

# SCREWED BONNET NEEDLE VALVES

H99  
SERIES



## FEATURES

- Blowout-Proof Stem
- MAWP\* up to 10,000 psi (690 bar)
- MAWT\* up to 648°C (1200°F)
- End connection size range: 1/4" to 1" or 6mm to 25mm
- Available in 4 body sizes (S, M, L, XL)
- Flow Coefficient (Cv) 0 to 1.5
- Variety of stem types
- Packing bolt for easy panel mounting, no packing disassembling is required

\* Maximum Allowed Working Pressure, Maximum Allowed Working Temperature.

## GENERAL

The H-99 Series offers a general service valve of rugged design and construction. It is available in stainless steel to suit a wide range of services. Capable of withstanding high-pressure (10,000 psig max) and high temperature.

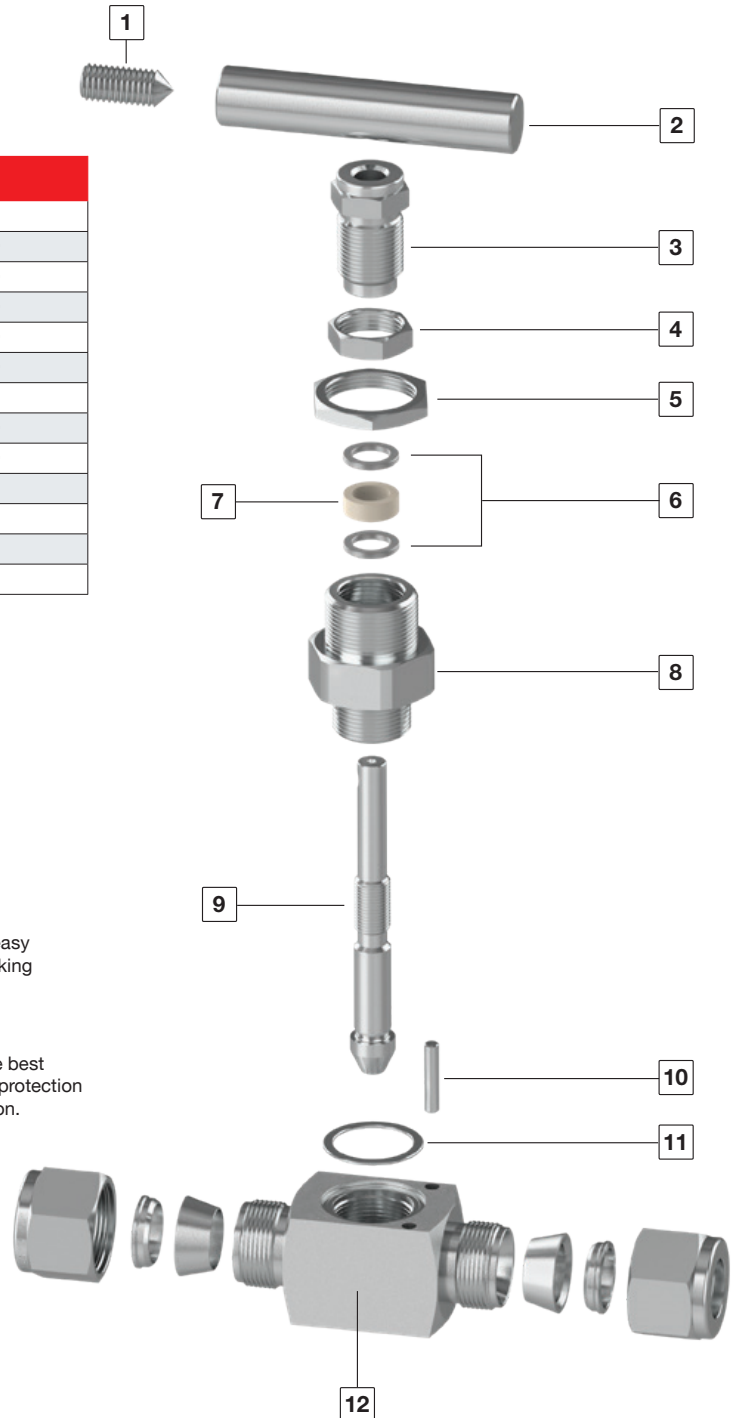
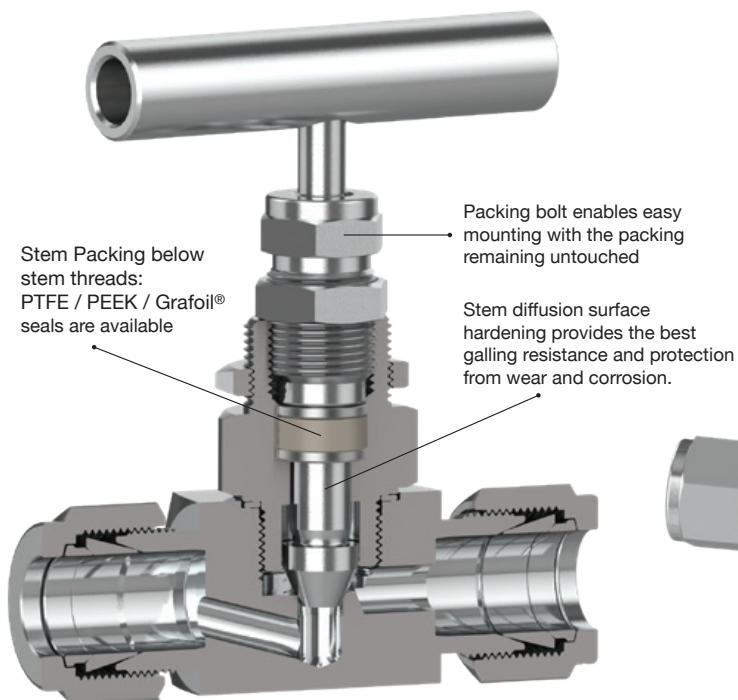
This valve is typically used in severe environments, high-pressure sampling systems, high-pressure shut-down systems and test stands.

