

HI-TECH COMPONENTS

HTC



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 to reduce the risk of galling and to improve the remakeability of the fitting. This high-quality plating also reduces the torque required for 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
HTC Face Seal Fittings	SS316L	1000	538
	SS316L Var or Vim / Var ⁽¹⁾	1000	538
HTC Welding Fittings	SS316L	1000	538
	SS316L Var or Vim / Var ⁽¹⁾	1000	538
HTC Gaskets	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 3x10⁻¹⁰ std cm³/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

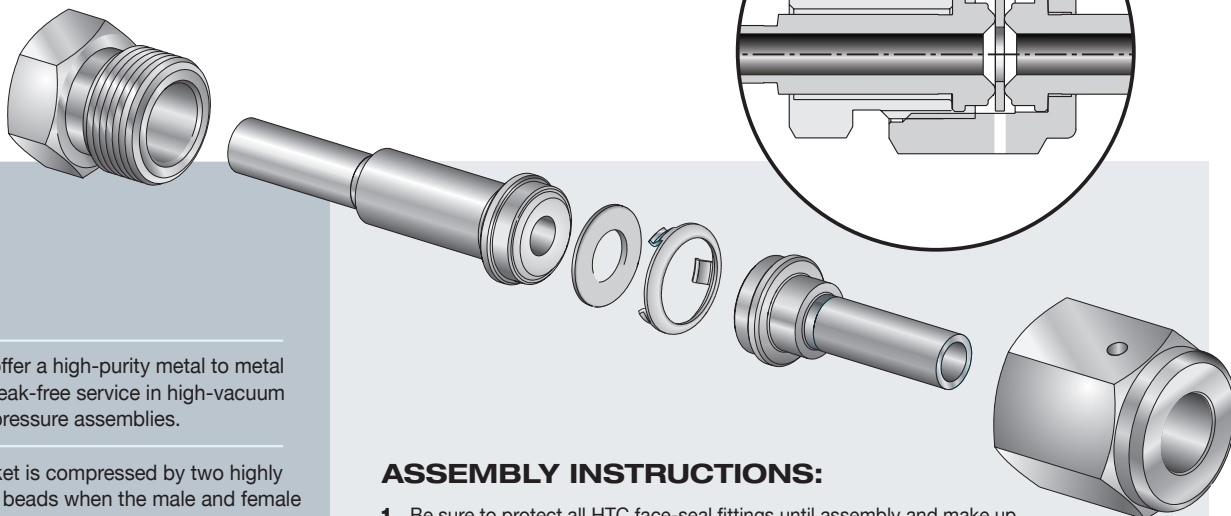
Products	Material	Size	Wall Thickness	Pressure Rating	
				psig	bar
HTC Fittings	316L or 316LV	1/8	0.028	8550	590
		1/4	0.035	5200	359
		3/8	0.035	3350	231
		1/2	0.049	3750	259
		3/4*	0.065	3350	231
		3/4*	0.049	2400	165
		1*	0.065	2400	165

* 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.

⁽¹⁾ 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 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 make up and assembly of high-purity fittings and applications.
3. Make up instructions:
Tighten the female nut to the male nut/body finger tight.
Tighten the female nut 1/8 turn past finger tight.
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.

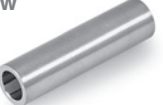


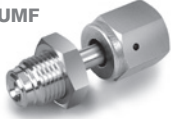
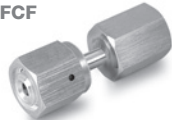
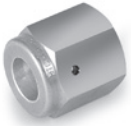
GRIPKIT ordering information
See page 174

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		MINI ELBOW 153 45° Without shoulder ME-45°-W 		MINI ELBOW 154 With extended leg Without shoulder MEX-W 		LONG WELD SHAPED CONNECTORS	
LONG GLAND 148 Without shoulder GL-W 	LONG GLAND 148 With shoulder GL-S 	MINI TEE 154 Without shoulder MT-W 	MINI TEE REDUCER 155 Without shoulder MTR-W 	ELBOW 159 Without shoulder EW-W 	TEE 159 Without shoulder TW-W 		
MALE GLAND 149 Without shoulder GM-W 	SHORT GLAND 149 Without shoulder GS-W 	MINI CROSS 155 Without shoulder MC-W 	MINI TRI-EL 156 Without shoulder MTB-W 	TEE REDUCER 160 Without shoulder TWR-W 	CROSS 160 Without shoulder CW-W 		
SHORT GLAND 150 With shoulder GS-S 	MINI SHORT GLAND 150 Without shoulder MGS-W 	REDUCING UNION 156 Without shoulder RU-W 	SHAPED UNIONS		REDUCER 161 Without shoulder RW-W 	BUTTWELD UNION 161 Without shoulder UB-W 	
MINI SHORT GLAND 151 With shoulder MGS-S 	GLAND ADAPTER TO LET-LOK 151 AG 				BUTTWELD UNION 162 With shoulder UB-S 	BUTTWELD UNION 162 With locator and shoulder UBL-S 	
MALE GLAND 151 Short tube without shoulder MG-W 	SOCKET WELD GLAND 152 GSW 	ELBOW UNION 157 EU 	TEE UNION 157 TU 	THREADED STRAIGHT CONNECTORS			
MINI BUTTWELDS		CROSS UNION 158 CU 	MALE ELBOW 158 EM 	MALE UNION 163 UM 	MALE TO MALE NPT CONNECTOR 163 CM 		
MINI ELBOW 152 Without shoulder ME-W 	MINI ELBOW REDUCER 153 Without shoulder MER-W 			MALE REDUCING UNION 164 RUM 	BULKHEAD UNION 164 BU 		

