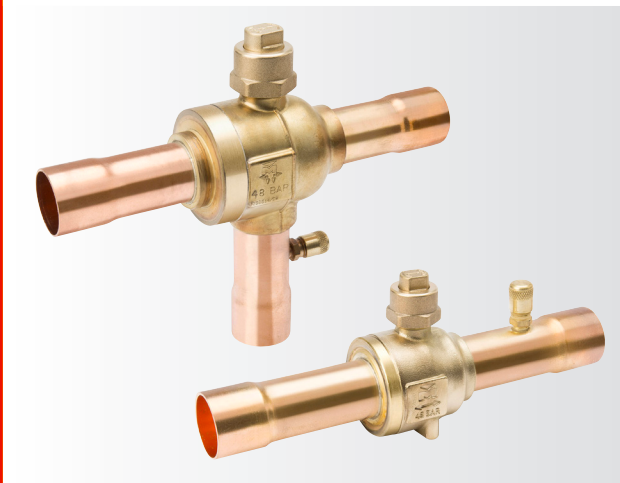
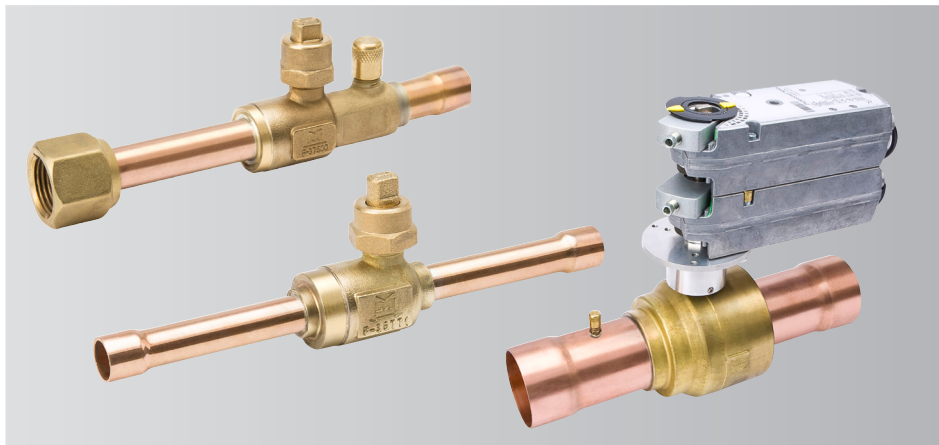




## TECHNICAL CATALOG



Mueller Refrigeration is a global leader in the design and manufacturing of premium-performance valves, protection devices, and brass fittings for various OEM customers in the commercial HVAC/R industry. While maintaining industry certifications, such as UL/cUL and CE, we also offer RoHS compliance for an extensive line of products. As a matter of company policy, all of our products are built to exceed current industry standards to guarantee reliable performance when using new-era refrigerants that operate at higher temperatures and pressures than many industry standards require. Our sophisticated in-house engineering and lab resource capabilities allow us to provide continuous improvement of existing products while addressing new product development and innovation. We specialize in finding solutions to our customer's most complex HVAC/R problems and applications, and we welcome new engineering and manufacturing challenges.

#### **Mission**

We are a quality manufacturer and supplier of refrigerant valves, components, and value-added assemblies to the HVAC and refrigeration market.

We will be a global supplier of diversified valves, components, and value-added assemblies achieving growth and top performance through:

Excellent customer service.

Creative and innovative advancements, and

Maximizing our core manufacturing capabilities.

"RELENTLESS PURSUIT OF EXCELLENCE"

#### **Sales/Customer Service**

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NO16 Chuangy Rd  
Xinbei District, Changzhou, Jiangsu  
Phone: 00086-0519-68887126  
Fax: 0086-0519-68887133

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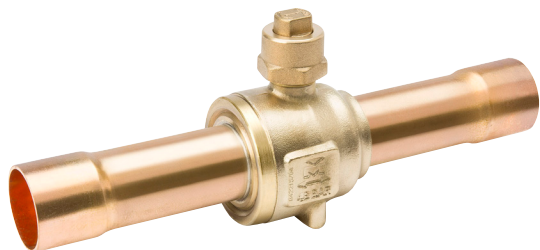
|                                                    |    |
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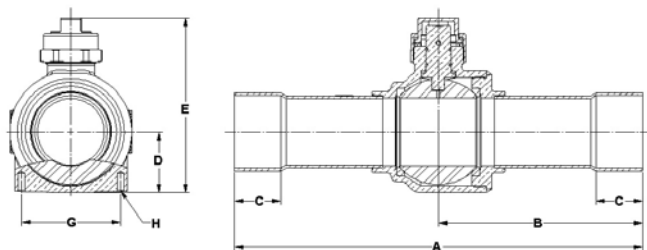
# CYCLEMASTER® Ball Valves

## Standard



### Features:

- Maximum abnormal pressure (MAP): Up to 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



| Part Number |     | Size  |     | Cv    | Kv  | A     |     | B    |     | C Min |    | D    |    | E    |     | G ** |     | H **     | Port (in) | MWP |    | Wt    |       | Seal Cap Kit |
|-------------|-----|-------|-----|-------|-----|-------|-----|------|-----|-------|----|------|----|------|-----|------|-----|----------|-----------|-----|----|-------|-------|--------------|
|             |     | in    | mm  |       |     | in    | mm  | in   | mm  | in    | mm | in   | mm | in   | mm  | psi  | bar |          |           | lb  | kg |       |       |              |
| AP17859     | ‡   | 1/4   | 6   | 1.0   | 1   | 5.50  | 140 | 2.98 | 76  | 0.31  | 8  | 0.54 | 14 | 2.23 | 57  | 0.87 | 22  | M4 X 0.7 | 0.50      | 775 | 53 | 0.67  | 0.30  | A 17842      |
| AP17860C    | ‡   | 3/8   | 10  | 4.3   | 4   | 5.50  | 140 | 2.98 | 76  | 0.31  | 8  | 0.54 | 14 | 2.23 | 57  | 0.87 | 22  | M4 X 0.7 | 0.50      | 775 | 53 | 0.48  | 0.22  | A 17842      |
| AP17861C    | ‡   | 1/2   | 13  | 6.2   | 5   | 6.35  | 161 | 3.41 | 87  | 0.38  | 10 | 0.54 | 14 | 2.23 | 57  | 0.87 | 22  | M4 X 0.7 | 0.50      | 775 | 53 | 0.53  | 0.24  | A 17842      |
| AP17862C    | ‡   | 5/8   | 17  | 12.1  | 10  | 6.35  | 161 | 3.41 | 87  | 0.50  | 13 | 0.54 | 14 | 2.23 | 57  | 0.87 | 22  | M4 X 0.7 | 0.50      | 775 | 53 | 0.50  | 0.23  | A 17842      |
| AP17863     | ‡   | 3/4   | 19  | 19.0  | 16  | 7.45  | 189 | 3.89 | 99  | 0.62  | 16 | 0.72 | 18 | 2.66 | 68  | 1.18 | 30  | M4 X 0.7 | 0.75      | 775 | 53 | 1.40  | 0.63  | A 17843      |
| AP17864C    | ‡   | 7/8   | 22  | 27.5  | 24  | 7.45  | 189 | 3.89 | 99  | 0.75  | 19 | 0.72 | 18 | 2.66 | 68  | 1.18 | 30  | M4 X 0.7 | 0.75      | 775 | 53 | 0.93  | 0.42  | A 17843      |
| AP17865     | ‡   | 1 1/8 | 29  | 54.0  | 47  | 8.42  | 214 | 4.21 | 107 | 0.91  | 23 | 1.00 | 25 | 3.15 | 80  | 1.50 | 38  | M4 X 0.7 | 1.00      | 775 | 53 | 1.61  | 0.73  | A 17843      |
| A 17866     |     | 1 3/8 | 35  | 89.1  | 77  | 10.00 | 254 | 5.00 | 127 | 0.97  | 25 | 1.17 | 30 | 3.72 | 94  | 1.89 | 48  | M6 X 1.0 | 1.25      | 775 | 53 | 2.59  | 1.17  | A 17844      |
| A 17867     |     | 1 5/8 | 41  | 114.0 | 99  | 11.00 | 279 | 5.50 | 140 | 1.09  | 28 | 1.38 | 35 | 4.12 | 105 | 2.17 | 55  | M6 X 1.0 | 1.50      | 775 | 53 | 3.64  | 1.65  | A 17844      |
| A 17868     |     | 2 1/8 | 54  | 244.0 | 211 | 12.00 | 305 | 6.00 | 152 | 1.34  | 34 | 1.79 | 45 | 5.14 | 131 | 2.91 | 74  | M6 X 1.0 | 2.00      | 700 | 48 | 8.02  | 3.64  | A 17845      |
| A 17869     |     | 2 5/8 | 67  | 401.0 | 347 | 13.50 | 343 | 6.75 | 171 | 1.47  | 37 | 2.19 | 56 | 5.92 | 150 |      |     |          | 2.44      | 700 | 48 | 13.40 | 6.08  | A 17845      |
| A 17870     |     | 3 1/8 | 79  | 553.0 | 478 | 16.00 | 406 | 8.00 | 203 | 1.66  | 42 | 2.69 | 68 | 7.03 | 179 |      |     |          | 3.00      | 700 | 48 | 21.31 | 9.67  | A 17846      |
| A 17871     | *   | 2 5/8 | 67  | 230.0 | 199 | 12.00 | 305 | 6.00 | 152 | 1.47  | 37 | 1.79 | 45 | 5.14 | 131 | 2.91 | 74  | M6 X 1.0 | 2.00      | 700 | 48 | 8.46  | 3.84  | A 17845      |
| A 17872     | *   | 3 1/8 | 79  | 143.0 | 124 | 12.00 | 305 | 6.00 | 152 | 1.66  | 42 | 1.79 | 45 | 5.14 | 131 | 2.91 | 74  | M6 X 1.0 | 2.00      | 700 | 48 | 9.12  | 4.13  | A 17845      |
| B 34909     | *** | 3 5/8 | 92  |       |     | 13.10 | 333 | 6.50 | 165 | 1.91  | 49 | 2.69 | 68 | 7.03 | 179 |      |     |          | 3.00      | 700 | 48 | 22.80 | 10.34 | A 17846      |
| B 34910     | *** | 4 1/8 | 105 |       |     | 14.50 | 368 | 7.20 | 183 | 2.16  | 55 | 2.69 | 68 | 7.03 | 179 |      |     |          | 3.00      | 700 | 48 | 21.00 | 9.53  | A 17846      |

\* Reduced Port

\*\* Where Applicable

\*\*\* Consult Factory

‡ Standard product offering includes drilled/ tapped feature

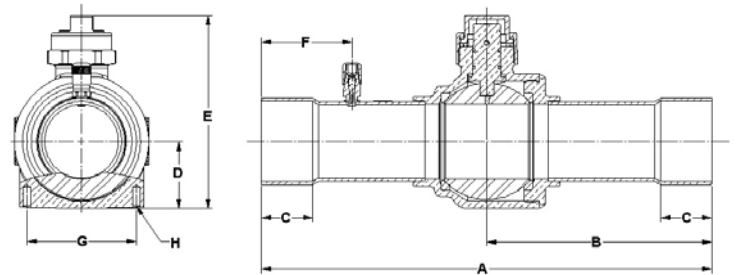
Prefix AP Drilled/ tapped

# CYCLEMASTER® Ball Valves

## Standard With Access Port

### Features:

- Maximum abnormal pressure (MAP): Up to 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



| Part Number | Size  |    | Cv    | Kv  | A     |     | B    |     | C Min |    | D    |    | E    |     | F    |    | G ** |    | H **     |      | Port (in) | MWP |       | Wt   |         | Seal Cap Kit |
|-------------|-------|----|-------|-----|-------|-----|------|-----|-------|----|------|----|------|-----|------|----|------|----|----------|------|-----------|-----|-------|------|---------|--------------|
|             | in    | mm |       |     | in    | mm  | in   | mm  | in    | mm | in   | mm | in   | mm  | in   | mm | in   | mm | psig     | bar  |           | lb  | kg    |      |         |              |
| AQ17859 ‡   | 1/4   | 6  | 1.0   | 1   | 5.50  | 140 | 2.98 | 76  | 0.31  | 8  | 0.54 | 14 | 2.23 | 57  | 1.16 | 29 | 0.87 | 22 | M4 X 0.7 | 0.50 | 775       | 53  | 0.72  | 0.33 | A 17842 |              |
| AQ17860C ‡  | 3/8   | 10 | 4.3   | 4   | 5.50  | 140 | 2.98 | 76  | 0.31  | 8  | 0.54 | 14 | 2.23 | 57  | 1.16 | 29 | 0.87 | 22 | M4 X 0.7 | 0.50 | 775       | 53  | 0.52  | 0.24 | A 17842 |              |
| AQ17861C ‡  | 1/2   | 13 | 6.2   | 5   | 6.35  | 161 | 3.41 | 87  | 0.38  | 10 | 0.54 | 14 | 2.23 | 57  | 1.21 | 31 | 0.87 | 22 | M4 X 0.7 | 0.50 | 775       | 53  | 0.53  | 0.24 | A 17842 |              |
| AQ17862C ‡  | 5/8   | 17 | 12.1  | 10  | 6.35  | 161 | 3.41 | 87  | 0.50  | 13 | 0.54 | 14 | 2.23 | 57  | 1.35 | 34 | 0.87 | 22 | M4 X 0.7 | 0.50 | 775       | 53  | 0.54  | 0.24 | A 17842 |              |
| AQ17863 ‡   | 3/4   | 19 | 19.0  | 16  | 7.45  | 189 | 3.89 | 99  | 0.62  | 16 | 0.72 | 18 | 2.66 | 68  | 1.47 | 37 | 1.18 | 30 | M4 X 0.7 | 0.75 | 775       | 53  | 0.96  | 0.43 | A 17843 |              |
| AQ17864C ‡  | 7/8   | 22 | 27.5  | 24  | 7.45  | 189 | 3.89 | 99  | 0.75  | 19 | 0.72 | 18 | 2.66 | 68  | 1.60 | 41 | 1.18 | 30 | M4 X 0.7 | 0.75 | 775       | 53  | 0.96  | 0.43 | A 17843 |              |
| AQ17865 ‡   | 1 1/8 | 29 | 54.0  | 47  | 8.42  | 214 | 4.21 | 107 | 0.91  | 23 | 1.00 | 25 | 3.15 | 80  | 1.74 | 44 | 1.50 | 38 | M4 X 0.7 | 1.00 | 775       | 53  | 1.66  | 0.75 | A 17843 |              |
| AC17866     | 1 3/8 | 35 | 89.1  | 77  | 10.00 | 254 | 5.00 | 127 | 0.97  | 25 | 1.17 | 30 | 3.72 | 94  | 2.04 | 52 | 1.89 | 48 | M6 X 1.0 | 1.25 | 775       | 53  | 2.62  | 1.19 | A 17844 |              |
| AC17867     | 1 5/8 | 41 | 114.0 | 99  | 11.00 | 279 | 5.50 | 140 | 1.09  | 28 | 1.38 | 35 | 4.12 | 105 | 2.25 | 57 | 2.17 | 55 | M6 X 1.0 | 1.50 | 775       | 53  | 4.78  | 2.17 | A 17844 |              |
| AC17868     | 2 1/8 | 54 | 244.0 | 211 | 12.00 | 305 | 6.00 | 152 | 1.34  | 34 | 1.79 | 45 | 5.14 | 131 | 2.41 | 61 | 2.91 | 74 | M6 X 1.0 | 2.00 | 700       | 48  | 8.09  | 3.67 | A 17845 |              |
| AC17869     | 2 5/8 | 67 | 401.0 | 347 | 13.50 | 343 | 6.75 | 171 | 1.47  | 37 | 2.19 | 56 | 5.92 | 150 | 2.85 | 72 |      |    |          | 2.44 | 700       | 48  | 13.81 | 6.26 | A 17845 |              |
| AC17870     | 3 1/8 | 79 | 553.0 | 478 | 16.00 | 406 | 8.00 | 203 | 1.66  | 42 | 2.69 | 68 | 7.03 | 179 | 3.41 | 87 |      |    |          | 3.00 | 700       | 48  | 21.42 | 9.72 | A 17846 |              |
| AC17871 *   | 2 5/8 | 67 | 230.0 | 199 | 12.00 | 305 | 6.00 | 152 | 1.47  | 37 | 1.79 | 45 | 5.14 | 131 | 2.48 | 63 | 2.91 | 74 | M6 X 1.0 | 2.00 | 700       | 48  | 8.71  | 3.95 | A 17845 |              |
| AC17872 *   | 3 1/8 | 79 | 143.0 | 124 | 12.00 | 305 | 6.00 | 152 | 1.66  | 42 | 1.79 | 45 | 5.14 | 131 | 2.66 | 68 | 2.91 | 74 | M6 X 1.0 | 2.00 | 700       | 48  | 9.23  | 4.18 | A 17845 |              |

\* Reduced Port

\*\* Where Applicable

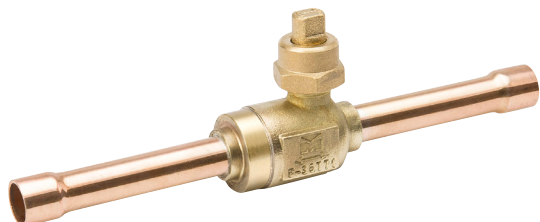
\*\*\* Consult Factory

‡ Standard product offering includes drilled/ tapped feature

Prefix AQ Drilled/ tapped

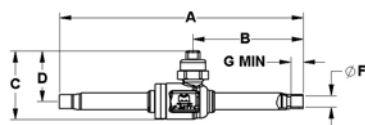
# CYCLEMASTER® Ball Valves

## IBV Series

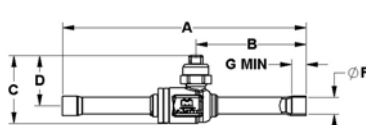


### Features:

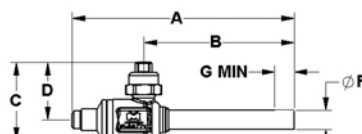
- Maximum abnormal pressure (MAP): 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology



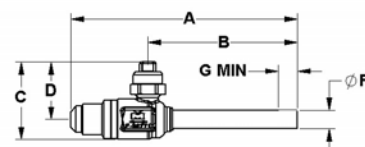
Drawing A



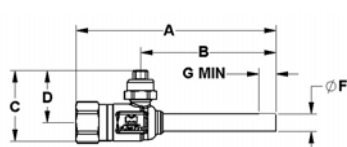
Drawing B



Drawing C



Drawing D



Drawing E



### Solder

| Part Number | Size    | A    |     | B    |    | C    |    | D    |    | E    |    | F     |    | G Min |    | Wt   |      | Drawing | 2 Piece Seal Cap Assembly |
|-------------|---------|------|-----|------|----|------|----|------|----|------|----|-------|----|-------|----|------|------|---------|---------------------------|
|             | in      | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in    | mm | in    | mm | lb   | kg   |         |                           |
| A 17855     | 1/4 ODS | 5.50 | 140 | 2.50 | 64 | 1.54 | 39 | 1.14 | 29 | 0.81 | 21 | 0.250 | 6  | 0.25  | 6  | 0.25 | 0.12 | A       | A 17841                   |
| A 17856     | 3/8 ODS | 5.50 | 140 | 2.50 | 64 | 1.54 | 39 | 1.14 | 29 | 0.81 | 21 | 0.375 | 10 | 0.31  | 8  | 0.26 | 0.12 | B       | A 17841                   |

### FL x ODE

| Part Number | Size             | A    |     | B    |    | C    |    | D    |    | E    |    | F     |    | G Min |    | Wt   |      | Drawing | Flare Fitting Seal Cap | Valve Core ** | Flare Fitting Seal Cap Kit *** | 2 Piece Seal Cap Assembly |
|-------------|------------------|------|-----|------|----|------|----|------|----|------|----|-------|----|-------|----|------|------|---------|------------------------|---------------|--------------------------------|---------------------------|
|             | in               | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in    | mm | in    | mm | lb   | kg   |         |                        |               |                                |                           |
| A 18673     | 1/4 FL X 3/8 ODE | 4.38 | 111 | 2.97 | 75 | 1.54 | 39 | 1.14 | 29 | 0.81 | 21 | 0.375 | 10 | 0.38  | 10 | 0.26 | 0.12 | C       | A 16447                | P 25998       | A 18726                        | A 17841                   |
| A 18674     | 3/8 FL X 3/8 ODE | 4.50 | 114 | 2.97 | 75 | 1.54 | 39 | 1.14 | 29 | 0.81 | 21 | 0.375 | 10 | 0.38  | 10 | 0.28 | 0.13 | D       | A 16448                |               |                                | A 17841                   |

### NPTFI X ODE

| Part Number | Size                | A    |     | B    |    | C    |    | D    |    | E    |    | F     |    | G Min |    | Wt   |      | Drawing | Plug for 1/4 NPTF | 2 Piece Seal Cap Assembly |
|-------------|---------------------|------|-----|------|----|------|----|------|----|------|----|-------|----|-------|----|------|------|---------|-------------------|---------------------------|
|             | in                  | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in    | mm | in    | mm | lb   | kg   |         |                   |                           |
| A 18675     | 1/4 NPTFI X 3/8 ODE | 4.38 | 111 | 2.97 | 75 | 1.54 | 39 | 1.14 | 29 | 0.81 | 21 | 0.375 | 10 | 0.38  | 10 | 0.28 | 0.13 | E       | P 34707           | A 17841                   |

\* Assembled finger tight

\*\* Installation torque 1-3 in/lbs

\*\*\* Includes seal cap and valve core

1) Stem torque to rotate ball: 15 in-lbs maximum

2) Torque for installing ball valves with 1/4" flare connection: 8 - 10 ft-lbs

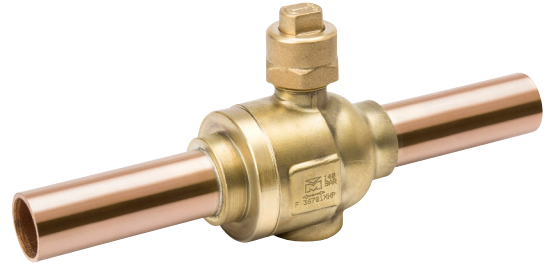
3) Torque for installing ball valves with 3/8" flare connection: 15 - 25 ft-lbs

# CYCLEMASTER® Ball Valves

## CO2 High Pressure

### Features:

- Maximum abnormal pressure (MAP): Contact Factory
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Designed for transcritical CO2 systems
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology



Increased interest in the use of carbon dioxide as a refrigerant in recent years has raised questions regarding the application of various valves and components in refrigeration systems. Systems can be designed in many different configurations including direct expansion, secondary fluids, circulation with pumps or any combination of these, and operation may include pressures and temperatures above the critical point for CO2, known as transcritical applications.

Mueller is pleased to announce the upcoming release of a new ball valve series designed to address market requirements for transcritical applications. Mueller valves feature a unique stem design installed inside the valve body during the manufacturing process, assuring the stem will not dislodge from the valve in the event of high pressures.

Internally, each valve has two distinct seal sets that assure proper operation: stem seals and ball seals. Dual stem seals are in the neck of the valve, and have been designed to work with all system lubricants to assure a tight fit between surfaces, eliminating the potential for any media to escape to the atmosphere.

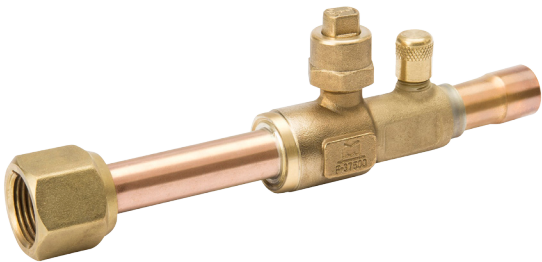
Specially designed ball seals are located on either side of the ball, and are designed to assure positive circuit isolation when the valve is closed, while minimizing valve operational torques. The unique nature of the CYCLEMASTER ball valve seal material and physical design characteristics assure proper operation in CO2 applications.

Using the new Mueller Industries' Streamline XHP copper tube for system connections, Mueller ball valves assure compliance with the higher pressures of CO2 without the need for stainless or steel tubing.

For specific application questions or assistance with product selection, please contact factory for details at (615)374-2124.

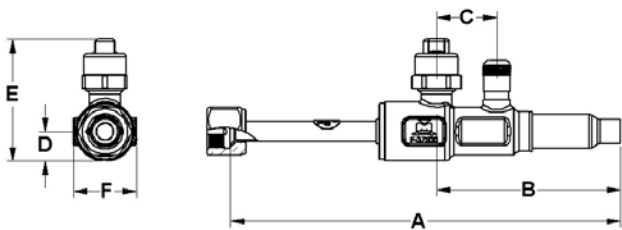
# Multi Split Ball Valves

## Unibody Flare x ODS

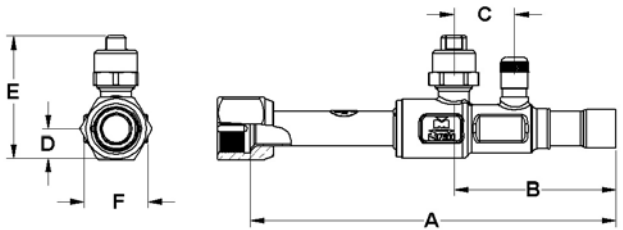


### Features:

- Maximum abnormal pressure (MAP): 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



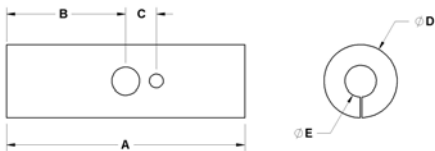
Drawing A



Drawing B

| Valve Part Number | Valve Insulation Kit Part Number | Size |    | A    |     | B    |    | C    |    | D    |    | E    |    | F    |    | Wt |    | Drawing |
|-------------------|----------------------------------|------|----|------|-----|------|----|------|----|------|----|------|----|------|----|----|----|---------|
|                   |                                  | in   | mm | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm | lb | kg |         |
| A 18941           | A 18611U                         | 1/4  | 6  | 7.17 | 182 | 3.36 | 85 | 1.34 | 34 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18942           | A 18612U                         | 3/8  | 10 | 7.12 | 181 | 3.36 | 85 | 1.34 | 34 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18943           | A 18613U                         | 1/2  | 13 | 6.71 | 170 | 2.94 | 75 | 1.73 | 44 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18944           | A 18614U                         | 5/8  | 17 | 6.64 | 169 | 2.94 | 75 | 1.59 | 40 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | B       |

| Insulation Part No. | Valve Size         | A (in) | B (in) | C (in) | D (in) | E (in) | Wt(lb) |
|---------------------|--------------------|--------|--------|--------|--------|--------|--------|
| MSBVINS             | Multi Split Valves | 8.56   | 4.28   | 1.10   | 2.63   | 1.13   | 0.10   |

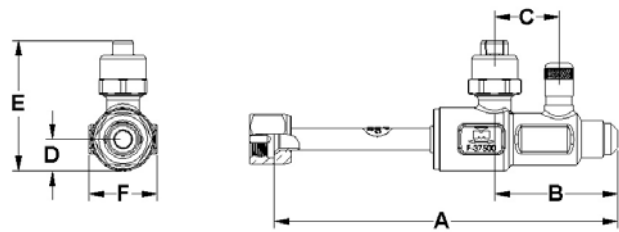
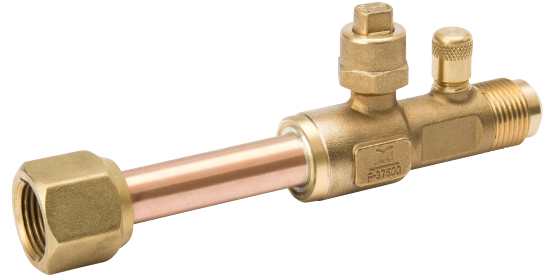


# Multi Split Ball Valves

## Unibody Female x Male Flare

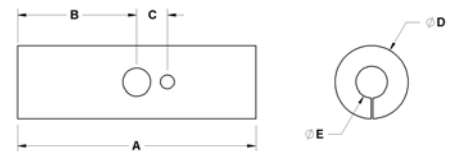
### Features:

- Maximum abnormal pressure (MAP): 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



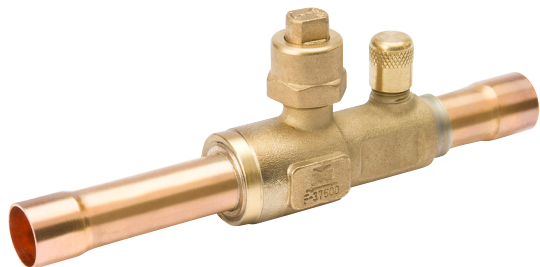
| Valve Part Number | Valve Insulation Kit Part Number | Size          |    | A    |     | B    |    | C    |    | D    |    | E    |    | F    |    | Wt |    |
|-------------------|----------------------------------|---------------|----|------|-----|------|----|------|----|------|----|------|----|------|----|----|----|
|                   |                                  | in            | mm | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm | lb | kg |
| A 18945           | A 18567U                         | 1/4           | 6  | 5.86 | 149 | 2.05 | 52 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |
| A 18946           | A 18568U                         | 3/8           | 10 | 5.86 | 149 | 2.10 | 53 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |
| A 18947           | A 18569U                         | 1/2           | 13 | 5.98 | 152 | 2.21 | 56 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |
| A 18948           | A 18570U                         | 5/8           | 17 | 5.98 | 152 | 2.28 | 58 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |
| A 18949           | A 18652U                         | 3/8 F X 1/4 M |    | 5.81 | 148 | 2.05 | 52 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |
| A 18950           | A 18653U                         | 5/8 F X 1/2 M |    | 5.91 | 150 | 2.21 | 56 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    |

| Insulation Part No. | Valve Size         | A (in) | B (in) | C (in) | D (in) | E (in) | Wt(lb) |
|---------------------|--------------------|--------|--------|--------|--------|--------|--------|
| MSBVINS             | Multi Split Valves | 8.56   | 4.28   | 1.10   | 2.63   | 1.13   | 0.10   |



