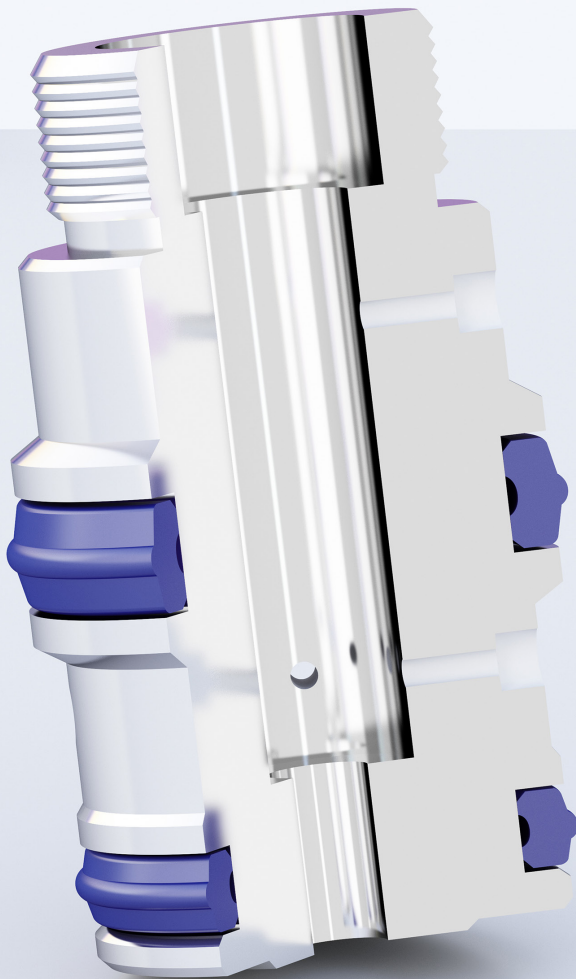
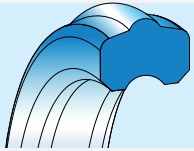


ARTIC VSS

VALVE SEALING SOLUTION

TECHNICAL DATA SHEET





VSS

TENUTE PER VALVOLE A CARTUCCIA TIPO VSS

Descrizione

Realizzata in TPU ad alte prestazioni, la tenuta per valvole a cartuccia VSS è utilizzata per applicazioni semi-statiche e semi-dinamiche e consente di ottenere, rispetto ai tradizionali sistemi multicomponente in NBR, vantaggi come:

- migliore resistenza a estrusione e 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
- gestione semplificata delle scorte grazie all'utilizzo di un unico componente

Dati tecnici

Pressione pulsante: 450 [bar] (6500 [psi])
 Temperatura: da - 35° C a + 100° C, con punte fino a + 110° C
 Fluidi: olio e grassi minerali
 (vedi catalogo Artic Seals 2020 tabella 3 a pag. 14)

Montaggio

Il montaggio avviene in modo elastico in sede anulare. È importante eliminare gli spigoli vivi e le bave di lavorazione. (Vedi catalogo Artic Seals 2020 sezione tecnica pag.34)

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 provide considerable advantages over conventional multi-component systems in NBR:

- improved extrusion and abrasion resistance thanks to TPU's mechanical properties
- extended seal life
- easier installation due to symmetrical profile
- perfect interchangeability with standard O-Ring + antiextrusion ring's groove
- lower inventory cost due to single component and one part number

Technical data

Impulse pressure: 450 [bar] (6500 [psi])
 Temperature: from - 35° C to + 100° C with peaks till + 110° C
 Fluids: mineral oil and grease
 (see Artic Seals catalog 2020 table 3, page 14)

Assembling

The installation is in an annular groove using elasticity of the part to assemble. It is important to remove flashes or cutting edges to avoid damages. (see Artic Seals catalog 2020 technical overview page 34)