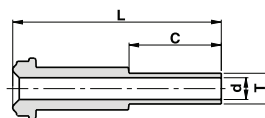
SHORT BULKHEAD UNION SBU 164 	MALE TO NPT BULKHEAD CONNECTOR BCM 165 	MALE PLUG MP 169 	MALE NUT NM 169 	HIGH FLOW CONNECTORS													
MALE TO SEAL O-RING CONNECTOR CMOB 165 	MALE TO FEMALE NPT CONNECTOR FC 165 	TAPERED MALE NUT TNM 169 	SHORT MALE NUT SNM 170 			LONG HIGH FLOW GLAND HGL 173 	HIGH FLOW MALE TO TUBE HMT 173 										
MALE TO LET-LOK UNION UGL 166 	MALE TO BULKHEAD LET-LOK UNION BUL 166 	SWIVEL CONNECTORS		HIGH FLOW FEMALE NUT HNF 173 	HIGH FLOW MALE NUT HNM 173 												
MALE TO SHORT BULKHEAD LET-LOK UNION SBUL 166 	BULKHEAD TO TUBE UNION Without shoulder BHUT-W 167 			FEMALE TO MALE UNION UMF 170 	FEMALE TO MALE NPT CONNECTOR MCF 170 	ORDERING INFORMATION											
SHORT BULKHEAD TO TUBE UNION Without shoulder SBHUT-W 167 		FEMALE TO FEMALE UNION UFF 171 	FEMALE TO FEMALE NPT CONNECTOR FCF 171 	V - GL - 1/2 - W - E													
CAPS, NUTS & PLUGS		FEMALE TO LET-LOK CONNECTOR FHTL 171 		Type of Fitting Designator Size Designator <table border="1"> <tr><td>1/8</td><td>6 mm</td></tr> <tr><td>1/4</td><td>8 mm</td></tr> <tr><td>3/8</td><td>10 mm</td></tr> <tr><td>1/2</td><td>12 mm</td></tr> <tr><td>3/4</td><td>18 mm</td></tr> <tr><td>1</td><td></td></tr> </table>	1/8	6 mm	1/4	8 mm	3/8	10 mm	1/2	12 mm	3/4	18 mm	1		Surface Level Designator To indicate the desired level of polish, please add "E" or "H" to the part Number: E - With Electropolish H - Without Electropolish
1/8	6 mm																
1/4	8 mm																
3/8	10 mm																
1/2	12 mm																
3/4	18 mm																
1																	
COUPLING CP 167 	DOUBLE FEMALE UNION DFU 168 	GASKETS		End Designator S - With Shoulder W - Without Shoulder													
FEMALE NUT NF 168 	FEMALE CAP CF 168 			Material Designator <table border="1"> <tr><td>P</td><td>- 316L/316L VOD (AOD)</td></tr> <tr><td>V</td><td>- SS316L Var or Vim/Var⁽¹⁾</td></tr> <tr><td>LM</td><td>- Low Manganese</td></tr> <tr><td>H</td><td>- Hastelloy</td></tr> <tr><td>*NI</td><td>- Nickel</td></tr> <tr><td>*SS</td><td>- Stainless Steel</td></tr> </table>	P	- 316L/316L VOD (AOD)	V	- SS316L Var or Vim/Var ⁽¹⁾	LM	- Low Manganese	H	- Hastelloy	*NI	- Nickel	*SS	- Stainless Steel	
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*NI	- Nickel																
*SS	- Stainless Steel																
		GASKET GA 172 	RETAINED GASKET GA-RT 172 	* For Gaskets only													

⁽¹⁾ Per SEMI F20-0305

GL-W

LONG GLAND

Without shoulder

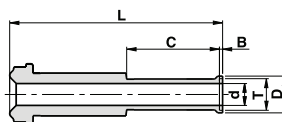


Ordering Information	Face Seal size	L		C		d		T Tube O.D	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-GL-1/8-W	1/8	36.1	1.42	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GL-1/4 X 1/8-W	1/4	36.1	1.42	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GL-1/4-W	1/4	43.2	1.70	19.1	0.75	4.6	0.18	1/4"	-	0.035
V-GL-3/8-W	1/2	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



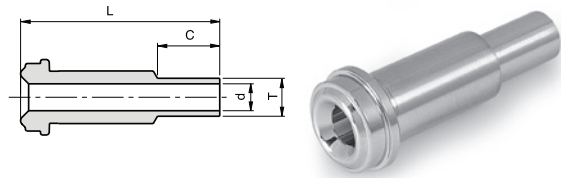
Ordering Information	Face Seal size	L		C		d		B		D		T Tube O.D	W.T.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch/mm	mm	inch
V-GL-1/4-S	1/4	43.7	1.72	19.1	0.75	4.6	0.18	0.6	0.02	7.4	0.29	1/4"	-	0.035
V-GL-3/8-S	1/2	46.2	1.82	19.1	0.75	7.7	0.30	0.8	0.03	10.4	0.41	3/8"	-	0.035
V-GL-1/2-S	1/2	46.5	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 145).

GM-W**MALE GLAND**

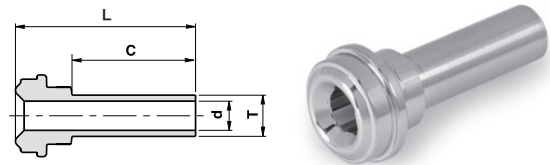
Without shoulder



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



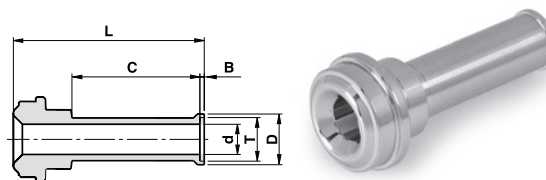
Ordering Information	Face Seal size	L		C		d		T	W.T.	
	inch	mm	inch	mm	inch	mm	inch	Tube O.D inch / mm	mm	inch
V-GS-1/8-W	1/8	27.4	1.08	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GS-1/4-W	1/4	27.9	1.10	19.1	0.75	4.6	0.18	1/4"	-	0.035
V-GS-1/4 X 1/8 -W	1/4	27.9	1.10	19.1	0.75	1.9	0.07	1/8"	-	0.028
V-GS -1/4-W 0.72	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 145).

