

Medium and High Pressure Valves, Fittings, and Tubing

IPT Series



- Products up to 60 000 psig (4136 bar)
- End connections up to 1 in. (25.4 mm)
- NACE® MR0175/ISO15156 compliance available

Swagelok® Medium and High Pressure Valves, Fittings, and Tubing

These precision medium and high pressure valves, fittings, and fluid control devices are made standard from cold-worked 316 SS. Annealed 316 SS and other exotic materials are available to meet NACE MR0175/ISO 15156. They are designed for the oil and gas, chemical, petrochemical, water jet cutting and blasting, and aerospace industries.

Applications Include:

- Surface and Subsea
- Process Instrumentation and Controls
- Chemical Injections and Sampling
- DBB Isolation
- Waterjet Cutting
- Water Blasting
- Testing Equipment



Swagelok Limited Lifetime Warranty

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

Custom materials and configurations available upon request



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Coned & Threaded Fittings

Features & Benefits

- Coned & threaded connection provides dependable performance
- Weep holes standard on all pressure connections to verify proper connection
- All medium and high pressure fittings, adapters, and couplings complete with glands and collars when required
- Antivibration connection components available
- Adapters available in one or two piece designs (note: Add -S1 to catalog numbers for one-piece)
- Products can be manufactured to meet NACE MR0175/ISO 15156.

Note:
For NACE MR0175/ISO15156 fittings, add NACE to end of part number.

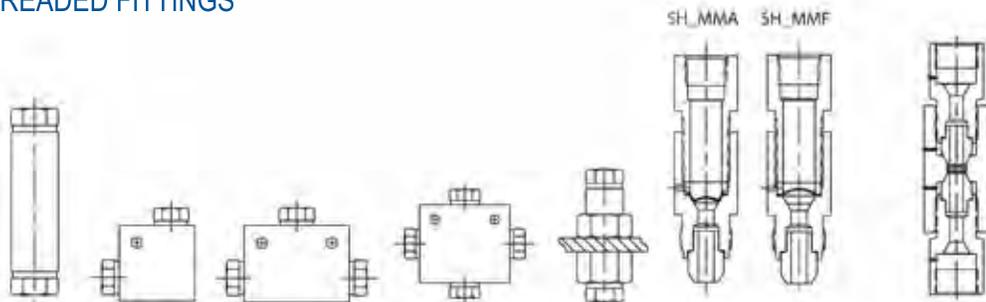
Specifications

Max. working pressure:
Up to 60 000 psig (4136 bar)

Materials of Construction

- 316 cold-worked stainless steel standard
- Other materials available on request

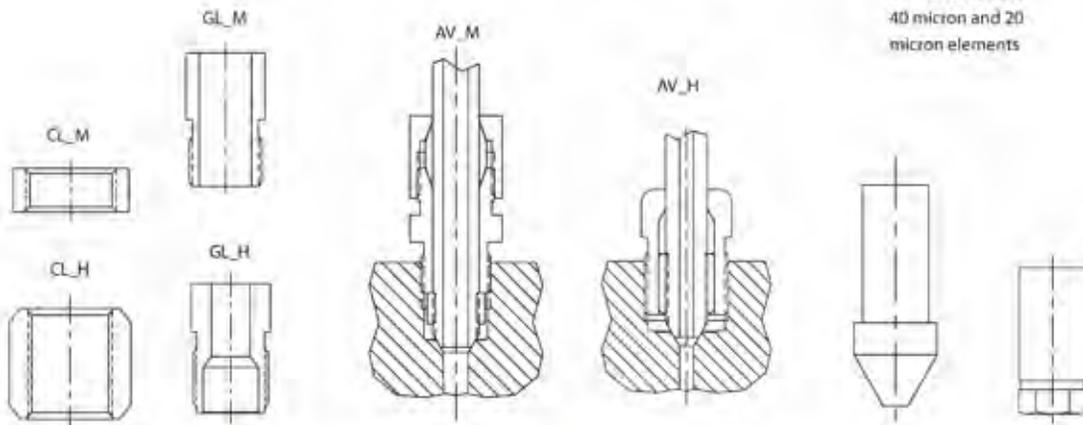
CONED & THREADED FITTINGS



| CONNECTION | COUPLING | ELBOW | TEE | CROSS | BULKHEAD | SAFETY HEAD | LINE FILTER | MAWP |
|------------|----------|---------|---------|---------|----------|-------------|--------------|------------|
| 1/4" M/P | CN4MF20 | L4MF20 | T4MF20 | X4MF20 | BH4MF20 | SH4MM*20 | LF4MF20-*/^ | 20,000 PSI |
| 3/8" M/P | CN6MF20 | L6MF20 | T6MF20 | X6MF20 | BH6MF20 | SH6MM*20 | LF6MF20-*/^ | 20,000 PSI |
| 9/16" M/P | CN9MF20 | L9MF20 | T9MF20 | X9MF20 | BH9MF20 | SH9MM*20 | LF9MF20-*/^ | 20,000 PSI |
| 3/4" M/P | CN12MF20 | L12MF20 | T12MF20 | X12MF20 | BH12MF20 | SH12MM*20 | LF12MF20-*/^ | 20,000 PSI |
| 1" M/P | CN16MF20 | L16MF20 | T16MF20 | X16MF20 | BH16MF20 | SH16MM*20 | LF16MF20-*/^ | 20,000 PSI |
| 1/4" H/P | CN4HF60 | L4HF60 | T4HF60 | X4HF60 | BH4HF60 | SH4HM*60 | LF4HF60-*/^ | 60,000 PSI |
| 3/8" H/P | CN6HF60 | L6HF60 | T6HF60 | X6HF60 | BH6HF60 | SH6HM*60 | LF6HF60-*/^ | 60,000 PSI |
| 9/16" H/P | CN9HF60 | L9HF60 | T9HF60 | X9HF60 | BH9HF60 | SH9HM*60 | LF9HF60-*/^ | 60,000 PSI |

*Insert A for 1/4" Angled style; Insert F for 1/2" Flat style
 * Flat disc up to 10,000psi

Replace */^ with the desired micron ratings
 Example: L4MF20-40/20 would have 40 micron and 20 micron elements



| CONNECTION | COLLAR | GLAND | ANTI-VIBRATION GLAND | PLUG | CAP |
|------------|--------|-------|----------------------|-------|---------|
| 1/4" M/P | CL4M | GL4M | AV4M | PL4M | CA4M20 |
| 3/8" M/P | CL6M | GL6M | AV6M | PL6M | CA6M20 |
| 9/16" M/P | CL9M | GL9M | AV9M | PL9M | CA9M20 |
| 3/4" M/P | CL12M | GL12M | AV12M | PL12M | CA12M20 |
| 1" M/P | CL16M | GL16M | AV16M | PL16M | CA16M20 |
| 1/4" H/P | CL4H | GL4H | AV4H | PL4H | CA4H60 |
| 3/8" H/P | CL6H | GL6H | AV6H | PL6H | CA6H60 |
| 9/16" H/P | CL9H | GL9H | AV9H | PL9H | CA9H60 |



Medium and High Pressure Tubing and Nipples

All tubing and nipples are seamless, austenitic, cold-drawn, tested and inspected to meet maximum strength and performance.

Specifications

Max. working pressure:

20 000 psig (1378 bar) medium pressure

60 000 psig (4136 bar) high pressure

Materials of Construction

- 316L stainless steel
- 304 stainless steel
- Other materials available

ORDERING

| PART NUMBER | NOMINAL TUBING | | MAWP @ 72°F |
|-------------|----------------|--------|-------------|
| | O.D. | I.D. | |
| TU4M20 | 1/4" | 0.109" | 20,000 PSI |
| TU6M20 | 3/8" | 0.203" | |
| TU9M20 | 9/16" | 0.312" | |
| TU12M20 | 3/4" | 0.438" | |
| TU16M20 | 1" | 0.562" | 60,000 PSI |
| TU4H60 | 1/4" | 0.083" | |
| TU6H60 | 3/8" | 0.125" | |
| TU9H60 | 9/16" | 0.188" | |

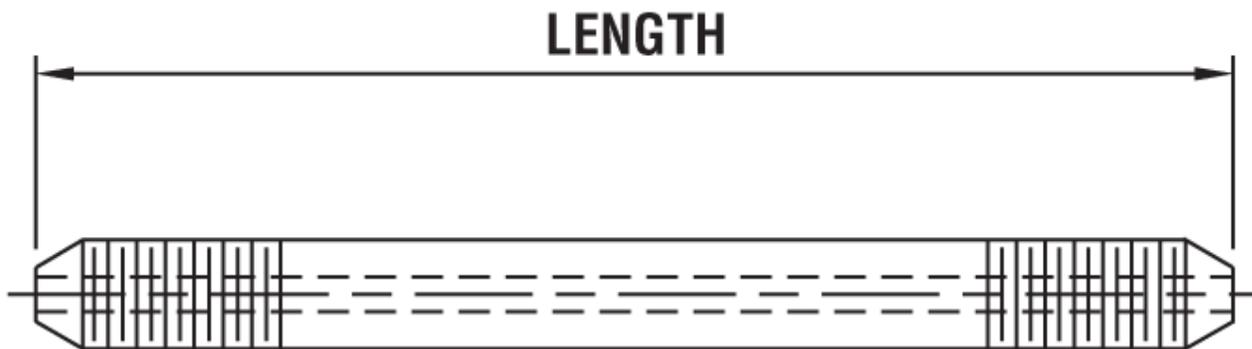
Tubing is supplied in random lengths averaging 24 ft (20 to 27 ft). Custom lengths are available upon requests.