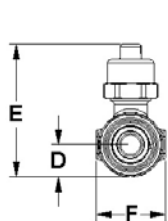
# Multi Split Ball Valves

Unibody ODS x ODS

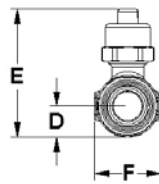
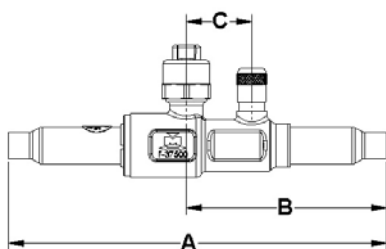


## Features:

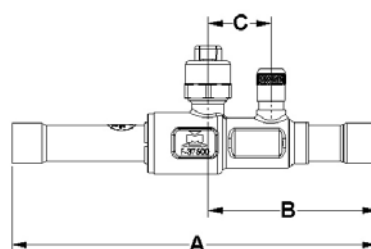
- Maximum abnormal pressure (MAP): 775 psig, 53 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



**Drawing A**

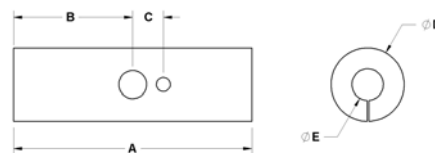


**Drawing B**



| Valve Part Number | Valve Insulation Kit Part Number | Size |    | A    |     | B    |    | C    |    | D    |    | E    |    | F    |    | Wt |    | Drawing |
|-------------------|----------------------------------|------|----|------|-----|------|----|------|----|------|----|------|----|------|----|----|----|---------|
|                   |                                  | in   | mm | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm | lb | kg |         |
| A 18937           | A 18571U                         | 1/4  | 6  | 6.35 | 161 | 3.36 | 85 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18938           | A 18572U                         | 3/8  | 10 | 6.35 | 161 | 3.36 | 85 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18939           | A 18573U                         | 1/2  | 13 | 6.35 | 161 | 2.94 | 75 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | A       |
| A 18940           | A 18574U                         | 5/8  | 17 | 6.35 | 161 | 2.94 | 75 | 1.10 | 28 | 0.54 | 14 | 2.23 | 57 | 1.16 | 29 |    |    | B       |

| Insulation Part No. | Valve Size         | A (in) | B (in) | C (in) | D (in) | E (in) | Wt(lb) |
|---------------------|--------------------|--------|--------|--------|--------|--------|--------|
| MSBVINS             | Multi Split Valves | 8.56   | 4.28   | 1.10   | 2.63   | 1.13   | 0.10   |

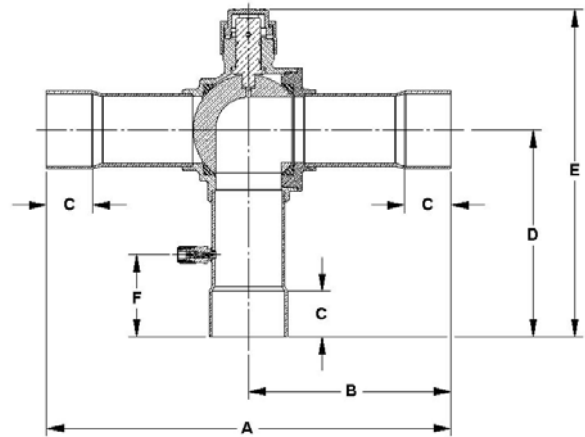
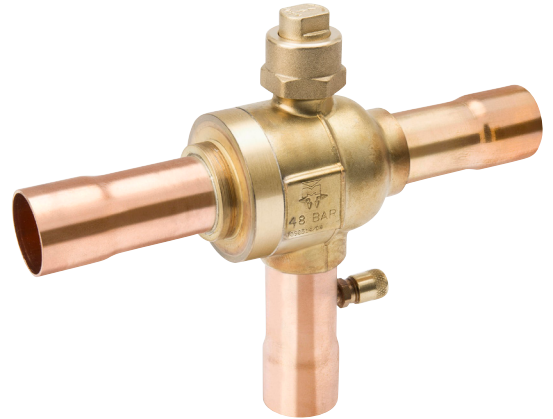


# CYCLEMASTER® Ball Valves

## 3-Way

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Full port construction to match line size ID
- Internally equalized ball design
- Rupture-proof encapsulated stem
- MCM Seal Technology
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC

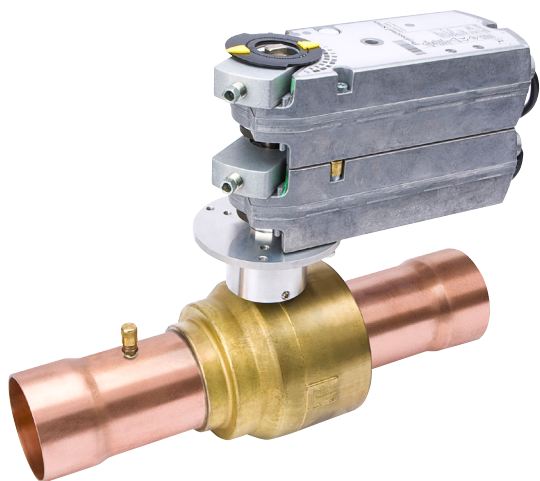


| Part Number | Size  |    | Cv    | Kv | A     |     | B    |     | C    |    | D    |     | E    |     | F    |    | Port (in) | Wt    |      | Seal Cap Kit |
|-------------|-------|----|-------|----|-------|-----|------|-----|------|----|------|-----|------|-----|------|----|-----------|-------|------|--------------|
|             | in    | mm |       |    | in    | mm  | in   | mm  | in   | mm | in   | mm  | in   | mm  | in   | mm |           | lb    | kg   |              |
| AU17860     | 3/8   | 10 | 2.23  | 2  | 5.50  | 140 | 2.97 | 75  | 0.31 | 8  | 2.61 | 66  | 4.16 | 106 | 1.16 | 29 | 0.50      | 0.73  | 0.33 | A 17842      |
| AU17861     | 1/2   | 13 | 3.94  | 3  | 6.38  | 162 | 3.42 | 87  | 0.38 | 10 | 3.05 | 77  | 4.60 | 117 | 1.21 | 31 | 0.50      | 0.74  | 0.33 | A 17842      |
| AU17862     | 5/8   | 17 | 4.63  | 4  | 6.38  | 162 | 3.42 | 87  | 0.50 | 13 | 3.05 | 77  | 4.60 | 117 | 1.35 | 34 | 0.50      | 0.74  | 0.34 | A 17842      |
| AU17863     | 3/4   | 19 | 11.90 | 10 | 7.47  | 190 | 3.91 | 99  | 0.62 | 16 | 3.65 | 93  | 5.86 | 149 | 1.47 | 37 | 0.75      | 1.40  | 0.64 | A 17843      |
| AU17864     | 7/8   | 22 | 10.89 | 9  | 7.47  | 190 | 3.91 | 99  | 0.75 | 19 | 3.65 | 93  | 5.86 | 149 | 1.60 | 41 | 0.75      | 1.52  | 0.69 | A 17843      |
| AU17865     | 1 1/8 | 29 | 19.33 | 17 | 8.41  | 214 | 4.33 | 110 | 0.91 | 23 | 4.01 | 102 | 6.39 | 162 | 1.74 | 44 | 1.00      | 2.82  | 1.28 | A 17844      |
| A 17545     | 1 3/8 | 35 | 31.06 | 27 | 10.00 | 254 | 5.07 | 129 | 0.97 | 25 | 4.92 | 125 | 7.89 | 200 | 2.04 | 52 | 1.25      | 4.97  | 2.25 | A 17845      |
| A 17546     | 1 5/8 | 41 | 44.69 | 39 | 11.00 | 279 | 5.53 | 140 | 1.09 | 28 | 5.46 | 139 | 8.61 | 219 | 2.25 | 57 | 1.50      | 7.17  | 3.25 | A 17845      |
| AU17868     | 2 1/8 | 54 | 76.32 | 66 | 11.86 | 301 | 5.95 | 151 | 1.34 | 34 | 6.06 | 154 | 9.58 | 243 | 2.41 | 61 | 1.93      | 8.27  | 3.75 | A 17845      |
| AU17871 *   | 2 5/8 | 67 | 69.85 | 60 | 11.90 | 302 | 5.97 | 152 | 1.47 | 37 | 6.08 | 154 | 9.60 | 244 | 2.48 | 63 | 1.93      | 8.80  | 3.99 | A 17845      |
| AU17872 *   | 3 1/8 | 79 | 58.19 | 50 | 11.86 | 301 | 5.95 | 151 | 1.66 | 42 | 6.06 | 154 | 9.58 | 243 | 2.66 | 68 | 1.93      | 11.10 | 5.03 | A 17845      |

\* Reduced Port

# CYCLEMASTER® Ball Valves

## Actuated



### Features:

- Maximum abnormal pressure (MAP): Up to 775 psig, 53 bar
- Power Supply: 24 VAC
- Actuator Ambient Temperature: -22°F to 130°F, -30°C to 54°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Valve Refrigerant Temperature: -40°F to 300°F, -40°C to 149°C
- Full shutoff capability
- Gradual open/close stops line hammer
- Remote operating capability
- Removable actuator for quick change replacement
- Manual override and valve positioning
- Electronic overload protection
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC

### Actuated Standard

| Part Number | Size  |       | Cv     | Kv     | A    |      | B    |      | C Min |      | D    |      | MWP  |     | Wt    |       | Motor | Hub Kit | Actuator Kit*** | Heater  |             |
|-------------|-------|-------|--------|--------|------|------|------|------|-------|------|------|------|------|-----|-------|-------|-------|---------|-----------------|---------|-------------|
|             | in    | mm    |        |        | in   | mm   | in   | mm   | in    | mm   | in   | mm   | psig | bar | lb    | kg    |       |         |                 |         |             |
| AW17861     | 1/2   | 13    | 6.20   | 5      | 4.00 | 102  | 2.36 | 60   | 3.70  | 94   | 2.76 | 70   | 775  | 53  | 2.21  | 1.00  | 1     | A 18389 | A 18390         |         |             |
| AW17862     | 5/8   | 17    | 12.10  | 10     | 4.00 | 102  | 2.36 | 60   | 3.70  | 94   | 2.76 | 70   | 775  | 53  | 2.38  | 1.08  | 1     | A 18389 | A 18390         |         |             |
| AW17863     | 3/4   | 19    | 19.00  | 16     | 4.21 | 107  | 2.36 | 60   | 3.70  | 94   | 2.76 | 70   | 775  | 53  | 2.40  | 1.09  | 1     | A 18391 | A 18392         |         |             |
| AW17864     | 7/8   | 22    | 27.50  | 24     | 4.21 | 107  | 2.36 | 60   | 3.70  | 94   | 2.76 | 70   | 775  | 53  | 2.42  | 1.10  | 1     | A 18391 | A 18392         |         |             |
| AW17865     | 1 1/8 | 29    | 54.00  | 47     | 4.58 | 116  | 2.36 | 60   | 3.70  | 94   | 2.76 | 70   | 775  | 53  | 3.10  | 1.41  | 1     | A 18391 | A 18392         |         |             |
| AW17866     | 1 3/8 | 35    | 89.10  | 77     | 5.05 | 128  | 2.36 | 60   | 5.91  | 150  | 3.19 | 81   | 775  | 53  | 5.53  | 2.51  | 2     | A 18393 | A 18394         | A 18366 |             |
| AW17867     | 1 5/8 | 41    | 114.00 | 99     | 5.34 | 136  | 2.36 | 60   | 5.91  | 150  | 3.19 | 81   | 775  | 53  | 6.94  | 3.15  | 2     | A 18393 | A 18394         | A 18366 |             |
| AW17868     | 2 1/8 | 54    | 244.00 | 211    | 6.42 | 163  | 2.66 | 68   | 8.94  | 227  | 3.94 | 100  | 700  | 48  | 13.14 | 5.96  | 3     | A 18368 | A 18395         | A 18367 |             |
| AW17869     | **    | 2 5/8 | 67     | 401.00 | 347  | 9.45 | 240  | 5.30 | 135   | 8.94 | 227  | 3.94 | 100  | 700 | 48    | 23.40 | 10.61 | 4       | A 18764         | A 18765 | A 18367 (2) |
| AW17870     | **    | 3 1/8 | 79     | 553.00 | 478  | 9.99 | 254  | 5.30 | 135   | 8.94 | 227  | 3.94 | 100  | 700 | 48    | 31.40 | 14.24 | 4       | A 18400         | A 18401 | A 18367 (2) |
| AW17871     | *     | 2 5/8 | 67     | 230.00 | 199  | 6.42 | 163  | 2.66 | 68    | 8.94 | 227  | 3.94 | 100  | 700 | 48    | 13.56 | 6.15  | 3       | A 18368         | A 18395 | A 18367     |
| AW17872     | *     | 3 1/8 | 79     | 143.00 | 124  | 6.42 | 163  | 2.66 | 68    | 8.94 | 227  | 3.94 | 100  | 700 | 48    | 14.24 | 6.46  | 3       | A 18368         | A 18395 | A 18367     |

### Actuated 3-Way

| Part Number | Size    |    | Cv    | Kv | A    |     | B    |    | C Min |     | D    |     | MWP  |     | Wt    |      | Motor | Hub Kit | Actuator Kit*** | Heater  |
|-------------|---------|----|-------|----|------|-----|------|----|-------|-----|------|-----|------|-----|-------|------|-------|---------|-----------------|---------|
|             | in      | mm |       |    | in   | mm  | in   | mm | in    | mm  | in   | mm  | psig | bar | lb    | kg   |       |         |                 |         |
| AY17861     | 1/2     | 13 | 3.90  | 3  | 4.18 | 106 | 2.36 | 60 | 3.70  | 94  | 2.76 | 70  | 700  | 48  | 2.28  | 1.03 | 1     | A 18389 | A 18390         |         |
| AY17862     | 5/8     | 17 | 4.60  | 4  | 4.18 | 106 | 2.36 | 60 | 3.70  | 94  | 2.76 | 70  | 700  | 48  | 2.39  | 1.08 | 1     | A 18389 | A 18390         |         |
| AY17863     | 3/4     | 19 | 11.90 | 10 | 4.50 | 114 | 2.36 | 60 | 3.70  | 94  | 2.76 | 70  | 700  | 48  | 3.50  | 1.59 | 1     | A 18391 | A 18392         |         |
| AY17864     | 7/8     | 22 | 10.90 | 9  | 4.50 | 114 | 2.36 | 60 | 3.70  | 94  | 2.76 | 70  | 700  | 48  | 3.25  | 1.47 | 1     | A 18391 | A 18392         |         |
| AY17865     | 1 1/8   | 29 | 19.30 | 17 | 5.02 | 128 | 2.36 | 60 | 5.91  | 150 | 3.19 | 81  | 700  | 48  | 5.73  | 2.60 | 2     | A 18393 | A 18394         | A 18366 |
| A 17810     | 1 3/8   | 35 | 31.10 | 27 | 5.44 | 138 | 2.36 | 60 | 5.91  | 150 | 3.19 | 81  | 700  | 48  | 8.13  | 3.69 | 2     | A 18368 | A 18396         | A 18366 |
| A 17811     | 1 5/8   | 41 | 44.70 | 39 | 6.22 | 158 | 2.66 | 68 | 8.94  | 227 | 3.94 | 100 | 700  | 48  | 12.00 | 5.44 | 3     | A 18368 | A 18395         | A 18367 |
| AY17868     | 2 1/8   | 54 | 76.30 | 66 | 6.54 | 166 | 2.66 | 68 | 8.94  | 227 | 3.94 | 100 | 700  | 48  | 13.23 | 6.00 | 3     | A 18368 | A 18395         | A 18367 |
| AY17871     | * 2 5/8 | 67 | 69.90 | 60 | 6.54 | 166 | 2.66 | 68 | 8.94  | 227 | 3.94 | 100 | 700  | 48  | 14.09 | 6.39 | 3     | A 18368 | A 18395         | A 18367 |
| AY17872     | * 3 1/8 | 79 | 58.20 | 50 | 6.54 | 166 | 2.66 | 68 | 8.94  | 227 | 3.94 | 100 | 700  | 48  | 14.64 | 6.64 | 3     | A 18368 | A 18395         | A 18367 |

\* Reduced Port

\*\* Consists of two stacked motors operating in tandem

\*\*\* Actuator Kit includes Motor and Hub

Prefix AWS Actuator includes auxillary switch

Prefix AYS Actuator includes auxillary switch

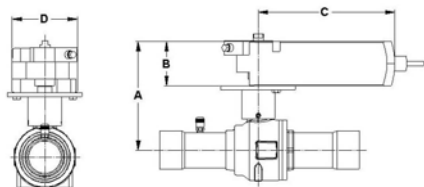
Warning Heater assembly required for low temperature applications

Warning Motors not for use in wet or applications where moisture will condense on motor

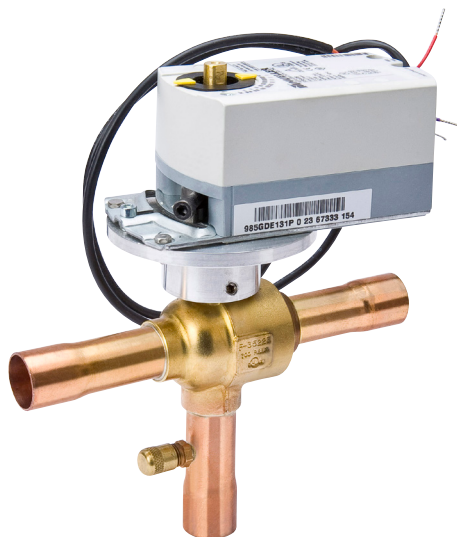
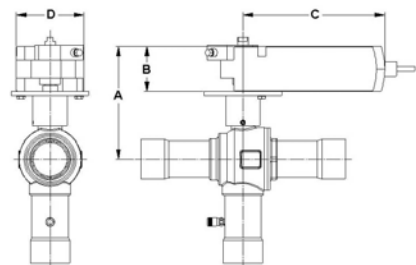
# CYCLEMASTER® Ball Valves

## Actuated

### Actuated Standard



### Actuated 3-Way



Tonnage calculations are based on the following conditions:  
 Evaporator temperature: 40°  
 Vapor temperature exiting evaporator: 10°F superheated  
 Liquid temperature entering evaporator: 100°F  
 Hot gas temperature: 140°F  
 Pressure drop across valve: 1 psig

### Motor Specifications

| Motor Series | Torque (in-lb) | Power Consumption (VA) | Running Time (seconds) |
|--------------|----------------|------------------------|------------------------|
| 1            | 44             | 2.5                    | 90                     |
| 2            | 132            | 3.0                    | 125                    |
| 3            | 310            | 7                      | 125                    |
| 4 **         | 620            | 12                     | 125                    |

| Part Number | Liquid Capacity (tons) |        |                |         |        | Suction Capacity (tons) |       |                |        |       | Hot Gas Capacity (tons) |       |                |        |       |
|-------------|------------------------|--------|----------------|---------|--------|-------------------------|-------|----------------|--------|-------|-------------------------|-------|----------------|--------|-------|
|             | R22                    | R134a  | R404A/<br>R507 | R407C   | R410A  | R22                     | R134a | R404A/<br>R507 | R407C  | R410A | R22                     | R134a | R404A/<br>R507 | R407C  | R410A |
| AW17861     | 19.0                   | 17.7   | 12.2           | 18.13   | 17.8   | 2.7                     | 2.1   | 2.2            | 2.52   | 3.1   | 3.9                     | 3.2   | 3.2            | 4.05   | 4.5   |
| AW17862     | 36.9                   | 34.5   | 23.8           | 35.27   | 34.6   | 5.2                     | 4.1   | 4.3            | 4.90   | 6.0   | 7.5                     | 6.2   | 6.2            | 7.87   | 8.7   |
| AW17863     | 58.0                   | 54.1   | 37.4           | 55.40   | 54.4   | 8.1                     | 6.4   | 6.8            | 7.69   | 9.5   | 11.8                    | 9.7   | 9.7            | 12.37  | 13.7  |
| AW17864     | 84.1                   | 78.4   | 54.2           | 80.27   | 78.8   | 11.8                    | 9.2   | 9.8            | 11.15  | 13.7  | 17.1                    | 14.1  | 14.0           | 17.92  | 19.8  |
| AW17865     | 165.3                  | 154.3  | 106.5          | 157.86  | 154.9  | 23.2                    | 18.1  | 19.4           | 21.92  | 27.0  | 33.7                    | 27.7  | 27.6           | 35.24  | 38.9  |
| AW17866     | 272.9                  | 254.7  | 175.8          | 260.62  | 255.8  | 38.3                    | 29.9  | 32.0           | 36.19  | 44.6  | 55.6                    | 45.7  | 45.6           | 58.18  | 64.2  |
| AW17867     | 348.7                  | 325.3  | 224.6          | 332.95  | 326.8  | 49.0                    | 38.2  | 40.8           | 46.23  | 57.0  | 71.1                    | 58.4  | 58.3           | 74.33  | 82.1  |
| AW17868     | 746.8                  | 696.9  | 481.2          | 713.19  | 699.9  | 104.9                   | 81.9  | 87.5           | 99.03  | 122.2 | 152.3                   | 125.0 | 124.8          | 159.21 | 175.8 |
| AW17869     | 1227.6                 | 1145.5 | 791.0          | 1172.30 | 1150.5 | 172.4                   | 134.6 | 143.8          | 162.78 | 200.8 | 250.3                   | 205.5 | 205.2          | 261.71 | 289.0 |
| AW17870     | 1693.7                 | 1580.4 | 1091.3         | 1617.41 | 1587.4 | 237.9                   | 185.8 | 198.4          | 224.58 | 277.0 | 345.3                   | 283.5 | 283.1          | 361.08 | 398.7 |
| AW17871     | 705.3                  | 658.2  | 454.5          | 673.57  | 661.1  | 99.1                    | 77.4  | 82.6           | 93.53  | 115.4 | 143.8                   | 118.1 | 117.9          | 150.37 | 166.0 |
| AW17872     | 439.3                  | 409.9  | 283.0          | 419.50  | 411.7  | 61.7                    | 48.2  | 51.5           | 58.25  | 71.9  | 89.6                    | 73.5  | 73.4           | 93.65  | 103.4 |
| AY17861     | 12.1                   | 11.3   | 7.8            | 11.52   | 11.3   | 1.7                     | 1.3   | 1.4            | 1.60   | 2.0   | 2.5                     | 2.0   | 2.0            | 2.57   | 2.8   |
| AY17862     | 14.2                   | 13.2   | 9.1            | 13.54   | 13.3   | 2.0                     | 1.6   | 1.7            | 1.88   | 2.3   | 2.9                     | 2.4   | 2.4            | 3.02   | 3.3   |
| AY17863     | 36.4                   | 34.0   | 23.5           | 34.79   | 34.1   | 5.1                     | 4.0   | 4.3            | 4.83   | 6.0   | 7.4                     | 6.1   | 6.1            | 7.77   | 8.6   |
| AY17864     | 33.3                   | 31.1   | 21.5           | 31.84   | 31.2   | 4.7                     | 3.7   | 3.9            | 4.42   | 5.5   | 6.8                     | 5.6   | 5.6            | 7.11   | 7.8   |
| AY17865     | 59.2                   | 55.2   | 38.1           | 56.52   | 55.5   | 8.3                     | 6.5   | 6.9            | 7.85   | 9.7   | 12.1                    | 9.9   | 9.9            | 12.62  | 13.9  |
| A 17810     | 95.1                   | 88.7   | 61.3           | 90.81   | 89.1   | 13.4                    | 10.4  | 11.1           | 12.61  | 15.6  | 19.4                    | 15.9  | 15.9           | 20.27  | 22.4  |
| A 17811     | 136.8                  | 127.7  | 88.2           | 130.66  | 128.2  | 19.2                    | 15.0  | 16.0           | 18.14  | 22.4  | 27.9                    | 22.9  | 22.9           | 29.17  | 32.2  |
| AY17868     | 233.7                  | 218.0  | 150.6          | 223.14  | 219.0  | 32.8                    | 25.6  | 27.4           | 30.98  | 38.2  | 47.6                    | 39.1  | 39.1           | 49.81  | 55.0  |
| AY17869     |                        |        |                |         |        |                         |       |                |        |       |                         |       |                |        |       |
| AY17870     |                        |        |                |         |        |                         |       |                |        |       |                         |       |                |        |       |
| AY17871     | 213.9                  | 199.6  | 137.8          | 204.22  | 200.4  | 30.0                    | 23.5  | 25.1           | 28.36  | 35.0  | 43.6                    | 35.8  | 35.7           | 45.59  | 50.3  |
| AY17872     | 178.2                  | 166.2  | 114.8          | 170.13  | 167.0  | 25.0                    | 19.5  | 20.9           | 23.62  | 29.1  | 36.3                    | 29.8  | 29.8           | 37.98  | 41.9  |

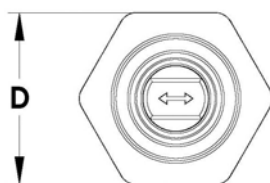
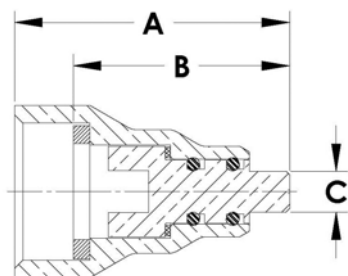
# Component Parts

## Retrofit Cap



### Features:

- Designed to replace existing caps on installed valves for the full range of CYCLEMASTER Ball Valve sizes 1/4" to 3 1/8"
- Large nut secures cap assembly to valve neck allowing center post to easily turn for on/off operation and clear visual identification
- Uses dual o-ring stem seals and base seal to assure positive isolation



| Part Number | Valve Configuration | Valve Size<br>in                       | A    |    | B    |    | C    |    | D    |    | Recommended<br>Sealing Torque |         | Wt   |      |
|-------------|---------------------|----------------------------------------|------|----|------|----|------|----|------|----|-------------------------------|---------|------|------|
|             |                     |                                        | in   | mm | in   | mm | in   | mm | in   | mm | ft-lb                         | N-m     | lb   | kg   |
| A 18351     | Straight            | 1/4 - 5/8                              | 1.33 | 34 | 1.04 | 26 | 0.16 | 4  | 0.81 | 21 | 5 - 6                         | 7 - 8   | 0.08 | 0.04 |
|             | 3-Way               | 1/4 - 5/8                              |      |    |      |    |      |    |      |    |                               |         |      |      |
| A 18352     | Straight            | 3/4 - 1 1/8                            | 1.50 | 38 | 1.18 | 30 | 0.22 | 6  | 0.94 | 24 | 5 - 6                         | 7 - 8   | 0.12 | 0.05 |
|             | 3-Way               | 3/4 - 7/8                              |      |    |      |    |      |    |      |    |                               |         |      |      |
| A 18353     | Straight            | 1 3/8 - 1 5/8                          | 1.92 | 49 | 1.59 | 40 | 0.31 | 8  | 1.13 | 29 | 13 - 15                       | 18 - 20 | 0.22 | 0.10 |
|             | 3-Way               | 1 1/8                                  |      |    |      |    |      |    |      |    |                               |         |      |      |
| A 18354     | Straight            | 2 1/8, 2 5/8 & 3 1/8" Red Port         | 2.57 | 65 | 1.97 | 50 | 0.38 | 10 | 1.63 | 41 | 40 - 45                       | 54 - 61 | 0.57 | 0.26 |
|             | 3-Way               | 1 3/8 - 2 1/8, 2 5/8 & 3 1/8" Red Port |      |    |      |    |      |    |      |    |                               |         |      |      |
| A 18355     | Straight            | 2 5/8 & 3 1/8 Full Port                | 2.66 | 68 | 2.10 | 53 | 0.38 | 10 | 1.88 | 48 | 45 - 50                       | 61 - 68 | 0.84 | 0.38 |
|             | 3-Way               |                                        |      |    |      |    |      |    |      |    |                               |         |      |      |

Valve sizes listed are based on current standard product offering. Confirm part number requirement based on thread size.