VSS

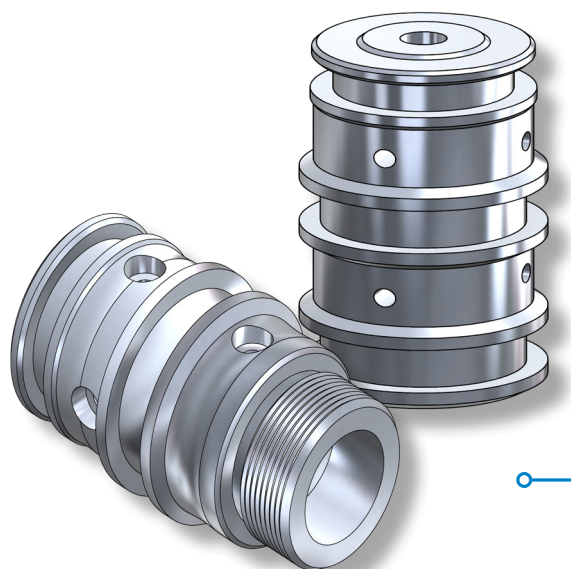
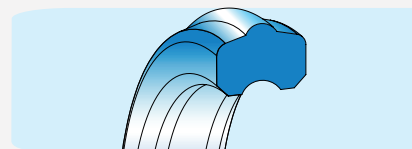
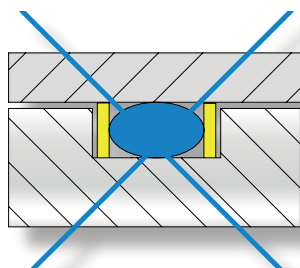


Fig: ARTIC VSS è una tenuta unica in materiale TPU poliester e ad alto modulo elastico, ottimo compression-set e alta resistenza all'abrasione, consente di sostituire i più comuni O-Ring + anello antiestrusione.

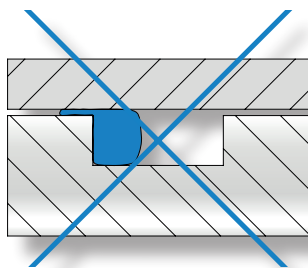
Pic: ARTIC VSS is a unique seal in polyester TPU with high elastic modulus, with an excellent compression set and high abrasion resistance, replacing the more common solution with O-ring + anti-extrusion ring.

UNICA SOLUZIONE JUST ONE SOLUTION

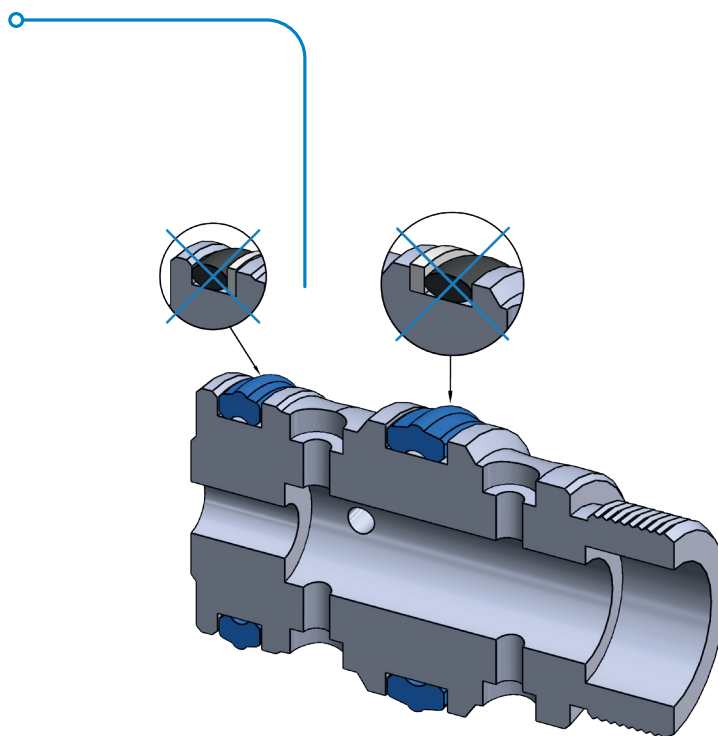


Perfettamente intercambiabile con la soluzione O-Ring + Anelli antiestrusione permette di utilizzare e tenere a stock un solo particolare.
Fully interchangeable with solution O-Ring+Backup Rings, more efficient stock manage due to use only one item.