Tube Nipples

Pre-cut, coned and threaded nipples in various lengths

Custom length tube nipples to desired length available upon request

Catalog numbers in the table refer to 316 stainless steel material. Other materials are available.



| PRESSURE | CONNECTION SIZE | MIN LENGTH | STANDARD LENGTHS | | | | | | | |
|--------------------------|-----------------|------------|------------------|------------|-------------|-------------|-------------|-------------|--------------|--------------|
| | | | 2.75" | 3.00" | 4.00" | 4.50" | 6.00" | 8.00" | 10.00" | 12.00" |
| 20,000 PSI (1380 bar) | 1/4" | 2.00 | N4M20-2.75 | N4M20-3.00 | N4M20-4.00 | — | N4M20-6.00 | N4M20-8.00 | N4M20-10.00 | N4M20-12.00 |
| | 3/8" | 2.50 | — | N6M20-3.00 | N6M20-4.00 | — | N6M20-6.00 | N6M20-8.00 | N6M20-10.00 | N6M20-12.00 |
| | 9/16" | 3.00 | — | N9M20-3.00 | N9M20-4.00 | — | N9M20-6.00 | N9M20-8.00 | N9M20-10.00 | N9M20-12.00 |
| | 3/4" | 3.25 | — | — | N12M20-4.00 | — | N12M20-6.00 | N12M20-8.00 | N12M20-10.00 | N12M20-12.00 |
| | 1" | 4.50 | — | — | — | N16M20-4.50 | N16M20-6.00 | N16M20-8.00 | N16M20-10.00 | N16M20-12.00 |
| 60,000 PSI (4140 bar) | 1/4" | 2.75 | N4H60-2.75 | N4H60-3.00 | N4H60-4.00 | — | N4H60-6.00 | N4H60-8.00 | N4H60-10.00 | N4H60-12.00 |
| | 3/8" | 3.00 | — | — | N6H60-4.00 | — | N6H60-6.00 | N6H60-8.00 | N6H60-10.00 | N6H60-12.00 |
| | 9/16" | 4.00 | — | — | N9H60-4.00 | — | N9H60-6.00 | N9H60-8.00 | N9H60-10.00 | N9H60-12.00 |

*To order a custom length, replace the last segment of the catalog number above to the desired length in inches.

Example: To order a 9/16" MP nipple 5.25" long, specify part number N9M20-5.25



Pipe Fittings

Features & Benefits

- Products can be manufactured to meet NACE MR0175/ISO15156

Specifications

Max. working pressure:
Up to 15 000 psig (1030 bar)

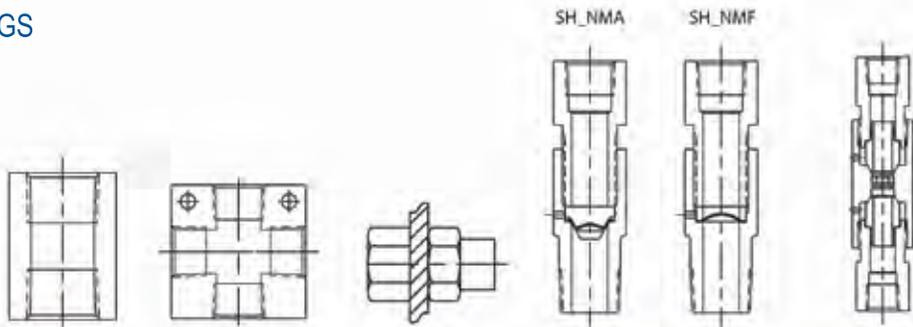
Materials of Construction

- 316 cold-worked stainless steel standard
- Other materials available on request

Note:

For NACE MR0175/ISO15156 fittings,
add NACE to end of part number.

PIPE FITTINGS

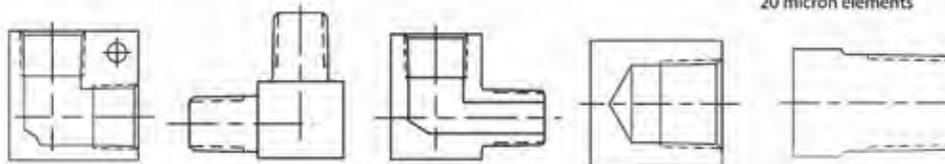


| CONNECTION | COUPLING | CROSS | BULKHEAD | SAFETY HEAD | LINE FILTER | MAWP |
|------------|----------|---------|----------|-------------|--------------|------------|
| 1/8" NPT | CN2NF15 | X2NF15 | BH2NF15 | SH2NM*15 | LF2NF15-*/" | 15,000 PSI |
| 1/4" NPT | CN4NF15 | X4NF15 | BH4NF15 | SH4NM*15 | LF4NF15-*/" | 15,000 PSI |
| 3/8" NPT | CN6NF15 | X6NF15 | BH6NF15 | SH6NM*15 | LF6NF15-*/" | 15,000 PSI |
| 1/2" NPT | CN8NF15 | X8NF15 | BH8NF15 | SH8NM*15 | LF8NF15-*/" | 15,000 PSI |
| 3/4" NPT | CN12NF10 | X12NF10 | BH12NF10 | SH12NM*10 | LF12NF10-*/" | 10,000 PSI |
| 1" NPT | CN16NF10 | X16NF10 | BH16NF10 | SH16NM*10 | LF16NF10-*/" | 10,000 PSI |

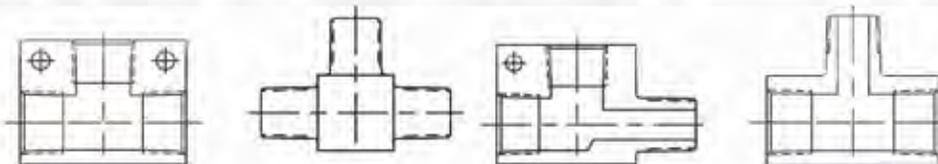
*Insert A for 1/4" Angled style;
Insert F for 1/2" Flat style

Replace */" with the desired
micron ratings
Example: L4MF20-40/20
would have 40 micron and
20 micron elements

Standard micron sizes
available
0.5, 2.5, 10, 20,
40 and 100 micron



| CONNECTION | FEMALE ELBOW | MALE ELBOW | STREET ELBOW | CAP | PLUG | MAWP |
|------------|--------------|------------|--------------|---------|---------|------------|
| 1/8" NPT | L2NF15 | L2NM15 | L2NM2NF15 | CA2N15 | PL2N15 | 15,000 PSI |
| 1/4" NPT | L4NF15 | L4NM15 | L4NM4NF15 | CA4N15 | PL4N15 | 15,000 PSI |
| 3/8" NPT | L6NF15 | L6NM15 | L6NM6NF15 | CA6N15 | PL6N15 | 15,000 PSI |
| 1/2" NPT | L8NF15 | L8NM15 | L8NM8NF15 | CA8N15 | PL8N15 | 15,000 PSI |
| 3/4" NPT | L12NF10 | L12NM10 | L12NM12NF10 | CA12N10 | PL12N10 | 10,000 PSI |
| 1" NPT | L16NF10 | L16NM10 | L16NM16NF10 | CA16N10 | PL16N10 | 10,000 PSI |



| CONNECTION | FEMALE TEE | MALE TEE | MALE RUN TEE | MALE BRANCH TEE | MAWP |
|------------|------------|----------|-----------------|-----------------|------------|
| 1/8" NPT | T2NF15 | T2NM15 | T2NF2NM2NF15 | T2NF2NF2NM15 | 15,000 PSI |
| 1/4" NPT | T4NF15 | T4NM15 | T4NF4NM4NF15 | T4NF4NF4NM15 | 15,000 PSI |
| 3/8" NPT | T6NF15 | T6NM15 | T6NF6NM6NF15 | T6NF6NF6NM15 | 15,000 PSI |
| 1/2" NPT | T8NF15 | T8NM15 | T8NF8NM8NF15 | T8NF8NF8NM15 | 15,000 PSI |
| 3/4" NPT | T12NF10 | T12NM10 | T12NF12NM12NF10 | T12NF12NF12NM10 | 10,000 PSI |
| 1" NPT | T16NF10 | T16NM10 | T16NF16NM16NF10 | T16NF16NF16NM10 | 10,000 PSI |



Adapters & Couplings

Features & Benefits

- All adapters are supplied with complete gland and collars
- Material 316 cold-worked stainless steel (other materials available)

Note:

1. The MAWP for an adapter is determined by the connection with the lowest pressure rating.
2. For NACE MR0175/ISO15156 adapters, add NACE to end of part number.