## MATERIALS OF CONSTRUCTION

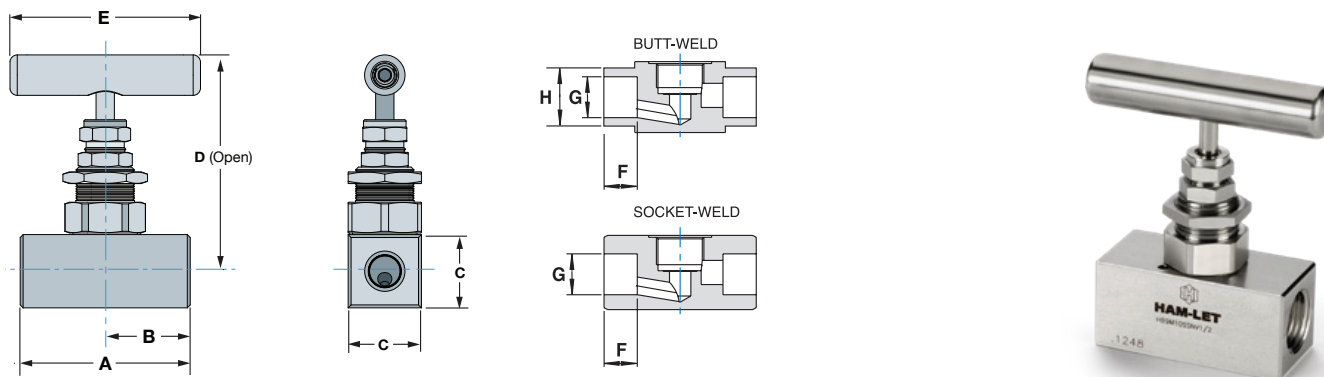
| No. | Components           | Qty | Material                     |
|-----|----------------------|-----|------------------------------|
| 1   | Set Screw            | 1   | St.St. 18-8                  |
| 2   | Handle               | 1   | St.St.316 ASTM A-276 / A-479 |
| 3   | Upper Bonnet         | 1   | St.St.316 ASTM A-276 / A-479 |
| 4   | Lock Nut             | 1   | St.St.316 ASTM A-276 / A-479 |
| 5   | Panel Nut            | 1   | St.St.316 ASTM A-276 / A-479 |
| 6   | *Stem Washer         | 2   | St.St.316 ASTM A-276 / A-479 |
| 7   | Packing              | 1   | PTFE / PEEK / Grafoil®       |
| 8   | *Bonnet              | 1   | St.St.316 ASTM A-276 / A-479 |
| 9   | *Stem                | 1   | St.St.316 ASTM A-276 / A-479 |
| 10  | Safety Pin           | 1   | St.St. 304                   |
| 11  | *Gasket              | 1   | St.St.316                    |
| 12  | *Body <sup>(1)</sup> | 1   | St.St.316 ASTM A-479         |
|     | Lubricant            |     | Silicone based               |

<sup>(1)</sup>For weld ends valves, body is made of low carbon stainless steel

\* Wetted parts



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## STANDARD CONFIGURATION DIMENSIONS

