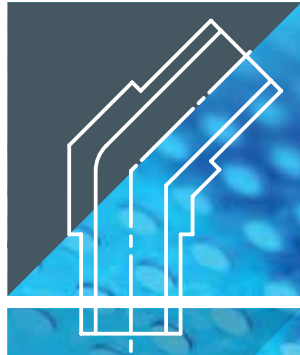


HI-TECH COMPONENTS

**HTC**<sup>®</sup>



ORBITAL WELD AND METAL GASKET FACE SEAL FITTINGS



## TECHNICAL INFORMATION

**HAM-LET/HTC®** specializes in the design and production of high-quality, specially manufactured valves and fittings for High Purity and Ultra-High Purity applications.

A joint effort of **HTC®**'s expert engineers and technicians resulted in the development a complete line that reflects the company's deep understanding of the critical requirements of the semiconductor, biotech, and pharmaceutical industries.

**HAM-LET/HTC®** is a leader in the manufacturing of fittings and valves for clean industries and has consistently spearheaded significant new developments in this field. **HTC®** has broken new ground in surface-finishing techniques by implementing improved electro-polishing processes.

### PLATING

Female threads are silver plated in order to reduce the risk of galling and to improve the remakeability of the fitting. This high-quality plating also reduces the torque required for the fitting assembly. Reference Spec: Meeting and exceeding - Mil Spec: QQ-S-365.

**Note:** Do not apply any type of cleaning acid and/or electropolishing solutions to any female threads. These solutions damage the silver plating and invalidate any expressed or implied warranty.

### WELDING

Options: butt weld, shoulder weld, socket weld. Reference Specs: All welded products are manufactured and welded according to SEMI F75,F81.

### TESTING

HAM-LET follows the relevant ASTM, ANSI, ASME, ISO, SEMI & SEMASPEC standards for testing and for qualifying processes and results.

### JAPANESE STANDARDS

HAM-LET, upon request, manufactures the **HTC®** product line to meet Japanese standards:

- Low Manganese Material Specifications (JIS)
- Wall thickness
- Hardness

### TEMPERATURE RATING

PRODUCTS	MATERIAL	F	C
<b>HTC®Face Seal Fittings</b>	SS316L	1000	538
	SS316L Var or Vim / Var <sup>(1)</sup>	1000	538
<b>HTC® Welding Fittings</b>	SS316L	1000	538
	SS316L Var or Vim / Var <sup>(1)</sup>	1000	538
<b>HTC® Gaskets</b>	SS316	1000	538
	NICKEL	1000	538

### HELIUM LEAK

All HAM-LET Face Seal products are tested and qualified to a helium leak rate of less than 3x10<sup>-10</sup> std cm<sup>3</sup>/sec. Reference Spec: SEMI F1.

### SURFACE FINISH

Reference Spec: ANSI B46.1 and ISO 4288.

### SURFACE ANALYSIS

SEM/EDX/AES analysis is used to monitor surface defects per ASTM F1372 and ASTM F1375.

### MOISTURE ANALYSIS

Based on ASTM F1397.

### PARTICLE CONTRIBUTION TEST

Based on Semaspec 90120390 B.

### SURFACE CHEMISTRY

All UHP products are electropolished with a proprietary process for achieving and exceeding the Sematec Standards of surface cleanliness and anticorrosion requirements. Parameters are measured by SEM, AUGER, ESCA.

Reference Spec: SEMI F19; E49.9; SEMASPEC 91060573A-STD.

### CLEANING SPECIFICATIONS

According to # H9800.

Reference Spec: SEMI E49.3.

### MATERIAL TRACEABILITY

All **HTC®** components are Heat Coded for full traceability.

### ASSEMBLY

According to SEMI E49.6.

### ACCESSORIES

Grip Kit, Plastic Bead Protector.

**PACKAGING:** Each "E" finished component is double bagged to ensure component cleanliness and to protect it from environmental contamination. The inner bag is Nylon 6 and vacuum sealed. The outer bag is polyethylene. Reference Spec: SEMI E49.1

### INTERNATIONAL CERTIFICATIONS

ISO 9001, Certified by S.I.I.

### HTC® FITTINGS PRESSURE RATING

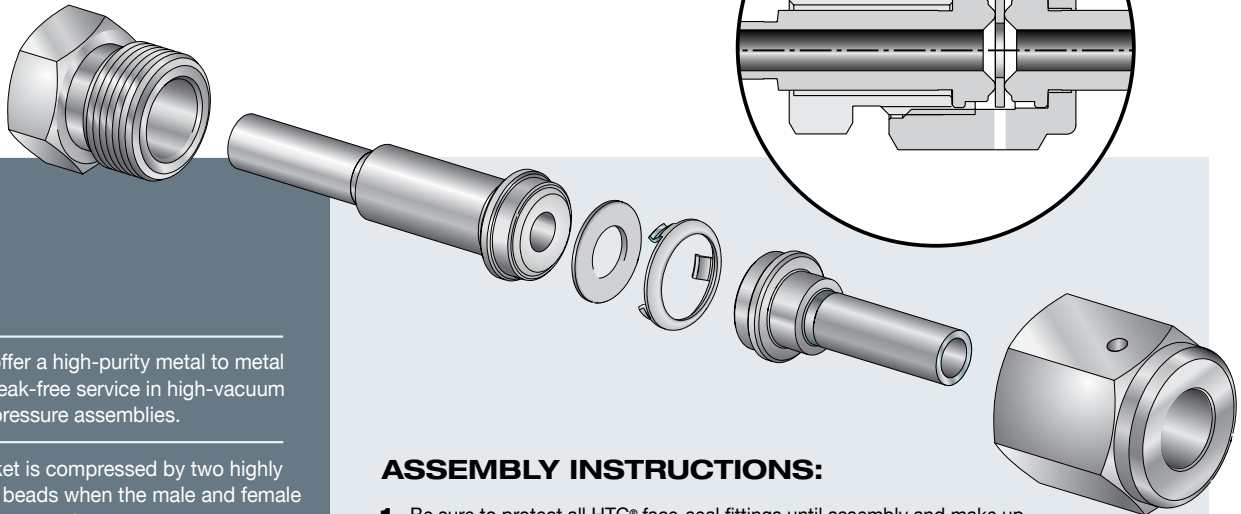
Products	Material	Size	Wall Thickness	Pressure Rating	
				psig	bar
<b>HTC® Fittings</b>	<b>316L or 316LV</b>	1/8	0.028	8550	590
		1/4	0.035	5200	359
		3/8	0.035	3350	231
		1/2	0.049	3750	259
		3/4*	0.065	3350	231
		3/4*	0.049	2400	165
		1*	0.065	2400	165

\* 3/4" & 1" sizes are not standard, but can be manufactured on request

Pressure ratings are calculated in accordance with ANSI Code for Pressure Piping ANSI B-31, for stainless steel fittings. All working pressures are at 4:1 safety factor. Pressure indicated in the catalogue is at room temp.

<sup>(1)</sup> Per SEMI F20-0305

## MAKE UP OF GLANDS



Glands offer a high-purity metal to metal seal for leak-free service in high-vacuum or high-pressure assemblies.

The gasket is compressed by two highly polished beads when the male and female nuts are engaged.

The gland bead-to-bead assembly compresses a soft-metal gasket-to-seal. This assembly can be locked by the HAM-LET Grip-Kit (see A below).

Visual test and leak testing are performed through two test ports in opposite locations from the female nut.

### ASSEMBLY INSTRUCTIONS:

1. Be sure to protect all HTC® face-seal fittings until assembly and make up. Exercise great care so that the sealing surfaces are not scratched, damaged or contaminated in any way during handling and assembly.
2. Always use a clean environment, and always employ proper cleanroom protocol for the make up and assembly of high-purity fittings and applications.
3. Make up instructions:  
Tighten the female nut to the male nut/body the finger tight.  
Tighten the female nut 1/8 turn past the finger tight point.  
Always torque the female nut while keeping the male nut/body stationary.  
Face seal connections are remakable - please use a new gasket for each remake.



GRIPKIT Ordering Information  
See page 186

## MATERIAL

PRODUCTS	LEVEL "E"			LEVEL "H"		
	TREATMENT	Ra (Microinch)		TREATMENT	Ra (Microinch)	
		MAX	AVERAGE		MAX	AVERAGE
GLANDS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
MINI BUTTWELD	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
SHAPED UNIONS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	20	15
LONG WELD SHAPED CONNECTORS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	15	10
THREADED STRAIGHT CONNECTORS	ELECTROPOLISHED	10	5	NON- ELECTROPOLISHED	20	15

\* "E" level - Electropolished \*\* "H" level - Not Electropolished

**GLANDS**

**LONG GLAND** 160  
Without shoulder  
GL-W



**LONG GLAND** 160  
With shoulder  
GL-S



**MALE GLAND** 161  
Without shoulder  
GM-W



**SHORT GLAND** 161  
Without shoulder  
GS-W



**SHORT GLAND** 162  
With shoulder  
GS-S



**MINI SHORT GLAND** 162  
Without shoulder  
MGS-W



**MINI SHORT GLAND** 163  
With shoulder  
MGS-S



**GLAND ADAPTER TO LET-LOK®** 163  
AG



**MALE GLAND** 163  
Short tube without shoulder  
MG-W



**SOCKET WELD GLAND** 164  
GSW



**MINI BUTTWELDS**

**MINI ELBOW** 164  
Without shoulder  
ME-W



**MINI ELBOW REDUCER** 165  
Without shoulder  
MER-W



**MINI ELBOW** 165  
45°  
Without shoulder  
ME-45°-W



**MINI ELBOW** 166  
With extended leg  
Without shoulder  
MEX-W



**MINI TEE** 166  
Without shoulder  
MT-W



**MINI TEE REDUCER** 167  
Without shoulder  
MTR-W



**MINI CROSS** 167  
Without shoulder  
MC-W



**MINI TRI-EL** 168  
Without shoulder  
MTB-W



**REDUCING UNION** 168  
Without shoulder  
RU-W



**SHAPED UNIONS**

**ELBOW UNION** 169  
EU



**TEE UNION** 169  
TU



**CROSS UNION** 170  
CU



**MALE ELBOW** 170  
EM



**LONG WELD SHAPED CONNECTORS**

**ELBOW** 171  
Without shoulder  
EW-W



**TEE** 171  
Without shoulder  
TW-W



**TEE REDUCER** 172  
Without shoulder  
TWR-W



**CROSS** 172  
Without shoulder  
CW-W



**REDUCER** 173  
Without shoulder  
RW-W



**BUTTWELD UNION** 173  
Without shoulder  
UB-W



**BUTTWELD UNION** 174  
With shoulder  
UB-S



**BUTTWELD UNION** 174  
With locator and shoulder  
UBL-S



**THREADED STRAIGHT CONNECTORS**

**MALE UNION** 175  
UM



**MALE TO MALE NPT CONNECTOR** 175  
CM



**MALE REDUCING UNION** 176  
RUM



**BULKHEAD UNION** 176  
BU



**SHORT BULKHEAD UNION** 176  
SBU

**MALE TO NPT BULKHEAD CONNECTOR** 177  
BCM

**MALE PLUG** 181  
MP

**MALE NUT** 181  
NM

**MALE TO SEAL O-RING CONNECTOR** 177  
CMOB

**MALE TO FEMALE NPT CONNECTOR** 177  
FC

**TAPERED MALE NUT** 181  
TNM

**SHORT MALE NUT** 182  
SNM

## HIGH FLOW CONNECTORS

**LONG HIGH FLOW GLAND** 185  
HGL

**HIGH FLOW MALE TO TUBE** 185  
HMT

**MALE TO LET-LOK UNION** 178  
UGL

**MALE TO BULKHEAD LET-LOK UNION** 178  
BUL

## SWIVEL CONNECTORS

**HIGH FLOW FEMALE NUT** 185  
HNF

**HIGH FLOW MALE NUT** 185  
HNM

**MALE TO SHORT BULKHEAD LET-LOK UNION** 178  
SBUL

**BULKHEAD TO TUBE UNION Without shoulder** 179  
BHUT-W

**FEMALE TO MALE UNION** 182  
UMF

**FEMALE TO MALE NPT CONNECTOR** 182  
MCF

**SHORT BULKHEAD TO TUBE UNION Without shoulder** 179  
SBHUT-W

**FEMALE TO FEMALE UNION** 183  
UFF

**FEMALE TO FEMALE NPT CONNECTOR** 183  
FCF

## ORDERING INFORMATION

**V - GL - 1/2 - W - E**

<b>Type of Fitting Designator</b>	<b>Surface Level Designator</b>
<b>Size Designator</b>	To indicate the desired level of polish, please add "E" or "H" to the part Number:
1/8 6 mm	<b>E</b> - With Electropolish
1/4 8 mm	<b>H</b> - Without Electropolish
3/8 10 mm	
1/2 12 mm	
3/4 18 mm	
1	
<b>End Designator</b>	
<b>S</b> - With Shoulder	
<b>W</b> - Without Shoulder	