Specifications

Max. working pressure:
Up to 60 000 psig (4136 bar)

PLUGS

| | | |
|-------------|------------|-------|
| Type M Hose | 9/16"-18 | PL9R |
| | 3/4"-16 | PL12R |
| | 1"-12 | PL16R |
| | 1-5/16"-12 | PL21R |

CAPS

| | | |
|-------------|------------|---------|
| Type M Hose | 9/16"-18 | CA9R50 |
| | 3/4"-16 | CA12R30 |
| | 1"-12 | CA16R30 |
| | 1-5/16"-12 | CA21R20 |

MALE X MALE ADAPTERS (CONTINUED)*

| | | TYPE M HOSE | | | |
|-----|------|-------------|--------------|--------------|--------------|
| | | 9/16"-18 | 3/4"-16 | 1"-12 | 1-5/16"-12 |
| NPT | 1/4" | CN4NM9RM15 | CN4NM12RM15 | CN4NM16RM15 | — |
| | 3/8" | CN6NM9RM15 | CN6NM12RM15 | CN6NM16RM15 | — |
| | 1/2" | CN8NM9RM15 | CN8NM12RM15 | CN8NM16RM15 | CN8NM21RM15 |
| | 3/4" | CN12NM9RM10 | CN12NM12RM10 | CN12NM16RM10 | CN12NM21RM10 |
| | 1" | CN16NM9RM10 | CN16NM12RM10 | CN16NM16RM10 | CN16NM21RM10 |

| | | MP CONE & THREAD | | | | |
|-----|------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| NPT | 1/8" | CN2NM4MM15 | CN2NM6MM15 | CN2NM9MM15 | CN2NM12MM15 | CN2NM16MM15 |
| | 1/4" | CN4NM4MM15 | CN4NM6MM15 | CN4NM9MM15 | CN4NM12MM15 | CN4NM16MM15 |
| | 3/8" | CN6NM4MM15 | CN6NM6MM15 | CN6NM9MM15 | CN6NM12MM15 | CN6NM16MM15 |
| | 1/2" | CN8NM4MM15 | CN8NM6MM15 | CN8NM9MM15 | CN8NM12MM15 | CN8NM16MM15 |
| | 3/4" | CN12NM4MM10 | CN12NM6MM10 | CN12NM9MM10 | CN12NM12MM10 | CN12NM16MM10 |
| | 1" | CN16NM4MM10 | CN16NM6MM10 | CN16NM9MM10 | CN16NM12MM10 | CN16NM16MM10 |

| | | HP CONE & THREAD | | |
|-----|------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| NPT | 1/8" | CN2NM4HM15 | CN2NM6HM15 | CN2NM9HM15 |
| | 1/4" | CN4NM4HM15 | CN4NM6HM15 | CN4NM9HM15 |
| | 3/8" | CN6NM4HM15 | CN6NM6HM15 | CN6NM9HM15 |
| | 1/2" | CN8NM4HM15 | CN8NM6HM15 | CN8NM9HM15 |
| | 3/4" | CN12NM4HM10 | CN12NM6HM10 | CN12NM9HM10 |
| | 1" | CN16NM4HM10 | CN16NM6HM10 | CN16NM9HM10 |

| | | TYPE M HOSE | | | | | |
|-------------|------------|-------------|--------------|--------------|--------------|--------------|--------------|
| | | 9/16"-18 | 3/4"-16 | 7/8"-14 | 1"-12 | 1-1/8"-12 | 1-5/16"-12 |
| Type M Hose | 9/16"-18 | CN9RM50 | CN9RM12RM30 | CN9RM14RM50 | CN9RM16RM30 | CN9RM18RM50 | — |
| | 3/4"-16 | CN9RM12RM30 | CN12RM30 | — | CN12RM16RM30 | — | — |
| | 7/8"-14 | CN9RM14RM50 | — | CN14RM50 | — | CN14RM18RM50 | — |
| | 1"-12 | CN9RM16RM30 | CN12RM16RM30 | — | CN16RM30 | — | CN16RM21RM20 |
| | 1-1/8"-12 | CN9RM18RM50 | — | CN14RM18RM50 | — | CN18RM50 | — |
| | 1-5/16"-12 | — | — | — | CN16RM21RM20 | — | CN21RM20 |

* Last two digits of part number designates pressure x 1000 psi (e.g. CN4NM9RM15 is rated for 15,000 psi)

Continued on next page....

MALE X MALE ADAPTERS* (CONTINUED)

| | | MP CONE & THREAD | | | | |
|-------------|------------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| Type M Hose | 9/16"-18 | CN4MM9RM20 | CN6MM9RM20 | CN9MM9RM20 | CN12MM9RM20 | CN16MM9RM20 |
| | 3/4"-16 | CN4MM12RM20 | CN6MM12RM20 | CN9MM12RM20 | CN12MM12RM20 | CN16MM12RM20 |
| | 7/8"-14 | CN4MM14RM20 | CN6MM14RM20 | CN9MM14RM20 | CN12MM14RM20 | CN16MM14RM20 |
| | 1"-12 | CN4MM16RM20 | CN6MM16RM20 | CN9MM16RM20 | CN12MM16RM20 | CN16MM16RM20 |
| | 1-5/16"-12 | — | — | CN9MM21RM20 | CN12MM21RM20 | CN16MM21RM20 |

| | | HP CONE & THREAD | | |
|-------------|------------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| Type M Hose | 9/16"-18 | CN9RM4HM50 | CN9RM6HM50 | CN9RM9HM50 |
| | 3/4"-16 | CN12RM4HM30 | CN12RM6HM30 | CN12RM9HM30 |
| | 7/8"-14 | — | CN14RM6HM50 | CN14RM9HM50 |
| | 1"-12 | — | CN16RM6HM30 | CN16RM9HM30 |
| | 1-1/8"-12 | — | — | CN18RM9HM50 |
| | 1-5/16"-12 | — | — | CN21RM9HM50 |

| | | MP CONE & THREAD | | | | |
|------------------|-------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| MP Cone & Thread | 1/4" | CN4MM20 | CN4MM6MM20 | CN4MM9MM20 | CN4MM12MM20 | CN4MM16MM20 |
| | 3/8" | CN4MM6MM20 | CN6MM20 | CN6MM9MM20 | CN6MM12MM20 | CN6MM16MM20 |
| | 9/16" | CN4MM9MM20 | CN6MM9MM20 | CN9MM20 | CN9MM12MM20 | CN9MM16MM20 |
| | 3/4" | CN4MM12MM20 | CN6MM12MM20 | CN9MM12MM20 | CN12MM20 | CN12MM16MM20 |
| | 1" | CN4MM16MM20 | CN6MM16MM20 | CN9MM16MM20 | CN12MM16MM20 | CN16MM20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| MP Cone & Thread | 1/4" | CN4MM4HM20 | CN4MM6HM20 | CN4MM9HM20 |
| | 3/8" | CN6MM4HM20 | CN6MM6HM20 | CN6MM9HM20 |
| | 9/16" | CN9MM4HM20 | CN9MM6HM20 | CN9MM9HM20 |
| | 3/4" | CN12MM4HM20 | CN12MM6HM20 | CN12MM9HM20 |
| | 1" | CN16MM4HM20 | CN16MM6HM20 | CN16MM9HM20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|------------|------------|
| MALE END | | 1/4" | 3/8" | 9/16" |
| HP Cone & Thread | 1/4" | CN4HM60 | CN4HM6HM60 | CN4HM9HM60 |
| | 3/8" | CN4HM6HM60 | CN6HM60 | CN6HM9HM60 |
| | 9/16" | CN4HM9HM60 | CN6HM9HM60 | CN9HM60 |

FEMALE X FEMALE COUPLINGS*

| | | NPT | | | | | |
|-----|------|-------------|-------------|-------------|-------------|--------------|--------------|
| | | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| NPT | 1/8" | CN2NF15 | CN2NF4NF15 | CN2NF6NF15 | CN2NF8NF15 | CN2NF12NF10 | CN2NF16NF10 |
| | 1/4" | CN2NF4NF15 | CN4NF15 | CN4NF6NF15 | CN4NF8NF15 | CN4NF12NF10 | CN4NF16NF10 |
| | 3/8" | CN2NF6NF15 | CN4NF6NF15 | CN6NF15 | CN6NF8NF15 | CN6NF12NF10 | CN6NF16NF10 |
| | 1/2" | CN2NF8NF15 | CN4NF8NF15 | CN6NF8NF15 | CN8NF15 | CN8NF12NF10 | CN8NF16NF10 |
| | 3/4" | CN2NF12NF10 | CN4NF12NF10 | CN6NF12NF10 | CN8NF12NF10 | CN12NF10 | CN12NF16NF10 |
| | 1" | CN2NF16NF10 | CN4NF16NF10 | CN6NF16NF10 | CN8NF16NF10 | CN12NF16NF10 | CN16NF10 |

