# HAM–LET
# SEVERE SERVICE
# SCREWED–BONNET
# NEEDLE VALVES

## H-98 & H-98HP SERIES


HAM-LET®
ADVANCED CONTROL TECHNOLOGY

## FEATURES

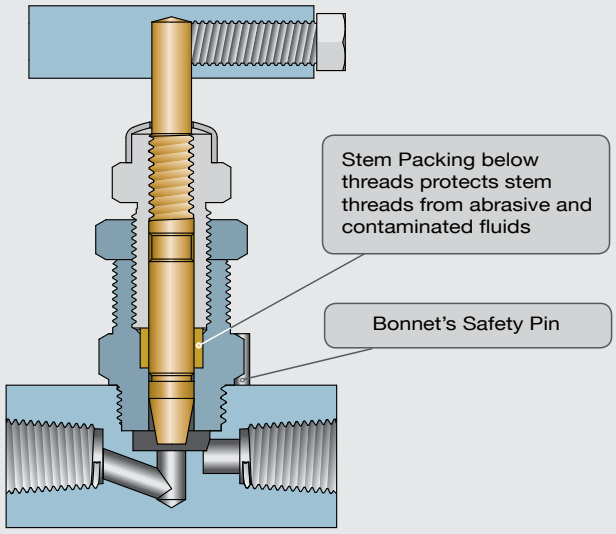
- Blow-out Proof Stem
- MAWP up to 10,000 psi (690 bar)
- MAWT up to 260°C (500°F)
- Size range: 1/4" to 1" or 6mm to 25mm
- Adjustable Packing
- Packing below stem threads protects stem threads from fluid contaminations

