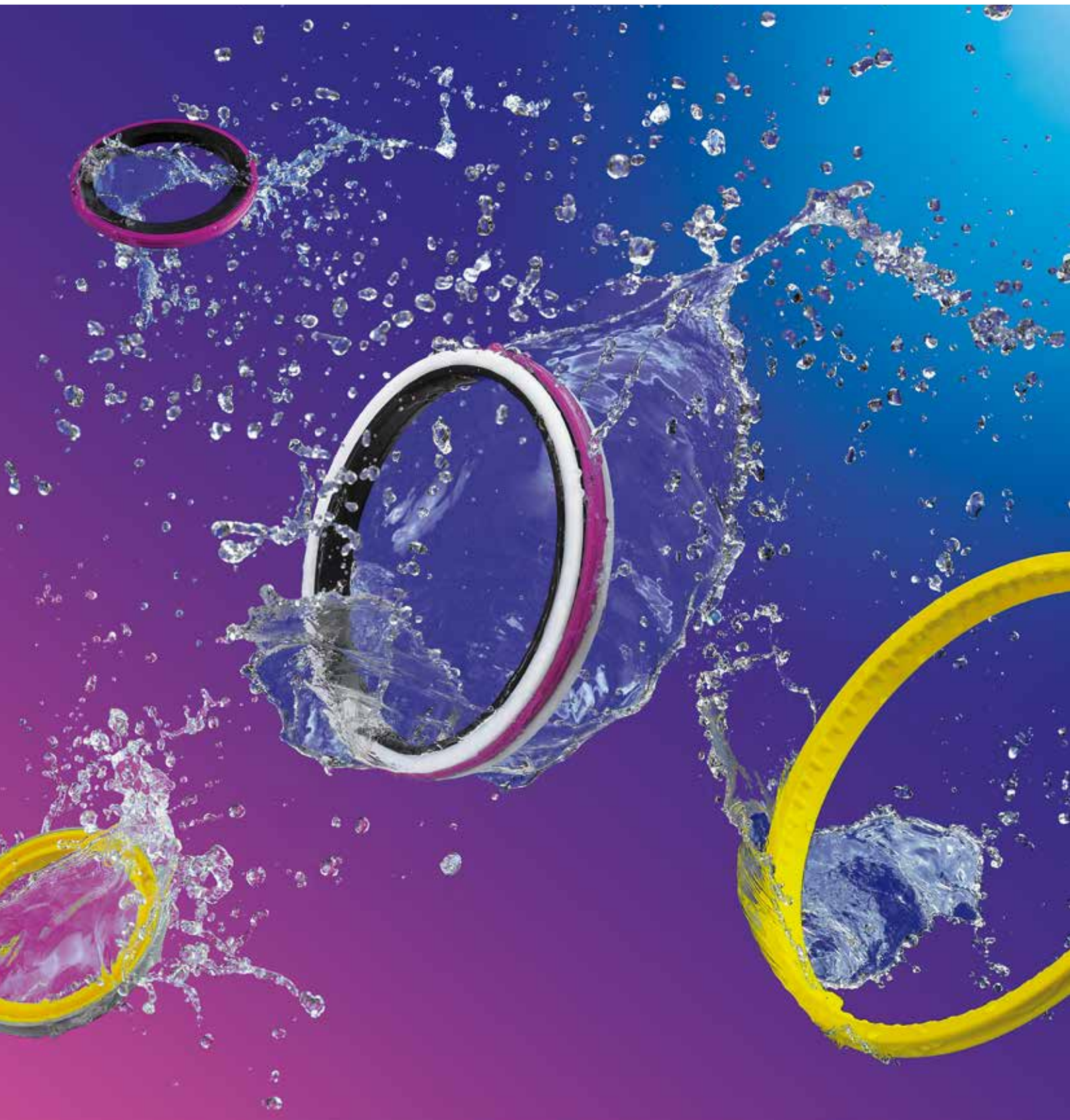


Oleodinamica/Pneumatica
Hydraulic/Pneumatic



ARTIC SEALS™



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Sealing Solutions





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Indice

Index

Gamma prodotti	4	Products range	4
Sezione tecnica	8	Technical overview	8
Sistemi di tenuta per oleodinamica	52	Hydraulic sealing systems	52
- guarnizioni stelo		- <i>rod seals</i>	
- guarnizioni pistone		- <i>piston seals</i>	
- anelli guida	138	- <i>wear rings</i>	138
- raschiatori		- <i>wipers</i>	
Tenute statiche	196	Static seals	196
- guarnizioni statiche		- <i>static seals</i>	
- guarnizione valvole a cartuccia		- <i>cartridge valve seals</i>	
- o-rings		- <i>o-rings</i>	
- o-ring antirolling®		- <i>o-ring antirolling®</i>	
- anelli antiestrusione		- <i>back-up rings</i>	
Sistemi di tenuta per pneumatica	238	Pneumatic sealing systems	238
- guarnizioni stelo		- <i>rod seals</i>	
- guarnizioni ammortizzo		- <i>cushion seals</i>	
- guarnizioni pistone		- <i>piston seals</i>	
- anelli guida		- <i>wear rings</i>	
- raschiatori		- <i>wipers</i>	
- membrane scarico rapido		- <i>membrane rapid discharge</i>	



Gamma prodotti

Product range

GUARNIZIONI STELO / ROD SEALS									
Condizioni massime non simultanee / Maximum conditions (not combined)									
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	RSA	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	64
	RLF	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	68
	RSB	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	72
	RSB2	-35 +100	< 500	< 0,5	TPU POM	● ○		Idraulica Hydraulic	78
	RSC	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	80
	RSD	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	84
	RPO	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	88
	RAA	-30 +135	< 600	< 1	POM	○		Idraulica Hydraulic	92
	TSS/P	-35 +100	< 600	5	TPU NBR	● ●		Idraulica Hydraulic	94
	TSS	-30 +120	< 600	15	PTFE bronzo/ bronze NBR	● ●		Idraulica Hydraulic	96
	RSO	-35 +100	< 400	< 0,5	TPU NBR	● ●		Idraulica Hydraulic	98
	RBR	-35 +100	< 400	< 0,8	TPU POM	● ○		Idraulica Hydraulic	100
	RPS	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	102
	RSP	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	246
	SRS	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	248
	SRS/N	-30 +100	< 12	< 1	NBR	●		Pneumatica Pneumatic	250
GUARNIZIONI ROTAZIONE / ROTARY SEALS									
	GDR	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	156
GUARNIZIONI AMMORTIZZO / CUSHION SEALS									
	CSA	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	252

GUARNIZIONI PISTONE / PISTON SEALS														
Condizioni massime non simultanee / Maximum conditions (not combined)														
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU	POM / PA	PTFE Bronze	NBR	TPE	Resina PTFE Carbo.	PTFE	Sezione Section	Pagina Page
	RPS	-35 +100	< 400	< 0,5	TPU	●							Idraulica Hydraulic	102
	PSA	-35 +100	< 400	< 0,5	TPU	●							Idraulica Hydraulic	106
	PAE	-35 +100	< 500	< 0,5	TPU POM	●	○						Idraulica Hydraulic	110
	PSH+RR	-35 +100	< 400	< 0,5	TPU POM	●	○						Idraulica Hydraulic	112
	PSO	-30 +100	< 250 materiali standard standard materials < 400 materiali alternativi alternative materials	< 0,5	TPU NBR	●			●				Idraulica Hydraulic	114
	PSQ	-30 +100	< 250 materiali standard standard materials < 400 materiali alternativi alternative materials	< 0,5	TPU NBR	●			●				Idraulica Hydraulic	118
	PSN	-30 +110	< 250	< 4	Technopolymer NBR				●	○			Hydraulic / Pneumatic	120/274
	TPD	-30 +120	< 600	15	PTFE bronzo/ bronze NBR			●	●				Idraulica Hydraulic	122
	PSZ	-30 +110	< 600	1	PA66 NBR		●		●				Idraulica Hydraulic	124
	PHP	-30 +100	< 600	< 1,5	TPU POM NBR	●	○		●				Idraulica Hydraulic	126
	KDSA	-30 +100	< 300	< 0,5	POM NBR TPE		○		●	●			Idraulica Hydraulic	128
	KDSB	-30 +100	< 300	< 0,5	POM NBR TPE		○		●	●			Idraulica Hydraulic	130
	KDSP	-30 +100	< 300	< 0,5	TPU POM	●	○						Idraulica Hydraulic	134
	KDAE	-30 +100	< 400	< 0,5	TPU TPE	●				●			Idraulica Hydraulic	136
	PSP	-40 +90	< 20	< 1	TPU	●							Pneumatica Pneumatic	254
	PSP/N	-30 +100	< 20	< 1	NBR				●				Pneumatica Pneumatic	258
	MPS	-40 +90	< 20	< 1	TPU	●							Pneumatica Pneumatic	260
	MPS/2	-40 +90	20	< 1	TPU	●							Pneumatica Pneumatic	262
	MPM	-40 +90	< 20	< 1	POM NBR TPU	●	○		●				Pneumatica Pneumatic	264
	SPS	-40 +90	< 20	< 1	TPU	●							Pneumatica Pneumatic	266
	SPS/N	-30 +100	< 12	< 1	NBR				●				Pneumatica Pneumatic	268
	PLF	-40 +90	< 20	< 1	TPU	●							Pneumatica Pneumatic	270
	MPP	-30 +100	< 20	< 1	NBR STEEL				●				Pneumatica Pneumatic	272

RASCHIATORI / WIPERS									
Condizioni massime non simultanee / Maximum conditions (not combined)									
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	WSL	-35 +100	-	< 1	TPU	●		Idraulica Hydraulic	158
	RO6	-30 +100	-	< 4	NBR		●	Idraulica Hydraulic	162
	WSG	-35 +100	-	< 1	TPU STEEL	●		Idraulica Hydraulic	166
	IWP	-35 +100	-	< 0,8	TPU STEEL	●		Idraulica Hydraulic	168
	DWP	-35 +100	-	< 0,8	TPU STEEL	●		Idraulica Hydraulic	170
	Ro9	-30 +100	-	< 1	NBR STEEL		●	Idraulica Hydraulic	172
	WWS	-35 +100	-	< 1	TPU	●		Idraulica Hydraulic	174
	RO8	-30 +100	-	< 4	NBR		●	Idraulica Hydraulic	176
	WAT	-35 +100	-	< 1	TPU	●		Idraulica Hydraulic	180
	TRD	-30 +120	-	< 15	PTFE bronzo/ bronze NBR		● ●	Idraulica Hydraulic	182
	WED	-35 +100	< 20	< 1	TPU	●		Idraulica Hydraulic	184
	WDA	-35 +100	< 50	< 1	TPU	●		Idraulica Hydraulic	188
	WIP	-40 +90	< 20	< 1	TPU	●		Idraulica Hydraulic	190
	WNM	-35 +100	< 20	< 1	PA Filled	●		Idraulica Hydraulic	192
	WEL	-35 +100	-	< 1	TPU	●		Idraulica Hydraulic	194
	LWA	-40 +90	-	< 1	TPU	●		Pneumatica Pneumatic	284
	BWA	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	286
	PIW	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	288
	BWS	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	290
	BWH	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	294
	BWH/N	-30 +100	< 20	< 1	NBR STEEL		●	Pneumatica Pneumatic	296

ANELLI DI GUIDA / WEAR RINGS										
<u>(sezione tecnica guide pag. 138/ wear rings technical section pag. 138)</u>										
Condizioni massime non simultanee / Maximum conditions (not combined)										
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze	NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	HIS HES	-40 +115	-	< 0,8	POM fibre di vetro glass fibres	○			Idraulica Hydraulic	142/146
	NG	-40 +200	-	15	PTFE bronzo/ bronze	●			Idraulica Hydraulic	150
	HPW	-50 +150	-	< 1	Resina Fenolica			●	Idraulica Hydraulic	152
	HEN	-40 +115	-	< 0,8	POM fibre di vetro glass fibres	○			Idraulica Hydraulic	154
	ISA	-35 +115	-	< 1	POM modificato/ <i>mo- dified</i>	○			Pneumatica Pneumatic	276
	ESA	-35 +115	-	< 1	POM modificato/ <i>mo- dified</i>	○			Pneumatica Pneumatic	278
	NG	-40 +200	-	15	PTFE carbogرافite			●	Pneumatica Pneumatic	282

O-RING / O-RING				
	OR	vedi specifiche mescole o-ring see specifications of o-ring compounds	Statica Static	210
	OR ANTIROLLING®	vedi specifiche mescole o-ring see specifications of o-ring compounds	Statica Static	212

ANELLI ANTIESTRUSIONE / BACK-UP RINGS									
	RAE/ MAE	-30 +120	-	< 0,8	TPE			Statica Static	214
	AKN	-30 +100	-	< 0,8	NBR			Statica Static	214
	AKC	-40 +200	-	< 0,8	PTFE			Statica Static	214
	AKW	-40 +200	-	< 0,8	PTFE			Statica Static	214
	AKS	-40 +200	-	< 0,8	PTFE			Statica Static	214

GUARNIZIONI STATICHE / <i>STATIC SEALS</i>									
	SSA	-35 +100	< 400	-	TPU	●		Statica <i>Static</i>	200
	VSS	-35 +100	< 400	-	TPU	●		Statica <i>Static</i>	204
	FSA	-35 +100	< 500	-	TPU	●		Statica <i>Static</i>	206
	VRA	-35 +100	-	-	TPU	●		Statica <i>Static</i>	208

MEMBRANE SCARICO RAPIDO / CUSHION SEALS									
	CUP	-40 +90	<10	-	TPU	●		Pneumatica Pneumatic	298

Introduzione

L'oleodinamica e la Pneumatica sono discipline assai consolidate della Fluidodinamica e sono orientate allo studio della trasmissione dell'energia tramite fluidi in pressione. La risoluzione di un problema in tali ambiti, comporta generalmente lo sviluppo di complesse equazioni per la definizione delle diverse proprietà del fluido, come ad esempio velocità, pressione, densità, e temperatura, in funzione dello spazio e del tempo. Esse trovano applicazione nella ingegneria meccanica riscontrando notevole successo in moltissime applicazioni grazie agli innumerevoli vantaggi offerti da queste tecnologie che combinano formidabili concentrazioni di potenza con eccellenti capacità di controllo e regolazione. Nella tipica applicazione oleodinamica, la portata d'olio generata da una pompa all'interno di un circuito oleodinamico, viene utilizzata per muovere un martinetto o un motore idraulico a seconda che l'effetto meccanico desiderato (forza o movimento) sia lineare o rotatorio.

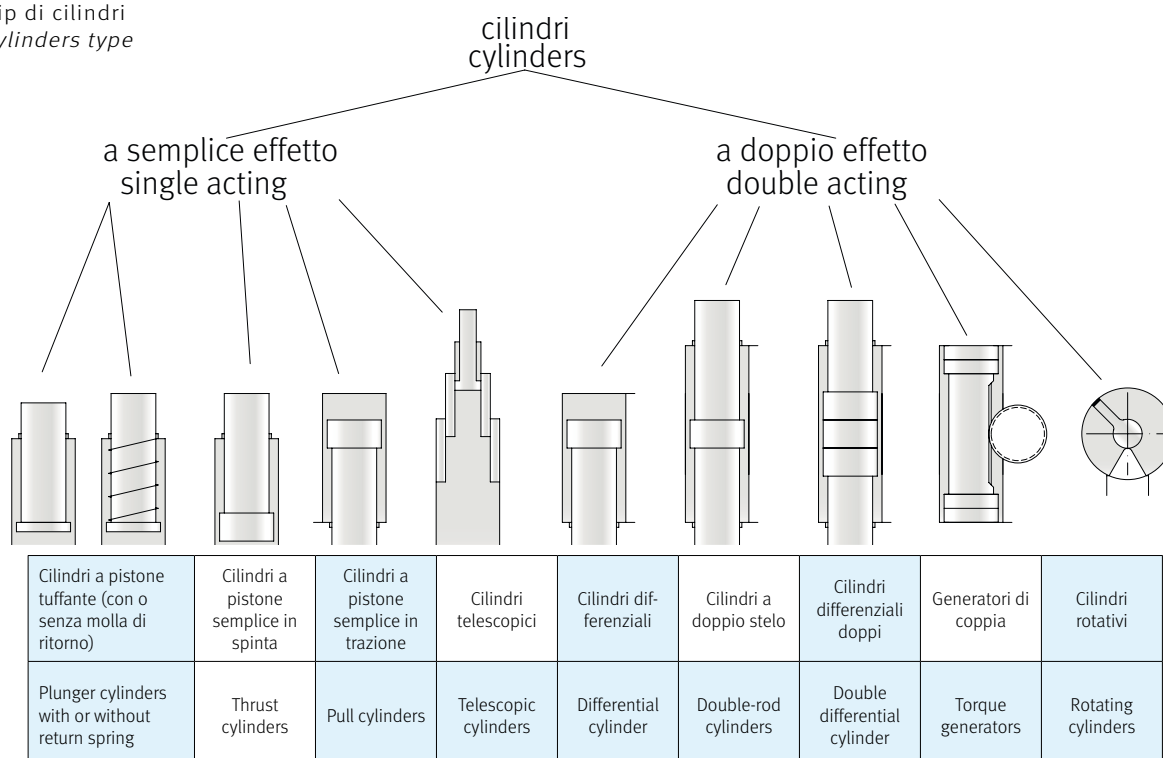
I cilindri oleodinamici sono attuatori lineari che realizzano la conversione dell'energia idraulica in energia meccanica, e producono una forza e lo spostamento lineare del carico. In relazione alla funzione svolta, i cilindri idraulici possono essere raggruppati in due categorie principali: Cilindri a semplice effetto e cilindri a doppio effetto, secondo lo schema sotto riportato.

Preface

Hydraulics and pneumatics are very well-established branches of fluid dynamics, focusing on the study of energy transmission through fluids under pressure. Solving a problem in such fields usually implies the development of complex formulas, aiming at specifying the different fluid properties, such as for instance speed, pressure, density and temperature, as a function of space and time. Thanks to their countless advantages, those technologies are applied very successfully in a large number of mechanical engineering applications, as they combine outstanding concentrations of power with excellent control and adjustment capabilities. In a typical hydraulic application, the oil flow generated by a pump in a hydraulic circuit is used to move a jack or a hydraulic motor to obtain the desired mechanical effect (force or movement), i.e. linear or rotational movement.

Hydraulic cylinders are linear actuators converting hydraulic into mechanical energy, that generate a force and determine the linear displacement of the load. Depending on the function to be carried out, hydraulic cylinders can be grouped into two main categories: single-acting cylinders and double-acting cylinders, as shown in the diagram below.

Fig.1: Tip di cilindri
Cylinders type



All'interno dei cilindri viene fatto largo impiego di guarnizioni, anelli realizzati in materiali Elastomeri o Termoplastici, di sezione variabile, a cui viene affidato il compito di garantire la perfetta tenuta dei fluidi, tra le parti reciprocamente mobili e fisse dei cilindri in un contesto assai ampio di casistiche, legate principalmente alle differenti applicazioni.

Negli ultimi anni, l'introduzione di nuove tipologie di fluidi e il costante innalzamento dei livelli di pressione e temperatura degli stessi, hanno reso necessario lo sviluppo di nuove tipologie di guarnizioni che fossero in grado di garantire adeguati livelli di prestazione. In particolare sono stati sviluppati nuovi polimeri che, combinati ad innovativi profili, consentono di ottenere i risultati attesi.

Le guarnizioni principalmente devono resistere alle pressioni, alle temperature e alle velocità d'esercizio e devono risultare compatibili al contatto con determinati fluidi. Devono inoltre avere buona resistenza all'usura per garantire il buon funzionamento nel tempo. Devono quindi possedere elasticità, resistenza alla compressione, resistenza all'usura, durezza e compatibilità chimica con il fluido.

In un cilindro quindi i fattori che influenzano l'intero sistema di tenuta sono molteplici e vanno tutti presi in seria considerazione fin dalla fase di progettazione delle guarnizioni che verranno introdotte, utilizzando i materiali più idonei e progettando i profili più adeguati. La collaborazione fra il produttore della guarnizione e l'utilizzatore finale diviene così fondamentale per la realizzazione nel tempo di sistemi di tenuta efficaci e affidabili.

Cylinders use a large number of seals, i.e. rings in elastomeric or thermoplastic materials with variable section, that shall guarantee the flawless sealing of fluids among the cylinder reciprocally movable and fixed parts, in a wide range of situations, mainly determined by the different application requirements.

In recent years, the introduction of new fluid types, as well as the fluid steadily increasing pressure and temperature levels, led to the development of new seal types, able to guarantee adequate performance standards. In particular, new polymers have been developed, that combined with innovative profiles enable to achieve the expected results.

Seals shall primarily withstand operating pressures, temperatures and speeds and offer compatibility with given fluids. Moreover they shall feature good wear resistance properties, in order to ensure efficient operating over time. Therefore, they shall offer elasticity, compressive strength, wear resistance, hardness and chemical compatibility with fluids.

As a result, the factors influencing the entire sealing system in a cylinder are many and shall all be taken into serious consideration right from the seal design phase, choosing the most suitable materials and designing the most effective profiles. The co-operation between the seals producer and the end user becomes then essential to develop efficient and reliable sealing systems in time.

Pressione

Valori di pressione troppo elevati combinati con giochi d'accoppiamento eccessivi tra stelo/testata e camicia/pistone, nel medio termine, rappresentano la prima causa di deterioramento della guarnizione causato dall'estrusione con conseguenti perdite del fluido. Oltre alla normale pressione di esercizio generata dal sistema idraulico, nel cilindro possono intervenire altre pressioni: variabili, improvvise e di valore altissimo. Ciò accade quando la macchina, equipaggiata con cilindri idraulici, a causa di fattori esterni, incorre in situazioni anomale e di forte carico. I picchi di pressione che ne conseguono, influenzano negativamente tutto il sistema, sottoponendo le guarnizioni a forti shock che possono generare lacerazioni o crepe e compromettere l'intero sistema idraulico. Altra situazione anomala in cui la pressione influenza negativamente tutto il sistema è la assenza di pressione, o pressione prossima allo zero. Anche in questo caso, diventa molto complesso garantire la perfetta tenuta, che viene affidata principalmente al modulo elastico del materiale con cui è realizzata la guarnizione e al suo profilo, disegnato affinché il precarico iniziale di montaggio risulti efficace alla tenuta anche in assenza di pressione, laddove non si ha il supporto della pressione stessa per mantenere i labbri della guarnizione contro la superficie di contatto. In tutti questi casi risulta appropriato l'impiego di tenute specifiche. La gamma dei prodotti proposta offre un'ampia scelta di profili che, abbinati a varie tipologie di materiali come poliuretani, gomme e polimeri in PTFE, consentono di individuare la soluzione ideale in tutte le applicazioni.

Temperatura

La temperatura del fluido da trattenere, ha un'influenza fondamentale sulla vita e quindi, sull'efficienza della tenuta. E' necessario, inoltre, considerare che, alla temperatura propria del fluido, occorre sommare una sovratemperatura provocata dall'attrito tra lo spigolo di tenuta della guarnizione e la superficie con cui è a contatto.

Pressure

Too high pressure values combined with excessive fitting clearance values between rod/head and liner/piston are the main cause of seals deterioration due to extrusion in the medium run, resulting in fluid leakages. Besides the typical operating pressure generated by the hydraulic system, other pressures may occur in cylinders: variable, unexpected and extremely high.

This happens when a machine supplied with hydraulic cylinders experiences anomalies and heavy-load events due to external factors. The resulting pressure peaks adversely affect the entire system, exposing the seals to heavy shock loads, that may cause tears or cracks and damage the whole hydraulic system.

Another condition negatively affecting the entire system is the lack of pressure or a pressure close to zero.

Also in that case, it is very complicated to ensure a flawless sealing, that will be basically left to the modulus of elasticity of the seal material and to its profile, conceived to ensure an effective initial mounting preload for the seal even in lack of pressure, where no pressure support is available to keep the seal lips against the contact surface. In those cases it would be appropriate to use specific seals.

The proposed product range offers a wide choice of profiles, which combined with different material typologies such as polyurethanes, rubbers and polymers of PTFE, enable to identify the ideal solution for any application.

Temperature

The temperature of the fluid to be retained has a major influence on the life and, therefore, the efficiency of the seal. Moreover an over temperature, that results from the friction between the seal lip and the contact surface, shall be added to the fluid own temperature.

L'entità della sovratemperatura dipende da diversi fattori, tra cui i principali sono:

- rugosità dello stelo e della camicia
- velocità
- pressione d'esercizio
- tipo di fluido da ritenere
- lubrificazione
- forma del labbro di tenuta
- anelli di guida

L'aspetto fondamentale che determina la resistenza di una guarnizione, alla somma delle temperature coinvolte, è il materiale in cui è realizzata la guarnizione stessa. Per ogni tipologia di materiale vengono considerate delle temperature tipiche di esercizio che possono variare anche notevolmente in funzione del profilo della guarnizione.

Quando ci si avvicina alle temperature limite, individuate per ogni tipologia di guarnizione, possono comparire problemi, sia alle basse temperature che alle alte temperature, poiché in entrambe le situazioni, si manifestano significative variazioni nella viscosità del fluido e nella elasticità del materiale. Alle alte temperature, ad esempio, l'eccessiva viscosità del fluido può compromettere il suo potere di lubrificazione, basilare per il mantenimento del microfilm d'olio che si crea tra il labbro di tenuta e la superficie di scorrimento. Il film lubrificante è funzione della pressione idrodinamica generata dalla velocità del sistema e, in sua assenza, l'attrito che ne deriva, innalza la temperatura della guarnizione in breve tempo. Il rischio quindi è di assistere ad una variazione di stato dell'elemento di tenuta, in base alla composizione del materiale, alla sua forma e alla sua durezza. Alle basse temperature invece si assiste ad un irrigidimento della guarnizione, con notevole perdita delle sue caratteristiche elastiche, fino ad un vero e proprio cambiamento di stato quando si raggiunge la temperatura di cristallizzazione del materiale in cui è realizzata, detta appunto transizione vetrosa. Artic Seal, propone una vasta gamma di profili e materiali, adatti ad essere impiegati in applicazioni che vedano coinvolte temperature comprese tra -50°C e +220 °C. Va inoltre ricordato che le temperature che vengono indicate nelle schede tecniche dei materiali, sono da ritenersi puramente indicative, in quanto vengono testate in su provini e in ambiente controllato.

The over temperature values depend on different factors, the main ones being:

- *rod and bore roughness*
- *speed*
- *operating pressure*
- *fluid to be retained*
- *lubrication*
- *sealing lip shape*
- *wear rings*

Considering all temperatures involved, the main item that determines the seal resistance is the material it is made of. For each material type, typical operating temperatures are taken into consideration, that can vary considerably depending on the seal profile. When getting closer to the limit temperatures of a given seal type, problems may arise both at high and low temperature, as significant changes in the fluid viscosity and material elasticity occur in both conditions.

At high temperatures, for example, the excessive fluid viscosity may damage its lubrication efficiency, which is essential to maintain the oil microfilm that forms between the sealing lip and the sliding surface.

The lubricant film is a function of the hydrodynamic pressure generated by the system speed and in lack of it, the resulting friction causes the seal temperature to raise in short time.

The risk is then to experience a change in the sealing item state, depending on the material, shape and hardness.

At low temperatures, the seal may stiffen losing a considerable share of its elasticity properties, up to a real change of state when it reaches the material crystallization temperature, specifically known as glass transition.

Artic Seal proposes a wide assortment of profiles and materials, suitable for applications with temperature between -50°C and +220 °C.

Please note that the temperatures listed in the material technical data sheets are to be regarded as guideline values, as they are tested on specimens in a controlled environment.

Velocità

Quando si parla di velocità, vi sono alcune variabili da tenere in considerazione: la rugosità delle superfici di contatto, la temperatura dell'olio, la pressione d'esercizio. Queste tre variabili insieme al tipo di materiale della guarnizione possono determinare il valore massimo della velocità sostenibile dal sistema. Velocità comprese tra 0,03 e 0,3 m/s normalmente non compromettono il funzionamento del sistema di tenuta. In presenza di velocità molto basse, invece, la modesta pressione idrodinamica non riesce a mantenere costante lo spessore del meato d'olio che si crea tra i labbri della guarnizione e superficie di scorrimento. Esso tende a rompersi e ricrearsi in continuazione e l'attrito che ne deriva genera un movimento a "scatti" (stick slip) con conseguente usura della guarnizione. Al contrario, a velocità troppo elevate la pressione idrodinamica tende invece a "staccare" il labbro di tenuta dalla superficie di contatto. In questa zona aumenta la temperatura e diminuisce la viscosità del fluido con conseguente perdita. Le tipologie di materiali proposte da ARTIC SEALS riescono a soddisfare tutte le esigenze di variazioni di velocità. L'utilizzo di varie mescole di poliuretani, gomme e PTFE, permettono di operare con tutte le diverse velocità richieste.

Fluidi

In un cilindro idraulico sono normalmente utilizzati oli a base minerale oppure oli ecologici biodegradabili. Le caratteristiche di ciascun tipo di fluido vengono abitualmente vagliate dal produttore e dall'utilizzatore finale in base ad esigenze specifiche. (Vedere tab.1)

Un aspetto molto importante da valutare è la compatibilità del fluido, olio in particolare con le guarnizioni di tenuta. In caso di lubrificanti nuovi, poco utilizzati o mai testati, ARTIC SEALS si rende disponibile a verificare la compatibilità con le nostre guarnizioni, presso la nostra sala prove.

Speed

When it deals with speeds, some other variables shall be taken into consideration, i.e. the contact surface roughness, the oil temperature and the operating pressure.

These three variables together with the seal material may determine the system maximum admissible speed. Speeds in the range between 0,03 and 0,3 m/s, normally, do not affect the sealing system efficiency. In case of very low speeds, however, the poor hydrodynamic pressure is unable to maintain constant the thickness of the oil gap that forms between sealing lips and sliding surface.

It tends to break and reform continuously and the resulting friction causes a "jerky" motion (stick-slip), leading to the seal wearing. On the contrary, at too high speeds the hydrodynamic pressure tends to "pull" the sealing lip away from the contact surface. In this area the temperature increases, while the fluid viscosity decreases, resulting in leakages. The material typologies offered by ARTIC SEALS satisfy all speed changing needs. The different polyurethane, rubber and PTFE compounds enable operating at the different speeds required.

Fluids

Hydraulic cylinders normally use mineral-base oils or biodegradable, environmentally friendly ones. The features of each fluid type are usually weighed by the manufacturer and the end users, depending on the specific needs. (See Table 1)

Hydraulic cylinders normally use mineral-base oils or biodegradable, environmentally friendly ones. The features of each fluid type are usually weighed by the manufacturer and the end users, depending on the specific needs. Below are listed the hydraulic oils on the market:

Tab. 1 - principali olii idraulici presenti sul mercato - *Principal Hydraulic oils on the market*

Liquidi a base di olio minerale/ <i>Mineral-oil based fluids</i>	Liquidi resistenti alla fiamma/ <i>Fire resistant fluids</i>	Liquidi ecologici / <i>Environmentally friendly fluids</i>	Liquidi speciali / <i>Special fluids</i>
HL Con additivi Anticorrosione e antinvecchiamento / <i>With anticorrosion and anti-aging additives</i>	Acqua pura / <i>Pure water</i>	HETG Trigliceridi a base di oli vegetali (Olio di colza) / <i>Vegetable-oil-based tryglicer- ides (rapeseed oil)</i>	Liquidi sintetici per usi aeronautici / <i>Synthetic fluids for aeronautical use</i> MIL-H-5606A
HLP Come HL più additivi antigrippaggio / <i>Like HL plus anti-seize addi- tives</i>	HFA Emulsione olio in acqua / <i>Oil-in-water emulsion</i> (80-98 % O)	HEPG Glicoli polietilenici e polialchilenici / <i>Polyethylene and polyalkylene glycols</i>	Liquidi sintetici per usi marini / <i>Synthetic fluids for marine use</i> NATO-H-540
HV Come HLP più additivi ridu- zione viscosità con la tempera- tura / <i>Like HLP plus addi- tives reducing viscosity with</i>	HFB Emulsione acqua in olio / <i>Oil-in-water emulsion</i> (40-50 % O)	HEE Esteri sintetici / <i>Synthetic esters</i>	
HLP-D Come HLP più additivi deter- genti / <i>Like HLP plus detergent addi- tives</i>	HFC Poliglicole in soluzione ac- quosa / <i>Polyglycole in water solution</i> (35...55 % O)		
	HFDR Esteri forforici / <i>Phosphate esters</i>		
	HFDS Idrocarburi clorati / <i>Chlorinated hydrocarbons</i>		
	HFDT Miscele di HFDR+HFDS / <i>HFDR+HFDS compounds</i>		

 Tab. 2 - principali olii idraulici presenti sul mercato - *Principal Hydraulic oils on the market*

ISO classification	Sub Category	Composition	Wear Content	Typical Tempera- ture Range (ISO)	Comments
HFA	HFAE	oil in water emulsion	>80%	+5 to +50 °C	Storage temperature >0°
	HFAS	Synthetic aque- ous fluids	>80%	+5 to +50 °C	
HFB	-	Water-in-oil (invert emulsion)	> 40%	+5 to +50 °C	Storage temperature >0°
HFC	-	Water glicole solutions	> 35%	-20 to +50 °C	-
HFD	HFDR	Phosphate esters	None	-20 to +70°C	In some case, used up to 150°C but a such temperatures, the fluids may be subject at deterioration and shall be frequently checked (upper temperature limitsfo short-term only).In high-tempe- rature circuits, i.e. above +100°C, special materials may have to be used for seals, packings, hoses etc. Where doubt exist, clarification should be sought from the equipment manufacturer and / or fluids.
	HFDU	Synthetic Anhy- drous fluids other than phsphate esters (PAG / Polyol esters	None	-20 to +70°C	

Tab. 3 - Resistenza chimica dei materiali - *Chemical resistance of materials*

		poliuretano <i>polyurethane</i>	Resina acetica <i>Acetic resin</i>	Elastomero termoplastico <i>Thermoplastic elastomer</i>	Gomma nitrilica <i>Nitril rubber</i>	Gomma nitrilica idrogenata <i>Hydrogenated nitrile rubber</i>	Etilene propilene <i>Ethylene propylene</i>	Fluoroelastomero <i>Fluoroelastomer</i>	Fluorosilicone <i>Fluorosilicone</i>	Poli tetrafluoroetilene <i>Polytetrafluorethylene</i>
Fluido	<i>Fluid</i>	PU	POM	TPE	NBR	HNBR	EPDM	FKM	VMQ	PTFE
acetato di etilene	<i>ethyl acetate</i>	●	●●●	●●	●	●	●●●	●	●	●●●
aceto	<i>vinegar</i>	●	●●●	●●●	●●	●●	●●●	●●	●●●	●●●
acetone	<i>acetone</i>	●	●●●	●●●	●	●	●●●	●	●	●●●
acido acetico (20%)	<i>acetic acid (20%)</i>	●	●●	●●●	●●	●●	●●●	●●	●●	●●●
acido acetico (5%)	<i>acetic acid (5%)</i>	●	●●●	●●●	●●	●●	●●●	●●	●●●	●●●
acido acetico (50%)	<i>acetic acid (50%)</i>	●	●	●●	●	●	●●●	●	●	●●●
acido citrico	<i>citric acid</i>	●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
acido cloridrico (10%)	<i>chloric acid (10%)</i>	●	●	●●	●	●	●●	●●	●	●●●
acido cloroacetico (10%)	<i>chloroacetic acid (10%)</i>	●	●	●●	●	●	●●●	●	●	●●●
acido cromatico (10%)	<i>chromic acid (10%)</i>	●	●	●●	●	●	●●	●●●	●	●●●
acido fluoridrico (10%)	<i>hydrofluoric acid (10%)</i>	●	●	●●	●	●	●●	●	●	●●●
acido formico	<i>formic acid</i>	●	●	●●	●	●	●●	●	●	●●●
acido fosforico (30%)	<i>phosphoric acid (30%)</i>	●	●	●●	●	●	●●●	●●●	●	●●●
acido muriatico	<i>muriatic acid</i>	●	●	●●	●	●	●●	●●●	●	●●●
acido nitrico (10%)	<i>nitric acid (10%)</i>	●	●	●●	●	●	●	●●●	●	●●●
acido oleico	<i>oleic acid</i>	●	●●●	●●	●●●	●●●	●	●●●	●	●●●
acido palmitico	<i>palmitic acid</i>	●●	●●●	●●	●●	●●	●	●●●	●	●●●
acido perclorico (10%)	<i>perchloric acid (10%)</i>	●	●	●●●	●	●	●●	●●●	●	●●●
acido solforico (30%)	<i>sulphuric acid (30%)</i>	●	●	●●●	●	●	●●●	●●●	●	●●●
acido tartarico	<i>tartaric acid</i>	●	●	●●	●●●	●●●	●●	●●●	●●●	●●●
acido tricloroacetico	<i>trichloroacetic acid</i>	●	●	●●●	●●	●●	●●	●	●●	●●●
alcol metilico	<i>methyl alcohol</i>	●	●●●	●●	●●●	●●●	●●●	●	●●●	●●●
acqua	<i>water</i>	●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
acqua 100°C	<i>water 100°C</i>	●	●●●	●●	●●	●●●	●●●	●●	●●	●●●
acqua clorurata >0,5 ppm	<i>chlorine ater >0.5 ppm</i>	●	●●●	●●●	●	●	●●	●●●	●	●●●
acqua distillata	<i>distilled water</i>	●●	●●●	●●●	●●	●●●	●●	●●	●●●	●●●
acqua glicole	<i>glycol water</i>	●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
acqua marina	<i>sea water</i>	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●●
acqua olio	<i>oil water</i>	●●	●●●	●●●	●●●	●●●	●	●●●	●●●	●●●
acqua ossigenata (1%)	<i>hydrogen peroxine (1%)</i>	●	●●●	●●●	●●	●●	●	●●●	●●●	●●●
acqua ossigenata (30%)	<i>hydrogen peroxine (30%)</i>	●	●	●●●	●	●	●	●●●	●●	●●●
alcol etilico	<i>ethanol</i>	●	●●	●●●	●●●	●●●	●	●●●	●●	●●●
ammoniaca (10%)	<i>ammonia (10%)</i>	●	●	-	●●●	●●●	●●●	●	●	●●●
anidride carbonica	<i>carbon dioxide (wet and dry)</i>	●	●●●	●●●	●●●	●●●	●●	●●●	●●	●●●
anidride solforosa	<i>sulphur dioxide</i>	●	●	●●●	●	●	●●●	●●	●●	●●●
anilina	<i>aniline</i>	●	●●	●	●	●	●●●	●	●	●●●
aria	<i>air</i>	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
azoto	<i>nitrogen</i>	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
benzina	<i>benzine (gasoline)</i>	●●●	●●●	●●●	●●	●	●	●●●	●	●●●
benzolo	<i>benzol</i>	●	●●●	●●	●	●	●	●●	●	●●●
birra	<i>beer</i>	●	-	●●●	●●●	●●●	●●●	●●●	●●●	●●●
butano	<i>butane</i>	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
caffè	<i>coffee</i>	●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
candeggiante (10%)	<i>bleach solution (10%)</i>	●	●	●●	●	●	●●●	●●●	●	●●●
carburante diesel	<i>diesel fuel</i>	●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
cherosene	<i>kerosene</i>	●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
ciclo esano	<i>cyclo hexane</i>	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
cloroformio	<i>chloroform</i>	●	●●	●●	●	●	●	●●	●	●●●

Attenzione: consultare il nostro ufficio tecnico per le altre compatibilità

Attention :consult our technical department for the other compatibility

Valori indicativi/indicative values

●●●=buono/ good

●●=sufficiente/ fair

●=insufficiente/ poor

Condizioni di prova: a temperatura ambiente - testata su provette

Operating conditions: room temperature - tested on specimens

Tab. 3 - Resistenza chimica dei materiali - *Chemical resistance of materials*

		poliuretano polyurethane	Resina acetica Acetalic resin	Elastomero termoplastico Thermoplastic elastomer	Gomma nitrilica Nitril rubber	Gomma nitrilica idrogenato Hydrogenated nitril rubber	Etilene propilene Ethylene propylene	Fluoroelastomero Fluoroelastomer	Fluorosilicone Fluorosilicone	Polieterafluoroetilene Polytetrafluoroethylene
Fluido	Fluid	PU	POM	TPE	NBR	HNBR	EPDM	FKM	VMQ	PTFE
cloruro di calcio (10%)	calcium chloride (10%)	●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
cloruro di sodio (10%)	sodium chloride (10%)	●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
eptano	heptane	●●●	●●●	●●●	●●●	●●●	●	●●●	●●●	●●●
esano	hexane	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
etanolo	ethanol	●	●●●	-	●	●	●●	●	●	●●●
etere etilico	ether	●	●●●	-	●	●	●●	●	●	●●●
fluido per freni	brake fluid	●	●●●	●	●	●	●●●	●	●	●●●
formaldeide (37%)	formaldehyde (37%)	●	●●●	●●	●	●	●●●	●	●	●●●
freon 11	freon 11	●	●●●	●●	●●	●●	●	●●	●	●●●
freon 12	freon 12	●●	●●●	●●●	●●	●●	●●	●●●	●	●●●
freon 21	freon 21	●●	●●●	●●●	●	●	●	●	●	●●●
freon 22	freon 22	●	●●●	●●	●	●	●●●	●	●	●●●
freon 113	freon 113	●●●	●●●	●●●	●●	●●●	●	●●	●	●●●
freon 114	freon 114	●●●	●●●	●●●	●●●	●●●	●●●	●●	●	●●●
gas naturale	natural gas	●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
gas propano	propane gas	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
gasolio	diesel oil	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
glicerina	glycerine	●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
glicole	ethylene glycol	●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
glucosio	glucose solution	●	●●●	-	●●●	●●●	●●●	●●●	●●●	●●●
grasso minerale	mineral grease	●●●	●●●	●●●	●●●	●●●	●	●●●	●●	●●●
idrogeno gas	hydrogen gas	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●	●●●
ipoclorito di sodio (5%)	sodium hypochlorite (5%)	●	●	●●●	●●	●●	●●●	●●●	●●	●●●
latte	milk	●	●●●	-	●●●	●●●	●●●	●●●	●●●	●●●
mercurio	mercury	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
metano	methane	●●●	●●●	●●●	●●●	●●●	●	●●●	●●●	●●●
metiltilchetone	methyl ethyl ketone	●	●●	●●●	●	●	●●	●●	●	●●●
oli vegetali	vegetal oils	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
olio al silicone	silicone oil	●●●	●●●	●●●	●●●	●●●	●●	●●●	●	●●●
olio ASTM 1	oil ASTM 1	●●●	●●●	●●●	●●●	●●●	●	●●●	●●●	●●●
olio ASTM 3	oil ASTM 3	●●●	●●●	●●●	●●●	●●●	●	●●●	●●	●●●
olio combustibile	fuel oil	●●●	●●●	●●●	●●	●●	●	●●●	●	●●●
olio lubrificante	lubricating oil	●●●	●●●	●●●	●●●	●●●	●	●●●	●●	●●●
olio minerale	mineral oil	●●●	●●●	●●●	●●●	●●●	●	●●●	●●	●●●
olio paraffinico	paraffin oil	●●●	●●●	●●●	●●●	●●●	●	●●●	●	●●●
olio per motore	engine oil	●●	●●●	●●●	-	-	●	●●●	-	●●●
olio per freni	break oil	●	●●	●●	-	-	●●●	●●●	-	●●●
olio ATF II	ATF II oil	●●●	●●●	●●●	●●	●●	●	●●●	●	●●●
olio ATF III	ATF III oil	●●	●●	●●	●	●	●	●●●	●	●●●
olio ATF IV	ATF IV oil	●	●	●●	●	●●	●	●●●	●	●●●
olio per freni	break oil	●	●●	●●	-	-	●●●	●●●	-	●●●
ossigeno	oxygen	●●	●●●	●●●	●	●	●●●	●●●	●●●	●●●
ozono	ozone	●●	●●●	●●●	●	●	●●●	●●●	●●●	●●●
paraffina	paraffin	-	●●●	●●●	●●●	●●●	●	●●●	●●	●●●
percloro etilene	perchlore ethylene	●	●●	●●●	●	●	●	●●●	●●●	●●●
succo di frutta	fruit juices	●	●●●	-	●●	●●	●●●	●●	●●●	●●●
trementina/acquaragia	turpentine	●	●●●	-	●●●	●●●	●	●●●	●	●●●
urea (5%)	urea (5%)	●	●●●	-	●●●	●●●	●●●	●●●	●●●	●●●
vapore	vapour	●	●●●	-	●	●	●●	●●●	●●	●●●
vaselina	vaseline	●●	●●●	●●●	●●●	●●●	●●	●●●	●	●●●
vino	wine	●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●

Valori indicativi/indicative values

●●●=buono/ good

●●=sufficiente/ fair

●=insufficiente/ poor

Condizioni di prova: a temperatura ambiente - testata su provette

Operating conditions: room temperature - tested on specimens

Materiali

Nella determinazione di quale sia la guarnizione ideale per una specifica applicazione, la scelta del materiale, rappresenta certamente uno degli aspetti più importanti e forse il più complesso poiché ci si deve orientare tra una moltitudine di polimeri, oggi disponibili sul mercato. Inoltre, il materiale deve essere attentamente selezionato sulla base dei vincoli che ogni sistema di tenuta prevede. Tra questi i più significativi sono :

- Compatibilità chimica: l'incontro che avviene fra la tenuta e il fluido o l'ambiente lavorativo;
- Attrito/Usura: indispensabile per determinare la vita e le prestazioni della tenuta;
- Proprietà meccaniche: definiscono la resistenza del materiale alle sollecitazioni meccaniche;
- Resistenza all'estrusione: definisce i limiti meccanici del materiale
- Consigli su, assemblaggio, stoccaggio e movimentazione : indispensabili per mantenere inalterate le caratteristiche delle tenute

Una volta verificate le caratteristiche principali del sistema di tenuta, che possono avere impatto sul materiale costruttivo della guarnizione, la scelta del materiale a cui riferirsi diviene assai più semplice e più efficace. Qui di seguito proponiamo una veloce carrellata dei polimeri più utilizzati in ambito guarnizioni.

Materials

To determine the most suitable seal for a specific application, the material choice is for certain one of the most important issues and perhaps the most complex one, due to the variety of polymers currently available on the market. Moreover, the material shall be accurately selected based on the binding requirements specified for the sealing systems. Among them, the most important are the following ones:

- *Chemical compatibility: contact seal material and the fluid used and/or the operating environment;*
- *Friction/Wear: It is essential to evaluate the seal life and performances*
- *Extrusion resistance: It is essential to evaluate the material suitability.*
- *Information assembling: storing and handling methods .Essential to maintain the seal performance*

Checking the sealing system main features, that may impact on the seal material, makes the material selection much easier and effective. Find below a brief overview of the polymers most commonly used for seal manufacturing

Tab. 4 - THERMOPLASTIC ELASTOMERS - POLIURETHANES : TPU

Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
AO	Polyether copolymer-based TPU	Light Violet	Combines hardness with excellent mechanical properties and good hydrolysis resistance. Ideal for Pneumatic applications like rod seals, piston seals and wipers	-40 to +90	85	
AT	Virgin Polyether copolymer-based TPU	Transparent	Combines low hardness with excellent mechanical properties and good hydrolysis resistance. Ideal for Pneumatic applications like rod seals, piston seals and wipers.	-40 to +90	85	
AG	Graphite Filled Polyether copolymer-based TPU	Graphite Grey	Combines hardness with excellent mechanical properties and good hydrolysis resistance. Improved wear resistance and reduced friction compared with standard AO TPU.	-40 to +90	85	
BO	polyether-based thermoplastic polyurethane	Light Grey	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance. Excellent Pneumatic rod seals, piston seals and wipers	-40 to +90	90	
BT	Virgin polyether-based thermoplastic polyurethane	Transparent	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance. Excellent for Pneumatic rod seals, piston seals and wipers. Transparent version.	-40 to +90	90	
BG	Graphite Filled polyether-based thermoplastic polyurethane	Graphite Grey	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance. Improved wear resistance and reduced friction compared with standard BO. Excellent for Pneumatic rod seals, piston seals and wipers.	-40 to +90	90	
CO	Caprolactone-based thermoplastic polyurethane.	Violet	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance over conventional polyester-based TPUs. Material produced by Kasting.	-35 to +110	94	
CT	Caprolactone-based thermoplastic polyurethane.	Transparent	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance over conventional polyester-based TPUs. Material produced by Kasting. Transparent version	-35 to +110	94	
DO	Polyester based thermoplastic polyurethane.	Fuchsia	Grease and oil-resistant; low compression set; good heat resistance, high elasticity, good for automotive engineering, technical parts and bearing bushes	-35 to +110	98	
EO	Polyether based polyurethane	natural white	High antiextrusion resistance for antiextrusion ring, wipers and special applications. Better resistance to hydrolysis and microbiological attack, a very good cold flexibility but a lower resistance to oxidation, in comparison with Polyester TPUs.	-25 to +100	62	
FO	Polyether based polyurethane	brown	Polyurethane for general purpose where high extrusion resistance is required. Better resistance to hydrolysis and microbiological attack, a very good cold flexibility but a lower resistance to oxidation, in comparison with Polyester TPUs.	-20 to +100	70	
GO	PPDI isocyanate based thermoplastic polyurethane	Dark Grey	Offers a combination of properties not obtainable with MDI polyurethane based. Very low compression set at elevated temperatures (+135°C), Resistance to abrasion, flex cracking, cutting and tearing, rebound resilience are all taken to a significantly higher level. Most relevant application is hydraulic seals where temperature reach +135°C.	-30 to +135	93	
GT	Virgin PPDI isocyanate based thermoplastic polyurethane	Transparent	Offers a combination of properties not obtainable with MDI polyurethane-based. Very low compression set at elevated temperatures (+135°C), Resistance to abrasion, flex cracking, cutting and tearing, rebound resilience are all taken to a significantly higher level. Most relevant application is hydraulic seals where temperature reach +135°C.	-30 to +135	93	
X1	polyether-based thermoplastic polyurethane	natural	Exceptional performance in terms of compression set, wear resistance and hydrolysis resistance. Excellent for Hydraulic and Pneumatic seals at low temperature.	-50 to +90	94	
X7	Polyester based thermoplastic polyurethane.	natural	Grease and oil-resistant; low compression set; good heat resistance, high elasticity, good for automotive engineering, technical parts and bearing bushes	-35 to +110	98	

Tab. 5 - THERMOPLASTIC ELASTOMERS: TPE

Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
L0	High performance thermoplastic polyester elastomer	Black	Dedicated to anti-extrusion rings and special parts requiring food contact compatibility. Food compliance specificity. It show extended resistance to extrusion and excellent fluid compatibility.	-55 to +110		37
L1	Thermoplastic polyester elastomer	Yellow	Mainly used for production of anti-extrusion rings. It show extended resistance to extrusion and excellent fluid compatibility.	-30 to + 130 (Peaks till -50 to +150)		55
L2	Thermoplastic polyester elastomer	Light violet	Mainly used for production of anti-extrusion rings. It show extended resistance to extrusion and excellent fluid compatibility.	-30 to + 130 (Peaks till -50 +150)		63
L7	Thermoplastic polyester elastomer	White	General purpose industrial parts, with extended resistance to extrusion and excellent fluid compatibility.	-30+ 130 (Peaks till -50 +150)		72

Tab. 6 - THERMOPLASTIC ENGINEERED RESIN: POM- PA-PBT

Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
R0	POM homopolymer 20% glass fiber filled	Black	High stiffness, low warpage and low creep for superior performance at elevated temperature. It contains carbon black for improved weathering. Primary application is Hydraulic wearing.	-40°C to +115°C		85
R2	POM homopolymer Heat stabilized	White	Acetal homopolymer, with improved thermal stability, good mechanical properties, and low volatile emissions.	-40°C to +115°C		85
R2FG	POM homopolymer Food Grade	White	Food compliance specificity; Acetal homopolymer, with improved thermal stability. It has been developed for consideration into applications such as parts for the food industry.	-40°C to +115°C		85
R3	POM filled 10% PTFE/Silicone	White	Self-lubricating material, good wear resistance. Mainly used for pneumatic wearing. It shows high mechanical properties, low friction coefficient and low wear.	-40°C +115°C		84
R1	PA6 40% glass fiber filled	Black	The glass fiber reinforcement enhances performance such as strength, stiffness and heat deflection temperature. The heat stabilizer system extends the properties at elevated temperatures. It also has excellent chemical resistance to greases, oils and hydrocarbons	-40°C +140°C		86
R9	PA6 40% glass fiber and 15% PTFE filled	Black	Heat stabilized PA6 40% glass fiber and 15% PTFE filled, ideal for hydraulic special items such as bushings, wipers and back-up rings where there is a demand for high toughness and low friction. . Self lubricating compound.	-40°C + 140°C		85 - 88
R4	PA6 + MOS2	Dark Grey	Heat stabilized PA6 filled with MoS2, ideal for hydraulic special items such as bushings, wipers and back-up rings where there is a demand for high toughness and low friction. Self lubricating compound.	-40°C +130°C		85
P2	Polibutilentereftalato (PBT)	White	PBT compound based filled with PTFE. It shows excellent self-lubricating properties. General purpose for industrial and meccanichal applications.	-30+ 130 (Peaks till -50 +150)		72

Tab. 7 - THERMOPLASTIC ENGINEERED RESIN: COMPOSITE RESIN

Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
S0	Phenol resin Cotton fabric reinforced	Tan	Self-lubrication, good mechanical properties, good dimensional stability and chemical resistance. Excellence in water resistance and in abrasion resistance. Excellence in impact. Main applications are wear ring for all kinds of cylinder, sliding bearing and bushes.	-60 to +150		80 (45)*
S1	Phenol resin polyester fabric reinforced with PTFE	Light blue	Self-lubrication, good mechanical properties, good dimensional stability and chemical resistance. Excellence in water resistance and in abrasion resistance. Excellence in impact. Main applications are wear ring for all kinds of cylinder, sliding bearing and bushes.	-60 +150		75 (45)*
S3	Phenol resin polyester fabric reinforced with GRAPHITE	Dark grey	Excellent dimensional stability and abrasion resistance. Self-lubrication and wide chemical resistance. Excellence in water. Main applications are wear ring for all kinds of cylinder, sliding bearing and bushes.	-50 +150		80 (45)*

Tab. 8 - SYNTHETIC FLUOROPOLYMER: Polytetrafluoroethylene (PTFE)

Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
T1	PTFE Virgin	White	Wide temperature range, excellent sliding properties, good steam and hot water resistance; FDA approved.	-190 to +230		55 - 57
T3	PTFE fiber Glass Filled (15%), Graphite, MoS2 (3%)	Green	Developed for hydraulic piston seals, involved in extreme conditions such as high pressure, high temperature, wear resistance on hardened dynamic surfaces.	-190 +290		55 - 61
TM	PTFE Bronze Filled (40%)	Brown	High compressive load and extrusion resistance, ideal for hydraulic rod/piston seals.	-150 +260		58 - 65
TV	PTFE Bronze Filled (40%)	Green	High compressive load and extrusion resistance, ideal for hydraulic wearing.	-150 +260		58 - 65
TC	PTFE Graphite Filled (15%)	Black	High chemical and corrosive resistance, low abrasion for soft shaft. Self-lubricating properties, ideal for hydraulic wearing.	-190 +230		55
T4	PTFE Carbon Filled (10%)	Dark Grey	Good in water service, very high chemical resistance against strong alkali and hydrofluoric acid.	-190 +230		64 - 67

Tab. 9 - THERMOSET ELASTOMERS : Nitrile (NBR)						
Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
N0	NBR 70 Sh	Black	General purpose nitrile rubber, ideal for soft seals like standard O-ring energizing element for PTFE sealing system	-30 +100	70	
N1	NBR 73 Sh	Black	General purpose nitrile rubber, ideal for soft seals like standard O-ring and energizing element for PTFE sealing system	-30 +100	73	
N2	NBR 75 Sh	Black	General purpose nitrile rubber, with low compression set, good chemical compatibility and good modulus, ideal for pneumatic sealing system.	-30 +100	75	
N3	NBR 75 Sh	Black	General purpose nitrile rubber, with low compression set, good chemical compatibility and good modulus, ideal for pneumatic sealing system.	-35 +120	75	
N4	NBR 90 Sh	Black	Hard nitrile with high modulus and good compression set, for outstanding anti-extrusion application.	-30 +100	90	
N5	NBR 80 Sh	Black	Premium nitrile, for use application where its required perfect sealing at low temperature.	-60 +100	80	

Tab. 10 - THERMOSET ELASTOMERS : Fluorocarbon Elastomer (FKM)						
Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C (F°)	Shore Hardness	
					A	D
FKM75	Fluoro-elastomer 75SH	Black / Brown	General purpose Fluorocarbon, strong resistance to chemical attack and heat	-25 + 200	75	
FKM 85	Fluoro-elastomer 85SH	Brown	General purpose Fluorocarbon, strong resistance to chemical attack and heat	-20 +200	85	

The above reported values are based on laboratory tests performed on specimen and reflected typical material properties. The application limits are maximum values determined in the laboratory. It is recommended that customers perform adequate testing to evaluate the suitability of each individual products.

PU – Poliuretano

Resina uretanica sempre più utilizzata nel settore delle guarnizioni. Viene ottenuto tramite reazione tra Poliolo, di-Isocianato ed estensore di catena. In ambito guarnizioni esistono principalmente due tipologie di Poliuretani in base al tipo di Poliolo di base: polietere e poliestere. Altra grande classificazione riguarda il tipo di di-isocianato e tra questi, i più utilizzati sono il MDI, PPDI e TODI. La combinazione tra tipologia di poliolo da un lato e di-isocianato dall'altro, da origine a prodotti molto diversi tra loro, le cui caratteristiche fisiche e meccaniche variano significativamente, così come le applicazioni in cui vengono utilizzati.

I TPU presenti oggi sul mercato sono elastomeri con caratteristiche meccaniche molto elevate e presentano ottima resistenza alla trazione, alla lacerazione, all'abrasione e al taglio. Sono di prassi compatibili con oli minerali, con grassi, con idrocarburi e derivati del petrolio.

I TPU standard generalmente hanno scarsa compatibilità con acqua calda, con acidi, con soluzioni alcaline, con vapore.

PU – Polyurethane

Urethane resin increasingly used to manufacture seals. It is obtained by reaction among polyol, diisocyanate and a chain extender. In seals division, two main polyurethanes are used depending on the base polyol: polyether and polyester. Another important classification concerns the diisocyanate type, the most used being MDI, PPDI and TODI. The combination between polyol and diisocyanate typology results in very different products, whose physical and mechanical features vary significantly, as well as the applications they are intended for. The TPUs currently on the market are elastomers with high performing mechanical characteristics and featuring excellent tensile strength, as well as very good tearing, abrasion and cutting resistance; they are usually compatible with mineral oils, greases, hydrocarbons and petroleum derivatives. Standard TPUs normally feature a poor compatibility with hot water, acids, alkaline solutions, steam.

Tab.11- TPUs different based comparison

Parameter	Polyester based TPUs	Polycaprolactone based TPUs	Polyeter based TPUs
Hydrolysis Resistance	-	+	++
Microbial stability	-	+	+
Adhesion strength	+	++	+
Thermooxidative resistance	+	+	+
Low temperature flexibility	0	+	++
Mechanical proprieties	+	++	+
Oil and grease resistance	+	++	+

(++ excellent; + good; 0 acceptable; - poor; -- very poor)

TPE – Termoplastico elastomero

Il termoplastico elastomero è una resina poliestere disponibile in diversi gradi di durezza. E' adatta ad applicazioni in oleodinamica, specialmente indicato per anelli di supporto e anti-estrusione.

TPE – Thermoplastic elastomer

The thermoplastic elastomer is a polyester resin available in different hardness degrees. It is suitable for hydraulic applications, and ideal for support and backup rings.

E' un materiale flessibile come gli elastomeri, dotato di proprietà meccaniche simili alle materie plastiche. Ottima resistenza all'abrasione e al taglio. Ha ottime caratteristiche chimiche, tali da permettere la compatibilità con oli lubrificanti e idrocarburi, ma anche con molti fluidi tipo acidi e basi.

POM – Polimetilossido

Il polimetilossido comunemente conosciuto come “resina acetica”, viene utilizzato nella costruzione di boccole, anelli anti-estrusione e pattini di guida nei cilindri. Ha ottime proprietà di rigidità, elevata resistenza all'urto e alla fatica con un alto modulo elastico. Ha ottima stabilità dimensionale non essendo igroscopico, e supporta, con o senza cariche aggiuntive, carichi radiali importanti. Sono disponibili molte versioni differenti tra loro in base all'additivo introdotto e alla sua percentuale. Citiamo ad esempio il POM caricato con fibra di vetro, per la produzione di fasce di guida che vadano a contatto con superfici in acciaio, o caricato con PTFE per ridurre l'attrito. In caso di utilizzo nella produzione di particolari che sia in accoppiamento con metalli teneri tipo alluminio, ottone, è preferibile l'utilizzo del polimero al naturale.

PA – Poliammide

Il poliammide comunemente chiamato Nylon e' un tecnopolimero. Presenta peso specifico relativamente basso, resistenza agli urti e all'usura, discreto isolamento elettrico, resistenza ai solventi, agli oli, ai grassi e ai carburanti, autoestinguenti. A differenza della resina acetica, questo materiale rimane più stabile alle temperature oltre i 140 °C. Viene utilizzato per pattini guida e boccole, dove la temperatura rimane costantemente elevata. Viene comunemente caricato con carbonio, con ptfe, con bisolfuro molibdeno, o con fibre di vetro e/o altri additivi, per ottenere caratteristiche fisiche/meccaniche più performanti.

PTFE – Politetrafluoroetilene

Il politetrafluoroetilene (PTFE) è il polimero del tetrafluoroetene, ad alto peso molecolare. E' un termoisolante senza punto di fusione e può essere lavorato tramite processo di sinterizzazione. Il PTFE presenta una serie interessante di caratteristiche tra cui ricordiamo:

The material features the flexibility of elastomers and the mechanical properties of plastics. Excellent abrasion and cutting resistance. It has very good chemical properties, that make it compatible with lubricant oils and hydrocarbons, as well as with many fluids like acids and alkalis.

POM – Polymethyloxide

The polymethyloxide, commonly known as “acetal resin”, is used to manufacture bushings, backup rings and guide shoes in cylinders. It features excellent properties in terms of stiffness, high shock resistance and fatigue strength, with high modulus of elasticity. It is not hygroscopic, therefore offers outstanding dimensional stability and can take heavy radial loads, with or without additional fillers. Depending on the additive type and content percentage, many different versions are available. One example is glass-fibre-filled POM, used to manufacture guide strips intended for contact with steel surfaces, or PTFE-filled POM to reduce friction, to name a couple. To manufacture parts in combination with soft metals, as aluminium or brass, the natural polymer should be the preferred choice

PA – Polyamide

The polyamide commonly known as Nylon is a technical polymer. It features relatively low specific weight, shock and wear resistance, fairly good electric insulation, resistance to solvents, oils, greases and self-extinguishing fuels. Unlike acetal resin, this material is more stable at temperature over 140 °C. It is used for guide shoes and bushings, where temperature are constantly high. It is usually filled with carbon, PTFE, molybdenum disulfide, or glass fibre and/or other additives, to achieve improved physical/mechanical performing characteristics.

PTFE - Polytetrafluoroethylene

The polytetrafluoroethylene (PTFE) is the high-molecular-weight polymer of tetrafluoroethene. It is a thermosetting material with no melting point, that can be processed through sintering. The PTFE offers a number of interesting features, among which:

- la completa inerzia chimica per cui non viene aggredito dalla quasi totalità dei composti chimici;
- Bassissimo coefficiente di attrito: ad oggi il più basso tra i prodotti industriali;
- la completa insolubilità in acqua e in qualsiasi solvente organico;
- ottime qualità dielettriche;
- ottime qualità di resistenza al fuoco: non propaga la fiamma.

Queste caratteristiche assumono ulteriore importanza se si considera che si mantengono praticamente inalterate in un campo di temperature comprese tra i -80 °C e i 250 °C con picchi anche superiori. Viene utilizzato in numerosissime applicazioni, in campo industriale, alimentare, elettrico e chimico. Nel settore idraulico-pneumatico è ampiamente utilizzato per la produzione di guarnizioni e fasce di guida. Avendo un basso modulo elastico, viene spesso proposto in tandem con particolari elastomerici ad alta memoria elastica o in metallo a forma di molla, per conferirgli elasticità/energia. In fase di montaggio, si rende spesso necessaria la procedura della calandratura meccanica.

- Il PTFE viene proposto sia puro che caricato con vari additivi e in varie percentuali, con Molibdeno, con fibre di vetro, di carbonio, di grafite, di bronzo.
- Disponibile ricavato sia con metodo isostatico, il quale è consigliato per alte pressioni, che con metodo non isostatico fino a 200 bar

Resina Fenolica

La resina fenolica è un materiale sintetico ottenuto dalla reazione chimica tra il fenolo e la formaldeide, con cui vengono impregnate fibre di cotone o di poliestere.

Ha un'elevata tenacità, un basso coefficiente di attrito, un'elevata resistenza alla trazione e all'usura. Viene impiegata quasi esclusivamente per la produzioni di anelli di guida.

Generalmente la si additiva con PTFE o con GRAFITE sia con fibre di cotone che con fibre di poliestere. Buona resistenza agli oli minerali, ai grassi, e a soluzioni non aggressive di acidi e alcali. Per la sua composizione chimica è inadatta ad impieghi alimentari.

- *total chemical inertia, which makes it resistant to almost all chemicals;*
- *extremely low friction coefficient, currently the lowest among industrial products;*
- *complete insolubility in water and in any organic solvent*
- *excellent dielectric properties;*
- *outstanding fire resistance properties, i.e. no flame propagation.*

Those feature become even more important, as that they are maintained virtually unaltered in the temperature range between -80 °C and 250 °C, with even higher peaks.

It is used for a variety of applications in the industrial, food, electric and chemical fields. In the hydraulic-pneumatic segment it is used to produce seals and guide strips. Thanks to its low modulus of elasticity, it is often proposed in combination with high memory elastomeric parts or metal spring-shaped ones, to add elasticity/energising properties. Mechanical keying is often required to accomplish the mounting procedure.

- *PTFE is available pure or filled with different additives in different percentages, as well as with molybdenum and glass, carbon, graphite and bronze fibres.*
- *Available proceeds with either isostatic method, which is recommended for high pressures, with that method does not isostatic up to 200 bar*

Phenolic Resin

Phenolic resin is a synthetic material obtained by chemical reaction between the phenol and formaldehyde, used to impregnate cotton or polyester fibres.

It feature high toughness, low friction coefficient, high tensile strength and wear resistance . It is used almost exclusively to manufacture guide rings.

PTFE and GRAPHITE are normally used as additives, both with cotton and polyester fibres.

Good resistance to mineral oils, greases and mild solutions of acids and alkalis.

Due to its chemical composition, it is not suitable for usage in the food industry.

NBR – Gomma Nitrilica

E' l'elastomero, a base di butadiene e di acrilonitrile in quantità variabile, impiegato nella maggior parte delle applicazioni.

Presenta un ottimo ritorno elastico e il suo utilizzo principale è per la produzione degli OR.

In particolare è indicato a contatto con:

- Olii a base paraffinica (alifatici)
- Olii e grassi minerali (oli motore, oli per cambi, differenziali, etc)
- Olii idraulici
- Acqua e soluzioni acquose (liscive).

Invecchia rapidamente se esposto ad aria, sole o agli agenti atmosferici più in generale. Estremamente versatile dal punto di vista applicativo grazie alla sua compatibilità termica da – 30°C fino a punte di 120 °C , mantenendo inalterate le caratteristiche meccaniche.

HNBR – Gomma Nitrilica Idrogenata

La struttura chimica di questo elastomero (ottenuto idrogenando un tipo opportuno di gomma nitrilica NBR) consente, specialmente se vulcanizzato a perossido, di aumentare la resistenza alla temperatura, e all'abrasione, rispetto al gomma NBR standard.

In particolare risulta indicato per:

- Resistenza al calore
- Resistenza all'ozono
- Resistenza all'abrasione

La resistenza agli olii e solventi risulta in media di poco superiore alla gomma nitrilica, salvo casi particolari.

Ha un campo di applicazione molto ampio mantenendo inalterate le caratteristiche meccaniche dai – 40°C fino a punte di 150 °C

EPDM – Gomma etilene-propilene

E' una gomma sintetica, a base etilene propilene più un terzo monomero (diene) che consente la reticolazione a zolfo.

Grazie alla propria struttura chimica, presenta una peculiare resistenza a fluidi come acqua e vapore e ad ambienti con alta percentuale di ozono. Per questo risulta particolarmente indicata per:

NBR - Nitrile Rubber

This elastomer, based on butadiene and acrylonitrile in variable quantity, is used in the majority of applications.

It offers an excellent spring-back and is mostly used to manufacture O-rings.

It is ideal with:

- *Paraffin-based oils (aliphatic)*
- *Mineral oils and greases (engine oils, gearbox, differential oils, etc.)*
- *Hydraulic oils*
- *Water and water solutions (lyes)*

Exposure to air, sunlight or weathering in general accelerates the material aging.

Thanks to its thermal compatibility from – 30°C to peaks of 120°C, it is extremely versatile in terms of applications, while maintaining its mechanical characteristics.

HNBR - Hydrogenated Nitrile Rubber

The chemical structure of this elastomer (resulting from the hydrogenation of a suitable type of NBR nitrile rubber) enables to increase the temperature and abrasion resistance compared to the standard NBR rubber, in particular if peroxide-vulcanized.

It is very suitable when the following requirements are requested:

- *Heat resistance*
- *Ozone resistance*
- *Abrasion resistance*

The resistance to oils and solvents is averagely slightly higher compared to nitrile rubber, with few exceptions.

It offers a very wide application range, while maintaining its mechanical features in the temperature range from -40°C to peaks of 150 °C.

EPDM- Rubber ethylene- Polypropylene

It deals with a synthetic rubber, based on ethylene-propylene and a third monomer (diene), which enables the sulphur crosslinking.

Thanks to its chemical structure, it features a excellent resistance to fluids such as water and steam, and is suitable for environments with high ozone percentage. For these reasons it is ideal for:

- Acqua fino all'ebollizione
- Vapore
- Sistemi idraulici particolari come impianti frenanti
- Ozono
- Agenti atmosferici
- Basi
- Solventi polari a temperatura ambiente
- Range di temperature da -50°C a + 150°C

FKM – Elastomero Fluorurato

Il fluoro elastomero, comunemente chiamato Viton®, è una gomma sintetica molto resistente al calore. Resiste ottimamente agli oli, agli idrocarburi alifatici ed aromatici ed agli agenti chimici. Perfetto per la produzione di O-ring o di tenute dove sia richiesta stabilità e memoria elastica alle alte temperature.

VMQ – Gomma Siliconica

Per la sua composizione chimica, presenta una notevole resistenza agli agenti atmosferici, alla luce e all'ozono. Mostra inoltre un'eccellente resistenza alle basse ed alte temperature, tanto che il suo campo di utilizzo, ne copre una vasta gamma e, sebbene la sua resistenza alla lacerazione e all'abrasione non siano completamente soddisfacenti, il suo basso coefficiente di attrito, ne ricompensa ampiamente l'effetto. Viene utilizzato sia nel campo medico che nel contatto con alimenti. Particolarmente indicato per:
Resistenza agli agenti atmosferici
Resistenza agli oli minerali, vegetali e naturali, e anche agli oli idraulici se la temperatura non supera gli 60°C
Resistenza a fluidi a base glicolica
Non utilizzare mai con le benzine. Resistente a temperature variabili tra - 55°C fino a punte di 180°C

FMQ – Fluoro Silicone

Il fluorosilicone ha caratteristiche meccaniche simili alla gomma siliconica, ma la presenza del fluoro nella composizione ne aumenta di molto la compatibilità agli olii animali e minerali per l'intero range di temperatura di lavoro, agli idrocarburi alifatici ed aromatici, agli acidi. Ma al contrario, diminuisce le prestazioni alle alte e basse temperature.

- Water up to boiling point
- Steam
- Special hydraulic systems such as braking systems
- Ozone
- Weathering
- Alkalies
- Polar solvents at room temperature
- Temperature range between -50°C and + 150°C

FKM - Fluorocarbon Elastomer

The fluoro-elastomer, commonly known as Viton®, is a synthetic rubber with high thermal resistance. It features excellent resistance to oils, aliphatic and aromatic hydrocarbons and chemicals. Ideal to manufacture O-rings or seals for application requiring stability and memory at high temperature.

QMV - Silicone Rubber

Thanks to its chemical composition, it features high resistance to weathering, light and ozone. Moreover, the excellent properties of resistance to high and low temperatures enable a wide operating range. Although its tearing and abrasion resistance is not completely satisfactory, its low friction coefficient compensates for efficiency. It is used both in the medical and food industry. Ideal for applications with requirements for:
Resistance to weathering
Resistance to mineral, vegetable and natural oils, and also hydraulic oils, if temperature does not exceed 60°C.
Resistance to glycol-based fluids
Never use with petrols.
Resistant to variable temperatures from - 55°C to peaks of 180°C

FMQ - Fluorine Silicone

The fluoro silicone features mechanical characteristics similar to the fluoro rubber, but the fluorine in the composition increases considerably the compatibility with animal oils in the entire operating temperature range, as well as with aliphatic and aromatic hydrocarbons and acids. Conversely, it decreases performances at high and low temperatures.

Nella determinazione e configurazione di una tenuta, nonché nel garantire le performance che la stessa deve mantenere nel tempo, bisogna analizzare attentamente le caratteristiche fisiche/meccaniche fondamentali dei materiali.

Durezza

La Durezza, tipicamente, è quella proprietà del materiale che misura la resistenza alla penetrazione. Le due principali scale per la misurazione della durezza, nel campo degli elastomeri, sono la durezza Shore e il Grado Internazionale di Durezza della Gomma (IRHD).

Per la durezza Shore esistono due scale ulteriori di riferimento, la "Shore A" e la "Shore D".

Per entrambe le scale, viene usato un durometro e, per determinare il grado di durezza, vengono utilizzati due diversi tipi di penetratore: per la scala "Shore A", il penetratore ha una puntina a troncocono, mentre per la scala "Shore D" ha una puntina con angolo a 30°.

La scala Shore A, viene utilizzata per durezza comprese tra 40 a 90 Sh, mentre per valori superiori ci si riferisce alla scala Shore D.

In entrambi i casi, la misurazione è regolamentata secondo le Norme DIN 53505, ASTM D2240. Di seguito riportiamo lo schema di sovrapposibilità delle sue scale di riferimento, nonché il posizionamento dei principali polimeri, la quale diminuisce con l'innalzarsi della temperatura.

Generalmente, gli elastomeri con durezza bassa, cioè più teneri, si adattano meglio alla superfici più ruvide ma sono più soggette all'estrusione.

To specify and design a seal, as well as to guarantee its performances over time, it is necessary to analyse the material essential physical/mechanical features.

Hardness

Typically, under hardness we understand the property, that specifies the material resistance to penetration.

The two main hardness measuring scales in the field of elastomers are the Shore hardness and the International Rubber Hardness Degrees (IRHD).

As for Shore hardness, two more reference scales are used, i.e. "Shore A" and "Shore D".

To measure the hardness degree, both scales use an hardness meter, but different indenters: the indenter for scale "Shore A" features a truncated cone point, while the one for scale "Shore D" has a 30°-angled point.

Scale Shore A is used for hardness values between 40 and 90 Sh, while for higher values the Shore D scale is the reference one.

In both cases, the measurements conform to standards DIN 53505 and ASTM D2240. Find below the reference scales overlapping pattern, as well as the position of the main polymers.

In the field of seals, hardness is a very important parameter, that needs to be taken into account, as it affects both dynamic friction and stiction.

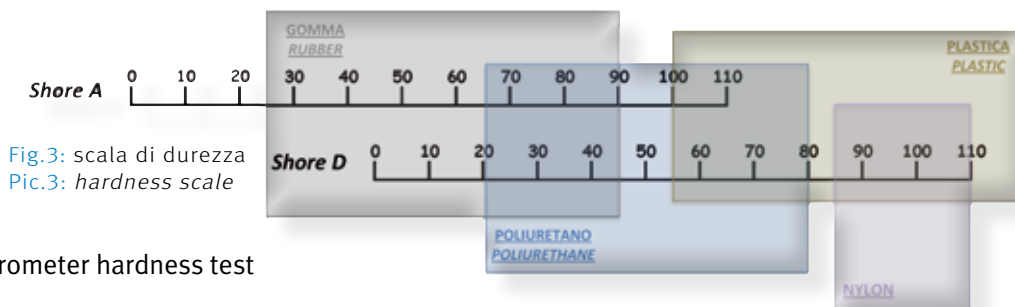
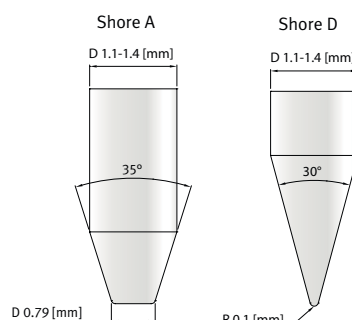
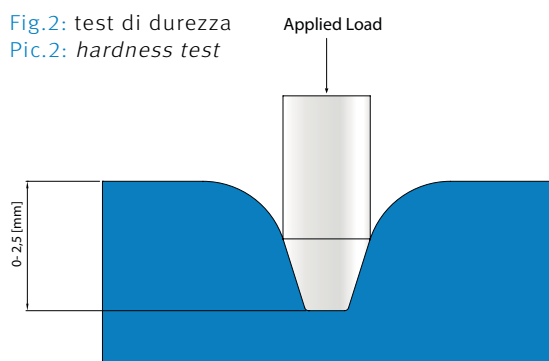


Fig.3: hardness scale

Durometer hardness test

Fig.2: test di durezza
Pic.2: hardness test



La durezza è un parametro molto importante da considerare in ambito guarnizioni, perché influenza l'attrito sia dinamico che di primo distacco. A parità di spinta e rugosità della sede, una durezza bassa, riduce l'attrito di primo distacco; al contrario, una durezza elevata riduce l'attrito dinamico. La durezza, a sua volta è influenzata dalla temperatura: essa infatti diminuisce con l'innalzarsi della temperatura. Generalmente, gli elastomeri con durezza bassa, cioè più teneri, si adattano meglio alle superfici più ruvide ma sono più soggetti all'estrusione.

Resistenza alla Compressione – Memoria Elastica – Compression Set

E' la capacità di un elastomero, di ritornare al suo spessore originale dopo prolungate sollecitazioni di compressione e deformazione ad una data temperatura. Un elastomero, compresso a lungo nel tempo, tende infatti a perdere la sua capacità di ritornare alla sua dimensione originale. La differenza tra la dimensione originale e quella finale, viene espressa in percentuale, e rappresenta il compression set del materiale analizzato. Pertanto più la percentuale di compression set è bassa, migliore è la resistenza alla compressione di un materiale.

In ambito guarnizioni, la funzionalità di una tenuta è fortemente influenzata dal livello di compression set del materiale in cui è realizzata. Una scarsa resistenza alla compressione, ossia un alto compression set, può compromettere la funzionalità della guarnizione che non è più in grado di mantenere la tenuta per un lungo periodo di tempo. Per contro, un'alta resistenza alla compressione, ossia un basso compression set, è indicativa di una buona durata, nel tempo, della tenuta sia statica che dinamica. Essendo la tenuta, sottoposta a pressione durante il ciclo, è di fondamentale importanza che, a fine ciclo, la guarnizione riprenda la sua forma originale, affinché non avvenga la perdita di fluido.

Thrust and seat roughness being equal, a low hardness degree reduces stiction, while a high hardness degree reduces dynamic friction. Hardness, in turn, is influenced by temperature, i.e. the higher the temperature and the lower the hardness. In general, elastomers with low hardness degree, i.e. softer, are better suited for rougher surfaces, but are more prone to extrusion.

Compressive strength - Memory - Compression Set

It deals with the capacity of elastomers to recover their original thickness after experiencing prolonged compressive and deformation stresses at a given temperature. After a long time under compression, elastomers tend to lose the ability to recover their original thickness. The difference between the original and final dimensions is expressed in percentage and represents the compression set of the material being tested. The lower the compression set percentage and the better the material compressive strength.

As far as seals are concerned, their efficiency is strongly influenced by the seal material compression set. A low compressive strength, i.e. a high compression set value, can negatively influence the efficiency of the seal, that will no longer be able to guarantee the sealing function over a long period of time. Conversely, a high compressive strength, i.e. a low compression set value, suggests good dynamic and static sealing efficiency over time. As seals are subject to pressure during the working cycle, the ability to recover their original shape at the end of the cycle is of paramount importance, in order to prevent fluid leakages.

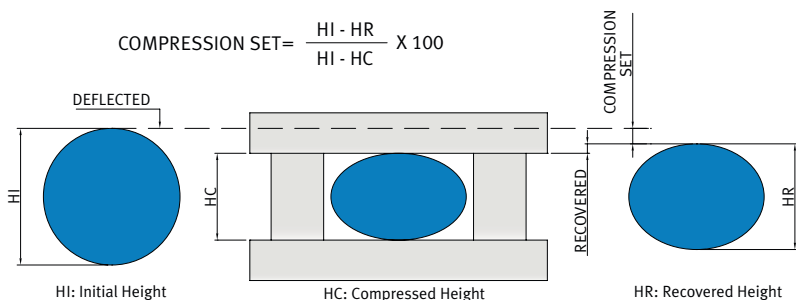


Fig.4: test compression set
Pic.4: compression set test

Modulo di Elasticità

Il Modulo Elastico, misura la quantità di forza necessaria, per mettere in tensione un provino di materiale, ed allungarlo fino ad una percentuale predefinita della sua dimensione originale. Vengono normalmente valutati il modulo elastico al 50% (forza necessaria per allungare il provino del 50% della sua dimensione originale) ; al 100% e al 300%. Più il valore riscontrato durante la prova di trazione, è alto, migliori sono le caratteristiche del materiale. Nel campo delle tenute, è preferibile un elevato modulo elastico in quanto garantisce:

- Elevata forza del labbro, contro le superfici a contatto, sia in caso di tenuta statica che dinamica.
- Maggior resistenza all'estrusione.

Inoltre, come evidenziato nel grafico a lato, per tensione (allungamento) si intende la deformazione elastica che può subire il materiale in prova senza irreversibilità o rottura.

L'allungamento è un parametro inversamente proporzionale alla durezza del materiale.

Questo modulo è un indicatore fondamentale, sia per la tenacità della tenuta sia per la sua repulsione all'estrusione.

Il modulo è misurato calcolando lo sforzo e dividendolo per l'allungamento; è quindi misurato in unità di sforzo divise per unità di allungamento : N/cm².

Per quanto riguarda il carico di rottura (tenacità), viene misurata la quantità di forza necessaria, che il provino può assorbire, per superare la fase elastica e lacerarsi, fino alla rottura, assumendo quindi una forma irreversibile.

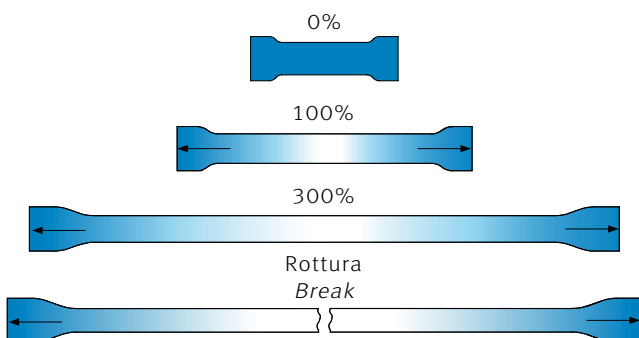


Fig.5: test allungamento
Pic.5: elongation test

Elastic Modulus

The modulus of elasticity measures the force necessary to tension a material specimen and extend it to a given percentage of its original size.

Normally the test evaluates the modulus of elasticity at 50% (force necessary to extend the specimen by 50% of its original size) , at 100% and at 300%.

The higher the value measured during the tensile test, and the better the material characteristics. In the fields of seal, a high modulus of elasticity is preferable, as it ensures:

- High lip force against the mating surfaces, both in dynamic and static sealing.
- Higher resistance to extrusion.

Moreover, as shown in the diagram on the side, under tension (elongation) we understand the elastic deformation that the test material can undergo without suffering breaking or irreversible effects. Elongation is a parameter inversely proportional to the material hardness.

This modulus is a key indicator both for the seal toughness and its resistance to extrusion.

The modulus is measured calculating the stress and dividing it by the elongation, therefore is measured in stress units divided by elongation units: N/cm². Concerning the ultimate tensile stress (toughness), it is measured the force required by a specimen to exceed the elastic phase and tear to break, thus taking an irreversible shape.

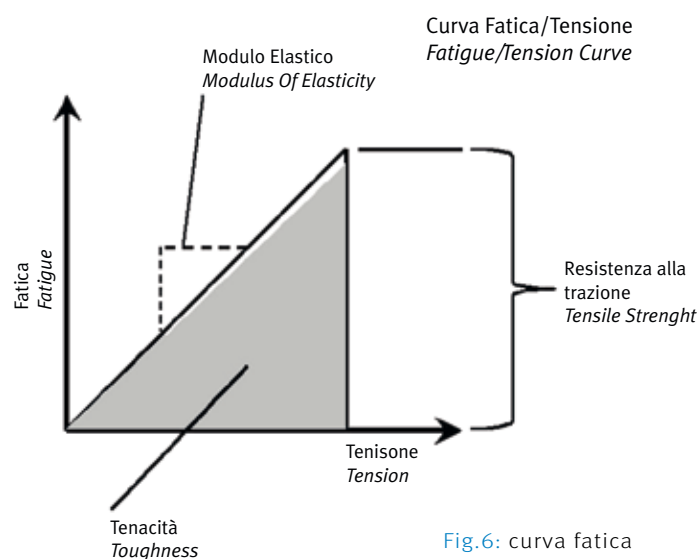


Fig.6: curva fatica
Pic.6: tension curve

Resistenza all'Abrasione

Altra caratteristica fondamentale nella determinazione della tenuta è la resistenza all'abrasione.

A differenza della resistenza a taglio, che avviene in un preciso momento, la resistenza all'abrasione è un fenomeno che si manifesta nel tempo, dovuto ad uno sfregamento fra superfici a contatto.

La prova, per valutarne la resistenza, avviene mediante rullo di carta vetrata, sul quale, in un tempo prefissato, viene fatto sfregare il provino. Si misura il peso prima e dopo il test e la differenza tra i due dati, viene espressa in percentuale rispetto al peso iniziale. Più il valore è basso, migliore è la resistenza dell'elastomero all'abrasione.

Resilienza o Rimbalzo

La resilienza o rimbalzo, rappresenta la capacità di un elastomero di recuperare la sua grandezza e forma originale dopo una deformazione temporanea. La prova di resilienza prevede il lancio di un pendolo contro un provino fissato alle due estremità con staffe. L'altezza a cui il pendolo rimbalza, viene poi calcolata come percentuale rispetto all'altezza di caduta iniziale.

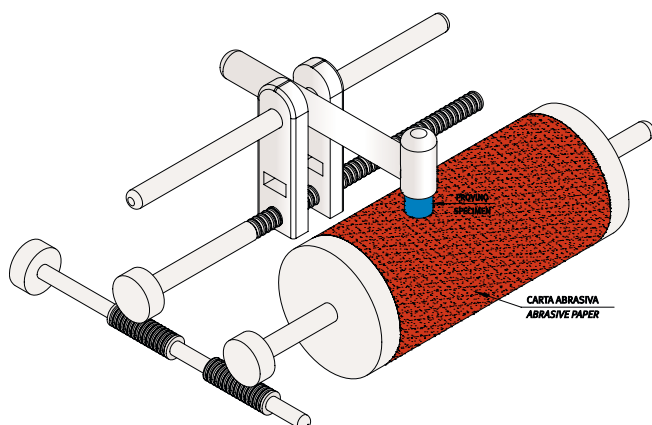


Fig.7: macchina per test di abrasione
Pic.7: abrasion test machine

Abrasion Resistance

Another essential characteristic to specify a seal is the abrasion resistance.

Unlike shearing stress, which occurs at a given time, abrasion occurs over time, due to the rubbing between mating surfaces.

To evaluate the abrasion resistance, a test is carried out, where a specimen rubs over a sandpaper roll for a given period of time. The weight is measured before and after the test and the difference between the measurements is expressed in percentage compared to the initial weight. The lower the value, and the better the abrasion resistance of the elastomer.

Resilience or Rebound

The resilience, or rebound, represents the ability of an elastomer to recover its original size and shape after a temporary deformation stress. The resilience test is carried out by dropping a plunger on a specimen. The plunger rebound height is then calculated as percentage of the initial dropping height.

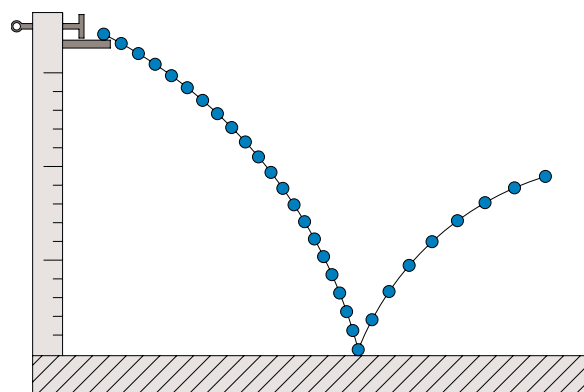


Fig.8: schema curva test resilienza o rimbalzo
Pic.8: resilience or rebound's test curve

Lacerazione ed usura

La resistenza alla lacerazione di un elastomero (ASTMD624), è molto importante per tutte le applicazioni per le quali il manufatto è soggetto a trazione, particolarmente nei casi dove esista il rischio che si possano produrre tagli superficiali tali da innescare facilmente lacerazioni che deteriorino completamente il manufatto stesso.

La determinazione della resistenza all'usura (ASTM D394) è assai importante per una corretta valutazione di progetto in tutte le applicazioni di tenute dinamiche.

I fattori in gioco sono essenzialmente: il tipo di polimero, la durezza, la finitura superficiale, la lubrificazione, le velocità relative, l'ambiente di funzionamento.

E' la resistenza che il materiale oppone allo svilupparsi di un taglio, quando vi è applicata una tensione e viene misurata in kN/m (kN per metro).

E' un parametro molto importante di cui tenere presente anche durante le fasi di lavorazione del manufatto e di installazione dello stesso nella sua sede. Durante lo stampaggio infatti, una buona resistenza , agevola il distacco dallo stampo; in fase di montaggio previene lacerazioni.

Tear and wear

The tearing resistance of an elastomer (ASTMD624) is very important for all applications in which an item is subject to traction, particularly for those where there is a risk of significant surface cuts, that could easily induce tears, resulting in the item complete deterioration.

Determining the wear resistance (ASTM D394) is essential for a correct project evaluation in dynamic sealing applications.

The factors involved are: polymer type; hardness; surface finishing; lubrication; relative speeds; operating environment.

It deals with the resistance a material opposes to cut initiating, when a tension stress is applied, and is measured in kN/m (kN per meter).

It is a very significant parameter that shall be taken into account also during the item processing phases and the installation in its seat. A good resistance in fact, facilitates the removal from mould during moulding, and prevents tears during mounting.

Attrito e lavorazione delle sedi

Friction and grooves machining

Attrito ed assorbimento di potenza

L'attrito dovuto allo strisciamento sulla superficie dell'albero o sulla parete interna del cilindro, contro lo spigolo di tenuta, dà luogo ad una dissipazione d'energia. Per contenere nei giusti limiti l'energia dissipata occorre che siano correttamente impostati i seguenti parametri:

- La geometria ed il materiale costituente del labbro di tenuta
- Il grado di rugosità delle superfici e di conseguenza la loro finitura
- La pressione d'esercizio
- La velocità
- La viscosità del lubrificante

E' molto importante ridurre l'attrito al minimo possibile, perché generalmente è un fattore che causa:

- Calore
- Usura
- Perdite

in conclusione, una riduzione in termini di efficienza del sistema di tenuta.

Il carico radiale è un fattore fondamentale per la funzionalità dell'anello di tenuta. Un eccessivo carico radiale provoca un forte attrito con conseguenti alti assorbimenti di potenza e rapide usure. La durata e l'efficacia di una guarnizione dipendono dalla qualità della superficie dell'area di contatto. Graffi, fori, porosità, segni di lavorazione di utensile non sono ammessi. E' necessario porre molta attenzione alla qualità delle superfici, soprattutto dove scorre dinamicamente la guarnizione. I parametri utilizzati per definire la finitura sono R_a , R_t , R_{MAX} sono in conformità alla ISO 4287/1. La Tabella 12 evidenzia chiaramente che non è sufficiente considerare solo i valori di R_a e R_t per valutare il tipo di guarnizione da adottare.

I picchi superficiali mostrano che a parità di valori R_a e R_t , il profilo con minori asperità (vedi RMR) ha, con la guarnizione, una maggiore superficie di contatto con evidente beneficio per la durata della stessa. Una scelta accurata delle rugosità dei vari componenti del cilindro, consente di salvaguardare la longevità della tenuta.

Se le superfici in gioco, hanno un grado di rugosità elevato, si avrà un maggiore attrito e un conseguente deterioramento e usura delle tenute.

Friction and power consumption

Sliding friction on the shaft surface or on the cylinder inside wall, against the sealing lip, results in energy dissipation. To keep energy dissipation within correct limits, the following parameters shall be properly set:

- *Sealing lip geometry and material;*
- *Surfaces roughness degree and therefore finishing;*
- *Operating pressure*
- *Speed*
- *Lubricant viscosity*

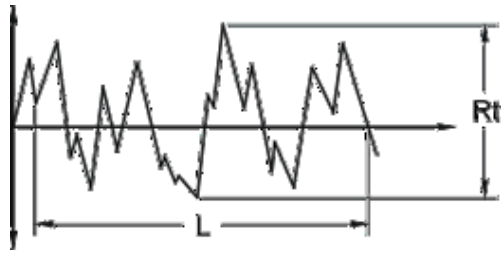
Minimizing the friction is of paramount importance, as it generally causes:

- *Heat*
- *Wear*
- *Leakage*

basically a reduced efficiency of the sealing system. The radial load is an essential factor for the sealing ring efficiency. An excessive radial load causes high fiction levels, resulting in high power consumption and rapid wear. The seal life and efficiency depend on the surface quality of the contact area. Scratches, holes, porosity, tooling marks are not admissible. It is very important to pay close attention to the surface quality, in particular in the area where the seal slides dynamically. The parameters used to specify the finishing are R_a , R_t , R_{MAX} and conform to the standard ISO 4287/1. Table 12 highlights clearly that, considering only the values for R_a and R_t is not enough to identify the most suitable seal. If the surfaces involved feature a high roughness degree, fiction will increase, resulting in the seal deterioration and wear.

The surface peaks show that, R_a and R_z values being equal, the profile featuring less unevenness (see RMR) offers a larger contact area with the seal, which is obviously beneficial for the seal duration. A careful choice of the cylinder components roughness supports the seal durability.

Fig.9-A
Pic.9-A



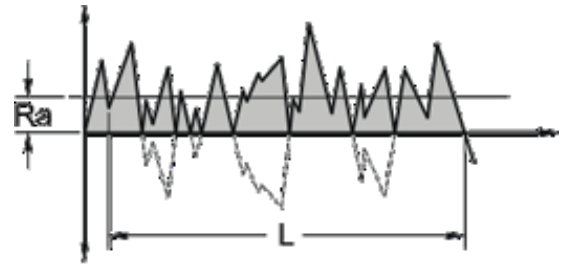
Rt: altezza totale del profilo

Rt: total height of the profile

R_{MR} : percentuale della lunghezza portante

R_{MR}: percentage of total length of the profile

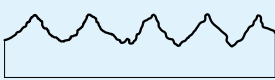
Fig.9-B
Pic.9-B



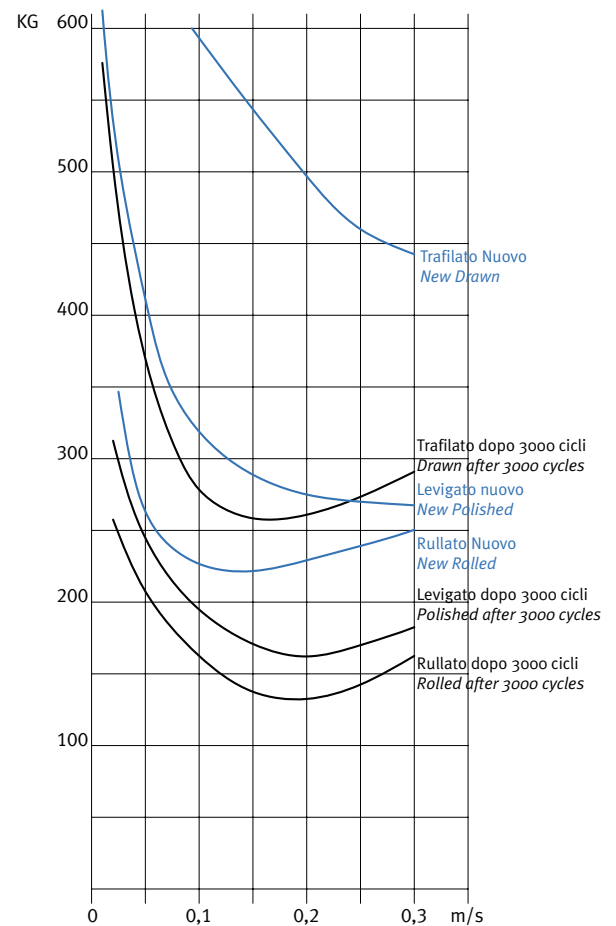
Ra: scostamento aritmetico medio del profilo vaultato

Ra: roughness average value of the measured profile.

Fig.10: Perdite per effetto di attrito a Temperatura ambiente
Pic.10: Leaks due the friction room Temperature

Tab. 12 - profili superficie/ surface profile			
Profili superficie surface profile	R _a	R _t	R _{MR}
 profilo aperto open profile	0,25	1	15%
 profilo chiuso closed profile	0,25	1	70%

Tab. 13 - rugosità superficiale / surface roughness		
	superficie di scorrimento consigliata per il poliuretano sliding surface recommen- ded for polyurethane	superficie della cava static surface
R _{max}	1,00 - 4,00	< 10,0
R _t DIN	0,63 - 2,50	< 6,3
R _a	0,10 - 0,60	< 1,6



Indicazione di rugosità nelle lavorazioni

Per ottenere un accoppiamento fra le varie parti in movimento, e di conseguenza preservare le tenute durante il loro ciclo di lavorazione, Artic consiglia di attestarsi sui seguenti gradi di rugosità:

Stelo 0,1 - 0,4 $\mu\text{m Ra}$

Ottenibile da finitura come, Rettificazione, Cromatura, Pelatura

Camicia interna 0,2 - 0,6 $\mu\text{m Ra}$

Ottenibile da finitura come, Levigatura, Alesatura, Rullatura

Occorre però considerare che, a parità di grado di rugosità, i profili superficiali ottenibili dalle varie tipologie di lavorazione, saranno significativamente differenti tra loro, come mostrato negli schemi sotto riportati.

Per questa ragione, suggeriamo di attenersi ad un profilo superficiale, come mostrato in Fig 12.

Quando il grado di rugosità ha un valore relativamente basso, ma le creste si presentano come evidenziato in Fig.11 (lucido di trafilatura con R_{MR} 15%), si consiglia di adottare tenute in PTFE caricato a Bronzo e sconsiglia l'utilizzo di gomme e/o Poliuretani

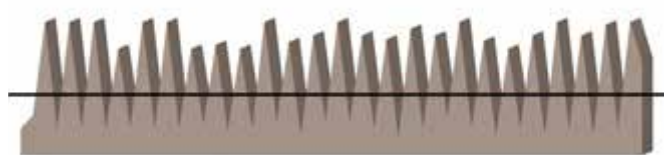


Fig.11-Pic.11: $Ra = 0,4 \mu\text{m}/16 \mu\text{inc}$ R_{MR} : 15%

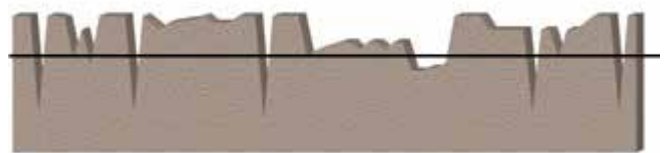


Fig.12-Pic.12: $Ra = 0,4 \mu\text{m}/16 \mu\text{inc}$ R_{MR} : 75%

Surface roughness

To obtain the right fitting among the different moving parts, while protecting the seal during its operating cycle, Artic recommends the following roughness degrees:

Rod = 0,1 ÷ 0,4 $\mu\text{m Ra}$

Achieved through finishing typologies like: Grinding, Chrome, Peeling

Inside liner = 0,2 ÷ 0,6 $\mu\text{m Ra}$

Achieved through finishing typologies like: Honing, Boring, Rolling

It should also be considered that, roughness degree being equal, the surface profiles can significantly vary, depending on the machining.

For this reason, it is advisable to choose a surface roughness that enables a profile similar to the one shown in Pic.12.

If the roughness degree is relatively low, but peaks appear as shown in Pic.11 (Bright drawn with R_{MR} 15%) it is recommended Bronze-filled PTFE seals and advises against rubber and/or Polyurethanes.

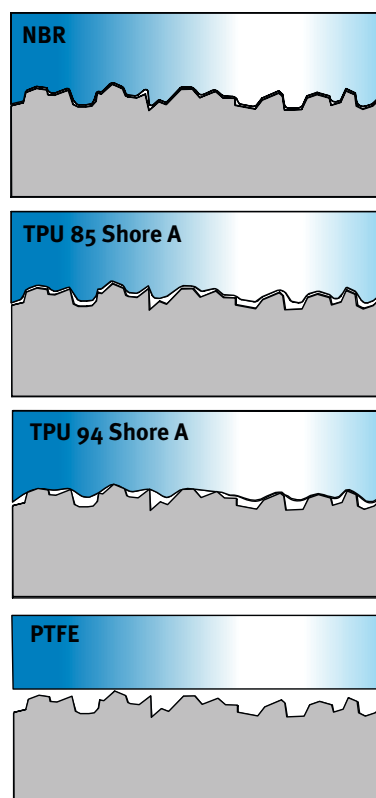


Fig.13: Esempi di appoggio/contatto di diversi materiali a parità di valore di rugosità della superficie lavorata

Pic.13: Example of contact profile of different material on machined surface having same roughness value.

Dimensionamento delle sedi - Gioco di accoppiamento

L'ampiezza massima consentita del gioco di accoppiamento tra testata/stelo e pistone /camicia deve essere attentamente valutata affinché non intervengano problemi di estrusione nella parte posteriore della guarnizione. (vedi fig. 14) Tale gioco dipende principalmente dalla durezza del materiale con cui è costruita la tenuta, dalla pressione massima presente nel cilindro, dalla temperatura e dalla resistenza al carico radiale degli anelli di guida. Nella tabella 4 viene mostrato il gioco di accoppiamento che si deve mantenere tra stelo/ testata e tra pistone/ camicia. Il test è stato eseguito con olio a temperatura a 60° C con materiale 93 Shore A. La figura 15 mostra i valori indicativi del gioco massimo ammesso in funzione della pressione di esercizio utilizzando guarnizioni di materiale e durezza differenti.

Tab. 14 - gioco di accoppiamento / coupling clearance	
PRESSIONE / PRESSURE bar	G mm
50	0,50
100	0,40
150	0,30
200	0,15
300	0,10
400	0,05

Goove dimensioning – Fitting clearance

The maximum admissible fitting clearance value between head/rod and piston/liner shall be carefully evaluated, in order to prevent extrusion problems in the seal rear area, (see Pic. 14). The clearance depends mainly on the seal material hardness, the maximum pressure in the cylinder, the temperature and the radial load resistance of the guide rings. Table 4 lists the fitting clearance values that shall be maintained between rod/head and piston/liner. The test has been carried out with oil at 60° C, using a material featuring a hardness value equal to 93 Shore A. Picture 15 shows the reference values for the maximum admissible clearance as a function of the operating pressure, using seals in different materials and featuring different hardness degrees

Fig.14 / Pic.14

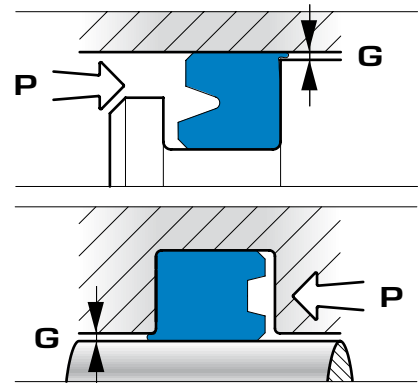
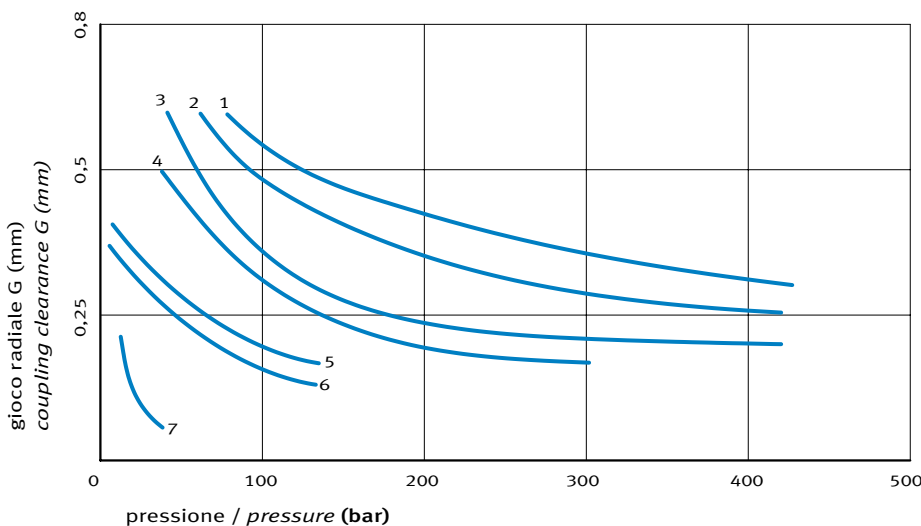


Fig.15 / Pic.15



- 1 - poliuretano 93 Shore A con anello antiestrusione
- 2 - poliuretano 98 Shore A
- 3 - poliuretano 93 Shore A
- 4 - poliuretano 90 Shore A
- 5 - poliuretano 85 Shore A
- 6 - NBR 90 Shore A
- 7 - NBR 70 Shore A

- 1 - polyurethane 93 Shore A with antiextrusion ring
- 2 - polyurethane 98 Shore A
- 3 - polyurethane 93 Shore A
- 4 - polyurethane 90 Shore A
- 5 - polyurethane 85 Shore A
- 6 - NBR 90 Shore A
- 7 - NBR 70 Shore A

Metodo FEA

Il metodo degli elementi finiti si basa sul concetto di descrivere lo stato di deformazione di un sistema continuo mediante funzioni di spostamento, definite in piccole regioni del "continuum". In quest'ottica le soluzioni sono formulate per ciascuna unità e combinate per ottenere la soluzione del corpo o della struttura originale.

L'analisi degli elementi finiti (FEA) consente di calcolare il comportamento strutturale di un sistema applicando un concetto di base, la discretizzazione, ossia la suddivisione della struttura iniziale in un sistema equivalente di strutture più piccole o unità, tali che il loro assemblaggio dia luogo alla struttura reale. Si ha quindi la definizione di una griglia geometrica (mesh) tramite la quale il modello geometrico viene diviso in tanti piccoli elementi di facile calcolo. Ciò equivale a descrivere una struttura attraverso un numero finito di punti.

Il metodo degli E.F. non è un metodo esatto, ma approssimato. La convergenza della approssimazione con la soluzione esatta deriva da numerosi parametri. Se il modello è impostato correttamente, siamo comunque nell'ambito di approssimazioni molto vicine alla soluzione esatta. Tramite l'analisi degli elementi finiti (FEA), completamente integrata all'interno del ns software CAD, è possibile ottimizzare e convalidare in modo rapido ed efficiente ciascuna fase della progettazione, per verificare la qualità, le prestazioni e la sicurezza del prodotto. La FEA può quindi essere considerata come una parte normale del processo di progettazione, riducendo la necessità di costosi prototipi, eliminando le rilavorazioni e i ritardi.

L'applicativo in uso presso Artic Seals, utilizza la formulazione dello spostamento del metodo degli elementi finiti per calcolare gli spostamenti, le deformazioni e le sollecitazioni dei componenti sottoposti a carichi interni ed esterni. La geometria sottoposta ad analisi viene suddivisa utilizzando elementi tetraedrici (3D), elementi triangolari (2D) ed elementi trave, quindi viene risolta attraverso un solutore Direct Sparse o iterativo.

FEA method

The finite elements method is based on the concept of describing the state of deformation of a continuous system by means of displacement functions, defined in small areas of the "continuum". In this perspective, solutions are formulated for each unit and combined to obtain the body or original structure solution.

Finite element Analysis (FEA) enables to calculate the structural behaviour of a system applying the core concept of discretization, i.e. dividing the initial structure in an equivalent system of smaller structures or units, such as their assembling results in the real structure. We get then a geometrical mesh, through which the geometrical model is divided into many small, easy-to-calculate items. This equates to describe a structure using a finite numbers of points (called nodes).

The finite elements analysis is not an exact method, but approximate. The convergence of the approximation with the exact solution derives from a variety of parameters. If the model is set in correct form, the approximations achieved are anyway very close to the exact solution. Applying the FEA fully integrated in our CAD software, we can optimize and validate each design phase quickly and easily, to check the product quality, performance and safety. The FEA can therefore be considered as a normal part of the designing process, reducing the need of costly prototypes, eliminating reworking and delays.

The application in use at Artic Seals, using the formulation of the displacement of the finite element method to calculate displacements, strains and stresses of the components subjected to internal and external loads. The geometry is divided subjected to analysis using tetrahedral elements (3D) triangular elements (2D) and beam elements, then it is resolved through a Direct Sparse solver or iterative.