GS-S**SHORT GLAND**

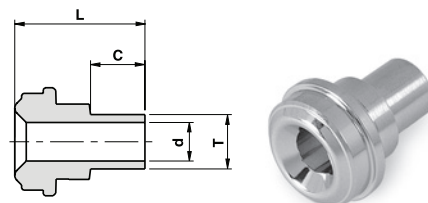
With shoulder



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	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



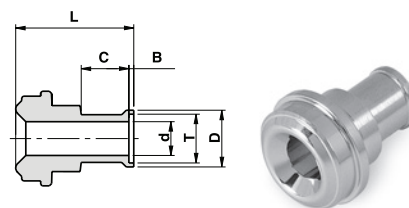
Ordering Information	Face Seal size	L		C		d		T Tube O.D	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MGS-1/4-W	1/4	15.2	0.60	6.4	0.25	4.6	0.18	1/4"	-	0.035
V-MGS-3/8-W	1/2	15.8	0.62	6.4	0.25	7.7	0.30	3/8"	-	0.035
V-MGS-1/2-W	1/2	15.8	0.62	6.4	0.25	10.2	0.40	1/2"	-	0.049
V-MGS-1/2-W W.T.=0.065	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.

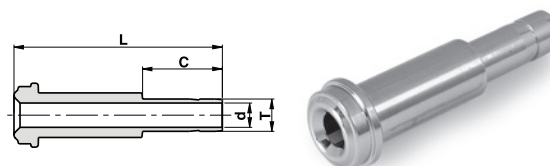
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

MGS-S**MINI SHORT GLAND**

With shoulder



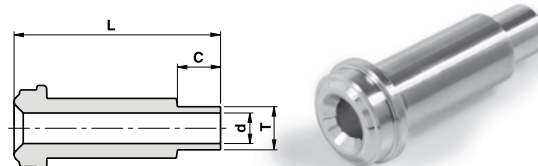
Ordering Information	Face Seal size	L		C		d		B		D		T Tube O.D	W.T.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MGS-1/4-S	1/4	15.8	0.62	6.4	0.25	4.6	0.18	0.6	0.02	7.4	0.29	1/4"	-	0.035
V-MGS-3/8-S	1/2	16.5	0.65	6.4	0.25	7.7	0.30	0.8	0.03	10.4	0.41	3/8"	-	0.035
V-MGS-1/2-S	1/2	16.8	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 Tube O.D
	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



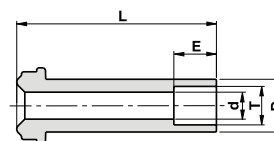
Ordering Information	Face Seal size	L		C		d		T Tube O.D	W.T.	
	inch	mm	inch	mm	inch	mm	inch	inch / mm	mm	inch
V-MG-1/4-W	1/4	30.5	1.20	6.4	0.25	4.6	0.18	1/4"	-	0.035
V-MG-1/4-W 1.32	1/4	33.5	1.32	9.6	0.38	4.6	0.18	1/4"	-	0.035
V-MG-3/8-W	1/2	32.8	1.29	6.4	0.25	7.7	0.30	3/8"	-	0.035
V-MG-1/2-W	1/2	32.8	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 145).

GSW

SOCKET WELD GLAND

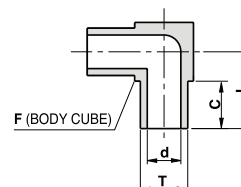


Ordering Information	Face Seal size	L		d		E		D		T
	inch	mm	inch	mm	inch	mm	inch	mm	inch	Tube O.D. inch
V-GSW-1/8	1/8	17.8	0.70	2.4	0.09	2.5	0.10	5.1	0.20	1/8
V-GSW-1/4	1/4	33.3	1.31	4.6	0.18	7.1	0.28	8.9	0.35	1/4
V-GSW-1/4-W-0.75"	1/4	19.1	0.75	4.6	0.18	7.1	0.28	8.9	0.35	1/4
V-GSW-1/4-W-0.50"	1/4	12.7	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	Tube O.D. 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	-

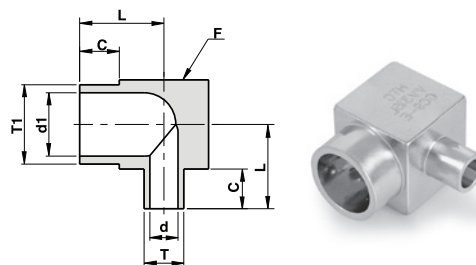
Dimensions are for reference only, and are subject to change without notice.

When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

MER-W

MINI ELBOW REDUCER

Without shoulder

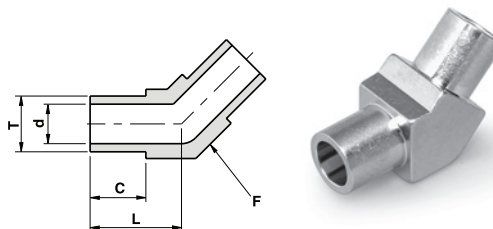


Ordering Information	L		C		d1		d		F	T1 Tube O.D	W.T. (T1)		T Tube O.D	W.T. (T)	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch	inch/mm	mm	inch
V-MER-1/4 X 1/8-W	10.3	0.41	6.4	0.25	4.6	0.18	1.9	0.07	5/16	1/4"	-	0.035	1/8"	-	0.028
V-MER-3/8 X 1/4-W	11.9	0.47	6.4	0.25	7.7	0.30	4.6	0.18	7/16	3/8"	-	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



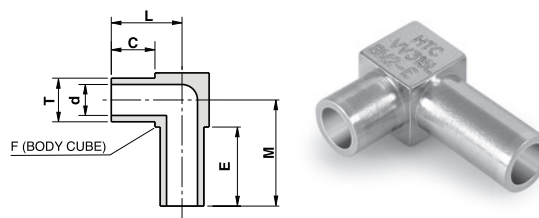
Ordering Information	L		C		d		F	T Tube O.D	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-ME-1/4-W-45DEG	10.3	0.41	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-ME-3/8-W-45DEG	11.9	0.47	6.4	0.25	7.7	0.30	7/16	3/8"	-	0.035
V-ME-1/2-W-45DEG	13.5	0.53	6.4	0.25	10.2	0.40	9/16	1/2"	-	0.049
V-ME-1/2-W-45DEG 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 145).