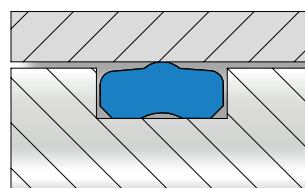
NO ESTRUSIONE



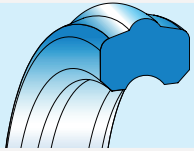
La sua particolare geometria garantisce la totale assenza di estrusione in quanto la superficie di tenuta rimane distante dal fondo della sede.



NO EXTRUSION



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.



VSS

TEST ENDURANCE MATERIALE STANDARD

Al fine di verificare le performance della tenuta ARTIC VSS sono stati condotti una serie di test in comparazione alle migliori soluzioni oggi in commercio, utilizzando le stesse cartucce per valvole e simulando lo stesso test per entrambe le soluzioni. (7 dimensioni in 4 Porte)

I test sono stati realizzati utilizzando il capitolato più gravoso dei nostri clienti, sottoponendo le guarnizioni a un ciclo di endurance con pressione pulsante 0-400 [bar] (0-5800 [psi]) alternativamente da ambo i lati della guarnizione.

Target 1.000.000 cicli.

Rilevazione delle curve di tenuta, e del relativo decadimento di pressione, delle varie posizioni a zero cicli; 500.000 cicli e 1.000.000 di cicli.

ENDURANCE TEST STANDARD MATERIAL

In order to verify the performance of the ARTIC VSS seal, a series of tests were conducted in comparison with the best solutions on the market today, using the same cartridges for valves and simulating the same test for both solutions. (7 dimensions in 4 ports)

The tests were carried out using the most demanding specifications of our customers, submitting the seals to an endurance cycle with pulsating pressure 0-400 [bar] (0-5800 [psi]) alternately on both sides of the seal.

Target 1.000.000 cycles.

Detection of the sealing curves, and the relative pressure decay, of the different positions at zero cycle; 500.000 cycles and 1.000.000 cycles.

Fig: curve decadimento pressione 50[bar] (725 [psi]) a 1.000.000 cicli
Pic: pressure decay curves 50 [bar] (725 [psi]) at 1.000.000 cycles

