

Turcon® Variseal® H and Turcon® Variseal® HF



Single-acting

Radial and axial sealing

Material:

Turcon®



TURCON® VARISEAL® CATALOG



For more information on this product, see the full Turcon® Variseal® Catalog at www.trelleborg.com/seals/literature



! This page is intentionally left blank.



Turcon® Variseal® H



DESCRIPTION

Turcon® Variseal® H is a single-acting seal consisting of a U-shaped jacket and a helical wound corrosion-resistant spring.

The helical spring of Variseal® H has a high spring loading, which gives excellent sealing integrity at low pressure.

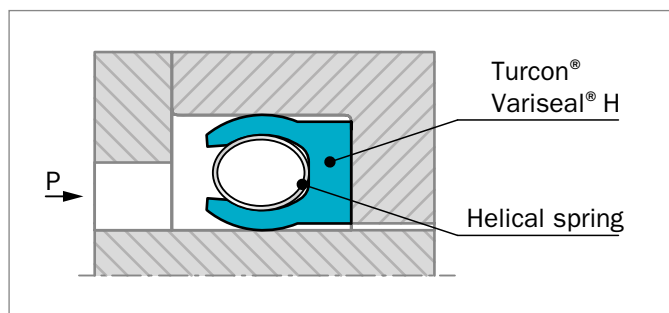


Figure 47: Turcon® Variseal® H

OPERATING CONDITIONS

Pressure:	Maximum static load 40 MPa / 5,800 psi (207 MPa / 30,000 psi with custom designs)
Temperature:	-100 °C to +200 °C / -148 °F to +392 °F
Media/compatibility:	Virtually all fluids, chemicals 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 depends on media.

FEATURES AND BENEFITS

- High contact pressure
- Excellent sealing integrity in gas and fluid applications
- Withstands rapid changes in temperature
- Good sealing ability when surfaces are not ideal
- Excellent resistance to aging
- Interchangeable with O-Ring and Back-up Ring in most cases

APPLICATION EXAMPLES

- Compressors
- Ball valves
- Construction - equipment and plant
- Chemical processing
- Crude oil and natural gas installations
- Cryogenic engineering
- Nuclear power engineering
- Vacuum applications
- Pivot joints
- Gas chromatographs

ORDERING

For more information on this product, or for orders and enquiries, see the full Turcon® Variseal® Catalog at www.trelleborg.com/seals/literature or contact your local Customer Solution Center.