MEX-W**MINI ELBOW**

With extended leg

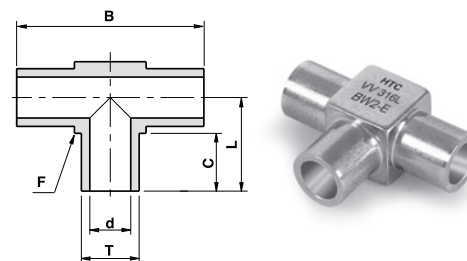
Without shoulder



Ordering Information	L		C		M		E		d		F	T Tube O.D	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

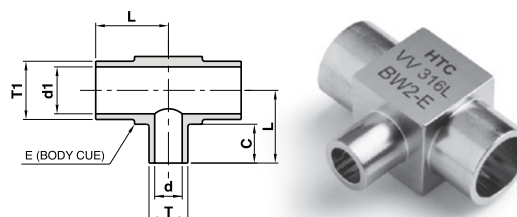


Ordering Information	L		B		C		d		F	T Tube O.D	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch / mm	mm	inch
V-MT-1/8-W	10.3	0.41	20.7	0.81	6.4	0.25	1.9	0.07	5/16	1/8"	-	0.028
V-MT-1/4-W	10.3	0.41	20.7	0.81	6.4	0.25	4.6	0.18	5/16	1/4"	-	0.035
V-MT-3/8-W	11.9	0.47	23.9	0.94	6.4	0.25	7.7	0.30	7/16	3/8"	-	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 145).

MTR-W**MINI TEE REDUCER**

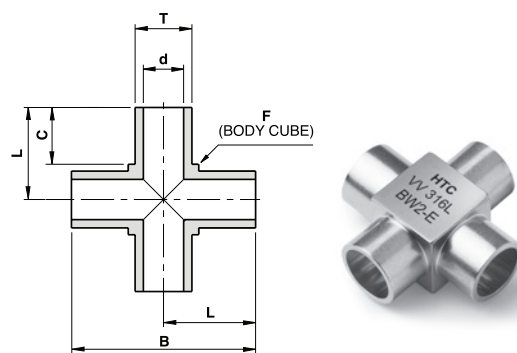
Without shoulder



Ordering Information	L		B		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	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**

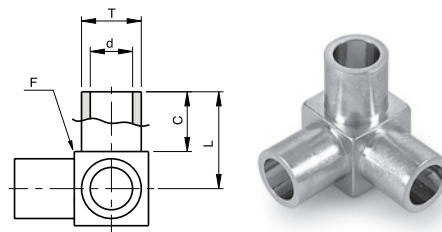
Without shoulder



Ordering Information	L		B		C		d		F	T Tube O.D	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	-

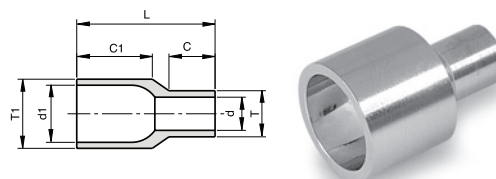
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

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	-

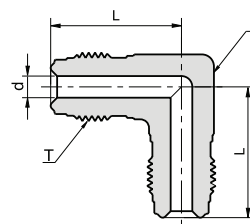
RU-W
REDUCING UNION
Without shoulder



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	-

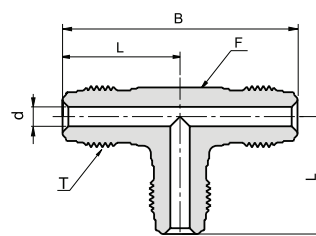
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

EU ELBOW UNION



Ordering Information	Face Seal size	L		d		F	T Thread Size
		inch	mm	inch	mm		
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

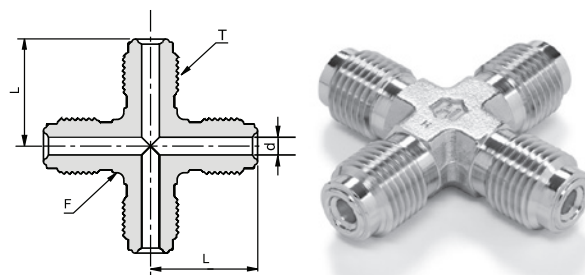
TU TEE UNION



Ordering Information	Face Seal size	L		B		d		F	T Thread Size
		inch	mm	inch	mm	inch	mm		
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

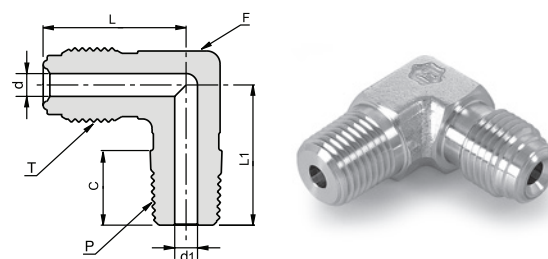
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

CU CROSS UNION



Ordering Information	Face Seal size	L		d		F	T
	inch	mm	inch	mm	inch	inch	Thread Size
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



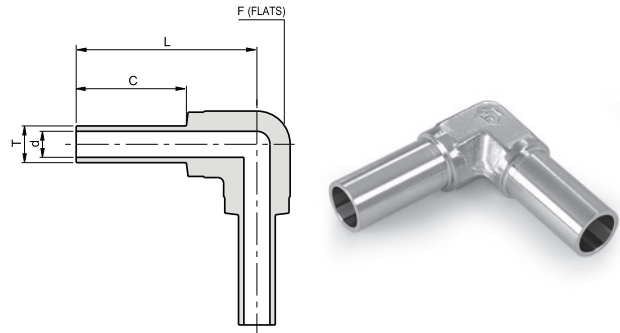
Ordering Information	Face Seal size	L		L1		C		d		d1		F	T	P
	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	Thread Size	NPT-M
P-EM-1/4 X 3/8	1/4	27.2	1.07	22.1	0.87	9.6	0.38	4.6	0.18	4.6	0.18	1/2	9/16-18	1/8
P-EM-1/4 X 1/4	1/4	27.2	1.07	26.7	1.05	14.2	0.56	4.6	0.18	4.6	0.18	1/2	9/16-18	1/4
P-EM-1/4 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 145).