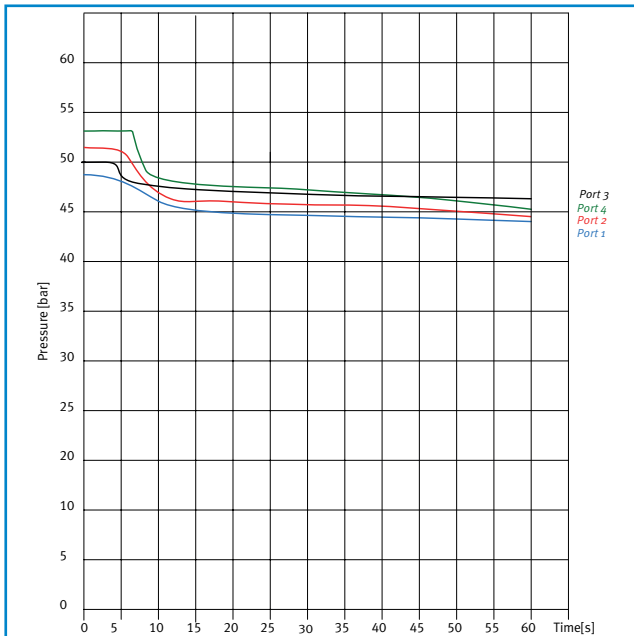
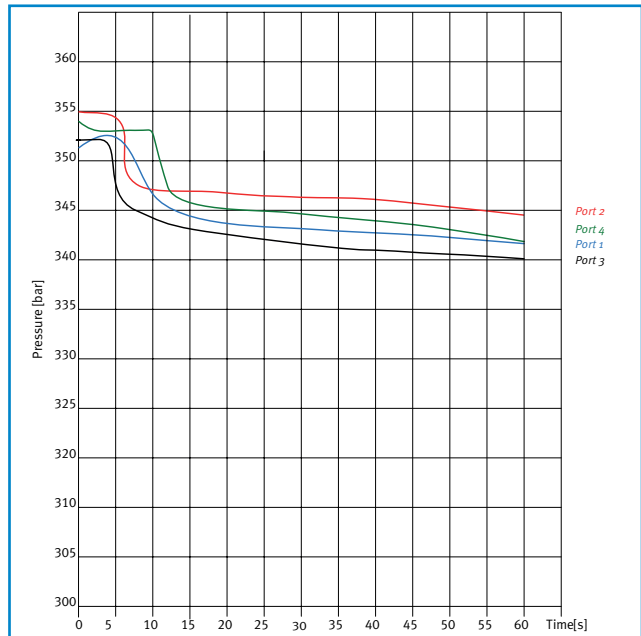


Fig: curve decadimento pressione 350[bar] (5000 [psi]) a 1.000.000 cicli
Pic: pressure decay curves 350 [bar] (5000 [psi]) at 1.000.000 cycles



STANDARD MATERIAL						
Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range °C	Shore Hardness	
					A	D
C0	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 casting.	-35 to +110	94	

VSS

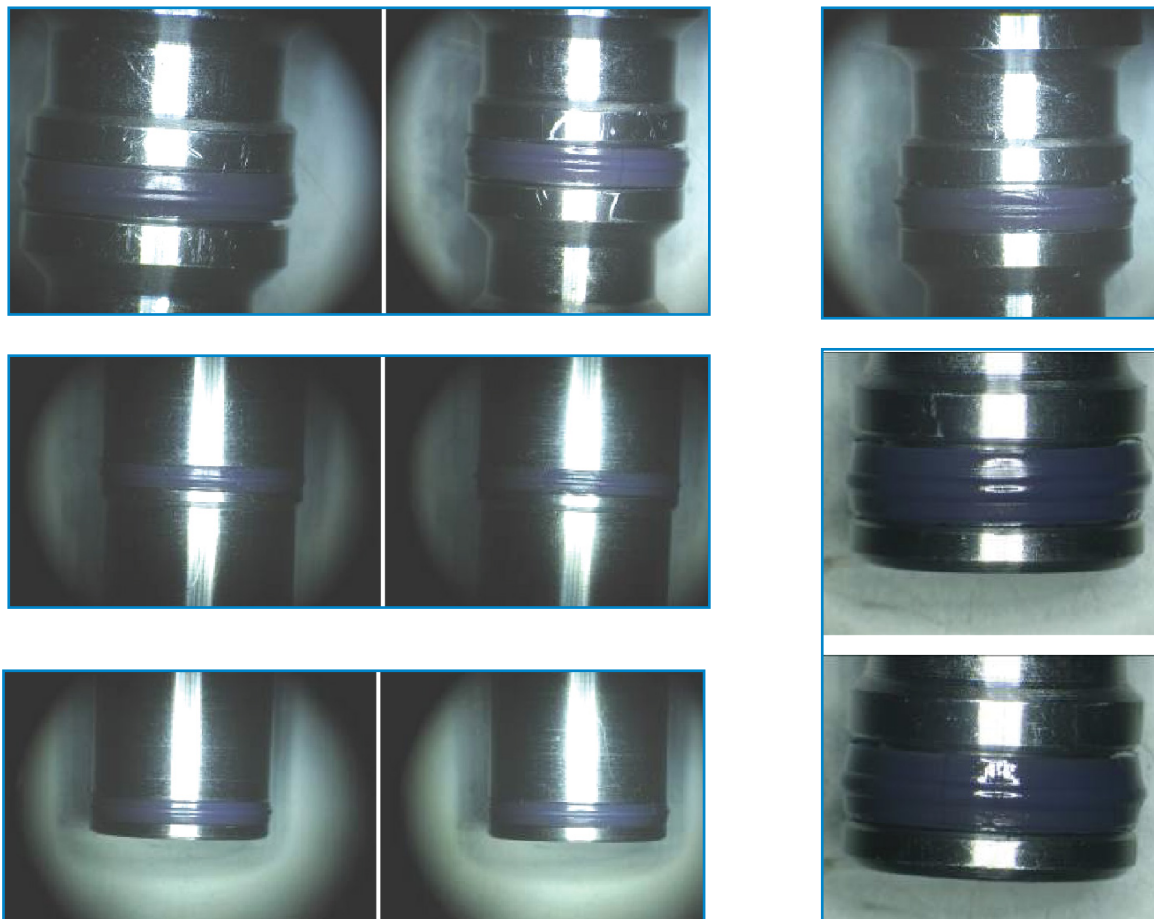
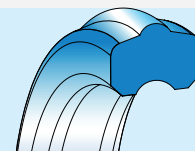