Installation Recommendation for Rod Seals - Turcon® Variseal® H

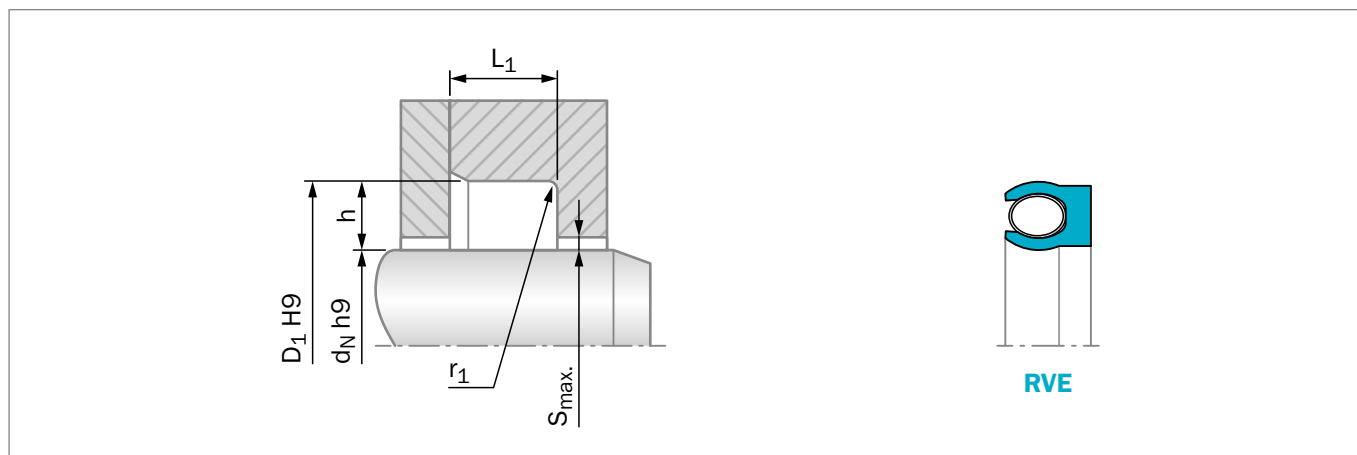


Figure 48: Installation drawing

Table 31: Installation Dimensions – Standard Recommendations – Metric

Series Number for Types	Rod Diameter d_N h9		h	D_1	L_1	r_1	Radial Clearance S_{max}			
	Standard Range	Extended Range					2 MPa	10 MPa	20 MPa	40 MPa
H			Groove Depth	Groove Diameter H9	Groove Width +0.2	Radius Max				
RVE0	3.0 - 9.9	3.0 - 40.0	1.45	$d_N + 2.9$	2.4	0.25	0.20	0.10	0.08	0.05
RVE1	10.0 - 19.9	6.0 - 200.0	2.25	$d_N + 4.5$	3.6	0.38	0.25	0.15	0.10	0.07
RVE2	20.0 - 39.9	10.0 - 400.0	3.10	$d_N + 6.2$	4.8	0.38	0.35	0.20	0.15	0.08
RVE3	40.0 - 119.9	20.0 - 700.0	4.70	$d_N + 9.4$	7.1	0.38	0.50	0.25	0.20	0.10
RVE4	120.0 - 999.9	35.0 - 1600.0	6.10	$d_N + 12.2$	9.5	0.51	0.60	0.30	0.25	0.12
RVE5	1000.0 - 2500.0	80.0 - 2500.0	9.50	$d_N + 19.0$	15.0	0.51	0.90	0.50	0.40	0.20

h9/H9 tolerance dimensions can be found using the ISO Fits & Tolerances App, see page 22.

Table 32: Installation Dimensions – Inch

Series Number for Types	h	L_1	r_1	Radial Clearance S_{max}			
				290 psi	1,450 psi	2,900 psi	5,800 psi
H	Groove Depth	Groove Width +0.010	Radius Max				
RVEA	0.062	0.094	0.010	0.008	0.004	0.003	0.002
RVEB	0.093	0.141	0.015	0.010	0.006	0.004	0.003
RVEC	0.125	0.188	0.015	0.014	0.008	0.006	0.003
RVED	0.187	0.281	0.015	0.020	0.010	0.008	0.004
RVEE	0.250	0.375	0.020	0.024	0.012	0.010	0.005
RVEG	0.375	0.591	0.020	0.030	0.015	0.012	0.006