EW-W

ELBOW

Without shoulder

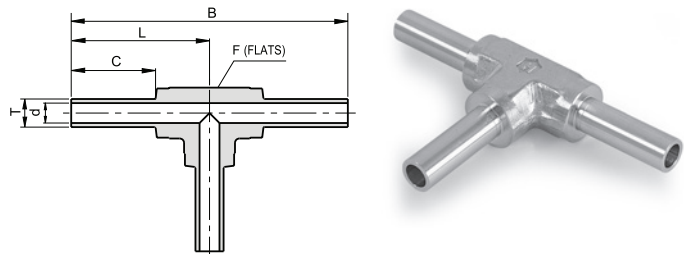


Ordering Information	L		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch
P-EW-1/4-W	31.2	1.23	19.1	0.75	4.6	0.18	7/16	1/4"	-	0.035
P-EW-3/8-W	30.5	1.20	19.1	0.75	7.7	0.30	7/16	3/8"	-	0.035
P-EW-1/2-W	34.0	1.34	19.1	0.75	10.2	0.40	11/16	1/2"	-	0.049
P-EW-1/2-W W.T.=0.065	34.0	1.34	19.1	0.75	9.5	0.37	11/16	1/2"	-	0.049
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"	-	0.065
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

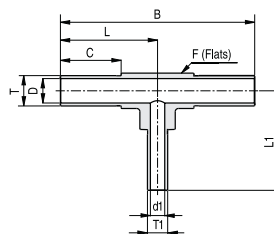


Ordering Information	L		B		C		d		F	T	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch/mm	mm	inch
P-TW-1/4-W	31.2	1.23	62.5	2.46	19.1	0.75	4.6	0.18	7/16	1/4"	-	0.035
P-TW-3/8-W	30.5	1.20	61.0	2.40	19.1	0.75	7.7	0.30	7/16	3/8"	-	0.035
P-TW-1/2-W	34.0	1.34	68.1	2.68	19.1	0.75	10.2	0.40	11/16	1/2"	-	0.049
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"	-	0.065
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 145).

TWR-W**TEE REDUCER**

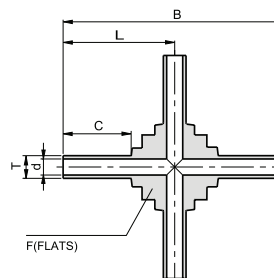
Without shoulder



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



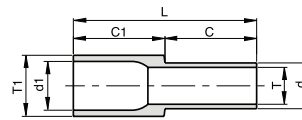
Ordering Information	L		B		C		d		F	T Tube O.D.	W.T.	
	mm	inch	mm	inch	mm	inch	mm	inch	inch/mm	inch/mm	mm	inch
P-CW-1/4-W	31.2	1.23	62.5	2.46	19.1	0.75	4.6	0.18	17mm	1/4"	-	0.035
P-CW-3/8-W	30.5	1.20	61.0	2.40	19.1	0.75	7.7	0.30	17mm	3/8"	-	0.035
P-CW-1/2-W	31.0	1.22	62.0	2.44	19.1	0.75	10.2	0.40	17mm	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 145).

RW-W**REDUCER**

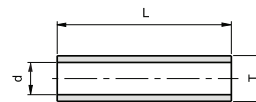
Without shoulder



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

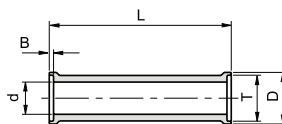


Ordering Information	L		d		T Tube O.D	W.T.
	mm	inch	mm	inch	inch	inch
V-UB-1/4-W	24.3	0.96	4.6	0.18	1/4	0.035
V-UB-3/8-W	23.9	0.94	7.7	0.30	3/8	0.035
V-UB-1/2-W	23.4	0.92	10.2	0.40	1/2	0.049
P-UB-3/4-W W.T.=0.049	23.4	0.92	16.6	0.65	3/4	0.049
P-UB-3/4-W W.T.=0 .065	23.4	0.92	15.8	0.62	3/4	0.065
P-UB-1-W 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 145).

UB-S**BUTTWELD UNION**

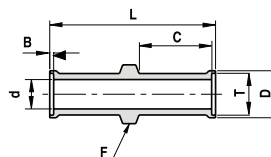
With shoulder



Ordering Information	L		d		B		D		T Tube O.D.	W.T.
	mm	inch	mm	inch	mm	inch	mm	inch	inch	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

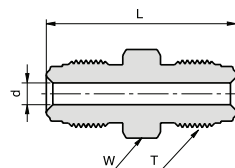


Ordering Information	L		C		d		B		D		F		T Tube O.D.	W.T.
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch
V-UBL-1/4-S	42.9	1.69	19.1	0.75	4.6	0.18	0.6	0.02	7.4	0.29	9.1	0.36	1/4	0.035
V-UBL-3/8-S	43.4	1.71	19.1	0.75	7.7	0.30	0.8	0.03	10.4	0.41	10.7	0.42	3/8	0.035
V-UBL-1/2-S	43.9	1.73	19.1	0.75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

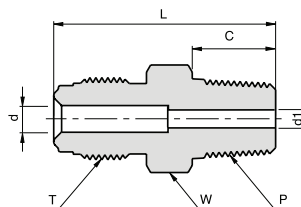
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

UM MALE UNION



Ordering Information	Face Seal size	L		d		W	T Thread size
	inch	mm	inch	mm	inch	inch	inch
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