## CAPS, NUTS & PLUGS

**COUPLING** 179  
CP

**DOUBLE FEMALE UNION** 180  
DFU

## GASKETS

**FEMALE NUT** 180  
NF

**FEMALE CAP** 180  
CF

**GASKET** 184  
GA

**RETAINED GASKET** 184  
GA-RT

**Material Designator**

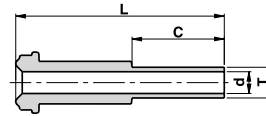
- P** - 316L/316L VOD (AOD)
- V** - SS316L Var or Vim/Var<sup>(1)</sup>
- LM** - Low Manganese
- H** - Alloy C-276
- \*NI** - Nickel
- \*SS** - Stainless Steel

\* For Gaskets only  
<sup>(1)</sup> Per SEMI F20-0305

GL-W

**LONG GLAND**

Without shoulder

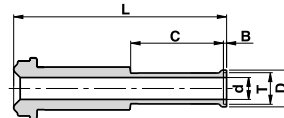


Ordering Information	Face Seal Size	L		C		d		T Tube O.D	W.T.	
		inch	mm	inch	mm	inch	mm		inch	mm
V-GL-1/8-W	1/8	36.1	1.42	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GL-1/4 X 1/8-W	1/4	36.1	1.42	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GL-1/4-W	1/4	43.2	1.70	19.1	0.75	4.6	0.18	1/4"	-	0.035
V-GL-3/8-W	1/2	45.5	1.79	19.1	0.75	7.7	0.30	3/8"	-	0.035
V-GL-1/2-W	1/2	45.5	1.79	19.1	0.75	10.2	0.40	1/2"	-	0.049
V-GL-1/2-W 1.41	1/2	35.8	1.41	9.6	0.38	10.2	0.40	1/2"	-	0.049
V-GL-1/2-W W.T.=0.065	1/2	45.5	1.79	19.1	0.75	9.5	0.37	1/2"	-	0.065
V-GL-1/2 X 1/4-W	1/2	45.5	1.79	19.1	0.75	4.6	0.18	1/4"	-	0.035
P-GL-3/4-W W.T.=0.049	3/4	51.6	2.03	19.1	0.75	16.6	0.65	3/4"	-	0.049
P-GL-3/4-W W.T.=0.065	3/4	51.6	2.03	19.1	0.75	15.8	0.62	3/4"	-	0.065
P-GL-1-W W.T.=0.065	1	58.9	2.32	19.1	0.75	22.1	0.87	1"	-	0.065
V-GL-6MM-W	1/4	43.2	1.70	19.1	0.75	4.0	0.16	6mm	1.00	-
V-GL-8MM-W	1/4	43.2	1.70	19.1	0.75	6.0	0.24	8mm	1.00	-
V-GL-10MM-W	1/2	45.5	1.79	19.1	0.75	8.0	0.31	10mm	1.00	-
V-GL-12MM-W	1/2	45.5	1.79	19.1	0.75	10.0	0.39	12mm	1.00	-
P-GL-18MM-W	3/4	51.6	2.03	19.1	0.75	15.0	0.59	18mm	1.50	-

GL-S

**LONG GLAND**

With shoulder



Ordering Information	Face Seal Size	L		C		d		B		D		T Tube O.D	W.T.	
		inch	mm	inch	mm	inch	mm	inch	mm	inch	mm		inch	mm
V-GL-1/4-S	1/4	43.7	1.72	19.1	0.75	4.6	0.18	0.6	0.02	7.4	0.29	1/4"	-	0.035
V-GL-3/8-S	1/2	46.2	1.82	19.1	0.75	7.7	0.30	0.8	0.03	10.4	0.41	3/8"	-	0.035
V-GL-1/2-S	1/2	46.5	1.83	19.1	0.75	10.2	0.40	1.0	0.04	14.0	0.55	1/2"	-	0.049
V-GL-1/2-S W.T.=0.065	1/2	46.5	1.83	19.1	0.75	9.5	0.37	1.0	0.04	14.0	0.55	1/2"	-	0.065
P-GL-3/4-S W.T.=0.049	3/4	52.6	2.07	19.1	0.75	16.6	0.65	1.0	0.04	20.3	0.80	3/4"	-	0.049
P-GL-3/4-S W.T.=0.065	3/4	52.6	2.07	19.1	0.75	15.8	0.62	1.0	0.04	20.3	0.80	3/4"	-	0.065
P-GL-1-S W.T.=0.065	1	65.3	2.57	19.1	0.75	22.1	0.87	1.0	0.04	26.9	1.06	1"	-	0.065
V-GL-6MM-S	1/4	43.7	1.72	19.1	0.75	4.0	0.16	0.5	0.02	7.0	0.27	6mm	1.00	-
V-GL-8MM-S	1/4	46.2	1.82	19.1	0.75	6.0	0.24	0.8	0.03	8.9	0.35	8mm	1.00	-
V-GL-10MM-S	1/2	46.2	1.82	19.1	0.75	8.0	0.31	0.8	0.03	10.9	0.43	10mm	1.00	-
V-GL-12MM-S	1/2	46.5	1.83	19.1	0.75	10.0	0.39	1.0	0.04	13.2	0.52	12mm	1.00	-
P-GL-18MM-S	3/4	52.6	2.07	19.1	0.75	15.0	0.59	1.0	0.04	19.3	0.76	18mm	1.50	-

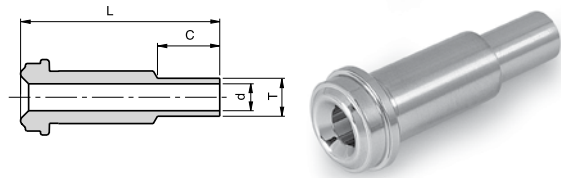
Dimensions are for reference only, and are subject to change without notice.

When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

GM-W

**MALE GLAND**

Without shoulder

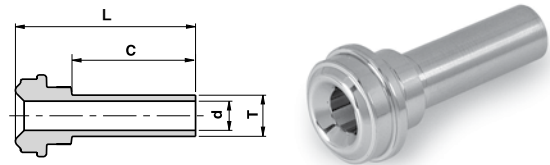


Ordering Information	Face Seal size	L		C		d		T
	inch	mm	inch	mm	inch	mm	inch	Tube O.D inch
V-GM-1/8-W	1/8	17.8	0.70	7.1	0.28	1.9	0.07	1/8
V-GM-1/4-W	1/4	33.3	1.31	10.4	0.41	3.0	0.12	1/4
V-GM-3/8-W	1/2	38.1	1.50	10.4	0.41	7.1	0.28	3/8
V-GM-1/2-W	1/2	38.1	1.50	12.7	0.50	10.2	0.40	1/2
P-GM-3/4-W	3/4	50.8	2.00	15.7	0.62	13.5	0.53	3/4
P-GM-1-W	1	56.4	2.22	20.6	0.81	19.1	0.75	1

GS-W

**SHORT GLAND**

Without shoulder



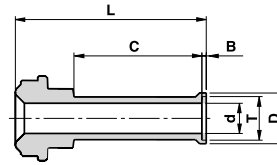
Ordering Information	Face Seal Size	L		C		d		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-GS-1/8-W	1/8	27.4	1.08	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GS-1/4-W	1/4	27.9	1.10	19.1	0.75	4.6	0.18	1/4"	-	0.035
V-GS-1/4 X 1/8 -W	1/4	27.9	1.10	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GS -1/4-W 0.72	1/4	18.3	0.72	9.6	0.38	4.6	0.18	1/4"	-	0.035
V-GS-3/8-W	1/2	28.4	1.12	19.1	0.75	7.7	0.30	3/8"	-	0.035
V-GS-1/2-W	1/2	28.4	1.12	19.1	0.75	10.2	0.40	1/2"	-	0.049
V-GS-1/2-W W.T.=0.065	1/2	28.4	1.12	19.1	0.75	9.5	0.37	1/2"	-	0.065
V-GS-1/2-W-0.74	1/2	18.8	0.74	9.7	0.38	10.2	0.40	1/2"	-	0.049
V-GS-1/2 X 1/4-W	1/2	28.4	1.12	19.1	0.75	4.6	0.18	1/4"	-	0.035
P-GS-3/4-W W.T.=0.049	3/4	29.0	1.14	19.1	0.75	16.6	0.65	3/4"	-	0.049
P-GS-3/4-W W.T.=0.065	3/4	29.0	1.14	19.1	0.75	15.8	0.62	3/4"	-	0.065
P-GS-1-W W.T.=0.065	1	32.0	1.26	19.1	0.75	22.1	0.87	1"	-	0.065
V-GS-6MM-W	1/4	29.4	1.16	19.1	0.75	4.0	0.16	6mm	1.00	-
V-GS-8MM-W	1/4	29.5	1.16	19.1	0.75	6.0	0.24	8mm	1.00	-
V-GS-10MM-W	1/2	29.4	1.16	19.1	0.75	8.0	0.31	10mm	1.00	-
V-GS-12MM-W	1/2	29.4	1.16	19.1	0.75	10.0	0.39	12mm	1.00	-
P-GS-18MM-W	3/4	31.0	1.22	19.1	0.75	15.0	0.59	18mm	1.50	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

GS-S

**SHORT GLAND**

With shoulder

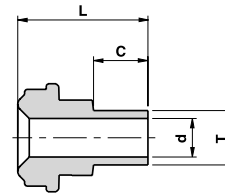


Ordering Information	Face Seal Size	L		C		d		B		D		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-GS-1/4-S	1/4	28.5	1.12	19.1	0.75	4.6	0.18	0.6	0.02	7.4	0.29	1/4"	-	0.035
V-GS-3/8-S	1/2	29.2	1.15	19.1	0.75	7.7	0.30	0.8	0.03	10.4	0.41	3/8"	-	0.035
V-GS-1/2-S	1/2	29.4	1.16	19.1	0.75	10.2	0.40	1.0	0.04	14.0	0.55	1/2"	-	0.049
V-GS-1/2-S W.T.=0.065	1/2	29.4	1.16	19.1	0.75	9.5	0.37	1.0	0.04	14.0	0.55	1/2"	-	0.065
P-GS-3/4-S W.T.=0.049	3/4	30.0	1.18	19.1	0.75	16.6	0.65	1.0	0.04	20.3	0.80	3/4"	-	0.049
P-GS-3/4-S W.T.=0.065	3/4	30.0	1.18	19.1	0.75	15.8	0.62	1.0	0.04	20.3	0.80	3/4"	-	0.065
P-GS-1-S W.T.=0.065	1	32.1	1.26	19.1	0.75	22.1	0.87	1.0	0.04	26.9	1.06	1"	-	0.065
V-GS-6MM-S	1/4	30.0	1.18	19.1	0.75	4.0	0.16	0.5	0.02	7.0	0.27	6mm	1.00	-
V-GS-8MM-S	1/4	30.2	1.19	19.1	0.75	6.0	0.24	0.8	0.03	8.9	0.35	8mm	1.00	-
V-GS-10MM-S	1/2	31.0	1.22	19.1	0.75	8.0	0.31	0.8	0.03	10.9	0.43	10mm	1.00	-
V-GS-12MM-S	1/2	30.5	1.20	19.1	0.75	10.0	0.39	1.0	0.04	13.2	0.52	12mm	1.00	-
P-GS-18MM-S	3/4	31.0	1.22	19.1	0.75	15.0	0.59	1.0	0.04	19.3	0.76	18mm	1.50	-

MGS-W

**MINI SHORT GLAND**

Without shoulder



Ordering Information	Face Seal Size	L		C		d		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MGS-1/4-W	1/4	15.2	0.60	6.4	0.25	4.6	0.18	1/4"	-	0.035
V-MGS-3/8-W	1/2	15.8	0.62	6.4	0.25	7.7	0.30	3/8"	-	0.035
V-MGS-1/2-W	1/2	15.8	0.62	6.4	0.25	10.2	0.40	1/2"	-	0.049
V-MGS-1/2-W W.T.=0.065	1/2	15.8	0.62	6.4	0.25	9.5	0.37	1/2"	-	0.065
V-MGS-6MM-W	1/4	15.2	0.60	6.4	0.25	4.0	0.16	6mm	1.00	-
V-MGS-8MM-W	1/4	15.8	0.62	6.4	0.25	6.0	0.24	8mm	1.00	-
V-MGS-10MM-W	1/2	15.8	0.62	6.4	0.25	8.0	0.31	10mm	1.00	-
V-MGS-12MM-W	1/2	15.8	0.62	6.4	0.25	10.0	0.39	12mm	1.00	-

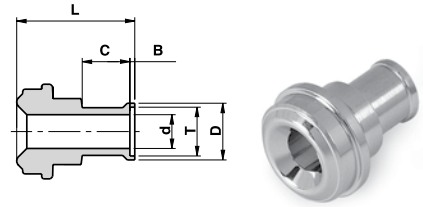
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).