For further information, refer to the full Turcon® Variseal® catalog



Installation Recommendation for Piston Seals – Turcon® Variseal® H

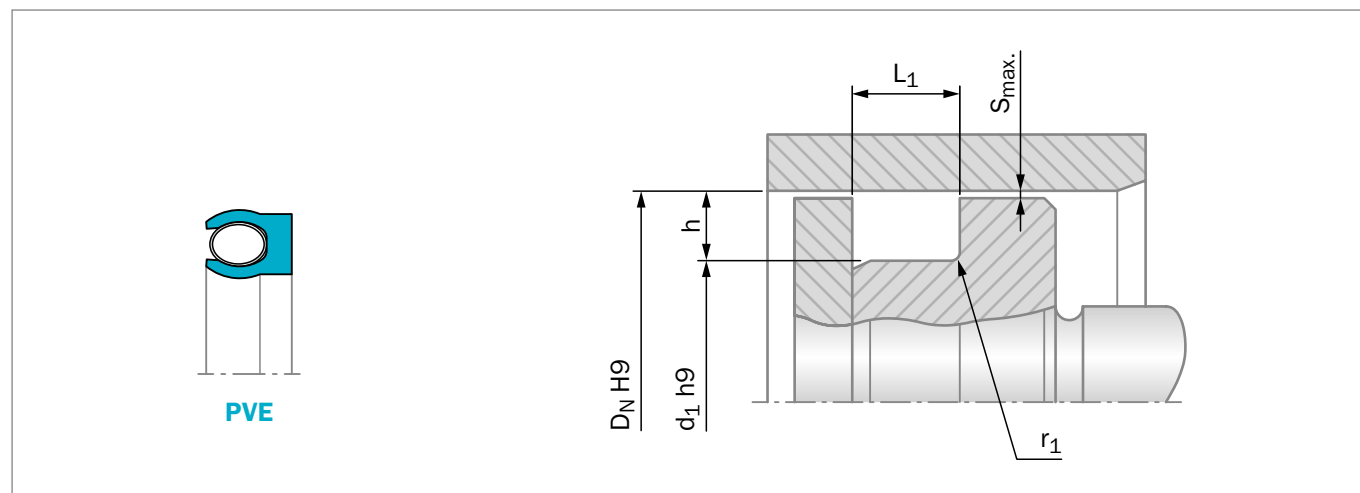


Figure 49: Installation drawing

Table 33: Installation Dimensions – Standard Recommendations – Metric

Series Number for Types	Bore Diameter D_N H9		h	d_1	L_1	r_1	Radial Clearance S_{max}			
	Standard Range	Extended Range					2 MPa	10 MPa	20 MPa	40 MPa
H			Groove Depth	Groove Diameter h9	Groove Width +0.2	Radius Max				
PVE0	6.0 - 13.9	6.0 - 40.0	1.45	$D_N - 2.9$	2.4	0.25	0.20	0.10	0.08	0.05
PVE1	14.0 - 24.9	10.0 - 200.0	2.25	$D_N - 4.5$	3.6	0.38	0.25	0.15	0.10	0.07
PVE2	25.0 - 45.9	16.0 - 400.0	3.10	$D_N - 6.2$	4.8	0.38	0.35	0.20	0.15	0.08
PVE3	46.0 - 124.9	28.0 - 700.0	4.70	$D_N - 9.4$	7.1	0.38	0.50	0.25	0.20	0.10
PVE4	125.0 - 999.9	45.0 - 1600.0	6.10	$D_N - 12.2$	9.5	0.51	0.60	0.30	0.25	0.12
PVE5	1000.0 - 2500.0	100.0 - 2500.0	9.50	$D_N - 19.0$	15.0	0.51	0.90	0.50	0.40	0.20

h9/H9 tolerance dimensions can be found using the ISO Fits & Tolerances App, see page 22.

Table 34: Installation Dimensions – Inch

Series Number for Types	h	L_1	r_1	Radial Clearance S_{max}			
				290 psi	1,450 psi	2,900 psi	5,800 psi
H	Groove Depth	Groove Width +0.010	Radius Max				
PVEA	0.062	0.094	0.010	0.008	0.004	0.003	0.002
PVEB	0.093	0.141	0.015	0.010	0.006	0.004	0.003
PVEC	0.125	0.188	0.015	0.014	0.008	0.006	0.003
PVED	0.187	0.281	0.015	0.020	0.010	0.008	0.004
PVEE	0.250	0.375	0.020	0.024	0.012	0.010	0.005
PVEG	0.375	0.591	0.020	0.030	0.015	0.012	0.006



Turcon® Variseal® HF



DESCRIPTION

Turcon® Variseal® HF is the standard seal for axial (face) applications. It has 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 Turcon® Variseal® HF makes it the best choice for vacuum, gas and low temperature flange sealing applications.

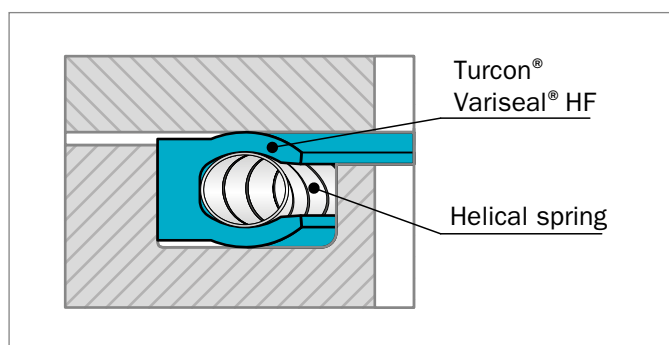


Figure 50: Turcon® Variseal® HF

FEATURES AND BENEFITS

- High contact pressure
- Excellent sealing integrity in gas and fluid applications
- Withstands rapid changes in temperature
- Good sealing ability when surfaces are not ideal
- Excellent resistance to aging
- Interchangeable with O-Ring and Back-up Ring in most cases

APPLICATION EXAMPLES

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

OPERATING CONDITIONS

Pressure:	Maximum static load: 60 MPa / 8,702 psi (207 MPa / 30,000 psi with Back-up Ring)
Temperature:	-150 °C to +200 °C / -238 °F to +392 °F
Media/compatibility:	Virtually all fluids, chemicals 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 depends on media.