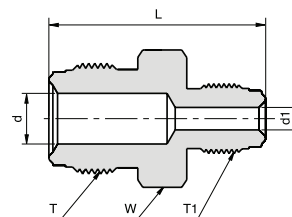
CM MALE TO MALE NPT CONNECTOR



Ordering Information	Face Seal size	L		C		d		d1		W	T Thread size	P NPT-M
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
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

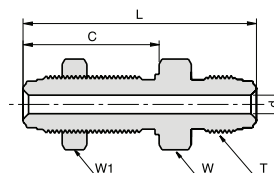
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

RUM MALE REDUCING UNION



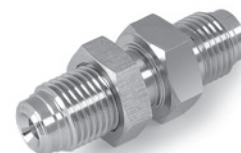
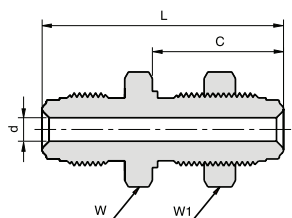
Ordering Information	Face Seal size	Face Seal Size1	L		d		d1		W	T Thread size	T1 Thread size
	inch	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
P-RUM 1/4 X 1/8	1/4	1/8	34.8	1.37	4.6	0.18	2.4	0.09	5/8	9/16-18	5/16-24
P-RUM 1/2 X 1/4	1/2	1/4	43.4	1.71	10.2	0.40	4.6	0.18	15/16	7/8-1/4	9/16 -18

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

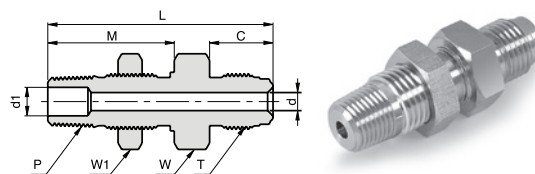


Ordering Information	Face Seal size	L		C		d		W	W1	T Thread size	Panel hole drill size
	inch	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch
P-SBU 1/4	1/4	46.2	1.82	25.1	0.99	4.6	0.18	3/4	3/4	9/16-18	19/32
P-SBU 1/2	1/2	54.4	2.14	28.2	1.11	10.2	0.40	1 1/16	1 1/16	7/8-14	29/32

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 145).

BCM

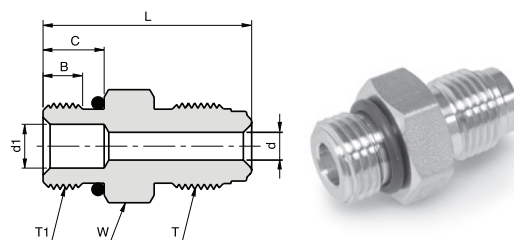
MALE TO NPT BULKHEAD CONNECTOR



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

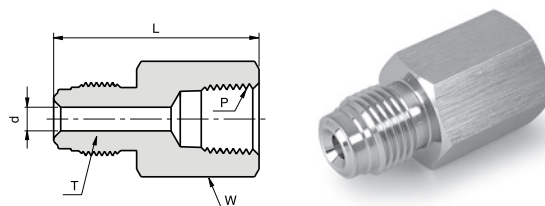
MALE TO SEAL O-RING CONNECTOR



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	
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

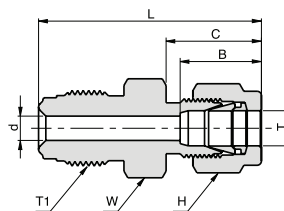


Ordering Information	Face Seal size	L		d		W	T Thread size	P NPT-F
	inch	mm	inch	mm	inch	inch	inch	inch
P-FC 1/4 X 1/8	1/4	35.8	1.41	4.6	0.18	5/8	9/16 -18	1/8
P-FC 1/4 X 1/4	1/4	39.1	1.54	4.6	0.18	3/4	9/16 -18	1/4
P-FC 1/2 X 1/4	1/2	39.1	1.54	10.2	0.40	15/16	7/8 -14	1/4
P-FC 1/2 X 3/8	1/2	44.7	1.76	10.2	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.

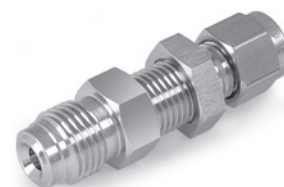
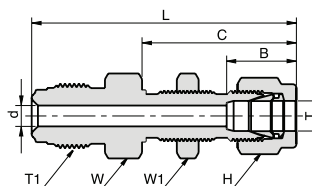
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

UGL MALE TO LET-LOK UNION



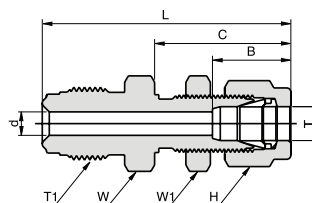
Ordering Information	Face Seal size	L		C		B		d		W	H	T Tube O.D.	T1 Thread size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch
P-UGL 1/4 X 1/8	1/4	38.9	1.53	15.2	0.60	12.7	0.50	4.6	0.18	5/8	7/16	1/8	9/16 - 18
P-UGL 1/4 X 1/4	1/4	41.1	1.62	17.8	0.70	15.2	0.60	4.6	0.18	5/8	9/16	1/4	9/16 - 18
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

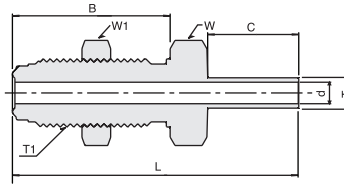


Ordering Information	Face Seal size	L		C		B		d		W	W1	H	T Tube O.D.	T1 Thread size	Panel hole drill size
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch	inch
P-SBUL 1/4 X 1/4	1/4	47.8	1.88	26.7	1.05	15.2	0.60	4.6	0.18	5/8	5/8	9/16	1/4	9/16 - 18	29/64

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 145).