| | | MP CONE & THREAD | | | | |
|-----|------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| NPT | 1/8" | CN2NF4MF15 | CN2NF6MF15 | CN2NF9MF15 | CN2NF12MF15 | CN2NF16MF15 |
| | 1/4" | CN4NF4MF15 | CN4NF6MF15 | CN4NF9MF15 | CN4NF12MF15 | CN4NF16MF15 |
| | 3/8" | CN6NF4MF15 | CN6NF6MF15 | CN6NF9MF15 | CN6NF12MF15 | CN6NF16MF15 |
| | 1/2" | CN8NF4MF15 | CN8NF6MF15 | CN8NF9MF15 | CN8NF12MF15 | CN8NF16MF15 |
| | 3/4" | CN12NF4MF10 | CN12NF6MF10 | CN12NF9MF10 | CN12NF12MF10 | CN12NF16MF10 |
| | 1" | CN16NF4MF10 | CN16NF6MF10 | CN16NF9MF10 | CN16NF12MF10 | CN16NF16MF10 |

| | | HP CONE & THREAD | | |
|-----|------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| NPT | 1/8" | CN2NF4HF15 | CN2NF6HF15 | CN2NF9HF15 |
| | 1/4" | CN4NF4HF15 | CN4NF6HF15 | CN4NF9HF15 |
| | 3/8" | CN6NF4HF15 | CN6NF6HF15 | CN6NF9HF15 |
| | 1/2" | CN8NF4HF15 | CN8NF6HF15 | CN8NF9HF15 |
| | 3/4" | CN12NF4HF10 | CN12NF6HF10 | CN12NF9HF10 |
| | 1" | CN16NF4HF10 | CN16NF6HF10 | CN16NF9HF10 |

| | | MP CONE & THREAD | | | | |
|------------------|-------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| MP Cone & Thread | 1/4" | CN4MF20 | CN4MF6MF20 | CN4MF9MF20 | CN4MF12MF20 | CN4MF16MF20 |
| | 3/8" | CN4MF6MF20 | CN6MF20 | CN6MF9MF20 | CN6MF12MF20 | CN6MF16MF20 |
| | 9/16" | CN4MF9MF20 | CN6MF9MF20 | CN9MF20 | CN9MF12MF20 | CN9MF16MF20 |
| | 3/4" | CN4MF12MF20 | CN6MF12MF20 | CN9MF12MF20 | CN12MF20 | CN12MF16MF20 |
| | 1" | CN4MF16MF20 | CN6MF16MF20 | CN9MF16MF20 | CN12MF16MF20 | CN16MF20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| MP Cone & Thread | 1/4" | CN4MF4HF20 | CN4MF6HF20 | CN4MF9HF20 |
| | 3/8" | CN6MF4HF20 | CN6MF6HF20 | CN6MF9HF20 |
| | 9/16" | CN9MF4HF20 | CN9MF6HF20 | CN9MF9HF20 |
| | 3/4" | CN12MF4HF20 | CN12MF6HF20 | CN12MF9HF20 |
| | 1" | CN16MF4HF20 | CN16MF6HF20 | CN16MF9HF20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|------------|------------|
| | | 1/4" | 3/8" | 9/16" |
| HP Cone & Thread | 1/4" | CN4HF60 | CN4HF6HF60 | CN4HF9HF60 |
| | 3/8" | CN4HF6HF60 | CN6HF60 | CN6HF9HF60 |
| | 9/16" | CN4HF9HF60 | CN6HF9HF60 | CN9HF60 |

MALE X FEMALE ADAPTERS

| | | NPT | | | | | |
|-----|------|-------------|-------------|-------------|-------------|--------------|--------------|
| | | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| NPT | 1/8" | CN2NM2NF15 | CN2NM4NF15 | CN2NM6NF15 | CN2NM8NF15 | CN2NM12NF10 | CN2NM16NF10 |
| | 1/4" | CN4NM2NF15 | CN4NM4NF15 | CN4NM6NF15 | CN4NM8NF15 | CN4NM12NF10 | CN4NM16NF10 |
| | 3/8" | CN6NM2NF15 | CN6NM4NF15 | CN6NM6NF15 | CN6NM8NF15 | CN6NM12NF10 | CN6NM16NF10 |
| | 1/2" | CN8NM2NF15 | CN8NM4NF15 | CN8NM6NF15 | CN8NM8NF15 | CN8NM12NF10 | CN8NM16NF10 |
| | 3/4" | CN12NM2NF10 | CN12NM4NF10 | CN12NM6NF10 | CN12NM8NF10 | CN12NM12NF10 | CN12NM16NF10 |
| | 1" | CN16NM2NF10 | CN16NM4NF10 | CN16NM6NF10 | CN16NM8NF10 | CN16NM12NF10 | CN16NM16NF10 |

| | | MP CONE & THREAD | | | | |
|-----|------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| NPT | 1/8" | CN2NM4MF15 | CN2NM6MF15 | CN2NM9MF15 | CN2NM12MF15 | CN2NM16MF15 |
| | 1/4" | CN4NM4MF15 | CN4NM6MF15 | CN4NM9MF15 | CN4NM12MF15 | CN4NM16MF15 |
| | 3/8" | CN6NM4MF15 | CN6NM6MF15 | CN6NM9MF15 | CN6NM12MF15 | CN6NM16MF15 |
| | 1/2" | CN8NM4MF15 | CN8NM6MF15 | CN8NM9MF15 | CN8NM12MF15 | CN8NM16MF15 |
| | 3/4" | CN12NM4MF10 | CN12NM6MF10 | CN12NM9MF10 | CN12NM12MF10 | CN12NM16MF10 |
| | 1" | CN16NM4MF10 | CN16NM6MF10 | CN16NM9MF10 | CN16NM12MF10 | CN16NM16MF10 |

| | | HP CONE & THREAD | | |
|----------|------|------------------|-------------|-------------|
| MALE END | | 1/4" | 3/8" | 9/16" |
| NPT | 1/8" | CN2NM4HF15 | CN2NM6HF15 | CN2NM9HF15 |
| | 1/4" | CN4NM4HF15 | CN4NM6HF15 | CN4NM9HF15 |
| | 3/8" | CN6NM4HF15 | CN6NM6HF15 | CN6NM9HF15 |
| | 1/2" | CN8NM4HF15 | CN8NM6HF15 | CN8NM9HF15 |
| | 3/4" | CN12NM4HF10 | CN12NM6HF10 | CN12NM9HF10 |
| | 1" | CN16NM4HF10 | CN16NM6HF10 | CN16NM9HF10 |

| | | NPT | | | | | |
|------------------|-------|-------------|-------------|-------------|-------------|--------------|--------------|
| | | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| MP Cone & Thread | 1/4" | CN4MM2NF15 | CN4MM4NF15 | CN4MM6NF15 | CN4MM8NF15 | CN4MM12NF10 | CN4MM16NF10 |
| | 3/8" | CN6MM2NF15 | CN6MM4NF15 | CN6MM6NF15 | CN6MM8NF15 | CN6MM12NF10 | CN6MM16NF10 |
| | 9/16" | CN9MM2NF15 | CN9MM4NF15 | CN9MM6NF15 | CN9MM8NF15 | CN9MM12NF10 | CN9MM16NF10 |
| | 3/4" | CN12MM2NF15 | CN12MM4NF15 | CN12MM6NF15 | CN12MM8NF15 | CN12MM12NF10 | CN12MM16NF10 |
| | 1" | CN16MM2NF15 | CN16MM4NF15 | CN16MM6NF15 | CN16MM8NF15 | CN16MM12NF10 | CN16MM16NF10 |

| | | NPT | | | | | |
|------------------|-------|------------|------------|------------|------------|-------------|-------------|
| | | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1" |
| HP Cone & Thread | 1/4" | CN4HM2NF15 | CN4HM4NF15 | CN4HM6NF15 | CN4HM8NF15 | CN4HM12NF10 | CN4HM16NF10 |
| | 3/8" | CN6HM2NF15 | CN6HM4NF15 | CN6HM6NF15 | CN6HM8NF15 | CN6HM12NF10 | CN6HM16NF10 |
| | 9/16" | CN9HM2NF15 | CN9HM4NF15 | CN9HM6NF15 | CN9HM8NF15 | CN9HM12NF10 | CN9HM16NF10 |

