



Turcon® Variseal® HF

DESCRIPTION

Turcon® Variseal® **HF** is the standard seal for axial (face) applications. It has a high spring loading, which gives excellent sealing integrity at low pressure and is available for both internal and external pressure.

The heavy helical spring in Variseal® HF makes it the best choice for vacuum, gas and low temperature flange sealing applications.

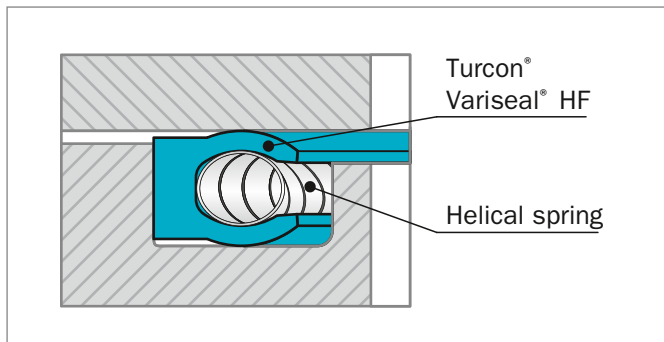


Figure 24: Turcon® Variseal® HF

AREAS OF APPLICATION

- Compressor housings
- Construction equipment and plant
- Chemical processing
- Crude oil and natural gas installations
- Cryogenic engineering
- Nuclear power
- Vacuum applications
- Pivot joints

TECHNICAL DATA

Operating pressure:	Maximum static load: 60 MPa / 8,702 psi Maximum dynamic load: 20 MPa / 2,900 psi (207 MPa / 30,000 psi with Back-up Ring)
Speed:	Static to slow rotating or pivoting movements
Operating temperature:	-150 °C to +200 °C / -238 °F to +392 °F
Media compatibility:	Virtually all fluids, chemicals compatibility: and gases

IMPORTANT NOTE

The above data are maximum values and cannot be used at the same time. e.g. the maximum operating speed depends on material type, pressure, temperature and gap value.
Temperature range also dependent on media.

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■ Installation Recommendations for Internal Face Seals – Type HF – Metric