ORDERING

For more information on this product, or for orders and enquiries, see the full Turcon® Variseal® Catalog at www.trelleborg.com/seals/literature or contact your local Customer Solution Center.



Installation Recommendation for Internal Face Seals - Turcon® Variseal® HF

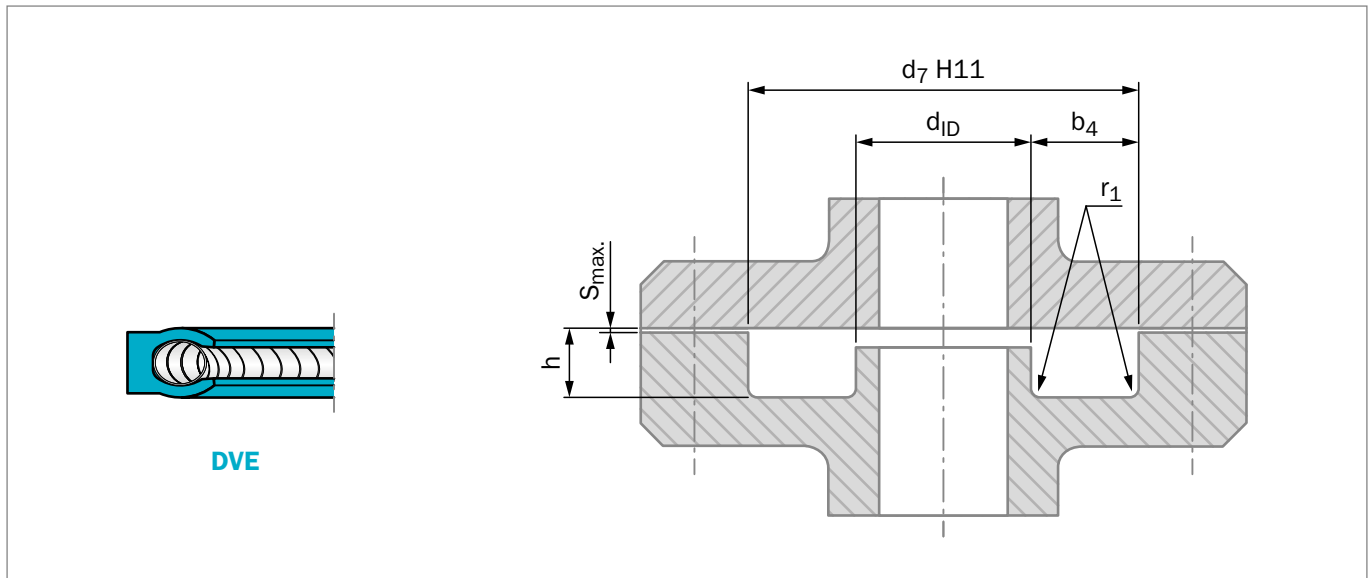


Figure 51: Installation drawing

Table 35: Installation Dimensions – Standard Recommendations – Metric

Series No.	Groove Outside Diameter d_7 H11		h Groove Depth		b_4 Groove Width Min	r_1 Radius Max	Axial Clearance S_{max}			
							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 22.