\* For use with 2 1/8" and larger 3-Way Ball Valves manufactured prior to Nov. 2006

\*\* For use with 1 1/8 Straight valves manufactured after Jun 2010

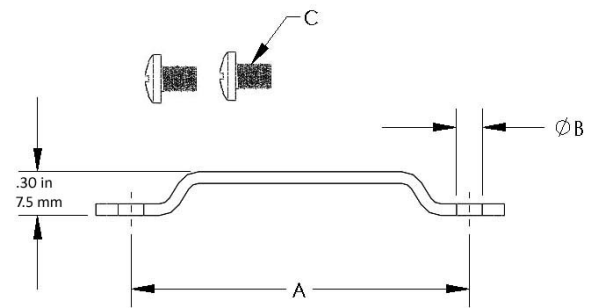
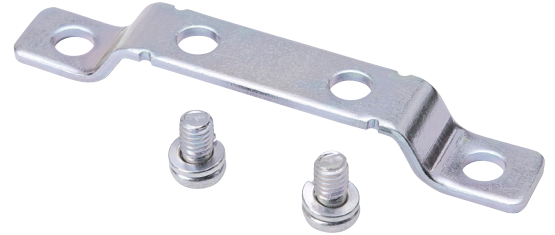
\*\*\* For use with 1 5/8 straight valves manufactured after Jan 2014

# CYCLEMASTER® Ball Valves

## Bracket Kits

### Features:

- Kits include bracket and two screws
- Specifically designed to fit Mueller CYCLEMASTER® ball valve sizes
- Plated steel to provide corrosion resistance

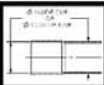
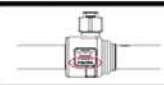


| Part Number | Valve Size | A    |      | B    |      | Screw Thread Size<br>(C) | Wt   |      |
|-------------|------------|------|------|------|------|--------------------------|------|------|
|             |            | (in) | (mm) | (in) | (mm) |                          | (lb) | (kg) |
| B 35531     | 1/4 - 5/8  | 2.28 | 58   | 0.17 | 4.4  | M4 X .07                 | 0.03 | 0.01 |
| B 35532     | 3/4 - 7/8  | 2.84 | 72   | 0.17 | 4.4  | M4 X .07                 | 0.04 | 0.02 |
| B 35533     | 1 1/8      | 3.07 | 78   | 0.17 | 4.4  | M4 X .07                 | 0.04 | 0.02 |
| B 35534     | 1 3/8      | 3.62 | 92   | 0.25 | 6.4  | M6 X 1.0                 | 0.05 | 0.02 |
| B 35535     | 1 5/8      | 3.94 | 100  | 0.25 | 6.4  | M6 X 1.0                 | 0.05 | 0.02 |
| B 35536     | 2 1/8      | 4.80 | 122  | 0.25 | 6.4  | M6 X 1.0                 | 0.06 | 0.03 |

# CYCLEMASTER Ball Valves

## Accessories

## Ball Valve Cross-Reference - Caps, Hubs, Motor Accessories

|  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Stem Neck Thread Size                                                             | Connection Size                                                                   | Straight-Through Valve Body Numbers                                               | 3-Way Valve Body Numbers                                                          | Motor Series                                                                      | ABV Hub Kit                                                                        | ABV Hub-Motor Kit                                                                   | Heater                                                                              | One-Piece Plastic Cap                                                               | One-Piece Brass Cap                                                                 | Two-Piece Brass Cap                                                                 | Retrofit Brass Cap                                                                  |
| 11/16"-16 UN                                                                      | 1/4"                                                                              | N-2351                                                                            | ---                                                                               | I                                                                                 | A-18389                                                                            | A-18390                                                                             | ---                                                                                 | P-36723                                                                             | A-17965                                                                             | A-17842                                                                             | A-18351                                                                             |
|                                                                                   | 3/8"                                                                              | F-35222                                                                           | F-35222                                                                           |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 1/2"                                                                              | F-36573                                                                           |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 5/8"                                                                              | F-36700<br>F-36700A                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 13/16"-16 UN                                                                      | 3/4"                                                                              | N-2352<br>F-33957<br>F-35223<br>F-35427<br>F-35639<br>F-36701<br>F-36701A         | F-35223                                                                           | I                                                                                 | A-18391                                                                            | A-18392                                                                             | ---                                                                                 | P-36762                                                                             | A-17966                                                                             | A-17843                                                                             | A-18352                                                                             |
|                                                                                   | 7/8"                                                                              | F-36701A                                                                          |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 1-1/8"                                                                            | F-36702A                                                                          |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 1"-16 UN                                                                          | 1-1/8"                                                                            | N-2353<br>F-33958<br>F-35224<br>F-35428<br>F-35640<br>F-36702                     | F-35224                                                                           | II                                                                                | A-18393                                                                            | A-18394                                                                             | A-18366                                                                             | P-36763                                                                             | A-17967                                                                             | A-17844                                                                             | A-18353                                                                             |
|                                                                                   | 1-3/8"                                                                            | F-35949<br>F-36703<br>F-36703A                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 1-5/8"                                                                            | F-36704A                                                                          |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 1-1/2"-16 UN                                                                      | 1-3/8"                                                                            | N-2354<br>F-35429<br>F-35641                                                      | F-35162                                                                           | II                                                                                | A-18368                                                                            | A-18396                                                                             | A-18366                                                                             | P-36764                                                                             | A-17968                                                                             | A-17845                                                                             | A-18354                                                                             |
|                                                                                   | 1-5/8"                                                                            | N-2355<br>F-35430<br>F-35642<br>F-35950<br>F-36704                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 2-1/8"                                                                            | F-35951                                                                           | F-35160                                                                           | III                                                                               | A-18368                                                                            | A-18395                                                                             | A-18367                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 2-5/8" & 3-1/8" Reduced Port                                                      | F-36451<br>F-36705<br>F-36705A                                                    |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 2-5/8" Full Port                                                                  | F-36706A                                                                          | ---                                                                               | IV                                                                                | A-18764                                                                            | A-18765                                                                             | (2) A-18367                                                                         |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 3-1/8" Full Port<br>3-5/8" & 4-1/8" Reduced Port                                  | F-36322A<br>F-36707A                                                              | ---                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| 1-3/4"-16 UN                                                                      | 2-1/8"<br>2-5/8" & 3-1/8" Reduced Port                                            | N-2356<br>F-35111                                                                 | F-35161                                                                           | III                                                                               | A-18402                                                                            | ---                                                                                 | A-18367                                                                             | P-36765                                                                             | A-18399                                                                             | A-17846                                                                             | A-18355                                                                             |
|                                                                                   | 2-5/8" Full Port                                                                  | F-35755<br>F-36452<br>F-36706                                                     |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                                                                   | 3-1/8" Full Port<br>3-5/8" & 4-1/8" Reduced Port                                  | F-35952<br>F-36322<br>F-36707                                                     | ---                                                                               | IV                                                                                | A-18400                                                                            | A-18401                                                                             | (2) A-18367                                                                         |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

| Motor Series             | I                | II                | III               | IV *               |
|--------------------------|------------------|-------------------|-------------------|--------------------|
| Standard Actuator        | P-36408          | P-36409           | P-36410           | (2) P-36714        |
| Actuator w/ Aux Switches | P-36417          | P-36418           | P-36419           | P-36714<br>P-36889 |
| Hub Seal Kits            | A-18403 (1 Seal) | A-18404 (2 Seals) | A-18404 (2 Seals) | A-18404 (2 Seals)  |

Views shown without Hub Kit Bracket Assembly. **Hub Seal Kits** include seals **ONLY**.

\* **Note:** Series IV motor assemblies require additional mounting hardware to join tandem motors.

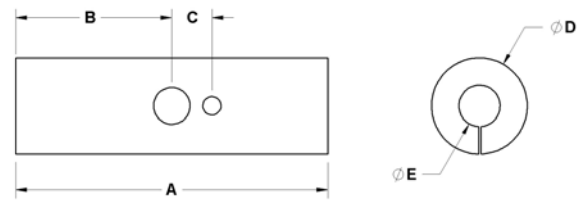
# CYCLEMASTER Ball Valves

## Accessories

### O Ring Kit for Actuator Hub Service

| O-Ring Kits | Valve Size    |
|-------------|---------------|
| A 18403     | 1/2 - 1 1/8   |
| A 18404     | 1 3/8 - 3 1/8 |

### Insulation Cover



| Insulation | Valve Size         | A (in) | B (in) | C (in) | D (in) | E (in) | Wt(lb) |
|------------|--------------------|--------|--------|--------|--------|--------|--------|
| 38RBVINS   | 3/8                | 5.50   | 3.00   | 0.63   | 2.50   | 1.19   | 0.10   |
| 12RBVINS   | 1/2                | 6.38   | 3.44   | 0.63   | 2.50   | 1.19   | 0.10   |
| 58RBVINS   | 5/8                | 6.38   | 3.44   | 0.63   | 2.50   | 1.38   | 0.10   |
| 34RBVINS   | 3/4                | 7.44   | 3.88   | 0.88   | 3.06   | 1.63   | 0.10   |
| 78RBVINS   | 7/8                | 7.44   | 3.88   | 0.88   | 3.06   | 1.63   | 0.10   |
| 118RBVINS  | 1 1/8              | 8.44   | 4.31   | 1.13   | 3.63   | 1.75   | 0.10   |
| 138RBVINS  | 1 3/8              | 10.00  | 5.00   | 1.25   | 3.94   | 2.06   | 0.10   |
| 158RBVINS  | 1 5/8              | 11.00  | 5.50   | 1.44   | 4.56   | 2.25   | 0.32   |
| 218RBVINS  | 2 1/8              | 12.00  | 6.06   | 1.88   | 5.38   | 2.44   | 0.10   |
| 258RBVINS  | 2 5/8              | 13.50  | 6.81   | 2.25   | 6.25   | 2.88   | 0.10   |
| MSBVINS    | Multi Split Valves | 8.56   | 4.28   | 1.10   | 2.63   | 1.13   | 0.10   |

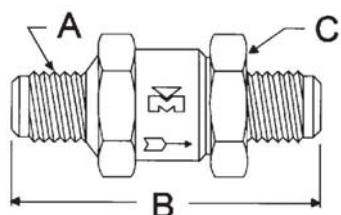
# Check Valves

## Inline

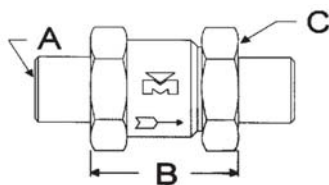


### Features:

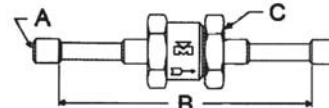
- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Pressure to open: < 1 psi
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Neoprene seat for positive isolation and pulsation dampening
- Enhanced internal design for maximum flow and minimum pressure drop



Flare to Flare



Solder to Solder



Solder to Solder, Extended Ends

### Flare to Flare

| Part Number | Size A |    | B    |    | C         |        | Wt   |      |
|-------------|--------|----|------|----|-----------|--------|------|------|
|             | in     | mm | in   | mm | in        | mm     | lb   | kg   |
| A 15620     | 1/4    | 6  | 2.25 | 57 | 13/16 Hex | 21 Hex | 0.15 | 0.07 |
| A 15621     | 3/8    | 10 | 2.40 | 61 | 13/16 Hex | 21 Hex | 0.20 | 0.09 |
| A 15622     | 1/2    | 13 | 3.00 | 76 | 1 1/4 Oct | 32 Oct | 0.43 | 0.19 |
| A 15623     | 5/8    | 17 | 3.20 | 81 | 1 1/4 Oct | 32 Oct | 0.51 | 0.23 |

### Solder to Solder

| Part Number |    | Size A |    | B    |     | C         |        | Wt   |      |
|-------------|----|--------|----|------|-----|-----------|--------|------|------|
|             |    | in     | mm | in   | mm  | in        | mm     | lb   | kg   |
| A 15628     | *  | 1/4    | 6  | 1.14 | 29  | 13/16 Hex | 21 Hex | 0.13 | 0.06 |
| A 15629     | *  | 3/8    | 10 | 1.14 | 29  | 13/16 Hex | 21 Hex | 0.13 | 0.06 |
| A 15630     | *  | 1/2    | 13 | 1.44 | 37  | 1 1/4 Oct | 32 Oct | 0.37 | 0.17 |
| A 15631     | *  | 5/8    | 17 | 1.44 | 37  | 1 1/4 Oct | 32 Oct | 0.36 | 0.16 |
| A 15632     | ** | 1/4    | 6  | 4.40 | 112 | 13/16 Hex | 21 Hex | 0.16 | 0.07 |
| A 15633     | ** | 3/8    | 10 | 4.70 | 119 | 13/16 Hex | 21 Hex | 0.18 | 0.08 |
| A 15634     | ** | 1/2    | 13 | 4.90 | 124 | 1 1/4 Oct | 32 Oct | 0.43 | 0.20 |
| A 15635     | ** | 5/8    | 17 | 5.20 | 132 | 1 1/4 Oct | 32 Oct | 0.48 | 0.22 |

\* Shipped loosely assembled

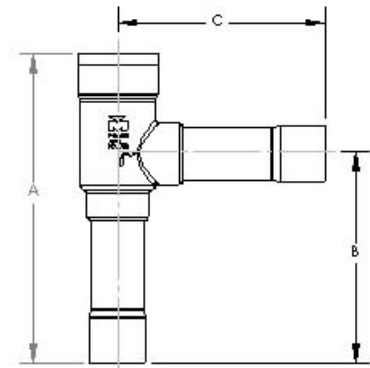
\*\* Extended Ends

# Check Valves

## 90° Angle

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Forged brass body exceeds the most stringent quality standards in the industry
- Neoprene gasket



| Part Number | Size (in) |                              | Cv   | Kv   | A    |     | B    |     | C    |     | Wt   |      |
|-------------|-----------|------------------------------|------|------|------|-----|------|-----|------|-----|------|------|
|             |           |                              |      |      | in   | mm  | in   | mm  | in   | mm  | lb   | kg   |
| A 18383C    | 7/8       | Male Inlet x Female Outlet   | 13.4 | 11.6 | 5.38 | 137 | 3.70 | 94  | 3.47 | 88  | 0.81 | 0.37 |
| A 18565C    | 7/8       | Male Inlet x Male Outlet     | 13.4 | 11.6 | 5.38 | 137 | 3.70 | 94  | 3.67 | 93  | 0.80 | 0.36 |
| A 18566C    | * 7/8     | Female Inlet x Female Outlet | 13.4 | 11.6 | 5.18 | 132 | 3.50 | 89  | 3.47 | 88  | 0.81 | 0.37 |
| A 18659C    | * 1 1/8   | Female Inlet x Female Outlet | 30.2 | 26.1 | 8.02 | 204 | 5.55 | 141 | 4.84 | 123 | 1.93 | 0.88 |
| A 18660C    | * 1 3/8   | Female Inlet x Female Outlet | 37.0 | 32.0 | 8.02 | 204 | 5.55 | 141 | 4.84 | 123 | 1.98 | 0.90 |

Standard valve includes 2 lb spring

\* Prefixed AH for valve with 4.3 lb spring

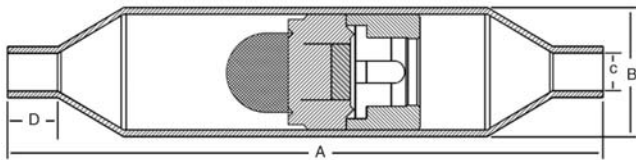
# Check Valves

## Magnetic



### Features:

- Maximum abnormal pressure (MAP): Charted below
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Built-in 30 mesh stainless steel screen
- Internal components installed with DuraForm Technology
- Mechanically formed solder cup stops for easy installation
- Flexible for installation in vertical or horizontal position
- Hermetically formed solid copper body assures zero leak potential



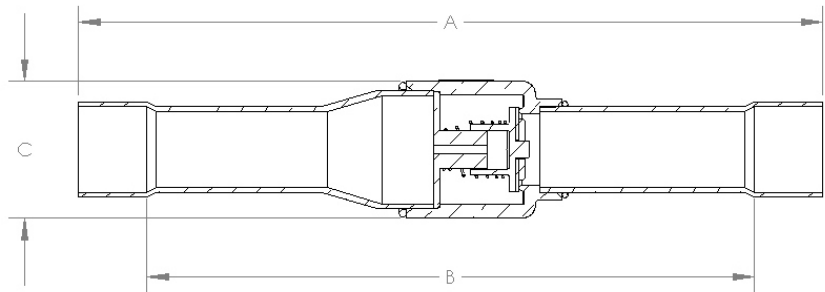
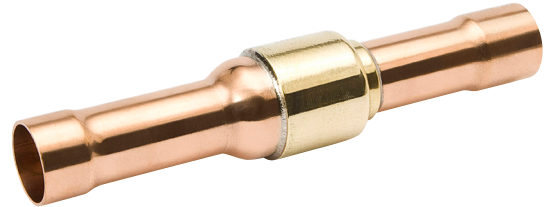
| Part Number | Model   | Size C (in) |    | A     |     | B    |     | D    |    | MAP  |     | Wt   |      |
|-------------|---------|-------------|----|-------|-----|------|-----|------|----|------|-----|------|------|
|             |         |             |    | in    | mm  | in   | mm  | in   | mm | psig | bar | lb   | kg   |
| A 17934     | CMV-4S  | 1/4         | 6  | 4.02  | 102 | 0.88 | 22  | 0.34 | 9  | 800  | 55  | 0.20 | 0.09 |
| A 17935     | CMV-6S  | 3/8         | 10 | 4.02  | 102 | 0.88 | 22  | 0.34 | 9  | 800  | 55  | 0.20 | 0.09 |
| A 17936     | CMV-8S  | 1/2         | 13 | 5.18  | 131 | 1.13 | 29  | 0.41 | 10 | 800  | 55  | 0.38 | 0.17 |
| A 17937     | CMV-10S | 5/8         | 17 | 5.18  | 131 | 1.13 | 29  | 0.53 | 13 | 800  | 55  | 0.34 | 0.16 |
| A 17938     | CMV-12S | 3/4         | 19 | 7.04  | 179 | 1.63 | 41  | 0.65 | 17 | 800  | 55  | 0.87 | 0.40 |
| A 17939     | CMV-14S | 7/8         | 22 | 7.04  | 179 | 1.63 | 41  | 0.78 | 20 | 800  | 55  | 0.90 | 0.41 |
| A 17940     | CMV-18S | 1 1/8       | 29 | 8.43  | 214 | 2.13 | 54  | 0.94 | 24 | 800  | 55  | 1.61 | 0.73 |
| A 17941     | CMV-22S | 1 3/8       | 35 | 9.41  | 239 | 2.63 | 67  | 1.00 | 25 | 800  | 55  | 2.74 | 1.24 |
| A 17942     | CMV-26S | 1 5/8       | 41 | 10.55 | 268 | 3.13 | 79  | 1.12 | 28 | 800  | 55  | 3.91 | 1.77 |
| A 17943     | CMV-34S | 2 1/8       | 54 | 12.06 | 306 | 3.63 | 92  | 1.37 | 35 | 775  | 53  | 6.00 | 2.72 |
| A 17944     | CMV-42S | 2 5/8       | 67 | 13.05 | 331 | 4.13 | 105 | 1.50 | 38 | 775  | 53  | 7.00 | 3.18 |
| A 17981     | CMV-50S | 3 1/8       | 79 | 13.05 | 331 | 4.13 | 105 | 1.69 | 43 | 700  | 68  | 7.43 | 3.37 |

# Check Valves

## Piston

### Features:

- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Enhanced internal design for maximum flow and minimum pressure drop
- Maximum abnormal pressure (MAP): Charted below
- 1/4" - 1/2" sized valves are designed for use with R744 (CO2)
- 5/8" - 7/8" sized valves are designed for use with R744 in cascading systems or secondary loops where design pressures are below the R744 critical pressure of 1058 psi



| Part Number | Size ODS |     | Cv   | Kv   | $\Delta P$<br>psi | A    |     | B    |     | C    |    | Wt   |      | MAP  |
|-------------|----------|-----|------|------|-------------------|------|-----|------|-----|------|----|------|------|------|
|             | in       | mm  |      |      |                   | in   | mm  | in   | mm  | in   | mm | lb   | kg   |      |
| A 18720     | 1/4      | 6   | 0.70 | 0.61 | 1                 | 3.62 | 92  | 3.00 | 76  | 0.71 | 18 | 0.11 | 0.05 | 1305 |
| A 18721     | 3/8      | 10  | 1.40 | 1.21 | 1                 | 4.29 | 109 | 3.60 | 91  | 0.71 | 18 | 0.12 | 0.05 | 1305 |
| A 18722     | 1/2      | 13  | 2.71 | 2.34 | .75               | 5.15 | 131 | 4.28 | 109 | 0.85 | 22 | 0.16 | 0.07 | 1305 |
| A 18723     | 5/8      | 17  | 4.10 | 3.55 | .75               | 5.43 | 138 | 4.43 | 113 | 1.00 | 25 | 0.22 | 0.10 | 1000 |
| A 18724     | 7/8      | 22  | 9.19 | 7.95 | .75               | 6.50 | 165 | 5.25 | 133 | 1.34 | 34 | 0.42 | 0.19 | 1000 |
| A 18838     | 3/4      | 19  | 8.76 | 7.58 | .75               | 7.01 | 178 | 5.86 | 149 | 1.34 | 34 | 0.43 | 0.19 | 1000 |
| AH18720     | *        | 1/4 | 6    | 0.70 | 4.4               | 3.62 | 92  | 3.00 | 76  | 0.71 | 18 | 0.11 | 0.05 | 1305 |
| AH18721     | *        | 3/8 | 10   | 1.40 | 4.4               | 4.29 | 109 | 3.60 | 91  | 0.71 | 18 | 0.12 | 0.05 | 1305 |
| AH18722     | *        | 1/2 | 13   | 2.71 | 4.4               | 5.15 | 131 | 4.28 | 109 | 0.85 | 22 | 0.16 | 0.07 | 1305 |
| AH18723     | *        | 5/8 | 17   | 4.10 | 4.4               | 5.43 | 138 | 4.43 | 113 | 1.00 | 25 | 0.22 | 0.10 | 1000 |
| AH18724     | *        | 7/8 | 22   | 9.19 | 4.4               | 6.50 | 165 | 5.25 | 133 | 1.34 | 34 | 0.42 | 0.19 | 1000 |
| AH18838     | *        | 3/4 | 19   | 8.76 | 4.4               | 7.01 | 178 | 5.86 | 149 | 1.34 | 34 | 0.44 | 0.20 | 1000 |

Prefixed AH for valve with 4.4 lb spring

Standard valve includes 1 lb spring

\* Prefixed AH for valves with higher  $\Delta P$

$\Delta P$  Minimum pressure at which valve fully opens.

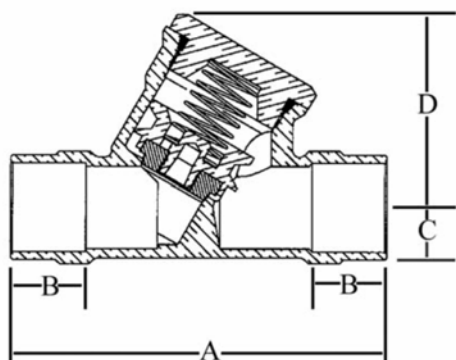
# Check Valves

## Screw Bonnet



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Design features easy removal and reassembly of internal components
- Forged brass body exceeds the most stringent quality standards in the industry
- Designed to provide minimal pressure drop and increased flow capacity
- PTFE gasket



| Part Number | Size |    | Cv   | Kv | A    |     | B    |    | C    |    | D    |    | Pressure to Open |      | Rec Bolt Torques |         | Replacement Components |              | Wt   |      |
|-------------|------|----|------|----|------|-----|------|----|------|----|------|----|------------------|------|------------------|---------|------------------------|--------------|------|------|
|             | in   | mm |      |    | in   | mm  | in   | mm | in   | mm | in   | mm | psi              | bar  | ft-lb            | N-m     | 5 lb Spring            | 10 lb Spring | lb   | kg   |
| A 17953     | 1/4  | 6  | 0.50 | 0  | 3.00 | 76  | 0.31 | 8  | 0.19 | 5  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.58 | 0.26 |
| A 17954     | 3/8  | 10 | 1.42 | 1  | 3.00 | 76  | 0.44 | 11 | 0.25 | 6  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.57 | 0.26 |
| A 17955     | 1/2  | 13 | 2.03 | 2  | 3.00 | 76  | 0.56 | 14 | 0.32 | 8  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.53 | 0.24 |
| A 17956     | 5/8  | 17 | 8.10 | 7  | 3.31 | 84  | 0.66 | 17 | 0.38 | 10 | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.53 | 0.24 |
| A 17958     | 7/8  | 22 | 2.50 | 2  | 3.75 | 95  | 0.75 | 19 | 0.52 | 13 | 1.92 | 49 | <1               | <.07 | 14 - 16          | 19 - 22 | P 37516                | P 37517      | 0.87 | 0.39 |
| AT17954 *   | 3/8  | 10 |      |    | 6.30 | 160 | 0.31 | 8  | 0.21 | 5  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.62 | 0.28 |
| AT17955 *   | 1/2  | 13 |      |    | 6.06 | 154 | 0.38 | 10 | 0.28 | 7  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.59 | 0.27 |
| AT17956 *   | 5/8  | 17 |      |    | 6.81 | 173 | 0.50 | 13 | 0.34 | 9  | 1.57 | 40 | <1               | <.07 | 14 - 16          | 19 - 22 | P 36542                | P 36543      | 0.66 | 0.30 |
| AT17958 *   | 7/8  | 22 |      |    | 7.75 | 197 | 0.75 | 19 | 0.47 | 12 | 1.92 | 49 | <1               | <.07 | 14 - 16          | 19 - 22 | P 37516                | P 37517      | 1.09 | 0.49 |

\* Extended End

Prefix AG Includes 5 lb spring

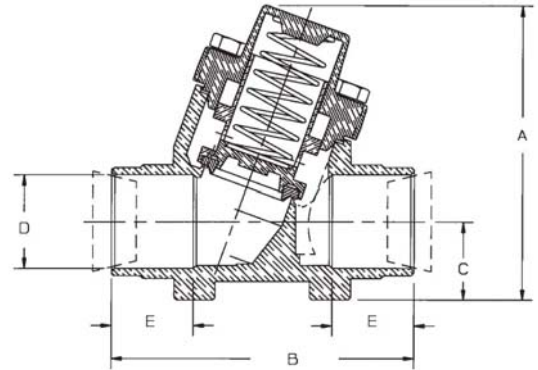
Prefix AH Includes 10 lb spring

# Check Valves

## Four-Bolt

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Design features easy removal and reassembly of internal components
- Forged brass body exceeds the most stringent quality standards in the industry
- Horizontal or vertical installation (not to be installed with bonnet facing down)
- "Y" type design provides minimal pressure drop and increased flow capacity



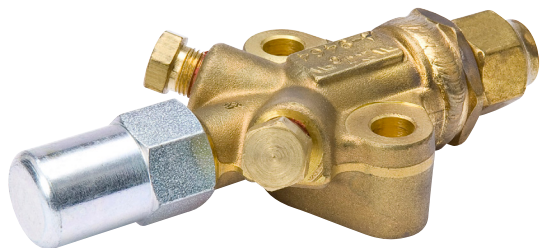
| Part Number | Size D |    | Cv    | Kv | A    |     | B    |     | C    |    | E    |    | Pressure to Open |      |         |         | Replacement Components |              |              |         | Wt    |       |
|-------------|--------|----|-------|----|------|-----|------|-----|------|----|------|----|------------------|------|---------|---------|------------------------|--------------|--------------|---------|-------|-------|
|             | in     | mm |       |    | in   | mm  | in   | mm  | in   | mm | in   | mm | psi              | bar  | ft-lb   | N-m     | Kit **                 | 10 lb Spring | 20 lb Spring | Gasket  | lb    | kg    |
| B 34235 *   | 7/8    | 22 | 9.20  | 8  | 3.55 | 90  | 3.68 | 93  | 0.94 | 24 | 0.94 | 24 | <1               | <.07 | 8 - 15  | 11 - 20 | A 17986                | P 35656      | P 35859      | P 35708 | 2.44  | 1.11  |
| B 34236 *   | 1 1/8  | 29 | 11.00 | 10 | 3.55 | 90  | 3.68 | 93  | 0.94 | 24 | 1.00 | 25 | <1               | <.07 | 8 - 15  | 11 - 20 | A 17986                | P 35656      | P 35859      | P 35708 | 2.27  | 1.03  |
| B 34237 *   | 1 3/8  | 35 | 18.50 | 16 | 4.53 | 115 | 4.75 | 121 | 1.25 | 32 | 1.06 | 27 | 2                | .14  | 10 - 20 | 14 - 27 | A 17987                | P 35657      | P 36305      | P 35691 | 5.45  | 2.47  |
| B 34238 *   | 1 5/8  | 41 | 20.40 | 18 | 4.53 | 115 | 4.75 | 121 | 1.25 | 32 | 1.06 | 27 | 2                | .14  | 10 - 20 | 14 - 27 | A 17987                | P 35657      | P 36305      | P 35691 | 4.65  | 2.11  |
| B 34239 *   | 2 1/8  | 54 | 36.00 | 31 | 5.84 | 148 | 6.37 | 162 | 1.70 | 43 | 1.50 | 38 | 2                | .14  | 10 - 20 | 14 - 27 | A 17988                | P 36544      |              | P 35721 | 12.31 | 5.58  |
| B 34240 *   | 2 5/8  | 67 | 86.10 | 74 | 8.00 | 203 | 8.88 | 226 | 2.00 | 51 | 1.90 | 48 | 2                | .14  | 15 - 25 | 20 - 34 | A 18050                |              |              | P 36041 | 27.67 | 12.55 |
| B 34241 *   | 3 1/8  | 79 |       |    | 8.00 | 203 | 8.88 | 226 | 2.00 | 51 | 1.90 | 48 | 2                | .14  | 15 - 25 | 20 - 34 | A 18050                |              |              | P 36041 | 26.52 | 12.03 |

\* Includes standard 2 lb spring

\*\* Replacement kit includes seat holder subassembly, cover gasket and 2 lb spring

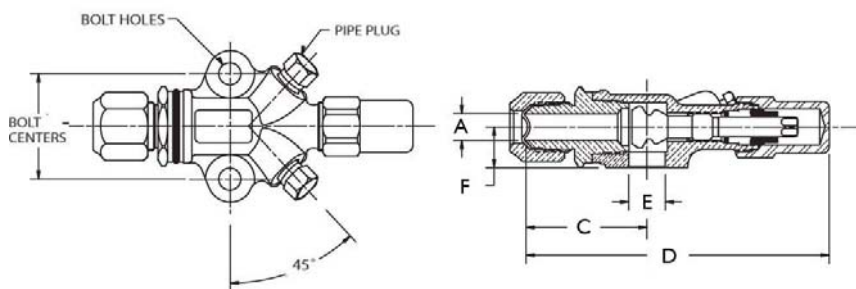
# Brass Compressor Valves

Double Port, 45° Flare



## Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | Kit Part Number * | A   |    | C    |    | D    |     | E    |    | F    |    | Bolt Hole |    | Bolt Hole Diameter |    | Pipe Plug | Flange Thickness |    | Seat Position | Valve Wt |      | Kit Wt |      |
|-------------------|-------------------|-----|----|------|----|------|-----|------|----|------|----|-----------|----|--------------------|----|-----------|------------------|----|---------------|----------|------|--------|------|
|                   |                   | in  | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in        | mm | in                 | mm | Size in   | in               | mm |               | lb       | kg   | lb     | kg   |
| A 16302           | A 17518           | 3/8 | 10 | 1.73 | 44 | 4.45 | 113 | 0.56 | 14 | 0.62 | 16 | 1 5/8     | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Mid           | 1.20     | 0.54 | 1.24   | 0.56 |
| A 16303           | A 17519           | 1/2 | 13 | 1.86 | 47 | 4.67 | 119 | 0.56 | 14 | 0.62 | 16 | 1 5/8     | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Mid           | 1.17     | 0.53 | 1.17   | 0.53 |
| A 16304           | A 17520           | 5/8 | 17 | 1.99 | 51 | 4.80 | 122 | 0.56 | 14 | 0.62 | 16 | 1 5/8     | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Mid           | 1.23     | 0.56 | 1.27   | 0.58 |

## Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             | Plastic Cap |       | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|-------------|-------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       | (ft-lb)     | (N-m) | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 14 - 18    | 19 - 24 | 14 - 18   | 19 - 24 | 8 - 12     | 11 - 16 | 2 - 3 Threads Exposed | NA          | NA    | 20 - 30   | 27 - 41 | 3 - 5     | 4 - 7 |

## References

| Valve Part Number | Body Number | Material | Standard Seal Cap |        |        |     | Replacement Seal Cap |          |         |           | Replacement Kit ** | Valve Kit * | Manufacturer Reference |             |
|-------------------|-------------|----------|-------------------|--------|--------|-----|----------------------|----------|---------|-----------|--------------------|-------------|------------------------|-------------|
|                   |             |          | Seal Cap          | Gasket | O-ring | Kit | Plastic              | Brass*** | Steel   | Cast Iron |                    |             | Carrier                | Copeland    |
| A 16302           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17518     |                        | 998-0510-15 |
| A 16303           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17519     |                        | 998-0510-16 |
| A 16304           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17520     |                        | 998-0510-17 |

\* Valve kit includes valve, gasket and bolts

\*\* Replacement kit contains components to pack stem (pack gland, packing and pack washer)

\*\*\* Cap and cap gasket kit

\*\*\*\* Seal cap and o-ring kit

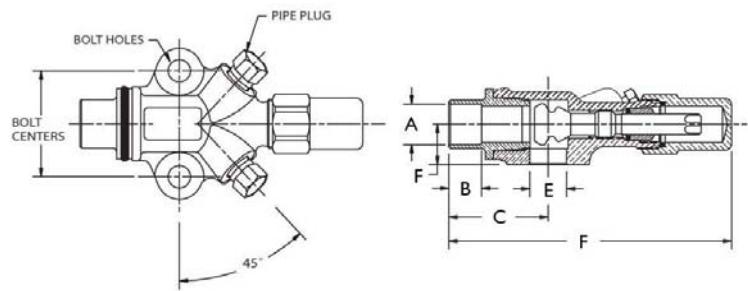
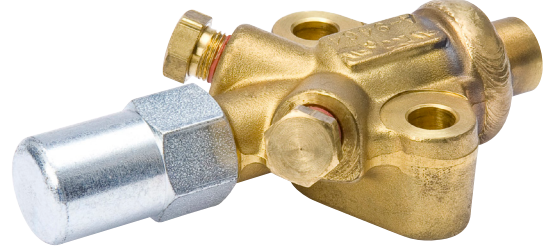
\*\*\*\*\* O-ring included

# Brass Compressor Valves

## Double Port, Solder

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part | Kit Part Number<br>* | A   |    | B    |    | C    |    | D    |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug | Flange Thickness |    | Seat Position   | Valve Wt |      | Kit Wt |      |
|------------|----------------------|-----|----|------|----|------|----|------|-----|------|----|------|----|--------------|----|--------------------|----|-----------|------------------|----|-----------------|----------|------|--------|------|
|            |                      | in  | mm | in   | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in           | mm | in                 | mm | Size in   | in               | mm |                 | lb       | kg   | lb     | kg   |
| A 16307    | A 17510              | 3/8 | 10 | 0.31 | 8  | 1.27 | 32 | 4.07 | 103 | 0.56 | 14 | 0.62 | 16 | 1 5/8        | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Front           | 0.69     | 0.31 | 0.73   | 0.33 |
| A 16308    | A 17511              | 1/2 | 13 | 0.38 | 10 | 1.40 | 36 | 4.20 | 107 | 0.56 | 14 | 0.62 | 16 | 1 5/8        | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Front           | 0.86     | 0.39 | 0.90   | 0.41 |
| A 16309    | A 17512              | 5/8 | 17 | 0.50 | 13 | 1.52 | 39 | 4.32 | 110 | 0.56 | 14 | 0.62 | 16 | 1 5/8        | 41 | .34                | 9  | 1/8       | 7/8              | 22 | Front           | 0.88     | 0.40 | 0.92   | 0.42 |
| A 16309    | A 17531              | 5/8 | 17 | 0.50 | 13 | 1.52 | 39 | 4.32 | 110 | 0.56 | 14 | 0.62 | 16 | 1 5/8        | 41 | .34                | 9  | 1/8       | 7/8              | 22 | 1 Turn off Back | 0.88     | 0.40 | 0.93   | 0.42 |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             |  | Plastic Cap |       | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|--|-------------|-------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       |  | (ft-lb)     | (N-m) | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 14 - 18    | 19 - 24 | 14 - 18   | 19 - 24 | 8 - 12     | 11 - 16 | 2 - 3 Threads Exposed |  | NA          | NA    | 20 - 30   | 27 - 41 | 3 - 5     | 4 - 7 |

### References

| Valve Part Number | Body Number | Material | Standard Seal Cap |        |        |     | Replacement Seal Cap |          |         |           | Replace-ment Kit** | Valve Kit * | Manufacturer Reference |             |
|-------------------|-------------|----------|-------------------|--------|--------|-----|----------------------|----------|---------|-----------|--------------------|-------------|------------------------|-------------|
|                   |             |          | Seal Cap          | Gasket | O-ring | Kit | Plastic              | Brass*** | Steel   | Cast Iron |                    |             | Carrier                | Copeland    |
| A 16307           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17510     |                        | 998-0510-04 |
| A 16308           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17511     |                        | 998-0510-05 |
| A 16309           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17512     |                        | 998-0510-06 |
| A 16309           | A 09464     | Steel    | A 04566           |        |        |     | P 34627              | A 16474  | A 04566 |           | A 17420            | A 17531     | 06DA660-060            |             |

\* Valve kit includes valve, gasket and bolts

\*\* Replacement kit contains components to pack stem (pack gland, packing and pack washer)

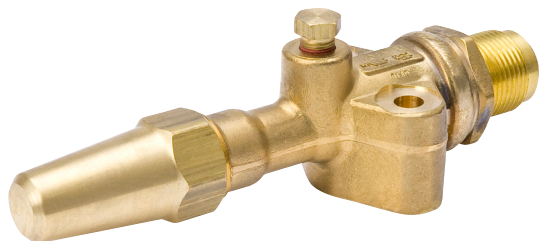
\*\*\* Cap and cap gasket kit

\*\*\*\* Seal cap and o-ring kit

\*\*\*\*\* O-ring included

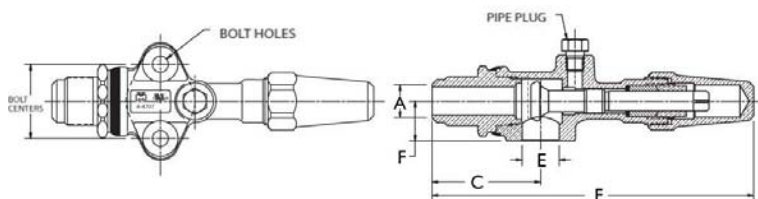
# Brass Compressor Valves

## Straight Port, 45° Flare



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | A   |    | B  |    | C    |    | D    |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug Size | Flange Thickness |    | Seat Position | Valve Wt |      |
|-------------------|-----|----|----|----|------|----|------|-----|------|----|------|----|--------------|----|--------------------|----|----------------|------------------|----|---------------|----------|------|
|                   | in  | mm | in | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in           | mm | in                 | mm | in             | in               | mm |               | lb       | kg   |
| A 13166           | 3/4 | 19 |    |    | 2.37 | 60 | 7.05 | 179 | 0.81 | 21 | 0.85 | 22 | 1 5/8        | 41 | .34                | 9  | 1/8            | 1 1/4            | 32 | Mid           | 1.78     | 0.81 |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             |  | Plastic Cap |            | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|--|-------------|------------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       |  | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 25    | 20 - 34 | 2 - 3 Threads Exposed |  | Hand Tight  | Hand Tight | 40 - 50   | 54 - 68 | NA        | NA    |

### References

| Valve Part Number | Body Number | Material | Standard Seal Cap |         |                | Replacement Seal Cap |           |       |           | Replacement Kit** | Valve Kit * | Manufacturer Reference |          |
|-------------------|-------------|----------|-------------------|---------|----------------|----------------------|-----------|-------|-----------|-------------------|-------------|------------------------|----------|
|                   |             |          | Seal Cap          | Gasket  | O-ring Kit**** | Plastic              | Brass**** | Steel | Cast Iron |                   |             | Carrier                | Copeland |
| A 13166           | A 04707     | Brass    | A 04775           | A 04710 | A 15099        |                      | A 15099   |       |           |                   | A 17419     |                        |          |

\* Valve kit includes valve, gasket and bolts

\*\* Replacement kit contains components to pack stem (pack gland, packing and pack washer)

\*\*\* Cap and cap gasket kit

\*\*\*\* Seal cap and o-ring kit

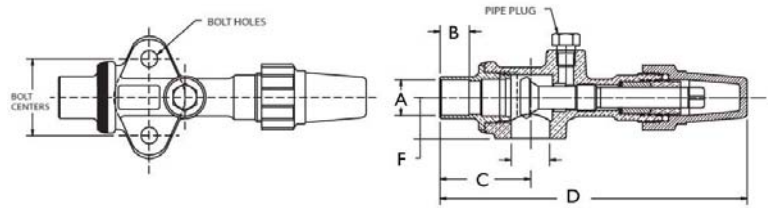
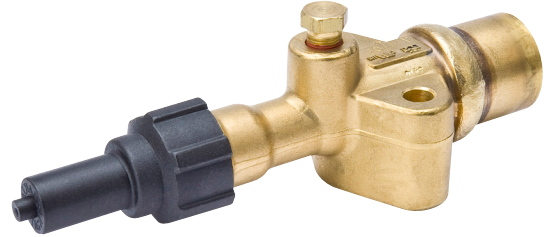
\*\*\*\*\* O-ring included

# Brass Compressor Valves

## Straight Port, Solder

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | Kit Part Number | A     |    | B    |    | C    |    | D    |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug | Flange Thickness |    | Seat Position | Valve Wt |      | Kit Wt |      |
|-------------------|-----------------|-------|----|------|----|------|----|------|-----|------|----|------|----|--------------|----|--------------------|----|-----------|------------------|----|---------------|----------|------|--------|------|
|                   |                 | in    | mm | in   | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in           | mm | in                 | mm | Size in   | in               | mm |               | lb       | kg   | lb     | kg   |
| A 16310           |                 | 3/4   | 19 | 0.62 | 16 | 1.91 | 49 | 6.49 | 165 | 0.81 | 21 | 0.88 | 22 | 15/8         | 41 | .34                | 9  | 1/8       | 1 21/64          | 34 | Front         | 1.64     | 0.74 |        |      |
| A 16311           | A 17515         | 7/8   | 22 | 0.76 | 19 | 1.97 | 50 | 6.55 | 166 | 0.81 | 21 | 0.88 | 22 | 15/8         | 41 | .34                | 9  | 1/8       | 1 21/64          | 34 | Front         | 1.63     | 0.74 | 1.55   | 0.70 |
| B 32197           | A 17529         | 7/8   | 22 | 0.76 | 19 | 1.97 | 50 | 6.47 | 164 | 0.81 | 21 | 0.88 | 22 | 13/4         | 44 | .34                | 9  | 1/8       | 1 21/64          | 34 | Mid           | 1.42     | 0.64 | 1.69   | 0.77 |
| A 15500           |                 | 1 1/8 | 29 | 0.90 | 23 | 2.06 | 52 | 6.64 | 169 | 0.81 | 21 | 0.88 | 22 | 1 5/8        | 41 | .34                | 9  | 1/8       | 1 21/64          | 34 | Back          | 1.43     | 0.65 |        |      |
| A 16312           | A 17516         | 1 1/8 | 29 | 0.90 | 23 | 2.06 | 52 | 6.64 | 169 | 0.81 | 21 | 0.88 | 22 | 1 5/8        | 41 | .34                | 9  | 1/8       | 1 21/64          | 34 | Front         | 1.66     | 0.75 | 1.55   | 0.70 |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             | Plastic Cap |            | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|-------------|------------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 25    | 20 - 34 | 2 - 3 Threads Exposed | Hand Tight  | Hand Tight | 40 - 50   | 54 - 68 | NA        | NA    |

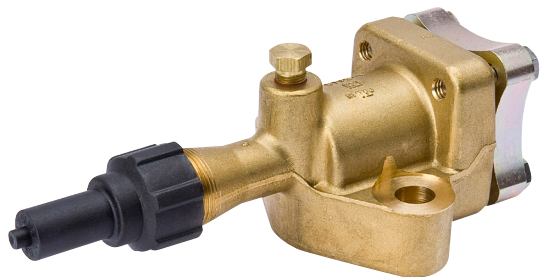
### References

| Valve Part Number | Body Number | Standard Seal Cap |                |         | Replacement Seal Cap |            |       |           | Replace-ment Kit** | Valve Kit * | Manufacturer Reference |             |
|-------------------|-------------|-------------------|----------------|---------|----------------------|------------|-------|-----------|--------------------|-------------|------------------------|-------------|
|                   |             | Material          | Seal Cap ***** | Kit     | Plastic*****         | Brass***** | Steel | Cast Iron |                    |             | Carrier                | Copeland    |
| A 16310           | A 04707     | Plastic           | P 34632        | P 35915 | P 34632              | A 15099    |       |           | A 17419            |             |                        |             |
| A 16311           | A 04707     | Plastic           | P 34632        | P 35915 | P 34632              | A 15099    |       |           | A 17419            | A 17515     |                        | 998-0510-12 |
| B 32197           | A 04715     | Plastic           | P 34632        | P 35915 | P 34632              | A 15099    |       |           | A 17419            | A 17529     | 06DA660-062            |             |
| A 15500           | A 04707     | Plastic           | P 34632        | P 35915 | P 34632              | A 15099    |       |           | A 17419            |             |                        |             |
| A 16312           | A 04707     | Plastic           | P 34632        | P 35915 | P 34632              | A 15099    |       |           | A 17419            | A 17516     |                        | 998-0510-13 |

- \* Valve kit includes valve, gasket and bolts
- \*\* Replacement kit contains components to pack s
- \*\*\* Cap and cap gasket kit
- \*\*\*\* Seal cap and o-ring kit
- \*\*\*\*\* O-ring included

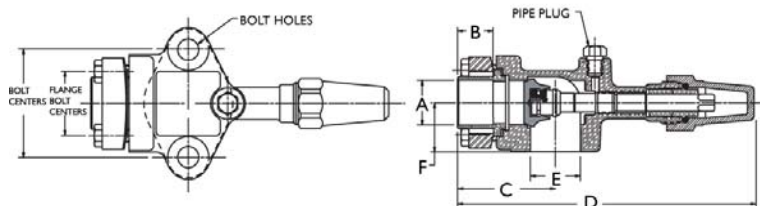
# Brass Compressor Valves

## Flange Union, Solder



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | Kit Part Number * | A     |    | B    |    | C    |    | D    |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug Size | Flange Thickness |    | Seat Position | Valve Wt |      | Kit Wt |      |
|-------------------|-------------------|-------|----|------|----|------|----|------|-----|------|----|------|----|--------------|----|--------------------|----|----------------|------------------|----|---------------|----------|------|--------|------|
|                   |                   | in    | mm | in   | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in           | mm | in                 | mm | in             | in               | mm |               | lb       | kg   | lb     | kg   |
| A 16313           |                   | 3/4   | 19 | 0.62 | 16 | 2.31 | 59 | 7.33 | 186 | 1.25 | 32 | 1.25 | 32 | 2 3/4        | 70 | .531               | 13 | 1/8            | 1                | 25 | Front         | 3.93     | 1.78 |        |      |
| A 16314           | A 17527           | 7/8   | 22 | 0.75 | 19 | 2.31 | 59 | 7.33 | 186 | 1.25 | 32 | 1.25 | 32 | 2 3/4        | 70 | .531               | 13 | 1/8            | 1                | 25 | Front         | 3.90     | 1.77 | 4.05   | 1.84 |
| A 16315           | A 17525           | 1 1/8 | 29 | 0.91 | 23 | 2.47 | 63 | 7.49 | 190 | 1.25 | 32 | 1.25 | 32 | 2 3/4        | 70 | .531               | 13 | 1/8            | 1                | 25 | Front         | 3.66     | 1.66 | 4.03   | 1.83 |
| A 16316           | A 17526           | 1 3/8 | 35 | 0.97 | 25 | 2.47 | 63 | 7.49 | 190 | 1.25 | 32 | 1.25 | 32 | 2 3/4        | 70 | .531               | 13 | 1/8            | 1                | 25 | Front         | 3.65     | 1.66 | 3.80   | 1.72 |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             |  | Plastic Cap |            | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|--|-------------|------------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       |  | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 30 - 40    | 41 - 54 | 22 - 45   | 30 - 61 | 15 - 25    | 20 - 34 | 2 - 3 Threads Exposed |  | Hand Tight  | Hand Tight | 40 - 50   | 54 - 68 | NA        | NA    |

### References

| Valve Part Number | Body Number | Standard Seal Cap |               |        |        | Replacement Seal Cap |               |          |       | Replace-ment Kit** | Valve Kit * | Manufacturer Reference |             |
|-------------------|-------------|-------------------|---------------|--------|--------|----------------------|---------------|----------|-------|--------------------|-------------|------------------------|-------------|
|                   |             | Material          | Seal Cap **** | Gasket | O-ring | Kit                  | Plastic ***** | Brass*** | Steel | Cast Iron          |             | Carrier                | Copeland    |
| A 16313           | A 03416     | Plastic           | P 34632       |        |        | P 35915              | P 34632       | A 15099  |       | A 17419            |             |                        |             |
| A 16314           | A 03416     | Plastic           | P 34632       |        |        | P 35915              | P 34632       | A 15099  |       | A 17419            | A 17527     |                        | 998-0510-10 |
| A 16315           | A 03416     | Plastic           | P 34632       |        |        | P 35915              | P 34632       | A 15099  |       | A 17419            | A 17525     |                        | 998-0510-09 |
| A 16316           | A 03416     | Plastic           | P 34632       |        |        | P 35915              | P 34632       | A 15099  |       | A 17419            | A 17526     |                        | 998-0510-11 |

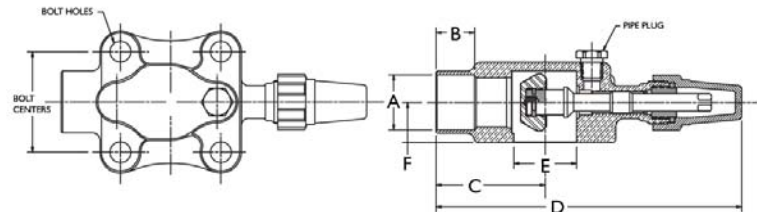
- \* Valve kit includes valve, gasket and bolts
- \*\* Replacement kit contains components to pack s
- \*\*\* Cap and cap gasket kit
- \*\*\*\* Seal cap and o-ring kit
- \*\*\*\*\* O-ring included

# Brass Compressor Valves

## Four-Bolt Mounting, Solder

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop
- Flat Gasket Surface



| Valve Part Number | Kit Part Number | A     |    | B    |    | C    |    | D    |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug Size | Flange Thickness |    | Seat Position | Valve Wt |      | Kit Wt |      |
|-------------------|-----------------|-------|----|------|----|------|----|------|-----|------|----|------|----|--------------|----|--------------------|----|----------------|------------------|----|---------------|----------|------|--------|------|
|                   |                 | in    | mm | in   | mm | in   | mm | in   | mm  | in   | mm | in   | mm | in           | mm | in                 | mm | in             | in               | mm |               | lb       | kg   | lb     | kg   |
| B 32807           | A 17532         | 1 1/8 | 29 | 0.90 | 23 | 2.72 | 69 | 7.61 | 193 | 1.56 | 40 | 1.00 | 25 | 2.5          | 64 | .53                | 13 | 1/4            |                  |    | Mid           | 4.00     | 1.81 | 4.47   | 2.03 |
| B 32808           | A 17533         | 1 3/8 | 35 | 0.96 | 24 | 2.72 | 69 | 7.61 | 193 | 1.56 | 40 | 1.00 | 25 | 2.5          | 64 | .53                | 13 | 1/4            |                  |    | Mid           | 3.98     | 1.80 | 4.67   | 2.12 |
| B 32930           | A 17534         | 1 5/8 | 41 | 1.10 | 28 | 2.88 | 73 | 7.89 | 200 | 1.81 | 46 | 1.03 | 26 | 2.5          | 64 | .53                | 13 | 1/4            |                  |    | Mid           | 4.13     | 1.87 | 4.67   | 2.12 |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |         | Pipe Plug             |  | Plastic Cap |            | Brass Cap |         | Steel Cap |       |
|------------|---------|-----------|---------|------------|---------|-----------------------|--|-------------|------------|-----------|---------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |                       |  | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m)   | (ft-lb)   | (N-m) |
| 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 10 - 15    | 14 - 20 | 2 - 3 Threads Exposed |  | Hand Tight  | Hand Tight | 40 - 50   | 54 - 68 | NA        | NA    |

### References

| Valve Part Number | Body Number | Material | Standard Seal Cap |         | Replacement Seal Cap |            |       |           | Replace-ment Kit** | Valve Kit * | Manufacturer Reference |          |
|-------------------|-------------|----------|-------------------|---------|----------------------|------------|-------|-----------|--------------------|-------------|------------------------|----------|
|                   |             |          | Seal Cap *****    | Kit     | Plastic*****         | Brass***** | Steel | Cast Iron |                    |             | Carrier                | Copeland |
| B 32807           | F 27950     | Plastic  | P 34632           | P 35915 | P 34632              | A 15099    |       |           | A 17418            | A 17532     | 06DA660-063            |          |
| B 32808           | F 27955     | Plastic  | P 34632           | P 35915 | P 34632              | A 15099    |       |           | A 17418            | A 17533     | 06DA660-065            |          |
| B 32930           | F 29201     | Plastic  | P 34632           | P 35915 | P 34632              | A 15099    |       |           | A 17418            | A 17534     | 06DA660-090            |          |

\* Valve kit includes valve, gasket and bolts

\*\* Replacement kit contains components to pack s

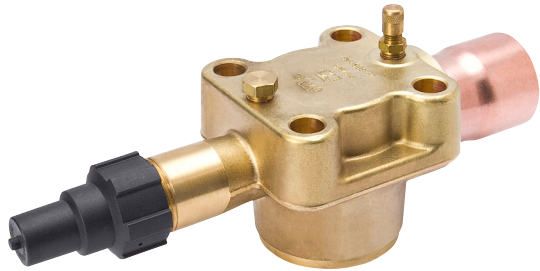
\*\*\* Cap and cap gasket kit

\*\*\*\* Seal cap and o-ring kit

\*\*\*\*\* O-ring included

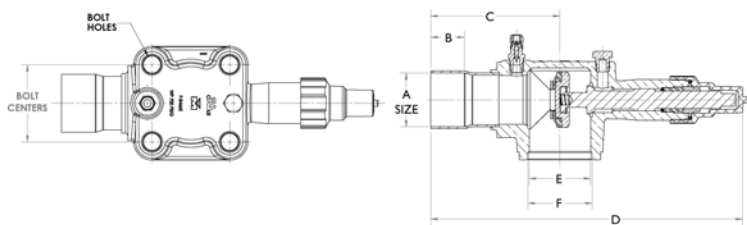
# Brass Compressor Valves

## Four-Bolt Mounting, Access Port



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | Kit Part Number * | A     |    | B    |    | C    |     | D     |     | E    |    | F    |    | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug Size | Access Port in | Seat Position | Valve Wt |      | Kit Wt |    |
|-------------------|-------------------|-------|----|------|----|------|-----|-------|-----|------|----|------|----|--------------|----|--------------------|----|----------------|----------------|---------------|----------|------|--------|----|
|                   |                   | in    | mm | in   | mm | in   | mm  | in    | mm  | in   | mm | in   | mm | in           | mm | in                 | mm |                |                |               | lb       | kg   | lb     | kg |
| A 17495           |                   | 2 1/8 | 54 | 1.34 | 34 | 5.09 | 129 | 12.31 | 313 | 2.42 | 61 | 2.53 | 64 | 3.06         | 78 | .69                | 17 | 1/4            | 0.25           | Mid           | 11.84    | #### |        |    |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |        | Pipe Plug |  | Plastic Cap |            | Brass Cap |       | Steel Cap |       |
|------------|---------|-----------|---------|------------|--------|-----------|--|-------------|------------|-----------|-------|-----------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m): |           |  | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m) | (ft-lb)   | (N-m) |
| 45 - 65    | 61 - 88 | 45 - 65   | 61 - 88 | 35 - 45    |        | 240 - 300 |  | Hand Tight  | Hand Tight |           |       |           |       |

### References

| Valve Part Number | Body Number | Standard Seal Cap |                |         | Replacement Seal Cap |           |       |           | Replace-ment Kit** | Valve Kit * | Manufacturer Reference |          |
|-------------------|-------------|-------------------|----------------|---------|----------------------|-----------|-------|-----------|--------------------|-------------|------------------------|----------|
|                   |             | Material          | Seal Cap ***** | Kit     | Plastic*****         | Brass**** | Steel | Cast Iron |                    |             | Carrier                | Copeland |
| A 17495           | F 34665     | Plastic           | N 02849        | A 17668 | A 17668              | A 15099   |       | B 33816   | A 17422            |             |                        |          |

\*\*\*\* Seal cap and o-ring kit

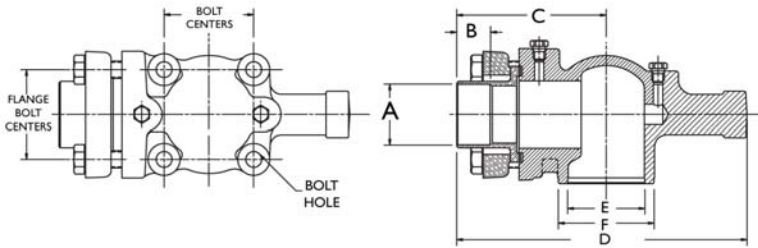
\*\*\*\*\* O-ring included

# Cast Iron Flanges

## Four-Bolt

**Features:**

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve<br>Part<br>Number | A     |    | B    |    | C    |     | D     |     | E    |    | F    |     | Bolt<br>Centers |    | Bolt Hole<br>Diameter |    | Pipe<br>Plug<br>Size | Flange Bolt<br>Centers |    | Valve Wt |       |
|-------------------------|-------|----|------|----|------|-----|-------|-----|------|----|------|-----|-----------------|----|-----------------------|----|----------------------|------------------------|----|----------|-------|
|                         | in    | mm | in   | mm | in   | mm  | in    | mm  | in   | mm | in   | mm  | in              | mm | in                    | mm | in                   | in                     | mm | lb       | kg    |
| B 34987                 | 2 5/8 | 67 | 1.47 | 37 | 6.49 | 165 | 12.55 | 319 | 3.35 | 85 | 4.16 | 106 | 3 7/8           | 98 | .69                   | 17 | 1/4                  | 3.88                   | 98 | 28.21    | 12.80 |