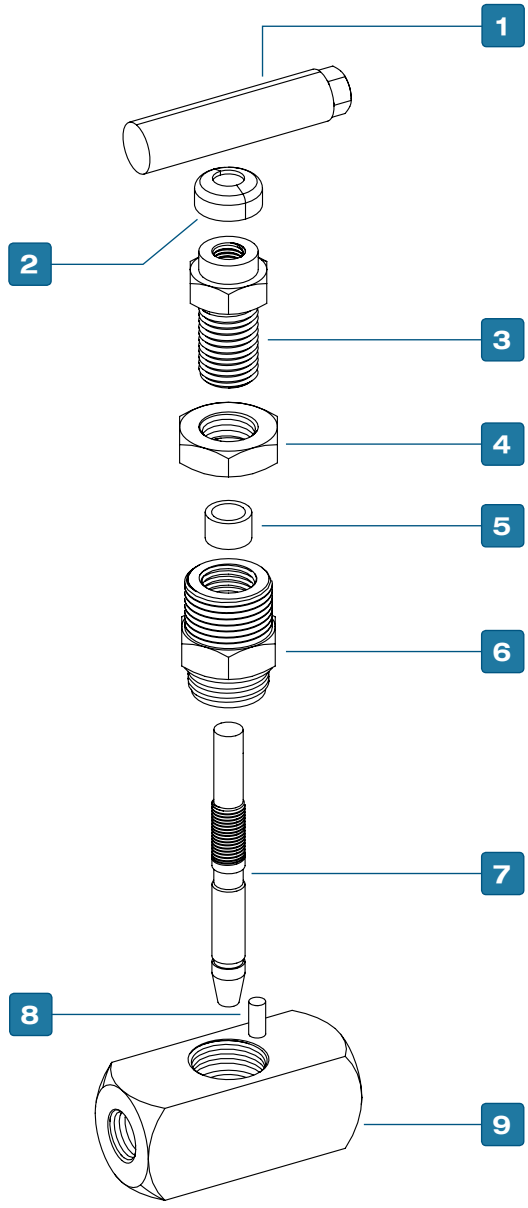
## GENERAL

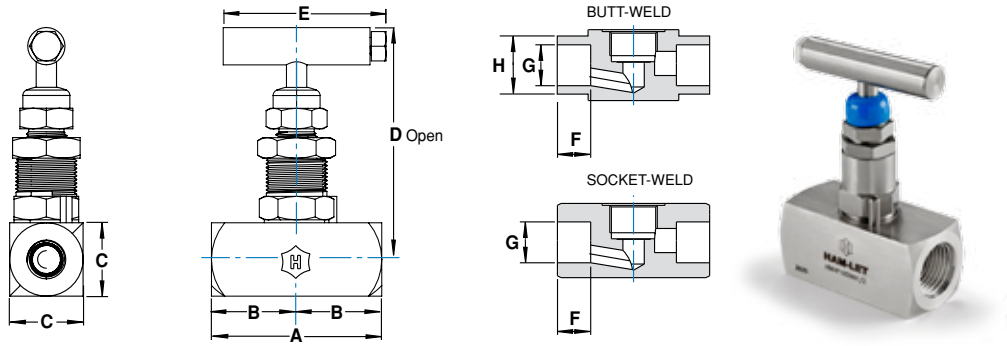
The H-98 & H-98HP Series offers a severe-service valve of rugged design and construction.
It is available in stainless steel to suit a wide range of services.
Capable of withstanding high pressures (10,000 psig max) and high temperature.
This valve is typically used in a severe environment, high pressure sampling systems, high pressure shut-down systems and test stands.

**MATERIALS OF CONSTRUCTION**

| No. | Components | | Qty | Material |
|---|---|---|---|---|
| 1 | Handle | | 1 | Stainless Steel 304 |
| 2 | Cap | | 1 | PVC |
| 3 | Gland | | 1 | Stainless Steel 304 |
| 4 | Locking Nut | | 1 | Stainless Steel 304 |
| 5 | Packing | | 1 | PTFE / PEEK |
| 6 | Bonnet | H-98HP | 1 | ASTM A276 Gr 316 |
| | | H-98 | 1 | ASTM A351 Gr CF8M |
| 7 | Stem | | 1 | Stainless Steel 316 / A276 |
| 8 | Safety Pin | | 1 | Stainless Steel 304 |
| 9 | Body | H-98HP | 1 | ASTM A276 Gr 316 |
| | | H-98 | 1 | ASTM A351 Gr CF8M |