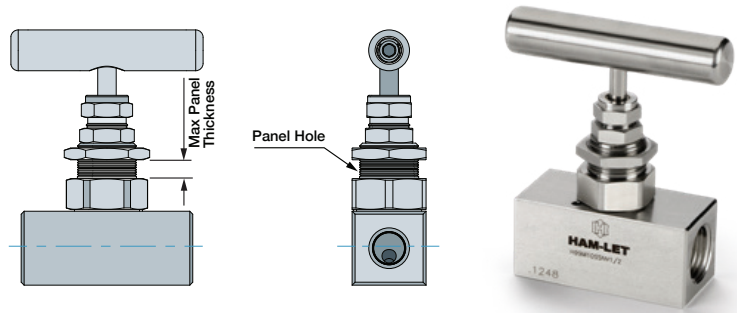
| End                                             |      | Body | Orifice |       | A    |     | B    |     | C    |     | D    |     | E    |     | F    |      | G    |      | H    |      |
|-------------------------------------------------|------|------|---------|-------|------|-----|------|-----|------|-----|------|-----|------|-----|------|------|------|------|------|------|
| Connection                                      | Size | Size | mm      | in    | mm   | in  | mm   | in  | mm   | in  | mm   | in  | mm   | in  | mm   | in   | mm   | in   | mm   | in   |
| Let-Lok®<br>Inch                                | 1/4" | S    | 6.35    | 0.25  | 72.7 | 2.9 | 36.4 | 1.4 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 |      |      |      |      |      |      |
|                                                 | 3/8" |      |         |       | 72.7 | 2.9 | 36.4 | 1.4 |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 1/2" |      |         |       | 78.3 | 3.1 | 39.2 | 1.5 |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 3/4" | M    | 6.35    | 0.25  | 85.3 | 3.4 | 42.7 | 1.7 |      |     |      |     |      |     |      |      |      |      |      |      |
| Let-Lok®<br>Metric                              | 6mm  | S    | 6.35    | 0.25  | 72.8 | 2.9 | 36.4 | 1.4 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 |      |      |      |      |      |      |
|                                                 | 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 |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 14mm |      |         |       | 78.2 | 3.1 | 39.1 | 1.5 |      |     |      |     |      |     |      |      |      |      |      |      |
| Female<br>Thread<br>(NPT/ISO)                   | 1/8" | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 |      |      |      |      |      |      |
|                                                 | 1/4" |      |         |       |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 1/2" | M    | 6.35    | 0.25  | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 |      |      |      |      |      |      |
|                                                 | 3/4" | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 |      |      |      |      |      |      |
|                                                 | 1"   | XL   | 9.50    | 0.375 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 99.6 | 3.9 | 80.0 | 3.2 |      |      |      |      |      |      |
| Tube<br>Socket Weld<br>Inch                     | 1/4" | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 | 6.4  | 0.25 | 6.5  | 0.26 |      |      |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     | 9.7  | 0.38 | 9.7  | 0.38 |      |      |
|                                                 | 1/2" |      |         |       |      |     |      |     |      |     |      |     |      |     | 12.7 | 0.50 | 12.9 | 0.51 |      |      |
|                                                 | 3/4" | M    | 6.35    | 0.25  | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 | 14.2 | 0.56 | 19.2 | 0.76 |      |      |
|                                                 | 1"   | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 19.2 | 0.76 | 25.6 | 1.01 |      |      |
| Tube<br>Socket Weld<br>Metric                   | 6mm  | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 | 6.0  | 0.24 | 6.2  | 0.24 |      |      |
|                                                 | 8mm  |      |         |       |      |     |      |     |      |     |      |     |      |     | 7.9  | 0.31 | 8.2  | 0.32 |      |      |
|                                                 | 10mm |      |         |       |      |     |      |     |      |     |      |     |      |     | 12.7 | 0.50 | 10.2 | 0.40 |      |      |
|                                                 | 12mm |      |         |       |      |     |      |     |      |     |      |     |      |     | 12.7 | 0.50 | 12.2 | 0.48 |      |      |
|                                                 | 14mm | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 | 14.2 | 0.50 | 14.1 | 0.50 |      |      |
|                                                 | 25mm | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 19.2 | 0.76 | 25.2 | 0.99 |      |      |
| Pipe<br>Socket Weld                             | 1/8" | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 | 9.0  | 0.35 | 10.8 | 0.43 |      |      |
|                                                 | 1/4" |      |         |       |      |     |      |     |      |     |      |     |      |     | 14.0 | 0.55 | 14.0 | 0.55 |      |      |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     | 14.0 | 0.55 | 17.5 | 0.69 |      |      |
|                                                 | 1/2" | M    | 6.35    | 0.25  | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 | 16.5 | 0.65 | 22.0 | 0.87 |      |      |
|                                                 | 3/4" | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 18.0 | 0.71 | 27.5 | 1.08 |      |      |
|                                                 | 1"   | XL   | 9.50    | 0.375 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 99.6 | 3.9 | 80.0 | 3.2 | 20.0 | 0.79 | 34.5 | 1.36 |      |      |
| Tube<br>Butt Weld<br>Inch                       | 1/4" | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 | 6.4  | 0.25 | 3.1  | 0.12 | 6.4  | 0.25 |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     | 6.0  | 0.24 | 6.2  | 0.24 | 9.5  | 0.37 |
|                                                 | 1/2" |      |         |       |      |     |      |     |      |     |      |     |      |     | 6.0  | 0.24 | 8.5  | 0.33 | 12.7 | 0.50 |
|                                                 | 3/4" | M    | 6.35    | 0.25  | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 | 8.0  | 0.31 | 13.5 | 0.53 | 19.1 | 0.75 |
|                                                 | 1"   | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 10.0 | 0.39 | 19.3 | 0.76 | 25.4 | 1.00 |
| Tube<br>Butt Weld<br>Metric                     | 6mm  | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 | 6.0  | 0.24 | 3.1  | 0.12 | 6.0  | 0.24 |
|                                                 | 8mm  |      |         |       |      |     |      |     |      |     |      |     |      |     | 7.9  | 0.31 | 4.8  | 0.19 | 8.0  | 0.31 |
|                                                 | 10mm |      |         |       |      |     |      |     |      |     |      |     |      |     | 6.0  | 0.24 | 6.7  | 0.26 | 10.0 | 0.39 |
|                                                 | 12mm |      |         |       |      |     |      |     |      |     |      |     |      |     | 6.0  | 0.24 | 7.8  | 0.31 | 12.0 | 0.47 |
|                                                 | 14mm | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 65.0 | 2.6 | 6.0  | 0.2  | 11.0 | 0.4  | 14.0 | 0.55 |
|                                                 | 25mm | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 10.0 | 0.39 | 18.9 | 0.74 | 25.0 | 0.98 |
| Pipe (S40)<br>Butt Weld                         | 1/8" | S    | 6.35    | 0.25  | 58.0 | 2.3 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 | 6.0  | 0.24 | 7.1  | 0.28 | 10.5 | 0.41 |
|                                                 | 1/4" |      |         |       |      |     |      |     |      |     |      |     |      |     |      |      | 9.2  | 0.36 | 13.7 | 0.54 |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     |      |      | 12.5 | 0.49 | 17.1 | 0.67 |
|                                                 | 1/2" | M    | 6.35    | 0.25  | 65.0 | 2.6 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 | 8.0  | 0.31 | 15.8 | 0.62 | 21.3 | 0.84 |
|                                                 | 3/4" | L    | 9.50    | 0.375 | 70.0 | 2.8 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 | 10.0 | 0.39 | 21.0 | 0.83 | 26.7 | 1.05 |
|                                                 | 1"   | XL   | 9.50    | 0.375 | 80.0 | 3.1 | 40.0 | 1.6 | 45.0 | 1.8 | 99.6 | 3.9 | 80.0 | 3.2 | 12.0 | 0.47 | 26.6 | 1.04 | 33.4 | 1.31 |
| Male Thread to<br>Female<br>Thread<br>(NPT/ISO) | 1/4" | S    | 6.35    | 0.25  | 60.0 | 2.4 | 29.0 | 1.1 | 25.0 | 1.0 | 78.9 | 3.1 | 60.0 | 2.6 |      |      |      |      |      |      |
|                                                 | 3/8" |      |         |       |      |     |      |     |      |     |      |     |      |     |      |      |      |      |      |      |
|                                                 | 1/2" | M    | 6.35    | 0.25  | 70.0 | 2.8 | 32.5 | 1.3 | 30.0 | 1.2 | 81.4 | 3.2 | 80.0 | 3.2 |      |      |      |      |      |      |
|                                                 | 3/4" | L    | 9.50    | 0.375 | 75.0 | 3.0 | 35.0 | 1.4 | 35.0 | 1.4 | 92.5 | 3.6 | 80.0 | 3.2 |      |      |      |      |      |      |

