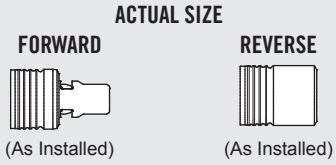
# 855 SERIES 316L CHECK VALVE WITH CERAMIC BALL

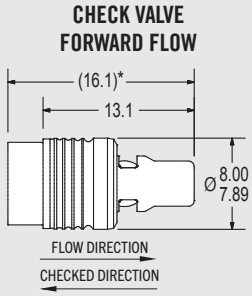
The new 855 Series 316L Check Valve With Ceramic Ball is a miniature, threadless, cartridge style check valve, specifically designed for installation into manifolds. This new valve is constructed from medical grade 316L stainless steel for improved compatibility with hydrogen and other aggressive fluids.

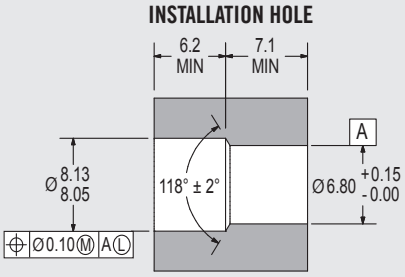
A high quality metal seat provides low leakage and highly repeatable cracking pressures. A robust design and 100% performance testing ensures consistent long term performance.

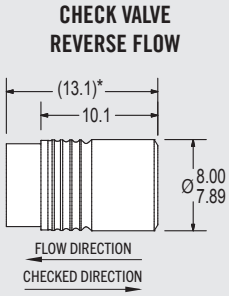
Simple to install, the new check valve uses our field-proven Lee Insert Principle that provides secure retention and eliminates the need for threads, O-rings, or in-house designs. To install, simply insert the valve into a drilled installation hole and drive the expansion pin flush to seal and lock the valve in place. The valves are available in both forward flow and reverse flow versions to provide design flexibility.

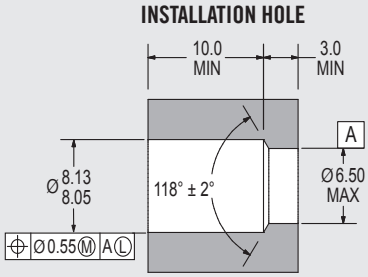
- 316L stainless steel and ceramic configuration for improved compatibility with hydrogen and other aggressive fluids
- 100% performance tested to eliminate rework
- Forward and reverse flow versions for design flexibility



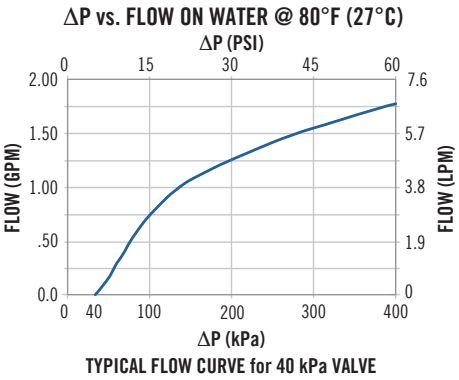




*Overall length before installation. All dimensions are in millimeters*




TYPICAL FLOW CURVE for 40 kPa VALVE

| FLOW DIRECTION | PART NUMBER | CRACKING PRESSURE |
|---|---|---|
| FORWARD | CCFM2804800S | 0 kPa (no spring) |
| | CCFM2804804S | 4 ± 3 kPa (0.6 ± 0.4 psid) |
| | CCFM2804807S | 7 ± 5 kPa (1 ± 0.7 psid) |
| | CCFM2804814S | 14 ± 5 kPa (2 ± 0.7 psid) |
| | CCFM2804840S | 40 ± 15 kPa (6 ± 2.2 psid) |
| | CCFM2804869S | 69 ± 15 kPa (10 ± 2.2 psid) |
| REVERSE | CCRM2804800S | 0 kPa (no spring) |
| | CCRM2804804S | 4 ± 3 kPa (0.6 ± 0.4 psid) |
| | CCRM2804807S | 7 ± 5 kPa (1 ± 0.7 psid) |
| | CCRM2804814S | 14 ± 5 kPa (2 ± 0.7 psid) |
| | CCRM2804840S | 40 ± 15 kPa (6 ± 2.2 psid) |
| | CCRM2804869S | 69 ± 15 kPa (10 ± 2.2 psid) |

| PERFORMANCE | |
|---|---|
| Lohm Rate | 75 Lohms** |
| Checked Direction Leakage | 20 SCCM (max.) @ 172 kPa (25 psid) on air |
| Maximum Working Pressure in Checked Direction | Forward Flow Valve: 16 MPa (2320 psid)<br>Reverse Flow Valve: 28 MPa (4060 psid) |
| Maximum Working Pressure in Flow Direction | 4 MPa (580 psid) (flow direction) |
| Materials | Body, Cage, Pin, and Spring are 316L Stainless Steel. Ball is Ceramic. |

** *The Lohm is a measure of flow resistance. Additional information can be found on the reverse side and at theleeco.com/Lohm.*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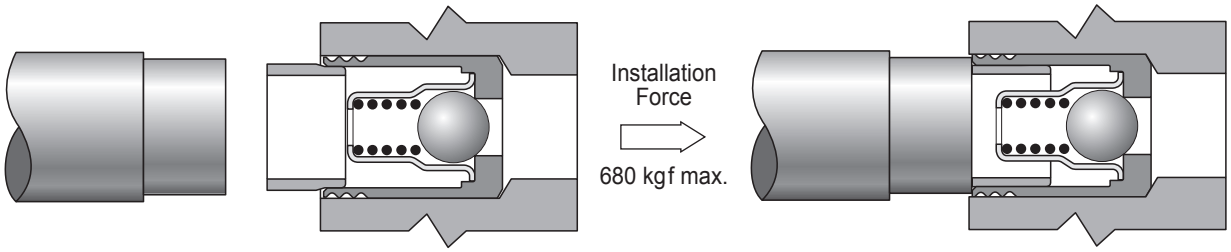
## INSTALLATION

Insert the valve into a drilled installation hole. Drive the expander pin flush to within 0.25 mm (0.010 of an inch) above flush of the check valve body. Use a maximum installation force of 680 kgf (1500 lbs force).

The installation tool can bottom on the insert body with no consequence. Lee Installation Tool part number CCRT0900150S is available.




REVERSE FLOW INSTALLATION

# LEE LOHM LAWS (LIQUIDS)

## WORKING WITH LIQUIDS

Engineers will be interested in our simple method of defining and measuring the resistance to fluid flow for hydraulic components. Just as the Ohm is used in electrical engineering, we find that we can use a liquid Ohm or “Lohm” to good advantage on all hydraulic computations.

When using the Lohm, 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 our testing of each component to establish flow tolerances. The resistance to flow of any fluid 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.

Due to the differences in fluid properties between gases and liquids, the equations for calculating the relationship between flow restriction, pressure differential, and flow rate are different.

## 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 below)
*S = 1.0 for water at 80°F.
**V = 1.0 for water at 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 |
| $in^3$/min | 4620 | 17,600 | 1760 |

| GRAVIMETRIC FLOW UNITS | | | |
|---|---|---|---|
| | PRESSURE UNITS | | |
| FLOW UNITS | psi | bar | kPa |
| PPH | 10,000 | 38,100 | 3810 |
| g/min | 75,700 | 288,000 | 28,800 |

For more information on Lohms, contact your local Lee Sales Engineer or visit theleeco.com/Lohm.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