## STANDARD CONFIGURATION DIMENSIONS

| End | | Orifice | | A | | B | | C | | D | | E | | F | | G | | H | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Connection** | **Size** | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in | mm | in |
| **Let-Lok® Tube Fittings** | 1/4" | 5.00 | 0.20 | 72.7 | 2.9 | 36.4 | 1.4 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | | | | | | |
| | 3/8" | | | 72.7 | 2.9 | 36.4 | 1.4 | | | | | | | | | | | | |
| | 1/2" | | | 78.3 | 3.1 | 39.2 | 1.5 | | | | | | | | | | | | |
| | 3/4" | 6.00 | 0.24 | 85.3 | 3.4 | 42.7 | 1.7 | 30.0 | 1.2 | 81.0 | 3.2 | | | | | | | | |
| **Let-Lok® Metric** | 6mm | 0.20 | 5.00 | 72.8 | 2.9 | 36.4 | 1.4 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | | | | | | |
| | 8mm | | | 73.0 | 2.9 | 36.5 | 1.4 | | | | | | | | | | | | |
| | 10mm | | | 73.2 | 2.9 | 36.6 | 1.4 | | | | | | | | | | | | |
| | 12mm | | | 78.2 | 3.1 | 39.1 | 1.5 | | | | | | | | | | | | |
| **Female Thread (NPT/ISO)** | 1/8" | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | | | | | | |
| | 1/4" | | | | | | | | | | | | | | | | | | |
| | 3/8" | | | | | | | | | | | | | | | | | | |
| | 1/2" | 6.00 | 0.24 | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | | | | | | |
| | 3/4" | | | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | | | | | | |
| | 1" | 8.00 | 0.31 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 87.0 | 3.4 | | | | | | | | |
| **Tube Socket Weld Inch** | 1/4" | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | 6.4 | 0.3 | 6.5 | 0.3 | | |
| | 3/8" | | | | | | | | | | | | | 9.7 | 0.4 | 9.7 | 0.4 | | |
| | 1/2" | | | | | | | | | | | | | 12.7 | 0.5 | 12.9 | 0.5 | | |
| | 3/4" | 6.00 | 0.24 | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | 14.2 | 0.6 | 19.2 | 0.8 | | |
| | 1" | | | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 19.2 | 0.8 | 25.6 | 1.0 | | |
| **Tube Socket Weld Metric** | 6mm | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | 6.0 | 0.2 | 6.2 | 0.2 | | |
| | 8mm | | | | | | | | | | | | | 7.9 | 0.3 | 8.2 | 0.3 | | |
| | 10mm | | | | | | | | | | | | | 12.7 | 0.5 | 10.2 | 0.4 | | |
| | 12mm | | | | | | | | | | | | | 12.7 | 0.5 | 12.2 | 0.5 | | |
| | 25mm | 6.00 | 0.24 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 19.2 | 0.8 | 25.2 | 1.0 | | |
| **Pipe Socket Weld** | 1/8" | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | 9.0 | 0.4 | 10.8 | 0.4 | | |
| | 1/4" | | | | | | | | | | | | | 14.0 | 0.6 | 14.0 | 0.6 | | |
| | 3/8" | | | | | | | | | | | | | 14.0 | 0.6 | 17.5 | 0.7 | | |
| | 1/2" | 6.00 | 0.24 | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | 16.5 | 0.6 | 22.0 | 0.9 | | |
| | 3/4" | | | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 18.0 | 0.7 | 27.5 | 1.1 | | |
| | 1" | 8.00 | 0.31 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 87.0 | 3.4 | | | 20.0 | 0.8 | 34.5 | 1.4 | | |
| **Tube Butt Weld Inch** | 1/4" | 5.00 | 2.3 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | - | - | 3.1 | 0.1 | 6.4 | 0.3 |
| | 3/8" | | | | | | | | | | | | | 6.0 | 0.2 | 6.2 | 0.2 | 9.5 | 0.4 |
| | 1/2" | | | | | | | | | | | | | 6.0 | 0.2 | 8.5 | 0.3 | 12.7 | 0.5 |
| | 3/4" | 6.00 | 0.24 | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | 8.0 | 0.3 | 13.5 | 0.5 | 19.1 | 0.8 |
| | 1" | | | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 10.0 | 0.4 | 19.3 | 0.8 | 25.4 | 1.0 |
| **Tube Butt Weld Metric** | 6mm | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | - | - | 3.1 | 0.1 | 6.0 | 0.2 |
| | 8mm | | | | | | | | | | | | | - | - | 4.8 | 0.2 | 8.0 | 0.3 |
| | 10mm | | | | | | | | | | | | | 6.0 | 0.2 | 6.7 | 0.3 | 10.0 | 0.4 |
| | 12mm | | | | | | | | | | | | | 6.0 | 0.2 | 7.8 | 0.3 | 12.0 | 0.5 |
| | 25mm | 6.00 | 0.24 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 10.0 | 0.4 | 18.9 | 0.7 | 25.0 | 1.0 |
| **Pipe (S40) Butt Weld** | 1/8" | 5.00 | 0.20 | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | 6.0 | 0.2 | 7.1 | 0.3 | 10.5 | 0.4 |
| | 1/4" | | | | | | | | | | | | | | | 9.2 | 0.4 | 13.7 | 0.5 |
| | 3/8" | | | | | | | | | | | | | | | 12.5 | 0.5 | 17.1 | 0.7 |
| | 1/2" | 6.00 | 0.24 | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | 8.0 | 0.3 | 15.8 | 0.6 | 21.3 | 0.8 |
| | 3/4" | | | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | 10.0 | 0.4 | 21.0 | 0.8 | 26.7 | 1.1 |
| | 1" | 8.00 | 0.31 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 87.0 | 3.4 | | | 12.0 | 0.5 | 26.6 | 1.0 | 33.4 | 1.3 |
| **Male Thread to Female Thread (NPT/ISO)** | 1/4" | 5.00 | 0.20 | 60.0 | 2.4 | 29.0 | 1.1 | 25.0 | 1.0 | 79.0 | 3.1 | 62.0 | 2.4 | | | | | | |
| | 3/8" | | | | | | | | | | | | | | | | | | |
| | 1/2" | 6.00 | 0.24 | 70.0 | 2.8 | 32.5 | 1.3 | 30.0 | 1.2 | 81.0 | 3.2 | | | | | | | | |
| | 3/4" | | | 75.0 | 3.0 | 35.0 | 1.4 | 35.0 | 1.4 | 84.0 | 3.3 | | | | | | | | |
| | 1" | 8.00 | 0.31 | 85.0 | 3.3 | 40.0 | 1.6 | 45.0 | 1.8 | 87.0 | 3.4 | | | | | | | | |