\* Does not include seat and stem

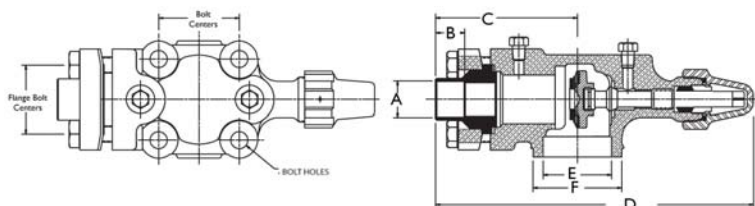
# Cast Iron Compressor Valves

## Four-Bolt Flange Union, Solder



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | Kit Part Number * | A     |     | B    |    | C    |     | D     |     | E    |     | F    |     | Bolt Centers |     | Bolt Hole Diameter |    | Pipe Plug Size | Flange Bolt Centers |     | Seat Position | Valve Wt |       | Kit Wt |       |
|-------------------|-------------------|-------|-----|------|----|------|-----|-------|-----|------|-----|------|-----|--------------|-----|--------------------|----|----------------|---------------------|-----|---------------|----------|-------|--------|-------|
|                   |                   | in    | mm  | in   | mm | in   | mm  | in    | mm  | in   | mm  | in   | mm  | in           | mm  | in                 | mm |                | in                  | mm  |               | lb       | kg    | lb     | kg    |
| A 15246           |                   | 1 5/8 | 41  | 1.09 | 28 | 3.95 | 100 | 9.47  | 241 | 2.12 | 54  | 2.75 | 70  | 2.5          | 64  | .53                | 13 | 1/4            | 2.12                | 64  | Mid           | 9.37     | 4.25  |        |       |
| A 16321           | A 17513           | 1 5/8 | 41  | 1.09 | 28 | 4.59 | 117 | 10.04 | 255 | 2.12 | 54  | 2.75 | 70  | 2.5          | 64  | .53                | 13 | 1/4            | 2.12                | 64  | Front         | 8.71     | 3.95  | 8.92   | 4.05  |
| B 32337           |                   | 1 5/8 | 41  | 1.09 | 28 | 3.95 | 100 | 9.47  | 241 | 2.12 | 54  | 2.75 | 70  | 2.5          | 64  | .53                | 13 | 1/4            | 2.12                | 64  | Front         | 9.07     | 4.11  |        |       |
| A 15586           | A 17535           | 2 1/8 | 54  | 1.31 | 33 | 5.06 | 129 | 11.95 | 304 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Mid           | 17.43    | 7.91  | 17.64  | 8.00  |
| A 16324           | A 17523           | 2 1/8 | 54  | 1.31 | 33 | 5.06 | 129 | 11.95 | 304 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Front         | 17.47    | 7.92  | 18.69  | 8.48  |
| B 33572           |                   | 2 1/8 | 54  | 1.31 | 33 | 5.06 | 129 | 11.95 | 304 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Front         | 17.49    | 7.93  |        |       |
| B 34671           |                   | 2 1/8 | 54  | 1.31 | 33 | 5.10 | 130 | 11.99 | 305 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Front         | 17.28    | 7.84  |        |       |
| A 15587           |                   | 2 5/8 | 67  | 1.27 | 32 | 5.02 | 128 | 12.07 | 307 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Mid           | 20.30    | 9.21  |        |       |
| A 16366           | A 17522           | 2 5/8 | 67  | 1.47 | 37 | 6.49 | 165 | 15.12 | 384 | 3.35 | 85  | 4.16 | 106 | 3.88         | 98  | .69                | 17 | 1/4            | 3.88                | 98  | Front         | 33.18    | 15.05 | 33.72  | 15.30 |
| B 33568           |                   | 2 5/8 | 67  | 1.27 | 32 | 5.02 | 128 | 11.90 | 302 | 2.53 | 64  | 3.22 | 82  | 3.06         | 78  | .69                | 17 | 1/4            | 3.06                | 78  | Front         | 20.23    | 9.18  |        |       |
| B 34661           |                   | 2 5/8 | 67  | 1.47 | 37 | 6.49 | 165 | 15.12 | 384 | 3.35 | 85  | 4.16 | 106 | 3.88         | 98  | .69                | 17 | 1/4            | 3.88                | 98  | Front         | 30.80    | 13.97 |        |       |
| A 15588           |                   | 3 1/8 | 79  | 1.22 | 31 | 5.94 | 151 | 14.60 | 371 | 3.35 | 85  | 4.16 | 106 | 3.88         | 98  | .69                | 17 | 1/4            | 3.88                | 98  | Mid           | 30.42    | 13.80 |        |       |
| A 16365           | A 17521           | 3 1/8 | 79  | 1.22 | 31 | 5.94 | 151 | 14.60 | 371 | 3.35 | 85  | 4.16 | 106 | 3.88         | 98  | .69                | 17 | 1/4            | 3.88                | 98  | Front         | 30.59    | 13.88 | 33.77  | 15.32 |
| B 33569           |                   | 3 1/8 | 79  | 1.22 | 31 | 5.94 | 151 | 14.60 | 371 | 3.35 | 85  | 4.16 | 106 | 3.88         | 98  | .69                | 17 | 1/4            | 3.88                | 98  | Front         | 32.38    | 14.69 |        |       |
| A 17496           |                   | 3 5/8 | 92  | 2.06 | 52 | 7.00 | 178 | 16.30 | 414 | 3.88 | 99  | 4.55 | 116 | 4.25         | 108 | .69                | 17 | 1/4            | 4.25                | 108 | Mid           | 34.01    | 15.43 |        |       |
| B 33788           |                   | 3 5/8 | 92  | 2.06 | 52 | 7.00 | 178 | 16.30 | 414 | 3.88 | 99  | 4.55 | 116 | 4.25         | 108 | .69                | 17 | 1/4            | 4.25                | 108 | Front         | 34.01    | 15.43 |        |       |
| B 34670           |                   | 3 5/8 | 92  | 2.06 | 52 | 7.00 | 178 | 16.30 | 414 | 3.89 | 99  | 4.55 | 115 | 4.25         | 108 | .69                | 17 | 1/4            | 4.25                | 108 | Front         | 36.43    | 16.52 |        |       |
| A 15589           |                   | 4 1/8 | 105 | 1.97 | 50 | 7.22 | 183 | 17.50 | 445 | 4.38 | 111 | 5.13 | 130 | 4.81         | 122 | .8125              | 21 | 1/4            | 4.81                | 122 | Mid           | 49.80    | 22.59 |        |       |

\* Valve kit includes valve, gasket and bolts

\*\* Replacement kit contains components to pack s

\*\*\* Seal cap and o-ring kit

# Cast Iron Compressor Valves

## Four-Bolt Flange Union, Solder



| Torque To Seal |         |           |         |            |        |                       |             |            |           |       |               |            |
|----------------|---------|-----------|---------|------------|--------|-----------------------|-------------|------------|-----------|-------|---------------|------------|
| Front Seat     |         | Back Seat |         | Pack Gland |        | Pipe Plug             | Plastic Cap |            | Steel Cap |       | Cast Iron Cap |            |
| (ft-lb)        | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m): |                       | (ft-lb)     | (N-m)      | (ft-lb)   | (N-m) | (ft-lb)       | (N-m)      |
| 45 - 65        | 61 - 88 | 45 - 65   | 61 - 88 |            |        | 2 - 3 Threads Exposed | Hand Tight  | Hand Tight | NA        | NA    | Hand Tight    | Hand Tight |

| References        |             |                   |          |         |                      |                   |                   |             |                        |             |
|-------------------|-------------|-------------------|----------|---------|----------------------|-------------------|-------------------|-------------|------------------------|-------------|
| Valve Part Number | Body Number | Standard Seal Cap |          |         | Replacement Seal Cap |                   | Replacement Kit** | Valve Kit * | Manufacturer Reference |             |
|                   |             | Material          | Seal Cap | Kit***  | Steel                | Cast Iron         |                   |             | Carrier                | Copeland    |
| A 15246           | A 09621     | Plastic           | N 02848  | A 17667 |                      |                   | A 17421           |             |                        |             |
| A 16321           | A 09621     | Plastic           | N 02848  | A 17667 |                      |                   | A 17421           | A 17513     |                        | 998-0510-07 |
| B 32337           | A 09621     | Plastic           | N 02848  | A 17667 |                      |                   | A 17421           |             |                        |             |
| A 15586           | A 06201     | Plastic           | N 02848  | A 17668 |                      |                   | A 17422           | A 17535     | 06DA660-091            |             |
| A 16324           | A 06201     | Plastic           | N 02849  | A 17668 |                      |                   | A 17422           | A 17523     |                        | 998-0510-20 |
| B 33572           | A 06201     | Plastic           | N 02849  | A 17668 |                      |                   | A 17422           |             |                        |             |
| A 15587           | A 06201     | Plastic           | N 02849  | A 17668 |                      |                   | A 17422           |             |                        |             |
| A 16366           | A 06203     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           | A 17522     |                        | 998-0510-19 |
| B 33568           | A 06201     | Plastic           | N 02849  | A 17668 |                      |                   | A 17422           |             |                        |             |
| A 15588           | A 06203     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           |             |                        |             |
| A 16365           | A 06203     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           | A 17521     |                        | 998-0510-18 |
| A 17496           | A 06204     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           |             |                        |             |
| B 33788           | A 06204     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           |             |                        |             |
| B 33569           | A 06203     | Cast Iron         | A 06251P | A 17907 |                      | A 17907           | A 17423           |             |                        |             |
| B 34670           | C 35801     | Cast Iron         | C 35804  |         |                      | C 35804 & P 34712 |                   |             |                        |             |
| A 15589           | A 06205     | Steel             | A 06252  |         | A 06252              | A 06252 & P 32709 | A 17424           |             |                        |             |
| B 34661           | C 35800     | Cast Iron         | C 35804  |         |                      | C 35804 & P 34712 |                   |             |                        |             |
| B 34671           | C 35815     | Plastic           | N 02849  | A 17668 |                      |                   |                   |             |                        |             |

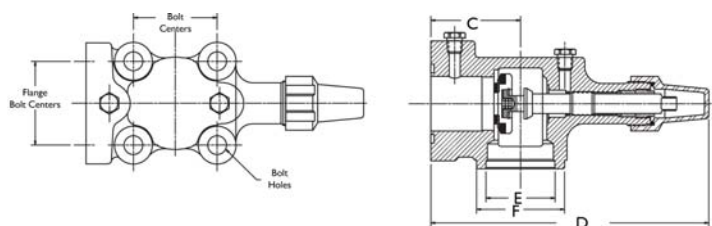
# Cast Iron Compressor Valves

## Four-Bolt Without Flange, Solder



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free valve packing
- Valve openings designed for maximum flow and minimum pressure drop



| Valve Part Number | C    |    | D     |     | E    |    | F    |     | Bolt Centers |    | Bolt Hole Diameter |    | Pipe Plug Size | Flange Bolt Centers |    | Seat Position       | Valve Wt |       |
|-------------------|------|----|-------|-----|------|----|------|-----|--------------|----|--------------------|----|----------------|---------------------|----|---------------------|----------|-------|
|                   | in   | mm | in    | mm  | in   | mm | in   | mm  | in           | mm | in                 | mm |                | in                  | mm |                     | lb       | kg    |
| B 33793           | 3.28 | 83 | 10.17 | 258 | 2.53 | 64 | 3.22 | 82  | 3.06         | 78 | .69                | 17 | 1/4            | 3.06                | 78 | 2-3 Turns off Front | 12.78    | 5.80  |
| B 33794           | 3.78 | 96 | 12.44 | 316 | 3.35 | 85 | 4.16 | 106 | 3.88         | 98 | .69                | 17 | 1/4            | 3.88                | 98 | 2-3 Turns off Front | 22.20    | 10.07 |
| B 34183           | 2.69 | 68 | 8.22  | 209 | 2.12 | 54 | 2.75 | 70  | 2.5          | 64 | .53                | 13 | 1/4            | 2.12                | 64 |                     | 6.91     | 3.13  |
| B 34715           | 3.78 | 96 | 13.00 | 330 | 3.35 | 85 | 4.16 | 106 | 3.88         | 98 | .69                | 17 | 1/4            | 3.88                | 98 | 2-3 Turns off Front | 22.80    | 10.34 |
| B 34761           | 3.28 | 83 | 10.17 | 258 | 2.53 | 64 | 3.22 | 82  | 3.06         | 78 | .69                | 17 | 1/4            | 3.06                | 78 | Front               | 13.00    | 5.90  |
| B 35049           | 3.28 | 83 | 10.12 | 257 | 2.53 | 64 | 3.22 | 82  | 3.06         | 78 | .69                | 17 | 1/4            | 3.06                | 78 | Front               | 12.97    | 5.88  |

### Torque To Seal

| Front Seat |         | Back Seat |         | Pack Gland |        | Pipe Plug | Plastic Cap |       | Steel Cap  |       | Cast Iron Cap |       |
|------------|---------|-----------|---------|------------|--------|-----------|-------------|-------|------------|-------|---------------|-------|
| (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m): |           | (ft-lb)     | (N-m) | (ft-lb)    | (N-m) | (ft-lb)       | (N-m) |
| 45 - 65    | 61 - 88 | 45 - 65   | 61 - 88 |            |        | 240 - 300 | Hand Tight  |       | Hand Tight |       | Hand Tight    |       |

### References

| Valve Part Number | Body Number | Material  | Standard Seal Cap |         | Kit**   | Plastic ** | Replacement Seal Cap |              | Replacement Kit* |
|-------------------|-------------|-----------|-------------------|---------|---------|------------|----------------------|--------------|------------------|
|                   |             |           | Seal Cap          | O-Ring  |         |            | Steel                | Cast Iron ** |                  |
| B 33793           | A 06201     | Plastic   | N 02849           | P 34712 | A 17668 | A 17668    |                      |              | A 17422          |
| B 33794           | A 06203     | Cast Iron | A 06251P          | P 35589 | A 17907 |            |                      | A 17907      | A 17422          |
| B 34183           | C 35634     | Plastic   | N 02848           | P 34711 | A 17667 | A 17667    |                      |              |                  |
| B 34715           | C 36126     | Steel     | P 36128           | P 35589 |         |            |                      | A 17907      |                  |
| B 34761           | A 06201     | Plastic   | N 02849           | P 34712 | A 17668 | A 17668    |                      | B 33816      |                  |
| B 35049           | C 35815     | Plastic   | N 02849           | P 34712 | A 17668 | A 17668    |                      |              |                  |

\* Replacement kit contains components to pack s

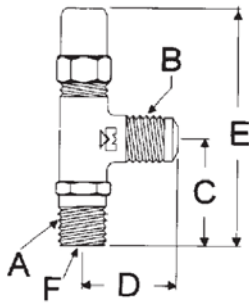
\*\* Seal cap and o-ring kit

# Packed Line Valves, Angle

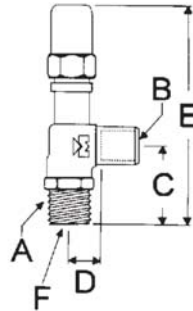
## Backseating

### Features:

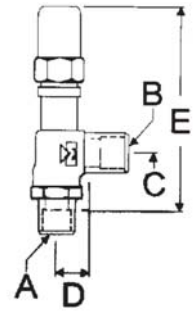
- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body
- Corrosion resistant stem suitable for refrigerants and other industrial fluids



NPTFE Inlet to Flare



NPTFE Inlet to Solder



Solder to Solder

### NPTFE Inlet to Flare

| Part Number | NPTFE A |    | Flare B |    | C    |    | D    |    | E    |     | Counterbore Dim F |       |      |      | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|---------|----|---------|----|------|----|------|----|------|-----|-------------------|-------|------|------|--------------|----------|----------------------|---------|---------|------|------|
|             | in      | mm | in      | mm | in   | mm | in   | mm | in   | mm  | in                | mm    | in   | mm   | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| A 13183     | 1/2     |    | 5/8     |    | 1.81 | 46 | 1.50 | 38 | 4.64 | 118 | .504              | 12.80 | .375 | 9.53 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.58 | 0.26 |
| A 13220     | 1/2     |    | 1/2     |    | 1.81 | 46 | 1.31 | 33 | 4.11 | 104 | .504              | 12.80 | .375 | 9.53 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.69 | 0.31 |

### NPTFE Inlet to Solder

| Part Number | NPTFE A |    | Solder B |    | C    |    | D    |    | E    |     | Counterbore Dim F |       |      |       | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|---------|----|----------|----|------|----|------|----|------|-----|-------------------|-------|------|-------|--------------|----------|----------------------|---------|---------|------|------|
|             | in      | mm | in       | mm | in   | mm | in   | mm | in   | mm  | in                | mm    | in   | mm    | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| A 13977     | 1/2     | 13 | 1/2      | 13 | 1.81 | 46 | 1.00 | 25 | 4.11 | 104 | .504              | 12.80 | .375 | 9.53  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.45 | 0.20 |
| A 13978     | 1/2     | 13 | 5/8      | 17 | 1.80 | 46 | 1.00 | 25 | 4.70 | 119 | .504              | 12.80 | .375 | 9.53  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.55 | 0.25 |
| A 13979     | 3/4     | 19 | 7/8      | 22 | 2.10 | 53 | 1.00 | 25 | 6.02 | 153 | .754              | 19.15 | .625 | 15.88 | Plastic      | P 34632  | A 16474              | P 34627 | A 04566 | 1.24 | 0.56 |

### Solder to Solder

| Part Number | A   |    | B   |    | C    |    | D    |    | E    |     | Standard Cap |          | Replacement Seal Cap |         |         | Packing Kit | Wt   |      |
|-------------|-----|----|-----|----|------|----|------|----|------|-----|--------------|----------|----------------------|---------|---------|-------------|------|------|
|             | in  | mm | in  | mm | in   | mm | in   | mm | in   | mm  | Material     | Seal Cap | Brass                | Plastic | Steel   |             | lb   | kg   |
| A 17506     | 5/8 | 17 | 5/8 | 17 | 0.91 | 23 | 1.00 | 25 | 4.20 | 107 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | A 17420     | 0.66 | 0.30 |
| B 32080     | 7/8 | 22 | 7/8 | 22 | 2.28 | 58 | 1.75 | 44 | 6.20 | 157 | Plastic      | P 34632  | A 16474              | P 34632 | A 04566 | A 17420     | 0.99 | 0.45 |

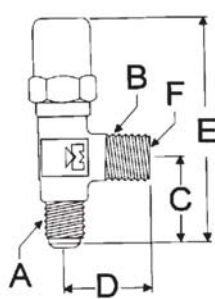
# Packed Line Valves, Angle

## Non-Backseating

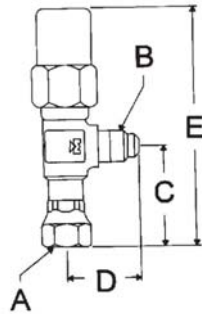


### Features:

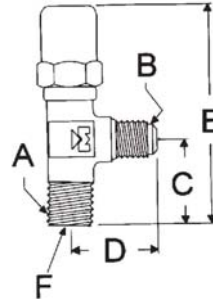
- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body
- Corrosion resistant stem suitable for refrigerants and other industrial fluids



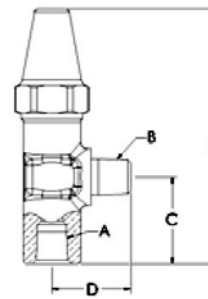
Flare to NPTFE



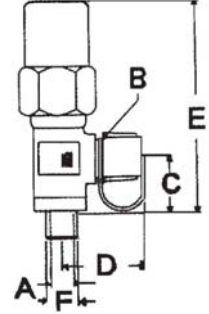
Internal Swivel FI x FI



NPTFE Inlet to Flare



NPTFE x NPTFI



Solder to Flare

### Flare to NPTFE

| Part<br>Number | Flare<br>A | NPTFE B | C   | D    |    | E    |    | Counterbore Dim F |    |       |      | Standard Cap |          | Replacement Seal Cap |         |         | Wt      |         |      |      |
|----------------|------------|---------|-----|------|----|------|----|-------------------|----|-------|------|--------------|----------|----------------------|---------|---------|---------|---------|------|------|
|                |            |         |     |      |    |      |    | Diameter          |    | Depth |      | Material     | Seal Cap | Brass                | Plastic | Steel   | lb      | kg      |      |      |
|                |            |         |     |      |    |      |    | in                | mm | in    | mm   |              |          |                      |         |         |         |         |      |      |
| A 15073        | #          | 1/4     | 1/4 | 0.94 | 24 | 1.00 | 25 | 2.96              | 75 | .254  | 6.45 | .31          | 7.87     | Steel                | A 04566 | A 16474 | P 34627 | A 04566 | 0.43 | 0.19 |

| Torque     |         |          |         |
|------------|---------|----------|---------|
| Pack Gland |         | Seal Cap |         |
| ft-lb      | N-m     | ft-lb    | N-m     |
| 8 - 12     | 11 - 16 | 20 - 30  | 27 - 41 |

### Internal Swivel Flare to Flare

| Part Number |      | Flare A | Flare B | C    |    | D    |    | E    |    | Torque     |         |             |              | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|------|---------|---------|------|----|------|----|------|----|------------|---------|-------------|--------------|--------------|----------|----------------------|---------|---------|------|------|
|             |      |         |         |      |    |      |    |      |    | Pack Gland |         | Seal Cap    |              | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
|             |      |         |         |      |    |      |    |      |    | ft-lb      | N-m     | ft-lb       | N-m          |              |          |                      |         |         |      |      |
| B 33803     | **   | 1/4     | 1/4     | 1.47 | 37 | 1.06 | 27 | 3.90 | 99 | 8 - 12     | 11 - 16 | 6 - 10      | 8 - 14       | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.34 | 0.16 |
| A 17429     | ***  | 1/4     | 1/4     | 1.47 | 37 | 1.06 | 27 | 3.49 | 89 | 8 - 12     | 11 - 16 | inger Tight | finger Tight | Plastic      | P 34627  | A 16474              | P 34627 | A 04566 | 0.23 | 0.10 |
| B 34247     | **** | 1/4     | 1/4     | 1.47 | 37 | 1.06 | 27 | 3.90 | 99 | 8 - 12     | 11 - 16 | 20 - 30     | 27 - 41      | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.34 | 0.16 |
| A 17474     | **   | 3/8     | 3/8     | 1.52 | 39 | 1.12 | 28 | 3.55 | 90 | 8 - 12     | 11 - 16 | 6 - 10      | 8 - 14       | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.27 | 0.12 |
| B 34261     | **** | 3/8     | 3/8     | 1.52 | 39 | 1.12 | 28 | 3.55 | 90 | 8 - 12     | 11 - 16 | 20 - 30     | 27 - 41      | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.42 | 0.19 |

# Packed Line Valves, Angle

## Non-Backseating

### NPTFE Inlet to Flare

| Part Number | NPTFE A | Flare B |    | C    |    | D    |    | E    |    | Counterbore Dim F |      |       |       | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|---------|---------|----|------|----|------|----|------|----|-------------------|------|-------|-------|--------------|----------|----------------------|---------|---------|------|------|
|             | in      | in      | mm | in   | mm | in   | mm | in   | mm | Diameter          |      | Depth |       | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
|             |         |         |    |      |    |      |    |      |    | in                | mm   | in    | mm    |              |          |                      |         |         |      |      |
| A 11031     | 1/4     | 1/4     |    | 1.00 | 25 | 0.94 | 24 | 3.02 | 77 | .254              | 6.45 | .31   | 7.87  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.28 | 0.13 |
| A 16472 *   | 1/4     | 1/4     |    | 1.00 | 25 | 0.94 | 24 | 3.02 | 77 | .254              | 6.45 | .31   | 7.87  | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.29 | 0.13 |
| A 11030     | 1/4     | 3/8     |    | 1.06 | 27 | 1.12 | 28 | 3.10 | 79 | .317              | 8.05 | .31   | 7.87  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.25 | 0.11 |
| B 33964 ### | 1/4     | 1/4     |    | 1.00 | 25 | 0.94 | 24 | 3.02 | 77 | .254              | 6.45 | .31   | 7.87  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.31 | 0.14 |
| A 13613     | 3/8     | 1/4     |    | 1.12 | 28 | 1.06 | 27 | 3.14 | 80 | .379              | 9.63 | .31   | 7.87  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.48 | 0.22 |
| A 13503     | 3/8     | 3/8     |    | 1.12 | 28 | 1.12 | 28 | 3.15 | 80 | .379              | 9.63 | .5    | 12.70 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.34 | 0.15 |
| A 11042     | 3/8     | 1/2     |    | 1.38 | 35 | 1.38 | 35 | 3.77 | 96 | .379              | 9.63 | .31   | 7.87  | Steel        | A 00409  |                      |         |         | 0.51 | 0.23 |

### NPTFE x NPTFI, NPTFI x NPTFE

| Part<br>Number |               | A   |     | B    |    | C    |    | D    |    | E      |         | Torque |         | Standard Cap |  | Replacement Seal Cap |          |       | Wt      |       |      |    |
|----------------|---------------|-----|-----|------|----|------|----|------|----|--------|---------|--------|---------|--------------|--|----------------------|----------|-------|---------|-------|------|----|
|                |               | in  |     | in   |    | in   |    | mm   |    | in     |         | mm     |         | Pack Gland   |  | Material             | Seal Cap | Brass | Plastic | Steel | lb   | kg |
|                |               |     |     |      |    |      |    |      |    |        |         | ft-lb  |         | N-m          |  |                      |          |       |         |       |      |    |
| A 13502        | NPTFE X NPTFI | 1/4 | 1/4 | 1.38 | 35 | 1.06 | 27 | 3.78 | 96 | 8 - 12 | 11 - 16 | Steel  | A 00409 |              |  |                      |          |       |         | 0.49  | 0.22 |    |
| B 32222        | NPTFI X NPTFE | 1/4 | 1/4 | 1.25 | 32 | 1.12 | 28 | 3.64 | 92 | 8 - 12 | 11 - 16 | Steel  | A 00409 |              |  |                      |          |       |         | 0.51  | 0.23 |    |

### Solder to Flare

| Part Number<br>A |     | Solder | Flare<br>B | C    |    | D    |    | E    |    | F ODE |    | Torque     |         |          |         | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|------------------|-----|--------|------------|------|----|------|----|------|----|-------|----|------------|---------|----------|---------|--------------|----------|----------------------|---------|---------|------|------|
|                  |     |        |            | in   | mm | in   | mm | in   | mm | in    | mm | Pack Gland |         | Seal Cap |         | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
|                  |     |        |            |      |    |      |    |      |    |       |    | ft-lb      | N-m     | ft-lb    | N-m     |              |          |                      |         |         |      |      |
| A 17502          | **  | 1/4    | 1/4        | 0.71 | 18 | 1.03 | 26 | 2.75 | 70 | 3/8   | 10 | 8 - 12     | 11 - 16 | 6 - 10   | 8 - 14  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.30 | 0.14 |
| B 34252          | *** | 1/4    | 1/4        | 0.71 | 18 | 1.03 | 26 | 2.75 | 70 | 3/8   | 10 | 8 - 12     | 11 - 16 | 20 - 30  | 27 - 41 | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.31 | 0.14 |
| B 35161          | ### | 1/4    | 1/4        | 0.71 | 18 | 1.03 | 26 | 2.75 | 70 | 3/8   | 10 | 8 - 12     | 11 - 16 | 6 - 10   | 8 - 14  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.31 | 0.14 |
| A 17503          | **  | 3/8    | 3/8        | 0.69 | 18 | 1.50 | 38 | 2.72 | 69 | 1/2   | 13 | 8 - 12     | 11 - 16 | 6 - 10   | 8 - 14  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.49 | 0.22 |
| B 34255          | *** | 3/8    | 3/8        | 0.69 | 18 | 1.27 | 32 | 2.72 | 69 | 1/2   | 13 | 8 - 12     | 11 - 16 | 20 - 30  | 27 - 41 | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.37 | 0.17 |
| B 35160          | ### | 3/8    | 3/8        | 0.69 | 18 | 1.50 | 38 | 2.72 | 69 | 1/2   | 13 | 8 - 12     | 11 - 16 | 6 - 10   | 8 - 14  | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.38 | 0.17 |
| B 34288          | *** | 3/8    | 3/8        | 0.69 | 18 | 1.50 | 38 | 2.72 | 69 | 1/2   | 13 |            |         | FT       | FT      | Plastic      | P 34627  | A 16474              | P 34627 | A 04566 | 0.31 | 0.14 |

|      |                                               |
|------|-----------------------------------------------|
| #    | Machined to accept OD size tube as indicated. |
| ##   | Steel Seal Cap, Loosely Assembled             |
| ###  | Cap finger tight for shipping                 |
| *    | Brass Seal Cap                                |
| **   | Steel Seal Cap                                |
| ***  | Plastic Seal Cap                              |
| **** | Brass Seal Cap, includes copper gasket        |
| ^    | 3/8 Solder also 1/2 FTG                       |
| ^    | 1/4 Solder also 3/8 FTG                       |

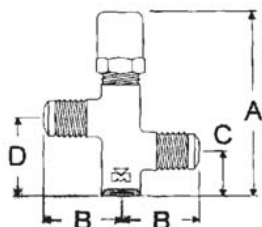
# Packed Line Valves

## Two-Way

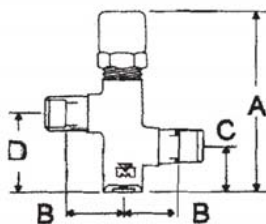


### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body
- Corrosion resistant stem suitable for refrigerants and other industrial fluids
- Asbestos-free stem packing material



Flare to Flare



Solder to Solder

### Flare to Flare

| Part Number | Size | A    |    | B    |    | C    |    | D    |    | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|------|------|----|------|----|------|----|------|----|--------------|----------|----------------------|---------|---------|------|------|
|             |      | in   | mm | in   | mm | in   | mm | in   | mm | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| A 13591     | 1/4  | 3.48 | 88 | 1.00 | 25 | 0.94 | 24 | 1.44 | 37 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.43 | 0.20 |
| B 33482     | 1/4  | 3.40 | 86 | 1.00 | 25 | 0.90 | 23 | 1.40 | 36 | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.51 | 0.23 |
| A 13595     | 3/8  | 3.40 | 86 | 1.12 | 28 | 0.90 | 23 | 1.40 | 36 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.48 | 0.22 |
| A 13592     | 1/2  | 3.40 | 86 | 1.25 | 32 | 0.94 | 24 | 1.44 | 37 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.50 | 0.22 |

### Solder to Solder

| Part Number | Size | A    |    | B    |    | C    |    | D    |    | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|------|------|----|------|----|------|----|------|----|--------------|----------|----------------------|---------|---------|------|------|
|             |      | in   | mm | in   | mm | in   | mm | in   | mm | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| A 15580     | 1/4  | 3.40 | 86 | 0.75 | 19 | 0.94 | 24 | 1.44 | 37 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.42 | 0.19 |
| A 15581     | 3/8  | 3.40 | 86 | 0.93 | 24 | 0.90 | 23 | 1.40 | 36 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.45 | 0.20 |
| A 15582     | 1/2  | 3.40 | 86 | 0.87 | 22 | 0.90 | 23 | 1.40 | 36 | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.54 | 0.25 |

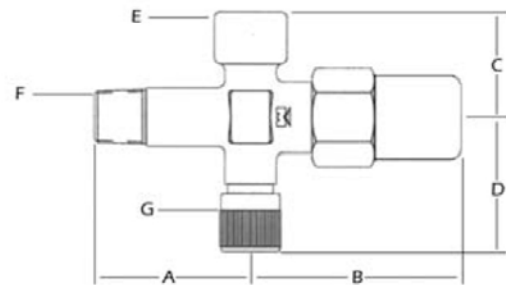
\* Includes steel cap and copper gasket

\*\* Includes brass cap and copper gasket

# Transducer Valves

## Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body
- Plated steel stem suitable for refrigerants and other industrial fluids non-corrosive to brass and steel
- Asbestos-free stem packing material