MGS-S

### MINI SHORT GLAND

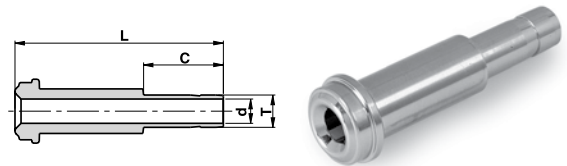
With shoulder



Ordering Information	Face Seal Size	L		C		d		B		D		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MGS-1/4-S	1/4	15.8	0.62	6.4	0.25	4.6	0.18	0.6	0.02	7.4	0.29	1/4"	-	0.035
V-MGS-3/8-S	1/2	16.5	0.65	6.4	0.25	7.7	0.30	0.8	0.03	10.4	0.41	3/8"	-	0.035
V-MGS-1/2-S	1/2	16.8	0.66	6.4	0.25	10.2	0.40	1.0	0.04	14.0	0.55	1/2"	-	0.049
V-MGS-1/2-S W.T.=0.065	1/2	16.8	0.66	6.4	0.25	9.5	0.37	1.0	0.04	14.0	0.55	1/2"	-	0.065
V-MGS-6MM-S	1/4	15.8	0.62	6.4	0.25	4.0	0.16	0.5	0.02	7.0	0.27	6mm	1.00	-
V-MGS-8MM-S	1/4	16.5	0.65	6.4	0.25	6.0	0.24	0.8	0.03	8.9	0.35	8mm	1.00	-
V-MGS-10MM-S	1/2	16.5	0.65	6.4	0.25	8.0	0.31	0.8	0.03	10.9	0.43	10mm	1.00	-
V-MGS-12MM-S	1/2	16.8	0.66	6.4	0.25	10.0	0.39	1.0	0.04	13.2	0.52	12mm	1.00	-

AG

### GLAND ADAPTER TO LET-LOK®

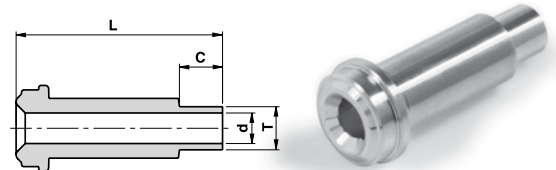


Ordering Information	Face Seal Size	L		C		d		T
	inch	mm	inch	mm	inch	mm	inch	inch/mm
V-AG-1/4	1/4	41.2	1.62	15.9	0.62	4.3	0.17	1/4"
P-AG-3/8	1/2	46.0	1.81	17.5	0.69	6.8	0.27	3/8"
V-AG-1/2	1/2	49.3	1.94	24.4	0.96	9.4	0.37	1/2"
V-AG-6M	1/4	41.2	1.62	15.7	0.62	4.0	0.16	6mm

MG-W

### MALE GLAND

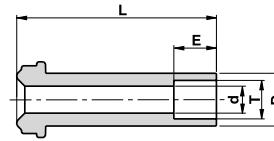
Short tube without shoulder



Ordering Information	Face Seal Size	L		C		d		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MG-1/4-W	1/4	30.5	1.20	6.4	0.25	4.6	0.18	1/4"	-	0.035
V-MG-1/4-W 1.32	1/4	33.5	1.32	9.6	0.38	4.6	0.18	1/4"	-	0.035
V-MG-3/8-W	1/2	32.8	1.29	6.4	0.25	7.7	0.30	3/8"	-	0.035
V-MG-1/2-W	1/2	32.8	1.29	6.4	0.25	10.2	0.40	1/2"	-	0.049
V-MG-6MM-W	1/4	30.5	1.20	6.4	0.25	4.0	0.16	6mm	1.00	-
V-MG-8MM-W	1/4	30.5	1.20	6.4	0.25	6.0	0.24	8mm	1.00	-
V-MG-10MM-W	1/2	32.8	1.29	6.4	0.25	8.0	0.31	10mm	1.00	-
V-MG-12MM-W	1/2	32.8	1.29	6.4	0.25	10.0	0.39	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

GSW

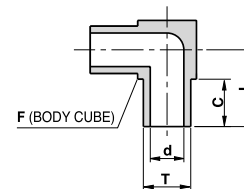
**SOCKET WELD GLAND**

Ordering Information	Face Seal Size	L		d		E		D		T
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch
V-GSW-1/8	1/8	17.8	0.70	2.4	0.09	2.5	0.10	5.1	0.20	1/8
V-GSW-1/4	1/4	33.3	1.31	4.6	0.18	7.1	0.28	8.9	0.35	1/4
V-GSW-1/4-W-0.75"	1/4	19.1	0.75	4.6	0.18	7.1	0.28	8.9	0.35	1/4
V-GSW-1/4-W-0.50"	1/4	12.7	0.50	4.6	0.18	7.1	0.28	8.9	0.35	1/4
V-GSW-3/8	1/2	38.1	1.50	7.1	0.28	7.9	0.31	15.2	0.60	3/8
V-GSW-1/2	1/2	38.1	1.50	10.2	0.40	9.6	0.38	15.2	0.60	1/2
P-GSW-3/4	3/4	50.8	2.00	15.7	0.62	11.2	0.44	22.4	0.88	3/4
P-GSW-1	1	56.4	2.22	22.1	0.87	15.7	0.62	30.2	1.19	1

ME-W

**MINI ELBOW**

Without shoulder



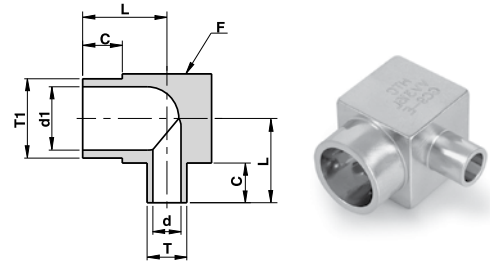
Ordering Information	L		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-ME-1/8-W	10.3	0.41	6.4	0.25	1.9	0.07	5/16	1/8"	-	0.028
V-ME-1/4-W	10.3	0.41	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-ME-3/8-W	11.9	0.47	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-ME-1/2-W	13.5	0.53	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-ME-1/2-W W.T.=0.065	13.5	0.53	6.4	0.25	9.5	0.37	9/16	1/2"	-	0.065
V-ME-6MM-W	10.3	0.41	6.4	0.25	4.0	0.16	5/16	6mm	1.00	-
V-ME-8MM-W	11.9	0.47	6.4	0.25	6.0	0.24	7/16	8mm	1.00	-
V-ME-10MM-W	11.9	0.47	6.4	0.25	8.0	0.31	7/16	10mm	1.00	-
V-ME-12MM-W	13.5	0.53	6.4	0.25	10.0	0.39	9/16	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

MER-W

## MINI ELBOW REDUCER

Without shoulder

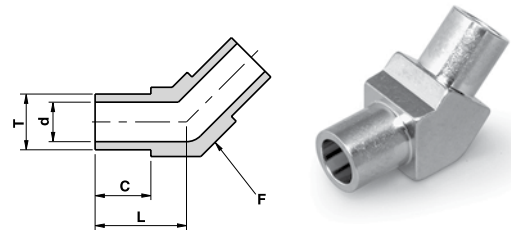


Ordering Information	L		C		d1		d		F	T1 Tube O.D	W.T. (T1)	T Tube O.D	W.T. (T)		
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch	inch/mm	mm	inch
V-MER-1/4 X 1/8-W	10.3	0.41	6.4	0.25	4.6	0.18	1.9	0.07	5/16	1/4"	-	0.035	1/8"	-	0.028
V-MER-3/8 X 1/4-W	11.9	0.47	6.4	0.25	7.7	0.30	4.6	0.18	7/16	3/8"	-	0.035	1/4"	-	0.035
V-MER-1/2 X 1/4-W	13.5	0.53	6.4	0.25	10.2	0.40	4.6	0.18	9/16	1/2"	-	0.049	1/4"	-	0.035
V-MER-1/2 X 3/8-W	13.5	0.53	6.4	0.25	10.2	0.40	7.7	0.30	9/16	1/2"	-	0.049	3/8"	-	0.035
V-MER-8MM X 6MM-W	11.9	0.47	6.4	0.25	6.0	0.24	4.0	0.16	7/16	8mm	1.00	-	6mm	1.00	-
V-MER-12MM X 6MM-W	13.5	0.53	6.4	0.25	10.0	0.39	4.0	0.16	9/16	12mm	1.00	-	6mm	1.00	-
V-MER-12MM X 8MM-W	13.5	0.53	6.4	0.25	10.0	0.39	6.0	0.24	9/16	12mm	1.00	-	8mm	1.00	-

ME-45°-W

## MINI ELBOW 45°

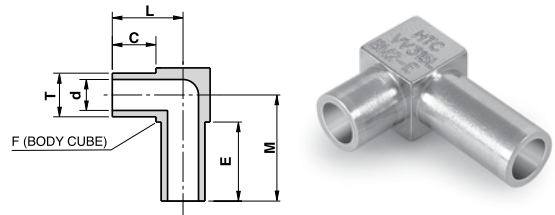
Without shoulder



Ordering Information	L		C		d		F	T Tube O.D	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-ME-1/4-W-45DEG	10.3	0.41	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-ME-3/8-W-45DEG	11.9	0.47	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-ME-1/2-W-45DEG	13.5	0.53	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-ME-1/2-W-45DEG W.T.=0.065	13.5	0.53	6.4	0.25	9.5	0.37	9/16	1/2"	-	0.065
V-ME-6MM-W-45DEG	10.3	0.41	6.4	0.25	4.0	0.16	5/16	6mm	1.00	-
V-ME-8MM-W-45DEG	11.9	0.47	6.4	0.25	6.0	0.24	7/16	8mm	1.00	-
V-ME-10MM-W-45DEG	11.9	0.47	6.4	0.25	8.0	0.31	7/16	10mm	1.00	-
V-ME-12MM-W-45DEG	13.5	0.53	6.4	0.25	10.0	0.39	9/16	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

MEX-W

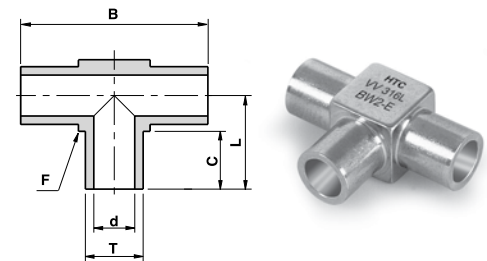
**MINI ELBOW**With extended leg  
Without shoulder