Dimensions are for reference only, and are subject to change. Face to face dimensions for LET-LOK® end connections (dimensions A and B) are finger tight.

## CLEANING & PACKAGING

HAM-LET H-98 & H-98HP Needle Valves are treated with HAM-LET Passivation Cleaning and Packaging (Procedure 8075). Special Cleaning for Oxygen service is available upon request.

## TESTING

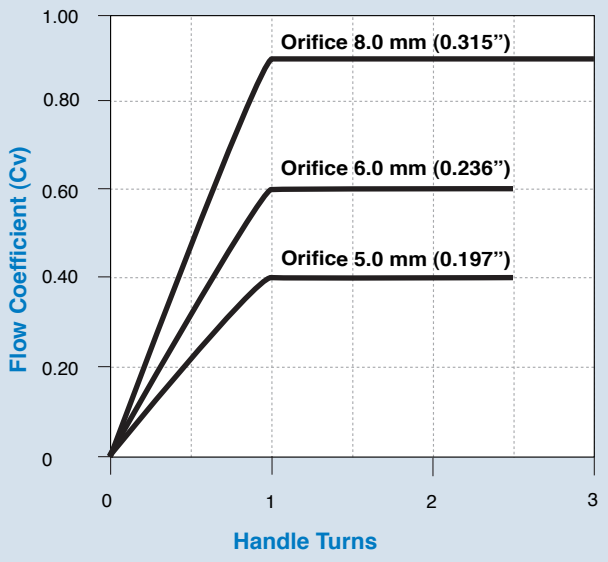
The H-98 & H-98HP Series Needle Valve designs have been tested for Proof and Burst.
Every H-98 & H-98HP Needle Valve is factory tested with Nitrogen at 1000 psi (69 bar).
The maximum allowable leakage across seat is 0.1 std cc/min.

## PACKING ADJUSTMENT

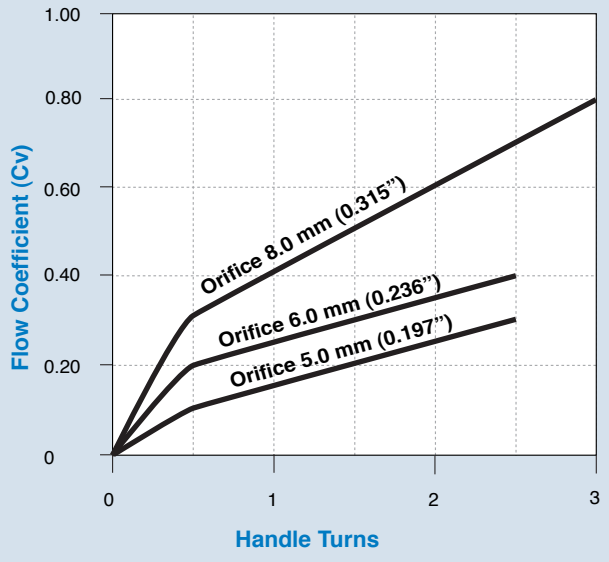
Due to the varied service applications of the valve, packing adjustment may be occasionally necessary.
Valve packing is factory pre adjusted to 1000 psig service.
Initial packing adjustment is recommended after installation and prior to start-up.