MALE X FEMALE ADAPTERS (CONTINUED)

| | | MP CONE & THREAD | | | | |
|------------------|-------|------------------|-------------|-------------|--------------|--------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| MP Cone & Thread | 1/4" | CN4MM4MF20 | CN4MM6MF20 | CN4MM9MF20 | CN4MM12MF20 | CN4MM16MF20 |
| | 3/8" | CN6MM4MF20 | CN6MM6MF20 | CN6MM9MF20 | CN6MM12MF20 | CN6MM16MF20 |
| | 9/16" | CN9MM4MF20 | CN9MM6MF20 | CN9MM9MF20 | CN9MM12MF20 | CN9MM16MF20 |
| | 3/4" | CN12MM4MF20 | CN12MM6MF20 | CN12MM9MF20 | CN12MM12MF20 | CN12MM16MF20 |
| | 1" | CN16MM4MF20 | CN16MM6MF20 | CN16MM9MF20 | CN16MM12MF20 | CN16MM16MF20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" |
| MP Cone & Thread | 1/4" | CN4MM4HF20 | CN4MM6HF20 | CN4MM9HF20 |
| | 3/8" | CN6MM4HF20 | CN6MM6HF20 | CN6MM9HF20 |
| | 9/16" | CN9MM4HF20 | CN9MM6HF20 | CN9MM9HF20 |
| | 3/4" | CN12MM4HF20 | CN12MM6HF20 | CN12MM9HF20 |
| | 1" | CN16MM4HF20 | CN16MM6HF20 | CN16MM9HF20 |

| | | MP CONE & THREAD | | | | |
|------------------|-------|------------------|------------|------------|-------------|-------------|
| | | 1/4" | 3/8" | 9/16" | 3/4" | 1" |
| HP Cone & Thread | 1/4" | CN4HM4MF20 | CN4HM6MF20 | CN4HM9MF20 | CN4HM12MF20 | CN4HM16MF20 |
| | 3/8" | CN6HM4MF20 | CN6HM6MF20 | CN6HM9MF20 | CN6HM12MF20 | CN6HM16MF20 |
| | 9/16" | CN9HM4MF20 | CN9HM6MF20 | CN9HM9MF20 | CN9HM12MF20 | CN9HM16MF20 |

| | | HP CONE & THREAD | | |
|------------------|-------|------------------|------------|------------|
| MALE END | | 1/4" | 3/8" | 9/16" |
| HP Cone & Thread | 1/4" | CN4HM4HF60 | CN4HM6HF60 | CN4HM9HF60 |
| | 3/8" | CN6HM4HF60 | CN6HM6HF60 | CN6HM9HF60 |
| | 9/16" | CN9HM4HF60 | CN9HM6HF60 | CN9HM9HF60 |



Custom Manifolds

Features & Benefits

- Pressure manifolds minimize space requirements and reduce installation time necessary to plumb a pressure system.
- The number of potential leak points is minimized by reducing the number of components used in a system

A variety of pressure manifolds are available to meet your installation, layout and pressure requirements. These manifolds can withstand pressures up to 60 000 psig (4136 bar) and are available in a variety of materials.



Coning & Threading Kit

Features & Benefits

- Precision quality coning and threading tools for tubing sizes through 9/16 in. OD
- Manufactured from tool grade materials for long life
- All tools are designed with interchangeable blades, bushings, and dies. The convenient kit includes everything needed to prepare both medium and high pressure tubing in 1/4, 3/8 and 9/16 in. sizes
- Tools are easily adaptable for use with a power hand drill
- Tools guide on the outside diameter of the tubing, eliminating misalignment issues that adversely affect quality
- Lightweight tube vise securely holds the tubing during both coning and threading operations, preventing marring and collapse of the tubing
- Tube vise eliminates the need for soft jaws in vise
- Custom coning tool gauge allows for fast setup

REPLACEMENT BLADES AND DIES

| TUBING SIZE | MP BLADE | HP BLADE | DIE |
|-------------|----------|----------|-----|
| 1/4" | BL4M | BL4H | DT4 |
| 3/8" | BL6M | BL6H | DT6 |
| 9/16" | BL9M | BL9H | DT9 |



Pipe-Ended Needle Valves

Features & Benefits

- Two-piece, nonrotating stem
- Full open in 4-5 turns
- Nine body styles for a wide range of applications
- Packing gland machined from NiAlBronze for reduced operation torque.
- Packing gland locking mechanism prevents accidental disassembly and allows for simple panel mounting.
- For NACE MR0175/ISO15156 compliance, see sour gas page 22
- Stainless steel handle
- Patent pending

Specifications

Max. working pressure:
Up to 15 000 psig (1030 bar)

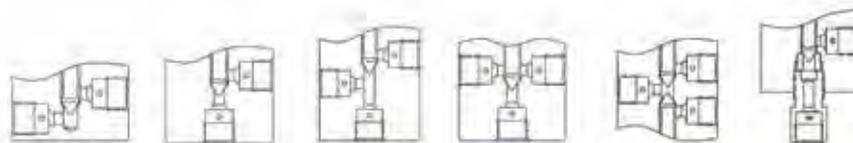
Materials of Construction

- Body – 316 cold-worked stainless steel
- Packing – Glass filled PTFE
- Stem 17-4PH

Actuator Options – see page 26

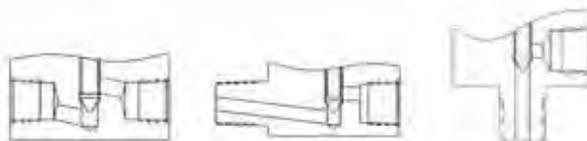
Ordering Options
PM - Panel mount

ORDERING



| PRESSURE | CONNECTION | | STEM TIP | 2-WAY | | 3-WAY 2 INLET PORTS | 3-WAY 2 OUTLET PORTS | 2-STEM MANIFOLD | REPLACEABLE SEAT | |
|--------------------------|------------|--------|----------|-------|------------|---------------------|----------------------|-----------------|------------------|-------------|
| | SIZE | PORT | | CV* | STRAIGHT | | | | | 2-WAY ANGLE |
| 15,000 PSI (1035 bar) | 1/8" | 0.187" | 0.65 | Vee | NVT2N1VA15 | NVT2N2VA15 | NVT2N3VA15 | NVT2N4VA15 | NVT2N5VA15 | NVT2N6VA15 |
| | | 0.187" | 0.65 | Reg | NVT2N1RA15 | NVT2N2RA15 | NVT2N3RA15 | NVT2N4RA15 | NVT2N5RA15 | NVT2N6RA15 |
| | 1/4" | 0.250" | 0.75 | Vee | NVT4N1VG15 | NVT4N2VG15 | NVT4N3VG15 | NVT4N4VG15 | NVT4N5VG15 | NVT4N6VG15 |
| | | 0.250" | 0.75 | Reg | NVT4N1RG15 | NVT4N2RG15 | NVT4N3RG15 | NVT4N4RG15 | NVT4N5RG15 | NVT4N6RG15 |
| | 3/8" | 0.312" | 1.75 | Vee | NVT6N1VB15 | NVT6N2VB15 | NVT6N3VB15 | NVT6N4VB15 | NVT6N5VB15 | NVT6N6VB15 |
| | | 0.312" | 1.75 | Reg | NVT6N1RB15 | NVT6N2RB15 | NVT6N3RB15 | NVT6N4RB15 | NVT6N5RB15 | NVT6N6RB15 |
| | 1/2" | 0.312" | 1.75 | Vee | NVT8N1VB15 | NVT8N2VB15 | NVT8N3VB15 | NVT8N4VB15 | NVT8N5VB15 | NVT8N6VB15 |
| | | 0.312" | 1.75 | Reg | NVT8N1RB15 | NVT8N2RB15 | NVT8N3RB15 | NVT8N4RB15 | NVT8N5RB15 | NVT8N6RB15 |
| 10,000 PSI (690 bar) | 3/4" | 0.562" | 3.40 | Vee | NV12N1VD10 | NV12N2VD10 | NV12N3VD10 | NV12N4VD10 | NV12N5VD10 | NV12N6VD10 |
| | | 0.562" | 3.40 | Reg | NV12N1RD10 | NV12N2RD10 | NV12N3RD10 | NV12N4RD10 | NV12N5RD10 | NV12N6RD10 |
| | 1" | 0.562" | 3.40 | Vee | NV16N1VD10 | NV16N2VD10 | NV16N3VD10 | NV16N4VD10 | NV16N5VD10 | NV16N6VD10 |
| | | 0.562" | 3.40 | Reg | NV16N1RD10 | NV16N2RD10 | NV16N3RD10 | NV16N4RD10 | NV16N5RD10 | NV16N6RD10 |

*Cv values listed are for 2-way straight valves. For 2-way angle valves, increase Cv by 50%



| PRESSURE | CONNECTION | | STEM TIP | 2-WAY STRAIGHT | 2-WAY STRAIGHT MALE X FEMALE | 2-WAY ANGLE MALE X FEMALE | |
|--------------------------|------------|--------|----------|----------------|------------------------------|---------------------------|------------|
| | SIZE | PORT | | | | | CV* |
| 15,000 PSI (1035 bar) | 1/8" | 0.187" | 0.60 | Vee | NVT2N1VE15 | NVT2N7VE15 | NVT2N8VE15 |
| | | 0.187" | 0.60 | Reg | NVT2N1RE15 | NVT2N7RE15 | NVT2N8RE15 |
| | 1/4" | 0.250" | 0.73 | Vee | NVT4N1VE15 | NVT4N7VE15 | NVT4N8VE15 |
| | | 0.250" | 0.73 | Reg | NVT4N1RE15 | NVT4N7RE15 | NVT4N8RE15 |
| | 3/8" | 0.250" | 0.73 | Vee | NVT6N1VE15 | NVT6N7VE15 | NVT6N8VE15 |
| | | 0.250" | 0.73 | Reg | NVT6N1RE15 | NVT6N7RE15 | NVT6N8RE15 |
| | 1/2" | 0.250" | 1.25 | Vee | NVT8N1VE15 | NVT8N7VE15 | NVT8N8VE15 |
| | | 0.250" | 1.25 | Reg | NVT8N1RE15 | NVT8N7RE15 | NVT8N8RE15 |
| 10,000 PSI (690 bar) | 3/4" | 0.687" | 5.20 | Vee | NV12N1VF10 | NV12N7VF10 | NV12N8VF10 |
| | | 0.687" | 5.20 | Reg | NV12N1RF10 | NV12N7RF10 | NV12N8RF10 |
| | 1" | 0.687" | 5.20 | Vee | NV16N1VF10 | NV16N7VF10 | NV16N8VF10 |
| | | 0.687" | 5.20 | Reg | NV16N1RF10 | NV16N7RF10 | NV16N8RF10 |

