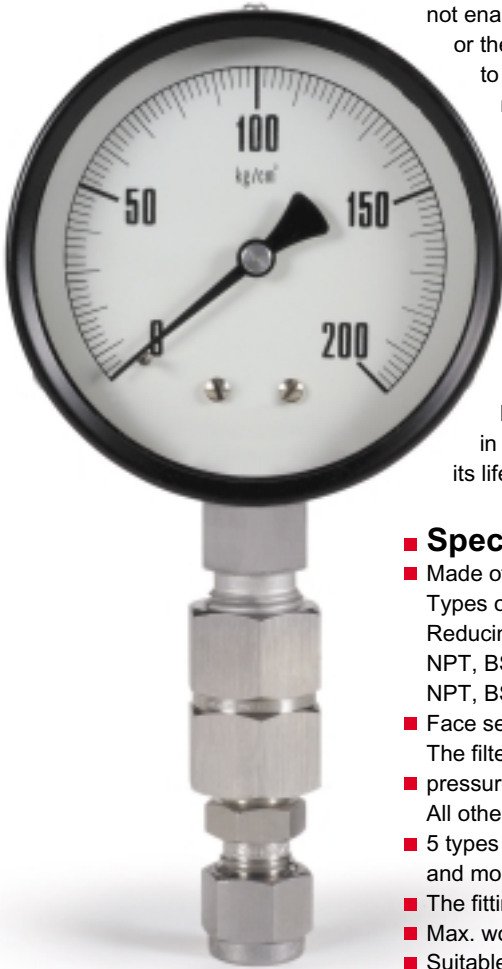


HAM-LET PROTECTOR FITTING

Ham-Let's Protector Fitting protects instruments and pressure gauges from sudden rises in pressure, a phenomenon that has a negative impact on the instrument's operation and accuracy. This fitting does not enable penetration of contaminants from the gas or the fluid of the hydraulic or pneumatic systems to the expensive and accurate control instrument mechanism, causing its malfunction.



Note: This Protector Fitting is not a substitute for a filter, only a protector of the control instruments.

In systems with contaminants in the gas/fluid that requires a filter - choose the appropriate filter to the appropriate application from Ham-Let's catalogue, pages

Methods of Operation

The fitting has a sintered filtering element made of st.st. 316. The element is sintered to the fittings body. The pores in the filtering element absorb the pressure hits existing in the hydraulic/pneumatic systems, thus preventing sudden fluctuations in the instrument's mechanism. This operations protects the pressure gauge, lengthen its lifespan and keep its accuracy.

■ Specifications

- Made of st.st. or brass.

Types of ends are: NPT, BSPP, BSPT Male & Female, Reducing NPT, Reducing BSPP, Reducing BSPT Male & Female.

NPT, BSPT, Let-Lok to BSPP.

NPT, BSPT, Face seal HTC connector to BSPP

- Face seal HTC connector GSW Glands.

The filtering element is sintered to the fitting's body, thus enabling work with differential

- pressure of up to 6,000 psi (408 bar) in St.St. fittings 1/8 male Npt.

All other Protector: stated working pressures.

- 5 types of filtering elements, suitable for light gases, up to oil in viscosity of 1,000 SSU and more.

- The fitting's body is made of st.st. 316 or brass.

- Max. working temperature in St.St. 1022°F (550°C), Brass 430°F (220°C).

- Suitable for steam.

The range of the filtering elements - from light gases through oil in viscosity of 1,000 SSU and more.