## FLOW DATA AT 100°F (37°C)

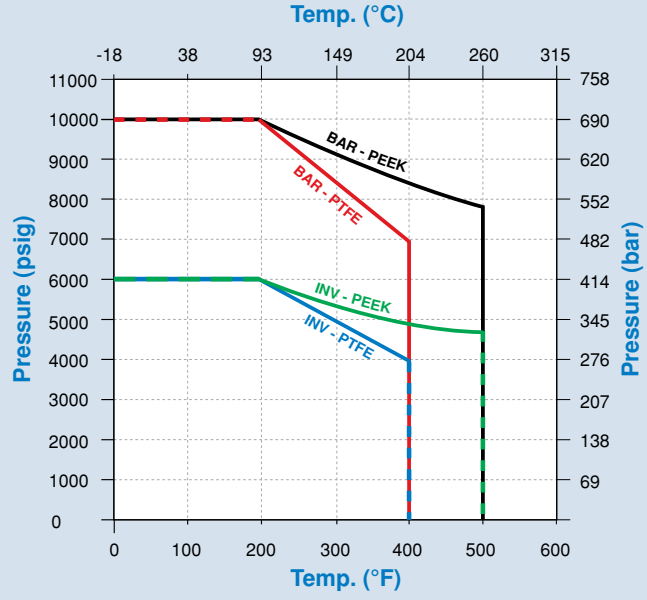
### V-STEM




### R-STEM




## PRESSURE TEMPERATURE RATING THREADED & WELD CONNECTIONS




### MAX. PRESSURE RATING AT 70°F (21°C)

| Body Raw Material | Pressure | |
|---|---|---|
| | psi | bar |
| Investment casting | 6000 | 414 |
| Bar Stock | 10000 | 690 |

### MAX. ALLOWED WORKING AT TEMPERATURE

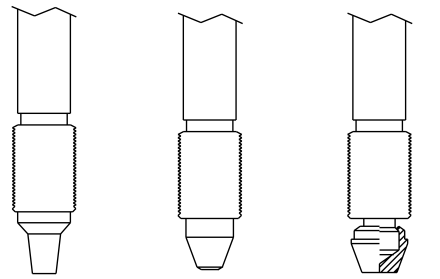
| Body Raw Material | Pressure | |
|---|---|---|
| | °C | °F |
| PTFE | 204 | 400 |
| PEEK | 260 | 500 |

The max. allowable pressure of welded connected valve, is limited to the max. allowed working pressure of the tube.

## ALTERNATIVE STEMS

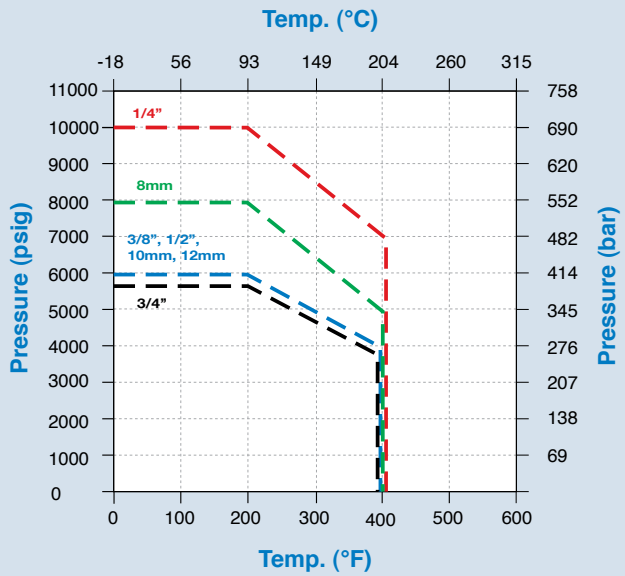
HAM-LET Needle Valves are available with a choice of stem-tip options to allow greater flexibility.

**Regulating**: Used where some degree of flow control is required.
**V-Stem**: A standard stem tip used for general-purpose liquids and gases.
**Non-Rotating**: Typically used in high-cycle applications to extend valve life. It is designed to prevent galling between the seat and stem.