*Cv values listed are for 2-way straight valves. For 2-way angle valves, increase Cv by 50%



Needle Valves

Features & Benefits

- Two-piece, nonrotating stem tip prevents galling and scoring
- Vee or regulating stem tip
- Full open in 4-5 turns
- Six body styles for a wide range of applications
- Integral through-holes for bracket mounting
- Panel mounting option is also available
- Packing gland locking mechanism prevents accidental disassembly and allows for simple panel mounting.
- For NACE MR0175/ISO15156 compliance, see sour gas page 22
- Stainless steel handle
- Patent pending

Specifications

Max. working pressure:
Up to 60 000 psig (4136 bar)

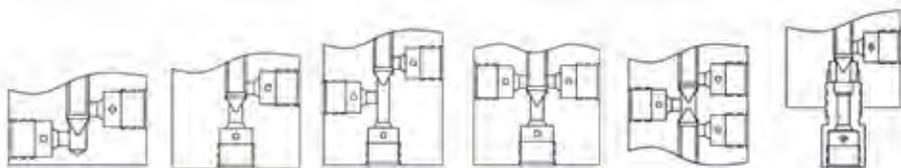
Materials of Construction

- Body – 316 cold-worked stainless steel
- Packing – Glass filled PTFE
- Stem 17-4PH

Actuator Options – see page 26

Ordering Options
PM - Panel mount

ORDERING



| PRESSURE | CONNECTION SIZE | PORT | CV* | STEM TIP | 2-WAY STRAIGHT | 2-WAY ANGLE | 3-WAY 2 INLET PORTS | 3-WAY 2 OUTLET PORTS | 2-STEM MANIFOLD | REPLACEABLE SEAT |
|--------------------------|-----------------|--------|------|----------|----------------|-------------|---------------------|----------------------|-----------------|------------------|
| 20,000 PSI (1380 bar) | 1/4" | 0.109" | 0.31 | Vee | NVT4M1VA20 | NVT4M2VA20 | NVT4M3VA20 | NVT4M4VA20 | NVT4M5VA20 | NVT4M6VA20 |
| | | | | Reg | NVT4M1RA20 | NVT4M2RA20 | NVT4M3RA20 | NVT4M4RA20 | NVT4M5RA20 | NVT4M6RA20 |
| | 3/8" | 0.203" | 0.75 | Vee | NVT6M1VA20 | NVT6M2VA20 | NVT6M3VA20 | NVT6M4VA20 | NVT6M5VA20 | NVT6M6VA20 |
| | | | | Reg | NVT6M1RA20 | NVT6M2RA20 | NVT6M3RA20 | NVT6M4RA20 | NVT6M5RA20 | NVT6M6RA20 |
| | 9/16" | 0.312" | 1.75 | Vee | NVT9M1VB20 | NVT9M2VB20 | NVT9M3VB20 | NVT9M4VB20 | NVT9M5VB20 | NVT9M6VB20 |
| | | | | Reg | NVT9M1RB20 | NVT9M2RB20 | NVT9M3RB20 | NVT9M4RB20 | NVT9M5RB20 | NVT9M6RB20 |
| | 3/4" | 0.438" | 2.80 | Vee | NVT12M1VC20 | NVT12M2VC20 | NVT12M3VC20 | NVT12M4VC20 | NVT12M5VC20 | NVT12M6VC20 |
| | | | | Reg | NVT12M1RC20 | NVT12M2RC20 | NVT12M3RC20 | NVT12M4RC20 | NVT12M5RC20 | NVT12M6RC20 |
| | 1" | 0.562" | 5.20 | Vee | NVT16M1VD20 | NVT16M2VD20 | NVT16M3VD20 | NVT16M4VD20 | NVT16M5VD20 | NVT16M6VD20 |
| | | | | Reg | NVT16M1RD20 | NVT16M2RD20 | NVT16M3RD20 | NVT16M4RD20 | NVT16M5RD20 | NVT16M6RD20 |
| 30,000 PSI (2070 bar) | 1/4" | 0.093" | 0.12 | Vee | NVT4H1VY30 | NVT4H2VY30 | NVT4H3VY30 | NVT4H4VY30 | NVT4H5VY30 | NVT4H6VY30 |
| | | | | Reg | NVT4H1RY30 | NVT4H2RY30 | NVT4H3RY30 | NVT4H4RY30 | NVT4H5RY30 | NVT4H6RY30 |
| | 3/8" | 0.125" | 0.23 | Vee | NVT6H1VY30 | NVT6H2VY30 | NVT6H3VY30 | NVT6H4VY30 | NVT6H5VY30 | NVT6H6VY30 |
| | | | | Reg | NVT6H1RY30 | NVT6H2RY30 | NVT6H3RY30 | NVT6H4RY30 | NVT6H5RY30 | NVT6H6RY30 |
| | 9/16" | 0.187" | 0.33 | Vee | NVT9H1VY30 | NVT9H2VY30 | NVT9H3VY30 | NVT9H4VY30 | NVT9H5VY30 | NVT9H6VY30 |
| | | | | Reg | NVT9H1RY30 | NVT9H2RY30 | NVT9H3RY30 | NVT9H4RY30 | NVT9H5RY30 | NVT9H6RY30 |
| 60,000 PSI (4140 bar) | 1/4" | 0.093" | 0.08 | Vee | NVT4H1VM60 | NVT4H2VM60 | NVT4H3VM60 | NVT4H4VM60 | NVT4H5VM60 | NVT4H6VM60 |
| | | | | Reg | NVT4H1RM60 | NVT4H2RM60 | NVT4H3RM60 | NVT4H4RM60 | NVT4H5RM60 | NVT4H6RM60 |
| | 3/8" | 0.125" | 0.09 | Vee | NVT6H1VM60 | NVT6H2VM60 | NVT6H3VM60 | NVT6H4VM60 | NVT6H5VM60 | NVT6H6VM60 |
| | | | | Reg | NVT6H1RM60 | NVT6H2RM60 | NVT6H3RM60 | NVT6H4RM60 | NVT6H5RM60 | NVT6H6RM60 |
| | 9/16" | 0.125" | 0.14 | Vee | NVT9H1VM60 | NVT9H2VM60 | NVT9H3VM60 | NVT9H4VM60 | NVT9H5VM60 | NVT9H6VM60 |
| | | | | Reg | NVT9H1RM60 | NVT9H2RM60 | NVT9H3RM60 | NVT9H4RM60 | NVT9H5RM60 | NVT9H6RM60 |

Cv values listed are for 2-way straight valves. For 2-way angle valves, increase Cv by 50%



NACE Compliant Products for Sour Gas Service

Features & Benefits

- Manufactured to meet NACE MR0175/ISO 15156 compliance
- Two-piece, nonrotating stem tip prevents galling and scoring
- Vee or regulating stem tip
- Six body styles for a wide range of applications
- Integral through-holes for bracket mounting
- Panel mounting option is also available
- Gland locking device prevents accidental loosening of the packing gland, reducing leak potential
- Stainless steel handle

Specifications

Max. working pressure:
Up to 30 000 psig (2070 bar)

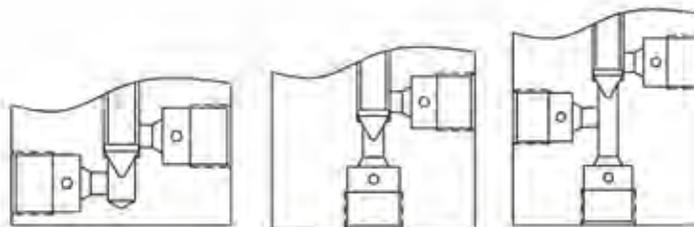
Materials of Construction

- 316 stainless steel annealed body and trim
- Inconel® 718 stem and glass filled PTFE packing