Body Dimensions: S - 25mm / M - 30mm / L - 35mm / XL - 45mm.

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.

## HIGH PERFORMANCE NEEDLE VALVE FOR EASY MOUNTING

### H-99 SERIES



#### MOUNTING CONFIGURATION DIMENSIONS

| End                           |      | Body | Panel Hole |      | Max Panel Thickness |      |
|-------------------------------|------|------|------------|------|---------------------|------|
| Connection                    | Size | Size | mm         | in   | mm                  | in   |
| Let-Lok®<br>Inch              | 1/4" |      |            |      | 6.35                | 0.25 |
|                               | 3/8" | S    | 22.0       | 0.87 |                     |      |
|                               | 1/2" |      |            |      |                     |      |
|                               | 3/4" | M    | 25.0       | 0.98 |                     |      |
| Let-Lok®<br>Metric            | 6mm  | S    | 22.0       | 0.87 | 6.35                | 0.25 |
|                               | 8mm  |      |            |      |                     |      |
|                               | 10mm |      |            |      |                     |      |
|                               | 12mm |      |            |      |                     |      |
| Female<br>Thread<br>(NPT/ISO) | 1/8" |      |            |      |                     |      |
|                               | 1/4" | S    | 22.0       | 0.87 | 6.35                | 0.25 |
|                               | 3/8" |      |            |      |                     |      |
|                               | 1/2" | M    | 25.0       | 0.98 | 6.35                | 0.25 |
|                               | 3/4" | L    |            |      |                     |      |
| Tube<br>Socket Weld<br>Inch   | 1"   | XL   | 27.0       | 1.06 | 6.35                | 0.25 |
|                               | 1/4" |      |            |      |                     |      |
|                               | 3/8" | S    | 22.0       | 0.87 | 6.35                | 0.25 |
|                               | 1/2" |      |            |      |                     |      |
| Tube<br>Socket Weld<br>Metric | 3/4" | M    | 25.0       | 0.98 | 6.35                | 0.25 |
|                               | 1"   | L    |            |      |                     |      |
|                               | 6mm  |      |            |      |                     |      |
|                               | 8mm  | S    | 22.0       | 0.87 | 6.35                | 0.25 |
| Tube<br>Socket Weld<br>Metric | 10mm |      |            |      |                     |      |
|                               | 12mm |      |            |      |                     |      |
|                               | 25mm | L    | 25.0       | 0.98 | 6.35                | 0.25 |