Table convertor of Viscosity from SSU* to Centistocks

Viscosity in Centistokes	For Viscosities of 32 to 100 Saybolt Universal Seconds: Centistokes = $.2253 \times \text{SUS} - \frac{194.4}{\text{SUS}}$	CS= $.2253 \text{SUS} - \frac{194.4}{\text{SUS}}$
Viscosity in Centistokes	For Viscosities of 100 to 240 Saybolt Universal Seconds: Centistokes = $.2913 \times \text{SUS} - \frac{134.6}{\text{SUS}}$	CS= $.2193 \text{SUS} - \frac{134.6}{\text{SUS}}$
	Centistokes= $\frac{\text{SUS}}{4.635}$	CS= $\frac{\text{SUS}}{4.635}$

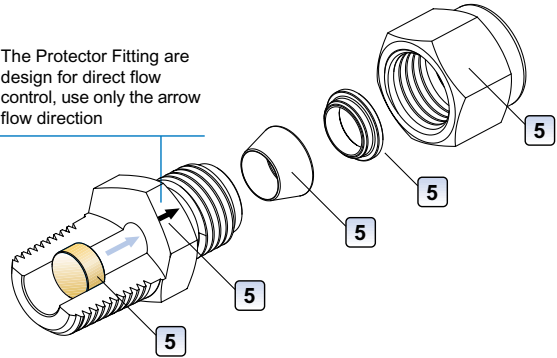
NOTE: Saybolt Universal Seconds is often abbreviated SSU.

Material Of Construction

Item No.	Components	Qty.	Valve Body Material	
			316 St.St.	Brass
1	Nut*	1	St.St. ASTM A-276	Brass ASTM B-16
2	Back ferrule*	1	St.St. ASTM A-276	Brass ASTM B-16
3	Front ferrule*	1	St.St. ASTM A-276	Brass ASTM B-16
4	Body	1	St.St. ASTM A-276	Brass ASTM B-16
5	Filtration Element	1	St.St. ASTM A-276	Brass ASTM B-16

* For Let-Lok end connection only

The Protector Fitting are design for direct flow control, use only the arrow flow direction



Effective Element area by Element Diameter

Effective Diameter		Effective Element Area	
inch	mm	inch ²	mm ²
0.09	2.2	0.065	3.8
0.19	4.8	0.029	18.1
0.28	7.1	0.06	39.6
0.41	10.4	0.13	84.9



Temperature rating

Fitting Material	Element Material	Temperature Max
Brass 316 SS	Brass 316 SS	430°F (220°C) 1022°F (550°C)

Pressure Rating

Calculations based on ASME code for process piping B31.3, at 70°F (20°C)

Maximum Differential Pressure

SS 316 Fitting with 1/8 male NPT: 5300 Psi (365 bar)
all the other protector fittings: stated working pressure

Cracking and Reseal Pressure

Fluid	Average Fluid Flow Estimate L / min*	Element Designator
Light gases from 69 to 79 SUS (13 to 16 CST mm ² /s)	0.05 at 25 psig (1.72 bar)	A
Air-Steam from 75 to 119 SUS (15 to 25 CST mm ² /s)	2.4 at 25 psig (1.72 bar)	B
Water, light oils from 75 to 250 SUS (15 to 54 CST mm ² /s)	3.3 at 25 psig (1.72 bar)	C
Oils from 250 to 1000 (54 to 220 CST mm ² /s)	1.3 at 10 psig (0.69 bar)	D
Oils of 1000 SUS (220 CST mm ² /s) and above	0.9 at 10 psig (0.69 bar)	**E

* The products is tasted with air pressure at 70°F (20°C). The estimated flow is the average flow multiplied by the nominal air / Fluid ratio of the kinematic viscosity.

** Not available in 1/8 & 1/4 in 120H-P.

CLEANING / PACKAGING:

Ham-Let Protector Fittings are treated with Ham-Let Passivation, Cleaning and Packaging (Procedure 8075). Ham-Let Protector Fittings with Face seal end connections are treated with Ham-let Oxygen Cleaning and Packaging (Procedure 8055). Oxygen Cleaning and Packaging for other end connections are available as an option.