Ordering Information	L		C		M		E		d		F	T	W.T.
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
V-MEX-1/4-W 0.41X0.66	10.3	0.41	6.4	0.25	16.8	0.66	12.7	0.50	4.6	0.18	5/16	1/4	0.035
V-MEX-1/4-W 0.41X0.61	10.3	0.41	6.4	0.25	15.4	0.61	11.4	0.45	4.6	0.18	5/16	1/4	0.035
V-MEX-1/4-W 0.66X0.66"	16.8	0.66	12.7	0.50	16.8	0.66	12.7	0.50	4.6	0.18	5/16	1/4	0.035

MT-W

**MINI TEE**

Without shoulder



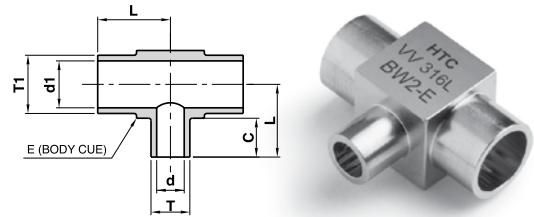
Ordering Information	L		B		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-MT-1/8-W	10.3	0.41	20.7	0.81	6.4	0.25	1.9	0.07	5/16	1/8"	-	0.028
V-MT-1/4-W	10.3	0.41	20.7	0.81	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-MT-3/8-W	11.9	0.47	23.9	0.94	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-MT-1/2-W	13.5	0.53	27.1	1.07	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-MT-1/2-W W.T.=0.065	13.5	0.53	27.1	1.07	6.4	0.25	9.5	0.37	9/16	1/2"	-	0.065
V-MT-6MM-W	10.3	0.41	20.7	0.81	6.4	0.25	4.0	0.16	5/16	6mm	1.00	-
V-MT-8MM-W	11.9	0.47	23.9	0.94	6.4	0.25	6.0	0.24	7/16	8mm	1.00	-
V-MT-10MM-W	11.9	0.47	23.9	0.94	6.4	0.25	8.0	0.31	7/16	10mm	1.00	-
V-MT-12MM-W	13.5	0.53	27.1	1.07	6.4	0.25	10.0	0.39	9/16	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

MTR-W

## MINI TEE REDUCER

Without shoulder

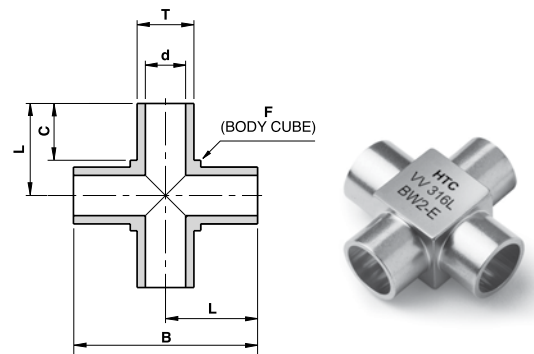


Ordering Information	L		B		C		d1		d		F	T1	W.T. (T1)		T	W.T. (T)	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch	inch / mm	mm	inch
V-MTR-1/2 X 1/4-W	13.5	0.53	27.1	1.07	6.4	0.25	10.2	0.40	4.6	0.18	9/16	1/2"	-	0.049	1/4"	-	0.035
V-MTR-1/2 X 3/8-W	13.5	0.53	27.1	1.07	6.4	0.25	10.2	0.40	7.7	0.30	9/16	1/2"	-	0.049	3/8"	-	0.035
V-MTR-3/8 X 1/4-W	11.9	0.47	23.9	0.94	6.4	0.25	7.7	0.30	4.6	0.18	7/16	3/8"	-	0.035	1/4"	-	0.035
V-MTR-8MMX6MM-W	11.9	0.47	23.9	0.94	6.4	0.25	6.0	0.24	4.0	0.16	7/16	8mm	1.00	-	6mm	1.00	-
V-MTR-12MMX6MM-W	13.5	0.53	27.1	1.07	6.4	0.25	10.0	0.39	4.0	0.16	9/16	12mm	1.00	-	6mm	1.00	-
V-MTR-12MMX8MM-W	13.5	0.53	27.1	1.07	6.4	0.25	10.0	0.39	6.0	0.24	9/16	12mm	1.00	-	8mm	1.00	-

MC-W

## MINI CROSS

Without shoulder



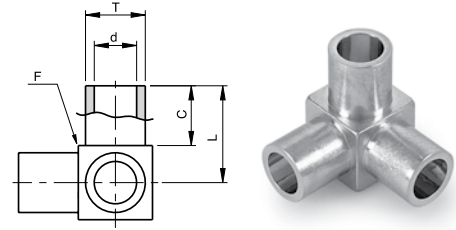
Ordering Information	L		B		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-MC-1/8-W	10.3	0.41	20.7	0.81	6.4	0.25	1.9	0.07	5/16	1/8"	-	0.028
V-MC-1/4-W	10.3	0.41	20.7	0.81	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-MC-3/8-W	11.9	0.47	23.9	0.94	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-MC-1/2-W	13.5	0.53	27.1	1.07	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-MC-1/2-W W.T.=0.065	13.5	0.53	27.1	1.07	6.4	0.25	9.5	0.37	9/16	1/2"	-	0.065
V-MC-6MM-W	10.3	0.41	20.7	0.81	6.4	0.25	4.0	0.16	5/16	6mm	1.00	-
V-MC-8MM-W	11.9	0.47	23.9	0.94	6.4	0.25	6.0	0.24	7/16	8mm	1.00	-
V-MC-10MM-W	11.9	0.47	23.9	0.94	6.4	0.25	8.0	0.31	7/16	10mm	1.00	-
V-MC-12MM-W	13.5	0.53	27.1	1.07	6.4	0.25	10.0	0.39	9/16	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

MTB-W

## MINI TRI-EL

Without shoulder

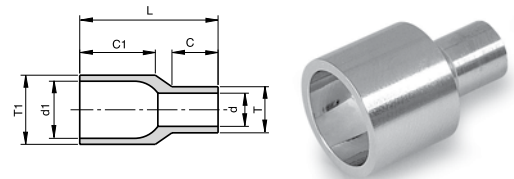


Ordering Information	L		C		d		F	T Tube O.D	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-MTB-1/8-W	10.3	0.41	6.4	0.25	1.9	0.07	5/16	1/8"	-	0.028
V-MTB-1/4-W	10.3	0.41	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-MTB-3/8-W	11.9	0.47	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-MTB-1/2-W	13.5	0.53	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-MTB-6MM-W	10.3	0.41	6.4	0.25	4.0	0.16	5/16	6mm	1.00	-
V-MTB-8MM-W	11.9	0.47	6.4	0.25	6.0	0.24	7/16	8mm	1.00	-
V-MTB-10MM-W	11.9	0.47	6.4	0.25	8.0	0.31	7/16	10mm	1.00	-
V-MTB-12MM-W	13.5	0.53	6.4	0.25	10.0	0.39	9/16	12mm	1.00	-

RU-W

## REDUCING UNION

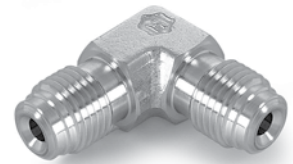
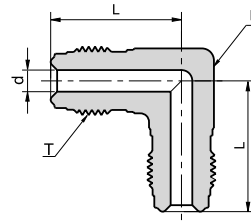
Without shoulder



Ordering Information	L		C1		C		d1		d		T1 Tube O.D	W.T. (T1)		T Tube O.D	W.T. (T)	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch/ mm	mm	inch	inch/ mm	mm	inch
V-RU-1/4 X 1/8-W	19.1	0.75	10.4	0.41	6.4	0.25	4.6	0.18	1.9	0.07	1/4"	-	0.035	1/8"	-	0.028
V-RU-3/8 X 1/4-W	19.1	0.75	10.4	0.41	6.4	0.25	7.7	0.30	4.6	0.18	3/8"	-	0.035	1/4"	-	0.035
V-RU-1/2 X 1/4-W	19.1	0.75	10.4	0.41	6.4	0.25	10.2	0.40	4.6	0.18	1/2"	-	0.049	1/4"	-	0.035
V-RU-1/2 X 3/8-W	19.1	0.75	10.4	0.41	6.4	0.25	10.2	0.40	7.7	0.30	1/2"	-	0.049	3/8"	-	0.035
P-RU- 1 X 1/2-W	19.1	0.75	10.4	0.41	6.4	0.25	22.1	0.87	10.2	0.40	1"	-	0.065	1/2"	-	0.049
V-RU- 8MM X 6MM-W	19.1	0.75	10.4	0.41	6.4	0.25	6.0	0.24	4.0	0.16	8mm	1.00	-	6mm	1.00	-
V-RU- 10MM X 6MM-W	19.1	0.75	10.4	0.41	6.4	0.25	8.0	0.31	4.0	0.16	10mm	1.00	-	6mm	1.00	-
V-RU- 10MM X 8MM-W	19.1	0.75	10.4	0.41	6.4	0.25	8.0	0.31	6.0	0.24	10mm	1.00	-	8mm	1.00	-
V-RU- 12MM X 6MM-W	19.1	0.75	10.4	0.41	6.4	0.25	10.0	0.39	4.0	0.16	12mm	1.00	-	6mm	1.00	-
V-RU- 12MM X 8MM-W	19.1	0.75	10.4	0.41	6.4	0.25	10.0	0.39	6.0	0.24	12mm	1.00	-	8mm	1.00	-
V-RU- 12MM X 10MM-W	19.1	0.75	10.4	0.41	6.4	0.25	10.0	0.39	8.0	0.31	12mm	1.00	-	10mm	1.00	-

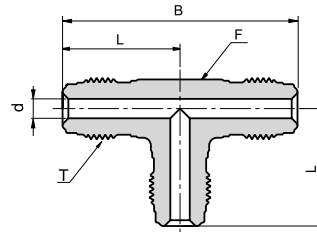
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

EU  
**ELBOW UNION**



Ordering Information	Face Seal Size	L		d		F	T
	inch	mm	inch	mm	inch	inch	Thread Size
P-EU-1/4	1/4	27.2	1.07	4.6	0.18	1/2	9/16-18
P-EU-1/2	1/2	36.8	1.45	10.2	0.40	13/16	7/8-14
P-EU-3/4	3/4	48.8	1.92	15.8	0.62	1 1/4	1 1/4 -18
P-EU-1	1	50.8	2.00	22.1	0.87	1 11/16	1 1/2 -20

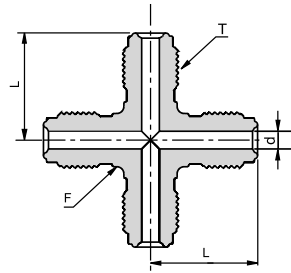
TU  
**TEE UNION**



Ordering Information	Face Seal Size	L		B		d		F	T
	inch	mm	inch	mm	inch	mm	inch	inch	Thread Size
P-TU-1/4	1/4	27.2	1.07	54.4	2.14	4.6	0.18	1/2	9/16-18
P-TU-1/2	1/2	36.8	1.45	73.6	2.90	10.2	0.40	13/16	7/8-14
P-TU-3/4	3/4	48.8	1.92	97.6	3.84	15.8	0.62	1 1/4	1 1/4 -18
P-TU-1	1	50.8	2.00	101.6	4.00	22.1	0.87	1 11/16	1 1/2 -20

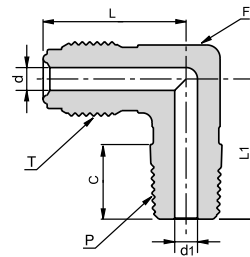
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

CU

**CROSS UNION**

Ordering Information	Face Seal Size	L		d		F	T
	inch	mm	inch	mm	inch	inch	Thread Size inch
P-CU-1/4	1/4	27.2	1.07	4.6	0.18	1/2	9/16-18
P-CU-1/2	1/2	36.8	1.45	10.2	0.40	13/16	7/8-14

EM

**MALE ELBOW**

Ordering Information	Face Seal Size	L		L1		C		d		d1		F	T	P
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	Thread Size inch	NPT-M inch
P-EM-1/4 X 1/8	1/4	27.2	1.07	22.1	0.87	9.6	0.38	4.6	0.18	4.6	0.18	1/2	9/16-18	1/8
P-EM-1/4 X 1/4	1/4	27.2	1.07	26.7	1.05	14.2	0.56	4.6	0.18	4.6	0.18	1/2	9/16-18	1/4
P-EM-1/4 X 1/2	1/4	31.2	1.45	33.5	1.26	19.0	0.56	4.6	0.40	9.5	0.37	13/16	9/16-18	1/2
P-EM-1/2 X 1/4	1/2	36.8	1.23	32.0	1.32	14.2	0.75	10.2	0.18	4.6	0.40	13/16	7/8-14	1/4
P-EM-1/2 X 3/8	1/2	36.8	1.45	32.0	1.26	14.2	0.56	10.2	0.40	9.5	0.37	13/16	7/8-14	3/8
P-EM-1/2 X 1/2	1/2	36.8	1.45	36.8	1.45	19.0	0.75	10.2	0.40	10.2	0.40	13/16	7/8-14	1/2

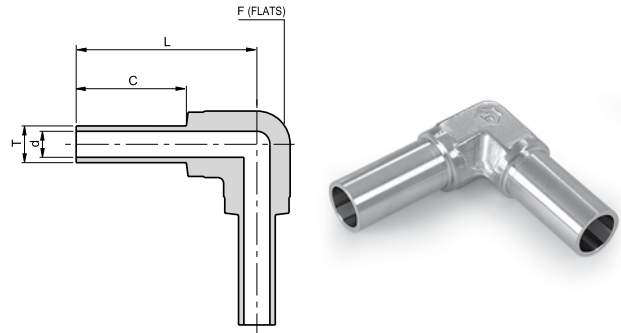
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).



