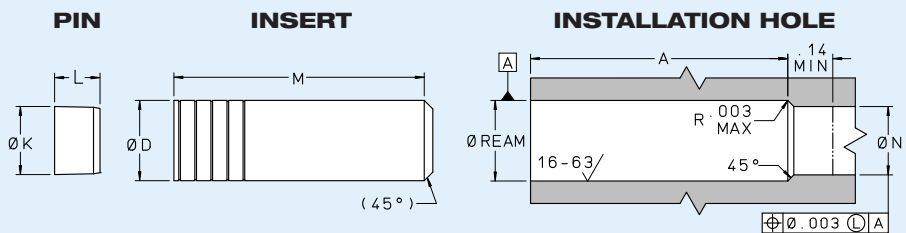# Innovation in Miniature

**LEE**
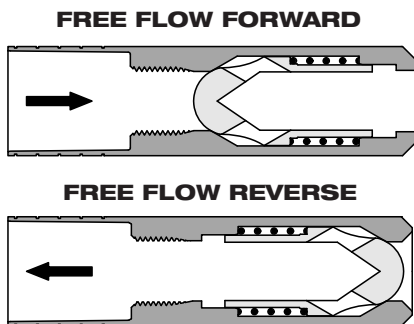
# NACE COMPLIANT
# HIGH PRESSURE LEE CHEK®

The Lee Company's new NACE Compliant High Pressure Lee Chek® Valves are specifically designed for the harsh duty applications found in the oil tool industry. They are constructed entirely of corrosion-resistant materials that comply with NACE specification MR0175/ISO 15156. These new check valves feature a durable MP35N poppet and seat, and are designed for checked direction pressures up to 15,000 psid.

The new valves are available in free flow forward and free flow reverse directions, with cracking pressures of 5 ± 3 and 1 ± 0.5 psid. Sizes range from 0.125" to 0.500" in diameter, with free flow Lohm† rates from 400 to 15 Lohms. Each NACE Compliant High Pressure Lee Chek® valve is 100% tested and inspected to ensure reliable, consistent performance, eliminating the need for additional in-house testing.

- All Valve Materials Compliant with NACE MR0175/ISO 15156
- 15,000 psid Maximum Working Pressure
- 5 Standard Sizes, as Small as 0.125" Diameter
- Free Flow Lohm Rates from 400 Down to 15 Lohms
- 100% Tested and Inspected

### PIN   INSERT   INSTALLATION HOLE

## FREE FLOW FORWARD

## FREE FLOW REVERSE

| MATERIALS | |
|-----------|---------|
| **PART** | **MATERIAL** |
| Body | MP35N |
| Poppet | MP35N |
| Spring | Elgiloy |
| Pin | MP35N |

*Pins are prewaxed. Do not degrease. Do not lubricate.*

† *The Lohm is a measure of flow resistance. Additional information can be found on the reverse side and at www.TheLeeCo.com.*

|  | .125" Dia. | .187" Dia. | .250" Dia. | .375" Dia. | .500" Dia. |
|---|---|---|---|---|---|
| Ø D | 0.1242 - 0.1249 | 0.1867 - 0.1874 | 0.2492 - 0.2499 | 0.3742 - 0.3749 | 0.4992 - 0.4999 |
| M | 0.52 | 0.82 | 1.00 | 1.30 | 1.69 |
| Ø K | 0.11 | 0.16 | 0.21 | 0.34 | 0.46 |
| L | 0.14 | 0.25 | 0.32 | 0.39 | 0.49 |
| A | 0.54 min. | 0.84 min. | 1.02 min. | 1.32 min. | 1.71 min. |
| Ø N | 0.082 - 0.096 | 0.141 - 0.159 | 0.205 - 0.221 | 0.280 - 0.320 | 0.378 - 0.445 |
| Ø Ream | 0.1250 - 0.1255 | 0.1875 - 0.1880 | 0.2500 - 0.2505 | 0.3750 - 0.3755 | 0.5000 - 0.5010 |