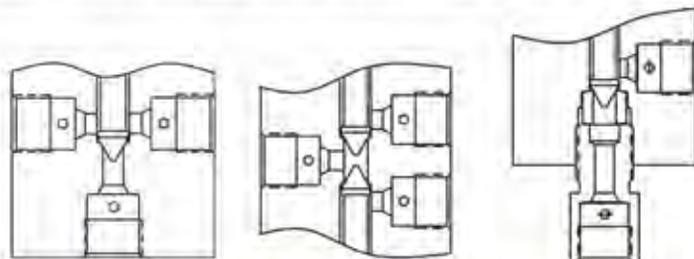
Actuator Options – see page 26

Ordering Options

PM - Panel mount



| PRESSURE | CONNECTION SIZE | PORT | CV* | STEM TIP | 2-WAY STRAIGHT | 2-WAY ANGLE | 3-WAY 2 INLET PORTS |
|--------------------------|-----------------|--------|------|----------|-----------------|-----------------|---------------------|
| 20,000 PSI (1380 bar) | 1/4" | 0.093" | 0.12 | Vee | NVT4H1VY20-NACE | NVT4H2VY20-NACE | NVT4H3VY20-NACE |
| | | | | Reg | NVT4H1RY20-NACE | NVT4H2RY20-NACE | NVT4H3RY20-NACE |
| | 3/8" | 0.125" | 0.23 | Vee | NVT6H1VY20-NACE | NVT6H2VY20-NACE | NVT6H3VY20-NACE |
| | | | | Reg | NVT6H1RY20-NACE | NVT6H2RY20-NACE | NVT6H3RY20-NACE |
| | 9/16" | 0.187" | 0.33 | Vee | NVT9H1VY20-NACE | NVT9H2VY20-NACE | NVT9H3VY20-NACE |
| | | | | Reg | NVT9H1RY20-NACE | NVT9H2RY20-NACE | NVT9H3RY20-NACE |
| 30,000 PSI (2070 bar) | 1/4" | 0.093" | 0.08 | Vee | NVT4H1VM30-NACE | NVT4H2VM30-NACE | NVT4H3VM30-NACE |
| | | | | Reg | NVT4H1RM30-NACE | NVT4H2RM30-NACE | NVT4H3RM30-NACE |
| | 3/8" | 0.125" | 0.09 | Vee | NVT6H1VM30-NACE | NVT6H2VM30-NACE | NVT6H3VM30-NACE |
| | | | | Reg | NVT6H1RM30-NACE | NVT6H2RM30-NACE | NVT6H3RM30-NACE |
| | 9/16" | 0.187" | 0.14 | Vee | NVT9H1VM30-NACE | NVT9H2VM30-NACE | NVT9H3VM30-NACE |
| | | | | Reg | NVT9H1RM30-NACE | NVT9H2RM30-NACE | NVT9H3RM30-NACE |



| PRESSURE | CONNECTION SIZE | PORT | CV* | STEM TIP | 3-WAY 2 OUTLET PORTS | 2-STEM MANIFOLD | REPLACEABLE SEAT |
|--------------------------|-----------------|--------|------|----------|----------------------|-----------------|------------------|
| 20,000 PSI (1380 bar) | 1/4" | 0.093" | 0.12 | Vee | NVT4H4VY20-NACE | NVT4H5VY20-NACE | NVT4H6VY20-NACE |
| | | | | Reg | NVT4H4RY20-NACE | NVT4H5RY20-NACE | NVT4H6RY20-NACE |
| | 3/8" | 0.125" | 0.23 | Vee | NVT6H4VY20-NACE | NVT6H5VY20-NACE | NVT6H6VY20-NACE |
| | | | | Reg | NVT6H4RY20-NACE | NVT6H5RY20-NACE | NVT6H6RY20-NACE |
| | 9/16" | 0.187" | 0.33 | Vee | NVT9H4VY20-NACE | NVT9H5VY20-NACE | NVT9H6VY20-NACE |
| | | | | Reg | NVT9H4RY20-NACE | NVT9H5RY20-NACE | NVT9H6RY20-NACE |
| 30,000 PSI (2070 bar) | 1/4" | 0.093" | 0.08 | Vee | NVT4H4VM30-NACE | NVT4H5VM30-NACE | NVT4H6VM30-NACE |
| | | | | Reg | NVT4H4RM30-NACE | NVT4H5RM30-NACE | NVT4H6RM30-NACE |
| | 3/8" | 0.125" | 0.09 | Vee | NVT6H4VM30-NACE | NVT6H5VM30-NACE | NVT6H6VM30-NACE |
| | | | | Reg | NVT6H4RM30-NACE | NVT6H5RM30-NACE | NVT6H6RM30-NACE |
| | 9/16" | 0.187" | 0.14 | Vee | NVT9H4VM30-NACE | NVT9H5VM30-NACE | NVT9H6VM30-NACE |
| | | | | Reg | NVT9H4RM30-NACE | NVT9H5RM30-NACE | NVT9H6RM30-NACE |



Trunnion Style Ball Valves

Features & Benefits

- Bidirectional trunnion style ball
- Blowout proof stem
- Three standard mounting options:
 - Panel mount design using panel nut
 - Two bolts through panel into valve body
 - Bolted through body mounting holes with dual bolt pattern for OEM valve replacement
- Large selection of tube and pipe end connections available
- 3-way valve available in either switching or diverting style
- Optional valve lockout
- Product can be manufactured to meet NACE MR0175/ISO 15156
- Available with electric or pneumatic actuators and accessories for remote operation

Specifications

Max. working pressure:
Up to 20 000 psig (1378 bar)
Port sizes: 3/16, 1/4 or 3/8 in.

Standard Connections:

Male or female NPT
M/P cone & thread
H/P cone & thread
Other connections, such as socket weld, butt weld and BSP are available on request

Materials of Construction

- Body/side adapter/stem – 316 cold-worked stainless steel
- Packing – filled PTFE
- Seats – filled PEEK
- Seals – FKM
- Bearings – Nitronic® 60

ORDERING

NO LONGER AVAILABLE

PORT & PRESSURE*

BVF 3/16" - 20,000 PSI
 BVG 1/4" - 20,000 PSI
 BVH 1/2" - 10,000 PSI
 BVJ 1/2" - 10,000 PSI
 BVL 3/16" - 20,000 PSI
 BVM 1/4" - 20,000 PSI
 BVN 3/8" - 20,000 PSI

*Final working pressure of the complete valve is determined by the MAWP of the chosen end connections

FLOW CONFIGURATION

T 2-way Trunnion
 S 3-way Switching
 D 3-way Diverting

CONNECTION SIZE

2 1/8" size
 4 1/4" size
 6 3/8" size
 8 1/2" size
 9 9/16" size
 12 3/4" size
 16 1" size

BVL S - 4 MF - 4 MF - 4 NM

| CONNECTION TYPE & MAWP | | |
|------------------------|-----------------------------|-----------------------------|
| NF | Female NPT | 1/8" thru 1/2" - 15,000 PSI |
| NM | Male NPT | 3/4" thru 1" - 10,000 PSI |
| MF | M/P Cone/Thread Female | |
| MM | M/P Cone/Thread Male | 20,000 PSI |
| MT | M/P Cone/Thread Tube Nipple | |
| HF | H/P Cone/Thread Female | |
| HM | H/P Cone/Thread Male | 60,000 PSI |
| HT | H/P Cone/Thread Tube Nipple | |

Other connections, such as socket weld, butt weld and BSP are available on request

ORDER NUMBER EXAMPLE

BVLS-4MF-4MF-4NM

3/16" port, 15,000 PSI, 3-way switching valve with 1/4" M/P Female connections in the sides, 1/4" NPT Male connection in the bottom (Note: Although the L-series valve is rated for 20,000 PSI, the working pressure of this configuration is only 15,000 because of the NPT connection.

MEDIUM PRESSURE CONNECTIONS

| CONNECTION SIZE | PORT | MAWP |
|-----------------|-------|------------|
| 1/4" MP | 0.109 | |
| 3/8" MP | 0.203 | |
| 9/16" MP | 0.312 | 20,000 PSI |
| 3/4" MP | 0.437 | |
| 1" MP | 0.562 | |

MALE & FEMALE PIPE CONNECTIONS

| CONNECTION SIZE | MAWP |
|-----------------|------------|
| 1/8" NPT | 15,000 PSI |
| 1/4" NPT | 15,000 PSI |
| 3/8" NPT | 15,000 PSI |
| 1/2" NPT | 15,000 PSI |
| 3/4" NPT | 10,000 PSI |
| 1" NPT | 10,000 PSI |

HIGH PRESSURE CONNECTIONS

| CONNECTION SIZE | PORT | MAWP |
|-----------------|-------|------------|
| 1/4" HP | 0.093 | |
| 3/8" HP | 0.125 | 60,000 PSI |
| 9/16" HP | 0.187 | |

Notes:

1. Select a Ball Valve with a port size equal to or slightly larger than the connection port size. See examples above.
2. All Maximum Allowable Working Pressures (MAWP) are based on usage @ 72° F.
3. **Caution:** The Maximum Allowable Working Pressure (MAWP) of the valve shall not exceed the MAWP of the valve series or the selected connection, whichever is less.