TESTING:

The Protector Fittings designs have been tested for Proof, Burst and Leakage.
Every Protector Fittings is factory tested for proper assembly,

PROTECTOR FITTINGS - ORDERING INFORMATION

Example:

*** 768L- P**

- 120H-P** - Adapter NPT Thread
- 120HNR-P** - Adapter NPT to BSPT
- **V-GSW-P** - Gland socket weld
- **MCF-P** - Male NPT connector to female Face seal gland

* NPT/ISO tapered Theard to Let-Lok end connection

** Available in 316L SS Only

SS = Stainless Steel
B = Brass

1/4

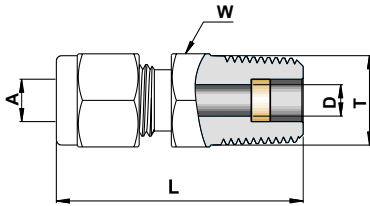
Tube O.D.
The O.D. size is always the first to be described

X 1/4

1/4 NPT

- A

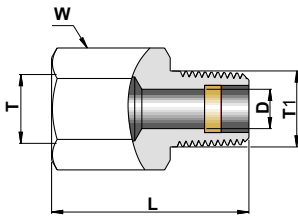
Element Designator



768L-P (NPT Thread) & 768LR-P (*ISO Tapered Thread)

A Tube O.D.		T NPT	T ISO	D		W Width Across Hex		L	
mm	inch	inch	inch	mm	inch	mm	inch	mm	inch
1/8	3.17	1/8	R-1/8	2.28	0.09	11.1	7/16	29.7	1.17
1/4	6.35	1/8	R-1/8	4.82	0.19	12.7	1/2	32.8	1.29
1/4	6.35	1/4	R1/4	4.82	0.19	14.28	9/16	37.9	1.49
1/4	6.35	3/8	R3/8	4.82	0.19	11/16	17.46	38.4	1.51
3/8	9.52	3/8	R3/8	9.52	0.375	3/8	9.52	39.9	1.57

* BSP-T Tapered Thread

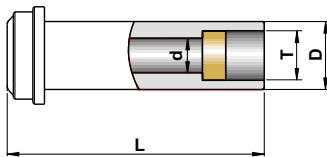


120H-P Adapter NPT Thread

T Female NPT Size	T1 Male NPT Size	D		W Width Across Hex inch	L	
		mm	inch		mm	inch
1/8	1/8	4.8	0.19	9/16	27.9	1.1
1/4	1/8	4.8	0.19	3/4	32.0	1.26
1/4	1/4	7.1	0.28	3/4	35.6	1.4
3/8	3/8	9.6	0.38	7/8	38.4	1.51
1/2	1/4	7.1	0.28	1 1/16	44.7	1.76
1/2	3/8	11.9	0.47	1 1/16	49.3	1.94

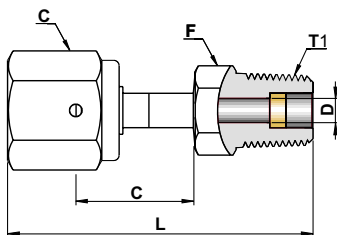
120HNR-P Adapter NPT To BSPT

T Female NPT Size	T1 Male BSPT Size	D		W Width Across Hex inch	L	
		mm	inch		mm	inch
1/8	1/8-28	4.8	0.19	9/16	27.7	1.09
1/4	1/4-19	7.1	0.28	3/4	36.1	1.42
3/8	3/8-19	9.6	0.38	7/8	38.1	1.50
1/2	1/2-14	11.9	0.47	1 1/16	49.3	1.94



V-GSW-P Gland socket weld

Part No.	T Tube O.D.	d		D		L	
	inch	mm	inch	mm	inch	mm	inch
V-GSW-P-1/4	1/4	4.56	0.18	8.9	0.35	33.3	1.3
V-GSW-P-3/8	3/8	7.73	0.30	15.2	0.60	38.1	1.5
V-GSW-P-1/2	1/2	10.2	0.40	15.2	0.60	38.1	1.5



MCF-P Male Connector to Female

Part No.	T1 Male NPT	D		W	F	C		L	
	inch	mm	inch	inch	inch	mm	inch	mm	inch
P-MCF-P-1/4	1/4	4.56	0.18	3/4	9/16	23.4	0.92	45.5	1.79
P-MCF-P-1/2	1/2	10.2	0.40	1 1/16	7/8	25.6	1.01	53.1	2.09