## NPTFI x NPTFE

| Part Number | A    |      | B    |      | D    |      | E NPTFI | F NPTFE | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|------|------|------|------|------|------|---------|---------|--------------|----------|----------------------|---------|---------|------|------|
|             | in   | mm   | in   | mm   | in   | mm   | in      | in      | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| B 33837     | 1.50 | 38   | 2.00 | 51   | 1.25 | 32   | 1/8     | 1/4     | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.42 | 0.19 |
| B 34254     | 1.50 | 38   | 2.00 | 51   | 1.25 | 32   | 1/8     | 1/4     | Brass        | A 16474  | A 16474              | P 34627 | A 04566 | 0.41 | 0.18 |
| B 34287     | *    | 1.50 | 38   | 2.00 | 51   | 1.25 | 1/4     | 1/4     | Plastic      | P 34627  | A 16474              | P 34627 | A 04566 | 0.35 | 0.16 |
| B 35334     | **   | 1.50 | 38   | 2.00 | 51   | 1.25 | 1/4     | 1/4     | Plastic      | P 34627  | A 16474              | P 34627 | A 04566 | 0.34 | 0.16 |

## NPTFI x ODS

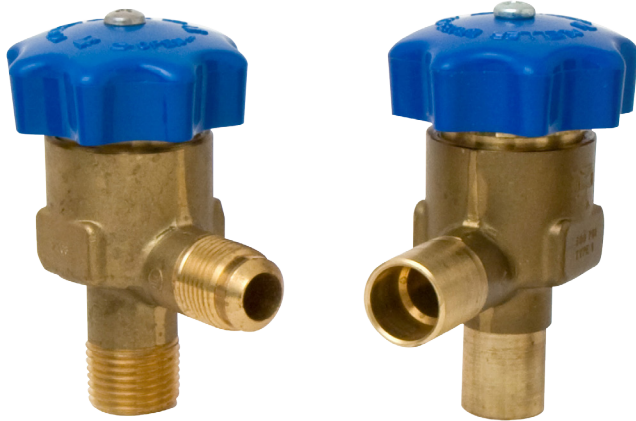
| Part Number | A    |    | B    |    | D    |    | E NPTFI | F NPTFE | Standard Cap |          | Replacement Seal Cap |         |         | Wt   |      |
|-------------|------|----|------|----|------|----|---------|---------|--------------|----------|----------------------|---------|---------|------|------|
|             | in   | mm | in   | mm | in   | mm | in      | in      | Material     | Seal Cap | Brass                | Plastic | Steel   | lb   | kg   |
| B 35162     | 1.50 | 38 | 2.00 | 51 | 1.25 | 32 | 1/8     | 3/8     | Steel        | A 04566  | A 16474              | P 34627 | A 04566 | 0.43 | 0.20 |

\* Valve core not installed

\*\* Valve core shipped loosely assembled

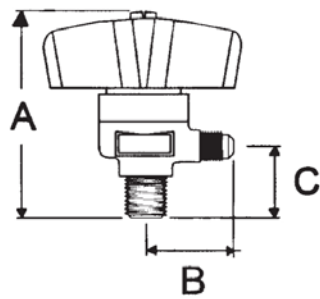
# Packless Diaphragm Valves

## Angle

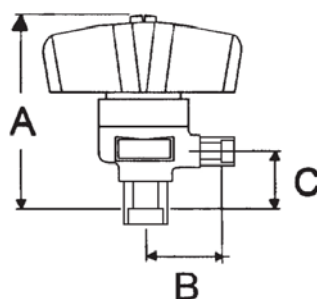


### Features:

- Maximum abnormal pressure (MAP) with the flow in the direction of the arrow on the body: 700 psig, 48 bar
- Maximum abnormal pressure (MAP) with the flow against the direction of the arrow on the body: 300 psig, 24 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body with full size openings for maximum flow and minimum pressure drop
- Diaphragms for positive isolation
- Thermally stable hand wheel for operation in wide temperature ranges



**NPTFE to Flare**



**Solder to Solder**

### NPTFE to Flare

| Part Number | NPTFE |    | Flare |    | A Open |    | B    |    | C Min |    | Wt   |      |
|-------------|-------|----|-------|----|--------|----|------|----|-------|----|------|------|
|             | in    | mm | in    | mm | in     | mm | in   | mm | in    | mm | lb   | kg   |
| A 15525     | 1/4   | 6  | 1/4   | 6  | 2.82   | 72 | 1.30 | 33 | 1.04  | 26 | 0.71 | 0.32 |
| A 15526     | 1/4   | 6  | 3/8   | 9  | 2.82   | 72 | 1.42 | 36 | 1.04  | 26 | 0.45 | 0.20 |
| A 15530     | 1/2   | 13 | 1/2   | 13 | 3.70   | 94 | 1.86 | 47 | 1.44  | 37 | 1.17 | 0.53 |
| A 15531     | 1/2   | 13 | 5/8   | 16 | 3.70   | 94 | 1.94 | 49 | 1.44  | 37 | 1.18 | 0.54 |

### Solder to Solder

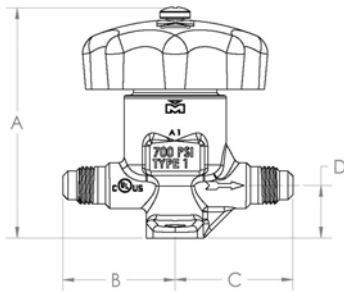
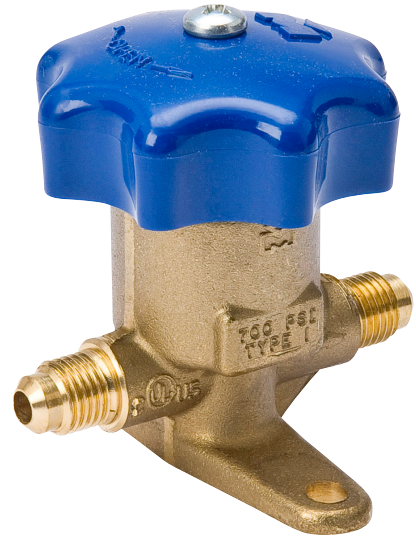
| Part Number | OD  |    | A Open |    | B    |    | C    |    | Wt   |      |
|-------------|-----|----|--------|----|------|----|------|----|------|------|
|             | in  | mm | in     | mm | in   | mm | in   | mm | lb   | kg   |
| A 15539     | 1/4 | 6  | 2.85   | 72 | 1.11 | 28 | 0.76 | 19 | 0.69 | 0.31 |
| A 15541     | 1/2 | 13 | 3.70   | 94 | 1.56 | 40 | 1.06 | 27 | 1.14 | 0.52 |
| A 15542     | 5/8 | 17 | 3.70   | 94 | 1.44 | 37 | 0.94 | 24 | 1.14 | 0.52 |

# Packless Diaphragm Valves

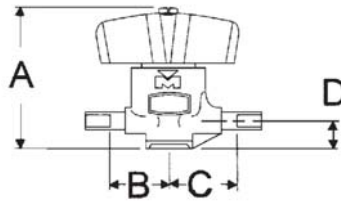
## Straight

### Features:

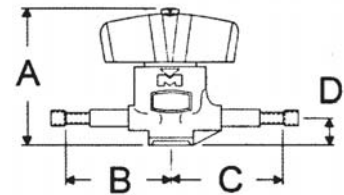
- Maximum abnormal pressure (MAP) with the flow in the direction of the arrow on the body: 700 psig, 48 bar
- Maximum abnormal pressure (MAP) with the flow against the direction of the arrow on the body: 300 psig, 24 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- Forged brass body with full size openings for maximum flow and minimum pressure drop
- Diaphragms for positive isolation
- Thermally stable hand wheel for operation in wide temperature ranges



Flare to Flare



Solder to Solder



Solder to Solder Ext Ends

### Flare to Flare

| Part Number | Size | A Open |    | B    |    | C    |    | D    |    | Wt   |      |
|-------------|------|--------|----|------|----|------|----|------|----|------|------|
|             |      | in     | mm | in   | mm | in   | mm | in   | mm | lb   | kg   |
| A 14833     | 1/4  | 2.70   | 69 | 1.32 | 34 | 1.38 | 35 | 0.62 | 16 | 0.59 | 0.27 |
| A 14835     | 3/8  | 2.70   | 69 | 1.36 | 35 | 1.42 | 36 | 0.62 | 16 | 0.60 | 0.27 |
| A 14836     | 1/2  | 3.46   | 88 | 1.62 | 41 | 1.86 | 47 | 0.84 | 21 | 1.03 | 0.47 |
| A 14837     | 5/8  | 3.46   | 88 | 1.70 | 43 | 1.93 | 49 | 0.84 | 21 | 1.05 | 0.48 |

### Solder to Solder

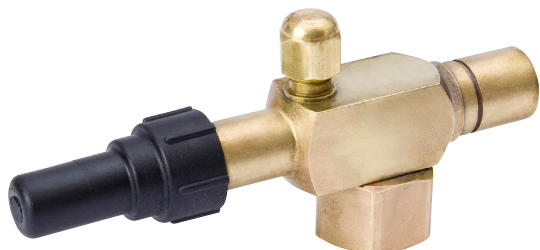
| Part Number | Size |    | A Open |    | B    |    | C    |    | D    |    | Wt   |      |
|-------------|------|----|--------|----|------|----|------|----|------|----|------|------|
|             | in   | mm | in     | mm | in   | mm | in   | mm | in   | mm | lb   | kg   |
| A 14838     | 1/4  | 6  | 2.70   | 69 | 1.04 | 26 | 1.10 | 28 | 0.62 | 16 | 0.57 | 0.26 |
| A 14840     | 3/8  | 10 | 2.70   | 69 | 1.04 | 26 | 1.10 | 28 | 0.62 | 16 | 0.57 | 0.26 |
| A 14841     | 1/2  | 13 | 3.49   | 89 | 1.32 | 34 | 1.56 | 40 | 0.84 | 21 | 0.97 | 0.44 |
| A 14842     | 5/8  | 17 | 3.49   | 89 | 1.20 | 30 | 1.44 | 37 | 0.84 | 21 | 1.00 | 0.45 |

### Solder to Solder Ext Ends

| Part Number | Size |    | A Open |    | B    |    | C    |    | D    |    | Wt   |      |
|-------------|------|----|--------|----|------|----|------|----|------|----|------|------|
|             | in   | mm | in     | mm | in   | mm | in   | mm | in   | mm | lb   | kg   |
| A 14848     | 1/4  | 6  | 2.70   | 69 | 2.66 | 68 | 2.72 | 69 | 0.62 | 16 | 0.86 | 0.39 |
| A 14850C    | 3/8  | 10 | 2.70   | 69 | 2.82 | 72 | 2.88 | 73 | 0.62 | 16 | 0.62 | 0.28 |
| A 14851     | 1/2  | 13 | 3.49   | 89 | 3.04 | 77 | 3.28 | 83 | 0.84 | 21 | 1.06 | 0.48 |
| A 14852     | 5/8  | 17 | 3.49   | 89 | 3.11 | 79 | 3.35 | 85 | 0.84 | 21 | 1.17 | 0.53 |

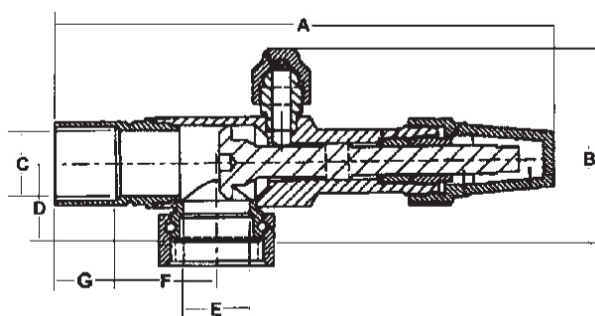
# Brass Angle Isolation Valves

## Solder to Rotolock



### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free packing material
- Quick-change packing gland allows easy replacement without refrigerant loss
- Solid brass construction for maximum protection in all environmental conditions
- Backseating design



| Part Number | Size              | Cv    | Kv    | A     |     | B    |    | C    |    | D    |    | E    |    | F    |    | Flare Size in | Wt   |      | Packing Kit |
|-------------|-------------------|-------|-------|-------|-----|------|----|------|----|------|----|------|----|------|----|---------------|------|------|-------------|
|             |                   |       |       | in    | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm |               | lb   | kg   |             |
| B 34418 *   | 5/8 X 1 THD       | 6.00  | 5.19  | 5.35  | 136 | 2.25 | 57 | 0.55 | 14 | 0.93 | 24 | 0.55 | 14 | 0.17 | 4  | 1/4           | 0.68 | 0.31 | A 17420     |
| B 34417 *   | 7/8 X 1 1/4 THD   | 15.00 | 12.97 | 6.56  | 167 | 2.40 | 61 | 0.75 | 19 | 1.07 | 27 | 0.75 | 19 | 1.27 | 32 | 1/4           | 1.33 | 0.61 | A 17419     |
| B 34415 **  | 1 3/8 X 1 3/4 THD | 38.00 | 32.87 | 9.52  | 242 | 3.22 | 82 | 1.25 | 32 | 1.41 | 36 | 1.25 | 32 | 1.91 | 49 | 3/8           | 3.26 | 1.48 | A 17419     |
| B 34414 **  | 1 5/8 X 2 1/4 THD | 53.00 | 45.84 | 10.04 | 255 | 3.35 | 85 | 1.50 | 38 | 1.58 | 40 | 1.50 | 38 | 2.19 | 56 | 3/8           | 4.26 | 1.93 | A 17419     |

### Torque To Seal

| Part Number | Front Seat |         | Back Seat |         | Pack Gland |         | Rotolock Nut |           | Plastic Cap  |        | Brass Cap |         |
|-------------|------------|---------|-----------|---------|------------|---------|--------------|-----------|--------------|--------|-----------|---------|
|             | (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  | (ft-lb)      | (N-m):    | (ft-lb)      | (N-m): | (ft-lb)   | (N-m)   |
| B 34418     | 16 - 18    | 22 - 24 | 16 - 18   | 22 - 24 | 8 - 12     | 11 - 16 | 40 - 50      | 54 - 68   | Finger Tight |        |           |         |
| B 34417     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 | 60 - 80      | 81 - 109  | Finger Tight |        |           |         |
| B 34415     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 | 60 - 80      | 81 - 109  |              |        | 40 - 50   | 54 - 68 |
| B 34414     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 | 80 - 100     | 109 - 136 |              |        | 40 - 50   | 54 - 68 |

### Rotolock Couplings and Line Break Kits

| Union Size | Male Spud | Gasket  | Line Break Kit **** |
|------------|-----------|---------|---------------------|
| 1 1/8      | S 36173   | P 36168 | A 17910             |
| 1 3/8      | S 36171   | P 36169 | A 17912             |
| 1 5/8      | S 36164   | P 36167 | A 17908             |

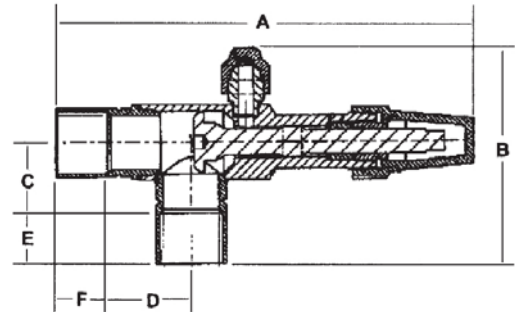
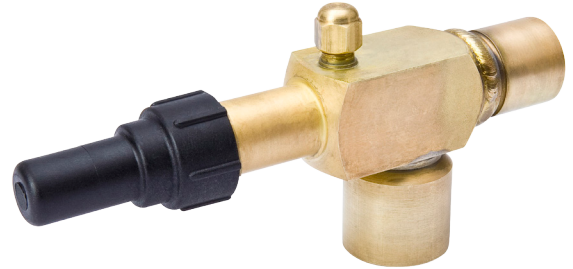
- \* Plastic Cap  
 \*\* Brass Cap  
 \*\*\* Flare Seal Cap and Plastic Seal Cap should be finger tight  
 \*\*\*\* Includes Rotolock, Spud and Gasket  
 \*\*\*\*\* Consult factory

# Brass Angle Isolation Valves

## Solder to Solder

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- 100% tested
- Asbestos-free packing material
- Quick-change packing gland allows easy replacement without refrigerant loss
- Solid brass construction for maximum protection in all environmental conditions
- Backseating design



| Part Number | Size             | Cv    | Kv    | A    |     | B    |     | C    |    | D    |    | E    |    | F    |    | Flare Size in | Wt   |      | Packing Kit |
|-------------|------------------|-------|-------|------|-----|------|-----|------|----|------|----|------|----|------|----|---------------|------|------|-------------|
|             |                  |       |       | in   | mm  | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm |               | lb   | kg   |             |
| B 34413     | * 5/8 X 5/8      | 6.00  | 5.19  | 5.38 | 137 | 2.58 | 66  | 0.84 | 21 | 1.17 | 30 | 0.50 | 13 | 0.50 | 13 | 1/4           | 0.56 | 0.25 | A 17420     |
| B 34412     | * 7/8 X 7/8      | 15.00 | 12.97 | 6.52 | 166 | 3.09 | 78  | 0.91 | 23 | 1.27 | 32 | 0.75 | 19 | 0.75 | 19 | 1/4           | 1.10 | 0.50 | A 17419     |
| B 35224     | * 1 1/8 X 1 1/8  | 25.00 | 21.62 | 7.58 | 193 | 3.77 | 96  | 1.31 | 33 | 1.50 | 38 | 0.94 | 24 | 0.94 | 24 | 3/8           | 1.85 | 0.84 | A 17419     |
| B 34778     | ** 1 1/8 X 1 1/8 |       |       | 7.58 | 193 | 3.77 | 96  | 1.31 | 33 | 1.50 | 38 | 1.00 | 25 | 0.94 | 24 | 3/8           | 2.06 | 0.93 | A 17419     |
| B 34594     | ** 1 3/8 X 1 3/8 | 38.00 | 32.87 | 9.52 | 242 | 4.14 | 105 | 1.50 | 38 | 1.91 | 49 | 1.00 | 25 | 1.00 | 25 | 3/8           | 2.87 | 1.30 | A 17419     |
| B 35291     | ** 1 3/8 X 1 3/8 | 38.00 | 32.87 | 9.52 | 242 | 4.14 | 105 | 1.50 | 38 | 1.91 | 49 | 1.00 | 25 | 1.00 | 25 | 1/4           | 2.99 | 1.36 | A 17419     |
| B 34595     | ** 1 5/8 X 1 5/8 | 53.00 | 45.84 | 9.98 | 253 | 4.62 | 117 | 1.75 | 44 | 2.19 | 56 | 1.09 | 28 | 1.09 | 28 | 3/8           | 3.89 | 1.76 | A 17419     |

### Torque To Seal

| Part Number | Front Seat |         | Back Seat |         | Pack Gland |         | Plastic Cap  | Brass Cap |         |
|-------------|------------|---------|-----------|---------|------------|---------|--------------|-----------|---------|
|             | (ft-lb)    | (N-m):  | (ft-lb)   | (N-m):  | (ft-lb)    | (N-m):  |              | (ft-lb)   | (N-m)   |
| B 34413     | 16 - 18    | 22 - 24 | 16 - 18   | 22 - 24 | 8 - 12     | 11 - 16 | Finger Tight |           |         |
| B 34412     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 | Finger Tight |           |         |
| B 35224     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 | Finger Tight |           |         |
| B 34778     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 |              | 40 - 50   | 54 - 68 |
| B 34594     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 |              | 40 - 50   | 54 - 68 |
| B 35291     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 |              | 40 - 50   | 54 - 68 |
| B 34595     | 22 - 40    | 30 - 54 | 25 - 45   | 34 - 61 | 15 - 20    | 20 - 27 |              | 40 - 50   | 54 - 68 |

\* Plastic Cap

\*\* Brass Cap

\*\*\* Flare Seal Cap and Plastic Seal Cap should be finger tight

# Pressure Relief Valves

## Selection Process

While valves are designed to reseal after discharge, it is advisable that they are replaced, since system impurities such as piping debris, solder, and metal shavings can accumulate under the valve disc and inhibit the proper resealing of the valve.

Selection of a relief valve should be based on the discharge capacity required for the system or vessel, based on the size of the equipment and the refrigerant being used. Minimum settings for valves should be at least 25% above the designed Maximum Operating Pressure, while additional consideration must be given in the valve location may experience high ambient temperatures such as an equipment room or rooftop. Sizing valves to the maximum allowable setting will minimize the possibility of seepage or early discharge.

Relief valves operate automatically when the system pressure exceeds the valve set pressure and exerts a force on the valve disc that overcomes the opposing internal spring force. By code, valves may open with allowable tolerances within a +/- 3% range of stamped set pressure, with full discharge capacity realized at 10% above the actual opening pressure.

Relief valves conform to the American Standard Safety Code for Mechanical Refrigeration (ANSI/SHRAE 15), and are designed and manufactured in accordance with ASME Section VIII Division I, certifying specific capacities and identified by the ASME and National Board NB stamps on each valve. These valves are also compliant with European Union Pressure Equipment Directive (PED 97/23/EC), and exhibit the appropriate EC marking and identification number.

A Pressure Relief Valve (PRV) is a system safety device that has been designed to function in accordance with specific country codes to prevent and protect the operation of systems and vessels above the allowable safe levels.

### Discharge Capacity

The minimum required discharge capacity of the pressure relief device or fusible plug for each pressure vessel is determined by the following formula, specified by the ASHRAE Standard 15, Safety Code for Mechanical Refrigeration:

$C = fDL$  where:

$C$  = minimum required discharge capacity of the relief device, lb. air/min (kg air/sec)

$D$  = outside diameter of vessel, ft (m)

$L$  = length of the vessel, ft (m)

$f$  = factor dependent on the kind of refrigerant from Discharge Capacity Chart

### Example of relief valve selection:

Information for vessel being protected:

Diameter = 1.33 ft

Length = 3.33 ft

Working Pressure = 350 psi

Information from the table for  $f$  values:

Application = R-22

Value of  $f$  = 1.6

From the information provided, the required discharge capacity to protect the vessel is determined by solving the minimum discharge capacity formula:  $C = fDL$

$C = (1.6)(3.33)(1.33)$

$C = 7.1$  lbs of air/min

Using the calculated discharge 7.1 lbs of air/min and the required pressure of 350 psi, we can select from the product offering.

Using the discharge capacity table, select the row for 350 psi. Valves with capacities that meet the minimum discharge required 7.1, are viable options. Discharge table values A-K allows for selection of a valve based on the inlet and outlet sizes and configurations.

If the desired valve is to have a 3/8" NPTFE inlet and 3/8" Flare outlet, with the outlet being 90°, valve A 15512 is acceptable since it has a discharge table rating of B.

# Pressure Relief Valves

## Selection Process

| Application                                                        | Value of F | Metric Valve of F |
|--------------------------------------------------------------------|------------|-------------------|
| <i>When used on the lowside of a limited-charge cascade system</i> |            |                   |
| R-11                                                               | 1.0        | 0.082             |
| R-113                                                              | 1.0        | 0.082             |
| R-114                                                              | 1.6        | 0.131             |
| R-115                                                              | 2.5        | 0.203             |
| R-1150                                                             | 1.0        | 0.082             |
| R-12                                                               | 1.6        | 0.131             |
| R-123                                                              | 1.0        | 0.082             |
| R-124                                                              | 1.6        | 0.131             |
| R-1270                                                             | 1.6        | 0.131             |
| R-13                                                               | 2.0        | 0.163             |
| R-134a                                                             | 1.6        | 0.131             |
| R-13B1                                                             | 2.0        | 0.163             |
| R-14                                                               | 2.5        | 0.203             |
| R-142b                                                             | 1.0        | 0.082             |
| R-143a                                                             | 2.0        | 0.163             |
| R-152a                                                             | 1.0        | 0.082             |
| R-170                                                              | 1.0        | 0.082             |
| R-22                                                               | 1.6        | 0.131             |
| R-23                                                               | 1.0        | 0.082             |
| R-290                                                              | 1.0        | 0.082             |
| R-32                                                               | 1.0        | 0.082             |
| R-401A                                                             | 1.6        | 0.131             |
| R-401B                                                             | 1.6        | 0.131             |
| R-401C                                                             | 1.6        | 0.131             |
| R-402A                                                             | 2.5        | 0.203             |
| R-402B                                                             | 2.0        | 0.163             |
| R-403A                                                             | 2.0        | 0.163             |
| R-403B                                                             | 2.5        | 0.203             |
| R-404A                                                             | 2.5        | 0.203             |
| R-405A                                                             | 1.6        | 0.131             |
| R-406A                                                             | 1.6        | 0.131             |

| Application                                                        | Value of F | Metric Valve of F |
|--------------------------------------------------------------------|------------|-------------------|
| <i>When used on the lowside of a limited-charge cascade system</i> |            |                   |
| R-407A                                                             | 2.0        | 0.163             |
| R-407C                                                             | 1.6        | 0.131             |
| R-407D                                                             | 1.6        | 0.131             |
| R-407E                                                             | 1.6        | 0.131             |
| R-408A                                                             | 2.0        | 0.163             |
| R-409A                                                             | 1.6        | 0.131             |
| R-409B                                                             | 1.6        | 0.131             |
| R-407B                                                             | 2.5        | 0.203             |
| R-410A                                                             | 2.5        | 0.203             |
| R-410B                                                             | 2.5        | 0.203             |
| R-411A                                                             | 1.6        | 0.131             |
| R-411B                                                             | 1.6        | 0.131             |
| R-411C                                                             | 1.6        | 0.131             |
| R-412A                                                             | 1.6        | 0.131             |
| R-413A                                                             | 2.0        | 0.163             |
| R-414A                                                             | 1.6        | 0.131             |
| R-414B                                                             | 1.6        | 0.131             |
| R-500                                                              | 1.6        | 0.131             |
| R-502                                                              | 2.5        | 0.203             |
| R-503                                                              | 2.0        | 0.163             |
| R-507A                                                             | 2.5        | 0.203             |
| R-508A                                                             | 1.0        | 0.082             |
| R-508B                                                             | 1.0        | 0.082             |
| R-509A                                                             | 2.5        | 0.203             |
| R-600                                                              | 1.0        | 0.082             |
| R-600a                                                             | 1.0        | 0.082             |
| R-717                                                              | 0.5        | 0.041             |
| R-718                                                              | 0.2        | 0.016             |
| R-744                                                              | 1.0        | 0.082             |
| R-764                                                              | 1.0        | 0.082             |
|                                                                    | 0.0        | 0.000             |

# Pressure Relief Valves

## Certification and Part Number Explanation

### Certifications:

Conforms to ASME Section VIII, Division 1 and The National Board of Boiler and Pressure Vessel Inspectors, Certificate Number 16,564.

Conforms to Pressure Equipment Directive 97/23/EC B. CE Certification Number 69517, BSI Product Services Notified Body Number 0086.

Canadian Registration Number 0G0314.9C.

### Certification Documentation Levels:

Level 3 Certificate: A Certificate of Conformance can be provided based on customer request at the time of order placement. A serialized certificate can be provided to document the pressure setting of each valve at the point of production.

Level 2 Certificate: A Certificate of Conformance an a UV-1 Form can be provided based on customer request at the time of order placement, or after customer receipt of product. Information necessary to provide a Certificate of Conformance includes: customer name, purchase order number, manufacturing part number, quantity shipped and date of shipment.

Level 1 Certificate: A Certificate of Conformance can be provided based on customer request at the time of order placement, or after customer receipt of product. Information necessary to provide a Certificate of Conformance includes: customer name, purchase order number, manufacturing part number, quantity shipped and date of shipment.

### Part Number Explanation:

Pressure Relief Valves are prefixed to designate the desired pressure setting.

To determine the applicable prefix, see chart below.