Inoltre, ci consente di:

- Ridurre il ricorso a prototipi e collaudi fisici
- Prevedere e migliorare le prestazioni e l'affidabilità di un prodotto
- Valutare diversi progetti e materiali
- Ottimizzare i progetti e ridurre il consumo di materiali

In addition, we can:

- *Reduce the need for physical prototypes and testing*
- *Predict and improve the performance and reliability of a product*
- *Evaluate different designs and materials*
- *Optimize designs and reduce the consumption of materials*

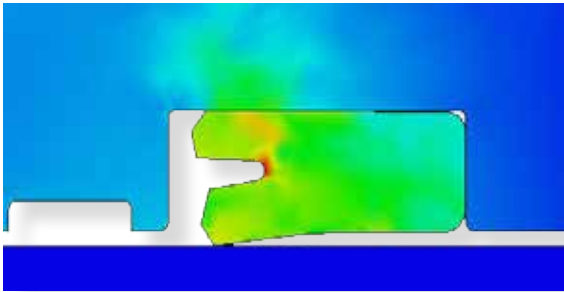


Fig.16: FEA guarnizione stelo montata in sede in assenza di pressione

Pic.16: FEA of rod seal in groove without pressure

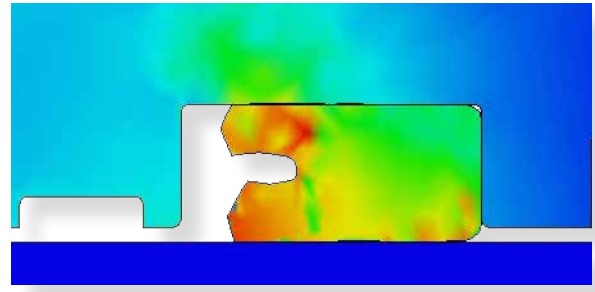


Fig.17: FEA guarnizione stelo montata in sede pressione di esercizio

Pic.17: FEA of rod seal in groove with exercise pressure

Tab. 15 - Tabella tolleranze - *Tolerances table*

dimensioni nominali <i>nominal dimensions</i> Ø mm		albero base <i>rod</i> (0.001 mm)								foro base <i>bore</i> (0,001 mm)				
da <i>from</i>	a <i>to</i>	e9	f7	f8	f9	h8	h9	h10	h11	H7	H8	H9	H10	H11
1,6	3	-14 -39	-6 -16	-6 -20	-6 -31	0 -14	0 -25	0 -40	0 -60	+9 0	+14 0	+25 0	+40 0	+60 0
3	6	-20 -50	-10 -22	-10 -28	-10 -40	0 -18	0 -30	0 -48	0 -75	+12 0	+18 0	+30 0	+48 0	+75 0
6	10	-25 -61	-13 -28	-13 -35	-13 -49	0 -22	0 -36	0 -58	0 -90	+15 0	+22 0	+36 0	+58 0	+90 0
10	18	-32 -75	-16 -34	-16 -43	-16 -59	0 -27	0 -43	0 -70	0 -110	+18 0	+27 0	+43 0	+70 0	+110 0
18	30	-40 -92	-20 -41	-20 -53	-20 -72	0 -33	0 -52	0 -84	0 -130	+21 0	+33 0	+52 0	+84 0	+130 0
30	50	-50 -112	-25 -50	-25 -64	-25 -87	0 -39	0 -62	0 -100	0 -160	+25 0	+39 0	+62 0	+100 0	+160 0
50	80	-60 -134	-30 -60	-30 -76	-30 -104	0 -46	0 -74	0 -120	0 -190	+30 0	+46 0	+74 0	+120 0	+190 0
80	120	-72 -159	-36 -71	-36 -90	-36 -123	0 -54	0 -87	0 -140	0 -220	+35 0	+54 0	+87 0	+140 0	+220 0
120	180	-85 -185	-43 -83	-43 -106	-43 -143	0 -63	0 -100	0 -160	0 -250	+40 0	+63 0	+100 0	+160 0	+250 0
180	250	-100 -215	-50 -96	-50 -122	-50 -165	0 -72	0 -115	0 -185	0 -290	+46 0	+72 0	+115 0	+185 0	+290 0
250	315	-110 -240	-56 -108	-56 -137	-56 -186	0 -81	0 -130	0 -210	0 -320	+52 0	+81 0	+130 0	+210 0	+320 0
315	400	-125 -265	-62 -119	-62 -151	-62 -212	0 -89	0 -140	0 -230	0 -360	+57 0	+89 0	+140 0	+230 0	+360 0

Conversione dimensioni lineari

Linear dimensions conversion



ARTIC SEALS

Tab. 16 - Tabella conversione dimensioni lineari / Linear dimensions conversion tab

Pollici / Inch		0	1	2	3	4	5	6	7	8	9	10
Fraction	Decimal											
0	0.000000	0.000	25.400	50.800	76.200	101.600	127.000	152.400	177.800	203.200	228.600	254.000
1/64	0.015625	0.397	25.797	51.197	76.597	101.997	127.397	152.797	178.197	203.597	228.997	254.397
1/32	0.031250	0.794	26.194	51.594	76.994	102.394	127.794	153.194	178.594	203.994	229.394	254.794
3/64	0.046875	1.191	26.591	51.991	77.391	102.791	128.191	153.591	178.991	204.391	229.791	255.191
1/16	0.062500	1.588	26.988	52.388	77.788	103.188	128.588	153.988	179.388	204.788	230.188	255.588
5/64	0.078125	1.984	27.384	52.784	78.184	103.584	128.984	154.384	179.784	205.184	230.584	255.984
3/32	0.093750	2.381	27.781	53.181	78.581	103.981	129.381	154.781	180.181	205.581	230.981	256.381
7/64	0.109375	2.778	28.178	53.578	78.978	104.378	129.778	155.178	180.578	205.978	231.378	256.778
1/8	0.125000	3.175	28.575	53.975	79.375	104.775	130.175	155.575	180.975	206.375	231.775	257.175
9/64	0.140625	3.572	28.972	54.372	79.772	105.172	130.572	155.972	181.372	206.772	232.172	257.572
5/32	0.156250	3.969	29.369	54.769	80.169	105.569	130.969	156.369	181.769	207.169	232.569	257.969
11/64	0.171875	4.366	29.766	55.166	80.566	105.966	131.366	156.766	182.166	207.566	232.966	258.366
3/16	0.187500	4.762	30.162	55.562	80.962	106.362	131.762	157.162	182.562	207.962	233.362	258.762
13/64	0.203125	5.159	30.559	55.959	81.359	106.759	132.159	157.559	182.959	208.359	233.759	259.159
7/32	0.218750	5.556	30.956	56.356	81.756	107.156	132.556	157.956	183.356	208.756	234.156	259.556
15/64	0.234375	5.953	31.353	56.753	82.153	107.553	132.953	158.353	183.753	209.153	234.553	259.953
1/4	0.250000	6.350	31.750	57.150	82.550	107.950	133.350	158.750	184.150	209.550	234.950	260.350
17/64	0.265625	6.747	32.147	57.547	82.947	108.347	133.747	159.147	184.547	209.947	235.347	260.747
9/32	0.281250	7.144	32.544	57.944	83.344	108.744	134.144	159.544	184.944	210.344	235.744	261.144
19/64	0.296875	7.541	32.941	58.341	83.741	109.141	134.541	159.941	185.341	210.741	236.141	261.541
5/16	0.312500	7.938	33.338	58.738	84.138	109.538	134.938	160.338	185.738	211.138	236.538	261.938
21/64	0.328125	8.334	33.734	59.134	84.534	109.934	135.334	160.734	186.134	211.534	236.934	262.334
11/32	0.343750	8.731	34.131	59.531	84.931	110.331	135.731	161.131	186.531	211.931	237.331	262.731
23/64	0.359375	9.128	34.528	59.928	85.328	110.728	136.128	161.528	186.928	212.328	237.728	263.128
3/8	0.375000	9.525	34.925	60.325	85.725	111.125	136.525	161.925	187.325	212.725	238.125	263.525
25/64	0.390625	9.922	35.322	60.722	86.122	111.522	136.922	162.322	187.722	213.122	238.522	263.922
13/32	0.406250	10.319	35.719	61.119	86.519	111.919	137.319	162.719	188.119	213.519	238.919	264.319
27/64	0.421875	10.716	36.116	61.516	86.916	112.316	137.716	163.116	188.516	213.916	239.316	264.716
7/16	0.437500	11.112	36.512	61.912	87.312	112.712	138.112	163.512	188.912	214.312	239.712	265.112
29/64	0.453125	11.509	36.909	62.309	87.709	113.109	138.509	163.909	189.309	214.709	240.109	265.509
15/32	0.468750	11.906	37.306	62.706	88.106	113.506	138.906	164.306	189.706	215.106	240.506	265.906
31/64	0.484375	12.303	37.703	63.103	88.503	113.903	139.303	164.703	190.103	215.503	240.903	266.303
1/2	0.500000	12.700	38.100	63.500	88.900	114.300	139.700	165.100	190.500	215.900	241.300	266.700
33/64	0.515625	13.097	38.497	63.897	89.297	114.697	140.097	165.497	190.897	216.297	241.697	267.097
17/32	0.531250	13.494	38.894	64.294	89.694	115.094	140.494	165.894	191.294	216.694	242.094	267.494
35/64	0.546875	13.891	39.291	64.691	90.091	115.491	140.891	166.291	191.691	217.091	242.491	267.891
9/16	0.562500	14.288	39.688	65.088	90.488	115.888	141.288	166.688	192.088	217.488	242.888	268.288
37/64	0.578125	14.684	40.084	65.484	90.884	116.284	141.684	167.084	192.484	217.884	243.284	268.684
19/32	0.593750	15.081	40.481	65.881	91.281	116.681	142.081	167.481	192.881	218.281	243.681	269.081
39/64	0.609375	15.478	40.878	66.278	91.678	117.078	142.478	167.878	193.278	218.678	244.078	269.478
5/8	0.625000	15.875	41.275	66.675	92.075	117.475	142.875	168.275	193.675	219.075	244.475	269.875
41/64	0.640625	16.272	41.672	67.072	92.472	117.872	143.272	168.672	194.072	219.472	244.872	270.272
21/32	0.656250	16.669	42.069	67.469	92.869	118.269	143.669	169.069	194.469	219.869	245.269	270.669
43/64	0.671875	17.066	42.466	67.866	93.266	118.666	144.066	169.466	194.866	220.266	245.666	271.066
11/16	0.687500	17.462	42.862	68.262	93.662	119.062	144.462	169.862	195.262	220.662	246.062	271.462
45/64	0.703125	17.859	43.259	68.659	94.059	119.459	144.859	170.259	195.659	221.059	246.459	271.859
23/32	0.718750	18.256	43.656	69.056	94.456	119.856	145.256	170.656	196.056	221.456	246.856	272.256
47/64	0.734375	18.653	44.053	69.453	94.853	120.253	145.653	171.053	196.453	221.853	247.253	272.653
3/4	0.750000	19.050	44.450	69.850	95.250	120.650	146.050	171.450	196.850	222.250	247.650	273.050
49/64	0.765625	19.447	44.847	70.247	95.647	121.047	146.447	171.847	197.247	222.647	248.047	273.447
25/32	0.781250	19.844	45.244	70.644	96.044	121.444	146.844	172.244	197.644	223.044	248.444	273.844
51/64	0.796875	20.241	45.641	71.041	96.441	121.841	147.241	172.641	198.041	223.441	248.841	274.241
13/16	0.812500	20.638	46.038	71.438	96.838	122.238	147.638	173.038	198.438	223.838	249.238	274.638
53/64	0.828125	21.034	46.434	71.834	97.234	122.634	148.034	173.434	198.834	224.234	249.634	275.034
27/32	0.843750	21.431	46.831	72.231	97.631	123.031	148.431	173.831	199.231	224.631	250.031	275.431
55/64	0.859375	21.828	47.228	72.628	98.028	123.428	148.828	174.228	199.628	225.028	250.428	275.828
7/8	0.875000	22.225	47.625	73.025	98.425	123.825	149.225	174.625	200.025	225.425	250.825	276.225
57/64	0.890625	22.622	48.022	73.422	98.822	124.222	149.622	175.022	200.422	225.822	251.222	276.622
29/32	0.906250	23.019	48.419	73.819	99.219	124.619	150.019	175.419	200.819	226.219	251.619	277.019
59/64	0.921875	23.416	48.816	74.216	99.616	125.016	150.416	175.816	201.216	226.616	252.016	277.416
15/16	0.937500	23.812	49.212	74.612	100.012	125.412	150.812	176.212	201.612	227.012	252.412	277.812
61/64	0.953125	24.209	49.609	75.009	100.409	125.809	151.209	176.609	202.009	227.409	252.809	278.209
31/32	0.968750	24.606	50.006	75.406	100.806	126.206	151.606	177.006	202.406	227.806	253.206	278.606
63/64	0.984375	25.003	50.403	75.803	101.203	126.603	152.003	177.403	202.803	228.203	253.603	279.003

Conversione Pressioni Bar/Psi

Pressures Conversion Bar/Psi

Tab. 17 - Tabella conversione pressioni / Pressures conversion chart

Bar	Psi	Bar	Psi	Bar	Psi	Bar	Psi
1	14,50	26	377,09	51	739,69	76	1102,28
2	29,00	27	391,60	52	754,19	77	1116,79
3	43,51	28	406,10	53	768,70	78	1131,29
4	58,01	29	420,60	54	738,20	79	1145,79
5	72,51	30	453,11	55	797,70	80	1160,30
6	87,02	31	449,61	56	818,21	81	1174,80
7	101,52	32	464,12	57	826,71	82	1189,30
8	116,03	33	478,62	58	841,21	83	1203,81
9	130,53	34	493,12	59	855,72	84	1218,31
10	145,03	35	507,63	60	870,22	85	1232,82
11	159,54	36	522,13	61	884,73	86	1247,32
12	174,04	37	536,63	62	899,23	87	1261,82
13	188,54	38	551,14	63	913,73	88	1276,33
14	203,05	39	565,64	64	928,24	89	1290,83
15	217,55	40	580,15	65	842,74	90	1305,33
16	232,06	41	594,65	66	957,24	100	1450,37
17	246,56	42	609,15	67	971,75	125	1812,97
18	261,06	43	623,66	68	986,25	150	2175,56
19	275,57	44	638,16	69	100,76	175	2538,16
20	290,07	45	652,66	70	1015,26	200	2900,75
21	304,57	46	667,17	71	1029,76	250	3625,94
22	319,08	47	681,67	72	1044,27	300	4351,13
23	333,58	48	696,18	73	1058,77	500	7251,88
24	348,09	49	710,68	74	1073,27	750	10877,83
25	362,59	50	725,18	75	1087,78	1000	14503,77

Conversione Temperature °C/°F

Temperature Conversion °C/°F



ARTIC SEALS

Tab. 18 Tabella conversione temperature / Temperature conversion chart

Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit
-169	-273	-7.8	18	17.8	64	93	200	343	650
-168	-270	-7.2	19	18.3	65	99	210	349	660
-162	-260	-6.7	20	18.9	66	100	212	354	670
-157	-250	-6.1	21	19.4	67	104	220	360	680
-151	-240	-5.6	22	20	68	110	230	366	690
-146	-230	-5	23	20.6	69	116	240	371	700
-140	-220	-4.4	24	21.1	70	121	250	377	710
-134	-210	-3.9	25	21.7	71	127	260	382	720
-129	-200	-3.3	26	22.2	72	132	270	388	730
-123	-190	-2.8	27	22.8	73	138	280	393	740
-118	-180	-2.2	28	23.3	74	143	290	399	750
-112	-170	-1.7	29	23.9	75	149	300	404	760
-107	-160	-1.1	30	24.4	76	154	310	410	770
-101	-150	-0.6	31	25	77	160	320	416	780
-96	-140	0	32	25.6	78	166	330	421	790
-90	-130	0.6	33	26.1	79	171	340	427	800
-84	-120	1.1	34	26.7	80	177	350	432	810
-79	-110	1.7	35	27.2	81	182	360	438	820
-73	-100	2.2	36	27.8	82	188	370	443	830
-68	-90	2.8	37	28.3	83	193	380	449	840
-62	-80	3.3	38	28.9	84	199	390	454	850
-57	-70	3.9	39	29.4	85	204	400	460	860
-51	-60	4.4	40	30	86	210	410	466	870
-46	-50	5	41	30.6	87	216	420	471	880
-40	-40	5.6	42	31.1	88	221	430	477	890
-34	-30	6.1	43	31.7	89	227	440	482	900
-29	-20	6.7	44	32.2	90	232	450	488	910
-23	-10	7.2	45	32.8	91	238	460	493	920
-17.8	0	7.8	46	33.3	92	243	470	499	930
-17.2	1	8.3	47	33.9	93	249	480	504	940
-16.7	2	8.9	48	34.4	94	254	490	510	950
-16.1	3	9.4	49	35	95	260	500	516	960
-15.6	4	10	50	35.6	96	266	510	521	970
-15	5	10.6	51	36.1	97	271	520	527	980
-14.4	6	11.1	52	36.7	98	277	530	532	990
-13.9	7	11.7	53	37.2	99	282	540	538	1000
-13.3	8	12.2	54	37.8	100	288	550	549	1020
-12.8	9	12.8	55	43	110	293	560	560	1040
-12.2	10	13.3	56	49	120	299	570	571	1060
-11.7	11	13.9	57	54	130	304	580	582	1080
-11.1	12	14.4	58	60	140	310	590	593	1100
-10.6	13	15	59	66	150	316	600	604	1120
-10	14	15.6	60	71	160	321	610	616	1140
-9.4	15	16.1	61	77	170	327	620	627	1160
-8.9	16	16.7	62	82	180	332	630	638	1180
-8.3	17	17.2	63	88	190	338	640	649	1200

Sezione tecnica
Technical overview

Tab.19 Lunghezza - Distanza		
Grandezza	simbolo	conversioni
metro	m	1 m = 0,001 km = 39,37 in = 3,28 ft = 1,09 yd
centimetro	cm	1 cm = 0,01 m = 0,3937 in = 0,0328 ft = 0,0109 yd
chilometro	km	1 km = 1000 m = 1093,61 yd = 0,5396 naut mi = 0,62137 mi
inch (pollice)	1", in	1 in = 0,0833 ft = 0,0278 yd = 2,54 cm = 0,0254 m
foot (piede)	1', ft	1 ft = 12 in = 0,333 yd = 30,48 cm = 0,3048 m
yard (iarda)	yd	1 yd = 3 ft = 36 in = 91,44 cm = 0,9144 m
miglio marino	naut mi	1 naut mi = 1,853 km = 1'853,18 m = 2'026,67 yd = 1,151 mi
miglio terrestre US	mi	1 mi = 1,609 km = 1'609,35 m = 1'760 yd = 0,868 naut mi
hand (palmo)	hand	1 hand = 4 in = 0,3332 ft = 0,111 yd = 10,16 cm = 0,1016 m
span (spanna)	span	1 span = 9 in = 0,7497 ft = 0,25 yd = 22,86 cm = 0,2286 m

Tab.20 Superficie - Area		
Grandezza	simbolo	conversioni
metro quadrato	m ²	1 m ² = 10'000 cm ² = 0,0001 ha = 1.550 in ² = 10,76 ft ² = 1,196 yd ²
centimetro quadrato	cm ²	1 cm ² = 0,0001 m ² = 0,155 in ² = 0,0011 ft ² = 0,00012 yd ²
kilometro quadrato	km ²	1 km ² = 1'000'000 m ² = 100 ha = 0,386 mi ² = 247,105 ac
ara	a	1a = 100 m ² = 0,01 ha = 1'076,39 ft ² = 119,599 yd ² = 0,0000386 mi ² = 0,024 ac
ettaro	ha	1 ha = 100 a = 10'000 m ² = 0,01 km ² = 107'639,1 ft ² = 0,0039 mi ² = 2,47 ac
square inch	in ²	1 in ² = 0,00694 ft ² = 6,4516 cm ²
square foot	ft ²	1 ft ² = 0,092 m ² = 144 in ² = 0,111 yd ²
square yard	yd ²	1 yd ² = 0,836 m ² = 8'361,27 cm ² = 9 ft ² = 1'296 in ² = 0,0002 ac
square mile	mi ²	1mi ² = 2,59 km ² = 259 ha = 640 ac
acre	ac	1 ac = 4'046,86 m ² = 0,0040 km ² = 0,40 ha = 40,47 a = 43.560 ft ² = 4840 yd ² = 0,00156 mi ²

Tab.21 Volume		
Grandezza	simbolo	conversioni
metro cubo	m ³	1 m ³ = 1'000 dm ³ = 35,3146 ft ³ = 61'023,744 in ³ = 1,308 yd ³ = 264,20 galUS = 219,97 galUK
decimetro cubo; litro	dm ³	1 dm ³ = 1 l = 0,001 m ³ = 61,024 in ³ = 0,0353 ft ³ = 0,00131 yd ³ = 0,26417 galUS = 0,21997 galUK
centimetro cubo	cm ³ , cc	1 cm ³ = 0,001 dm ³ = 0,001 l = 0,061 in ³ = 0,000264 galUS = 0,00022gal UK
cubic inch	in ³	1 in ³ = 0,0000164 m ³ = 0,0164 dm ³ = 0,0005787 ft ³ = 0,0043 galUS = 0,0036 galUK
cubic foot	ft ³	1 ft ³ = 0,02832 m ³ = 28,32 dm ³ = 1'728 in ³ = 0,037 yd ³ = 7,48 galUS = 6,23 galUK
cubic yard	yd ³	1 yd ³ = 0,764 m ³ = 764,55 dm ³ = 46'656 in ³ = 27 ft ³ = 201,97 galUS = 168,18 galUK
gallon US	galUS	1 galUS = 0,00378 m ³ = 3,785 dm ³ = 231 in ³ = 0,134 ft ³ = 0,0049 yd ³ = 0,833 galUK
gallon UK	galUK	1 galUK = 0,00455 m ³ = 4,546 dm ³ = 277,42 in ³ = 0,16 ft ³ = 0,0059 yd ³ = 1,2 galUS

Unità di misura e principali grandezze

Units and main sizes



Tab.22 Pressione		
Grandezza	simbolo	conversioni
pascal	Pa	1 Pa = 1 N/m ² 1 kPa = 0,01 bar = 0,1 N/cm ² = 0,10 mH ₂ O = 7,5 mmHg = 0,0099 atm = 0,145 psi = 0,02088 lbf/ft ² = 0,334 ftH ₂ O
bar	bar	1 bar = 100'000 Pa = 100 kPa = 1,0197 kg/cm ² = 10,198 mH ₂ O = 750 mmHg = 0,987 atm = 14,5 psi = 33,455 ftH ₂ O
millibar	mbar	1 mbar = 100 Pa = 0,010 mH ₂ O = 0,750 mmHg = 0,00102 kg/cm ² = 0,0145 psi = 2,088 lbf/ft ² = 0,033 ftH ₂ O
millimetri di mercurio	mmHg	1 mmHg = 133,322 Pa = 0,133 kPa = 0,00133 bar = 0,0136 mH ₂ O = 0,00131 atm = 0,00136 kg/cm ² = 0,01934 psi = 2,78 lbf/ft ² = 0,045 ftH ₂ O
atmosfera tecnica = kgf/cm ²	at, kg/cm ²	1 at = 1 kg/cm ² = 735,56 mmHg = 10 mH ₂ O = 98066,50 Pa = 98,067 kPa = 0,981 bar = 0,968 atm = 14,22 psi = 2048,16 lbf/ft ² = 32,81 ftH ₂ O
atmosfera metrica	atm	1 atm = 101'325 Pa = 760 mmHg = 1,033 at = 10,33 mH ₂ O = 1,01 bar = 14,696 psi = 2116,22 lbf/ft ² = 33,9 ftH ₂ O
metri colonna d'acqua	mH ₂ O	1 mH ₂ O = 9806 Pa = 0,09806 bar = 73,55 mmHg = 0,9806 N/cm ² = 0,09678 atm = 0,0999 at = 1,4224 psi = 204,8 lbf/ft ² = 3,28 ftH ₂ O
foot of water	ftH ₂ O	1 ftH ₂ O = 2988,87 Pa = 0,0299 bar = 0,3048 mH ₂ O = 22,419 mmHg = 0,0295 atm = 0,03048 kg/cm ² = 0,4335 psi = 62,42 lbf/ft ²
pounds per square inch	psi	1 psi = 6'894,76 Pa = 6,894 kPa = 0,069 bar = 0,703 mH ₂ O = 51,715 mmHg = 0,689 N/cm ² = 0,068 atm = 0,0703 kg/cm ² = 144 lbf/ft ² = 2,31 ftH ₂ O
pounds per square foot	lbf/ft ²	1 lbf/ft ² = 2'988,87 Pa = 2,99 kPa = 0,0299 bar = 0,3048 mH ₂ O = 22,418 mmHg = 0,299 N/cm ² = 0,0295 atm = 0,0305 at = 0,433 psi = 62,424 lbf/ft ²

Tab.23 Portata in volume		
Grandezza	simbolo	conversioni
metri cubi al secondo	m ³ /s	1 m ³ /s = 60 m ³ /min = 3'600 m ³ /ora = 1'000 l/s = 60'000 l/min = 6'102'374,42 in ³ /s = 2'118,88 ft ³ /min = 15'850,32 gpm = 13'198,13 l gpm
metri cubi al minuto	m ³ /min	1 m ³ /min = 0,0167 m ³ /s = 60 m ³ /h = 16,67 l/s = 1'000 l/min = 35,31 ft ³ /min = 264,17 gpm = 219,97 l gpm
metro cubo all'ora	m ³ /h	1 m ³ /h = 0,000278 m ³ /s = 0,0167 m ³ /min = 0,28 l/s = 16,67 l/min = 1017,06 in ³ /min = 0,588 ft ³ /min = 4,40 gpm = 3,66 l gpm
litri al secondo	l/s	1 l/s = 0,001 m ³ /s = 0,06 m ³ /min = 3,6 m ³ /h = 60 l/min = 3661,42 in ³ /min = 2,12 ft ³ /min = 15,85 gpm = 13,198 l gpm
litri al minuto	l/min	1 l/min = 0,001 m ³ /min = 0,06 m ³ /h = 0,0167 l/s = 61,024 in ³ /min = 0,035 ft ³ /min = 0,264 gpm = 0,22 l gpm
cubic inch per minute	in ³ /min	1 in ³ /min = 0,00027 l/s = 0,016 l/min = 0,00058 ft ³ /min = 0,0043 gpm = 0,0036 l gpm
cubic foot per minute	ft ³ /min	1 ft ³ /min = 0,00047 m ³ /s = 0,028 m ³ /min = 1,7 m ³ /h = 0,472 l/s = 28,32 l/min = 1'728 in ³ /min = 7,48 gpm = 6,23 l gpm
gallon per minute	gpm	1 gpm = 0,0038 m ³ /min = 0,227 m ³ /h = 0,063 l/s = 3,785 l/min = 231 in ³ /min = 0,134 ft ³ /min = 0,833 l gpm
imperial gallon per minute	l gpm	1 l gpm = 0,000076 m ³ /s = 0,00454 m ³ /min = 0,273 m ³ /h = 0,076 l/s = 4,55 l/min = 277,42 in ³ /min = 0,16 ft ³ /min = 1,2 gpm

Tab.24 Velocità		
Grandezza	simbolo	conversioni
metri al secondo	m/s	1 m/s = 60 m/min = 3,6 km/h = 39,37 in/s = 2'362,2 in/min = 3,28 ft/s = 196,85 ft/min = 2,237 mi/h = 1,94 kn
kilometri all'ora	km/h	1 km/h = 0,278 m/s = 16,67 m/min = 10,963 in/s = 656,17 in/min = 0,91 ft/s = 54,68 ft/min = 0,62 mi/h = 0,54 kn
metri al minuto	m/min	1 m/min = 0,0167 m/s = 0,06 km/h = 0,66 in/s = 39,37 in/min = 0,0547 ft/s = 3,28 ft/min = 196,85 ft/h = 0,037 mi/h = 0,032 kn
inch per second	in/s	1 in/s = 0,0254 m/s = 1,524 m/min = 0,091 km/h = 60 in/min = 0,083 ft/s = 5 ft/min = 300 ft/h = 0,057 mi/h = 0,049 kn
inch per minute	in/min	1 in/min = 0,0254 m/min = 0,001524 km/h = 0,167 in/s = 0,0014 ft/s = 0,083 ft/min = 5 ft/h
foot per second	ft/s	1 ft/s = 0,305 m/s = 18,288 m/min = 1,097 km/h = 12 in/s = 720 in/min = 60 ft/min = 0,68 mi/h = 0,59 kn
foot per minute	ft/min	1 ft/min = 0,00508 m/s = 0,3048 m/min = 0,0183 km/h = 0,2 in/s = 12 in/min = 0,0167 ft/s = 60 ft/h = 0,011 mi/h = 0,0099 kn
foot per hour	ft/h	1 ft/h = 0,005 m/min = 0,0033 in/s = 0,2 in/min = 0,0167 ft/min
mile per hour	mi/h	1 mi/h = 0,447 m/s = 26,82 m/min = 1,609 km/h = 17,6 in/s = 1'056 in/min = 1,47 ft/s = 88 ft/min = 0,87 kn
nautical mile per hour = knot = nodo	kn	1 kn = 0,51 m/s = 30,89 m/min = 1,85 km/h = 20,27 in/s = 1'216 in/min = 1,69 ft/s = 101,33 ft/min = 1,15 mi/h

Tab.25 Velocità angolare		
Grandezza	simbolo	conversioni
radianti al secondo	rad/s	1 rad/s = 60 rad/min = 0,159 giri/s = 9,55 giri/min
radianti al minuto	rad/min	1 rad/min = 0,0167 rad/s = 0,0026 giri/s = 0,159 giri/min
giri al secondo	giri/s	1 giro/s = 60 giri/min = 6,283 rad/s = 376,99 rad/min
giri al minuto	giri/min	1 giro/min = 0,0167 giri/s = 0,1047 rad/s = 6,283 rad/min

Tab.26 Forza		
Grandezza	simbolo	conversioni
Newton	N	1 N = 0,102 kgf = 0,0001 t = 0,2248 lbf = 3,597 ozf
kilogrammo forza; kilogrammo peso	kgf; kgp	1 kgf = 9,81 N = 0,001 t = 2,204 lbf = 35,27 ozf
tonnellata peso	t	1 t = 9'806,65 N = 1'000 kgf = 2'204,62 lbf = 35'274 ozf
kilopound	kip	1 kip = 4'448 N = 453,59 kgf = 1'000 lbf = 16'000 ozf
pound force (libbra)	lbf	1 lbf = 4,448 N = 0,454 kgf = 16 ozf
ounce force (oncia)	ozf	1 ozf = 0,278 N = 0,028 kgf = 0,0625 lbf

Unità di misura e principali grandezze

Units and main sizes



Tab.27 Potenza		
Grandezza	simbolo	conversioni
kilowatt	kW	1 kW = 1,36 CV = 1,34 hp = 737,56 lbf·ft/s = 4'4253,7 lbf·ft/min = 859,84 kcal/h = 3'412,14 btu/h = 101,97 kgf·m/s
cavallo vapore	CV	1 CV = 0,735 kW = 0,986 hp = 75 kg·m/s = 542,47 lbf·ft/s = 632,41 kcal/h = 2'509,62 btu/h = 75 kgf·m/s
kilogrammo forza per metri al secondo	kgf·m/s	1 kgf·m/s = 0,01 kW = 0,013 CV = 0,013 hp = 7,23 lbf·ft/s = 433,98 lbf·ft/min = 8,43 kcal/h = 33,46 btu/h
kilocaloria all'ora	kcal/h	1 kcal/h = 0,0012 kW = 0,0016 CV = 0,00156 hp = 0,8578 lbf·ft/s = 51,47 lbf·ft/min = 3,97 btu/h = 0,12 kgf·m/s
horsepower	HP	1 HP = 1,014 CV = 0,746 kW = 550 lbf·ft/s = 33000 lbf·ft/min = 641,19 kcal/h = 2'544,43 btu/h = 76,04 kgf·m/s
foot pound force per second	lbf·ft/s	1 lbf·ft/s = 0,0013 kW = 0,0018 CV = 0,0018 hp = 60 lbf·ft/min = 1,166 kcal/h = 4,63 btu/h = 0,138 kgf·m/s
foot pound force per minute	lbf·ft/min	1 lbf·ft/min = 0,000023 kW = 0,0167 lbf·ft/s = 0,019 kcal/h = 0,077 btu/h = 0,0023 kgf·m/s
british thermal unit per hour	BTU/h	1 btu/h = 0,00029 kW = 0,216 lbf·ft/s = 12,97 lbf·ft/min = 0,25 kcal/h = 0,030 kgf·m/s

Tab.28 Lavoro - Energia - Momento - Coppia - Calore		
Grandezza	simbolo	conversioni
joule	J	1 J = 1N·m = 0,102 kgf·m = 0,00024 kcal = 8,85 lbf·in = 0,74 lbf·ft = 0,00095 BTU
kilogrammo forza per metro	kgf·m	1 kgf·m = 9,807 J = 0,0023 kcal = 86,80 lbf·in = 7,233 lbf·ft = 0,0093 BTU
cavallo vapore per ora	CV·h	1 CV·h = 270'000 kgf·m = 0,736 kW·h = 632,41 kcal = 2'509 BTU
kilocaloria	kcal	1 kcal = 4,1868 kJ = 426,93 kgf·m = 0,0016 CV·h = 0,0012 kW·h = 37'056,3 lbf·in = 3'088 lbf·ft = 3,97 BTU
kilowatt per ora	kW·h	1 kW·h = 3'600 kJ = 1,36 CV·h = 859,8 kcal = 3'412,14 BTU
pound force inch	lbf·in	1 lbf·in = 0,113 J = 0,0115 kgf·m = 0,083 lbf·ft = 0,0001 BTU
pound force foot	lbf·ft	1 lbf·ft = 1,356 J = 0,138 kgf·m = 0,324 cal = 12 lbf·in = 0,0013 BTU
horse power hour	HP·h	1 HPh = 2,684 MJ = 641,19 kcal = 1,014 CV·h = 0,746 kW·h = 1'980'000 lbf·ft = 2'544,43 BTU
british thermal unit	BTU	1 BTU = 1'055,056 J = 107,58 kgf·m = 0,0004 CV·h = 0,252 kcal = 0,00029 kWh = 9'338,03 lbf·in = 778,17 lbf·ft

Tab.29 Densità		
Grandezza	simbolo	conversioni
kilogrammo su metro cubo	kg/m ³	1 kg/m ³ = 0,001 kg/dm ³ = 0,001 t/m ³ = 0,001 g/cm ³ = 0,062 lb/ft ³ = 0,00075 tn/yd ³ = 0,00084 s tn/yd ³ = 0,133 oz/gal
kilogrammo su decimetro cubo	kg/dm ³	1 kg/dm ³ = 1'000 kg/m ³ = 0,001 g/cm ³ = 1 t/m ³ = 1 g/cm ³ = 62,42 lb/ft ³ = 0,036 lb/in ³ = 133,53 oz/gal
tonnellata su metro cubo	t/m ³	1 t/m ³ = 1'000 kg/m ³ = 1 kg/dm ³ = 0,001 kg/cm ³ = 1 g/cm ³ = 62,43 lb/ft ³ = 0,036 lb/in ³ = 0,752 tn/yd ³ = 0,843 s tn/yd ³ = 133,53 oz/gal
pound per cubic foot	lb/ft ³	1 lb/ft ³ = 16,018 kg/m ³ = 0,016 kg/dm ³ = 0,016 t/m ³ = 0,016 g/cm ³ = 0,00058 lb/in ³ = 0,012 tn/yd ³ = 0,0135 s tn/yd ³ = 2,14 oz/gal
pound per cubic inch	lb/in ³	1 lb/in ³ = 27,68 kg/dm ³ = 0,02768 kg/cm ³ = 27,68 t/m ³ = 27,68 g/cm ³ = 1'728 lb/ft ³ = 20,83 tn/yd ³ = 23,33 s tn/yd ³ = 3'696 oz/gal
ounce per gallon	oz/gal	1 oz/gal = 7,489 kg/m ³ = 0,00749 kg/dm ³ = 0,00749 t/m ³ = 0,00749 g/cm ³ = 0,467 lb/ft ³ = 0,00027 lb/in ³ = 0,00563 tn/yd ³

Tab.30 Temperatura		
Grandezza	simbolo	conversioni
Kelvin	K	K = °C + 273,15 K = 1,8 · °R K = [5/9 · °F] + (459,67/1,8)
grado Celsius	°C	°C = (°F - 32) · 5/9 °C = K - 273,15 °C = (5/9) · °F - (32/1,8)
grado Fahrenheit	°F	°F = 9/5 · °C + 32 °F = °R - 459,67 °F = (9/5) · K - 459,67
grado Rankine	°R	°R = (5/9) K °R = 491,67 + (9/5) · °C °R = 459,67 + °F

Tab.31 Accelerazione		
Grandezza	simbolo	conversioni
metro al secondo quadrato	m/s ²	1 m/s ² = 100 cm/s ² = 0,001 km/s ² = 3,28 ft/s ² = 39,37 in/s ² = 0,00062 mi/s ²
centimetro al secondo quadrato	cm/s ²	1 cm/s ² = 0,01 m/s ² = 0,00001 km/s ² = 0,0328 ft/s ² = 0,394 in/s ²
kilometro al secondo quadrato	km/s ²	1 km/s ² = 1'000 m/s ² = 100'000 cm/s ² = 3'280,84 ft/s ² = 39'370,08 in/s ² = 0,621 mi/s ²
foot per square second	ft/s ²	1 ft/s ² = 0,3048 m/s ² = 30,48 cm/s ² = 12 in/s ²
inch per square second	in/s ²	1 in/s ² = 0,0254 m/s ² = 2,54 cm/s ² = 0,083 ft/s ²
mile per square second	mi/s ²	1 mi/s ² = 1'609,34 m/s ² = 1,609 km/s ² = 5'280 ft/s ² = 63'360 in/s ²

Le condizioni di immagazzinamento rappresentano un aspetto molto importante quando si parla di prodotti realizzati in elastomeri e termoplastici, a causa della loro sensibilità alle condizioni ambientali. Tali polimeri infatti, se non adeguatamente immagazzinati, subiscono delle variazioni significative nelle proprietà fisiche e meccaniche che possono arrivare a compromettere l'utilizzo del particolare stesso. Possono manifestarsi indurimento, rammollimento, crepe, screpolature o altri tipi di degradazione per effetto di ossigeno, ozono, luce, calore e / o umidità.

Le seguenti raccomandazioni rappresentano le condizioni più idonee per lo stoccaggio dei nostri prodotti a cui ci si deve attenere onde evitare il danneggiamento dei prodotti stessi

1 Temperatura

La temperatura di immagazzinamento non dovrebbe superare i 50°C;
Temperature inferiori non rappresentano un problema per i materiali elastomeri termoplastici.

2 Luce

Proteggere dalla luce diretta del sole o da altre fonti di luce artificiale se molto potenti. In tal caso utilizzare confezioni con filtri UV;

3 Umidità

L'umidità ideale è di circa 65% in ambiente privo di correnti dirette;

4 Ossigeno e Ozono

I prodotti in materiali elastomeri devono essere protetti dalle correnti d'aria. Poiché l'ozono è particolarmente dannoso per la gomma in particolare, nei locali ove vengono stoccati tali prodotti, non devono essere presenti attrezzature che possano dar luogo a scintille o scariche elettriche. Si suggerisce il confezionamento in opportuni contenitori.

The storage conditions are a very important issue when it comes to products in elastomeric or thermoplastic materials, as they are environmentally sensitive. If not suitably stored these polymers experience significant changes in their physical or mechanical properties, that can even impair the item usage. Hardening, softening, cracks, or other types of damage may occur, due to the exposure to oxygen, ozone, light, heat and/or humidity.

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Below are provided recommendations concerning the most suitable storage conditions for our products, that should be complied with to prevent the products damaging.

1 Temperature

The storage temperature should not exceed 50°C; Lower temperatures do not impair thermoplastic, elastomeric materials. We recommend to warm up the items to a temperature of 30° before mounting;

2 Light

Do not expose to direct sunlight or other artificial light sources, if very powerful. If this condition cannot be avoided, use packages supplied with UV filters;

3 Humidity

The ideal humidity level is about 65% in an environment with no direct currents;

4 Oxygen and ozone

Products in elastomeric material should be protected from drafts. Ozone is especially detrimental for rubber, in particular in the areas where the products are to be stored. For this reason no equipment that could produce sparks or electric discharges should be placed in those areas. We recommend packaging in suitable boxes.

5 Deformazione

I prodotti realizzati in termoplastici elastomeri dovrebbero sempre essere stoccati in spazio adeguato alle loro dimensioni, evitando schiacciamento, distorsioni o stiramenti. Si consiglia di posizionarli in appositi scaffali o piani. Si sconsiglia di appenderli o di schiacciarli. Evitare stiramenti e deformazioni.

6 Contatto con liquidi

Durante lo stoccaggio, evitare il contatto con solventi, acidi, basi, oli o grassi;

7 Contatto con metalli

Alcuni metalli come il manganese in ferro e il rame o le sue leghe, possono essere nocive per la gomma in particolare pertanto, si suggerisce di mantenere divisi questi materiali tramite l'uso di carta, polietilene o normale busta di cellophane.

8 Rotazione di magazzino

Si consiglia di applicare una corretta rotazione delle scorte di magazzino onde evitare lunghi periodi di stoccaggio.

9 Pulizia

In caso si renda necessario, lavare con acqua e sapone ed asciugare a temperatura ambiente prima dell'uso. Solventi organici quali tricloroetilene, tetracloruro di carbonio e petrolio risultano molto aggressivi, e se ne sconsiglia l'uso.

10 Durata stoccaggio

La seguente tabella mostra la durata dei prodotti realizzati nei materiali più comuni in condizioni ideali di stoccaggio.
Lo stoccaggio in condizioni non idonee riduce la

5 Deformation

Products in thermoplastic elastomers should be stored in areas suitable for their dimensions, thus avoiding squeezing, distortion or stretching. We recommend to place them on suitable shelves or resting surfaces. We do not recommend hanging or pressing them. Avoid stretching and deformations.

6 Contact with fluids

During storage, avoid contact with solvents, oils or greases;

7 Contact with metals

Some metal as manganese, iron and copper or its alloys may be detrimental for rubber. Therefore, we recommend to keep this materials separated using paper, polyethylene or simple cellophane bags.

8 Inventory turnover

We recommend applying a correct stock rotation, to avoid long storage periods of the items.

9 Cleaning

If necessary, wash with water and soap and dry at room temperature before use. Organic solvents as trichloroethylene, carbon tetrachloride and petrol are aggressive and not recommended.

10 Storage period

*The table below shows the life of products made out of the most common materials in ideal storage conditions.
Unsuitable storage conditions result in the reduction of the product life.*

durata.

Una volta prelevati i prodotti da magazzino, e prima di procedere con il loro utilizzo, si consiglia di verificare la durata di stoccaggio e l'assenza dei principali difetti da non corretto immagazzinamento quali ad esempio:

- difetti meccanici;
- distorsioni permanenti;
- crepe o screpolature superficiali;
- incollaggio o indurimento/rammollimento superficiale;

I pezzi più sottili (sezione inferiore a 1 mm) tendono ad essere più critici in termini di invecchiamento;

After collecting the products from the warehouse and before using them, we recommend to check the storage period and make sure no major damages have occurred, e.g.:

- *mechanical faults;*
 - *permanent distortions;*
 - *surface cracks;*
 - *gluing or surface hardening/softening;*
- thinnest items (section less than 1 mm) are more critical when it comes to ageing;*

Tab. 32 - profili superficie/ surface profile

Base Polymer (Iso Designation)	Primary Storage period (Years)	Extension of storage period after re-inspection (Years)
• NITRILE (NBR)	7	3
• SILICON (UHQ) • VITON (FKM) • ETILENE PROPYLENE (EPDM) • POLYURETHANE (TPU)	10	5
• ACETAL (POM) • POLYAMIDE (PA) • TEFLON (PTFE) • TERMOPLASTIC ELASTOMER (TPE)	UNLIMITED	

Tutto quanto riportato è necessario per mantenere la qualità del prodotto; tuttavia Artic Seals non si assume alcuna responsabilità per danni ed alterazioni che siano da addebitarsi ad ulteriori cause non previste in queste raccomandazioni

The recommendations above are to be complied with to preserve the product quality. Nevertheless Artic Seals shall not assume no responsibility whatsoever for damages or alterations due to other causes, that are not covered by these recommendations.

Artic Seals realizza i suoi prodotti tramite un Sistema di Qualità Totale Certificato, che prevede obiettivi e piani per la qualità sviluppati collaborazione con il Quality management del gruppo Gapi e basati su fabbisogni ed aspettative del mercato, cercando di soddisfare le esigenze del Cliente per mezzo di continui miglioramenti nel progetto, nel prodotto, nel servizio.

La qualità dei prodotti rappresenta l'obiettivo principale su cui si è investito nel corso degli anni, tramite l'introduzione di sempre più sofisticate attrezzature legate all'innovazione e all'automazione per ottenere costanza, stabilità e ripetibilità di tutti i ns processi: robot antropomorfi nei reparti di stampaggio, trimming completamente automatico, packaging automatico e impianti di visione artificiale computerizzata, completamente automatica per il controllo al 100% dei prodotti ove richiesto. Ogni fase risulta integrata all'interno dell' ERP aziendale per garantire un immediato controllo sui processi e sulle relative performance.

Artic Seals esegue un attento controllo in fase di accettazione delle materie prime, durante il processo e in fase di collaudo finale per garantire la totale conformità dei prodotti ai requisiti specificati.

Le sinergie tra le aziende del gruppo giocano un ruolo fondamentale in termini di accesso a tecnologie e competenze specificatamente sviluppate per uno specifico settore, e messe al servizio delle consociate. In questo contesto Artic Seals gioca un ruolo fondamentale come Lead Center per il settore Idraulico e Pneumatico e può sviluppare prodotti tramite l'ausilio di materiali e processi interni al gruppo.

Il gruppo inoltre offre un servizio fondamentale legato alle scienze dei materiali, offrendo alle consociate, l'accesso a due laboratori di analisi ove testare le principali proprietà chimiche, fisiche e meccaniche dei materiali trattati.

Per ricevere certificati di collaudo e/o Attestati di conformità, sulla merce in consegna contattare i ns uffici e specificare eventualmente lo standard di riferimento.

Artic Seals manufactures its products in compliance with a Certified Global Quality System, that provides quality targets and programmes developed together with the Gapi Group Quality management and based on the market needs and expectations, striving to meet the customers' requirements by constantly improving designs, products and services.

The product quality is the main target we invested in over the years, introducing increasingly sophisticated equipment pursuing innovation and automation, to achieve consistency, stability and repeatability for all our processes: anthropomorphic robots in moulding departments, completely automatic trimming, automatic packaging and computer vision, totally automatic systems to check the product 100%, where requested. Each phase is integrated into the company's ERP system to provide immediate monitoring of processes and related performances. Artic Seals carries out a careful inspection of incoming raw materials, as well as during the process and the final testing phase, to guarantee total conformance of the products with the specifications.

The synergies among the group's companies play a vital role in terms of access to technologies, skills and know-how especially developed for specific areas of competence and shared among the subsidiaries. In this context Artic Seals plays a crucial role as Hydraulic and Pneumatic Lead Center and develops its products using the group own materials and processes.

The group provides also a key service related to material science, offering the subsidiaries access to two analysis labs to test the main chemical, physical and mechanical properties of the materials processed.

To receive testing and/or compliance certificates for the supply goods, please turn to our offices and possibly specify the reference standard.



Sistemi di tenuta per oleodinamica *Hydraulic sealing systems*



oleodinamica
Hydraulic

Tenute Stelo

Rod Seals

GUARNIZIONI STELO / ROD SEALS									
Condizioni massime non simultanee / Maximum conditions (not combined)									
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	RSA	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	64
	RLF	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	68
	RSB	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	72
	RSB2	-35 +100	< 500	< 0,5	TPU POM	● ○		Idraulica Hydraulic	78
	RSC	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	80
	RSD	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	84
	RPO	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	88
	RAA	-30 +135	< 600	< 1	POM	○		Idraulica Hydraulic	92
	TSS/P	-30 +100	< 600	5	TPU NBR	● ●		Idraulica Hydraulic	94
	TSS	-30 +120	< 600	15	PTFE bronzo/ bronze NBR	● ●		Idraulica Hydraulic	96
	RSO	-35 +100	< 400	< 0,5	TPU NBR	● ●		Idraulica Hydraulic	98
	RBR	-35 +100	< 400	< 0,8	TPU POM	● ○		Idraulica Hydraulic	100
	RPS	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	102
GUARNIZIONI ROTAZIONE / ROTARY SEALS									
	GDR	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	156

Tenute Pistone Piston Seals

GUARNIZIONI PISTONE / PISTON SEALS									
Condizioni massime non simultanee / Maximum conditions (not combined)									
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	RPS	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	102
	PSA	-35 +100	< 400	< 0,5	TPU	●		Idraulica Hydraulic	106
	PAE	-35 +100	< 500	< 0,5	TPU POM	● ○		Idraulica Hydraulic	110
	PSH+RR	-35 +100	< 400	< 0,5	TPU POM	● ○		Idraulica Hydraulic	112
	PSO	-30 +100	< 250 materiali standard standard materials < 400	< 0,5	TPU NBR	● ●		Idraulica Hydraulic	114
	PSQ	-30 +100	< 250 materiali standard standard materials < 400	< 0,5	TPU NBR	● ●		Idraulica Hydraulic	118
	PSN	-30 +110	< 250	< 4	Technopolymer NBR		○	Idraulica / Pneumatic	120
	TPD	-30 +120	< 600	15	PTFE bronzo/ bronze NBR	● ●		Idraulica Hydraulic	122
	PSZ	-30 +110	< 600	1	PA66 NBR	● ●		Idraulica Hydraulic	124
	PHP	-30 +100	< 600	< 1,5	TPU POM NBR	● ○ ●		Idraulica Hydraulic	126
	KDSA	-30 +100	< 300	< 0,5	POM NBR TPE	○ ● ●		Idraulica Hydraulic	128
	KDSB	-30 +100	< 300	< 0,5	POM NBR TPE	○ ● ●		Idraulica Hydraulic	130
	KDSP	-30 +100	< 300	< 0,5	TPU POM	● ○		Idraulica Hydraulic	134
	KDAE	-30 +100	< 400	< 0,5	TPU TPE	●	●	Idraulica Hydraulic	136

Guide e Raschiatori

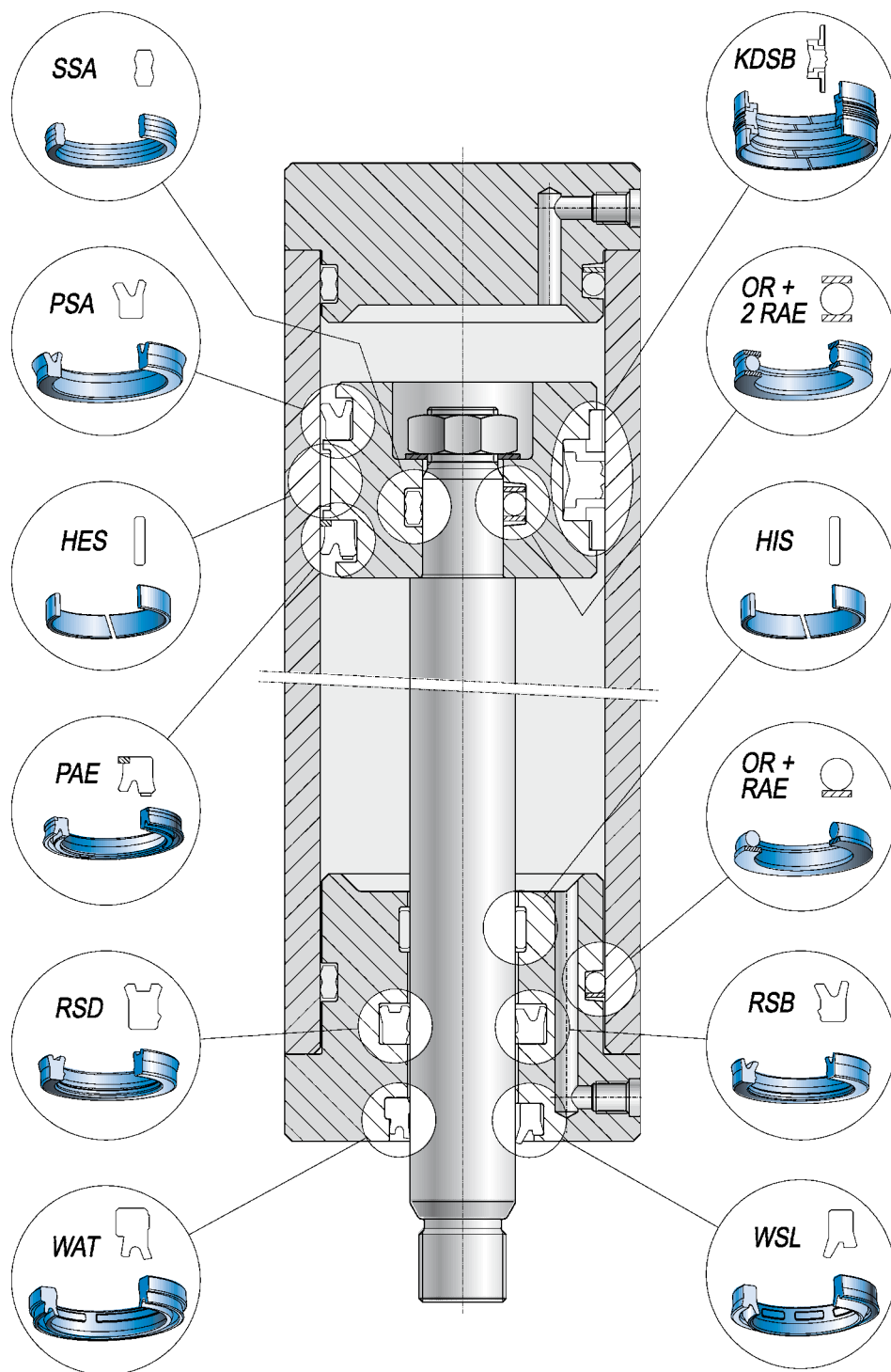
Wears and Wipers

ANELLI DI GUIDA / WEAR RINGS										
<i>(sezione tecnica guide pag. 138 / wear rings technical section pag. 138)</i>										
Condizioni massime non simultanee / Maximum conditions (not combined)										
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze	NBR	TPE Resina PTFE Carbo.	Sezione Section	Pagina Page
	HIS HES	-40 +115	-	< 0,8	POM fibre di vetro glass fibres	○			Idraulica Hydraulic	142/146
	NG	-40 +200	-	15	PTFE bronzo/ bronzes	●			Idraulica Hydraulic	150
	HPW	-50 +150	-	< 1	Resina Fenolica			●	Idraulica Hydraulic	152
	HEN	-40 +115	-	< 0,8	POM fibre di vetro glass fibres	○			Idraulica Hydraulic	154

RASCHIATORI / WIPERS										
	WSL	-35 +100	-	< 1	TPU				Idraulica Hydraulic	158
	RO6	-30 +100	-	< 4	NBR				Idraulica Hydraulic	162
	WSG	-35 +100	-	< 1	TPU STEEL				Idraulica Hydraulic	166
	IWP	-35 +100	-	< 0,8	TPU STEEL				Idraulica Hydraulic	168
	DWP	-35 +100	-	< 0,8	TPU STEEL				Idraulica Hydraulic	170
	Ro9	-30 +100	-	< 1	NBR STEEL				Idraulica Hydraulic	172
	WWS	-35 +100	-	< 1	TPU				Idraulica Hydraulic	174
	RO8	-30 +100	-	< 4	NBR				Idraulica Hydraulic	176
	WAT	-35 +100	-	< 1	TPU				Idraulica Hydraulic	180
	TRD	-30 +120	-	< 15	PTFE bronzo/ bronzes NBR		 		Idraulica Hydraulic	182
	WED	-35 +100	< 20	< 1	TPU				Idraulica Hydraulic	184
	WDA	-35 +100	< 50	< 1	TPU				Idraulica Hydraulic	188
	WIP	-40 +90	< 20	< 1	TPU				Idraulica Hydraulic	190
	WNM	-35 +100	< 20	< 1	PA Filled				Idraulica Hydraulic	192
	WEL	-35 +100	-	< 1	TPU				Idraulica Hydraulic	194

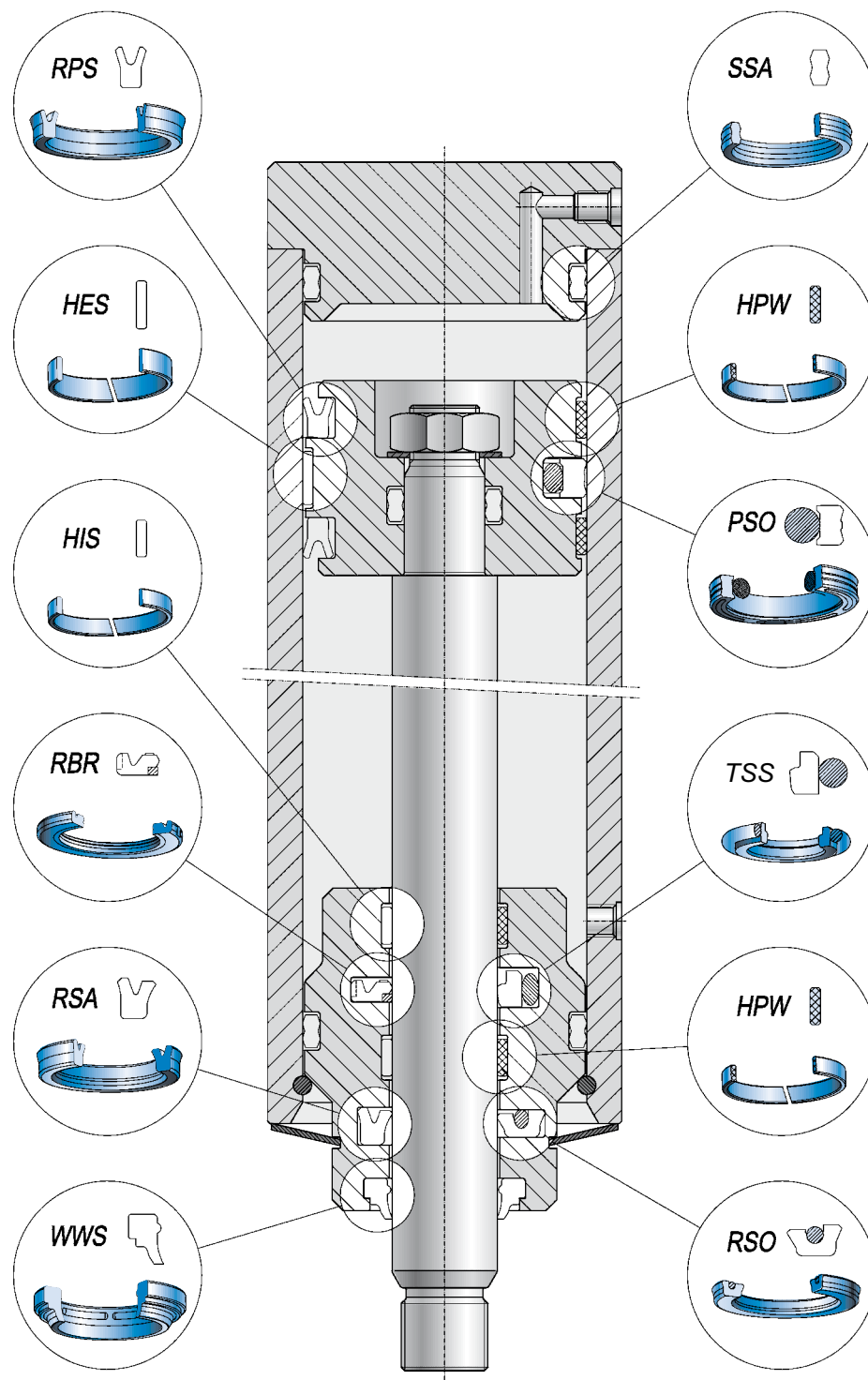
Schema cilindro idraulico A

Hydraulic cylinder sketch A



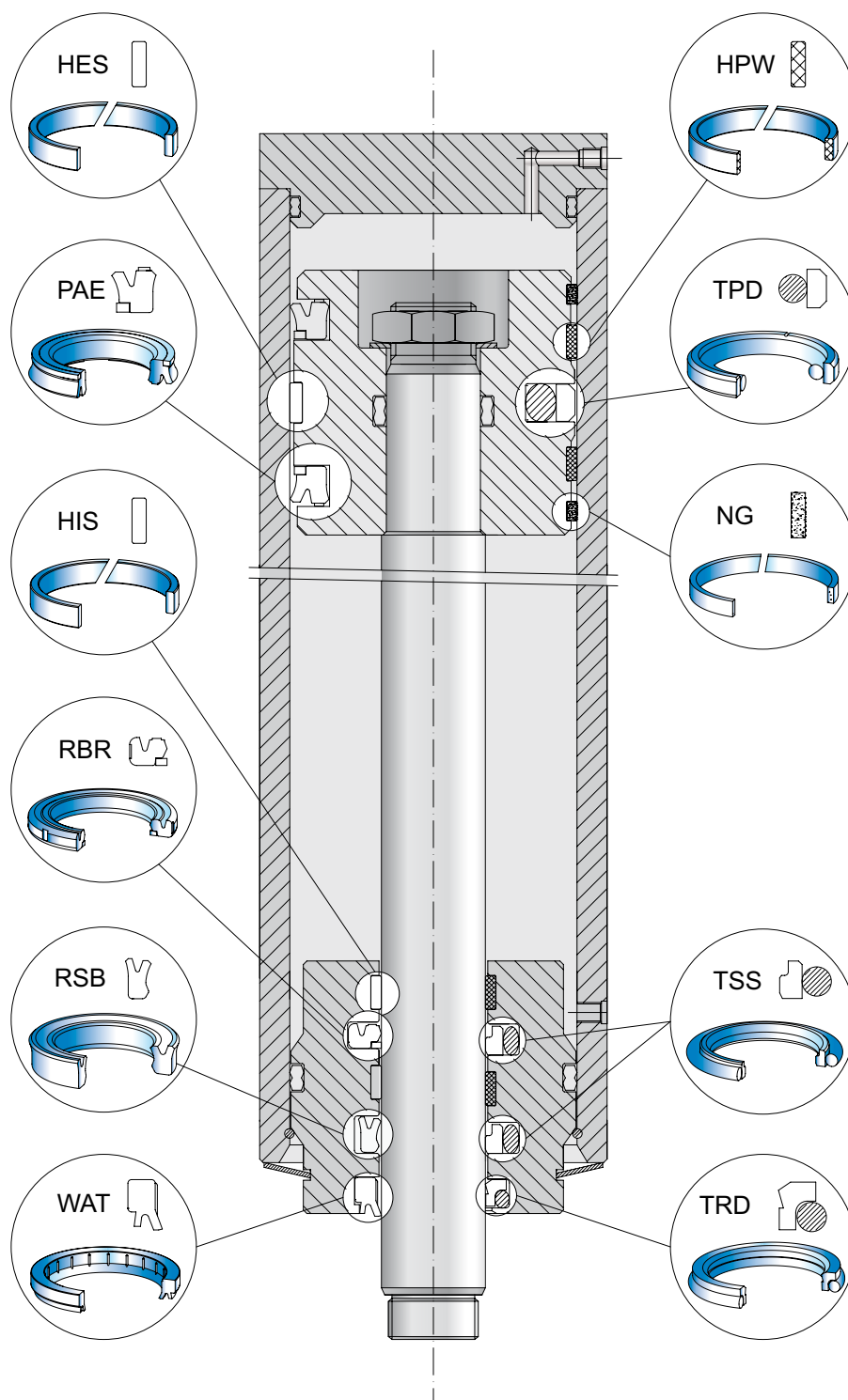
Schema cilindro idraulico B

Hydraulic cylinder sketch B



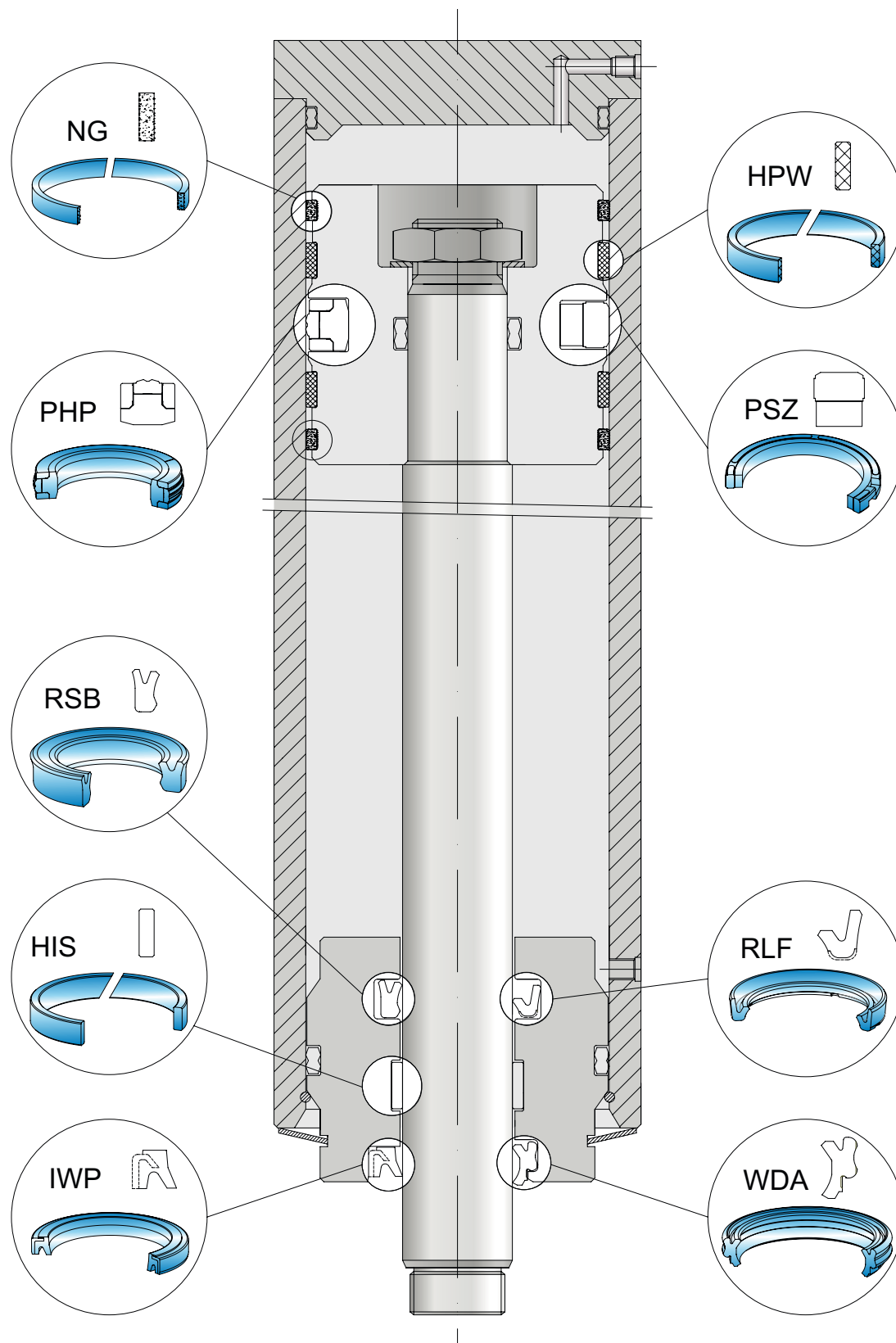
Schema cilindro idraulico C

Hydraulic cylinder sketch C



Schema cilindro idraulico D

Hydraulic cylinder sketch D



Montaggio

Assembling

Avvertenze e precauzioni di montaggio nei sistemi oleodinamici

Per un ottimo funzionamento delle guarnizioni occorre che durante il montaggio non vengano tagliate o deformate in modo permanente. Si raccomanda anche di rispettare le norme internazionali ISO sia per quanto riguarda le dimensioni degli alloggiamenti che per le tolleranze. Per le finiture delle superfici, vedere le figure 18 e 19 sotto indicate, che riportano i valori cui attenersi. Le finiture di sola rettifica non sono mai consigliate ma si raccomanda un'ulteriore lavorazione di lucidatura prima del montaggio.

Assembling instructions

For a correct sealing functioning it's necessary to avoid cuts or permanent deformations during the assembling process. It's also recommended to follow the ISO norms concerning housings and tolerances. Regarding the surfaces finish, take a look at the following sketches 18 and 19 indicating the values to be respected. A further polishing operation is usually suggested before mounting, since the only grinding operation isn't recommended.

Fig. 18

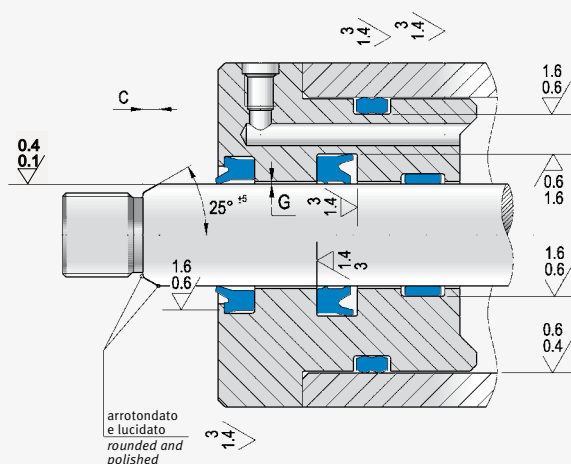
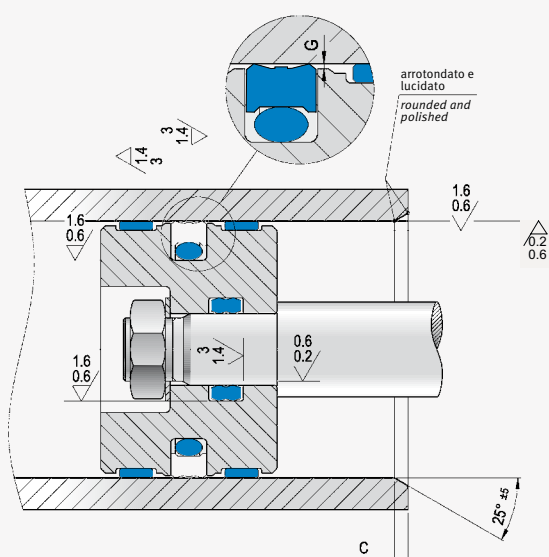


Fig. 19



Montaggio - PTFE

Assembling - PTFE

Montaggio tenuta stelo - PTFE

Le guarnizioni PTFE necessitano di precauzioni estremamente rigorose, maggiori che per tutte le altre tipologie di tenuta. E' fondamentale eliminare gli spigoli vivi e le bave nelle sedi.

Il montaggio delle **guarnizioni per stelo** segue normalmente questa sequenza:

- installare O-Ring nella sede (Fig.20);
- deformare l'anello in PTFE (come in Fig.21) senza creare piegature ad angolo vivo;
- inserire l'anello nella sede cercando di ridargli la formazione iniziale (Fig.22)
- calibrare con utensile conico in materiale Plastico (Fig.23)

Fig. 20 - Pic.20

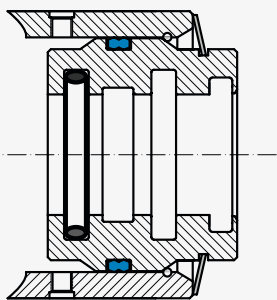


Fig. 21 - Pic.21

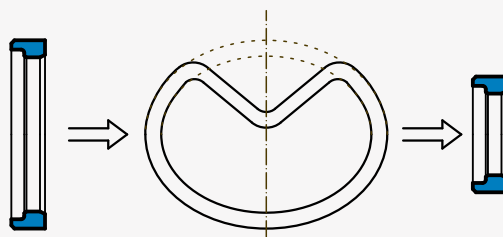


Fig. 22 - Pic.22

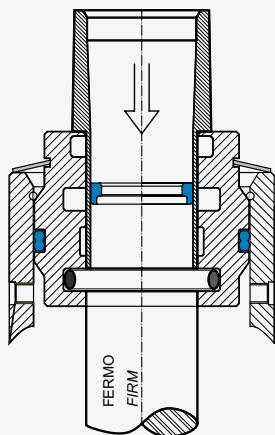
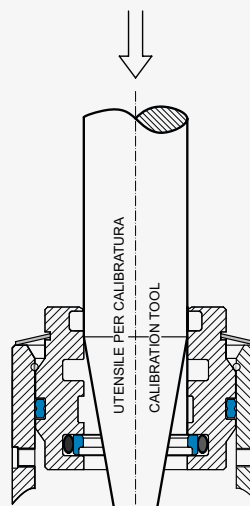


Fig. 23 - Pic.23



PTFE seals require careful assembling operations in comparison to other types of seals. It is necessary to remove flashes and/or cutting edges in the grooves.

*The **rod seal** is usually assembled in the following sequence:*

- *fit the O-Ring into the groove (Pic.20);*
- *twist the PTFE ring (as shown in Pic.21), without causing any open edge curl;*
- *insert the ring into the groove restoring the original shape (Pic.22)*
- *calibrate with a plastic conical tool (Pic.23)*

Montaggio tenuta pistone - PTFE

Analogamente a quanto indicato in precedenza, il montaggio delle **guarnizioni per pistone** segue normalmente questa sequenza:

- Installare O-Ring nella sede;
- Spingere dilatando l'anello in PTFE, con l'ausilio di un mandrino ed una bussola ad espansione (Fig.24);
- Calibrare con una bussola opportunamente dimensionata (Fig.25)

Assembling piston seal - PTFE

As previously indicated, the **piston seal** is usually assembled in the following sequence:

- fit the O-Ring into the groove
- twist the PTFE ring using a mandrel and a expansion bush (Pic.24);
- calibrate with a bush with right dimension (Pic.25)

Fig. 24 - Pic.24

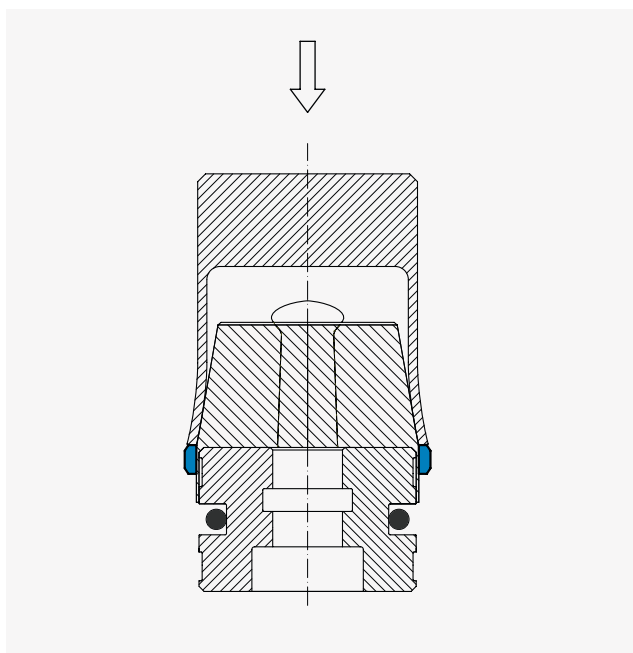
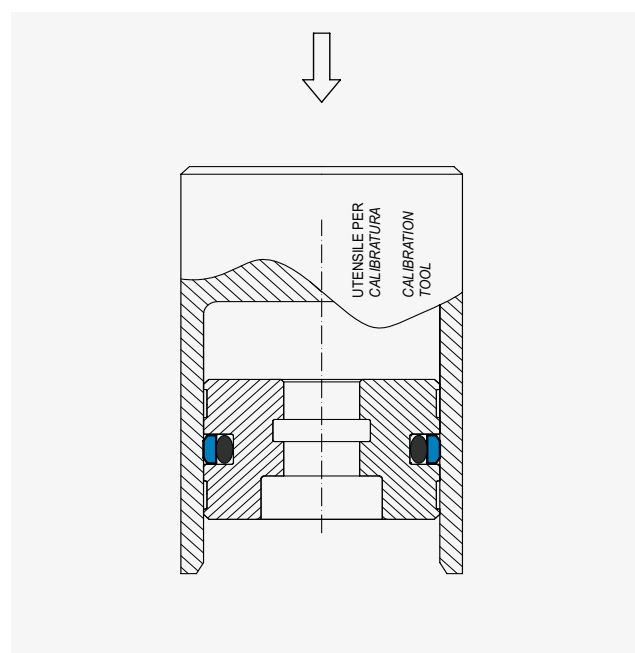
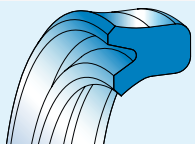


Fig. 25 - Pic.25





RSA

TENUTA STELO TIPO RSA

Descrizione

La guarnizione tipo RSA, progettata con labbro dinamico più corto rispetto a quello statico, ha impieghi dove risultano elevati i disallineamenti dello stelo e dove le pressioni possono raggiungere valori elevati.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
 Velocità: < 0.5 m/s
 Temperatura: da - 35° C a + 100° C con punte fino a 110° C
 Fluidi: fluidi idraulici a base minerale
 (vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo C0 ad alto modulo elastico, basso compression-set ed elevata resistenza all'abrasione.
 Ha un durezza di 93 Shore A $\pm$ 2.
 Codice materiale: C0

Montaggio

Per evitare che la guarnizione si danneggi occorre eliminare le bave e gli spigoli taglienti presenti nella sede e sullo stelo.
 E' sempre consigliato lubrificare la tenuta prima del montaggio per agevolare l'inserimento dello stelo.
 Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RSA TYPE ROD SEAL

Description

The RSA seal has a dynamic lip shorter than the static one and it is used in cases of high rod misalignments and possible high pressure.

Technical data

*Pressure: < 400 bar, at a temperature of 60° C
 Speed: < 0.5 m/s
 Temperature: from - 35° C to + 100° C, with peaks up to 110° C
 Fluids: mineral hydraulic fluids
 (see table 3, page 14)*

Material

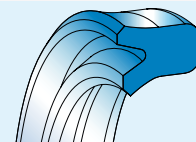
*The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.
 The hardness is 93 Shore A $\pm$ 2.
 Compound reference: C0*

Assembling

*To prevent any damage to the seal, remove any flash and cutting edges in the housing and on the rod.
 The seal should always be lubricated before assembling in order to have easier insertion of the rod.*

For further information please refer to the installation instructions on page 61.

RSA


RSA

RLF

RSB

RSB₂

GPDI-

GPDIM

RSC

RSD

RPO

RAA

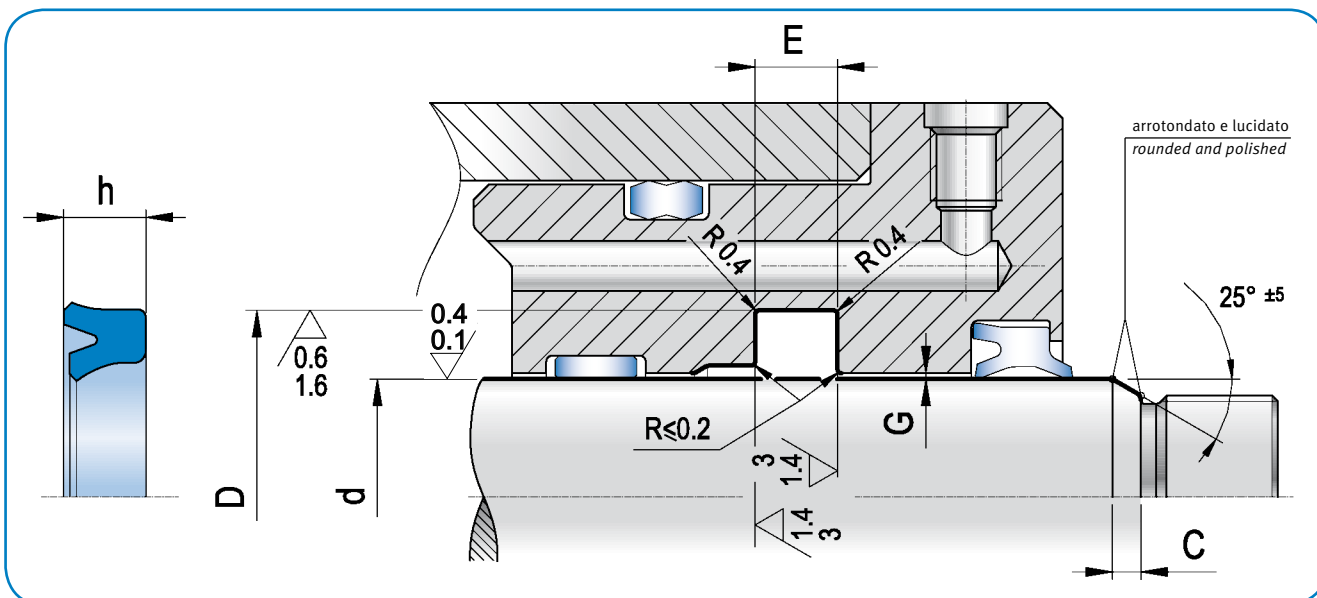
TSS/P

TSS

RSO

RBR

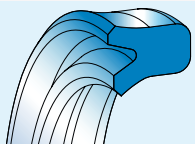
RPS



d_{H9}	D_{H10}	h	$E_{+0,2}$	C	ART / ITEM
* 6,0	14,0	5,7	6,3	3,5	RSA 0060 0140 057 C0
8,0	16,0	4,7	5,3	3,5	RSA 0080 0160 047 C0
* 8,0	16,0	5,7	6,3	3,5	RSA 0080 0160 057 C0
8,0	18,0	8,0	9,0	3,5	RSA 0080 0180 080 C0
* 10,0	18,0	5,7	6,3	3,5	RSA 0100 0180 057 C0
10,0	20,0	7,2	8,0	4,5	RSA 0100 0200 072 C0
12,0	19,0	5,0	5,5	3,5	RSA 0120 0190 050 C0
* 12,0	20,0	5,0	5,5	3,5	RSA 0120 0200 050 C0
* 12,0	20,0	5,7	6,4	3,5	RSA 0120 0200 057 C0
12,0	22,0	4,7	5,3	4,5	RSA 0120 0220 047 C0
* 12,0	22,0	7,2	8,0	4,5	RSA 0120 0220 072 C0
* 14,0	22,0	5,7	6,3	3,5	RSA 0140 0220 057 C0
* 14,0	24,0	7,2	8,0	4,5	RSA 0140 0240 072 C0
15,0	23,0	5,7	6,3	3,5	RSA 0150 0230 057 C0
15,0	25,0	8,0	9,0	4,5	RSA 0150 0250 080 C0
16,0	20,6	3,3	3,6	3,5	RSA 0160 0206 033 C0
16,0	22,0	5,0	5,5	3,5	RSA 0160 0220 050 C0
* 16,0	24,0	5,7	6,3	3,5	RSA 0160 0240 057 C0
* 16,0	26,0	7,2	8,0	4,5	RSA 0160 0260 072 C0
18,0	24,0	4,7	5,3	3,5	RSA 0180 0240 047 C0
* 18,0	26,0	5,7	6,3	3,5	RSA 0180 0260 057 C0
18,0	26,0	8,0	9,0	3,5	RSA 0180 0260 080 C0
* 18,0	28,0	7,2	8,0	4,5	RSA 0180 0280 072 C0
18,0	28,0	8,0	9,0	4,5	RSA 0180 0280 080 C0
20,0	26,0	5,0	5,5	3,5	RSA 0200 0260 050 C0
* 20,0	28,0	5,7	6,3	3,5	RSA 0200 0280 057 C0
20,0	28,0	6,2	7,0	3,5	RSA 0200 0280 062 C0

d_{H9}	D_{H10}	h	$E_{+0,2}$	C	ART / ITEM
20,0	28,0	7,2	8,0	3,5	RSA 0200 0280 072 C0
* 20,0	30,0	7,2	8,0	4,5	RSA 0200 0300 072 C0
20,0	30,0	8,0	9,0	4,5	RSA 0200 0300 080 C0
20,0	35,0	10,0	11,0	5,5	RSA 0200 0350 100 C0
* 22,0	30,0	5,7	6,4	3,5	RSA 0220 0300 057 C0
22,0	30,0	8,0	9,0	3,5	RSA 0220 0300 080 C0
22,0	32,0	7,2	8,0	4,5	RSA 0220 0320 072 C0
* 22,0	32,0	9,0	10,0	4,5	RSA 0220 0320 090 C0
24,0	34,0	7,2	8,0	4,5	RSA 0240 0340 072 C0
25,0	33,0	5,7	6,3	3,5	RSA 0250 0330 057 C0
* 25,0	33,0	6,3	7,0	3,5	RSA 0250 0330 063 C0
25,0	33,0	7,2	8,0	3,5	RSA 0250 0330 072 C0
25,0	33,0	10,0	11,0	3,5	RSA 0250 0330 010 C0
* 25,0	35,0	7,2	8,0	4,5	RSA 0250 0350 072 C0
25,0	38,0	9,0	10,0	5,0	RSA 0250 0380 090 C0
25,0	40,0	10,0	11,0	5,5	RSA 0250 0400 100 C0
26,0	34,0	4,0	5,0	3,5	RSA 0260 0340 040 C0
28,0	36,0	5,7	6,3	3,5	RSA 0280 0360 057 C0
* 28,0	38,0	7,2	8,0	4,5	RSA 0280 0380 072 C0
28,0	38,0	8,0	9,0	4,5	RSA 0280 0380 080 C0
28,0	38,0	10,0	11,0	4,5	RSA 0280 0380 100 C0
28,0	40,0	8,5	9,5	4,5	RSA 0280 0400 085 C0
* 28,0	43,0	11,5	12,5	5,5	RSA 0280 0430 115 C0
30,0	38,0	5,7	6,3	3,5	RSA 0300 0380 057 C0
30,0	38,0	8,0	9,0	3,5	RSA 0300 0380 080 C0
30,0	40,0	5,7	6,3	4,5	RSA 0300 0400 057 C0
30,0	40,0	7,2	8,0	4,5	RSA 0300 0400 072 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with norms ISO/DIN 5597 and ISO 5597/1



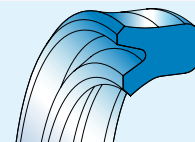
RSA

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM					
30,0	40,0	9,5	10,5	4,5	RSA	0300	0400	095	C0	
30,0	40,0	10,0	11,0	4,5	RSA	0300	0400	100	C0	
30,0	43,0	9,0	10,0	4,5	RSA	0300	0430	090	C0	
	30,0	45,0	8,0	9,0	5,5	RSA	0300	0450	080	C0
	32,0	40,0	5,7	6,3	3,5	RSA	0320	0400	057	C0
	32,0	40,0	8,0	9,0	3,5	RSA	0320	0400	080	C0
*	32,0	42,0	7,2	8,0	4,5	RSA	0320	0420	072	C0
	32,0	42,0	10,0	11,0	4,5	RSA	0320	0420	100	C0
	32,0	45,0	10,0	11,0	4,5	RSA	0320	0450	100	C0
	32,0	47,0	10,0	11,0	5,5	RSA	0320	0470	100	C0
	33,0	43,0	10,0	11,0	4,5	RSA	0330	0430	100	C0
	35,0	43,0	5,7	6,3	3,5	RSA	0350	0430	057	C0
	35,0	43,0	8,0	9,0	3,5	RSA	0350	0430	080	C0
	35,0	45,0	7,2	8,0	4,5	RSA	0350	0450	072	C0
	35,0	45,0	10,0	11,0	4,5	RSA	0350	0450	100	C0
	35,0	46,0	8,0	9,0	4,5	RSA	0350	0460	080	C0
	35,0	47,0	8,0	9,0	4,5	RSA	0350	0470	080	C0
	35,0	50,0	10,0	11,0	5,5	RSA	0350	0500	100	C0
	36,0	44,0	5,0	5,5	3,5	RSA	0360	0440	050	C0
	36,0	44,0	5,7	6,4	3,5	RSA	0360	0440	057	C0
	36,0	44,0	8,0	9,0	3,5	RSA	0360	0440	080	C0
*	36,0	46,0	7,2	8,0	4,5	RSA	0360	0460	072	C0
	36,0	46,0	10,0	11,0	4,5	RSA	0360	0460	100	C0
	36,0	48,0	7,0	8,0	4,5	RSA	0360	0480	070	C0
	36,0	48,0	8,0	9,0	4,5	RSA	0360	0480	080	C0
	36,0	51,0	10,0	11,0	5,5	RSA	0360	0510	100	C0
	36,0	51,0	11,5	12,5	5,5	RSA	0360	0510	115	C0
	38,0	44,5	4,7	5,3	3,5	RSA	0380	0445	047	C0
	38,0	45,0	6,2	7,0	3,5	RSA	0380	0450	062	C0
	40,0	48,0	5,7	6,3	4,0	RSA	0400	0480	057	C0
*	40,0	48,0	8,0	9,0	4,0	RSA	0400	0480	080	C0
	40,0	50,0	7,2	8,0	4,5	RSA	0400	0500	072	C0
	40,0	50,0	9,0	10,0	4,5	RSA	0400	0500	090	C0
*	40,0	50,0	10,0	11,0	4,5	RSA	0400	0500	100	C0
	40,0	52,0	8,0	9,0	4,5	RSA	0400	0520	080	C0
	40,0	55,0	10,0	11,0	5,5	RSA	0400	0550	100	C0
*	40,0	55,0	11,5	12,5	5,5	RSA	0400	0550	115	C0
	40,0	60,0	12,0	13,0	6,0	RSA	0400	0600	120	C0
	42,0	52,0	7,2	8,0	4,5	RSA	0420	0520	072	C0
	43,0	53,0	7,0	8,0	4,5	RSA	0430	0530	070	C0
	45,0	53,0	5,7	6,3	4,0	RSA	0450	0530	057	C0
	45,0	53,0	10,0	11,0	4,0	RSA	0450	0530	100	C0
*	45,0	55,0	7,2	8,0	4,5	RSA	0450	0550	072	C0
	45,0	55,0	10,0	11,0	4,5	RSA	0450	0550	100	C0
	45,0	58,0	9,0	10,0	5,0	RSA	0450	0580	090	C0

	d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM			
*	45,0	60,0	10,0	11,0	5,5	RSA	0450	0600	100 C0
	45,0	60,0	11,5	12,5	5,5	RSA	0450	0600	115 C0
	45,0	65,0	12,0	13,0	5,5	RSA	0450	0650	120 C0
*	50,0	60,0	7,2	8,0	4,5	RSA	0500	0600	072 C0
	50,0	60,0	10,0	11,0	4,5	RSA	0500	0600	100 C0
	50,0	60,0	12,0	13,0	4,5	RSA	0500	0600	120 C0
	50,0	62,0	9,0	10,0	5,0	RSA	0500	0620	090 C0
	50,0	63,0	10,0	11,0	5,0	RSA	0500	0630	100 C0
	50,0	65,0	10,0	11,0	5,5	RSA	0500	0650	100 C0
*	50,0	65,0	11,5	12,5	5,5	RSA	0500	0650	115 C0
	50,0	70,0	12,0	13,0	6,5	RSA	0500	0700	120 C0
	52,0	62,0	10,0	11,0	4,5	RSA	0520	0620	100 C0
	55,0	63,0	12,0	13,0	3,5	RSA	0550	0630	120 C0
	55,0	65,0	7,2	8,0	4,5	RSA	0550	0650	072 C0
	55,0	65,0	10,0	11,0	4,5	RSA	0550	0650	100 C0
	55,0	68,0	10,0	11,0	5,0	RSA	0550	0680	100 C0
	55,0	70,0	10,0	11,0	5,5	RSA	0550	0700	100 C0
	55,0	75,0	12,0	13,0	6,5	RSA	0550	0750	120 C0
*	56,0	66,0	10,0	11,0	5,0	RSA	0560	0660	100 C0
	56,0	71,0	10,0	11,0	6,0	RSA	0560	0710	100 C0
	56,0	71,0	11,5	12,5	6,0	RSA	0560	0710	115 C0
	56,0	71,0	12,5	13,5	6,0	RSA	0560	0710	125 C0
	56,0	76,0	12,0	13,0	6,5	RSA	0560	0760	120 C0
	56,0	76,0	15,0	16,0	6,5	RSA	0560	0760	150 C0
	60,0	68,0	12,5	13,5	4,5	RSA	0600	0680	125 C0
	60,0	70,0	5,0	36,0	5,0	RSA	0600	0700	050 C0
	60,0	70,0	7,2	8,0	5,0	RSA	0600	0700	072 C0
	60,0	70,0	10,0	11,0	5,0	RSA	0600	0700	100 C0
	60,0	72,0	8,0	9,0	5,5	RSA	0600	0720	080 C0
	60,0	72,0	9,0	10,0	5,5	RSA	0600	0720	090 C0
	60,0	73,0	10,0	11,0	5,5	RSA	0600	0730	100 C0
	60,0	75,0	10,0	11,0	6,0	RSA	0600	0750	100 C0
	60,0	75,0	11,5	12,5	6,0	RSA	0600	0750	115 C0
	60,0	80,0	12,0	13,0	6,5	RSA	0600	0800	120 C0
	63,0	73,0	12,0	13,0	5,0	RSA	0630	0730	120 C0
	63,0	75,0	8,6	9,6	5,5	RSA	0630	0750	086 C0
*	63,0	78,0	10,0	11,0	6,0	RSA	0630	0780	100 C0
	63,0	78,0	11,5	12,5	6,0	RSA	0630	0780	115 C0
	63,0	83,0	15,0	16,0	6,5	RSA	0630	0830	150 C0
	65,0	75,0	10,0	11,0	5,0	RSA	0650	0750	100 C0
	65,0	77,0	8,6	9,6	5,5	RSA	0650	0770	086 C0
	65,0	77,0	9,0	10,0	5,5	RSA	0650	0770	090 C0
*	65,0	80,0	10,0	11,0	6,0	RSA	0650	0800	100 C0
	65,0	85,0	12,0	13,0	6,5	RSA	0650	0850	120 C0
	70,0	80,0	7,2	8,0	5,0	RSA	0700	0800	072 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

RSA



d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
70,0	80,0	12,0	13,0	5,0	RSA 0700 0800 120 C0
70,0	82,0	8,6	9,6	6,0	RSA 0700 0820 086 C0
70,0	85,0	10,0	11,0	6,0	RSA 0700 0850 100 C0
* 70,0	85,0	11,5	12,5	6,0	RSA 0700 0850 115 C0
* 70,0	85,0	12,0	13,0	6,0	RSA 0700 0850 120 C0
* 70,0	90,0	15,0	16,0	7,0	RSA 0700 0900 150 C0
75,0	85,0	7,2	8,0	7,0	RSA 0750 0850 072 C0
75,0	87,0	8,6	9,6	6,0	RSA 0750 0870 086 C0
75,0	90,0	12,0	13,0	6,0	RSA 0750 0900 120 C0
75,0	95,0	12,0	13,0	7,0	RSA 0750 0950 120 C0
80,0	90,0	7,2	8,0	5,0	RSA 0800 0900 072 C0
80,0	90,0	8,0	9,0	5,0	RSA 0800 0900 080 C0
80,0	90,0	10,0	11,0	5,0	RSA 0800 0900 100 C0
80,0	90,0	12,0	13,0	5,0	RSA 0800 0900 120 C0
80,0	92,0	8,6	9,6	5,5	RSA 0800 0920 086 C0
80,0	95,0	10,0	11,0	6,0	RSA 0800 0950 100 C0
* 80,0	95,0	11,5	12,5	6,0	RSA 0800 0950 115 C0
80,0	95,0	12,0	13,0	6,0	RSA 0800 0950 120 C0
80,0	100,0	12,0	13,0	7,0	RSA 0800 1000 120 C0
80,0	100,0	12,5	13,5	7,0	RSA 0800 1000 125 C0
* 80,0	100,0	15,0	16,0	7,0	RSA 0800 1000 150 C0
85,0	100,0	11,0	12,0	6,0	RSA 0850 1000 110 C0
85,0	100,0	12,0	13,0	6,0	RSA 0850 1000 120 C0
85,0	105,0	12,0	13,0	7,0	RSA 0850 1050 120 C0
90,0	100,0	4,5	5,5	5,5	RSA 0900 1000 045 C0
90,0	100,0	11,5	12,5	5,5	RSA 0900 1000 115 C0
* 90,0	105,0	8,5	9,5	6,0	RSA 0900 1050 085 C0
* 90,0	105,0	11,5	12,5	6,0	RSA 0900 1050 115 C0
* 90,0	105,0	12,0	13,0	6,0	RSA 0900 1050 120 C0
90,0	110,0	12,0	13,0	7,0	RSA 0900 1100 120 C0
* 90,0	110,0	15,0	16,0	7,0	RSA 0900 1100 150 C0
95,0	110,0	12,0	13,0	6,0	RSA 0950 1100 120 C0
95,0	115,0	12,0	13,0	7,0	RSA 0950 1150 120 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
100,0	115,0	12,0	13,0	6,0	RSA 1000 1150 120 C0
* 100,0	120,0	12,0	13,0	7,0	RSA 1000 1200 120 C0
* 100,0	120,0	15,0	16,0	7,0	RSA 1000 1200 150 C0
* 100,0	125,0	19,0	20,0	8,0	RSA 1000 1250 190 C0
105,0	120,0	11,5	12,5	6,0	RSA 1050 1200 115 C0
105,0	125,0	12,0	13,0	7,0	RSA 1050 1250 120 C0
105,0	125,0	15,0	16,0	7,0	RSA 1050 1250 150 C0
110,0	125,0	11,0	12,0	6,0	RSA 1100 1250 110 C0
110,0	130,0	12,0	13,0	7,0	RSA 1100 1300 120 C0
* 110,0	130,0	15,0	16,0	7,0	RSA 1100 1300 150 C0
115,0	130,0	11,0	12,0	7,0	RSA 1150 1300 110 C0
115,0	135,0	12,0	13,0	7,0	RSA 1150 1350 120 C0
120,0	135,0	11,5	12,5	6,0	RSA 1200 1350 115 C0
120,0	140,0	12,0	13,0	7,0	RSA 1200 1400 120 C0
120,0	140,0	15,0	16,0	7,0	RSA 1200 1400 150 C0
* 125,0	145,0	15,0	16,0	7,0	RSA 1250 1450 150 C0
130,0	150,0	12,0	13,0	7,0	RSA 1300 1500 120 C0
130,0	150,0	15,0	16,0	7,0	RSA 1300 1500 150 C0
* 140,0	160,0	15,0	16,0	7,0	RSA 1400 1600 150 C0
150,0	170,0	15,0	16,0	7,0	RSA 1500 1700 150 C0
160,0	180,0	12,0	13,0	7,0	RSA 1600 1800 120 C0
160,0	180,0	15,0	16,0	7,0	RSA 1600 1800 150 C0
170,0	190,0	15,0	16,0	7,0	RSA 1700 1900 150 C0
180,0	200,0	15,0	16,0	7,0	RSA 1800 2000 150 C0
190,0	210,0	15,0	16,0	7,0	RSA 1900 2100 150 C0
200,0	220,0	15,0	16,0	7,0	RSA 2000 2200 150 C0
200,0	225,0	16,0	17,0	8,0	RSA 2000 2250 160 C0
210,0	230,0	15,0	16,0	7,0	RSA 2100 2300 150 C0
220,0	240,0	15,0	16,0	7,0	RSA 2200 2400 150 C0
230,0	250,0	15,0	16,0	7,0	RSA 2300 2500 150 C0
240,0	260,0	15,0	16,0	7,0	RSA 2400 2600 150 C0
250,0	270,0	15,0	16,0	7,0	RSA 2500 2700 150 C0

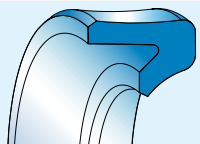
RSA
RLF
RSB
RSB₂
GPDI-
GPDIM
RSC
RSD
RPO
RAA
TSS/P
TSS
RSO
RBR
RPS

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* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 - in accordance with ISO/DIN 5597 and ISO 5597/1 norms

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



RLF®

TENUTA STELO TIPO RLF®

Descrizione

La tenuta tipo RLF® ha un profilo innovativo rispetto alle tradizionali guarnizioni a labbro. Presenta nella parte statica un labbro molto lungo rispetto al labbro dinamico che resta vicino al fondo sede.

In questo modo si genera pochissimo attrito in esercizio e si autoallinea perfettamente allo stelo. La base della guarnizione, sia nella parte dinamica che in quella statica, ha due grossi raggi che facilitano notevolmente il montaggio e contemporaneamente non creano sotto pressione spigoli che ne determinerebbero estrusione.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: fluidi a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano tipo C0 ad alto modulo elastico, basso compression-set ed elevata resistenza all'usura.

Ha una durezza 93 Sh A ± 2

Codice materiale: C0

Montaggio

Per evitare che la guarnizione si danneggi occorre eliminare le bave e gli spigoli vivi presenti nella sede e sullo stelo.

Importante: lo stelo deve avere uno smusso di invito molto curato per non rovesciare la guarnizione durante il montaggio. Fare riferimento alla tabella dimensionale qui di seguito per le quote consigliate per lo smusso. E' sempre consigliato lubrificare la guarnizione prima del montaggio.

PIPE SEAL TYPE RLF®

Description

The RLF® seal has an innovative profile compared to traditional lip seals. In the static part, the lip is much longer than the dynamic lip and is close to the bottom of the housing. The friction thus generated during operation is very low and there is perfect auto-alignment with the rod. Two wide radii at the bottom of the seal, both in the dynamic and in the static section, considerably ease assembly and, at the same time, no edges develop under pressure, which would be a cause for extrusion.

The contact surface at the bottom of the seal shows some roughness which, together with the notches, release the pressure generated by possible pumping movements.

Technical data

Pressure: < 400 bar, at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C to + 100° C, with peaks up to 110° C
Fluids: mineral fluids
(see table 3, page 14)

Material

The material used is a C0-type polyurethane with high elasticity modulus, low compression-set and high resistance to wear.

The hardness is 93 Sh A ± 2

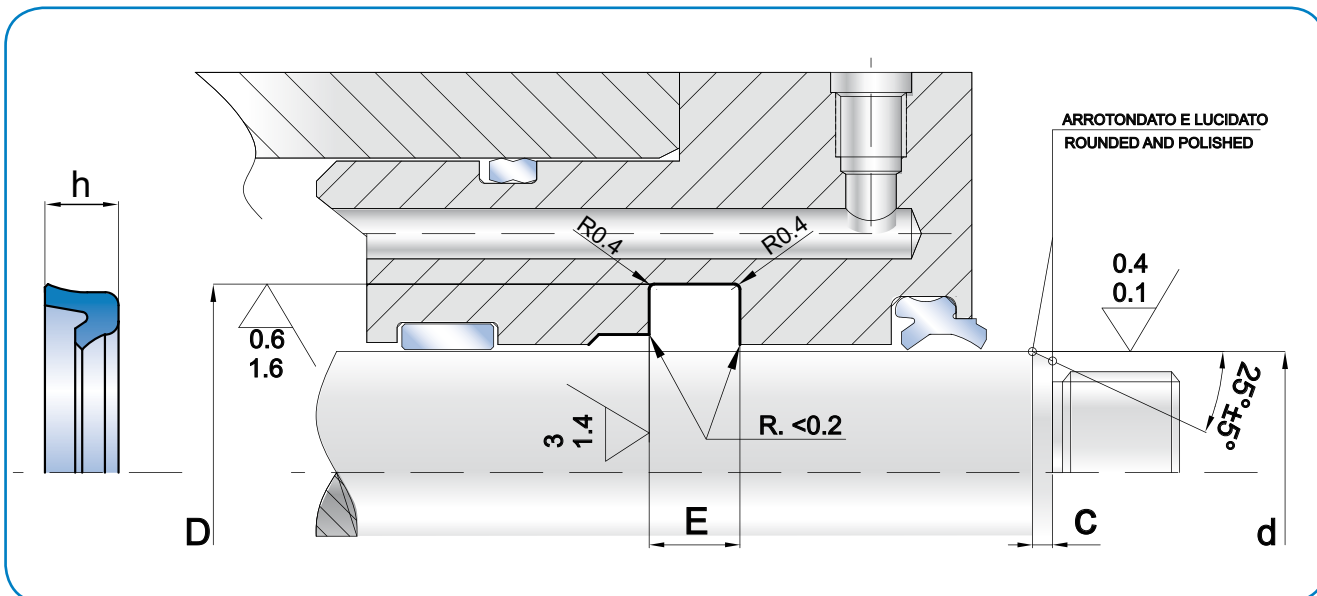
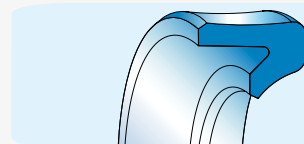
Compound reference: C0

Assembling

To prevent any damage to the seal, remove any flash and sharp edges in the housing and on the rod.

Warning: the rod needs a very accurate lead-in chamfer in order not to distort the seal during assembly. Please refer to the dimensional table below for the recommended dimensions for the lead-in chamfer. The seal should always be lubricated before assembly.

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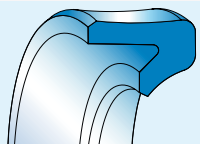


RSA
 RLF
 RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
6,0	9,5	3,5	4,0	3,5	RLF 0060 0095 035 C0
8,0	14,1	5,6	6,0	4,0	RLF 0080 0141 056 C0
10,0	15,0	3,5	4,0	3,5	RLF 0100 0150 035 C0
11,0	16,0	3,5	4,0	3,5	RLF 0110 0160 035 C0
15,0	20,0	4,5	5,5	4,0	RLF 0150 0200 045 C0
20,0	26,0	4,8	5,5	4,0	RLF 0200 0260 048 C0
25,0	33,0	4,5	5,5	4,0	RLF 0250 0330 045 C0
25,0	33,0	5,7	6,0	4,0	RLF 0250 0330 057 C0
28,0	36,0	5,7	6,0	4,0	RLF 0280 0360 057 C0
30,0	40,0	10,0	11,0	4,5	RLF 0300 0400 100 C0
36,0	44,0	5,7	6,0	4,0	RLF 0360 0440 057 C0
40,0	48,0	6,3	7,0	4,0	RLF 0400 0500 073 C0
40,0	50,0	7,3	8,0	4,5	RLF 0400 0500 073 C0
40,0	50,0	10,0	11,0	4,5	RLF 0400 0500 100 C0
45,0	55,0	7,3	8,0	4,5	RLF 0450 0550 073 C0
50,0	60,0	7,3	8,0	4,5	RLF 0500 0600 073 C0
50,0	60,0	9,0	10,0	4,5	RLF 0500 0600 090 C0
50,0	60,0	10,0	11,0	4,5	RLF 0500 0600 100 C0
50,0	65,0	10,0	11,0	5,5	RLF 0500 0650 100 C0
50,0	65,0	11,5	12,5	5,5	RLF 0500 0650 115 C0
50,8	66,7	11,5	12,5	5,5	RLF 0508 0667 115 C0
51,0	59,0	7,5	8,5	5,5	RLF 0510 0590 075 D0
55,0	65,0	7,3	8,0	4,5	RLF 0550 0650 073 C0
55,0	65,0	9,0	10,0	4,5	RLF 0550 0650 090 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
60,0	68,0	6,0	7,0	4,5	RLF 0600 0680 060 C0
60,0	70,0	7,3	8,0	4,5	RLF 0600 0700 073 C0
60,0	70,0	9,0	10,0	4,5	RLF 0600 0700 090 C0
60,0	70,0	10,0	11,0	4,5	RLF 0600 0700 100 C0
60,0	75,0	11,5	12,5	5,5	RLF 0600 0750 115 C0
60,0	75,0	12,0	13,0	5,5	RLF 0600 0750 120 C0
63,0	78,0	11,5	12,5	5,5	RLF 0630 0780 115 C0
65,0	75,0	7,3	8,0	4,5	RLF 0650 0750 073 C0
65,0	75,0	9,0	10,0	4,5	RLF 0650 0750 090 C0
65,0	75,0	10,0	11,0	4,5	RLF 0650 0750 100 C0
66,0	74,0	9,0	10,0	4,5	RLF 0660 0740 090 D0
70,0	80,0	7,3	8,0	4,5	RLF 0700 0800 073 C0
70,0	80,0	10,0	11,0	4,5	RLF 0700 0800 100 C0
70,0	84,0	11,5	12,5	4,5	RLF 0700 0840 115 C0
70,0	85,0	11,5	12,5	5,5	RLF 0700 0850 115 C0
75,0	85,0	7,3	8,0	4,5	RLF 0750 0850 073 C0
75,0	85,0	10,0	11,0	4,5	RLF 0750 0850 100 C0
80,0	95,0	11,5	12,5	5,5	RLF 0800 0950 115 C0
80,0	100,0	13,5	14,5	5,5	RLF 0800 1000 135 C0
85,0	95,0	7,3	8,0	4,5	RLF 0850 0950 073 C0
85,0	95,0	10,0	11,0	4,5	RLF 0850 0950 100 C0
85,0	105,0	13,5	14,5	5,5	RLF 0850 1050 135 C0
90,0	100,0	6,7	7,5	4,5	RLF 0900 1000 067 C0
90,0	100,0	10,0	11,0	4,5	RLF 0900 1000 100 C0

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RLF®

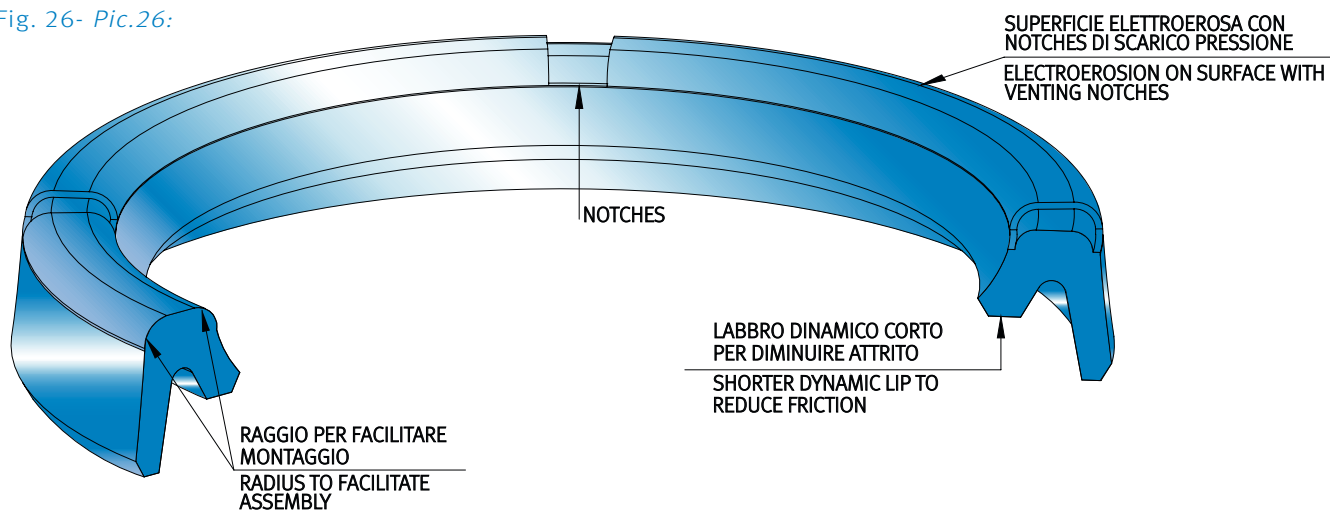
d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
90,0	105,0	11,5	12,5	5,5	RLF 0900 1050 115 C0
90,0	110,0	11,5	12,5	5,5	RLF 0900 1100 115 C0
95,0	110,0	11,5	12,5	5,5	RLF 0950 1100 115 C0
100,0	120,0	11,5	12,5	5,5	RLF 1000 1200 115 C0
100,0	120,0	15,0	16,0	6,0	RLF 1000 1200 150 C0
105,0	120,0	11,5	12,5	5,5	RLF 1050 1200 115 C0
105,0	125,0	15,0	16,0	6,0	RLF 1050 1250 150 C0
110,0	130,0	11,5	12,5	5,5	RLF 1100 1300 115 C0
110,0	130,0	15,0	16,0	6,0	RLF 1100 1300 150 C0
120,0	135,0	11,5	12,5	5,5	RLF 1200 1350 115 C0
120,0	135,0	15,0	16,0	5,5	RLF 1200 1350 160 C0
120,0	140,0	11,5	12,5	5,5	RLF 1200 1400 115 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
120,0	140,0	15,0	16,0	6,0	RLF 1200 1400 150 C0
125,0	145,0	15,0	16,0	6,0	RLF 1250 1450 150 C0
130,0	145,0	14,0	15,0	6,0	RLF 1300 1450 140 C0
150,0	165,0	12,0	13,0	6,0	RLF 1500 1650 120 C0
160,0	175,0	14,0	15,0	6,0	RLF 1600 1750 140 C0
180,0	195,0	11,5	12,5	6,0	RLF 1800 1950 115 C0
200,0	220,0	13,5	14,5	6,0	RLF 2000 2200 135 C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

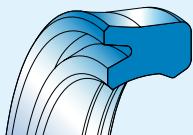
Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Fig. 26- Pic.26:



Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, acting as a margin. The rest of the page is covered by the blue grid pattern. There are no other markings, text, or drawings on the paper.



RSB

TENUTA STELO TIPO RSB

Descrizione

La guarnizione tipo RSB è molto simile al tipo RSA, ma presenta sul lato dinamico un doppio labbro che ha più di una funzione:

- attenua eventuali fenomeni di stick-slip grazie al fluido trattenuto nell'intercapedine fra i due labbri;
- evita alle impurità di entrare dall'esterno;
- contrasta il ritiro del materiale alle basse temperature;
- funge da stabilizzatore.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
 Velocità: < 0.5 m/s
 Temperatura: da - 35° C a + 100° C con punte fino a 110° C
 Fluidi: fluidi idraulici a base minerale
 (vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo C0 ad alto modulo elastico, basso compression-set ed elevata resistenza all'abrasione.

Ha un durezza di 93 Shore A $\pm$ 2.

Codice materiale: C0

Montaggio

Per evitare che la guarnizione si danneggi occorre eliminare le bave e gli spigoli taglienti presenti nella sede e sullo stelo.

E' sempre consigliato lubrificare la tenuta prima del montaggio per agevolare l'inserimento dello stelo.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 26.

RSB TYPE ROD SEAL

Description

The RSB seal type is similar to the RSA type, but on the dynamic side, it presents a multifunctional double lip which:

- reduces stick-slip effects thanks because it keeps oil between the secondary lip and the main one;
- stops any external impurities;
- faces the material shrinkage at low temperatures;
- acts as a stabilizer.

Technical data

Pressure: < 400 bar at a temperature of 60° C
 Speed: < 0.5 m/s
 Temperature: from - 35° C to + 100° C with peaks till 110° C
 Fluids: mineral hydraulic fluids
 (see table 3, page 14)

Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Compound reference: C0

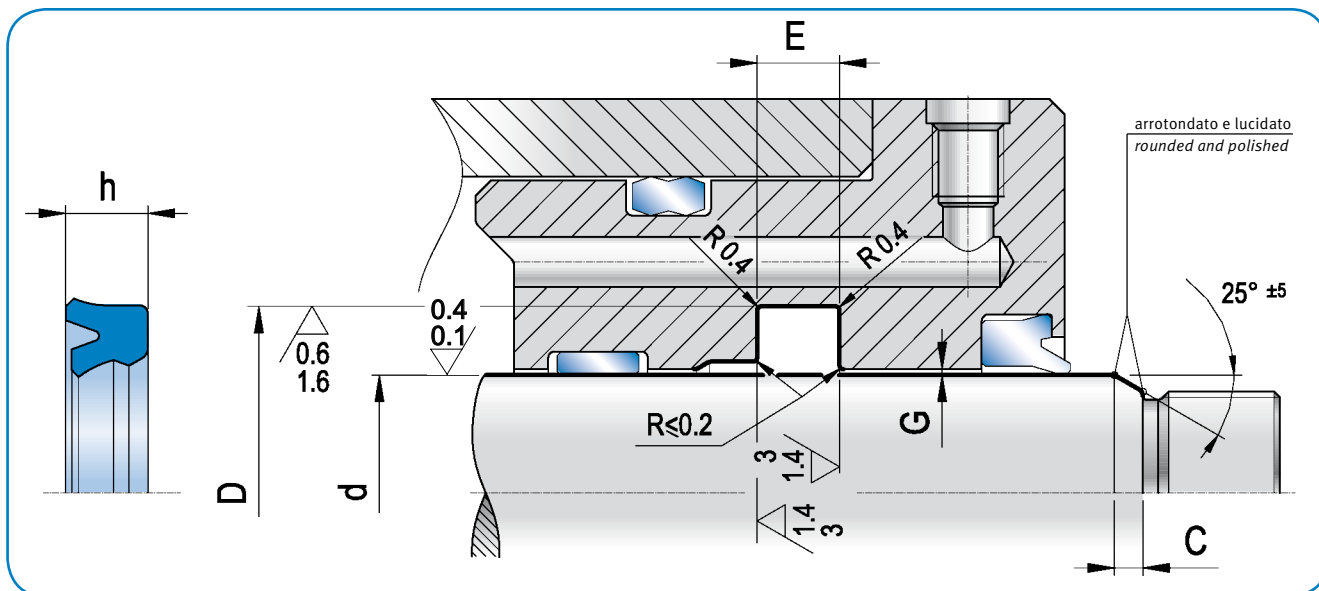
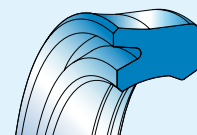
Assembling

To prevent any damage to the seal, remove any flash and cutting edges in the housing and on the rod.

The seal should always be lubricated before assembling in order to have easier insertion of the rod.

For further information please refer to the installation instructions on page 26.

RSB

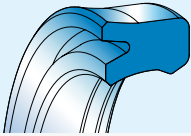


RSA
 RLF
RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

d _{H9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
6,0	14,0	5,7	6,3	3,5	RSB 0060 0140 057 C0
8,0	16,0	5,7	6,3	3,5	RSB 0080 0160 057 C0
10,0	18,0	5,7	6,3	3,5	RSB 0100 0180 057 C0
10,0	20,0	7,0	8,0	4,5	RSB 0100 0200 070 C0
12,0	17,0	3,6	4,0	3,5	RSB 0120 0170 036 C0
12,0	19,0	5,0	5,6	3,5	RSB 0120 0190 050 C0
12,0	20,0	5,7	6,3	4,0	RSB 0120 0200 057 C0
12,0	22,0	7,0	8,0	4,5	RSB 0120 0220 070 C0
12,0	22,0	8,0	9,0	4,5	RSB 0120 0220 080 C0
14,0	20,0	5,8	6,3	4,0	RSB 0140 0200 058 C0
14,0	21,0	5,0	5,6	4,0	RSB 0140 0210 050 C0
14,0	22,0	5,7	6,3	4,0	RSB 0140 0220 057 C0
14,0	24,0	7,3	8,0	4,5	RSB 0140 0240 073 C0
15,0	21,0	5,0	6,0	3,5	RSB 0150 0210 050 C0
15,0	23,0	5,7	6,3	4,0	RSB 0150 0230 057 C0
16,0	20,6	3,3	4,0	3,0	RSB 0160 0206 033 C0
16,0	22,0	5,0	6,0	3,5	RSB 0160 0220 050 C0
16,0	24,0	5,7	6,3	4,0	RSB 0160 0240 057 C0
16,0	26,0	7,3	8,0	4,5	RSB 0160 0260 073 C0
18,0	26,0	6,3	7,0	3,5	RSB 0180 0260 063 C0
18,0	25,0	5,0	5,6	3,5	RSB 0180 0250 050 C0
18,0	26,0	5,7	6,3	4,0	RSB 0180 0260 057 C0
18,0	28,0	7,3	8,0	4,5	RSB 0180 0280 073 C0
20,0	26,0	5,0	6,0	3,5	RSB 0200 0260 050 C0
20,0	28,0	4,3	5,0	4,0	RSB 0200 0280 043 C0
20,0	28,0	5,7	6,3	4,0	RSB 0200 0280 057 C0
20,0	30,0	7,3	8,0	4,5	RSB 0200 0300 073 C0
22,0	28,0	5,0	6,0	3,5	RSB 0220 0280 050 C0
22,0	29,0	5,0	5,6	3,5	RSB 0220 0290 050 C0
22,0	30,0	5,5	6,0	4,5	RSB 0220 0300 055 C0

d _{H9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
22,0	32,0	7,3	8,0	4,5	RSB 0220 0320 073 C0
25,0	33,0	5,7	6,3	4,0	RSB 0250 0330 057 C0
25,0	33,0	7,3	8,0	4,0	RSB 0250 0330 073 C0
25,0	35,0	7,3	8,0	4,5	RSB 0250 0350 073 C0
28,0	36,0	5,7	6,3	4,0	RSB 0280 0360 057 C0
28,0	36,0	7,3	8,0	4,0	RSB 0280 0360 073 C0
28,0	38,0	5,7	6,3	4,5	RSB 0280 0380 057 C0
28,0	38,0	7,3	8,0	4,5	RSB 0280 0380 073 C0
28,0	38,0	8,0	9,0	4,5	RSB 0280 0380 080 C0
28,0	43,0	11,5	12,5	5,0	RSB 0280 0430 115 C0
30,0	38,0	5,7	6,3	4,0	RSB 0300 0380 057 C0
30,0	40,0	6,0	7,0	4,5	RSB 0300 0400 060 C0
30,0	40,0	7,3	8,0	4,5	RSB 0300 0400 073 C0
30,0	40,0	8,0	9,0	4,5	RSB 0300 0400 080 C0
32,0	39,0	3,5	4,5	4,0	RSB 0320 0390 035 C0
32,0	40,0	5,7	6,3	4,0	RSB 0320 0400 057 C0
32,0	40,0	6,0	7,0	4,0	RSB 0320 0400 060 C0
32,0	40,0	6,7	7,7	4,0	RSB 0320 0400 067 C0
32,0	42,0	5,7	6,3	4,5	RSB 0320 0420 057 C0
32,0	42,0	7,3	8,0	4,5	RSB 0320 0420 073 C0
35,0	42,0	7,0	8,0	4,0	RSB 0350 0420 070 C0
35,0	43,0	5,7	6,3	4,0	RSB 0350 0430 057 C0
35,0	43,0	6,0	7,0	5,0	RSB 0350 0430 060 C0
35,0	45,0	6,0	7,0	5,0	RSB 0350 0450 060 C0
35,0	45,0	6,7	7,7	5,0	RSB 0350 0450 067 C0
35,0	45,0	7,0	8,0	5,0	RSB 0350 0450 070 C0
35,0	45,0	7,3	8,0	5,0	RSB 0350 0450 073 C0
35,0	45,0	12,0	13,0	5,0	RSB 0350 0450 120 C0
35,0	50,0	9,0	10,0	5,5	RSB 0350 0500 090 C0
36,0	44,0	5,7	6,3	4,5	RSB 0360 0440 057 C0

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 Hydraulic

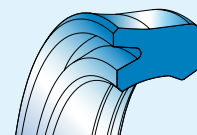


RSB

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
36,0	44,0	6,3	7,0	4,5	RSB 0360 0440 063 C0
36,0	46,0	7,0	8,0	5,0	RSB 0360 0460 070 C0
36,0	46,0	7,3	8,0	5,0	RSB 0360 0460 073 C0
36,0	46,0	8,0	9,0	5,0	RSB 0360 0460 080 C0
37,0	47,0	7,2	8,0	5,0	RSB 0370 0470 072 C0
38,0	48,0	8,0	9,0	5,0	RSB 0380 0480 080 C0
40,0	48,0	5,7	6,3	4,5	RSB 0400 0480 057 C0
40,0	50,0	6,0	7,0	4,5	RSB 0400 0500 060 C0
40,0	50,0	7,0	8,0	5,0	RSB 0400 0500 070 C0
40,0	50,0	7,3	8,0	5,0	RSB 0400 0500 073 C0
40,0	50,0	10,0	11,0	5,0	RSB 0400 0500 100 C0
40,0	52,0	8,0	9,0	5,5	RSB 0400 0520 080 C0
40,0	55,0	10,0	11,0	5,5	RSB 0400 0550 100 C0
40,0	55,0	11,5	12,5	5,5	RSB 0400 0550 115 C0
40,0	55,0	9,0	10,0	5,5	RSB 0400 0550 090 C0
42,0	50,0	8,0	9,0	4,5	RSB 0420 0500 080 C0
42,0	50,0	11,5	12,5	4,5	RSB 0420 0500 115 C0
42,0	53,0	9,0	10,0	5,0	RSB 0420 0530 090 C0
45,0	53,0	5,7	6,3	4,5	RSB 0450 0530 057 C0
45,0	53,0	10,0	11,0	4,5	RSB 0450 0530 100 C0
45,0	53,0	11,5	12,5	4,5	RSB 0450 0530 115 C0
45,0	55,0	5,7	6,3	5,0	RSB 0450 0550 057 C0
45,0	55,0	6,0	7,0	4,5	RSB 0450 0550 060 C0
45,0	55,0	7,3	8,0	5,0	RSB 0450 0550 073 C0
45,0	55,0	11,5	12,5	5,0	RSB 0450 0550 115 C0
45,0	60,0	11,5	12,5	5,5	RSB 0450 0600 115 C0
46,0	56,0	10,0	11,0	5,0	RSB 0460 0560 100 C0
48,0	56,0	11,5	12,5	4,5	RSB 0480 0560 115 C0
48,0	56,0	12,0	13,0	4,5	RSB 0480 0560 120 C0
50,0	57,0	7,3	8,0	4,5	RSB 0500 0570 073 C0
50,0	57,0	10,0	11,0	4,5	RSB 0500 0570 100 C0
50,0	58,0	6,0	7,0	4,5	RSB 0500 0580 060 C0
50,0	58,0	11,5	12,5	4,5	RSB 0500 0580 115 C0
50,0	58,9	5,8	6,5	5,0	RSB 0500 0589 058 C0
50,0	59,0	10,0	11,0	5,0	RSB 0500 0590 100 C0
50,0	60,0	6,0	7,0	4,5	RSB 0500 0600 060 C0
50,0	60,0	7,3	8,0	5,0	RSB 0500 0600 073 C0
50,0	60,0	10,0	11,0	5,0	RSB 0500 0600 100 C0
50,0	65,0	9,0	10,0	5,5	RSB 0500 0650 090 C0
50,0	65,0	10,0	11,0	5,5	RSB 0500 0650 100 C0
50,0	65,0	11,5	12,5	5,5	RSB 0500 0650 115 C0
50,0	70,0	10,0	11,0	6,0	RSB 0500 0700 100 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
50,0	70,0	12,0	13,0	7,0	RSB 0500 0700 120 C0
55,0	63,0	11,5	12,5	4,5	RSB 0550 0630 115 C0
55,0	65,0	6,0	7,0	4,5	RSB 0550 0650 060 C0
55,0	65,0	7,3	8,0	5,0	RSB 0550 0650 073 C0
55,0	65,0	8,5	9,5	5,0	RSB 0550 0650 085 C0
55,0	65,0	10,0	11,0	5,0	RSB 0550 0650 100 C0
55,0	68,0	10,0	11,0	5,0	RSB 0550 0680 100 C0
55,0	70,0	9,0	10,0	5,5	RSB 0550 0700 090 C0
55,0	75,0	12,0	13,0	5,0	RSB 0550 0750 120 C0
56,0	66,0	6,0	7,0	5,0	RSB 0560 0660 060 C0
56,0	71,0	9,0	10,0	5,5	RSB 0560 0710 090 C0
56,0	71,0	10,0	11,0	5,5	RSB 0560 0710 100 C0
56,0	71,0	11,5	12,5	5,5	RSB 0560 0710 115 C0
56,0	76,0	15,0	16,0	6,0	RSB 0560 0760 150 C0
60,0	68,0	11,5	12,5	4,5	RSB 0600 0680 115 C0
60,0	70,0	6,0	7,0	5,0	RSB 0600 0700 060 C0
60,0	70,0	7,3	8,0	5,0	RSB 0600 0700 073 C0
60,0	70,0	10,0	11,0	5,0	RSB 0600 0700 100 C0
60,0	70,0	11,5	12,5	5,0	RSB 0600 0700 115 C0
60,0	73,0	10,0	11,0	5,5	RSB 0600 0730 100 C0
60,0	75,0	9,0	10,0	5,5	RSB 0600 0750 090 C0
60,0	75,0	10,0	11,0	5,5	RSB 0600 0750 100 C0
60,0	75,0	11,5	12,5	5,5	RSB 0600 0750 115 C0
60,0	80,0	12,0	13,0	7,0	RSB 0600 0800 120 C0
63,0	73,0	6,0	7,0	5,0	RSB 0630 0730 060 C0
63,0	78,0	10,0	11,0	5,5	RSB 0630 0780 100 C0
63,0	78,0	11,5	12,5	5,5	RSB 0630 0780 115 C0
63,0	83,0	12,0	13,0	7,0	RSB 0630 0830 120 C0
63,0	83,0	15,0	16,0	7,0	RSB 0630 0830 150 C0
65,0	73,0	11,5	12,5	4,5	RSB 0650 0730 115 C0
65,0	75,0	6,0	7,0	5,0	RSB 0650 0750 060 C0
65,0	75,0	7,0	8,0	5,5	RSB 0650 0750 070 C0
65,0	75,0	7,3	8,0	5,0	RSB 0650 0750 073 C0
65,0	75,0	10,0	11,0	5,0	RSB 0650 0750 100 C0
65,0	75,0	12,0	13,0	5,5	RSB 0650 0750 120 C0
65,0	78,0	10,0	11,0	5,5	RSB 0650 0780 100 C0
65,0	80,0	9,0	10,0	5,5	RSB 0650 0800 090 C0
65,0	80,0	11,5	12,5	5,5	RSB 0650 0800 115 C0
65,0	85,0	12,0	13,0	7,0	RSB 0650 0850 120 C0
66,3	76,3	11,5	12,5	5,0	RSB 0663 0763 115 C0
67,0	75,0	11,5	12,5	5,0	RSB 0670 0750 115 C0
67,0	77,0	6,0	7,0	5,0	RSB 0670 0770 060 C0

RSB

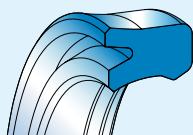


d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
68,0	78,0	7,3	8,0	5,0	RSB 0680 0780 073 C0
70,0	78,0	11,5	12,5	4,5	RSB 0700 0780 115 C0
70,0	80,0	6,0	7,0	5,0	RSB 0700 0800 060 C0
70,0	80,0	7,3	8,0	5,5	RSB 0700 0800 073 C0
70,0	80,0	11,5	12,5	5,0	RSB 0700 0800 115 C0
70,0	83,0	10,0	11,0	5,5	RSB 0700 0830 100 C0
70,0	85,0	9,0	10,0	5,5	RSB 0700 0850 090 C0
70,0	85,0	10,0	11,0	5,5	RSB 0700 0850 100 C0
70,0	85,0	11,5	12,5	6,0	RSB 0700 0850 115 C0
70,0	90,0	12,0	13,0	7,0	RSB 0700 0900 120 C0
70,0	90,0	15,0	16,0	7,0	RSB 0700 0900 150 C0
71,0	81,0	6,0	7,0	5,0	RSB 0710 0810 060 C0
71,0	81,0	8,0	9,0	5,0	RSB 0710 0810 080 C0
75,0	83,0	7,0	8,0	5,0	RSB 0750 0830 070 C0
75,0	83,0	11,5	12,5	5,0	RSB 0750 0830 115 C0
75,0	85,0	6,0	7,0	5,5	RSB 0750 0850 060 C0
75,0	85,0	10,0	11,0	5,5	RSB 0750 0850 100 C0
75,0	85,0	11,5	12,5	5,5	RSB 0750 0850 115 C0
75,0	88,0	10,0	11,0	5,5	RSB 0750 0880 100 C0
75,0	90,0	9,0	10,0	5,5	RSB 0750 0900 090 C0
75,0	90,0	11,5	12,5	6,0	RSB 0750 0900 115 C0
75,0	95,0	12,0	13,0	7,0	RSB 0750 0950 120 C0
78,0	86,0	11,5	12,5	5,0	RSB 0780 0860 115 C0
80,0	88,0	11,5	12,5	5,0	RSB 0800 0880 115 C0
80,0	89,6	5,8	6,5	5,5	RSB 0800 0896 058 C0
80,0	90,0	6,0	7,0	5,5	RSB 0800 0900 060 C0
80,0	90,0	7,3	8,0	5,5	RSB 0800 0900 073 C0
80,0	90,0	10,0	11,0	5,5	RSB 0800 0900 100 C0
80,0	93,0	10,0	11,0	5,5	RSB 0800 0930 100 C0
80,0	95,0	9,0	10,0	6,0	RSB 0800 0950 090 C0
80,0	95,0	10,0	11,0	6,0	RSB 0800 0950 100 C0
80,0	95,0	11,5	12,5	6,0	RSB 0800 0950 115 C0
80,0	100,0	12,0	13,0	7,0	RSB 0800 1000 120 C0
80,0	100,0	15,0	16,0	7,0	RSB 0800 1000 150 C0
85,0	93,0	11,5	12,5	5,0	RSB 0850 0930 115 C0
85,0	100,0	9,0	10,0	6,0	RSB 0850 1000 090 C0
85,0	100,0	10,0	11,0	6,0	RSB 0850 1000 100 C0
85,0	100,0	11,5	12,5	6,0	RSB 0850 1000 115 C0
85,0	105,0	12,0	13,0	7,0	RSB 0850 1050 120 C0
90,0	98,0	11,5	12,5	5,0	RSB 0900 0980 115 C0
90,0	100,0	7,3	8,0	5,5	RSB 0900 1000 073 C0
90,0	100,0	11,5	12,5	5,5	RSB 0900 1000 115 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
90,0	105,0	9,0	10,0	6,0	RSB 0900 1050 090 C0
90,0	105,0	10,0	11,0	6,0	RSB 0900 1050 100 C0
90,0	105,0	11,5	12,5	6,0	RSB 0900 1050 115 C0
90,0	110,0	12,0	13,0	7,0	RSB 0900 1100 120 C0
90,0	110,0	15,0	16,0	7,0	RSB 0900 1100 150 C0
93,0	101,0	11,5	12,5	5,0	RSB 0930 1010 115 C0
95,0	103,0	11,5	12,5	5,0	RSB 0950 1030 115 C0
95,0	105,0	12,0	13,0	5,5	RSB 0950 1050 120 C0
95,0	110,0	9,0	10,0	7,0	RSB 0950 1100 090 C0
95,0	110,0	10,0	11,0	6,0	RSB 0950 1100 100 C0
95,0	115,0	12,0	13,0	7,0	RSB 0950 1150 120 C0
95,0	115,0	13,5	14,5	5,5	RSB 0950 1150 135 C0
97,0	105,0	11,5	12,5	5,0	RSB 0970 1050 115 C0
100,0	108,0	11,5	12,5	5,5	RSB 1000 1080 115 C0
100,0	115,0	9,0	10,0	6,0	RSB 1000 1150 090 C0
100,0	115,0	10,0	11,0	6,0	RSB 1000 1150 100 C0
100,0	115,0	12,0	13,0	6,0	RSB 1000 1150 120 C0
100,0	120,0	11,8	13,0	7,0	RSB 1000 1200 118 C0
100,0	120,0	12,0	13,0	7,0	RSB 1000 1200 120 C0
100,0	120,0	15,0	16,0	7,0	RSB 1000 1200 150 C0
105,0	113,0	11,5	12,5	5,0	RSB 1050 1130 115 C0
105,0	115,0	11,5	12,5	5,5	RSB 1050 1150 115 C0
105,0	120,0	9,0	10,0	6,0	RSB 1050 1200 090 C0
105,0	120,0	10,0	11,0	6,0	RSB 1050 1200 100 C0
105,0	125,0	12,0	13,0	7,0	RSB 1050 1250 120 C0
106,0	121,0	9,0	10,0	6,0	RSB 1060 1210 090 C0
106,0	121,0	10,0	11,0	6,0	RSB 1060 1210 100 C0
110,0	118,0	11,5	12,5	5,0	RSB 1100 1180 115 C0
110,0	125,0	9,0	10,0	6,0	RSB 1100 1250 090 C0
110,0	125,0	9,6	10,6	6,0	RSB 1100 1250 096 C0
110,0	125,0	10,0	11,0	6,0	RSB 1100 1250 100 C0
110,0	130,0	10,0	11,0	7,0	RSB 1100 1300 100 C0
110,0	130,0	12,0	13,0	7,0	RSB 1100 1300 120 C0
110,0	130,0	15,0	16,0	7,0	RSB 1100 1300 150 C0
110,0	135,0	19,0	20,0	8,0	RSB 1100 1350 190 C0
112,0	127,0	9,0	10,0	6,0	RSB 1120 1270 090 C0
112,0	127,0	10,0	11,0	6,0	RSB 1120 1270 100 C0
112,0	125,0	9,0	10,0	5,5	RSB 1120 1250 090 C0
115,0	123,0	11,5	12,5	5,0	RSB 1150 1230 115 C0
115,0	125,0	12,0	13,0	5,5	RSB 1150 1250 120 C0
115,0	130,0	9,0	10,0	6,0	RSB 1150 1300 090 C0
115,0	135,0	12,0	13,0	7,0	RSB 1150 1350 120 C0

RSA
 RLF
RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

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 Hydraulic



RSB

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
118,0	126,0	11,5	12,5	5,0	RSB 1180 1260 115 C0
118,0	133,0	9,0	10,0	6,0	RSB 1180 1330 090 C0
118,0	133,0	10,0	11,0	6,0	RSB 1180 1330 100 C0
120,0	128,0	11,5	12,5	5,0	RSB 1200 1280 115 C0
120,0	135,0	9,0	10,0	6,0	RSB 1200 1350 090 C0
120,0	140,0	10,0	11,0	7,0	RSB 1200 1400 100 C0
120,0	140,0	12,0	13,0	7,0	RSB 1200 1400 120 C0
120,0	140,0	15,0	16,0	7,0	RSB 1200 1400 150 C0
125,0	133,0	11,5	12,5	5,0	RSB 1250 1330 115 C0
125,0	140,0	9,0	10,0	6,0	RSB 1250 1400 090 C0
125,0	145,0	12,0	13,0	7,0	RSB 1250 1450 120 C0
125,0	145,0	15,0	16,0	7,0	RSB 1250 1450 150 C0
125,0	150,0	19,0	20,0	8,0	RSB 1250 1500 190 C0
128,0	136,0	11,5	12,5	5,0	RSB 1280 1360 115 C0
130,0	145,0	9,0	10,0	6,0	RSB 1300 1450 090 C0
130,0	150,0	12,0	13,0	7,0	RSB 1300 1500 120 C0
130,0	150,0	15,0	16,0	7,0	RSB 1300 1500 150 C0
135,0	143,0	11,5	12,5	5,0	RSB 1350 1430 115 C0

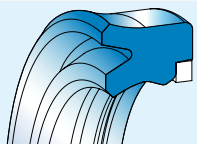
d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
140,0	148,0	11,5	12,5	5,0	RSB 1400 1480 115 C0
140,0	155,0	9,0	10,0	6,0	RSB 1400 1550 090 C0
140,0	155,0	9,6	10,6	6,0	RSB 1400 1550 096 C0
140,0	155,0	10,0	11,0	6,0	RSB 1400 1550 100 C0
140,0	160,0	15,0	16,0	7,0	RSB 1400 1600 150 C0
140,0	165,0	19,0	20,0	8,0	RSB 1400 1650 190 C0
143,0	151,0	11,5	12,5	5,0	RSB 1430 1510 115 C0
150,0	170,0	12,0	13,0	7,0	RSB 1500 1700 120 C0
150,0	170,0	15,0	16,0	7,0	RSB 1500 1700 150 C0
152,0	160,0	11,5	12,5	5,0	RSB 1520 1600 115 C0
155,0	163,0	11,5	12,5	5,0	RSB 1550 1630 115 C0
160,0	168,0	11,5	12,5	5,0	RSB 1600 1680 115 C0
170,0	180,0	12,0	13,0	5,0	RSB 1700 1800 120 C0
170,0	190,0	15,0	16,0	7,0	RSB 1700 1900 150 C0
180,0	200,0	15,0	16,0	7,0	RSB 1800 2000 150 C0
180,0	205,0	15,0	16,0	8,0	RSB 1800 2050 150 C0
200,0	225,0	15,0	16,0	8,0	RSB 2000 2250 150 C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, serving as a margin. The rest of the page is covered by the blue grid pattern.