Fig: condizioni tenute dopo 1.000.000 di cicli
 Pic: seal conditions after 1.000.000 of cycles

Conclusioni:

durante il test di durata la temperatura dell'olio è stata mantenuta tra 40°C e 45°C.

durante le prove è emerso quanto segue:

- tutti i campioni testati non hanno mostrato cedimenti o alterazioni significative della forma (a fine test struttura della guarnizione integra e in apparenza ottima)
- la verifica della tenuta eseguita su tutti i campioni non ha evidenziato variazioni significative; sia ad alta che bassa pressione le prestazioni sono risultate conformi allo standard durante tutti i controlli effettuati

In conclusione, le tenute ARTIC VSS possono essere ritenute conformi per l'utilizzo.

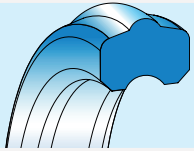
Conditions:

During all tests the oil temperature was controlled and maintained between 40°C and 45°C.

during the tests the following results were achieved:

- all the tested samples did not show significant sagging or alterations of the shape (at the end of the test the structure of the seal is intact and in excellent appearance)
- the leak test carried out on all the samples did not show significant variations; both at high and low pressure, the performances were in compliance with the test standard during all the checks carried out

In conclusion, the ARTIC VSS seals can be considered compliant for use.



VSS

TEST ENDURANCE MATERIALE SPECIALE

Il test è stato eseguito su 4 plug uguali equipaggiati con n°3 ARTIC VSS ciascuno e in comparazione con plug equipaggiati con metodo standard OR+BK ring. Sottoporre le guarnizioni a un ciclo di endurance ad una temperatura dell'olio 40°C/45°C con pressioni a 35 [bar] (500[psi]) e a 350 [bar] (5000 [psi]) per verificare il decadimento della pressione.

Target 1.000.000 cicli.

Rilevazione delle curve di decadimento pressione a zero; 250.000; 500.000 e 1.000.000 di cicli.

ENDURANCE TEST SPECIAL MATERIAL

The test was performed on 4 identical spools equipped with 3 ARTIC VSS each and in comparison with spools equipped with the standard OR + BK ring method. Seals submitted to an endurance cycle at an oil temperature of 40°C/45°C with pressures at 35 [bar] (500 [psi]) and 350 [bar] (5000 [psi]) to check the pressure decay.

Target 1.000.000 cycles.

Measurement of pressure decay curves at zero; 250.000; 500.000 and 1.000.000 cycles.