Table 36: Installation Dimensions – Inch

Series No.	h Groove Depth		b_4 Groove Width Min	r_1 Radius Max	Axial Clearance S_{max}			
					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



Installation Recommendation for External Face Seals - Turcon® Variseal® HF

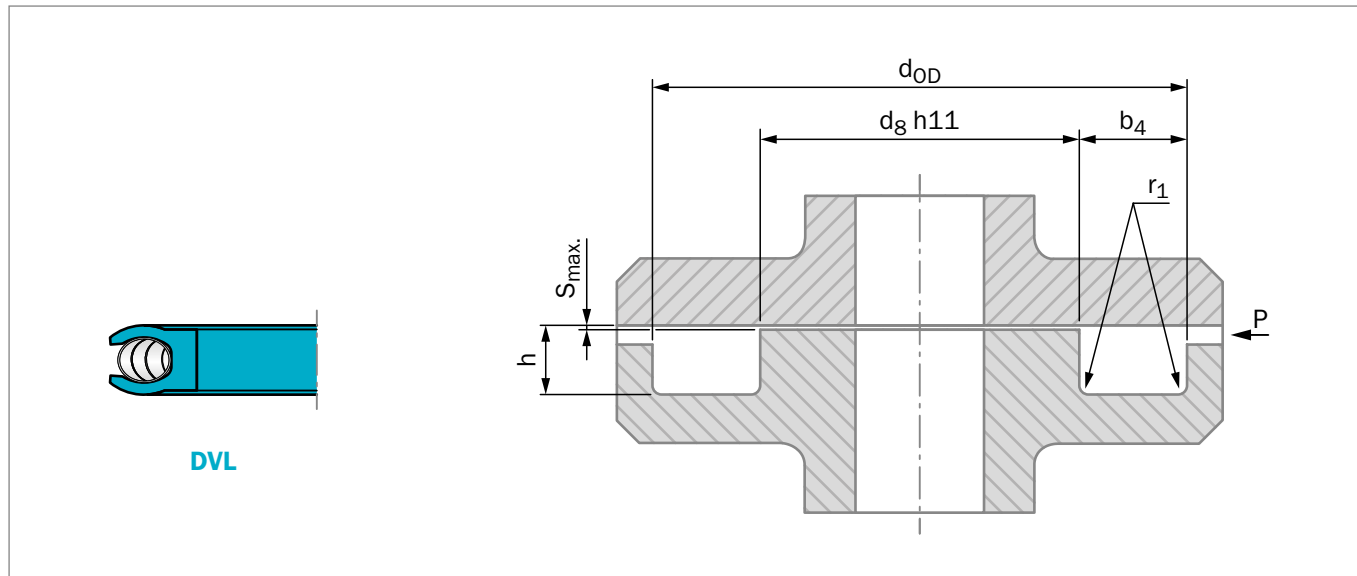


Figure 52: Installation drawing

Table 37: Installation Dimensions – Metric

Series Number	Groove Inside Diameter d_g h11		h		b_4	r_1	Axial Clearance S_{max}			
	Standard Range	Extended Range ¹⁾	Groove Depth		Groove Width Min	Radius Max	2 MPa	10 MPa	20 MPa	40 MPa
DVL0	3.0 - 9.9	3.0 - 40.0	1.45	+0.03	2.40	0.25	0.20	0.10	0.08	0.05
DVL1	10.0 - 19.9	8.0 - 200.0	2.25	+0.05	3.60	0.38	0.25	0.15	0.10	0.07
DVL2	20.0 - 39.9	12.0 - 400.0	3.10	+0.08	4.80	0.38	0.35	0.20	0.15	0.08
DVL3	40.0 - 119.9	20.0 - 700.0*	4.70	+0.10	7.10*	0.38	0.50	0.25	0.20	0.10
DVL4	120.0 - 999.9**	35.0 - 1600.0**	6.10	+0.15	9.50**	0.51	0.60	0.30	0.25	0.12
DVL5	1000.0 - 2500.9***	80.0 - 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 22.

Table 38: Installation Dimensions – Inch

Series Number	h		b_4	r_1	Axial Clearance S_{max}			
	Groove Depth		Groove Width Min	Radius Max	290 psi	1,450 psi	2,900 psi	5,800 psi
DVL0	0.057	+ 0.002	0.094	0.010	0.008	0.004	0.003	0.002
DVL1	0.089	+ 0.002	0.141	0.015	0.010	0.006	0.004	0.003
DVL2	0.122	+ 0.002	0.188	0.015	0.014	0.008	0.006	0.003
DVL3	0.186	+ 0.002	0.281	0.015	0.020	0.010	0.008	0.004
DVL4	0.238	+ 0.002	0.375	0.020	0.024	0.012	0.010	0.005
DVL5	0.374	+ 0.004	0.591	0.020	0.030	0.015	0.012	0.008