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

For valves required at non-standard pressure settings listed above, use the chart below to determine prefix by selecting the range at which your requirement falls into. Follow the part number with the exact pressure setting you require.

| PSIG Range | Prefix | PSIG Range | Prefix |
|------------|--------|------------|--------|
| 70 - 249   | Q      | 451 - 549  | X      |
| 251 - 349  | R      | 551 - 699  | W      |
| 351 - 449  | S      |            |        |

Examples of part numbers using prefixes for the A 15502 relief valve:

| Part Number | Pressure Setting |
|-------------|------------------|
| AD15502     | 235 psig         |
| AJ15502     | 450 psig         |
| AL15502     | 500 psig         |
| AP15502     | 700 psig         |
| AQ15502-75  | 75 psig          |
| AQ15502-240 | 240 psig         |
| AW15502-560 | 560 psig         |
| AW15502-625 | 625 psig         |

# Pressure Relief Valves

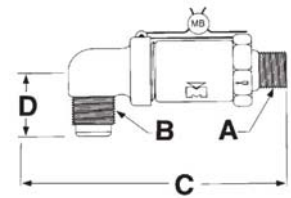
## Angle NPTFE to Flare

### Features:

- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Designed primarily for use on liquid receiver applications above the liquid refrigerant level (it is recommended that the factory be consulted before the valves are used on other applications)
- Satisfy ASHRAE Standard 15 code requirements for a refrigerant vessel safety device (Application information can also be found in ASHRAE Guide and Data Book)
- Comply with ASME code for unfired pressure vessels
- Discharge rates are certified by National Board of Boiler & Pressure Vessel Inspectors
- Designed for maximum discharge capacities
- Conforms to Pressure Equipment Directive 97/23/EC, CRN, Compatible with all CFC, HCFC and HFC refrigerants and oils



| Part Number *** | NPTFE A (in) | Flare Outlet B | C (in) | C (mm) | D (in) | D (mm) | Wt (lb) | Wt (kg) | Discharge Table | Working Pressure |
|-----------------|--------------|----------------|--------|--------|--------|--------|---------|---------|-----------------|------------------|
| A 15512         | 3/8          | 3/8            | 2.43   | 62     | 1.21   | 31     | 0.37    | 0.17    | B               | 150 - 700 psi    |
| A 15513         | 3/8          | 1/2            | 2.43   | 62     | 1.34   | 34     | 0.37    | 0.17    | B               | 150 - 700 psi    |
| B 33746         | 1/4          | 3/8            | 2.43   | 62     | 1.21   | 31     | 0.34    | 0.15    | B               | 150 - 700 psi    |
| B 33754         | 1/4          | 1/2            | 2.43   | 62     | 1.34   | 34     | 0.43    | 0.19    | B               | 150 - 700 psi    |
| A 15514         | 1/2          | 5/8            | 4.10   | 104    | 1.56   | 40     | 1.02    | 0.46    | C               | 150 - 700 psi    |



| Prefix *** | PSIG | Discharge Capacity (lb air/min) |      |      |      |       |       |      |       |      |       | BAR | Discharge Capacity (kg air/min) |      |      |      |      |      |      |      |      |      |
|------------|------|---------------------------------|------|------|------|-------|-------|------|-------|------|-------|-----|---------------------------------|------|------|------|------|------|------|------|------|------|
|            |      | A                               | B    | C    | D    | E     | F     | G    | H     | J    | K     |     | A                               | B    | C    | D    | E    | F    | G    | H    | J    | K    |
| D          | 235  | 4.3                             | 9.1  | 20.1 | 33.7 | 55.9  | 91.8  | 39.0 |       | 60.6 | 90.3  | 16  | 2.0                             | 4.1  | 9.1  | 15.3 | 25.4 | 41.6 | 17.7 |      | 27.5 | 41.0 |
| E          | 300  | 5.4                             | 11.5 | 25.4 | 42.5 | 70.5  | 115.8 | 49.2 |       | 76.5 | 113.9 | 21  | 2.4                             | 5.2  | 11.5 | 19.3 | 32.0 | 52.5 | 22.3 |      | 34.7 | 51.7 |
| G          | 350  | 6.3                             | 13.3 | 29.5 | 49.3 | 81.8  | 134.3 | 57.1 |       | 88.7 | 132.1 | 24  | 2.9                             | 6.0  | 13.4 | 22.4 | 37.1 | 60.9 | 25.9 |      | 40.2 | 59.9 |
| H          | 400  | 7.1                             | 15.2 | 33.5 | 56.1 | 93.0  | 152.7 | 64.9 |       |      | 150.3 | 28  | 3.2                             | 6.9  | 15.2 | 25.4 | 42.2 | 69.3 | 29.4 |      |      | 68.2 |
| I          | 425  | 7.6                             | 16.1 | 35.6 | 59.5 | 98.6  | 162.0 | 68.8 |       |      | 159.4 | 29  | 3.4                             | 7.3  | 16.1 | 27.0 | 44.7 | 73.5 | 31.2 |      |      | 72.3 |
| J          | 450  | 8.0                             | 17.0 | 37.6 | 62.9 | 104.3 | 171.2 | 72.8 |       |      | 168.5 | 31  | 3.6                             | 7.7  | 17.1 | 28.5 | 47.3 | 77.7 | 33.0 |      |      | 76.4 |
| L          | 500  |                                 | 18.8 |      |      |       |       |      |       |      |       | 34  |                                 | 8.5  |      |      |      |      |      |      |      |      |
| M          | 550  |                                 | 20.7 | 45.6 |      |       |       |      |       |      |       | 38  |                                 | 9.4  | 20.7 |      |      |      |      |      |      |      |
| N          | 600  |                                 | 22.5 | 49.7 |      |       |       |      | 88.9  |      |       | 41  |                                 | 10.2 | 22.5 |      |      |      |      | 40.3 |      |      |
| O          | 650  |                                 | 24.3 | 53.7 |      |       |       |      | 96.2  |      |       | 45  |                                 | 11.0 | 24.4 |      |      |      |      | 43.6 |      |      |
| P          | 700  |                                 | 26.2 | 57.8 |      |       |       |      | 103.4 |      |       | 48  |                                 | 11.9 | 26.2 |      |      |      |      | 46.9 |      |      |

### \*\*\*Standard Pressure Setting Part Number Prefixes:

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

### \*\*\*Non-Standard Pressure Setting Part Number Prefixes:

| PSIG Range | Prefix | PSIG Range | Prefix |                                                            |
|------------|--------|------------|--------|------------------------------------------------------------|
| 70 - 249   | Q      | 451 - 549  | X      | Follow the part number with the pressure setting required. |
| 251 - 349  | R      | 551 - 699  | W      |                                                            |
| 351 - 449  | S      |            |        |                                                            |

Examples of part numbers are listed on page 48

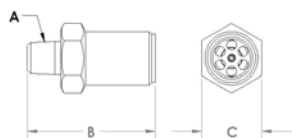
# Pressure Relief Valves

## Atmospheric - NPTFE Inlet



### Features:

- Temperature Range: -40°F/300°F, -40°C/149°C
- Designed primarily for use on liquid receiver applications above the liquid refrigerant level (it is recommended that the factory be consulted before the valves are used on other applications)
- Satisfy ASHRAE Standard 15 code requirements for a refrigerant vessel safety device (Application information can also be found in ASHRAE Guide and Data Book)
- Comply with ASME code for unfired pressure vessels
- Discharge rates are certified by National Board of Boiler & Pressure Vessel Inspectors
- Designed for maximum discharge capacities
- Conforms to Pressure Equipment Directive 97/23/EC, CRN, Compatible with all CFC, HCFC and HFC refrigerants and oils



| Part Number *** | NPTFE Inlet A (in) | B (in) | B (mm) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge Table | Working Pressure |
|-----------------|--------------------|--------|--------|--------|--------|---------|---------|-----------------|------------------|
| A 15508         | 1/8                | 1.88   | 48     | 0.75   | 19     | 0.12    | 0.05    | A               | 150 - 450 psi    |
| A 15509         | 1/4                | 2.00   | 51     | 0.75   | 19     | 0.14    | 0.06    | A               | 150 - 450 psi    |
| A 17430         | 3/8                | 2.12   | 54     | 1.00   | 25     | 0.25    | 0.11    | B               | 150 - 700 psi    |
| B 33755         | 1/4                | 2.12   | 54     | 1.00   | 25     | 0.30    | 0.14    | B               | 150 - 700 psi    |

| Prefix *** | PSIG | Discharge Capacity (lb air/min) |      |      |      |       |       |      |       |      |       | BAR | Discharge Capacity (kg air/min) |      |      |      |      |      |      |      |      |      |
|------------|------|---------------------------------|------|------|------|-------|-------|------|-------|------|-------|-----|---------------------------------|------|------|------|------|------|------|------|------|------|
|            |      | A                               | B    | C    | D    | E     | F     | G    | H     | J    | K     |     | A                               | B    | C    | D    | E    | F    | G    | H    | J    | K    |
| D          | 235  | 4.3                             | 9.1  | 20.1 | 33.7 | 55.9  | 91.8  | 39.0 |       | 60.6 | 90.3  | 16  | 2.0                             | 4.1  | 9.1  | 15.3 | 25.4 | 41.6 | 17.7 |      | 27.5 | 41.0 |
| E          | 300  | 5.4                             | 11.5 | 25.4 | 42.5 | 70.5  | 115.8 | 49.2 |       | 76.5 | 113.9 | 21  | 2.4                             | 5.2  | 11.5 | 19.3 | 32.0 | 52.5 | 22.3 |      | 34.7 | 51.7 |
| G          | 350  | 6.3                             | 13.3 | 29.5 | 49.3 | 81.8  | 134.3 | 57.1 |       | 88.7 | 132.1 | 24  | 2.9                             | 6.0  | 13.4 | 22.4 | 37.1 | 60.9 | 25.9 |      | 40.2 | 59.9 |
| H          | 400  | 7.1                             | 15.2 | 33.5 | 56.1 | 93.0  | 152.7 | 64.9 |       |      | 150.3 | 28  | 3.2                             | 6.9  | 15.2 | 25.4 | 42.2 | 69.3 | 29.4 |      |      | 68.2 |
| I          | 425  | 7.6                             | 16.1 | 35.6 | 59.5 | 98.6  | 162.0 | 68.8 |       |      | 159.4 | 29  | 3.4                             | 7.3  | 16.1 | 27.0 | 44.7 | 73.5 | 31.2 |      |      | 72.3 |
| J          | 450  | 8.0                             | 17.0 | 37.6 | 62.9 | 104.3 | 171.2 | 72.8 |       |      | 168.5 | 31  | 3.6                             | 7.7  | 17.1 | 28.5 | 47.3 | 77.7 | 33.0 |      |      | 76.4 |
| L          | 500  |                                 | 18.8 | 41.6 |      |       |       |      |       |      |       | 34  |                                 | 8.5  | 18.9 |      |      |      |      |      |      |      |
| M          | 550  |                                 | 20.7 | 45.6 |      |       |       |      |       |      |       | 38  |                                 | 9.4  | 20.7 |      |      |      |      |      |      |      |
| N          | 600  |                                 | 22.5 | 49.7 |      |       |       |      | 88.9  |      |       | 41  |                                 | 10.2 | 22.5 |      |      |      |      | 40.3 |      |      |
| O          | 650  |                                 | 24.3 | 53.7 |      |       |       |      | 96.2  |      |       | 45  |                                 | 11.0 | 24.4 |      |      |      |      | 43.6 |      |      |
| P          | 700  |                                 | 26.2 | 57.8 |      |       |       |      | 103.4 |      |       | 48  |                                 | 11.9 | 26.2 |      |      |      |      | 46.9 |      |      |

### \*\*\*Standard Pressure Setting Part Number Prefixes:

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

### \*\*\*Non-Standard Pressure Setting Part Number Prefixes:

| PSIG Range | Prefix | PSIG Range | Prefix |                                                            |
|------------|--------|------------|--------|------------------------------------------------------------|
| 70 - 249   | Q      | 451 - 549  | X      | Follow the part number with the pressure setting required. |
| 251 - 349  | R      | 551 - 699  | W      |                                                            |
| 351 - 449  | S      |            |        |                                                            |

Examples of part numbers are listed on page 48

# Pressure Relief Valves

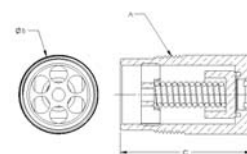
## Internal

### Features:

- Temperature Range: -40°F/300°F, -40°C/149°C
- Designed primarily for use on liquid receiver applications above the liquid refrigerant level (it is recommended that the factory be consulted before the valves are used on other applications)
- Satisfy ASHRAE Standard 15 code requirements for a refrigerant vessel safety device (Application information can also be found in ASHRAE Guide and Data Book)
- Comply with ASME code for unfired pressure vessels
- Discharge rates are certified by National Board of Boiler & Pressure Vessel Inspectors
- Designed for maximum discharge capacities
- Conforms to Pressure Equipment Directive 97/23/EC, CRN, Compatible with all CFC, HCFC and HFC refrigerants and oils



| Part Number<br>*** | NPTFE<br>A (in) | B (in) | B (mm) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge<br>Table | Working<br>Pressure |
|--------------------|-----------------|--------|--------|--------|--------|---------|---------|--------------------|---------------------|
| B 34425            | 3/4             | 1.65   | 42     | 1.13   | 29     | 0.36    | 0.16    | B                  | 150 - 700 psi       |
| A 17970            | 1               | 2.37   | 60     | 1.31   | 33     | 0.57    | 0.26    | I                  | 150 - 450 psi       |
| A 18473            | 1 1/2           | 3.14   | 80     | 1.90   | 48     | 1.73    | 0.78    | F                  | 150 - 450 psi       |



| Prefix *** | PSIG | Discharge Capacity (lb air/min) |      |      |      |       |       |      |       |      |       | BAR | Discharge Capacity (kg air/min) |      |      |      |      |      |      |      |      |      |
|------------|------|---------------------------------|------|------|------|-------|-------|------|-------|------|-------|-----|---------------------------------|------|------|------|------|------|------|------|------|------|
|            |      | A                               | B    | C    | D    | E     | F     | G    | H     | J    | K     |     | A                               | B    | C    | D    | E    | F    | G    | H    | J    | K    |
| D          | 235  | 4.3                             | 9.1  | 20.1 | 33.7 | 55.9  | 91.8  | 39.0 |       | 60.6 | 90.3  | 16  | 2.0                             | 4.1  | 9.1  | 15.3 | 25.4 | 41.6 | 17.7 |      | 27.5 | 41.0 |
| E          | 300  | 5.4                             | 11.5 | 25.4 | 42.5 | 70.5  | 115.8 | 49.2 |       | 76.5 | 113.9 | 21  | 2.4                             | 5.2  | 11.5 | 19.3 | 32.0 | 52.5 | 22.3 |      | 34.7 | 51.7 |
| G          | 350  | 6.3                             | 13.3 | 29.5 | 49.3 | 81.8  | 134.3 | 57.1 |       | 88.7 | 132.1 | 24  | 2.9                             | 6.0  | 13.4 | 22.4 | 37.1 | 60.9 | 25.9 |      | 40.2 | 59.9 |
| H          | 400  | 7.1                             | 15.2 | 33.5 | 56.1 | 93.0  | 152.7 | 64.9 |       |      | 150.3 | 28  | 3.2                             | 6.9  | 15.2 | 25.4 | 42.2 | 69.3 | 29.4 |      |      | 68.2 |
| I          | 425  | 7.6                             | 16.1 | 35.6 | 59.5 | 98.6  | 162.0 | 68.8 |       |      | 159.4 | 29  | 3.4                             | 7.3  | 16.1 | 27.0 | 44.7 | 73.5 | 31.2 |      |      | 72.3 |
| J          | 450  | 8.0                             | 17.0 | 37.6 | 62.9 | 104.3 | 171.2 | 72.8 |       |      | 168.5 | 31  | 3.6                             | 7.7  | 17.1 | 28.5 | 47.3 | 77.7 | 33.0 |      |      | 76.4 |
| L          | 500  |                                 | 18.8 | 41.6 |      |       |       |      |       |      |       | 34  |                                 | 8.5  | 18.9 |      |      |      |      |      |      |      |
| M          | 550  |                                 | 20.7 | 45.6 |      |       |       |      |       |      |       | 38  |                                 | 9.4  | 20.7 |      |      |      |      |      |      |      |
| N          | 600  |                                 | 22.5 | 49.7 |      |       |       |      | 88.9  |      |       | 41  |                                 | 10.2 | 22.5 |      |      |      |      | 40.3 |      |      |
| O          | 650  |                                 | 24.3 | 53.7 |      |       |       |      | 96.2  |      |       | 45  |                                 | 11.0 | 24.4 |      |      |      |      | 43.6 |      |      |
| P          | 700  |                                 | 26.2 | 57.8 |      |       |       |      | 103.4 |      |       | 48  |                                 | 11.9 | 26.2 |      |      |      |      | 46.9 |      |      |

### \*\*\*Standard Pressure Setting Part Number Prefixes:

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

### \*\*\*Non-Standard Pressure Setting Part Number Prefixes:

| PSIG Range | Prefix | PSIG Range | Prefix |                                                            |
|------------|--------|------------|--------|------------------------------------------------------------|
| 70 - 249   | Q      | 451 - 549  | X      | Follow the part number with the pressure setting required. |
| 251 - 349  | R      | 551 - 699  | W      |                                                            |
| 351 - 449  | S      |            |        |                                                            |

Examples of part numbers are listed on page 48

# Pressure Relief Valves

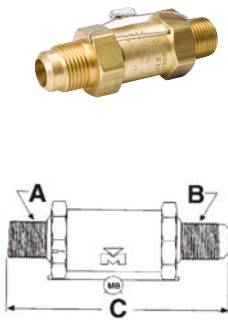
## Straight Thru



### Features:

- Temperature Range: -40°F/300°F, -40°C/149°C
- Designed primarily for use on liquid receiver applications above the liquid refrigerant level (it is recommended that the factory be consulted before the valves are used on other applications)
- Satisfy ASHRAE Standard 15 code requirements for a refrigerant vessel safety device (Application information can also be found in ASHRAE Guide and Data Book)
- Comply with ASME code for unfired pressure vessels
- Discharge rates are certified by National Board of Boiler & Pressure Vessel Inspectors
- Designed for maximum discharge capacities
- Conforms to Pressure Equipment Directive 97/23/EC, CRN, Compatible with all CFC, HCFC and HFC refrigerants and oils

### NPTFE Inlet to Flare Outlet



| Part Number<br>**** | NPTFE<br>A (in) | Flare B (in) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge<br>Table | Working<br>Pressure |
|---------------------|-----------------|--------------|--------|--------|---------|---------|--------------------|---------------------|
| A 15501             | 1/4             | 3/8          | 2.65   | 67     | 0.20    | 0.09    | A                  | 150 - 450 psi       |
| A 15502             | 3/8             | 3/8          | 2.81   | 71     | 0.34    | 0.15    | B                  | 150 - 700 psi       |
| A 15503             | 3/8             | 1/2          | 3.00   | 76     | 0.35    | 0.16    | B                  | 150 - 700 psi       |
| B 33752             | 1/4             | 3/8          | 2.81   | 71     | 0.00    | 0.00    | B                  | 150 - 700 psi       |
| B 33753             | 1/4             | 1/2          | 3.00   | 76     | 0.41    | 0.18    | B                  | 150 - 700 psi       |
| A 15504             | 1/2             | 5/8          | 4.20   | 107    | 0.84    | 0.38    | C                  | 150 - 700 psi       |
| A 18737             | 3/8             | 5/8          | 4.20   | 107    | 0.96    | 0.44    | C                  | 150 - 700 psi       |
| A 18783             | 3/8             | 1/2          | 4.20   | 107    | 0.96    | 0.44    | C                  | 150 - 700 psi       |

| Prefix *** | PSIG | Discharge Capacity (lb air/min) |      |      |      |       |       |      |       |      |       | BAR | Discharge Capacity (kg air/min) |      |      |      |      |      |      |      |      |      |
|------------|------|---------------------------------|------|------|------|-------|-------|------|-------|------|-------|-----|---------------------------------|------|------|------|------|------|------|------|------|------|
|            |      | A                               | B    | C    | D    | E     | F     | G    | H     | J    | K     |     | A                               | B    | C    | D    | E    | F    | G    | H    | J    | K    |
| D          | 235  | 4.3                             | 9.1  | 20.1 | 33.7 | 55.9  | 91.8  | 39.0 |       | 60.6 | 90.3  | 16  | 2.0                             | 4.1  | 9.1  | 15.3 | 25.4 | 41.6 | 17.7 |      | 27.5 | 41.0 |
| E          | 300  | 5.4                             | 11.5 | 25.4 | 42.5 | 70.5  | 115.8 | 49.2 |       | 76.5 | 113.9 | 21  | 2.4                             | 5.2  | 11.5 | 19.3 | 32.0 | 52.5 | 22.3 |      | 34.7 | 51.7 |
| G          | 350  | 6.3                             | 13.3 | 29.5 | 49.3 | 81.8  | 134.3 | 57.1 |       | 88.7 | 132.1 | 24  | 2.9                             | 6.0  | 13.4 | 22.4 | 37.1 | 60.9 | 25.9 |      | 40.2 | 59.9 |
| H          | 400  | 7.1                             | 15.2 | 33.5 | 56.1 | 93.0  | 152.7 | 64.9 |       |      | 150.3 | 28  | 3.2                             | 6.9  | 15.2 | 25.4 | 42.2 | 69.3 | 29.4 |      |      | 68.2 |
| I          | 425  | 7.6                             | 16.1 | 35.6 | 59.5 | 98.6  | 162.0 | 68.8 |       |      | 159.4 | 29  | 3.4                             | 7.3  | 16.1 | 27.0 | 44.7 | 73.5 | 31.2 |      |      | 72.3 |
| J          | 450  | 8.0                             | 17.0 | 37.6 | 62.9 | 104.3 | 171.2 | 72.8 |       |      | 168.5 | 31  | 3.6                             | 7.7  | 17.1 | 28.5 | 47.3 | 77.7 | 33.0 |      |      | 76.4 |
| L          | 500  |                                 | 18.8 | 41.6 |      |       |       |      |       |      |       | 34  |                                 | 8.5  | 18.9 |      |      |      |      |      |      |      |
| M          | 550  |                                 | 20.7 | 45.6 |      |       |       |      |       |      |       | 38  |                                 | 9.4  | 20.7 |      |      |      |      |      |      |      |
| N          | 600  |                                 | 22.5 | 49.7 |      |       |       |      | 88.9  |      |       | 41  |                                 | 10.2 | 22.5 |      |      |      |      | 40.3 |      |      |
| O          | 650  |                                 | 24.3 | 53.7 |      |       |       |      | 96.2  |      |       | 45  |                                 | 11.0 | 24.4 |      |      |      |      | 43.6 |      |      |
| P          | 700  |                                 | 26.2 | 57.8 |      |       |       |      | 103.4 |      |       | 48  |                                 | 11.9 | 26.2 |      |      |      |      | 46.9 |      |      |

#### \*\*\*Standard Pressure Setting Part Number Prefixes:

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

#### \*\*\*Non-Standard Pressure Setting Part Number Prefixes:

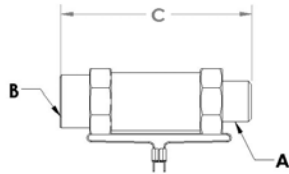
| PSIG Range | Prefix | PSIG Range | Prefix |                                                            |
|------------|--------|------------|--------|------------------------------------------------------------|
| 70 - 249   | Q      | 451 - 549  | X      | Follow the part number with the pressure setting required. |
| 251 - 349  | R      | 551 - 699  | W      |                                                            |
| 351 - 449  | S      |            |        |                                                            |

Examples of part numbers are listed on page 41

# Pressure Relief Valves

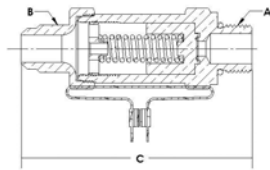
## Straight Thru

### NPTFE Inlet to NPTFI Outlet



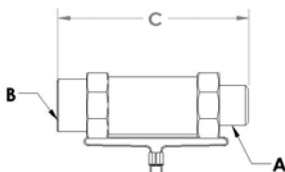
| Part Number<br>**** | NPTFE<br>A (in) | NPTFI<br>B (in) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge<br>Table | Working<br>Pressure |
|---------------------|-----------------|-----------------|--------|--------|---------|---------|--------------------|---------------------|
| A 18736             | 3/8             | 3/4             | 4.00   | 102    | 0.97    | 0.44    | C                  | 150 - 700 psi       |
| A 18762             | PTFE Seat 1/2   | 3/4             | 4.00   | 102    | 0.97    | 0.44    | C                  | 150 - 700 psi       |
| A 15506             | 3/4             | 3/4             | 4.95   | 126    | 1.53    | 0.69    | D                  | 150 - 450 psi       |
| A 17840             | 1               | 1               | 4.60   | 117    | 1.45    | 0.66    | E                  | 150 - 450 psi       |
| A 18735             | 3/4             | 1               | 4.60   | 117    | 1.49    | 0.68    | E                  | 150 - 450 psi       |
| A 17834             | 1 1/4           | 1 1/4           | 4.94   | 125    | 2.00    | 0.91    | F                  | 150 - 450 psi       |
| A 18387             | 1               | 1               | 4.94   | 125    | 1.81    | 0.82    | F                  | 150 - 450 psi       |
| A 18356             | 1/2             | 1/2             | 3.99   | 101    | 0.96    | 0.43    | G                  | 150 - 450 psi       |
| A 18357             | 1/2             | 3/4             | 3.99   | 101    | 0.89    | 0.40    | G                  | 150 - 450 psi       |
| A 18358             | 3/4             | 3/4             | 3.99   | 101    | 0.93    | 0.42    | G                  | 150 - 450 psi       |
| AW18422 *           | 3/4             | 3/4             | 4.95   | 126    | 1.60    | 0.73    | H                  | 600 - 700 psi       |
| A 18424 *           | 1               | 1               | 4.77   | 121    | 1.58    | 0.72    | J                  | 150 - 350 psi       |
| A 18425 *           | 1 1/4           | 1 1/4           | 5.24   | 133    | 2.17    | 0.99    | K                  | 150 - 450 psi       |
| A 18444 *           | 1               | 1 1/4           | 5.24   | 133    | 1.98    | 0.90    | K                  | 150 - 450 psi       |

### Straight Thread Inlet to Flare Outlet



| Part Number<br>**** | Inlet<br>A (in)   | Outlet<br>B (in) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge<br>Table | Working<br>Pressure |
|---------------------|-------------------|------------------|--------|--------|---------|---------|--------------------|---------------------|
| B 35413             | 7/8 - 14 UNF - 2A | 5/8              | 4.19   | 106    | 0.92    | 0.42    | C                  | 150 - 700 psi       |

### Straight Thread Inlet to NPTFI Outlet



| Part Number<br>**** | Inlet<br>A (in)     | Outlet<br>B (in) | C (in) | C (mm) | Wt (lb) | Wt (kg) | Discharge<br>Table | Working<br>Pressure |
|---------------------|---------------------|------------------|--------|--------|---------|---------|--------------------|---------------------|
| B 34444             | 7/8 - 14UNF - 2A    | 3/4              | 5.00   | 127    | 1.52    | 0.69    | D                  | 150 - 450 psi       |
| B 34519             | 1 5/16 - 12UNF - 2S | 1                | 4.38   | 111    | 1.37    | 0.62    | E                  | 150 - 450 psi       |
| B 34580             | 1 5/8 - 12UNF - 2A  | 1 1/4            | 5.00   | 127    | 2.00    | 0.91    | F                  | 150 - 450 psi       |
| A 18540             | 7/8 - 14UNF - 2A    | 3/4              | 3.99   | 101    | 0.96    | 0.44    | G                  | 150 - 450 psi       |

\*\*\*Standard Pressure Setting Part Number Prefixes:

| PSIG | Prefix | PSIG | Prefix | PSIG | Prefix | PSIG | Prefix |
|------|--------|------|--------|------|--------|------|--------|
| 235  | D      | 400  | H      | 500  | L      | 650  | O      |
| 300  | E      | 425  | I      | 550  | M      | 700  | P      |
| 350  | G      | 450  | J      | 600  | N      |      |        |

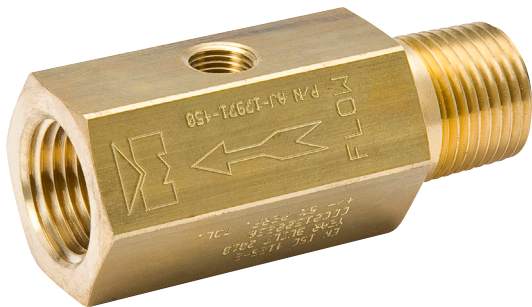
\*\*\*Non-Standard Pressure Setting Part Number Prefixes:

| PSIG Range | Prefix | PSIG Range | Prefix |                                                            |
|------------|--------|------------|--------|------------------------------------------------------------|
| 70 - 249   | Q      | 451 - 549  | X      | Follow the part number with the pressure setting required. |
| 251 - 349  | R      | 551 - 699  | W      |                                                            |
| 351 - 449  | S      |            |        |                                                            |

Examples of part numbers are listed on page 48

# Rupture Disc and Pressure Gauge

NPTFE X NPTFI

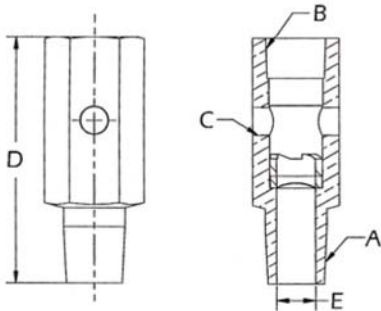


### Features:

- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Conforms to Pressure Equipment Directive 97/23/EC Category 4 Product, Certified to meet ASME Code
- Wide range of pressure settings available
- One-piece brass design assures setting accuracy
- Non-fragmenting disc

| Part Number * | A NPTFE (in) | B NPTFI (in) | C NPT (in) | D (in) | D (mm) | E (in) | E (mm) | Wt (lb) | Wt (kg) |
|---------------|--------------|--------------|------------|--------|--------|--------|--------|---------|---------|
| A 17971       | 1/2          | 1/2          | 1/8        | 3      | 71     | 1      | 13     | 0.51    | 0.23    |

| Prefix | PSIG | Bar |
|--------|------|-----|
| D      | 235  | 16  |
| E      | 300  | 21  |
| G      | 350  | 24  |
| H      | 400  | 28  |
| I      | 425  | 29  |
| J      | 450  | 31  |
| L      | 500  | 34  |
| M      | 550  | 38  |
| N      | 600  | 41  |
| O      | 650  | 45  |
| P      | 700  | 48  |



### Pressure Gauge

P 36214



# Rupture Disc and Pressure Gauge

## NPTFE X NPTFI

Rupture discs are non-resealing system safety devices that are typically used in conjunction with pressure relief valves, and are designed to function in accordance with specific country codes to prevent and protect the operation of systems and vessels above allowable safe levels.

The domed style non-fragmenting disc is housed inside a single piece brass body, that has two threaded access ports for gauge and transducer installation, which provide a visual and electronic signal for opening indication. Rupture discs have been designed to be used with relief valves to prevent any leakage through the PRV, and a total loss of refrigerant after the disc bursts.



### ASME Code

Guidelines for the application of Rupture Disc Devices in combination with pressure relief valves is provided by ASME Code. The following is an excerpt from the ASME Code, Section VIII, Division I, UG-127.

A rupture disc device may be installed between a pressure relief valve and the vessel provided:

The marked capacity of a pressure relief valve, when installed with a rupture disc device between the inlet of the valve and the vessel, shall be multiplied by a factor of 0.90 of the rated relieving capacity of the valve alone.