STANDARD MATERIAL						
Artic Seals Code	Description	Colour identification	Typical Applications & Description	Service Temperature Range°C	Shore Hardness	
					A	D
G2	PPDI isocyanate based thermoplastic polyurethane	light blu	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.	-30 to +135	93	



Fig: condizioni tenute dopo 1.000.000 di cicli

Pic: seal conditions after 1.000.000 of cycles

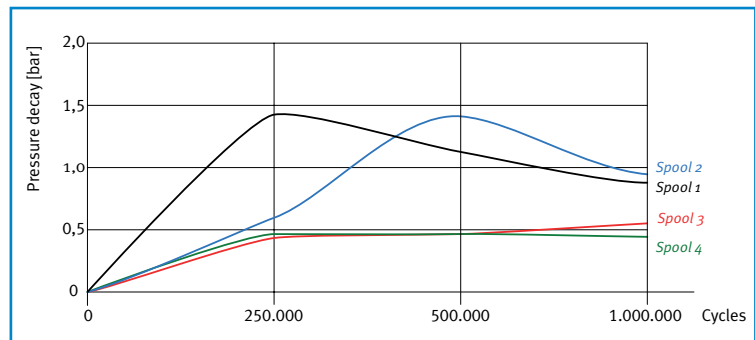


Fig: curve di decadimento pressione 35 [bar] (500 [psi])

Pic: pressure decay curves 35 [bar] (500 [psi])

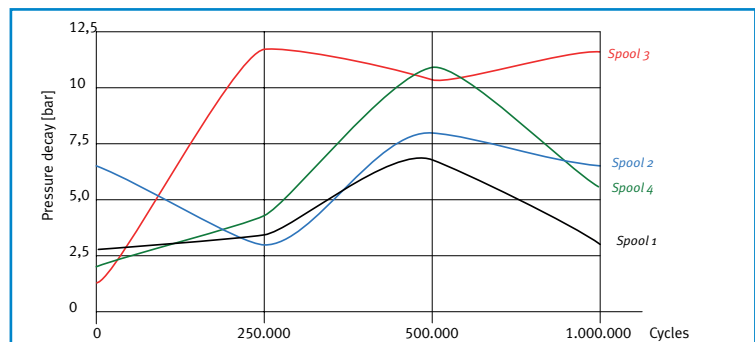


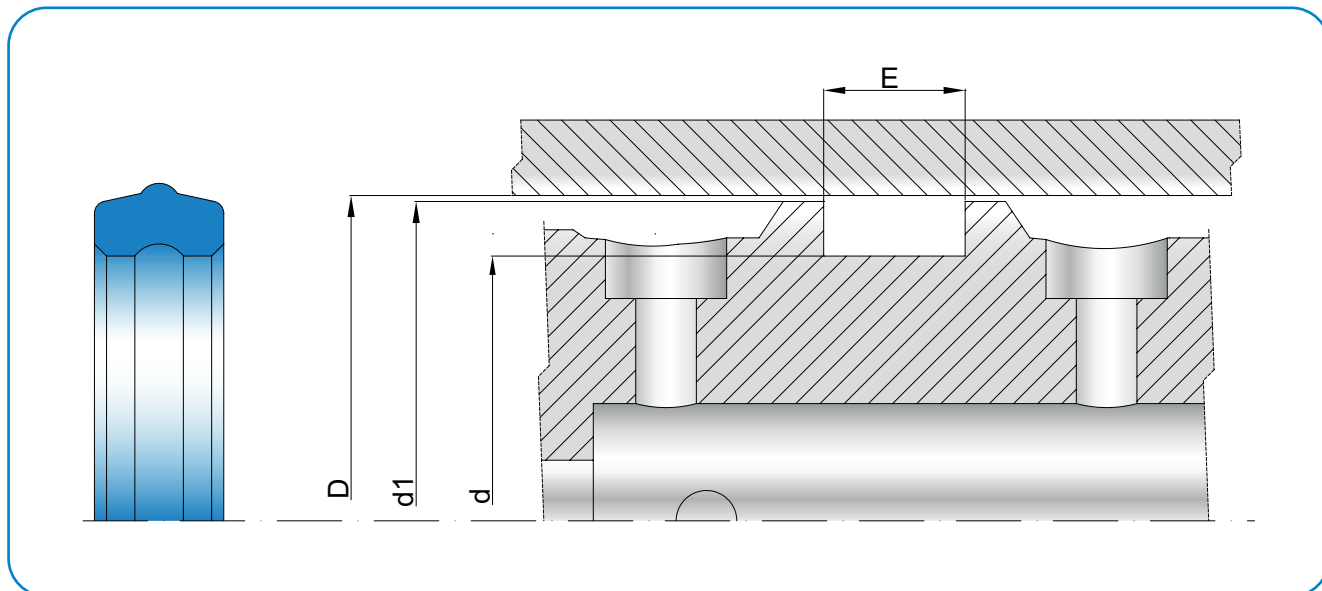
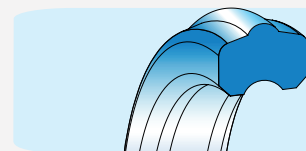
Fig: curve di decadimento pressione 350 [bar] (5000 [psi])