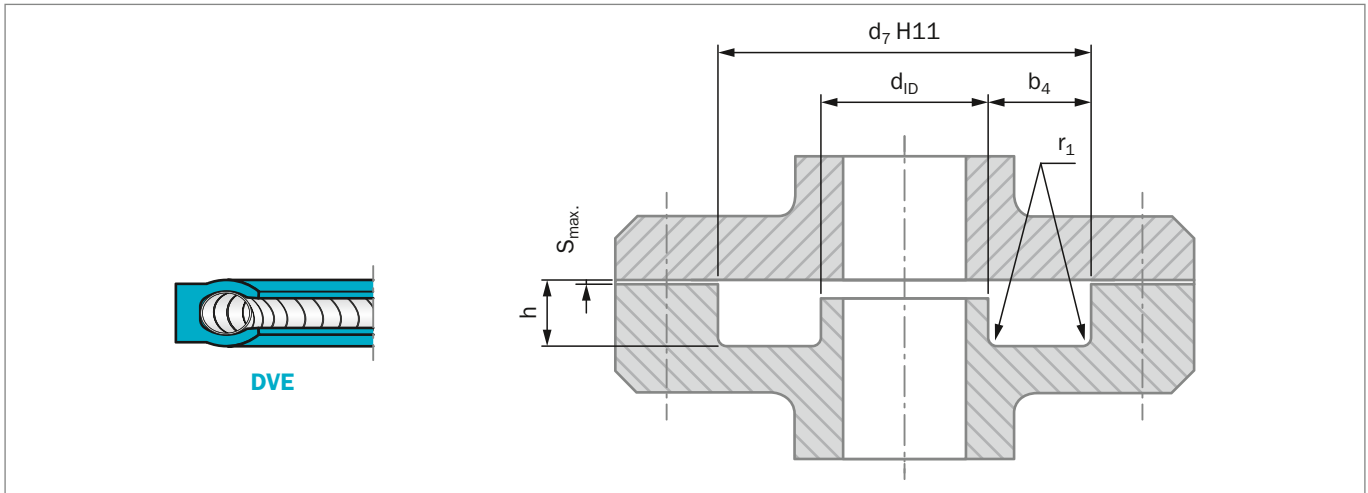


Figure 25: Installation Drawing

Table 30: Installation Dimensions – Metric

Series No.	Groove Outside Diameter d_7 H11		h		b_4 Groove Width Min	r_1 Radius Max	Axial Clearance S_{max}			
			Groove Depth				2 MPa	10 MPa	20 MPa	40 MPa
	Standard Range	Extended Range ¹⁾								
DVE0	10.0 - 13.9	10.0 - 40.0	1.45	+0.03	2.40	0.25	0.20	0.10	0.08	0.05
DVE1	14.0 - 24.9	13.0 - 200.0	2.25	+0.05	3.60	0.38	0.25	0.15	0.10	0.07
DVE2	25.0 - 45.9	18.0 - 400.0	3.10	+0.08	4.80	0.38	0.35	0.20	0.15	0.08
DVE3	46.0 - 124.9	28.0 - 700.0*	4.70	+0.10	7.10*	0.38	0.50	0.25	0.20	0.10
DVE4	125.0 - 999.9**	45.0 - 1000.0**	6.10	+0.15	9.50**	0.51	0.60	0.30	0.25	0.12
DVE5	1000.0 - 2500.0***	110.0 - 2500.0***	9.50	+0.20	15.00***	0.51	0.90	0.50	0.40	0.20

* For diameters above 700 mm b_4 min. = 8.0 mm

** For diameters above 700 mm b_4 min. = 11.0 mm

*** For diameters above 1000 mm b_4 min. = 18.0 mm

¹⁾ Available on request

H11 tolerance can be found using the ISO Fits & Tolerance App, see page 88.

Table 31: Size Series – Metric

d_7	d_{ID} max	TSS Part No.	d_7	d_{ID} max	TSS Part No.	d_7	d_{ID} max	TSS Part No.
10.0	5.2	DVE000100	45.0	35.4	DVE200450	105.0	90.8	DVE301050
12.0	7.2	DVE000120	48.0	33.8	DVE300480	110.0	95.8	DVE301100
14.0	6.8	DVE100140	50.0	35.8	DVE300500	115.0	100.8	DVE301150
15.0	7.8	DVE100150	52.0	37.8	DVE300520	120.0	105.8	DVE301200
16.0	8.8	DVE100160	55.0	40.8	DVE300550	122.0	107.8	DVE301220
18.0	10.8	DVE100180	56.0	41.8	DVE300560	125.0	106.0	DVE401250
20.0	12.8	DVE100200	60.0	45.8	DVE300600	130.0	111.0	DVE401300
22.0	14.8	DVE100220	63.0	48.8	DVE300630	135.0	116.0	DVE401350
25.0	15.4	DVE200250	65.0	50.8	DVE300650	140.0	121.0	DVE401400
28.0	18.4	DVE200280	70.0	55.8	DVE300700	150.0	131.0	DVE401500
30.0	20.4	DVE200300	75.0	60.8	DVE300750	160.0	141.0	DVE401600
32.0	22.4	DVE200320	80.0	65.8	DVE300800	170.0	151.0	DVE401700
35.0	25.4	DVE200350	85.0	70.8	DVE300850	180.0	161.0	DVE401800
36.0	26.4	DVE200360	90.0	75.8	DVE300900			
40.0	30.4	DVE200400	95.0	80.8	DVE300950			
42.0	32.4	DVE200420	100.0	85.8	DVE301000			

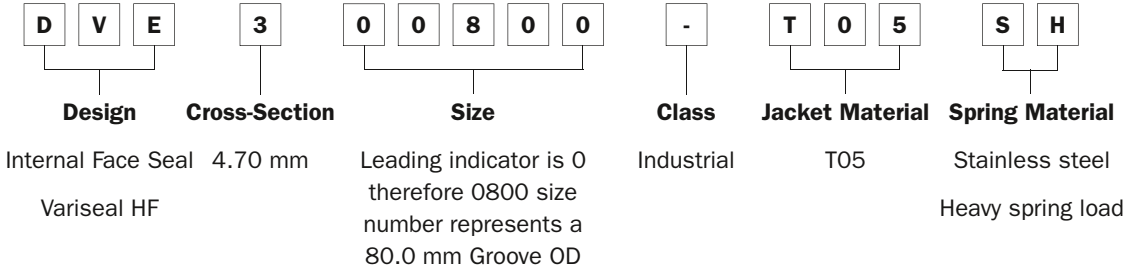
For additional size and part number details please contact your local Trelleborg Sealing Solutions Marketing company.