EW-W

**ELBOW**

Without shoulder

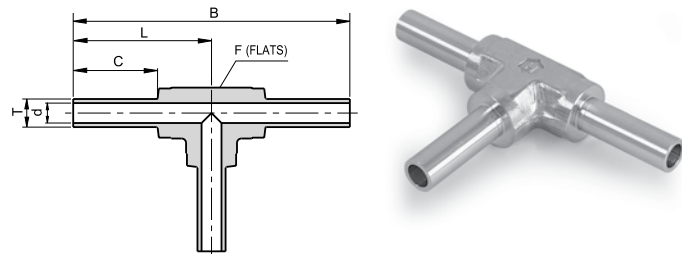


Ordering Information	L		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch
P-EW-1/4-W	31.2	1.23	19.1	0.75	4.6	0.18	7/16	1/4"	-	0.035
P-EW-3/8-W	30.5	1.20	19.1	0.75	7.7	0.30	7/16	3/8"	-	0.035
P-EW-1/2-W	34.0	1.34	19.1	0.75	10.2	0.40	11/16	1/2"	-	0.049
P-EW-1/2-W W.T.=0.065	34.0	1.34	19.1	0.75	9.5	0.37	11/16	1/2"	-	0.065
P-EW-3/4-W W.T.=0.049	37.1	1.46	19.1	0.75	16.6	0.65	15/16	3/4"	-	0.049
P-EW-3/4-W W.T.=0.065	37.1	1.46	19.1	0.75	15.8	0.62	15/16	3/4"	-	0.065
P-EW-1-W W.T.=0.065	47.0	1.85	24.4	0.96	22.1	0.87	1 3/8	1"	-	0.065
P-EW-1-W W.T.=0.120	47.0	1.85	24.4	0.96	19.4	0.76	1 3/8	1"	-	0.120
P-EW-6M-W	31.2	1.23	19.1	0.75	4.0	0.16	7/16	6mm	1.00	-
P-EW-8MM-W	31.2	1.23	19.1	0.75	6.0	0.24	7/16	8mm	1.00	-
P-EW-10MM-W	34.0	1.34	19.1	0.75	8.0	0.31	11/16	10mm	1.00	-
P-EW-12MM-W	34.0	1.34	19.1	0.75	10.0	0.39	11/16	12mm	1.00	-

TW-W

**TEE**

Without shoulder



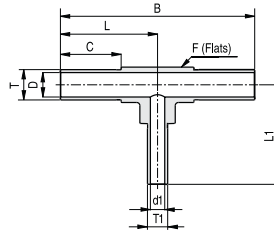
Ordering Information	L		B		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch
P-TW-1/4-W	31.2	1.23	62.5	2.46	19.1	0.75	4.6	0.18	7/16	1/4"	-	0.035
P-TW-3/8-W	30.5	1.20	61.0	2.40	19.1	0.75	7.7	0.30	7/16	3/8"	-	0.035
P-TW-1/2-W	34.0	1.34	68.1	2.68	19.1	0.75	10.2	0.40	11/16	1/2"	-	0.049
P-TW-1/2-W W.T.=0.065	34.0	1.34	68.1	2.68	19.1	0.75	9.5	0.37	11/16	1/2"	-	0.065
P-TW-3/4-W W.T.=0.065	37.1	1.46	74.2	2.92	19.1	0.75	15.8	0.62	15/16	3/4"	-	0.065
P-TW-3/4-W W.T.=0.049	37.1	1.46	74.2	2.92	19.1	0.75	16.6	0.65	15/16	3/4"	-	0.049
P-TW-1-W W.T.=0.065	47.0	1.85	94.0	3.70	24.4	0.96	22.1	0.87	1 3/8	1"	-	0.065
P-TW-1-W W.T.=0.120	47.0	1.85	94.0	3.70	24.4	0.96	19.4	0.76	1 3/8	1"	-	0.120
P-TW-6MM-W	31.2	1.23	62.5	2.46	19.1	0.75	4.0	0.16	7/16	6mm	1.00	-
P-TW-8MM-W	31.2	1.23	62.5	2.46	19.1	0.75	6.0	0.24	7/16	8mm	1.00	-
P-TW-10MM-W	34.0	1.34	68.1	2.68	19.1	0.75	8.0	0.31	11/16	10mm	1.00	-
P-TW-12MM-W	34.0	1.34	68.1	2.68	19.1	0.75	10.0	0.39	11/16	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

## TWR-W

**TEE REDUCER**

Without shoulder

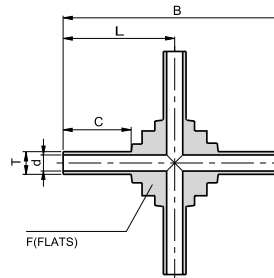


Ordering Information	L		L1		B		C		d		d1		F	T Tube O.D.	W.T. (T)	T1 Tube O.D.	W.T. (T1)
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch/mm	inch/mm	inch/mm	inch/mm
P-TWR-3/8X1/4 W	30.5	1.20	31.2	1.23	61.0	2.40	19.1	0.75	7.7	0.30	4.6	0.18	7/16	3/8"	0.035"	1/4"	0.035"
P-TWR-1/2X1/4 W	34.0	1.34	34.0	1.34	68.0	2.68	19.1	0.75	10.2	0.40	4.6	0.18	11/16	1/2"	0.049"	1/4"	0.035"
P-TWR-1/2X3/8 W	34.0	1.34	34.0	1.34	68.0	2.68	19.1	0.75	10.2	0.40	7.7	0.30	11/16	1/2"	0.049"	3/8"	0.035"
P-TWR-3/4X1/4 W W.T.= 0.049 X 0.035	37.1	1.46	37.1	1.46	74.2	2.92	19.1	0.75	16.6	0.65	4.6	0.18	15/16	3/4"	0.049"	1/4"	0.035"
P-TWR-3/4X1/4 W W.T.=0.065 X 0.035	37.1	1.46	37.1	1.46	74.2	2.92	19.1	0.75	15.8	0.62	4.6	0.18	15/16	3/4"	0.065"	1/4"	0.035"
P-TWR-3/4X1/2 W W.T.=0.049	37.1	1.46	37.1	1.46	74.2	2.92	19.1	0.75	16.6	0.65	10.2	0.40	15/16	3/4"	0.049"	1/2"	0.049"
P-TWR-12MMX6MM W	34.0	1.34	34.0	1.34	68.0	2.68	19.1	0.75	10.0	0.39	4.0	0.16	11/16	12mm	1.00mm	6mm	1.00mm

## CW-W

**CROSS**

Without shoulder



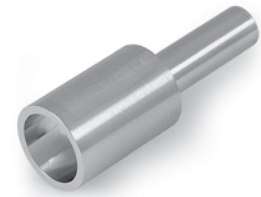
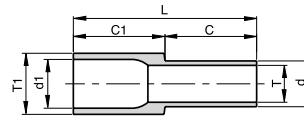
Ordering Information	L		B		C		d		F	T Tube O.D.	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch/mm	inch/mm	mm	inch
P-CW-1/4-W	31.2	1.23	62.5	2.46	19.1	0.75	4.6	0.18	17mm	1/4"	-	0.035
P-CW-3/8-W	30.5	1.20	61.0	2.40	19.1	0.75	7.7	0.30	17mm	3/8"	-	0.035
P-CW-1/2-W	31.0	1.22	62.0	2.44	19.1	0.75	10.2	0.40	17mm	1/2"	-	0.049
P-CW-1/2-W W.T.=0.065	31.0	1.22	62.0	2.44	19.1	0.75	9.5	0.37	17mm	1/2"	-	0.065
P-CW-6MM-W	31.2	1.23	62.5	2.46	19.1	0.75	4.0	0.16	17mm	6mm	1.00	-
P-CW-8MM-W	30.5	1.20	61.0	2.40	19.1	0.75	6.0	0.24	17mm	8mm	1.00	-
P-CW-10MM-W	31.0	1.22	62.0	2.44	19.1	0.75	8.0	0.31	17mm	10mm	1.00	-
P-CW-12MM-W	31.0	1.22	62.0	2.44	19.1	0.75	10.0	0.39	17mm	12mm	1.00	-

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

RW-W

**REDUCER**

Without shoulder

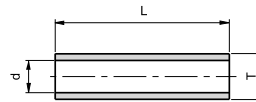


Ordering Information	L		C1		C		d1		d		T1 Tube O.D.	W.T. (T1)		T Tube O.D.	W.T. (T)	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch/mm	mm	inch	inch/mm	mm	inch
V-RW-1/4X1/8-W	38.1	1.50	19.1	0.75	19.1	0.75	4.6	0.18	1.9	0.07	1/4"	-	0.035	1/8"	-	0.028
V-RW-3/8X1/4-W	38.1	1.50	19.1	0.75	19.1	0.75	7.7	0.30	4.6	0.18	3/8"	-	0.035	1/4"	-	0.035
V-RW-1/2X1/4-W	38.1	1.50	19.1	0.75	19.1	0.75	10.2	0.40	4.6	0.18	1/2"	-	0.049	1/4"	-	0.035
V-RW-1/2X3/8-W	38.1	1.50	19.1	0.75	19.1	0.75	10.2	0.40	7.7	0.30	1/2"	-	0.049	3/8"	-	0.035
V-RW-3/4X1/2 W W.T.=0.049	38.5	1.51	19.1	0.75	19.1	0.75	16.6	0.65	10.2	0.40	3/4"	-	0.049	1/2"	-	0.049
P-RW-3/4X1/2 W W.T.=0.065X0.049	38.5	1.51	19.1	0.75	19.1	0.75	15.8	0.62	10.2	0.40	3/4"	-	0.065	1/2"	-	0.065
P-RW-3/4X1/4 W W.T.=0.049X0.035	38.5	1.51	19.1	0.75	19.1	0.75	16.6	0.65	4.6	0.18	3/4"	-	0.049	1/4"	-	0.049
P-RW-1X1/2 W W.T.= 0.065X0.049	40.5	1.59	19.1	0.75	19.1	0.75	22.1	0.87	10.2	0.40	1"	-	0.065	1/2"	-	0.049
V-RW-8MM X 6MM-W	38.1	1.50	19.1	0.75	19.1	0.75	6.0	0.24	4.0	0.16	8mm	1.00	-	6mm	1.00	-
V-RW-10MM X 6MM-W	38.1	1.50	19.1	0.75	19.1	0.75	8.0	0.31	4.0	0.16	10mm	1.00	-	6mm	1.00	-
V-RW-10MM X 8MM-W	38.1	1.50	19.1	0.75	19.1	0.75	8.0	0.31	6.0	0.24	10mm	1.00	-	8mm	1.00	-
V-RW-12MM X 6MM-W	38.1	1.50	19.1	0.75	19.1	0.75	10.0	0.39	4.0	0.16	12mm	1.00	-	6mm	1.00	-
V-RW-12MM X 8MM-W	38.1	1.50	19.1	0.75	19.1	0.75	10.0	0.39	6.0	0.24	12mm	1.00	-	8mm	1.00	-
V-RW-12MM X 10MM-W	38.1	1.50	19.1	0.75	19.1	0.75	10.0	0.39	8.0	0.31	12mm	1.00	-	10mm	1.00	-