Pic: pressure decay curves 350 [bar] (5000 [psi])

Conclusioni: tutti i 4 plug testati con tenute ARTIC VSS non hanno presentato decadimenti di pressione significativi per entrambe le pressioni di 35 [bar] (500[psi]) e 350 [bar] (5000 [psi]) e le guarnizioni si presentano dopo 1.000.000 di cicli in buono stato e senza cedimenti strutturali.

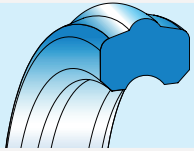
Conditions: all 4 Spool tested with ARTIC VSS seals did not show significant pressure decays at both 35 [bar] (500 [psi]) and 350 [bar] (5000 [psi]) test pressures and the seals appeared after 1.000.000 of cycles in good condition and without structural failures.

VSS



Inch Sizes in alternative to O-Ring + 1 Backup Ring

O-Ring Size + BK	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 CO
011	0,436	11,07	0,326	8,28	0,434	11,02	0,138	3,51	VSS 0110 0083 035 CO
012	0,499	12,67	0,389	9,88	0,497	12,62	0,138	3,51	VSS 0127 0099 035 CO
013	0,561	14,25	0,451	11,46	0,559	14,20	0,138	3,51	VSS 0142 0115 035 CO
014	0,624	15,85	0,514	13,06	0,622	15,80	0,138	3,51	VSS 0158 0131 035 CO
015	0,686	17,42	0,576	14,63	0,684	17,37	0,138	3,51	VSS 0174 0146 035 CO
016	0,749	19,02	0,639	16,23	0,747	18,97	0,138	3,51	VSS 0190 0162 035 CO
017	0,811	20,60	0,701	17,81	0,809	20,55	0,138	3,51	VSS 0206 0178 035 CO
018	0,874	22,20	0,764	19,41	0,872	22,15	0,138	3,51	VSS 0222 0194 035 CO
019	0,936	23,77	0,826	20,98	0,934	23,72	0,138	3,51	VSS 0237 0210 035 CO
020	0,999	25,37	0,889	22,58	0,997	25,32	0,138	3,51	VSS 0254 0226 035 CO