RSB2

TENUTA STELO TIPO RSB2

Descrizione

La tenuta stelo RSB2 è molto simile alla tenuta RSB con l'aggiunta di un anello antiestrusione.

Si utilizza questa tenuta quando non è possibile ridurre i giochi di accoppiamento, tra la testata e lo stelo e dove esistono picchi di pressione elevata.

Dati tecnici

Pressione:	<400 bar con punte a 500 bar alla temperatura di 60°C
Velocità:	<0.5 m/s
Temperatura:	da - 35°C a +100°C con punte fino a +110°C
Fluidi :	fluidi idraulici a base minerale (vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo CO ad alto modulo elastico, basso compression-set ed elevata resistenza all'abrasione. Ha una durezza di 93 Shore A $\pm$ 2.

Per l'anello antiestrusione viene proposta una resina poliacetalica (RO) con elevata resistenza al carico di rottura

Codice materiale: CR

Montaggio

Per evitare che la guarnizione si danneggi occorre eliminare le bave e gli spigoli taglienti presenti nella sede e sullo stelo.

E' sempre consigliato lubrificare la tenuta prima del montaggio per agevolare l'inserimento dello stelo.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag 61.

RSB2 TYPE ROD SEAL

Description

The RSB2 seal type is similar to the RSB type with anti-extrusion ring. This seal is recommended when the coupling clearance between the head and the rod cannot be reduced and in the event of high pressure peaks

Technical data

Pressure:	<400 bar with peaks till 500 bar At 60°C
Speed :	< 0.5 [m/s]
Temperature:	- 35 °C ÷ +100 °C with peaks till +110°C
Fluids :	mineral hydraulic fluids (see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

The material proposed for the antiextrusion ring is polyacetal resin (RO) with haight resintence to breaking load

Material code:CR

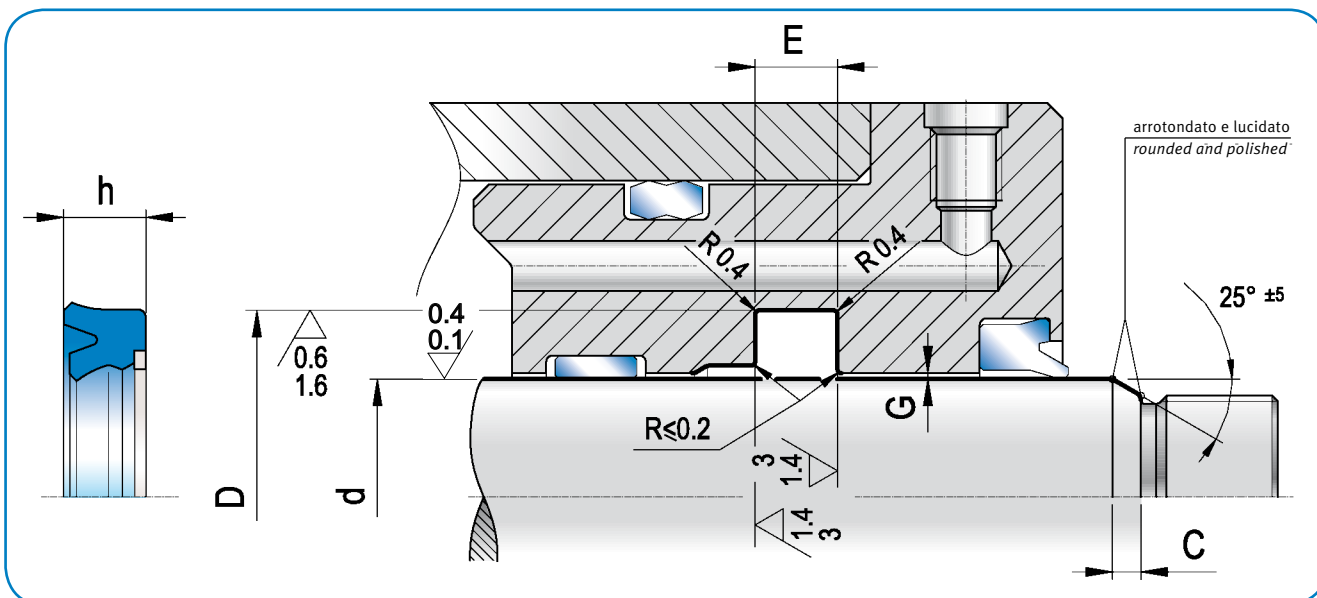
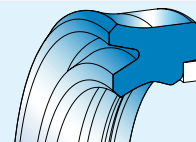
Assembling

To prevent any damage to the seal, remove any flash and cutting edges in the housing and on the rod.

The seal should always be lubricated before assembling in order to have easier insertion of the rod.

For further information please refer to the installation instructions on page 61.

RSB2



RSA
 RLF
 RSB
RSB2
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
40,0	55,0	10,0	11,0	5,5	RSB2 0400 0550 100 CR
42,0	51,0	10,0	11,0	4,5	RSB2 0420 0510 100 CR
45,0	60,0	10,0	11,0	5,5	RSB2 0450 0600 100 CR
50,0	59,0	10,0	11,0	4,5	RSB2 0500 0590 100 CR
50,0	60,0	7,3	8,0	5,0	RSB2 0500 0600 073 CR
50,0	65,0	10,0	11,0	5,5	RSB2 0500 0650 100 CR
50,0	65,0	11,5	12,5	5,5	RSB2 0500 0650 115 CR
50,0	70,0	12,0	13,0	6,0	RSB2 0500 0700 120 CR
56,0	71,0	11,5	12,5	5,5	RSB2 0560 0710 115 CR
60,0	69,0	10,0	11,0	4,5	RSB2 0600 0690 100 CR
60,0	75,0	11,5	12,5	5,5	RSB2 0600 0750 115 CR
60,0	80,0	12,0	13,0	6,0	RSB2 0600 0800 120 CR
63,0	78,0	11,5	12,5	5,5	RSB2 0630 0780 115 CR
63,0	83,0	12,0	13,0	6,0	RSB2 0630 0830 120 CR
65,0	80,0	11,5	12,5	5,5	RSB2 0650 0800 115 CR
70,0	80,0	7,3	8,0	5,0	RSB2 0700 0800 073 CR
70,0	85,0	11,5	12,5	5,5	RSB2 0700 0850 115 CR
75,0	95,0	13,5	14,5	6,0	RSB2 0750 0950 135 CR

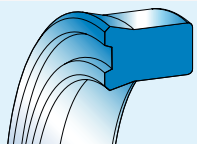
d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
80,0	95,0	11,5	12,5	5,5	RSB2 0800 0950 115 CR
80,0	100,0	13,5	14,5	7,0	RSB2 0800 1000 135 CR
85,0	100,0	11,0	12,0	7,0	RSB2 0850 1000 110 CR
85,0	105,0	12,0	13,0	7,0	RSB2 0850 1050 120 CR
85,0	105,0	13,5	14,5	7,0	RSB2 0850 1050 135 CR
90,0	105,0	11,5	12,5	6,0	RSB2 0900 1050 115 CR
95,0	115,0	13,5	14,5	7,0	RSB2 0950 1150 135 CR
100,0	120,0	12,0	13,0	7,0	RSB2 1000 1200 120 CR
100,0	120,0	13,5	14,5	7,0	RSB2 1000 1200 135 CR
105,0	125,0	12,0	13,0	7,0	RSB2 1050 1250 120 CR
110,0	125,0	11,0	12,0	7,0	RSB2 1100 1250 110 CR
110,0	130,0	12,0	13,0	7,0	RSB2 1100 1300 120 CR
120,0	140,0	12,0	13,0	7,0	RSB2 1200 1400 120 CR
125,0	145,0	12,0	13,0	7,0	RSB2 1250 1450 120 CR
130,0	150,0	12,0	13,0	7,0	RSB2 1300 1500 120 CR

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 Hydraulic

CR = CO (TPU 93 shore A) + RO (POM)

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



RSC

TENUTA STELO TIPO RSC

Descrizione

La guarnizione tipo RSC è stata realizzata con ingombri limitati e per quei cilindri dove è possibile avere variazioni di pressione e di velocità elevate. Il profilo è stato progettato con una gola poco profonda per garantire un forte contatto tra le parti statiche e le parti dinamiche anche in assenza di pressione.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: fluidi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo CO ad alto modulo elastico, basso compression-set, alta resistenza all'abrasione.
Ha una durezza di 93 Shore A $\pm$ 2.
Codice materiale: CO

Montaggio

Per evitare che si danneggino le guarnizioni durante il montaggio occorre eliminare le bave e gli spigoli taglienti nella sede e sullo stelo.
E' consigliabile lubrificare la tenuta durante il montaggio per agevolare l'inserimento dello stelo.
Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RSC TYPE ROD SEAL

Description

*The RSC seal has small dimensions and has been developed for cylinders used in presence of pressure variation and high speed.
The profile has been designed with a shallow groove to ensure tight contact between the static and dynamic part, even in zero pressure situations.*

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C to + 100° C, with peaks till 110° C
Fluids: mineral oils and fluids
(see table 3, page 14)

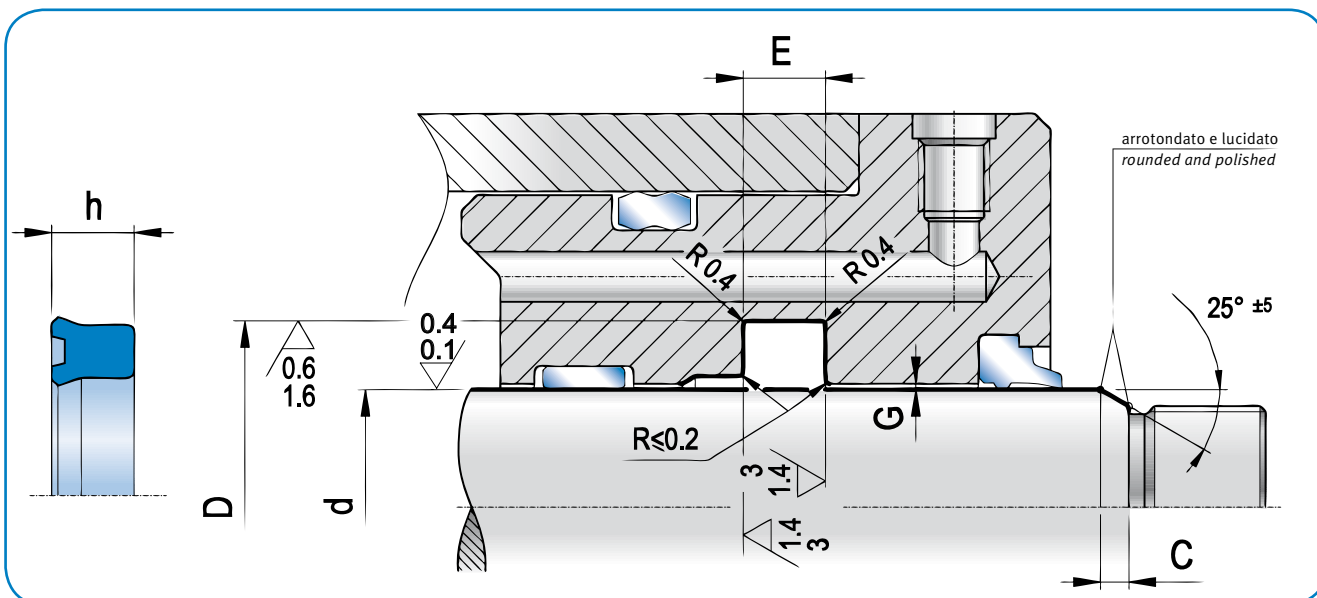
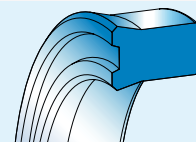
Material

*The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.
The hardness is 93 Shore A $\pm$ 2.
Compound reference: CO*

Assembling

*To prevent and damage to the seal, remove any flash and cutting edges in the housing and on the rod.
The seal should always be lubricated before assembling in order to have easier insertion of the rod.
For further information please refer to the installation instructions on page 61.*

RSC



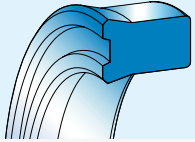
RSA
 RLF
 RSB
 RSB2
 GPDI-
 GPDIM
RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
6,0	14,0	5,8	6,3	4,5	RSC 0060 0140 058 C0
8,0	14,0	5,8	6,3	4,0	RSC 0080 0140 058 C0
8,0	16,0	5,8	6,3	4,5	RSC 0080 0160 058 C0
10,0	18,0	5,8	6,3	4,5	RSC 0100 0180 058 C0
12,0	18,0	4,5	5,0	4,0	RSC 0120 0180 045 C0
12,0	20,0	5,8	6,3	4,5	RSC 0120 0200 058 C0
14,0	21,0	5,0	5,5	4,0	RSC 0140 0210 050 C0
14,0	22,0	5,8	6,3	4,5	RSC 0140 0220 058 C0
16,0	22,0	4,0	4,5	3,5	RSC 0160 0220 040 C0
16,0	24,0	5,8	6,3	4,5	RSC 0160 0240 058 C0
16,0	24,0	6,0	7,0	4,5	RSC 0160 0240 060 C0
18,0	22,0	4,0	4,5	3,0	RSC 0180 0220 040 C0
18,0	26,0	5,8	6,3	4,5	RSC 0180 0260 040 C0
20,0	25,0	4,0	4,5	4,0	RSC 0200 0250 040 C0
20,0	26,0	5,0	5,5	4,0	RSC 0200 0260 050 C0
* 20,0	28,0	5,8	6,3	4,5	RSC 0200 0280 058 C0
* 20,0	30,0	7,0	8,0	5,0	RSC 0200 0300 070 C0
22,0	28,0	4,5	5,0	4,0	RSC 0220 0280 045 C0
22,0	28,0	5,8	6,3	3,5	RSC 0220 0280 058 C0
22,0	29,0	5,0	5,5	4,0	RSC 0220 0290 050 C0
* 22,0	30,0	5,8	6,3	4,5	RSC 0220 0300 058 C0
22,0	30,0	7,0	8,0	4,5	RSC 0220 0300 070 C0
22,0	32,0	7,0	8,0	5,0	RSC 0220 0320 070 C0
24,0	32,0	5,7	6,3	4,5	RSC 0240 0320 057 C0
24,0	34,0	5,7	6,3	4,5	RSC 0240 0340 057 C0
25,0	31,0	5,0	5,5	3,5	RSC 0250 0310 050 C0
* 25,0	33,0	5,8	6,3	4,5	RSC 0250 0330 058 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
25,0	33,0	8,0	9,0	4,5	RSC 0250 0330 080 C0
25,0	35,0	5,0	5,5	5,0	RSC 0250 0350 050 C0
25,0	35,0	7,0	8,0	5,0	RSC 0250 0350 070 C0
* 28,0	36,0	5,8	6,3	4,5	RSC 0280 0360 058 C0
28,0	38,0	5,8	6,3	5,0	RSC 0280 0380 058 C0
28,0	38,0	7,0	8,0	5,0	RSC 0280 0380 070 C0
30,0	38,0	5,8	6,3	4,5	RSC 0300 0380 058 C0
30,0	38,0	6,0	7,0	4,5	RSC 0300 0380 060 C0
30,0	38,0	7,0	8,0	4,5	RSC 0300 0380 070 C0
30,0	38,0	8,0	9,0	4,5	RSC 0300 0380 080 C0
30,0	40,0	7,0	8,0	5,0	RSC 0300 0400 070 C0
30,0	40,0	10,0	11,0	5,0	RSC 0300 0400 100 C0
32,0	40,0	6,0	7,0	4,5	RSC 0320 0400 060 C0
32,0	40,0	8,0	9,0	4,5	RSC 0320 0400 080 C0
* 32,0	42,0	7,0	8,0	5,0	RSC 0320 0420 070 C0
32,0	42,0	8,0	9,0	5,0	RSC 0320 0420 080 C0
32,0	42,0	9,0	10,0	5,0	RSC 0320 0420 090 C0
35,0	43,0	5,8	6,3	4,5	RSC 0350 0430 058 C0
35,0	43,0	6,0	7,0	4,5	RSC 0350 0430 060 C0
35,0	43,0	6,3	7,0	4,5	RSC 0350 0430 063 C0
35,0	43,0	7,0	8,0	4,5	RSC 0350 0430 070 C0
35,0	43,0	8,0	9,0	4,5	RSC 0350 0430 080 C0
35,0	45,0	7,0	8,0	5,0	RSC 0350 0450 070 C0
35,0	45,0	10,0	11,0	5,0	RSC 0350 0450 100 C0
35,0	45,0	11,0	12,0	5,0	RSC 0350 0450 110 C0
* 36,0	44,0	5,8	6,3	4,5	RSC 0360 0440 058 C0
36,0	44,0	6,0	7,0	4,5	RSC 0360 0440 060 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

oleodinamica
Hydraulic



RSC

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM				
36,0	44,0	6,3	7,0	4,5	RSC 0360	0440	063	CO	
36,0	44,0	7,0	8,0	4,5	RSC 0360	0440	070	CO	
36,0	44,0	8,0	9,0	4,5	RSC 0360	0440	080	CO	
36,0	44,0	9,0	10,0	4,5	RSC 0360	0440	090	CO	
36,0	46,0	7,0	8,0	5,0	RSC 0360	0460	070	CO	
36,0	46,0	7,2	8,0	4,5	RSC 0360	0460	072	CO	
36,0	46,0	10,0	11,0	5,0	RSC 0360	0460	100	CO	
36,0	46,0	11,0	12,0	5,0	RSC 0360	0460	110	CO	
38,0	45,0	6,0	7,0	4,5	RSC 0380	0450	060	CO	
40,0	48,0	5,8	6,3	4,5	RSC 0400	0480	058	CO	
40,0	48,0	6,0	7,0	4,5	RSC 0400	0480	060	CO	
40,0	48,0	7,0	8,0	4,5	RSC 0400	0480	070	CO	
40,0	48,0	8,0	9,0	4,5	RSC 0400	0480	080	CO	
40,0	50,0	6,0	7,0	5,0	RSC 0400	0500	060	CO	
*	40,0	50,0	7,0	5,0	RSC 0400	0500	070	CO	
40,0	50,0	10,0	11,0	5,0	RSC 0400	0500	100	CO	
42,0	50,0	6,0	7,0	4,5	RSC 0420	0500	060	CO	
42,0	50,0	7,0	8,0	4,5	RSC 0420	0500	070	CO	
45,0	53,0	6,0	7,0	4,5	RSC 0450	0530	060	CO	
45,0	53,0	6,3	7,0	4,5	RSC 0450	0530	063	CO	
45,0	53,0	7,0	8,0	4,5	RSC 0450	0530	070	CO	
*	45,0	55,0	5,8	6,3	5,0	RSC 0450	0550	058	CO
45,0	55,0	6,3	7,0	5,0	RSC 0450	0550	063	CO	
*	45,0	55,0	7,0	8,0	5,0	RSC 0450	0550	070	CO
46,0	54,0	7,0	8,0	4,5	RSC 0460	0540	070	CO	
46,0	54,0	7,5	8,5	4,5	RSC 0460	0540	075	CO	
46,0	54,0	8,0	9,0	4,5	RSC 0460	0540	080	CO	
50,0	58,0	8,0	9,0	4,5	RSC 0500	0580	080	CO	
50,0	58,0	9,0	10,0	4,5	RSC 0500	0580	090	CO	
*	50,0	60,0	7,0	8,0	5,0	RSC 0500	0600	070	CO
50,0	60,0	8,0	9,0	5,0	RSC 0500	0600	080	CO	
50,0	60,0	10,0	11,0	5,0	RSC 0500	0600	100	CO	
50,0	60,0	11,0	12,0	5,0	RSC 0500	0600	110	CO	
50,0	62,0	8,0	9,0	5,5	RSC 0500	0620	080	CO	
55,0	63,0	8,0	9,0	4,5	RSC 0550	0630	080	CO	
55,0	65,0	7,0	8,0	5,0	RSC 0550	0650	070	CO	
55,0	65,0	11,0	12,0	5,0	RSC 0550	0650	110	CO	
56,0	66,0	10,0	11,0	5,0	RSC 0560	0660	100	CO	
56,0	66,0	11,0	12,0	5,0	RSC 0560	0660	110	CO	
*	56,0	71,0	11,5	12,5	6,0	RSC 0560	0710	115	CO
56,0	71,0	12,5	13,5	6,0	RSC 0560	0710	125	CO	
60,0	68,0	8,0	9,0	5,0	RSC 0600	0680	080	CO	
60,0	68,0	9,0	10,0	4,5	RSC 0600	0680	090	CO	
60,0	70,0	7,0	8,0	5,5	RSC 0600	0700	070	CO	
60,0	70,0	7,5	8,5	5,5	RSC 0600	0700	075	CO	

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

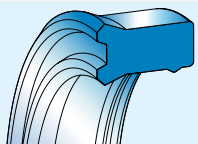
d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM			
60,0	70,0	8,0	9,0	5,0	RSC 0600	0700	080	C0
60,0	70,0	8,5	9,5	5,0	RSC 0600	0700	085	C0
60,0	70,0	11,0	12,0	5,0	RSC 0600	0700	110	C0
60,0	70,0	12,0	13,0	5,5	RSC 0600	0700	120	C0
60,0	70,0	13,0	14,0	5,0	RSC 0600	0700	130	C0
60,0	72,0	8,0	9,0	5,5	RSC 0600	0720	080	C0
60,0	72,0	9,0	10,0	5,5	RSC 0600	0720	090	C0
63,0	71,0	8,0	9,0	5,0	RSC 0630	0710	080	C0
65,0	73,0	8,0	9,0	5,0	RSC 0650	0730	080	C0
65,0	73,0	9,0	10,0	4,5	RSC 0650	0730	090	C0
65,0	75,0	12,0	13,0	5,0	RSC 0650	0750	120	C0
70,0	78,0	8,0	9,0	5,0	RSC 0700	0780	080	C0
70,0	78,0	9,0	10,0	4,5	RSC 0700	0780	090	C0
* 70,0	80,0	6,5	7,5	5,5	RSC 0700	0800	065	C0
70,0	80,0	7,0	8,0	5,5	RSC 0700	0800	070	C0
70,0	80,0	7,5	8,5	5,0	RSC 0700	0800	075	C0
70,0	80,0	8,0	9,0	5,0	RSC 0700	0800	080	C0
70,0	80,0	12,0	13,0	5,5	RSC 0700	0800	120	C0
70,0	80,0	13,0	14,0	5,0	RSC 0700	0800	130	C0
70,0	82,0	9,5	10,5	6,0	RSC 0700	0820	095	C0
70,0	82,0	10,5	11,5	6,0	RSC 0700	0820	105	C0
70,0	85,0	11,5	12,5	6,0	RSC 0700	0850	115	C0
70,0	85,0	12,5	13,5	6,5	RSC 0700	0850	125	C0
75,0	83,0	8,0	9,0	5,0	RSC 0750	0830	080	C0
75,0	83,0	9,0	10,0	4,5	RSC 0750	0830	090	C0
75,0	85,0	7,0	8,0	5,5	RSC 0750	0850	070	C0
75,0	85,0	8,0	9,0	5,0	RSC 0750	0850	080	C0
76,0	84,0	8,0	9,0	5,0	RSC 0760	0840	080	C0
76,0	84,0	9,0	10,0	4,5	RSC 0760	0840	090	C0
80,0	88,0	8,0	9,0	5,0	RSC 0800	0880	080	C0
80,0	88,0	9,0	10,0	4,5	RSC 0800	0880	090	C0
80,0	90,0	7,0	8,0	5,5	RSC 0800	0900	070	C0
80,0	90,0	8,0	9,0	5,0	RSC 0800	0900	080	C0
80,0	90,0	12,0	13,0	5,0	RSC 0800	0900	120	C0
* 80,0	95,0	11,5	12,5	6,5	RSC 0800	0950	115	C0
80,0	95,0	12,5	13,5	6,5	RSC 0800	0950	125	C0
85,0	93,0	8,0	9,0	5,5	RSC 0850	0930	080	C0
85,0	93,0	9,0	10,0	4,5	RSC 0850	0930	090	C0
90,0	98,0	8,0	9,0	5,5	RSC 0900	0980	080	C0
90,0	98,0	9,0	10,0	4,5	RSC 0900	0980	090	C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

[illegible]



RSD

TENUTA STELO TIPO RSD

Descrizione

La guarnizione tipo RSD è molto simile al tipo RSC, ma presenta sul lato dinamico un doppio labbro che ha più di una funzione:

- attenua eventuali fenomeni di stick-slip grazie al fluido trattenuto nell'intercapedine fra i due labbri;
- evita alle impurità di entrare dall'esterno;
- contrasta il ritiro del materiale alle basse temperature;
- funge da stabilizzatore;

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
 Velocità: < 0.5 m/s
 Temperatura: da - 35° C a + 100° C con punte fino a 110° C
 Fluidi: fluidi e oli minerali
 (vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo C0 ad alto modulo elastico, basso compression-set, alta resistenza all'abrasione.

Ha una durezza di 93 Shore A $\pm$ 2.

Codice materiale: C0

Montaggio

Per evitare che si danneggino le guarnizioni durante il montaggio occorre eliminare le bave e gli spigoli taglienti nella sede e sullo stelo.

E' consigliabile lubrificare la tenuta durante il montaggio per agevolare l'inserimento dello stelo.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RSD TYPE ROD SEAL

Description

The RSD seal type is similar to the RSC type, but on the dynamic side, it presents a multifunctional double lip which:

- reduces stick-slip effects thanks because it keeps oil between the secondary lip and the main one;
- stops any external impurities;
- faces the material shrinkage at low temperatures;
- acts as a stabilizer.

Technical data

Pressure: < 400 bar at a temperature of 60° C
 Speed: < 0.5 m/s
 Temperature: from - 35° C to + 100° C with peaks till 110° C
 Fluids: mineral fluids and oils
 (see table 3, page 14)

Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Compound reference: C0

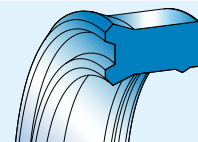
Assembling

To prevent any damage to the seal, remove any flash and cutting edges in the housing and on the rod.

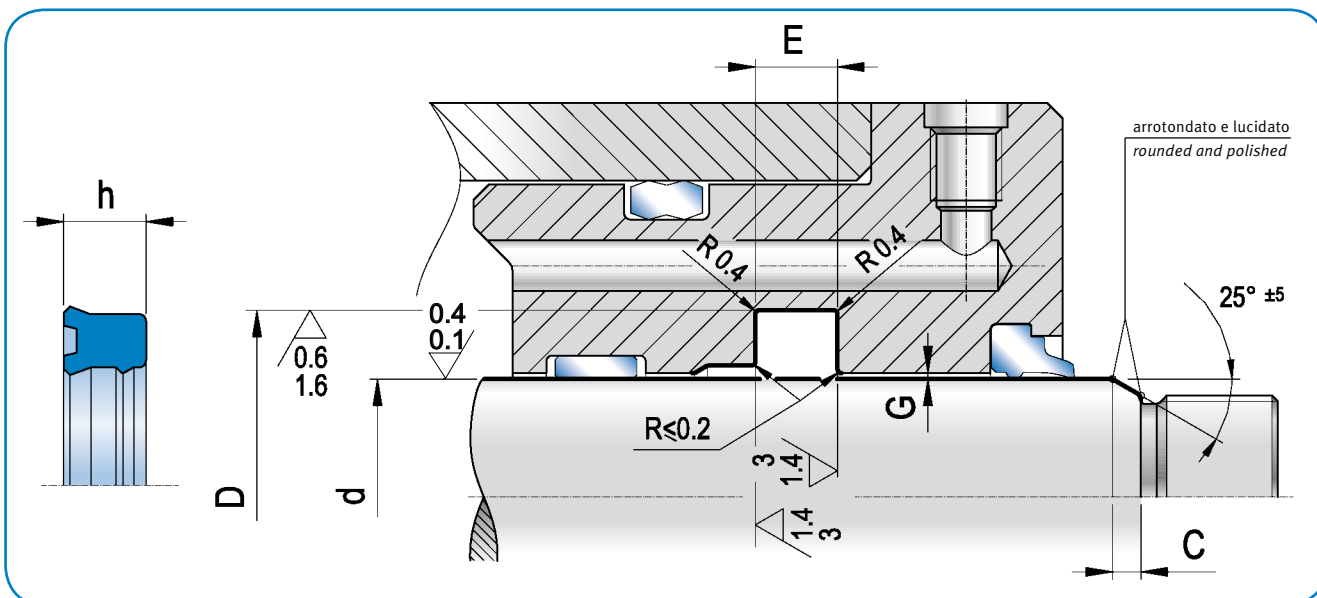
The seal should always be lubricated before assembling in order to have easier insertion of the rod.

For further information please refer to the installation instructions on page 61.

RSD



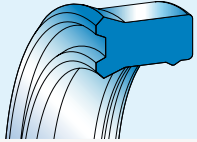
RSA
 RLF
 RSB
 RSB2
 GPDI-
 GPDIM
 RSC
RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS



d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
* 6,0	14,0	5,8	6,3	3,5	RSD 0060 0140 058 C0
* 8,0	14,0	5,7	6,3	3,5	RSD 0080 0140 057 C0
* 8,0	16,0	5,8	6,3	3,5	RSD 0080 0160 058 C0
* 10,0	18,0	5,8	6,3	3,5	RSD 0100 0180 058 C0
12,0	19,0	5,0	5,6	3,5	RSD 0120 0190 050 C0
* 12,0	20,0	5,8	6,3	4,5	RSD 0120 0200 058 C0
14,0	21,0	5,0	5,6	4,0	RSD 0140 0210 050 C0
14,0	22,0	5,8	6,3	4,5	RSD 0140 0220 058 C0
15,0	23,0	6,0	7,0	4,5	RSD 0150 0230 060 C0
16,0	22,0	5,0	5,6	3,5	RSD 0160 0220 050 C0
* 16,0	24,0	5,8	6,3	4,5	RSD 0160 0240 058 C0
18,0	22,0	4,0	4,5	3,0	RSD 0180 0220 040 C0
18,0	25,0	5,0	5,7	4,0	RSD 0180 0250 050 C0
* 18,0	26,0	5,8	6,3	4,5	RSD 0180 0260 058 C0
18,0	26,0	8,0	9,0	4,5	RSD 0180 0260 080 C0
20,0	26,0	5,2	6,0	3,5	RSD 0200 0260 052 C0
* 20,0	28,0	5,8	6,3	4,5	RSD 0200 0280 058 C0
* 20,0	30,0	7,0	8,0	5,0	RSD 0200 0300 070 C0
22,0	28,0	4,5	5,5	3,5	RSD 0220 0280 045 C0
22,0	28,0	5,8	6,3	3,5	RSD 0220 0280 058 C0
22,0	29,0	5,0	5,6	4,0	RSD 0220 0290 050 C0
* 22,0	30,0	5,8	6,3	4,5	RSD 0220 0300 058 C0
24,0	32,0	5,8	6,3	4,5	RSD 0240 0320 058 C0
25,0	31,0	5,0	5,6	3,5	RSD 0250 0310 050 C0
* 25,0	33,0	5,8	6,3	4,5	RSD 0250 0330 058 C0
25,0	33,0	6,5	7,5	4,5	RSD 0250 0330 065 C0
25,0	33,0	7,0	8,0	4,5	RSD 0250 0330 070 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
* 25,0	35,0	7,0	8,0	5,0	RSD 0250 0350 070 C0
25,0	35,0	8,0	9,0	5,0	RSD 0250 0350 080 C0
* 28,0	36,0	5,8	6,3	4,5	RSD 0280 0360 058 C0
* 28,0	38,0	5,8	6,3	5,0	RSD 0280 0380 058 C0
* 28,0	38,0	7,0	8,0	5,0	RSD 0280 0380 070 C0
30,0	38,0	5,8	6,3	4,5	RSD 0300 0380 058 C0
30,0	38,0	7,0	8,0	4,5	RSD 0300 0380 070 C0
30,0	38,0	8,0	9,0	4,5	RSD 0300 0380 080 C0
30,0	40,0	6,5	7,5	5,0	RSD 0300 0400 065 C0
30,0	40,0	10,0	11,0	5,0	RSD 0300 0400 100 C0
32,0	40,0	5,8	6,3	4,5	RSD 0320 0400 058 C0
32,0	40,0	6,0	7,0	4,5	RSD 0320 0400 060 C0
32,0	40,0	8,0	9,0	4,5	RSD 0320 0400 080 C0
* 32,0	42,0	7,0	8,0	4,5	RSD 0320 0420 070 C0
32,0	42,0	8,0	9,0	5,0	RSD 0320 0420 080 C0
32,0	42,0	10,0	11,0	5,0	RSD 0320 0420 100 C0
32,0	45,0	8,0	9,0	7,0	RSD 0320 0450 080 C0
35,0	43,0	5,8	6,3	4,5	RSD 0350 0430 058 C0
35,0	43,0	6,0	7,0	4,5	RSD 0350 0430 060 C0
35,0	43,0	8,0	9,0	4,5	RSD 0350 0430 080 C0
35,0	45,0	7,0	8,0	5,0	RSD 0350 0450 070 C0
35,0	45,0	10,0	11,0	5,0	RSD 0350 0450 100 C0
* 36,0	44,0	5,8	6,3	4,5	RSD 0360 0440 058 C0
36,0	44,0	8,0	9,0	4,5	RSD 0360 0440 080 C0
40,0	48,0	5,8	6,3	4,5	RSD 0400 0480 058 C0
40,0	48,0	8,0	9,0	4,5	RSD 0400 0480 080 C0
* 40,0	50,0	7,0	8,0	5,0	RSD 0400 0500 070 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms



RSD

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
40,0	50,0	10,0	11,0	5,0	RSD 0400 0500 100 C0
40,0	55,0	10,0	11,0	6,5	RSD 0400 0550 100 C0
42,0	50,0	6,0	7,0	4,5	RSD 0420 0500 060 C0
42,0	52,0	8,0	9,0	5,0	RSD 0420 0520 080 C0
45,0	52,0	12,0	13,0	5,0	RSD 0450 0520 120 C0
* 45,0	53,0	5,8	6,3	4,5	RSD 0450 0530 058 C0
45,0	53,0	8,0	9,0	4,5	RSD 0450 0530 080 C0
45,0	53,0	10,0	11,0	4,5	RSD 0450 0530 100 C0
* 45,0	55,0	5,7	6,3	5,0	RSD 0450 0550 057 C0
* 45,0	55,0	7,0	8,0	5,0	RSD 0450 0550 070 C0
45,0	55,0	10,0	11,0	5,0	RSD 0450 0550 100 C0
46,0	54,0	8,0	9,0	4,5	RSD 0460 0540 080 C0
50,0	58,0	8,0	9,0	4,5	RSD 0500 0580 080 C0
50,0	58,0	11,5	12,5	4,5	RSD 0500 0580 115 C0
* 50,0	60,0	7,0	8,0	5,0	RSD 0500 0600 070 C0
50,0	60,0	9,0	10,0	5,0	RSD 0500 0600 090 C0
50,0	60,0	10,0	11,0	5,0	RSD 0500 0600 100 C0
50,0	65,0	8,0	9,0	6,5	RSD 0500 0650 080 C0
50,0	65,0	10,0	11,0	6,5	RSD 0500 0650 100 C0
55,0	63,0	8,0	9,0	4,5	RSD 0550 0630 080 C0
55,0	65,0	7,0	8,0	5,0	RSD 0550 0650 070 C0
55,0	65,0	10,0	11,0	5,0	RSD 0550 0650 100 C0
55,0	65,0	12,0	13,0	5,0	RSD 0550 0650 120 C0
56,0	64,0	8,0	9,0	4,5	RSD 0560 0640 080 C0
56,0	66,0	6,5	7,5	5,0	RSD 0560 0660 065 C0
* 56,0	71,0	11,5	12,5	6,5	RSD 0560 0710 115 C0
60,0	68,0	6,3	7,0	4,5	RSD 0600 0680 063 C0
60,0	68,0	8,0	9,0	4,5	RSD 0600 0680 080 C0
60,0	68,0	13,0	14,0	4,5	RSD 0600 0680 130 C0
60,0	70,0	7,0	8,0	5,5	RSD 0600 0700 070 C0
60,0	70,0	7,5	8,5	5,5	RSD 0600 0700 075 C0
60,0	70,0	10,0	11,0	5,5	RSD 0600 0700 100 C0
60,0	70,0	12,0	13,0	5,5	RSD 0600 0700 120 C0
60,0	72,0	9,0	10,0	6,0	RSD 0600 0720 090 C0
61,0	69,0	8,0	9,0	4,5	RSD 0610 0690 080 C0
63,0	71,0	8,0	9,0	4,5	RSD 0630 0710 080 C0
65,0	73,0	8,0	9,0	4,5	RSD 0650 0730 080 C0
65,0	75,0	12,0	13,0	5,0	RSD 0650 0750 120 C0
65,0	77,0	9,0	10,0	6,0	RSD 0650 0770 090 C0
65,0	80,0	10,5	11,5	6,0	RSD 0650 0800 105 C0
68,0	76,0	8,0	9,0	4,5	RSD 0680 0760 080 C0
70,0	78,0	8,0	9,0	4,5	RSD 0700 0780 080 C0
* 70,0	80,0	6,5	7,5	5,5	RSD 0700 0800 065 C0
70,0	80,0	7,0	8,0	5,0	RSD 0700 0800 070 C0
70,0	80,0	12,0	13,0	5,5	RSD 0700 0800 120 C0

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
70,0	82,0	9,5	10,5	6,0	RSD 0700 0820 095 C0
* 70,0	85,0	11,5	12,5	6,5	RSD 0700 0850 115 C0
75,0	83,0	6,3	7,0	4,5	RSD 0750 0830 063 C0
75,0	83,0	8,0	9,0	4,5	RSD 0750 0830 080 C0
75,0	85,0	7,0	8,0	5,5	RSD 0750 0850 070 C0
75,0	85,0	12,0	13,0	5,5	RSD 0750 0850 120 C0
76,0	84,0	8,0	9,0	4,5	RSD 0760 0840 080 C0
76,0	86,0	8,0	9,0	5,0	RSD 0760 0860 080 C0
78,0	86,0	8,0	9,0	4,5	RSD 0780 0860 080 C0
78,0	86,0	13,0	14,0	4,5	RSD 0780 0860 130 C0
80,0	88,0	8,0	9,0	4,5	RSD 0800 0880 080 C0
80,0	90,0	12,0	13,0	5,0	RSD 0800 0900 120 C0
80,0	92,0	9,0	10,0	6,0	RSD 0800 0920 090 C0
* 80,0	95,0	11,5	12,5	6,5	RSD 0800 0950 115 C0
85,0	93,0	8,0	9,0	4,5	RSD 0850 0930 080 C0
85,0	95,0	12,0	13,0	5,5	RSD 0850 0950 120 C0
90,0	98,0	6,3	7,0	4,5	RSD 0900 0980 063 C0
90,0	98,0	8,0	9,0	4,5	RSD 0900 0980 080 C0
* 90,0	100,0	6,5	7,5	5,5	RSD 0900 1000 065 C0
* 90,0	105,0	11,5	12,5	6,5	RSD 0900 1050 115 C0
91,0	99,0	8,0	9,0	4,5	RSD 0910 0990 080 C0
95,0	103,0	8,0	9,0	4,5	RSD 0950 1030 080 C0
97,0	105,0	13,0	14,0	4,5	RSD 0970 1050 130 C0
100,0	108,0	6,5	7,5	4,5	RSD 1000 1080 065 C0
100,0	108,0	8,0	9,0	4,5	RSD 1000 1080 080 C0
105,0	113,0	8,0	9,0	4,5	RSD 1050 1130 080 C0
107,0	115,0	8,0	9,0	4,5	RSD 1070 1150 080 C0
108,0	116,0	8,0	9,0	4,5	RSD 1080 1160 080 C0
* 110,0	125,0	9,5	10,5	6,5	RSD 1100 1250 095 C0
110,0	125,0	11,0	12,0	6,5	RSD 1100 1250 110 C0
115,0	123,0	8,0	9,0	4,5	RSD 1150 1230 080 C0
115,0	130,0	11,3	12,0	6,5	RSD 1150 1300 113 C0
120,0	128,0	11,5	12,5	4,5	RSD 1200 1280 115 C0
120,0	135,0	15,0	16,0	6,5	RSD 1200 1350 150 C0
125,0	133,0	7,5	8,5	4,5	RSD 1250 1330 075 C0
125,0	133,0	8,0	9,0	4,5	RSD 1250 1330 080 C0
126,0	134,0	8,0	9,0	4,5	RSD 1260 1340 080 C0
130,0	145,0	15,0	16,0	6,5	RSD 1300 1450 150 C0
135,0	143,0	8,0	9,0	4,5	RSD 1350 1430 080 C0
135,0	150,0	11,5	12,5	6,5	RSD 1350 1500 115 C0
140,0	150,0	11,5	12,5	5,0	RSD 1400 1500 115 C0
145,0	153,0	8,0	9,0	4,5	RSD 1450 1530 080 C0

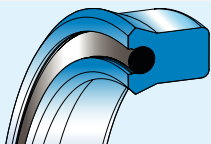
Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

Note

[illegible]



RPO

TENUTA STELO TIPO RPO

Descrizione

La tenuta stelo tipo RPO è caratterizzata dalla presenza di un O-Ring alloggiato nella gola interna tra il labbro dinamico e quello statico, il quale ha la funzione di energizzare i labbri per garantire la tenuta anche a basse pressioni. Questo profilo garantisce una tenuta perfetta anche in presenza di carichi laterali. L'O-Ring può essere fornito in diverse mescole, in base alle temperature di utilizzo.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: fluidi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo CO ad alto modulo elastico, basso compression-set, alta resistenza all'abrasione.

Ha una durezza di 93 Shore A $\pm$ 2.

O-Ring standard è proposto in materiale NBR 75 Shore A, in alternativa può essere fornito anche in materiali quali FKM o HNBR

Codice materiale: CN

Montaggio

Il montaggio avviene in cava anulare.

Per evitare che si danneggino le guarnizioni durante il montaggio occorre eliminare le bave e gli spigoli taglienti nella sede e sullo stelo.

E' consigliabile lubrificare la tenuta durante il montaggio per agevolare l'inserimento dello stelo.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RPO TYPE ROD SEAL

Description

The rod seal type RPO is characterized by the presence of an O-ring fit in the internal groove between the dynamic lip and the static one, which has the function to energize the sealing lips to ensure the seal even at low pressures. This profile ensures a perfect seal even in the presence of lateral loads. The O-ring can be provided in different compounds, depending on the temperature of use.

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C to + 100° C with peaks till 110° C
Fluids: mineral fluids and oils
(see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Standard O-Ring proposed is in NBR 75 Shore A material, or could be equipped in alternative material like FKM or HNBR

Compound reference: CN

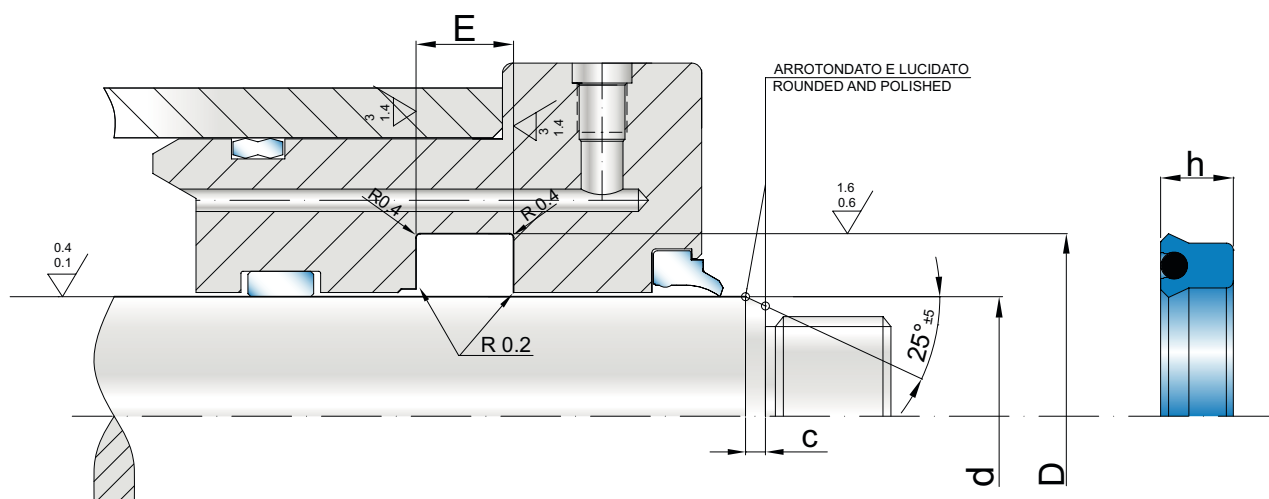
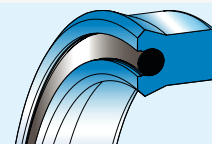
Assembling

To prevent any damage to the seal, remove any flash and cutting edges in the housing and on the rod.

The seal should always be lubricated before assembling in order to have easier insertion of the rod.

For further information please refer to the installation instructions on page 61.

RPO

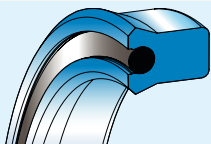


RSA
 RLF
 RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
20,0	29,0	5,0	5,5	3,5	RPO 0200 0290 050 CN
20,0	30,0	8,0	9,0	3,5	RPO 0200 0300 080 CN
20,0	30,0	10,0	11,0	3,5	RPO 0200 0300 100 CN
22,0	32,0	8,0	9,0	3,5	RPO 0220 0320 080 CN
22,0	32,0	10,0	11,0	3,5	RPO 0220 0320 100 CN
25,0	35,0	8,0	9,0	4,5	RPO 0250 0350 080 CN
25,0	35,0	10,0	11,0	4,0	RPO 0250 0350 100 CN
28,0	38,0	8,0	9,0	4,5	RPO 0280 0380 080 CN
28,0	38,0	10,0	11,0	4,5	RPO 0280 0380 100 CN
28,0	43,0	11,5	12,0	3,5	RPO 0280 0430 115 CN
30,0	40,0	7,0	8,0	4,5	RPO 0300 0400 070 CN
30,0	40,0	10,0	11,0	3,0	RPO 0300 0400 100 CN
32,0	40,0	8,0	9,0	4,0	RPO 0320 0400 080 CN
32,0	42,0	10,0	11,0	4,5	RPO 0320 0420 100 CN
35,0	45,0	7,0	8,0	4,5	RPO 0350 0450 070 CN
35,0	45,0	8,0	9,0	3,5	RPO 0350 0450 080 CN
35,0	45,0	10,0	11,0	4,5	RPO 0350 0450 100 CN
40,0	50,0	7,0	8,0	5,0	RPO 0400 0500 070 CN
40,0	50,0	8,0	9,0	3,5	RPO 0400 0500 080 CN
40,0	50,0	10,0	11,0	3,5	RPO 0400 0500 100 CN
42,0	50,0	6,0	7,0	4,0	RPO 0420 0500 060 CN
42,0	50,0	8,0	9,0	4,5	RPO 0420 0500 080 CN
45,0	55,0	6,0	7,0	4,5	RPO 0450 0550 060 CN
45,0	55,0	6,5	7,5	3,5	RPO 0450 0550 065 CN
45,0	55,0	10,0	11,0	4,5	RPO 0450 0550 100 CN
45,0	60,0	10,0	11,0	4,5	RPO 0450 0600 100 CN
45,0	65,0	11,5	12,5	4,5	RPO 0450 0650 115 CN

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
50,0	60,0	7,2	8,0	5,0	RPO 0500 0600 072 CN
50,0	60,0	10,0	11,0	5,0	RPO 0500 0600 100 CN
50,0	60,0	11,0	12,0	4,5	RPO 0500 0600 110 CN
50,0	65,0	10,0	11,0	5,0	RPO 0500 0650 100 CN
50,0	65,0	11,5	12,5	5,0	RPO 0500 0650 115 CN
55,0	65,0	10,0	11,0	4,5	RPO 0550 0650 100 CN
55,0	65,0	12,0	13,0	4,5	RPO 0550 0650 120 CN
56,0	71,0	11,5	12,5	4,5	RPO 0560 0710 115 CN
60,0	70,0	8,0	9,0	5,0	RPO 0600 0700 080 CN
60,0	70,0	10,0	11,0	5,0	RPO 0600 0700 100 CN
60,0	70,0	12,0	13,0	4,5	RPO 0600 0700 120 CN
60,0	75,0	11,5	12,5	4,5	RPO 0600 0750 115 CN
63,0	73,0	6,0	7,0	5,0	RPO 0630 0730 060 CN
63,0	75,0	10,0	11,0	5,0	RPO 0630 0750 100 CN
65,0	75,0	10,0	11,0	7,0	RPO 0650 0750 100 CN
65,0	75,0	12,0	13,0	4,5	RPO 0650 0750 120 CN
70,0	80,0	8,0	9,0	4,5	RPO 0700 0800 080 CN
70,0	80,0	10,0	11,0	4,5	RPO 0700 0800 100 CN
70,0	80,0	12,0	13,0	5,0	RPO 0700 0800 120 CN
70,0	85,0	11,5	12,5	4,5	RPO 0700 0850 125 CN
75,0	85,0	7,0	8,0	4,5	RPO 0750 0850 070 CN
75,0	85,0	12,0	13,0	4,5	RPO 0750 0850 120 CN
75,0	90,0	11,5	12,5	5,0	RPO 0750 0900 115 CN
80,0	90,0	7,2	8,0	5,0	RPO 0800 0900 072 CN
80,0	90,0	8,0	9,0	5,0	RPO 0800 0900 080 CN
80,0	90,0	10,0	11,0	5,0	RPO 0800 0900 100 CN
80,0	90,0	12,0	13,0	5,0	RPO 0800 0900 120 CN

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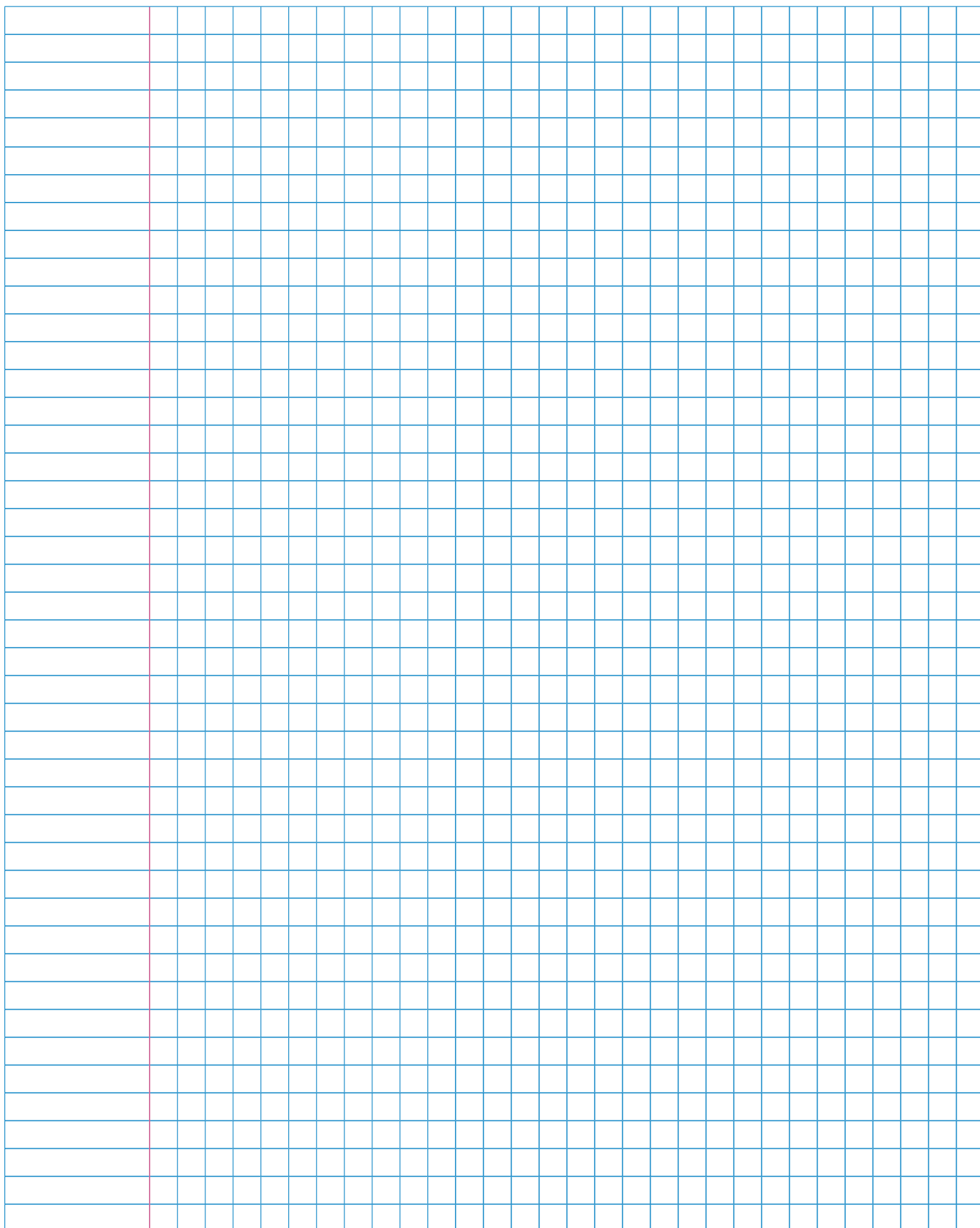


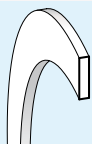
RPO

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM			
85,0	95,0	12,0	13,0	5,0	RPO 0850	0950	120	CN
85,0	100,0	9,0	10,0	5,5	RPO 0850	1000	090	CN
85,0	100,0	12,0	13,0	5,5	RPO 0850	1000	120	CN
90,0	100,0	8,0	9,0	5,0	RPO 0900	1000	080	CN
90,0	100,0	12,0	13,0	5,0	RPO 0900	1000	120	CN
90,0	105,0	11,5	12,5	5,0	RPO 0900	1050	115	CN
100,0	115,0	12,0	13,0	5,0	RPO 1000	1150	120	CN
105,0	120,0	15,0	16,0	5,5	RPO 1050	1200	150	CN
110,0	125,0	12,0	13,0	5,5	RPO 1100	1250	130	CN
110,0	125,0	15,0	16,0	5,5	RPO 1100	1250	150	CN
125,0	140,0	11,0	12,0	5,5	RPO 1250	1400	110	CN
125,0	140,0	15,0	16,0	5,5	RPO 1250	1400	150	CN

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.





RAA

ANELLI ANTIETRUZIONE TIPO RAA

Descrizione

Gli anelli antiestruzione vengono utilizzati a supporto della guarnizione, dove il gioco di accoppiamento tra la testata e lo stelo risulta ampio e le pressioni di esercizio molto elevate (superiore a 250 bar).

Dati Tecnici

Pressione: < 600 bar
Velocità: < 1 m/s
Temperatura: da - 30° C a + 100° C
Fluidi: fluidi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è resina acetlica POM
Codice materiale: R2

Montaggio

montaggio può avvenire in sede anulare con anello tagliato o ad anello intero.

RAA TYPE ANTIEXTRUSION RING

Description

The anti-extrusion rings are used to support the gasket, where the coupling clearance between the cylinder head and the stem is wide and the operating pressures are very high (over 250 bar)

Technical data

Pressure: < 600 bar
Speed: < 1 m/s
Temperature: from - 30° C up to + 100° C
Fluid: mineral fluids and oils
(see table 3, page 14)

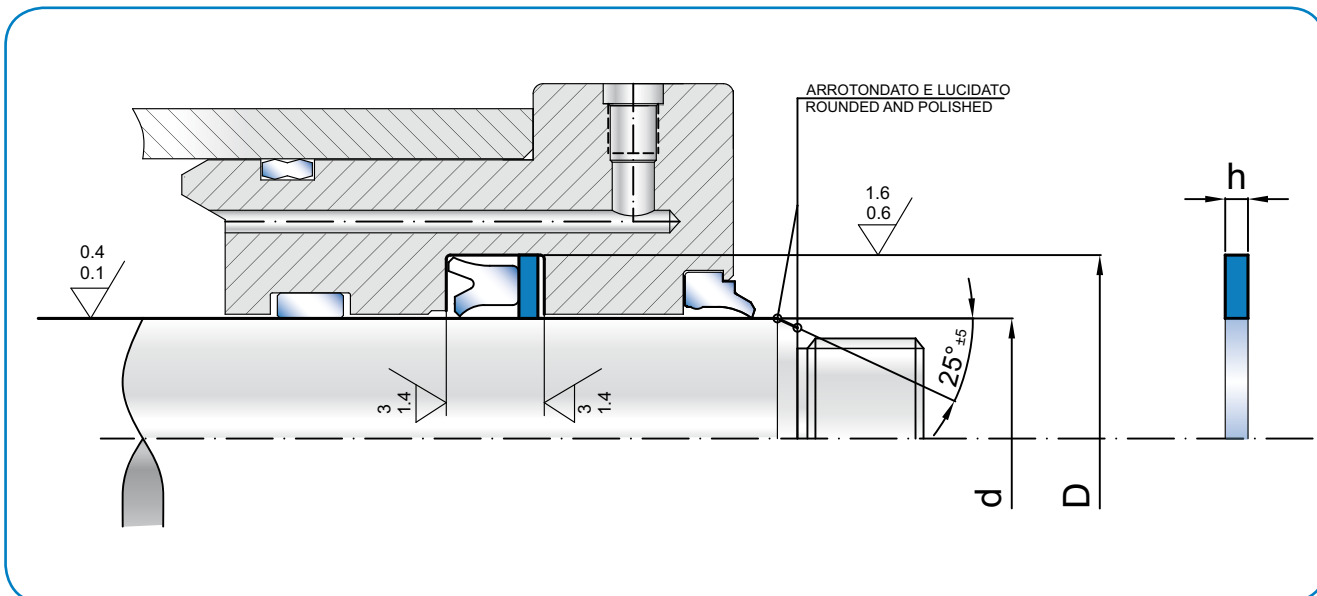
Material

Standard material is acetalic resin POM
Compound reference: R2

Assembling

Assembling can be in the annular groove ring with cut or whole ring.

RAA



RSA
 RLF
 RSB
 RSB2
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
RAA
 TSS/P
 TSS
 RSO
 RBR
 RPS

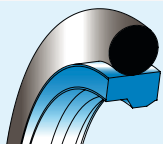
d _{h9}	D _{H10}	h	ART / ITEM
28,00	36,00	1,50	RAA 0280 0360 015 R2
30,00	38,00	1,50	RAA 0300 0380 015 R2
30,0	40,0	2,00	RAA 0300 0400 020 R2
30,80	37,00	1,40	RAA 0308 0370 014 R2
32,00	39,00	1,50	RAA 0320 0390 015 R2
32,00	40,00	1,50	RAA 0320 0400 015 R2
35,00	43,00	1,50	RAA 0350 0430 015 R0
35,00	44,00	1,50	RAA 0350 0430 015 R2
35,00	45,00	1,50	RAA 0350 0450 015 R2
36,00	47,30	1,50	RAA 0360 0440 015 R2
37,40	48,00	3,00	RAA 0374 0473 030 R4
38,00	46,00	1,50	RAA 0380 0480 015 R2
40,00	48,00	1,40	RAA 0400 0460 014 R2
40,00	50,00	2,00	RAA 0400 0500 020 R2
40,00	50,00	1,50	RAA 0400 0500 015 R2
42,00	52,00	1,50	RAA 0420 0500 015 R2
42,00	52,00	1,50	RAA 0420 0520 015 R2
45,00	53,00	1,50	RAA 0450 0530 015 R2
45,00	55,00	1,50	RAA 0450 0550 015 R2
45,00	55,00	2,00	RAA 0450 0550 020 R2
45,20	51,40	1,40	RAA 0452 0514 014 R2

d _{h9}	D _{H10}	h	ART / ITEM
50,00	58,00	1,50	RAA 0500 0580 015 R2
50,00	59,00	1,50	RAA 0500 0590 015 R2
50,00	60,00	1,20	RAA 0500 0600 012 R2
50,00	60,00	1,50	RAA 0500 0600 015 R2
53,00	63,00	2,00	RAA 0530 0630 020 R2
56,00	66,00	1,50	RAA 0560 0660 015 R2
60,00	70,00	1,50	RAA 0600 0700 015 R2
60,00	75,00	1,50	RAA 0600 0750 015 R2
63,00	67,80	3,00	RAA 0630 0678 030 R2
63,00	82,00	1,50	RAA 0630 0710 015 R2
65,00	75,00	1,50	RAA 0650 0750 015 R2
65,00	77,00	1,50	RAA 0650 0770 015 R2
70,00	80,00	1,50	RAA 0700 0800 015 R2
70,00	80,00	2,00	RAA 0700 0800 020 R2
75,00	85,00	1,50	RAA 0750 0850 015 R2
75,00	90,00	1,50	RAA 0750 0900 015 R2
80,00	90,00	1,50	RAA 0800 0900 015 R2
90,00	100,0	3,00	RAA 0900 1000 030 R2
90,00	105,00	1,50	RAA 0900 1050 015 R2
100,00	110,00	3,00	RAA 1000 1100 030 R2
100,00	115,00	1,50	RAA 1000 1150 015 R2

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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TSS/P

TENUTA STELO TIPO TSS/P

Descrizione

La TSS/P è una guarnizione in materiale poliuretano di durezza di 60 Sh D per stelo a semplice effetto, energizzata con OR in NBR. Le dimensioni delle sedi sono intercambiabili con le TSS. Viene utilizzata sia come guarnizione primaria che come guarnizione secondaria (tandem).

È consigliato montare la TSS/P con un raschiatore bidirezionale, poiché il profilo permette il rientro nel cilindro dell'olio (blow-by).

L'utilizzo è su cilindri che hanno pressioni elevate e colpi d'ariete frequenti.

Dati Tecnici

Pressione: < 600 bar

Velocità: < 5 m/s

Temperatura: da - 30°C a + 110°C, con punte per periodi brevi fino a 120°C.

Fluidi: fluidi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano poliestere di durezza 60 Sh D.

Codice materiale: EN

Montaggio

Il montaggio avviene in cava anulare chiusa.

L'elasticità del materiale favorisce l'inserimento in sede. Togliere bavette di lavorazione meccanica, per non rovinare la guarnizione.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

TSS /P TYPE ROD SEAL

Description

The TSS / P is a Polyurethane 60 Shore D seal for a simple acting rod energized with an NBR O-Ring.

The dimensions of the groove are interchangeable with the TSS. This type of seal is used both as a primary and as a secondary seal (tandem).

Recommended use the TSS / P with a bidirectional, wiper because the profile allows the return oil into the cylinder (blow-by).

The common use is on cylinders that have high pressure and frequent water hammer.

Technical data

Pressure: < 600 bar

Speed: < 5 m/s

Temperature: from - 30°C up to + 110°C
with short peaks till 120°C

Fluid: mineral fluids and oils
(see table 3, page 14)

Material

The material is a polyurethane 60 Sh D hardness

Compound reference: EN

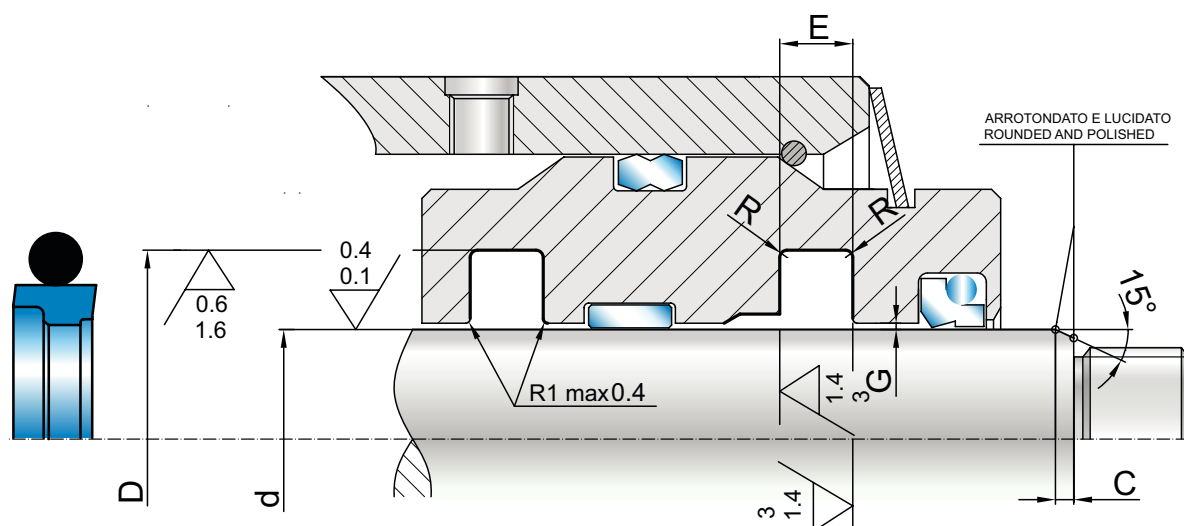
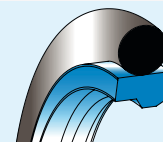
Assembling

Installation is in the annular recess closed.

The elasticity of the material favors the inclusion in the seat. Remove burrs from machining, to avoid damaging the seal.

For further information please refer to the installation instructions on page 61.

TSS/P

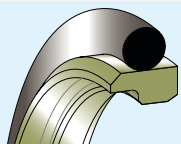


RSA
RLF
RSB
RSB₂
GPD1-
GPDIM
RSC
RSD
RPO
RAA
TSS/P
TSS
RSO
RBR
RPS

d _{H9}	D _{H9}	E _{+0,2}	O-R	C	ART / ITEM				
4,0	8,9	2,20	010	5,0	TSS	0040	0089	022	EN
5,0	9,9	2,20	010	5,0	TSS	0050	099	022	EN
7,0	11,9	2,20	012	5,0	TSS	0070	0119	022	EN
8,0	15,3	3,20	111	5,0	TSS	0080	0153	032	EN
10,0	17,3	3,20	112	5,0	TSS	0100	0173	032	EN
12,0	19,3	3,20	114	5,0	TSS	0120	0193	032	EN
14,0	21,3	3,20	115	5,0	TSS	0140	0213	032	EN
15,0	22,3	3,20	116	5,0	TSS	0150	0223	032	EN
16,0	23,3	3,20	116	5,0	TSS	0160	0233	032	EN
18,0	25,3	3,20	117	5,0	TSS	0180	0253	032	EN
20,0	30,7	4,20	214	5,0	TSS	0200	0307	042	EN
22,0	32,7	4,20	215	5,0	TSS	0220	0327	042	EN
24,0	34,7	4,20	216	5,0	TSS	0240	0347	042	EN
25,0	35,7	4,20	217	5,0	TSS	0250	0357	042	EN
26,0	36,7	4,20	218	5,0	TSS	0260	0367	042	EN
28,0	38,7	4,20	219	5,0	TSS	0280	0387	042	EN
30,0	40,7	4,20	220	5,0	TSS	0300	0407	042	EN
32,0	42,7	4,20	221	5,0	TSS	0320	0427	042	EN
35,0	45,7	4,20	222	5,0	TSS	0350	0457	042	EN
37,0	47,7	4,20	223	5,0	TSS	0370	0477	042	EN
38,0	53,1	6,30	327	5,0	TSS	0380	0531	063	EN
40,0	55,1	6,30	328	5,0	TSS	0400	0551	063	EN
42,0	57,1	6,30	328	5,0	TSS	0420	0571	063	EN
45,0	60,1	6,30	329	5,0	TSS	0450	0601	063	EN
48,0	63,1	6,30	330	5,0	TSS	0480	0631	063	EN
50,0	65,1	6,30	331	5,0	TSS	0500	0651	063	EN
52,0	67,1	6,30	331	5,0	TSS	0520	0671	063	EN
55,0	70,1	6,30	332	5,0	TSS	0550	0701	063	EN
58,0	73,1	6,30	333	5,0	TSS	0580	0731	063	EN
60,0	75,1	6,30	334	5,0	TSS	0600	0751	063	EN

d _{H9}	D _{H9}	E _{+0,2}	O-R	C	ART / ITEM				
65,0	80,1	6,30	335	5,0	TSS	0650	0801	063	EN
70,0	85,1	6,30	337	5,0	TSS	0700	0851	063	EN
75,0	90,1	6,30	339	5,0	TSS	0750	0901	063	EN
80,0	95,1	6,30	340	5,0	TSS	0800	0951	063	EN
85,0	100,1	6,30	342	5,0	TSS	0850	1001	063	EN
90,0	105,1	6,30	343	5,0	TSS	0900	1051	063	EN
95,0	110,1	6,30	345	7,0	TSS	0950	1101	063	EN
100,0	115,1	6,30	346	7,0	TSS	1000	1151	063	EN
110,0	125,1	6,30	350	7,0	TSS	1100	1251	063	EN
120,0	135,1	6,30	353	7,0	TSS	1200	1351	063	EN
125,0	140,1	6,30	354	7,0	TSS	1250	1401	063	EN
130,0	145,1	6,30	356	7,0	TSS	1300	1451	063	EN
140,0	155,1	6,30	359	7,0	TSS	1400	1551	063	EN
150,0	165,1	6,30	361	7,0	TSS	1500	1651	063	EN
155,0	170,1	6,30	362	7,0	TSS	1550	1701	063	EN
160,0	175,1	6,30	363	7,0	TSS	1600	1751	063	EN
170,0	185,1	6,30	365	7,0	TSS	1700	1851	063	EN
175,0	190,1	6,30	366	7,0	TSS	1750	1901	063	EN
180,0	195,1	6,30	366	7,0	TSS	1800	1951	063	EN
185,0	200,1	6,30	367	7,0	TSS	1850	2001	063	EN
190,0	205,1	6,30	368	7,0	TSS	1900	2051	063	EN
195,0	210,1	6,30	368	7,0	TSS	1950	2101	063	EN
200,0	220,5	8,10	445	10,0	TSS	2000	2205	063	EN
210,0	230,5	8,10	446	10,0	TSS	2100	2305	063	EN
220,0	240,5	8,10	447	10,0	TSS	2200	2405	063	EN
225,0	245,5	8,10	447	10,0	TSS	2250	2455	063	EN
230,0	250,5	8,10	448	10,0	TSS	2300	2505	063	EN
240,0	260,5	8,10	448	10,0	TSS	2400	2605	063	EN
250,0	270,5	8,10	449	10,0	TSS	2500	2705	063	EN

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TSS

TENUTA STELO TIPO TSS

Descrizione

La tenuta stelo tipo TSS consta di un anello opportunamente sagomato in PTFE caricato bronzo, avente funzione di tenuta dinamica e di un anello O-Ring che effettua la tenuta statica e contemporaneamente svolge un effetto energizzante.

Dati Tecnici

Pressione: < 600 bar

Velocità: < 15 m/s

Temperatura: per il tipo standard con OR in nitrile da - 30°C a + 100°C, con punte per periodi brevi fino a 120°C.
Per range di temperature differente occorre sostituire l'O-Ring con un altro tipo più idoneo

Materiale

Per il tipo standard PTFE caricato bronzo ed O-Ring in nitrile.

Codice materiale: TN

Montaggio

Le guarnizioni in PTFE necessitano di precauzioni estremamente rigorose, maggiori che per tutte le altre tipologie di tenuta. E' fondamentale eliminare gli spigoli vivi e le bave nelle sedi. Il montaggio delle guarnizioni per lo stelo segue normalmente questa sequenza:

- Installare O-Ring nella sede;
- Deformare l'anello in PTFE, con l'ausilio di un mandrino e una bussola ad espansione;
- Calibrare con una bussola opportunamente dimensionata (pag. 62)

TSS TYPE ROD SEAL

Description

The TSS rod seal is composed of two rings. The dynamic seal is a ring in bronze filled PTFE while the static seal is an O-Ring also acting as energizer.

Technical data

Pressure: < 600 bar

Speed: < 15 m/s

Temperature: from - 30°C up to + 100°C for the standard type with nitrile OR. Short peaks till 120°C. For a different temperature range, the O-Ring should be replaced by a more suitable model

Material

Bronze-filled PTFE for the standard type, and is NBR (Nitrile butadiene rubber) O-Ring.

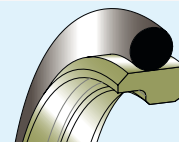
Compound reference: TN

Assembling

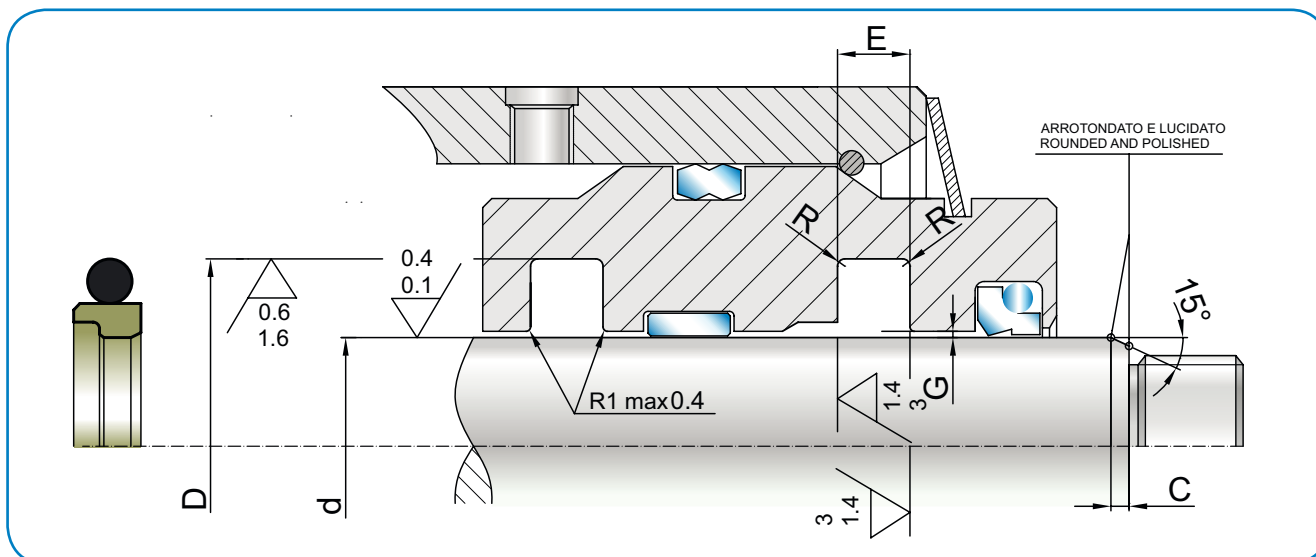
PTFE seals require careful assembling operations in comparison to other types of seals. It is necessary to remove flashes and/or cutting edges in the grooves. The rod seal is usually assembled in the following sequence:

- fit the O-Ring into the groove
- twist the PTFE ring using a mandrel and a expansion bush;
- calibrate with a plastic conical tool (Page 62)

TSS



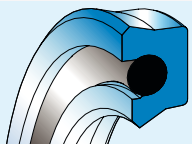
RSA
 RLF
 RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
TSS
 RSO
 RBR
 RPS



d_{H9}	D_{H9}	$E_{+0,2}$	$O-R$	C	ART / ITEM			
4,0	8,9	2,20	010	5,0	TSS	0040	0089	022 TN
5,0	9,9	2,20	010	5,0	TSS	0050	0099	022 TN
7,0	11,9	2,20	012	5,0	TSS	0070	0119	022 TN
8,0	15,3	3,20	111	5,0	TSS	0080	0153	032 TN
10,0	17,3	3,20	112	5,0	TSS	0100	0173	032 TN
12,0	19,3	3,20	114	5,0	TSS	0120	0193	032 TN
14,0	21,3	3,20	115	5,0	TSS	0140	0213	032 TN
15,0	22,3	3,20	116	5,0	TSS	0150	0223	032 TN
16,0	23,3	3,20	116	5,0	TSS	0160	0233	032 TN
18,0	25,3	3,20	117	5,0	TSS	0180	0253	032 TN
20,0	30,7	4,20	214	5,0	TSS	0200	0307	042 TN
22,0	32,7	4,20	215	5,0	TSS	0220	0327	042 TN
24,0	34,7	4,20	216	5,0	TSS	0240	0347	042 TN
25,0	35,7	4,20	217	5,0	TSS	0250	0357	042 TN
26,0	36,7	4,20	218	5,0	TSS	0260	0367	042 TN
28,0	38,7	4,20	219	5,0	TSS	0280	0387	042 TN
30,0	40,7	4,20	220	5,0	TSS	0300	0407	042 TN
32,0	42,7	4,20	221	5,0	TSS	0320	0427	042 TN
35,0	45,7	4,20	222	5,0	TSS	0350	0457	042 TN
37,0	47,7	4,20	223	5,0	TSS	0370	0477	042 TN
38,0	53,1	6,30	327	5,0	TSS	0380	0531	063 TN
40,0	55,1	6,30	328	5,0	TSS	0400	0551	063 TN
42,0	57,1	6,30	328	5,0	TSS	0420	0571	063 TN
45,0	60,1	6,30	329	5,0	TSS	0450	0601	063 TN
48,0	63,1	6,30	330	5,0	TSS	0480	0631	063 TN
50,0	65,1	6,30	331	5,0	TSS	0500	0651	063 TN
52,0	67,1	6,30	331	5,0	TSS	0520	0671	063 TN
55,0	70,1	6,30	332	5,0	TSS	0550	0701	063 TN
58,0	73,1	6,30	333	5,0	TSS	0580	0731	063 TN
60,0	75,1	6,30	334	5,0	TSS	0600	0751	063 TN

d_{H9}	D_{H9}	$E_{+0,2}$	$O-R$	C	ART / ITEM			
65,0	80,1	6,30	335	5,0	TSS	0650	0801	063 TN
70,0	85,1	6,30	337	5,0	TSS	0700	0851	063 TN
75,0	90,1	6,30	339	5,0	TSS	0750	0901	063 TN
80,0	95,1	6,30	340	5,0	TSS	0800	0951	063 TN
85,0	100,1	6,30	342	5,0	TSS	0850	1001	063 TN
90,0	105,1	6,30	343	5,0	TSS	0900	1051	063 TN
95,0	110,1	6,30	345	7,0	TSS	0950	1101	063 TN
100,0	115,1	6,30	346	7,0	TSS	1000	1151	063 TN
110,0	125,1	6,30	350	7,0	TSS	1100	1251	063 TN
120,0	135,1	6,30	353	7,0	TSS	1200	1351	063 TN
125,0	140,1	6,30	354	7,0	TSS	1250	1401	063 TN
130,0	145,1	6,30	356	7,0	TSS	1300	1451	063 TN
140,0	155,1	6,30	359	7,0	TSS	1400	1551	063 TN
150,0	165,1	6,30	361	7,0	TSS	1500	1651	063 TN
155,0	170,1	6,30	362	7,0	TSS	1550	1701	063 TN
160,0	175,1	6,30	363	7,0	TSS	1600	1751	063 TN
170,0	185,1	6,30	365	7,0	TSS	1700	1851	063 TN
175,0	190,1	6,30	366	7,0	TSS	1750	1901	063 TN
180,0	195,1	6,30	366	7,0	TSS	1800	1951	063 TN
185,0	200,1	6,30	367	7,0	TSS	1850	2001	063 TN
190,0	205,1	6,30	368	7,0	TSS	1900	2051	063 TN
195,0	210,1	6,30	368	7,0	TSS	1950	2101	063 TN
200,0	220,5	8,10	445	10,0	TSS	2000	2205	081 TN
210,0	230,5	8,10	446	10,0	TSS	2100	2305	081 TN
220,0	240,5	8,10	447	10,0	TSS	2200	2405	081 TN
225,0	245,5	8,10	447	10,0	TSS	2250	2455	081 TN
230,0	250,5	8,10	448	10,0	TSS	2300	2505	081 TN
240,0	260,5	8,10	448	10,0	TSS	2400	2605	081 TN
250,0	270,5	8,10	449	10,0	TSS	2500	2705	081 TN

oleodinamica
 Hydraulic



RSO

TENUTA STELO TIPO RSO

Descrizione

La tenuta tipo RSO è stata sviluppata per sostituire e/o lavorare in tandem con guarnizioni a gradino in PTFE, avendo le stesse dimensioni di sede.

Presenta al suo interno una gola arrotondata dove può essere alloggiato un o-ring che ha la funzione di energizzare i labbri di tenuta dinamico e statico anche in assenza di pressione.

Questo profilo può essere utilizzato anche a bassissima velocità e pressione con risultati eccellenti per il basso attrito sviluppato. Presenta ridotti ingombri assiali e quindi lavorazioni di sede estremamente semplici.

Dati tecnici

Pressione: < 250 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto per la tenuta è il poliuretano tipo CO ad alto modulo elastico (standard 93 Sh A), basso compression-set ed elevata resistenza all'abrasione energizzato da un o-ring in NBR 70 (NO).

Codice materiale: CN

Montaggio

Come per tutte le sedi dove alloggia la guarnizione occorre eliminare le bave e gli spigoli taglienti. Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RSO TYPE ROD SEAL

Description

The RSO seal type has been developed to replace or work jointly with stepseals in PTFE, because of the same groove dimension.

Internally it has a round groove where an O-ring can be housed. The O-Ring acts as energizer for the static and dynamic sealing lips even without pressure.

This profile has also excellent results at very low speed and pressure, because of the low friction. The machining of the groove is easier thanks to the reduced axial dimension.

Technical data

Pressure: < 250 bar at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C to + 100° C, with peaks till 110° C
Fluids: mineral oils (see TABLE I, pages 12-13)
(see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2, energized with O-ring in NBR 70 (NO).

Compound reference: CN

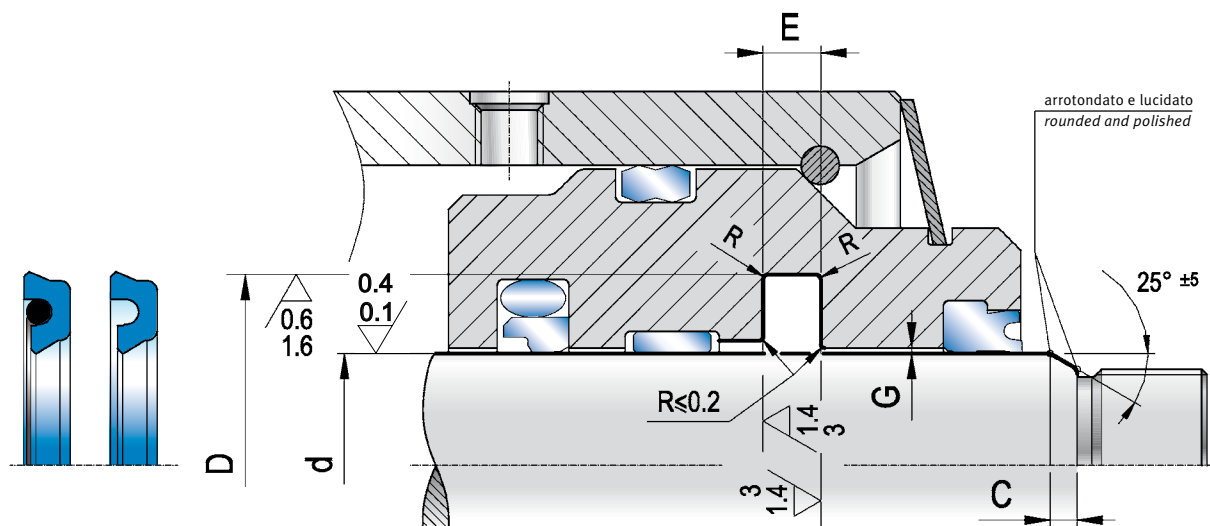
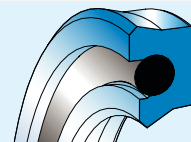
Assembling

As for all seal housings, remove any flash or cutting edges.

For further information please refer to the installation instructions on page 61.

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

RSO



RSA
 RLF
RSB
 RSB₂
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
RSO
 RBR
 RPS

d _{h9}	D _{H10}	E _{+0,2}	R	C	o-ring	ART / ITEM
8,0	15,5	3,0	0,5	3,0	-	RSO 0080 0155 030 C0
* 12,0 ⁽¹⁾	19,5	3,2	0,5	3,0	-	RSO 0120 0195 032 C0
* 14,0 ⁽¹⁾	21,5	3,2	0,5	3,0	-	RSO 0140 0215 032 C0
* 16,0 ⁽¹⁾	23,5	3,2	0,5	3,0	-	RSO 0160 0235 032 C0
* 18,0 ⁽¹⁾	25,5	3,2	0,5	3,0	-	RSO 0180 0255 032 C0
* 20,0 ⁽¹⁾	27,5	3,2	0,5	3,0	-	RSO 0200 0275 032 C0
* 20,0 ⁽²⁾	31,0	4,2	0,5	4,0	OR 119	RSO 0200 0310 042 CN
* 22,0 ⁽¹⁾	29,5	3,2	0,5	3,0	-	RSO 0220 0295 032 C0
* 22,0 ⁽²⁾	33,0	4,2	0,5	4,0	OR 120	RSO 0220 0330 042 CN
* 25,0 ⁽¹⁾	32,5	3,2	0,5	3,0	-	RSO 0250 0325 032 C0
* 25,0 ⁽²⁾	36,0	4,2	0,5	4,0	OR 122	RSO 0250 0360 042 CN
* 26,5 ⁽¹⁾	34,0	3,2	0,5	3,0	-	RSO 0265 0340 032 C0
* 28,0 ⁽²⁾	39,0	4,2	0,5	4,0	OR 124	RSO 0280 0390 042 CN
* 32,0 ⁽²⁾	43,0	4,2	0,5	4,0	OR 127	RSO 0320 0430 042 CN
* 36,0 ⁽²⁾	47,0	4,2	0,5	4,0	OR 129	RSO 0360 0470 042 CN
* 40,0 ⁽²⁾	51,0	4,2	0,5	4,0	OR 132	RSO 0400 0510 042 CN
* 40,0	55,5	6,3	0,9	5,0	OR 224	RSO 0400 0555 063 CN
* 45,0	56,0	4,2	0,5	4,0	OR 135	RSO 0450 0560 042 CN
45,0	60,5	6,3	0,9	5,0	OR 226	RSO 0450 0605 063 CN
* 50,0	61,0	4,2	0,5	4,0	OR 138	RSO 0500 0610 042 CN
50,0	65,5	6,3	0,9	5,0	OR 227	RSO 0500 0655 063 CN
55,0	66,0	4,2	0,5	4,0	OR 141	RSO 0550 0660 042 CN
55,0	70,5	6,3	0,5	4,0	OR 229	RSO 0550 0705 063 CN
* 56,0	67,0	4,2	0,5	4,0	OR 142	RSO 0560 0670 042 CN
* 56,0	71,5	6,3	0,9	5,0	OR 229	RSO 0560 0715 063 CN
* 63,0	74,0	4,2	0,5	4,0	OR 146	RSO 0630 0740 042 CN
* 63,0	78,5	6,3	0,9	5,0	OR 231	RSO 0630 0785 063 CN

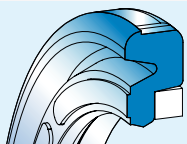
d _{h9}	D _{H10}	E _{+0,2}	R	C	o-ring	ART / ITEM
65,0	80,5	6,3	0,9	5,0	OR 232	RSO 0650 0805 063 CN
* 70,0	85,5	6,3	0,9	5,0	OR 234	RSO 0700 0855 063 CN
75,0	86,0	4,2	0,5	4,0	OR 152	RSO 0750 0860 042 CN
75,0	90,5	6,3	0,9	5,0	OR 236	RSO 0750 0905 063 CN
* 80,0	95,5	6,3	0,9	5,0	OR 237	RSO 0800 0955 063 CN
* 90,0	105,5	6,3	0,9	5,0	OR 240	RSO 0900 1055 063 CN
95,0	110,5	6,3	0,9	5,0	OR 242	RSO 0950 1105 063 CN
* 100,0	115,5	6,3	0,9	5,0	OR 243	RSO 1000 1155 063 CN
105,0	120,5	6,3	0,9	5,0	OR 245	RSO 1050 1205 063 CN
110,0	125,5	6,3	0,9	5,0	OR 246	RSO 1100 1255 063 CN
115,0	130,5	6,3	0,9	5,0	OR 248	RSO 1150 1305 063 CN
120,0	135,5	6,3	0,9	5,0	OR 250	RSO 1200 1355 063 CN
130,0	145,5	6,3	0,9	5,0	OR 253	RSO 1300 1455 063 CN
135,0	150,5	6,3	0,9	5,0	OR 255	RSO 1350 1505 063 CN
* 140,0	155,5	6,3	0,9	5,0	OR 256	RSO 1400 1555 063 CN
145,0	160,5	6,3	0,9	5,0	OR 258	RSO 1450 1605 063 CN
150,0	165,5	6,3	0,9	5,0	OR 259	RSO 1500 1655 063 CN
* 160,0	175,5	6,3	0,9	5,0	OR 260	RSO 1600 1755 063 CN
* 160,0	181,0	8,1	0,9	7,0	OR 363	RSO 1600 1810 081 CN
* 180,0	195,5	6,3	0,9	5,0	OR 263	RSO 1800 1955 063 CN
190,0	205,5	6,3	0,9	5,0	OR 265	RSO 1900 2055 063 CN
200,0	215,5	6,3	0,9	5,0	OR 267	RSO 2000 2155 063 CN
* 200,0	221,0	8,1	0,9	7,0	OR 370	RSO 2000 2210 081 CN

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

(1) = per RSO con sezione 3,75 mm non viene fornito con o-ring – for cross section 3.75mm RSO is supplied without o-ring

(2) = si consiglia la sede aperta per facilitare montaggio – open groove housing is recommended for easier installation



RBR

BUFFER RING TIPO RBR

Descrizione

L'anello RBR, avente funzione di buffer ring, è stato appositamente progettato come guarnizione primaria per lavorare esclusivamente in tandem con tenute a labbri asimmetrici (vedi RSA, pag 30). La sua funzione è quella di permettere alla tenuta secondaria di lavorare comunque in pressione. Non effettuando una tenuta assoluta tra le due guarnizioni si crea una camera d'olio con pressione crescente che, grazie al particolare profilo dell'anello RBR, raggiunto un certo valore, viene "liberata" all'interno del cilindro. Il tutto funziona come una valvola di massima. Inoltre svolge il compito di contrastare i picchi di pressione.

Dati tecnici

Pressione: < 400 bar a temperature di 60° C
Velocità: < 0.8 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: oli minerali HL e HLP
(vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo CO a 93 Shore A con buona resistenza all'abrasione, ottimo compression-set, elevato modulo elastico necessario per la tenuta. Per l'anello antiestrusione viene proposta una resina termoplastica (LO) con elevata resistenza al carico di rottura. Codice materiale: CL

Montaggio

Il montaggio avviene in cava chiusa. E' pertanto necessario montare prima la guarnizione in poliuretano poi l'anello antiestrusione. Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RBR TYPE BUFFER RING

Description

The RBR ring, working as buffer ring, has been specially designed to work as main seal, to be used in combination with asymmetrical lip seals (see RSA, page 30). Its function is to maintain working pressure for the second seal. It does not provide full sealing effect so an oil chamber will thus form between the two seals. Thanks to the special profile of the RBR ring, the growing pressure in the space will be released into the cylinder once a certain value is achieved. It works as a valve. It has been also designed to compensate pressure peaks.

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0.8 m/s
Temperature: from - 35° C to + 100° C with peaks till 110° C
Fluids: HL and HLP mineral oil
(see table 3, page 14)

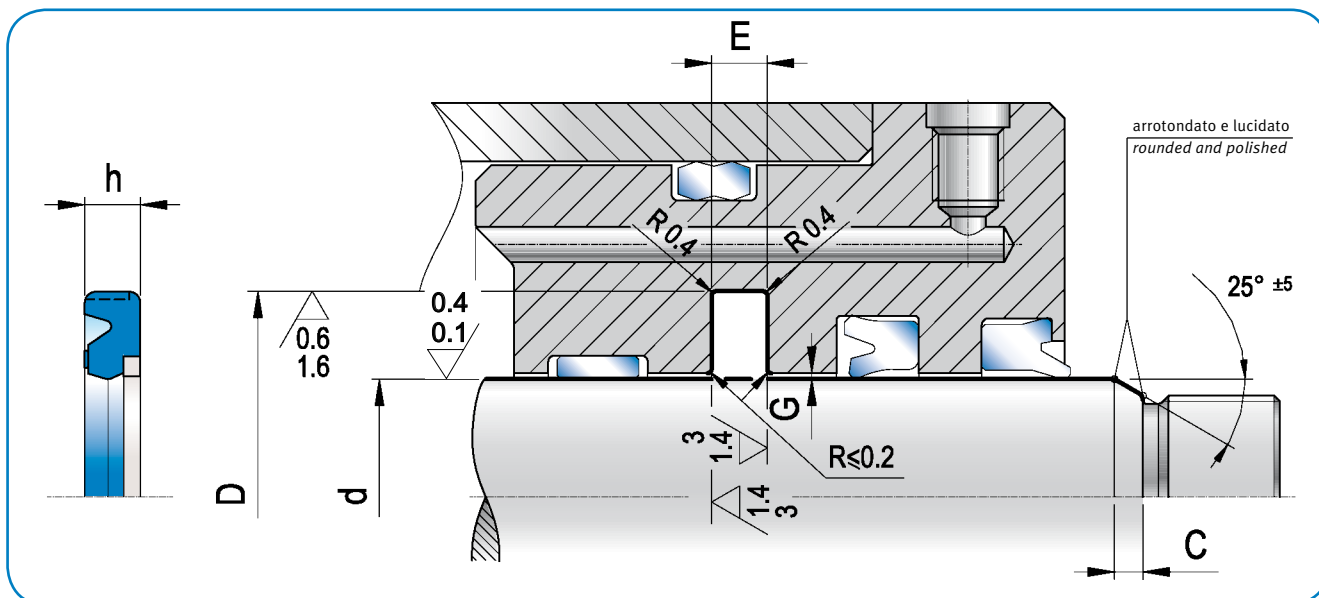
Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, fundamental for the sealing, low compression-set and high abrasion resistance. The hardness is 93 Shore A ± 2. For the anti-extrusion ring we propose a polyacetalic resin (RO) with high tensile strength. Compound reference: CR

Assembling

The assembling is done in closed groove. The polyurethane seal must therefore be fitted before the anti-extrusion ring. For further information please refer to the installation instructions on page 61.

RBR



RSA
 RLF
 RSB
 RSB2
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
RBR
 RPS

d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
45,0	60,5	5,9	6,3	5,5	RBR 0450 0605 063 CL
50,0	65,5	5,9	6,3	5,5	RBR 0500 0655 063 CL
55,0	70,5	5,9	6,3	5,5	RBR 0550 0705 063 CL
56,0	71,5	5,9	6,3	5,5	RBR 0560 0715 063 CL
60,0	75,5	5,9	6,3	5,5	RBR 0600 0755 063 CL
65,0	80,5	5,9	6,3	5,5	RBR 0650 0805 063 CL
63,0	78,5	5,9	6,3	5,5	RBR 0630 0785 063 CL
70,0	85,5	5,9	6,3	6,0	RBR 0700 0855 063 CL
75,0	90,5	5,9	6,3	6,0	RBR 0750 0905 063 CL
80,0	95,5	5,9	6,3	6,0	RBR 0800 0955 063 CL
85,0	100,5	5,9	6,3	6,0	RBR 0850 1005 063 CL
90,0	105,5	5,9	6,3	6,0	RBR 0900 1055 063 CL

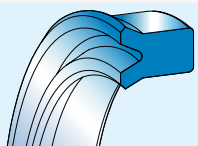
d _{h9}	D _{H10}	h	E _{+0,2}	C	ART / ITEM
95,0	110,5	5,9	6,3	6,0	RBR 0950 1105 063 CL
100,0	115,5	5,9	6,3	6,0	RBR 1000 1155 063 CL
105,0	120,5	5,9	6,3	6,0	RBR 1050 1205 063 CL
110,0	125,5	5,9	6,3	6,0	RBR 1100 1255 063 CL
115,0	130,5	5,9	6,3	6,0	RBR 1150 1305 063 CL
120,0	135,5	5,9	6,3	6,0	RBR 1200 1355 063 CL
125,0	140,5	5,9	6,3	6,0	RBR 1250 1405 063 CL
130,0	145,5	5,9	6,3	6,0	RBR 1300 1455 063 CL
150,0	165,5	5,9	6,3	6,0	RBR 1500 1655 063 CL
170,0	185,5	5,9	6,3	6,0	RBR 1700 1855 063 CL
180,0	195,5	5,9	6,3	6,0	RBR 1800 1955 063 CL
200,0	220,5	7,6	8,1	7,5	RBR 2000 2205 081 CL

CL = CO (TPU 93 shore A) + L7 (TPE 72 Shore D)

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

oleodinamica
Hydraulic



RPS

TENUTA STELO / PISTONE TIPO RPS

Descrizione

La guarnizione tipo RPS, grazie al suo profilo simmetrico, può essere utilizzata sia per tenuta su stelo che per tenuta su pistone e per cilindri che lavorano a semplice o a doppio effetto. Il profilo a labbri uguali e la profondità della gola garantiscono una ridotta frizione e un movimento lineare anche a bassa pressione.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0,5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a 110° C
Fluidi: oli idraulici minerali
(vedi tabella 3 a pagina 14)

Materiali

Il materiale proposto è il poliuretano tipo CO ad alto modulo elastico, basso compression-set e buona resistenza all'abrasione.

Ha una durezza di 93 Shore A $\pm$ 2.

Codice materiale: CO

Montaggio

Il montaggio è facilitato dall'alto modulo elastico del poliuretano.

E' consigliato ingrassare la guarnizione prima del montaggio, e togliere spigoli e bave che danneggerebbero la tenuta.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

RPS TYPE ROD/PISTON SEAL

Description

The RPS seal type, due to its symmetrical profile, it can be used both for rod and piston sealing applications and for cylinders working with simple or double effect.

The profile with equal lips and the deep groove ensures low friction and a linear movement even at low pressure.

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0,5 m/s
Temperature: from - 35° C to + 100° C, with peaks till + 110° C
Fluids: mineral hydraulic oils
(see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, fundamental for the sealing, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Compound reference: CO

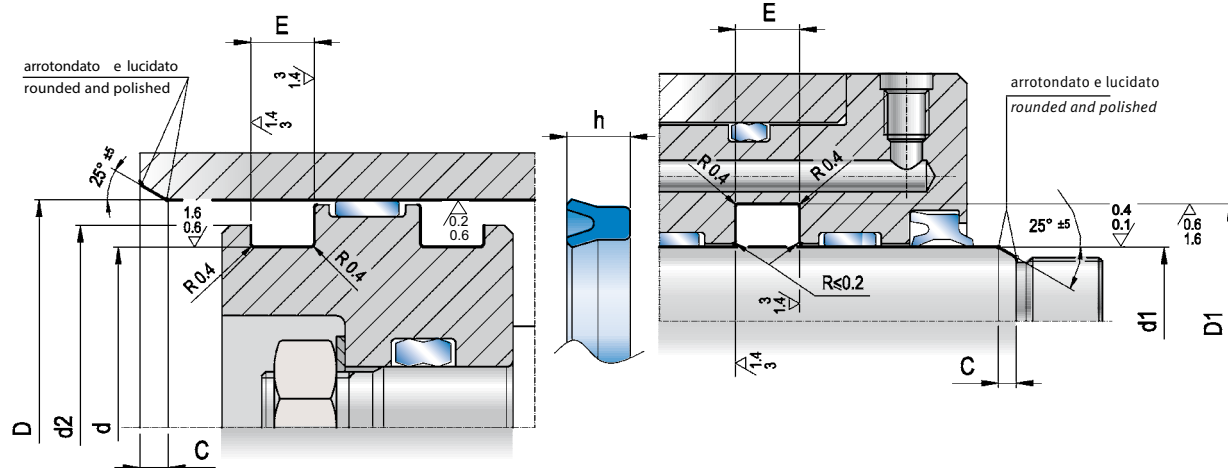
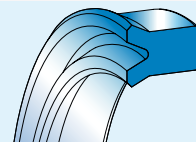
Assembling

The high modulus of elasticity of the polyurethane helps the assembling.

It is recommended to lubricate the seals before installation and to eliminate any edges or flash which could damage the seal.

For further information please refer to the installation instructions on page 61.

RPS



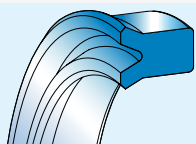
RSA
 RLF
 RSB
 RSB2
 GPDI-
 GPDIM
 RSC
 RSD
 RPO
 RAA
 TSS/P
 TSS
 RSO
 RBR
RPS

d_{h11} d_{1h9}	D_{H9} D_{1H10}	h	$E_{+0,2}$	d_{2**}	C	ART / ITEM
4,0	8,0	3,5	4,0	6,0	2,0	RPS 0040 0080 035 C0
4,0	9,0	4,0	4,5	6,5	3,0	RPS 0040 0090 040 C0
4,0	10,0	4,0	4,5	7,0	3,0	RPS 0040 0100 040 C0
5,0	12,0	4,5	5,0	8,5	3,0	RPS 0050 0120 045 C0
5,0	12,0	5,0	5,5	8,5	3,0	RPS 0050 0120 050 C0
6,0	12,0	4,0	4,5	9,0	3,0	RPS 0060 0120 040 C0
6,0	12,0	4,5	5,0	9,0	3,0	RPS 0060 0120 045 C0
6,0	12,0	5,5	6,0	9,0	3,0	RPS 0060 0120 055 C0
6,0	12,0	6,0	7,0	9,0	3,0	RPS 0060 0120 060 C0
7,0	14,0	3,5	4,0	10,5	4,0	RPS 0070 0140 035 C0
8,0	12,0	5,0	5,5	10,0	2,0	RPS 0080 0120 050 C0
8,0	14,0	5,5	6,0	11,0	3,0	RPS 0080 0140 055 C0
8,0	14,0	6,0	7,0	11,0	3,0	RPS 0080 0140 060 C0
8,0	15,0	5,7	6,3	11,0	4,0	RPS 0080 0150 057 C0
8,0	16,0	5,5	6,0	12,0	4,0	RPS 0080 0160 055 C0
8,0	16,0	5,7	6,3	12,0	3,5	RPS 0080 0160 057 C0
8,0	16,0	7,0	8,0	12,0	3,5	RPS 0080 0160 070 C0
9,0	19,0	6,0	7,0	14,0	4,0	RPS 0090 0190 060 C0
10,0	16,0	6,0	6,5	13,0	3,0	RPS 0100 0160 060 C0
10,0	18,0	5,5	6,0	14,0	3,5	RPS 0100 0180 055 C0
10,0	18,0	5,7	6,3	14,0	3,5	RPS 0100 0180 057 C0
10,0	18,0	6,0	7,0	14,0	3,5	RPS 0100 0180 060 C0
10,0	18,0	8,0	9,0	14,0	3,5	RPS 0100 0180 080 C0
10,0	19,0	3,2	3,5	14,5	4,0	RPS 0100 0190 032 C0

d_{h11} d_{1h9}	D_{H9} D_{1H10}	h	$E_{+0,2}$	d_{2**}	C	ART / ITEM
10,0	20,0	7,0	8,0	15,0	4,0	RPS 0100 0200 070 C0
10,0	20,0	8,0	9,0	15,0	4,0	RPS 0100 0200 080 C0
12,0	18,0	5,0	5,5	15,0	3,0	RPS 0120 0180 050 C0
12,0	18,0	6,0	7,0	15,0	3,0	RPS 0120 0180 060 C0
12,0	20,0	4,0	4,5	16,0	4,5	RPS 0120 0200 040 C0
12,0	20,0	7,0	8,0	16,0	3,5	RPS 0120 0200 070 C0
12,0	20,0	8,0	9,0	16,0	3,5	RPS 0120 0200 080 C0
12,0	22,0	5,0	6,0	17,0	4,0	RPS 0120 0220 050 C0
12,0	22,0	7,0	8,0	17,0	4,0	RPS 0120 0220 070 C0
12,0	22,0	8,0	9,0	17,0	4,0	RPS 0120 0220 080 C0
12,0	24,0	8,0	9,0	18,0	5,0	RPS 0120 0240 080 C0
12,0	25,0	10,0	11,0	18,5	5,0	RPS 0120 0250 100 C0
14,0	20,0	4,8	5,3	17,0	3,0	RPS 0140 0200 048 C0
14,0	22,0	4,0	4,5	18,0	3,5	RPS 0140 0220 040 C0
14,0	22,0	6,0	7,0	18,0	3,5	RPS 0140 0220 060 C0
14,0	22,0	8,0	9,0	18,0	3,5	RPS 0140 0220 080 C0
14,0	22,0	11,0	12,0	18,0	3,5	RPS 0140 0220 110 C0
14,0	24,0	7,0	8,0	19,0	4,0	RPS 0140 0240 070 C0
14,0	24,0	8,0	9,0	19,0	4,0	RPS 0140 0240 080 C0
15,0	25,0	8,0	9,0	20,0	4,0	RPS 0150 0250 080 C0
15,0	25,0	10,0	11,0	20,0	4,0	RPS 0150 0250 100 C0
16,0	22,0	4,0	4,5	19,0	3,0	RPS 0160 0220 040 C0
16,0	22,0	5,0	5,5	19,0	3,0	RPS 0160 0220 050 C0
16,0	24,0	5,0	6,0	20,0	3,5	RPS 0160 0240 050 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

** diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio – hook diameter which could be modified according to mounting demand



RPS

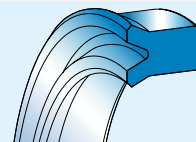
d _{h11} d _{1h9}	D _{H9} D _{1H10}	h	E _{+0,2}	d _{2**}	C	ART / ITEM
16,0	24,0	5,7	6,3	20,0	3,5	RPS 0160 0240 057 C0
16,0	24,0	7,0	8,0	20,0	3,5	RPS 0160 0240 070 C0
16,0	26,0	5,0	6,0	21,0	4,0	RPS 0160 0260 050 C0
16,0	26,0	8,0	9,0	21,0	4,0	RPS 0160 0260 080 C0
16,0	28,0	6,0	7,0	22,0	5,0	RPS 0160 0280 060 C0
17,0	25,0	4,0	5,0	21,0	3,0	RPS 0170 0250 040 C0
17,0	25,0	10,0	11,0	21,0	3,0	RPS 0170 0250 100 C0
18,0	25,0	5,0	5,5	21,5	3,5	RPS 0180 0250 050 C0
18,0	26,0	6,5	7,5	22,0	3,5	RPS 0180 0260 065 C0
18,0	28,0	6,0	7,0	23,0	4,0	RPS 0180 0280 060 C0
18,0	28,0	8,0	9,0	23,0	4,0	RPS 0180 0280 080 C0
18,0	30,0	8,0	9,0	24,0	5,0	RPS 0180 0300 080 C0
19,0	25,0	6,0	7,0	22,0	3,0	RPS 0190 0250 060 C0
20,0	28,0	4,0	5,0	24,0	3,5	RPS 0200 0280 040 C0
20,0	28,0	4,5	5,0	24,0	3,5	RPS 0200 0280 045 C0
20,0	30,0	8,0	9,0	25,0	4,0	RPS 0200 0300 080 C0
20,0	30,0	10,0	11,0	25,0	4,0	RPS 0200 0300 100 C0
20,0	32,0	7,5	8,5	26,0	5,0	RPS 0200 0320 075 C0
20,0	35,0	12,0	13,0	27,5	5,0	RPS 0200 0350 120 C0
20,0	40,0	10,0	11,0	30,0	7,0	RPS 0200 0400 100 C0
20,0	40,0	12,0	13,0	30,0	7,0	RPS 0200 0400 120 C0
22,0	28,0	4,5	5,5	25,0	3,0	RPS 0220 0280 045 C0
22,0	28,0	8,0	9,0	25,0	3,0	RPS 0220 0280 080 C0
22,0	30,0	6,0	7,0	26,0	3,5	RPS 0220 0300 060 C0
22,0	30,0	10,0	11,0	26,0	3,5	RPS 0220 0300 100 C0
22,0	32,0	8,0	9,0	27,0	4,0	RPS 0220 0320 080 C0
22,0	32,0	10,0	11,0	27,0	4,0	RPS 0220 0320 100 C0
22,0	35,0	10,0	11,0	28,5	5,0	RPS 0220 0350 100 C0
22,0	40,0	10,0	11,0	31,0	6,0	RPS 0220 0400 100 C0
24,0	32,0	7,0	8,0	28,0	3,5	RPS 0240 0320 070 C0
25,0	35,0	5,0	5,5	30,0	4,0	RPS 0250 0350 050 C0
25,0	35,0	8,0	9,0	30,0	4,0	RPS 0250 0350 080 C0
25,0	35,0	10,0	11,0	30,0	4,0	RPS 0250 0350 100 C0
25,0	38,0	10,0	11,0	31,5	5,0	RPS 0250 0380 100 C0
25,0	40,0	10,0	11,0	32,5	5,0	RPS 0250 0400 100 C0
28,0	32,8	3,0	4,0	30,4	3,0	RPS 0280 0328 030 C0
28,0	35,0	5,0	5,5	31,5	3,0	RPS 0280 0350 050 C0
28,0	36,0	5,7	6,3	33,0	4,0	RPS 0280 0360 057 C0
28,0	36,0	6,5	7,5	32,0	3,5	RPS 0280 0360 065 C0
28,0	38,0	5,7	6,3	33,0	4,0	RPS 0280 0380 057 C0
28,0	38,0	8,0	9,0	33,0	4,0	RPS 0280 0380 080 C0
28,0	40,0	10,0	11,0	34,0	5,0	RPS 0280 0400 100 C0

d _{h11} d _{1h9}	D _{H9} D _{1H10}	h	E _{+0,2}	d _{2**}	C	ART / ITEM
30,0	38,0	6,0	6,5	34,0	4,0	RPS 0300 0380 060 C0
30,0	40,0	5,0	5,5	35,0	5,0	RPS 0300 0400 050 C0
30,0	40,0	7,0	8,0	35,0	5,0	RPS 0300 0400 070 C0
30,0	40,0	10,0	11,0	35,0	5,0	RPS 0300 0400 100 C0
30,0	42,0	9,0	10,0	36,0	5,5	RPS 0300 0420 090 C0
30,0	42,0	10,0	11,0	36,0	5,5	RPS 0300 0420 100 C0
30,0	45,0	10,0	11,0	37,5	6,0	RPS 0300 0450 100 C0
30,0	50,0	10,0	11,0	40,0	7,0	RPS 0300 0500 100 C0
30,0	50,0	12,0	13,0	40,0	7,0	RPS 0300 0500 120 C0
32,0	40,0	5,5	6,0	36,0	4,0	RPS 0320 0400 055 C0
32,0	40,0	5,7	6,3	36,0	4,0	RPS 0320 0400 057 C0
32,0	40,0	8,0	9,0	36,0	4,0	RPS 0320 0400 080 C0
32,0	42,0	7,0	8,0	37,0	5,0	RPS 0320 0420 070 C0
32,0	42,0	10,0	11,0	37,0	5,0	RPS 0320 0420 100 C0
32,0	45,0	10,0	11,0	38,5	5,5	RPS 0320 0450 100 C0
32,0	50,0	12,0	13,0	41,0	6,5	RPS 0320 0500 120 C0
35,0	45,0	8,0	9,0	40,0	5,0	RPS 0350 0450 080 C0
35,0	45,0	10,0	11,0	40,0	5,0	RPS 0350 0450 100 C0
35,0	48,0	10,0	11,0	41,5	5,5	RPS 0350 0480 100 C0
35,0	50,0	10,0	11,0	42,5	6,0	RPS 0350 0500 100 C0
35,0	55,0	10,0	11,0	45,0	7,0	RPS 0350 0550 100 C0
36,0	46,0	7,0	8,0	41,0	5,0	RPS 0360 0460 070 C0
38,0	45,0	5,0	5,5	41,5	3,5	RPS 0380 0450 050 C0
38,0	50,0	9,0	10,0	44,0	5,5	RPS 0380 0500 090 C0
38,0	55,0	10,0	11,0	46,5	6,5	RPS 0380 0550 100 C0
40,0	50,0	6,0	7,0	45,0	5,0	RPS 0400 0500 060 C0
40,0	50,0	6,5	7,5	45,0	5,0	RPS 0400 0500 065 C0
40,0	50,0	7,0	8,0	45,0	5,0	RPS 0400 0500 070 C0
40,0	50,0	8,0	9,0	45,0	5,0	RPS 0400 0500 080 C0
40,0	50,0	10,0	11,0	45,0	5,0	RPS 0400 0500 100 C0
40,0	55,0	10,0	11,0	47,5	6,0	RPS 0400 0550 100 C0
40,0	56,0	10,0	11,0	48,0	6,0	RPS 0400 0560 100 C0
40,0	60,0	10,0	11,0	50,0	7,0	RPS 0400 0600 100 C0
40,0	60,0	13,0	14,0	50,0	7,0	RPS 0400 0600 130 C0
42,0	52,0	9,0	10,0	47,0	5,0	RPS 0420 0520 090 C0
45,0	55,0	6,5	7,5	50,0	5,0	RSP 0450 0550 065 C0
45,0	55,0	10,0	11,0	50,0	5,0	RPS 0450 0550 100 C0
45,0	60,0	10,0	11,0	52,5	6,0	RPS 0450 0600 100 C0
45,0	63,0	10,0	11,0	54,0	6,5	RPS 0450 0630 100 C0
45,0	65,0	10,0	11,0	55,0	7,0	RPS 0450 0650 100 C0
45,0	65,0	12,0	13,0	55,0	7,0	RPS 0450 0650 120 C0
48,0	58,0	10,0	11,0	53,0	5,0	RPS 0480 0580 100 C0

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

** diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio – hook diameter which could be modified according to mounting demand

RPS



d _{h11} d _{1h9}	D _{H9} D _{1H10}	h	E _{+0,2}	d _{2**}	C	ART / ITEM
50,0	60,0	10,0	11,0	55,0	5,0	RPS 0500 0600 100 C0
50,0	60,0	11,0	12,0	55,0	5,0	RPS 0500 0600 110 C0
50,0	63,0	6,0	7,0	56,5	5,5	RPS 0500 0630 060 C0
50,0	65,0	10,0	11,0	57,5	6,0	RPS 0500 0650 100 C0
50,0	70,0	10,0	11,0	60,0	7,0	RPS 0500 0700 100 C0
50,0	70,0	12,0	13,0	60,0	7,0	RPS 0500 0700 120 C0
53,0	63,0	6,5	7,5	58,0	5,0	RPS 0530 0630 065 C0
55,0	65,0	10,0	11,0	60,0	5,0	RPS 0550 0650 100 C0
55,0	65,0	12,0	13,0	60,0	5,0	RPS 0550 0650 120 C0
55,0	70,0	12,0	13,0	62,5	6,0	RPS 0550 0700 120 C0
55,0	75,0	12,0	13,0	65,0	7,0	RPS 0550 0750 120 C0
56,0	66,0	10,0	11,0	61,0	5,0	RPS 0560 0660 100 C0
56,0	71,0	10,0	11,0	63,5	6,0	RPS 0560 0710 100 C0
60,0	70,0	8,0	9,0	65,0	5,0	RPS 0600 0700 080 C0
60,0	70,0	10,0	11,0	65,0	5,0	RPS 0600 0700 100 C0
60,0	70,0	12,0	13,0	65,0	5,0	RPS 0600 0700 120 C0
60,0	75,0	10,0	11,0	67,5	6,0	RPS 0600 0750 100 C0
60,0	75,0	12,0	13,0	67,5	6,0	RPS 0600 0750 120 C0
60,0	80,0	10,0	11,0	70,0	7,0	RPS 0600 0800 100 C0
60,0	80,0	12,0	13,0	70,0	7,0	RPS 0600 0800 120 C0
63,0	75,0	10,0	11,0	69,0	5,5	RPS 0630 0750 100 C0
63,0	78,0	10,0	11,0	70,5	6,0	RPS 0630 0780 100 C0
63,0	80,0	10,0	11,0	71,5	6,5	RPS 0630 0800 100 C0
65,0	75,0	12,0	13,0	70,0	5,0	RPS 0650 0750 120 C0
65,0	80,0	10,0	11,0	72,5	6,0	RPS 0650 0800 100 C0
65,0	80,0	11,0	12,0	72,5	6,0	RPS 0650 0800 110 C0
65,0	80,0	12,0	13,0	72,5	6,0	RPS 0650 0800 120 C0
65,0	85,0	10,0	11,0	75,0	7,0	RPS 0650 0850 100 C0
65,0	85,0	12,0	13,0	75,0	7,0	RPS 0650 0850 120 C0
66,0	76,0	8,0	9,0	71,0	5,0	RPS 0660 0760 080 C0
67,0	77,0	12,0	13,0	72,0	5,0	RPS 0670 0770 120 C0
70,0	80,0	7,0	8,0	75,0	5,0	RPS 0700 0800 070 C0
70,0	80,0	8,0	9,0	75,0	5,0	RPS 0700 0800 080 C0
70,0	80,0	10,0	11,0	75,0	5,0	RPS 0700 0800 100 C0
70,0	80,0	12,0	13,0	75,0	5,0	RPS 0700 0800 120 C0
70,0	85,0	10,0	11,0	77,5	6,0	RPS 0700 0850 100 C0
70,0	85,0	12,0	13,0	77,5	6,0	RPS 0700 0850 120 C0
70,0	90,0	10,0	11,0	80,0	7,0	RPS 0700 0900 100 C0
70,0	90,0	12,0	13,0	80,0	7,0	RPS 0700 0900 120 C0
75,0	85,0	10,0	11,0	80,0	5,0	RPS 0750 0850 100 C0
75,0	85,0	12,0	13,0	80,0	5,0	RPS 0750 0850 120 C0
75,0	90,0	10,0	11,0	82,5	6,0	RPS 0750 0900 100 C0

d _{h11} d _{1h9}	D _{H9} D _{1H10}	h	E _{+0,2}	d _{2**}	C	ART / ITEM
75,0	90,0	12,0	13,0	82,5	6,0	RPS 0750 0900 120 C0
75,0	95,0	12,0	13,0	85,0	7,0	RPS 0750 0950 120 C0
75,0	95,0	13,5	14,5	85,0	7,0	RPS 0750 0950 135 C0
80,0	90,0	7,0	8,0	85,0	5,0	RPS 0800 0900 070 C0
80,0	90,0	10,0	11,0	85,0	5,0	RPS 0800 0900 100 C0
80,0	90,0	12,0	13,0	85,0	5,0	RPS 0800 0900 120 C0
80,0	95,0	12,0	13,0	87,5	6,0	RPS 0800 0950 120 C0
80,0	100,0	10,0	11,0	90,0	7,0	RPS 0800 1000 100 C0
80,0	100,0	12,0	13,0	90,0	7,0	RPS 0800 1000 120 C0
85,0	95,0	8,5	9,5	90,0	5,0	RPS 0850 0950 085 C0
85,0	95,0	12,0	13,0	90,0	5,0	RPS 0850 0950 120 C0
85,0	100,0	9,0	10,0	92,5	6,0	RPS 0850 1000 090 C0
85,0	100,0	12,0	13,0	92,5	6,0	RPS 0850 1000 120 C0
85,0	105,0	12,0	13,0	95,0	7,0	RPS 0850 1050 120 C0
90,0	100,0	7,0	8,0	95,0	5,0	RPS 0900 1000 070 C0
90,0	100,0	8,0	9,0	95,0	5,0	RPS 0900 1000 080 C0
90,0	100,0	10,5	11,5	95,0	5,0	RPS 0900 1000 105 C0
90,0	100,0	12,0	13,0	95,0	5,0	RPS 0900 1000 120 C0
90,0	105,0	12,0	13,0	97,5	6,0	RPS 0900 1050 120 C0
90,0	110,0	12,0	13,0	100,0	7,0	RPS 0900 1100 120 C0
90,0	110,0	18,0	19,0	100,0	7,0	RPS 0900 1100 180 C0
95,0	105,0	12,0	13,0	100,0	5,0	RPS 0950 1050 120 C0
95,0	110,0	12,0	13,0	102,5	6,0	RPS 0950 1100 120 C0
95,0	110,0	12,5	13,5	102,5	6,0	RPS 0950 1100 125 C0
95,0	110,0	15,0	16,0	102,5	6,0	RPS 0950 1100 150 C0
95,0	112,0	11,0	12,0	103,5	6,5	RPS 0950 1120 110 C0
95,0	115,0	12,0	13,0	105,0	7,0	RPS 0950 1150 120 C0
95,0	115,0	18,0	19,0	105,0	7,0	RPS 0950 1150 180 C0
100,0	115,0	12,0	13,0	107,5	6,0	RPS 1000 1150 120 C0
100,0	120,0	12,0	13,0	110,0	7,0	RPS 1000 1200 120 C0
100,0	125,0	15,0	16,0	112,5	8,0	RPS 1000 1250 150 C0
105,0	125,0	12,0	13,0	115,0	7,0	RPS 1050 1250 120 C0
105,0	125,0	15,0	16,0	115,0	7,0	RPS 1050 1250 150 C0
110,0	130,0	15,0	16,0	120,0	7,0	RPS 1100 1300 150 C0
120,0	140,0	15,0	16,0	120,0	7,0	RPS 1200 1400 150 C0
125,0	140,0	15,0	16,0	132,5	6,0	RPS 1250 1400 150 C0
170,0	190,0	15,0	16,0	180,0	7,0	RPS 1700 1900 150 C0
200,0	220,0	12,0	13,0	210,0	7,0	RPS 2000 2200 120 C0

RSA
RLF
RSB
RSB₂
GPDJ-
GPDIM
RSC
RSD
RAA
TSS
RSO
RBR
GDR
RPS

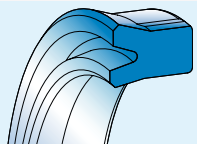
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Hydraulic

Per diametri superiori a 200mm sono disponibili le tenute tipo MAD e tipo CSC della Macma.