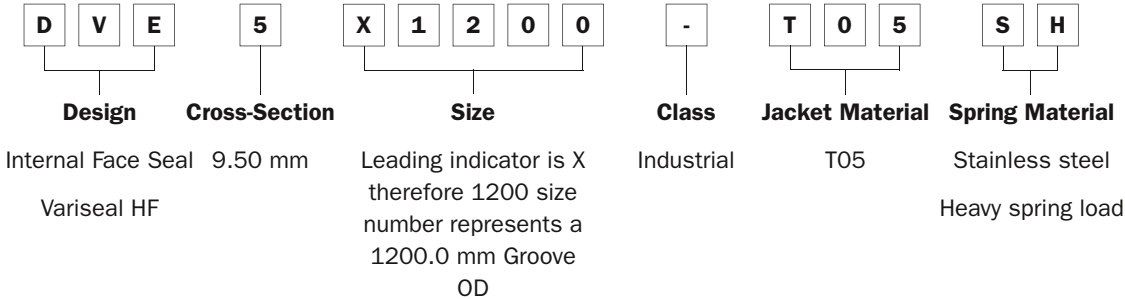
Table 32: Part Number Systems for Internal Face Seals – Metric

Article Code	Cross-Section	Size	Class	Seal Material	Spring Material	Spring Load
DVE Variseal HF (Internal)	0 1.45 1 2.25 2 3.10 3 4.70 4 6.10 5 9.50	0xxxx Groove OD <1000 (dia x 10.0) Xxxxx Groove OD >= 1000 (dia x 1.0)	- Industrial A Aerospace	T01 MF1 MF4 MF6 T05 T07 See page 7 T12 for material T24 description T40 M79 Z48 Z80	S Stainless Steel H Hastelloy E Elgiloy	Standard load for each design H Heavy

ORDERING EXAMPLE 1



ORDERING EXAMPLE 2





■ Installation Recommendations for Internal Face Seals – Type HF – Inch

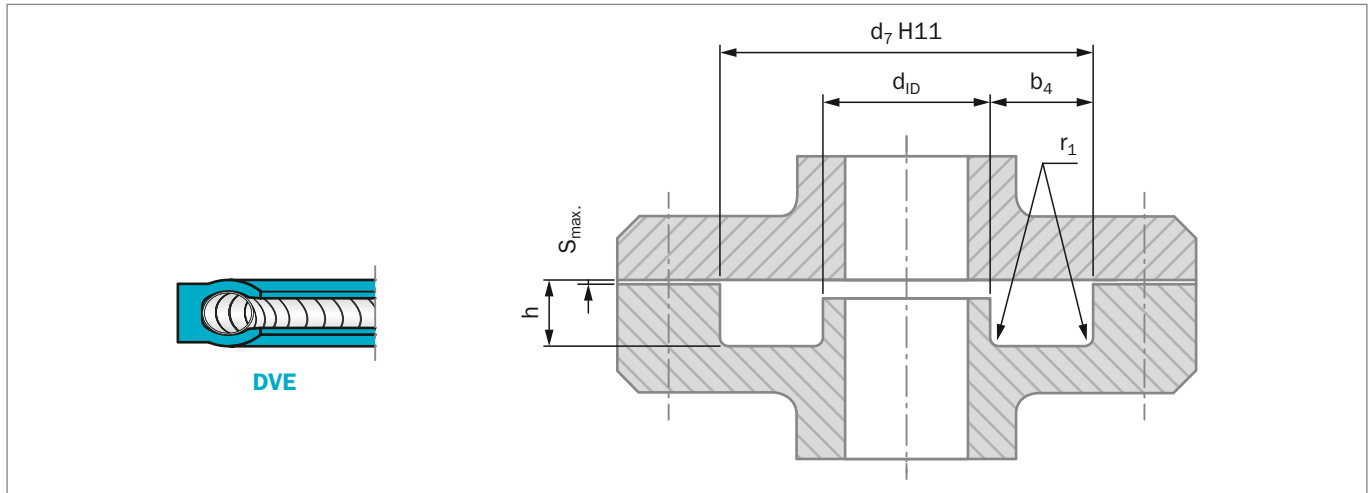


Figure 26: Installation Drawing

Table 33: Installation Dimensions – Inch

Series No.	h		b ₄ Groove Width Min	r ₁ Radius Max	Axial Clearance S _{max}			
	Groove Depth				290 psi	1,450 psi	2,900 psi	5,800 psi
DVE0	0.057	+ 0.002	0.094	0.010	0.008	0.004	0.003	0.002
DVE1	0.089	+ 0.002	0.141	0.015	0.010	0.006	0.004	0.003
DVE2	0.122	+ 0.002	0.188	0.015	0.014	0.008	0.006	0.003
DVE3	0.186	+ 0.002	0.281	0.015	0.020	0.010	0.008	0.004
DVE4	0.238	+ 0.002	0.375	0.020	0.024	0.012	0.010	0.005
DVE5	0.374	+ 0.004	0.591	0.020	0.030	0.015	0.012	0.006

H11 tolerance can be found using the ISO Fits & Tolerance App, see page 88.