| LEE PART NUMBER | CRACKING PRESSURE (psid) | LOHM RATE (Max.) | FLOW DIRECTION | MAXIMUM LEAKAGE CHECKED DIRECTION | MAX. WORKING PRESSURE* (psid) |
|---|---|---|---|---|---|
| CHRA1256651A | 1 ± 0.5 | 400 | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHRA1256655A | 5 ± 3 | | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHFA1256651A | 1 ± 0.5 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHFA1256655A | 5 ± 3 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHRA1876651A | 1 ± 0.5 | 210 | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHRA1876655A | 5 ± 3 | | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHFA1876651A | 1 ± 0.5 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHFA1876655A | 5 ± 3 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHRA2506651A | 1 ± 0.5 | 60 | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHRA2506655A | 5 ± 3 | | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHFA2506651A | 1 ± 0.5 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHFA2506655A | 5 ± 3 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHRA3756651A | 1 ± 0.5 | 27 | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHRA3756655A | 5 ± 3 | | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHFA3756651A | 1 ± 0.5 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHFA3756655A | 5 ± 3 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHRA5006651A | 1 ± 0.5 | 15 | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHRA5006655A | 5 ± 3 | | Reverse | 1 drop/min at 5 psid | 15,000 |
| CHFA5006651A | 1 ± 0.5 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |
| CHFA5006655A | 5 ± 3 | | Forward | 1 drop/hr at 1,000-15,000 psid | 15,000* |

\* *These forward flow check valve models require secondary retention for check direction pressure above 8,000 PSID.*

# LEE LOHM LAWS

## LOHMS LAWS (liquids)

Every engineer will be interested in our simple system of defining the fluid resistance of Lee hydraulic components.

Just as the OHM is used in the electrical industry, we find that we can use a liquid OHM or "Lohm" to good advantage on all hydraulic computations.

When using the Lohm system, you can forget about coefficients of discharge and dimensional tolerances on drilled holes. These factors are automatically compensated for in the Lohm calculations, and confirmed by testing each component to establish flow tolerances. The resistance to flow of any fluid control component can be expressed in Lohms.

The Lohm has been selected so that a 1 Lohm restriction will permit a flow of 100 gallons per minute of water with a pressure drop of 25 psi at a temperature of 80°F.

### LIQUID FLOW – UNITS CONSTANT K

| VOLUMETRIC FLOW UNITS | | | |
|---|---|---|---|
| | Pressure Units | | |
| Flow Units | psi | bar | kPa |
| GPM | 20 | 76.2 | 7.62 |
| L/min | 75.7 | 288 | 28.8 |
| ml/min | 75 700 | 288 000 | 28 800 |
| in³/min | 4 620 | 17 600 | 1 760 |

| GRAVIMETRIC FLOW UNITS | | | |
|---|---|---|---|
| | Pressure Units | | |
| Flow Units | psi | bar | kPa |
| PPH | 10 000 | 38 100 | 3 810 |
| gm/min | 75 700 | 288 000 | 28 800 |

## LIQUID FLOW FORMULA

The following formulas are presented to extend the use of the Lohm laws to many different liquids, operating over a wide range of pressure conditions.

These formulas introduce compensation factors for liquid density and viscosity. They are applicable to any liquid of known properties, with minimum restrictions on pressure levels or temperature.

The units constant (K) eliminates the need to convert pressure and flow parameters to special units.

Volumetric Flow Units

$$L = \frac{KV}{I}\sqrt{\frac{H}{S}}$$

Gravimetric Flow Units

$$L = \frac{KV}{w}\sqrt{HS}$$

## NOMENCLATURE

- L = Lohms
- S = Specific gravity*
- H = Differential pressure
- V = Viscosity compensation factor**
- I = Liquid flow rate: Volumetric
- w = Liquid flow rate: Gravimetric
- K = Units Constant – Liquid (see chart above)
- *S = 1.0 for water at 80°F.
- **V = 1.0 for water at 80°F.

For other fluids and temperatures, contact your Lee Sales Engineer or visit us at www.TheLeeCo.com.

## FREE LOHM SYSTEM SLIDE RULE

The Lee Company offers a specially designed Hydraulic and Pneumatic Flow Calculator to help in the transition to the Lohm System. This handy, free slide rule can be used to solve basic Lohm calculations.