Body Dimensions: **S** - 25mm / **M** - 30mm / **L** - 35mm / **XL** - 45mm.

#### MOUNTING CONFIGURATION DIMENSIONS

| End                                             |      | Body | Panel Hole |      | Max Panel Thickness |      |
|-------------------------------------------------|------|------|------------|------|---------------------|------|
| Connection                                      | Size | Size | mm         | in   | mm                  | in   |
| Pipe<br>Socket Weld                             | 1/8" |      |            |      | 6.35                | 0.25 |
|                                                 | 1/4" | S    | 22.0       | 0.87 |                     |      |
|                                                 | 3/8" |      |            |      |                     |      |
|                                                 | 1/2" | M    | 25.0       | 0.98 |                     |      |
|                                                 | 3/4" | L    |            |      |                     |      |
| Tube<br>Butt Weld<br>Inch                       | 1"   | XL   | 27.0       | 1.06 | 6.35                | 0.25 |
|                                                 | 1/4" |      |            |      |                     |      |
|                                                 | 3/8" | S    | 22.0       | 0.87 | 6.35                | 0.25 |
|                                                 | 1/2" |      |            |      |                     |      |
| Tube<br>Butt Weld<br>Metric                     | 3/4" | M    | 25.0       | 0.98 | 6.35                | 0.25 |
|                                                 | 1"   | L    |            |      |                     |      |
|                                                 | 6mm  |      |            |      |                     |      |
|                                                 | 8mm  | S    | 22.0       | 0.87 | 6.35                | 0.25 |
| Pipe (S40)<br>Butt Weld                         | 10mm |      |            |      |                     |      |
|                                                 | 12mm |      |            |      |                     |      |
|                                                 | 25mm | L    | 25.0       | 0.98 | 6.35                | 0.25 |
|                                                 | 1/8" |      |            |      |                     |      |
|                                                 | 1/4" | S    | 22.0       | 0.87 | 6.35                | 0.25 |
| Male Thread<br>to<br>Female Thread<br>(NPT/ISO) | 3/8" |      |            |      |                     |      |
|                                                 | 1/2" | M    | 25.0       | 0.98 | 6.35                | 0.25 |
|                                                 | 3/4" | L    |            |      |                     |      |
|                                                 | 1"   | XL   | 27.0       | 1.06 | 6.35                | 0.25 |
|                                                 | 1/4" |      |            |      |                     |      |
|                                                 | 3/8" | S    | 22.0       | 0.87 | 6.35                | 0.25 |
| Male Thread<br>to<br>Female Thread<br>(NPT/ISO) | 1/2" | M    | 25.0       | 0.98 | 6.35                | 0.25 |
|                                                 | 3/4" | L    |            |      |                     |      |
|                                                 | 1"   | XL   | 27.0       | 1.06 | 6.35                | 0.25 |
|                                                 | 1"   | XL   | 27.0       | 1.06 | 6.35                | 0.25 |

#### EASY MOUNTING PROCEDURE

- 1.** Disassemble the handle, using an appropriate hex key. Take off the panel nut.
- 2.** Insert the valve into the panel hole and reassemble the panel nut. Firmly tighten the nut.
- 3.** Reassemble the handle. Firmly tighten the hex screw.

## CLEANING & PACKAGING

Every H-99 series needle valve is cleaned in accordance with Standard Cleaning and Packaging (procedure 8184). Oxygen Clean & Lubricant-Free Cleaning and packaging, in accordance with Special Cleaning and Packaging (procedure 8185), is available as an option.