Table 34: Standard Dash Sizes – Inch

d ₇	d _{ID} max	TSS Part No.	d ₇	d _{ID} max	TSS Part No.	d ₇	d _{ID} max	TSS Part No.
0.500	0.313	DVE00M012	1.250	0.688	DVE30M316	1.750	1.188	DVE30M324
0.625	0.438	DVE00M014	1.375	1.188	DVE00M026	1.875	1.688	DVE00M031
0.750	0.563	DVE00M016	1.375	1.093	DVE10M123	1.875	1.593	DVE10M131
0.750	0.468	DVE10M113	1.375	1.000	DVE20M216	1.875	1.500	DVE20M223
0.875	0.688	DVE00M018	1.375	0.813	DVE30M318	1.875	1.313	DVE30M325
0.875	0.593	DVE10M115	1.500	1.313	DVE00M028	2.000	1.813	DVE00M032
0.875	0.500	DVE20M208	1.500	1.218	DVE10M125	2.000	1.718	DVE10M133
1.000	0.813	DVE00M020	1.500	1.125	DVE20M218	2.000	1.625	DVE20M224
1.000	0.718	DVE10M117	1.500	0.938	DVE30M320	2.000	1.438	DVE30M326
1.000	0.625	DVE20M210	1.625	1.438	DVE00M029	2.000	1.250	DVE40M401
1.125	0.938	DVE00M022	1.625	1.343	DVE10M127	2.125	1.938	DVE00M033
1.125	0.843	DVE10M119	1.625	1.250	DVE20M220	2.125	1.843	DVE10M135
1.125	0.750	DVE20M212	1.625	1.063	DVE30M322	2.125	1.750	DVE20M225
1.250	1.063	DVE00M024	1.750	1.563	DVE00M030	2.125	1.563	DVE30M327
1.250	0.968	DVE10M121	1.750	1.468	DVE10M129	2.125	1.375	DVE40M402
1.250	0.875	DVE20M214	1.750	1.375	DVE20M222	2.250	2.063	DVE00M034