BHUT-W BULKHEAD TO TUBE UNION

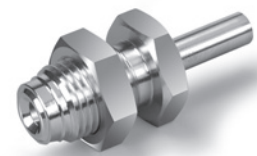
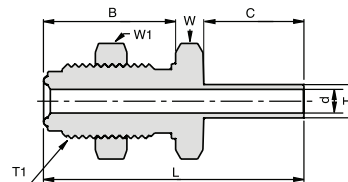
Without shoulder



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

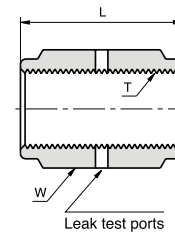
SBHUT-W SHORT BULKHEAD TO TUBE UNION

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

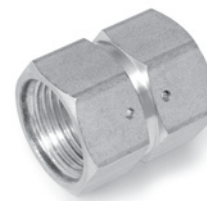
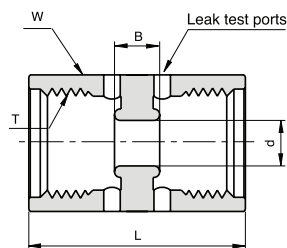
CP COUPLING



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

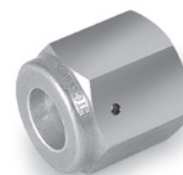
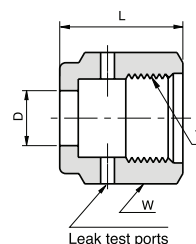
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

DFU DOUBLE FEMALE UNION



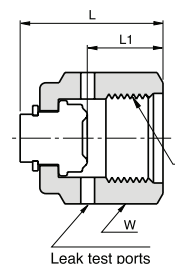
Ordering Information	Face Seal size	L		B		d		W	T Thread size
	inch	mm	inch	mm	inch	mm	inch	inch	inch
P-DFU-1/4	1/4	30.2	1.19	6.0	0.24	6.4	0.25	3/4	9/16 - 18
P-DFU-1/2	1/2	33.3	1.31	6.0	0.24	14.0	0.55	1 1/16	7/8 - 14

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

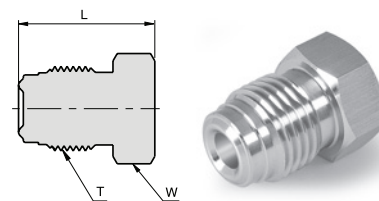


CF FEMALE CAP

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

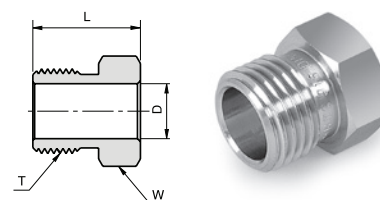
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

MP MALE PLUG



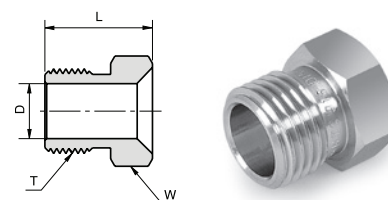
Ordering Information	Face Seal size	L		W	T Thread size
	inch	mm	inch	inch	inch
P-MP 1/8	1/8	17.3	0.68	3/8	5/16 - 24
P-MP 1/4	1/8	23.4	0.92	5/8	9/16 -18
P-MP 1/2	1/2	27.4	1.08	15/16	7/8 -14
P-MP 3/4	3/4	36.3	1.43	1 5/16	1 1/4 -18
P-MP 1	1	38.6	1.52	1 5/8	1 1/2 - 20

NM MALE NUT



Ordering Information	Face Seal size	L		D		W	T Thread size
	inch	mm	inch	mm	inch	inch	inch
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

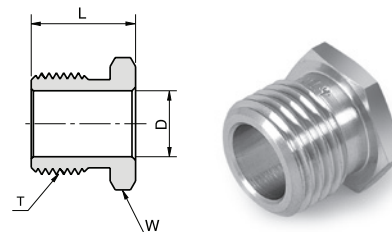
TNM TAPERED MALE NUT



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

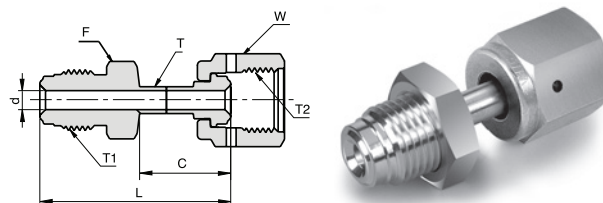
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

SNM SHORT MALE NUT



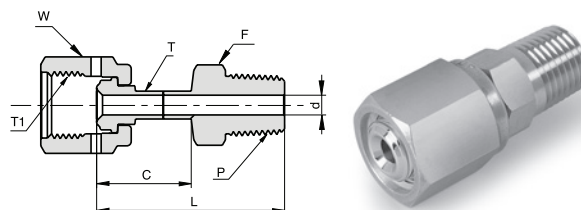
Ordering Information	Face Seal size	L		D		W	T Thread size
	inch	mm	inch	mm	inch	inch	inch
P-SNM 1/4 .54	1/4	13.7	0.54	9.2	0.36	5/8	9/16-18
P-SNM 1/4 .65	1/4	16.5	0.65	9.2	0.36	5/8	9/16-18

UMF FEMALE TO MALE UNION



Ordering Information	Face Seal size	L		C		d		F	W	T Tube O.D.	T1 Thread size	T2 Thread size
	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

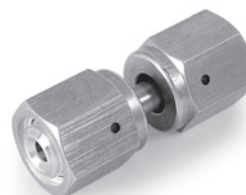
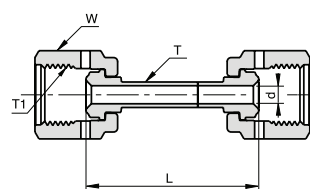
MCF FEMALE TO MALE NPT CONNECTOR



Ordering Information	Face Seal size	L		C		d		F	W	T Tube O.D.	T1 Thread size	P NPT-M
	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	inch	inch
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