Seals type MAD and type CSC, produced by Macma, are available for diameters bigger than 200 mm.

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms

** diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio – hook diameter which could be modified according to mounting demand



PSA

TENUTA PISTONE TIPO PSA

Descrizione

La guarnizione tipo PSA è stata realizzata per impieghi su pistone e può essere utilizzata sia per il semplice che per il doppio effetto.

Ha labbri asimmetrici che assicurano sempre il contatto con la camicia anche in presenza di disallineamenti elevati.

Montaggio elastico avviene in cava semiaperta, avendo il materiale un alto modulo elastico.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
 Velocità: < 0.5 m/s
 Temperatura: da - 35° C a + 100° C con punte fino a 110° C
 Fluidi: oli a base minerale
 (vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo C0 ad alto modulo elastico, basso compression-set ed alta resistenza all'usura.

Ha una durezza di 93 Shore A $\pm$ 2.

Codice materiale: C0

Montaggio

Eliminare tutti gli spigoli vivi e le bave sul pistone dove alloggia la guarnizione.

Eseguire uno smusso di invito sulla camicia per facilitare l'inserimento del pistone.

Lubrificare la tenuta prima del montaggio.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

PSA TYPE PISTON SEAL

Description

The PSA seal type has been conceived to work on the piston and it can be used for simple or double effect. Its has asymmetrical lips which ensure a continuous contact with the bore, even in case of high misalignments.

Elastic installation in semi-open groove thanks to the high elastic modulus of the material.

Technical data

Pressure: < 400 bar at a temperature of 60° C
 Speed: < 0.5 m/s
 Temperature: from - 35° C to + 100° C, with peaks till 110° C
 Fluids: mineral-based oils and fuels
 (see table 3, page 14)

Material

The material used is a polyurethane with a high modulus of elasticity, low compression set and high wear resistance.

Its hardness is 93 Shore A $\pm$ 2.

Compound reference: C0

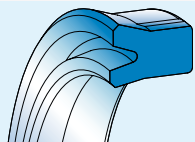
Assembling

Remove any flash or cutting edges on the piston where the seal is housed.

Provide a lead-in chamfer in the bore to have an easier piston insertion.

Lubricate the packing before installation.

For further information please refer to the installation instructions on page 61.



PSA

D _{H9}	d _{H9}	h	E _{+0,2}	d ₁ *	C	ART / ITEM
70,0	55,0	12,0	13,0	60,0	6,0	PSA 0700 0550 120 C0
70,0	60,0	7,0	8,0	64,0	5,0	PSA 0700 0600 070 C0
70,0	60,0	12,0	13,0	64,0	5,0	PSA 0700 0600 120 C0
70,0	62,0	7,5	8,5	65,0	4,5	PSA 0700 0620 075 C0
75,0	55,0	13,5	14,5	60,0	7,0	PSA 0750 0550 135 C0
75,0	65,0	7,0	8,0	69,0	5,0	PSA 0750 0650 070 C0
75,0	65,0	10,0	11,0	69,0	5,0	PSA 0750 0650 100 C0
80,0	60,0	12,0	13,0	65,0	7,0	PSA 0800 0600 120 C0
80,0	65,0	12,0	13,0	70,0	6,0	PSA 0800 0650 120 C0
80,0	68,0	8,5	9,5	72,0	5,5	PSA 0800 0680 085 C0
80,0	70,0	7,0	8,0	74,0	5,0	PSA 0800 0700 070 C0
80,0	70,0	12,0	13,0	74,0	5,0	PSA 0800 0700 120 C0
85,0	65,0	12,0	13,0	70,0	7,0	PSA 0850 0650 120 C0
85,0	65,0	13,5	14,5	70,0	7,0	PSA 0850 0650 135 C0
85,0	70,0	12,0	13,0	75,0	6,0	PSA 0850 0700 120 C0
85,0	75,0	10,0	11,0	79,0	5,0	PSA 0850 0750 100 C0
90,0	70,0	12,0	13,0	75,0	7,0	PSA 0900 0700 120 C0
90,0	70,0	13,5	14,5	75,0	7,0	PSA 0900 0700 135 C0
90,0	75,0	12,0	13,0	80,0	6,0	PSA 0900 0750 120 C0
90,0	80,0	10,0	11,0	84,0	5,0	PSA 0900 0800 100 C0
95,0	80,0	12,0	13,0	85,0	6,0	PSA 0950 0800 120 C0
95,0	85,0	7,0	8,0	89,0	5,0	PSA 0950 0850 070 C0
100,0	80,0	10,0	11,0	85,0	7,0	PSA 1000 0800 100 C0
100,0	80,0	12,0	13,0	85,0	7,0	PSA 1000 0800 120 C0
100,0	85,0	12,0	13,0	90,0	6,0	PSA 1000 0850 120 C0
100,0	88,0	8,5	9,5	93,0	5,5	PSA 1000 0880 085 C0
100,0	90,0	7,0	8,0	94,0	5,0	PSA 1000 0900 070 C0

D _{H9}	d _{H9}	h	E _{+0,2}	d ₁ *	C	ART / ITEM
100,0	90,0	8,0	9,0	94,0	5,0	PSA 1000 0900 080 C0
105,0	90,0	12,0	13,0	95,0	6,0	PSA 1050 0900 120 C0
110,0	90,0	12,0	13,0	95,0	7,0	PSA 1100 0900 120 C0
110,0	95,0	12,0	13,0	100,0	6,0	PSA 1100 0950 120 C0
110,0	100,0	8,0	9,0	105,0	6,0	PSA 1100 1000 080 C0
115,0	95,0	15,0	16,0	105,0	7,0	PSA 1150 0950 150 C0
115,0	100,0	12,0	13,0	105,0	6,0	PSA 1150 1000 120 C0
120,0	100,0	12,0	13,0	105,0	7,0	PSA 1200 1000 120 C0
120,0	105,0	12,0	13,0	110,0	6,0	PSA 1200 1050 120 C0
125,0	100,0	15,0	16,0	105,0	8,0	PSA 1250 1000 150 C0
125,0	105,0	12,0	13,0	110,0	7,0	PSA 1250 1050 120 C0
125,0	105,0	15,0	16,0	110,0	7,0	PSA 1250 1050 150 C0
125,0	110,0	10,0	11,0	115,0	6,0	PSA 1250 1100 100 C0
130,0	110,0	15,0	16,0	115,0	7,0	PSA 1300 1100 150 C0
140,0	120,0	12,0	13,0	125,0	7,0	PSA 1400 1200 120 C0
140,0	120,0	15,0	16,0	125,0	7,0	PSA 1400 1200 150 C0
150,0	130,0	15,0	16,0	135,0	7,0	PSA 1500 1300 150 C0
160,0	140,0	11,5	12,5	145,0	7,0	PSA 1600 1400 115 C0
160,0	140,0	15,0	16,0	145,0	7,0	PSA 1600 1400 150 C0
180,0	160,0	11,5	12,5	165,0	7,0	PSA 1800 1600 115 C0
180,0	160,0	15,0	16,0	165,0	7,0	PSA 1800 1600 150 C0
200,0	170,0	19,0	20,0	175,0	8,0	PSA 2000 1700 190 C0
250,0	220,0	19,0	20,0	225,0	8,0	PSA 2500 2200 190 C0

* diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio

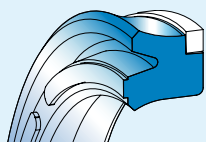
recommended hook diameter which could be modified according to mounting demand

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, acting as a margin. The rest of the page is covered by the blue grid pattern. There are no other markings, text, or drawings on the paper.



PAE

TENUTA PISTONE CON ANELLO ANTIESTRUSIONE TIPO PAE

Descrizione

La guarnizione tipo PAE è stata realizzata specificatamente per operare in condizioni di esercizio molto gravose.

Quando i giochi di accoppiamento tra camicia e pistone non possono essere ridotti e la pressione è molto elevata, superiore a 250 bar, la tenuta tipo PAE, grazie ad un robusto anello antiestrusione, risulta tra le più appropriate.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a +100° C con punte fino a 110° C
Fluidi: Oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati sono un poliuretano tipo C0 a 93 Shore A ad alto modulo elastico per la guarnizione e una resina acetlica tipo R0 rinforzata con fibre di vetro con elevata resistenza al carico di rottura per l'anello antiestrusione.

Codice materiale: CR

Montaggio

Il montaggio di questa guarnizione avviene in cava semiaperta.

La sequenza prevede prima la tenuta e poi l'anello antiestrusione.

E' importante togliere le bave e gli spigoli vivi sul pistone per non danneggiare la guarnizione durante il montaggio nella fase di accavallamento.

Lubrificare la tenuta prima del montaggio.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61

PAE TYPE PISTON SEAL WITH ANTIEXTRUSION RING

Description

The PAE seal type is specially designed for heavy duty applications.

When the coupling clearance between bore and piston cannot be reduced and the pressure is very high - above 250 bar - the PAE seal type, thanks to a strong anti-extrusion ring, is among the most appropriate of seal types.

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C till +100° C
Fluids: mineral oils
(see table 3, page 14)

Material

The material used for the seal is polyurethane C0-type at 93 Shore A with high elasticity module. The anti-extrusion ring is made of acetal resin R0-type reinforced with fibreglass and with high tensile strength.

Compound reference: CR

Assembling

The assembling of this seal is done in semi-open groove.

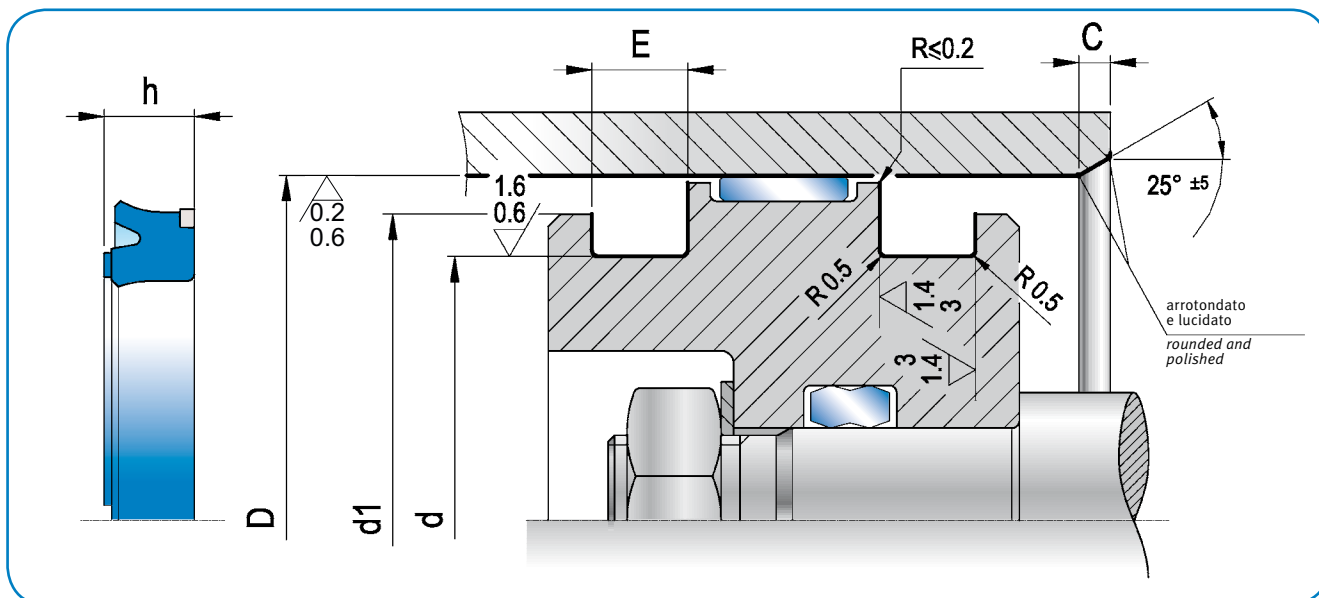
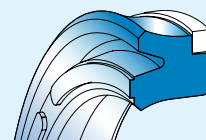
The anti-extrusion ring should be installed after the seal.

It is important to remove any flash or cutting edge on the piston not to damage the seal during the overlapping.

Lubricate the packing before installation.

For further information please refer to the installation instructions on page 61.

PAE



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

D _{H9}	d _{H9}	d ₁ *	h	E _{+0,2}	C	ART / ITEM
40,0	25,0	35,0	9,3	9,5	4,0	PAE 0400 0250 093 CR
45,0	30,0	40,0	9,3	9,5	4,0	PAE 0450 0300 093 CR
50,0	35,0	45,0	9,3	9,5	4,0	PAE 0500 0350 093 CR
55,0	40,0	50,0	9,3	9,5	4,0	PAE 0550 0400 093 CR
60,0	45,0	55,0	9,3	9,5	4,0	PAE 0600 0450 093 CR
63,0	48,0	58,0	9,3	9,5	4,0	PAE 0630 0480 093 CR
65,0	50,0	60,0	9,3	9,5	4,0	PAE 0650 0500 093 CR
70,0	50,0	64,0	12,2	12,5	5,0	PAE 0700 0500 122 CR
75,0	55,0	69,0	12,2	12,5	5,0	PAE 0750 0550 122 CR
80,0	60,0	74,0	12,2	12,5	5,0	PAE 0800 0600 122 CR
85,0	70,0	80,0	9,3	9,5	4,0	PAE 0850 0700 093 CR
90,0	70,0	84,0	12,2	12,5	5,0	PAE 0900 0700 122 CR

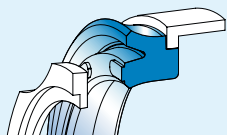
D _{H9}	d _{H9}	d ₁ *	h	E _{+0,2}	C	ART / ITEM
100,0	80,0	94,0	12,2	12,5	5,0	PAE 1000 0800 122 CR
105,0	85,0	99,0	12,2	12,5	5,0	PAE 1050 0850 122 CR
110,0	90,0	104,0	12,2	12,5	5,0	PAE 1100 0900 122 CR
115,0	95,0	109,0	12,2	12,5	5,0	PAE 1150 0950 122 CR
125,0	100,0	117,0	15,2	16,2	6,5	PAE 1250 1000 152 CR
125,0	105,0	119,0	12,2	12,5	5,0	PAE 1250 1050 122 CR
130,0	110,0	124,0	12,2	12,5	5,0	PAE 1300 1100 122 CR
140,0	115,0	132,0	15,2	16,2	6,5	PAE 1400 1150 152 CR
140,0	120,0	134,0	12,2	12,5	5,0	PAE 1400 1200 122 CR

* diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio
recommended hook diameter which could be modified according to mounting demand

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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PSH + RR

TENUTA PISTONE CON ANELLO GUIDA E RITEGNO TIPO PSH + RR

Descrizione

La guarnizione per pistone tipo PSH è simile al tipo PSA, ma è provvista di un anello di guida in resina acetale che, oltre ad attenuare eventuali disallineamenti, funge anche da antiestrusione. Un anello di ritegno tipo RR in resina termoplastica previene l'espulsione della tenuta durante l'inversione del ciclo.

Dati tecnici

Pressione: < 400 bar a temperatura di 60° C
Velocità: < 0.5 m/s
Temperatura: da - 35° C a + 100° C con punte fino a +110° C
Fluidi: fluidi e oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale proposto è il poliuretano tipo C0 ad alto modulo elastico, a basso compression-set ed elevata resistenza all'abrasione; l'anello di guida è in resina acetale tipo R0 rinforzata con fibre di vetro.

Codice materiale PSH: CR

L'anello di ritegno è costruito in resina termoplastica tipo R2.

Codice materiale RR: R2

Montaggio

Eliminare tutti gli spigoli vivi e le bave sul pistone dove alloggia la guarnizione.

Eseguire uno smusso di invito sulla camicia per facilitare l'inserimento del pistone.

Lubrificare la tenuta prima del montaggio.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

PSH+RR TYPE PISTON SEAL WITH WEAR AND RETAINING RING

Description

The PSH piston seal type is similar to the PSA type, but it has an acetal resin wear ring to mitigate possible misalignments and avoid extrusion. A RR retaining ring made of thermoplastic resin prevents seal ejection during the cycle inversion.

Technical data

Pressure: < 400 bar at a temperature of 60° C
Speed: < 0.5 m/s
Temperature: from - 35° C to + 100° C with peaks till +110° C
Fluids: mineral fluids and oils
(see table 3, page 14)

Material

The proposed material is a C0-type polyurethane with high modulus of elasticity, low compression set and high abrasion resistance. The wear ring is made of a R0-type acetal resin reinforced with fibreglass.

Compound reference PSH: CR

The retaining seal is made of thermoplastic resin, R2 type.

Compound reference RR: R2

Assembling

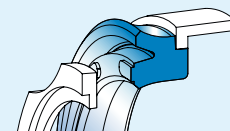
Avoid all cutting edges and flash on the piston where the seal is housed.

A lead-in chamfer in the groove will facilitate the piston insertion.

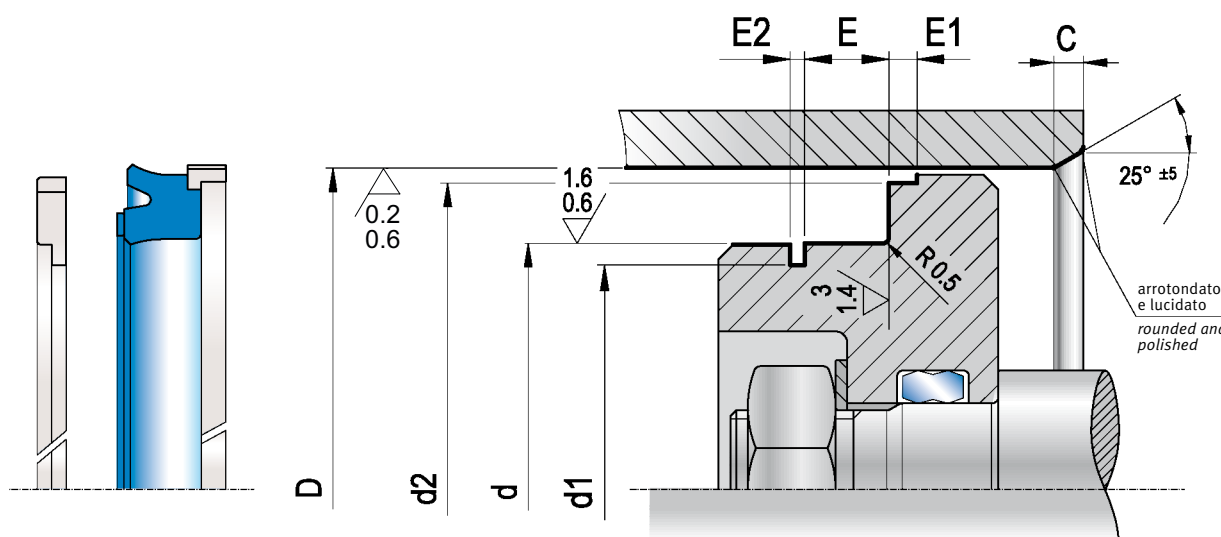
Lubricate the seal before installation.

For further information please refer to the installation instructions on page 61.

PSH+RR



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

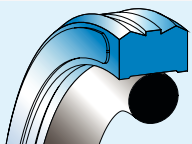


D _{H9}	d _{H9}	E +0,2	E ₂ +0,1 +0,2	d ₂ 0/-0,05	E ₁ ±0,1	C	d ₁ ±0,1	ART / ITEM	ART / ITEM
32,0	20,0	10,0	3,10	28,50	6,35	4,0	15,80	PSH 0320 0200 100 CR	RR 0320 0200 R2
35,0	22,0	10,0	3,10	31,40	6,35	4,0	17,80	PSH 0350 0220 100 CR	RR 0350 0220 R2
40,0	26,0	9,4	3,10	35,40	6,35	4,0	21,60	PSH 0400 0260 094 CR	RR 0400 0260 R2
45,0	30,0	9,5	3,10	40,40	6,35	4,0	25,80	PSH 0450 0300 095 CR	RR 0450 0300 R2
50,0	30,0	14,5	3,35	44,30	6,35	4,0	25,80	PSH 0500 0300 145 CR	RR 0500 0300 R2
50,0	35,0	11,0	3,10	45,35	6,35	4,0	30,60	PSH 0500 0350 110 CR	RR 0500 0350 R2
55,0	40,0	11,0	3,10	50,36	6,35	4,0	35,80	PSH 0550 0400 110 CR	RR 0550 0400 R2
60,0	40,0	14,5	3,35	55,40	6,35	4,0	36,10	PSH1 0600 0400 145 CR	RR 0600 0400 R2
60,0	40,0	14,5	3,35	54,20	6,35	4,0	36,10	PSH 0600 0400 145 CR	RR 0600 0400 R2
60,0	45,0	11,0	3,10	54,20	6,35	4,0	40,60	PSH 0600 0450 110 CR	RR 0600 0450 R2
63,0	45,0	10,5	3,10	58,40	6,35	4,0	40,84	PSH 0630 0450 105 CR	RR 0630 0450 R2
70,0	50,0	14,5	3,35	64,20	6,35	5,0	45,84	PSH 0700 0500 145 CR	RR 0700 0500 R2
75,0	55,0	14,5	3,35	69,20	6,35	5,0	51,10	PSH 0750 0550 145 CR	RR 0750 0550 R2
90,0	70,0	14,5	3,35	84,15	6,35	5,0	66,10	PSH 0900 0700 145 CR	RR 0900 0700 R2
95,0	75,0	14,5	3,35	89,15	6,35	5,0	71,10	PSH 0950 0750 145 CR	RR 0950 0750 R2

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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Hydraulic



PSO

TENUTA PISTONE TIPO PSO

Descrizione

La guarnizione tipo PSO ha un profilo con doppie punte sulla parte dinamica e un piano con due piccoli gradini di contenimento sulla parte statica dove trova alloggio l'o-ring.

La presenza dell'o-ring, che energizza la guarnizione, garantisce la perfetta tenuta sia a basse che ad alte pressioni.

Lo speciale profilo a doppie punte evita pressioni idrodinamiche sulla tenuta e di conseguenza l'effetto blow-by.

Dati tecnici

Pressione:	< 250 bar con materiale standard 93 Sh A a 60° C (C0)
Pressione:	< 400 bar con materiale alternativo 98 Sh A a 60° C (D0)
Pressione:	< 500 bar con materiale alternativo 55 Sh D a 60° C (E0)
Velocità:	< 0.5 m/s
Temperatura:	da - 35° C a + 100° C con punte fino a 110° C
Fluidi:	fluidi a base minerale (vedi tabella 3 a pagina 14)

Materiale

I materiali proposti sono TPU in differenti durezza a seconda delle pressioni di esercizio (C0/D0 / E0).

L'o-ring in NBR 70 Shore A. (N0).

Codice materiale: CN (o in alternativa, DN / EN).

Montaggio

E' necessario eliminare spigoli taglienti e bave nella sede dove alloggia la guarnizione.

Eseguire smusso di invito sulla camicia per facilitare il montaggio del pistone.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

Nota: in caso di finitura da lucido di trafilatura si consiglia l'utilizzo di tenuta pistone in PTFE.

PSO TYPE PISTON SEAL

Description

The PSO seal type shows a double profile on the dynamic side and a surface with two small steps on the static side, where the o-ring is housed.

The presence of the o-ring, which energizes the seal, ensures a perfect seal performance at low and high pressure.

The special double profile avoids any Hydro-dynamic pressure on the sealing part and the consequent blow-by effect.

Technical data

Pressure:	< 250 bar with standard material 93 Sh A at 60° C (C0)
Pressure:	< 400 bar with alternative material 98 Sh A at 60° C (D0)
Pressure:	< 500 bar with alternative material 55 Sh D at 60° C (E0)
Speed:	< 0.5 m/s
Temperature:	from - 35° C to + 100° C, with peaks at 110° C
Fluids:	mineral-based fluids (see table 3, page 14)

Material

Material proposed are TPUs with different hardness according to the working pressure (C0 / D0 / E0).

O-ring in NBR 70 Shore A (N0).

Compound reference: CN (or, in alternative, DN / EN).

Assembling

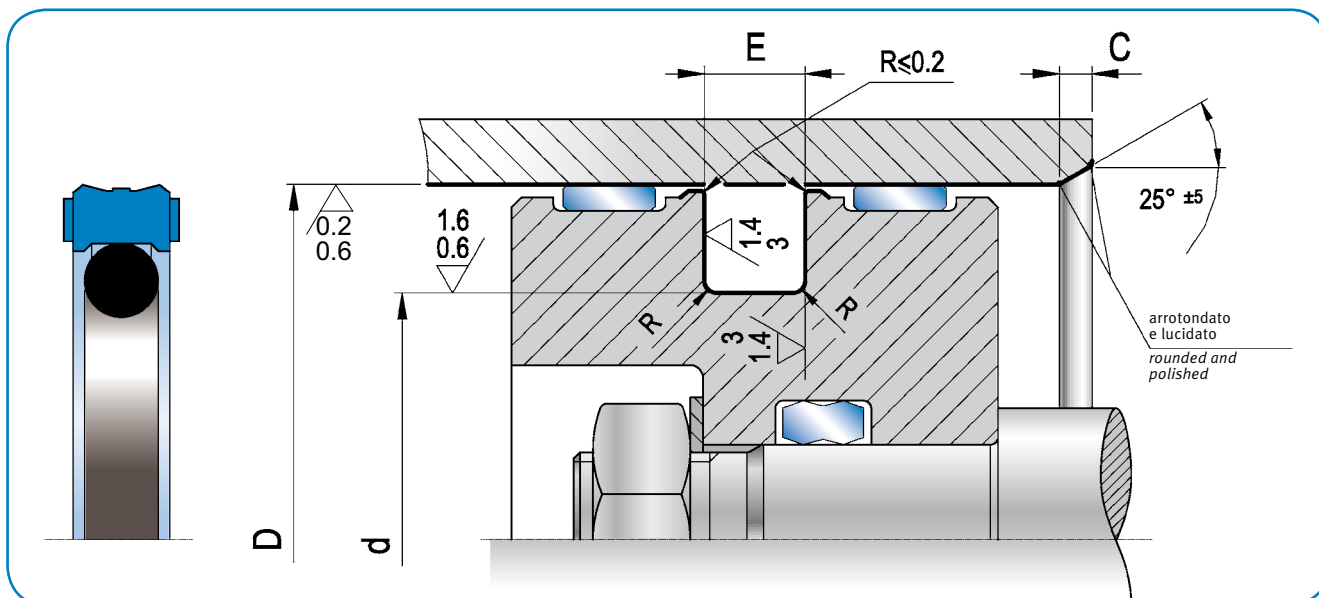
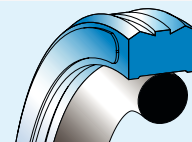
Remove any cutting edges and flash in the housing of the seal.

Ensure a lead-in chamfer in the bore to facilitate the piston installation.

For further information please refer to the installation instructions page 61.

Note: in case of Bright drawn surface machining it is recommended to use PTFE piston seals.

PSO

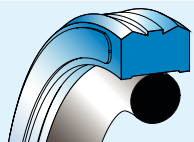


PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

D _{H9}	d _{h9}	E _{+0,2}	C	R	o-ring (no)	ART / ITEM
12,00	7,1	2,2	2,0	0,2	OR 610	PSO 0120 0710 022 CN
* 20,00	12,50	3,2	3,0	0,2	OR 112	PSO 0200 0125 032 CN
22,00	14,50	3,2	3,0	0,2	OR 113	PSO 0220 0145 032 CN
24,00	16,50	3,2	3,0	0,2	OR 114	PSO 0240 0165 032 CN
* 25,00	14,00	4,2	4,0	0,4	OR 207	PSO 0250 0140 042 CN
* 25,00	17,50	3,2	3,0	0,2	OR 115	PSO 0250 0175 032 CN
28,00	20,50	3,2	3,0	0,4	OR 117	PSO 0280 0205 032 CN
30,00	22,50	3,2	3,0	0,4	OR 118	PSO 0300 0225 032 CN
32,00	21,00	4,2	4,0	0,4	OR 211	PSO 0320 0210 042 CN
* 32,00	24,50	3,2	3,0	0,4	OR 119	PSO 0320 0245 032 CN
35,00	24,00	4,2	4,0	0,4	OR 213	PSO 0350 0240 042 CN
35,00	27,50	3,2	3,0	0,4	OR 121	PSO 0350 0275 032 CN
36,00	25,00	4,2	4,0	0,4	OR 213	PSO 0360 0250 042 CN
36,00	28,50	3,2	3,0	0,4	OR 122	PSO 0360 0285 032 CN
38,00	30,50	3,2	3,0	0,4	OR 123	PSO 0380 0305 032 CN
40,00	24,50	6,3	5,0	0,5	OR 318	PSO 0400 0245 063 CN
* 40,00	29,00	4,2	4,0	0,4	OR 216	PSO 0400 0290 042 CN
42,00	31,00	4,2	4,0	0,5	OR 217	PSO 0420 0310 042 CN
45,00	29,50	6,3	5,0	0,5	OR 320	PSO 0450 0295 063 CN
45,00	34,00	4,2	4,0	0,5	OR 219	PSO 0450 0340 042 CN
48,00	37,00	4,2	4,0	0,5	OR 221	PSO 0480 0370 042 CN
49,00	38,00	4,2	4,0	0,5	OR 222	PSO 0490 0380 042 CN
50,00	34,50	6,3	5,0	0,5	OR 324	PSO 0500 0345 063 CN
* 50,00	39,00	4,2	4,0	0,5	OR 222	PSO 0500 0390 042 CN
50,80	39,80	4,2	4,0	0,5	OR 222	PSO 0508 0398 042 CN
52,00	36,50	6,3	5,0	0,5	OR 324	PSO 0520 0365 063 CN
55,00	39,50	6,3	5,0	0,5	OR 325	PSO 0550 0395 063 CN

D _{H9}	d _{h9}	E _{+0,2}	C	R	o-ring (no)	ART / ITEM
55,00	44,00	4,2	4,0	0,5	OR 224	PSO 0550 0440 042 CN
57,00	46,00	4,2	4,0	0,5	OR 224	PSO 0570 0460 042 CN
60,00	44,50	6,3	5,0	0,5	OR 327	PSO 0600 0445 063 CN
60,00	49,00	4,2	4,0	0,5	OR 225	PSO 0600 0490 042 CN
* 63,00	47,50	6,3	5,0	0,5	OR 328	PSO 0630 0475 063 CN
* 63,00	52,00	4,2	4,0	0,5	OR 226	PSO 0630 0520 042 CN
63,50	52,50	4,2	4,0	0,5	OR 226	PSO 0635 0525 042 CN
65,00	49,50	6,3	5,0	0,5	OR 328	PSO 0650 0495 063 CN
65,00	54,00	4,2	4,0	0,5	OR 227	PSO 0650 0540 042 CN
70,00	54,50	6,3	5,0	0,5	OR 330	PSO 0700 0545 063 CN
70,00	59,00	4,2	4,0	0,5	OR 228	PSO 0700 0590 042 CN
72,00	61,00	4,2	4,0	0,5	OR 229	PSO 0720 0610 042 CN
75,00	59,50	6,3	5,0	0,5	OR 331	PSO 0750 0595 063 CN
75,00	64,00	4,2	4,0	0,5	OR 230	PSO 0750 0640 042 CN
* 80,00	64,50	6,3	5,0	0,5	OR 333	PSO 0800 0645 063 CN
* 80,00	69,00	4,2	4,0	0,5	OR 842	PSO 0800 0690 042 CN
85,00	69,50	6,3	5,0	0,5	OR 335	PSO 0850 0695 063 CN
88,90	73,40	6,3	5,0	0,5	OR 336	PSO 0889 0734 063 CN
90,00	74,50	6,3	5,0	0,5	OR 336	PSO 0900 0745 063 CN
95,00	79,50	6,3	5,0	0,5	OR 338	PSO 0950 0795 063 CN
* 100,00	84,50	6,3	5,0	0,5	OR 339	PSO 1000 0845 063 CN
105,00	89,50	6,3	5,0	0,5	OR 341	PSO 1050 0895 063 CN
110,00	94,50	6,3	5,0	0,5	OR 343	PSO 1100 0945 063 CN
115,00	94,00	8,1	6,0	0,5	OR 94X7	PSO 1150 0940 081 CN
115,00	99,50	6,3	5,0	0,5	OR 344	PSO 1150 0995 063 CN
118,00	102,50	6,3	5,0	0,5	OR 345	PSO 1180 1025 063 CN
120,00	104,50	6,3	5,0	0,5	OR 346	PSO 1200 1045 063 CN

* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms



PSO

D _{H9}	d _{H9}	E _{+0,2}	C	R	O-ring (no)	ART / ITEM				
* 125,00	104,00	8,1	6,0	0,5	OR 100X7	PSO 1250	1040	081	CN	
* 125,00	109,50	6,3	5,0	0,5	OR 347	PSO 1250	1095	063	CN	
130,00	109,00	8,1	6,0	0,6	OR 106X7	PSO 1300	1090	081	CN	
130,00	114,50	6,3	5,0	0,6	OR 349	PSO 1300	1145	063	CN	
135,00	114,00	8,1	6,0	0,6	OR 425	PSO 1350	1140	081	CN	
135,00	119,50	6,3	5,0	0,6	OR 350	PSO 1350	1195	063	CN	
140,00	119,00	8,1	6,0	0,6	OR 426	PSO 1400	1190	081	CN	
145,00	124,00	8,1	6,0	0,6	OR 428	PSO 1450	1240	081	CN	
150,00	129,00	8,1	6,0	0,6	OR 430	PSO 1500	1290	081	CN	
* 160,00	139,00	8,1	6,0	0,6	OR 433	PSO 1600	1390	081	CN	
170,00	149,00	8,1	6,0	0,6	OR 436	PSO 1700	1490	081	CN	
177,80	156,80	8,1	6,0	0,6	OR 437	PSO 1778	1568	081	CN	
180,00	159,00	8,1	6,0	0,6	OR 438	PSO 1800	1590	081	CN	
185,00	164,00	8,1	6,0	0,6	OR 874	PSO 1850	1640	081	CN	
190,00	169,00	8,1	6,0	0,6	OR 439	PSO 1900	1690	081	CN	
* 200,00	179,00	8,1	6,0	0,6	OR 441	PSO 2000	1790	081	CN	
210,00	189,00	8,1	6,0	0,6	OR 443	PSO 2100	1890	081	CN	
220,00	199,00	8,1	6,0	0,6	OR 444	PSO 2200	1990	081	CN	
230,00	209,00	8,1	6,0	0,6	OR 445	PSO 2300	2090	081	CN	
240,00	219,00	8,1	6,0	0,6	OR 446	PSO 2400	2190	081	CN	
* 250,00	229,00	8,1	6,0	0,6	OR 447	PSO 2500	2290	081	CN	

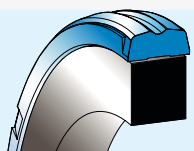
* in conformità alle norme ISO/DIN 5597 e ISO 5597/1 – in accordance with ISO/DIN 5597 and ISO 5597/1 norms
Materiali alternativi: DN (98 Sh A); EN (55 Sh D) – Alternative compounds: DN (98 Sh A); EN (55 Sh D)

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

[illegible]



PSQ

TENUTA PISTONE TIPO PSQ

Descrizione

La guarnizione PSQ ha un profilo con doppie punte al centro nella parte dinamica ed un piano con due piccoli gradini nella parte statica dove alloggia il Q-ring.

La presenza del Q-ring energizza la guarnizione e garantisce la perfetta tenuta sia a bassa che ad alta pressione.

La geometria del profilo a doppie punte centrali evita pressioni idrodinamiche sulla tenuta e di conseguenza l'effetto blow-by.

Dati tecnici

Pressione: < 250 Bar con materiale tipo C0
a 93 Shore A a temperatura di 60° C.
< 400 Bar con materiale tipo D0 a 98
Shore A a temperatura di 60° C.

Velocità: < 0,8 m/s

Temperatura: da - 35° C a + 100 ° C
con punte fino a 110° C.

Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali proposti sono TPU di diverse durezza a seconda delle pressioni di esercizio.

Codice materiale: CN (93 Shore A con Q-ring) o, in alternativa, DN (98 Shore A con Q-ring)

Montaggio

E' necessario eliminare gli spigoli taglienti e le bave nella sede dove alloggia la guarnizione.

Eseguire smusso d'invito sulla camicia per facilitare il montaggio del pistone.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag 61.

PSQ TYPE PISTON SEAL

Description

The PSQ seal has a double point profile in the in the dynamic part, and two small steps in the static part where the Q-ring is housed.

The Q-ring energizes the seal and provides a perfect sealing performance at low and high pressure.

The shape of the central double profile prevents hydrodynamic pressures on the seal and the resulting blow-out effect.

Technical data

Pressure: < 250 Bar with a C0-type material at 93
Shore A, at a temperature of 60°C.
< 400 Bar a D0-type material, at 98
Shore A, at a temperature of 60° C.

Speed: < 0.8 m/s

Temperature: from - 35° C to + 100 ° C with peaks
up to 110° C.

Fluids: mineral oils
(see table 3, page 14)

Material

Material proposed are TPUs with different hardness according to the working pressure.

Compound reference: CN (93 Shore A with Q-ring) or, alternatively, DN (98 Shore A with Q-ring)

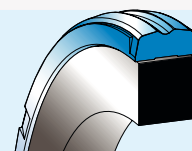
Assembling

Cutting edges or flash must be removed in the housing of the seal.

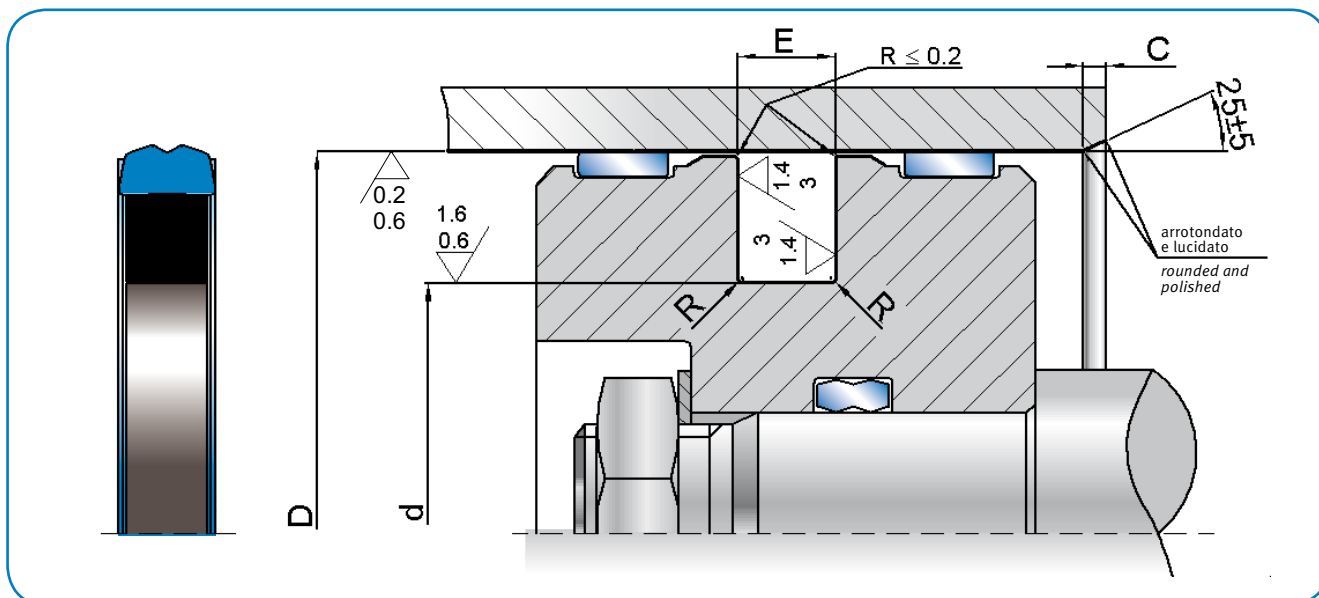
Ensure a lead-in chamfer in the bore to facilitate the piston installation.

For further information please refer to the assembly instructions on page 61.

PSQ



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE



D _{H9}	d _{h9}	E _{+0,2}	C	R	ART / ITEM
40,0	24,5	6,3	5,0	0,4	PSQ 0400 0245 063 CN
* 40,0	29,0	4,2	4,0	0,3	PSQ 0400 0290 042 CN
45,0	34,0	4,2	4,0	0,3	PSQ 0450 0340 042 CN
* 50,0	34,5	6,3	5,0	0,4	PSQ 0500 0345 063 CN
* 50,0	39,0	4,2	4,0	0,3	PSQ 0500 0390 042 CN
55,0	39,5	6,3	5,0	0,4	PSQ 0550 0395 063 CN
60,0	44,5	6,3	5,0	0,4	PSQ 0600 0445 063 CN
60,0	49,0	4,2	4,0	0,3	PSQ 0600 0490 042 CN
* 63,0	47,5	6,3	5,0	0,4	PSQ 0630 0475 063 CN
* 63,0	52,0	4,2	5,0	0,3	PSQ 0630 0520 042 CN
65,0	49,5	6,3	4,0	0,4	PSQ 0650 0495 063 CN
70,0	54,5	6,3	5,0	0,4	PSQ 0700 0545 063 CN
70,0	59,0	4,2	4,0	0,3	PSQ 0700 0590 042 CN
75,0	59,5	6,3	5,0	0,4	PSQ 0750 0595 063 CN
75,0	64,0	4,2	5,0	0,4	PSQ 0750 0640 042 CN
80,0	59,0	8,1	6,0	0,4	PSQ 0800 0590 081 CN
* 80,0	64,5	6,3	5,0	0,4	PSQ 0800 0645 063 CN
85,0	69,5	6,3	5,0	0,4	PSQ 0850 0695 063 CN

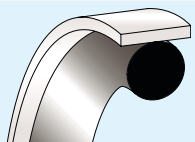
D _{H9}	d _{h9}	E _{+0,2}	C	R	ART / ITEM
90,0	69,0	8,1	6,0	0,4	PSQ 0900 0690 081 CN
90,0	74,5	6,3	5,0	0,4	PSQ 0900 0745 063 CN
95,0	79,5	6,3	5,0	0,4	PSQ 0950 0795 063 CN
100,0	79,0	8,1	6,0	0,4	PSQ 1000 0790 081 CN
* 100,0	84,5	6,3	5,0	0,4	PSQ 1000 0845 063 CN
105,0	89,5	6,3	5,0	0,4	PSQ 1050 0895 063 CN
110,0	89,0	8,1	6,0	0,4	PSQ 1100 0890 081 CN
110,0	94,5	6,3	5,0	0,4	PSQ 1100 0945 063 CN
115,0	94,0	8,1	6,0	0,4	PSQ 1150 0940 081 CN
120,0	99,0	8,1	6,0	0,4	PSQ 1200 0990 081 CN
* 125,0	104,0	8,1	6,0	0,4	PSQ 1250 1040 081 CN
* 125,0	109,5	6,3	5,0	0,4	PSQ 1250 1095 063 CN
130,0	109,0	8,1	6,0	0,4	PSQ 1300 1090 081 CN
140,0	119,0	8,1	6,0	0,4	PSQ 1400 1190 081 CN
180,0	159,0	8,1	6,0	0,4	PSQ 1800 1590 081 CN

* ISO 7425

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

oleodinamica
Hydraulic



PSN

TENUTA PISTONE TIPO PSN

Descrizione

La tenuta pistone tipo PSN è stata studiata sia per impieghi oleodinamici che pneumatici.

Grazie alla sua elasticità, può essere montata anche su pistone di tipo monoblocco.

La sua caratteristica principale è l'eccezionale scorrevolezza, che permette di utilizzare questa tenuta anche con fluidi a basso potere lubrificante come aria e acqua.

Innumerevoli test hanno dato esiti positivi per quanto riguarda l'assenza di estrusione del profilo anche con passaggio della tenuta sui fori di drenaggio.

Dati Tecnici

Pressione: < 250 bar
Velocità: < 4 m/s
Temperatura: - 30° C a + 110° C,
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato per l'elemento di tenuta è un tecnopolimero ad alta elasticità, mentre per quanto riguarda l'elemento energizzante si utilizza O-Ring in NBR 70 Shore A.

In alternativa, per la tenuta si può utilizzare PTFE rinforzato bronzo, mentre, per l'elemento energizzante, O-Ring in materiali quali HNBR o FKM

Montaggio

Il montaggio avviene in sede anulare in modo elastico.

Eliminare le bave di lavorazione meccanica.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag 61.

PSN TYPE PISTON SEAL

Description

The PSN type piston seal has been designed for both hydraulic and pneumatic applications.

Due to its elasticity can also be assembled on monoblock piston type.

Its main characteristic is an exceptional smoothness that allows to use this seal even with low lubricity fluids such as air and water.

many tests have given positive results as regards the absence of extrusion of the profile even with the passage of the seal on the drainage holes of the system.

Technical data

Pressure: < 250 bar
Speed: < 4 m/s
Temperature: from - 30° C up to + 110° C
Fluids: mineral oils
(see table 3, page 14)

Material

The sealing element's material is a technopolymer with high elasticity, whereas, for the energizing element, it is proposed O-ring in NBR 70 Shore A. Alternative material is bronze filled PTFE for the sealing element and, for the energizing element, O-ring in HNBR or FKM.

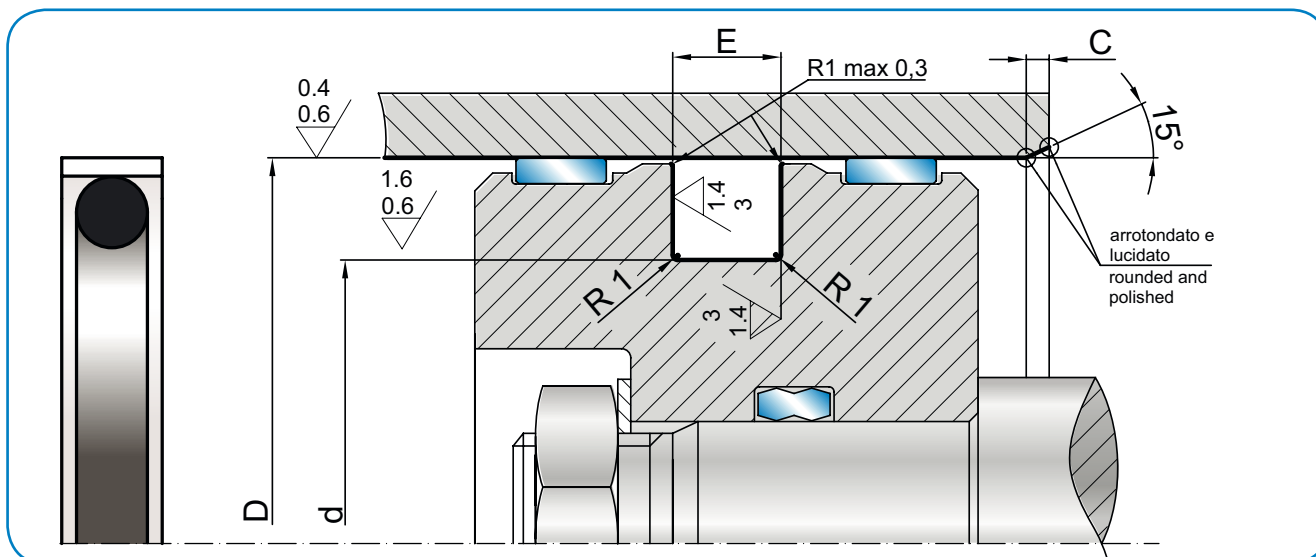
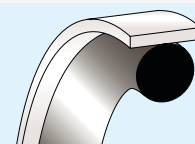
Assembling

Elastic installation in annular groove.

Remove any machining burrs and lubricate the seal. Lubricate the seal before installation.

For further information please refer to the installation instructions on page 61.

PSN



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

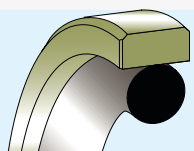
D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
20,00	13,80	3,0	615	5,0	PSN 0200 0138 030 RN
22,00	15,80	3,0	616	5,0	PSN 0220 0158 030 RN
25,00	18,80	3,00	617	5,0	PSN 0250 0188 030 RN
28,00	20,00	4,0	210	5,0	PSN 0280 0200 040 RN
30,00	22,00	4,0	211	5,0	PSN 0300 0220 040 RN
32,00	24,00	4,0	213	5,0	PSN 0320 0240 040 RN
35,00	27,00	4,0	215	5,0	PSN 0350 0240 040 RN
36,00	28,00	4,0	215	5,0	PSN 0360 0280 040 RN
38,00	30,00	4,0	216	5,0	PSN 0380 0300 040 RN
40,00	32,00	4,0	218	5,0	PSN 0400 0320 040 RN
42,00	34,00	4,0	218	5,0	PSN 0420 0340 040 RN
45,00	37,00	4,0	221	5,0	PSN 0450 0370 040 RN
48,00	40,00	4,0	222	5,0	PSN 0480 0400 040 RN
50,00	38,30	6,0	325	5,0	PSN 0500 0383 060 RN
55,00	43,50	6,0	326	5,0	PSN 0550 0435 060 RN
56,00	44,30	6,0	327	5,0	PSN 0560 0443 060 RN
60,00	48,30	6,0	328	5,0	PSN 060 0483 060 RN
63,00	51,30	6,0	329	5,0	PSN 0630 0513 060 RN

D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
65,00	53,30	6,0	329	5,0	PSN 0650 0533 060 RN
70,00	58,40	6,00	331	5,0	PSN 0700 0584 060 RN
75,00	62,90	6,0	332	5,0	PSN 0750 0629 060 RN
80,00	68,00	6,0	334	5,0	PSN 0800 0680 060 RN
85,00	72,90	6,0	336	5,0	PSN 0850 0729 050 RN
90,00	78,00	6,0	337	5,0	PSN 0900 0780 060 RN
95,00	82,90	6,0	339	5,0	PSN 0950 0829 060 RN
100,00	88,00	6,0	340	5,0	PSN 1000 0880 060 RN
110,00	97,90	6,0	343	7,0	PSN 1100 0979 060 RN
120,00	107,90	6,0	346	7,0	PSN 1200 1079 060 RN
125,00	112,50	6,0	348	7,0	PSN 1250 1125 060 RN
130,00	117,50	6,0	349	7,0	PSN 1300 1175 060 RN
140,00	124,50	8,0	428	7,0	PSN 1400 1245 080 RN
160,00	144,20	8,0	434	7,0	PSN 1600 1442 080 RN
180,00	163,70	8,0	874	7,0	PSN 1800 1637 080 RN
200,00	183,70	8,0	880	7,0	PSN 2000 1837 080 RN
250,00	233,70	8,0	447	10,0	PSN 2500 2337 080 RN

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Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



TPD

TENUTA PISTONE TIPO TPD

Descrizione

La tenuta pistone tipo TPD consta di un anello sagomato in PTFE caricato bronzo a basso coefficiente di attrito, avente funzione di tenuta dinamica e di un anello O-Ring che effettua la tenuta statica e contemporaneamente svolge un effetto energizzante.

Dati Tecnici

Pressione: < 600 bar

Velocità: < 15 m/s

Temperatura: per il tipo standard con OR in nitrile da - 30° C a + 100° C, con punte per periodi brevi fino a 120° C.
Per range di temperature differenti occorre sostituire l'O-Ring in NBR con materiali più idonei

Materiale

Per il tipo standard PTFE caricato a bronzo ed O-Ring in nitrile.

Codice materiale: TN

Montaggio

Le guarnizioni PTFE necessitano di precauzioni estremamente rigorose, maggiori che per tutte le altre tipologie di tenuta. E' fondamentale eliminare gli spigoli vivi e le bave nelle sedi. Il montaggio delle guarnizioni per stelo segue normalmente questa sequenza:

- Installare O-Ring nella sede;
- Spingere dilatando l'anello in PTFE, con l'ausilio di un mandrino ed una bussola ad espansione;
- Calibrare con una bussola opportunamente dimensionata (Pag.62)

TPD TYPE PISTON SEAL

Description

The TPD piston seal is composed of two rings. The dynamic seal is a shaped in bronze filled PTFE with very low friction coefficient. The static seal is an O-Ring also working as energizer.

Technical data

Pressure: < 600 bar

Speed: < 15 m/s

Temperature: from - 30° C up to + 100° C for the standard type with nitrile OR. Short peaks till 120° C. For a different temperature range, the O-Ring in NBR should be replaced by a more suitable material

Material

Bronze-filled PTFE for the standard type, and NBR for the O-Ring.

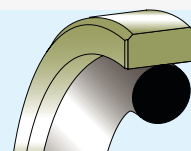
Compound reference: TN

Assembling

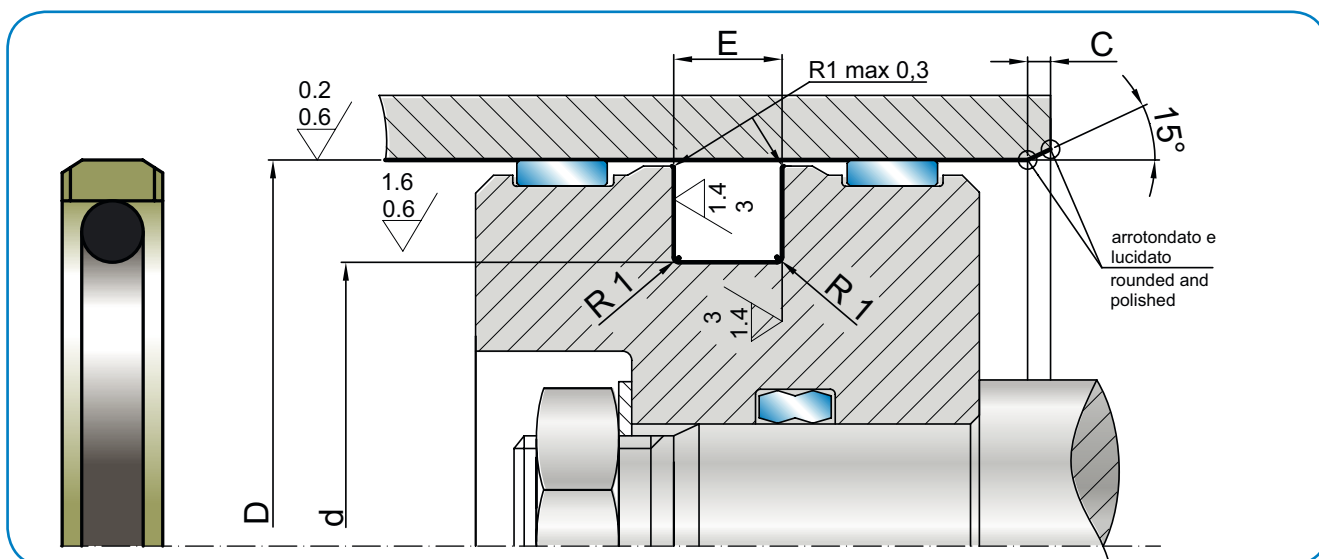
PTFE seals require careful assembling operations in comparison to other types of seals. It is necessary to remove flashes and/or cutting edges in the grooves. The rod seal is usually assembled in the following Sequence:

- fit the O-Ring into the groove
- twist the PTFE ring using a mandrel and a expansion bush;
- calibrate with a bush with right dimension (Pag.62)

TPD



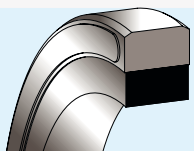
PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE



D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
8,0	3,1	2,2	006	5,0	TPD 0080 0031 022 TN
10,0	5,1	2,2	008	5,0	TPD 0100 0051 022 TN
12,0	7,1	2,2	010	5,0	TPD 0120 0071 022 TN
15,0	7,5	3,2	108	5,0	TPD 0150 0075 032 TN
16,0	8,5	3,2	109	5,0	TPD 0160 0085 032 TN
18,0	10,5	3,2	110	5,0	TPD 0180 0105 032 TN
20,0	12,5	3,2	111	5,0	TPD 0200 0125 032 TN
20,0	15,1	2,2	015	5,0	TPD 0200 0151 022 TN
22,0	14,5	3,2	113	5,0	TPD 0220 0145 032 TN
24,0	16,5	3,2	114	5,0	TPD 0240 0165 032 TN
25,0	20,1	2,2	018	5,0	TPD 0250 0201 022 TN
25,0	17,5	3,2	115	5,0	TPD 0250 0175 032 TN
28,0	20,5	3,2	116	5,0	TPD 0280 0205 032 TN
30,0	22,5	3,2	118	5,0	TPD 0300 0225 032 TN
32,0	24,5	3,2	119	5,0	TPD 0320 0245 032 TN
35,0	27,5	3,2	121	5,0	TPD 0350 0275 032 TN
39,0	31,5	3,2	124	5,0	TPD 0390 0315 032 TN
40,0	29,0	4,2	216	5,0	TPD 0400 0290 042 TN
42,0	31,0	4,2	217	5,0	TPD 0420 0310 042 TN
45,0	34,0	4,2	219	5,0	TPD 0450 0340 042 TN
48,0	37,0	4,2	221	5,0	TPD 0480 0370 042 TN
50,0	39,0	4,2	222	5,0	TPD 0500 0390 042 TN
52,0	41,0	4,2	223	5,0	TPD 0520 0410 042 TN
55,0	44,0	4,2	224	5,0	TPD 0550 0440 042 TN
60,0	49,0	4,2	225	5,0	TPD 0600 0490 042 TN
63,0	52,0	4,2	226	5,0	TPD 0630 0520 042 TN
65,0	54,0	4,2	227	5,0	TPD 0650 0540 042 TN
70,0	59,0	4,2	228	5,0	TPD 0700 0590 042 TN
75,0	64,0	4,2	230	5,0	TPD 0750 0640 042 TN
80,0	64,5	6,3	333	5,0	TPD 0800 0645 063 TN

D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
85,0	69,5	6,3	335	5,0	TPD 0850 0695 063 TN
90,0	74,5	6,3	336	5,0	TPD 0900 0745 063 TN
100,0	84,5	6,3	339	5,0	TPD 1000 0845 063 TN
105,0	89,5	6,3	341	7,0	TPD 1050 0895 063 TN
110,0	94,5	6,3	343	7,0	TPD 1100 0945 063 TN
115,0	94,0	8,1		7,0	TPD 1100 0940 081 TN
115,0	99,5	6,3	344	7,0	TPD 1150 0995 063 TN
120,0	104,5	6,3	346	7,0	TPD 1200 1045 063 TN
125,0	104,0	8,1		7,0	TPD 1250 1040 081 TN
125,0	109,5	6,3	347	7,0	TPD 1250 1095 063 TN
130,0	114,5	6,3	349	7,0	TPD 1300 1145 063 TN
135,0	114,0	8,1	425	7,0	TPD 1350 1140 081 TN
140,0	119,0	8,1	426	7,0	TPD 1400 1190 081 TN
145,0	124,0	8,1	428	7,0	TPD 1450 1240 081 TN
150,0	129,0	8,1	429	7,0	TPD 1500 1290 081 TN
160,0	139,0	8,1	433	7,0	TPD 1600 1390 081 TN
170,0	149,0	8,1	436	7,0	TPD 1700 1490 081 TN
180,0	159,0	8,1	438	7,0	TPD 1800 1590 081 TN
190,0	169,0	8,1	439	7,0	TPD 1900 1690 081 TN
200,0	179,0	8,1	441	7,0	TPD 2000 1790 081 TN
210,0	189,0	8,1	442	10,0	TPD 2100 1890 081 TN
220,0	199,0	8,1	444	10,0	TPD 2200 1990 081 TN
230,0	209,0	8,1	445	10,0	TPD 2300 2090 081 TN
240,0	219,0	8,1	446	10,0	TPD 2400 2190 081 TN
250,0	229,0	8,1	447	10,0	TPD 2500 2290 081 TN
260,0	239,0	8,1	447	10,0	TPD 2600 2390 081 TN
270,0	249,0	8,1	448	10,0	TPD 2700 2490 081 TN
280,0	259,0	8,1	449	10,0	TPD 2800 2590 081 TN
290,0	269,0	8,1	450	10,0	TPD 2900 2690 081 TN
300,0	279,0	8,1	451	10,0	TPD 3000 2790 081 TN

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PSZ

TENUTA PISTONE TIPO PSZ

Descrizione

La tenuta PSZ a doppio effetto è il risultato della combinazione tra un pattino in materiale plastico tagliato a gradino ed un anello in materiale elastomerico (NBR), di sezione rettangolare, con funzione energizzante.

L'alta resistenza del materiale plastico, permette alla tenuta di resistere a pressioni elevate e ammette giochi radiali (Pistone/Camicia) molto superiori rispetto alle attuali tenute. Questo semplifica e facilita le lavorazioni meccaniche del pistone. Trova impiego in escavatori, sollevatori, gru e carrelli elevatori.

Limiti d'impiego

Pressione: < 800 bar (con picchi fino a 1000 bar)
Velocità: < 1 m/s
Temperatura: da - 30 °C a +110°C
Fluidi: fluidi e oli a base minerale.
(vedi tabella 3 a pagina 14)

Materiale

Anello elastomerico in NBR 75 Shore A.
Pattino in materiale PA66 modificato.

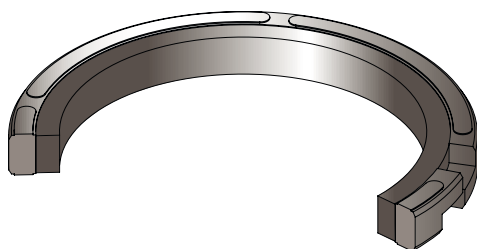
Montaggio

Il montaggio è semplificato essendo il pattino tagliato a gradino.

Si monta in cava chiusa dopo aver montato l'elemento energizzante in NBR.

Si consiglia di ingrassare prima di inserire il pistone nel cilindro.

Fig. 27- Pic.27:



PSZ TYPE PISTON SEAL

Description

The double effect PSZ seal is the result of a combination between plastic runner with step cut and elastomeric Q-ring (NBR) for energizing. The high strength of the plastic material, grant the sealing effect at high pressure and permit higher radial clearance (Piston/ Bore) compare to other piston seals.

This last aspect allows for an easier machining of the piston.

Fields of applications: excavators, lifts, cranes and fork lifts.

Technical data

Pressure: < 800 bar (with peaks till 1000 bar)
Speed: < 1 m/s
Temperature: from - 30° C to + 110° C
Fluids: mineral-based fluid and oil.
(see table 3, page 14)

Material

Elastomeric ring in NBR 75 Shore A
Plastic Runner in modify PA66 material

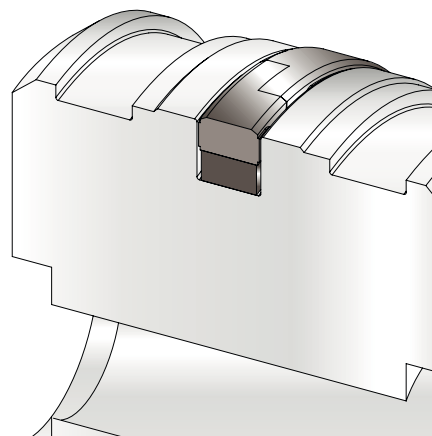
Assembling

The installation is simplified because the Runner has a cutting step.

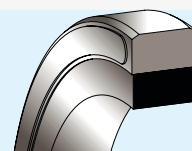
The assembling in in closed groove after the installation of NBR energizing element.

Grease before the piston installation in the cylinder.

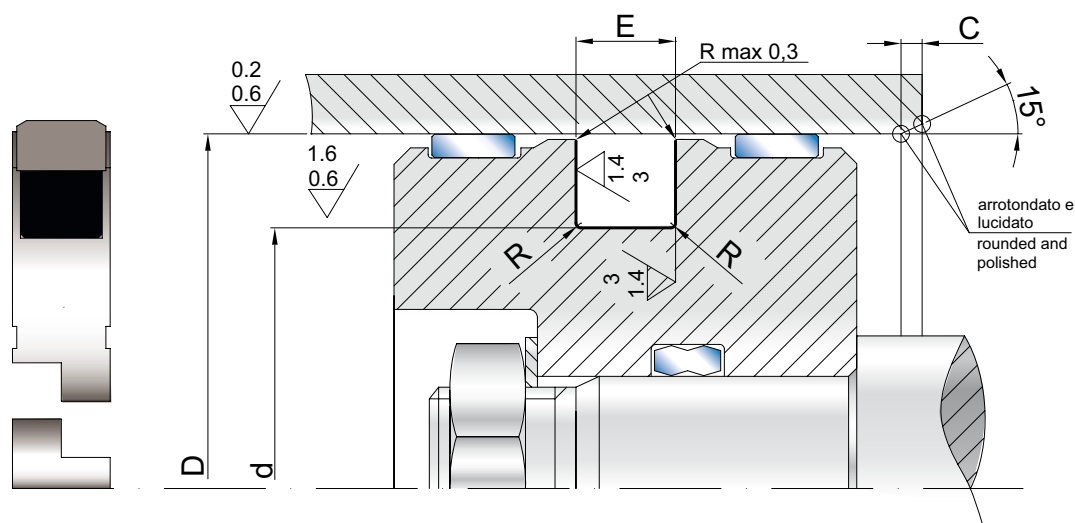
Fig. 28- Pic.28:



PSZ



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE



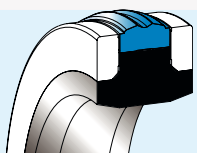
D _{H9}	d _{H9}	E _{+0,1}	R	C	ART / ITEM
45,0	34,0	4,2	0,3	5,0	PSZ 0450 0340 042 RN
50,0	34,5	6,3	0,3	5,0	PSZ 0500 0345 063 RN
60,0	49,0	4,2	0,3	5,0	PSZ 0600 0490 042 RN
63,0	47,5	6,3	0,3	5,0	PSZ 0630 0475 063 RN
70,0	54,5	6,3	0,5	5,0	PSZ 0700 0545 063 RN
75,0	59,5	6,3	0,5	5,0	PSZ 0750 0595 063 RN
75,0	54,0	8,1	0,5	5,0	PSZ 0750 0540 081 RN
80,0	59,0	8,1	0,5	5,0	PSZ 0800 0590 081 RN
85,0	69,5	6,3	0,5	5,0	PSZ 0850 0695 063 RN
90,0	69,0	8,1	0,5	5,0	PSZ 0900 0690 081 RN
95,0	79,5	6,3	0,5	5,0	PSZ 0950 0795 063 RN
100,0	79,0	8,1	0,5	5,0	PSZ 1000 0790 081 RN

D _{H9}	d _{H9}	E _{+0,1}	R	C	ART / ITEM
110,0	89,0	8,1	0,5	5,0	PSZ 1100 0890 081 RN
120,0	99,0	8,1	0,5	5,0	PSZ 1200 0990 081 RN
125,0	104,0	8,1	0,6	6,5	PSZ 1250 1040 081 RN
130,0	109,0	8,1	0,6	6,5	PSZ 1300 1090 081 RN
140,0	119,0	8,1	0,6	6,5	PSZ 1400 1190 081 RN
150,0	129,0	8,1	0,6	6,5	PSZ 1500 1290 081 RN
160,0	139,0	8,1	0,6	6,5	PSZ 1600 1390 081 RN
170,0	149,0	8,1	0,6	6,5	PSZ 1700 1490 081 RN
180,0	159,0	8,1	0,6	6,5	PSZ 1800 1590 081 RN
190,0	169,0	8,1	0,6	6,5	PSZ 1900 1690 081 RN
200,0	179,0	8,1	0,6	6,5	PSZ 2000 1790 081 RN

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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PHP

TENUTA PISTONE TIPO PHP

Descrizione

La tenuta pistone PHP è studiata per cilindri a doppio effetto dove le pressioni e le condizioni di lavoro sono molto gravose.

E' composta da tre elementi:

- Parte statica che ha funzione energizzante
- Parte centrale dinamica con funzione di tenuta assiale
- Anelli laterali antiestrusione che permettono un gioco radiale maggiore tra pistone e camicia del cilindro.

Utilizzata sui cilindri macchine movimento terra, macchine di sollevamento e presse.

Limiti d'impiego

Pressione:	< 400 bar (con materiale TPU) < 600 bar (con materiale PTFE)
Velocità:	< 0.8 m/s (con materiale TPU) < 1.5 m/s (con materiale PTFE)
Temperatura:	da - 35 °C a +100°C (con punte fino a 110°C con materiale TPU) da -35°C a + 150° (con materiale PTFE)
Fluidi:	Fluidi e oli a base minerale. (vedi tabella 3 a pagina 14)

Materiale

- Anello espansore statico in NBR 80 Shore A
- Anello di tenuta dinamica in TPU 93 Shore A (standard per pressioni fino a 300 [bar])
- Anello di tenuta dinamica in TPU 98 Shore A (standard per pressioni fino a 400 [bar])
- Anello di tenuta dinamica in PTFE(per pressioni fino a 600 [bar] e alte velocità)
- Anelli antiestrusione in materiale termoplastico (POM oppure PA)

Montaggio

Il montaggio può avvenire sia su pistone monoblocco che su pistone in due parti.

Sequenza del montaggio:

- Elemento in Gomma
- Elemento in Poliuretano o in PTFE
- Anelli Antiestrusione.

Togliere gli spigoli vivi e le bave di lavorazione per evitare di danneggiare la tenuta durante il montaggio.

PHP TYPE PISTON SEAL

Description

The PHP piston seal is design for double effect cylinder where the pressure and working conditions are heavy.

It is composed by three element:

- Static Part that has energizing function
 - Central Dynamic part has axial sealing function
 - Lateral antiextrusion Ring allow a greater radial clearance between piston and bore cylinder.
- Cylinders used on earth moving machines, lifting machines and presses.

Technical data

Pressure:	< 400 bar (With TPU material) < 600 bar (With PTFE material)
Speed:	< 0.8 m/s (With TPU material) < 1.5 m/s (With PTFE material)
Temperature:	from - 35 °C to +100°C (with peaks till 110°C with TPU material) da -35°C a + 150° (With PTFE material)
Fluids:	mineral-based fluid and oil. (see table 3, page 14)

Material

- Static energizing ring in NBR 80 Shore A
- Dynamic seal in TPU 93 Shore A (standard for pressure until 300 [bar])
- Dynamic seal in TPU 98 Shore A (standard for pressure until 400 [bar])
- Dynamic seal in PTFE(for pressure until 600 [bar] e high speed)
- Anti-extrusion Ring in thermoplastic material (POM or PA)

Assembling

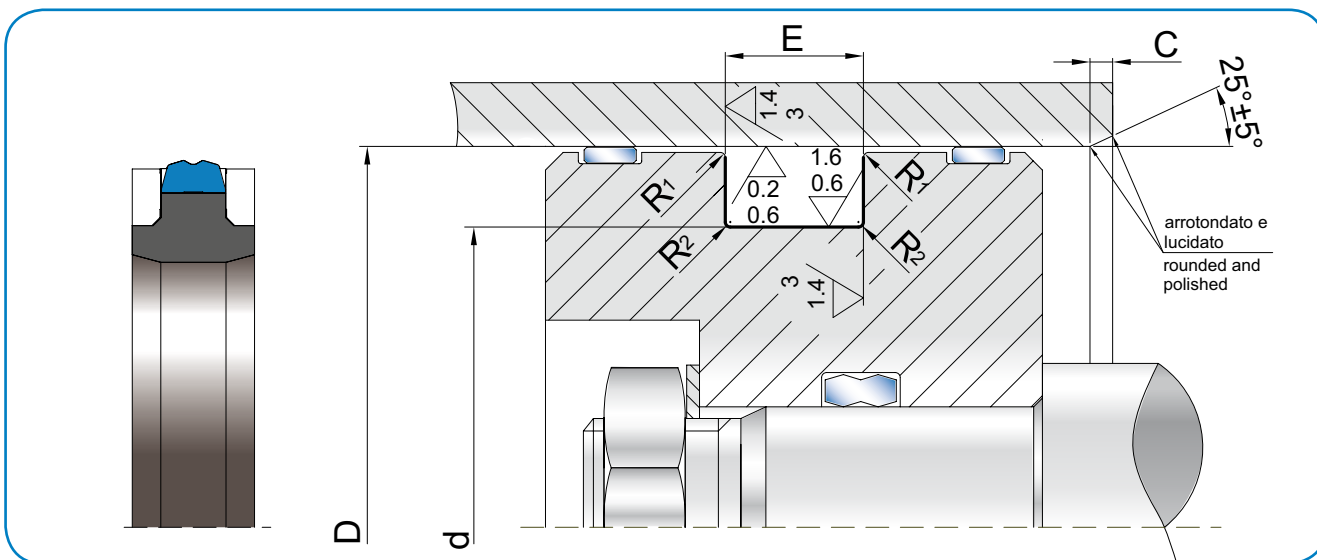
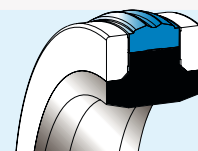
The assembling can be on monoblock or two-parts piston

Assembling sequence:

- NBR element
- Polyurethane or PTFE element
- Anti-extrusion Ring.

Eliminate sharp edges and burrs to avoid damaging the seal during assembly.

PHP



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

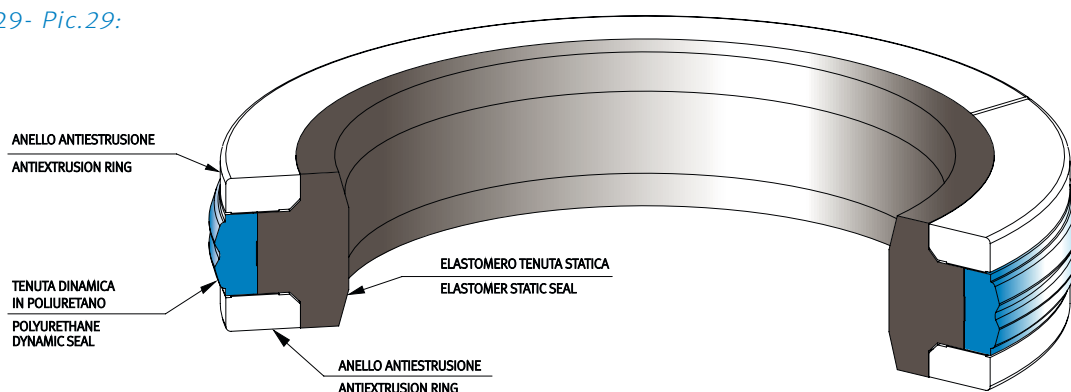
D _{H9}	d _{h9}	E _{+0,2}	R1	R2	C	ART / ITEM
40,0	30,0	8,0	0,1	0,3	5,0	PHP 0400 0300 080 CX
50,0	36,0	9,0	0,1	0,3	5,0	PHP 0500 0360 090 CX
55,0	41,0	9,0	0,1	0,3	5,0	PHP 0550 0410 090 CX
60,0	46,0	9,0	0,1	0,3	5,0	PHP 0600 0460 090 CX
63,0	48,0	11,0	0,1	0,5	5,0	PHP 0630 0480 090 CX
65,0	50,0	11,0	0,1	0,5	5,0	PHP 0650 0500 110 CX
70,0	55,0	11,0	0,1	0,5	5,0	PHP 0700 0550 110 CX
75,0	60,0	11,0	0,1	0,5	5,0	PHP 0750 0600 110 CX
80,0	65,0	11,0	0,1	0,5	5,0	PHP 0800 0650 110 CX
85,0	70,0	11,0	0,1	0,5	5,0	PHP 0850 0700 110 CX
90,0	75,0	11,0	0,1	0,5	5,0	PHP 0900 0750 110 CX
95,0	80,0	12,5	0,1	0,5	5,0	PHP 0950 0800 125 CX
100,0	85,0	12,5	0,1	0,5	5,0	PHP 1000 0850 125 CX
105,0	90,0	12,5	0,2	0,5	5,0	PHP 1050 0900 125 CX
110,0	95,0	12,5	0,2	0,5	5,0	PHP 1100 0950 125 CX

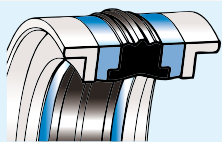
D _{H9}	d _{h9}	E _{+0,2}	R1	R2	C	ART / ITEM
115,0	100,0	12,5	0,2	0,5	5,0	PHP 1150 1000 125 CX
120,0	105,0	12,5	0,2	0,5	5,0	PHP 1200 1050 125 CX
125,0	102,0	16,0	0,2	0,6	6,5	PHP 1250 1020 160 CX
130,0	107,0	16,0	0,2	0,6	6,5	PHP 1300 1070 160 CX
135,0	112,0	16,0	0,2	0,6	6,5	PHP 1350 1120 160 CX
140,0	117,0	16,0	0,2	0,6	6,5	PHP 1400 1170 160 CX
145,0	122,0	16,0	0,2	0,6	6,5	PHP 1450 1220 160 CX
150,0	127,0	16,0	0,2	0,6	6,5	PHP 1500 1270 160 CX
155,0	132,0	16,0	0,2	0,6	6,5	PHP 1550 1320 160 CX
160,0	137,0	16,0	0,2	0,6	6,5	PHP 1600 1370 160 CX
165,0	142,0	16,0	0,2	0,6	6,5	PHP 1650 1420 160 CX
170,0	147,0	16,0	0,2	0,6	6,5	PHP 1700 1470 160 CX
180,0	157,0	16,0	0,2	0,6	6,5	PHP 1800 1570 160 CX

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Fig. 29- Pic.29:





KDSA

TENUTA PISTONE COMPATTA TIPO KDSA

Descrizione

La tenuta pistone compatta tipo KDSA è costituita da un elemento centrale in gomma nitrilica che esercita la funzione di tenuta, da due supporti laterali all'elemento in gomma che agiscono da anelli antiestrusione e da due guide esterne che mantengono in guida il pistone nel cilindro.

Dati tecnici

Pressione: da 0 a 300
Velocità: < 0.5 m/s
Temperatura: da - 30 °C a +100 °C
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati per la costruzione di questo tipo di tenuta sono i seguenti:

- L'elemento centrale è in NBR con durezza 70 Shore A $\pm$ 3
- I supporti laterali sono in elastomero termoplastico (TPE)
- Le guide esterne sono in resina poliacetalica (POM)

Codice materiale standard: CX

Montaggio

Il montaggio di questa tenuta può essere eseguito sia in cava chiusa su pistone monoblocco, sia in cava aperta su pistone in due pezzi.

L'ordine del montaggio deve essere il seguente:

- Elemento in gomma;
- Supporti;
- Guide.

E' necessario che il pistone non presenti bave di lavorazione meccanica che danneggerebbero l'elemento in gomma durante il montaggio.

KDSA TYPE COMPACT PISTON SEAL

Description

The KDSA compact seal is made of a central unit made of NBR working as a seal, two siden supports, working as anti extrusion ring, and two external guide rings, keeping aligned the piston in the cylinder.

Technical data

Pressure: from 0 to 300
Speed: < 0.5 m/s
Temperature: from - 30 °C at +100 °C
Fluids: Mineral oils
(see table 3, page 14)

Material

The compounds used to manufacture this seal type are:

- The central units is made of NBR, the hardness is 70 Shore A $\pm$ 3
- The sides support are made of thermoplastic elastomer (TPE)
- The external wear rings are made of polyacetal resin (POM)

Compound reference: CX

Assembling

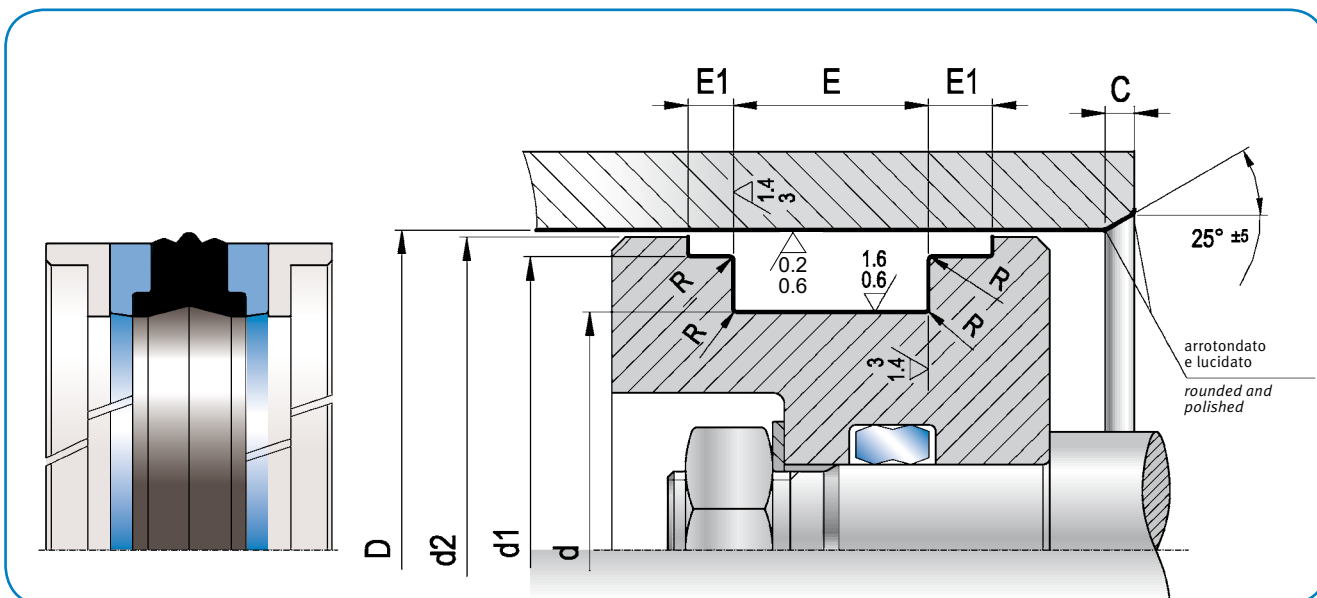
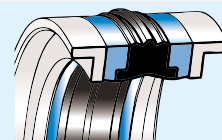
The assembling of this seal can be carried out in either closed groove in a mono-block piston, or in open groove in a two-parts piston.

The assembling has to be done as follows:

- Rubber element;
- Supports;
- Wear rings.

The piston must not have machining scores which may damage the rubber unit during the installation.

KDSA



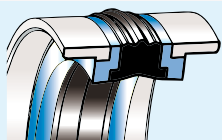
PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

oleodinamica
Hydraulic

D _{H9}	d _{H9}	E _{+0,2}	d _{1H9}	d _{2±0,2}	E _{1 0/+0,1}	R	C	ART / ITEM
32,0	24,0	15,5	28,0	31,4	3,2	0,4	3,5	KDSA 0320 0240 155 CX
40,0	32,0	15,5	36,0	39,4	3,2	0,4	4,0	KDSA 0400 0320 155 CX
50,0	38,0	20,5	46,0	49,4	4,2	0,4	4,0	KDSA 0500 0380 205 CX
60,0	48,0	20,5	56,0	59,4	4,2	0,4	4,5	KDSA 0600 0480 205 CX
63,0	51,0	20,5	59,0	62,4	4,2	0,4	4,5	KDSA 0630 0510 205 CX
70,0	58,0	20,5	66,0	69,4	4,2	0,4	4,5	KDSA 0700 0580 205 CX
80,0	66,0	22,5	76,0	79,4	5,2	0,4	4,5	KDSA 0800 0660 225 CX
90,0	76,0	22,5	86,0	89,4	5,2	0,4	4,5	KDSA 0900 0760 225 CX
100,0	86,0	22,5	96,0	99,4	5,2	0,4	5,0	KDSA 1000 0860 225 CX
110,0	96,0	22,5	106,0	109,4	5,2	0,4	5,0	KDSA 1100 0960 225 CX
120,0	106,0	22,5	116,0	119,4	5,2	0,8	5,0	KDSA 1200 1060 225 CX
125,0	108,0	26,5	121,0	124,4	7,2	0,8	5,0	KDSA 1250 1080 265 CX
130,0	113,0	26,5	126,0	129,4	7,2	0,8	5,0	KDSA 1300 1130 265 CX
140,0	123,0	26,5	136,0	139,4	7,2	0,8	5,0	KDSA 1400 1230 265 CX
150,0	133,0	26,5	146,0	149,4	7,2	0,8	5,0	KDSA 1500 1330 265 CX
160,0	143,0	26,5	156,0	159,4	7,2	0,8	5,0	KDSA 1600 1430 265 CX

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



KDSB

TENUTA PISTONE COMPATTA TIPO KDSB

Descrizione

La tenuta pistone compatta tipo KDSB è costituita da un elemento centrale in gomma nitrilica che esercita la funzione di tenuta, da due supporti laterali all'elemento in gomma che agiscono da anelli antiestrusione e da due guide esterne che mantengono in guida il pistone nel cilindro.

Dati tecnici

Pressione: da 0 a 300
Velocità: < 0.5 m/s
Temperatura: da - 30 °C a +100 °C
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati per la costruzione di questo tipo di tenuta sono i seguenti:

- L'elemento centrale è in NBR con durezza 70 Shore A $\pm$ 3
- I supporti laterali sono in elastomero termoplastico (TPE)
- Le guide esterne sono in resina poliacetalica (POM)

Codice materiale standard: CX

Montaggio

Il montaggio di questa tenuta può essere eseguito sia in cava chiusa su pistone monoblocco, sia in cava aperta su pistone in due pezzi.

L'ordine del montaggio deve essere il seguente:

- Elemento in gomma;
- Supporti;
- Guide.

E' necessario che il pistone non presenti bave di lavorazione meccanica che danneggerebbero l'elemento in gomma durante il montaggio.

KDSB TYPE COMPACT PISTON SEAL

Description

The KDSB compact seal is made of a central unit in NBR working as a seal, two side supports, working as anti extrusion ring, and two external guide rings, keeping aligned the piston in the cylinder.

Technical data

Pressure: from 0 to 300
Speed: < 0.5 m/s
Temperature: from - 30 °C at +100 °C
Fluids: Mineral oils
(see table 3, page 14)

Material

The compounds used to manufacture this seal type are the following:

- The central units is made of NBR, the hardness is 70 Shore A $\pm$ 3
- The sides support are made of a thermoplastic elastomer (TPE)
- The external wear rings are made of polyacetal resin (POM)

Compound reference: CX

Assembling

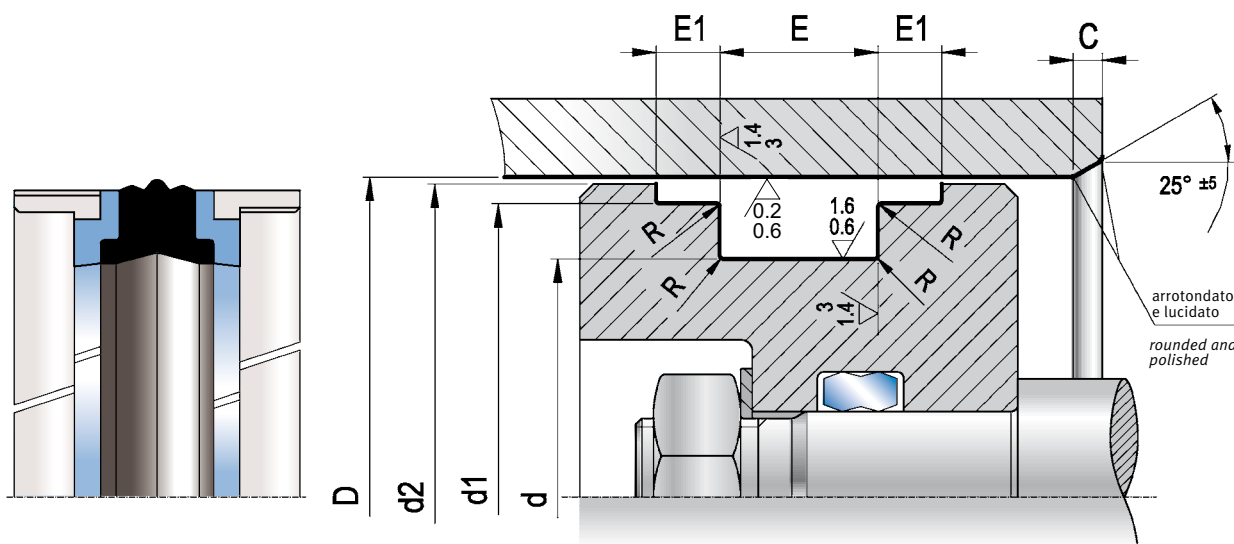
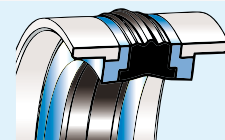
The assembling of this seal can be carried out in either closed groove in a mono-block piston, or in open groove in a two-parts piston.

The assembling has to be done as follows:

- Rubber element;
- Supports;
- Wear rings.

Avoid machining scores on the piston which may damage the rubber unit during the installation.

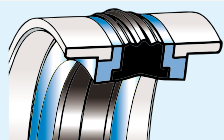
KDSB



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

D _{H9}	d _{H9}	E _{+0,2}	d _{1H9}	d _{2±0,2}	E _{1 0/+0,1}	R	C	ART / ITEM
20,0	11,0	13,5	17,00	19,0	2,10	0,4	3,5	KDSB 0200 0110 135 CX
22,0	13,0	13,5	19,00	21,0	2,10	0,4	3,5	KDSB 0220 0130 135 CX
25,0	15,0	12,0	21,00	23,0	4,00	0,4	3,5	KDSB 0250 0150 120 CX
25,0	15,0	12,5	22,00	24,0	4,00	0,4	3,5	KDSB 0250 0150 125 CX
25,0	15,0	16,4	21,45	23,5	6,35	0,4	3,5	KDSB 0250 0150 164 CX
25,0	16,0	13,5	22,00	24,0	2,10	0,4	3,5	KDSB 0250 0160 135 CX
28,0	19,0	13,5	25,00	27,0	2,10	0,4	3,5	KDSB 0280 0190 135 CX
30,0	21,0	13,5	27,00	29,0	2,10	0,4	3,5	KDSB 0300 0210 135 CX
32,0	22,0	15,5	28,00	31,0	2,60	0,4	3,5	KDSB 0320 0220 155 CX
32,0	22,0	16,4	28,50	30,5	6,35	0,4	3,5	KDSB 0320 0220 164 CX
35,0	25,0	15,5	31,00	34,0	2,60	0,4	3,5	KDSB 0350 0250 155 CX
35,0	25,0	16,4	31,40	33,5	6,35	0,4	3,5	KDSB 0350 0250 164 CX
40,0	24,0	18,4	35,40	38,5	6,35	0,4	4,0	KDSB 0400 0240 184 CX
40,0	26,0	15,5	36,00	39,0	2,60	0,4	4,0	KDSB 0400 0260 155 CX
40,0	30,0	12,5	36,00	38,0	4,00	0,4	4,0	KDSB 0400 0300 125 CX
40,0	30,0	16,4	35,40	38,5	6,35	0,4	4,0	KDSB 0400 0300 164 CX
42,0	28,0	15,5	38,00	41,0	2,60	0,4	4,0	KDSB 0420 0280 155 CX
45,0	29,0	18,4	40,40	43,5	6,35	0,4	4,0	KDSB 0450 0290 184 CX
45,0	31,0	15,5	41,00	44,0	2,60	0,4	4,0	KDSB 0450 0310 155 CX
45,0	35,0	16,4	40,40	43,5	6,35	0,4	4,0	KDSB 0450 0350 164 CX
50,0	34,0	18,4	45,40	48,5	6,35	0,4	4,0	KDSB 0500 0340 184 CX
50,0	34,0	20,5	46,00	49,0	3,10	0,4	4,0	KDSB 0500 0340 205 CX
55,0	39,0	18,4	50,36	53,5	6,35	0,4	4,0	KDSB 0550 0390 184 CX
55,0	39,0	20,5	51,00	54,0	3,10	0,4	4,0	KDSB 0550 0390 205 CX
56,0	40,0	20,5	52,00	55,0	3,10	0,4	4,0	KDSB 0560 0400 205 CX
60,0	44,0	18,4	55,40	58,5	6,35	0,4	4,5	KDSB 0600 0440 184 CX
60,0	44,0	20,5	56,00	59,0	3,10	0,4	4,5	KDSB 0600 0440 205 CX

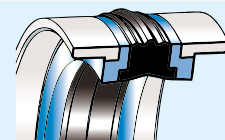
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Hydraulic



KDSB

D _{H9}	d _{H9}	E _{+0,2}	d _{1H9}	d _{2±0,2}	E _{1 0/+0,1}	R	C	ART / ITEM			
63,0	47,0	18,4	58,40	61,5	6,35	0,4	4,5	KDSB	0630	0470	184 CX
63,0	47,0	19,4	58,40	61,5	6,35	0,4	4,5	KDSB	0630	0470	194 CX
63,0	47,0	20,5	59,00	62,0	3,10	0,4	4,5	KDSB	0630	0470	205 CX
65,0	49,0	20,5	61,00	64,0	3,10	0,4	4,5	KDSB	0650	0490	205 CX
65,0	50,0	18,4	60,40	63,5	6,35	0,4	4,5	KDSB	0650	0500	184 CX
65,0	53,0	20,5	61,0	63,5	4,10	0,4	4,5	KDSB	0650	0530	205 CX
70,0	50,0	22,4	64,20	68,3	6,35	0,4	4,5	KDSB	0700	0500	224 CX
70,0	54,0	20,5	66,00	69,0	3,10	0,4	4,5	KDSB	0700	0540	205 CX
75,0	55,0	22,4	69,20	73,3	6,35	0,4	4,5	KDSB	0750	0550	224 CX
75,0	59,0	20,5	71,00	74,0	3,10	0,4	4,5	KDSB	0750	0590	205 CX
80,0	60,0	22,4	74,15	78,3	6,35	0,4	4,5	KDSB	0800	0600	224 CX
80,0	62,0	22,5	76,00	79,0	3,60	0,4	4,5	KDSB	0800	0620	225 CX
85,0	65,0	22,4	79,15	83,3	6,35	0,4	4,5	KDSB	0850	0650	224 CX
90,0	70,0	22,4	84,15	88,3	6,35	0,4	4,5	KDSB	0900	0700	224 CX
90,0	72,0	22,5	86,00	89,0	3,60	0,4	4,5	KDSB	0900	0720	225 CX
95,0	75,0	22,4	89,15	93,3	6,35	0,4	4,5	KDSB	0950	0750	224 CX
100,0	75,0	22,4	93,15	98,0	6,35	0,4	5,0	KDSB	1000	0750	224 CX
100,0	82,0	22,5	96,00	99,0	3,60	0,4	5,0	KDSB	1000	0820	225 CX
105,0	80,0	22,4	98,10	103,0	6,35	0,4	5,0	KDSB	1050	0800	224 CX
110,0	85,0	22,4	103,10	108,0	6,35	0,4	5,0	KDSB	1100	0850	224 CX
110,0	92,0	22,5	106,00	109,0	3,60	0,4	5,0	KDSB	1100	0920	225 CX
115,0	90,0	22,4	108,10	113,0	6,35	0,4	5,0	KDSB	1150	0900	224 CX
115,0	97,0	22,5	111,00	114,0	3,60	0,4	5,0	KDSB	1150	0970	225 CX
120,0	95,0	22,4	113,10	118,1	6,35	0,8	5,0	KDSB	1200	0950	224 CX
125,0	100,0	25,4	118,10	123,0	6,35	0,8	5,0	KDSB	1250	1000	254 CX
125,0	103,0	26,5	121,00	124,0	5,10	0,8	5,0	KDSB	1250	1030	265 CX
130,0	105,0	25,4	122,60	127,5	9,50	0,8	5,0	KDSB	1300	1050	254 CX
130,0	105,0	25,4	123,10	128,0	6,35	0,8	5,0	KDSB1	1300	1050	254 CX
135,0	110,0	25,4	127,60	132,5	9,50	0,8	5,0	KDSB	1350	1100	254 CX
135,0	110,0	25,4	128,10	133,0	6,35	0,8	5,0	KDSB1	1350	1100	254 CX
140,0	115,0	25,4	132,60	137,5	9,50	0,8	5,0	KDSB	1400	1150	254 CX
140,0	115,0	25,4	133,00	138,0	6,35	0,8	5,0	KDSB1	1400	1150	254 CX
140,0	118,0	26,5	136,00	139,0	5,10	0,8	5,0	KDSB	1400	1180	265 CX
145,0	120,0	25,4	137,60	142,5	9,50	0,8	5,0	KDSB	1450	1200	254 CX
145,0	120,0	25,4	138,30	143,0	6,35	0,8	5,0	KDSB1	1450	1200	254 CX
150,0	125,0	25,4	142,60	147,5	9,50	0,8	5,0	KDSB	1500	1250	254 CX
150,0	125,0	25,4	143,00	148,0	6,35	0,8	5,0	KDSB1	1500	1250	254 CX
150,0	128,0	26,5	146,00	149,0	5,10	0,8	5,0	KDSB	1500	1280	265 CX
155,0	130,0	25,4	147,60	152,5	9,50	0,8	5,0	KDSB	1550	1300	254 CX
155,0	130,0	25,4	148,00	153,0	6,35	0,8	5,0	KDSB1	1550	1300	254 CX
160,0	130,0	25,4	153,00	157,5	6,35	0,8	5,0	KDSB1	1600	1300	254 CX
160,0	130,0	25,4	152,60	157,5	9,50	0,8	5,0	KDSB	1600	1300	254 CX
160,0	135,0	25,4	152,60	157,5	9,50	0,8	5,0	KDSB	1600	1350	254 CX
160,0	138,0	26,5	156,00	159,0	5,10	0,8	5,0	KDSB	1600	1380	265 CX
165,0	140,0	25,4	157,60	162,5	9,50	0,8	5,0	KDSB	1650	1400	254 CX

KDSB

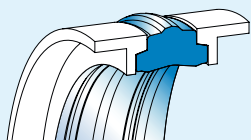


D _{H9}	d _{H9}	E _{+0,2}	d _{1H9}	d _{2+0,2}	E _{1 0/+0,1}	R	C	ART / ITEM			
170,0	145,0	25,4	161,70	167,1	12,70	0,8	5,0	KDSB	1700	1450	254 CX
170,0	148,0	26,5	166,00	169,0	5,10	0,8	5,0	KDSB	1700	1480	265 CX
175,0	150,0	25,4	166,70	172,1	12,70	0,8	5,0	KDSB	1750	1500	254 CX
180,0	150,0	35,4	172,95	177,9	6,35	0,8	5,0	KDSB	1800	1500	354 CX
180,0	155,0	25,4	171,70	177,1	12,70	0,8	5,0	KDSB	1800	1550	254 CX
185,0	160,0	25,4	176,70	182,1	12,70	0,8	5,0	KDSB	1850	1600	254 CX
190,0	165,0	25,4	181,70	187,0	12,70	0,8	5,0	KDSB	1900	1650	254 CX
195,0	170,0	25,4	186,70	192,0	12,70	0,8	5,0	KDSB	1950	1700	254 CX
200,0	175,0	25,4	191,60	197,0	12,70	0,8	6,0	KDSB	2000	1750	254 CX
200,0	180,0	31,5	196,00	198,0	9,20	0,8	6,0	KDSB	2000	1800	315 CX
210,0	185,0	25,4	201,60	207,0	12,70	0,8	6,0	KDSB	2100	1850	254 CX
220,0	190,0	35,4	212,70	217,9	6,35	0,8	6,0	KDSB	2200	1900	354 CX
220,0	195,0	25,4	211,60	217,0	12,70	0,8	6,0	KDSB	2200	1950	254 CX
230,0	205,0	25,4	221,60	227,0	12,70	0,8	6,0	KDSB	2300	2050	254 CX
240,0	215,0	25,4	231,60	237,0	12,70	0,8	6,0	KDSB	2400	2150	254 CX
250,0	220,0	35,4	242,90	247,9	6,35	0,8	6,0	KDSB	2500	2200	354 CX
250,0	225,0	25,4	241,60	247,0	12,70	0,8	6,0	KDSB	2500	2250	254 CX

PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



KDSP

TENUTA PISTONE COMPATTA TIPO KDSP

Descrizione

La guarnizione KDSP nasce per tenuta pistone con sedi intercambiabili ISO 6547.

E' composta da soli tre elementi: quello centrale in poliuretano (che ha la funzione di tenuta) e due guide laterali in poliacetalica rinforzata vetro.

Questo sistema permette di eliminare i supporti antiestrusione, in quanto l'elemento centrale col suo alto modulo elastico ha una durezza superiore alla gomma nitrilica NBR.

L'attrito di primo distacco ed in esercizio si mantiene basso per la particolare geometria della guarnizione.

Dati tecnici

Pressione: da 0 a 400
Velocità: 0,8 m/s
Temperatura: da - 30° C a + 100 ° C
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati per la costruzione di questo tipo di guarnizione sono i seguenti:

- l'elemento centrale in poliuretano di durezza 93 Shore A Codice materiale tipo C0
- gli elementi laterali in poliacetalica caricata vetro (POM)

Codice materiale: CX

Montaggio

Il montaggio di questa tenuta può essere eseguito sia in cava chiusa su pistone monoblocco, sia in cava aperta su pistone in due pezzi.

E' necessario che il pistone non presenti bave di lavorazione meccanica che danneggerebbero l'elemento di tenuta durante il montaggio.

KDSP TYPE COMPACT PISTON SEAL

Description

The KDSP seal is designed to be a piston seal with interchangeable seats ISO 6547.

It consists of only three elements: a polyurethane seal at the middle and two side wear rings in glass-filled polyacetal resin.

This system doesn't need anti-extrusion supports, Thanks to the high modulus of elasticity and the hardness of the central element, which has higher hardness than Nitrile rubber NBR.

The friction (first operation and in working condition) is low thanks to the particular geometric shape of the seal.

Technical data

Pressure: from 0 to 400 Bar
Speed: 0.8 m/s
Temperature: from - 30° C to + 100 ° C
Fluids: mineral oils
(see table 3, page 14)

Material

The materials used for the construction of this type of seal are:

- polyurethane for the central element, hardness 93 Shore A, compound reference C0
- glass-filled polyacetal resin (POM) for the side elements

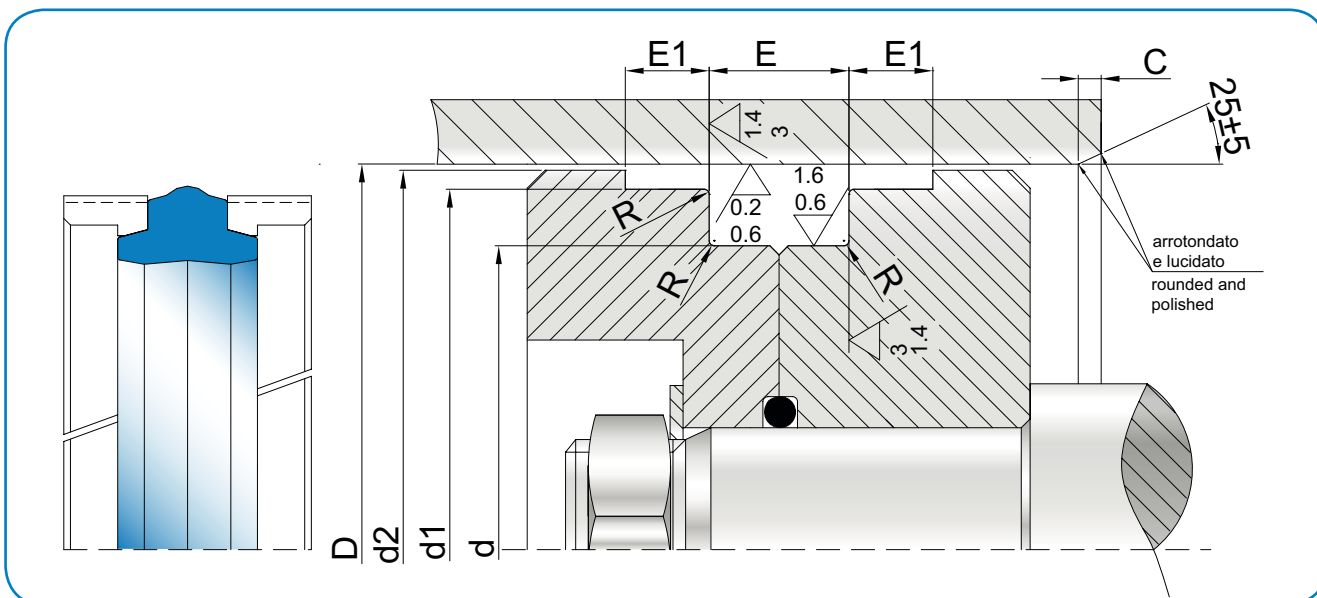
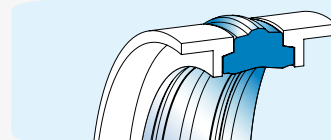
Compound reference: CX

Assembling

This seal can be assembled both in closed groove on a mono-block piston and in open groove on a two-part piston.

Avoid machining scores on the piston which may damage the sealing during the installation.

KDSP



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

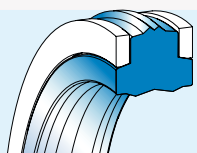
oleodinamica
Hydraulic

	D _{H9}	d _{H9}	E _{+0,2}	d _{1H9}	d _{2±0,2}	E _{1 0/+0,1}	R	C	ART / ITEM
*	25,0	15,0	12,5	22,0	24,0	4,0	0,4	5,0	KDSP 0250 0150 125 CX
*	25,0	17,0	10,0	22,0	24,0	4,0	0,4	5,0	KDSP 0250 0170 100 CX
*	32,0	22,0	12,5	29,0	31,0	4,0	0,4	5,0	KDSP 0320 0220 125 CX
*	32,0	24,0	10,0	29,0	31,0	4,0	0,4	5,0	KDSP 0320 0240 100 CX
*	40,0	30,0	12,5	36,0	38,0	4,0	0,4	5,0	KDSP 0400 0300 125 CX
*	40,0	32,0	10,0	37,0	39,0	4,0	0,4	5,0	KDSP 0400 0320 100 CX
*	50,0	35,0	20,0	46,0	48,5	5,0	0,4	5,0	KDSP 0500 0350 200 CX
*	50,0	40,0	12,5	47,0	49,0	4,0	0,4	5,0	KDSP 0500 0400 125 CX
*	55,0	45,0	12,5	52,0	54,0	4,0	0,4	5,0	KDSP 0550 0450 125 CX
*	63,0	48,0	20,0	59,0	62,0	5,0	0,4	5,0	KDSP 0630 0480 200 CX
*	63,0	53,0	12,5	60,0	62,0	4,0	0,4	5,0	KDSP 0630 0530 125 CX
*	70,0	55,0	20,0	66,0	68,5	5,0	0,4	5,0	KDSP 0700 0550 200 CX
	70,0	60,0	12,5	67,0	69,0	4,0	0,4	5,0	KDSP 0700 0600 125 CX
*	80,0	65,0	20,0	76,0	78,5	5,0	0,4	5,0	KDSP 0800 0650 200 CX
	80,0	70,0	12,5	77,0	79,0	4,0	0,4	5,0	KDSP 0800 0700 125 CX
*	90,0	75,0	20,0	86,0	88,5	5,0	0,4	5,0	KDSP 0900 0750 200 CX
	90,0	80,0	12,5	86,0	88,5	5,0	0,4	5,0	KDSP 0900 0800 125 CX
*	100,0	85,0	20,0	96,0	98,5	5,0	0,4	5,0	KDSP 1000 0850 200 CX
	100,0	90,0	12,5	96,0	98,5	5,0	0,4	5,0	KDSP 1000 0900 125 CX

* ISO 6547

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



KDAE

TENUTA PISTONE COMPATTA TIPO KDAE

Descrizione

Sempre tra le tenute pistone compatte, la guarnizione KDAE nasce con un elemento centrale in poliuretano e due anelli antiestrusione ai lati. L'assemblaggio combinato del poliuretano ad alto modulo elastico, con due anelli in elastomero con elevata durezza, rendono la tenuta molto stabile anche alle alte pressioni. Paragonata alla gomma, l'abrasione risulta molto inferiore con l'utilizzo del poliuretano aumentandone in questo caso la durata del pistone stesso. L'attrito di primo distacco ed in esercizio, per lo speciale profilo geometrico della tenuta, è maggiormente performante rispetto alla guarnizione in NBR.

Dati tecnici

Pressione: da 0 a 400 bar
Velocità: < 0,8 m/s
Temperatura: da - 30° C a + 100° C
con punte fino a 110° C
Fluidi: oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati per la costruzione di questo tipo di tenuta sono i seguenti :

- elemento centrale in poliuretano di durezza 93 Shore A Codice materiale tipo C0.
 - gli anelli antiestrusione laterali in termoplastico di durezza 63 Shore D Codice materiale tipo L2
- Codice materiale: CR

Montaggio

Il montaggio di questa tenuta può essere eseguito sia in cava chiusa su pistone monoblocco, sia (consigliato da Artic Seals) in cava aperta su pistone in due pezzi.

E' importante che il pistone non presenti bave di lavorazione meccanica che andrebbero a danneggiare la tenuta durante il montaggio. E' consigliato ingrassare il pistone per facilitare il montaggio.

KDAE TYPE COMPACT PISTON SEAL

Description

The KDAE compact piston seal series type is designed with a central polyurethane element and two side anti extrusion rings.

The assembling between the polyurethane element with high elastic modulus and the two elastomer rings with high hardness enhances stability of the sealing even at heavy duty applications.

Compared to rubber, the abrasion is also reduced due to the use of polyurethane, therefore extending the life of the seal.

The friction (first operation and in working condition) is also considerably reduced, due to geometric shape of the seal, having better performance than NBR.

Technical data

Pressure: from 0 to 400 bar
Speed: < 0.8 m/s
Temperature: from - 30° C to + 100 ° C with peaks up to + 110° C
Fluids: mineral oils
(see table 3, page 14)

Material

The materials used for the construction of this type of seal are:

- polyurethane for the central element, hardness 93 Shore A (C0)
 - the backup rings in TPE elastomer 63 Shore D (L2).
- Compound reference: CR*

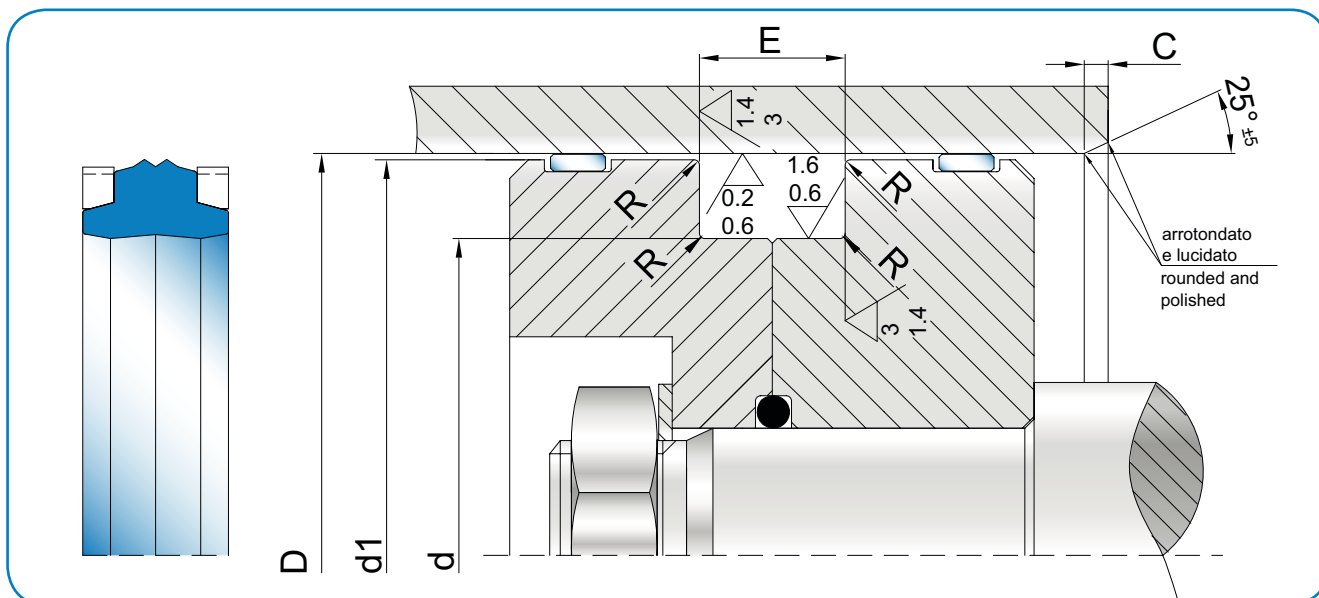
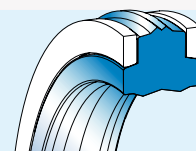
Assembling

This seal can be assembled both in closed groove on a mono-block piston and (Artic Seals suggestion) in open groove on a two-part piston.

Avoid machining scores on the piston which may damage the sealing during the installation

The use of grease in the piston is recommended for easier assembling.

KDAE



PSA
GPDE-
GPDEM
PAE
PSH
RR
PSO
PSQ
PSN
TPD
PSZ
PHP
KDSA
KDSB
KDSP
KDAE

D _{H9}	d _{H9}	E _{+0,2}	C	ART / ITEM
50,0	36,0	9,0	4,0	KDAE 0500 0360 090 CR
50,0	38,0	10,0	4,0	KDAE 0500 0380 100 CR
55,0	41,0	9,0	4,0	KDAE 0550 0410 090 CR
60,0	46,0	9,0	4,0	KDAE 0600 0460 090 CR
63,0	48,0	11,0	4,0	KDAE 0630 0480 110 CR
63,0	51,0	10,0	4,0	KDAE 0630 0510 100 CR
65,0	50,0	11,0	4,0	KDAE 0650 0500 110 CR
70,0	53,0	14,0	4,0	KDAE 0700 0530 140 CR
70,0	55,0	11,0	4,0	KDAE 0700 0550 110 CR
75,0	60,0	11,0	4,0	KDAE 0750 0600 110 CR
80,0	63,0	14,0	4,0	KDAE 0800 0630 140 CR
80,0	65,0	11,0	4,0	KDAE 0800 0650 110 CR
85,0	70,0	11,0	4,0	KDAE 0850 0700 110 CR
90,0	73,0	14,0	5,0	KDAE 0900 0730 140 CR
90,0	75,0	11,0	5,0	KDAE 0900 0750 110 CR

D _{H9}	d _{H9}	E _{+0,2}	C	ART / ITEM
95,0	80,0	11,0	5,0	KDAE 0950 0800 110 CR
100,0	83,0	14,0	5,0	KDAE 1000 0830 140 CR
100,0	85,0	12,5	5,0	KDAE 1000 0850 125 CR
105,0	88,0	14,0	5,0	KDAE 1050 0880 140 CR
105,0	90,0	12,5	5,0	KDAE 1050 0900 125 CR
110,0	93,0	14,0	5,0	KDAE 1100 0930 140 CR
110,0	95,0	12,5	5,0	KDAE 1100 0950 125 CR
115,0	98,0	14,0	5,0	KDAE 1150 0980 140 CR
115,0	100,0	12,5	5,0	KDAE 1150 1000 125 CR
120,0	103,0	14,0	5,0	KDAE 1200 1030 140 CR
120,0	105,0	12,5	5,0	KDAE 1200 1050 125 CR
125,0	108,0	14,0	5,0	KDAE 1250 1080 140 CR

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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Hydraulic

Anelli Guida

Wear Rings

Materiale

In funzione delle specifiche esigenze determinate dal carico radiale del cilindro si possono utilizzare i seguenti materiali:

- Resina poliacetalica (POM) vergine o rinforzata con fibra di vetro a basso coefficiente d'attrito;
- Nylon (PA6 o PA66) caricati con varie tipologie di additivi tra cui vetro, PTFE e MoS₂;
- Polibutilentereftelato (PBT) caricato PTFE con proprietà autolubrificanti;
- PTFE caricato bronzo (TM o TV) resistente all'usura, basso attrito, per applicazioni di basso-medio carico;
- Tessuto rinforzato con resina fenolica (FR), per sopportare elevati carichi radiali.

Material

The choice of the material depends on the specific needs arising from the cylinder radial load.

- Polyacetal resin (POM) reinforced with fibreglass with low friction factor.
- Nylon (PA6 or PA66) different filled with: Glass, PTFE or MoS₂;
- Polibutylentereftelato (PBT) filled with PTFE, self-lubricating properties;
- PTFE with bronze (TM or TV), wear resistant, low friction, for low and medium load .
- Fabrics reinforced phenolic (FR) resin, for high radial loads.

Tab.33 Dati Tecnici / Technical Data

Material	Velocità / Speed	Temperatura / Temperature	Carico Radiale / Radial Load	
	m/s	°C	N/ mm ²	T°
POM	<0,8	-40 to +115	<35 >25	<60 °C >60 °C
PA6 / PA66	<1,0	-40 to +140	<75 >40	<60 °C >60 °C
PBT	<1,0	-40 to +150	<35 >25	<60 °C >60 °C
PTFE	<15	-50 to +160 (200)	<15 >12 >8	30°C 80°C 120°C
Phenolic Resin	<1	-50 + 150	<120 >60	25°C 80°C

Anelli Guida Wear Rings

Dimensionamento

Utilizzando la seguente formula si possono calcolare le altezze delle guide come illustrato in Fig.1

$$\text{Altezza Guida } T = \frac{C * f}{D * Cr}$$

Dove:

- C: carico radiale previsto in N [Newton]
- f: fattore di sicurezza [2]
- D: diametro stelo o camicia
- Cr: carico radiale ammissibile in N/mm²
Riferito al materiale

Dimensioning

The following formula can be used to calculate the wear ring's height as shown in Pic.1

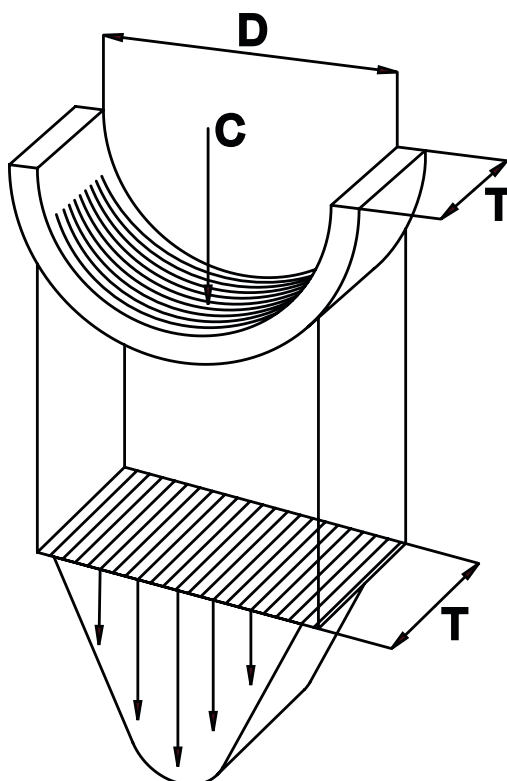
$$\text{Wear ring's height } T = \frac{C * f}{D * Cr}$$

As:

- C: radial load in N [Newton]
- f: safety factor [2]
- D: rod or bore diameter
- Cr: allowable radial load in N/mm²
reported material

Fig.30:Distribuzione del carico

Pic.30:Load distribution



Nota: Prego contattare il nostro ufficio tecnico per ulteriori informazione.