VSS

Metric sizes for standard dimensions

D _{H8} mm	d _{h9} mm	d _{1h9} mm	E _{+0,2} mm	ART / ITEM
8,20	5,30	8,15	3,50	VSS 0082 0053 035 CO
9,50	7,90	9,45	2,60	VSS 0095 0079 026 CO
10,20	8,60	10,15	2,60	VSS 0102 0086 026 CO
11,20	9,60	11,15	2,60	VSS 0112 0096 026 CO
11,80	10,30	11,75	2,60	VSS 0118 0103 026 CO
12,00	7,30	11,95	3,00	VSS 0120 0073 030 CO
12,00	8,60	11,95	2,40	VSS 0120 0086 024 CO
12,00	9,20	11,95	3,50	VSS 0120 0092 035 CO
12,50	10,90	12,45	2,80	VSS 0125 0109 028 CO
12,70	10,40	12,65	3,50	VSS 0127 0104 035 CO
13,00	10,10	12,95	3,50	VSS 0130 0101 035 CO
14,00	11,10	13,95	3,50	VSS 0140 0111 035 CO
14,25	11,46	14,20	2,50	VSS 0142 0115 025 CO
15,00	12,10	14,95	3,50	VSS 0150 0121 035 CO
15,85	13,06	15,80	2,50	VSS 0158 0131 025 CO
16,70	13,80	16,65	2,50	VSS 0167 0138 025 CO
17,40	14,60	17,35	2,50	VSS 0174 0146 025 CO
18,30	15,40	18,25	2,50	VSS 0183 0154 025 CO

D _{H8} mm	d _{h9} mm	d _{1h9} mm	E _{+0,2} mm	ART / ITEM
18,60	15,70	18,55	3,30	VSS 0186 0157 033 CO
19,00	16,20	18,95	2,50	VSS 0190 0162 025 CO
19,80	16,90	19,75	2,50	VSS 0198 0169 025 CO
20,00	17,20	19,95	3,50	VSS 0200 0172 035 CO
22,00	19,40	21,95	4,50	VSS 0220 0194 045 CO
22,30	17,50	22,25	3,20	VSS 0223 0175 032 CO
23,50	20,60	23,45	3,50	VSS 0235 0206 035 CO
24,00	21,40	23,95	4,50	VSS 0240 0214 045 CO
27,20	24,40	27,15	3,50	VSS 0272 0244 035 CO
28,50	25,80	28,45	3,50	VSS 0285 0258 035 CO
30,00	27,10	29,95	3,50	VSS 0300 0271 035 CO
32,00	29,20	31,95	3,50	VSS 0320 0292 035 CO
33,40	30,50	33,35	3,50	VSS 0334 0305 035 CO
34,00	31,20	33,95	3,50	VSS 0340 0312 035 CO
36,00	33,20	35,95	3,50	VSS 0360 0332 035 CO
36,50	32,30	36,45	3,50	VSS 0365 0320 035 CO
38,00	35,20	37,95	3,50	VSS 0380 0352 035 CO
50,80	47,80	50,75	3,50	VSS 0508 0478 035 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.

***I prodotti Artic Seals sono distribuiti da:
Artic Seals's products are distributed by:***

GAPI S.p.A.
via Molinaretti, 2
I - 24060 Castelli Calepio (BG) - Italy
ph +39 030 7438 511
fax +39 030 7438 550
sales@gapigroup.com

GAPI Group
Centri di distribuzione e
uffici commerciali
Sales and logistic centers

GAPI USA Inc.
300 Huls Drive, Englewood
Ohio, OH 45315, U.S.A.
ph +1 (937) 836-0080
800 442 8030
fax +1 (937) 836-7499
gapi@gapiusa.com

GAPI Ltd
Centurion Business Park
Bessemer Way - Templeborough
Rotherham - Sheffield - S60 1 FB - UK
ph +44 (01709) 378 181
fax +44 (01709) 378 182
sales@gapi.co.uk

Gapi Sealing System S.L.U.
C/ Telecomunicaciones, 21
Polígono Industrial Urtinsa II
28923 Alcorcón (Madrid) - E
ph +34 918517 187
fax +34 918517 195
gapiss@gapiss.es

GAPI GmbH
Hans Böckler Str. 14
Postfach 200265 - 51503
Rösrath - D
ph +49 (02205) 90494-0
fax +49 (02205) 90494-33
verkauf@gapi.de

www.gapigroup.com