d ₇	d _{ID} max	TSS Part No.	d ₇	d _{ID} max	TSS Part No.	d ₇	d _{ID} max	TSS Part No.
2.250	1.968	DVE10M137	3.625	3.438	DVE00M043	6.000	5.625	DVE20M256
2.250	1.875	DVE20M226	3.625	3.250	DVE20M237	6.000	5.438	DVE30M358
2.250	1.688	DVE30M328	3.625	3.063	DVE30M339	6.000	5.250	DVE40M433
2.250	1.500	DVE40M403	3.625	2.875	DVE40M414	6.250	5.875	DVE20M258
2.375	2.188	DVE00M035	3.750	3.375	DVE20M238	6.250	5.688	DVE30M360
2.375	2.093	DVE10M139	3.750	3.188	DVE30M340	6.250	5.500	DVE40M435
2.375	2.000	DVE20M227	3.750	3.000	DVE40M415	6.500	6.125	DVE20M259
2.375	1.813	DVE30M329	3.875	3.688	DVE00M044	6.500	5.750	DVE40M437
2.375	1.625	DVE40M404	3.875	3.500	DVE20M239	6.750	6.375	DVE20M260
2.500	2.313	DVE00M036	3.875	3.313	DVE30M341	6.750	6.000	DVE40M438
2.500	2.218	DVE10M141	3.875	3.125	DVE40M416	7.000	6.625	DVE20M261
2.500	2.125	DVE20M228	4.000	3.625	DVE20M240	7.000	6.250	DVE40M439
2.500	1.938	DVE30M330	4.000	3.438	DVE30M342	7.250	6.875	DVE20M262
2.500	1.750	DVE40M405	4.000	3.250	DVE40M417	7.250	6.500	DVE40M440
2.625	2.438	DVE00M037	4.125	3.938	DVE00M045	7.500	7.125	DVE20M263
2.625	2.343	DVE10M143	4.125	3.750	DVE20M241	7.500	6.750	DVE40M441
2.625	2.250	DVE20M229	4.125	3.563	DVE30M343	7.750	7.375	DVE20M264
2.625	2.063	DVE30M331	4.125	3.375	DVE40M418	7.750	7.000	DVE40M442
2.625	1.875	DVE40M406	4.250	3.875	DVE20M242	8.000	7.625	DVE20M265
2.750	2.563	DVE00M038	4.250	3.688	DVE30M344	8.000	7.250	DVE40M443
2.750	2.468	DVE10M145	4.250	3.500	DVE40M419	8.250	7.875	DVE20M266
2.750	2.375	DVE20M230	4.375	4.000	DVE20M243	8.250	7.500	DVE40M444
2.750	2.188	DVE30M332	4.375	3.813	DVE30M345	8.500	8.125	DVE20M267
2.750	2.000	DVE40M407	4.375	3.625	DVE40M420	8.500	7.750	DVE40M445
2.875	2.688	DVE00M039	4.500	4.125	DVE20M244	9.000	8.625	DVE20M269
2.875	2.593	DVE10M147	4.500	3.938	DVE30M346	9.000	8.250	DVE40M446
2.875	2.500	DVE20M231	4.500	3.750	DVE40M421	9.500	8.750	DVE40M447
2.875	2.313	DVE30M333	4.625	4.250	DVE20M245	10.000	9.250	DVE40M448
2.875	2.125	DVE40M408	4.625	4.063	DVE30M347	10.500	9.750	DVE40M449
3.000	2.813	DVE00M040	4.625	3.875	DVE40M422	11.000	10.250	DVE40M450
3.000	2.718	DVE10M149	4.750	4.375	DVE20M246	11.500	10.750	DVE40M451
3.000	2.625	DVE20M232	4.750	4.188	DVE30M348	12.000	11.250	DVE40M452
3.000	2.438	DVE30M334	4.750	4.000	DVE40M423	12.500	11.750	DVE40M453
3.000	2.250	DVE40M409	4.875	4.500	DVE20M247	13.000	12.250	DVE40M454
3.125	2.938	DVE00M041	4.875	4.313	DVE30M349	13.500	12.750	DVE40M455
3.125	2.750	DVE20M233	4.875	4.125	DVE40M424	14.000	13.250	DVE40M456
3.125	2.563	DVE30M335	5.000	4.625	DVE20M248	14.500	13.750	DVE40M457
3.125	2.375	DVE40M410	5.000	4.438	DVE30M350	15.000	14.250	DVE40M458
3.250	2.875	DVE20M234	5.000	4.250	DVE40M425	15.500	14.750	DVE40M459
3.250	2.688	DVE30M336	5.250	4.875	DVE20M250	16.000	15.250	DVE40M460
3.250	2.500	DVE40M411	5.250	4.688	DVE30M352			
3.375	3.188	DVE00M042	5.250	4.500	DVE40M427			
3.375	3.000	DVE20M235	5.500	5.125	DVE20M252			
3.375	2.813	DVE30M337	5.500	4.938	DVE30M354			
3.375	2.625	DVE40M412	5.500	4.750	DVE40M429			
3.500	3.125	DVE20M236	5.750	5.375	DVE20M254			
3.500	2.938	DVE30M338	5.750	5.188	DVE30M356			
3.500	2.750	DVE40M413	5.750	5.000	DVE40M431			

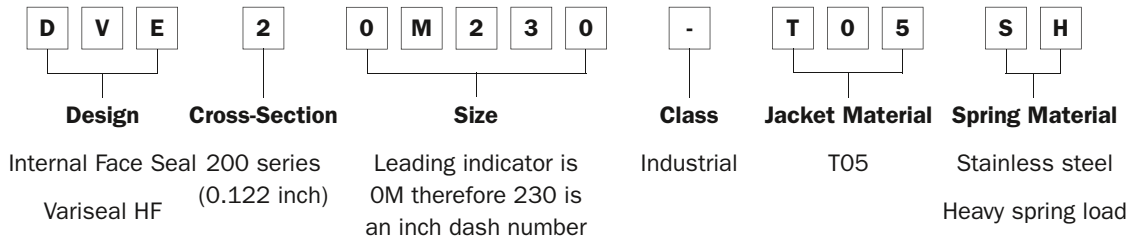
Figures in **bold** are preferred sizes.
For additional size and part number details please contact your local Trelleborg Sealing Solutions Marketing company.



Table 35: Part Number Systems for Internal Face Seals – Inch

Article Code	Cross-Section	Size	Class	Seal Material	Spring Material	Spring Load
DVE Variseal HF (Internal)	0 0.056	OM xxx Dash #	- Industrial	T01	S Stainless Steel	Standard load for each design H Heavy
	1 0.089	S xxx Groove OD < 10.0 Inch (dia x 1000.0)	A Aerospace	MF1	H Hastelloy	
	2 0.122	L xxx Groove OD >= 10.0 (dia x 100.0)		MF4	E Elgiloy	
	3 0.186			MF6		
	4 0.239			T05 See page 7		
	5 0.375			T07 for material description		
			T12			
				T24		
				T40		
				M 79		
				Z48		
				Z80		

ORDERING EXAMPLE 1



ORDERING EXAMPLE 2