⚠ **Lubricant-Free cleaned valves have significantly higher actuation torque.**

## TESTING

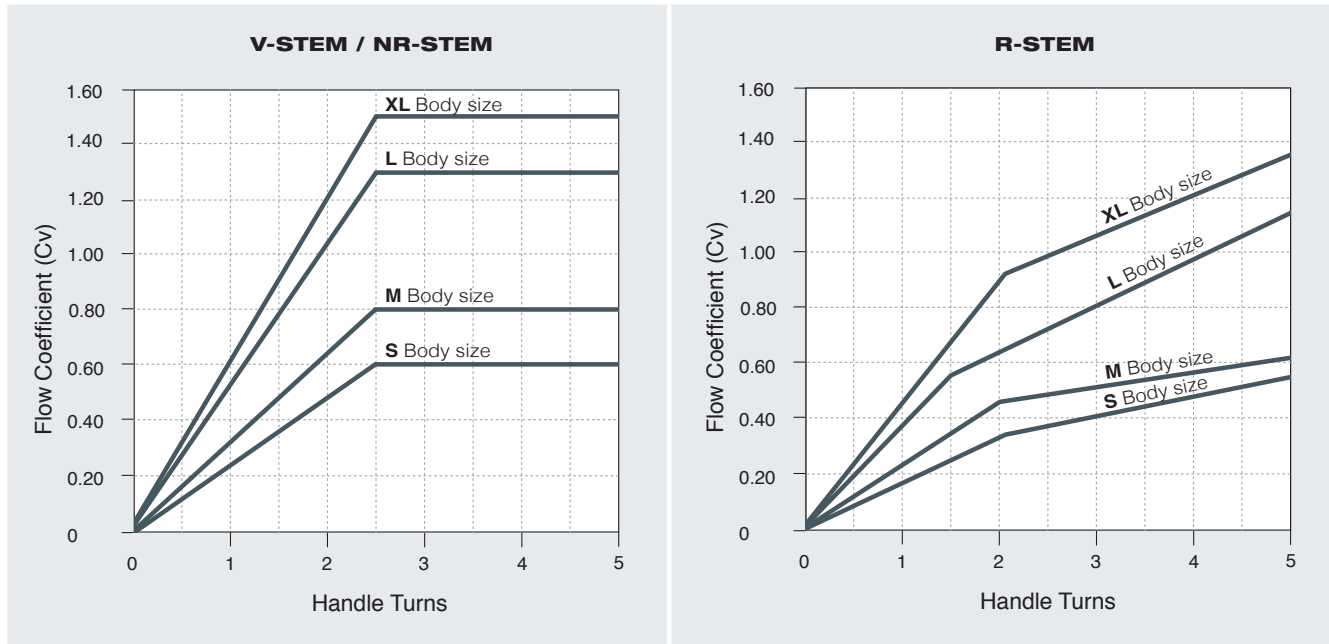
The H-99 Series Needle Valve design has been tested for proof and burst. Every H-99 Needle Valve is factory tested with Nitrogen at 1000 psi (69 bar) for leakage through the packing and seat. The maximum allowable leakage across the seat is 0.1 std cc/min. No detectable leakage is allowed during shell test.

## PACKING ADJUSTMENT

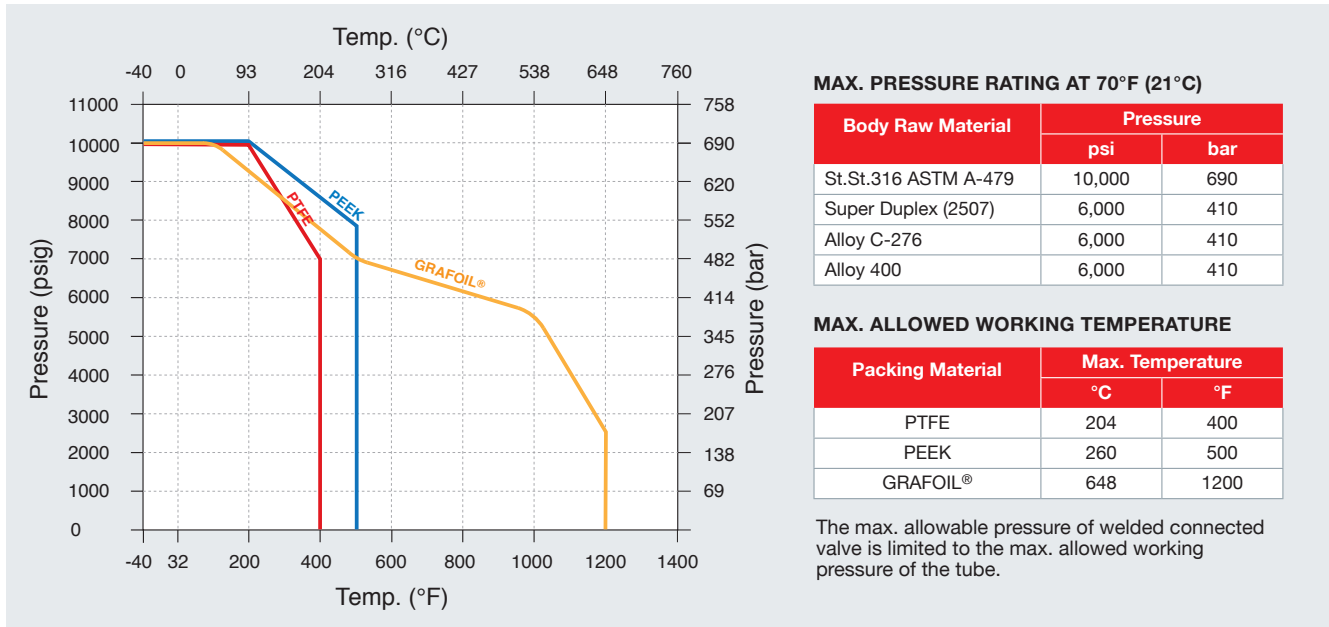
Due to the varied service applications of the valve, packing adjustment may be occasionally necessary. Valve Packing is factory preadjusted to 1000 psig service.