Air or Hydraulic Actuators for Needle Valve Remote Operation

- Single-action actuators have built-in safety mechanisms which automatically close or open upon a loss in air pressure.
- Normally Closed – Air is required to open the valve; any loss in air pressure automatically closes the valve.
- Normally Open – Air is required to close the valve; any loss in air pressure automatically opens the valve.
- Double-action actuators open or close valves in a controlled motion, using air or hydraulic pressure.

| Valve Series & Tube OD | | Normally Open Air-to-Close | | Normally Closed Air-to-Open | | Double-Acting Pneumatic | | Double-Acting Hydraulic | |
|------------------------|-----------------------|-------------------------------|--------------------------|--------------------------------|--------------------------|----------------------------|--------------------------|----------------------------|--------------------------|
| | | AC19 | AC50 | AO19 | AO50 | DA19 | DA50 | HD2 | HD4 |
| 20K 1/4"-3/8" | MAWP* | 20,000 PSI (1378 bar) | | 20,000 PSI (1378 bar) | 20,000 PSI (1378 bar) | 20,000 PSI (1378 bar) | | 20,000 PSI (1378 bar) | |
| | Required Air Pressure | 74 PSI (5 bar) | | 82 PSI (5 bar) | 55 PSI (3 bar) | 63 PSI (4 bar) | | 592 PSI (40 bar) | |
| 20K 9/16" | MAWP* | 18,000 PSI (1241 bar) | 20,000 PSI (1378 bar) | 14,000 PSI (965 bar) | 20,000 PSI (1378 bar) | 20,000 PSI (1378 bar) | | 20,000 PSI (1378 bar) | |
| | Required Air Pressure | 100 PSI (6 bar) | 49 PSI (3 bar) | 84 PSI (5 bar) | 58 PSI (4 bar) | 98 PSI (6 bar) | | 925 PSI (63 bar) | |
| 20K 3/4" | MAWP* | | 20,000 PSI (1378 bar) | | 12,500 PSI (861 bar) | | 20,000 PSI (1378 bar) | | 20,000 PSI (1378 bar) |
| | Required Air Pressure | | 101 PSI (6 bar) | | 66 PSI (4 bar) | | 90 PSI (6 bar) | | 1,134 PSI (78 bar) |
| 20K 1" | MAWP* | | 12,000 PSI (827 bar) | | 7,500 PSI (517 bar) | | 12,000 PSI (827 bar) | | 16,000 PSI (1103 bar) |
| | Required Air Pressure | | 100 PSI (6 bar) | | 66 PSI (4 bar) | | 89 PSI (6 bar) | | 1,500 PSI (103 bar) |
| 30K 1/4"-9/16" | MAWP* | 30,000 PSI (2068 bar) | | 30,000 PSI (2068 bar) | | 30,000 PSI (2068 bar) | | 30,000 PSI (2068 bar) | |
| | Required Air Pressure | 35 PSI (2 bar) | | 78 PSI (5 bar) | | 23 PSI (1 bar) | | 222 PSI (15 bar) | |
| 30K 1" | MAWP* | | 18,000 PSI (1241 bar) | | 12,500 PSI (861 bar) | | 22,000 PSI (1516 bar) | | 26,000 PSI (1792 bar) |
| | Required Air Pressure | | 92 PSI (6 bar) | | 66 PSI (4 bar) | | 99 PSI (6 bar) | | 1475 PSI (101 bar) |
| 40K 9/16" | MAWP* | 40,000 PSI (2757 bar) | | 40,000 PSI (2757 bar) | | 40,000 PSI (2757 bar) | | 40,000 PSI (2757 bar) | |
| | Required Air Pressure | 36 PSI (2 bar) | | 78 PSI (5 bar) | | 24 PSI (1 bar) | | 227 PSI (15 bar) | |
| 60K 1/4"-9/16" | MAWP* | 60,000 PSI (4136 bar) | | 60,000 PSI (4136 bar) | | 60,000 PSI (4136 bar) | | 60,000 PSI (4136 bar) | |
| | Required Air Pressure | 23 PSI (1 bar) | | 88 PSI (6 bar) | | 12 PSI (1 bar) | | 111 PSI (7 bar) | |

*MAWP = Maximum Allowable Working Pressure at 72F (22C)



Double Block & Bleed Valves

Features & Benefits

- Allows for double positive isolation
- Vee stem vent valve
- Full-port flow path minimizes pressure drop
- Quarter turn from open to close with positive stop
- Optional all needle valve configuration

Specifications

Max. Working Pressure:

Ball – needle – ball configuration up to 15 000 psig (1034 bar)

Needle – needle – needle configuration up to 20 000 psig (1378 bar)

End Connections:

Male or female NPT

M/P cone & thread

H/P cone & thread

Materials of Construction

- 316 cold-worked stainless steel
- Packing – filled PTFE
- Seals – FKM

Contact your authorized Swagelok Sales and Service Center for more information.



Check Valves

Features & Benefits

- Prevents reverse flow where leak-tight shutoff is required
- Three styles to fit most applications:
- Ball Seat Poppet – Metal-to-metal seat for rapid cycling or severe environments
- Soft Seat Poppet – O-ring seat for fast shut-off and reliable seal; standard material is nitrile. A variety of seal materials are available for even the harshest media.
- Dual Seal Ball Style* – Rapid, reliable sealing on the glass-filled PTFE seat, backed by metal-to-metal sealing for durability
- Product can be manufactured to meet NACE MR0175/ISO15156

Specifications

Max. Working Pressure:

Up to 60 000 psig (4136 bar)

Nominal Cracking Pressure:

15 psig (1 bar)

Optional cracking pressures up to 100 psig (6 bar)

End Connections:

Female NPT

Materials of Construction

- 316 stainless steel

ORDERING

| PRESSURE | CONNECTION SIZE | BALL POPPET | D-RING POPPET | DUAL SEAL* |
|-----------------------|-----------------|-------------|---------------|------------|
| 15,000 PSI (1035 bar) | 1/8" | CV2NFB15 | CV2NFS15 | CV2NFD15 |
| | 1/4" | CV4NFB15 | CV4NFS15 | CV4NFD15 |
| | 3/8" | CV6NFB15 | CV6NFS15 | CV6NFD15 |
| | 1/2" | CV8NFB15 | CV8NFS15 | CV8NFD15 |
| 10,000 PSI (690 bar) | 3/4" | CV12NFB10 | CV12NFS10 | CV12NFD10 |
| | 1" | CV16NFB10 | CV16NFS10 | CV16NFD10 |

*Dual Seal Ball Style – Rapid, reliable sealing on the glass-filled PTFE seat, backed by metal-to-metal sealing for durability

ORDERING

| PRESSURE | CONNECTION SIZE | BALL POPPET | D-RING POPPET |
|-----------------------|-----------------|-------------|---------------|
| 20,000 PSI (1380 bar) | 1/4" | CV4MFB20 | CV4MFS20 |
| | 3/8" | CV6MFB20 | CV6MFS20 |
| | 9/16" | CV9MFB20 | CV9MFS20 |
| | 3/4" | CV12MFB20 | CV12MFS20 |
| | 1" | CV16MFB20 | CV16MFS20 |
| 60,000 PSI (4140 bar) | 1/4" | CV4HFB60 | CV4HFS60 |
| | 3/8" | CV6HFB60 | CV6HFS60 |
| | 9/16" | CV9HFB60 | CV9HFS60 |



Proportional Relief Valves

These relief valves are proportional relief valves that open gradually as the pressure increases. Consequently, they do not have a capacity rating at a given pressure rise (accumulation), and they are not certified to ASME or any other codes.

- ⚠ **Some systems application require relief valves to meet specific safety codes. The system designer and user must determine when such codes apply and whether these relief valves conform to them.**
- ⚠ **For valves not actuated for a period of time, initial relief pressure may be higher than the set pressure.**
- ⚠ **These valves are not rated for use in applications where back pressure can occur. Back pressure can result in leakage to atmosphere.**

Specifications

Max. Working Pressure:
Up to 20 000 psig (1378 bar)

End Connections:

MP cone & thread

Material of Construction

- 316 stainless steel

ORDERING

| CATALOG NUMBER* | | INLET CONNECTION | OUTLET CONNECTION | ORIFICE IN. (MM) | PRESSURE RATING PSIG @ 100°F (BAR @ 38°C) | |
|-----------------|-----------------|------------------|-------------------|------------------|---|---------------|
| SET PRESSURE | ADJUSTABLE | | | | MIN SET | MAX SET |
| RV6MF12NF* | RVA6MF12NF10-15 | 3/8" MP | 3/4" FNPT | 0.188 (4.78) | 10,000 (689) | 15,000 (1034) |
| RV6MF12NF* | RVA6MF12NF15-20 | | | | 15,000 (1034) | 20,000 (1378) |
| RV9MF12NF* | RVA9MF12NF1.5-5 | 9/16" MP | 3/4" FNPT | 0.312 (7.92) | 1,500 (103) | 5,000 (345) |
| RV9MF12NF* | RVA9MF12NF5-10 | | | | 5,000 (345) | 10,000 (689) |
| RV9MF12NF* | RVA9MF12NF10-15 | | | | 10,000 (689) | 15,000 (1034) |
| RV9MF12NF* | RVA9MF12NF15-20 | | | | 15,000 (1034) | 20,000 (1378) |

*Complete catalog number by specifying the required set pressure.

Examples:

RV9MF12NF2 would be a relief valve with 9/16" MP inlet, factory set for 2,000 PSI

RV6MF12NF12 would be a relief valve with 3/8" MP inlet, factory set for 12,000 PSI

Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance.

Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

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