Note: Please contact our technical department for any further informations

Anelli Guida

Wear Rings

Tab.34 Materiale Plastico / Plastics Material			
Sezione / Section		Altezza / Height	
D - d / 2 [mm]	S [mm]	E+0,2 [mm]	h [mm]
1,5	1,48 - 1,42	4	3,65 - 3,95
1,55	1,53 - 1,47	5,6	5,25 - 5,55
1,587	1,56 - 1,51	9,7	9,25 - 9,65
2	1,98 - 1,92	12,8	12,45 - 12,75
2,374	2,35 - 2,30	15	14,40 - 14,80
2,5	2,48 - 2,42	20	19,40 - 19,80
3	2,98 - 2,92	25	24,40 - 24,80
3,175	3,15 - 3,07	30	29,40 - 29,80

Tab.35 PTFE caricato / PTFE filled			
Sezione / Section		Altezza / Height	
D - d / 2 [mm]	S [mm]	E+0,2 [mm]	h [mm]
1,50	1,50 - 1,42	3,20	3,00 - 2,80
2,00	2,00 - 1,92	4,20	4,00 - 3,80
2,50	2,50 - 2,42	5,60	5,40 - 5,20
3,00	3,00 - 2,92	8,10	7,90 - 7,70
-	-	9,70	9,50 - 9,30
-	-	15,00	14,80 - 14,60
-	-	20,00	19,50 - 19,30
-	-	25,00	24,50 - 24,30
-	-	30,00	29,50 - 29,30

Tab.36 Resina Fenolica / Phenolic Resin			
Sezione / Section		Altezza / Height	
D - d / 2 [mm]	S [mm]	E+0,2 [mm]	h [mm]
2,50	2,50 - 2,45	5,60	5,50 - 5,30
D. <125[mm]		9,70	9,60 - 9,40
2,50	2,50 - 2,43	12,80	12,70 - 12,50
D. >125 [mm]		15,00	14,90 - 14,70
-	-	25,00	24,90 - 24,70

Anelli Guida

Wear Rings

Tab.37 Physical and Mechanical properties of Engineered Plastics

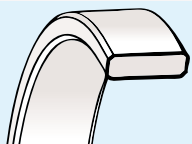
Property	Unit	POM UV-stabiliser + 20%glass fiber	PA6 Heat sta- bilyzed + Glass Fiber (40%)	PBT + PTFE	Norms
Compressive strength	Mpa	36	207	47	ASTM D695 23°C
Tensile strength	Mpa	59	172		ASTM D638 23°C
Tensile modulus	Gpa	6,2	11,7	2,6	ASTM D638 23°C
Flexural strength	Mpa	74	269	79	ASTM D790 23°C
IZOD notched impact strength	J/m	43	133	38	ASTM D256 23°C
Water absorption (24 hours)	%	0,12	0,33	0,06	ASTM D570 23°C
Temperature Range	°C	-30 to +115	-40 to +140	-40 to +150	-
Rockwell Hardness	R scale	118	125	102	ASTM D785

Tab.38 Physical and Mechanical properties of PTFE Compound

Property	Unit	PTFE + Bronze (40%)	PTFE + Carbon (23%) +Graphite (2%)	Norms
Compressive strength	Mpa	64,8	24,8	ASTM D695 23°C
Tensile strength	Mpa	22,1	15,5	ASTM D1457-81A
Elongation	%	250	100	ASTM D4894
Deformation Under Load (24 h)	%	3,1	2,5	ASTM D621 @ 13,8 Mpa, 21°C
Coefficient of friction	-	0,23	0,24	ASTM D3702
Temperature Range	°C	-130 to +300	-215 to + 300°	-
Shore D Hardness	-	65	64	ASTMD2240-75

Tab.39 Physical and Mechanical properties of Phenolic resin compound

Property	Unit	Standard Polyester Based + PTFE	Polyester Based + Graphite	Polyester Based + MoS ₂	Polyester Based + PTFE	Norms
Compressive strength	Mpa	345	345	345	345	ASTM D695 23°C
Tensile strength	Mpa	75	75	75	75	ASTM D638 23°C
Tensile modulus	Mpa	3450	3450	3450	3450	ASTM D638 23°C
Coefficient of friction	-	0,13 - 0,20	0,15 - 0,20	0,15 - 0,20	0,13 - 0,20	ASTM D790 23°C
Water Absorption (24 hours)	%	0,1	0,1	0,1	0,1	ASTM D570 23°C
Temperature Range	°C	-40 to + 90	-40 to + 90	-40 to + 200	-40 to + 200	-
Rockwell M Hardness	-	100	100	100	100	ASTM D785



HIS

ANELLI GUIDA INTERNO TIPO HIS

Descrizione

I pattini di guida tipo HIS, hanno la funzione di mantenere in asse tutto il sistema cilindro (stelo con testata, pistone con camicia). Svolgono una funzione importante aiutando la tenuta stelo, il raschiatore e la tenuta pistone a lavorare senza disallineamenti evitando allo stesso tempo il contatto tra le parti metalliche. Il materiale con un coefficiente di attrito molto basso non crea perdite di carico (linearità). Sopporta deformazioni sotto carico elevate avendo un punto di rammollimento vicino al punto di fusione (lavora in esercizio a 115° C). Per facilitare la scelta della guida pistone o stelo consigliamo la formula a pag.139 per conoscere l'altezza della guida da inserire nel sistema.

Dati tecnici

Velocità: < 0,8 m/s
Temperatura: da - 40° C a + 115° C
Fluidi: oli e fluidi a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale è una resina poliacetalica rinforzata con fibra di vetro.
Per temperature di esercizio superiori ai 115° C il materiale è una resina poliammidica rinforzata.
Codice materiale per temp < 115° C: R0
Codice materiale per temp > 115° C: R1

Montaggio

Il montaggio si esegue facilmente essendo la guida tagliata ed avendo un'ottima elasticità.
La presenza sui due lati di smussi facilita l'inserimento dello stelo.

Nota: sezione tecnica guide pag.138

HIS TYPE INTERNAL WEAR RING

Description

The HIS wear rings have been developed in order to keep all the parts of the cylinder aligned (the rod with the head, the piston with the bore). They play an important role as they help the rod seal, the wiper and the piston seal working without any misalignments and at the same time they prevent any contact between the metal parts. The material, which has a very low friction factor, does not cause load losses (linearity). It endures deformations under heavy loads, as the softening point is close to the fusion point (it works at 115° C). For an easier choice of the piston or rod guide, we suggest the use of the formula at page 139 to find the wear ring length.

Technical data

Speed: < 0,8 m/s
Temperature: from - 40° C to + 115° C
Fluids: mineral oils and fluids
(see table 3, page 14)

Material

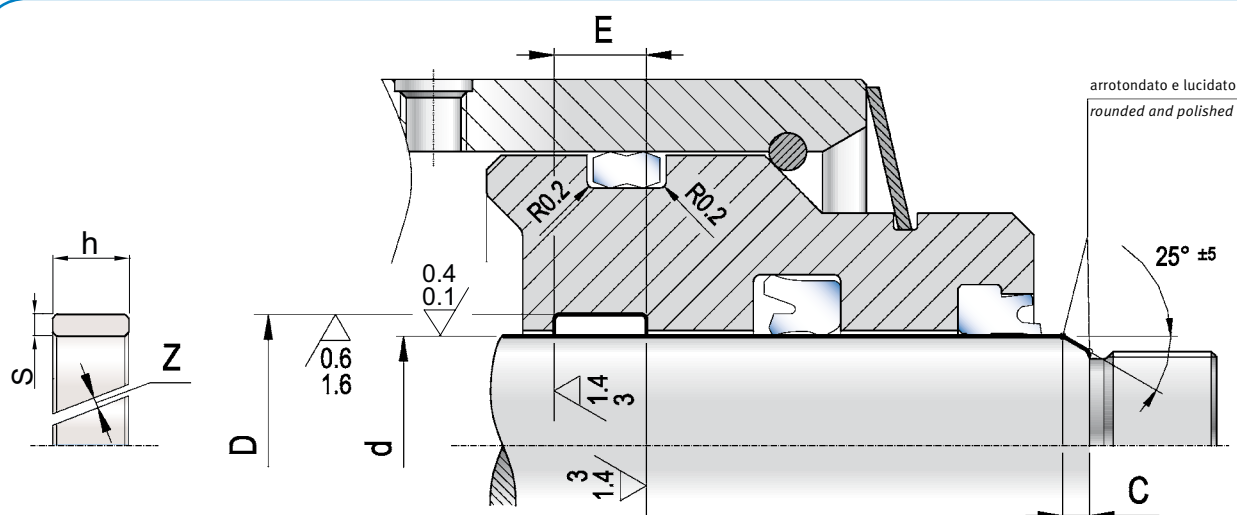
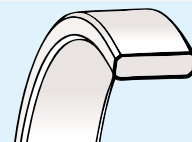
The material is a polyacetal resin reinforced with fibreglass.
For working temperatures higher than 115° C, the material is a reinforced polyamide resin.
Compound reference for temp < 115° C: R0
Compound reference for temp > 115° C: R1

Assembling

The assembling can be easily done since the wear ring is cut and extremely elastic.
The chamfers on both sides have been studied to better insert the wear ring in the rod.

Note: wear rings technical section pag.138

HIS

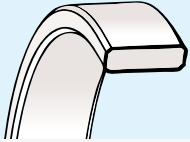


HIS
HES
NG
HPW
HEN

d_{h9}	$D \begin{smallmatrix} -0 \\ +0,05 \end{smallmatrix}$	$E +0,2$	C	ART / ITEM
12,0	16,0	9,6	>3	HIS 0120 0160 096 R0
14,0	18,0	9,6	>3	HIS 0140 0180 096 R0
16,0	20,0	9,6	>3	HIS 0160 0200 096 R0
18,0	22,0	9,6	>3	HIS 0180 0220 096 R0
20,0	24,0	9,6	>3	HIS 0200 0240 096 R0
20,0	25,0	5,6	>3	HIS 0200 0250 056 R0
20,0	25,0	9,7	>3	HIS 0200 0250 097 R0
22,0	26,0	9,6	>3	HIS 0220 0260 096 R0
22,0	27,0	5,6	>3	HIS 0220 0270 056 R0
22,0	27,0	9,7	>3	HIS 0220 0270 097 R0
25,0	29,0	9,6	>3	HIS 0250 0290 096 R0
25,0	30,0	5,6	>3	HIS 0250 0300 056 R0
25,0	30,0	9,7	>3	HIS 0250 0300 097 R0
26,0	30,0	9,6	>3	HIS 0260 0300 096 R0
27,0	32,0	5,6	>3	HIS 0270 0320 056 R0
27,0	32,0	9,7	>3	HIS 0270 0320 097 R0
28,0	32,0	9,6	>3	HIS 0280 0320 096 R0
28,0	33,0	5,6	>3	HIS 0280 0330 056 R0
28,0	33,0	9,7	>3	HIS 0280 0330 097 R0
30,0	34,0	9,6	>3	HIS 0300 0340 096 R0
30,0	35,0	5,6	>3	HIS 0300 0350 056 R0
30,0	35,0	9,7	>3	HIS 0300 0350 097 R0
32,0	36,0	9,6	>3	HIS 0320 0360 096 R0
32,0	37,0	5,6	>3	HIS 0320 0370 056 R0

d_{h9}	$D \begin{smallmatrix} -0 \\ +0,05 \end{smallmatrix}$	$E +0,2$	C	ART / ITEM
32,0	37,0	9,7	>3	HIS 0320 0370 097 R0
35,0	39,0	9,6	>3	HIS 0350 0390 096 R0
35,0	40,0	5,6	>3	HIS 0350 0400 056 R0
35,0	40,0	9,7	>3	HIS 0350 0400 097 R0
36,0	40,0	9,6	>3	HIS 0360 0400 096 R0
36,0	41,0	5,6	>3	HIS 0360 0410 056 R0
36,0	41,0	9,7	>3	HIS 0360 0410 097 R0
38,0	42,0	9,6	>3	HIS 0380 0420 096 R0
40,0	44,0	9,6	>3	HIS 0400 0440 096 R0
40,0	45,0	5,6	>3	HIS 0400 0450 056 R0
40,0	45,0	9,7	>3	HIS 0400 0450 097 R0
40,0	45,0	15,0	>3	HIS 0400 0450 150 R0
42,0	46,0	9,6	>3	HIS 0420 0460 096 R0
42,0	48,0	9,6	>3	HIS 0420 0480 096 R0
43,0	48,0	5,6	>3	HIS 0430 0480 056 R0
45,0	50,0	5,6	>3	HIS 0450 0500 056 R0
45,0	50,0	9,7	>3	HIS 0450 0500 097 R0
45,0	50,0	15,0	>3	HIS 0450 0500 150 R0
45,0	51,0	9,6	>3	HIS 0450 0510 096 R0
46,0	52,0	9,6	>3	HIS 0460 0520 096 R0
47,0	52,0	5,6	>3	HIS 0470 0520 056 R0
47,0	52,0	9,7	>3	HIS 0470 0520 097 R0
48,0	54,0	9,6	>3	HIS 0480 0540 096 R0
50,0	55,0	5,6	>3	HIS 0500 0550 056 R0

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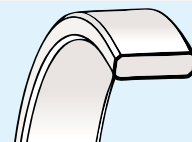


HIS

d _{h9}	D _{-0 +0,05}	E _{+0,2}	C	ART / ITEM
50,0	55,0	9,7	> 3	HIS 0500 0550 097 R0
50,0	55,0	15,0	> 3	HIS 0500 0550 150 R0
50,0	56,0	9,6	> 3	HIS 0500 0560 096 R0
52,0	57,0	9,7	> 3	HIS 0520 0570 097 R0
55,0	60,0	5,6	> 3	HIS 0550 0600 056 R0
55,0	60,0	9,7	> 3	HIS 0550 0600 097 R0
55,0	60,0	15,0	> 3	HIS 0550 0600 150 R0
55,0	61,0	9,6	> 3	HIS 0550 0610 096 R0
56,0	61,0	5,6	> 3	HIS 0560 0610 056 R0
56,0	61,0	9,7	> 3	HIS 0560 0610 097 R0
56,0	62,0	12,8	> 3	HIS 0560 0620 128 R0
58,0	63,0	5,6	> 3	HIS 0580 0630 056 R0
58,0	63,0	9,7	> 3	HIS 0580 0630 097 R0
60,0	65,0	5,6	> 3	HIS 0600 0650 056 R0
60,0	65,0	9,7	> 3	HIS 0600 0650 097 R0
60,0	65,0	15,0	> 3	HIS 0600 0650 150 R0
60,0	66,0	12,8	> 3	HIS 0600 0660 128 R0
63,0	68,0	5,6	> 3	HIS 0630 0680 056 R0
63,0	68,0	9,7	> 3	HIS 0630 0680 097 R0
63,0	69,0	12,8	> 3	HIS 0630 0690 128 R0
65,0	70,0	5,6	> 3	HIS 0650 0700 056 R0
65,0	70,0	9,7	> 3	HIS 0650 0700 097 R0
65,0	70,0	15,0	> 3	HIS 0650 0700 150 R0
65,0	71,0	12,8	> 3	HIS 0650 0710 128 R0
67,0	72,0	5,6	> 3	HIS 0670 0720 056 R0
70,0	75,0	5,6	> 3	HIS 0700 0750 056 R0
70,0	75,0	9,7	> 3	HIS 0700 0750 097 R0
70,0	75,0	15,0	> 3	HIS 0700 0750 150 R0
70,0	76,0	30,0	> 3	HIS 0700 0760 300 R0
70,0	76,0	12,8	> 3	HIS 0700 0760 128 R0
72,0	78,0	12,8	> 3	HIS 0720 0780 128 R0
75,0	80,0	5,6	> 4	HIS 0750 0800 056 R0
75,0	80,0	9,7	> 4	HIS 0750 0800 097 R0
75,0	80,0	15,0	> 4	HIS 0750 0800 150 R0
75,0	81,0	12,8	> 4	HIS 0750 0810 128 R0
76,0	82,0	12,8	> 4	HIS 0760 0820 128 R0
80,0	85,0	5,6	> 4	HIS 0800 0850 056 R0
80,0	85,0	9,7	> 4	HIS 0800 0850 097 R0
80,0	85,0	15,0	> 4	HIS 0800 0850 150 R0
80,0	86,0	12,8	> 4	HIS 0800 0860 128 R0
85,0	90,0	5,6	> 4	HIS 0850 0900 056 R0
85,0	90,0	9,7	> 4	HIS 0850 0900 097 R0
85,0	90,0	15,0	> 4	HIS 0850 0900 150 R0
85,0	91,0	12,8	> 4	HIS 0850 0910 128 R0
90,0	95,0	5,6	> 4	HIS 0900 0950 056 R0

d _{h9}	D _{-0 +0,05}	E _{+0,2}	C	ART / ITEM
90,0	95,0	9,7	> 4	HIS 0900 0950 097 R0
90,0	95,0	15,0	> 4	HIS 0900 0950 150 R0
90,0	96,0	12,8	> 4	HIS 0900 0960 128 R0
92,0	97,0	5,6	> 4	HIS 0920 0970 056 R0
95,0	100,0	5,6	> 4	HIS 0950 1000 056 R0
95,0	100,0	9,7	> 4	HIS 0950 1000 097 R0
95,0	100,0	15,0	> 4	HIS 0950 1000 150 R0
95,0	100,0	20,0	> 4	HIS 0950 1000 200 R0
95,0	100,0	25,0	> 4	HIS 0950 1000 250 R0
95,0	101,0	12,8	> 4	HIS 0950 1010 128 R0
100,0	105,0	5,6	> 4	HIS 1000 1050 056 R0
100,0	105,0	9,7	> 4	HIS 1000 1050 097 R0
100,0	105,0	15,0	> 4	HIS 1000 1050 150 R0
100,0	105,0	20,0	> 4	HIS 1000 1050 200 R0
100,0	105,0	25,0	> 4	HIS 1000 1050 250 R0
100,0	106,0	12,8	> 4	HIS 1000 1060 128 R0
105,0	110,0	9,7	> 4	HIS 1050 1100 097 R0
105,0	110,0	15,0	> 4	HIS 1050 1100 150 R0
105,0	110,0	20,0	> 4	HIS 1050 1100 200 R0
105,0	110,0	25,0	> 4	HIS 1050 1100 250 R0
105,0	111,0	12,8	> 4	HIS 1050 1110 128 R0
110,0	115,0	9,7	> 4	HIS 1100 1150 097 R0
110,0	115,0	15,0	> 4	HIS 1100 1150 150 R0
110,0	115,0	20,0	> 4	HIS 1100 1150 200 R0
110,0	115,0	25,0	> 4	HIS 1100 1150 250 R0
110,0	116,0	12,8	> 4	HIS 1100 1160 128 R0
115,0	120,0	9,7	> 4	HIS 1150 1200 097 R0
115,0	120,0	15,0	> 4	HIS 1150 1200 150 R0
115,0	120,0	20,0	> 4	HIS 1150 1200 200 R0
115,0	120,0	25,0	> 4	HIS 1150 1200 250 R0
115,0	121,0	12,8	> 4	HIS 1150 1210 128 R0
120,0	125,0	9,7	> 4	HIS 1200 1250 097 R0
120,0	125,0	15,0	> 4	HIS 1200 1250 150 R0
120,0	125,0	20,0	> 4	HIS 1200 1250 200 R0
120,0	125,0	25,0	> 4	HIS 1200 1250 250 R0
120,0	126,0	12,8	> 4	HIS 1200 1260 128 R0
125,0	130,0	9,7	> 4	HIS 1250 1300 097 R0
125,0	130,0	15,0	> 4	HIS 1250 1300 150 R0
125,0	130,0	20,0	> 4	HIS 1250 1300 200 R0
125,0	130,0	25,0	> 4	HIS 1250 1300 250 R0
125,0	131,0	12,8	> 4	HIS 1250 1310 128 R0
130,0	135,0	15,0	> 4	HIS 1300 1350 150 R0
130,0	135,0	20,0	> 4	HIS 1300 1350 200 R0
130,0	135,0	25,0	> 4	HIS 1300 1350 250 R0
130,0	136,0	12,8	> 4	HIS 1300 1360 128 R0

HIS

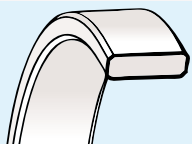


d _{h9}	D _{-0 +0,05}	E _{+0,2}	C	ART / ITEM
135,0	140,0	15,0	› 4	HIS 1350 1400 150 R0
135,0	140,0	20,0	› 4	HIS 1350 1400 200 R0
135,0	140,0	25,0	› 4	HIS 1350 1400 250 R0
135,0	141,0	12,8	› 4	HIS 1350 1410 128 R0
140,0	145,0	15,0	› 4	HIS 1400 1450 150 R0
140,0	145,0	20,0	› 4	HIS 1400 1450 200 R0
140,0	145,0	25,0	› 4	HIS 1400 1450 250 R0
140,0	146,0	12,8	› 4	HIS 1400 1460 128 R0
145,0	150,0	9,7	› 4	HIS 1450 1500 097 R0
145,0	150,0	15,0	› 4	HIS 1450 1500 150 R0
145,0	150,0	20,0	› 4	HIS 1450 1500 200 R0
145,0	150,0	25,0	› 4	HIS 1450 1500 250 R0
145,0	151,0	12,8	› 4	HIS 1450 1510 128 R0
150,0	155,0	15,0	› 4	HIS 1500 1550 150 R0
150,0	156,0	12,8	› 4	HIS 1500 1560 128 R0
155,0	161,0	19,2	› 4	HIS 1550 1610 192 R0
160,0	166,0	19,2	› 5	HIS 1600 1660 192 R0
165,0	171,0	19,2	› 5	HIS 1650 1710 192 R0

d _{h9}	D _{-0 +0,05}	E _{+0,2}	C	ART / ITEM
170,0	176,0	19,2	› 5	HIS 1700 1760 192 R0
175,0	181,0	19,2	› 5	HIS 1750 1810 192 R0
180,0	186,0	19,2	› 5	HIS 1800 1860 192 R0
185,0	191,0	19,2	› 5	HIS 1850 1910 192 R0
190,0	196,0	19,2	› 5	HIS 1900 1960 192 R0
195,0	201,0	19,2	› 5	HIS 1950 2100 192 R0
200,0	206,0	19,2	› 5	HIS 2000 2060 192 R0
205,0	211,0	19,2	› 5	HIS 2050 2110 192 R0
210,0	216,0	19,2	› 5	HIS 2100 2160 192 R0
215,0	221,0	19,2	› 5	HIS 2150 2210 192 R0
220,0	226,0	19,2	› 5	HIS 2200 2260 192 R0
225,0	231,0	19,2	› 5	HIS 2250 2310 192 R0
230,0	236,0	19,2	› 5	HIS 2300 2360 192 R0
235,0	241,0	19,2	› 5	HIS 2350 2410 192 R0
240,0	246,0	19,2	› 5	HIS 2400 2460 192 R0
245,0	251,0	19,2	› 5	HIS 2450 2510 192 R0

HIS
HES
NG
HPW
HEN

oleodinamica
Hydraulic



HES

ANELLI GUIDA ESTERNO TIPO HES

Descrizione

I pattini di guida tipo HES, hanno la funzione di mantenere in asse tutto il sistema cilindro (stelo con testata, pistone con camicia). Svolgono una funzione importante aiutando la tenuta stelo, il raschiatore e la tenuta pistone a lavorare senza disallineamenti evitando allo stesso tempo il contatto tra le parti metalliche. Il materiale con un coefficiente di attrito molto basso non crea perdite di carico (linearità). Sopporta deformazioni sotto carico elevate avendo un punto di rammollimento vicino al punto di fusione (lavora in esercizio a 115° C). Per facilitare la scelta della guida pistone o stelo consigliamo la formula a pag. 139 per conoscere l'altezza della guida da inserire nel sistema.

Dati tecnici

Velocità: < 0,8 m/s
Temperatura: da - 40° C a + 115° C
Fluidi: oli e fluidi a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale è una resina poliacetalica rinforzata con fibra di vetro. Per temperature di esercizio superiori ai 115° C il materiale è una resina poliammidica rinforzata. Codice materiale per temp < 115°C: R0
Codice materiale per temp > 115°C: R1

Montaggio

Il montaggio si esegue facilmente essendo la guida tagliata ed avendo un'ottima elasticità. La presenza sui due lati di smussi facilita l'inserimento dello stelo.

Nota: sezione tecnica guide pag.138

HES TYPE EXTERNAL WEAR RING

Description

The HES wear rings have been developed in order to keep all the parts of the cylinder aligned (the rod with the head, the piston with the bore). They play an important role as they help the rod seal, the wiper and the piston seal working without any misalignments and at the same time they prevent any contact between the metal parts. The material, which has a very low friction factor, does not cause load losses (linearity). It endures deformations under heavy loads, as the softening point is close to the fusion point (it works at 115° C). For an easier choice of the piston or rod guide, we suggest the use of the formula at page 139 to find the wear ring length.

Technical data

Speed: < 0,8 m/s
Temperature: from - 40° C to + 115° C
Fluids: mineral oils and fluids
(see table 3, page 14)

Material

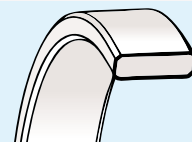
The material is a polyacetalic resin reinforced with fibreglass. For working temperatures higher than 115° C, the material is a reinforced polyamide resin. Compound reference for temp < 115°C: R0
Compound reference for temp > 115°C: R1

Assembling

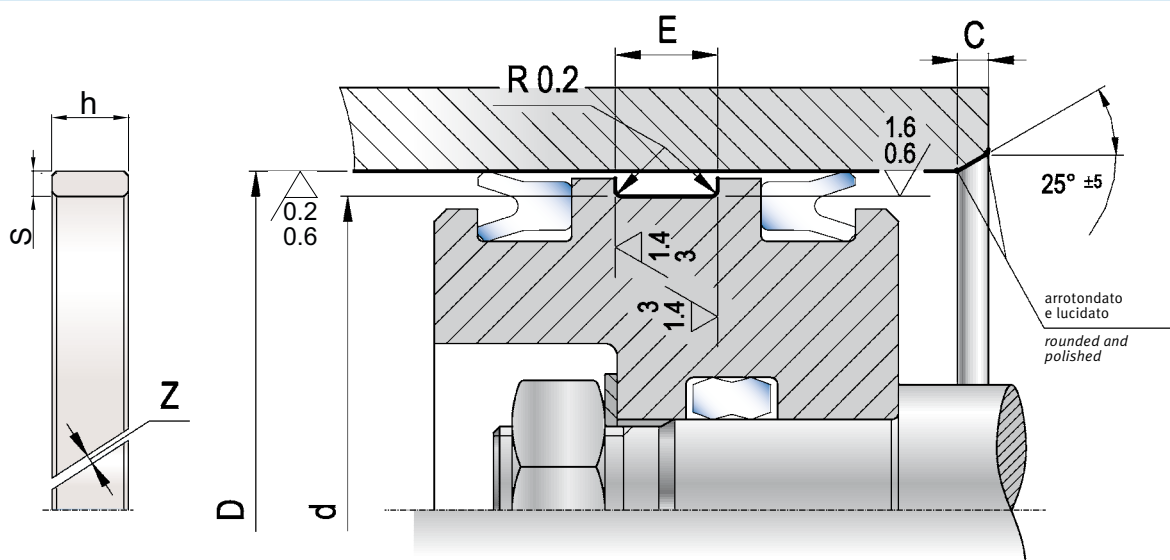
The assembling can be easily done since the wear ring is cut and extremely elastic. The chamfers on both sides have been studied to better insert the wear ring in the rod.

Note: wear rings technical section pag.138

HES



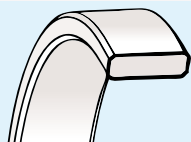
HIS
HES
NG
HPW
HEN



D H9	d +0 -0,05	E +0,2	C	ART / ITEM
16,0	12,0	9,6	>3	HES 0160 0120 096 R0
18,0	14,0	9,6	>3	HES 0180 0140 096 R0
20,0	16,0	9,6	>3	HES 0200 0160 096 R0
22,0	18,0	9,6	>3	HES 0220 0180 096 R0
24,0	20,0	9,6	>3	HES 0240 0200 096 R0
25,0	20,0	5,6	>3	HES 0250 0200 056 R0
25,0	20,0	9,7	>3	HES 0250 0200 097 R0
25,0	21,0	9,6	>3	HES 0250 0210 096 R0
27,0	22,0	5,6	>3	HES 0270 0220 056 R0
27,0	22,0	9,7	>3	HES 0270 0220 097 R0
28,0	24,0	9,6	>3	HES 0280 0240 096 R0
30,0	25,0	5,6	>3	HES 0300 0250 056 R0
30,0	25,0	9,7	>3	HES 0300 0250 097 R0
30,0	26,0	9,6	>3	HES 0300 0260 096 R0
32,0	27,0	5,6	>3	HES 0320 0270 056 R0
32,0	27,0	9,7	>3	HES 0320 0270 097 R0
32,0	28,0	9,6	>3	HES 0320 0280 096 R0
33,0	28,0	5,6	>3	HES 0330 0280 056 R0
33,0	28,0	9,7	>3	HES 0330 0280 097 R0
34,0	30,0	9,6	>3	HES 0340 0300 096 R0
35,0	30,0	5,6	>3	HES 0350 0300 056 R0
35,0	30,0	9,7	>3	HES 0350 0300 097 R0
35,0	31,0	9,6	>3	HES 0350 0310 096 R0
36,0	32,0	9,6	>3	HES 0360 0320 096 R0

D H9	d +0 -0,05	E +0,2	C	ART / ITEM
37,0	32,0	5,6	>3	HES 0370 0320 056 R0
37,0	32,0	9,7	>3	HES 0370 0320 097 R0
38,1	35,1	2,5	>3	HES 0381 0351 025 R0
40,0	35,0	5,6	>3	HES 0400 0350 056 R0
40,0	35,0	9,7	>3	HES 0400 0350 097 R0
40,0	36,0	9,6	>3	HES 0400 0360 096 R0
40,0	37,0	2,5	>3	HES 0400 0370 025 R0
41,0	36,0	5,6	>3	HES 0410 0360 056 R0
41,0	36,0	9,7	>3	HES 0410 0360 097 R0
44,4	41,4	2,5	>3	HES 0444 0414 025 R0
45,0	40,0	5,6	>3	HES 0450 0400 056 R0
45,0	40,0	9,7	>3	HES 0450 0400 097 R0
45,0	40,0	15,0	>3	HES 0450 0400 150 R0
45,0	41,0	9,6	>3	HES 0450 0410 096 R0
48,0	43,0	5,6	>3	HES 0480 0430 056 R0
50,0	44,0	9,6	>3	HES 0500 0440 096 R0
50,0	45,0	5,6	>3	HES 0500 0450 056 R0
50,0	45,0	9,7	>3	HES 0500 0450 097 R0
50,0	45,0	15,0	>3	HES 0500 0450 150 R0
50,8	47,8	2,5	>3	HES 0508 0478 025 R0
52,0	47,0	5,6	>3	HES 0520 0470 056 R0
52,0	47,0	9,7	>3	HES 0520 0470 097 R0
55,0	49,0	12,8	>3	HES 0550 0490 128 R0
55,0	50,0	5,6	>3	HES 0550 0500 056 R0

oleodinamica
Hydraulic

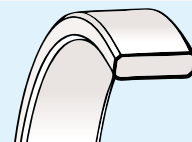


HES

D H9	d +0 -0,05	E +0,2	C	ART / ITEM
55,0	50,0	9,7	> 3	HES 0550 0500 097 R0
55,0	50,0	15,0	> 3	HES 0550 0500 150 R0
60,0	54,0	12,8	> 3	HES 0600 0540 128 R0
60,0	55,0	5,6	> 3	HES 0600 0550 056 R0
60,0	55,0	9,7	> 3	HES 0600 0550 097 R0
60,0	55,0	15,0	> 3	HES 0600 0550 150 R0
61,0	56,0	5,6	> 3	HES 0610 0560 056 R0
61,0	56,0	9,7	> 3	HES 0610 0560 097 R0
63,0	57,0	12,8	> 3	HES 0630 0570 128 R0
63,0	58,0	5,6	> 3	HES 0630 0580 056 R0
63,0	58,0	9,7	> 3	HES 0630 0580 097 R0
63,5	60,5	2,5	> 3	HES 0635 0605 025 R0
65,0	59,0	12,8	> 3	HES 0650 0590 128 R0
65,0	60,0	5,6	> 3	HES 0650 0600 056 R0
65,0	60,0	9,7	> 3	HES 0650 0600 097 R0
65,0	60,0	15,0	> 3	HES 0650 0600 150 R0
68,0	63,0	5,6	> 3	HES 0680 0630 056 R0
68,0	63,0	9,7	> 3	HES 0680 0630 097 R0
70,0	64,0	12,8	> 3	HES 0700 0640 128 R0
70,0	65,0	5,6	> 3	HES 0700 0650 056 R0
70,0	65,0	9,7	> 3	HES 0700 0650 097 R0
70,0	65,0	15,0	> 3	HES 0700 0650 150 R0
70,0	60,0	10,0	> 3	HES 0700 0660 100 R0
72,0	67,0	5,6	> 3	HES 0720 0670 056 R0
75,0	69,0	12,8	> 3	HES 0750 0690 128 R0
75,0	70,0	5,6	> 3	HES 0750 0700 056 R0
75,0	70,0	9,7	> 3	HES 0750 0700 097 R0
75,0	70,0	15,0	> 3	HES 0750 0700 150 R0
80,0	74,0	12,8	> 4	HES 0800 0740 128 R0
80,0	75,0	5,6	> 4	HES 0800 0750 056 R0
80,0	75,0	9,7	> 4	HES 0800 0750 097 R0
80,0	75,0	15,0	> 4	HES 0800 0750 150 R0
85,0	79,0	12,8	> 4	HES 0850 0790 128 R0
85,0	80,0	5,6	> 4	HES 0850 0800 056 R0
85,0	80,0	9,7	> 4	HES 0850 0800 097 R0
85,0	80,0	15,0	> 4	HES 0850 0800 150 R0
90,0	84,0	12,8	> 4	HES 0900 0840 128 R0
90,0	85,0	5,6	> 4	HES 0900 0850 056 R0
90,0	85,0	9,7	> 4	HES 0900 0850 097 R0
90,0	85,0	15,0	> 4	HES 0900 0850 150 R0
95,0	89,0	12,8	> 4	HES 0950 0890 128 R0
95,0	90,0	5,6	> 4	HES 0950 0900 056 R0
95,0	90,0	9,7	> 4	HES 0950 0900 097 R0
95,0	90,0	15,0	> 4	HES 0950 0900 150 R0
97,0	92,0	5,6	> 4	HES 0970 0920 056 R0

D H9	d +0 -0,05	E +0,2	C	ART / ITEM
100,0	94,0	12,8	> 4	HES 1000 0940 128 R0
100,0	95,0	5,6	> 4	HES 1000 0950 056 R0
100,0	95,0	9,7	> 4	HES 1000 0950 097 R0
100,0	95,0	15,0	> 4	HES 1000 0950 150 R0
100,0	95,0	20,0	> 4	HES 1000 0950 200 R0
100,0	95,0	25,0	> 4	HES 1000 0950 250 R0
105,0	99,0	12,8	> 4	HES 1050 0990 128 R0
105,0	100,0	5,6	> 4	HES 1050 1000 056 R0
105,0	100,0	9,7	> 4	HES 1050 1000 097 R0
105,0	100,0	15,0	> 4	HES 1050 1000 150 R0
105,0	100,0	20,0	> 4	HES 1050 1000 200 R0
105,0	100,0	25,0	> 4	HES 1050 1000 250 R0
110,0	104,0	12,8	> 4	HES 1100 1040 128 R0
110,0	105,0	9,7	> 4	HES 1100 1050 097 R0
110,0	105,0	15,0	> 4	HES 1100 1050 150 R0
110,0	105,0	20,0	> 4	HES 1100 1050 200 R0
110,0	105,0	25,0	> 4	HES 1100 1050 250 R0
115,0	109,0	12,8	> 4	HES 1150 1090 128 R0
115,0	110,0	9,7	> 4	HES 1150 1100 097 R0
115,0	110,0	15,0	> 4	HES 1150 1100 150 R0
115,0	110,0	20,0	> 4	HES 1150 1100 200 R0
115,0	110,0	25,0	> 4	HES 1150 1100 250 R0
120,0	114,0	12,8	> 4	HES 1200 1140 128 R0
120,0	115,0	9,7	> 4	HES 1200 1150 097 R0
120,0	115,0	15,0	> 4	HES 1200 1150 150 R0
120,0	115,0	20,0	> 4	HES 1200 1150 200 R0
120,0	115,0	25,0	> 4	HES 1200 1150 250 R0
125,0	119,0	12,8	> 4	HES 1250 1190 128 R0
125,0	120,0	9,7	> 4	HES 1250 1200 097 R0
125,0	120,0	15,0	> 4	HES 1250 1200 150 R0
125,0	120,0	20,0	> 4	HES 1250 1200 200 R0
125,0	120,0	25,0	> 4	HES 1250 1200 250 R0
130,0	124,0	12,8	> 4	HES 1300 1240 128 R0
130,0	125,0	15,0	> 4	HES 1300 1250 150 R0
130,0	125,0	20,0	> 4	HES 1300 1250 200 R0
130,0	125,0	25,0	> 4	HES 1300 1250 250 R0
135,0	129,0	12,8	> 4	HES 1350 1290 128 R0
135,0	130,0	15,0	> 4	HES 1350 1300 150 R0
135,0	130,0	20,0	> 4	HES 1350 1300 200 R0
135,0	130,0	25,0	> 4	HES 1350 1300 250 R0
140,0	134,0	12,8	> 4	HES 1400 1340 128 R0
140,0	135,0	15,0	> 4	HES 1400 1350 150 R0
140,0	135,0	20,0	> 4	HES 1400 1350 200 R0
140,0	135,0	25,0	> 4	HES 1400 1350 250 R0
145,0	139,0	12,8	> 4	HES 1450 1390 128 R0

HES



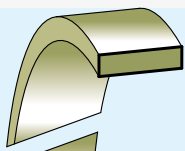
D H9	d + 0 -0,05	E +0,2	C	ART / ITEM
145,0	140,0	15,0	> 4	HES 1450 1400 150 R0
145,0	140,0	20,0	> 4	HES 1450 1400 200 R0
145,0	140,0	25,0	> 4	HES 1450 1400 250 R0
150,0	144,0	12,8	> 4	HES 1500 1440 128 R0
150,0	145,0	15,0	> 4	HES 1500 1450 150 R0
150,0	145,0	20,0	> 4	HES 1500 1450 200 R0
150,0	145,0	25,0	> 4	HES 1500 1450 250 R0
155,0	149,0	19,2	> 4	HES 1550 1490 192 R0
160,0	154,0	19,2	> 5	HES 1600 1540 192 R0

D H9	d + 0 -0,05	E +0,2	C	ART / ITEM
160,0	155,0	15,0	> 5	HES 1600 1550 150 R0
165,0	159,0	19,2	> 5	HES 1650 1590 192 R0
170,0	164,0	19,2	> 5	HES 1700 1640 192 R0
175,0	169,0	19,2	> 5	HES 1750 1690 192 R0
180,0	174,0	19,2	> 5	HES 1800 1740 192 R0
185,0	179,0	19,2	> 5	HES 1850 1790 192 R0
190,0	184,0	19,2	> 5	HES 1900 1840 192 R0
195,0	189,0	19,2	> 5	HES 1950 1890 192 R0
200,0	194,0	19,2	> 5	HES 2000 1940 192 R0
210,0	204,0	19,2	> 5	HES 2100 2040 192 R0
220,0	214,0	19,2	> 5	HES 2200 2140 192 R0
230,0	224,0	19,2	> 5	HES 2300 2240 192 R0
240,0	234,0	19,2	> 5	HES 2400 2340 192 R0
250,0	244,0	19,2	> 5	HES 2500 2440 192 R0

HIS
HES
NG
HPW
HEN

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



NG

NASTRO GUIDA IN PTFE TIPO NG

Descrizione

Il nastro guida NG in politetrafluoroetilene caricato bronzo viene fornito in rotoli dai quali si possono ricavare guide che possono essere intercambiabili con quelle in materiale termoplastico. Vengono applicate sia su stelo che su pistone. Hanno come caratteristica principale, la precisione dello spessore e la quasi assenza di attrito. Per la sua inerzia chimica, sono compatibili con molti fluidi. Possono essere con o senza smussi di invito.

Dati Tecnici

Velocità: <15 m/s
Temperatura: da -50°C a +160°C con punte a 200°C
Fluidi: molti fluidi essendo un materiale con inerzia chimica elevata
(vedi tabella 3 a pagina 14)

Materiale

Il materiale è politetrafluoroetilene (PTFE) con cariche interne di bronzo.
Codice materiale:
TV LBR4030 (verde),
TM LBR4003 (grigio/ marrone)

Montaggio

Il montaggio si esegue facilmente essendo le guide tagliate.

Nota: sezione tecnica guide pag.138

NG TYPE PTFE WEAR TAPE

Description

NG bronze filled PTFE tape is supplied in rolls. By cutting them it is possible to obtain interchangeable guides to replace thermoplastic material. They can be used for rods or pistons. Thanks to the properties (thickness accuracy, low friction and chemical resistance) are compatible with many fluids. They can be with or without chamfers.

Technical Data

Speed: < 15 m/s
Temperature: from -50°C to +160°C peaks till 200°C.
Fluids: many fluids as a material with high chemical inertia
(see table 3, page 14)

Material

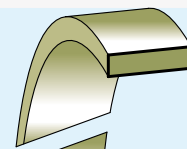
The material is bronze filled PTFE.
Compound reference:
TV LBR4030 (green),
TM LBR4003 (dark brown)

Assembling

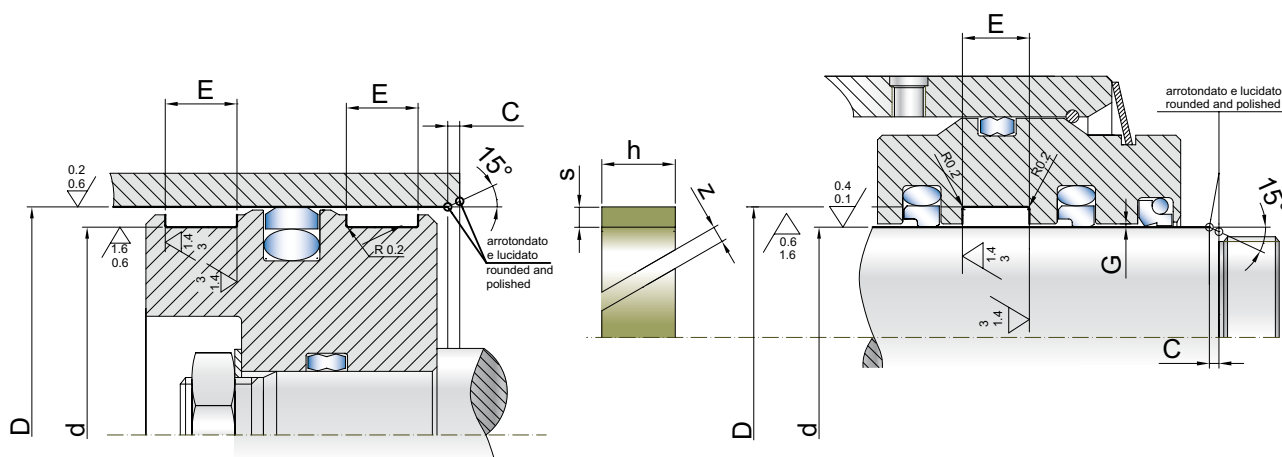
The assembling can be easily done since the wear ring is cut.

Note: wear rings technical section pag.138

NG



HIS
HES
NG
HPW
HEN

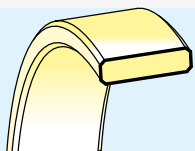


Dimensione sede - Groove dimension				
d_{H9}	D_{H9}	$E_{+0,2}$	Spessore anello Ring thickness s	z
8-20	$d + 2s$	3,20	1,50	1,0-2,0
15-35	$d + 2s$	4,20	1,50 2,00	1,0-2,0
15-75	$d + 2s$	5,60	1,50 2,00 2,50	1,5-3,5
20-75	$d + 2s$	6,30	1,50 2,00 2,50	1,5-3,5
30-250	$d + 2s$	8,10	1,50 2,00 2,50	2,0-5,0
35-300	$d + 2s$	9,70	1,50 2,00 2,50 3,00	2,0-6,0
120-400	$d + 2s$	15,00	1,50 2,00 2,50 3,00	4,0-8,0
200-900	$d + 2s$	20,00	1,50 2,00 2,50 3,00	4,5-8,0
300-900	$d + 2s$	25,00	2,00 2,50 3,00	6,0-8,0
300-900	$d + 2s$	30,00	2,00 2,50 3,00	6,0-10,0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

oleodinamica
Hydraulic



HPW

GUIDA TIPO HPW

Descrizione

Le HPW sono guide in resina fenolica e possono essere intercambiabili con quelle in materiale termoplastico. Vengono applicate su stelo o pistone. Sono ricavate da un tubo per tornitura, il che garantisce un'alta precisione di spessore. Supportano carichi molto elevati e vengono utilizzate in impieghi molto gravosi.

Dati Tecnici

Velocità: <1 m/s
Temperatura: da - 50° C a + 150° C
Fluidi: oli idraulici a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati possono essere di tre tipologie differenti:

- Resina fenolica impregnata in trecce di cotone naturale impiegata per carichi medio/bassi
- Resina fenolica impregnata in trecce di poliestere additivata con grafite
- Resina fenolica impregnata in trecce di poliestere additivata con PTFE.

Montaggio

Il montaggio si esegue facilmente essendo la guida tagliata ed avendo un'ottima elasticità. La presenza sui due lati di smussi facilita l'inserimento dello stelo o del pistone.

Nota: sezione tecnica guide pag.138

HPW TYPE WEAR RING

Description

HPW phenolic resin guides can be interchangeable with other thermoplastic wear rings. They can be used for rods or pistons. They are produced from tubes with high thickness accuracy, supporting very high loads and are used in very heavy conditions.

Technical Data

Speed: < 1 m/s
Temperature: from - 50° C a + 150° C
Fluids: hydraulic mineral oil
(see table 3, page 14)

Material

The materials used could be :

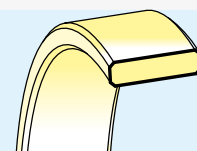
- *impregnated phenolic resin in natural cotton braids for low/medium load*
- *impregnated phenolic resin with polyester braids filled graphite*
- *impregnated phenolic resin with polyester braids filled PTFE.*

Assembling

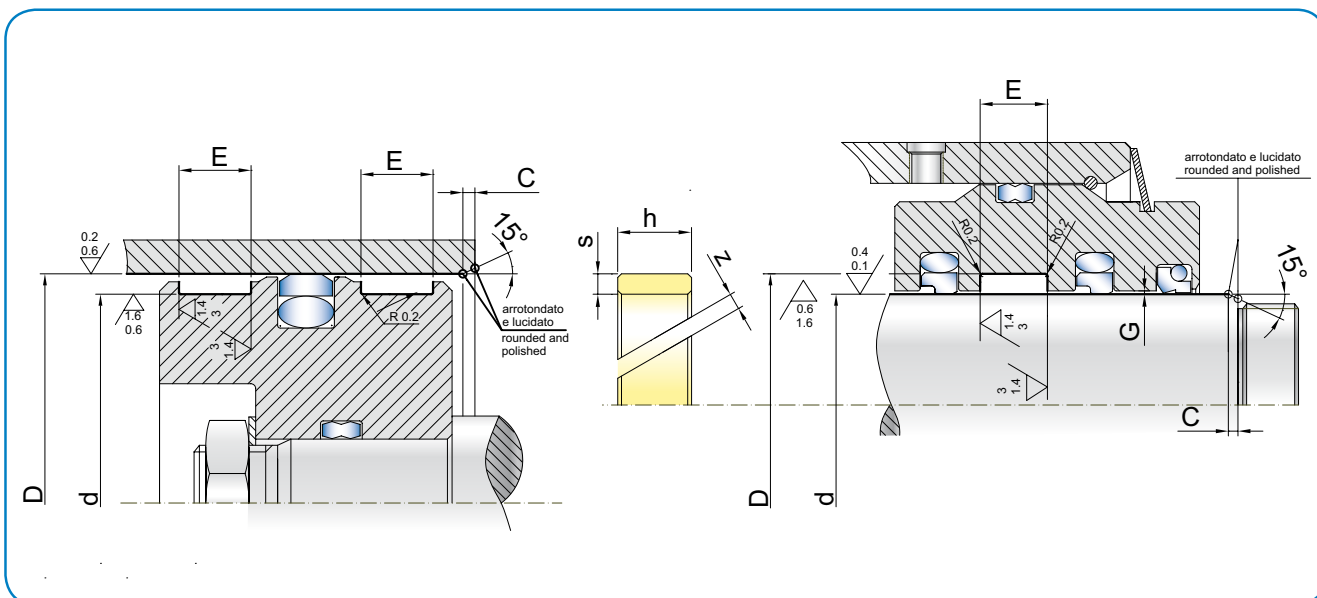
The assembling can be easily done since the wear ring is cut and extremely elastic. The chamfers on both sides have been studied to better insert the wear ring in the rod or piston.

Note: wear rings technical section pag.138

HPW



HIS
HES
NG
HPW
HEN

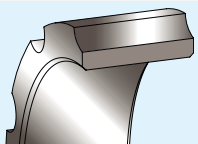


df8	DH9	E +0.2	E +0.2	E +0.2	ART / ITEM
40,0	45,0	5,6	9,7	\	HPW 0400 0450 056-097 SO
45,0	50,0	5,6	9,7	\	HPW 0450 0500 056-097 SO
50,0	55,0	5,6	9,7	\	HPW 0500 0550 056-097 SO
55,0	60,0	5,6	9,7	\	HPW 0550 0600 056-097 SO
56,0	61,0	5,6	9,7	\	HPW 0560 0610 056-097 SO
60,0	65,0	5,6	9,7	\	HPW 0600 0650 056-097 SO
65,0	70,0	5,6	9,7	\	HPW 0650 0700 056-097 SO
70,0	75,0	5,6	9,7	\	HPW 0700 0750 056-097 SO
75,0	80,0	5,6	9,7	\	HPW 0750 0800 056-097 SO
80,0	85,0	9,7	12,8	15,0	HPW 0800 0850 097-128-150 SO
85,0	90,0	9,7	12,8	15,0	HPW 0850 0900 097-128-150 SO
90,0	95,0	9,7	12,8	15,0	HPW 0900 0950 097-128-150 SO
95,0	100,0	9,7	12,8	15,0	HPW 0950 1000 097-128-150 SO
100,0	105,0	9,7	12,8	15,0	HPW 1000 1050 097-128-150 SO
105,0	110,0	9,7	12,8	15,0	HPW 1050 1100 097-128-150 SO
110,0	115,0	9,7	12,8	15,0	HPW 1100 1150 097-128-150 SO
115,0	120,0	9,7	12,8	15,0	HPW 1150 1200 097-128-150 SO
120,0	125,0	9,7	12,8	15,0	HPW 1200 1250 097-128-150 SO
125,0	130,0	9,7	12,8	15,0	HPW 1250 1300 097-128-150 SO
130,0	135,0	9,7	12,8	15,0	HPW 1300 1350 097-128-150 SO
135,0	140,0	9,7	12,8	15,0	HPW 1350 1400 097-128-150 SO
140,0	145,0	9,7	12,8	15,0	HPW 1400 1450 097-128-150 SO
145,0	150,0	9,7	12,8	15,0	HPW 1450 1500 097-128-150 SO
150,0	155,0	9,7	12,8	15,0	HPW 1500 1550 097-128-150 SO

df8	DH9	E +0.2	E +0.2	E +0.2	ART / ITEM
155,0	160,0	9,7	12,8	15,0	HPW 1550 1600 097-128-150 SO
160,0	165,0	9,7	12,8	15,0	HPW 1600 1650 097-128-150 SO
165,0	170,0	9,7	12,8	15,0	HPW 1650 1700 097-128-150 SO
170,0	175,0	9,7	12,8	15,0	HPW 1700 1750 097-128-150 SO
175,0	180,0	9,7	12,8	15,0	HPW 1750 1800 097-128-150 SO
180,0	185,0	9,7	12,8	15,0	HPW 1800 1850 097-128-150 SO
185,0	190,0	9,7	12,8	15,0	HPW 1850 1900 097-128-150 SO
190,0	195,0	9,7	12,8	15,0	HPW 1900 1950 097-128-150 SO
195,0	200,0	9,7	12,8	15,0	HPW 1950 2000 097-128-150 SO
200,0	205,0	9,7	12,8	15,0	HPW 2000 2050 097-128-150 SO
205,0	210,0	9,7	12,8	15,0	HPW 2050 2100 097-128-150 SO
210,0	215,0	9,7	12,8	15,0	HPW 2100 2150 097-128-150 SO
215,0	220,0	\	15,0	25,0	HPW 2150 2200 150-250 SO
220,0	225,0	\	15,0	25,0	HPW 2200 2250 150-250 SO
225,0	230,0	\	15,0	25,0	HPW 2250 2300 150-250 SO
230,0	235,0	\	15,0	25,0	HPW 2300 2350 150-250 SO
235,0	240,0	\	15,0	25,0	HPW 2350 2400 150-250 SO
240,0	245,0	\	15,0	25,0	HPW 2400 2450 150-250 SO
245,0	250,0	\	15,0	25,0	HPW 2450 2500 150-250 SO
250,0	255,0	\	15,0	25,0	HPW 2500 2550 150-250 SO

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



HEN

GUIDA TIPO HEN

Descrizione

Le HEN sono guide studiate in particolar modo per i cilindri tuffanti, in sostituzione alle tradizionali boccole in bronzo. La sua funzione è duplice: mantiene in guida lo stelo sulla camicia e funge da finecorsa, il passaggio dell'olio è garantito dalle grandi scanalature presenti sul diametro esterno.

Dati Tecnici

Velocità: < 0,8 m/s
Temperatura: da - 40° C a + 115° C
Fluidi: oli idraulici a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale è una resina poliacetalica rinforzata con fibra di vetro.

Per temperature di esercizio superiori ai 115°C il materiale è una resina poliammidica rinforzata.

Codice materiale per temp. < 115°C: R0

Codice materiale per temp > 115°C: R1

Montaggio

Il montaggio si esegue facilmente essendo la guida tagliata ed avendo un'ottima elasticità.

La presenza sui due lati di smussi facilita l'inserimento dello stelo.

Nota: sezione tecnica guide pag.138

HEN TYPE WEAR RING

Description

The HEN wear rings are designed especially for the plunger cylinders, in substitution to the traditional bronze bushings. It has a double function: it keeps the rod in guide on the bore and acts as a limit switch, the oil passage is guaranteed by the large grooves on the external diameter.

Technical Data

Speed: < 0,8 m/s
Temperature: from - 40° C a + 115° C
Fluids: hydraulic mineral oil
(see table 3, page 14)

Material

The material is a polyacetal resin reinforced with fibreglass.

For working temperatures higher than 115° C, the material is a reinforced polyamide resin.

Compound reference for temp < 115°C: R0

Compound reference for temp > 115°C: R1

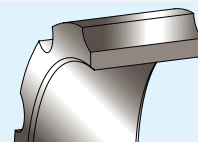
Assembling

The assembling can be easily done since the wear ring is cut and extremely elastic.

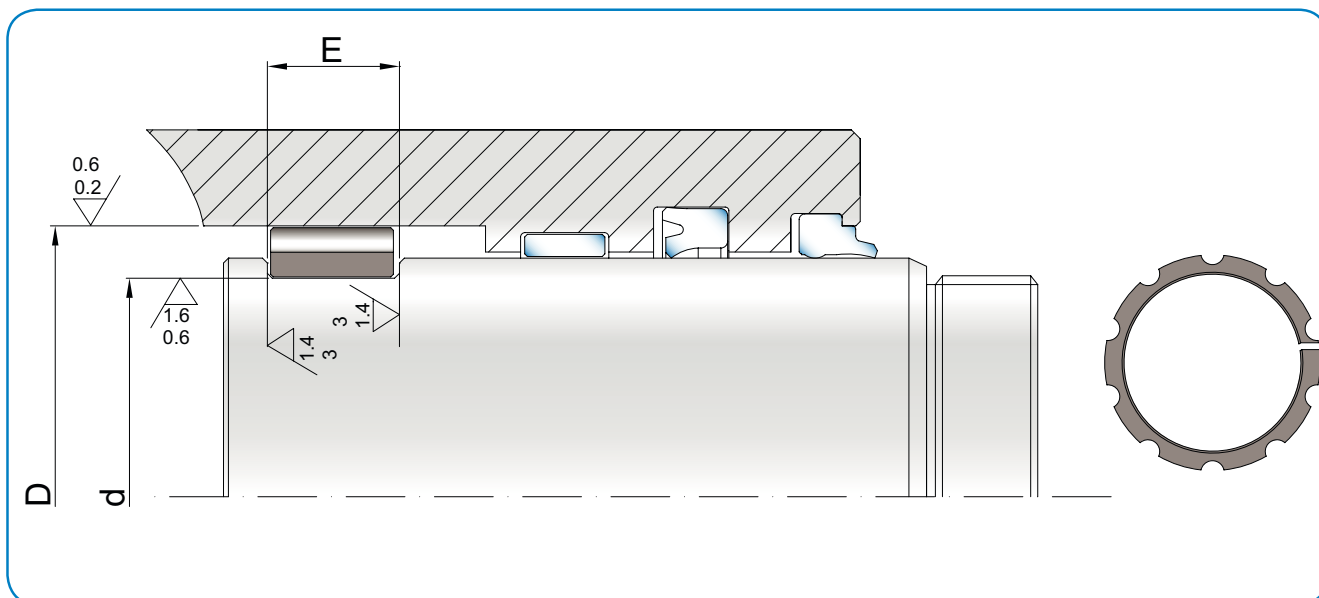
The chamfers on both sides have been studied to better insert the wear ring in the rod.

Note: wear rings technical section pag.138

HEN



HIS
HES
NG
HPW
HEN

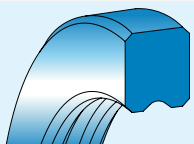


D _{H9}	d _{f8}	E +0.2	ART / ITEM				
30,0	20,0	13,0	HEN	0300	0200	130	RO
35,0	25,0	13,0	HEN	0350	0250	130	RO
40,0	30,0	13,0	HEN	0400	0300	130	RO
45,0	35,0	13,0	HEN	0450	0350	130	RO
50,0	40,0	16,0	HEN	0500	0400	160	RO
55,0	45,0	16,0	HEN	0550	0450	160	RO
60,0	50,0	16,0	HEN	0600	0500	160	RO
65,0	55,0	16,0	HEN	0650	0550	160	RO
70,0	60,0	16,0	HEN	0700	0600	160	RO
75,0	65,0	16,0	HEN	0750	0650	160	RO
80,0	70,0	16,0	HEN	0800	0700	160	RO
85,0	75,0	16,0	HEN	0850	0750	160	RO

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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Hydraulic



GDR

TENUTA ROTANTE TIPO GDR

Descrizione

La tenuta per movimenti rotativi tipo GDR è una guarnizione simmetrica con due lati di tenuta per giunti girevoli.

La simmetria del profilo ha lo scopo di facilitare il montaggio.

Sui lati di appoggio assiali, sono presenti dei notches per evitare l'incollaggio durante i fermi del sistema.

Dati tecnici

Pressione: < 350 bar

Velocità: < 0,3 m/s

Temperatura: da - 30° C a + 100° C

Fluidi: oli minerali

(vedi tabella 3 a pagina 14)

Rugosità superficie: da Ra 0,1 µm a Ra 0,4 µm

Materiale

Il materiale proposto è il poliuretano tipo CO a 93 Shore A con buona resistenza all'abrasione, ottimo compression-set, elevato modulo elastico necessario per la tenuta.

Montaggio

Il montaggio avviene in cava anulare.

Per la sua flessibilità non ha bisogno di utensili di montaggio.

Eliminare spigoli e bave che possano danneggiare la guarnizione durante l'installazione.

GDR TYPE ROTARY SEAL

Description

The seal for rotary type GDR is a symmetric two-sided seal for swivel joints.

The symmetry created has the purpose to facilitate the assembly, on the sides of the axial bearing has some notches to prevent sticking when the system is stopped.

Technical data

Pressure: < 350 bar

Speed: < 0.3 m/s

Temperature: from - 30° C to + 100° C

Fluids: mineral oil

(see table 3, page 14)

Surface Roughness: from Ra 0,1 µm to Ra 0,4 µm

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, fundamental for the sealing, low compression-set and high abrasion resistance.

The hardness is 93 Shore A ± 2.

Assembling

Installation is in the annular groove.

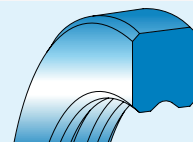
For its flexibility does not need installation tools.

Remove burrs and sharp edges that could damage the seal during installation.

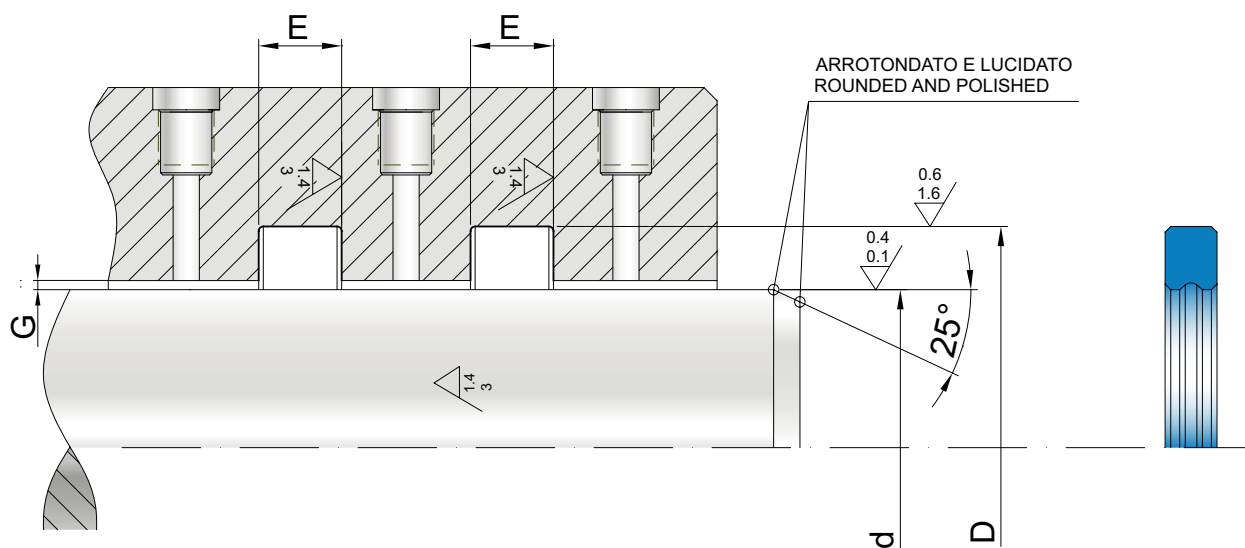
Tab.40 gioco di accoppiamento / coupling clearance

pressione / pressure BAR	G mm
50	0,50
100	0,30
200	0,20
300	0,10

GDR



GDR

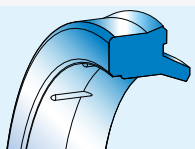


d_{fs}	D_{H10}	$E_{+0,3}$	C	ART / ITEM				
70,0	80,0	5,0	5,0	GDR	0700	0800	050	C0
80,0	90,0	5,0	5,0	GDR	0800	0900	050	C0
90,0	100,0	5,0	5,0	GDR	0900	1000	050	C0
95,0	105,0	5,0	5,5	GDR	0950	1050	050	C0
100,0	110,0	5,0	5,5	GDR	1000	1100	050	C0
110,0	120,0	5,0	5,5	GDR	1100	1200	050	C0
115,0	125,0	5,0	6,0	GDR	1150	1250	050	C0
120,0	130,0	5,0	6,0	GDR	1200	1300	050	C0
125,0	135,4	5,0	6,0	GDR	1250	1354	050	C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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Hydraulic



WSL

RASCHIATORE STELO TIPO WSL

Descrizione

Il raschiatore tipo WSL ha un labbro raschiante molto flessibile nella parte dinamica e un labbro sporgente, più corto e molto robusto nella parte statica.

Questo profilo speciale, sia dal lato stelo sia dal lato esterno statico, impedisce alle impurità quali scorie acqua ed altro, di penetrare, cosa che andrebbe a danneggiare la guarnizione di tenuta ed a corrodere la parte interna del cilindro.

Dati tecnici

Velocità: < 1 m/s

Temperatura: da - 35° C a + 100° C con punte fino a +110° C

Fluidi: acqua a temperatura ambiente, oli minerali
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati sono dei poliuretani che resistono agli agenti atmosferici, con alto modulo elastico e resistenti all'abrasione.

Il materiale standard è di durezza 93 Shore A $\pm$ 2. In alternativa è possibile utilizzare poliuretani di durezza superiore quando esistono condizioni gravose in ambienti molto inquinanti. In questo caso consultare il nostro ufficio tecnico.

Codice materiale: CO

Montaggio

Non presenta particolari problemi essendo in sede semiaperta collocata nella parte più vicina all'esterno del cilindro.

Si raccomanda di eliminare gli spigoli taglienti e le bave per non incidere il raschiatore durante il montaggio.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WSL TYPE ROD WIPER

Description

The WSL wiper has a high flexible wiping lip on the dynamic side and a strong, shorter, protruding lip on the static side.

This special profile keeps the rod and the static side where it is housed free from any impurity, waste or water.

Impurities would damage the seal and corrode the inner part of the cylinder.

Technical data

Speed: < 1 m/s

Temperature: from - 35° C to + 100° C with peaks till +110° C

Fluids: water at room temperature, mineral oils
(see table 3, page 14)

Material

The material used is a polyurethane with a high modulus of elasticity, low compression set and high wear resistance.

Its hardness is 93 Shore A $\pm$ 2.

Compound reference: CO

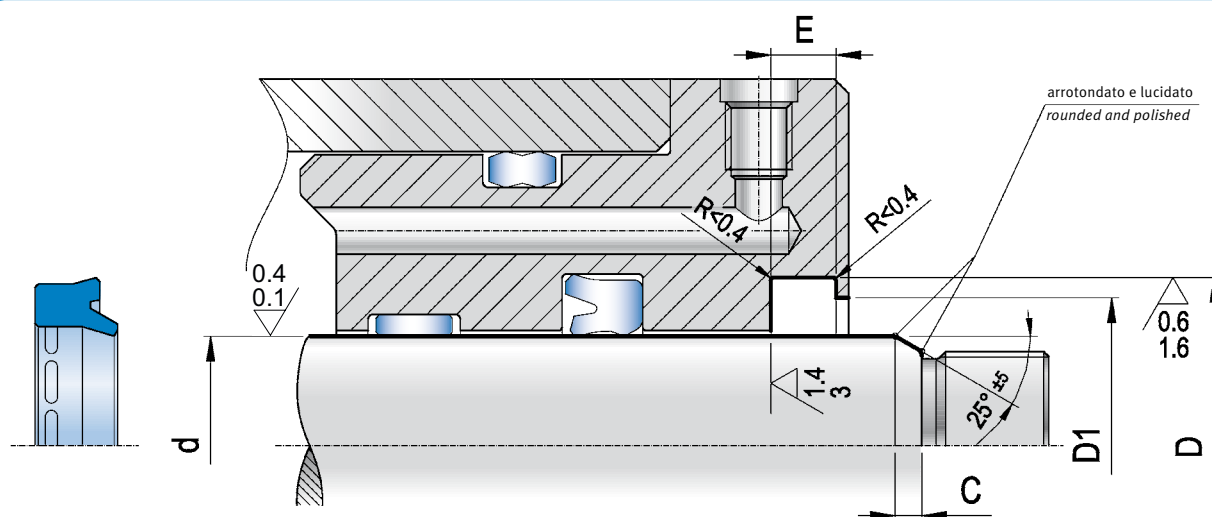
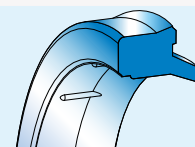
Assembling

It is not very problematic as it can be done in semi-open groove located in the nearest part outside the cylinder.

Remove cutting edges and flashes to avoid the scratching of the wiper during the installation.

For further information please refer to the installation instructions on page 61.

WSL



WSL

R06

WSG

IWP

DWP

R09

WWS

R08

WAT

TRD

WED

WDA

WIP

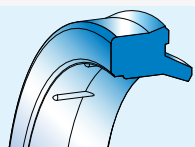
WNM

WEL

d _{h9}	D _{H10}	E _{+0,2}	D _{1 0/+0,2}	ART / ITEM
5,0	12,0	2,8	8,0	WSL 0050 0120 028 C0
6,0	12,0	3,0	9,0	WSL 0060 0120 030 C0
8,0	14,6	3,8	11,0	WSL 0080 0146 038 C0
10,0	15,0	1,0	13,0	WSL 0100 0150 010 C0
10,0	16,6	3,8	13,0	WSL 0100 0166 038 C0
12,0	18,6	3,8	15,0	WSL 0120 0186 038 C0
13,0	19,6	3,8	16,0	WSL 0130 0196 038 C0
14,0	20,6	3,8	17,0	WSL 0140 0206 038 C0
15,0	21,6	3,8	18,0	WSL 0150 0216 038 C0
16,0	22,6	3,8	19,0	WSL 0160 0226 038 C0
18,0	24,6	3,8	21,0	WSL 0180 0246 038 C0
20,0	28,6	5,3	23,0	WSL 0200 0286 053 C0
22,0	30,6	5,3	25,0	WSL 0220 0306 053 C0
24,0	32,6	5,3	27,0	WSL 0240 0326 053 C0
25,0	33,6	5,3	28,0	WSL 0250 0336 053 C0
28,0	36,6	5,3	31,0	WSL 0280 0366 053 C0
30,0	38,0	5,3	33,0	WSL 0300 0380 053 C0
30,0	38,6	5,3	33,0	WSL 0300 0386 053 C0
32,0	40,6	5,3	35,0	WSL 0320 0406 053 C0
35,0	43,6	5,3	38,0	WSL 0350 0436 053 C0
36,0	44,6	5,3	39,0	WSL 0360 0446 053 C0
38,0	46,6	5,3	41,0	WSL 0380 0466 053 C0
40,0	48,6	5,3	43,0	WSL 0400 0486 053 C0
45,0	53,6	5,3	48,0	WSL 0450 0536 053 C0
46,0	54,6	5,3	49,0	WSL 0460 0546 053 C0
50,0	58,0	5,3	53,0	WSL 0500 0580 053 C0
50,0	58,6	5,3	53,0	WSL 0500 0586 053 C0

d _{h9}	D _{H10}	E _{+0,2}	D _{1 0/+0,2}	ART / ITEM
55,0	63,6	5,3	58,0	WSL 0550 0636 053 C0
55,0	65,6	5,3	58,0	WSL 0550 0656 053 C0
56,0	64,6	5,3	59,0	WSL 0560 0646 053 C0
60,0	68,0	5,3	63,0	WSL 0600 0680 053 C0
60,0	68,6	5,3	63,0	WSL 0600 0686 053 C0
60,0	70,0	5,0	63,0	WSL 0600 0700 050 C0
61,0	69,6	5,3	64,0	WSL 0610 0696 053 C0
63,0	71,6	5,3	66,0	WSL 0630 0716 053 C0
65,0	73,6	5,3	68,0	WSL 0650 0736 053 C0
70,0	78,6	5,3	73,0	WSL 0700 0786 053 C0
70,0	80,0	5,0	73,0	WSL 0700 0800 050 C0
70,0	82,2	7,1	76,0	WSL 0700 0822 071 C0
70,0	82,6	7,1	76,0	WSL 0700 0826 071 C0
75,0	83,0	5,3	78,0	WSL 0750 0830 053 C0
75,0	83,6	5,3	78,0	WSL 0750 0836 053 C0
75,0	87,2	7,1	81,0	WSL 0750 0872 071 C0
76,0	84,6	5,3	79,0	WSL 0760 0846 053 C0
80,0	88,6	5,3	83,0	WSL 0800 0886 053 C0
80,0	90,2	7,1	83,0	WSL 0800 0902 071 C0
80,0	92,6	7,1	83,0	WSL 0800 0926 071 C0
85,0	93,6	5,3	88,0	WSL 0850 0936 053 C0
85,0	97,2	7,1	91,0	WSL 0850 0972 071 C0
90,0	98,0	5,3	96,0	WSL 0900 0980 053 C0
90,0	102,2	7,1	96,0	WSL 0900 1022 071 C0
91,0	99,6	5,3	97,0	WSL 0910 0996 053 C0
95,0	107,2	7,1	101,0	WSL 0950 1072 071 C0
97,0	105,6	5,3	103,0	WSL 0970 1056 053 C0

oleodinamica
Hydraulic



WSL

d _{h9}	D _{H10}	E _{+0,2}	D _{1 0/+0,2}	ART / ITEM
100,0	108,6	5,3	103,0	WSL 1000 1086 053 CO
100,0	112,2	7,1	106,0	WSL 1000 1122 071 CO
105,0	113,0	5,3	108,0	WSL 1050 1130 053 CO
105,0	113,6	5,3	108,0	WSL 1050 1136 053 CO
105,0	117,2	7,1	111,0	WSL 1050 1172 071 CO
107,0	115,6	5,3	110,0	WSL 1070 1156 053 CO
110,0	118,6	5,3	113,0	WSL 1100 1186 053 CO
110,0	122,2	7,1	116,0	WSL 1100 1222 071 CO
115,0	127,2	7,1	121,0	WSL 1150 1272 071 CO
120,0	132,2	7,1	126,0	WSL 1200 1322 071 CO
125,0	137,2	7,1	131,0	WSL 1250 1372 071 CO
126,0	134,6	5,3	129,0	WSL 1260 1346 053 CO
130,0	142,2	7,1	136,0	WSL 1300 1422 071 CO
135,0	147,2	7,1	141,0	WSL 1350 1472 071 CO
140,0	152,2	7,1	146,0	WSL 1400 1522 071 CO

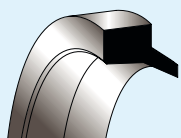
d _{h9}	D _{H10}	E _{+0,2}	D _{1 0/+0,2}	ART / ITEM
140,0	155,0	9,0	146,5	WSL 1400 1550 090 CO
145,0	157,2	7,1	151,0	WSL 1450 1572 071 CO
150,0	162,2	7,1	156,0	WSL 1500 1622 071 CO
160,0	172,2	7,1	166,0	WSL 1600 1722 071 CO
160,0	175,2	10,1	168,0	WSL 1600 1752 101 CO
170,0	185,2	10,1	178,0	WSL 1700 1852 101 CO
180,0	195,2	10,1	188,0	WSL 1800 1952 101 CO
180,0	200,2	10,2	183,0	WSL 1800 2002 102 CO
190,0	205,2	10,1	198,0	WSL 1900 2052 101 CO
200,0	215,2	10,1	208,0	WSL 2000 2152 101 CO
210,0	225,2	10,1	218,0	WSL 2100 2252 101 CO
220,0	235,2	10,1	228,0	WSL 2200 2352 101 CO
230,0	245,2	10,1	238,0	WSL 2300 2452 101 CO
240,0	255,2	10,1	248,0	WSL 2400 2552 101 CO
250,0	265,2	10,1	258,0	WSL 2500 2652 101 CO

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

[illegible]



R 0 6

RASCHIATORE STELO TIPO R06

Descrizione

Gli anelli raschiatori della serie R06 vengono utilizzati per impedire l'ingresso d'impurità all'interno di apparecchiature oleodinamiche, proteggendo così sia le guarnizioni che le parti metalliche che altrimenti potrebbero essere danneggiate.

Dati tecnici

Velocità: < 4 m/s
 Temperatura: da - 30° C a + 100° C con punte fino a +110° C
 Fluidi: acqua a temperatura ambiente, oli minerali
 (vedi tabella 3 a pagina 14)

Materiale

il materiale standard utilizzato è NBR 90 ShoreA. Per le elevate temperature (da -15°C a +200°C) si consiglia l'utilizzo di FPM 90 Shore A.

Montaggio

Non presenta particolari problemi essendo in sede semiaperta collocata nella parte più vicina all'esterno del cilindro.

Si raccomanda di eliminare gli spigoli taglienti e le bave per non incidere il raschiatore durante il montaggio.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

R06 TYPE ROD WIPER

Description

The wiper rings of the series R06 are used to prevent the entry of impurities inside of hydraulic equipment, thus protecting both the seals and the metal parts that might otherwise be damaged.

Technical data

Speed: < 4 m/s
 Temperature: from - 30° C to + 100° C with peaks till +110° C
 Fluids: water at room temperature, mineral oils
 (see table 3, page 14)

Material

the standard material used is NBR 90 ShoreA. For high temperatures (from -15 ° C to +200 ° C), we recommend the use of FPM 90 Shore A.

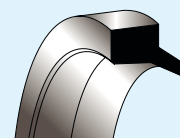
Assembling

It is not very problematic as it can be done in semi-open groove located in the nearest part outside the cylinder.

Remove cutting edges and flashes to avoid the scratching of the wiper during the installation.

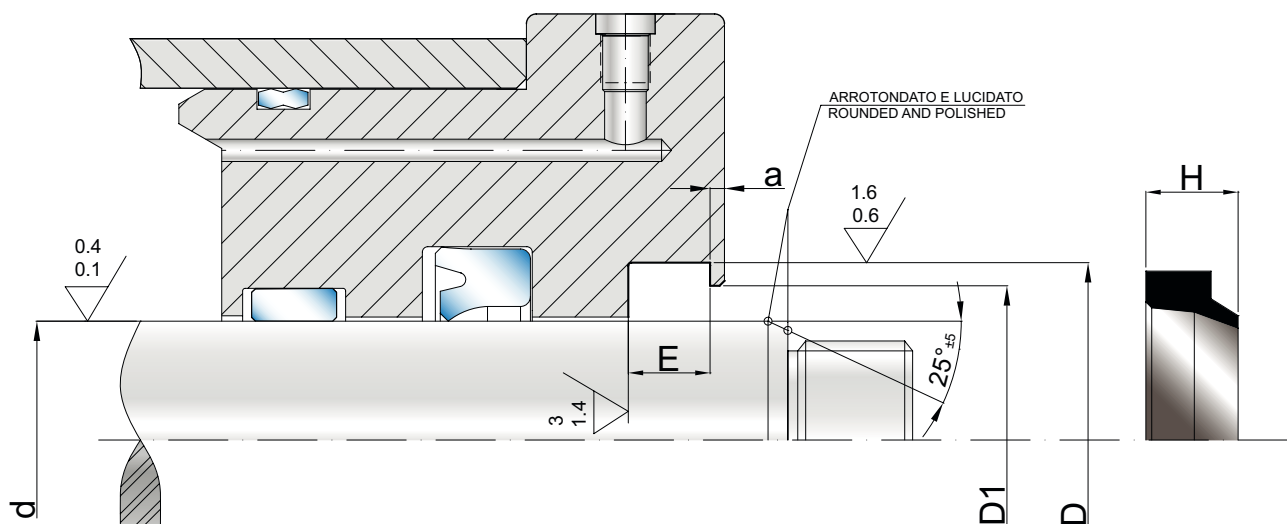
For further information please refer to the installation instructions on page 61.

R06



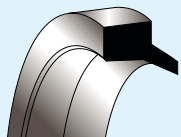
WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

oleodinamica
Hydraulic



d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
12,0	18,6	15,0	3,8	5,0	2,0	R06 1218
13,0	19,6	16,0	3,8	5,0	2,0	R06 1319
15,0	21,6	18,0	3,8	5,0	2,0	R06 1521
16,0	22,6	19,0	3,8	5,0	2,0	R06 1622
17,0	23,6	20,0	3,8	5,0	2,0	R06 1723
18,0	24,6	21,0	3,8	5,0	2,0	R06 1824
19,0	28,6	22,0	5,3	7,5	2,0	R06 1928
20,0	28,6	23,0	5,3	7,0	2,0	R06 2028
22,0	30,6	25,0	5,3	7,0	2,0	R06 2230
24,0	32,6	27,0	5,3	7,0	2,0	R06 2432
25,0	33,6	28,0	5,3	7,0	2,0	R06 2533
26,0	34,6	29,0	5,3	7,0	2,0	R06 2634
27,0	35,6	30,0	5,3	7,0	2,0	R06 2735
28,0	36,6	31,0	5,3	7,0	2,0	R06 2836
30,0	38,6	33,0	5,3	7,0	2,0	R06 3038
32,0	40,6	35,0	5,3	7,0	2,0	R06 3240
33,0	41,6	36,0	5,3	7,0	2,0	R06 3341
35,0	43,6	38,0	5,3	7,0	2,0	R06 3543
36,0	44,6	39,0	5,3	7,0	2,0	R06 3644
38,0	46,6	41,0	5,3	7,0	2,0	R06 3846
40,0	48,6	43,0	5,3	7,0	2,0	R06 4048
42,0	50,6	45,0	5,3	7,0	2,0	R06 4250
45,0	53,6	48,0	5,3	7,0	2,0	R06 4553
45,0	55,6	48,0	5,3	7,0	2,0	R06 4555
46,0	54,6	49,0	5,3	7,0	2,0	R06 4654
48,0	56,6	51,0	5,3	7,0	2,0	R06 4856
50,0	58,6	53,0	5,3	7,0	2,0	R06 5058

d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
50,0	60,6	53,0	5,3	7,0	2,0	R06 5060
53,0	61,6	56,0	5,3	7,0	2,0	R06 5361
28,0	36,0	5,8	6,3	4,5	2,0	R06 1218
55,0	63,6	58,0	5,3	7,0	2,0	R06 5563
55,0	65,6	58,0	5,3	7,0	2,0	R06 5565
56,0	64,6	59,0	5,3	7,0	2,0	R06 5664
56,0	66,6	59,0	5,3	7,0	2,0	R06 5666
60,0	68,6	63,0	5,3	7,0	2,0	R06 6068
60,0	70,6	63,0	5,3	7,0	2,0	R06 6070
63,0	71,6	66,0	5,3	7,0	2,0	R06 6371
63,0	73,6	68,0	5,3	7,0	2,0	R06 6373
65,0	73,6	68,0	5,3	7,0	2,0	R06 6573
65,0	75,6	68,0	5,3	7,0	2,0	R06 6575
70,0	78,6	73,0	5,3	7,0	2,0	R06 7078
70,0	80,6	73,0	5,3	7,0	2,0	R06 7080
70,0	82,6	76,0	7,1	11,5	4,5	R06 7082
73,0	81,6	76,0	5,3	7,0	2,0	R06 7381
75,0	83,6	78,0	5,3	7,0	2,0	R06 7583
75,0	87,2	81,0	7,1	12,0	5,0	R06 7587
76,5	88,7	82,5	7,1	11,5	4,5	R06 7688
78,0	92,2	85,0	7,1	12,0	5,0	R06 7892
80,0	88,6	83,0	5,3	7,0	2,0	R06 8088
80,0	92,6	86,0	7,1	12,0	5,0	R06 8092
83,0	91,6	86,0	5,3	7,0	2,0	R06 8391
85,0	93,6	88,0	5,3	7,0	2,0	R06 8593
85,0	97,2	91,0	7,1	12,0	4,5	R06 8597
88,0	100,2	94,0	7,1	12,5	4,5	R06 88100



R 06

d _{h9}	D _{H10}	D1	E _{+0,2}	H		ART / ITEM
105,0	117,2	111,0	7,1	12,5	5,5	R06 105117
110,0	122,2	116,0	7,1	12,0	5,0	R06 110122
115,0	127,2	121,0	7,1	12,0	5,0	R06 115127
116,0	130,2	123,0	7,1	12,0	5,0	R06 116130
118,0	130,2	124,0	7,1	12,5	5,5	R06 118130
120,0	132,2	126,0	7,1	12,5	5,5	R06 120132
125,0	137,2	131,0	7,1	12,5	5,5	R06 125137
125,0	140,0	132,6	10,1	16,0	6,0	R06 125140
127,0	139,2	133,0	7,1	12,5	5,5	R06 127139
130,0	142,2	136,0	7,1	12,5	5,5	R06 130142
135,0	147,2	141,0	7,1	12,5	5,5	R06 135147
135,0	149,2	142,0	7,1	12,0	5,0	R06 135149
140,0	152,2	146,0	7,1	12,5	5,5	R06 140152
140,0	155,2	148,0	10,1	16,0	6,0	R06 140155
145,0	157,2	151,0	7,1	12,5	5,5	R06 145157

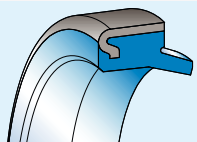
d _{h9}	D _{H10}	D1	E _{+0,2}	H		ART / ITEM
146,1	158,3	152,1	7,1	12,5	5,5	R06 146158
150,0	162,2	156,0	7,1	12,5	5,5	R06 150162
150,0	165,2	158,0	10,1	16,0	6,0	R06 150165
155,0	169,2	162,0	7,1	12,0	5,0	R06 155169
160,0	175,2	168,0	10,1	16,0	6,0	R06 160175
170,0	185,2	178,0	10,1	16,0	6,0	R06 170185
175,0	189,2	182,0	7,1	12,0	5,0	R06 175189
180,0	195,2	188,0	10,1	16,0	6,0	R06 180195
180,0	200,0	190,0	10,2	18,0	8,0	R06 180200
196,0	210,2	203,0	7,1	12,0	5,0	R06 196210
200,0	220,0	210,0	10,2	18,0	8,0	R06 200220
219,5	233,7	226,5	7,1	12,0	5,0	R06 219233
244,5	258,7	251,5	7,1	12,0	5,0	R06 244258

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

[illegible]



WSG

RASCHIATORE CON GABBIA METALLICA WSG

Descrizione

Il raschiatore tipo WSG ha la funzione di pulire lo stelo al suo rientro, mantenendo all'esterno le impurità.

E' composto da un'anima metallica incollata ad un elemento in poliuretano.

La cava risulta aperta facilitando l'esecuzione della sede.

Dati tecnici

Velocità: < 0,8 m/s

Temperatura: da - 35° C a + 100 ° C con punte fino a 110° C.

Fluidi: agenti atmosferici, acqua a temperatura inferiore a 60° C, oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale del raschiatore è un poliuretano di durezza 93 Shore A e anima in acciaio.

Codice materiale: CA

Montaggio

Il montaggio avviene in cava aperta.

Togliere gli spigoli vivi e le bave per facilitarne l'inserimento.

Attenzione: La cava dove alloggia il raschiatore deve essere in tolleranza di lavorazione come indicato nella tabella. Il mancato rispetto della misura della tolleranza può causare la fuoriuscita del raschiatore durante il movimento.

WSG TYPE WIPER WITH METAL CAGE

Description

The function of the WSG wiper is to clean the rod while returning to position, blocking external impurities.

It is made up of a metal core bonded to a polyurethane element.

The groove is open and allows easier design of the seat.

Technical data

Speed: < 0.8 m/s

Temperature: from - 35° C to + 100 ° C with peaks till 110° C.

Fluids: atmospheric factors, water at a temperature below 60° C, mineral oils
(see table 3, page 14)

Material

The material of the wiper is a polyurethane with a hardness of 93 Shore A and steel core.

Compound reference: CA

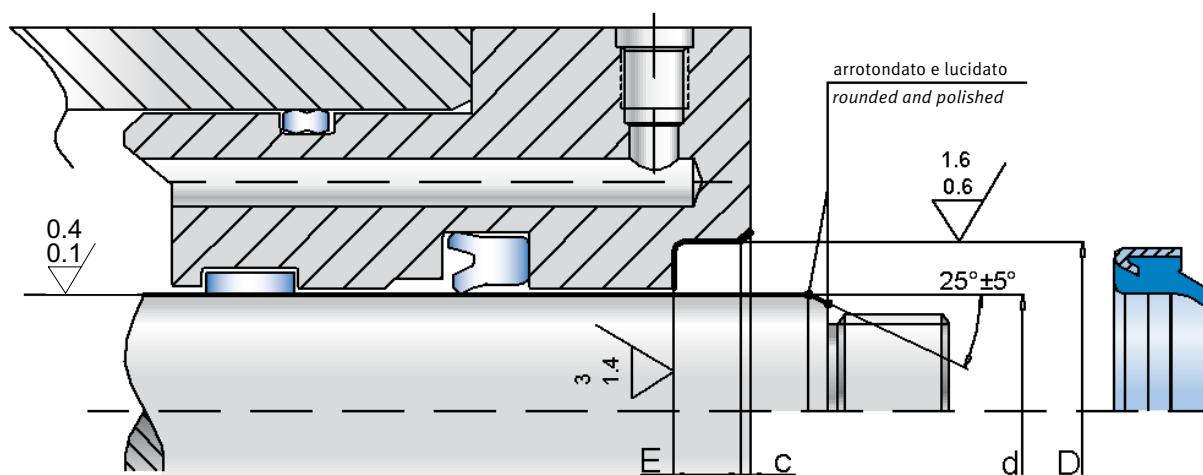
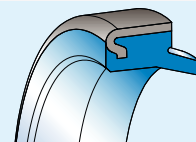
Assembling

The assembling is done in open groove.

Remove flashes and cutting edges to allow better installation of the wiper.

Warning: The housing of the wiper must be within the machining tolerance as shown in the table. Not observed tolerances may cause the expulsion of the wiper during the operations.

WSG



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

d _{h9}	D _{H10}	Toll.	E _{+0,2}	C	ART / ITEM
20,0	30,0	-0	4,0	0,8	WSG 0200 0300 040 CA
20,0	30,0	+0,033	5,0	1,0	WSG 0200 0300 050 CA
* 20,0	30,0		7,0	1,5	WSG 0200 0300 070 CA
22,0	30,0	-0	4,0	0,8	WSG 0220 0300 040 CA
22,0	32,0	+0,039	5,0	1,0	WSG 0220 0320 050 CA
* 22,0	32,0		7,0	1,5	WSG 0220 0320 070 CA
25,0	35,0	-0	5,0	1,5	WSG 0250 0350 050 CA
* 25,0	35,0	+0,039	7,0	1,5	WSG 0250 0350 070 CA
28,0	38,0		5,0	1,0	WSG 0280 0380 050 CA
28,0	38,0	-0	7,0	1,5	WSG 0280 0380 070 CA
30,0	40,0	+0,039	5,0	1,0	WSG 0300 0400 050 CA
30,0	40,0		7,0	1,5	WSG 0300 0400 070 CA
32,0	42,0	-0	5,0	1,0	WSG 0320 0420 050 CA
32,0	42,0	+0,039	7,0	1,5	WSG 0320 0420 070 CA
35,0	45,0		5,0	1,0	WSG 0350 0450 050 CA
* 35,0	45,0	-0	7,0	1,5	WSG 0350 0450 070 CA
36,0	46,0	+0,039	5,0	1,0	WSG 0360 0460 050 CA
38,0	48,0		7,0	1,0	WSG 0380 0480 070 CA
40,0	50,0	-0	5,0	1,0	WSG 0400 0500 050 CA
* 40,0	50,0	+0,046	7,0	1,5	WSG 0400 0500 070 CA
42,0	52,0		7,0	1,5	WSG 0420 0520 070 CA

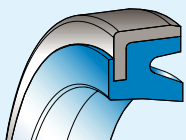
* in conformità alle norme ISO 3320 – in accordance with ISO 3320 norms

d _{h9}	D _{H10}	Toll.	E _{+0,2}	C	ART / ITEM
45,0	55,0	-0	7,0	1,5	WSG 0450 0550 070 CA
50,0	60,0	+0,046	5,0	1,0	WSG 0500 0600 050 CA
* 50,0	60,0		7,0	1,5	WSG 0500 0600 070 CA
55,0	65,0	-0	7,0	1,5	WSG 0550 0650 070 CA
* 56,0	66,0	+0,046	7,0	1,5	WSG 0560 0660 070 CA
60,0	70,0		5,0	1,0	WSG 0600 0700 050 CA
60,0	70,0	-0	7,0	1,5	WSG 0600 0700 070 CA
65,0	75,0	0,046	7,0	1,5	WSG 0650 0750 070 CA
* 70,0	80,0		7,0	1,5	WSG 0700 0800 070 CA
75,0	85,0	-0	7,0	1,5	WSG 0750 0850 070 CA
* 80,0	90,0	+0,054	7,0	1,5	WSG 0800 0900 070 CA
85,0	95,0		7,0	1,5	WSG 0850 0950 070 CA
* 90,0	100,0	-0	7,0	1,5	WSG 0900 1000 070 CA
95,0	105,0	+0,054	7,0	1,5	WSG 0950 1050 070 CA
100,0	110,0		7,0	1,5	WSG 1000 1100 070 CA
110,0	120,0	-0	7,0	1,5	WSG 1100 1200 070 CA
120,0	130,0	+0,063	7,0	1,5	WSG 1200 1300 070 CA

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions

oleodinamica
Hydraulic



IWP

RASCHIATORE CON GABBIA METALLICA TIPO IWP

Descrizione

Il raschiatore tipo IWP ha la funzione di mantenere pulito lo stelo al rientro nel cilindro. E' composto da un inserto metallico incollato ad un elemento in poliuretano. Ha largo impiego sulle macchine movimento terra e su macchine agricole.

Per il limitato ingombro può essere utilizzato anche per proteggere snodi, cuscinetti e boccole di rotolamento (pin dust seal). La cava dove alloggia il raschiatore è aperta, facilitandone il montaggio.

Dati tecnici

Velocità: < 0,8 m/s

Temperatura: da - 35° C a + 100 ° C con punte fino a 110° C.

Fluidi: oli idraulici, grassi e lubrificanti a base minerale
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato per il raschiatore e' un poliuretano a 93° Shore A. La gabbia metallica è realizzata in acciaio.

Codice Materiale: CA;

NORME DIN 1624

Montaggio

Il montaggio è in cava aperta ed avviene per interferenza (piantaggio). Togliere gli spigoli vivi ed eseguire lo smusso di invito come da tabella allegata, per facilitare e non danneggiare la gabbia metallica durante l'inserimento.

Attenzione: La cava dove alloggia il raschiatore deve essere in tolleranza di lavorazione come indicato nella tabella. Il mancato rispetto della misura della tolleranza può causare la fuoriuscita del raschiatore durante il movimento.

IWP TYPE WIPER WITH METAL CAGE

Description

The function of the IWP wiper is cleaning the rod while return into position, blocking external impurities. It is made up of an external metal cage core part glued to a PU element. It has widely used on earth moving machinery and agricultural machinery. For the limited size can be used to protect joints, bearings and bushings rolling (pin dust seal). The groove is open and makes easier the design of the seat.

Technical data

Speed: < 0.8 m/s

Temperature: from - 35° C to + 100 ° C with peaks till 110° C.

Fluids: hydraulics oils, grease and mineral lubricants
(see table 3, page 14)

Material

The material of the wiper is a polyurethane with a hardness of 93° Shore A and steel core.

Compound reference : CA

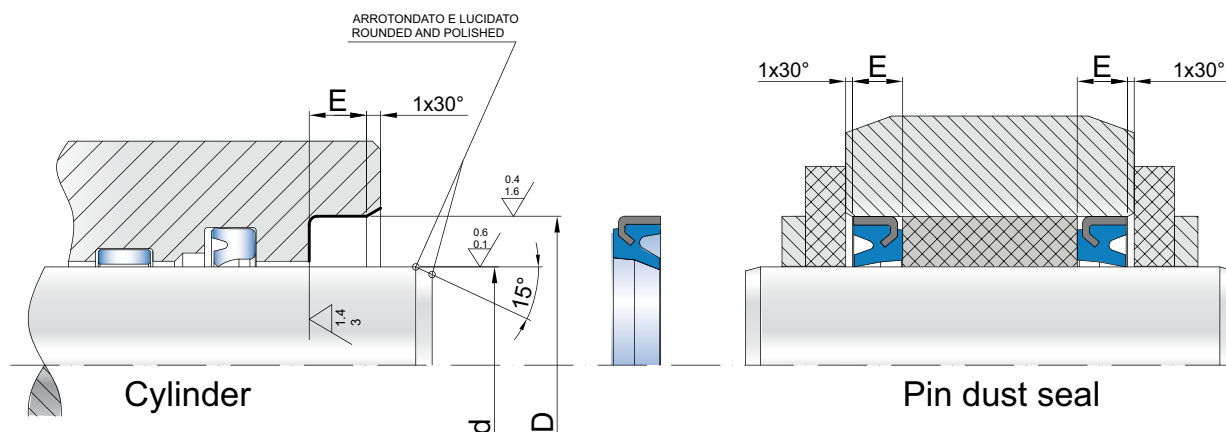
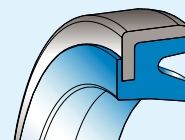
NORMS DIN 1624

Assembling

The assembling is done in open groove (interference). Remove flashes and cutting edges to allow better installation of the wiper to facilitate and not damage the cage during insertion.

Warning: The housing of the wiper must be within the machining tolerance as shown in the table. Not observed tolerances may cause the expulsion of the wiper during the operations.

IWP



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

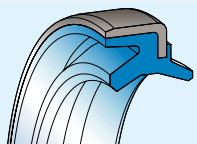
d _{h9}	D _{H8}	Toll _{H8}	E _{+0,2}	ART / ITEM			
30,0	40,0	+0,039/0	4,0	IWP	0300	0400	040 CA
32,0	45,0	+0,039/0	6,0	IWP	0320	0450	060 CA
35,0	45,0	+0,039/0	4,0	IWP	0350	0450	040 CA
35,0	45,0	+0,039/0	5,0	IWP	0350	0450	050 CA
35,0	45,0	+0,039/0	6,0	IWP	0350	0450	060 CA
38,0	50,0	+0,039/0	5,0	IWP	0380	0500	050 CA
38,0	50,0	+0,039/0	7,5	IWP	0380	0500	075 CA
40,0	50,0	+0,039/0	4,0	IWP	0400	0500	040 CA
40,0	52,0	+0,046/0	6,0	IWP	0400	0520	060 CA
42,0	52,0	+0,046/0	7,0	IWP	0420	0520	070 CA
45,0	55,0	+0,046/0	4,0	IWP	0450	0550	040 CA
45,0	55,0	+0,046/0	3,2	IWP	0450	0550	032 CA
45,0	60,0	+0,046/0	7,5	IWP	0450	0600	075 CA
50,0	60,0	+0,046/0	4,0	IWP	0500	0600	040 CA
50,0	63,0	+0,046/0	4,0	IWP	0500	0630	040 CA
50,0	65,0	+0,046/0	7,5	IWP	0500	0650	075 CA
55,0	65,0	+0,046/0	3,2	IWP	0550	0650	032 CA
55,0	70,0	+0,046/0	7,5	IWP	0550	0700	075 CA
56,0	70,0	+0,046/0	7,5	IWP	0560	0700	075 CA
60,0	75,0	+0,046/0	7,5	IWP	0600	0750	075 CA
60,0	75,0	+0,046/0	4,0	IWP	0600	0750	040 CA

d _{h9}	D _{H8}	Toll _{H8}	E _{+0,2}	ART / ITEM			
63,0	78,0	+0,046/0	7,5	IWP	0630	0780	075 CA
65,0	80,0	+0,046/0	5,0	IWP	0650	0800	050 CA
70,0	80,0	+0,046/0	5,0	IWP	0700	0800	050 CA
70,0	85,0	+0,054/0	7,5	IWP	0700	0850	075 CA
70,0	85,0	+0,054/0	4,0	IWP	0700	0850	040 CA
71,0	86,0	+0,054/0	5,0	IWP	0710	0860	050 CA
75,0	90,0	+0,054/0	7,5	IWP	0750	0900	075 CA
80,0	95,0	+0,054/0	5,0	IWP	0800	0950	050 CA
80,0	95,0	+0,054/0	7,5	IWP	0800	0950	075 CA
80,0	100,0	+0,054/0	10,0	IWP	0800	1000	100 CA
85,0	100,0	+0,054/0	10,0	IWP	0850	1000	100 CA
90,0	105,0	+0,054/0	6,0	IWP	0900	1050	060 CA
90,0	110,0	+0,054/0	10,0	IWP	0900	1100	100 CA
100,0	115,0	+0,054/0	6,5	IWP	1000	1150	065 CA
100,0	115,0	+0,054/0	7,5	IWP	1000	1150	075 CA
110,0	125,0	+0,063/0	4,0	IWP	1100	1250	040 CA
110,0	125,0	+0,063/0	9,0	IWP	1100	1250	090 CA
115,0	130,0	+0,063/0	7,5	IWP	1150	1300	075 CA
120,0	135,0	+0,063/0	8,0	IWP	1200	1350	080 CA
125,0	140,0	+0,063/0	7,0	IWP	1250	1400	070 CA

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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DWP

RASCHIATORE BIDIREZIONALE CON GABBIA METALLICA TIPO DWP

Descrizione

Il raschiatore tipo DWP è di genere bidirezionale con gabbia metallica.

Oltre alla funzione raschiante sullo stelo ha un labbro di tenuta che lavora in tandem con la guarnizione primaria

Questo tipo di raschiatore bidirezionale è utilizzato in cilindri di macchine movimento terra dove l'effetto raschiante è molto importante lavorando a contatto con terra, cemento, ghiaccio ecc.

Dati tecnici

Velocità: > 1 m/s

Temperatura: da - 35° C a + 110 ° C

Fluidi: Agenti atmosferici
(vedi tabella 3 a pagina 14)

Superficie di contatto: da Ra 0,1 um a Ra 0,4 um

Materiale

Il materiale utilizzato per il raschiatore e' un poliuretano a 93° Shore A. La gabbia metallica è realizzata in acciaio.

Codice Materiale: CA;

NORME DIN 1624

Montaggio

Il montaggio è in cava aperta ed avviene per interferenza (piantaggio). Togliere gli spigoli vivi ed eseguire lo smusso di invito come da tabella allegata, per facilitare e non danneggiare la gabbia metallica durante l'inserimento.

Attenzione: La cava dove alloggia il raschiatore deve essere in tolleranza di lavorazione come indicato nella tabella. Il mancato rispetto della misura della tolleranza può causare la fuoriuscita del raschiatore durante il movimento.

DWP TYPE BIDIRECTIONAL WIPER WITH METAL CAGE

Description

The DWP wiper is a bi-directional type with metal cage.

Besides the function wiper on the stem has a sealing lip that works in tandem with the primary seal

This type of bi-directional scraper is used in cylinders of earth-moving machines where the effect is very important when the wiper is in contact with earth, concrete, ice etc..

Technical data

Speed: > 1 m/s

Temperature: from - 35° C to +110° C.

Fluids: weathering
(see table 3, page 14)

Contact Surface: from Ra 0,1 um to Ra 0,4 um

Material

The material of the wiper is a polyurethane with a hardness of 93° Shore A and steel core.

Compound reference : CA

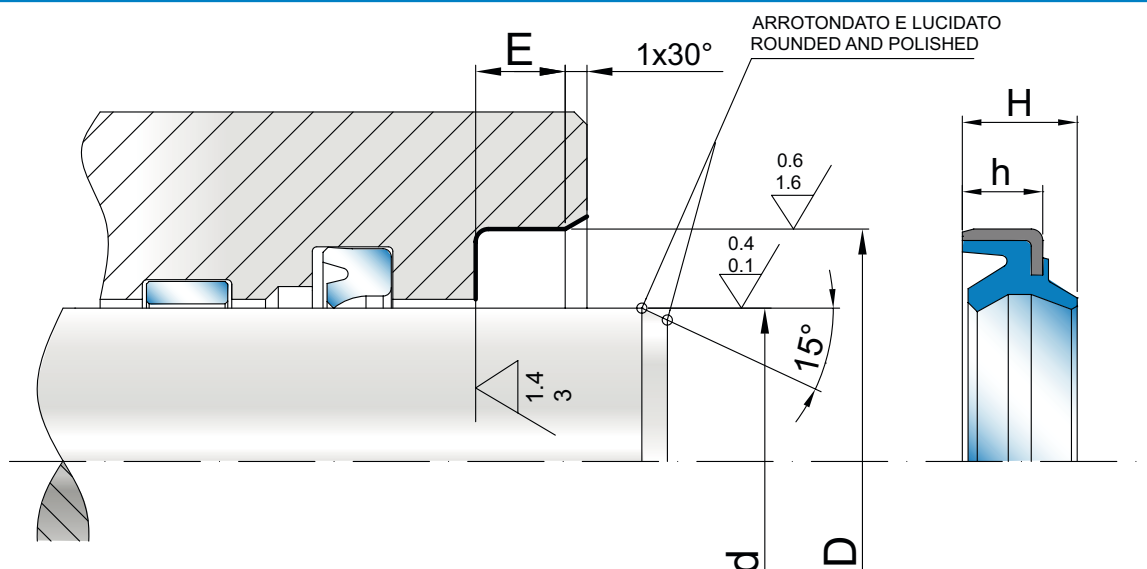
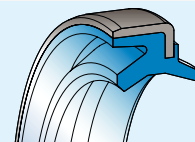
NORMS DIN 1624

Assembling

The assembling is done in open groove (interference). Remove flashes and cutting edges to allow better installation of the wiper to facilitate and not damage the cage during insertion.

Warning: The housing of the wiper must be within the machining tolerance as shown in the table. Not observed tolerances may cause the expulsion of the wiper during the operations.

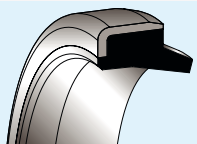
DWP



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

d _{H9}	D _{H8}	Toll _{H8}	h	H	E + 0,2	ART / ITEM				
20,0	32,0	+0,039/0	6,0	9,0	6,0	DWP	0200	0320	060	CA
25,0	37,0	+0,039/0	6,0	9,0	6,0	DWP	0250	0370	060	CA
30,0	42,0	+0,039/0	6,0	9,0	6,0	DWP	0300	0420	060	CA
32,0	44,0	+0,039/0	7,0	10,0	7,0	DWP	0320	0440	070	CA
34,0	46,0	+0,039/0	7,0	10,0	7,0	DWP	0340	0460	070	CA
35,0	47,0	+0,039/0	7,0	10,0	7,0	DWP	0350	0470	070	CA
38,0	50,0	+0,039/0	7,0	10,0	7,0	DWP	0380	0500	070	CA
40,0	52,0	+0,046/0	7,0	10,0	7,0	DWP	0400	0520	070	CA
45,0	57,0	+0,046/0	7,0	10,0	7,0	DWP	0450	0570	070	CA
50,0	62,0	+0,046/0	7,0	10,0	7,0	DWP	0500	0620	070	CA
55,0	69,0	+0,046/0	8,0	11,0	8,0	DWP	0550	0690	080	CA
60,0	74,0	+0,046/0	8,0	11,0	8,0	DWP	0600	0740	080	CA
65,0	79,0	+0,046/0	8,0	11,0	8,0	DWP	0650	0790	080	CA
70,0	84,0	+0,054/0	8,0	11,0	8,0	DWP	0700	0840	080	CA
75,0	89,0	+0,054/0	8,0	11,0	8,0	DWP	0750	0890	080	CA
80,0	94,0	+0,054/0	8,0	12,0	8,0	DWP	0800	0940	080	CA
85,0	99,0	+0,054/0	8,0	11,0	8,0	DWP	0850	0990	080	CA
90,0	104,0	+0,054/0	8,0	11,0	8,0	DWP	0900	1040	080	CA
95,0	109,0	+0,054/0	8,0	11,0	8,0	DWP	0950	1090	080	CA
100,0	114,0	+0,054/0	8,0	11,0	8,0	DWP	1000	1140	080	CA
105,0	121,0	+0,063/0	9,0	12,0	9,0	DWP	1050	1210	090	CA
110,0	126,0	+0,063/0	9,0	12,0	9,0	DWP	1100	1260	090	CA
115,0	131,0	+0,063/0	9,0	12,0	9,0	DWP	1150	1310	090	CA
120,0	136,0	+0,063/0	9,0	12,0	9,0	DWP	1200	1360	090	CA
130,0	146,0	+0,063/0	9,0	12,0	9,0	DWP	1300	1460	090	CA
140,0	160,0	+0,063/0	10,0	14,0	10,0	DWP	1400	1600	100	CA

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R09

RASCHIATORE CON GABBIA METALLICA TIPO R09

Descrizione

Il raschiatore R09 ha la funzione di pulire lo stelo al suo rientro, mantenendo all'esterno le impurità.

È composto da un'anima metallica rettificata all'esterno e incollata ad un elemento raschiante in NBR.

La cava che alloggia il raschiatore è aperta, facilitandone il montaggio.

Dati tecnici

Velocità: < 1 [m/s]

Temperatura: - 30 °C a +100 °C

Fluidi: agenti atmosferici, acqua, sabbia ecc.
(vedi tabella 3 a pagina 14)

Materiale

Il materiale del raschiatore è in gomma nitrilica NBR 90 Shore A e anima in acciaio AISI 1010

Codice materiale standard: NG

Montaggio

Il montaggio avviene in cava aperta.

Togliere spigoli vivi e le bave per facilitarne l'inserimento.

Attenzione: La cava dove alloggia il raschiatore deve essere in tolleranza di lavorazione come indicato nella tabella. Il mancato rispetto della misura della tolleranza può causare la fuoriuscita del raschiatore durante il movimento.

R09 TYPE WIPER WITH METAL CAGE

Description

The function of the R09 wiper is cleaning the rod while return into position, blocking external impurities.

It is made up of an external, ground metal cage core part glued to a NBR element.

The groove is open and makes easier the design of the seat.

Technical data

Speed: < 1 [m/s]

Temperature: - 30 °C to +100 °C

Fluids: atmospheric factors, water, sand, etc.
(see table 3, page 14)

Material

The wiper material is a nitrile rubber NBR 90 Shore A with steel core AISI 1010.

Compound reference: NG

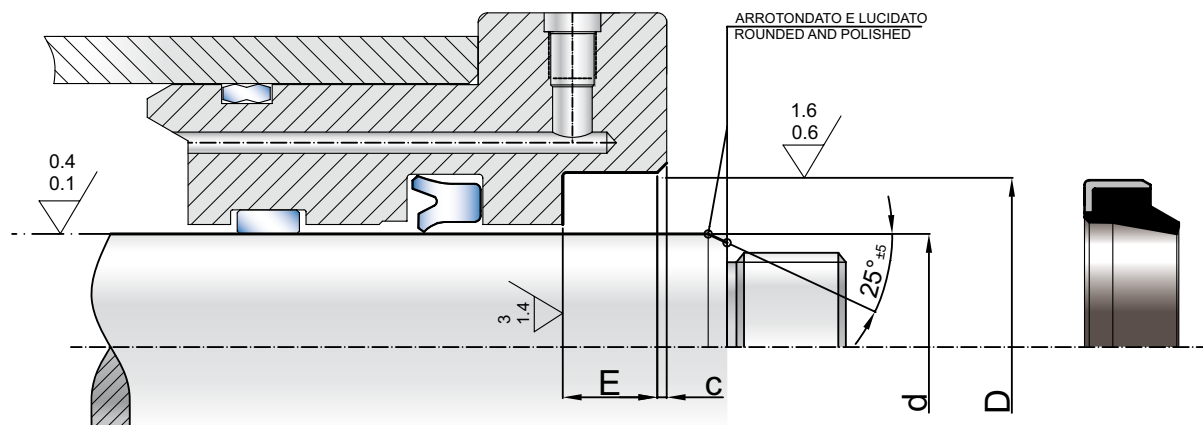
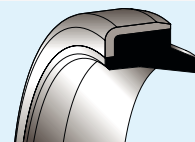
Assembling

The assembling is done in open groove.

Remove flashes and cutting edges to allow better installation of the wiper.

Warning: The housing of the wiper must be within the machining tolerance as shown in the table. Not observed tolerances may cause the expulsion of the wiper during the operations.

R09



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

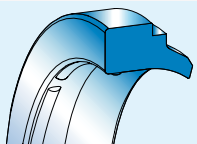
d _{h9}	D _{H10}	Toll.	E _{+0,2}	C	ART / ITEM
20,0	30,0	-0	4,0	0,8	R09 0200 0300 040 NG
20,0	30,0	+0,033	5,0	1,0	R09 0200 0300 050 NG
* 20,0	30,0		7,0	1,5	R09 0200 0300 070 NG
22,0	30,0	-0	4,0	0,8	R09 0220 0300 040 NG
22,0	32,0	+0,039	5,0	1,0	R09 0220 0320 050 NG
* 22,0	32,0		7,0	1,5	R09 0220 0320 070 NG
25,0	35,0	-0	5,0	1,5	R09 0250 0350 050 NG
* 25,0	35,0	+0,039	7,0	1,5	R09 0250 0350 070 NG
28,0	38,0		5,0	1,0	R09 0280 0350 050 NG
28,0	38,0	-0	7,0	1,5	R09 0280 0380 070 NG
30,0	40,0	+0,039	5,0	1,0	R09 0300 0400 050 NG
30,0	40,0		7,0	1,5	R09 0300 0400 070 NG
32,0	42,0	-0	5,0	1,0	R09 0320 0420 050 NG
32,0	42,0	+0,039	7,0	1,5	R09 0320 0420 070 NG
35,0	45,0		5,0	1,0	R09 0350 0450 050 NG
* 35,0	45,0	-0	7,0	1,5	R09 0350 0450 070 NG
36,0	46,0	+0,039	5,0	1,0	R09 0360 0460 050 NG
38,0	48,0		7,0	1,0	R09 0380 0480 070 NG
40,0	50,0	-0	5,0	1,0	R09 0400 0500 050 NG
* 40,0	50,0	+0,046	7,0	1,5	R09 0400 0500 070 NG
42,0	52,0		7,0	1,5	R09 0420 0520 070 NG

d _{h9}	D _{H10}	Toll.	E _{+0,2}	C	ART / ITEM
45,0	55,0	-0	7,0	1,5	R09 0450 0550 070 NG
50,0	56,0	+0,046	5,0	1,0	R09 0500 0560 050 NG
50,0	60,0		5,0	1,0	R09 0500 0600 050 NG
* 50,0	60,0		7,0	1,5	R09 0500 0600 070 NG
55,0	65,0	-0	7,0	1,5	R09 0550 0650 070 NG
* 56,0	66,0	+0,046	7,0	1,5	R09 0560 0660 070 NG
60,0	70,0		5,0	1,0	R09 0600 0700 050 NG
60,0	70,0	-0	7,0	1,5	R09 0600 0700 070 NG
65,0	75,0	0,046	7,0	1,5	R09 0650 0750 070 NG
* 70,0	80,0		7,0	1,5	R09 0700 0800 070 NG
75,0	85,0	-0	7,0	1,5	R09 0750 0850 070 NG
* 80,0	90,0	+0,054	7,0	1,5	R09 0800 0900 070 NG
85,0	95,0		7,0	1,5	R09 0850 0950 070 NG
* 90,0	100,0	-0	7,0	1,5	R09 0900 1000 070 NG
95,0	105,0	+0,054	7,0	1,5	R09 0950 1050 070 NG
100,0	110,0		7,0	1,5	R09 1000 1100 070 NG
110,0	120,0	-0	7,0	1,5	R09 1100 1200 070 NG
120,0	130,0	+0,063	7,0	1,5	R09 1200 1300 070 NG
140,0	155,0		9,0	1,5	R09 1400 1550 090 NG

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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WWS

RASCHIATORE CON STEP TIPO WWS

Descrizione

Il raschiatore tipo WWS a differenza di altri profili, presenta un gradino sul lato statico che serve per agganciarlo alla sede.

Questo facilita il montaggio in automatico del particolare e l'esecuzione meccanica della sede risulta molto semplice.

Ha dei notches nella base interna che hanno la funzione di stabilizzatori e assicurano uno sfiato alla pressione che potrebbe crearsi a causa di perdite tra guarnizione e raschiatore con conseguente espulsione dalla sede di quest'ultimo.

Dati tecnici

Velocità: < 1 m/s

Temperatura: da - 35° C a + 100° C con punte fino a +110° C

Fluidi: acqua a temperatura ambiente, oli minerali

(vedi tabella 3 a pagina 16)

Materiale

Il materiale utilizzato è un poliuretano molto flessibile anche a basse temperature con una alta resistenza all'abrasione.

Materiale standard poliuretano 90 Shore A (B0) fino al diametro 35mm.

Per diametri maggiori il poliuretano 93 Shore A (C0).

Codice materiale per diam ≤ 35mm: B0

Codice materiale per diam > 36mm: C0

Montaggio

Essendo in sede semiaperta il montaggio è molto facilitato.

Eliminare le bave e spigoli taglienti nella sede.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WWS TYPE WIPER WITH STEP

Description

The WWS scraper, unlike other profiles, has a step in the static side which hooks it to the housing.

This helps automated assembling and makes the mechanical construction of the groove extremely easy.

It presents notches in the wiper inner base having stabilisation effect, ensuring good ventilation.

This avoids extrusion problems.

Technical data

Speed: < 1 m/s

Temperature: from - 35° C to + 100° C with peaks till +110° C

Fluids: water at room temperature, mineral oils

(see table 3, page 16)

Material

The material used is a very flexible polyurethane, even at low temperatures, with a high abrasion resistance.

Standard polyurethane 90 Shore A up to diameter 35 mm (B0).

For bigger dimensions standard polyurethane 93 Shore A (C0).

Compound reference diam ≤ 35mm: B0

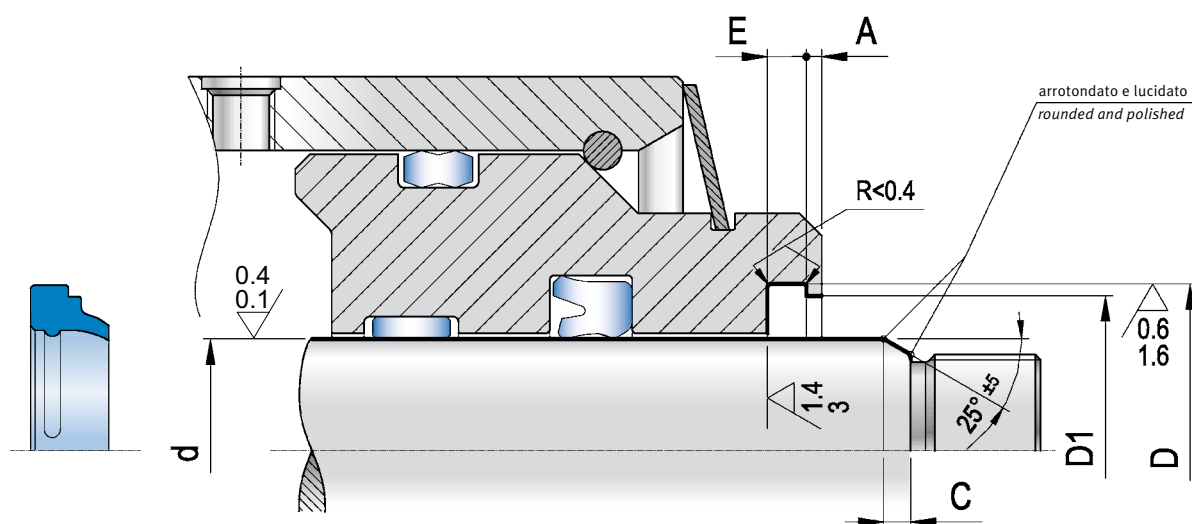
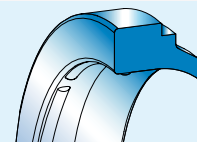
Compound reference diam > 36mm: C0

Assembling

The assembling is much easier since it can be done in semi-open groove.

Remove flashes an/or cutting edges in the housing.

For further information please refer to the installation instructions on page 61.



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

	d _{H9}	D _{H10}	E _{+0,2}	D _{1 H11}	Amin.	ART / ITEM			
	5,0	11,0	4,0	8,0	1,0	WWS 0050	0110	040 BO	
*	6,0	10,0	2,0	9,0	1,0	WWS 0060	0100	020 BO	
*	8,0	14,0	2,6	12,0	1,0	WWS 0080	0140	026 BO	
*	10,0	16,0	2,6	14,0	1,0	WWS 0100	0160	026 BO	
*	10,0	18,0	4,0	16,0	1,0	WWS 0100	0180	040 BO	
*	12,0	18,0	2,6	16,0	1,0	WWS 0120	0180	026 BO	
*	12,0	20,0	4,0	18,0	1,0	WWS 0120	0200	040 BO	
*	14,0	20,0	2,6	18,0	1,0	WWS 0140	0200	026 BO	
*	14,0	22,0	4,0	20,0	1,0	WWS 0140	0220	040 BO	
	15,0	23,0	4,0	21,0	1,0	WWS 0150	0230	040 BO	
*	16,0	24,0	4,0	22,0	1,0	WWS 0160	0240	040 BO	
*	18,0	26,0	4,0	24,0	1,0	WWS 0180	0260	040 BO	
*	20,0	28,0	4,0	26,0	1,0	WWS 0200	0280	040 BO	
*	22,0	30,0	4,0	28,0	1,0	WWS 0220	0300	040 BO	
	24,0	32,0	4,0	30,0	1,0	WWS 0240	0320	040 BO	
*	25,0	33,0	4,0	31,0	1,0	WWS 0250	0330	040 BO	
*	28,0	36,0	4,0	34,0	1,0	WWS 0280	0360	040 BO	
	30,0	38,0	4,0	36,0	1,0	WWS 0300	0380	040 BO	
*	32,0	40,0	4,0	38,0	1,0	WWS 0320	0400	040 BO	
	34,0	42,0	4,0	40,0	1,0	WWS 0340	0420	040 BO	
	35,0	43,0	4,0	41,0	1,0	WWS 0350	0430	040 BO	
*	36,0	44,0	4,0	42,0	1,0	WWS 0360	0440	040 CO	
	38,0	46,0	4,0	44,0	1,0	WWS 0380	0460	040 CO	
*	40,0	48,0	4,0	46,0	1,0	WWS 0400	0480	040 CO	

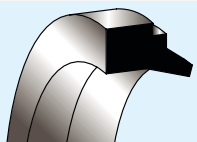
* in conformità alle norme ISO 3320 – *in accordance with ISO 3320 norms*

	d _{H9}	D _{H10}	E _{+0,2}	D _{1 H11}	Amin.	ART / ITEM			
	42,0	50,0	4,0	48,0	1,0	WWS	0420	0500	040 CO
*	45,0	53,0	4,0	51,0	1,0	WWS	0450	0530	040 CO
*	50,0	58,0	4,0	56,0	1,0	WWS	0500	0580	040 CO
	52,0	60,0	4,0	58,0	1,0	WWS	0520	0600	040 CO
	55,0	63,0	4,0	61,0	1,0	WWS	0550	0630	040 CO
*	56,0	64,0	4,0	62,0	1,0	WWS	0560	0640	040 CO
	60,0	68,0	4,0	66,0	1,0	WWS	0600	0680	040 CO
*	63,0	71,0	4,0	69,0	1,0	WWS	0630	0710	040 CO
	63,5	71,5	4,0	69,5	1,0	WWS	0635	0715	040 CO
	65,0	73,0	4,0	71,0	1,0	WWS	0650	0730	040 CO
*	70,0	78,0	4,0	76,0	1,0	WWS	0700	0780	040 CO
	75,0	83,0	4,0	81,0	1,0	WWS	0750	0830	040 CO
*	80,0	88,0	4,0	86,0	1,0	WWS	0800	0880	040 CO
	85,0	93,0	4,0	91,0	1,0	WWS	0850	0930	040 CO
*	90,0	98,0	4,0	96,0	1,0	WWS	0900	0980	040 CO
*	100,0	108,0	4,0	106,0	1,0	WWS	1000	1080	040 CO
	110,0	122,0	5,5	119,0	1,5	WWS	1100	1220	055 CO
	120,0	132,0	5,5	129,0	1,5	WWS	1200	1320	055 CO
*	125,0	137,0	5,5	134,0	1,5	WWS	1250	1370	055 CO
*	140,0	152,0	5,5	149,0	1,5	WWS	1400	1520	055 CO
	150,0	162,0	5,5	159,0	1,5	WWS	1500	1620	055 CO
*	160,0	172,0	5,5	169,0	1,5	WWS	1600	1720	055 CO
*	180,0	192,0	5,5	189,0	1,5	WWS	1800	1920	055 CO

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

oleodinamica
Hydraulic



R08

RASCHIATORE CON STEP TIPO R08

Descrizione

Gli anelli raschiatori della serie R08 vengono utilizzati per impedire l'ingresso d'impurità all'interno di apparecchiature oleodinamiche, proteggendo così sia le guarnizioni che le parti metalliche che altrimenti potrebbero essere danneggiate.