⚠ **Initial packing adjustment is recommended after installation and prior to start-up**

## FLOW DATA AT 100°F (37°C)



## PRESSURE TEMPERATURE RATING THREADED & WELD CONNECTION



**Note:** For lower temperature applications please contact your local representative.  
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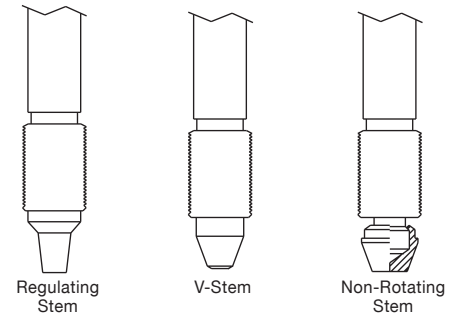
## ALTERNATIVE STEMS

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

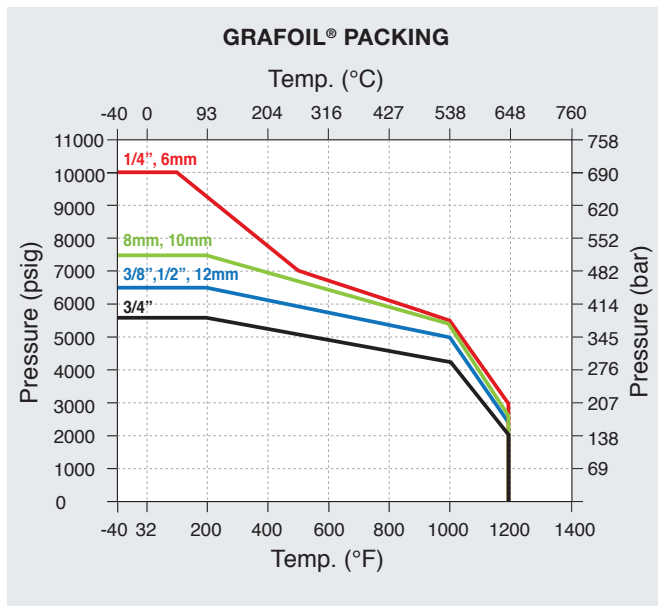
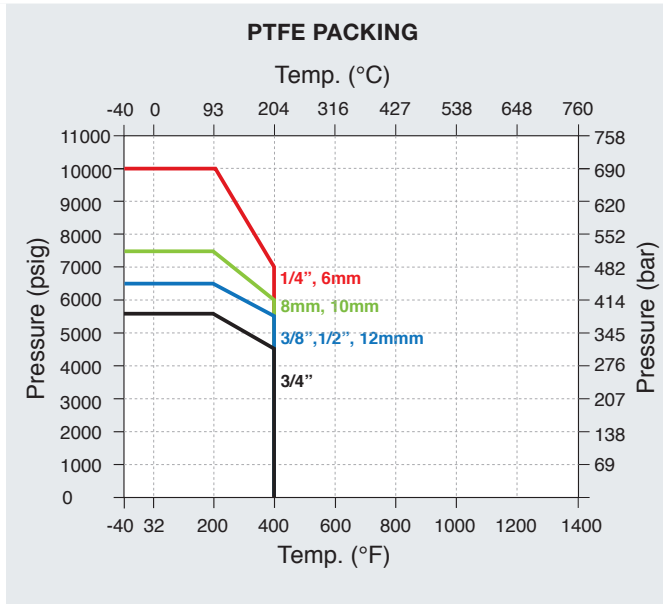
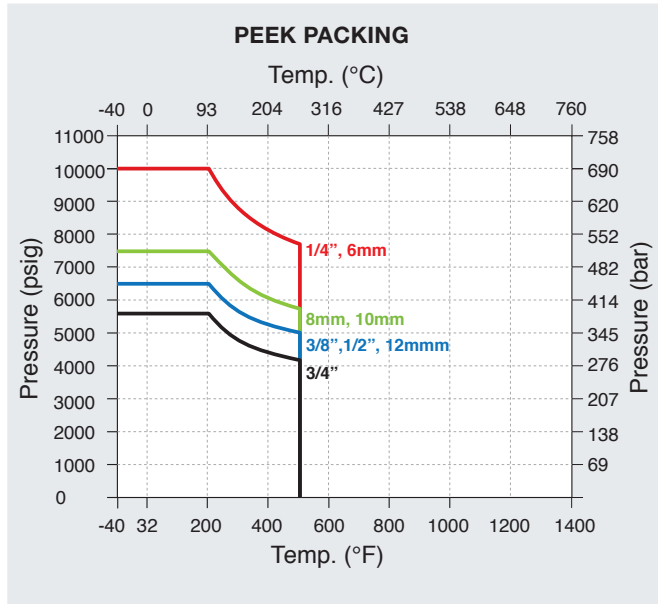
**V- Stem:** Standard stem tip used for the on/off operation in general-purpose liquids and gas service.