UB-W

**BUTTWELD UNION**

Without shoulder



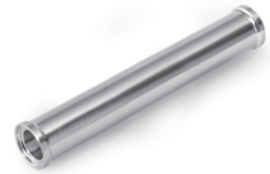
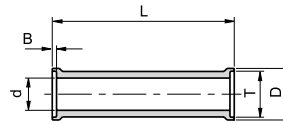
Ordering Information	L		d		T Tube O.D	W.T.
	mm	inch	mm	inch	inch	inch
V-UB-1/4-W	24.3	0.96	4.6	0.18	1/4	0.035
V-UB-3/8-W	23.9	0.94	7.7	0.30	3/8	0.035
V-UB-1/2-W	23.4	0.92	10.2	0.40	1/2	0.049
P-UB-3/4-W W.T.=0.049	23.4	0.92	16.6	0.65	3/4	0.049
P-UB-3/4-W W.T.=0 .065	23.4	0.92	15.8	0.62	3/4	0.065
P-UB-1-W W.T.=0 .065	29.7	1.17	22.1	0.87	1	0.065

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

UB-S

**BUTTWELD UNION**

With shoulder

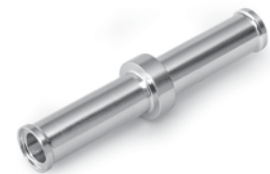
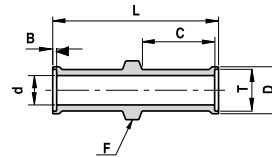


Ordering Information	L		d		B		D		T	W.T.
	mm	inch	mm	inch	mm	inch	mm	inch	Tube O.D.	inch
V-UB-1/4-S	25.4	1.00	4.6	0.18	0.55	0.02	7.4	0.29	1/4	0.035
V-UB-3/8-S	25.4	1.00	7.7	0.30	0.76	0.03	10.4	0.41	3/8	0.035
V-UB-1/2-S	25.4	1.00	10.2	0.40	1.00	0.04	14.0	0.55	1/2	0.049
P-UB-3/4-S W.T.=0 .049	25.4	1.00	16.5	0.65	1.00	0.04	20.3	0.80	3/4	0.049
P-UB-3/4-S W.T.=0 .065	25.4	1.00	15.8	0.62	1.00	0.04	20.3	0.80	3/4	0.065
P-UB-1-S W.T.=0 .065	31.8	1.25	22.1	0.87	1.00	0.04	26.9	1.06	1	0.065

UBL-S

**BUTTWELD UNION**

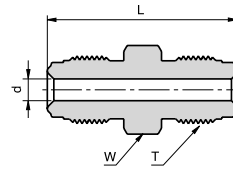
With locator and shoulder



Ordering Information	L		C		d		B		D		F		T	W.T.
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	Tube O.D.	inch
V-UBL-1/4-S	42.9	1.69	19.1	0.75	4.6	0.18	0.6	0.02	7.4	0.29	9.1	0.36	1/4	0.035
V-UBL-3/8-S	43.4	1.71	19.1	0.75	7.7	0.30	0.8	0.03	10.4	0.41	10.7	0.42	3/8	0.035
V-UBL-1/2-S	43.9	1.73	19.1	0.75	10.2	0.40	1.0	0.04	14.0	0.55	15.2	0.60	1/2	0.049

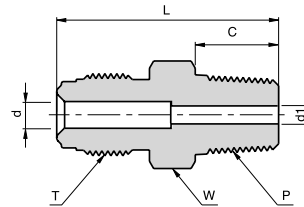
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

UM  
**MALE UNION**



Ordering Information	Face Seal Size	L		d		W	T
	inch	mm	inch	mm	inch	inch	Thread Size
P-UM 1/4	1/4	39.4	1.55	4.6	0.18	5/8	9/16 - 18
P-UM 1/2	1/2	46.7	1.84	10.2	0.40	15/16	7/8 - 14
P-UM 3/4	3/4	62.0	2.44	15.8	0.62	1 5/16	1 1/4 - 18
P-UM 1	1	65.8	2.59	22.2	0.87	1 5/8	1 1/2 - 20

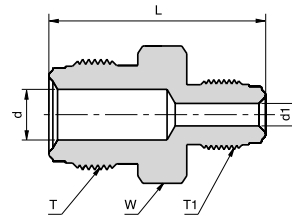
CM  
**MALE TO MALE  
NPT CONNECTOR**



Ordering Information	Face Seal Size	L		C		d		d1		W	T	P
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	Thread Size	NPT-M
P-CM-1/4 X 1/8	1/4	33.3	1.31	9.6	0.38	4.6	0.18	4.6	0.18	5/8	9/16 - 18	1/8
P-CM-1/4 X 1/4	1/4	37.8	1.49	14.2	0.56	4.6	0.18	4.6	0.18	5/8	9/16 - 18	1/4
P-CM-1/4 X R1/4 BSPT	1/4	37.8	1.49	14.2	0.56	4.6	0.18	4.6	0.18	5/8	9/16 - 18	1/4 BSPT
P-CM-1/2 X 1/4	1/2	41.9	1.65	14.2	0.56	10.2	0.40	7.1	0.28	15/16	7/8 - 14	1/4
P-CM-1/2 X 3/8	1/2	41.9	1.65	14.2	0.56	9.6	0.38	9.6	0.38	15/16	7/8 - 14	3/8
P-CM-1/2 X 1/2	1/2	46.7	1.84	19.0	0.75	10.2	0.40	10.2	0.40	15/16	7/8 - 14	1/2
P-CM-3/4 X 3/4	3/4	55.6	2.19	19.0	0.75	15.8	0.62	15.8	0.62	1 5/16	1 1/4 - 18	3/4
P-CM-1 X 1	1	62.7	2.47	23.9	0.94	22.2	0.87	22.2	0.87	1 5/8	1 1/2 - 20	1

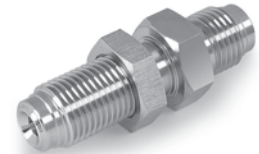
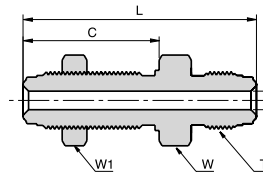
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

RUM

**MALE REDUCING UNION**

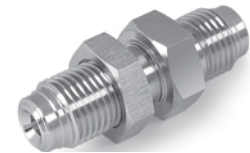
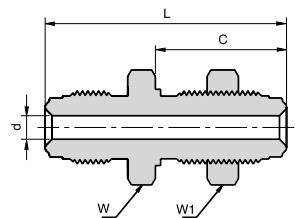
Ordering Information	Face Seal Size	Face Seal Size <sup>1</sup>	L		d		d1		W	T Thread Size	T1 Thread Size
	inch	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
P-RUM 1/4 X 1/8	1/4	1/8	34.8	1.37	4.6	0.18	2.4	0.09	5/8	9/16-18	5/16-24
P-RUM 1/2 X 1/4	1/2	1/4	43.4	1.71	10.2	0.40	4.6	0.18	15/16	7/8-1/4	9/16-18

BU

**BULKHEAD UNION**

Ordering Information	Face Seal Size	L		C		d		W	W1	T Thread Size	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
P-BU 1/4	1/4	56.6	2.23	33.0	1.30	4.6	0.18	3/4	3/4	9/16-18	19/32
P-BU 1/2	1/2	65.3	2.57	37.6	1.48	10.2	0.40	1 1/16	1 1/16	7/8-14	29/32

SBU

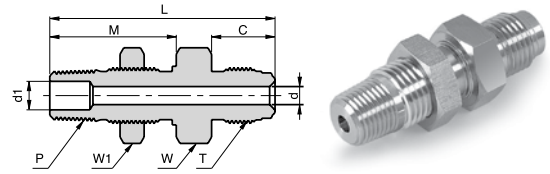
**SHORT BULKHEAD UNION**

Ordering Information	Face Seal Size	L		C		d		W	W1	T Thread Size	Panel hole drill Size
	inch	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
P-SBU 1/4	1/4	46.2	1.82	25.1	0.99	4.6	0.18	3/4	3/4	9/16-18	19/32
P-SBU 1/2	1/2	54.4	2.14	28.2	1.11	10.2	0.40	1 1/16	1 1/16	7/8-14	29/32

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

BCM

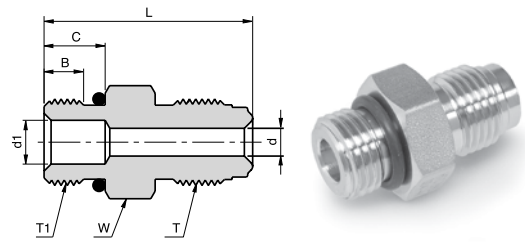
### MALE TO NPT BULKHEAD CONNECTOR



Ordering Information	Face Seal Size	L		C		d		M		d1		W	W1	T Thread Size	P NPT-M	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
P-BCM 1/4 X 1/4	1/4	56.1	2.21	15.8	0.62	4.6	0.18	31.5	1.24	7.1	0.28	13/16	13/16	9/16 -18	1/4	19/32
P-BCM 1/2 X 1/4	1/2	59.4	2.34	17.8	0.70	10.2	0.40	31.5	1.24	7.1	0.28	15/16	13/16	7/8 -14	1/4	19/32

CMOB

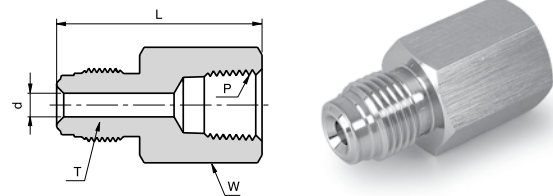
### MALE TO SEAL O-RING CONNECTOR



Ordering Information	Face Seal Size	L		C		B		d		d1		W	T Thread size	T1 Thread size	O-Ring Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
P-CMOB 1/4 X 9/16	1/4	33.8	1.33	9.9	0.39	6.4	0.25	4.6	0.18	7.1	0.28	3/4	9/16 -18	9/16 -18	3-906
P-CMOB 1/2 X 7/8	1/2	42.2	1.66	12.7	0.50	10.2	0.40	7.1	0.28	15.0	0.59	1	7/8 -14	7/8 -14	3-910
P-CMOB 1/2 X 9/16	1/2	37.6	1.48	9.9	0.39	6.4	0.25	7.1	0.28	7.1	0.28	15/16	7/8 -14	9/16 -18	3-906

FC

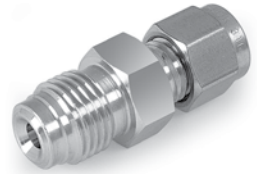
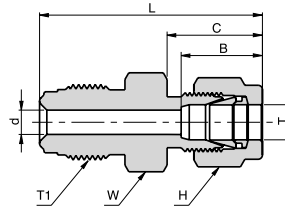
### MALE TO FEMALE NPT CONNECTOR



Ordering Information	Face Seal Size	L		d		W	T Thread Size	P NPT-F
	inch	mm	inch	mm	inch	inch	inch	inch
P-FC 1/4 X 1/8	1/4	35.8	1.41	4.6	0.18	5/8	9/16 -18	1/8
P-FC 1/4 X 1/4	1/4	39.1	1.54	4.6	0.18	3/4	9/16 -18	1/4
P-FC 1/2 X 1/4	1/2	39.1	1.54	10.2	0.40	15/16	7/8 -14	1/4
P-FC 1/2 X 3/8	1/2	44.7	1.76	10.2	0.40	15/16	7/8 -14	3/8
P-FC 1/2 X 1/2	1/2	50.5	1.99	10.2	0.40	1 1/16	7/8 -14	1/2
P-FC 3/4 X 3/4	3/4	59.9	2.36	15.8	0.62	1 5/16	1 1/4 -18	3/4
P-FC 1 X 1	1	63.8	2.51	22.1	0.87	1 5/8	1 1/2 -20	1