Rispetto al tipo R06 presenta un ulteriore gradino sulla superficie del diametro esterno che serve a bloccare la parte rigida del raschiatore, anche radialmente, permettendo così velocità di scorrimento più elevate.

Dati tecnici

Velocità: < 4 m/s

Temperatura: da - 30° C a + 100° C con punte fino a +110° C

Fluidi: acqua a temperatura ambiente, oli minerali
(vedi tabella 3 a pagina 14)

Materiale

il materiale standard utilizzato è NBR 90 ShoreA. Per le elevate temperature (da -15°C a +200°C) si consiglia l'utilizzo di FPM 90 Shore A.

Montaggio

Essendo in sede semiaperta il montaggio è molto facilitato.

Eliminare le bave e spigoli taglienti nella sede. Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

R08 TYPE WIPER WITH STEP

Description

The R08 series of wiper rings are used to prevent the ingress of impurities in hydraulic equipment, thus securing the seals that the metal parts that might otherwise be damaged.

Compared to the type R06 presents a further step on the surface of the outer diameter which serves to lock the rigid part of the wiper also radially, thus allowing higher sliding speed.

Technical data

Speed: < 4 m/s

Temperature: from - 30° C to + 100° C with peaks till +110° C

Fluids: water at room temperature, mineral oils
(see table 3, page 14)

Material

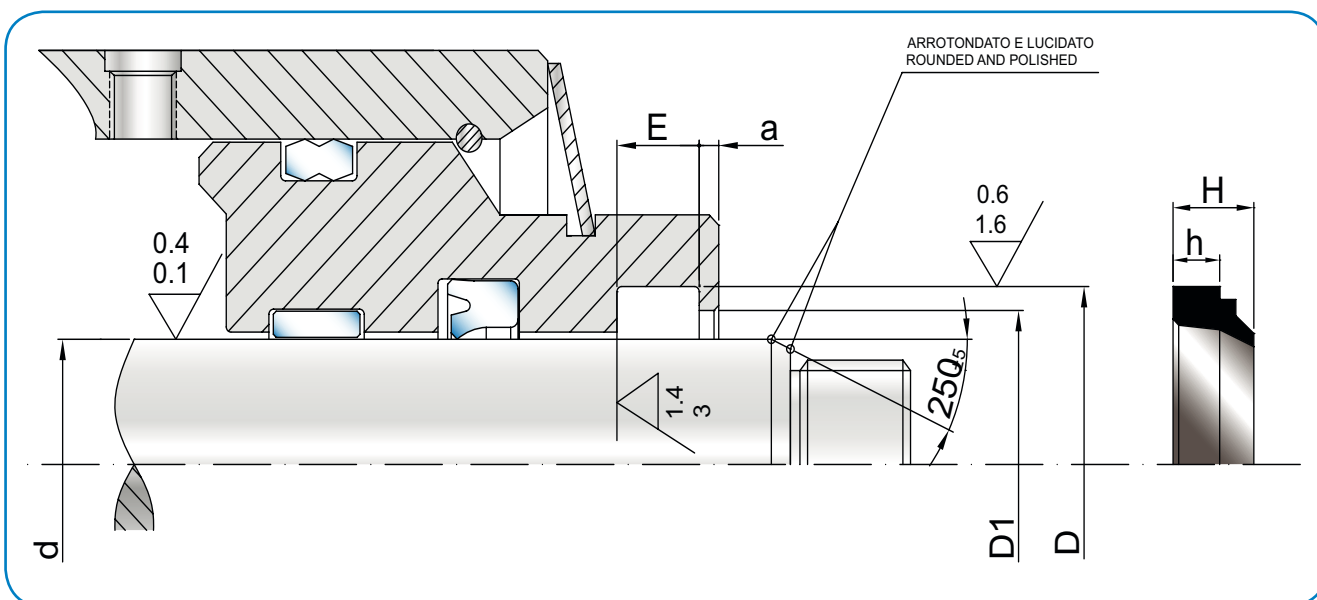
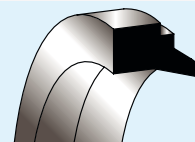
the standard material used is NBR 90 ShoreA. For high temperatures (from -15 ° C to +200 ° C), we recommend the use of FPM 90 Shore A.

Assembling

The assembling is much easier since it can be done in semi-open groove.

Remove flashes an/or cutting edges in the housing. For further information please refer to the installation instructions on page 61.

R08

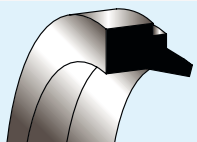


WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
4	12	10	4,0	7	1,0	R08 412
8	16	14	4,0	7	1,0	R08 816
10	18	16	4,0	7	1,0	R08 1018
12	20	18	4,0	7	1,0	R08 1220
14	22	20	4,0	7	1,0	R08 1422
15	23	21	4,0	7	1,0	R08 1523
16	24	22	4,0	7	1,0	R08 1624
17	25	23	4,0	7	1,0	R08 1725
18	26	24	4,0	7	1,0	R08 1826
20	28	26	4,0	7	1,0	R08 2028
22	30	29	4,0	7	1,0	R08 2230
23	31	29	4,0	7	1,0	R08 2331
24	32	30	4,0	7	1,0	R08 2432
25	33	31	4,0	7	1,0	R08 2533
26	34	32	4,0	7	1,0	R08 2634
28	36	34	4,0	7	1,0	R08 2836
30	38	36	4,0	7	1,0	R08 3038
32	40	38	4,0	7	1,0	R08 3240
33	41	39	4,0	7	1,0	R08 3341
34	42	40	4,0	7	1,0	R08 3442
35	43	41	4,0	7	1,0	R08 3543
36	44	42	4,0	7	1,0	R08 3644
38	46	44	4,0	7	1,0	R08 3846
40	48	46	4,0	7	1,0	R08 4048
41	49	47	4,0	7	1,0	R08 4149
42	50	48	4,0	7	1,0	R08 4250
44	52	50	4,0	7	1,0	R08 4452

d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
45	53	51	4,0	7	1,0	R08 4553
46	54	52	4,0	7	1,0	R08 4654
47	55	53	4,0	7	1,0	R08 4755
48	56	54	4,0	7	1,0	R08 4856
50	58	56	4,0	7	1,0	R08 5058
51	59	57	4,0	7	1,0	R08 5159
52	60	58	4,0	7	1,0	R08 5260
53	61	59	4,0	7	1,0	R08 5361
54	62	60	4,0	7	1,0	R08 5462
55	63	61	4,0	7	1,0	R08 5563
56	64	62	4,0	7	1,0	R08 5664
58	66	64	4,0	7	1,0	R08 5866
60	68	66	4,0	7	1,0	R08 6068
62	70	68	4,0	7	1,0	R08 6270
63	71	69	4,0	7	1,0	R08 6371
64	72	70	4,0	7	1,0	R08 6472
65	73	71	4,0	7	1,0	R08 6573
66	74	72	4,0	7	1,0	R08 6674
67	75	73	4,0	7	1,0	R08 6775
68	76	74	4,0	7	1,0	R08 6876
70	78	76	4,0	7	1,0	R08 7078
72	80	78	4,0	7	1,0	R08 7280
73	81	79	4,0	7	1,0	R08 7381
75	83	81	4,0	7	1,0	R08 7583
78	86	84	4,0	7	1,0	R08 7886
80	88	86	4,0	7	1,0	R08 8088
82	90	88	4,0	7	1,0	R08 8290

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Hydraulic



R 08

d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
83	91	89	4,0	7	1,0	R08 8391
85	93	91	4,0	7	1,0	R08 8593
86	94	92	4,0	7	1,0	R08 8694
88	96	94	4,0	7	1,0	R08 8896
90	98	96	4,0	7	1,0	R08 9098
93	101	99	4,0	7	1,0	R08 93101
95	103	101	4,0	7	1,5	R08 95103
100	108	106	4,0	7	1,5	R08 100108
102	114	111	5,5	10	1,5	R08 102114
105	117	114	5,5	10	1,5	R08 105117
106	118	115	5,5	10	1,5	R08 106118
110	118	116	4,0	7	1,5	R08 110118
110	122	119	5,5	10	1,5	R08 110122
112	124	121	5,5	10	1,5	R08 112124
115	127	124	5,5	10	1,5	R08 115127
118	130	127	5,5	10	1,5	R08 118130
120	132	129	5,5	10	1,5	R08 120132
125	137	134	5,5	10	1,5	R08 125137
128	140	137	5,5	10	1,5	R08 128140
130	142	139	5,5	10	1,5	R08 130142
135	147	144	5,5	10	1,5	R08 135147
140	152	149	5,5	10	1,5	R08 140152
142	154	151	5,5	10	1,5	R08 142154
145	157	154	5,5	10	1,5	R08 145157

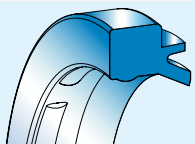
d_{h9}	D_{H10}	$D1$	$E_{+0,2}$	H	a	ART / ITEM
150	162	159	5,5	10	1,5	R08 150162
152	164	161	5,5	10	1,5	R08 152164
154	166	163	5,5	10	1,5	R08 154166
155	167	164	5,5	10	1,5	R08 155167
160	172	169	5,5	10	1,5	R08 160172
165	177	174	5,5	10	1,5	R08 165177
166	178	175	5,5	10	1,5	R08 166178
170	182	179	5,5	10	1,5	R08 170182
175	187	184	5,5	10	1,5	R08 175187
180	192	189	5,5	10	1,5	R08 180192
190	202	199	5,5	10	2,0	R08 190202
200	212	209	5,5	10	2,0	R08 200212
210	225	221	6,5	13	2,0	R08 210225
220	235	231	6,5	13	2,0	R08 220235
235	250	246	6,5	13	2,0	R08 235250
238	253	249	6,5	13	2,0	R08 238253
240	255	251	6,5	13	2,0	R08 240255
250	265	261	6,5	13	2,0	R08 250265
300	315	311	6,5	13	2,0	R08 300315
310	325	321	6,5	13	2,0	R08 310325
340	355	351	6,5	13	2,0	R08 340355
365	380	376	6,5	13	2,0	R08 365380
450	465	461	6,5	13	2,0	R08 450465

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single vertical red line that runs from the top edge to the bottom edge, serving as a margin. The rest of the page is filled with the blue grid pattern. There are no other markings, text, or drawings on the paper.



WAT

RASCHIATORE ANTI-RIBALTAMENTO TIPO WAT

Descrizione

Il raschiatore tipo WAT ha, grazie allo speciale profilo, la possibilità di autoallinearsi quando lo stelo, durante l'esercizio, è soggetto a forti disallineamenti.

Presenta due labbri che lo fanno assomigliare a una tenuta: il labbro dinamico raschiante più lungo e molto flessibile, il labbro statico più corto, che evita, appoggiandosi sul gradino trattenitore, l'entrata dall'esterno delle impurità.

Dati tecnici

Velocità: < 1 m/s

Temperatura: da - 35° C a + 100° C con punte fino a +110° C

Fluidi: acqua a temperatura ambiente, oli a base minerale

(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati sono dei poliuretani che resistono agli agenti atmosferici con alto modulo elastico e resistenti all'abrasione.

Il materiale standard è di durezza 93 Shore A $\pm$ 2. In alternativa è possibile utilizzare poliuretani di durezza superiore quando esistono condizioni gravose in ambienti molto inquinati. In questo caso consultare il nostro ufficio tecnico.

Codice materiale: CO

Montaggio

Il montaggio risulta molto semplice essendo la sede semiaperta.

Eliminare gli spigoli taglienti e le bave nella sede.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WAT TYPE NO-TWISTING WIPER

Description

The WAT wiper can be self-aligned in case of rod misalignment during operations, thanks to its special profile and design.

It presents two lips and it's similar to a seal: the scraping lip is longer, very flexible and dynamic; the static lip is shorter and stops the impurity sticking to the blocking step.

Technical data

Speed: < 1 m/s

Temperature: from - 35° C to + 100° C with peaks till +110° C

Fluids: water at room temperature mineral oils (see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Compound reference: CO

It is also possible to use harder polyurethanes for heavy polluted environments.

In case please contact our technical department.

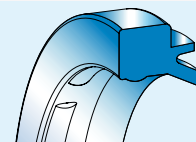
Assembling

The assembling is extremely easy because of the semi-open groove.

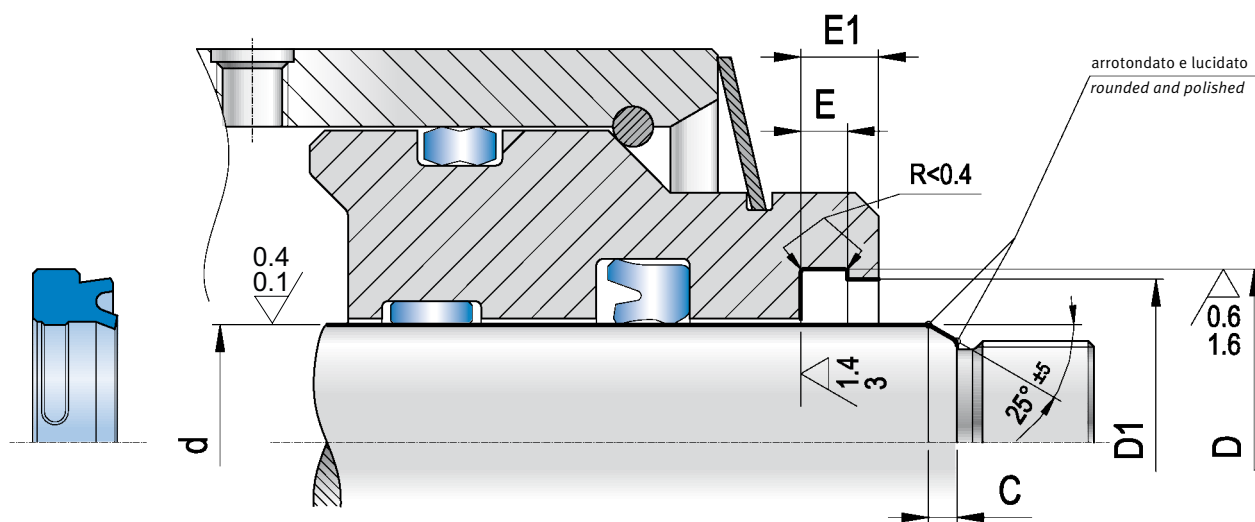
Remove flashes an/or cutting edges in the housing.

For further information please refer to the installation instructions on page 61.

WAT



WSL
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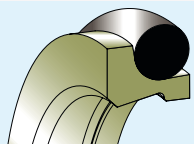
d _{h9}	D _{H10}	D _{1 H11}	E +0,2	E ₁ +0,2	ART / ITEM
12,0	20,0	17,5	5,0	7,0	WAT 0120 0200 050 C0
16,0	24,0	21,5	5,0	7,0	WAT 0160 0240 050 C0
18,0	26,0	23,5	5,0	7,0	WAT 0180 0260 050 C0
20,0	28,0	25,5	5,0	7,0	WAT 0200 0280 050 C0
22,0	30,0	27,5	5,0	7,0	WAT 0220 0300 050 C0
25,0	33,0	30,5	5,0	7,0	WAT 0250 0330 050 C0
28,0	36,0	33,5	5,0	7,0	WAT 0280 0360 050 C0
32,0	40,0	37,5	5,0	7,0	WAT 0320 0400 050 C0
36,0	44,0	41,5	5,0	7,0	WAT 0360 0440 050 C0
40,0	48,0	45,5	5,0	7,0	WAT 0400 0480 050 C0
45,0	53,0	50,5	5,0	7,0	WAT 0450 0530 050 C0
50,0	58,0	55,5	5,0	7,0	WAT 0500 0580 050 C0
56,0	66,0	63,0	6,3	8,3	WAT 0560 0660 063 C0
60,0	68,0	65,5	5,0	7,0	WAT 0600 0680 050 C0
63,0	73,0	70,0	6,3	8,3	WAT 0630 0730 063 C0

d _{h9}	D _{H10}	D _{1 H11}	E +0,2	E ₁ +0,2	ART / ITEM
70,0	80,0	77,0	6,3	8,3	WAT 0700 0800 063 C0
80,0	90,0	87,0	6,3	8,3	WAT 0800 0900 063 C0
90,0	100,0	97,0	6,3	8,3	WAT 0900 1000 063 C0
100,0	115,0	110,0	9,5	12,0	WAT 1000 1150 095 C0
110,0	122,0	119,0	5,5	7,0	WAT 1100 1220 055 C0
110,0	125,0	120,0	9,5	12,0	WAT 1100 1250 095 C0
115,0	127,0	124,0	5,5	7,0	WAT 1150 1270 055 C0
120,0	132,0	129,0	5,5	7,0	WAT 1200 1320 055 C0
125,0	137,0	134,0	5,5	7,0	WAT 1250 1370 055 C0
125,0	140,0	135,0	9,5	12,0	WAT 1250 1400 095 C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

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TRD

ANELLO RASCHIATORE TIPO TRD

Descrizione

I raschiatori tipo TRD sono composti da un elemento in PTFE+O-Ring che svolge tenuta nella parte statica e contemporaneamente ha un effetto energizzante sul raschiatore in assenza di pressione.

Il TRD oltre ad avere un effetto raschiante della parte esterna del cilindro, ha la funzione di trattenere il film d'olio residuo dal lato interno dello stelo.

Se viene utilizzata con una tenuta adeguata, permette di lavorare con ritorno idrodinamico nel cilindro.

Dati tecnici

Velocità: < 15 m/s

Temperatura: da -30°C a + 100° C per il tipo standard con O-Ring in nitrile.
Con punte fino a 120°C per periodi brevi.
da -15°C a + 150° C per il tipo con o-rings in FKM.

Materiale

Per il tipo standard PTFE caricato a bronzo ed O-Ring in nitrile.

Codice materiale: TN

Montaggio

Il montaggio risulta molto semplice in quanto è effettuato in cava semiaperta.

Inserire l'O-ring nella sede e successivamente l'elemento in PTFE.

Eliminare gli spigoli vivi e le bave nella sede.
Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 62.

TRD TYPE WIPER RING

Description

The TRD wipers are made of a PTFE element and an O-Ring having a sealing effect in the static part and, at the same time has an energizing effect on wiper in the absence of pressure.

The TRD also has a scraping effect on the outside of the Cylinder and maintains a residual oil film on the internal part of the rod.

Used with proper sealing, allows the hydrodynamic return in the cylinder.

Technical data

Speed: < 15 m/s

Temperature: from - 30° C to + 100° C for the standard type with nitrile O-Ring.
Short peaks till +120° C
from -15°C to +150°C with FKM o-rings

Material

Bronze-filled PTFE for the standard type, and nitrile rubber NBR for the O-Ring.

Compound reference: TN

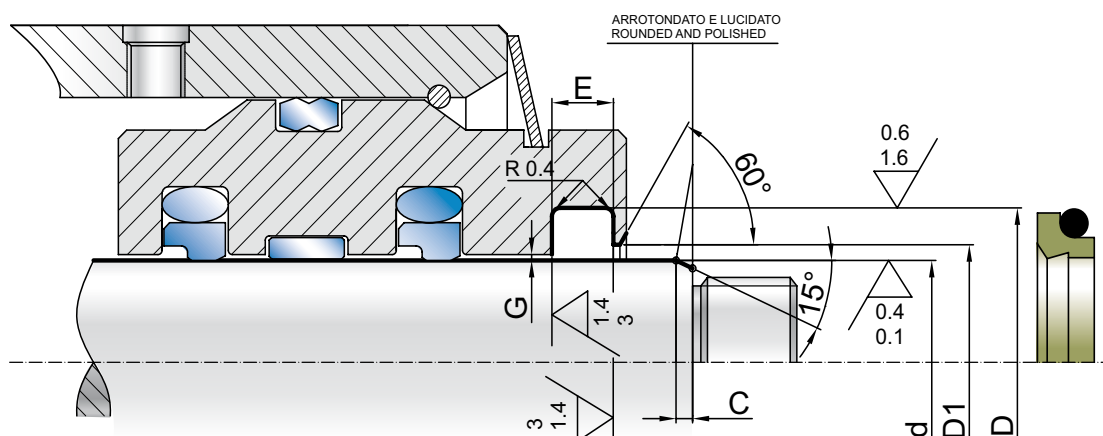
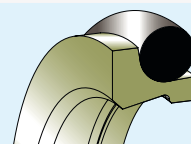
Assembling

Easy assembling in semi-open groove.

The O-Rings have to be fitted first into the groove and Then the PTFE element. Remove flashes and/or cutting edges in the groove.

For further information please refer to the installation instructions on page 62.

TRD

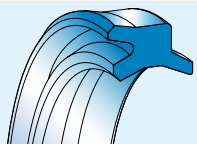


WSL
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R08
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WNM
WEL

d _{f8}	D _{H9}	E _{+0,2}	O-	C	D3	ART / ITEM
4,0	8,8	3,7	009	5,0	5,5	TRD 0040 0088 037 TN
5,0	9,8	3,7	010	5,0	6,5	TRD 0050 0980 037 TN
7,0	11,8	3,7	011	5,0	8,5	TRD 0070 011 037 TN
8,0	12,8	3,7	012	5,0	9,5	TRD 0080 0128 037 TN
10,0	14,8	3,7	013	5,0	11,5	TRD 0100 0148 037 TN
12,0	18,8	5,0	113	5,0	13,5	TRD 0120 0188 050 TN
14,0	20,8	5,0	114	5,0	15,5	TRD 0140 0208 050 TN
15,0	21,8	5,0	115	5,0	16,5	TRD 0150 0218 050 TN
16,0	22,8	5,0	116	5,0	17,5	TRD 0160 0228 050 TN
18,0	24,8	5,0	117	5,0	19,5	TRD 0180 0248 050 TN
20,0	26,8	5,0	118	5,0	21,5	TRD 0200 0268 050 TN
24,0	30,8	5,0	120	5,0	25,5	TRD 0240 0308 050 TN
25,0	31,8	5,0	121	5,0	26,5	TRD 0250 0318 050 TN
26,0	32,8	5,0	122	5,0	27,5	TRD 0260 0328 050 TN
28,0	34,8	5,0	123	5,0	29,5	TRD 0280 0348 050 TN
30,0	36,8	5,0	124	5,0	31,5	TRD 0300 0368 050 TN
32,0	38,8	5,0	126	5,0	33,5	TRD 0320 0388 050 TN
35,0	41,8	5,0	127	5,0	36,5	TRD 0350 0418 050 TN
37,0	43,8	5,0	129	5,0	38,5	TRD 0370 0438 050 TN
38,0	44,8	5,0	130	5,0	39,5	TRD 0380 0448 050 TN
40,0	46,8	5,0	131	5,0	41,5	TRD 0400 0468 050 TN
42,0	48,8	5,0	132	5,0	43,5	TRD 0420 0488 050 TN
45,0	51,8	5,0	134	5,0	46,5	TRD 0450 0518 050 TN
48,0	54,8	5,0	136	5,0	49,5	TRD 0480 0548 050 TN
50,0	56,8	5,0	137	5,0	51,5	TRD 0500 0568 050 TN
52,0	58,8	5,0	138	5,0	53,5	TRD 0520 0588 050 TN
55,0	61,8	5,0	140	5,0	56,5	TRD 0550 0618 050 TN
58,0	64,8	5,0	142	5,0	59,5	TRD 0580 0648 050 TN
60,0	66,8	5,0	143	5,0	61,5	TRD 0600 0668 050 TN
65,0	73,8	6,0	231	5,0	66,5	TRD 0650 0738 060 TN

d _{f8}	D _{H9}	E _{+0,2}	O-	C	D3	ART / ITEM
70,0	78,8	6,0	233	5,0	71,5	TRD 0700 0788 060 TN
75,0	83,8	6,0	234	5,0	76,5	TRD 0750 0838 060 TN
80,0	88,8	6,0	236	5,0	81,5	TRD 0800 0888 060 TN
85,0	93,8	6,0	237	5,0	86,5	TRD 0850 0938 060 TN
90,0	98,8	6,0	239	5,0	91,5	TRD 0900 0988 060 TN
95,0	103,8	6,0	241	7,0	96,5	TRD 0950 1038 060 TN
100,0	108,8	6,0	242	7,0	101,5	TRD 1000 1088 060 TN
110,0	118,8	6,0	245	7,0	111,5	TRD 1100 1188 060 TN
120,0	128,8	6,0	249	7,0	121,5	TRD 1200 1288 060 TN
125,0	133,8	6,0	250	7,0	125,5	TRD 1250 1338 060 TN
130,0	138,8	6,0	252	7,0	131,5	TRD 1300 1388 060 TN
135,0	143,8	6,0	254	7,0	136,5	WAB 1350 1438 060 TN
140,0	148,8	6,0	255	7,0	141,5	TRD 1400 1488 060 TN
150,0	158,8	6,0	258	7,0	151,5	TRD 1500 1588 060 TN
155,0	163,8	6,0	259	7,0	156,5	TRD 1550 1638 060 TN
160,0	168,8	6,0	260	7,0	161,5	TRD 1600 1688 060 TN
170,0	178,8	6,0	261	7,0	171,5	TRD 1700 1788 060 TN
175,0	183,8	6,0	262	7,0	176,5	TRD 1750 1838 060 TN
180,0	188,8	6,0	263	7,0	181,5	TRD 1800 1888 060 TN
185,0	193,8	6,0	263	7,0	186,5	TRD 1850 1938 060 TN
190,0	198,8	6,0	264	7,0	191,5	TRD 1900 1988 060 TN
195,0	203,8	6,0	265	7,0	196,5	TRD 1950 2038 060 TN
200,0	208,8	6,0	266	10,0	201,5	TRD 2000 2088 060 TN
210,0	218,8	6,0	267	10,0	211,5	TRD 2100 2188 060 TN
220,0	228,8	6,0	269	10,0	221,5	TRD 2200 2288 060 TN
225,0	233,8	6,0	270	10,0	226,5	TRD 2250 2338 060 TN
230,0	238,8	6,0	271	10,0	231,5	TRD 2300 2388 060 TN
240,0	248,8	6,0	272	10,0	241,5	TRD 2400 2488 060 TN
250,0	258,8	6,0	274	10,0	251,5	TRD 2500 2588 060 TN
260,0	272,2	8,4	378	10,0	262,0	TRD 2600 2722 084 TN

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Hydraulic



WED

RASCHIATORE BIDIREZIONALE TIPO WED

Descrizione

Il raschiatore bidirezionale tipo WED presenta il profilo combinato di un raschiatore e una guarnizione con un labbro raschiante nella parte esterna e un labbro di tenuta nella parte interna. Ha le dimensioni intercambiabili con le sedi dei raschiatori più utilizzati. Il labbro che agisce come raschiatore è molto flessibile e si adatta ai disallineamenti dello stelo. La parte di tenuta presenta un labbro più robusto ed allungato per garantire la tenuta e per aiutare il film d'olio che si crea sullo stelo a rientrare nel cilindro.

Dati tecnici

Pressione: < 20 bar
Velocità: 1 m/s
Temperatura: da - 35° C a +100° C con punte fino a +110° C
Fluidi: acqua a temperatura ambiente e oli a base minerale
(vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati sono dei poliuretani che resistono agli agenti atmosferici con alto modulo elastico e resistenti all'abrasione. Il materiale standard è di durezza 93 Shore A. In alternativa è possibile utilizzare poliuretani di durezza superiore quando esistono condizioni gravose in ambienti molto inquinati. In questo caso consultare il nostro ufficio tecnico. Codice materiale: C0

Montaggio

Il montaggio, molto semplice, è in sede semiaperta. Eliminare bave e spigoli taglienti nella sede per non danneggiare la tenuta. Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WED TYPE DOUBLE ACTING WIPER

Description

The WED bidirectional scraper has a combined scraper profile where the seal is provided with a scraping lip on the outside and a sealing lip on the inside. The dimensions are interchangeable with normal scraper housings. The scraping lip is very flexible and it compensates misalignments of the rod. The sealing side has a stronger and longer lip to ensure the sealing performance and to help the oil film remaining on the rod to go back into the cylinder.

Technical data

Pressure: < 20 bar
Speed: 1 m/s
Temperature: from - 35° C to +100° C with peaks till +110° C
Fluids: water at room temperature and mineral oils
(see table 3, page 14)

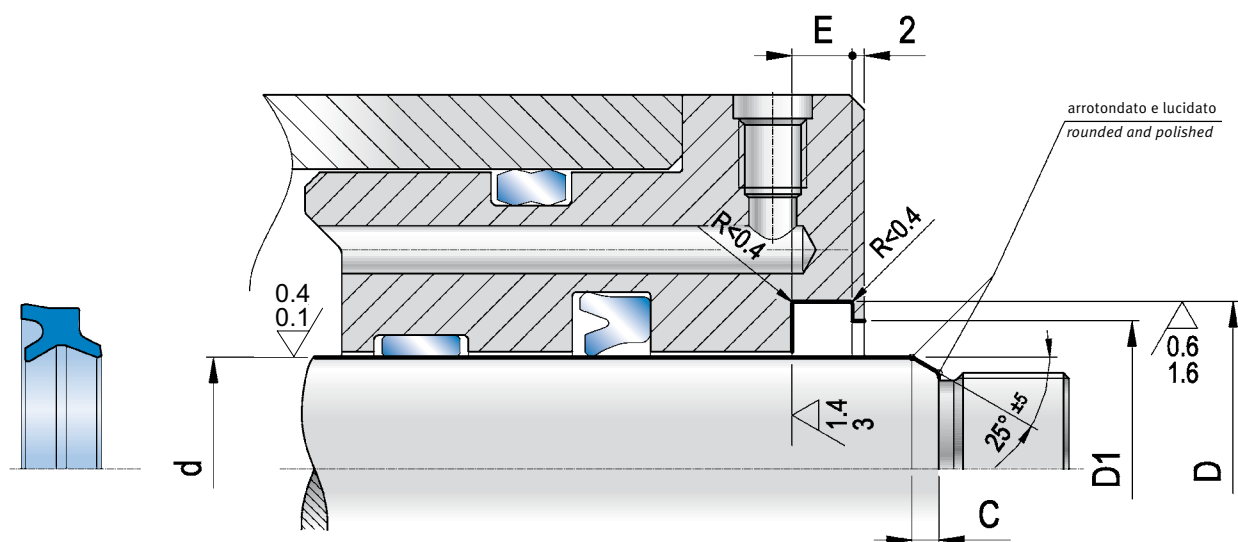
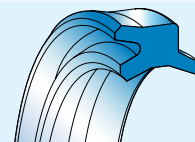
Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance. The hardness is 93 Shore A $\pm$ 2. Compound reference: C0. It is also possible to use harder polyurethanes for heavy polluted environments. In case please contact our technical department.

Assembling

The assembling is extremely easy because of the semi-open groove. Remove flashes and/or cutting edges in the housing. For further information please refer to the installation instructions on page 61.

WED



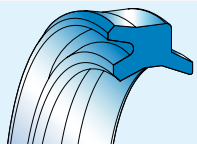
WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

	d _{h9}	D _{H10}	E +0,2	D ₁	C	ART / ITEM			
	6,0	11,0	3,5	8,5	»3,5	WED 0060	0110	035	CO
	8,0	13,0	3,5	10,5	»3,5	WED 0080	0130	035	CO
	10,0	16,0	4,0	13,0	»3,5	WED 0100	0160	040	CO
*	12,0	18,0	4,0	14,5	»3,5	WED 0120	0180	040	CO
	12,0	18,6	3,8	15,0	»3,5	WED 0120	0186	038	CO
*	14,0	20,0	4,0	16,5	»3,5	WED 0140	0200	040	CO
	14,0	20,6	3,8	17,0	»3,5	WED 0140	0206	038	CO
	16,0	22,0	4,0	18,5	»3,5	WED 0160	0220	040	CO
*	18,0	24,0	4,0	20,5	»3,5	WED 0180	0240	040	CO
	18,0	24,6	3,8	21,0	»3,5	WED 0180	0246	038	CO
	20,0	26,0	4,0	22,5	»3,5	WED 0200	0260	040	CO
	20,0	28,6	5,3	23,0	»3,5	WED 0200	0286	053	CO
*	22,0	28,0	4,0	24,5	»3,5	WED 0220	0280	040	CO
	22,0	30,6	5,3	25,0	»3,5	WED 0220	0306	053	CO
	24,0	32,6	5,3	27,0	»3,5	WED 0240	0326	053	CO
	25,0	31,0	4,0	27,5	»3,5	WED 0250	0310	040	CO
	25,0	33,6	5,3	28,0	»3,5	WED 0250	0336	053	CO
*	28,0	36,0	5,0	31,0	»3,5	WED 0280	0360	050	CO
	28,0	36,6	5,3	31,0	»3,5	WED 0280	0366	053	CO
	30,0	38,0	5,0	33,0	»3,5	WED 0300	0380	050	CO
	30,0	38,6	5,3	33,0	»3,5	WED 0300	0386	053	CO
	32,0	40,0	5,0	35,0	»3,5	WED 0320	0400	050	CO
	32,0	40,6	5,3	35,0	»3,5	WED 0320	0406	053	CO
	35,0	43,0	5,0	38,0	»3,5	WED 0350	0430	050	CO
	35,0	43,6	5,3	38,0	»3,5	WED 0350	0436	053	CO
	35,0	45,0	5,0	38,0	»4,0	WED 0350	0450	050	CO
*	36,0	44,0	5,0	39,0	»3,5	WED 0360	0440	050	CO

d _{h9}	D _{H10}	E _{+0,2}	D ₁	C	ART / ITEM				
36,0	44,6	5,3	39,0	> 3,5	WED 0360	0446	053	C0	
38,0	46,0	5,0	41,0	> 3,5	WED 0380	0460	050	C0	
40,0	48,0	5,0	43,0	> 4,0	WED 0400	0480	050	C0	
40,0	48,0	6,0	43,0	> 4,0	WED 0400	0480	060	C0	
40,0	48,6	5,3	43,0	> 4,0	WED 0400	0486	053	C0	
42,0	50,0	5,0	45,0	> 3,5	WED 0420	0500	050	C0	
*	42,0	50,0	6,0	45,0	> 3,5	WED 0420	0500	060	C0
	45,0	53,0	5,0	48,0	> 4,0	WED 0450	0530	050	C0
	45,0	53,0	6,0	48,0	> 4,0	WED 0450	0530	060	C0
45,0	53,6	5,3	48,0	> 4,0	WED 0450	0536	053	C0	
50,0	58,0	5,0	53,0	> 4,0	WED 0500	0580	050	C0	
50,0	58,0	6,0	53,0	> 4,0	WED 0500	0580	060	C0	
50,0	58,6	5,3	53,0	> 4,0	WED 0500	0586	053	C0	
50,0	60,0	6,0	53,0	> 4,0	WED 0500	0600	060	C0	
55,0	63,6	5,3	58,0	> 4,0	WED 0550	0636	053	C0	
*	55,0	65,0	6,0	58,0	> 4,0	WED 0550	0650	060	C0
	56,0	64,6	5,3	59,0	> 4,0	WED 0560	0646	053	C0
	56,0	66,0	6,0	59,0	> 4,0	WED 0560	0660	060	C0
58,0	68,0	6,0	61,0	> 4,0	WED 0580	0680	060	C0	
60,0	68,6	5,3	63,0	> 4,0	WED 0600	0686	053	C0	
60,0	70,0	6,0	63,0	> 4,0	WED 0600	0700	060	C0	
63,0	71,6	5,3	66,0	> 4,0	WED 0630	0716	053	C0	
63,0	73,0	6,0	66,0	> 4,0	WED 0630	0730	060	C0	
65,0	73,6	5,3	68,0	> 4,0	WED 0650	0736	053	C0	
65,0	75,0	6,0	68,0	> 4,0	WED 0650	0750	060	C0	
67,0	77,0	6,0	70,0	> 4,0	WED 0670	0770	060	C0	
70,0	78,6	5,3	73,0	> 4,0	WED 0700	0786	053	C0	

* in conformità alle norme ISO 6195 – in accordance with ISO 6195 norm

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W E D

	d _{h9}	D _{H10}	E _{+0,2}	D ₁	C	ART / ITEM
*	70,0	80,0	6,0	73,0	> 4,0	WED 0700 0800 060 C0
	75,0	83,6	5,3	78,0	> 4,0	WED 0750 0836 053 C0
	75,0	85,0	6,0	78,0	> 4,0	WED 0750 0850 060 C0
	78,0	88,0	6,0	81,0	> 4,0	WED 0780 0880 060 C0
	80,0	88,6	5,3	83,0	> 4,0	WED 0800 0886 053 C0
	80,0	90,0	6,0	83,0	> 4,0	WED 0800 0900 060 C0
	85,0	93,6	5,3	88,0	> 3,5	WED 0850 0936 053 C0
	85,0	95,0	6,0	88,0	> 4,0	WED 0850 0950 060 C0
	85,0	97,2	7,1	91,0	> 4,0	WED 0850 0972 071 C0
*	90,0	100,0	6,0	93,0	> 4,0	WED 0900 1000 060 C0
	90,0	102,2	7,1	96,0	> 4,0	WED 0900 1022 071 C0
	100,0	110,0	6,0	103,0	> 5,0	WED 1000 1100 060 C0

	d _{h9}	D _{H10}	E _{+0,2}	D ₁	C	ART / ITEM
	100,0	112,2	7,1	106,0	> 5,0	WED 1000 1122 071 C0
	110,0	122,2	7,1	116,6	> 5,0	WED 1100 1222 071 C0
*	110,0	125,0	8,5	114,0	> 5,0	WED 1100 1250 085 C0
	120,0	135,0	8,5	124,0	> 5,0	WED 1200 1350 085 C0
	125,0	140,0	8,5	129,0	> 5,0	WED 1250 1400 085 C0
*	140,0	155,0	8,5	144,0	> 5,0	WED 1400 1550 085 C0
	150,0	165,0	8,5	154,0	> 5,0	WED 1500 1650 085 C0
	160,0	175,0	8,5	164,0	> 5,0	WED 1600 1750 085 C0
	180,0	195,0	8,5	184,0	> 5,0	WED 1800 1950 085 C0

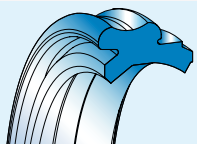
* in conformità alle norme ISO 6195 – *in accordance with ISO 6195 norm*

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, acting as a margin. The rest of the page is covered by the blue grid pattern.



WDA

RASCHIATORE BIDIREZIONALE TIPO WDA

Descrizione

Il raschiatore bidirezionale tipo WDA ha una geometria arrotondata nella parte statica per favorire lo sfiato dell'olio in caso di microperdite. E' progettato per essere un'efficace seconda guarnizione a bassa pressione. I labbri dinamici presentano, nella parte esterna, un robusto labbro raschiante con piccolo raggio: al contatto con lo stelo questo labbro permette di mantenere all'esterno le impurità. Contemporaneamente, facilita il rientro del film d'olio evitando che rimanga sullo stelo. Nella parte interna, il labbro a spigolo vivo lavora in tandem con la guarnizione primaria.

Dati tecnici

Pressione: < 50 bar
Velocità: 1 m/s
Temperatura: da - 35° C a +100° C con punte fino a +110° C
Fluidi: fluidi a base minerale
(vedi tabella 3 a pagina 14)

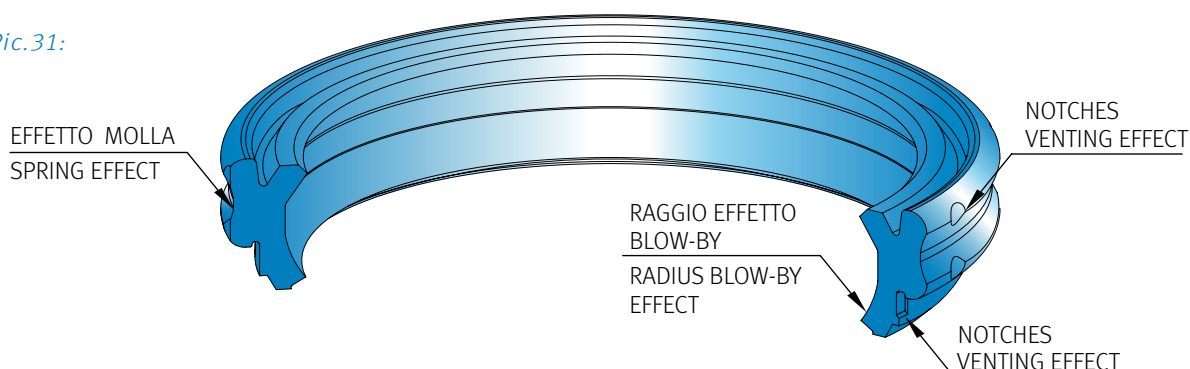
Materiale

Il materiale utilizzato e' un poliuretano tipo C0 con alto modulo elastico, basso compression-set ed elevata resistenza all'usura.
Ha una durezza 93 Sh A ± 2
Codice materiale: C0

Montaggio

Per evitare che si danneggi il raschiatore eliminare le bave di lavorazione della sede e gli spigoli taglienti. E' consigliato di lubrificare il raschiatore prima del montaggio.

Fig.31-Pic.31:



WDA TYPE DOUBLE ACTING WIPER

Description

The WDA bidirectional wiper has a rounded geometry in the static part to promote the oil venting in the event of micro leakage. It is designed to be an effective secondary seal at low pressure. The dynamic lips have, on the outer part, a strong wiping lip with a small radius: when in contact with the rod this lip blocks any external impurities. At the same time, it makes the retreat of the oil film easier, preventing it from remaining on the rod. In the inner part the cutting edge lip works in conjunction with the main seal.

Technical data

Pressure: < 50 bar
Speed: 1 m/s
Temperature: from - 35° C to +100° C with peaks till +110° C
Fluids: mineral fluids (see table 3, page 14)

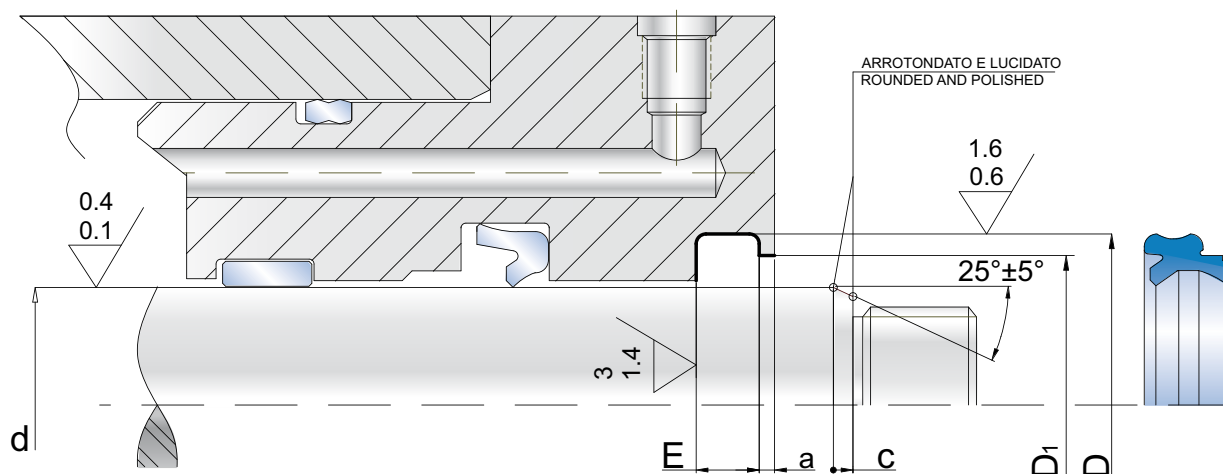
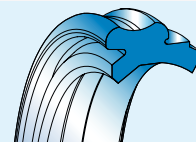
Material

The material used is a C0-type polyurethane with high elasticity modulus, low compression-set and high resistance to wear.
The hardness is 93 Sh A ± 2
Compound reference: C0

Assembling

To prevent any damage to the wiper, remove any machining scores on the housing and cutting edges. The wiper should be lubricated before assembly.

WDA



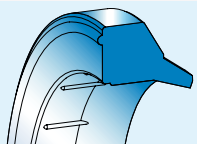
WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

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Hydraulic

d _{h9}	D _{H10}	E _{+0,2}	D _{1 0/+0,2}	a	C	ART / ITEM
25,0	31,0	4,0	28,6	2,0	4,0	WDA 0250 0310 040 C0
30,0	38,0	5,0	35,2	2,0	4,0	WDA 0300 0380 050 C0
40,0	48,8	6,3	44,4	3,0	5,0	WDA 0400 0488 063 C0
42,0	50,8	6,3	46,4	3,0	5,0	WDA 0420 0508 063 C0
45,0	53,8	6,3	49,4	3,0	5,0	WDA 0450 0538 063 C0
50,0	58,8	6,3	54,4	3,0	5,0	WDA 0500 0588 063 C0
55,0	63,8	6,3	59,4	3,0	5,0	WDA 0550 0638 063 C0
60,0	68,8	6,3	64,4	3,0	5,0	WDA 0600 0688 063 C0
63,0	71,8	6,3	67,4	3,0	5,0	WDA 0630 0718 063 C0
65,0	73,8	6,3	69,4	3,0	5,0	WDA 0650 0738 063 C0
70,0	82,2	8,1	76,0	4,0	6,0	WDA 0700 0822 081 C0
75,0	87,2	8,1	81,0	4,0	6,0	WDA 0750 0872 081 C0
80,0	92,2	8,1	86,0	4,0	6,0	WDA 0800 0922 081 C0
85,0	97,2	8,1	91,0	4,0	6,0	WDA 0850 0972 081 C0
90,0	100,2	8,1	91,0	4,0	6,0	WDA 0900 1022 081 C0
95,0	107,2	8,1	101,0	4,0	6,0	WDA 0950 1072 081 C0
100,0	112,2	8,1	106,0	4,0	6,0	WDA 1000 1122 081 C0
105,0	117,2	8,1	111,0	4,0	6,0	WDA 1050 1172 081 C0
110,0	122,2	8,1	116,0	4,0	6,0	WDA 1100 1222 081 C0
115,0	127,2	8,1	121,0	4,0	6,0	WDA 1150 1272 081 C0
120,0	132,2	8,1	126,0	4,0	6,0	WDA 1200 1322 081 C0
125,0	137,2	8,1	131,0	4,0	6,0	WDA 1250 1372 081 C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



WIP

RASCHIATORE TIPO WIP

Descrizione

Il raschiatore tipo WIP si applica quando le condizioni di lavoro possono essere gravose, tipo cilindri per macchine movimento terra, cilindri per miniere, cilindri dove lo stelo supporta grosse flessioni.

Le misure scelte sono per steli in pollici.

Dati tecnici

Velocità: < 1 m/s
 Temperatura: da - 35° C a +90° C
 Fluidi: acqua a temperatura ambiente e oli a base minerale
 (vedi tabella 3 a pagina 14)

Materiale

I materiali utilizzati sono dei poliuretani che resistono agli agenti atmosferici con alto modulo elastico e resistenti all'abrasione.

Il materiale standard è di durezza 90 Shore A.

In alternativa è possibile utilizzare poliuretani di durezza superiore quando esistono condizioni gravose in ambienti molto inquinati. In questo caso consultare il nostro ufficio tecnico.

Codice materiale: B0

Montaggio

Il montaggio, molto semplice, è in sede semiaperta. Eliminare bave e spigoli taglienti nella sede per non danneggiare la tenuta.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WIP TYPE WIPER

Description

The wiper type WIP applies when the conditions of application can be burden some, type cylinders for earthmoving machinery, mining cylinders, cylinders where the rod supports large deflections.

The measurement stem from in inch sizes.

Technical data

Speed: < 1 m/s
 Temperature: from - 35° C a +90°C
 Fluids: water at room temperature and mineral oils
 (see table 3, page 14)

Material

The proposed material is a "CO" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 90 Shore A $\pm$ 2.

Compound reference: B0

It is also possible to use harder polyurethanes for heavy polluted environments.

In case please contact our technical department.

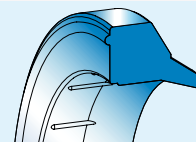
Assembling

The assembling is extremely easy because of the semi-open groove.

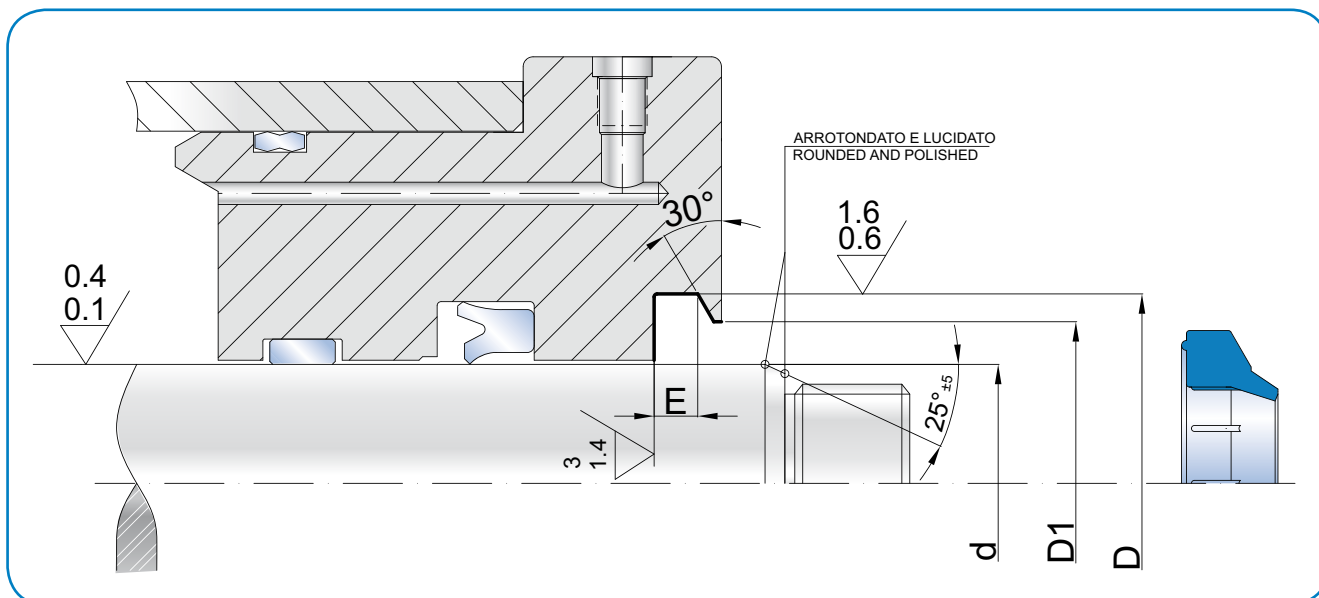
Remove flashes an/or cutting edges in the housing.

For further information please refer to the installation instructions on page 61.

WIP



WSL
RO6
WSG
IWP
DWP
RO9
WWS
RO8
WAT
TRD
WED
WDA
WIP
WNM
WEL



d _{h9}	D _{H10}	E +0,2	D _{1 0/+0,2}	ART / ITEM		
19,05	31,75	5,30	25,45	WIP	0750	1250 B0
20,00	32,70	5,30	26,40	WIP	0780	1280 B0
24,90	37,60	5,30	26,40	WIP	0980	1480 B0
25,40	38,10	5,30	31,80	WIP	1000	1500 B0
28,57	41,27	5,30	34,97	WIP	1125	1625 B0
30,00	42,70	5,30	36,40	WIP	1180	1680 B0
31,75	44,45	5,30	38,15	WIP	1250	1750 B0
33,00	45,70	5,30	39,40	WIP	1290	1790 B0
38,10	50,80	5,30	44,10	WIP	1500	2000 B0
40,00	52,70	5,30	46,40	WIP	1575	2075 B0
44,45	57,15	5,30	50,85	WIP	1750	2250 B0
45,00	57,70	5,30	51,40	WIP	1770	2270 B0
47,62	60,32	5,30	54,02	WIP	1875	2375 B0
50,00	62,70	5,30	46,40	WIP	1970	2470 B0
50,80	63,50	5,30	57,20	WIP	2000	2500 B0
53,97	66,67	5,30	60,37	WIP	2125	2625 B0
56,00	68,70	5,30	62,40	WIP	2200	2700 B0
57,15	69,85	5,30	63,55	WIP	2250	2750 B0

d _{h9}	D _{H10}	E +0,2	D _{1 0/+0,2}	ART / ITEM		
60,00	72,70	5,30	66,40	WIP	2360	2860 B0
63,00	75,70	5,30	69,40	WIP	2480	2980 B0
63,50	76,20	5,30	69,90	WIP	2500	3000 B0
65,00	77,70	5,30	71,40	WIP	2550	3050 B0
70,00	82,70	5,30	76,40	WIP	2750	3250 B0
76,20	88,90	5,30	82,40	WIP	3000	3500 B0
80,00	92,70	5,30	86,40	WIP	3150	3650 B0
82,55	95,25	5,30	88,95	WIP	3250	3750 B0
85,00	97,70	5,30	91,40	WIP	3340	3840 B0
88,00	100,70	5,30	94,40	WIP	3460	3960 B0
95,00	107,70	5,30	101,40	WIP	3740	4240 B0
100,00	112,70	5,30	106,40	WIP	3930	4430 B0
107,95	120,65	5,30	114,35	WIP	4250	4750 B0
110,00	122,70	5,30	116,40	WIP	4330	4830 B0

oleodinamica
Hydraulic



W N M

RASCHIATORE TIPO WNM

Descrizione

Il raschiatore tipo WNM è stato creato per applicazioni in cui vi è la necessità di eliminare dallo stelo materiali molto aggressivi, quale calcestruzzo, ghiaccio, cemento etc.

E' disegnato con il labbro dinamico più lungo di quello statico in modo che sia più flessibile per vincere i disallineamenti dello stelo.

Dati tecnici

Velocità: < 1 m/s

Temperatura: da -40° C a +130° C

Fluidi: acqua a temperatura ambiente e oli a base minerale
(vedi tabella 3 a pagina 16)

Materiale

il materiale utilizzato è un poliammide (PA) con bisolfuro di molibdeno (MoS2), un materiale molto resistente all'abrasione.

Montaggio

Il montaggio, avviene per pressione in cava semiaperta.

Si consiglia di ingrassare la sede per facilitare l'inserimento.

Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WNM TYPE WIPER

Description

The WNM type Wiper has been created for applications where there is the need to eliminate very aggressive materials from the rod, such as concrete, ice, cement etc.

It is designed with the dynamic lip longer than the static one so that it is more flexible to win the misalignment of the Rod.

Technical data

Speed: < 1 m/s

Temperature: from -40° C a +130°C

Fluids: water at room temperature and mineral oils
(see table 3, page 16)

Material

the material used is a polyamide (PA) with molybdenum disulfide (MoS2), a material highly resistant to abrasion.

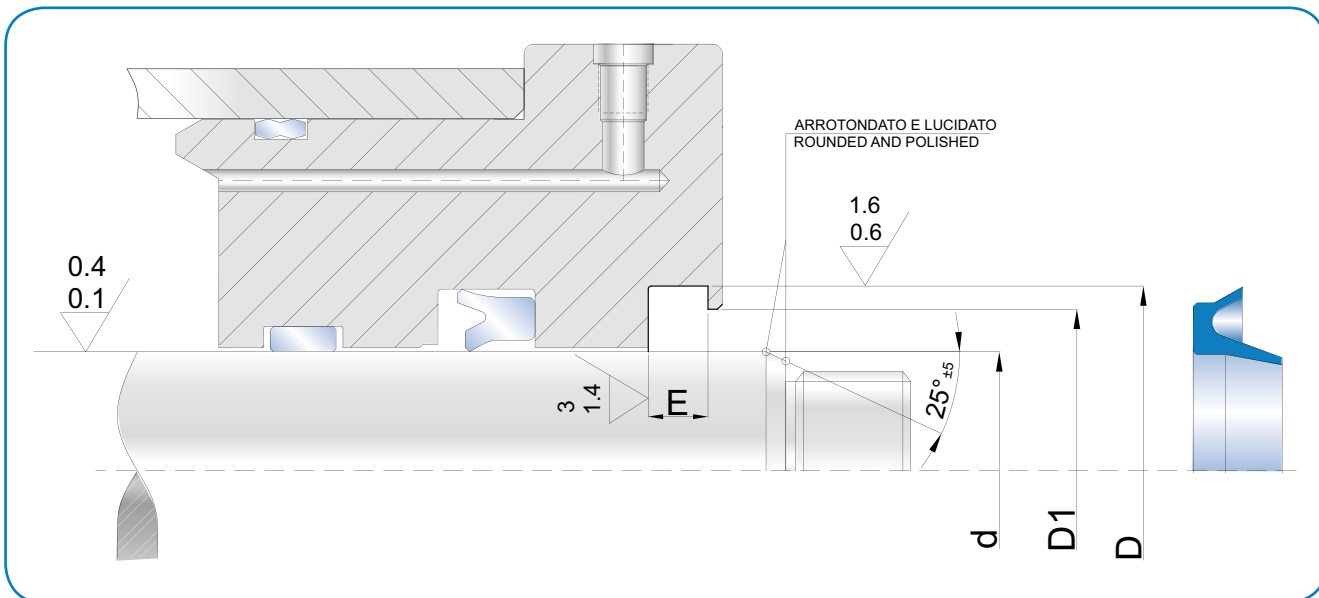
Assembling

The assembly, by pressure occurs in semi open groove.

It is recommended to grease the seat for easy insertion.

For further information please refer to the installation instructions on page 61.

W N M



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

Dimensioni metriche / Metric sizes

d_{h9}	D_{H10}	$E_{+0,2}$	$D_{10/+0,2}$	ART / ITEM
16,00	26,00	4,50	24,50	WNM 0160 0260 045 R4
20,00	33,00	6,00	31,50	WNM 0200 0330 060 R4
22,00	35,00	6,00	33,50	WNM 0220 0350 060 R4
25,00	38,00	6,00	36,50	WNM 0250 0380 060 R4
28,00	41,00	6,00	39,50	WNM 0280 0410 060 R4
30,00	43,00	6,00	41,50	WNM 0300 0430 060 R4
32,00	45,00	6,00	43,50	WNM 0320 0450 060 R4
36,00	49,00	6,00	47,50	WNM 0360 0490 060 R4
40,00	53,00	6,00	51,50	WNM 0400 0530 060 R4
45,00	58,00	6,00	56,50	WNM 0450 0580 060 R4
50,00	63,00	6,00	61,50	WNM 0500 0630 060 R4
55,00	68,00	6,00	66,50	WNM 0550 0680 060 R4
56,00	69,00	6,00	67,50	WNM 0560 0690 060 R4
60,00	73,00	6,00	71,50	WNM 0600 0730 060 R4
63,00	76,00	6,00	74,50	WNM 0630 0760 060 R4
65,00	78,00	6,00	76,50	WNM 0650 0780 060 R4
70,00	83,00	6,00	81,50	WNM 0700 0830 060 R4
75,00	88,00	6,00	86,50	WNM 0750 0880 060 R4
80,00	93,00	6,00	91,50	WNM 0800 0930 060 R4
90,00	103,00	6,00	101,50	WNM 0900 1030 060 R4
100,00	113,00	6,00	111,50	WNM 1000 1130 060 R4

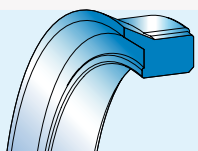
Dimensioni in inch / Inch sizes

d_{h9}	D_{H10}	$E_{+0,2}$	$D_{10/+0,2}$	ART / ITEM
12,70	22,22	4,36	20,62	WNM 0500 0875 0170 R4
19,05	31,75	5,95	30,15	WNM 0750 1250 0235 R4
22,22	34,92	5,95	33,32	WNM 0875 1375 0235 R4
25,40	38,10	5,95	36,50	WNM 1000 1500 0235 R4
28,57	41,27	5,95	39,68	WNM 1125 1625 0235 R4
31,75	44,45	5,95	42,85	WNM 1250 1750 0235 R4
38,10	50,80	5,95	49,20	WNM 1500 2000 0235 R4
44,45	57,15	5,95	55,55	WNM 1750 2250 0235 R4
50,80	63,50	5,95	61,90	WNM 2000 2500 0235 R4
63,50	76,20	5,95	74,60	WNM 2500 3000 0235 R4

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Hydraulic

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



WEL

RASCHIATORE PER ESTERNO TIPO WEL

Descrizione

Il raschiatore tipo WEL viene comunemente usato nei cilindri a semplice effetto aperti su di un lato. Per evitare che la camicia venga deteriorata da agenti atmosferici, condensa o altro nell'ambiente, si utilizza un raschiatore con profilo rovesciato che ha funzione di pulitore.

Dati tecnici

Pressione: non esiste pressione ma può avvenire una leggera cavitazione.
Velocità: < 1 m/s
Temperatura: da - 35° C a + 100° C, con punte fino a + 110° C
Fluidi: acqua, polvere o altro nell'atmosfera (vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano tipo C0 ad alto modulo elastico ed a basso compression-set, con una elevata resistenza all'usura a 93 Shore A. Codice materiale: C0

Montaggio

Il montaggio avviene per accavallamento in sede semiaperta con aggancio che ha la funzione di non permettere l'espulsione del raschiatore durante l'inversione del ciclo. E' importante togliere le bave e gli spigoli per evitarne il danneggiamento. Per ulteriori informazioni leggere le istruzioni di montaggio a pag. 61.

WEL TYPE EXTERNAL WIPER

Description

The WEL wiper type is commonly used in simple effect cylinders open on one side. Because of its cleaning function, a reverse profile wiper is used to prevent bore wearing which may be caused by atmospheric agents, condensation and other environmental conditions.

Technical data

Pressure: no pressure, but a slight cavitation might occur.
Speed: < 1 m/s
Temperature: from - 35° C to + 100° C, with peaks till + 110° C
Fluids: water, dust or other atmospheric factors
(see table 3, page 14)

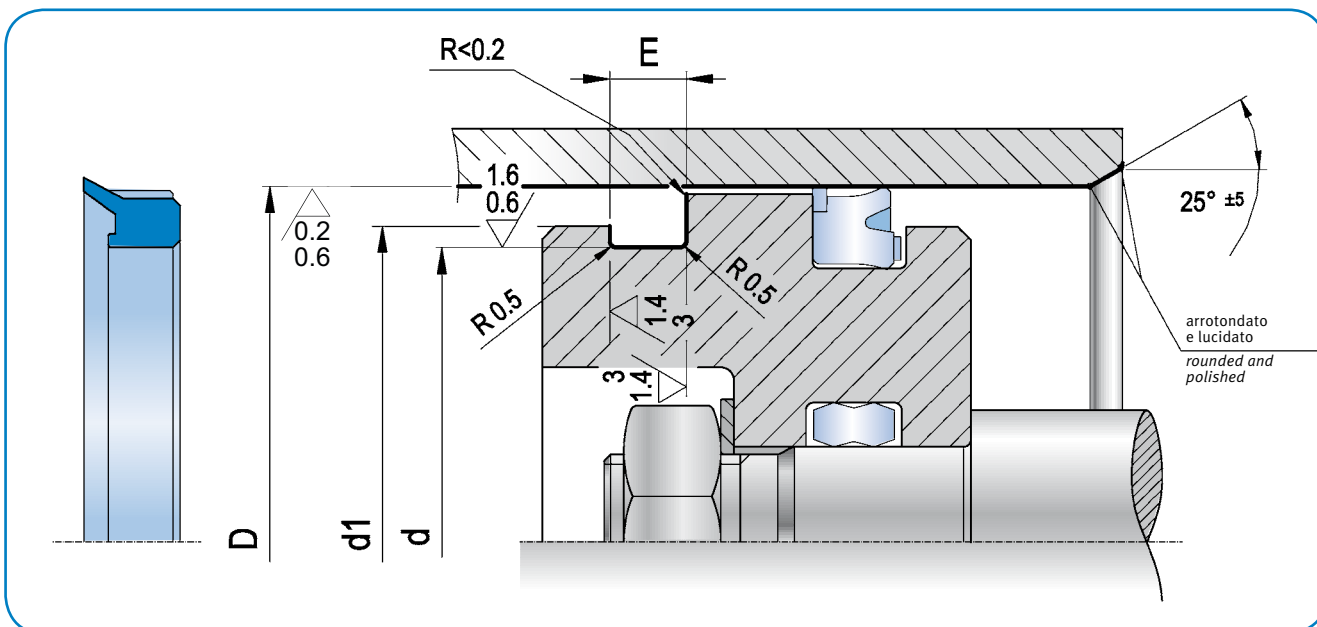
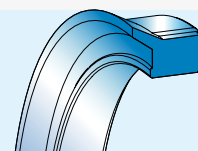
Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance. The hardness is 93 Shore A $\pm$ 2. Compound reference: C0

Assembling

The assembling is done by overlapping in semi-open groove with a chamfer preventing the wiper extrusion during the cycle inversion. It is important to remove flashes or cutting edges to avoid damages. For further information please refer to the installation instructions on page 61.

WEL



WSL
R06
WSG
IWP
DWP
R09
WWS
R08
WAT
TRD
WED
WDA
WIP
WNM
WEL

D _{H9}	d _{H9}	E +0,2	d ₁	ART / ITEM
40,0	31,4	5,3	37,0	WEL 0400 0314 053 C0
45,0	36,4	5,3	42,0	WEL 0450 0364 053 C0
50,0	41,4	5,3	47,0	WEL 0500 0414 053 C0
60,0	51,4	5,3	57,0	WEL 0600 0514 053 C0
63,0	54,4	5,3	60,0	WEL 0630 0544 053 C0
70,0	61,4	5,3	67,0	WEL 0700 0614 053 C0
75,0	66,4	5,3	72,0	WEL 0750 0664 053 C0
80,0	71,4	5,3	77,0	WEL 0800 0714 053 C0
85,0	76,4	5,3	82,0	WEL 0850 0764 053 C0

D _{H9}	d _{H9}	E +0,2	d ₁	ART / ITEM
90,0	81,4	5,3	87,0	WEL 0900 0814 053 C0
95,0	86,4	5,3	92,0	WEL 0950 0864 053 C0
100,0	91,4	5,3	97,0	WEL 1000 0914 053 C0
110,0	101,4	5,3	107,0	WEL 1100 1014 053 C0
120,0	111,4	5,3	117,0	WEL 1200 1114 053 C0
140,0	131,4	5,3	137,0	WEL 1400 1314 053 C0

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Hydraulic

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



Tenute statiche
Static seals



Tenute statiche

Static seals

A completare il sistema di tenuta di un cilindro oleodinamico, oltre alle già descritte guarnizioni dinamiche per stelo e pistone, intervengono quelle che servono ad assicurare la tenuta tra organi reciprocamente fissi.

Le guarnizioni statiche neutralizzano le fughe di fluido attraverso la filettatura esterna della testata e quella necessaria ad avvitare lo stelo al pistone.

Esse sono normalmente realizzate con un o-ring in NBR spesso accoppiato con uno o due anelli antiestrusione necessari in presenza di pressioni elevate e giochi di accoppiamento eccessivi.

A parte le limitazioni poste dalle alte temperature o dalla compatibilità con il fluido sussiste spesso anche un problema di usura. In presenza di pressioni pulsanti che comprimono e rilasciano l'o-ring, si genera comunque un effetto che in presenza di superfici di contatto con rugosità non accurata, tende a "limare" l'elemento di tenuta, provocando perdite.

Sotto questo aspetto risulta estremamente vantaggioso l'impiego di una guarnizione tipo SSA in poliuretano che, oltre a risolvere il problema, presenta il vantaggio di utilizzare un solo elemento anzichè due (o-ring e antiestrusione) con maggiore facilità di montaggio.

In addition to the already described rod and piston dynamic seals, further components granting the sealing between reciprocating static elements are involved in the hydraulic cylinder sealing system. Static seals prevents leakages of fluid by the head external screw-thread and the thread for tightening the rod to the piston.

The seals are usually composed by a NBR o-ring combined with one or two anti-extrusion rings, necessary in cases of high pressure and excessive coupling clearance.

Besides the limitations resulting from high temperatures or fluid compatibility issues, wear is also a common problem. Pulsating pressures loading or unloading the o-ring, when the roughness of the contact surface does not comply with the specification range, cause "filing" of the sealing part originating a leakage.

The use of a SSA polyurethane seal is more appropriate facing this effect, having also the advantage to have a easier assembling because of one single element instead of two (o-ring and anti-extrusion ring).

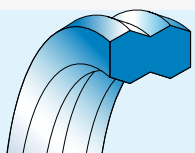
Profili

Profile

GUARNIZIONI STATICHE / <i>STATIC SEALS</i>										
Condizioni massime non simultanee / <i>Maximum conditions (not combined)</i>										
Profilo <i>Profile</i>	Ns Rif. <i>Our Ref.</i>	Temperatura <i>Temperature</i> C°	Pressione <i>Pressure</i> Bar	Velocità <i>Speed</i> m/s	Materiale <i>Material</i>	TPU POM / PA PTFE Bronze	NBR	TPE Resina PTFE Carbo. PTFE	Sezione <i>Section</i>	Pagina <i>Page</i>
	SSA	-35 +100	< 400	-	TPU	●			Statica <i>Static</i>	200
	VSS	-35 +100	< 400	-	TPU	●			Statica <i>Static</i>	204
	FSA	-35 +100	< 500	-	TPU	●			Statica <i>Static</i>	206
	VRA	-35 +100	-	-	TPU	●			Statica <i>Static</i>	208

O-RING / O-RING				
	OR	vedi specifiche mescole o-ring see specifications of o-ring compounds	Statica Static	210
	OR ANTIROLLING®	vedi specifiche mescole o-ring see specifications of o-ring compounds	Statica Static	212

ANELLI ANTIESTRUSIONE / BACK-UP RINGS									
	RAE/ MAE	-30 +120	-	< 0,8	TPE			Statica Static	214
	AKN	-30 +100	-	< 0,8	NBR			Statica Static	214
	AKC	-40 +200	-	< 0,8	PTFE			Statica Static	214
	AKW	-40 +200	-	< 0,8	PTFE			Statica Static	214
	AKS	-40 +200	-	< 0,8	PTFE			Statica Static	214



SSA

GUARNIZIONE STATICA TIPO SSA

Descrizione

La guarnizione tipo SSA è stata studiata e collaudata da molti anni. E' utilizzata per impieghi statici e, in qualche applicazione, anche dinamici.

Viene utilizzata principalmente in sostituzione di un o-ring e di un anello antiestrusione.

L'utilizzo di un poliuretano ad alto modulo elastico e a basso compression-set fa sì che non si attorcigli durante il montaggio e che non si estruda in esercizio. L'utilizzo di un solo pezzo e il profilo simmetrico rendono più facile all'operatore il montaggio in sede. Inoltre la gestione dello stock di magazzino risulta dimezzata.

Limiti d'impiego

Pressione: < 400 bar a temperatura di 60° C

Temperatura: da - 35° C a + 100° C, con punte fino a + 110° C

Fluidi: olio e grassi minerali, gas non aggressivi
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano tipo C0 ad alto modulo elastico ed a basso compression-set, con una elevata resistenza all'usura a 93 Shore A. Codice materiale: C0

Montaggio

E' importante eliminare gli spigoli vivi e le bave nella sede ed eseguire uno smusso di invito per facilitare il montaggio.

Nota: in caso di montaggio su testata flottante, si raccomanda di contattare il nostro ufficio tecnico per verificare l'adeguatezza dei giochi di accoppiamento.

SSA TYPE STATIC SEAL

Description

The SSA type static seal has been developed and tested for many years for static and sometimes dynamic sealing applications.

It is mainly used as replacement of o-ring and anti-extrusion ring.

The use of a high modulus polyurethane with a low compression-set prevents winding during assembling and avoid extrusion in working conditions.

One single piece with symmetrical profile allows the operator easier installation reducing at the same time the stock handling.

Technical data

Pressure: < 400 bar at a temperature of 60°C

Temperature: from - 35° C to + 100° C with peaks till + 110° C

Fluids: mineral oil and grease, non aggressive gas
(see table 3, page 14)

Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance.

The hardness is 93 Shore A $\pm$ 2.

Compound reference: C0

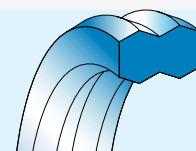
Assembling

It is important to remove flashes or cutting edges to avoid damages.

It's also recommended to make a lead-in chamfer for easier assembling.

Note: for usage in floating head please contact our technical engineer to verify the consistency of the coupling clearance.

SSA



SSA

VSS

FSA

VRA

OR

OR-ANT

RAE

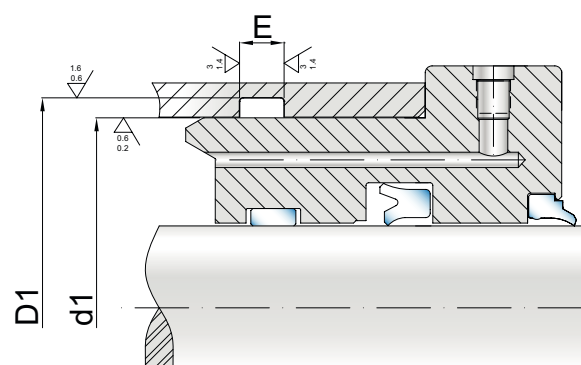
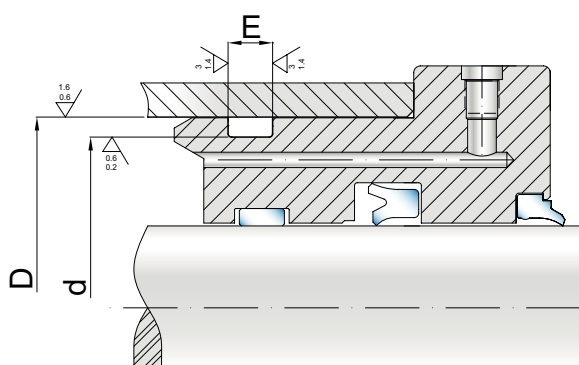
AKS

AKC

AKW

AKN

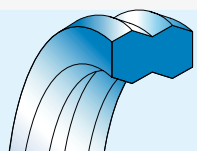
MAE



D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
10,00	7,40	2,2	0,2			SSA 0100 0074 022 C0
10,00	7,40	3,8	0,2	8,0	10,6	SSA 0100 0074 038 C0
12,00	9,40	2,2	0,2			SSA 0120 0094 022 C0
12,00	9,40	3,8	0,2			SSA 0120 0094 038 C0
12,60	10,30	3,1	0,2			SSA 0126 0103 031 C0
12,65	9,90	2,5	0,2	10,0	12,6	SSA 0126 0099 025 C0
13,00	10,20	2,5	0,2			SSA 0130 0102 025 C0
14,00	11,20	2,5	0,2			SSA 0140 0112 025 C0
14,00	11,40	3,8	0,2	12,0	14,6	SSA 0140 0114 038 C0
14,22	11,47	2,5	0,2			SSA 0142 0114 025 C0
14,20	11,90	3,1	0,2			SSA 0142 0119 031 C0
15,00	11,90	2,5	0,2			SSA 0150 0119 025 C0
15,00	11,90	4,0	0,2	11,0	14,1	SSA 0150 0119 040 C0
15,00	12,20	2,5	0,2			SSA 0150 0122 025 C0
15,00	12,40	3,8	0,2	13,0	15,6	SSA 0150 0124 038 C0
15,80	13,50	3,1	0,2			SSA 0158 0135 031 C0
15,82	13,07	2,5	0,2			SSA 0158 0130 025 C0
15,87	13,00	3,5	0,2			SSA 0159 0130 035 C0
16,00	12,90	2,5	0,2			SSA 0160 0129 025 C0
16,00	13,40	2,2	0,2			SSA 0160 0134 022 C0
16,00	13,40	3,8	0,2	14,0	16,6	SSA 0160 0134 038 C0
16,50	12,00	3,5	0,2			SSA 0165 0120 035 C0
17,00	14,20	2,5	0,2			SSA 0170 0142 025 C0
17,47	14,60	3,5	0,2			SSA 0175 0146 035 C0
18,00	14,90	2,5	0,2			SSA 0180 0149 025 C0
18,00	14,90	4,0	0,2	14,0	17,1	SSA 0180 0149 040 C0
18,00	15,20	2,5	0,2			SSA 0180 0152 025 C0

D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
18,00	15,40	3,8	0,2	16,0	18,6	SSA 0180 0154 038 C0
18,50	14,00	3,5	0,2			SSA 0185 0140 035 C0
19,00	15,90	2,5	0,2			SSA 0190 0159 025 C0
19,00	15,90	4,0	0,2	16,0	19,1	SSA 0190 0159 040 C0
19,00	16,20	2,5	0,2			SSA 0190 0162 025 C0
19,00	16,60	2,4	0,2			SSA 0190 0166 024 C0
19,05	16,20	3,5	0,2			SSA 0190 0162 035 C0
20,00	14,50	3,5	0,2			SSA 0200 0145 035 C0
20,00	17,40	3,4	0,2			SSA 0200 0174 034 C0
20,00	17,40	3,4	0,2	18,0	20,6	SSA 0200 0174 038 C0
20,62	17,80	3,5	0,2			SSA 0206 0178 035 C0
21,00	17,60	4,4	0,2			SSA 0210 0176 044 C0
21,50	17,00	3,5	0,2			SSA 0215 0170 035 C0
22,00	19,40	2,2	0,2			SSA 0220 0194 022 C0
22,00	19,40	3,8	0,2	20,0	22,6	SSA 0220 0194 038 C0
23,00	20,00	3,8	0,2			SSA 0230 0200 038 C0
24,00	21,40	3,8	0,2	22,0	24,6	SSA 0240 0214 038 C0
25,00	20,50	3,5	0,2			SSA 0250 0205 035 C0
25,00	20,50	5,0	0,2	20,0	24,5	SSA 0250 0205 050 C0
25,00	22,40	3,8	0,2	23,0	25,6	SSA 0250 0224 038 C0
25,00	22,60	2,4	0,2			SSA 0250 0226 024 C0
26,00	21,80	3,5	0,2			SSA 0260 0218 035 C0
26,00	22,00	5,0	0,2	22,0	26,0	SSA 0260 0220 050 C0
26,560	22,00	3,5	0,2			SSA 0265 0220 035 C0
27,00	22,80	3,5	0,2			SSA 0270 0228 035 C0
28,00	23,00	5,3	0,2			SSA 0280 0230 053 C0
28,00	23,80	3,5	0,2			SSA 0280 0238 035 C0

Tenute statiche
Static seals

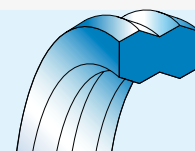


SSA

D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
28,00	24,00	5,0	0,2	24,0	28,0	SSA 0280 0240 050 C0
29,00	24,50	3,5	0,2			SSA 0290 0245 035 C0
29,00	24,90	5,0	0,2	24,0	28,1	SSA 0290 0249 050 C0
30,00	26,00	5,0	0,2	26,0	30,0	SSA 0300 0260 050 C0
32,00	28,00	5,0	0,2	28,0	32,0	SSA 0320 0280 050 C0
34,00	30,00	5,0	0,2	30,0	34,0	SSA 0340 0300 050 C0
35,00	31,00	5,0	0,2	31,0	35,0	SSA 0350 0310 050 C0
36,00	30,40	4,5	0,2			SSA 0360 0304 045 C0
36,00	32,00	5,0	0,2	32,0	36,0	SSA 0360 0320 050 C0
37,00	30,80	4,5	0,2			SSA 0370 0308 045 C0
38,00	31,80	4,5	0,2			SSA 0380 0318 045 C0
38,00	32,40	4,5	0,2			SSA 0380 0324 045 C0
38,60	34,00	4,0	0,2			SSA 0386 0340 040 C0
39,00	33,40	5,3	0,2			SSA 0390 0334 053 C0
40,00	33,80	6,0	0,2			SSA 0400 0338 060 C0
40,00	34,40	4,8	0,2			SSA 0400 0344 048 C0
40,00	36,00	5,0	0,2	36,0	40,0	SSA 0400 0360 050 C0
42,00	36,40	4,8	0,2			SSA 0420 0364 048 C0
42,00	38,00	3,2	0,2			SSA 0420 0380 032 C0
42,00	38,00	5,0	0,2	38,0	42,0	SSA 0420 0380 050 C0
43,00	37,40	5,3	0,2			SSA 0430 0374 053 C0
44,45	38,45	5,3	0,2			SSA 0445 0385 053 C0
45,00	41,00	5,0	0,2	41,0	45,0	SSA 0450 0410 050 C0
45,00	40,00	5,4	0,2			SSA 0450 0400 054 C0
45,60	41,00	4,0	0,2			SSA 0456 0410 040 C0
47,00	42,00	5,4	0,2	42,0		SSA 0470 0420 054 C0
48,00	42,30	5,3	0,2			SSA 0480 0423 053 C0
48,00	42,60	6,2	0,2	43,0	48,4	SSA 0480 0426 062 C0
48,00	43,00	3,6	0,2			SSA 0480 0430 036 C0
50,00	43,80	6,0	0,2			SSA 0500 0438 060 C0
50,00	44,40	5,3	0,2			SSA 0500 0444 053 C0
50,00	44,60	6,2	0,2	45,0	50,4	SSA 0500 0446 062 C0
50,00	47,50	3,6	0,2			SSA 0500 0475 036 C0
50,80	45,20	5,3	0,3			SSA 0508 0452 053 C0
51,00	46,5	3,5	0,3			SSA 0510 0465 035 C0
51,00	46,5	5,0	0,3			SSA 0510 0465 050 C0
52,00	46,60	6,2	0,3	47,0	52,4	SSA 0520 0466 062 C0
53,00	48,00	3,6	0,2			SSA 0530 0480 036 C0
53,00	48,00	5,4	0,3	48,0		SSA 0530 0480 054 C0
54,40	48,70	5,3	0,3			SSA 0544 0487 053 C0
55,00	49,60	6,2	0,3	50,0	55,4	SSA 0550 0496 062 C0
55,00	49,90	5,3	0,3			SSA 0550 0499 053 C0
55,00	51,00	3,5	0,3			SSA 0550 0510 035 C0
57,00	52,20	4,1	0,3			SSA 0570 0522 041 C0
57,15	51,15	5,3	0,3			SSA 0572 0512 053 C0

D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
60,00	53,80	6,0	0,3			SSA 0600 0538 060 C0
60,00	54,30	5,8	0,3			SSA 0600 0543 058 C0
60,00	54,40	5,8	0,3			SSA 0600 0544 058 C0
60,00	54,60	6,2	0,3	55,0	60,4	SSA 0600 0546 062 C0
60,00	55,00	5,3	0,3			SSA 0600 0550 053 C0
60,00	55,90	4,4	0,3			SSA 0600 0559 044 C0
60,70	55,00	5,3	0,3			SSA 0607 0550 053 C0
61,00	56,5	3,5	0,3			SSA 0610 0565 035 C0
61,00	56,5	5,0	0,3			SSA 0610 0565 050 C0
61,50	56,00	2,8	0,3			SSA 0615 0560 028 C0
61,50	56,00	4,0	0,3			SSA 0615 0560 040 C0
63,00	57,40	4,8	0,3			SSA 0630 0574 048 C0
63,50	57,50	5,3	0,3			SSA 0635 0575 053 C0
64,50	59,0	4,6	0,3			SSA 0645 0590 046 C0
65,00	59,40	5,0	0,3			SSA 0650 0594 050 C0
65,00	59,60	6,2	0,3	60,0	65,4	SSA 0650 0596 062 C0
65,00	60,00	5,0	0,3			SSA 0650 0600 050 C0
66,00	60,40	5,1	0,3			SSA 0660 0604 051 C0
69,60	65,00	3,9	0,3			SSA 0696 0650 039 C0
70,00	63,80	6,0	0,3			SSA 0700 0638 060 C0
70,00	64,60	6,2	0,3	65,0	70,4	SSA 0700 0646 062 C0
70,00	65,00	5,0	0,3			SSA 0700 0650 050 C0
71,50	66,00	4,6	0,3			SSA 0715 0660 046 C0
72,00	66,40	5,0	0,3			SSA 0720 0664 050 C0
72,60	68,00	3,8	0,3			SSA 0726 0680 038 C0
74,60	70,00	3,8	0,3			SSA 0746 0700 038 C0
75,00	69,40	5,3	0,3			SSA 0750 0694 053 C0
75,00	69,60	6,2	0,3	70,0	75,4	SSA 0750 0696 062 C0
75,60	70,00	5,3	0,3			SSA 0756 0700 053 C0
76,20	70,20	5,3	0,3			SSA 0762 0702 053 C0
76,60	72,00	4,8	0,3			SSA 0766 0720 048 C0
80,00	73,60	6,4	0,3			SSA 0800 0736 064 C0
80,00	73,80	6,0	0,3			SSA 0800 0738 060 C0
80,00	74,40	5,3	0,3			SSA 0800 0744 053 C0
80,00	74,60	6,2	0,3	75,0	80,4	SSA 0800 0746 062 C0
80,60	76,00	6,4	0,3			SSA 0806 0760 064 C0
81,00	74,80	4,5	0,3			SSA 0810 0748 045 C0
81,00	74,80	6,0	0,3			SSA 0810 0748 060 C0
84,70	78,58	4,9	0,3			SSA 0847 0786 049 C0
85,00	78,50	6,4	0,3			SSA 0850 0785 064 C0
85,00	79,40	5,3	0,3			SSA 0850 0794 053 C0
85,00	79,60	6,2	0,3	80,0	85,4	SSA 0850 0796 062 C0
85,10	80,50	3,9	0,3			SSA 0851 0805 039 C0
88,00	82,40	7,0	0,3			SSA 0880 0842 070 C0
89,00	82,80	6,0	0,3			SSA 0890 0828 060 C0

SSA



D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
90,00	80,60	9,0	0,3			SSA 0900 0806 090 C0
90,00	81,40	9,0	0,3	80,0	88,6	SSA 0900 0814 090 C0
90,00	83,00	6,5	0,3			SSA 0900 0830 065 C0
90,00	84,40	4,8	0,3			SSA 0900 0844 048 C0
91,50	86,00	4,6	0,3			SSA 0915 0860 046 C0
92,00	86,50	4,8	0,3			SSA 0920 0865 048 C0
93,00	87,40	5,3	0,3			SSA 0930 0874 053 C0
94,00	89,50	3,8	0,3			SSA 0940 0895 038 C0
95,00	86,40	9,0	0,3	85,0	93,6	SSA 0950 0864 090 C0
95,00	89,40	6,2	0,3			SSA 0950 0894 062 C0
99,00	92,80	6,0	0,3			SSA 0990 0928 060 C0
100,00	90,60	7,0	0,4			SSA 1000 0906 070 C0
100,00	90,60	9,0	0,4			SSA 1000 0906 090 C0
100,00	90,80	9,7	0,4			SSA 1000 0908 097 C0
100,00	91,40	7,0	0,4			SSA 1000 0914 070 C0
100,00	91,40	9,0	0,4	90,0	98,6	SSA 1000 0914 090 C0
100,00	94,30	5,3	0,4			SSA 1000 0943 053 C0
102,00	95,80	4,5	0,4			SSA 1020 0958 045 C0
102,00	95,80	6,0	0,4			SSA 1020 0958 060 C0
102,50	96,60	5,5	0,4			SSA 1025 0966 055 C0
104,00	99,50	3,8	0,4			SSA 1040 0995 038 C0
105,00	96,40	9,0	0,4	95,0	103,6	SSA 1050 0964 090 C0
108,00	98,90	7,2	0,4			SSA 1080 0989 072 C0
110,00	101,40	9,0	0,4	100,0	108,6	SSA 1100 1014 090 C0

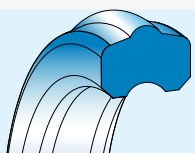
D _{H10}	d _{h9}	E _{+0,2}	R	d _{1h9}	D _{1H10}	ART / ITEM
110,00	104,50	4,5	0,4			SSA 1100 1045 045 C0
113,00	107,40	5,3	0,4			SSA 1130 1074 053 C0
115,00	106,40	9,0	0,4	105,0	113,6	SSA 1150 1064 090 C0
115,00	108,00	4,6	0,4			SSA 1150 1080 046 C0
120,00	111,40	9,0	0,4	110,0	118,6	SSA 1200 1114 090 C0
125,00	116,40	9,0	0,4	115,0	123,6	SSA 1250 1164 090 C0
130,00	121,40	9,0	0,4	120,0	128,6	SSA 1300 1214 090 C0
135,00	126,40	9,0	0,4	125,0	133,6	SSA 1350 1264 090 C0
140,00	131,40	9,0	0,4	130,0	138,6	SSA 1400 1314 090 C0
150,00	138,40	12,4	0,4	140,0	151,6	SSA 1500 1384 124 C0
150,00	145,80	9,0	0,4			SSA 1500 1458 090 C0
160,00	148,40	12,4	0,4	150,0	161,6	SSA 1600 1484 124 C0
160,00	154,4	3,6	0,4			SSA 1600 1544 036 C0
170,00	158,40	12,4	0,4	160,0	171,6	SSA 1700 1584 124 C0
180,00	168,40	12,4	0,4	170,0	181,6	SSA 1800 1684 124 C0
190,00	178,40	12,4	0,4	180,0	191,6	SSA 1900 1784 124 C0
200,00	188,40	12,4	0,4	190,0	201,6	SSA 2000 1884 124 C0
210,00	200,8	9,0	0,4			SSA 2100 2008 090 C0
225,00	213,40	12,4	0,4	215,0	226,6	SSA 2250 2134 124 C0
250,00	238,40	12,4	0,4	240,0	251,6	SSA 2500 2384 124 C0
270,00	258,40	12,4	0,4	260,0	271,6	SSA 2700 2584 124 C0
280,00	268,40	12,4	0,4	270,0	281,6	SSA 2800 2684 124 C0

SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Tenute statiche
Static seals



VSS

TENUTE PER VALVOLE A CARTUCCIA TIPO VSS

Descrizione

Tenuta per valvole a cartuccia, realizzata in TPU ad alte prestazioni, per applicazioni semi-statiche e semi-dinamiche.

Questa tenuta monocomponente consente di ottenere notevoli vantaggi rispetto ai tradizionali sistemi multicomponente in NBR:

- migliore resistenza all'estrusione ed abrasione grazie alle proprietà meccaniche del materiale;
- maggior durata della guarnizione nel tempo;
- assemblaggio semplificato per effetto del profilo simmetrico;
- perfetta intercambiabilità con sedi standard O-Ring + anello antiestrusione
- Semplificata gestione scorte dovuto all'utilizzo di un unico componente.

Dati tecnici

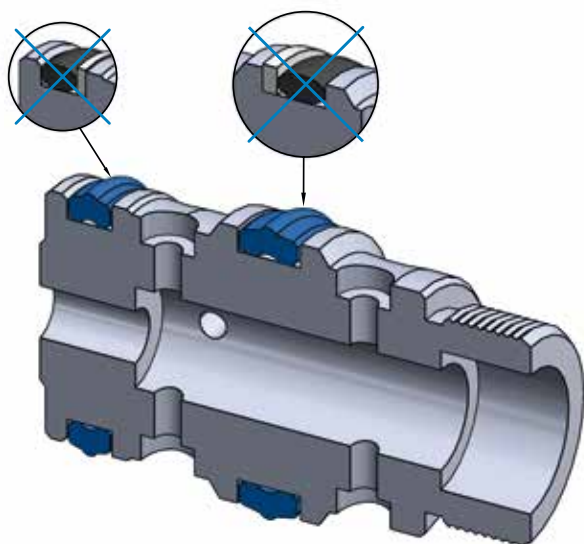
Pressione pulsante: 450 [bar] con punte
fino a 600 [bar]

Temperatura: da - 35° C a + 100° C, con punte fino a
+ 110° C

Fluidi: olio e grassi minerali
(vedi tabella 3 a pagina 14)

Montaggio

Il montaggio avviene in modo elastico in sede anulare. E' importante eliminare gli spigoli vivi e le bave di lavorazione.



CARTRIDGE VALVES SEAL TYPE VSS

Description

Hydraulic seal for cartridge valves, made in high performance TPU, dedicated to semi-static and semi-dynamic applications.

This one-component seal allows to obtain considerable advantages over conventional multi-component systems in NBR:

- improved extrusion and abrasion resistance thanks to TPU's mechanical properties;
- extended seal's life;
- easier installation due to symmetrical profile;
- perfect interchangeability with standard O-Ring + antiextrusion ring's groove;
- cheaper stock handling due to unique component

Technical data

Impulse pressure: 450 [bar] with peaks
until 600 [bar]

Temperature: from - 35° C to + 100° C with peaks till
+ 110° C

Fluids: mineral oil and grease
(see table 3, page 14)

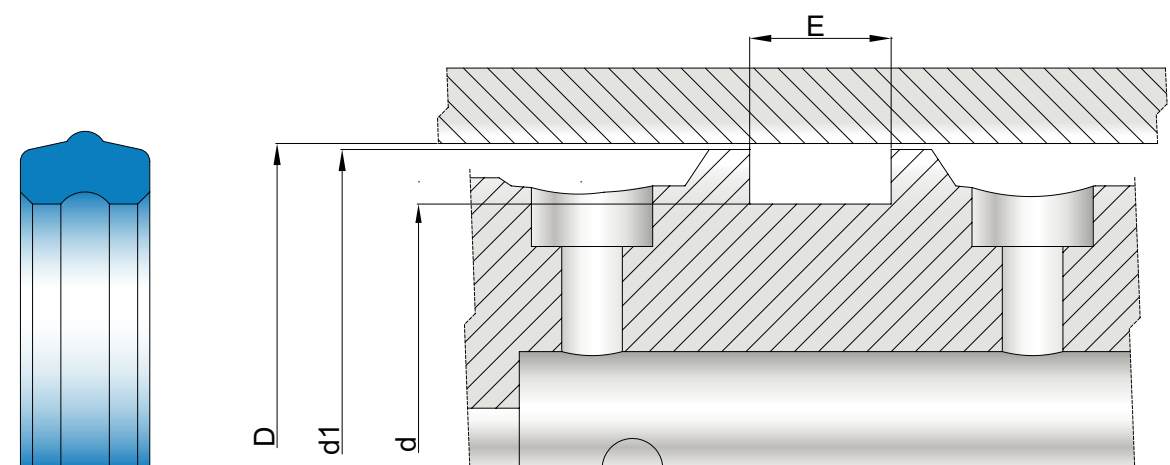
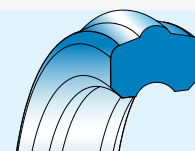
Assembling

The installation is in anular groove and in elastic method. It is important to remove flashes or cutting edges to avoid damages..

Fig.32: Soluzione ARTIC SEALS: unica tenuta in materiale TPU poliestere ad alto modulo elastico, ottimo compression-set e alta resistenza all'abrasione, consente di sostituire i più comuni O-Ring + anello antiestrusione.

Pic.32: ARTIC SEALS solution: unique seals in polyester TPU with high elastic modulus, with an excellent compression set and high abrasion resistance, instead of the more common solution with O-ring + anti-extrusion ring.

VSS



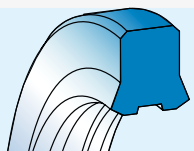
SSA
VSS
 FSA
 VRA
 OR
 OR-ANT
 RAE
 AKS
 AKC
 AKW
 AKN
 MAE

O-Ring Size	D _{H8}		d _{h9}		d _{1h9}		E _{+0,2}		ART / ITEM			
	inch	mm	inch	mm	inch	mm	inch	mm				
010	0,374	9,50	0,264	6,71	0,372	9,45	0,138	3,51	VSS	0095	0067	035 C0
011	0,436	11,07	0,326	8,28	0,434	11,02	0,138	3,51	VSS	0110	0083	035 C0
012	0,499	12,67	0,389	9,88	0,497	12,62	0,138	3,51	VSS	0127	0099	035 C0
013	0,561	14,25	0,451	11,46	0,559	14,20	0,138	3,51	VSS	0142	0115	035 C0
014	0,624	15,85	0,514	13,06	0,622	15,80	0,138	3,51	VSS	0158	0131	035 C0
015	0,686	17,42	0,576	14,63	0,684	17,37	0,138	3,51	VSS	0174	0146	035 C0
016	0,749	19,02	0,639	16,23	0,747	18,97	0,138	3,51	VSS	0190	0162	035 C0
017	0,811	20,60	0,701	17,81	0,809	20,55	0,138	3,51	VSS	0206	0178	035 C0
018	0,874	22,20	0,764	19,41	0,872	22,15	0,138	3,51	VSS	0222	0194	035 C0
019	0,936	23,77	0,826	20,98	0,934	23,72	0,138	3,51	VSS	0237	0210	035 C0
020	0,999	25,37	0,889	22,58	0,997	25,32	0,138	3,51	VSS	0254	0226	035 C0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Tenute statiche
 Static seals



FSA

TENUTA PER FLANGE SAE TIPO FSA

Descrizione

La guarnizione tipo FSA (Flange SAE) ha avuto in questi anni un notevole sviluppo in tutte quelle applicazioni statiche dove un normale o-ring in NBR non resiste a pressione e al gioco di accoppiamento elevati.

Lo speciale profilo, l'alto modulo elastico ed un ottimo compression-set eliminano il problema dell'estrusione e delle perdite nella flangiatura dei tubi.

Limiti d'impiego

Pressione: < 400 bar

Temperatura: da - 35° C a + 100° C, con punte fino a + 110° C

Fluidi: olio e grassi minerali, gas non aggressivi
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano tipo C0 ad alto modulo elastico ed a basso compression-set, con una elevata resistenza all'usura a 93 Shore A. Codice materiale: C0

Vantaggi

Ottima resistenza all'abrasione e all'estrusione.

Montaggio

E' importante eliminare gli spigoli vivi e le bave nella sede ed eseguire uno smusso di invito per facilitare il montaggio.

Il montaggio in cava aperta risulta molto semplice.

FSA TYPE SAE FLANGE SEAL

Description

The FSA seal type (SAE Flange) has recently known a significant development in all static applications where a normal NBR O-ring would not resist to pressure and high coupling clearance.

The specific profile and the high modulus of elasticity, together with an excellent compression-set, avoid extrusion and leakage problems in the tube flanging.

Technical data

Pressure: < 400 bar

Temperature: from - 35° C to + 100° C with peaks till + 110° C

Fluids: oil and mineral grease, non-aggressive gases
(see table 3, page 14)

Material

The proposed material is a "C0" type polyurethane, with high elasticity modulus, low compression-set and high abrasion resistance. The hardness is 93 Shore A $\pm$ 2.

Compound reference: C0

Advantages

Excellent abrasion and extrusion resistance.

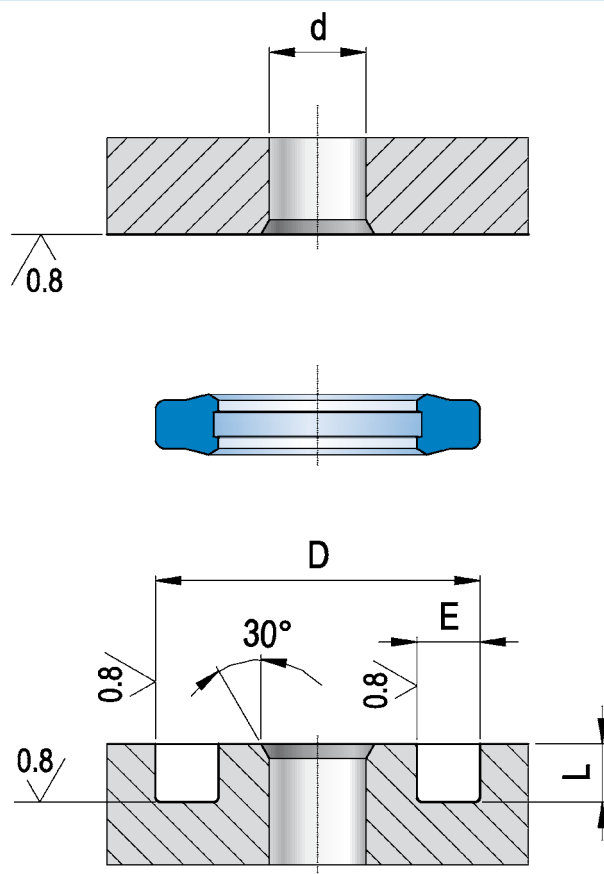
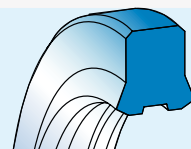
Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages.

It's also recommended to make a lead-in chamfer for easier assembling.

The installation in open housing is extremely simple.

FSA



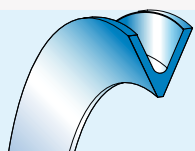
SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

INCH DIM.	d	D	E	L	ART / ITEM
		min – max			
1/2"	13,0	25,40 - 25,83	3,94 - 4,45	2,79 - 2,92	FSA 0500 CO
3/4"	19,0	31,75 - 31,88	3,94 - 4,45	2,79 - 2,92	FSA 0750 CO
1"	25,0	39,62 - 39,75	3,94 - 4,45	2,79 - 2,92	FSA 1000 CO
1" 1/4"	32,0	44,45 - 44,58	3,94 - 4,45	2,79 - 2,92	FSA 1250 CO
1" 1/2"	38,0	53,72 - 53,98	3,94 - 4,45	2,79 - 2,92	FSA 1500 CO
2"	51,0	63,25 - 63,50	3,94 - 4,45	2,79 - 2,92	FSA 2000 CO
2" 1/2"	63,0	76,45 - 76,70	3,94 - 4,45	2,79 - 2,92	FSA 2500 CO

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Tenute statiche
Static seals



VRA

GUARNIZIONE A V TIPO VRA

Descrizione

La guarnizione tipo VRA è stata studiata per proteggere snodi, cuscinetti, bronzine, flange e tutte quelle parti meccaniche che lavorano in moto rotatorio o semi rotatorio.

Questo tipo di profilo realizzato in materiale B0 a bassa deformazione permanente, impedisce ad acqua, fanghi e altre impurità di penetrare all'interno del componente.

La vasta gamma di diametri facilita il costruttore nella scelta dimensionale.

Limiti d'impiego

Pressione: non essendo una guarnizione di tipo tradizionale, la pressione di esercizio è quella necessaria al mantenimento del grasso all'interno del sistema.

Temperatura: da - 35° C a + 90° C

Fluidi: olio e grassi minerali, gas non aggressivi
(vedi tabella 3 a pagina 14)

Materiale

Poliuretano standard a 90 Shore A.

Codice materiale: B0

Montaggio

E' sufficiente ingrassare le parti metalliche dove va alloggiata la guarnizione con grasso minerale.

Spigoli e bave che danneggerebbero la tenuta vanno eliminati.

VRA TYPE V-SEAL

Description

The VRA seal type has been conceived to protect joints, bearings, bronze bushes, flanges and all the mechanical parts in rotation or semi-rotation.

Made of B0 material, having a low permanent deformation, it prevents water mud and other impurities penetration.

The wide range of diameters helps the Manufacturer selection.

Technical data

Pressure: *it is not a traditional seal, the working pressure is therefore the one resulting from keeping the grease within the system.*

Temperature: *from - 35° C to + 90° C*

Fluid: *mineral oil and grease, non-aggressive gas*
(see table 3, page 14)

Material

Standard polyurethane at 90 Shore A.

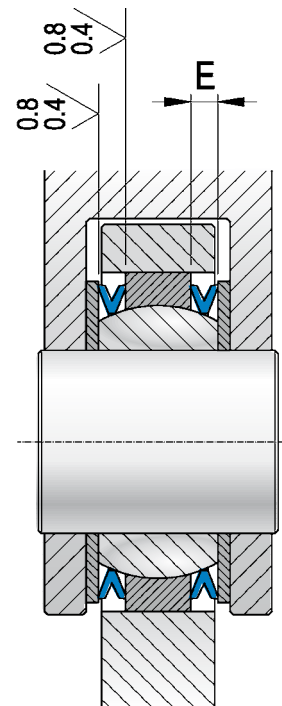
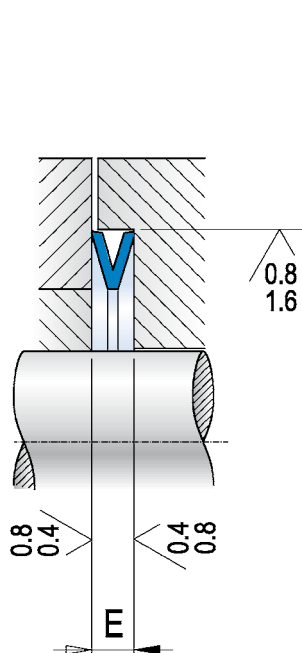
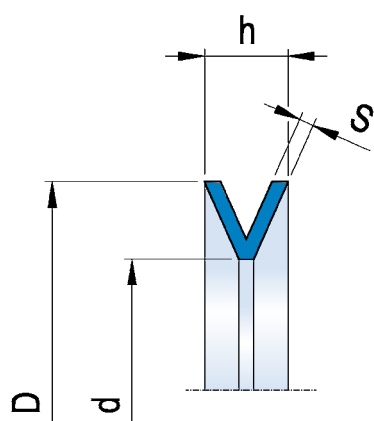
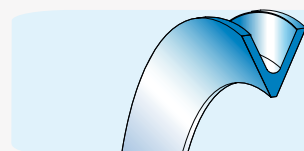
Compound reference: B0

Assembling

We recommend to lubricate the metal parts where the seal will be installed with mineral grease.

It is important to remove flashes or cutting edges otherwise they will reduce the sealing performance.

VRA



SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

D	d	h	E _{+0,2}	S	ART / ITEM
27,5	22,5	4,0	2,0	0,75	VRA 0275 0225 040 B0
38,5	31,0	4,5	2,0	0,75	VRA 0385 0310 045 B0
43,0	36,0	5,0	2,0	0,75	VRA 0430 0360 050 B0
51,0	42,0	6,0	2,5	0,80	VRA 0510 0420 060 B0
57,5	47,5	7,0	3,0	1,00	VRA 0575 0475 070 B0
59,0	50,5	5,0	2,5	1,00	VRA 0590 0505 050 B0
64,0	54,0	7,0	3,5	1,00	VRA 0640 0540 070 B0
71,0	59,0	7,0	3,5	1,00	VRA 0710 0590 070 B0
73,0	59,0	7,0	3,5	1,30	VRA 0730 0590 070 B0
80,0	65,0	7,0	3,5	1,00	VRA 0800 0650 070 B0
86,0	70,0	9,0	4,0	1,00	VRA 0860 0700 090 B0
86,0	71,0	9,0	4,0	1,00	VRA 0860 0710 090 B0

D	d	h	E _{+0,2}	S	ART / ITEM
88,8	70,0	8,0	3,5	1,20	VRA 0888 0700 080 B0
95,0	85,0	6,0	2,5	1,00	VRA 0950 0850 060 B0
100,0	82,0	9,0	4,5	1,25	VRA 1000 0820 090 B0
105,0	90,0	9,0	4,5	1,25	VRA 1050 0900 090 B0
112,0	96,0	10,0	5,0	1,50	VRA 1120 0960 100 B0
121,0	103,0	12,0	5,0	1,50	VRA 1210 1030 120 B0
142,0	116,0	16,5	7,5	1,50	VRA 1420 1160 165 B0
152,0	127,0	16,5	7,5	1,50	VRA 1520 1270 165 B0
186,0	160,0	16,0	7,5	2,00	VRA 1860 1600 160 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Tenute statiche
Static seals

Descrizione

La reperibilità di varie tipologie di materiali con differenti durezza, ha notevolmente ampliato il campo delle applicazioni. Anche se la forma toroidale è stata sostituita da altre tecnicamente più efficaci, la facilità di montaggio, la semplicità di esecuzione della sede ed il costo contenuto, hanno fatto dell'o-ring la tenuta più utilizzata.

Nel disegno di fig. 34 sono elencate le rugosità consigliate delle sedi del pistone e dello stelo.

Even if the toroidal shape has been replaced in some cases by more engineered shapes, the facility in the assembling, the simple groove construction and the limited cost made the O-ring the most used sealing.

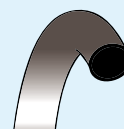
In Fig. 34 the drawing indicates the suggested roughness for piston and rod grooves.

The graph illustrates the relationship between the coupling radial (mm) and the pressure (bar) for three different shaft diameters: 70 sh, 90 sh, and RAE. The y-axis represents the coupling radial (mm) and ranges from 0.05 to 0.40. The x-axis represents the pressure (bar) and ranges from 50 to 500. Three curves are plotted, each corresponding to a different shaft diameter. The curves show that the coupling radial decreases as the pressure increases. The RAE curve is the highest, followed by the 90 sh curve, and the 70 sh curve is the lowest.

Pressure (bar)	70 sh (mm)	90 sh (mm)	RAE (mm)
50	0.33	-	-
75	0.25	0.33	-
100	0.18	0.25	0.33
125	0.13	0.18	0.25
150	0.10	0.13	0.20
175	0.08	0.10	0.16
200	0.07	0.08	0.13
225	-	0.07	0.10
250	-	0.06	0.08
275	-	-	0.06
300	-	-	0.05

[illegible]

O-Rings



Materiale

Esistono, come indicato nella descrizione, varie mescole e varie durezza per l'o-rings. Qui di seguito ne elenchiamo alcuni tipi ed il relativo utilizzo:

Mescole in NBR di durezza 70 Shore A standard e 90 Shore A a richiesta:

Mescole di impiego generico sia in oleodinamica che in pneumatica.

Hanno una bassa deformazione permanente e resistono molto bene ai fluidi come olio minerale, olio vegetale, grassi e composti con acqua e glicole con temperatura inferiore a 60° C.

Il range di temperatura in esercizio è compreso tra -25° C e +100° C con punte per periodi brevi fino a 120° C.

Mescole in HNBR di durezza 70 Shore A standard e 75 Shore A a richiesta:

Mescole di base come l'NBR ma con doppio legame del componente butadiene.

E' una mescola idrogenata utilizzata per impieghi a temperatura di 140° C e per periodi brevi anche a 150° C, dove la comune gomma in NBR non resiste. E' compatibile con grassi, oli minerali e vegetali e si comporta molto bene all'ossidazione.

Mescole in EPDM di durezza 70 Shore A standard e 75 Shore A, a richiesta:

Sono mescole impiegate in presenza di acqua, acqua calda, fluido per freni, fluido antigelo, glicoli ed hanno un range di temperatura compreso tra -40° C e +150° C.

Mescole in FKM di durezza 70 Shore A standard e 90 Shore A a richiesta:

Mescole in elastomero fluorurato utilizzato in applicazioni con elevate temperature e dove si richiede una inerzia chimica straordinaria.

Impiegate a contatto con solventi aromatici, fluidi a base di esteri fosforici, lubrificanti sintetici e acidi concentrati.

Possono essere utilizzate in un range di temperatura compreso tra i -15° C e +200° C.

Mescole in VMQ di durezza di 65/70 Shore A:

Mescole utilizzate nell'industria alimentare e nell'industria medicale. Hanno ottimi risultati in acqua calda, ossigeno ed ozono.

Il range di temperature molto ampio (da -60° C a +220° C) allarga il campo di applicazioni.

Tutte le compatibilità con queste mescole disponibili nella tabella 1 pagina 12.

Material

There are, as indicated before, different compounds and hardness for O-rings.

Some of the materials and applications are listed hereafter.

NBR 70 Shore A standard compound, NBR90 Shore A on demand:

They can be used for hydraulic and pneumatic applications.

They present low compression-set and they have a very good resistance to fluids like mineral oil, vegetal oil, greases and water-glycol compounds at temperatures not to exceeding 60° C.

The operating temperature ranges is from -25° C to +100° C, with short peaks up to 120° C.

HNBR 70 Shore A standard compound and HNBR75 Shore A on demand:

As the NBR they're basic compounds but with a double butadiene bond. It is a hydrogenated material and it can be used in applications where the normal rubber does not perform at temperatures of 140° C even with peaks of 150° C.

It is compatible with greases, mineral and vegetable oils has good behaviour against oxidation.

EPDM 70 Shore A standard compound and EPDM 75 Shore A on demand:

They can be used with water, hot water, fluids for brakes circuits, antifreeze fluid, glycols and the temperature range is from -40° C to +150° C.

FKM 75 Shore A standard compounds and FKM90 Shore A on demand:

Fluorinated elastomer compounds for high temperature applications and where high chemical inertia is requested.

They can be used in the contact with aromatic solvents, ester-phosphoric based fluids, synthetic lubricants and concentrated acids with temperature range from -15° C to +200° C.

VMQ 65/70 Shore A compounds:

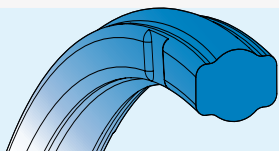
They're mainly used in the food and medical industry. They give excellent results in hot water, oxygen and ozone.

The wide temperature range (from -60° C to +220° C) allows the use in several application.

For all the compounds compatibilities see table 1, page 12.

SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

Tenute statiche
Static seals



NEW INNOVATIVE O-Ring Anti-Rolling®

PATENT PENDING
NO. MI2010A001639

Descrizione

La guarnizione O-Ring Anti-Rolling® presenta un innovativo profilo studiato appositamente per superare i limiti tecnici spesso riscontrati con l'utilizzo del classico O-Ring.

Innanzitutto, le protusioni laterali addossate alla sezione torica centrale, realizzano l'effetto anti-rotolamento dell'O-Ring all'interno della sede. Esse prevengono ogni eventuale torsione della corda, sia in fase di montaggio che durante l'esercizio.

La sua particolare geometria inoltre evita l'utilizzo di anelli antiestrusione garantendo al tempo stesso la totale assenza di estrusione, in quanto la superficie di tenuta rimane costantemente distante dal fondo della sede.

La presenza di notches posizionati sulle protusioni evita l'incollaggio dell'O-Ring alle pareti della sede. Essi inoltre fungono da sfiato in caso di residuo di pressione.

Materiali

L'OR Anti-Rolling® può essere realizzato in TPU, NBR, FKM, HNBR nelle diverse durezze disponibili. Prego contattare il nostro ufficio tecnico per studiare la soluzione più adeguata in base alle condizioni di esercizio specifiche dell'applicazione.

Description

The Anti-Rolling® O-Ring is an innovative seal technology designed to avoid the spiral failure mode of the standard O-Rings in radial applications.

The addition of axial protrusions prevents the seal from twisting in the groove during installation and reciprocating movement.

Additionally, the protrusions position the sealing surface away from the damaging effects of the extrusion gap, eliminating the need for separate anti-extrusion (back-up) rings.

The presence of notches, positioned on both protrusions, prevents bonding of O-Ring on the walls of the groove. They also realize venting-effect in case of residual pressure.

Materiali

The Anti-Rolling® O-Ring could be produced in TPU, NBR, FKM, HNBR in a wide range of grades available. Please contact our technical department to study the appropriate solution according to the specific operating conditions of the application.

Fig.35 - Pic.35:

Perfettamente intercambiabile con la soluzione O-Ring + Anelli antiestrusione permette di utilizzare e tenere a stock un particolare solo

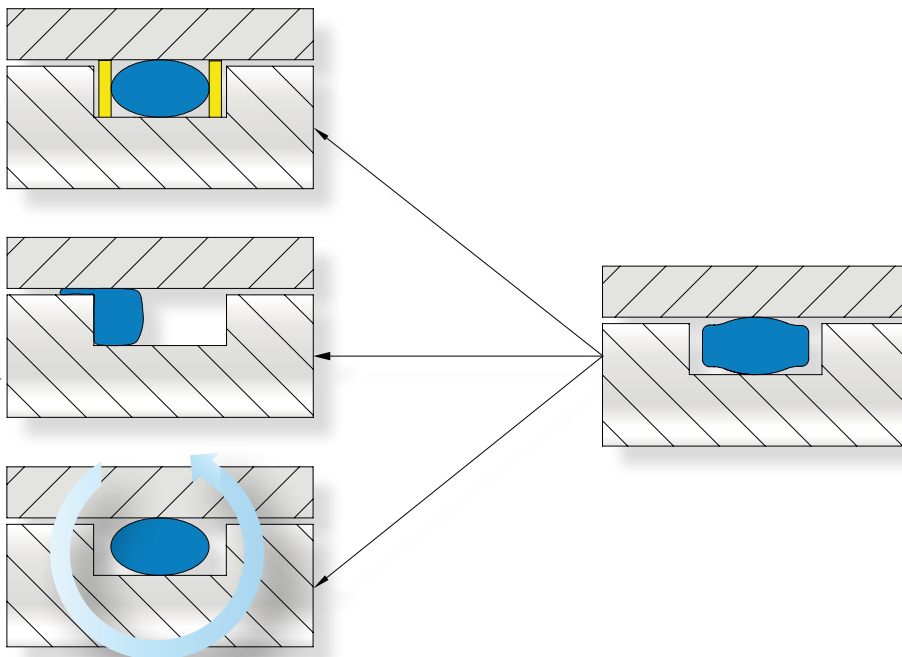
Fully interchangeable with solution O-Ring+Backup Rings, more efficient stock manage due to use only one item.

La sua particolare geometria garantisce la totale assenza di estrusione in quanto la superficie di tenuta rimane distante dal fondo della sede

The particular geometry ensures the complete absence of extrusion, because the the protrusions position the sealing surface away from the damaging effects of the extrusion gap.

La protusioni laterali addossate alla sezione torica centrale realizzano l'effetto Anti-Rotolamento, esse prevengono ogni tipo di torsione sia in fase di montaggio che in fase di esercizio.

The lateral protrusion leaned to the central toric section, realize the Anti-Rolling effect, they prevent any twisting both during intallation and exercise.



PATENT PENDING
NO. MI2010A001639

NEW INNOVATIVE O-Ring Anti-Rolling®

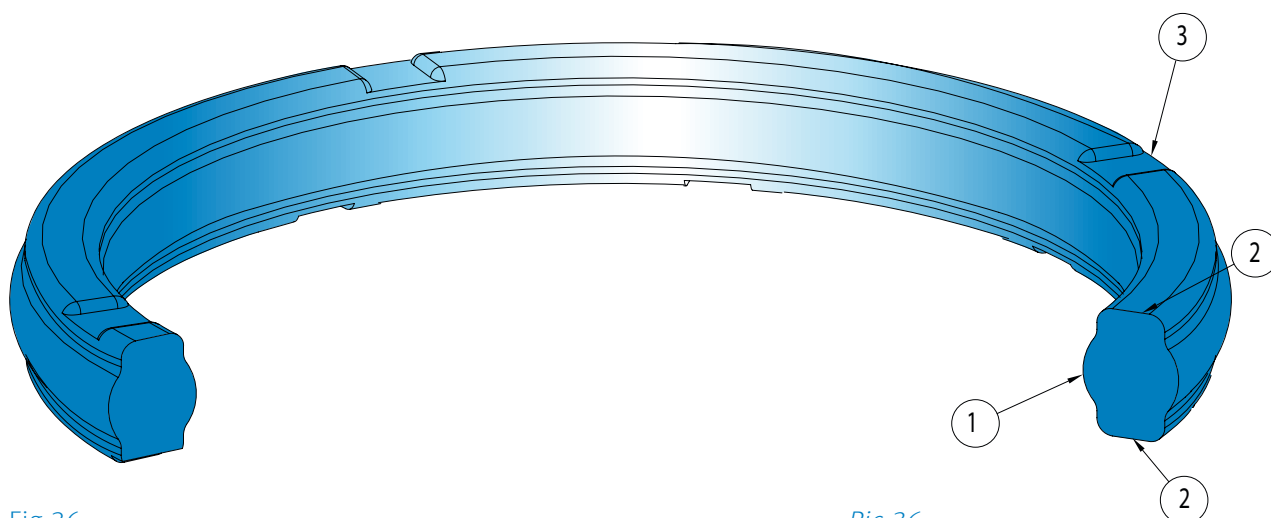
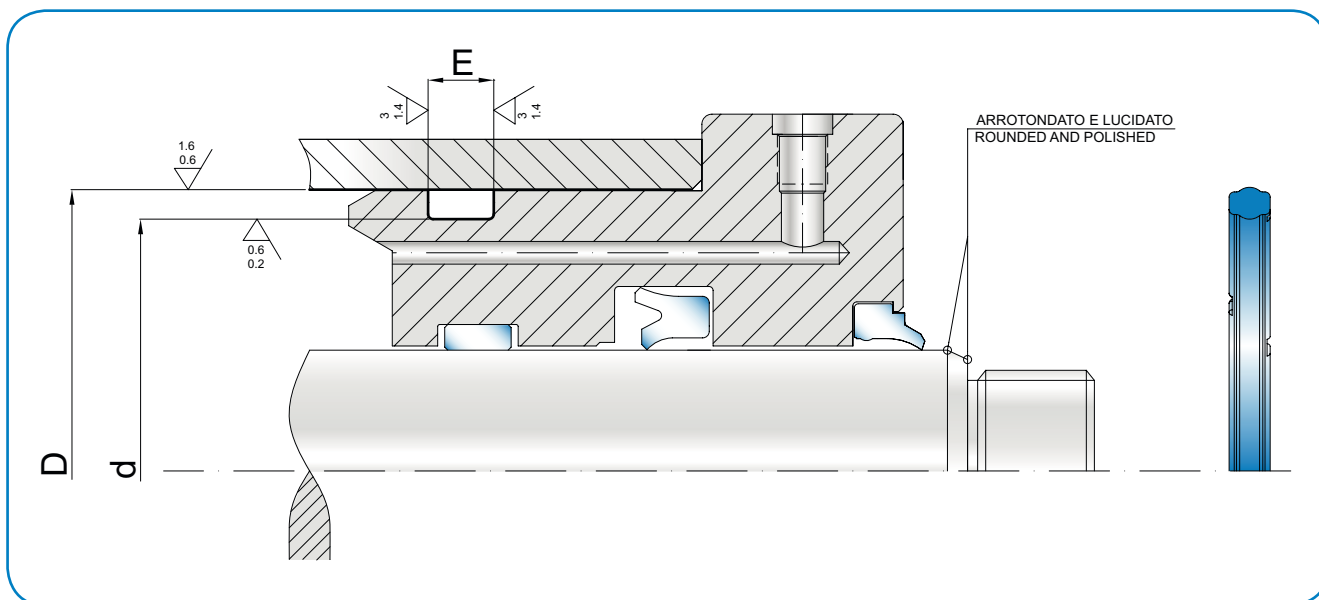
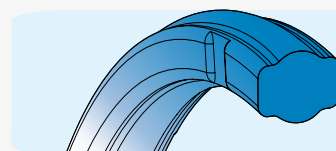


Fig.36:

- 1- Sezione Torica
- 2- Protusioni laterali anti-rolling
- 3- Notches di sfiato e anti-incollaggio

Pic.36:

- 1- Toric central Section
- 2- Lateral Anti-Rolling Protusion
- 3- Notches Ventil-Effect and anti-bonding

Tenute statiche
Static seals



Anelli antiestrusione *Back-up Rings*

ANELLI ANTIESTRUSIONE

Descrizione

Come descritto in precedenza, la tenuta con O-Ring è la più semplice ed anche la più economica in condizioni di lavoro non gravose.