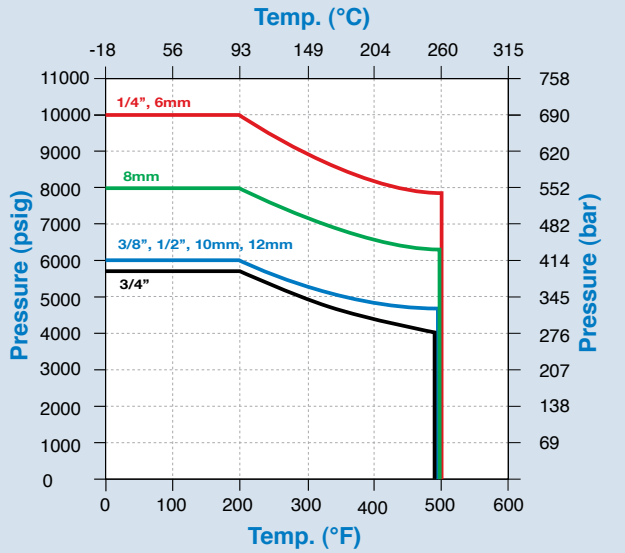



## PRESSURE TEMPERATURE RATING LET-LOK CONNECTION

### PTFE PACKING




### PEEK PACKING




### MAX. PRESSURE RATING AT 70°F (21°C)

| Let-Lok Size | | Let-Lok Size | |
|---|---|---|---|
| in | Pressure | mm | Pressure |
| 1/4 | 10000 psi | 6 | 10000 psi |
| - | - | 8 | 8000 psi |
| 3/8 | 6000 psi | 10 | 6000 psi |
| 1/2 | 6000 psi | 12 | 6000 psi |
| 3/4 | 5850 psi | - | - |

The max. allowed pressure of Let-Lok connected valve, is limited to the max. allowed working pressure of the tube.

**Note:** Valves with Let-Lok ends are always made of barstock body.

## H-98 & H-98HP SERIES ORDERING INFORMATION

OPTIONAL

H-98 HP - 00 - SS - L - V - 1/2 - - -

**Valve Series**

| Body Raw Material |
|---|
| **BLANK** - Investment Casting |
| **HP** - Bar stock |

| Valve Type | |
|---|---|
| **00** - | LET-LOK® End* |
| **10** - | Female End |
| **80** - | Male End* |
| **85** - | Male to Female End |

* Always made of ASTM-A276

| Material |
|---|
| St.St. 316 |

| End Connection Type | |
|---|---|
| **L** | - LET-LOK® End |
| **N** | - Threaded NPT |
| **R** | - ISO Tapered |
| **G** | - ISO Parallel |
| **TBW** | - Tube Butt-Weld |
| **TSW** | - Tube Socket-Weld |
| **PBW** | - Pipe Butt-Weld (Schedule 40) |
| **PSW** | - Pipe Socket Weld |

| Stem | |
|---|---|
| **V** | - V Stem |
| **R** | - Regulating Stem |
| **NR** | - Non-Rotating |

| End Connection Size | |
|---|---|
| **1/4** | **6**MM |
| **3/8** | **8**MM |
| **1/2** | **10**MM |
| **3/4** | **12**MM |
| **1”** | **25**MM |

| Packing |
|---|
| **BLANK** - PTFE |
| **PK** - PEEK |

| Treatments | |
|---|---|
| **BLANK** | - Standard Cleaning & Passivation |
| **OC** | - Oxygen Clean |
| **LF** | - Lubricant Free |

## SEAL KIT

Kit includes packing and label

Z - 98 - SK - 1/4 - PT

**For H-98, H-98HP**

| Body Designator per end connections | |
|---|---|
| **1/4** | For 1/8 to 3/8 ends |
| **1/2** | For 1/2 to 3/4 ends |
| **1”** | For 1 ends |

**Note:** For TBW and TSW end connections please contact Ham-Let Local representative

| Packing |
|---|
| **PT** - PTFE |
| **PK** - PEEK |

**Warning-**Select the right component for safety's sake: The total design of the system must be taken into consideration when selecting components in order to ensure that your HAM-LET products provide safe, trouble-free operation. It is the responsibility of the system designer and the user to consider the compatibility of the materials, of the components and system, the function of the component, appropriate ratings and to ensure proper installation, operation and maintenance. Improper selection or use of products can cause property damage or personal injury, in respect of which the system designer and/or the user shall be solely liable and responsible.