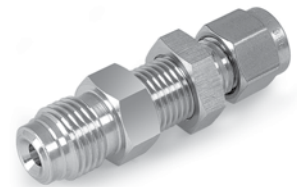
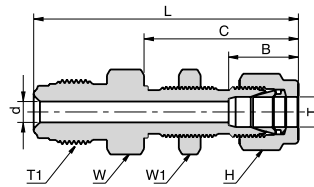
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

UGL

**MALE TO  
LET-LOK UNION**

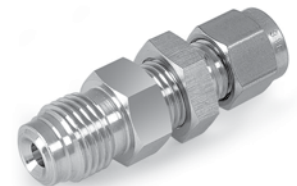
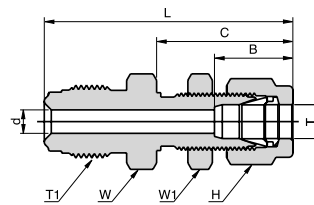
Ordering Information	Face Seal Size	L		C		B		d		W	H	T Tube O.D.	T1 Thread Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
P-UGL 1/4 X 1/8	1/4	38.9	1.53	15.2	0.60	12.7	0.50	4.6	0.18	5/8	7/16	1/8	9/16 - 18
P-UGL 1/4 X 1/4	1/4	41.1	1.62	17.8	0.70	15.2	0.60	4.6	0.18	5/8	9/16	1/4	9/16 - 18
P-UGL 1/4 X 3/8	1/4	42.1	1.66	19.4	0.76	16.8	0.66	4.6	0.18	5/8	11/16	3/8	9/16 - 18
P-UGL 1/2 X 3/8	1/2	46.7	1.84	19.4	0.76	16.8	0.66	7.1	0.28	15/16	11/16	3/8	7/8 - 14
P-UGL 1/2 X 1/2	1/2	49.5	1.95	21.8	0.86	22.9	0.90	10.2	0.40	15/16	7/8	1/2	7/8 - 14

BUL

**MALE TO BULKHEAD  
LET-LOK® UNION**

Ordering Information	Face Seal Size	L		C		B		d		W	W1	H	T Tube O.D.	T1 Thread Size	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch	inch
P-BUL 1/4 X 1/4	1/4	57.2	2.25	33.5	1.32	15.2	0.60	4.6	0.18	5/8	5/8	9/16	1/4	9/16 - 18	29/64
P-BUL 1/2 X 3/8	1/4	64.5	2.54	36.8	1.45	16.8	0.66	7.1	0.28	15/16	3/4	11/16	3/8	7/8 - 14	37/64
P-BUL 1/2 X 1/2	1/2	69.9	2.74	19.4	1.65	22.9	0.90	10.2	0.40	15/16	15/16	7/8	1/2	7/8 - 14	49/64

SBUL

**MALE TO SHORT BULKHEAD  
LET-LOK UNION**

Ordering Information	Face Seal Size	L		C		B		d		W	W1	H	T Tube O.D.	T1 Thread Size	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch	inch
P-SBUL 1/4 X 1/4	1/4	47.8	1.88	26.7	1.05	15.2	0.60	4.6	0.18	5/8	5/8	9/16	1/4	9/16-18	29/64

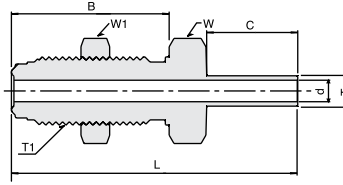
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).



BHUT-W

**BULKHEAD TO TUBE UNION**

Without shoulder

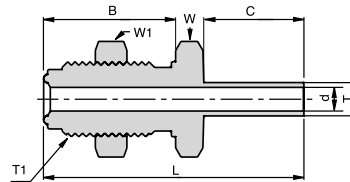


Ordering Information	Face Seal Size	L		B		C		d		W	W1	T Tube O.D.	T1 Thread Size	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
P-BHUT- 1/4 X 1/4-W	1/4	59.9	2.36	33.0	1.30	19.1	0.75	4.6	0.18	3/4	3/4	1/4	9/16 - 18	19/32
P-BHUT- 1/2 X 1/2-W	1/2	66.6	2.62	37.6	1.48	19.1	0.75	10.2	0.40	1 1/16	1 1/16	1/2	7/8 - 14	29/32

SBHUT-W

**SHORT BULKHEAD TO TUBE UNION**

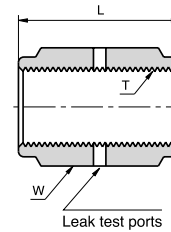
Without shoulder



Ordering Information	Face Seal Size	L		B		C		d		W	W1	T Tube O.D.	T1 Thread Size	Panel hole drill Size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
P-SBHUT- 1/4 X 1/4-W	1/4	49.5	1.95	25.1	0.99	19.1	0.75	4.6	0.18	3/4	3/4	1/4	9/16 - 18	19/32
P-SBHUT- 1/2 X 1/2-W	1/2	58.7	2.31	29.7	1.17	19.1	0.75	10.2	0.40	1 1/16	1 1/16	1/2	7/8 - 14	29/32

CP

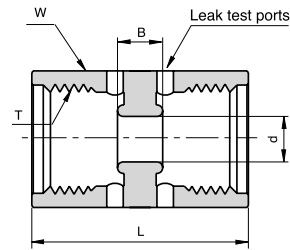
**COUPLING**



Ordering Information	Face Seal Size	L		W	T Thread Size
	inch	mm	inch	inch	inch
P-CP 1/4	1/4	30.2	1.19	3/4	9/16 - 18
P-CP 1/2	1/2	33.3	1.31	1 1/16	7/8 - 14
P-CP 3/4	3/4	42.7	1.68	1 1/2	1 1/4 - 18
P-CP 1	1	51.8	2.04	1 3/4	1 1/2 - 20

Dimensions are for reference only, and are subject to change without notice. When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

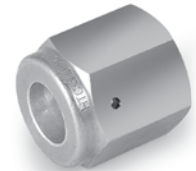
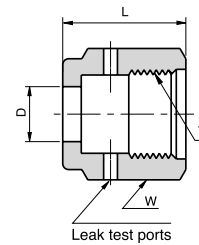
DFU

**DOUBLE FEMALE UNION**

Ordering Information	Face Seal Size	L		B		d		W	T Thread Size
	inch	mm	inch	mm	inch	mm	inch	inch	inch
P-DFU-1/4	1/4	30.2	1.19	6.0	0.24	6.4	0.25	3/4	9/16 - 18
P-DFU-1/2	1/2	33.3	1.31	6.0	0.24	14.0	0.55	1 1/16	7/8 - 14

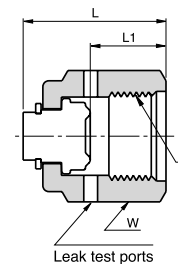
Caution: This fitting should be used with a swivel male connector only.

NF

**FEMALE NUT**

Ordering Information	Face Seal Size	L		D		W	T Thread Size
	inch	mm	inch	mm	inch	inch	inch
P-NF 1/8	1/8	13.6	0.54	5.3	0.21	7/16	5/16-24
P-NF 1/4	1/4	20.6	0.81	9.2	0.36	3/4	9/16-18
P-NF 1/2	1/2	22.5	0.88	15.5	0.61	1 1/16	7/8-14
P-NF 3/4	3/4	28.5	1.12	22.6	0.89	1 1/2	1 1/4-18
P-NF 1	1	34.0	1.34	30.6	1.20	1 3/4	1 1/2-20

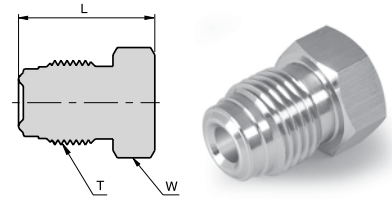
CF

**FEMALE CAP**

Ordering Information	Face Seal Size	L		L1		W	T Thread Size
	inch	mm	inch	mm	inch	inch	inch
PCF1/8	1/8	16.6	0.65	8.4	0.33	7/16	5/16-24
P-CF 1/4	1/4	23.9	0.94	12.7	0.50	3/4	9/16-18
P-CF 1/2	1/2	25.6	1.01	14.2	0.56	1 1/16	7/8-14
P-CF 3/4	3/4	32.3	1.27	19.1	0.75	1 1/2	1 1/4-18
P-CF 1	1	39.0	1.53	23.4	0.92	1 3/4	1 1/2-20

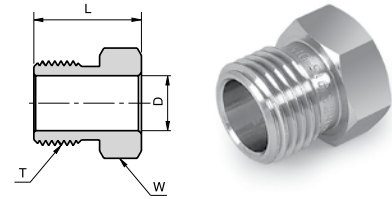
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

MP  
**MALE PLUG**



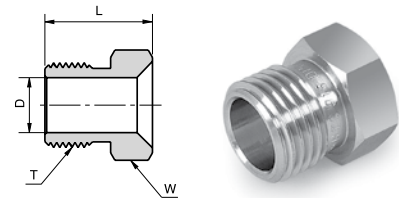
Ordering Information	Face Seal Size	L		W	T
	inch	mm	inch	inch	Thread Size
P-MP 1/8	1/8	17.3	0.68	3/8	5/16 - 24
P-MP 1/4	1/4	23.4	0.92	5/8	9/16 -18
P-MP 1/2	1/2	27.4	1.08	15/16	7/8 -14
P-MP 3/4	3/4	36.3	1.43	1 5/16	1 1/4 -18
P-MP 1	1	38.6	1.52	1 5/8	1 1/2 - 20

NM  
**MALE NUT**



Ordering Information	Face Seal Size	L		D		W	T
	inch	mm	inch	mm	inch	inch	Thread Size
P-NM 1/8	1/8	12.7	0.50	5.3	0.21	3/8	5/16-24
P-NM 1/4	1/4	18.0	0.71	9.2	0.36	5/8	9/16-18
P-NM 1/2	1/2	20.6	0.81	15.5	0.61	15/16	7/8-14
P-NM 3/4	3/4	25.4	1.00	22.7	0.89	1 5/16	1 1/4-18
P-NM 1	1	30.2	1.19	30.5	1.20	1 5/8	1 1/2-20

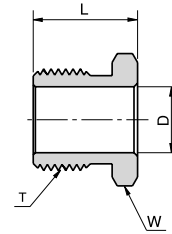
TNM  
**TAPERED MALE NUT**



Ordering Information	Face Seal Size	L		D		W	T
	inch	mm	inch	mm	inch	inch	Thread Size
P-NM 1/4	1/4	18.0	0.71	9.2	0.36	5/8	9/16-18

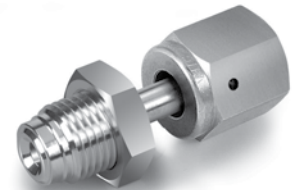
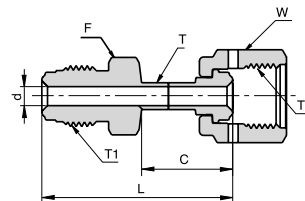
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

SNM

**SHORT MALE NUT**

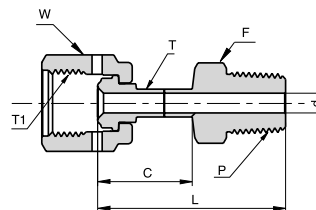
Ordering Information	Face Seal Size	L		D		W	T
	inch	mm	inch	mm	inch	inch	Thread Size
P-SNM 1/4 .54	1/4	13.7	0.54	9.2	0.36	5/8	9/16-18
P-SNM 1/4 .65	1/4	16.5	0.65	9.2	0.36	5/8	9/16-18

UMF

**FEMALE TO MALE UNION**

Ordering Information	Face Seal Size	L		C		d		F	W	T	T1	T2
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
P-UMF-1/4 X 1/4	1/4	45.2	1.78	21.6	0.85	4.6	0.18	5/8	3/4	1/4	9/16 - 18	9/16 - 18
P-UMF-1/2 X 1/2	1/2	49.8	1.96	22.1	0.87	10.2	0.40	15/16	1-1/16	1/2	7/8 - 14	7/8 - 14