Quando si è in presenza di pressioni più elevate il solo O-Ring non è sufficiente. In questo specifico caso bisogna montare O-Ring con uno o due anelli antiestrusione, per il semplice o doppio effetto. Nella gamma degli anelli antiestrusione abbiamo vari tipi di materiale: il PTFE, l'NBR e il TPE (termoplastico elastomero).

Dati tecnici

Pressione: <400 bar per il tipo RAE-MAE
<200 bar per il tipo AKN
<300 per i tipi AKC-AKS-AKW
Velocità: <1 m/s
Temperatura: da - 20°C a 120°C per i tipi RAE ed AKN
-20°C÷+200°C per i tipi AKC,AKS ed AKW
compatibilmente con l'O-Ring montato
Fluidi: fluidi idraulici a base minerale (vedi tabella 3 a pagina 14)

Materiale

I vari tipi di materiali proposti sono:

- TPE (termoplastico elastomero) per il tipo RAE-MAE
- NBR 90 Shore A per il tipo AKN
- PTFE per i tipi AKC-AKS-AKW

Montaggio

Il montaggio avviene in cava chiusa con la sequenza anello antiestrusione poi O-Ring.

BACK UP RINGS

Description

As described above, the sealing with O-Ring is the simplest and the most economic solution for not heavy working conditions.

But when there are high pressures the O-Ring alone is not enough. In this specific case we must mount O-ring with one or two anti-extrusion rings, for the simple or double effect.

In the range of anti-extrusion rings there're different materials: PTFE, NBR and TPE (thermoplastic elastomer).

Technical data

Pressure: <400 bar for type RAE-MAE
<200 bar for type AKN
<300 bar for type AKC-AKS-AKW
Speed: < 1 m/s
Temperature: from - 20°C to +120°C for type RAE and AKN
From -20°C to +200°C for type AKC,AKS and AKW
depending on the O-Ring
Fluids: mineral hydraulic fluids (see table 3, page 14)

Material

The different proposed materials are:

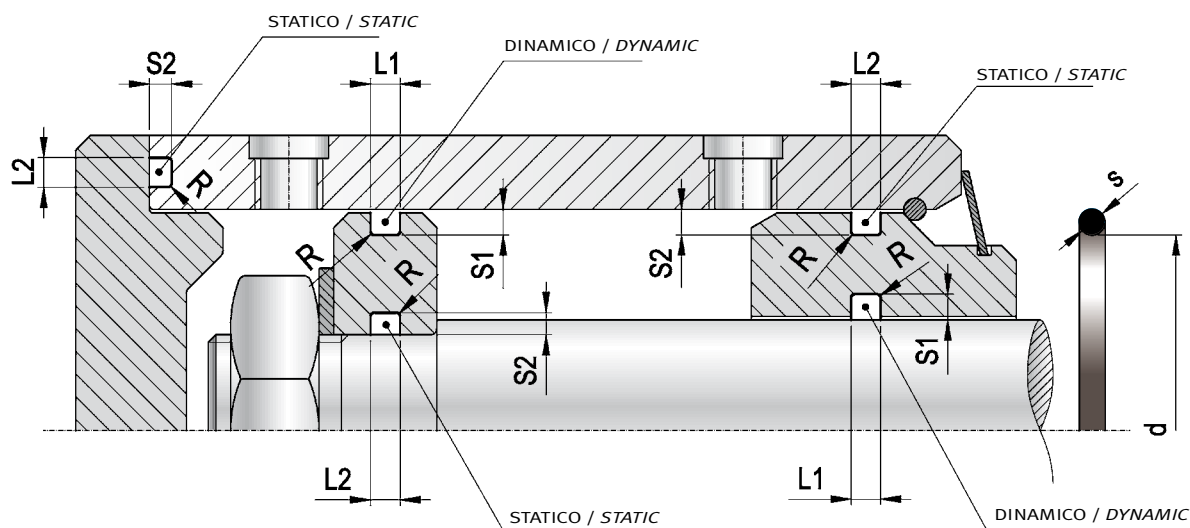
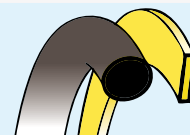
- TPE (thermoplastic elastomer) for type RAE-MAE
- NBR 90 Shore A for type AKN
- PTFE for types AKC-AKS-AKW

Assembling

The assembling is done in closed groove fitting the Anti-extrusion-ring before and the O-Ring after.

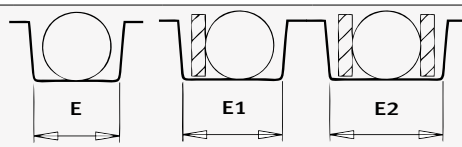
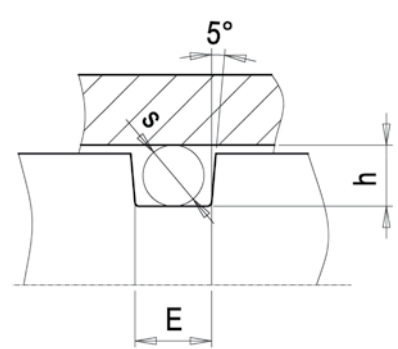
O-Rings + Anelli antiestrusione

O-Rings + Back-up Rings



SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

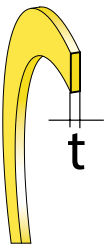
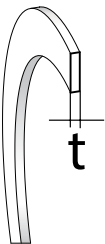
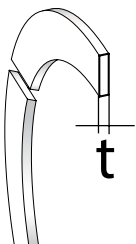
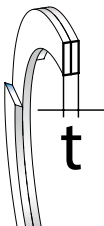
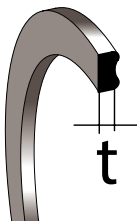
S sezione section	S1 sezione dinamica dynamic section	L1 sezione dinamica dynamic section	S2 sezione statica static section	L2 sezione statica static section	R raggio radius
1,78 ± 0,08	1,45 ± 0,05	2,40 ± 0,20	1,30 ± 0,05	2,60 ± 0,20	0,30 ± 0,10
2,62 ± 0,09	2,25 ± 0,05	3,60 ± 0,20	2,00 ± 0,05	3,80 ± 0,20	0,40 ± 0,15
3,53 ± 0,10	3,10 ± 0,05	4,80 ± 0,20	2,70 ± 0,05	5,00 ± 0,20	0,50 ± 0,20
5,34 ± 0,15	4,70 ± 0,05	7,10 ± 0,20	4,30 ± 0,05	7,30 ± 0,20	0,60 ± 0,25
6,99 ± 0,15	6,10 ± 0,05	9,50 ± 0,20	5,80 ± 0,05	9,70 ± 0,20	1,00 ± 0,30

DIMENSIONI SEDE GROOVE DIMENSION				S	h
	E	E1	E2		
	2,5	4,0	5,5	1,78	1,45
	3,5	5,0	6,5	2,62	2,25
	4,5	6,0	7,5	3,53	3,10
	7,0	9,0	10,5	5,34	4,70
	9,5	12,0	14,5	6,99	6,10

Tenute statiche
Static seals

Tipi anelli antiestrusione

Antiextrusion rings types

RAE-MAE	AKS	AKC	AKW	AKN
				
TPE 55 shore D	PTFE	PTFE	PTFE	NBR 90 Shore A

Sez Corda O-Ring O-Ring CS	t				
	RAE	AKS	AKC	AKW	AKN
1,78	1,4	1,23	1,27	1,5	1,14
2,62	1,4	1,23	1,27	1,5	1,14
3,53	1,4	1,23	1,27	1,5	1,02
5,34	1,7	1,78	1,85	2,0	1,52
6,99	2,5	2,67	2,74	2,5	2,44

Esempio richiesta d'ordine

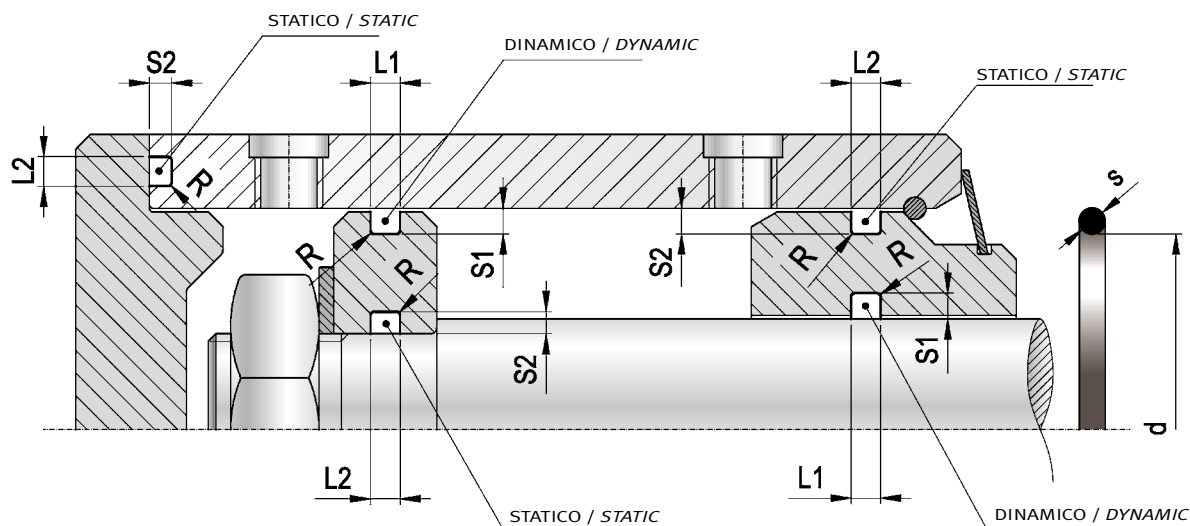
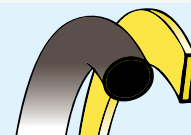
Per un o-ring 150:

Example for order request

For one o-ring 150:

Rif. anello antiestrusione		rif. O-Ring			Artic rif.
tipo type	materiale material	diametro diameter	rif. AS-BS AS-BS ref.	rif. ITA ITA ref.	Articolo / Item
RAE-MAE	TPE 55 Shore D	72,96 ± 0,64	150	3287	RAE 07296 00262 L1
AKS	PTFE	72,96 ± 0,64	150	3287	AKS 07296 00262 T0
AKC	PTFE	72,96 ± 0,64	150	3287	AKC 07296 00262 T0
AKW	PTFE	72,96 ± 0,64	150	3287	AKW 07296 00262 T0
AKN	NBR 90 Shore A	72,96 ± 0,64	150	3287	AKN 07296 00262 N0

OR+RAE

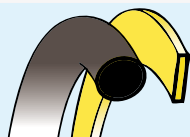


SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

S	S1	L1	S2	L2	R
1,78 ± 0,08	1,45 ± 0,05	2,40 ± 0,20	1,30 ± 0,05	2,60 ± 0,20	0,30 ± 0,10

d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
1,78	0,13	004	2007	RAE	00178	00178	L1
2,57	0,14	005	2010	RAE	00257	00178	L1
2,90	0,14	006	2012	RAE	00290	00178	L1
3,68	0,14	007	2015	RAE	00368	00178	L1
4,47	0,14	008	2018	RAE	00447	00178	L1
5,28	0,15	009	2019	RAE	00528	00178	L1
6,07	0,15	010	2025	RAE	00607	00178	L1
6,75	0,16	610	106	RAE	00675	00178	L1
7,65	0,16	011	2031	RAE	00765	00178	L1
8,73	0,17	611	108	RAE	00873	00178	L1
9,25	0,17	012	2037	RAE	00925	00178	L1
10,82	0,18	013	2043	RAE	01082	00178	L1
11,11	0,18	806	114	RAE	01111	00178	L1
12,42	0,19	014	2050	RAE	01242	00178	L1
14,00	0,20	015	2056	RAE	01400	00178	L1
15,60	0,20	016	2062	RAE	01560	00178	L1
17,17	0,21	017	2068	RAE	01717	00178	L1
18,77	0,22	018	2075	RAE	01877	00178	L1
20,35	0,23	019	2081	RAE	02035	00178	L1
21,95	0,24	020	2087	RAE	02195	00178	L1
23,52	0,24	021	2093	RAE	02352	00178	L1
25,12	0,26	022	2100	RAE	02512	00178	L1
26,07	0,28	023	2106	RAE	02607	00178	L1
28,30	0,29	024	2112	RAE	02830	00178	L1

Tenute statiche
Static seals

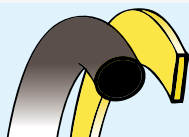


OR+RAE

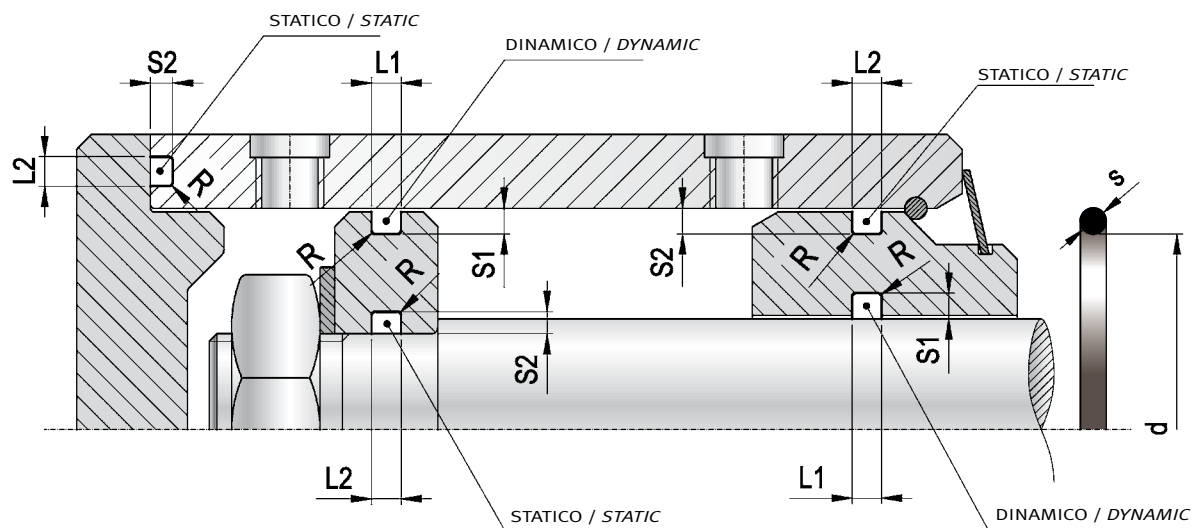
d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
29,87	0,29	025	2118	RAE	02987	00178	L1
31,47	0,31	026	2125	RAE	03147	00178	L1
33,05	0,32	027	2131	RAE	03305	00178	L1
34,65	0,33	028	2137	RAE	03465	00178	L1
37,82	0,37	029	2150	RAE	03782	00178	L1
41,00	0,39	030	2162	RAE	04100	00178	L1
44,17	0,42	031	2175	RAE	04417	00178	L1
47,35	0,44	032	2187	RAE	04735	00178	L1
50,52	0,47	033	2200	RAE	05052	00178	L1
53,70	0,50	034	2212	RAE	05370	00178	L1
56,87	0,52	035	2225	RAE	05687	00178	L1
60,05	0,55	036	2237	RAE	06005	00178	L1
63,22	0,58	037	2250	RAE	06322	00178	L1
66,40	0,59	038	2262	RAE	06640	00178	L1
69,57	0,63	039	2275	RAE	06957	00178	L1
72,75	0,64	040	2287	RAE	07275	00178	L1
75,92	0,67	041	2300	RAE	07592	00178	L1
82,27	0,71	042	2325	RAE	08227	00178	L1
88,62	0,77	043	2350	RAE	08862	00178	L1
94,97	0,81	044	2375	RAE	09497	00178	L1
101,32	0,87	045	2400	RAE	10132	00178	L1
107,67	0,91	046	2425	RAE	10767	00178	L1
114,02	0,95	047	2450	RAE	11402	00178	L1
120,37	1,00	048	2475	RAE	12037	00178	L1

Note

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, acting as a margin. The rest of the page is covered by the blue grid pattern. There are no other markings, text, or drawings on the paper.



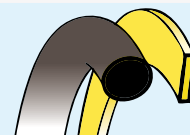
OR+RAE



S	S1	L1	S2	L2	R
2,62 ± 0,09	2,25 ± 0,05	3,60 ± 0,2	2,00 ± 0,05	3,80 ± 0,2	0,4 ± 0,15

d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
9,13	0,17	109	-	RAE	00913	00262	L1
9,19	0,17	110	3037	RAE	00919	00262	L1
9,92	0,17	613	112	RAE	00992	00262	L1
10,77	0,18	111	3043	RAE	01077	00262	L1
11,91	0,19	614	115	RAE	01191	00262	L1
12,37	0,19	112	3050	RAE	01237	00262	L1
13,10	0,19	615	117	RAE	01310	00262	L1
13,94	0,19	113	3056	RAE	01394	00262	L1
15,08	0,20	616	119	RAE	01508	00262	L1
15,54	0,20	114	3062	RAE	01554	00262	L1
15,88	0,20	809	121	RAE	01588	00262	L1
17,21	0,21	115	3068	RAE	01721	00262	L1
17,86	0,21	617	123	RAE	01786	00262	L1
18,72	0,22	116	3075	RAE	01872	00262	L1
20,29	0,23	117	3081	RAE	02029	00262	L1
20,63	0,23	812	128	RAE	02063	00262	L1
21,89	0,23	118	3087	RAE	02189	00262	L1
22,22	0,24	813	130	RAE	02222	00262	L1
23,47	0,24	119	3093	RAE	02347	00262	L1
23,81	0,25	814	132	RAE	02381	00262	L1
25,07	0,26	120	3100	RAE	02507	00262	L1

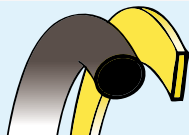
OR+RAE



d	toll ±	AS-BS	ITA	ARTICOLO / ITEM			
		o-ring	altro rif. alternative ref.	RAE (X 100)			
26,64	0,28	121	3106	RAE	02664	00262	L1
28,24	0,29	122	3112	RAE	02824	00262	L1
29,82	0,29	123	3118	RAE	02982	00262	L1
31,42	0,31	124	3123	RAE	03142	00262	L1
32,99	0,32	125	3131	RAE	03299	00262	L1
34,60	0,33	126	3137	RAE	03460	00262	L1
36,14	0,35	127	3143	RAE	03614	00262	L1
37,77	0,37	128	3150	RAE	03777	00262	L1
39,34	0,38	129	3156	RAE	03934	00262	L1
40,95	0,39	130	3162	RAE	04095	00262	L1
42,52	0,40	131	3168	RAE	04252	00262	L1
44,12	0,42	132	3175	RAE	04412	00262	L1
45,69	0,43	133	3181	RAE	04569	00262	L1
47,30	0,44	134	3187	RAE	04730	00262	L1
48,90	0,46	135	3193	RAE	04890	00262	L1
50,47	0,47	136	3200	RAE	05047	00262	L1
52,07	0,48	137	3206	RAE	05207	00262	L1
53,65	0,50	138	3212	RAE	05365	00262	L1
55,25	0,51	139	3218	RAE	05525	00262	L1
56,82	0,52	140	3225	RAE	05682	00262	L1
58,42	0,54	141	3231	RAE	05842	00262	L1
60,00	0,55	142	3237	RAE	06000	00262	L1
61,60	0,56	143	3243	RAE	06160	00262	L1
63,17	0,58	144	3250	RAE	06317	00262	L1
64,77	0,58	145	3256	RAE	06477	00262	L1
66,35	0,59	146	3262	RAE	06635	00262	L1
67,95	0,61	147	3268	RAE	06795	00262	L1
69,52	0,63	148	3275	RAE	06952	00262	L1
71,12	0,64	149	3281	RAE	07112	00262	L1
72,96	0,64	150	3287	RAE	07296	00262	L1
75,87	0,67	151	3300	RAE	07587	00262	L1
82,22	0,71	152	3325	RAE	08222	00262	L1
88,57	0,77	153	3350	RAE	08857	00262	L1
94,92	0,81	154	3375	RAE	09492	00262	L1
101,27	0,87	155	3400	RAE	10127	00262	L1
107,62	0,91	156	3425	RAE	10762	00262	L1
113,97	0,95	157	3450	RAE	11397	00262	L1
120,33	1,00	158	3475	RAE	12033	00262	L1
126,67	1,05	159	3500	RAE	12667	00262	L1
133,00	1,10	160	3525	RAE	13300	00262	L1
139,38	1,13	161	3550	RAE	13938	00262	L1
145,72	1,20	162	3575	RAE	14572	00262	L1

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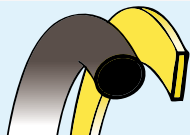


OR+RAE

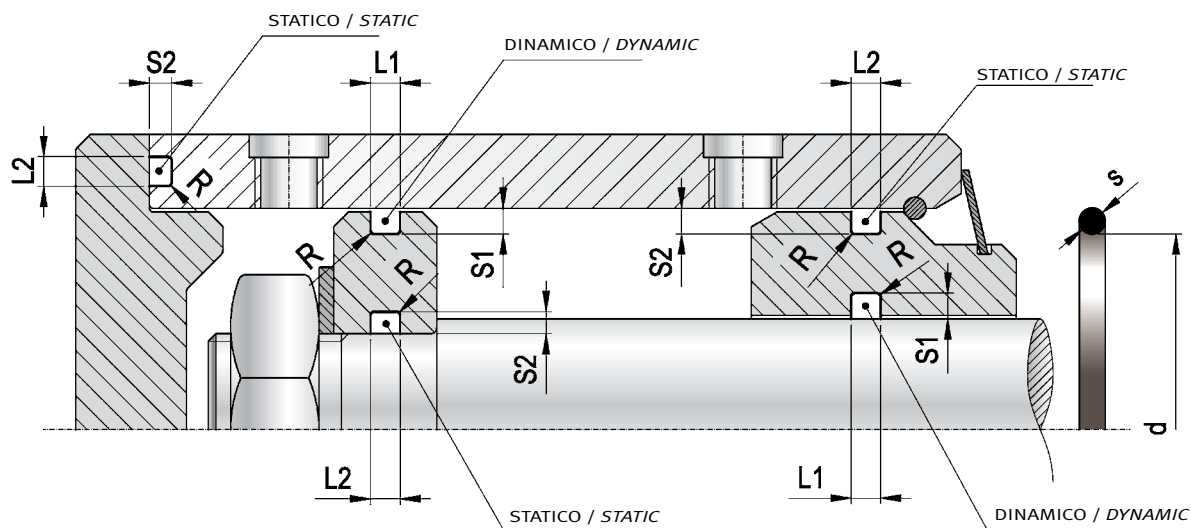
d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
152,07	1,24	163	3600	RAE	15207	00262	L1
158,43	1,27	164	3625	RAE	15843	00262	L1
164,78	1,31	165	3650	RAE	16478	00262	L1
171,13	1,38	166	3675	RAE	17113	00262	L1
177,84	1,41	167	3700	RAE	17784	00262	L1
183,83	1,44	168	3725	RAE	18383	00262	L1
190,18	1,51	169	3750	RAE	19018	00262	L1
196,53	1,55	170	3775	RAE	19653	00262	L1
202,88	1,59	171	3800	RAE	20288	00262	L1
209,23	1,63	172	3825	RAE	20923	00262	L1
215,58	1,67	173	3850	RAE	21558	00262	L1
221,93	1,71	174	3875	RAE	22193	00262	L1
228,28	1,75	175	3900	RAE	22828	00262	L1

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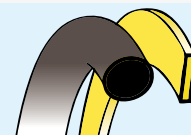
OR+RAE



S	S1	L1	S2	L2	R
3,53 ± 0,1	3,10 ± 0,05	4,80 ± 0,2	2,70 ± 0,05	5,00 ± 0,2	0,5 ± 0,2

d	toll ±	AS-BS		ARTICOLO / ITEM			
		o-ring	ITA altro rif. alternative ref.	RAE (X 100)			
18,64	0,22	210	4075	RAE	01864	00353	L1
20,22	0,23	211	4081	RAE	02022	00353	L1
21,82	0,24	212	4087	RAE	02182	00353	L1
23,40	0,24	213	4093	RAE	02340	00353	L1
24,99	0,25	214	4100	RAE	02499	00353	L1
25,80	0,26	618	134	RAE	02580	00353	L1
26,58	0,28	215	4106	RAE	02658	00353	L1
28,17	0,29	216	4112	RAE	02817	00353	L1
29,75	0,29	217	4118	RAE	02975	00353	L1
31,34	0,31	218	4125	RAE	03134	00353	L1
32,92	0,32	219	4131	RAE	03292	00353	L1
34,52	0,34	220	4137	RAE	03452	00353	L1
36,09	0,35	221	4143	RAE	03609	00353	L1
37,69	0,37	222	4150	RAE	03769	00353	L1
39,69	0,38	824	144	RAE	03969	00353	L1
40,87	0,39	223	4162	RAE	04087	00353	L1
41,28	0,40	825	146	RAE	04128	00353	L1
42,86	0,41	826	147	RAE	04286	00353	L1
44,04	0,42	224	4175	RAE	04404	00353	L1
44,45	0,42	827	149	RAE	04445	00353	L1
46,04	0,43	828	150	RAE	04604	00353	L1

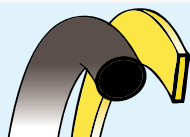
OR+RAE



		AS-BS	ITA	ARTICOLO / ITEM			
d	toll ±	o-ring	altro rif. alternative ref.	RAE (X 100)			
47,22	0,44	225	4187	RAE	04722	00353	L1
47,63	0,45	829	152	RAE	04763	00353	L1
49,21	0,46	830	153	RAE	04921	00353	L1
50,39	0,47	226	4200	RAE	05039	00353	L1
50,80	0,47	831	155	RAE	05080	00353	L1
52,39	0,48	832	156	RAE	05239	00353	L1
53,57	0,50	227	4212	RAE	05357	00353	L1
53,98	0,50	833	158	RAE	05398	00353	L1
55,56	0,51	834	159	RAE	05556	00353	L1
56,74	0,52	228	4225	RAE	05674	00353	L1
57,15	0,54	835	161	RAE	05715	00353	L1
58,74	0,54	836	162	RAE	05874	00353	L1
59,92	0,54	229	4237	RAE	05992	00353	L1
60,33	0,55	837	164	RAE	06033	00353	L1
61,91	0,56	838	165	RAE	06191	00353	L1
63,09	0,58	230	4250	RAE	06309	00353	L1
63,50	0,58	839	167	RAE	06350	00353	L1
65,09	0,59	840	168	RAE	06509	00353	L1
66,27	0,59	231	4262	RAE	06627	00353	L1
66,68	0,59	841	170	RAE	06668	00353	L1
68,26	0,61	842	171	RAE	06826	00353	L1
69,44	0,63	232	4275	RAE	06944	00353	L1
69,85	0,63	843	173	RAE	06985	00353	L1
71,44	0,64	844	174	RAE	07144	00353	L1
72,62	0,64	233	4287	RAE	07262	00353	L1
73,03	0,66	845	176	RAE	07303	00353	L1
74,61	0,66	846	177	RAE	07461	00353	L1
75,79	0,67	234	4300	RAE	07579	00353	L1
78,97	0,69	235	4312	RAE	07897	00353	L1
82,14	0,71	236	4325	RAE	08214	00353	L1
85,32	0,75	237	4337	RAE	08532	00353	L1
88,49	0,77	238	4350	RAE	08849	00353	L1
91,67	0,79	239	4362	RAE	09167	00353	L1
94,84	0,81	240	4375	RAE	09484	00353	L1
98,02	0,84	241	4387	RAE	09802	00353	L1
101,19	0,87	242	4400	RAE	10119	00353	L1
104,37	0,89	243	4412	RAE	10437	00353	L1
107,54	0,91	244	4425	RAE	10754	00353	L1
110,72	0,93	245	4437	RAE	11072	00353	L1
113,89	0,95	246	4450	RAE	11389	00353	L1
117,07	0,97	247	4462	RAE	11707	00353	L1
120,24	1,00	248	4475	RAE	12024	00353	L1

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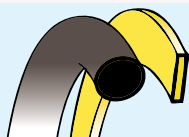


OR+RAE

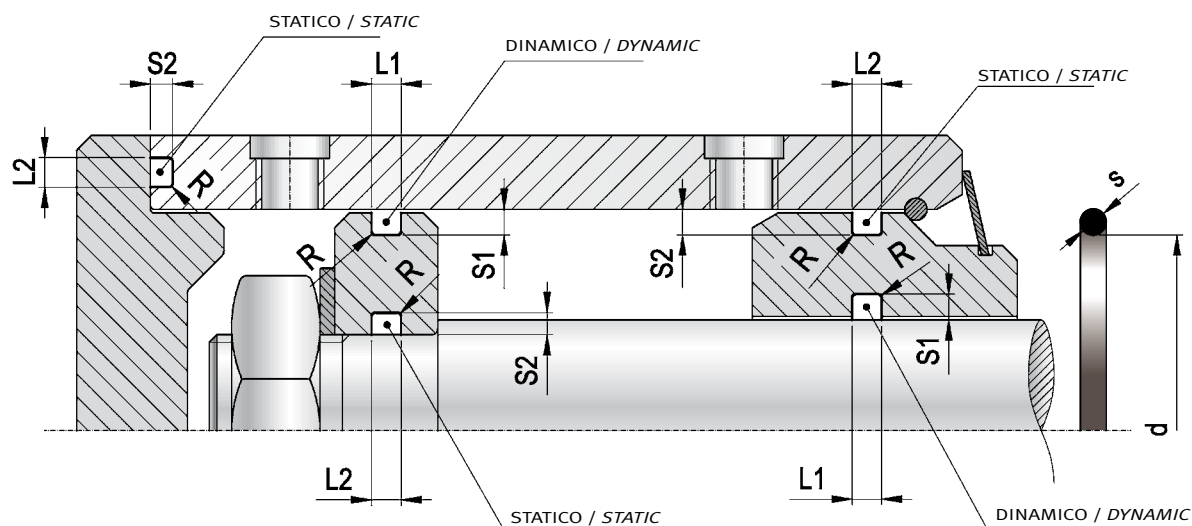
d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
123,42	1,03	249	4487	RAE	12342	00353	L1
126,59	1,05	250	4500	RAE	12659	00353	L1
129,77	1,08	251	4512	RAE	12977	00353	L1
132,94	1,10	252	4525	RAE	13294	00353	L1
136,12	1,13	253	4537	RAE	13612	00353	L1
139,29	1,13	254	4550	RAE	13929	00353	L1
142,47	1,17	255	4562	RAE	14247	00353	L1
145,64	1,20	256	4575	RAE	14564	00353	L1
148,82	1,20	257	4587	RAE	14882	00353	L1
151,99	1,24	258	4600	RAE	15199	00353	L1
158,34	1,27	259	4625	RAE	15834	00353	L1
164,69	1,31	260	4650	RAE	16469	00353	L1
171,04	1,38	261	4675	RAE	17104	00353	L1
177,39	1,41	262	4700	RAE	17739	00353	L1
183,74	1,44	263	4725	RAE	18374	00353	L1
190,09	1,51	264	4750	RAE	19009	00353	L1
196,44	1,55	265	4775	RAE	19644	00353	L1
202,79	1,59	266	4800	RAE	20279	00353	L1
209,14	1,63	267	4825	RAE	20914	00353	L1
215,49	1,67	268	4850	RAE	21549	00353	L1
221,84	1,71	269	4875	RAE	22184	00353	L1
228,19	1,75	270	4900	RAE	22819	00353	L1
234,54	1,79	271	4925	RAE	23454	00353	L1
240,89	1,83	272	4950	RAE	24089	00353	L1
247,24	1,88	273	4975	RAE	24724	00353	L1
253,59	1,93	274	41000	RAE	25359	00353	L1
266,29	2,02	275	41050	RAE	26629	00353	L1
278,99	2,08	276	41100	RAE	27899	00353	L1
291,69	2,21	277	41150	RAE	29169	00353	L1
304,39	2,25	278	41200	RAE	30439	00353	L1
329,79	2,43	279	41300	RAE	32979	00353	L1
355,19	2,62	280	41400	RAE	35519	00353	L1
380,59	2,76	281	41500	RAE	38059	00353	L1

Note

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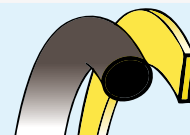
OR+RAE



S	S1	L1	S2	L2	R
5,34 ± 0,13	4,70 ± 0,05	7,10 ± 0,2	4,30 ± 0,05	7,30 ± 0,2	0,6 ± 0,25

d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM			
				RAE (X 100)			
37,47	0,36	325	6150	RAE	03747	00534	L1
40,65	0,39	326	6162	RAE	04065	00534	L1
43,82	0,42	327	6175	RAE	04382	00534	L1
47,00	0,44	328	6187	RAE	04700	00534	L1
50,16	0,47	329	6200	RAE	05016	00534	L1
53,34	0,50	330	6212	RAE	05334	00534	L1
56,52	0,52	331	6225	RAE	05652	00534	L1
59,69	0,54	332	6237	RAE	05969	00534	L1
62,87	0,56	333	6250	RAE	06287	00534	L1
66,04	0,59	334	6262	RAE	06604	00534	L1
69,22	0,63	335	6275	RAE	06922	00534	L1
72,39	0,64	336	6287	RAE	07239	00534	L1
74,63	0,66	619	178	RAE	07463	00534	L1
75,57	0,67	337	6300	RAE	07557	00534	L1
78,74	0,69	338	6312	RAE	07874	00534	L1
79,77	0,69	620	181	RAE	07977	00534	L1
81,92	0,71	339	6325	RAE	08192	00534	L1
85,09	0,75	340	6337	RAE	08509	00534	L1
88,27	0,77	341	6350	RAE	08827	00534	L1
89,69	0,77	621	185	RAE	08969	00534	L1
91,44	0,79	342	6362	RAE	09144	00534	L1

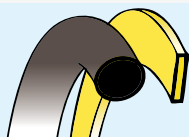
OR+RAE



d	toll ±	AS-BS	ITA	ARTICOLO / ITEM			
		o-ring	altro rif. alternative ref.	RAE (X 100)			
94,62	0,81	343	6375	RAE	09462	00534	L1
97,79	0,84	344	6387	RAE	09779	00534	L1
100,00	0,87	622	189	RAE	10000	00534	L1
100,97	0,87	345	6400	RAE	10097	00534	L1
104,14	0,89	346	6412	RAE	10414	00534	L1
107,32	0,91	347	6425	RAE	10732	00534	L1
109,50	0,93	623	193	RAE	10950	00534	L1
110,05	0,93	348	6437	RAE	11005	00534	L1
113,67	0,95	349	6450	RAE	11367	00534	L1
116,84	0,97	350		RAE	11684	00534	L1
117,50	0,97	860	199	RAE	11750	00534	L1
120,02	1,00	351		RAE	12002	00534	L1
120,65	1,00	861	201	RAE	12007	00534	L1
123,20	1,03	352		RAE	12320	00534	L1
123,80	1,03	862	203	RAE	12380	00534	L1
126,37	1,05	353		RAE	12637	00534	L1
127,00	1,05	863	206	RAE	12700	00534	L1
129,54	1,08	354		RAE	12954	00534	L1
130,20	1,08	864	208	RAE	13020	00534	L1
132,72	1,10	355		RAE	13272	00534	L1
133,40	1,10	865	210	RAE	13340	00534	L1
135,90	1,10	356		RAE	13590	00534	L1
136,50	1,13	866	213	RAE	13650	00534	L1
139,07	1,13	357		RAE	13907	00534	L1
139,70	1,13	867	215	RAE	13970	00534	L1
142,24	1,17	358		RAE	14224	00534	L1
142,90	1,17	868	217	RAE	14290	00534	L1
145,42	1,20	359		RAE	14542	00534	L1
146,10	1,20	869	219	RAE	14610	00534	L1
148,60	1,20	360		RAE	14860	00534	L1
149,20	1,20	870	221	RAE	14920	00534	L1
151,77	1,24	361	6600	RAE	15177	00534	L1
158,12	1,27	362	6625	RAE	15812	00534	L1
164,47	1,31	363	6645	RAE	16447	00534	L1
170,82	1,38	364	6670	RAE	17082	00534	L1
177,17	1,41	365	6700	RAE	17717	00534	L1
183,52	1,44	366	6720	RAE	18352	00534	L1
189,87	1,48	367	6745	RAE	18987	00534	L1
196,22	1,55	368	6670	RAE	19622	00534	L1
202,57	1,59	369	6700	RAE	20257	00534	L1
208,92	1,63	370	6720	RAE	20892	00534	L1
215,27	1,67	371	6745	RAE	21527	00534	L1

SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE

Tenute statiche
Static seals

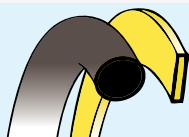


OR+RAE

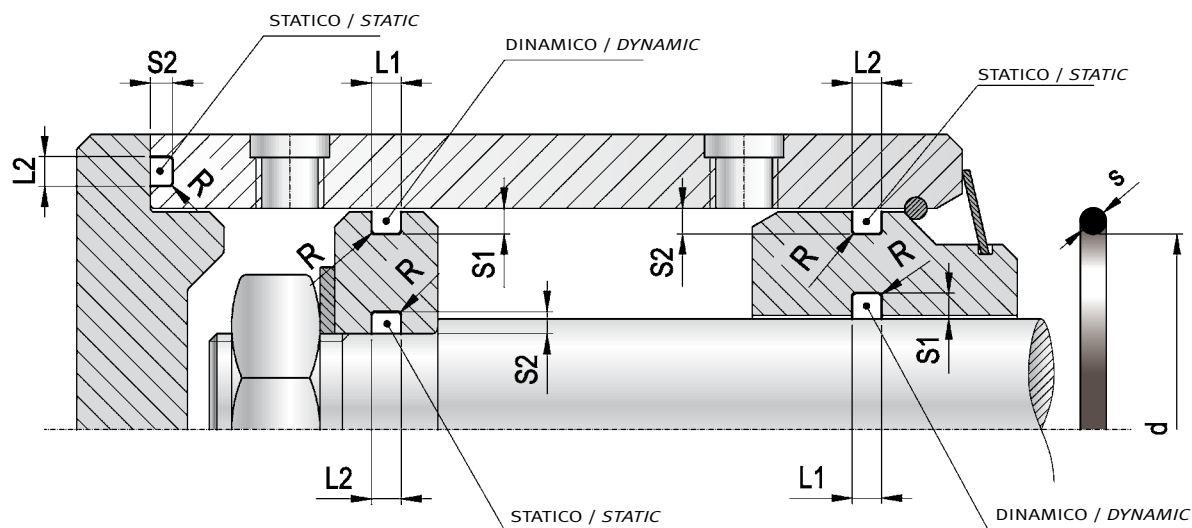
d	toll ±	AS-BS	ITA	ARTICOLO / ITEM			
		o-ring	altro rif. alternative ref.	RAE (X 100)			
221,62	1,71	372	6775	RAE	22162	00534	L1
227,97	1,75	373	6795	RAE	22797	00534	L1
234,32	1,79	374	6820	RAE	23432	00534	L1
240,67	1,83	375	6850	RAE	24067	00534	L1
247,02	1,88	376	6870	RAE	24702	00534	L1
253,37	1,93	377	6895	RAE	25337	00534	L1
266,07	2,02	378	6920	RAE	26607	00534	L1
278,77	2,08	379	6945	RAE	27877	00534	L1
291,47	2,21	380	6975	RAE	29147	00534	L1
304,17	2,25	381	6995	RAE	30417	00534	L1
329,57	2,43	382	61050	RAE	32957	00534	L1
354,97	2,56	383	61100	RAE	35497	00534	L1
380,37	2,76	384	61150	RAE	38037	00534	L1
405,26	2,91	385	61200	RAE	40526	00534	L1
430,66	3,07	386	61300	RAE	43066	00534	L1
456,06	3,22	387	61400	RAE	45606	00534	L1
481,40	3,37	388	61500	RAE	48140	00534	L1
506,80	3,54	389	61600	RAE	50680	00534	L1
532,20	3,72	390	61700	RAE	53220	00534	L1
557,60	3,81	391	61800	RAE	55760	00534	L1
582,68	4,05	392	61900	RAE	58268	00534	L1
608,08	4,13	393	62000	RAE	60808	00534	L1
633,48	4,34	394	62100	RAE	63348	00534	L1
658,88	4,46	395		RAE	65888	00534	L1

Note

Tenute statiche Static seals



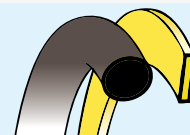
OR+RAE



S	S1	L1	S2	L2	R
6,99 ± 0,15	6,1 ± 0,05	9,5 ± 0,2	5,80 ± 0,05	9,7 ± 0,2	1 ± 0,3

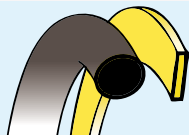
d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
113,67	0,95	425	4437	RAE	11376	00699	L1
114,70	0,95	624	197	RAE	11470	00699	L1
116,84	0,97	426	8462	RAE	11684	00699	L1
120,02	1,00	427	8475	RAE	12002	00699	L1
123,20	1,03	428	8487	RAE	12320	00699	L1
124,60	1,03	625	204	RAE	12460	00699	L1
126,37	1,05	429	8500	RAE	12637	00699	L1
129,54	1,08	430	8512	RAE	12954	00699	L1
132,72	1,10	431	8525	RAE	13272	00699	L1
134,50	1,10	626	211	RAE	13450	00699	L1
135,90	1,10	432	8537	RAE	13590	00699	L1
139,07	1,13	433	8550	RAE	13907	00699	L1
142,24	1,17	434	8562	RAE	14224	00699	L1
145,42	1,20	435	8575	RAE	14542	00699	L1
148,60	1,20	436	8587	RAE	14860	00699	L1
151,77	1,24	437	8600	RAE	15177	00699	L1
155,60	1,27	872	223	RAE	15560	00699	L1
158,12	1,27	438	8625	RAE	15812	00699	L1

OR+RAE



		AS-BS	ITA	ARTICOLO / ITEM			
d	toll ±	o-ring	altro rif. <i>alternative ref.</i>	<i>RAE (X 100)</i>			
159,50	1,27	627	225	RAE	15950	00699	L1
161,90	1,31	874	226	RAE	16190	00699	L1
164,47	1,31	439	8650	RAE	16447	00699	L1
166,70	1,34	628	228	RAE	16670	00699	L1
168,30	1,34	876	229	RAE	16830	00699	L1
170,82	1,38	440	8675	RAE	17082	00699	L1
174,60	1,38	878	231	RAE	17460	00699	L1
177,17	1,41	441	8700	RAE	17717	00699	L1
181,00	1,44	880	233	RAE	18100	00699	L1
183,52	1,44	442	8725	RAE	18352	00699	L1
187,30	1,48	882	235	RAE	18730	00699	L1
189,87	1,48	443	8750	RAE	18987	00699	L1
193,70	1,51	884	237	RAE	19370	00699	L1
196,22	1,55	444	8775	RAE	19622	00699	L1
200,00	1,55	886	239	RAE	20000	00699	L1
202,57	1,59	445	8800	RAE	20257	00699	L1
208,92	1,63	674	8825	RAE	20892	00699	L1
215,27	1,67	446	8850	RAE	21527	00699	L1
221,62	1,71	676	8875	RAE	22162	00699	L1
227,97	1,75	447	8900	RAE	22797	00699	L1
234,32	1,79	678	8925	RAE	23432	00699	L1
240,67	1,83	448	8950	RAE	24067	00699	L1
247,00	1,88	680	8975	RAE	24700	00699	L1
253,30	1,93	449	81000	RAE	25330	00699	L1
259,70	1,98	682	81025	RAE	25970	00699	L1
266,07	2,02	450	81050	RAE	26607	00699	L1
272,40	2,08	684	81075	RAE	27240	00699	L1
278,77	2,08	451	81100	RAE	27877	00699	L1
285,10	2,14	686	81125	RAE	28510	00699	L1
291,47	2,21	452	81150	RAE	29147	00699	L1
297,80	2,21	688	81175	RAE	29780	00699	L1
304,17	2,25	453	81200	RAE	30417	00699	L1
316,87	2,37	454	81250	RAE	31687	00699	L1
329,57	2,43	455	81300	RAE	32957	00699	L1
342,27	2,49	456	81350	RAE	34227	00699	L1
354,97	2,56	457	81400	RAE	35497	00699	L1
367,67	2,68	458	81450	RAE	36767	00699	L1
380,37	2,76	459	81500	RAE	38037	00699	L1
393,07	2,84	460	81550	RAE	39307	00699	L1

Tenute statiche
Static seals

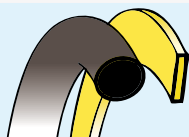


OR+RAE

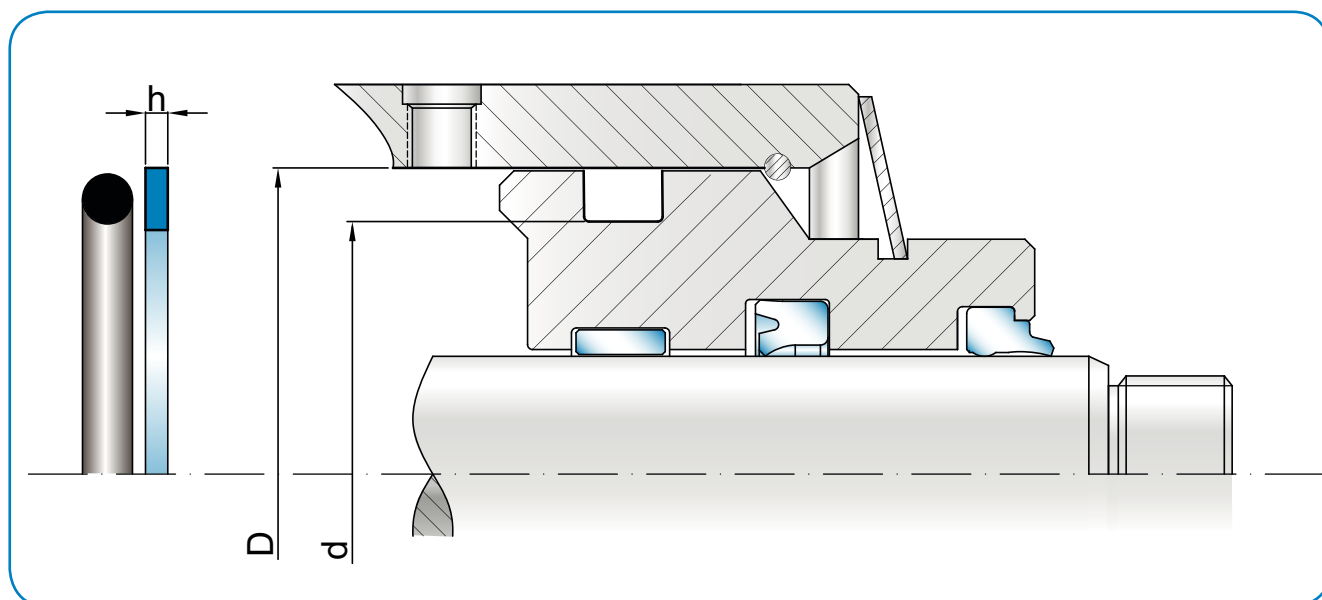
d	toll ±	AS-BS o-ring	ITA altro rif. alternative ref.	ARTICOLO / ITEM RAE (X 100)			
405,26	2,91	461	81600	RAE	40526	00699	L1
417,96	2,99	462	81650	RAE	41796	00699	L1
430,66	3,07	463	81700	RAE	43066	00699	L1
443,36	3,15	464	81750	RAE	44336	00699	L1
456,06	3,22	465	81800	RAE	45606	00699	L1
468,76	3,30	466	81850	RAE	46876	00699	L1
481,46	3,37	467	81900	RAE	48146	00699	L1
494,16	3,45	468	81950	RAE	49416	00699	L1
506,86	3,54	469	82000	RAE	50686	00699	L1
532,26	3,72	470	82100	RAE	53226	00699	L1
557,66	3,81	471	82200	RAE	55766	00699	L1

Note

Tenute statiche Static seals

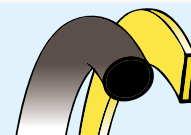


MAE (misura metriche / metric sizes)



d _{h9}	D _{H8}	h	ART/ITEM
8,0	12,0	1,3	MAE 0080 0120 013 L1
9,0	13,0	1,3	MAE 0090 0130 013 L1
12,0	16,0	1,3	MAE 0120 0160 013 L1
10,0	14,0	1,3	MAE 0100 0140 013 L1
11,0	15,0	1,3	MAE 0110 0150 013 L1
12,0	16,0	1,3	MAE 0120 0160 013 L1
13,0	17,0	1,3	MAE 0130 0170 013 L1
14,0	18,0	1,3	MAE 0140 0180 013 L1
15,0	19,0	1,3	MAE 0150 0190 013 L1
16,0	20,0	1,3	MAE 0160 0200 013 L1
17,0	21,0	1,3	MAE 0170 0210 013 L1
18,0	22,0	1,3	MAE 0180 0220 013 L1
20,0	25,0	1,3	MAE 0200 0250 013 L1
23,0	28,0	1,3	MAE 0230 0280 013 L1
25,0	30,0	1,3	MAE 0250 0300 013 L1
27,0	32,0	1,3	MAE 0270 0320 013 L1
30,0	35,0	1,3	MAE 0300 0350 013 L1
30,0	40,0	1,7	MAE 0300 0400 017 L1
32,0	37,0	1,3	MAE 0320 0370 013 L1
33,0	38,0	1,3	MAE 0330 0380 013 L1
35,0	40,0	1,3	MAE 0350 0400 013 L1
37,0	42,0	1,3	MAE 0370 0420 013 L1
38,0	42,0	1,3	MAE 0380 0420 013 L1
40,0	45,0	1,3	MAE 0400 0450 013 L1
40,0	50,0	1,7	MAE 0400 0500 017 L1
43,0	48,0	1,3	MAE 0430 0480 013 L1
45,0	50,0	1,7	MAE 0450 0500 017 L1

d _{h9}	D _{H8}	h	ART/ITEM
50,0	55,0	1,3	MAE 0500 0550 013 L1
50,0	60,0	1,7	MAE 0500 0600 017 L1
53,0	63,0	1,7	MAE 0530 0630 017 L1
55,0	60,0	1,3	MAE 0550 0600 013 L1
55,0	65,0	1,7	MAE 0550 0650 017 L1
58,0	63,0	1,3	MAE 0580 0630 013 L1
60,0	65,0	1,3	MAE 0600 0650 013 L1
60,0	70,0	1,7	MAE 0600 0700 017 L1
63,0	68,0	1,3	MAE 0630 0680 013 L1
65,0	70,0	1,3	MAE 0650 0700 013 L1
65,0	75,0	1,7	MAE 0650 0750 017 L1
69,0	74,0	1,3	MAE 0690 0740 013 L1
70,0	75,0	1,3	MAE 0700 0750 013 L1
70,0	80,0	1,7	MAE 0700 0800 017 L1
71,4	80,0	2,0	MAE 0714 0800 020 L1
72,5	77,5	1,3	MAE 0725 0775 013 L1
72,5	82,5	1,7	MAE 0725 0825 017 L1
75,0	80,0	1,3	MAE 0750 0800 013 L1
75,0	85,0	1,7	MAE 0750 0850 013 L1
79,0	84,0	1,3	MAE 0790 0840 013 L1
80,0	85,0	1,3	MAE 0800 0850 013 L1
80,0	90,0	1,7	MAE 0800 0900 017 L1
85,0	90,0	1,3	MAE 0850 0900 013 L1
85,0	95,0	1,7	MAE 0850 0950 017 L1
90,0	95,0	1,3	MAE 0900 0950 013 L1
91,4	100,0	2,0	MAE 0914 1000 020 L1
94,0	99,0	1,3	MAE 0940 0990 013 L1



(misura metriche / metric sizes) **MAE**

d _{H9}	D _{H8}	h	ART/ITEM
90,0	100,0	1,7	MAE 0900 1000 017 L1
95,0	100,0	1,3	MAE 0950 1000 013 L1
95,0	105,0	1,7	MAE 0950 1050 017 L1
100,0	105,0	1,3	MAE 1000 1050 013 L1
100,0	110,0	1,7	MAE 1000 1100 017 L1
105,0	110,0	1,3	MAE 1050 1100 013 L1
105,0	115,0	1,7	MAE 1050 1150 017 L1
110,0	115,0	1,3	MAE 1100 1150 013 L1
110,0	120,0	1,7	MAE 1100 1200 017 L1
113,0	118,0	1,3	MAE 1130 1180 013 L1
115,0	120,0	1,3	MAE 1150 1200 013 L1
115,0	125,0	1,7	MAE 1150 1250 017 L1
120,0	125,0	1,3	MAE 1200 1250 013 L1
120,0	130,0	1,7	MAE 1200 1300 017 L1
125,0	130,0	1,3	MAE 1250 1300 013 L1
125,0	130,0	1,7	MAE 1250 1300 013 L1
125,0	135,0	1,7	MAE 1250 1350 017 L1
130,0	135,0	1,3	MAE 1300 1350 013 L1
130,0	140,0	1,7	MAE 1300 1400 017 L1
135,0	140,0	1,3	MAE 1350 1400 013 L1
135,0	145,0	1,7	MAE 1350 1450 017 L1
140,0	145,0	1,3	MAE 1400 1450 013 L1
140,0	150,0	1,7	MAE 1400 1500 017 L1
145,0	150,0	1,3	MAE 1450 1500 013 L1

d _{H9}	D _{H8}	h	ART/ITEM
145,0	155,0	1,7	MAE 1450 155 0 017 L1
150,0	160,0	1,7	MAE 1500 1600 017 L1
155,0	165,0	1,7	MAE 1550 1650 017 L1
160,0	170,0	1,7	MAE 1600 1700 017 L1
165,0	175,0	1,7	MAE 1650 1750 017 L1
170,0	180,0	1,7	MAE 1700 1800 017 L1
175,0	185,0	1,7	MAE 1750 1850 017 L1
180,0	190,0	1,7	MAE 1800 1900 017 L1
185,0	195,0	1,7	MAE 1850 1950 017 L1
190,0	200,0	1,7	MAE 1900 2000 017 L1
195,0	205,0	1,7	MAE 1950 2050 017 L1
200,0	210,0	1,7	MAE 2000 2100 017 L1
210,0	220,0	1,7	MAE 2100 2200 017 L1
220,0	230,0	1,7	MAE 2200 2300 017 L1
230,0	240,0	1,7	MAE 2300 2400 017 L1
240,0	250,0	1,7	MAE 2400 2500 017 L1
245,0	255,0	1,7	MAE 2450 2550 017 L1
250,0	260,0	1,7	MAE 2500 2600 017 L1
270,0	280,0	1,7	MAE 2700 2800 017 L1
320,0	330,0	1,7	MAE 3200 3300 017 L1

SSA
VSS
FSA
VRA
OR
OR-ANT
RAE
AKS
AKC
AKW
AKN
MAE



Sistemi di tenuta per pneumatica *Pneumatic sealing systems*



Tenute Stelo e Pistone

Rod and Piston Seals

GUARNIZIONI STELO / ROD SEALS									
Condizioni massime non simultanee / Maximum conditions (not combined)									
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze NBR TPE Resina PTFE Carbo. PTFE		Sezione Section	Pagina Page
	RSP	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	246
	SRS	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	248
	SRS/N	-30 +100	< 12	< 1	NBR		●	Pneumatica Pneumatic	250

GUARNIZIONI AMMORTIZZO / CUSHION SEALS									
	CSA	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	252

GUARNIZIONI PISTONE / PISTON SEALS									
	PSP	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	254
	PSP/N	-30 +100	< 20	< 1	NBR		●	Pneumatica Pneumatic	258
	MPS	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	260
	MPS/2	-40 +90	20	< 1	TPU	●		Pneumatica Pneumatic	262
	MPM	-40 +90	< 20	< 1	POM NBR TPU	● ○ ●		Pneumatica Pneumatic	264
	SPS	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	266
	SPS/N	-30 +100	< 12	< 1	NBR		●	Pneumatica Pneumatic	268
	PLF	-40 +90	< 20	< 1	TPU	●		Pneumatica Pneumatic	270
	MPP	-30 +100	< 20	< 1	NBR STEEL		●	Pneumatica Pneumatic	272
	PSN	-30 +110	< 20	< 4	Technopolymer NBR		● ○	Pneumatica Pneumatic	274

Guide e Raschiatori Wear Rings and Wiper

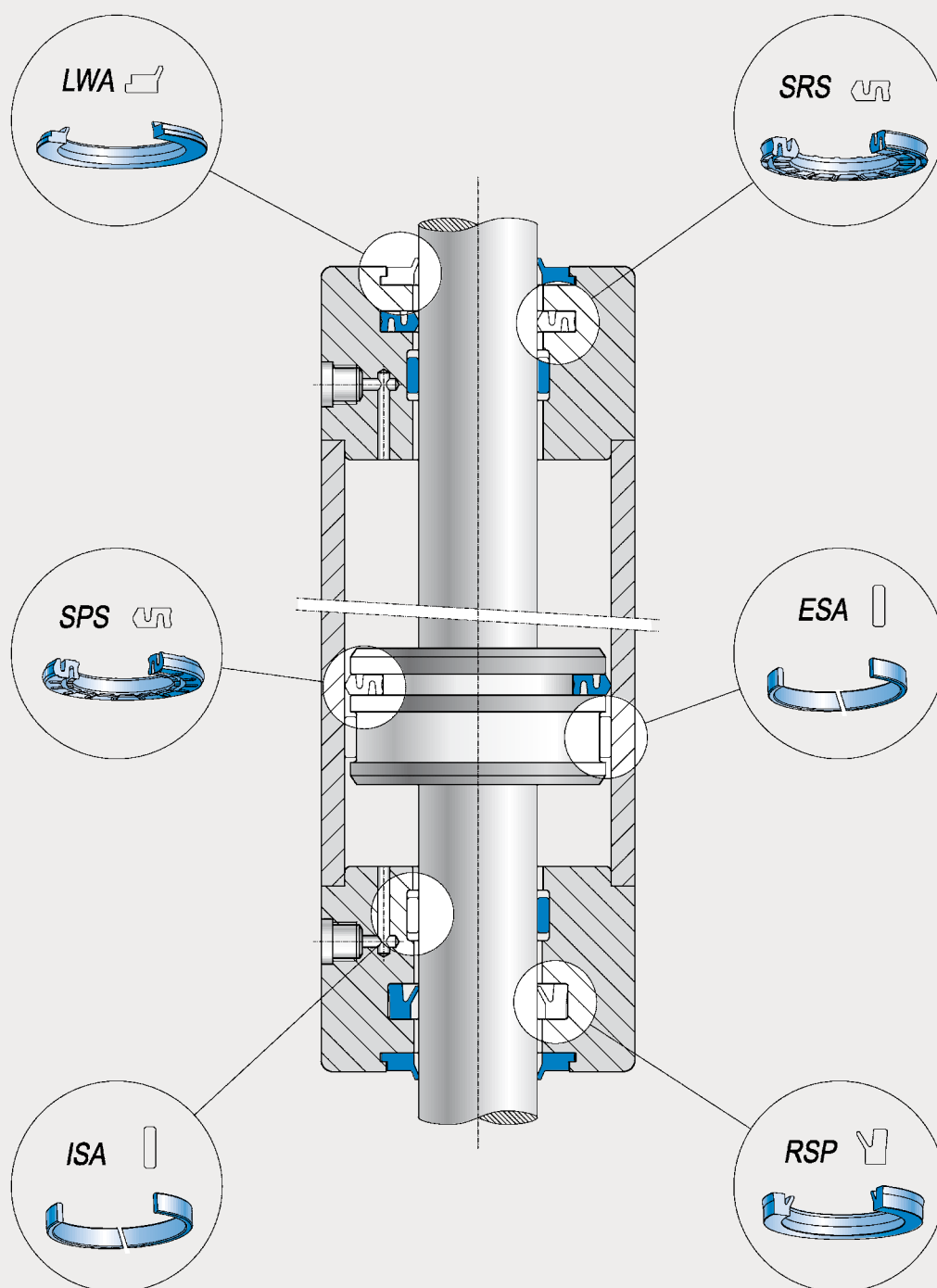
ANELLI DI GUIDA / WEAR RINGS										
<i>(sezione tecnica guide pag. 138 / wear rings technical section pag. 138)</i>										
Condizioni massime non simultanee / <i>Maximum conditions (not combined)</i>										
Profilo Profile	Ns Rif. Our Ref.	Temperatura Temperature C°	Pressione Pressure Bar	Velocità Speed m/s	Materiale Material	TPU POM / PA PTFE Bronze	NBR	TPE Resina PTFE Carbo. PTFE	Sezione Section	Pagina Page
	ISA	-35 +115	-	< 1	POM modificato/ <i>mo- dified</i>	○			Pneumatica Pneumatic	276
	ESA	-35 +115	-	< 1	POM modificato/ <i>mo- dified</i>	○			Pneumatica Pneumatic	278
	NG	-40 +200	-	15	PTFE carbografite			●	Pneumatica Pneumatic	282

RASCHIATORI / WIPERS										
	LWA	-40 +90	-	< 1	TPU	●			Pneumatica Pneumatic	284
	BWA	-40 +90	< 20	< 1	TPU	●			Pneumatica Pneumatic	286
	PIW	-40 +90	< 20	< 1	TPU	●			Pneumatica Pneumatic	288
	BWS	-40 +90	< 20	< 1	TPU	●			Pneumatica Pneumatic	290
	BWH	-40 +90	< 20	< 1	TPU	●			Pneumatica Pneumatic	294
	BWH/N	-30 +100	< 20	< 1	NBR STEEL		●		Pneumatica Pneumatic	296

MEMBRANE SCARICO RAPIDO / CUSHION SEALS										
	CUP	-40 +90	<10	-	TPU	●			Pneumatica Pneumatic	298

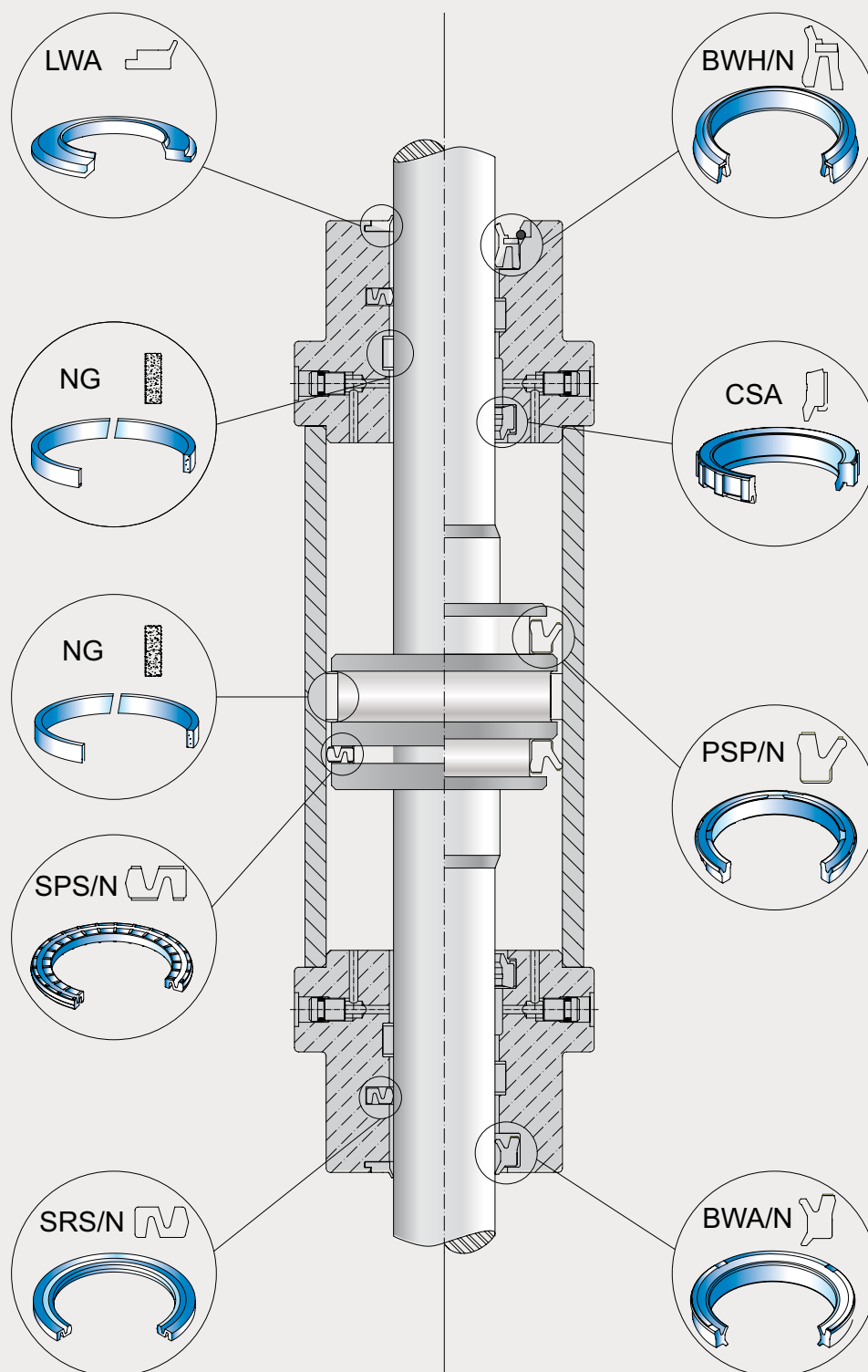
Schema cilindro pneumatico B

Pneumatic cylinder sketch B



Schema cilindro pneumatico C

Pneumatic cylinder sketch C



Montaggio

Assembling

AVVERTENZE E PRECAUZIONI DI MONTAGGIO NEI SISTEMI PNEUMATICI

Per un ottimo funzionamento delle guarnizioni occorre che durante il montaggio non vengano tagliate o deformate in modo permanente. Si raccomanda anche di rispettare le norme internazionali ISO sia per quanto riguarda le dimensioni degli alloggiamenti che per le tolleranze. Le finiture delle superfici sono descritte nelle figure 37 e 38 sotto indicate e riportano i valori cui attenersi. La tabella sotto indica il valore in mm. per eseguire lo smusso d'invito.

Le finiture di sola rettifica non sono mai consigliate ma si raccomanda un'ulteriore lavorazione di lucidatura prima del montaggio.

ASSEMBLING INSTRUCTIONS

For a correct functioning seals it's necessary to avoid cuts or permanent deformations during the assembling process. It's also recommended to follow the ISO norms concerning housings and tolerances. Regarding the surfaces finish, take a look at the following sketches 37 and 38 indicating the values to be respected.

A further polishing operation is usually suggested before mounting, since the only grinding operation isn't recommended.

Fig.37 - Pic.37

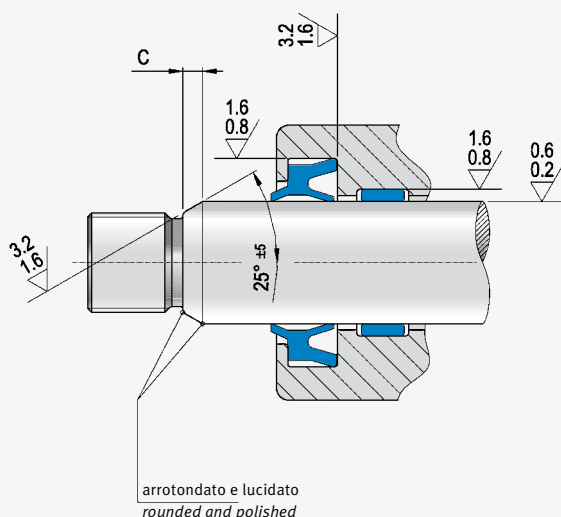
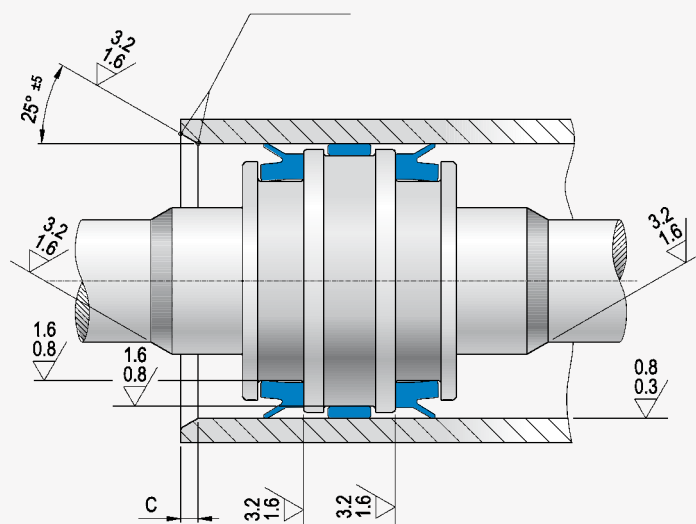
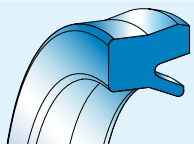


Fig.38 - Pic.38



diametri D-d diameters	< 25	25-60	61-100	101-180	181-300	> 300
C mm	2,5	3,0	4,0	5,0	6,0	7,5



RSP

TENUTA STELO PER PNEUMATICA TIPO RSP

Descrizione

La tenuta stelo tipo RSP, presenta caratteristiche tecniche di progettazione mirate a superare i limiti di analoghe guarnizioni presenti sul mercato, al fine di rendere la guarnizione più scorrevole e più sensibile alle basse pressioni.

Il labbro dinamico è arrotondato per favorire la linearità del movimento.

La profondità della gola tra il labbro dinamico e il labbro statico è più marcata per aumentare la flessibilità e per migliorare l'adattamento ad eventuali disallineamenti del sistema.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale: B0

Materiale alternativo poliuretano a 85 Shore A.

Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave nella sede per facilitare il montaggio e non danneggiare la guarnizione durante l'inserimento.

Lo stelo non deve presentare bave, e deve avere uno smusso d'invito (vedi pagina 245).

RSP TYPE ROD SEAL FOR PNEUMATIC

Description

The rod seal type RSP, present technical design characteristics aimed to overcome the existing limits of similar seals on the market, in order to obtain a smoother seal which is also more sensible to low pressure.

A rounded dynamic lip improves linear movements.

Deeper U-profile between the dynamic and the static lip improves flexibility and performs better in case of misalignments in the system.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from - 40° C up to + 90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

Compound reference: B0

Alternative polyurethane 85 Shore A.

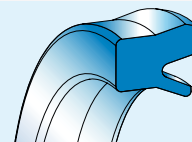
Alternative compound reference: A0

Assembling

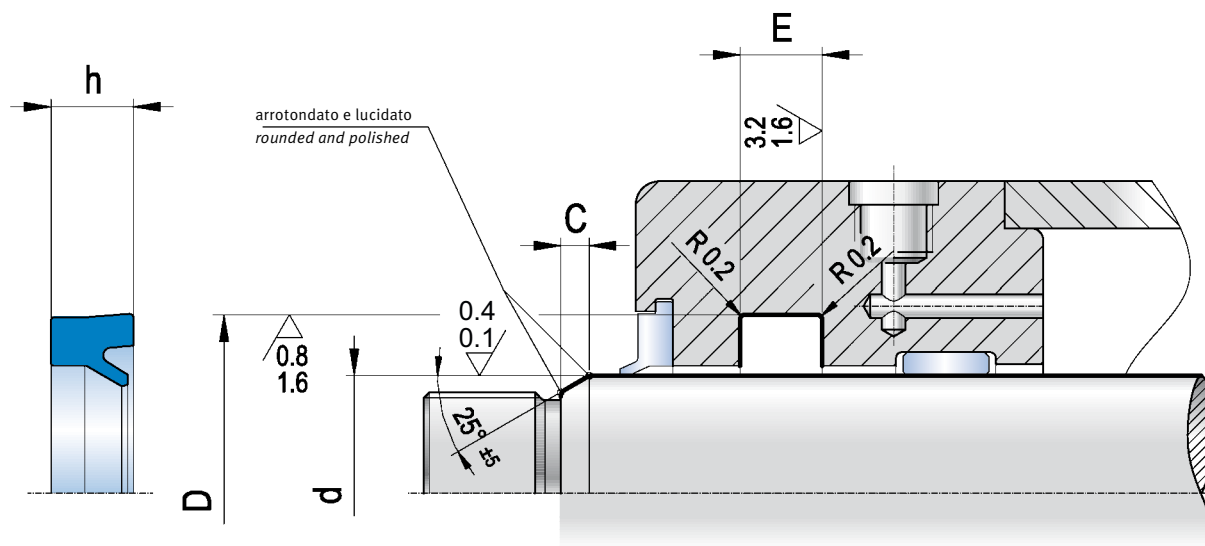
It is important to remove flashes or cutting edges in the housing to avoid damages.

The rod must not have present flashes and must have a lead-in chamfer (see page 245).

RSP



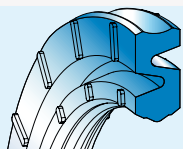
RSP
GPD/ /
GPDIM
SRS
SRSN
CSA



d _{f9}	D _{H10}	toll H ₁₀	h	E _{+0,2}	ART / ITEM
2,5	6,0	+0.058/0	2,5	3,0	RSP 0025 0060 025 B0
3,0	6,0	+0.058/0	2,5	3,0	RSP 0030 0060 025 B0
4,0	8,0	+0.058/0	3,0	3,5	RSP 0040 0080 030 B0
5,0	9,0	+0.058/0	2,5	3,0	RSP 0050 0090 025 B0
6,0	10,0	+0.070/0	3,0	3,5	RSP 0060 0100 030 B0
6,0	11,0	+0.070/0	3,0	3,5	RSP 0060 0110 030 B0
6,0	12,0	+0.070/0	4,0	4,5	RSP 0060 0120 040 B0
7,0	13,0	+0.070/0	4,0	4,5	RSP 0070 0130 040 B0
7,0	14,0	+0.070/0	3,5	4,0	RSP 0070 0140 035 B0
8,0	14,0	+0.070/0	4,0	4,5	RSP 0080 0140 040 B0
8,0	14,0	+0.070/0	4,5	5,0	RSP 0080 0140 045 B0
8,0	16,0	+0.070/0	4,5	5,0	RSP 0080 0160 045 B0
10,0	16,0	+0.070/0	4,5	5,0	RSP 0100 0160 045 B0
10,0	18,0	+0.070/0	5,5	6,0	RSP 0100 0180 055 B0
11,0	19,0	+0.070/0	4,0	4,5	RSP 0110 0190 040 B0
12,0	20,0	+0.084/0	5,5	6,0	RSP 0120 0200 055 B0
12,0	24,0	+0.084/0	6,0	6,5	RSP 0120 0240 060 B0
14,0	22,0	+0.084/0	5,5	6,0	RSP 0140 0220 055 B0
16,0	22,0	+0.084/0	3,0	3,5	RSP 0160 0220 030 B0
16,0	24,0	+0.084/0	5,5	6,0	RSP 0160 0240 055 B0
18,0	22,4	+0.084/0	2,5	3,5	RSP 0180 0224 025 B0
18,0	26,0	+0.084/0	5,5	6,0	RSP 0180 0260 055 B0
20,0	28,0	+0.084/0	5,5	6,0	RSP 0200 0280 055 B0
22,0	28,0	+0.100/0	4,5	5,0	RSP 0220 0280 045 B0
22,0	30,0	+0.100/0	5,5	6,0	RSP 0220 0300 055 B0
25,0	33,0	+0.100/0	5,5	6,0	RSP 0250 0330 055 B0
28,0	36,0	+0.100/0	5,5	6,0	RSP 0280 0360 055 B0

d _{f9}	D _{H10}	toll H ₁₀	h	E _{+0,2}	ART / ITEM
28,0	38,0	+0.100/0	7,0	7,5	RSP 0280 0380 070 B0
30,0	38,0	+0.100/0	5,5	6,0	RSP 0300 0380 055 B0
30,0	40,0	+0.100/0	7,0	7,5	RSP 0300 0400 070 B0
32,0	40,0	+0.100/0	5,5	6,0	RSP 0320 0400 055 B0
32,0	36,4	+0.100/0	2,7	3,5	RSP 0320 0364 027 B0
35,0	43,0	+0.100/0	8,0	8,5	RSP 0350 0430 080 B0
35,0	45,0	+0.100/0	7,0	7,5	RSP 0350 0450 070 B0
35,0	45,0	+0.100/0	10,0	10,5	RSP 0350 0450 100 B0
36,0	46,0	+0.100/0	7,0	7,5	RSP 0360 0460 070 B0
40,0	48,0	+0.100/0	5,5	6,0	RSP 0400 0480 055 B0
40,0	50,0	+0.100/0	7,0	7,5	RSP 0400 0500 070 B0
45,0	55,0	+0.120/0	7,0	7,5	RSP 0450 0550 070 B0
50,0	60,0	+0.120/0	7,0	7,5	RSP 0500 0600 070 B0
55,0	65,0	+0.120/0	7,0	7,5	RSP 0550 0650 070 B0
56,0	66,0	+0.120/0	7,0	7,5	RSP 0560 0660 070 B0
60,0	72,0	+0.120/0	8,5	9,5	RSP 0600 0720 085 B0
63,0	73,0	+0.120/0	7,0	7,5	RSP 0630 0730 070 B0
63,0	75,0	+0.120/0	8,5	9,5	RSP 0630 0750 085 B0
65,0	77,0	+0.120/0	8,5	9,5	RSP 0650 0770 085 B0
70,0	82,0	+0.120/0	8,5	9,5	RSP 0700 0820 085 B0
75,0	87,0	+0.120/0	8,5	9,5	RSP 0750 0870 085 B0
80,0	92,0	+0.120/0	8,5	9,5	RSP 0800 0920 085 B0
85,0	97,0	+0.120/0	8,5	9,5	RSP 0850 0970 085 B0
90,0	102,0	+0.120/0	8,5	9,5	RSP 0900 1020 085 B0
95,0	107,0	+0.120/0	8,5	9,5	RSP 0950 1070 085 B0
100,0	115,0	+0.120/0	10,0	11,0	RSP 1000 1150 100 B0

Pneumatica
Pneumatic



SRS

TENUTA STELO A MOLLA TIPO SRS

Descrizione

La guarnizione tipo SRS è progettata per la tenuta stelo di cilindri pneumatici.

Dove gli ingombri lo permettono, può essere utilizzata anche su valvole pneumatiche.

Le ridotte dimensioni delle sedi consentono un'esecuzione di lavorazione macchina semplice.

Ha un profilo arrotondato al centro sul labbro dinamico e due sporgenze sul labbro statico.

Il profilo simmetrico ne facilita il montaggio.

La particolare forma a molla rende il sistema molto scorrevole anche a bassa pressione.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo poliuretano a 85 Shore A.

Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave per evitare di compromettere la guarnizione.

Lo stelo non deve presentare bave, e deve avere uno smusso d'invito (vedi pag. 245)

SRS TYPE SPRING ROD SEAL

Description

The SRS rod seal has been designed for pneumatic cylinder applications. The SRS can also be used for pneumatic valves where the overall dimensions allowed. Moreover a shorter machining of the system can be obtained thanks to the reduced overall dimensions. The profile is rounded in the middle of the dynamic lip and it has two projections on the static lip. This symmetrical shape allows easier installation. The special spring shaped profile ensures high flexibility in the system even at low pressure.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from - 40° C up to + 90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

Standard compound reference: B0

Alternative polyurethane 85 Shore A.

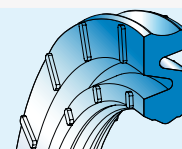
Alternative compound reference: A0

Assembling

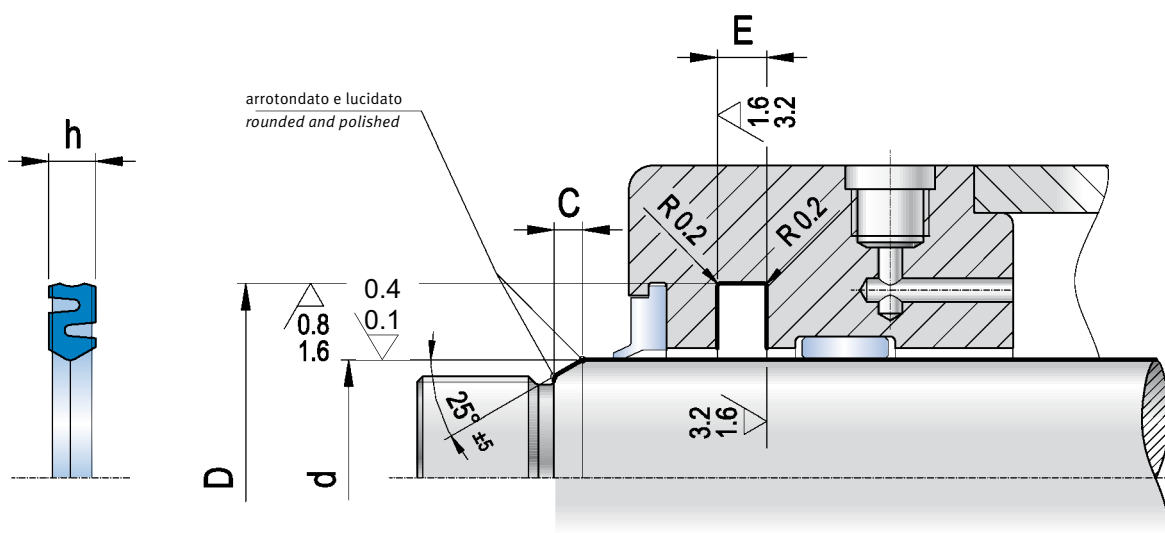
It is important to remove flashes or cutting edges in the housing to avoid damages.

The rod must not have present flashes and must have a lead-in chamfer (see page 245).

SRS



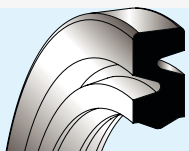
RSP
GPD/ /
GPDIM
SRS
SRSN
CSA



d _{f9}	D _{H10}	toll H10	h	E _{+0,2}	ART / ITEM				
6,0	13,0	+0,043/0	2,3	2,5	SRS	0060	0130	023	B0
8,0	15,0	+0,043/0	2,3	2,5	SRS	0080	0150	023	B0
10,0	17,0	+0,043/0	2,3	2,5	SRS	0100	0170	023	B0
12,0	19,0	+0,052/0	2,3	2,5	SRS	0120	0190	023	B0
14,0	21,0	+0,052/0	2,3	2,5	SRS	0140	0210	023	B0
15,0	22,0	+0,052/0	2,3	2,5	SRS	0150	0220	023	B0
16,0	25,0	+0,052/0	2,8	3,0	SRS	0160	0250	028	B0
20,0	29,0	+0,052/0	2,8	3,0	SRS	0200	0290	028	B0
25,0	34,0	+0,062/0	2,8	3,0	SRS	0250	0340	028	B0
30,0	39,0	+0,062/0	2,8	3,0	SRS	0300	0390	028	B0
40,0	49,0	+0,062/0	2,8	3,0	SRS	0400	0490	028	B0
42,0	51,0	+0,074/0	2,8	3,0	SRS	0420	0510	028	B0
50,0	59,0	+0,074/0	2,8	3,0	SRS	0500	0590	028	B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



SRS/N

TENUTA STELO A MOLLA TIPO SRS/N

Descrizione

La guarnizione tipo SRS/N è realizzata per tenuta stelo di cilindri pneumatici.

Dove gli ingombri lo permettono può essere utilizzata anche su valvole pneumatiche.

Le ridotte dimensioni delle sedi, consentono un'esecuzione di lavorazione macchina veloce e semplice. Il profilo simmetrico ne facilita il montaggio. La particolare forma a molla rende il sistema molto scorrevole anche a bassissima pressione.

Limiti d'impiego

Pressione: < 12 [bar]

Velocità: < 1 [m/s]

Temperatura: -30 °C ÷ +100 °C mescola NBR
-15 °C ÷ +150 °C mescola FKM

Fluidi: Aria lubrificata, grassi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è NBR 80 Shore A.

A richiesta materiale FKM 75 Shore A.

Codice materiale standard: N1

Montaggio

Eliminare spigoli vivi e le bave per non danneggiare la tenuta al momento del montaggio.

Lo stelo non deve presentare bave, e deve avere uno smusso d'invito (vedi pag. 245)

SRS/N TYPE SPRING ROD SEAL

Description

The seal type SRS / N is a rod seal for pneumatic cylinders.

The SRS/N can also be used for pneumatic valves where the overall dimensions allowed.

The reduced dimensions of the seat allows fast and simple machining operations.

This symmetrical profile allows easier installation.

The special spring shape ensure a system sliding even at very low pressure.

Technical data

Pressure: < 12 [bar]

Speed: < 1 [m/s]

Temperature: -30 °C ÷ +100 °C NBR material
-15 °C ÷ +150 °C FKM material

Fluids: Lubricated air, grease and mineral oils
(see table 3, page 14)

Material

Standard material is NBR 80 Shore A.

On demand material FKM 75 Shore A

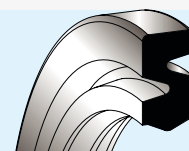
Standard compound reference: N1

Assembling

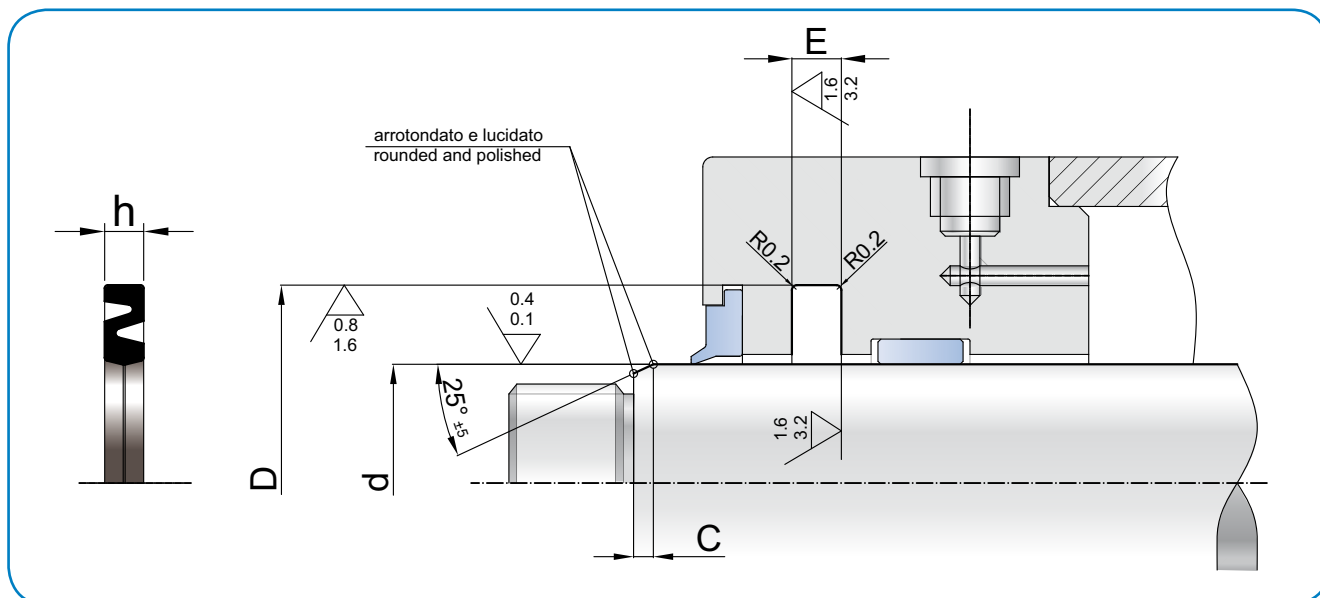
It is important to remove flashes or cutting edges in the housing to avoid damages.

The rod must not have present flashes and must have a lead-in chamfer (see page 245).

SRS/N



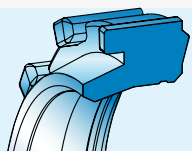
RSP
GPD1/
GPDIM
SRS
SRS/N
CSA



d _{f9}	D _{H10}	Toll h10	h	E _{+0,2}	ART / ITEM				
6,0	13,0	0/-0,043	2,30	2,50	SRS	0060	0130	023	N1
8,0	15,0	0/-0,043	2,30	2,50	SRS	0080	0150	023	N1
10,0	17,0	0/-0,043	2,30	2,50	SRS	0100	0170	023	N1
12,0	19,0	0/-0,052	2,30	2,50	SRS	0120	0190	023	N1
14,0	21,0	0/-0,052	2,30	2,50	SRS	0140	0210	023	N1
15,0	22,0	0/-0,052	2,30	2,50	SRS	0150	0220	023	N1
16,0	25,0	0/-0,052	2,80	3,00	SRS	0160	0250	028	N1
20,0	29,0	0/-0,052	2,80	3,00	SRS	0200	0290	028	N1
25,0	34,0	0/-0,062	2,80	3,00	SRS	0250	0340	028	N1
30,0	39,0	0/-0,062	2,80	3,00	SRS	0300	0390	028	N1
40,0	49,0	0/-0,062	2,80	3,00	SRS	0400	0490	028	N1
42,0	51,0	0/-0,074	2,80	3,00	SRS	0420	0510	028	N1
50,0	59,0	0/-0,074	2,80	3,00	SRS	0500	0590	028	N1

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



CSA

GUARNIZIONI AMMORTIZZO TIPO CSA

Descrizione

L'elemento d'ammortizzo tipo CSA è studiato per la frenatura di fine corsa nei pistoni dei cilindri pneumatici.

Diverse sono le caratteristiche che concorrono all'efficacia del sistema frenante della guarnizione CSA:

- il profilo raschiante con lo smusso d'invito che facilita l'inserimento dell'ogiva;
- le scanalature all'esterno che permettono l'allineamento;
- il bordo alla base dell'ammortizzo;
- l'utilizzo del poliuretano che grazie al suo alto modulo elastico e alla sua alta resistenza all'urto garantisce una lunga durata in esercizio.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è un poliuretano a basso compression-set con una buona flessibilità a freddo.

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo, (d > 40) poliuretano a 93 Shore A.

Codice materiale alternativo: C0

Montaggio

Il montaggio avviene in sede semiaperta, pertanto si consiglia di eliminare tutti gli spigoli vivi e le bave per evitare di compromettere la guarnizione.

Lubrificare con grasso per assicurare una maggiore durata della guarnizione.

CSA TYPE CUSHIONING SEAL

Description

The CSA cushioning seal is designed for braking points at the end-stroke of pneumatic cylinders.

Several elements contribute to the increased efficiency of the CSA seal braking system:

- the scraping profile with lead-in chamfer for better insertion of the shoulder;
- the external grooves granting auto-alignment;
- the edge at the bottom of the cushioning;
- the use of polyurethane which ensures a long service life thanks to the high modulus of elasticity and the very good impact resistance..

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from - 40° C up to + 90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

The standard raw material is a low compression-set polyurethane with good flexibility at low temperature.

Standard polyurethane 90 Shore A.

Standard compound reference: B0

Alternative (d > 40) polyurethane 93 Shore A.

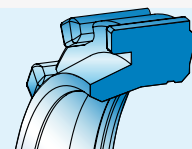
Alternative compound reference: C0

Assembling

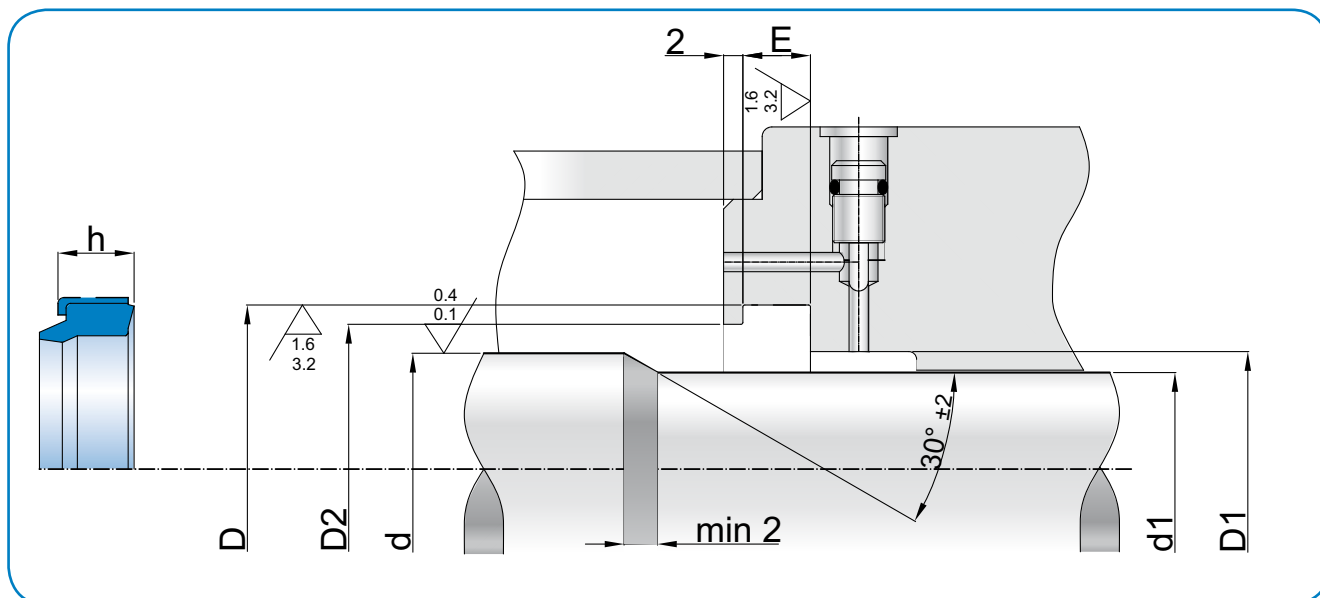
The assembling is done in semi-open groove, therefore cutting edges or flashes should be removed otherwise they may influence the sealing performance.

Lubrication with grease will increase lifetime of the seal.

CSA



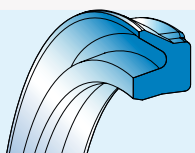
CSA



d _{h10}	toll _{h10}	D _{H11}	D ₁	D ₂	d ₁	h	E	ART / ITEM
6,0	0/-0.048	10,0	6,5	8,0	4,5	3,4	3,7	CSA 0060 0100 034 B0
8,0	0/-0.058	11,6	8,5	10,0	7,0	3,0	3,3	CSA 0080 0116 030 B0
9,5	0/-0.058	15,0	10,0	12,0	8,0	4,0	4,5	CSA 0095 0150 040 B0
10,0	0/-0.058	18,0	11,0	15,0	8,0	6,5	7,0	CSA 0100 0180 065 B0
12,0	0/-0.070	18,0	13,0	15,5	10,0	4,3	4,8	CSA 0120 0180 043 B0
12,0	0/-0.070	20,0	13,0	17,0	10,0	6,5	7,0	CSA 0120 0200 065 B0
14,0	0/-0.070	22,0	15,0	19,0	12,0	6,5	7,0	CSA 0140 0220 065 B0
16,0	0/-0.070	22,0	17,0	19,5	14,0	4,7	5,2	CSA 0160 0220 047 B0
16,0	0/-0.070	24,0	17,0	21,0	14,0	6,5	7,0	CSA 0160 0240 065 B0
18,0	0/-0.070	26,0	19,0	23,0	16,0	6,5	7,0	CSA 0180 0260 065 B0
20,0	0/-0.084	28,0	21,0	24,0	17,5	6,5	7,0	CSA 0200 0280 065 B0
22,0	0/-0.084	30,0	23,0	26,0	19,5	6,5	7,0	CSA 0220 0300 065 B0
25,0	0/-0.084	33,0	26,0	29,0	22,5	6,5	7,0	CSA 0250 0330 065 B0
28,0	0/-0.084	36,0	29,0	32,0	25,5	6,5	7,0	CSA 0280 0360 065 B0
30,0	0/-0.084	40,0	31,5	35,0	27,5	6,5	7,0	CSA 0300 0400 065 B0
32,0	0/-0.084	42,0	33,5	37,0	29,0	6,5	7,0	CSA 0320 0420 065 B0
36,0	0/-0.100	46,0	37,5	41,0	33,0	6,5	7,0	CSA 0360 0460 065 B0
40,0	0/-0.100	50,0	41,5	45,0	37,0	6,5	7,0	CSA 0400 0500 065 B0
50,0	0/-0.100	60,0	51,5	55,0	47,0	6,5	7,0	CSA 0500 0600 065 B0
57,0	0/-0.120	74,0	60,0	65,0	54,0	12,0	12,5	CSA 0570 0740 120 B0
70,0	0/-0.120	87,0	73,0	78,0	66,0	12,0	12,5	CSA 0700 0870 120 B0
78,0	0/-0.120	95,0	81,0	86,0	74,0	12,0	12,5	CSA 0780 0950 120 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



PSP

TENUTA PISTONE PER PNEUMATICA TIPO PSP

Descrizione

La tenuta tipo PSP è progettata per la tenuta pistone di cilindri pneumatici a semplice e doppio effetto.

La gola molto marcata tra il labbro dinamico e quello statico unitamente alla raggiatura dei due labbri di contatto aumentano la scorrevolezza della guarnizione anche in assenza di lubrificazione. Le limitate dimensioni e l'alta flessibilità del materiale rendono semplice il montaggio anche in cava chiusa.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 40° C a + 90° C
Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.
Codice materiale standard: B0
Materiale alternativo poliuretano a 85 Shore A.
Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave nella sede del pistone per evitare di compromettere la guarnizione. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245) per facilitare il montaggio. Si consiglia di lubrificare la guarnizione per rendere il sistema molto scorrevole.

PSP TYPE PISTON SEAL FOR PNEUMATICS

Description

The PSP piston seal has been designed for single and double action pneumatic cylinders.

The deep groove between the dynamic and the static lip, together with back-to-back radius lips, enhance seal sliding, even where there is a lack of environmental lubrication.

The reduced dimensions, together with the high flexibility of the material, also facilitates installation in closed grooves.

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from - 40° C up to + 90° C
Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

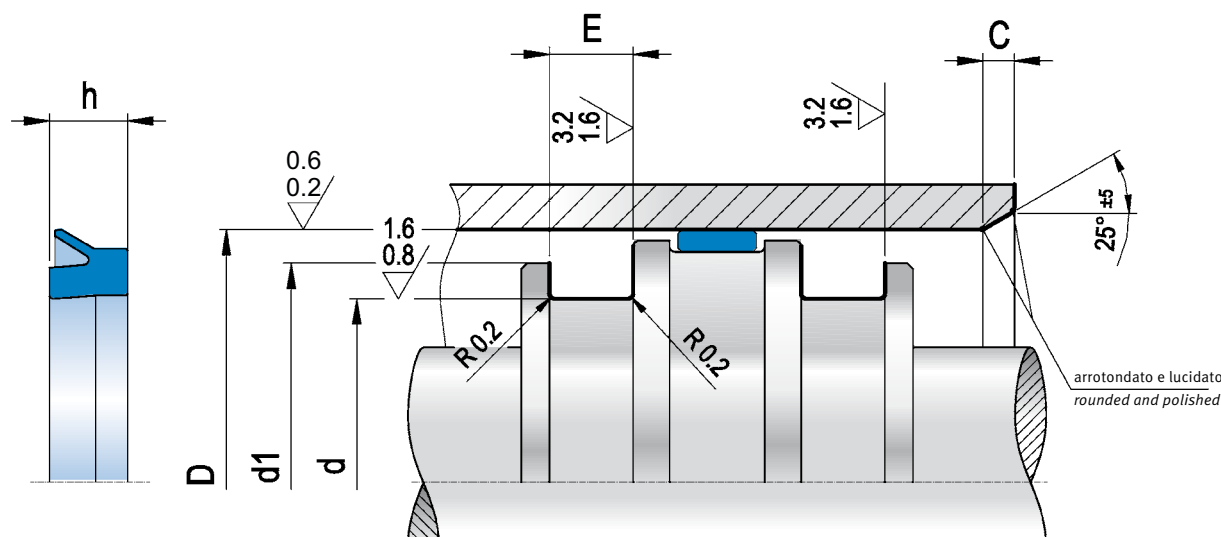
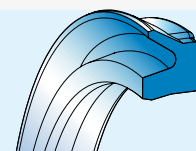
Standard polyurethane 90 Shore A.
Standard compound reference: B0
Alternative polyurethane 85 Shore A.
Alternative compound reference: A0

Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages.

The bore must not have flashes and must present a lead-in chamfer (see page 245).

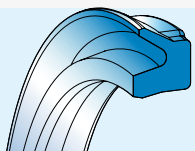
PSP



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

D _{H11}	d _{h10}	Toll. H10	d1*	h	E _{+0,2}	ART / ITEM	D _{H11}	d _{h10}	Toll. H10	d1*	h	E _{+0,2}	ART / ITEM
6,0	3,0	0/-0.048	5,0	2,00	2,50	PSP 0060 0030 020 B0	32,0	24,0	0/-0.084	31,0	3,25	3,50	PSP 0320 0240 032 B0
8,0	4,0	0/-0.048	7,0	2,55	3,00	PSP 0080 0040 025 B0	32,0	24,0	0/-0.084	31,0	5,50	6,00	PSP 0320 0240 055 B0
8,0	4,8	0/-0.048	7,0	2,30	2,70	PSP 0080 0048 023 B0	35,0	27,0	0/-0.084	34,0	3,25	3,50	PSP 0350 0270 032 B0
8,0	4,8	0/-0.048	7,0	2,55	3,00	PSP 0080 0048 025 B0	36,0	28,0	0/-0.084	35,0	3,25	3,50	PSP 0360 0280 032 B0
10,0	6,0	0/-0.048	9,0	2,55	3,00	PSP 0100 0060 025 B0	38,0	30,0	0/-0.084	37,0	3,25	3,50	PSP 0380 0300 032 B0
12,0	7,0	0/-0.058	11,0	2,55	3,00	PSP 0120 0070 025 B0	38,0	30,0	0/-0.084	37,0	5,50	6,00	PSP 0380 0300 055 B0
12,0	9,0	0/-0.058	11,0	2,10	2,50	PSP 0120 0090 021 B0	40,0	27,3	0/-0.084	39,0	6,40	7,50	PSP 0400 0273 064 B0
13,0	8,0	0/-0.058	12,0	2,55	3,00	PSP 0130 0080 025 B0	40,0	30,0	0/-0.084	39,0	7,00	7,50	PSP 0400 0300 070 B0
14,0	8,0	0/-0.058	13,0	2,55	3,00	PSP 0140 0080 025 B0	40,0	32,0	0/-0.100	39,0	3,25	3,50	PSP 0400 0320 032 B0
15,0	9,0	0/-0.058	14,0	2,55	3,00	PSP 0150 0090 025 B0	42,0	30,0	0/-0.100	41,0	6,00	6,50	PSP 0420 0300 060 B0
16,0	10,0	0/-0.058	15,0	2,55	3,00	PSP 0160 0100 025 B0	42,0	34,0	0/-0.100	41,0	3,25	3,50	PSP 0420 0340 032 B0
17,0	11,0	0/-0.070	16,0	2,55	3,00	PSP 0170 0110 025 B0	45,0	35,0	0/-0.100	44,0	10,00	11,00	PSP 0450 0350 100 B0
18,0	12,0	0/-0.070	17,0	2,55	3,00	PSP 0180 0120 025 B0	45,0	37,0	0/-0.100	44,0	3,25	3,50	PSP 0450 0370 032 B0
20,0	14,0	0/-0.070	19,0	2,55	3,00	PSP 0200 0140 025 B0	50,0	40,0	0/-0.100	49,0	5,00	6,00	PSP 0500 0400 050 B0
20,0	14,0	0/-0.070	19,0	4,00	4,50	PSP 0200 0140 040 B0	50,0	40,0	0/-0.100	49,0	7,00	7,50	PSP 0500 0400 070 B0
20,0	15,5	0/-0.070	19,0	4,00	4,50	PSP 0200 0155 040 B0	50,0	42,0	0/-0.100	49,0	3,25	3,50	PSP 0500 0420 032 B0
22,0	16,0	0/-0.070	21,0	2,55	3,00	PSP 0220 0160 025 B0	52,0	42,0	0/-0.100	51,0	4,25	4,50	PSP 0520 0420 042 B0
24,0	12,0	0/-0.070	23,0	6,50	7,50	PSP 0240 0120 065 B0	55,0	45,0	0/-0.100	54,0	7,00	7,50	PSP 0550 0450 070 B0
24,0	18,0	0/-0.070	23,0	2,55	3,00	PSP 0240 0180 025 B0	58,0	48,0	0/-0.100	57,0	4,25	4,50	PSP 0580 0480 042 B0
25,0	17,0	0/-0.070	24,0	5,50	6,00	PSP 0250 0170 055 B0	60,0	50,0	0/-0.120	59,0	5,00	5,70	PSP 0600 0500 050 B0
25,0	19,0	0/-0.084	24,0	3,25	3,50	PSP 0250 0190 032 B0	60,0	50,0	0/-0.120	59,0	7,00	7,50	PSP 0600 0500 070 B0
25,0	19,0	0/-0.084	24,0	4,00	4,50	PSP 0250 0190 040 B0	63,0	53,0	0/-0.120	62,0	4,25	4,50	PSP 0630 0530 042 B0
27,0	21,0	0/-0.084	26,0	3,25	4,00	PSP 0270 0210 032 B0	63,0	53,0	0/-0.120	62,0	7,00	7,50	PSP 0630 0530 070 B0
28,0	18,0	0/-0.084	27,0	7,00	7,50	PSP 0280 0180 070 B0	65,0	55,0	0/-0.120	64,0	5,00	6,00	PSP 0650 0550 050 B0
28,0	22,0	0/-0.084	27,0	3,25	3,50	PSP 0280 0220 032 B0	65,0	55,0	0/-0.120	64,0	7,00	7,50	PSP 0650 0550 070 B0
30,0	20,0	0/-0.084	29,0	5,00	6,00	PSP 0300 0200 050 B0	68,0	58,0	0/-0.120	67,0	4,70	5,50	PSP 0680 0580 047 B0
30,0	22,0	0/-0.084	29,0	3,25	3,50	PSP 0300 0220 032 B0	70,0	58,0	0/-0.120	69,0	8,50	9,50	PSP 0700 0580 085 B0

* diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio
recommended hook diameter which could be modified according to mounting demand



PSP

D _{H11}	d _{h10}	Toll. H10	d1*	h	E _{+0,2}	ART / ITEM
75,0	63,0	0/-0.120	74,0	8,50	9,50	PSP 0750 0630 085 B0
80,0	67,3	0/-0.120	79,0	6,35	7,00	PSP 0800 0673 063 B0
80,0	68,0	0/-0.120	79,0	8,50	9,50	PSP 0800 0680 085 B0
80,0	70,0	0/-0.120	79,0	4,25	4,50	PSP 0800 0700 042 B0
85,0	73,0	0/-0.120	84,0	8,50	9,50	PSP 0850 0730 085 B0
90,0	78,0	0/-0.120	89,0	8,50	9,50	PSP 0900 0780 085 B0
90,0	80,0	0/-0.120	89,0	4,25	4,50	PSP 0900 0800 042 B0
100,0	88,0	0/-0.140	99,0	8,50	9,50	PSP 1000 0880 085 B0
100,0	90,0	0/-0.140	99,0	4,25	4,50	PSP 1000 0900 042 B0
110,0	95,0	0/-0.140	109,0	10,00	11,00	PSP 1100 0950 100 B0
120,0	105,0	0/-0.140	119,0	10,00	11,00	PSP 1200 1050 100 B0
125,0	105,0	0/-0.140	124,0	8,25	8,50	PSP 1250 1050 082 B0

D _{H11}	d _{h10}	Toll. H10	d1*	h	E _{+0,2}	ART / ITEM
125,0	110,0	0/-0.140	124,0	10,00	11,00	PSP 1250 1100 100 B0
140,0	120,0	0/-0.140	139,0	8,25	8,50	PSP 1400 1200 082 B0
160,0	140,0	0/-0.160	159,0	8,25	8,50	PSP 1600 1400 082 B0
160,0	145,0	0/-0.160	159,0	10,00	11,00	PSP 1600 1450 100 B0
180,0	160,0	0/-0.160	179,0	14,00	15,00	PSP 1800 1600 140 B0
200,0	180,0	0/-0.160	199,0	8,25	8,50	PSP 2000 1800 082 B0
200,0	180,0	0/-0.160	199,0	14,00	15,00	PSP 2000 1800 140 B0
250,0	230,0	0/-0.185	249,0	14,00	15,00	PSP 2500 2300 140 B0

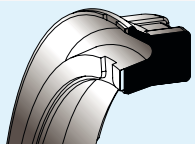
* diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio
recommended hook diameter which could be modified according to mounting demand

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

Pneumatic
Pneumatic



PSP/N

TENUTA PISTONE TIPO PSP/N

Descrizione

La PSP/N è una tenuta a labbro in NBR 70 Shore A che ha impieghi su pistone per cilindri a semplice e doppio effetto.

Creata con un labbro dinamico arrotondato per poter muoversi anche a bassissime pressioni. Sul labbro statico e dinamico sono state create delle sporgenze che NON permettono il rovesciamento in sede, anche quando si verificano delle inversioni in assenza di pressione.

Alla base e sul fianco ci sono dei notches che evitano, in presenza di pressione tra le due tenute creatasi da micro perdite, di espellere la guarnizione.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 30° C a + 100° C
Fluidi: aria lubrificata
(vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è una miscela di NBR 70 Shore A. E' possibile fornire, per impieghi diversi, mescole in HNBR, EPDM, FKM e VMQ.

Montaggio

Eliminare sporgenze e spigoli taglienti sul pistone per evitare durante il montaggio, il danneggiamento della tenuta. E' buona norma ingrassare la guarnizione sul pistone prima del montaggio. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

PSP/N TYPE PISTON SEAL TYPE

Description

The PSP/N is a lip seal in NBR 70 Shore A used on pistons for single and double effect cylinders.

Created with a rounded dynamic lip which moves even at very low pressure.

On the static and dynamic lip, there are protrusions avoiding any possibility of reversion in the groove, even in case of inversion without pressure.

There are also notches on the base and on the side avoiding the possibility of seal ejection when, in consequence of micro-leakages, there's pressure between the two seals.

Technical data

Pressure: < 20 bar
Speed: <= 1 m/s
Temperature: from - 30° C up to + 100° C
Fluids: lubricated air
(see table 3, page 14)

Material

Standard material is a compound NBR 70 Shore A. For different applications HNBR, EPDM, FKM and VMQ compounds can be also supplied.

Assembling

Eliminate sharp edges and protrusions on the piston to avoid, seal damages during the assembling.. Grease the seal on the piston before fitting. The bore must present a lead-in chamfer (see page 245).

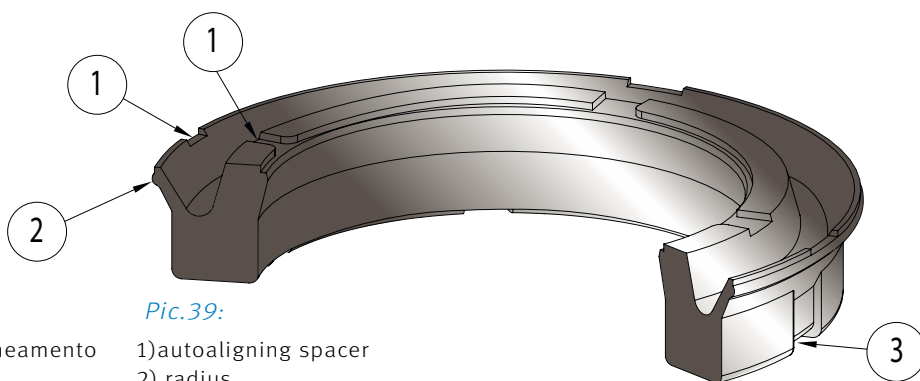


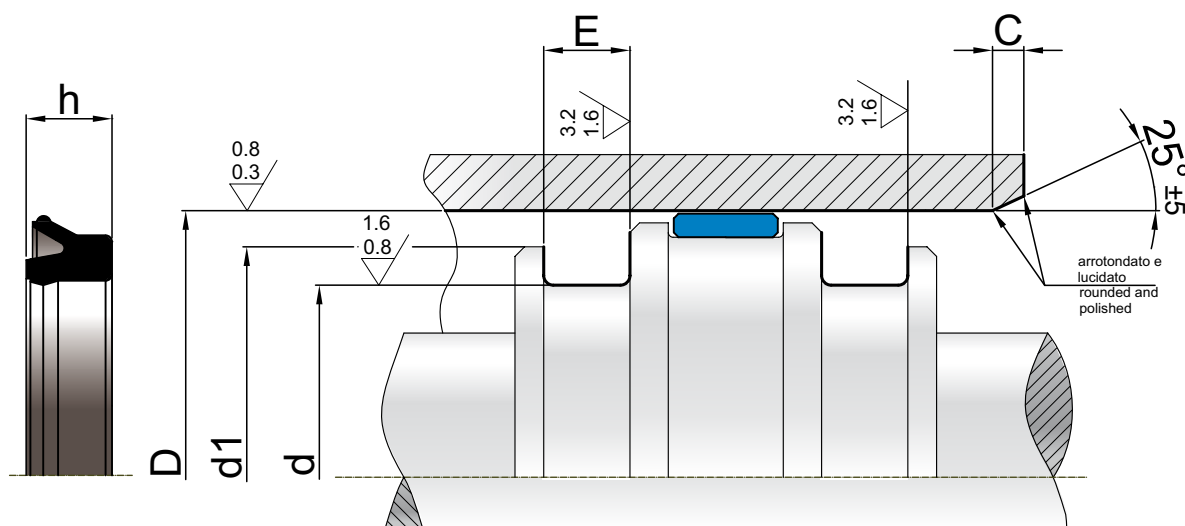
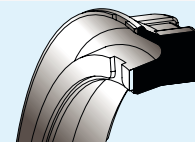
Fig.39:

- 1) distanziale per autoallineamento
- 2) raggio
- 3) notches antiespulsione

Pic.39:

- 1) autoaligning spacer
- 2) radius
- 3) antiejection notches

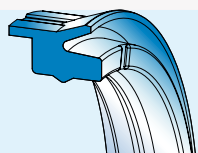
PSP/N



PSP
PSP/N
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

D_{H11}	d_{h10}	Toll h_{10}	d_1^*	h	$E_{+0,2}$	ART / ITEM
25	19	0/-0,070	24	3,25	3,50	PSP 0250 0190 032 NO
27	21	0/-0,084	26	3,25	3,50	PSP 0270 0210 032 NO
28	22	0/-0,084	27	3,25	3,50	PSP 0280 0220 032 NO
30	22	0/-0,084	29	3,25	3,50	PSP 0300 0220 032 NO
32	24	0/-0,084	31	3,25	3,50	PSP 0320 0240 032 NO
32	24	0/-0,084	31	5,50	11,00	PSP 0320 0240 055 NO
35	27	0/-0,084	34	3,25	3,50	PSP 0350 0270 032 NO
38	30	0/-0,084	37	3,25	3,50	PSP 0380 0300 032 NO
40	30	0/-0,084	39	7,00	7,50	PSP 0400 0300 070 NO
40	32	0/-0,010	39	3,25	3,50	PSP 0400 0320 032 NO
42	34	0/-0,010	41	3,25	3,50	PSP 0450 0340 032 NO
45	37	0/-0,010	44	3,25	3,50	PSP 0500 0370 032 NO
50	40	0/-0,010	49	7,00	7,50	PSP 0500 0400 070 NO
50	42	0/-0,010	49	3,25	3,50	PSP 0500 0420 032 NO
63	53	0/-0,012	62	4,25	4,50	PSP 0630 0530 042 NO
63	53	0/-0,012	62	7,00	7,50	PSP 0630 0530 070 NO
80	68	0/-0,012	79	8,50	9,50	PSP 0800 0680 085 NO
80	70	0/-0,012	79	4,25	4,50	PSP 0800 0400 042 NO
90	80	0/-0,012	89	4,25	4,50	PSP 0900 0800 042 NO
100	88	0/-0,014	99	8,50	9,50	PSP 1000 0880 085 NO
100	90	0/-0,014	99	4,25	4,50	PSP 1000 0900 042 NO

* diametro di aggancio consigliato ma modificabile in funzione delle esigenze di montaggio
recommended hook diameter which could be modified according to mounting demand



MPS

TENUTA PISTONE MAGNETICO TIPO MPS

Descrizione

La guarnizione tipo MPS è stata studiata sia per pistoni di cilindri pneumatici compatti a corsa breve sia per il semplice e doppio effetto.

L'elemento di guida è sulla guarnizione stessa. Appositi interstizi e notches creano spazi per trattenere grasso lubrificante mantenendo molto scorrevole il pistone nel tempo.

Il magnete è alloggiato all'interno tra le due guarnizioni contrapposte.

Per problemi o soluzioni alternative, il nostro ufficio tecnico mette a disposizione specifiche progettuali personalizzate.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da -30° C a +90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo poliuretano a 85 Shore A.

Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave nella sede del pistone per evitare di compromettere la guarnizione.

Il montaggio si effettua per accavallamento della guarnizione sul diametro del pistone.

Importante: il pistone deve essere sagomato esattamente come da disegno della tabella dimensionale MPS. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

MPS TYPE MAGNETIC PISTON SEAL

Description

The MPS seal has been specifically designed either for pneumatic compact short stroke cylinders and single/double effect cylinders.

The guiding element is integrated on the seal. Specific notches keep the lubricant grease maintaining a sliding effect on the piston for long time.

The magnet is located between the two opposed gaskets.

For specific needs or problems, our technical office is at your complete disposal with tailor-made solutions.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from -30° C up to +90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

Standard compound reference: B0

Alternative polyurethane 85 Shore A.

Alternative compound reference: A0

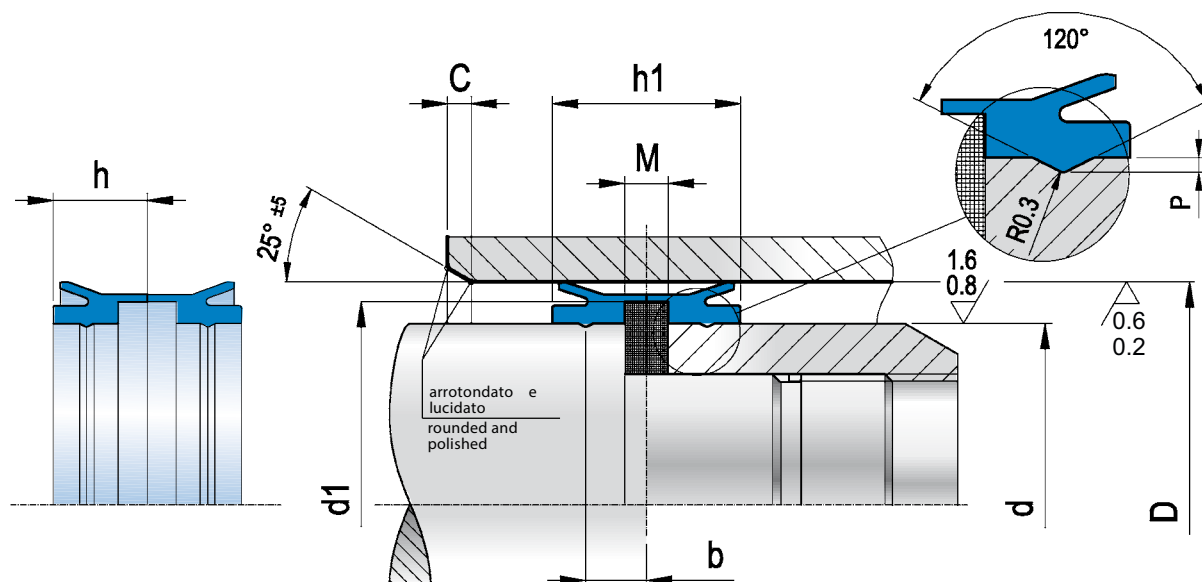
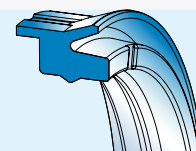
Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages.

The installation is made by overlapping the seal on the piston diameter.

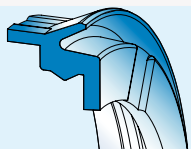
Warning: the piston must be correctly shaped according to the drawing of the MPS dimensions table. The bore must present a lead-in chamfer (see page 245).

MPS



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

D _{H11}	d _{h9}		h ₁	h	d1	M	P	b	ART / ITEM					
8,0	4,0	0/-0.030	12,0	6,0	6,5	4,0	0,35	4,00	MPS	0080	0040	040	120	B0
10,0	4,0	0/-0.030	12,0	6,0	8,5	3,0	0,35	3,50	MPS	0100	0040	030	120	B0
12,0	6,0	0/-0.030	12,0	6,0	10,5	3,0	0,40	3,50	MPS	0120	0060	030	120	B0
16,0	8,0	0/-0.036	12,0	6,0	14,5	3,0	0,40	3,50	MPS	0160	0080	030	120	B0
20,0	10,0	0/-0.036	12,0	6,0	18,0	3,0	0,50	3,50	MPS	0200	0100	030	120	B0
25,0	10,0	0/-0.036	12,0	6,0	23,0	3,0	0,50	3,50	MPS	0250	0100	030	120	B0



MPS/2

TENUTA PISTONE MAGNETICO TIPO MPS

Descrizione

La guarnizione tipo MPS è stata studiata sia per pistoni di cilindri pneumatici compatti a corsa breve sia per il semplice e doppio effetto.

L'elemento di guida è sulla guarnizione stessa.

Appositi interstizi e notches creano spazi per trattenere grasso lubrificante mantenendo molto scorrevole il pistone nel tempo.

Il magnete è alloggiato all'interno tra le due guarnizioni contrapposte.

Per problemi o soluzioni alternative, il nostro ufficio tecnico mette a disposizione specifiche progettuali personalizzate.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da -30° C a +90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo poliuretano a 85 Shore A.

Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave nella sede del pistone per evitare di compromettere la guarnizione.

Il montaggio si effettua per accavallamento della guarnizione sul diametro del pistone.

Importante: il pistone deve essere sagomato esattamente come da disegno della tabella dimensionale MPS. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

MPS TYPE MAGNETIC PISTON SEAL

Description

The MPS seal has been specifically designed either for pneumatic compact short stroke cylinders and single/double effect cylinders.