**R- Regulating:** Used where some degree of flow control is required.

**NR- Non-Rotating:** Typically used in high-cycle applications to extend valve life and prevent stem rotation inside the body tip, a suitable selection for gaseous high-pressure applications.



## PRESSURE TEMPERATURE RATING LET-LOK CONNECTION



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

| Pressure per LET-LOK® Size |           |    |           |
|----------------------------|-----------|----|-----------|
| in                         | Pressure  | mm | Pressure  |
| 1/4                        | 10000 psi | 6  | 10000 psi |
| 3/8                        | 6500 psi  | 8  | 7500 psi  |
| 1/2                        | 6500 psi  | 10 | 7500 psi  |
| 3/4                        | 5650 psi  | 12 | 6500 psi  |
| 1"                         | 4000 psi  | 25 | 4700 psi  |

**Note:** The maximum allowed working pressure that is marked on the valve may be limited according to the pressure limitations that are recommended by the tubing /piping standards (Reference: Let-Lok tube fittings General Information).

### Note:

Valves with Let-Lok ends are always made of bar stock body.  
For lower temperature applications please contact your local representative.

Grafoil - TM GrafTech International Holdings, Inc.

## H-99 SERIES ORDERING INFORMATION

|                  |  |                         |   |    |                                    |   |                     |   |          |   |                                         |   |          |  |
|------------------|--|-------------------------|---|----|------------------------------------|---|---------------------|---|----------|---|-----------------------------------------|---|----------|--|
| H-99             |  | L                       | - | 00 | SS                                 | - | L                   | - | V        | - | 1/2                                     | - | OPTIONAL |  |
| Valve Series     |  | Valve Type              |   |    | End Connection Type                |   | Stem                |   | Size     |   | Packing                                 |   |          |  |
| Body Designator  |  | 00 - LET-LOK® End       |   |    | L - LET-LOK®                       |   | V - V Stem          |   | 1/4 6MM  |   | Blank - PTFE                            |   |          |  |
| S - Small        |  | 10 - Female End         |   |    | N - Threaded NPT                   |   | R - Regulating Stem |   | 3/8 8MM  |   | PK - PEEK                               |   |          |  |
| M - Medium       |  | 15 - Female to Male End |   |    | R - ISO Taper                      |   | NR - Non Rotating   |   | 1/2 10MM |   | G - Grafoil®                            |   |          |  |
| L - Large        |  | 80 - Male End           |   |    | G - ISO Parallel                   |   | CB* - Ceramic ball  |   | 3/4 12MM |   |                                         |   |          |  |
| XL - Extra Large |  | 85 - Male to Female End |   |    | TBW - Tube Butt-Weld               |   | * For body S-M only |   | 1" 25MM  |   |                                         |   |          |  |
|                  |  | Material                |   |    | TSW - Tube Socket-Weld             |   |                     |   |          |   | Treatment                               |   |          |  |
|                  |  | SS - St.St 316          |   |    | PBW - Pipe Butt-Weld (Schedule 40) |   |                     |   |          |   | BLANK - Standard Cleaning & Passivation |   |          |  |
|                  |  | SD - Super Duplex 2507  |   |    | PSW - Pipe Socket Weld             |   |                     |   |          |   | OC - Oxygen clean                       |   |          |  |
|                  |  | HC - Alloy C-276        |   |    |                                    |   |                     |   |          |   | LF - Lubricant free                     |   |          |  |
|                  |  | M - Alloy 400           |   |    |                                    |   |                     |   |          |   | SF - Silicone free                      |   |          |  |

### SEAL KIT

Included: Packing & Label

Z - 99 - M - SK - PT

| Body's size |                    | Packing |          |
|-------------|--------------------|---------|----------|
| SS          | Small (25mm)       | PT      | PTFE     |
| SD          | Medium (30mm)      | PK      | PEEK     |
| HC          | Large (35mm)       | G       | Grafoil® |
| M           | Extra Large (45mm) |         |          |

Grafoil - TM GrafTech International Holdings, Inc.

### Warning!

The system designer and user have the sole responsibility for selecting products suitable for their special application requirements, ensuring their safe and trouble-free installation, operation, and maintenance. Application details, material compatibility and product ratings should all be considered for each selected product. Improper selection, installation or use of products can cause property damage or personal injury.

### HANDLE KIT

Z - 99 - SS - HK - 65mm

| Size  |                      |
|-------|----------------------|
| 65 mm | For S body size      |
| 80 mm | For M body size      |
| 90 mm | For L / XL body size |

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