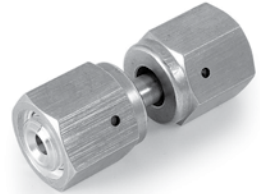
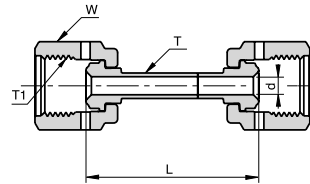
MCF

**FEMALE TO MALE NPT CONNECTOR**

Ordering Information	Face Seal Size	L		C		d		F	W	T	T1	P
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	NPT-M
P-MCF-1/4 X 1/4	1/4	45.5	1.79	23.4	0.92	4.6	0.18	9/16	3/4	1/4	9/16 - 18	1/4
P-MCF-1/2 X 1/2	1/2	53.1	2.09	25.6	1.01	10.2	0.40	7/8	1 1/16	1/2	7/8 - 14	1/2

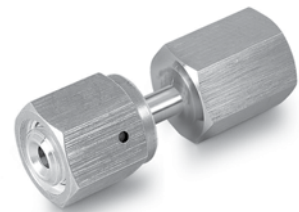
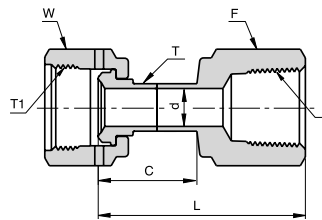
Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

UFF

**FEMALE TO FEMALE UNION**

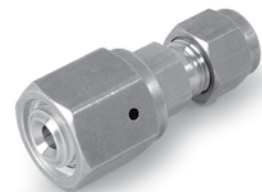
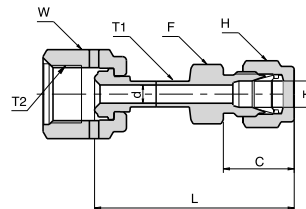
Ordering Information	Face Seal Size	L		d		W	T Tube O.D.	T1 Thread Size
	inch	mm	inch	mm	inch	inch	inch	inch
P-UFF-1/4 X 1/4	1/4	43.0	1.69	4.6	0.18	3/4	1/4	9/16 - 18
P-UFF-1/2 X 1/2	1/2	44.1	1.73	10.2	0.40	1 1/16	1/2	7/8 - 14

FCF

**FEMALE TO FEMALE  
NPT CONNECTOR**

Ordering Information	Face Seal Size	L		C		d		F	W	T Tube O.d.	T Thread Size	P NPT-F
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
P-FCF-1/4 X 1/4	1/4	45.0	1.77	23.4	0.92	4.6	0.18	3/4	3/4	1/4	9/16 - 18	1/4
P-FCF-1/2 X 1/2	1/2	54.8	2.16	26.4	1.04	10.2	0.40	1 1/16	1 1/16	1/2	7/8 - 14	1/2

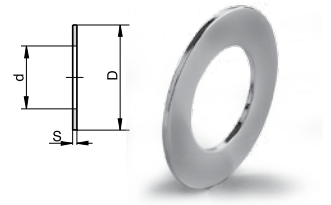
FHTL

**FEMALE TO  
LET-LOK CONNECTOR**

Ordering Information	Face Seal Size	L		C		d		F	W	H	T Tube O.D.	T1 Tube O.D.	T2 Thread Size
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch	inch
P-FHTL-1/4 X 1/4	1/4	49.3	1.94	17.8	0.70	4.6	0.18	1/2	3/4	9/16	1/4	1/4	9/16 - 18
P-FHTL-1/2 X 1/2	1/2	56.6	2.23	21.8	0.86	10.2	0.40	13/16	1 1/16	7/8	1/2	1/2	7/8 - 14

Dimensions are for reference only, and are subject to change without notice.  
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

## GA GASKET



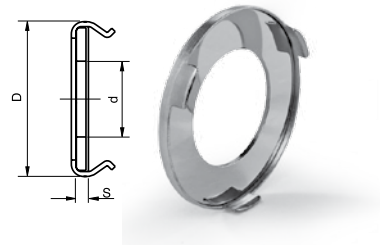
### UNPLATED GASKETS

Ordering Information	Face Seal Size	D		d		S	
	inch	mm	inch	mm	inch	mm	inch
GA-1/4 - E	1/4	11.9	0.47	5.6	0.22	0.7	0.028
GA-1/2 - E	1/2	19.8	0.78	11.2	0.44	0.7	0.028

### SILVER PLATED GASKETS

Ordering Information	Face Seal Size	D		d		S	
	inch	mm	inch	mm	inch	mm	inch
GA-1/4 SILVER PLATED	1/4	11.9	0.47	5.6	0.22	0.7	0.028
GA-1/2 SILVER PLATED	1/2	19.8	0.78	11.2	0.44	0.7	0.028
GA-3/4 SILVER PLATED	3/4	29.0	1.14	16.8	0.66	0.7	0.028
GA-1 SILVER PLATED	1	35.6	1.40	22.6	0.89	0.7	0.028

## GA-RT RETAINED GASKET



### UNPLATED RETAINED GASKETS

Ordering Information	Face Seal Size	D		d		S	
	inch	mm	inch	mm	inch	mm	inch
GA-1/4 -RT- E	1/4	12.7	0.50	6.1	0.24	0.7	0.028
GA-1/2 -RT- E	1/2	20.1	0.79	11.1	0.44	0.7	0.028

### SILVER PLATED RETAINED GASKETS

Ordering Information	Face Seal Size	D		d		S	
	inch	mm	inch	mm	inch	mm	inch
GA-1/4-RT SILVER PLATED	1/4	12.7	0.50	6.1	0.24	0.7	0.028
GA-1/2-RT SILVER PLATED	1/2	20.1	0.79	11.1	0.44	0.7	0.028
GA-3/4-RT SILVER PLATED	3/4	29.0	1.14	16.8	0.66	0.7	0.028
GA-1-RT SILVER PLATED	1	35.6	1.40	22.6	0.89	0.7	0.028

### HOW TO ORDER:

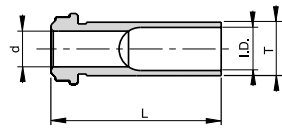
Example:

SS	-	GA-1/4
<b>Material Description</b>		
SS - Stainless Steel		
NI - Nickel		

Dimensions are for reference only, and are subject to change without notice. When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 157).

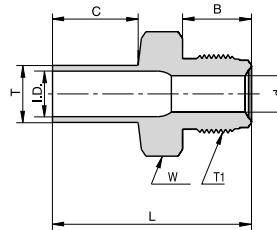
All orders should include the material description and ordering information (see product table).

HGL

**LONG HIGH FLOW GLAND**

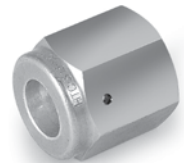
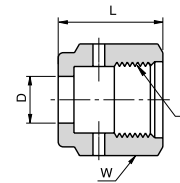
Ordering Information	Face Seal Size	L		d		T	I.D.	
	inch	mm	inch	mm	inch	inch	mm	inch
V-HGL-3/8 - 0.6	1/4	15.2	0.60	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.13	1/4	28.7	1.13	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.19	1/4	30.2	1.19	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.31	1/4	33.3	1.31	6.4	0.25	3/8	7.7	0.30

HMT

**HIGH FLOW MALE TO TUBE**

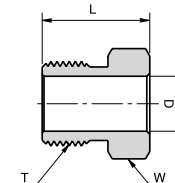
Ordering Information	Face Seal Size	L		B		C		d		W	T	T1	I.D.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	mm	inch
P- HMT 1/4	1/4	42.7	1.68	15.8	0.62	19.1	0.75	6.4	0.25	5/8	3/8	9/16 - 18	7.7	0.30

HNF

**HIGH FLOW FEMALE NUT**

Ordering Information	Face Seal Size	L		D		W	T
	inch	mm	inch	mm	inch	inch	inch
P - HNF 1/4	1/4	20.6	0.81	10.0	0.39	3/4	9/16 - 18

HNM

**HIGH FLOW MALE NUT**

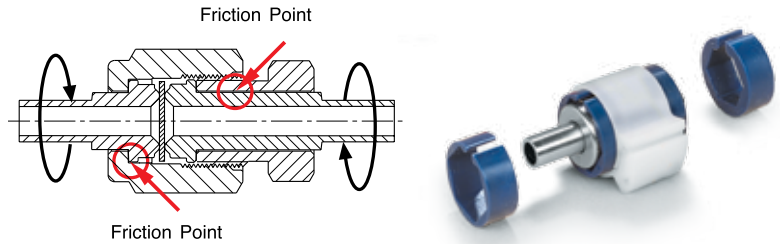
Ordering Information	Face Seal Size	L		D		T	W
	inch	mm	inch	mm	inch	inch	inch
P - HNM 1/4	1/4	18.0	0.71	10.0	0.39	9/16 - 18	5/8

Dimensions are for reference only, and are subject to change without notice.

When ordering, be sure to add the Surface-Finish Designator (either H or E) to the Part Number. (See Material Table, page 157).

# GRIPKIT

Gripkit is a patented product designed to help preventing potential leaks in metal-gasket face-seal fittings. The Gripkit is designed for use with critical, semiconductor-industry ultra-pure and high-purity gas applications, as well as vacuum delivery systems. The product is color coded for easy identification within the system and is engineered to be used with the fitting components of most major manufacturers.



MATERIAL Gripkit® consists of three components:		
Part Number	Description	Material
GK-NY-M4	5/8" Hex male crescent adapter	Blue Nylon
GK-NY-F4	3/4" Hex female crescent adapter	Blue Nylon
GK-1-CL-WH	White color coded clamp	Acetyl
GK-1-CL-BL	Blue color coded clamp	Acetyl
GK-1-CL-YL	Yellow color coded clamp	Acetyl
GK-1-CL-RD	Red color coded clamp	Acetyl
GK-1-CL-GR	Green color coded clamp	Acetyl



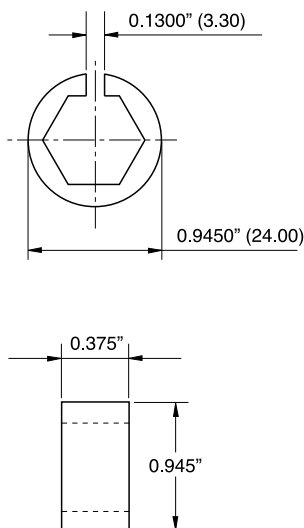
## HOW IT WORKS

The Gripkit® fixes the position of the male nut relative to the female nut, and therefore, the distance between the two sealing glands. Consequently, when torque is applied to either side of the fitting connection, it does not cause the nuts to rotate in opposition and lose their compression on the gasket. In extreme cases, when very high torque is applied to the fitting joint, the glands may rotate within the fixed nuts, but the connector will remain intact. Gripkit will prevent the kind of catastrophic leak that results from the loss of gland compression on the gasket.

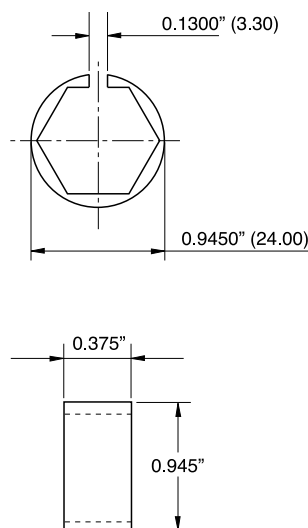
## WHY USE GRIPKIT ?

When pipe fitters, maintenance technicians and operators work on gas distribution systems, they can accidentally "torque" the system, causing fittings down-line to come apart. Most veteran gas system engineers recognize this common phenomenon. Another widespread problem occurs when a fitting connection "shakes apart" because it is mounted on, or near, vibrating equipment. Sources of system vibration include pumps, motors, pneumatic actuators, as well as mobile equipment. Gripkit® offers a very inexpensive solution to these real and potentially costly problems.

### 1" x 5/8" CRESCENT SECTION



### 1" x 3/4" CRESCENT SECTION



### 1" CLAMP SECTION