The guiding element is integrated on the seal.

Specific notches keep the lubricant grease maintaining a sliding effect on the piston for long time.

The magnet is located between the two opposed gaskets.

For specific needs or problems, our technical office is at your complete disposal with tailor-made solutions.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from -30° C up to +90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

Standard compound reference: B0

Alternative polyurethane 85 Shore A.

Alternative compound reference: A0

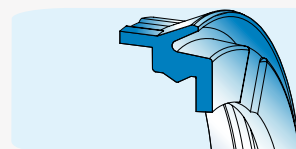
Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages.

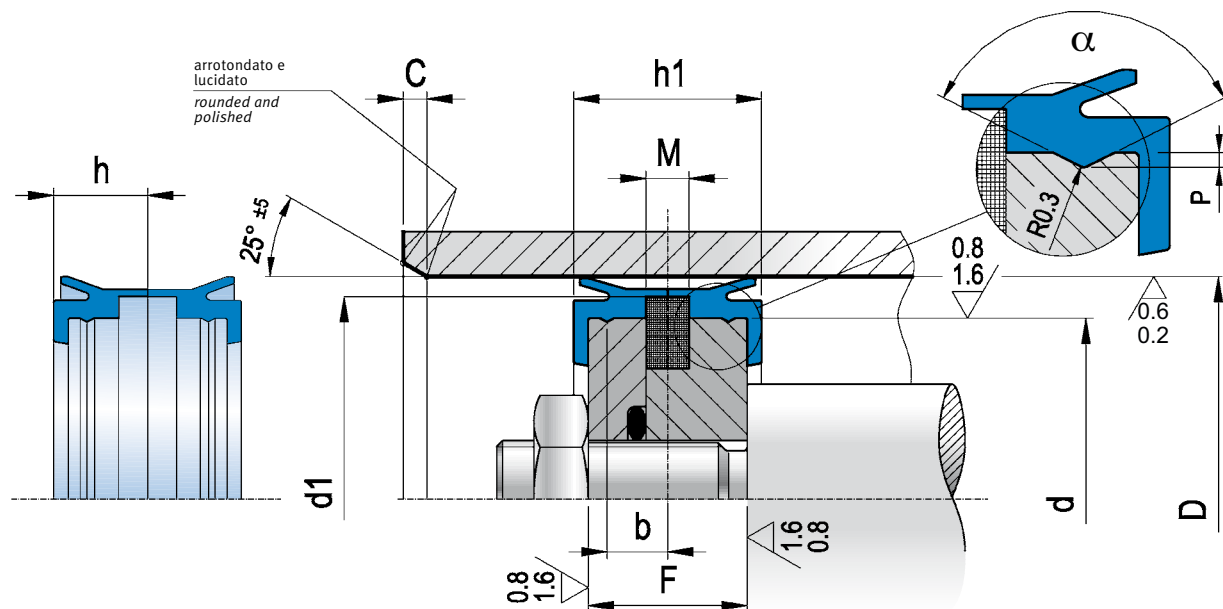
The installation is made by overlapping the seal on the piston diameter.

Warning: the piston must be correctly shaped according to the drawing of the MPS dimensions table. The bore must present a lead-in chamfer (see page 245).

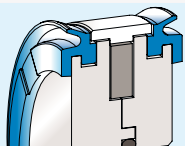
MPS/2



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN



D_{H11}	d_{h9}	Toll h_9	$h1$	h	$d1$	M	P	b	F	α	ART / ITEM					
32,0	26,0	0/-0.052	14,0	7,00	29,5	3,0	0,50	4,00	11,00	120°	MPS	0320	0260	030	120	B0
32,0	26,0	0/-0.052	14,0	7,00	29,5	3,0	0,80	4,00	11,00	90°	MPS	0320	0260	030	090	B0
32,0	26,0	0/-0.052	14,0	7,00	29,5	5,0	0,50	4,00	11,00	120°	MPS	0320	0260	050	120	B0
32,0	26,0	0/-0.052	14,0	7,00	29,5	5,0	0,80	4,00	11,00	90°	MPS	0320	0260	050	090	B0
40,0	34,0	0/-0.062	14,5	7,25	37,5	5,0	0,50	4,25	12,00	120°	MPS	0400	0340	050	120	B0
40,0	34,0	0/-0.062	14,5	7,25	37,5	5,0	0,80	4,25	12,00	90°	MPS	0400	0340	050	090	B0
50,0	43,0	0/-0.062	14,5	7,25	46,5	5,0	0,60	4,25	12,00	120°	MPS	0500	0430	050	120	B0
50,0	43,0	0/-0.062	14,5	7,25	46,5	5,0	0,80	4,25	12,00	90°	MPS	0500	0430	050	090	B0
63,0	55,0	0/-0.074	20,0	10,00	59,5	5,0	0,80	6,00	17,00	120°	MPS	0630	0550	050	120	B0
80,0	72,0	0/-0.074	22,0	11,00	76,5	5,0	0,80	6,50	19,00	120°	MPS	0800	0720	050	120	B0
100,0	90,0	0/-0.087	26,0	13,00	96,5	5,0	0,80	7,50	22,00	120°	MPS	1000	0900	050	120	B0



MPM

PISTONE MAGNETICO TIPO MPM

Descrizione

Il pistone magnetico MPM e' stato studiato per cilindri pneumatici a doppio effetto dove vi sia la necessità di controllare la corsa del pistone/stelo, tramite la presenza di un anello magnetico all'interno del pistone stesso.

Il pistone magnetico MPM, rispetto ai tradizionali pistoncini monoblocco in NBR, presenta un altro importante vantaggio, grazie alla presenza dell'anello guida, che mantiene il pistone perfettamente allineato alla sede.

Inoltre, le due tenute contrapposte in poliuretano, garantiscono la buona scorrevolezza del pistone e mantengono il cilindro internamente pulito, anche in presenza di aria lubrificata.

Il pistone MPM è composto dai seguenti elementi:

- 2 anelli di tenuta in poliuretano contrapposti fra loro;
- 2 anime in alluminio per il corpo centrale del pistone;
- 1 elemento magnetico in plastroferrite;
- 1 guida per mantenere allineato il pistone;
- 1 O-ring in NBR;

I suddetti articoli possono essere forniti assemblati o singolarmente.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: Aria (lubrificata e non), grasso, ecc.
(vedi tabella 3 a pagina 14)

Materiale

Tenute pistone in TPU polietere 85°ShA e 90 Sh° A; Alluminio ANTICORODAL 6082 per corpo centrale pistone; Magnete ANISOTROPICO (plastroferrite orientata); Resina acetica additivata PTFE per elemento guida; NBR a 70 Sh°A per O-Ring interno

Montaggio

Il montaggio del pistone magnetico e' molto semplice poiché viene fornito già assemblato nelle sue componenti. Eliminare tutti gli spigoli vivi e/o bave di lavorazione dello stelo per evitare di danneggiare l'O-ring interno.

MAGNETIC PISTON TYPE MPM

Description

The MPM magnetic piston, has been specifically designed for double effect pneumatic cylinders, where it is necessary to control the piston/rod stroke, by a magnetic rings, inside the piston.

The MPM magnetic piston, compared with conventional mono-bloc pistons in NBR, has another relevant advantage, thanks to the piston wear ring, which maintains the piston perfectly aligned with the bore. Moreover, the two opposed polyurethane piston seals, ensure a good sliding effect on the piston and maintain the system clean even in the presence of lubricated air.

The MPM magnetic piston, is composed by the following elements:

- 2 Polyurethane seals, opposing each other
- 2 Aluminium parts, for central elements of the piston;
- 1 magnetic element in Plastroferrite;
- 1 wear ring to maintain the piston axially aligned;
- 1 NBR O-ring;

The above mentioned items could be supply assembled or each single part.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from -40° C up to +90° C

Fluids: Air (lubricated or not), grease, etc.
(see table 3, page 14)

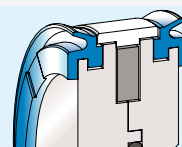
Material

Piston seals available in TPU Polyether 85ShA and 90ShA; Aluminum ANTICORODAL 6082 for central elements; ANISOTROPIC Magnetic Ring (oriented plastroferrite); Acetal Resin (POM) PTFE reinforced for wear ring; NBR 70 ShA for O ring

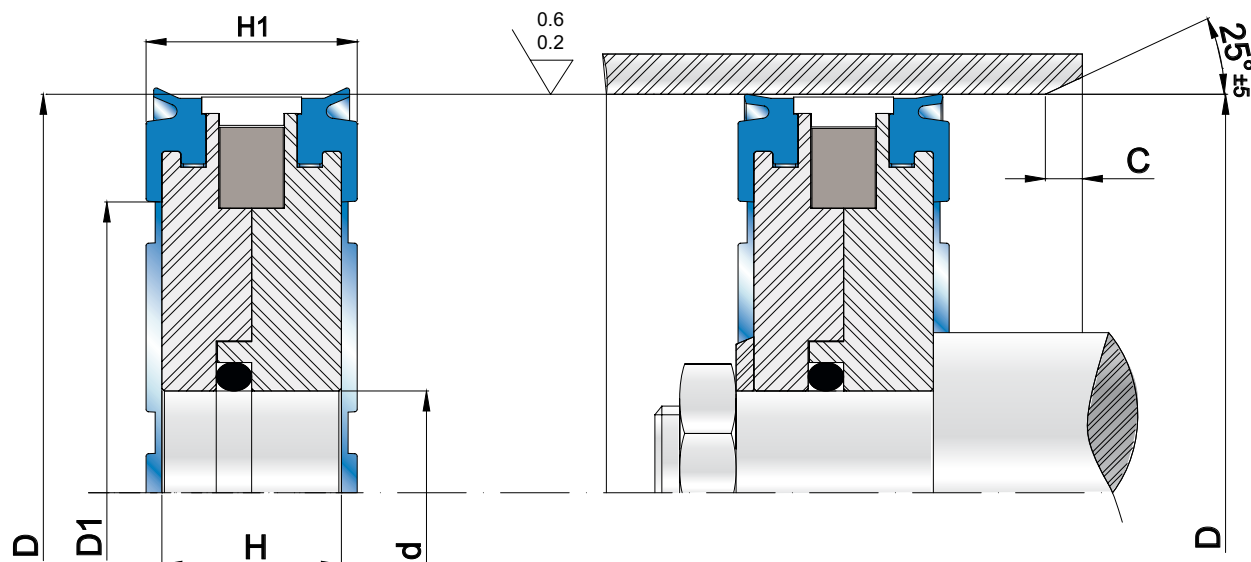
Assembling

The installation is very easy because the Kit is available already preassembled. It is important to remove flashes or cutting edges on the rod to avoid damages on the O-ring.

MPM



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN



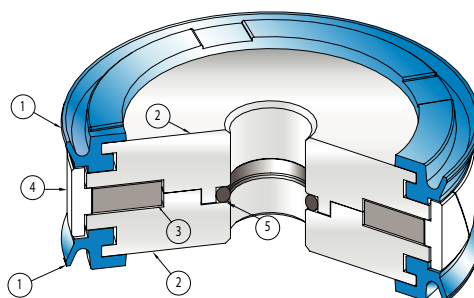
D _{H11}	d _{f9}	H	Max H1	Max D1	ART / ITEM	85sh	90sh
32,0	8,0	13,0	16,0	22,0	MPM 0320 0080 130	AX	BX
40,0	8,0	13,0	16,0	26,0	MPM 0400 0080 130	AX	BX
40,0	10,0	13,0	16,0	26,0	MPM 0400 0100 130	AX	BX
50,0	10,0	13,0	16,0	35,0	MPM 0500 0100 130	AX	BX
50,0	16,0	13,0	16,0	35,0	MPM 0500 0160 130	AX	BX
60,0	12,0	14,0	17,0	43,0	MPM 0600 0120 140	AX	BX
63,0	12,0	14,0	17,0	46,0	MPM 0630 0120 140	AX	BX
63,0	14,0	14,0	17,0	46,0	MPM 0630 0140 140	AX	BX
63,0	16,0	14,0	17,0	46,0	MPM 0630 0160 140	AX	BX
70,0	12,0	14,0	17,0	54,0	MPM 0700 0120 140	AX	BX
75,0	12,0	14,0	17,0	59,0	MPM 0750 0120 140	AX	BX
80,0	16,0	14,0	17,0	64,0	MPM 0800 0160 140	AX	BX
80,0	18,0	14,0	17,0	64,0	MPM 0800 0180 140	AX	BX
80,0	20,0	14,0	17,0	64,0	MPM 0800 0200 140	AX	BX
90,0	12,0	15,0	18,0	74,0	MPM 0900 0120 150	AX	BX
90,0	16,0	15,0	18,0	74,0	MPM 0900 0160 150	AX	BX
100,0	16,0	16,0	21,0	83,0	MPM 1000 0160 160	AX	BX
100,0	18,0	16,0	21,0	83,0	MPM 1000 0180 160	AX	BX
100,0	20,0	16,0	21,0	83,0	MPM 1000 0200 160	AX	BX

Fig.40:

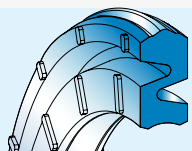
- 1) Tenute Pistone in Poliuretano
- 2) Anime Alluminio
- 3) Anello magnetico Plastroferrite
- 4) Guida Pistone
- 5) Oring

Pic.40:

- 1) Polyurethane piston seals
- 2) Aluminum elements
- 3) Magnetic Plastroferrite Ring
- 4) Wear Ring
- 5) Oring



Pneumatica
Pneumatic



SPS

TENUTA PISTONE A MOLLA TIPO SPS

Descrizione

La guarnizione tipo SPS è realizzata per la tenuta pistone di cilindri pneumatici.
Dove gli ingombri lo permettono, può essere utilizzata anche su valvole pneumatiche.
Le ridotte dimensioni delle sedi consentono un'esecuzione di lavorazione macchina semplice.
Ha un profilo con la tenuta arrotondata al centro sul labbro dinamico e due sporgenze sul labbro statico.
Il profilo simmetrico ne facilita il montaggio.
La particolare forma a molla rende il sistema molto scorrevole anche a bassa pressione.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 40° C a + 90° C
Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.
Codice materiale standard: B0
Materiale alternativo poliuretano a 85 Shore A.
Codice materiale alternativo: A0

Montaggio

Eliminare tutti gli spigoli vivi e le bave sulla camicia per evitare di compromettere la guarnizione.
Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

SPS TYPE SPRING PISTON SEAL

Description

*The SPS rod seal has been designed for pneumatic cylinder applications.
The SPS can also be used for pneumatic valves where the overall dimensions allowed.
Moreover a shorter machining of the system can be obtained thanks to the reduced overall dimensions.
The profile is rounded in the middle of the dynamic lip and it has two projections on the static lip.
This symmetric shape allows easier installation. The special spring shaped profile ensures high flexibility in the system even at low pressure.*

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from -40° C up to +90° C
Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

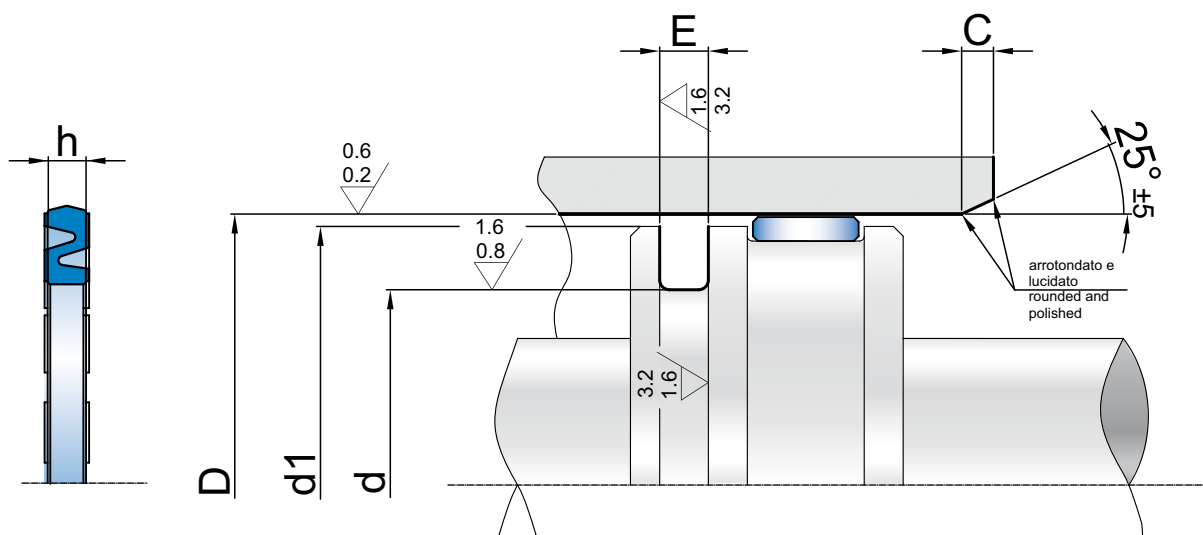
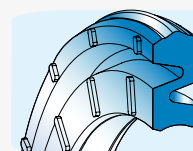
Material

Standard polyurethane 90 Shore A.
Standard compound reference: B0
Alternative polyurethane 85 Shore A.
Alternative compound reference: A0

Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages. The bore must present a lead-in chamfer (see page 245).

SPS

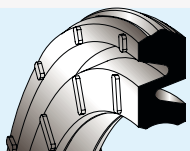


PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

DH11	dh10	toll _{h10}	d1	h	E+0,2	ART / ITEM			
12,0	7,0	0/-0.058	11,5	2,2	2,5	SPS	0120	0070	022 B0
16,0	9,0	0/-0.058	15,5	2,4	2,5	SPS	0160	0090	024 B0
20,0	13,0	0/-0.070	19,5	2,4	2,5	SPS	0200	0130	024 B0
25,0	18,0	0/-0.070	24,5	2,4	2,5	SPS	0250	0180	024 B0
28,0	21,0	0/-0.084	27,5	2,4	2,5	SPS	0280	0210	024 B0
30,0	21,0	0/-0.084	29,5	2,9	3,0	SPS	0300	0210	029 B0
32,0	23,0	0/-0.084	31,5	2,9	3,0	SPS	0320	0230	029 B0
35,0	26,0	0/-0.084	34,5	2,9	3,0	SPS	0350	0260	029 B0
40,0	31,0	0/-0.100	39,5	2,9	3,0	SPS	0400	0310	029 B0
45,0	36,0	0/-0.100	44,5	2,9	3,0	SPS	0450	0360	029 B0
50,0	41,0	0/-0.100	49,5	2,9	3,0	SPS	0500	0410	029 B0
60,0	48,0	0/-0.100	59,5	3,9	4,0	SPS	0600	0480	039 B0
63,0	51,0	0/-0.120	62,5	3,9	4,0	SPS	0630	0510	039 B0
70,0	58,0	0/-0.120	69,5	3,9	4,0	SPS	0700	0580	039 B0
80,0	68,0	0/-0.120	79,5	3,9	4,0	SPS	0800	0680	039 B0
100,0	88,0	0/-0.120	99,5	3,9	4,0	SPS	1000	0880	039 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



SPS / N

TENUTA PISTONE A MOLLA TIPO SPS/N

Descrizione

La guarnizione tipo SPS/N è realizzata per tenuta pistone di cilindri pneumatici.

Dove gli ingombri lo permettono può essere utilizzata anche su valvole pneumatiche.

Le ridotte dimensioni delle sedi, consentono un'esecuzione di lavorazione macchina veloce e semplice.

Il profilo simmetrico ne facilita il montaggio.

La particolare forma a molla rende il sistema molto scorrevole anche a bassissima pressione.

Limiti d'impiego

Pressione: < 12 [bar]

Velocità: < 1 [m/s]

Temperatura: da - 20 °C a +100 °C mescola NBR
da -15 °C a +150 °C mescola FKM

Fluidi: aria lubrificata, grassi e oli minerali
(vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è NBR 80 Shore A.

A richiesta materiale FKM 75 Shore A.

Codice materiale standard: N1

Montaggio

Eliminare spigoli vivi e le bave per non danneggiare la tenuta al momento del montaggio. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

SPS/N TYPE SPRING PISTON SEAL

Description

The seal type SPS / N is a piston seal for pneumatic cylinders.

The SPS/N can also be used for pneumatic valves where the overall dimensions allowed.

The reduced dimensions of the seat allows fast and simple machining operations.

This symmetric profile allows easier installation The special spring shape ensure a system sliding even at very low pressure.

Technical data

Pressure: < 12 [bar]

Speed: < 1 [m/s]]

Temperature: from - 20 °C to +100 °C mescola NBR
from -15 °C to +150 °C mescola FKM

Fluids: Lubricated air, grease and mineral oils
(see table 3, page 14)

Material

Standard material is NBR 80 Shore A.

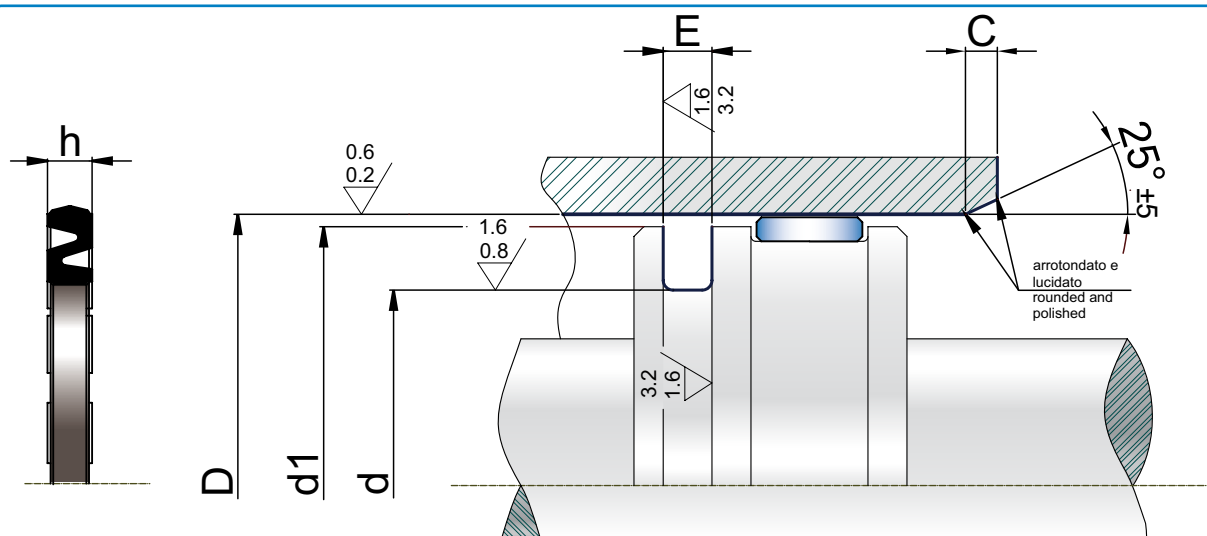
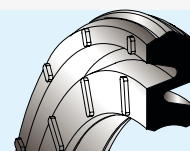
On demand material FKM 75 Shore A

Standard compound reference: N1

Assembling

It is important to remove flashes or cutting edges in the housing to avoid damages. The bore must present a lead-in chamfer (see page 245).

SPS/N

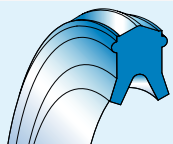


PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

df9	DH10	toll h10	d1	h	E+0,2	ART / ITEM				
12,0	7,0	0/-0,058	11,5	2,20	2,50	SPS	0120	0070	022	N1
16,0	9,0	0/-0,058	15,5	2,40	2,50	SPS	0160	0090	024	N1
20,0	13,0	0/-0,070	19,5	2,40	2,50	SPS	0200	0130	024	N1
25,0	18,0	0/-0,070	24,5	2,40	2,50	SPS	0250	0180	024	N1
28,0	21,0	0/-0,084	27,5	2,40	2,50	SPS	0280	0210	024	N1
30,0	21,0	0/-0,084	29,5	2,90	3,00	SPS	0300	0210	029	N1
32,0	23,0	0/-0,084	31,5	2,90	3,00	SPS	0320	0230	029	N1
35,0	26,0	0/-0,084	34,5	2,90	3,00	SPS	0350	0260	029	N1
40,0	31,0	0/-0,100	39,5	2,90	3,00	SPS	0400	0310	029	N1
45,0	36,0	0/-0,100	44,5	2,90	3,00	SPS	0450	0360	029	N1
50,0	41,0	0/-0,100	49,5	2,90	3,00	SPS	0500	0410	029	N1
60,0	48,0	0/-0,100	59,5	3,90	4,00	SPS	0600	0480	039	N1
63,0	51,0	0/-0,120	62,5	3,90	4,00	SPS	0630	0510	039	N1
70,0	58,0	0/-0,120	69,5	3,90	4,00	SPS	0700	0580	039	N1
80,0	68,0	0/-0,120	79,5	3,90	4,00	SPS	0800	0680	039	N1
100,0	88,0	0/-0,120	99,5	3,90	4,00	SPS	1000	0880	039	N1
125,0	110,0	0/-0,120	124,5	4,90	5,00	SPS	1250	1100	049	N1

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



PLF

TENUTA PISTONE TIPO PLF

Descrizione

La tenuta PLF "Pneumatic Low Friction" è una guarnizione per pistoni pneumatici, a semplice e a doppio effetto, nata per ridurre attrito e limitare l'ingombro nel pistone.

Il particolare profilo sfrutta la pressione dell'aria, per fare tenuta sia assialmente che radialmente.

Può lavorare sia a basse pressioni (0,20 Bar), che ad alta pressione (20 Bar).

Evita lo Stick-Slip sia in fase di partenza che durante il movimento alternativo.

Grazie al particolare profilo presenta ridotta usura nel tempo.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da -40 °C a +90 °C

Fluidi: aria (con o senza lubrificazione), fluidi e oli a base minerale.
(vedi tabella 3 a pagina 14)

Materiale

Standard: Poliuretano 85 Shore A

Codice materiale: A0

Montaggio

Il montaggio avviene in cava chiusa.

È importante togliere le bave di lavorazione che, in fase di montaggio, danneggerebbero la tenuta.

Prima del montaggio si consiglia di lubrificare con grasso minerale. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

PISTON SEAL TYPE PLF

Description

The PLF seal "Pneumatic Low Friction" is a single or double effect piston seal, created for Low Friction Working and to have limited dimension of the groove. The particular profile use air pressure, to seal both axially and radially.

It can work at low pressure (0,20 Bar) and high pressure (20 Bar).

No Stick-Slip is in the starting process or during the reciprocating movement.

Thanks to the particular design has a low wear over time.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from -40 °C to +90 °C

Fluids: air (lubricated or not), mineral-based fluid and oil.
(see table 3, page 14)

Material

Standard: Polyurethane 85 Shore A

Material code: A0

Assembling

The assembling is in closed groove.

Important is to eliminate burrs, that during the assembly, will damage the seal. Before the assembling is recommended to lubricate with mineral grease. The bore must present a lead-in chamfer (see page 245).

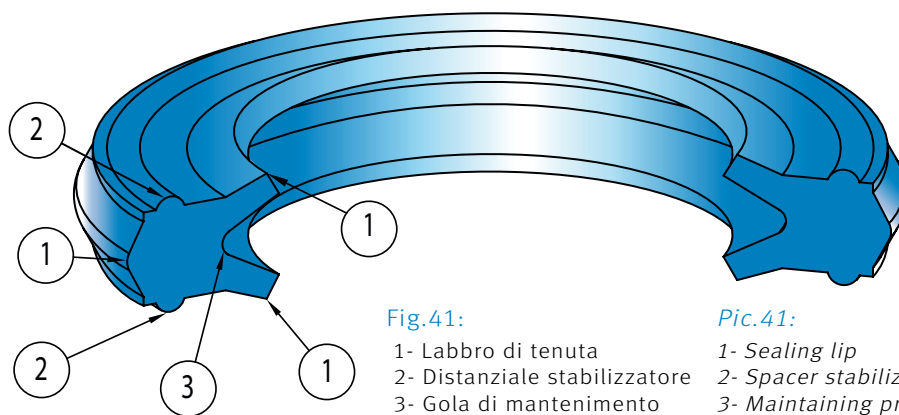


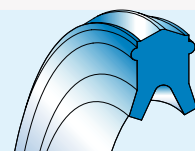
Fig.41:

1- Labbro di tenuta
2- Distanziale stabilizzatore
3- Gola di mantenimento tenuta in pressione

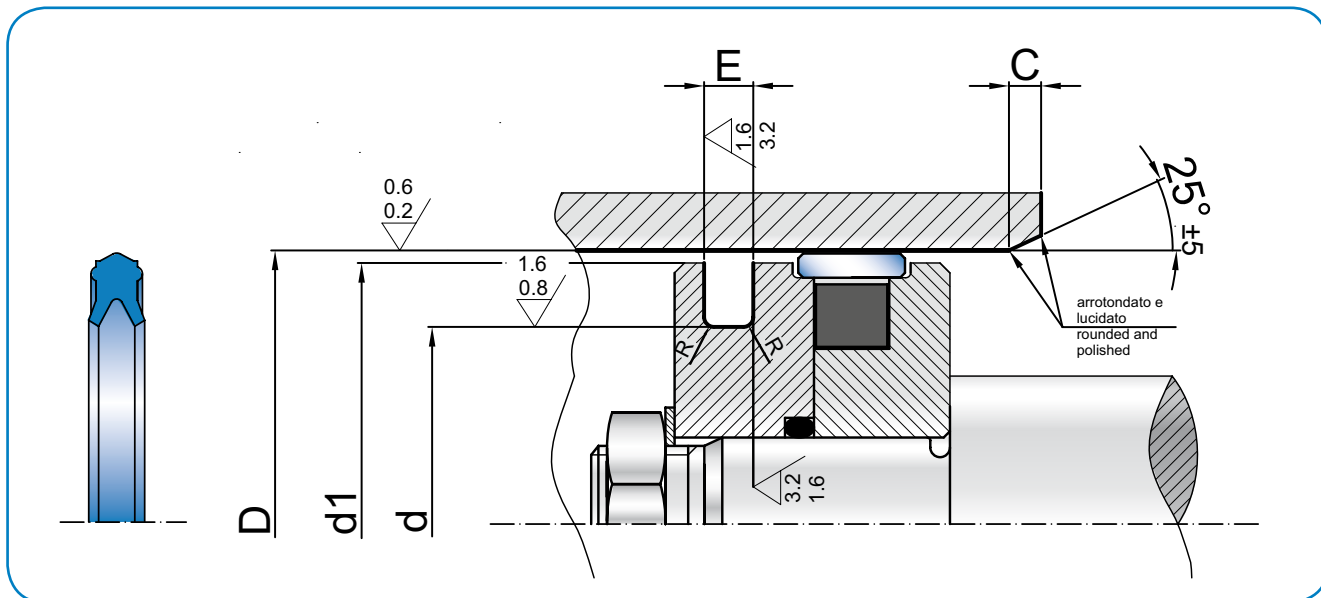
Pic.41:

1- Sealing lip
2- Spacer stabilizer
3- Maintaining pressure sealing groove

PLF



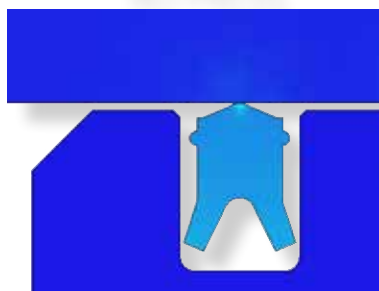
PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN



DH11	dH10	toll _{h10}	d1	E+0,2	R	ART / ITEM
20,0	13,0	0/-0,070	19,5	2,50	0,20	PLF 0200 0130 025 A0
25,0	18,0	0/-0,070	24,5	2,50	0,20	PLF 0250 0180 025 A0
32,0	23,0	0/-0,084	31,5	3,00	0,30	PLF 0320 0230 030 A0
40,0	31,0	0/-0,100	39,5	3,00	0,30	PLF 0400 0310 030 A0
50,0	41,0	0/-0,100	49,5	3,00	0,30	PLF 0500 0410 030 A0
63,0	51,0	0/-0,120	62,5	4,00	0,40	PLF 0630 0510 040 A0
80,0	68,0	0/-0,120	79,5	4,00	0,40	PLF 0800 0680 040 A0
100,0	88,0	0/-0,120	99,5	4,00	0,40	PLF 1000 0880 040 A0
125,0	110,0	0/-0,120	124,0	5,00	0,50	PLF 1250 1100 050 A0

Fig.42 - Pic.42:

NO PRESS.



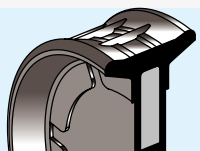
PRESS.



PRESS.



Pneumatica
Pneumatic



MPP

PISTONE MONOBLOCCO TIPO MPP

Descrizione

Il pistone monoblocco tipo MPP è realizzato in gomma nitrilica di durezza 75 Shore A vulcanizzata su inserto metallico.

Si usa normalmente in applicazioni pneumatiche nei cilindri a semplice e a doppio effetto. Il profilo a labbri di tenuta arrotondati, facilita lo scorrimento evitando il fenomeno di Stick-Slip. La camera porta lubrificante tra i due labbri di tenuta, garantisce nel tempo la linearità al movimento assiale. I distanziali in senso dello scorrimento, auto-allineano il pistone alla camicia, dove ci fossero carichi radiali forti. Il pistone nella parte interna ha, da entrambi i lati, alcuni bassorilievi che facilitano il primo distacco durante l'inversione di marcia.

Dati tecnici

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 30° C a + 100° C
Fluidi: aria (lubrificata e non) , grasso, ecc.
(vedi tabella 3 a pagina 14)

Materiale

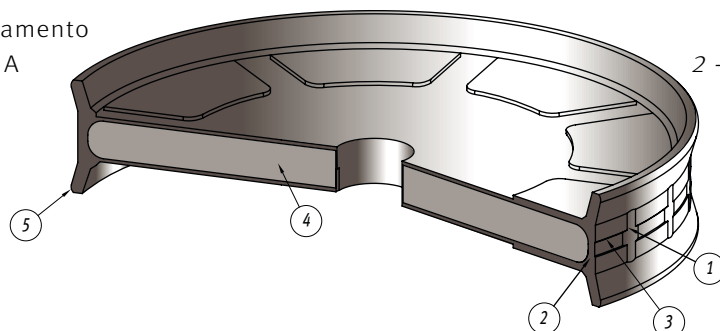
Il materiale utilizzato è la combinazione di gomma NBR 75 Shore A con inserto acciaio. E' possibile fornire il pistone anche in FKM per impieghi ad alte temperature.

Montaggio

Eliminare spigoli vivi all'imbocco camicia-cilindro per evitare di compromettere la guarnizione.
Ingrassare il pistone prima del montaggio. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

Fig.43:

- 1 - distanziale per autoallineamento
- 2 - mescola in NBR 75 Shore A
- 3 - gola porta lubrificante
- 4 - inserto metallico
- 5 - raggio



MONOBLOCK PISTON TYPE MPP

Description

The MPP type mono-block piston type MPP is made of NBR nitrile rubber hardness 75 Shore A vulcanized on a metal insert.

It is normally used in pneumatic applications, in single and double effect cylinders. The profile with rounded edges improves the sliding and avoids Stick-Slip. The groove leads lubricant through the two sealing lips, ensuring the axial movements linearity for long time.

The sliding direction spacers, self-align piston and sleeve in case of heavy radial loads. The piston presents, on both sides of the internal part, some grooves helping breakaway during the first reverse gear.

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from - 30° C up to + 100° C
Fluids: air (lubricated or not), grase, etc.
(see table 3, page 14)

Material

The material used is a combination of nitrile rubber NBR 75 Shore A and steel insert.
For high temperature application we could also provide FKM compound instead of NBR compound.

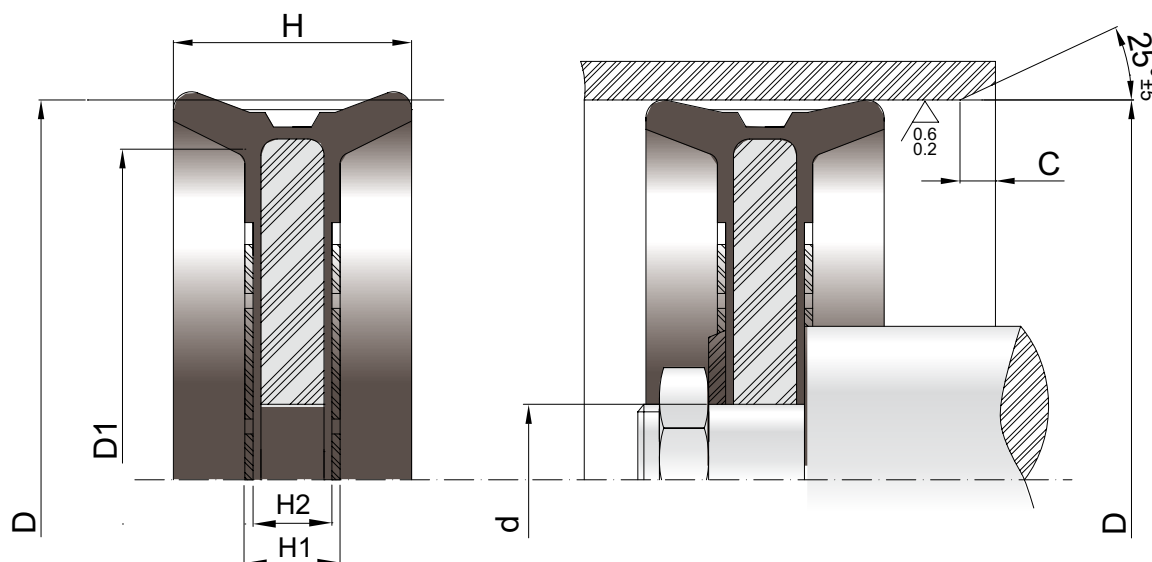
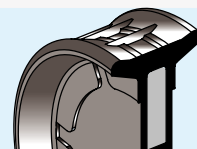
Assembling

Remove sharp edges at the Bore-Cylinder entry to avoid seal damages.
Grease the piston before installation. The bore must present a lead-in chamfer (see page 245).

Pic.43:

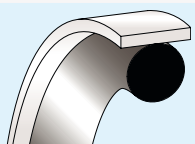
- 1 - aligning spacer
- 2 - NBR 75 Sh A compound
- 3 - lubricant groove
- 4 - metal insert
- 5 - radius

MPP



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

D _{H11}	d _{f8}	H	H1	H2	D1	C	ART / ITEM			
25,0	8,0	12,0	6,0	4,0	14,50	3,00	MPP	0250	0080	120 N2
32,0	8,0	15,0	6,0	4,0	16,00	3,00	MPP	0320	0080	150 N2
40,0	10,0	18,0	7,0	5,0	23,00	3,00	MPP	0400	0100	180 N2
50,0	10,0	18,0	7,0	5,0	29,00	4,00	MPP	0500	0100	180 N2
60,0	12,0	22,0	9,0	6,0	37,50	4,00	MPP	0600	0120	220 N2
63,0	12,0	22,0	9,0	6,0	40,50	4,00	MPP	0630	0120	220 N2
63,0	14,0	22,0	9,0	6,0	40,50	4,00	MPP	0630	0140	220 N2
63,0	16,0	22,0	9,0	6,0	40,50	4,00	MPP	0630	0160	220 N2
70,0	12,0	22,0	9,0	6,0	47,00	4,00	MPP	0700	0120	220 N2
75,0	12,0	25,0	9,0	6,0	49,00	4,50	MPP	0750	0120	250 N2
80,0	12,0	25,0	9,0	6,0	55,00	4,50	MPP	0800	0120	250 N2
80,0	14,0	25,0	9,0	6,0	55,00	4,50	MPP	0800	0140	250 N2
80,0	16,0	25,0	9,0	6,0	55,00	4,50	MPP	0800	0160	250 N2
80,0	18,0	25,0	9,0	6,0	60,00	4,50	MPP	0800	0180	250 N2
90,0	12,0	25,0	9,0	6,0	65,00	4,50	MPP	0900	0120	250 N2
95,0	12,0	25,0	9,0	6,0	70,00	4,50	MPP	0950	0120	250 N2
100,0	18,0	25,0	12,0	9,0	75,00	4,50	MPP	1000	0180	250 N2
100,0	20,0	25,0	12,0	9,0	75,00	4,50	MPP	1000	0200	250 N2
110,0	12,0	25,0	9,0	6,0	95,00	4,50	MPP	1100	0120	250 N2
125,0	18,0	30,0	12,0	9,0	90,00	5,00	MPP	1250	0180	300 N2
125,0	20,0	30,0	12,0	9,0	90,00	5,00	MPP	1250	0200	300 N2
160,0	20,0	30,0	14,0	11,0	115,00	6,00	MPP	1600	0200	300 N2
160,0	24,0	30,0	14,0	11,0	115,00	6,00	MPP	1600	0240	300 N2
200,0	20,0	30,0	16,0	12,0	150,00	6,00	MPP	2000	0200	300 N2
200,0	24,0	30,0	16,0	12,0	150,00	6,00	MPP	2000	0240	300 N2
250,0	30,0	35,0	16,0	12,0	200,00	6,00	MPP	2500	0300	350 N2



PSN

TENUTA PISTONE TIPO PSN

Descrizione

La tenuta pistone tipo PSN è stata studiata sia per impieghi pneumatici che oleodinamici.

Grazie alla sua elasticità può essere montata anche su pistone di tipo monoblocco.

La sua caratteristica principale è una eccezionale scorrevolezza che permette di utilizzare questa tenuta anche con fluidi a basso potere lubrificante come aria e acqua.

Innumerevoli test hanno dato esiti positivi per quanto riguarda l'assenza di estrusione del profilo anche con passaggio della tenuta sui fori di drenaggio.

Dati Tecnici

Pressione: da 1 a 20 bar

Velocità: < 4 m/s

Temperatura: - 30° C a + 110° C,

Fluidi: aria (lubrificata e non)
(vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato per l'elemento di tenuta è un tecnopolimero ad alta elasticità, mentre per quanto riguarda l'elemento energizzante si utilizza un O-Ring in NBR 75 Shore A.

In alternativa per la tenuta si può utilizzare PTFE rinforzato carbogرافite, mentre per l'elemento energizzante O-Ring in materiali quali HNBR o FKM

Montaggio

Il montaggio avviene in sede anulare in modo elastico.

Eliminare le bave di lavorazione meccanica e lubrificare la tenuta con grasso. Eseguire uno smusso sulla camicia del cilindro (vedi pagina 245).

PSN TYPE PISTON SEAL

Description

The PSN type piston seal has been designed for both pneumatic and hydraulic applications.

Due to its elasticity can also be assembled on monoblock piston type.

Its main characteristic is an exceptional smoothness that allows to use this seal even with low lubricity fluids such as air and water.

many tests have given positive results as regards the absence of extrusion of the profile even with the passage of the seal on the drainage holes of the system.

Technical data

Pressure: < 250 bar

Speed: < 4 m/s

Temperature: from - 30° C up to + 110° C

Fluids : air (lubricated and not)
(see table 3, page 14)

Material

The material of the sealing element is a polymer with high elasticity, while as for the energizing element using an O-ring in NBR 75 Shore A.

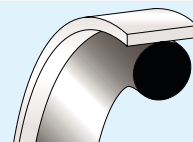
Alternative material should be use for sealing PTFE filled carbon-graphite, while for the element energizing O-ring materials such as HNBR or FKM

Assembling

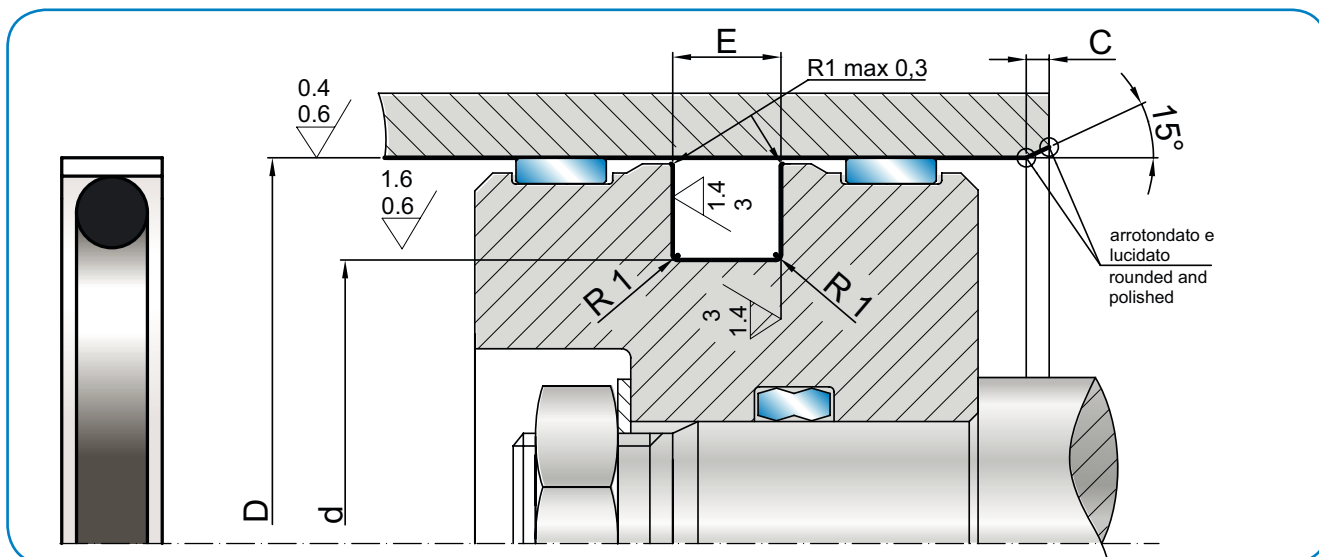
Installation is in elastic way in anular housing.

Remove the burrs mechanical and lubricate the seal with grease. The bore must present a lead-in chamfer (see page 245).

PSN



PSP
GPDE/
GPDEM
MPS
MPM
SPS
SPS/N
PLF
MPP
PSN

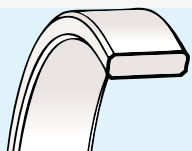


D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
20,00	13,80	3,0			psn 0200 0138 030 RN
22,00	15,80	3,0			PSN 0220 0158 030 RN
25,00	18,80	3,00			PSN 0250 0188 030 RN
28,00	20,00	4,0			PSN 0280 0200 040 RN
30,00	22,00	4,0			PSN 0300 0220 040 RN
32,00	24,00	4,0			PSN 0320 0240 040 RN
35,00	27,00	4,0			PSN 0350 0240 040 RN
36,00	28,00	4,0			PSN 0360 0280 040 RN
38,00	30,00	4,0			PSN 0380 0300 040 RN
40,00	32,00	4,0			PSN 0400 0320 040 RN
42,00	34,00	4,0			PSN 0420 0340 040 RN
45,00	37,00	4,0			PSN 0450 0370 040 RN
48,00	40,00	4,0			PSN 0480 0400 040 RN
50,00	38,30	6,0			PSN 0500 0383 060 RN
55,00	43,50	6,0			PSN 0550 0435 060 RN
56,00	44,30	6,0			PSN 0560 0443 060 RN
60,00	48,30	6,0			PSN 060 0483 060 RN
63,00	51,30	6,0			PSN 0630 0513 060 RN

D _{H9}	d _{h9}	E _{+0,2}	O-Ring	C	ART / ITEM
65,00	53,30	6,0			PSN 0650 0533 060 RN
70,00	58,40	6,00			PSN 0700 0584 060 RN
75,00	62,90	6,0			PSN 0750 0629 060 RN
80,00	68,00	6,0			PSN 0800 0680 060 RN
85,00	72,90	6,0			PSN 0850 0729 050 RN
90,00	78,00	6,0			PSN 0900 0780 060 RN
95,00	82,90	6,0			PSN 0950 0829 060 RN
100,00	88,00	6,0			PSN 1000 0880 060 RN
110,00	97,90	6,0			PSN 1100 0979 060 RN
120,00	107,90	6,0			PSN 1200 1079 060 RN
125,00	112,50	6,0			PSN 1250 1125 060 RN
130,00	117,50	6,0			PSN 1300 1175 060 RN
140,00	124,50	8,0			PSN 1400 1245 080 RN
160,00	144,20	8,0			PSN 1600 1442 080 RN
180,00	163,70	8,0			PSN 1800 1637 080 RN
200,00	183,70	8,0			PSN 2000 1837 080 RN
250,00	233,70	8,0			PSN 2500 2337 080 RN

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



ISA

FASCE DI GUIDA PER STELO TIPO ISA

Descrizione

Per evitare il contatto diretto tra lo stelo e la testata del cilindro, e tra il pistone e la camicia, che nella maggior parte dei cilindri pneumatici è di alluminio, si inserisce una fascia di guida tipo ISA che serve per tenere guidato tutto il sistema.

Le fasce di guida sono stampate con un materiale auto lubrificante, non abrasivo, studiato appositamente per favorire uno scorrimento lineare. Il profilo della guida presenta smussi sia all'interno sia all'esterno che facilitano il montaggio dello stelo e del pistone.

Limiti d'impiego

Velocità: < 1 m/s

Temperatura: da - 40° C a + 115° C

Materiale

Resina poliacetalica modificata.

Grazie all'aggiunta di particolari additivi si è realizzato un materiale molto scorrevole e non abrasivo.

Codice materiale standard: R3

Vantaggi

- Ottimo rapporto prezzo/prestazioni
- Basso effetto stick-slip
- Buona resistenza alla compressione

Montaggio

il montaggio di segue facilmente essendo le guide tagliate

Nota: sezione tecnica guide pag.138

ISA TYPE ROD GUIDE RING

Description

The ISA type rod guide ring is used to avoid direct contact between cylinder head and rod, and between piston and sleeve, since for the main part of the pneumatic cylinders are made of aluminium. It's also used to lead all the system.

The guide rings are moulded in non-abrasive and self-lubricant material, especially studied to improve the linear sliding.

The profile presents chamfers both sides for easier installation of rod and piston.

Technical data

Speed: < 1 m/s

Temperature: from - 40° C up to + 115° C

Material

Non abrasive modified Polyacetalic resin with additives improving the sliding.

Standard compound reference: R3

Advantages

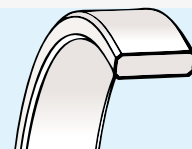
- Excellent price/performance ratio
- Low stick-slip effect
- Good compressive strength

Assembling

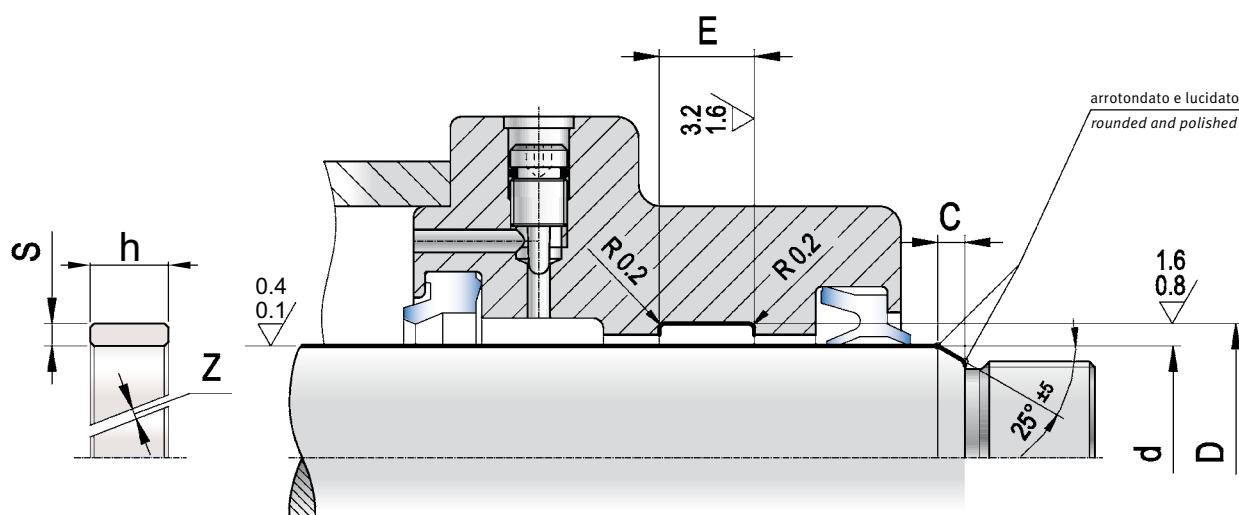
The assembling can be easily done since the wear

Note: wear rings technical section pag.138

ISA



ISA
ESA
NG

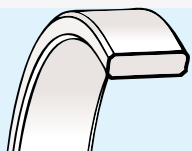


d _{f9}	D _{H7}	toll _{H7}	E _{+0,2}	ART / ITEM			
8,0	11,1	+0.018/0	2,5	ISA	0080	0111	025 R3
10,0	13,1	+0.018/0	2,5	ISA	0100	0131	025 R3
10,0	13,1	+0.018/0	4,0	ISA	0100	0131	040 R3
12,0	15,1	+0.018/0	4,0	ISA	0120	0151	040 R3
12,0	16,0	+0.018/0	9,7	ISA	0120	0160	097 R3
14,0	17,1	+0.018/0	4,0	ISA	0140	0171	040 R3
14,0	18,0	+0.018/0	9,7	ISA	0140	0180	097 R3
15,0	18,1	+0.021/0	4,0	ISA	0150	0181	040 R3
16,0	19,1	+0.021/0	4,0	ISA	0160	0191	040 R3
16,0	20,0	+0.021/0	9,7	ISA	0160	0200	097 R3
17,0	20,1	+0.021/0	4,0	ISA	0170	0201	040 R3
18,0	22,0	+0.021/0	9,7	ISA	0180	0220	097 R3

d _{f9}	D _{H7}	toll _{H7}	E _{+0,2}	ART / ITEM			
20,0	23,1	+0.021/0	4,0	ISA	0200	0231	040 R3
22,0	25,1	+0.021/0	4,0	ISA	0220	0251	040 R3
25,0	28,1	+0.021/0	4,0	ISA	0250	0281	040 R3
28,0	31,1	+0.025/0	4,0	ISA	0280	0311	040 R3
30,0	33,1	+0.025/0	4,0	ISA	0300	0331	040 R3
32,0	35,1	+0.025/0	4,0	ISA	0320	0351	040 R3
35,0	38,1	+0.025/0	4,0	ISA	0350	0381	040 R3
36,0	39,1	+0.025/0	4,0	ISA	0360	0391	040 R3
40,0	43,1	+0.025/0	4,0	ISA	0400	0431	040 R3
50,0	53,1	+0.030/0	4,0	ISA	0500	0531	040 R3

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



ESA

FASCE DI GUIDA PER PISTONE TIPO ESA

Descrizione

Per evitare il contatto diretto tra lo stelo e la testata del cilindro, e tra il pistone e la camicia, che nella maggior parte dei cilindri pneumatici è di alluminio, si inserisce una fascia di guida tipo ESA che serve per tenere guidato tutto il sistema.

Le fasce di guida sono stampate con un materiale autolubrificante, non abrasivo, studiato appositamente per favorire uno scorrimento lineare. Il profilo della guida presenta smussi sia all'interno sia all'esterno che facilitano il montaggio dello stelo e del pistone.

Limiti d'impiego

Velocità: < 0,8 m/s

Temperatura: da - 40° C a + 115° C

Materiale

Resina poliacetalica modificata.

Grazie all'aggiunta di particolari additivi si è realizzato un materiale molto scorrevole e non abrasivo.

Codice materiale standard: R3

Vantaggi

- Ottimo rapporto prezzo/prestazioni
- Basso effetto stick-slip
- Buona resistenza alla compressione

Montaggio

il montaggio di segue facilmente essendo le guide tagliate

Nota: sezione tecnica guide pag.138

ESA TYPE PISTON GUIDE RING

Description

The ESA type rod guide ring is used to avoid direct contact between cylinder head and rod, and between piston and sleeve, since for the main part of the pneumatic cylinders are made of aluminium. It's also used to lead all the system.

The guide rings are moulded in non-abrasive and self-lubricant material, especially studied to improve the linear sliding.

The profile presents chamfers both sides for easier installation of rod and piston.

Technical data

Speed: < 0,8 m/s

Temperature: from - 40° C up to + 115° C

Material

Non abrasive modified Polyacetalic resin with additives improving the sliding.

Standard compound reference: R3

Advantages

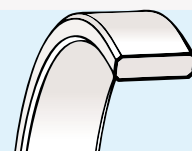
- Excellent price/performance ratio
- Low stick-slip effect
- Good compressive strength

Assembling

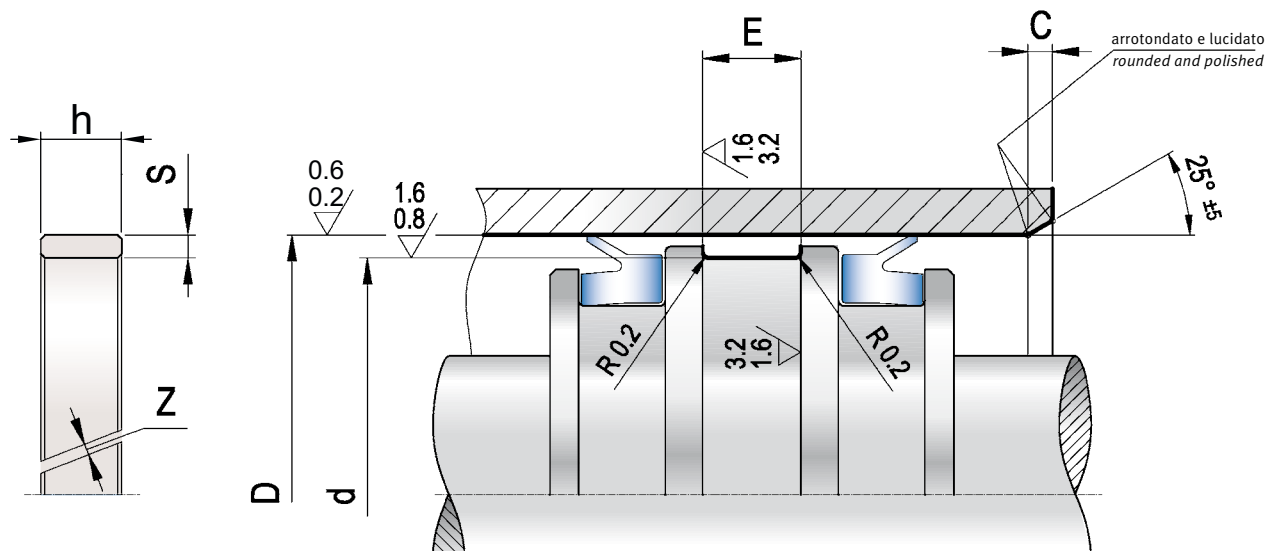
The assembling can be easily done since the wear ring is cut.

Note: wear rings technical section pag.138

ESA

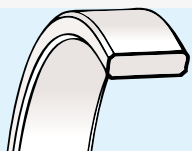


ISA
ESA
NG



D _{H11}	d _{h7}	toll _{h7}	E _{+0,2}	ART / ITEM				
8,0	4,9	0/-0.012	2,5	ESA	0080	0049	025	R3
10,0	6,9	0/-0.015	2,5	ESA	0100	0069	025	R3
10,0	6,9	0/-0.015	4,0	ESA	0100	0069	040	R3
12,0	8,9	0/-0.015	4,0	ESA	0120	0089	040	R3
14,0	10,9	0/-0.018	4,0	ESA	0140	0109	040	R3
15,0	11,9	0/-0.018	4,0	ESA	0150	0119	040	R3
16,0	12,9	0/-0.018	4,0	ESA	0160	0129	040	R3
16,0	12,0	0/-0.018	9,7	ESA	0160	0120	097	R3
18,0	14,9	0/-0.018	4,0	ESA	0180	0149	040	R3
20,0	16,0	0/-0.018	8,2	ESA	0200	0160	082	R3
20,0	16,0	0/-0.018	9,7	ESA	0200	0160	097	R3
20,0	16,9	0/-0.018	4,0	ESA	0200	0169	040	R3
21,0	17,0	0/-0.018	8,2	ESA	0210	0170	082	R3
22,0	18,0	0/-0.018	9,7	ESA	0220	0180	097	R3
25,0	21,0	0/-0.021	8,2	ESA	0250	0210	082	R3
25,0	21,9	0/-0.021	4,0	ESA	0250	0219	040	R3
26,0	22,0	0/-0.021	8,2	ESA	0260	0220	082	R3
30,0	25,8	0/-0.021	5,0	ESA	0300	0258	050	R3
30,0	26,0	0/-0.021	5,0	ESA	0300	0260	050	R3
30,0	26,0	0/-0.021	8,2	ESA	0300	0260	082	R3
32,0	26,1	0/-0.021	5,0	ESA	0320	0261	050	R3
32,0	28,0	0/-0.021	5,0	ESA	0320	0280	050	R3
32,0	28,0	0/-0.021	8,2	ESA	0320	0280	082	R3
32,0	28,9	0/-0.021	4,0	ESA	0320	0289	040	R3

D _{H11}	d _{h7}	toll _{h7}	E _{+0,2}	ART / ITEM				
35,0	31,0	0/-0.025	8,2	ESA	0350	0310	082	R3
40,0	36,0	0/-0.025	5,0	ESA	0400	0360	050	R3
40,0	36,0	0/-0.025	8,2	ESA	0400	0360	082	R3
40,0	37,0	0/-0.025	12,0	ESA	0400	0370	120	R3
45,0	41,0	0/-0.025	10,2	ESA	0450	0410	102	R3
50,0	46,0	0/-0.025	5,2	ESA	0500	0460	052	R3
50,0	46,0	0/-0.025	10,2	ESA	0500	0460	102	R3
50,0	47,0	0/-0.025	12,0	ESA	0500	0470	120	R3
55,0	51,0	0/-0.030	10,2	ESA	0550	0510	102	R3
58,0	54,0	0/-0.030	10,2	ESA	0580	0540	102	R3
60,0	56,0	0/-0.030	10,2	ESA	0600	0560	102	R3
63,0	59,0	0/-0.030	10,2	ESA	0630	0590	102	R3
63,0	60,0	0/-0.030	12,0	ESA	0630	0600	120	R3
65,0	61,0	0/-0.030	10,2	ESA	0650	0610	102	R3
70,0	66,0	0/-0.030	10,2	ESA	0700	0660	102	R3
75,0	71,0	0/-0.030	15,2	ESA	0750	0710	152	R3
80,0	76,0	0/-0.030	10,2	ESA	0800	0760	102	R3
80,0	76,0	0/-0.030	15,2	ESA	0800	0760	152	R3
80,0	77,0	0/-0.030	12,0	ESA	0800	0770	120	R3
85,0	81,0	0/-0.035	15,2	ESA	0850	0810	152	R3
90,0	86,0	0/-0.035	15,2	ESA	0900	0860	152	R3
95,0	91,0	0/-0.035	15,2	ESA	0950	0910	152	R3
100,0	96,0	0/-0.035	10,2	ESA	1000	0960	102	R3
100,0	96,0	0/-0.035	15,2	ESA	1000	0960	152	R3



ESA

D _{H11}	d _{h7}	toll _{h7}	E _{+0,2}	ART / ITEM				
105,0	101,0	0/-0.035	20,3	ESA	1050	1010	203	R3
110,0	106,0	0/-0.035	20,3	ESA	1100	1060	203	R3
115,0	111,0	0/-0.035	20,3	ESA	1150	1110	203	R3
120,0	116,0	0/-0.035	20,3	ESA	1200	1160	203	R3
125,0	121,0	0/-0.040	15,2	ESA	1250	1210	152	R3
125,0	121,0	0/-0.040	20,3	ESA	1250	1210	203	R3
130,0	126,0	0/-0.040	20,3	ESA	1300	1260	203	R3
135,0	131,0	0/-0.040	20,3	ESA	1350	1310	203	R3
140,0	136,0	0/-0.040	20,3	ESA	1400	1360	203	R3
150,0	146,0	0/-0.040	25,4	ESA	1500	1460	254	R3
160,0	155,0	0/-0.040	15,0	ESA	1600	1550	150	R3
160,0	156,0	0/-0.040	15,2	ESA	1600	1560	152	R3

D _{H11}	d _{h7}	toll _{h7}	E _{+0,2}	ART / ITEM				
180,0	176,0	0/-0.040	25,4	ESA	1800	1760	254	R3
200,0	195,0	0/-0.046	15,0	ESA	2000	1950	150	R3
200,0	196,0	0/-0.046	20,3	ESA	2000	1960	203	R3
200,0	196,0	0/-0.046	25,4	ESA	2000	1960	254	R3
220,0	216,0	0/-0.046	30,5	ESA	2200	2160	305	R3
250,0	245,0	0/-0.046	20,0	ESA	2500	2450	200	R3
250,0	246,0	0/-0.046	20,3	ESA	2500	2460	203	R3
250,0	246,0	0/-0.046	30,5	ESA	2500	2460	305	R3

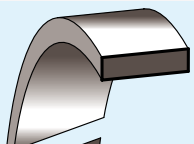
Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Note

Notes

This image shows a full page of graph paper. It features a uniform grid of small squares created by thin, light blue horizontal and vertical lines. On the left side of the page, there is a single, solid red vertical line that runs from the top edge to the bottom edge, acting as a margin. The rest of the page is covered by the blue grid pattern. There are no other markings, text, or drawings on the paper.



NG

NASTRO GUIDA IN PTFE TIPO NG

Descrizione

Il nastro guida NG in politetrafluoroetilene caricato carbografite viene fornito in rotoli dai quali si possono ricavare guide che possono essere intercambiabili con quelle in materiale termoplastico. Vengono applicate sia su stelo che su pistone.

Hanno come caratteristiche principali, la precisione dello spessore e la quasi assenza di attrito; per la sua inerzia chimica, sono compatibili con molti fluidi. Possono essere con o senza smussi di invito.

Limiti d'impiego

Velocità: <15 m/s

Temperatura: da -50°C a +160°C con punte a 200°C

Fluidi: molti fluidi essendo un materiale con inerzia chimica elevata
(vedi tabella 3 a pagina 16)

Materiale

Il materiale è un politetrafluoroetilene (PTFE) con caricato carbografite

Codice materiale: TC LCG3030

Montaggio

il montaggio di segue facilmente essendo le guide tagliate

Nota: sezione tecnica guide pag.138

NG TYPE PTFE WEAR TAPE

Description

NG carbon-graphite filled PTFE tape is supplied in rolls.

By cutting them it is possible to obtain interchangeable guides to replace thermoplastic material.

They can be used for rods or pistons.

Thanks to the properties (thickness accuracy, low friction and chemical resistance) are compatible with many fluids.

They can be with or without chamfers.

Technical data

Speed: < 15 m/s

Temperature: from -50°C to +160°C peaks till 200°C.

Fluidi: many fluids as a material with high chemical inertia
(see table 3, page 16)

Material

The material is carbon-graphite filled PTFE.

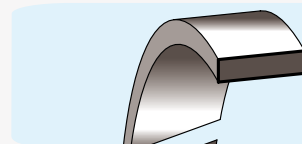
Compound reference: TC LCG3030

Assembling

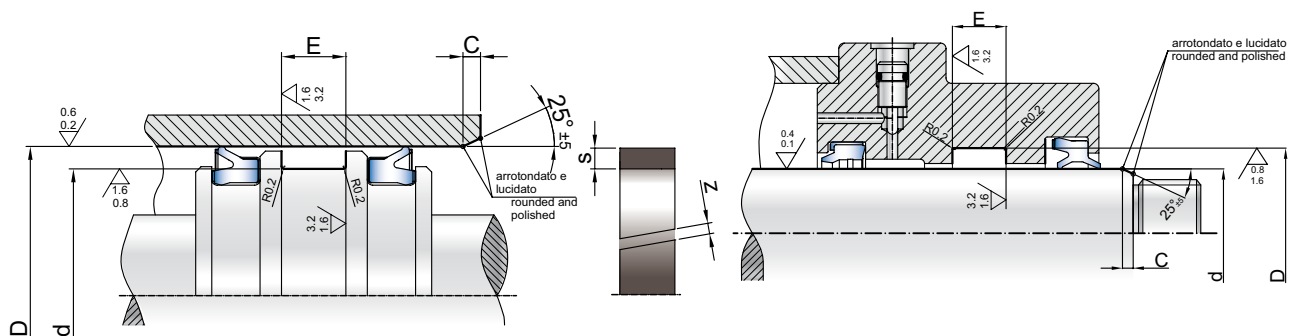
The assembling can be easily done since the wear ring is cut.

Note: wear rings technical section pag.138

NG

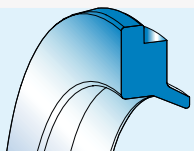


ISA
ESA
NG



Dimensione sede - Groove dimension

d_{H9}	D_{H9}	$E_{+0.2}$	Spessore anello Ring thickness s	z
8-20	$d + 2s$	3,20	1,50	1,0-2,0
15-35	$d + 2s$	4,20	1,50 2,00	1,0-2,0
15-75	$d + 2s$	5,60	1,50 2,00 2,50	1,5-3,5
20-75	$d + 2s$	6,30	1,50 2,00 2,50	1,5-3,5
30-250	$d + 2s$	8,10	1,50 2,00 2,50	2,0-5,0
35-300	$d + 2s$	9,70	1,50 2,00 2,50 3,00	2,0-6,0
120-400	$d + 2s$	15,00	1,50 2,00 2,50 3,00	4,0-8,0
200-900	$d + 2s$	20,00	1,50 2,00 2,50 3,00	4,5-8,0
300-900	$d + 2s$	25,00	2,00 2,50 3,00	6,0-8,0
300-900	$d + 2s$	30,00	2,00 2,50 3,00	6,0-10,0



LWA

RASCHIATORE LEGGERO TIPO LWA

Descrizione

Il raschiatore leggero tipo LWA è studiato per tenere pulite le bussole a sfera nelle unità di guida.

Questo raschiatore è a contatto con alberi cementati o rettificati nella parte interna.

Alloggia nella parte esterna sul diametro della bussola e l'aggancio viene garantito da una gola (tipo quella di un seeger per esterno) dove viene inserito il gradino del raschiatore.

La lavorazione meccanica di facile esecuzione ed il minimo ingombro del raschiatore ha ampliato il campo di applicazioni anche in quello dei cilindri pneumatici.

Il labbro molto flessibile del raschiatore non pregiudica la scorrevolezza dell'unità di guida.

Limiti d'impiego

Velocità: < 4 m/s

Temperatura: da - 40° C a + 90° C

Materiale

Il materiale utilizzato è un poliuretano che resiste molto bene all'usura e benissimo alle basse temperature mantenendosi sempre flessibile.

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Montaggio

Eliminare tutti gli spigoli vivi e le bave nell'alloggiamento del raschiatore.

Si consiglia di ingrassare il sistema. Lo stelo deve avere uno smusso d'invito (vedi pag. 245)

LWA TYPE LIGHT WIPER

Description

The LWA type light wiper is designed for the ball-bushings cleaning in the guide systems.

The internal part is in contact with hardened or ground shafts.

The external part is located the outside diameter of the bushing and the hanging is ensured by a groove (similar to a circlip for external use) where the wiper step is inserted.

The field of applications has been enlarged to the pneumatic cylinders thanks to the very simple mechanical execution and the reduced overall dimensions.

The highly flexible wiper lip does not interfere with the sliding of the guide system.

Technical data

Speed: < 4 m/s

Temperature: from - 40° C up to + 90° C

Material

Our polyurethane is very resistant to wear and is excellent at low temperature due to its high flexibility. Standard polyurethane 90 Shore A.

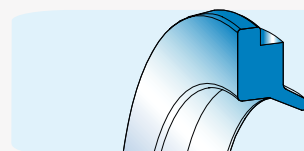
Standard compound reference: B0

Assembling

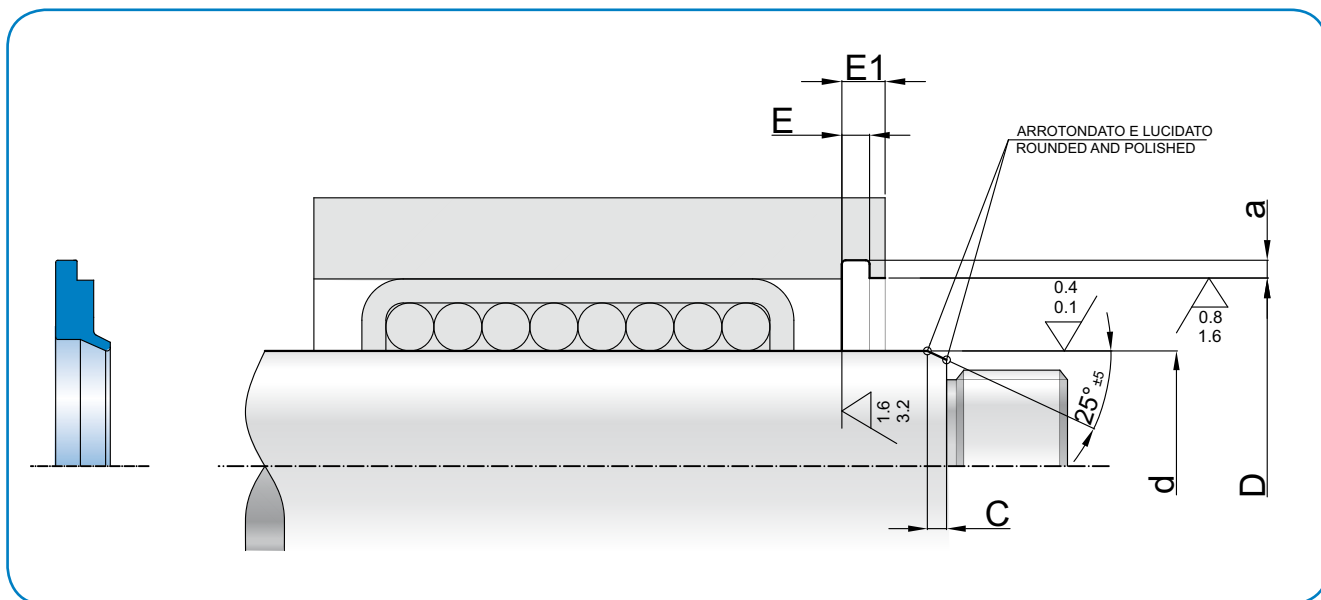
Remove cutting edges and flashes in the scraper housing.

We recommend greasing the system. The rod must have a lead-in chamfer (see page 245).

LWA



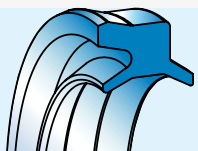
LWA
BWA
PIW
BWS
BWH
BWHN



d_{f9}	D_{H11}	tol H_{11}	h	E_1	a	E	ART / ITEM
6,0	12,0	+0.110/-0	4,5	3,0	1,3	1,6	LWA 0060 0120 045 B0
8,0	15,0	+0.110/-0	4,5	3,0	1,3	1,6	LWA 0080 0150 045 B0
10,0	17,0	+0.110/-0	4,5	3,0	1,3	1,6	LWA 0100 0170 045 B0
12,0	19,0	+0.130/-0	4,5	3,0	1,3	1,6	LWA 0120 0190 045 B0
14,0	21,0	+0.130/-0	4,5	3,0	1,3	1,6	LWA 0140 0210 045 B0
16,0	24,0	+0.130/-0	4,5	3,0	1,3	1,6	LWA 0160 0240 045 B0
18,0	23,5	+0.130/-0	4,5	3,0	1,3	1,6	LWA 0180 0235 045 B0
20,0	28,0	+0.130/-0	4,5	3,0	1,3	1,6	LWA 0200 0280 045 B0
25,0	35,0	+0.160/-0	4,5	3,0	1,5	1,6	LWA 0250 0350 045 B0
30,0	40,0	+0.160/-0	4,5	3,0	2,0	1,6	LWA 0300 0400 045 B0
40,0	52,0	+0.190/-0	4,5	3,0	2,0	1,6	LWA 0400 0520 045 B0
50,0	62,0	+0.190/-0	4,5	3,0	2,0	1,6	LWA 0500 0620 045 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



BWA

RASCHIATORE BIDIREZIONALE TIPO BWA

Descrizione

L'elemento di tenuta tipo BWA ha il profilo di una guarnizione a labbri asimmetrici combinato con un raschiatore.

Alloggiato in un'unica sede, presenta numerosi vantaggi:

- ingombri ridotti;
- minor tempo di esecuzione della sede.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo poliuretano a 85 Shore A.

Codice materiale alternativo: A0

Montaggio

La sede dove va alloggiato il raschiatore non deve presentare spigoli vivi o bave che compromettano in esercizio la durata dello stesso.

BWA TYPE BI-DIRECTIONAL WIPER

Description

The BWA sealing part combines an asymmetrical lip seal profile with a wiper.

Since it is installed in a single groove, the BWA seal has several advantages:

- reduced overall dimensions;
- faster construction of the groove.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from - 40° C up to + 90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

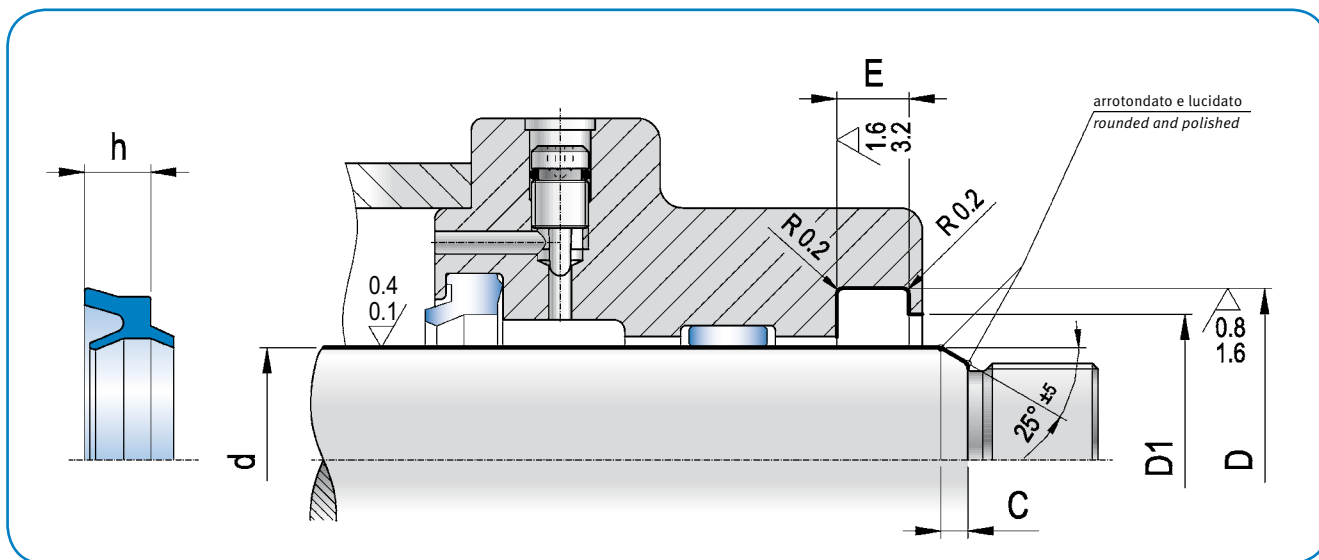
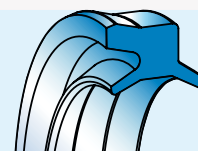
Standard compound reference: B0

Alternative polyurethane 85 Shore A.

Alternative compound reference: A0

Assembling

Remove cutting edges and/or flashes from the housing where the wiper has to be installed in order to minimise seal wear during operation.

BWA

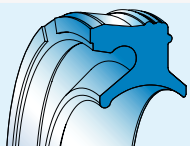
LWA
BWA
PIW
BWS
BWH
BWHN

d _{f9}	D _{H10}	Toll H10	D ₁	h	E _{+0,2}	ART / ITEM			
3,0	8,8	+0.058/0	5,0	4,0	4,5	BWA 0030	0088	040	B0
4,0	7,0	+0.058/0	6,0	2,2	2,7	BWA 0040	0070	022	B0
4,0	8,8	+0.058/0	5,4	4,0	4,5	BWA 0040	0088	040	B0
5,0	8,0	+0.058/0	6,2	2,2	2,7	BWA 0050	0080	022	B0
6,0	9,0	+0.070/0	7,2	2,2	2,7	BWA 0060	0090	022	B0
6,0	10,8	+0.070/0	8,0	4,0	4,5	BWA 0060	0108	040	B0
8,0	11,5	+0.070/0	9,2	2,5	3,0	BWA 0080	0115	025	B0
8,0	12,8	+0.070/0	10,0	4,0	4,5	BWA 0080	0128	040	B0
8,0	14,0	+0.070/0	11,0	4,0	4,5	BWA 0080	0140	040	B0
10,0	14,0	+0.070/0	11,4	2,8	3,2	BWA 0100	0140	028	B0
10,0	16,0	+0.070/0	12,5	3,6	4,0	BWA 0100	0160	036	B0
10,0	16,8	+0.070/0	13,0	4,0	4,5	BWA 0100	0168	040	B0
10,0	18,0	+0.070/0	14,0	4,5	5,0	BWA 0100	0180	045	B0
12,0	16,5	+0.070/0	13,7	3,2	3,7	BWA 0120	0165	032	B0
12,0	18,0	+0.070/0	14,5	3,6	4,0	BWA 0120	0180	036	B0
12,0	20,0	+0.084/0	16,0	3,2	3,7	BWA 0120	0200	032	B0
12,0	20,0	+0.084/0	16,0	4,5	5,0	BWA 0120	0200	045	B0
12,0	20,0	+0.084/0	16,0	5,0	5,5	BWA 0120	0200	050	B0
12,0	22,0	+0.084/0	16,0	5,0	6,0	BWA 0120	0220	050	B0
14,0	18,5	+0.084/0	15,7	3,2	3,7	BWA 0140	0185	032	B0
14,0	20,0	+0.084/0	16,5	3,6	4,0	BWA 0140	0200	036	B0
14,0	22,0	+0.084/0	18,0	4,5	5,0	BWA 0140	0220	045	B0
14,0	24,0	+0.084/0	18,0	5,0	6,0	BWA 0140	0240	050	B0
16,0	20,5	+0.084/0	17,7	3,2	3,7	BWA 0160	0205	032	B0
16,0	22,0	+0.084/0	18,5	3,6	4,0	BWA 0160	0220	036	B0
16,0	24,0	+0.084/0	18,5	4,5	5,0	BWA 0160	0240	045	B0
16,0	26,0	+0.084/0	20,0	5,0	6,0	BWA 0160	0260	050	B0
18,0	22,5	+0.084/0	19,7	3,2	3,7	BWA 0180	0225	032	B0
18,0	24,0	+0.084/0	20,5	3,6	4,0	BWA 0180	0240	036	B0
18,0	26,0	+0.084/0	21,0	4,5	5,0	BWA 0180	0260	045	B0

d _{f9}	D _{H10}	Toll H10	D ₁	h	E _{+0,2}	ART / ITEM				
18,0	28,0	+0.084/0	22,0	5,0	6,0	BWA 0180	0280	050	BO	
20,0	25,0	+0.084/0	21,9	3,6	4,0	BWA 0200	0250	036	BO	
20,0	26,0	+0.084/0	22,5	3,6	4,0	BWA 0200	0260	036	BO	
20,0	30,0	+0.084/0	24,0	6,0	7,0	BWA 0200	0300	060	BO	
22,0	27,0	+0.084/0	23,9	3,6	4,0	BWA 0220	0270	036	BO	
22,0	28,0	+0.084/0	24,5	3,6	4,0	BWA 0220	0280	036	BO	
22,0	32,0	+0.084/0	26,0	6,0	7,0	BWA 0220	0320	060	BO	
25,0	30,0	+0.084/0	26,9	3,6	4,0	BWA 0250	0300	036	BO	
25,0	31,0	+0.100/0	27,5	3,6	4,0	BWA 0250	0310	036	BO	
25,0	35,0	+0.100/0	29,0	6,0	7,0	BWA 0250	0350	060	BO	
28,0	38,0	+0.100/0	32,0	6,0	7,0	BWA 0280	0380	060	BO	
30,0	35,5	+0.100/0	32,1	3,9	4,5	BWA 0300	0355	039	BO	
30,0	38,0	+0.100/0	33,0	4,5	5,0	BWA 0300	0380	045	BO	
30,0	40,0	+0.100/0	34,0	6,0	7,0	BWA 0300	0400	060	BO	
32,0	37,5	+0.100/0	34,1	3,9	4,5	BWA 0320	0375	039	BO	
32,0	40,0	+0.100/0	35,0	4,5	5,0	BWA 0320	0400	045	BO	
32,0	42,0	+0.100/0	36,0	6,0	7,0	BWA 0320	0420	060	BO	
35,0	45,0	+0.100/0	39,0	6,0	7,0	BWA 0350	0450	060	BO	
36,0	44,0	+0.100/0	39,0	4,5	5,0	BWA 0360	0440	045	BO	
36,0	46,0	+0.100/0	40,0	6,0	7,0	BWA 0360	0460	060	BO	
40,0	46,0	+0.100/0	43,0	4,3	4,8	BWA 0400	0460	043	BO	
40,0	50,0	+0.100/0	44,0	6,0	7,0	BWA 0400	0500	060	BO	
45,0	53,0	+0.120/0	48,0	4,5	5,0	BWA 0450	0530	045	BO	
45,0	55,0	+0.120/0	49,0	6,0	7,0	BWA 0450	0550	060	BO	
50,0	62,0	+0.120/0	55,0	7,5	8,5	BWA 0500	0620	075	BO	

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



PIW

RASCHIATORE BIDIREZIONALE TIPO PIW

Descrizione

Il raschiatore bidirezionale PIW "Pneumatic Innovative bidirectional Wiper" è stato studiato per eliminare le perdite dovute a imperfezioni di lavoro nelle sedi delle testate dei cilindri pneumatici (Fig.45). Testate che possono essere in materiale plastico rinforzato con fibre di vetro o in alluminio fuso lavorate ad utensile. La particolare forma del profilo, con rilievi sul lato statico esterno, elimina completamente le perdite dovute a: tagli, segni di lavorazione d'utensile, ovalizzazioni e conicità di sforno nelle testate in plastica.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 40° C a + 90° C
Fluidi: aria (lubrificata e non) grassi minerali (vedi tabella 3 a pagina 14)

Materiale

Il materiale utilizzato è un poliuretano di durezza 90 Shore A. Codice materiale: B0

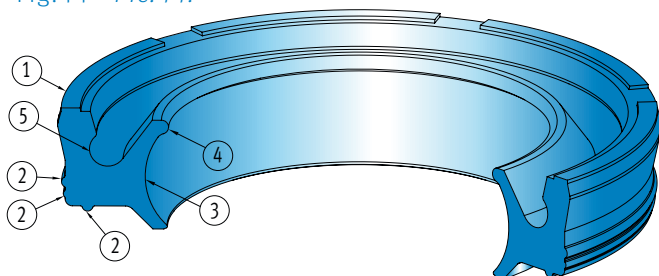
Montaggio

Il montaggio avviene in cava chiusa. Si consiglia di eliminare spigoli vivi e bave per non danneggiare la tenuta durante la fase di montaggio.

Fig.44:

- 1- Distanziali stabilizzatori per evitare back-pumping
- 2- Rilievi per vincere le imperfezioni delle sedi
- 3- Ampio raggio per creare effetto molla utile alle basse pressioni
- 4- Raggio sul labbro dinamico per diminuire l'attrito di primo distacco
- 5- Raggiatura per rendere maggiormente elastico il labbro statico

Fig.44 - Pic.44:



BI-DIRECTIONAL WIPER TYPE PIW

Description

The bi-directional wiper PIW "Pneumatic Innovative bidirectional Wiper" is design in order to eliminate the leakage due to the imperfection of the working in the groove of pneumatic cylinder head (Pic.45). The pneumatic head cylinder can be made in plastic material filled with glass fibers or cast aluminum machined.

The particular shape of the profile, with reliefs on the external static side completely eliminates leakage due to: cut, signs of machine tool, ovality and taper draft in plastic head cylinders.

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from - 40° C up to + 90° C
Fluids: air (lubricate or not) mineral grease (see table 3, page 14)

Material

The material used is Polyurethane with hardness 90 Shore A. Material code: B0

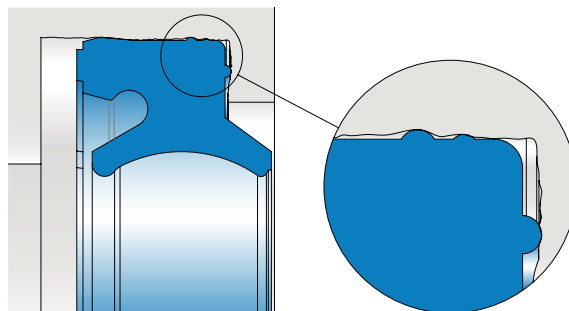
Assembling

The assemblin is on closed groove. Eliminate sharps and burrs to avoid damage the seal during the assembling.

Pic.44:

- 1- Stabilizers spacers to avoid back-pumping
- 2- Reliefs to win imperfection of the groove
- 3- Big radius to create spring effect usefull at low pressure
- 4- Radius on dynamic lip to decrease friction breakaway
- 5- Radius to make more flexible static lip

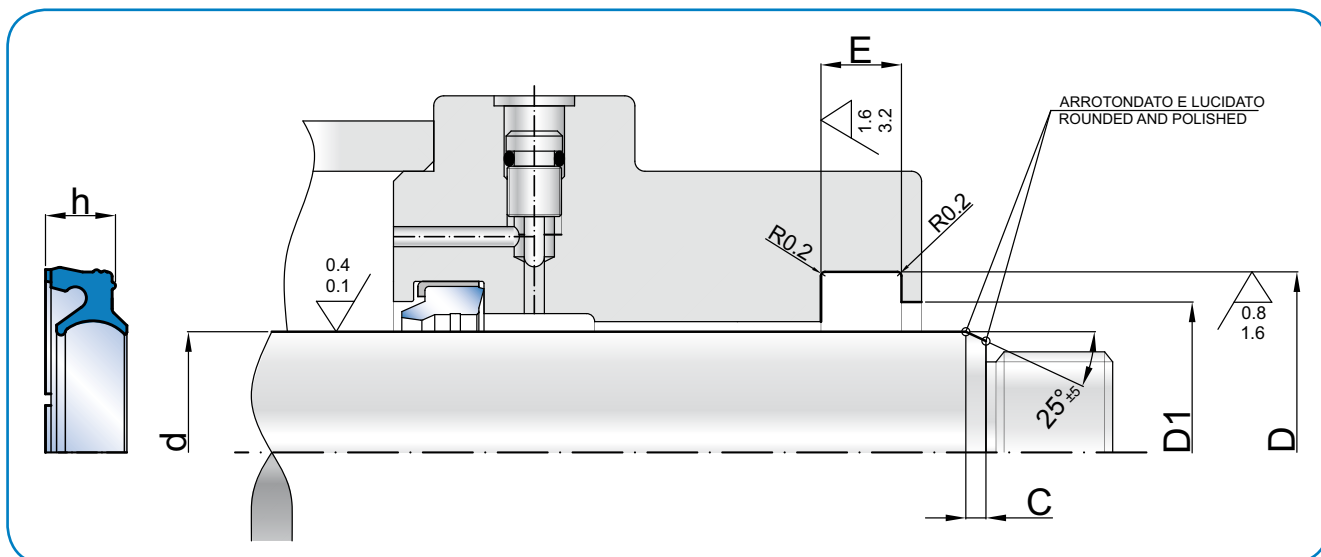
Fig.45 - Pic.45:



PIW



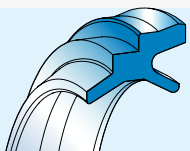
LWA
BWA
PIW
BWS
BWH
BWHN



d_{f9}	D_{H10}	Toll H10	D_1	h	$E_{+0,2}$	ART / ITEM			
12,0	20,0	+0,084/0	16,0	4,5	5,0	PIW	0120	0200	045 B0
12,0	22,0	+0,084/0	16,0	5,0	6,0	PIW	0120	0220	050 B0
14,0	18,5	+0,084/0	15,7	3,2	3,7	PIW	0140	0185	032 B0
14,0	22,0	+0,084/0	18,0	4,5	5,0	PIW	0140	0220	045 B0
14,0	24,0	+0,084/0	18,0	5,0	6,0	PIW	0140	0240	050 B0
16,0	20,5	+0,084/0	17,7	3,2	3,7	PIW	0160	0205	032 B0
16,0	24,0	+0,084/0	18,5	4,5	5,0	PIW	0160	0240	045 B0
16,0	26,0	+0,084/0	20,0	5,0	6,0	PIW	0160	0260	050 B0
18,0	22,5	+0,084/0	19,7	3,2	3,7	PIW	0180	0225	032 B0
18,0	26,0	+0,084/0	21,0	4,5	5,0	PIW	0180	0260	045 B0
18,0	28,0	+0,084/0	22,0	5,0	6,0	PIW	0180	0280	050 B0
20,0	26,0	+0,084/0	22,5	3,6	4,0	PIW	0200	0260	036 B0
20,0	30,0	+0,084/0	24,0	6,0	7,0	PIW	0200	0300	060 B0
22,0	27,0	+0,084/0	23,9	3,6	4,0	PIW	0220	0270	036 B0
22,0	32,0	+0,084/0	26,0	6,0	7,0	PIW	0220	0320	060 B0
25,0	30,0	+0,100/0	26,9	3,6	4,0	PIW	0250	0300	036 B0
25,0	31,0	+0,100/0	27,5	3,6	4,0	PIW	0250	0310	036 B0
25,0	35,0	+0,100/0	29,0	6,0	7,0	PIW	0250	0350	060 B0
30,0	35,5	+0,100/0	32,1	3,9	4,5	PIW	0300	0355	036 B0
30,0	40,0	+0,100/0	34,0	6,0	7,0	PIW	0300	0400	060 B0
32,0	37,5	+0,100/0	34,1	3,9	4,5	PIW	0320	0375	036 B0
40,0	50,0	+0,100/0	44,0	6,0	7,0	PIW	0400	0500	060 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



BWS

RASCHIATORE BIDIREZIONALE CON GRADINO TIPO BWS

Descrizione

Il raschiatore tipo BWS è ottenuto dalla combinazione di una guarnizione a labbri asimmetrici ed un raschiatore. Presenta sul labbro di tenuta una raggiatura che lo rende molto scorrevole ed ha sul lato statico un gradino ridotto che ne facilita il montaggio soprattutto per diametri piccoli. La parte raschiante ha un labbro molto sottile per non influenzare il primo distacco nel movimento del cilindro.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 40° C a + 90° C
Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.
Codice materiale standard: B0
Materiale alternativo poliuretano a 85 Shore A.
Codice materiale alternativo: A0

Montaggio

La sede dove va alloggiato il raschiatore non deve presentare spigoli vivi o bave che compromettano in esercizio la durata dello stesso.

Attenzione: per impieghi gravosi dove sono presenti disallineamenti o fuori centro, con diametri di stelo superiori a Ø 16 mm è consigliato un montaggio in sede non più agganciato con il solo gradino ma con tutta la base del raschiatore.

BWS TYPE BI-DIRECTIONAL WIPER WITH STEP

Description

The BWS wiper combines an asymmetric lip seal profile with a wiper. On the sealing lip the BWS has a radius allowing greater smoothness and on the static side the reduced size step facilitates installation, especially for small diameters. The scraping part has a very thin lip so as not to influence the stick-slip effect in the cylinder movement.

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from - 40° C up to + 90° C
Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

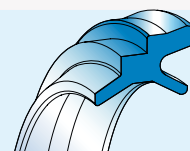
Standard polyurethane 90 Shore A.
Standard compound reference: B0
Alternative polyurethane 85 Shore A.
Alternative compound reference: A0

Assembling

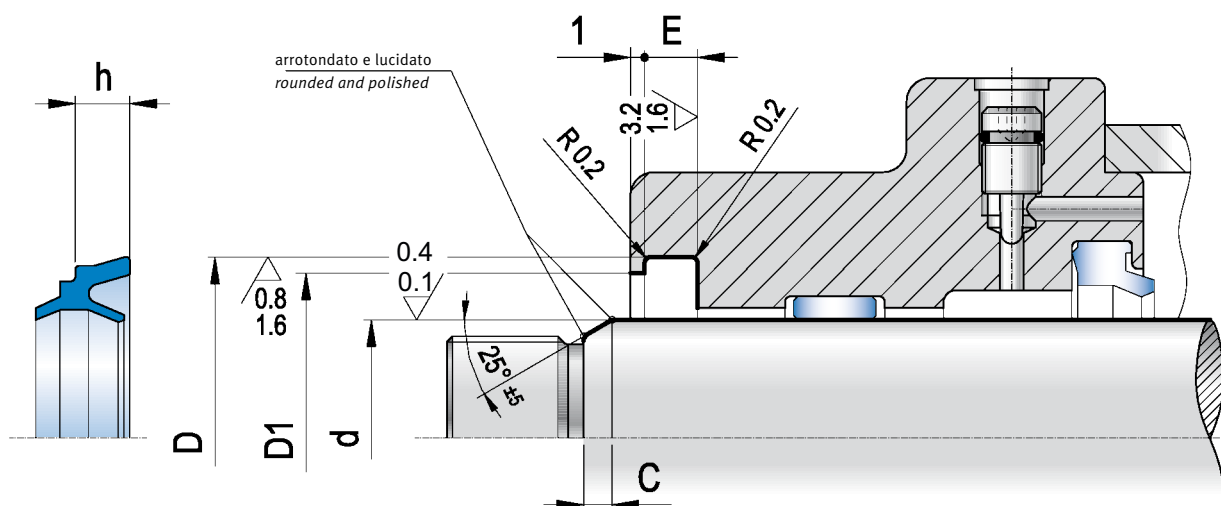
Remove cutting edges and/or flashes from the housing where the wiper has to be installed in order to minimise seal wear during operation.

Warning: for heavy duty applications showing misalignments or imbalance and with diameters bigger than Ø 16 mm, it's recommend to hang the base of the wiper to the housing and not only to the step.

BWS



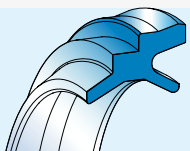
LWA
BWA
PIW
BWS
BWH
BWHN



d_{f9}	D_{H10}	toll H_{10}	D_1	h	$E_{+0,2}$	ART / ITEM
4,0	8,1	+0.058/0	6,70	2,8	3,0	BWS 0040 0081 028 B0
6,0	11,1	+0.070/0	9,10	3,3	3,6	BWS 0060 0111 033 B0
8,0	14,1	+0.070/0	12,10	3,3	3,6	BWS 0080 0141 033 B0
10,0	16,1	+0.070/0	14,10	3,8	4,2	BWS 0100 0161 038 B0
12,0	18,1	+0.084/0	15,10	3,8	4,2	BWS 0120 0181 038 B0
12,0	20,0	+0.084/0	18,00	3,6	4,0	BWS 0120 0200 036 B0
14,0	22,0	+0.084/0	20,00	3,6	4,0	BWS 0140 0220 036 B0
16,0	24,0	+0.084/0	22,00	3,6	4,0	BWS 0160 0240 036 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



BWS

RASCHIATORE BIDIREZIONALE CON GRADINO TIPO BWS

Descrizione

Il raschiatore tipo BWS è ottenuto dalla combinazione di una guarnizione a labbri asimmetrici ed un raschiatore. Presenta sul labbro di tenuta una raggiatura che lo rende molto scorrevole ed ha sul lato statico un gradino ridotto che ne facilita il montaggio soprattutto per diametri piccoli. La parte raschiante ha un labbro molto sottile per non influenzare il primo distacco nel movimento del cilindro.

Limiti d'impiego

Pressione: < 20 bar
Velocità: < 1 m/s
Temperatura: da - 40° C a + 90° C
Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.
Codice materiale standard: B0
Materiale alternativo poliuretano a 85 Shore A.
Codice materiale alternativo: A0

Montaggio

La sede dove va alloggiato il raschiatore non deve presentare spigoli vivi o bave che compromettano in esercizio la durata dello stesso.

Attenzione: per impieghi gravosi dove sono presenti disallineamenti o fuori centro, con diametri di stelo superiori a Ø 16 mm è consigliato un montaggio in sede non più agganciato con il solo gradino ma con tutta la base del raschiatore.

BWS TYPE BI-DIRECTIONAL WIPER WITH STEP

Description

The BWS wiper combines an asymmetric lip seal profile with a wiper. On the sealing lip the BWS has a radius allowing greater smoothness and on the static side the reduced size step facilitates installation, especially for small diameters. The scraping part has a very thin lip so as not to influence the stick-slip effect in the cylinder movement.

Technical data

Pressure: < 20 bar
Speed: < 1 m/s
Temperature: from - 40° C up to + 90° C
Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

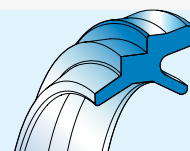
Standard polyurethane 90 Shore A.
Standard compound reference: B0
Alternative polyurethane 85 Shore A.
Alternative compound reference: A0

Assembling

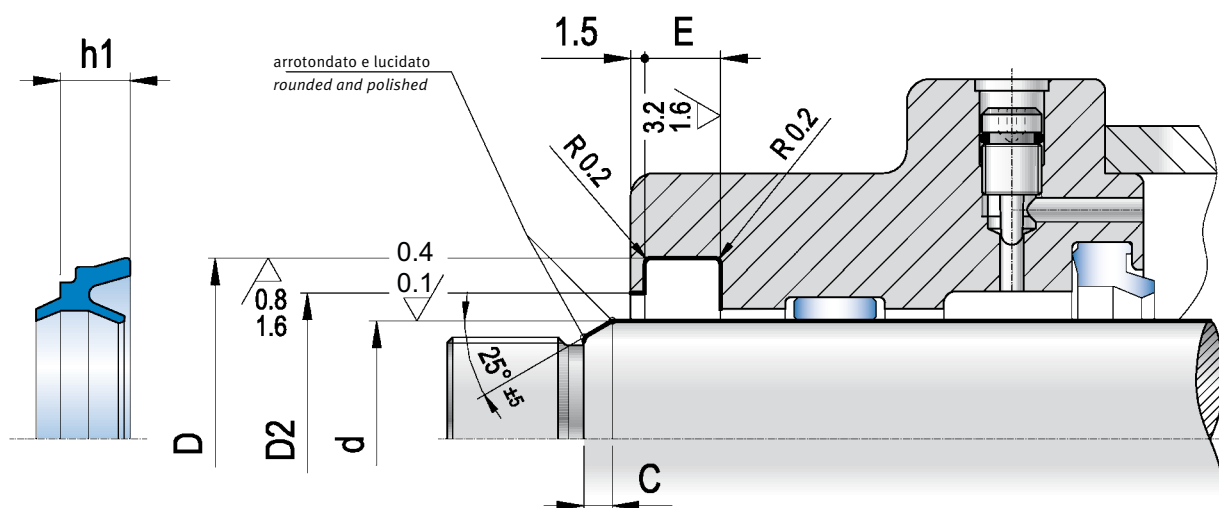
Remove cutting edges and/or flashes from the housing where the wiper has to be installed in order to minimise seal wear during operation.

Warning: for heavy duty applications showing misalignments or imbalance and with diameters bigger than Ø 16 mm, it's recommend to hang the base of the wiper to the housing and not only to the step.

BWS



LWA
BWA
PIW
BWS
BWH
BWHN

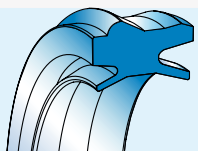


d _{f9}	D _{H10}	Toll _{H10}	D ₂	h ₁	E _{+0,2}	ART / ITEM
18	26	+0,084/0	21,5	5,6	6,0	BWS 0180 0260 056 B0
20	28	+0,084/0	23,5	5,6	6,0	BWS 0200 0280 056 B0
22	30	+0,084/0	25,5	5,6	6,0	BWS 0220 0300 056 B0
25	33	+0,100/0	28,5	5,6	6,0	BWS 0250 0330 056 B0
28	36	+0,100/0	31,5	5,6	6,0	BWS 0280 0360 056 B0
30	38	+0,100/0	33,5	5,6	6,0	BWS 0300 0380 056 B0
32	40	+0,100/0	35,5	5,6	6,0	BWS 0320 0400 056 B0
35	43	+0,100/0	38,5	5,6	6,0	BWS 0350 0430 056 B0
36	44	+0,100/0	39,5	5,6	6,0	BWS 0360 0440 056 B0
40	46	+0,100/0	43,0	4,3	4,8	BWS 0400 0460 043 B0
40	48	+0,100/0	43,5	5,6	6,0	BWS 0400 0480 056 B0
42	50	+0,100/0	45,5	5,6	6,0	BWS 0420 0500 056 B0
45	53	+0,120/0	48,5	5,6	6,0	BWS 0450 0530 056 B0
50	58	+0,120/0	53,5	5,6	6,0	BWS 0500 0580 056 B0
55	63	+0,120/0	58,5	5,6	6,0	BWS 0550 0630 056 B0
56	64	+0,120/0	59,5	5,6	6,0	BWS 0560 0640 056 B0
60	68	+0,120/0	63,5	5,6	6,0	BWS 0600 0680 056 B0
100	108	+0,120/0	103,5	5,6	6,0	BWS 1000 1080 056 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

Pneumatica
Pneumatic



BWH

RASCHIATORE BIDIREZIONALE CON GANCIO TIPO BWH

Descrizione

La particolare forma e profilo del raschiatore con aggancio tipo BWH e la sede completamente aperta, ne consentono un rapido montaggio sia in automatico che in manuale.

La sede completamente aperta con una fresatura sulla parte laterale consente di sostituire il raschiatore molto facilmente.

Lo speciale profilo, che combina la tenuta e il raschiatore è molto robusto e consente allo stelo anche significativi disallineamenti senza il pericolo di espulsione dalla sede.

Inoltre, la forma dei labbri statici impedisce alle impurità di penetrare nel cilindro.

Limiti d'impiego

Pressione: < 20 bar

Velocità: < 1 m/s

Temperatura: da - 40° C a + 90° C

Fluidi: aria con o senza lubrificazione, oli e grassi minerali
(vedi tabella 3 a pagina 14)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Materiale alternativo poliuretano a 93 Shore A.

Codice materiale alternativo: C0

Montaggio

E' consigliato durante il montaggio lubrificare la parte interna del raschiatore, mentre occorre evitare di lubrificare la parte esterna e la cava per il pericolo di espulsione dalla sede.

Eliminare tutti gli spigoli vivi e le bave nella sede per facilitare il montaggio e non danneggiare la guarnizione durante l'inserimento.

BWH TYPE BI-DIRECTIONAL WIPER WITH HOOK

Description

The main characteristic of the hooked profile of the BWH wiper is to enable easy and fast installation into a complete open housing, both automatically and manually.

The groove is completely open with a lateral milling, which allows the wiper to be replaced easily.

The special profile combining seal and wiper is very strong and allows important rod misalignments without any danger of ejection from the seat.

Moreover, the static lips profile keeps the cylinder free from outside impurities.

Technical data

Pressure: < 20 bar

Speed: < 1 m/s

Temperature: from - 40° C up to + 90° C

Fluids: air with or without lubrication, mineral oils or grease
(see table 3, page 14)

Material

Standard polyurethane 90 Shore A.

Standard compound reference: B0

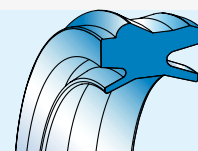
Alternative polyurethane 93 Shore A.

Alternative compound reference: C0

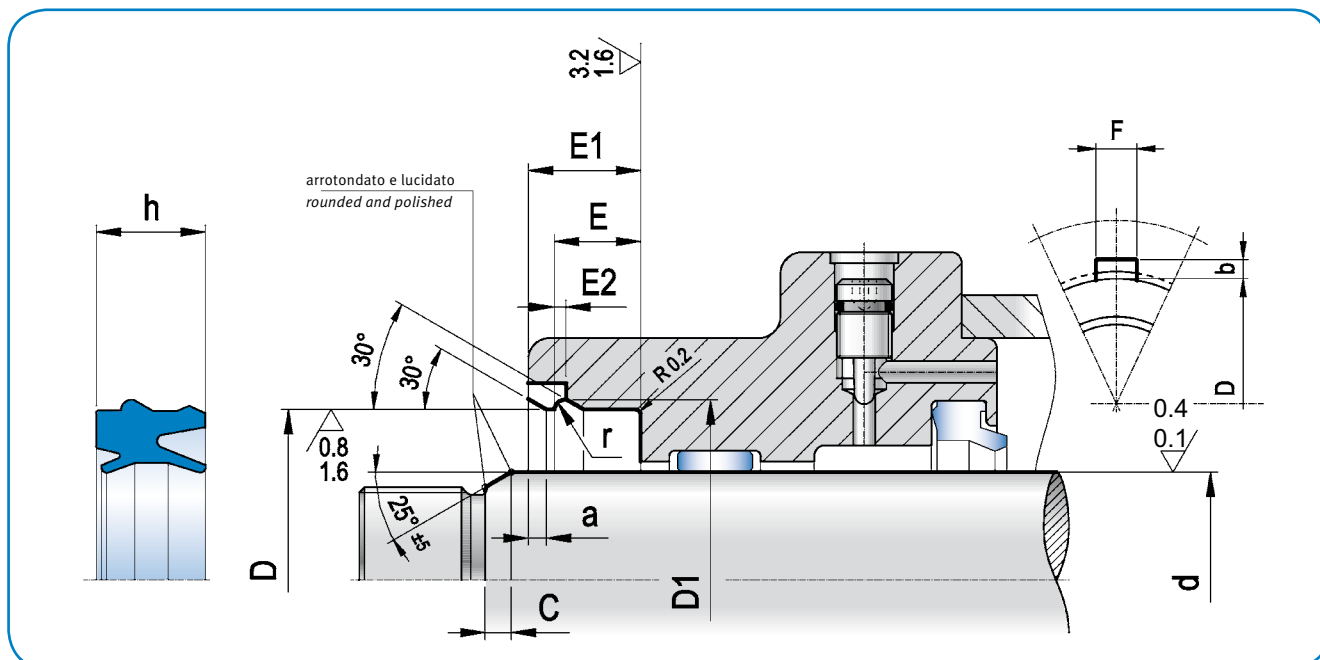
Assembling

The wiper should be lubricated internally during installation. The external lubrication of the wiper and housing is not recommended due to the ejection risk of the wiper. It is important to remove cutting edges and flashes in the housing to prevent damages of seal during assembling.

BWH



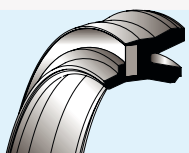
LWA
BWA
PIW
BWS
BWH
BWHN



d _{f9}	D _{H10}	toll _{H10}	D ₁	h	E ₁	E	E ₂	r	a	b	F	ART / ITEM
12,0	20,0	+0,084/0	22,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	4,0	BWH 0120 0200 107 B0
12,0	22,0	+0,084/0	24,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	4,0	BWH 0120 0220 107 B0
16,0	26,0	+0,084/0	28,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	5,0	BWH 0160 0260 107 B0
18,0	26,0	+0,084/0	28,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	5,0	BWH 0180 0260 107 B0
18,0	28,0	+0,084/0	30,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	5,0	BWH 0180 0280 107 B0
20,0	30,0	+0,084/0	32,0	10,7	13,0	8,8	2,5	1,1	1,5	1,8	5,0	BWH 0200 0300 107 B0
22,0	32,0	+0,100/0	34,5	11,2	14,0	9,4	3,0	1,4	2,0	2,0	7,5	BWH 0220 0320 112 B0
25,0	35,0	+0,100/0	37,5	11,2	14,0	9,4	3,0	1,4	2,0	2,0	7,5	BWH 0250 0350 112 B0
30,0	40,0	+0,100/0	42,5	11,2	14,0	9,4	3,0	1,4	2,0	2,0	7,5	BWH 0300 0400 112 B0
32,0	42,0	+0,100/0	44,5	11,2	14,0	9,4	3,0	1,4	2,0	2,0	7,5	BWH 0320 0420 112 B0
40,0	50,0	+0,100/0	52,5	11,2	14,0	9,4	3,0	1,4	2,0	2,0	7,5	BWH 0400 0500 112 B0
45,0	55,0	+0,120/0	58,2	12,2	15,0	10,4	4,0	1,8	2,0	2,5	10,0	BWH 0450 0550 122 B0
50,0	60,0	+0,120/0	63,2	12,2	15,0	10,4	4,0	1,8	2,0	2,5	10,0	BWH 0500 0600 122 B0
63,0	75,0	+0,120/0	78,2	13,0	16,0	11,4	4,0	1,8	2,0	2,5	10,0	BWH 0630 0750 130 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



BWH / N

RASCHIATORE BIDIREZIONALE CON GANCIO TIPO BWH/N

Descrizione

La particolare geometria del raschiatore BWH/N , senza aggancio con anima metallica vulcanizzata all'interno , per sede completamente aperta, favorisce il montaggio in automatico.

Il basso rilievo creato in sede, porta SEEGER , garantisce la non espulsione del raschiatore . Anche la sostituzione in caso di manutenzione e' estremamente semplice.

Lo speciale profilo , che combina la tenuta e il raschiatore in un'unica soluzione , impedisce alle impurita' di penetrare nel cilindro.

Limiti d'impiego

Pressione: < 16 [bar]

Velocità: < 1 [m/s]

Temperatura: da - 30°C a +100°C per la versione in NBR
da -15°C a + 150°C per la versione in FKM

Fluidi: aria lubrificata, grassi e oli minerali (vedi tabella 3 a pagina 14)

Materiale

Il materiale standard è NBR 75 Shore A colore nero
In alternativa FKM 75 Shore A di colore marrone.
Codice materiale standard: NG

Montaggio

Le sequenze del montaggio sono le seguenti :

- 1) Inserimento raschiatore
 - 2) Posizionamento SEEGER nell'apposita nicchia
- E' consigliato lubrificare la sede e togliere gli spigoli vivi creati da lavorazione meccanica.

BWH/N TYPE BI-DIRECTIONAL WIPER WITH HOOK

Description

The special geometry of the wiper BWH / N, without hanging, with vulcanized metal core inside, for completely open groove, improve the assembling. The grooved seat circlip holder, avoids the scraper ejection.

The replacement is also very simple during maintenance.

The special profile combining seal and wiper in a single solution, keeps the cylinder free from outside impurities.

Technical data

Pressure: < 16 [bar]

Speed: < 1 [m/s]

Temperature: from - 30°C to +100°C for NBR version
from -15°C to +150°C for FKM version

Fluids: lubricated air, grease and mineral oils (see table 3, page 14)

Material

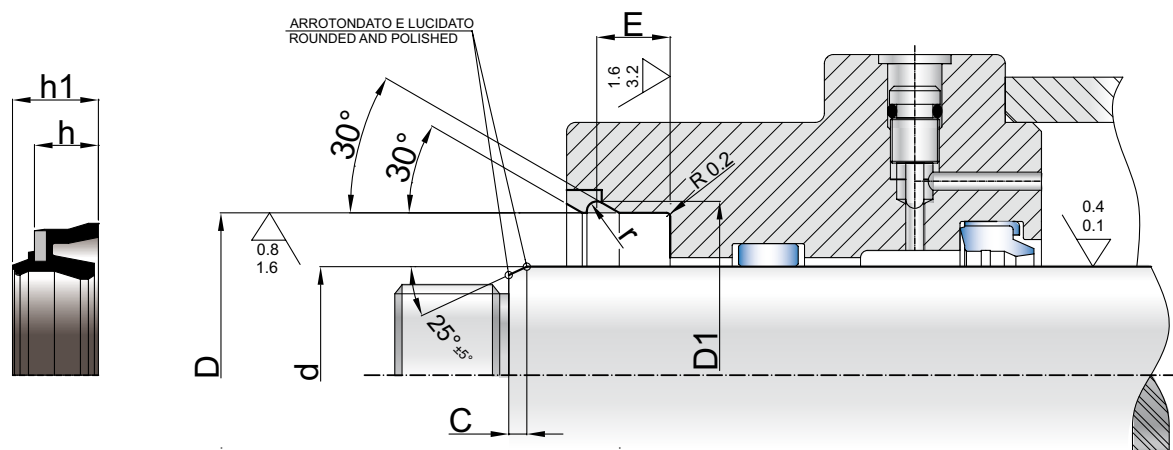
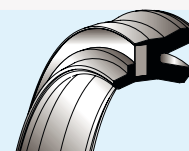
Standard material is NBR 75 Shore A black colour.
In alternative FKM 75 Shore A brown colour.
Compound reference: NG

Assembling

We suggest assembling as follows:

- 1) Insert scraper
 - 2) Place circlip in the niche
- Is recommended to lubricate the seat and remove the sharp edges originated by the machining.

BWH / N



LWA
BWA
PIW
BWS
BWH
BWHN

df9	DH10	h	h ₁	D ₁	E	r	ART / ITEM
10,0	20,0	7,0	9,5	22,00	8,50	1,10	BWH 0100 0200 070 NG
12,0	20,0	6,0	8,5	22,00	7,50	1,10	BWH 0120 0200 060 NG
12,0	22,0	7,0	9,5	24,00	8,50	1,10	BWH 0120 0220 070 NG
14,0	24,0	7,0	9,5	26,00	8,50	1,10	BWH 0140 0240 070 NG
16,0	26,0	7,0	9,5	28,00	8,50	1,10	BWH 0160 0260 070 NG
18,0	26,0	6,0	8,5	28,00	7,50	1,10	BWH 0180 0260 060 NG
18,0	28,0	7,0	9,5	30,00	8,50	1,10	BWH 0180 0280 070 NG
20,0	30,0	7,0	9,5	32,00	8,50	1,10	BWH 0200 0300 070 NG
22,0	32,0	7,0	9,5	34,50	8,80	1,40	BWH 0220 0320 070 NG
25,0	35,0	7,0	9,5	37,50	8,80	1,40	BWH 0250 0350 070 NG
30,0	40,0	7,0	9,5	42,50	8,80	1,40	BWH 0300 0400 070 NG
32,0	42,0	7,0	9,5	44,50	8,80	1,40	BWH 0320 0420 070 NG
40,0	50,0	7,0	9,5	52,50	8,80	1,40	BWH 0400 0500 070 NG
50,0	60,0	7,0	9,0	62,50	8,30	1,40	BWH 0500 0600 070 NG

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.



CUP

MEMBRANE PER SCARICO RAPIDO TIPO CUP

Descrizione

Le membrane per scarico rapido tipo CUP sono utilizzate sulle valvole per ottenere velocità di traslazione più rapida, nei cilindri a semplice e doppio effetto, e per depressurizzare velocemente nel caso si voglia svuotare serbatoi o altro.

Limiti d'impiego

Pressione: da 0,5 a 10 [bar]

Temperatura: da - 40°C a +90°C

Fluidi: aria secca o lubrificata (Se lubrificata si consiglia olio ISO VG32)

Materiale

Materiale standard poliuretano a 90 Shore A.

Codice materiale standard: B0

Per impieghi superiori a 90°C il materiale utilizzato è poliuretano per alte temperature (135°C)

Codice materiale standard: G0

Montaggio

il montaggio avviene in sede aperta.

si consiglia di lubrificare con grasso minerale.

CUP TYPE MEMBRANES FOR RAPID DISCHARGE

Description

The membranes for quick exhaust valves are used on CUP type for faster travel speed, in single and double acting cylinder, and to depressurize quickly if you want to empty the tanks or otherwise.

Technical data

Pressure: fro 0,5 to 10 [bar]

Temperature: from - 40°C to +90°C

Fluids: Dry or lubricated air (in case of lubricated is recommended to use oil ISO VG32)

Material

Standard polyurethane 90 Shore A.

Standard compound reference: B0

for applications above 90 ° C, the material used is polyurethane for high temperatures (135 ° C)

Code standard material: G0

Assembling

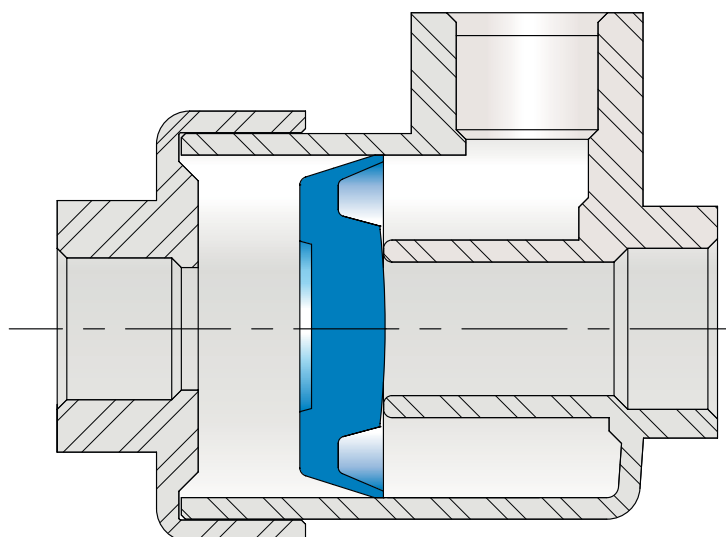
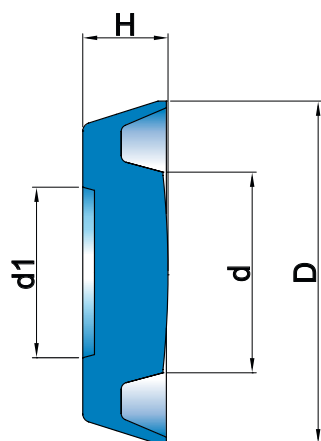
the assembly is in open groove.

it is recommended to lubricate with mineral grease.

CUP



CUP



Rif.	D+0,5	H+0,3	d	d1	ART / ITEM
12	12,4	4,0	5,5	2	CUP 0120 B0
1/8"	20,5	5,0	11,0	10,0	CUP 0200 B0
1/4"-3/8"	25,6	5,5	15,0	10,0	CUP 0250 B0
1/2"	35,8	7,9	20,0	14,0	CUP 0350 B0
3/4"-1"	41,0	7,9	27,0	17,0	CUP 0400 B0

Nota: altre dimensioni non a catalogo a richiesta. Consultare il nostro ufficio tecnico.

Remark: please contact our technical dept. for further dimensions not included in the catalogue.

IL GRUPPO GAPI

The GAPI GROUP

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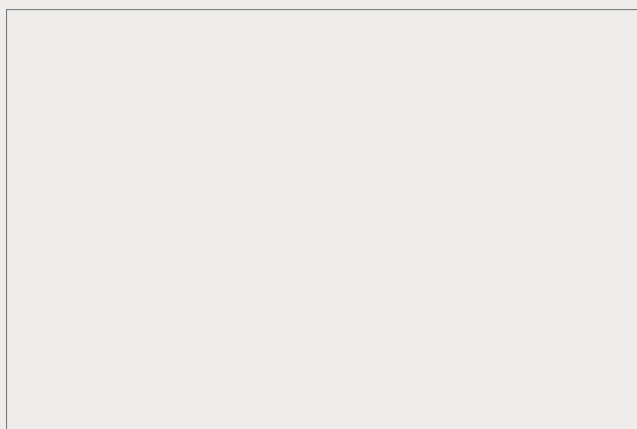
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