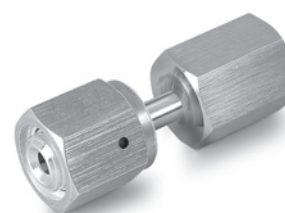
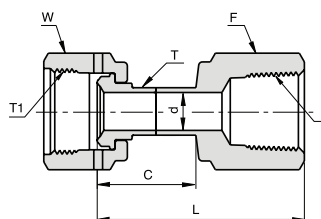
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

UFF FEMALE TO FEMALE UNION



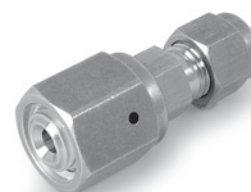
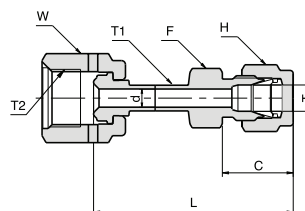
Ordering Information	Face Seal size	L		d		W	T Tube O.D.	T1 Thread size
	inch	mm	inch	mm	inch	inch	inch	inch
P-UFF-1/4 X 1/4	1/4	43.0	1.69	4.6	0.18	3/4	1/4	9/16 - 18
P-UFF-1/2 X 1/2	1/2	44.1	1.73	10.2	0.40	1 1/16	1/2	7/8 - 14

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

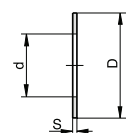
FHTL FEMALE TO LET-LOK CONNECTOR



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 145).

GA GASKET



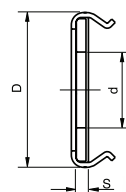
UNPLATED GASKETS

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

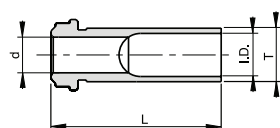
Ordering Information	Face Seal size	D		d		S	
	inch	mm	inch	mm	inch	mm	inch
GA-1/4 -RT- E	1/4	12.7	0.50	6.1	0.24	0.7	0.028
GA-1/2 -RT- E	1/2	20.1	0.79	11.1	0.44	0.7	0.028

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

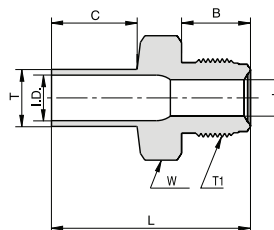
Dimensions are for reference only, and are subject to change without notice.
When ordering, be sure to add the Surface-Finish Designator (either H or E) to the part Number. (See Material Table, page 145).

HGL LONG HIGH FLOW GLAND



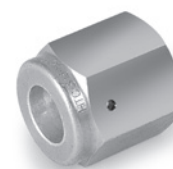
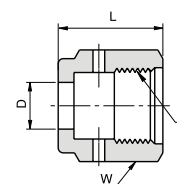
Ordering Information	Face Seal size	L		d		T Tube O.D	I.D.	
	inch	mm	inch	mm	inch	inch	mm	inch
V-HGL-3/8 - 0.6	1/4	15.2	0.60	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.13	1/4	28.7	1.13	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.19	1/4	30.2	1.19	6.4	0.25	3/8	7.7	0.30
V-HGL-3/8 - 1.31	1/4	33.3	1.31	6.4	0.25	3/8	7.7	0.30

HMT HIGH FLOW MALE TO TUBE



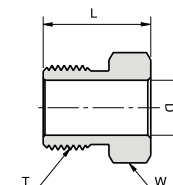
Ordering Information	Face Seal size	L		B		C		d		W	T Tube O.D.	T1 Thread size	I.D.	
	inch	mm	inch	mm	inch	mm	inch	mm	inch	inch	inch	inch	mm	inch
P- HMT 1/4	1/4	42.7	1.68	15.8	0.62	19.1	0.75	6.4	0.25	5/8	3/8	9/16 - 18	7.7	0.30

HNF HIGH FLOW FEMALE NUT



Ordering Information	Face Seal size	L		D		W	T Thread size
	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

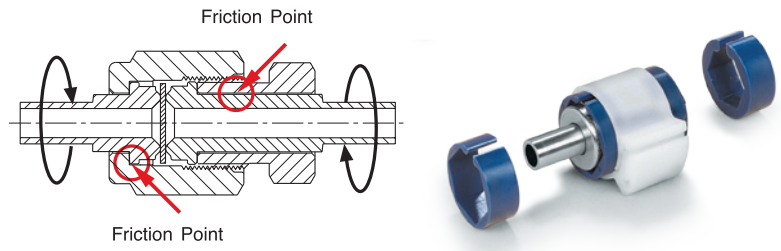


Ordering Information	Face Seal size	L		D		T Thread size	W
	inch	mm	inch	mm	inch	inch	inch
P - HNM 1/4	1/4	18.0	0.71	10.0	0.39	9/16 - 18	5/8

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 145).

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



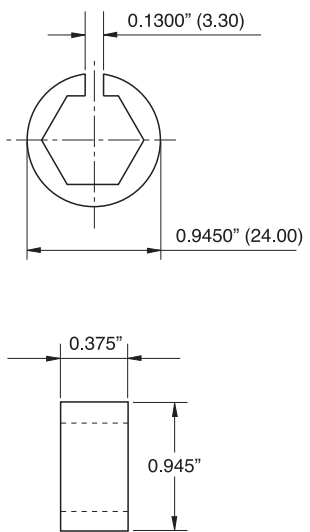
HOW IT WORKS

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.

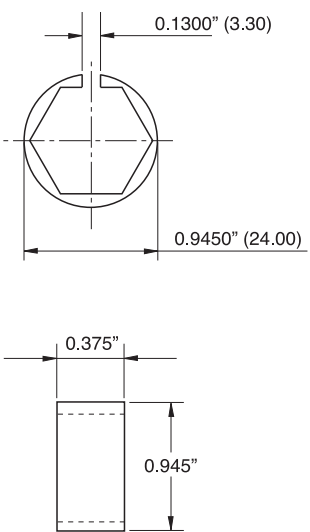
WHY USE GRIPKIT®?

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