The space between a rupture disc device and a pressure relief valve shall be provided with a pressure gage, or suitable telltale indicator. This arrangement permits detection of disc rupture or leakage.

Users are warned that a rupture disc will not burst at its design pressure if back pressure build up in the space between the disc and the pressure relief valve which will occur should leakage develop in the rupture disc due to corrosion or other cause.

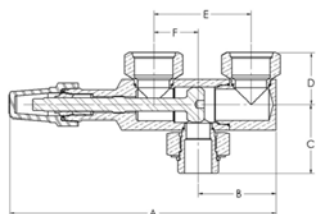
# RELIEFMASTER®

## Change-Over Manifold

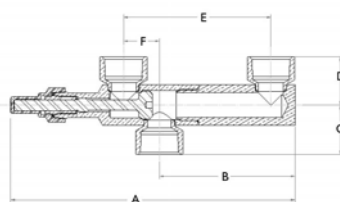


### Features:

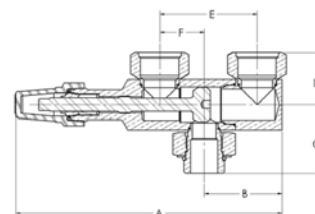
- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- Allows easy replacement of attached relief valves and rupture discs while the system is operative.
- Dual internal seats ensure complete isolation of individual circuits.
- Available with various inlet connections.
- Multiple cap options available.



**NPTFE X NPTFI**



**NPTFI X NPTFI**



**STRAIGHT THREAD**

### NPTFE X NPTFI

| Part Number | Inlet NPTFE | Outlet NPTFI | A    |     | B    |    | C    |    | D    |    | E    |    | F    |    | Front Seat |         | Torques to Seal Back Seat |         | Pack Gland |         | Wt   |      |
|-------------|-------------|--------------|------|-----|------|----|------|----|------|----|------|----|------|----|------------|---------|---------------------------|---------|------------|---------|------|------|
|             |             |              | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm | (ft-lb)    | (N-m)   | (ft-lb)                   | (N-m)   | (ft-lb)    | (N-m)   | lb   | kg   |
| A 17921     | 1/2         | 1/2          | 5.98 | 152 | 1.75 | 44 | 1.76 | 35 | 1.36 | 35 | 2.04 | 52 | 0.75 | 19 | 16 - 18    | 22 - 24 | 16 - 18                   | 22 - 24 | 8 - 12     | 11 - 16 | 1.20 | 0.54 |
| A 17922     | 3/4         | 3/4          | 6.01 | 153 | 1.85 | 47 | 1.84 | 35 | 1.38 | 35 | 2.04 | 52 | 0.75 | 19 | 16 - 18    | 22 - 24 | 16 - 18                   | 22 - 24 | 8 - 12     | 11 - 16 | 1.28 | 0.58 |
| A 17923     | 1           | 1            | 8.51 | 216 | 2.44 | 62 | 2.39 | 49 | 1.94 | 49 | 3.13 | 80 | 1.70 | 43 | 22 - 40    | 30 - 54 | 22 - 45                   | 30 - 61 | 15 - 25    | 20 - 34 | 4.55 | 2.06 |
| A 17924     | 1 1/4       | 1 1/4        | 8.80 | 224 | 2.44 | 62 | 2.45 | 54 | 2.11 | 54 | 3.13 | 80 | 1.70 | 43 | 22 - 40    | 30 - 54 | 22 - 45                   | 30 - 61 | 15 - 25    | 20 - 34 | 5.60 | 2.54 |

### NPTFI X NPTFI

| Part Number | Inlet NPTFE | Outlet NPTFI | A     |     | B    |     | C    |    | D    |    | E    |     | F    |    | Front Seat |         | Torques to Seal Back Seat |         | Pack Gland |         | Wt   |      |
|-------------|-------------|--------------|-------|-----|------|-----|------|----|------|----|------|-----|------|----|------------|---------|---------------------------|---------|------------|---------|------|------|
|             |             |              | in    | mm  | in   | mm  | in   | mm | in   | mm | in   | mm  | in   | mm | (ft-lb)    | (N-m)   | (ft-lb)                   | (N-m)   | (ft-lb)    | (N-m)   | lb   | kg   |
| B 35273     | 1 1/4       | 1 1/4        | 11.34 | 288 | 5.41 | 137 | 1.94 | 50 | 1.97 | 50 | 5.88 | 149 | 1.43 | 36 | 22 - 40    | 30 - 54 | 22 - 45                   | 30 - 61 | 15 - 25    | 20 - 34 | 6.00 | 2.72 |

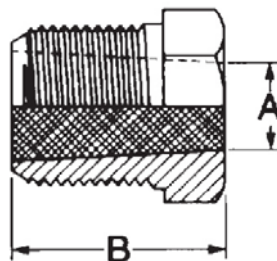
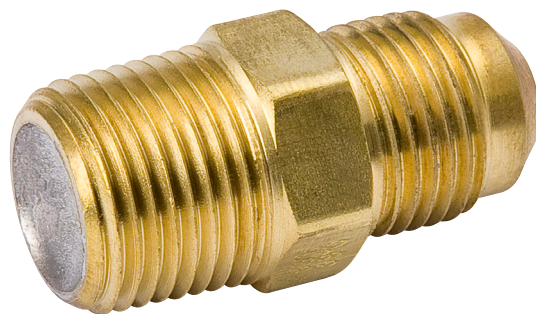
### STRAIGHT THREAD

| Part Number | Inlet           | Outlet          | A    |     | B    |    | C    |    | D    |    | E    |    | F    |    | Front Seat |         | Torques to Seal Back Seat |         | Pack Gland |         | Wt   |      |
|-------------|-----------------|-----------------|------|-----|------|----|------|----|------|----|------|----|------|----|------------|---------|---------------------------|---------|------------|---------|------|------|
|             |                 |                 | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm | in   | mm | (ft-lb)    | (N-m)   | (ft-lb)                   | (N-m)   | (ft-lb)    | (N-m)   | lb   | kg   |
| B 34550     | 7/8-14UNF 2A    | 7/8-14UNF 2B    | 5.98 | 152 | 1.85 | 47 | 1.65 | 35 | 1.38 | 35 | 2.04 | 52 | 0.75 | 19 | 16 - 18    | 22 - 24 | 16 - 18                   | 22 - 24 | 8 - 12     | 11 - 16 | 1.46 | 0.66 |
| B 34559     | 1 5/16-12UNF 2A | 1 5/16-12UNF 2B | 8.53 | 217 | 2.50 | 64 | 2.22 | 43 | 1.69 | 43 | 3.13 | 80 | 1.43 | 36 | 22 - 40    | 30 - 54 | 22 - 45                   | 30 - 61 | 15 - 25    | 20 - 34 | 3.14 | 1.42 |
| B 34654     | 1 5/8-12UNF 2A  | 1 5/8-12UNF 2B  | 8.53 | 217 | 2.50 | 64 | 2.19 | 46 | 1.81 | 46 | 3.13 | 80 | 1.43 | 36 | 22 - 40    | 30 - 54 | 22 - 45                   | 30 - 61 | 15 - 25    | 20 - 34 | 3.64 | 1.65 |

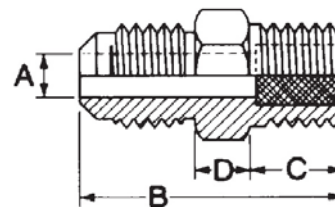
# Fusible Pipe Plugs & Connectors

## Features:

- Listed by Underwriters Laboratories, Inc., for use in the USA and Canada
- CE Compliant for European market



NPTFE



Flare to NPTFE

## Fusible Pipe Plugs - NPTFE

| Cat Number | Part Number<br>UL | Part Number<br>CE | Size<br>NPTFE | Hex   | Flare | A (in) | B (in) | C (in) | D (in) | Melting<br>Temp °F | Box<br>Qty | Wt(lb) |
|------------|-------------------|-------------------|---------------|-------|-------|--------|--------|--------|--------|--------------------|------------|--------|
| FP-A       | A 14058           | B 35133           | 1/8           | 7/16  |       | 0.22   | 0.59   |        |        | 283                | 10         | 0.022  |
| FP-B       | A 14059           | B 35134           | 1/4           | 9/16  |       | 0.25   | 0.78   |        |        | 283                | 15         | 0.055  |
| FP-C       | A 14060           | B 35135           | 3/8           | 11/16 |       | 0.38   | 0.84   |        |        | 283                | 15         | 0.084  |
| FP-A       | A 14017           | B 35122           | 1/8           | 7/16  |       | 0.22   | 0.59   |        |        | 210                | 10         | 0.024  |
| FP-B       | A 14018           | B 35123           | 1/4           | 9/16  |       | 0.25   | 0.78   |        |        | 210                | 15         | 0.054  |
| FP-C       | A 14021           | B 35125           | 3/8           | 11/16 |       | 0.38   | 0.84   |        |        | 210                | 15         | 0.090  |
| FP-A       | A 15214           |                   | 1/8           | 7/16  |       | 0.22   | 0.59   |        |        | 168                | 10         | 0.024  |
| FP-B       | A 14019           | B 35124           | 1/4           | 9/16  |       | 0.25   | 0.78   |        |        | 168                | 15         | 0.054  |
| FP-C       | A 14022           | B 35126           | 3/8           | 11/16 |       | 0.38   | 0.84   |        |        | 168                | 15         | 0.095  |

## Half Union - Flare to NPTFE

| Cat Number | Part Number<br>UL | Part Number<br>CE | Size<br>NPTFE | Hex   | Flare | A (in) | B (in) | C (in) | D (in) | Melting<br>Temp °F | Box<br>Qty | Wt(lb) |
|------------|-------------------|-------------------|---------------|-------|-------|--------|--------|--------|--------|--------------------|------------|--------|
| FU-4B      | A 14062           |                   | 1/4           | 9/16  | 1/4   | 0.19   | 1.25   | 0.56   | 0.19   | 283                | 10         | 0.065  |
| FU-6C      | A 14064           |                   | 3/8           | 11/16 | 3/8   | 0.28   | 1.44   | 0.56   | 0.25   | 283                | 10         | 0.126  |
| FU-4B      | A 14023           | B 35127           | 1/4           | 9/16  | 1/4   | 0.19   | 1.25   | 0.56   | 0.19   | 210                | 10         | 0.057  |
| FU-6C      | A 14026           |                   | 3/8           | 11/16 | 3/8   | 0.28   | 1.44   | 0.56   | 0.25   | 210                | 10         | 0.122  |
| FU-4B      | A 14024           |                   | 1/4           | 9/16  | 1/4   | 0.19   | 1.25   | 0.56   | 0.19   | 168                | 10         | 0.048  |
| FU-6C      | A 14027           |                   | 3/8           | 11/16 | 3/8   | 0.28   | 1.44   | 0.56   | 0.25   | 168                | 10         | 0.098  |

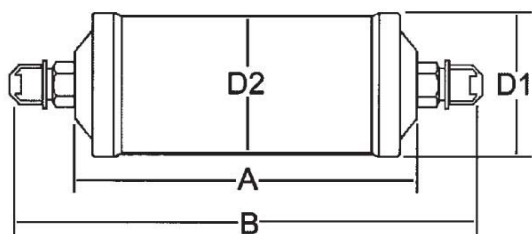
# DRYMASTER® High Capacity Filter Driers

## Liquid Line Flare Connection



### Features:

- Maximum abnormal pressure (MAP): 700 psig
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XH-11 desiccant
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- Solid core design
- High retention filter for removal of particulate as small as 25 microns
- High pressure shell and connections
- Powder paint finish approved for marine applications
- 100% copper connection for solder models



| Part Number | Model  | Des. Cu. In | Size (in) | A (in) | B (in) | D1 (in) | D2 (in) | Wt (lb) | Liquid Capacity (tons) |    |    |    |    |    | Water Capacity (drops) |       |       |       |      |       |      |       |       |       |       |     |
|-------------|--------|-------------|-----------|--------|--------|---------|---------|---------|------------------------|----|----|----|----|----|------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-----|
|             |        |             |           |        |        |         |         |         | R                      | R  | R  | R  | R  | R  | R134a                  |       | R404A |       | R507 |       | R22  |       | R407C |       | R410A |     |
|             |        |             |           |        |        |         |         |         | 1                      | 4  | 5  | 2  | 4  | 4  | 75°F                   | 125°F | 75°F  | 125°F | 75°F | 125°F | 75°F | 125°F | 75°F  | 125°F |       |     |
|             |        |             |           |        |        |         |         |         | 3                      | 0  | 0  | 2  | 0  | 1  |                        |       |       |       |      |       |      |       |       |       |       |     |
|             |        |             |           |        |        |         |         |         | 4                      | 4  | 7  |    | 7  | 0  |                        |       |       |       |      |       |      |       |       |       |       |     |
| a           | A      | 7           |           | C      | A      |         |         |         |                        |    |    |    |    |    |                        |       |       |       |      |       |      |       |       |       |       |     |
| A 18184     | FL-032 | 3           | 1/4       | 2.57   | 4.29   | 1.85    | 1.69    | 0.44    | 2                      | 1  | 1  | 2  | 2  | 2  | 82                     | 70    | 87    | 78    | 80   | 71    | 80   | 71    | 74    | 52    | 59    | 51  |
| A 18185     | FL-033 | 3           | 3/8       | 2.57   | 4.81   | 1.85    | 1.69    | 0.54    | 3                      | 3  | 2  | 4  | 4  | 4  | 82                     | 70    | 87    | 78    | 80   | 71    | 80   | 71    | 74    | 52    | 59    | 51  |
| A 18186     | FL-052 | 5           | 1/4       | 2.94   | 4.66   | 2.32    | 2.10    | 0.57    | 2                      | 1  | 1  | 2  | 2  | 2  | 157                    | 131   | 166   | 146   | 152  | 132   | 152  | 132   | 137   | 90    | 103   | 90  |
| A 18187     | FL-053 | 5           | 3/8       | 2.94   | 5.18   | 2.32    | 2.10    | 0.66    | 4                      | 3  | 3  | 4  | 4  | 4  | 157                    | 131   | 166   | 146   | 152  | 132   | 152  | 132   | 137   | 90    | 103   | 90  |
| A 18188     | FL-082 | 8           | 1/4       | 3.98   | 5.71   | 2.32    | 2.10    | 0.75    | 2                      | 1  | 1  | 2  | 2  | 2  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144 |
| A 18189     | FL-083 | 8           | 3/8       | 3.98   | 6.22   | 2.32    | 2.10    | 0.85    | 4                      | 3  | 3  | 4  | 4  | 4  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144 |
| A 18190     | FL-084 | 8           | 1/2       | 3.98   | 6.54   | 2.32    | 2.10    | 0.91    | 8                      | 6  | 6  | 8  | 8  | 8  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144 |
| A 18191     | FL-162 | 16          | 1/4       | 4.33   | 6.05   | 3.12    | 2.92    | 1.43    | 2                      | 1  | 1  | 2  | 2  | 2  | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291 |
| A 18192     | FL-163 | 16          | 3/8       | 4.33   | 6.57   | 3.12    | 2.92    | 1.52    | 4                      | 3  | 3  | 5  | 4  | 4  | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291 |
| A 18193     | FL-164 | 16          | 1/2       | 4.33   | 6.89   | 3.12    | 2.92    | 1.59    | 9                      | 7  | 7  | 10 | 9  | 10 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291 |
| A 18194     | FL-165 | 16          | 5/8       | 4.33   | 7.25   | 3.12    | 2.92    | 1.70    | 12                     | 9  | 9  | 13 | 13 | 14 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291 |
| A 18195     | FL-303 | 30          | 3/8       | 7.33   | 9.57   | 3.15    | 3.00    | 3.24    | 4                      | 3  | 3  | 5  | 4  | 4  | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595 |
| A 18196     | FL-304 | 30          | 1/2       | 7.33   | 9.89   | 3.15    | 3.00    | 3.30    | 9                      | 7  | 7  | 10 | 10 | 10 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595 |
| A 18197     | FL-305 | 30          | 5/8       | 7.33   | 10.25  | 3.15    | 3.00    | 3.40    | 13                     | 10 | 10 | 15 | 14 | 15 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595 |
| A 18801     | FL-306 | 30          | 3/4       | 7.33   | 10.17  | 3.15    | 3.00    | 3.51    | 12                     | 11 | 11 | 15 | 15 | 17 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595 |
| A 18198     | FL-413 | 41          | 3/8       | 7.35   | 9.59   | 3.65    | 3.50    | 4.40    | 5                      | 3  | 3  | 5  | 5  | 5  | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802 |
| A 18199     | FL-414 | 41          | 1/2       | 7.35   | 9.91   | 3.65    | 3.50    | 4.46    | 10                     | 7  | 7  | 11 | 10 | 11 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802 |
| A 18200     | FL-415 | 41          | 5/8       | 7.35   | 10.27  | 3.65    | 3.50    | 4.56    | 15                     | 11 | 11 | 17 | 16 | 16 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802 |

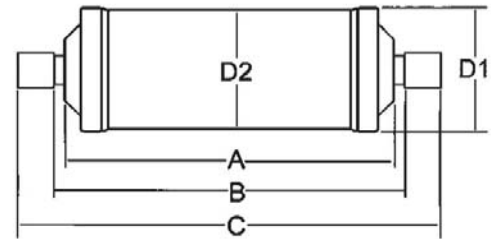
Water capacity data rated according to AHRI 710 standards.

# DRYMASTER® High Capacity Filter Driers

## Liquid Line Solder Connection

### Features:

- Maximum abnormal pressure (MAP): 700 psig
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XH-11 desiccant
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- Solid core design
- High retention filter for removal of particulate as small as 25 microns
- High pressure shell and connections
- Powder paint finish approved for marine applications
- 100% copper connection for solder models



| Part Number | Model  | Des Size<br>(in) | A<br>(in) | B<br>(in) | C<br>(in) | D1<br>(in) | D2<br>(in) | Wt<br>(lb) | Liquid Capacity (tons) |    |    |    |    |    | Water Capacity (drops) |       |       |       |      |       |      |       |       |       |       |       |
|-------------|--------|------------------|-----------|-----------|-----------|------------|------------|------------|------------------------|----|----|----|----|----|------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|
|             |        |                  |           |           |           |            |            |            | R                      | R  | R  | R  | R  | R  | R134a                  |       | R404A |       | R507 |       | R22  |       | R407C |       | R410A |       |
|             |        |                  |           |           |           |            |            |            | 1                      | 4  | 5  | 2  | 4  | 4  | 75°F                   | 125°F | 75°F  | 125°F | 75°F | 125°F | 75°F | 125°F | 75°F  | 125°F | 75°F  | 125°F |
|             |        |                  |           |           |           |            |            |            | a                      | A  |    |    | C  | A  |                        |       |       |       |      |       |      |       |       |       |       |       |
| A 18598     | SD-032 | 3 1/4            | 2.57      | 3.30      | 4.03      | 1.85       | 1.69       | 0.42       | 2                      | 1  | 1  | 2  | 2  | 2  | 82                     | 70    | 87    | 78    | 80   | 71    | 80   | 71    | 74    | 52    | 59    | 51    |
| A 18599     | SD-033 | 3 3/8            | 2.57      | 3.30      | 4.03      | 1.85       | 1.69       | 0.43       | 4                      | 3  | 3  | 4  | 4  | 4  | 82                     | 70    | 87    | 78    | 80   | 71    | 80   | 71    | 74    | 52    | 59    | 51    |
| A 18654     | SD-052 | 5 1/4            | 2.94      | 3.67      | 4.40      | 2.32       | 2.10       | 0.54       | 2                      | 1  | 1  | 2  | 2  | 2  | 157                    | 131   | 166   | 146   | 152  | 132   | 152  | 132   | 137   | 90    | 103   | 90    |
| A 18655     | SD-053 | 5 3/8            | 2.94      | 3.67      | 4.40      | 2.32       | 2.10       | 0.56       | 4                      | 3  | 3  | 4  | 4  | 4  | 157                    | 131   | 166   | 146   | 152  | 132   | 152  | 132   | 137   | 90    | 103   | 90    |
| A 18656     | SD-082 | 8 1/4            | 2.94      | 4.70      | 5.43      | 2.32       | 2.10       | 0.73       | 2                      | 1  | 1  | 2  | 2  | 2  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144   |
| A 18657     | SD-083 | 8 3/8            | 2.94      | 4.70      | 5.43      | 2.32       | 2.10       | 0.74       | 4                      | 3  | 3  | 5  | 4  | 4  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144   |
| A 18658     | SD-084 | 8 1/2            | 2.94      | 4.84      | 5.71      | 2.32       | 2.10       | 0.76       | 8                      | 6  | 6  | 9  | 8  | 8  | 255                    | 212   | 269   | 237   | 246  | 215   | 246  | 215   | 222   | 145   | 166   | 144   |
| A 18699     | SD-163 | 16 3/8           | 4.33      | 5.06      | 5.79      | 3.12       | 2.92       | 1.42       | 5                      | 3  | 3  | 5  | 5  | 5  | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291   |
| A 18700     | SD-164 | 16 1/2           | 4.33      | 5.19      | 6.06      | 3.12       | 2.92       | 1.46       | 10                     | 7  | 7  | 10 | 10 | 10 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291   |
| A 18701     | SD-165 | 16 5/8           | 4.33      | 5.28      | 6.22      | 3.12       | 2.92       | 1.50       | 12                     | 10 | 10 | 14 | 13 | 14 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291   |
| A 18702     | SD-166 | 16 3/4           | 4.33      | 5.51      | 6.69      | 3.12       | 2.92       | 1.54       | 13                     | 11 | 10 | 15 | 14 | 16 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291   |
| A 18703     | SD-167 | 16 7/8           | 4.33      | 5.35      | 6.77      | 3.12       | 2.92       | 1.58       | 12                     | 11 | 11 | 15 | 15 | 17 | 473                    | 402   | 498   | 444   | 459  | 405   | 459  | 405   | 419   | 296   | 330   | 291   |
| A 18741     | SD-303 | 30 3/8           | 7.33      | 8.06      | 8.79      | 3.15       | 3.00       | 3.13       | 5                      | 3  | 3  | 5  | 4  | 5  | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18742     | SD-304 | 30 1/2           | 7.33      | 8.20      | 9.07      | 3.15       | 3.00       | 3.15       | 10                     | 7  | 7  | 11 | 10 | 11 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18743     | SD-305 | 30 5/8           | 7.33      | 8.28      | 9.22      | 3.15       | 3.00       | 3.18       | 14                     | 11 | 11 | 16 | 15 | 16 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18800     | SD-306 | 30 3/4           | 7.33      | 8.52      | 9.70      | 3.15       | 3.00       | 3.23       | 13                     | 11 | 11 | 15 | 15 | 16 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18744     | SD-307 | 30 7/8           | 7.33      | 8.36      | 9.78      | 3.15       | 3.00       | 3.26       | 19                     | 15 | 14 | 21 | 20 | 22 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18745     | SD-309 | 30 1 1/8         | 7.33      | 8.16      | 9.81      | 3.15       | 3.00       | 3.29       | 24                     | 20 | 19 | 28 | 27 | 30 | 949                    | 813   | 999   | 893   | 925  | 817   | 925  | 817   | 846   | 607   | 673   | 595   |
| A 18746     | SD-413 | 41 3/8           | 7.35      | 8.08      | 8.81      | 3.65       | 3.50       | 4.29       | 5                      | 4  | 3  | 6  | 5  | 5  | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802   |
| A 18747     | SD-414 | 41 1/2           | 7.35      | 8.22      | 9.09      | 3.65       | 3.50       | 4.31       | 10                     | 8  | 8  | 11 | 11 | 12 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802   |
| A 18748     | SD-415 | 41 5/8           | 7.35      | 8.30      | 9.24      | 3.65       | 3.50       | 4.34       | 16                     | 12 | 12 | 17 | 16 | 17 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802   |
| A 18749     | SD-417 | 41 7/8           | 7.35      | 8.38      | 9.80      | 3.65       | 3.50       | 4.42       | 19                     | 15 | 15 | 22 | 21 | 23 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802   |
| A 18823     | SD-419 | 41 1 1/8         | 7.35      | 8.18      | 9.83      | 3.65       | 3.50       | 4.45       | 24                     | 19 | 18 | 27 | 26 | 28 | 1279                   | 1095  | 1346  | 1204  | 1246 | 1101  | 1246 | 1101  | 1140  | 819   | 908   | 802   |

Water capacity data rated according to AHRI 710 standards.

# DRYMASTER® Filter Driers

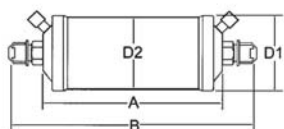
## Suction Line



### Features:

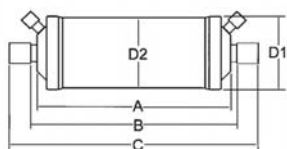
- Maximum abnormal pressure (MAP): 508 psig
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XH-11 desiccant
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- Solid core design, composed of 70% activated alumina/ 30% molecular sieves for exceptional moisture and acid removal
- High retention filter for removal of particulate as small as 25 microns
- High pressure shell and connections
- Powder paint finish approved for marine applications

### Flare Connection



| Part Number | Model      | Desiccant Cu In | Size (in) | A (in) | B (in) | D1 (in) | D2 (in) | Wt (lb) | Nominal Capacity (tons)<br>Evaporator Temp 40°F |             |                   |
|-------------|------------|-----------------|-----------|--------|--------|---------|---------|---------|-------------------------------------------------|-------------|-------------------|
|             |            |                 |           |        |        |         |         |         | R134a                                           | R404A, R507 | R22, R407C, R410A |
| A 17225     | FDF-164-TT | 16              | 1/2       | 4.3    | 6.9    | 3.1     | 3       | 2.14    | 1.7                                             | 2.4         | 3.0               |
| A 17226     | FDF-165-TT | 16              | 5/8       | 4.3    | 7.2    | 3.1     | 3       | 2.24    | 2.7                                             | 3.7         | 4.3               |

### Solder Connection



| Part Number | Model       | Desiccant Cu In | Size (in) | A (in) | B (in) | C (in) | D1 (in) | D2 (in) | Wt (lb) | Nominal Capacity (tons)<br>Evaporator Temp 40°F |             |                   |
|-------------|-------------|-----------------|-----------|--------|--------|--------|---------|---------|---------|-------------------------------------------------|-------------|-------------------|
|             |             |                 |           |        |        |        |         |         |         | R134a                                           | R404A, R507 | R22, R407C, R410A |
| A 17224     | FDS-164-TT  | 16              | 1/2       | 4.30   | 5.20   | 6.00   | 3.10    | 3.00    | 2.99    | 1.7                                             | 2.4         | 3.0               |
| A 17227     | FDS-165-TT  | 16              | 5/8       | 4.30   | 5.30   | 6.20   | 3.10    | 3.00    | 1.95    | 2.7                                             | 3.7         | 4.3               |
| A 17228     | FDS-166-TT  | 16              | 3/4       | 4.30   | 5.50   | 6.70   | 3.10    | 3.00    | 2.00    | 3.4                                             | 4.9         | 5.7               |
| A 17229     | FDS-167-TT  | 16              | 7/8       | 4.30   | 5.40   | 6.80   | 3.10    | 3.00    | 2.01    | 3.9                                             | 5.4         | 6.3               |
| A 17230     | FDS-169-TT  | 16              | 1 1/8     | 4.30   | 5.20   | 6.80   | 3.10    | 3.00    | 2.11    |                                                 |             |                   |
| A 17231     | FDS-309-TT  | 30              | 1 1/8     | 7.30   | 8.10   | 9.80   | 3.10    | 3.00    | 3.13    | 5.7                                             | 7.7         | 8.9               |
| A 17300     | FDS-305-TT  | 30              | 5/8       | 7.30   | 8.30   | 9.20   | 3.10    | 3.00    | 2.99    | 3.1                                             | 4.3         | 5.1               |
| A 17301     | FDS-306-TT  | 30              | 3/4       | 7.30   | 8.50   | 9.70   | 3.10    | 3.00    | 3.03    | 4.0                                             | 5.4         | 6.3               |
| A 17302     | FDS-307-TT  | 30              | 7/8       | 7.30   | 8.30   | 9.80   | 3.10    | 3.00    | 3.06    | 4.6                                             | 6.3         | 7.4               |
| A 17233     | FDS-3013-TT | 30              | 1 5/8     |        |        |        |         |         | 3.40    |                                                 |             |                   |

# DRYMASTER®

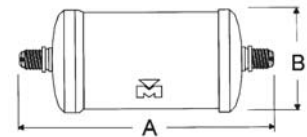
## Heat Pump Driers

### Features:

- Maximum abnormal pressure (MAP): 667 psig
- Maximum working temperature: 160°F/70°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils, and refrigerants requiring XH-11 desiccant
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC
- High retention filter for removal of particulate as small as 25 microns
- High pressure shell and connections
- Powder paint finish approved for marine applications

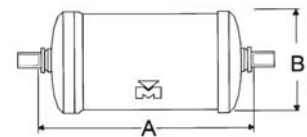


### Flare Connection



| Part Number | Model   | Dessicant Cu In | Size (in) | A (in) | B (in) | Wt (lb) | Liquid Capacity (tons) |             |                   | Water Capacity (drops) |      |       |      |                   |      |
|-------------|---------|-----------------|-----------|--------|--------|---------|------------------------|-------------|-------------------|------------------------|------|-------|------|-------------------|------|
|             |         |                 |           |        |        |         | R134a                  | R404A, R507 | R22, R407C, R410A | R134a, R507            |      | R404A |      | R22, R407C, R410A |      |
|             |         |                 |           |        |        |         |                        |             |                   | 75°F                   | 125° | 75°F  | 125° | 75°F              | 125° |
| A 17388     | HPF-083 | 8               | 3/8       | 6.30   | 2.30   | 1.50    | 2.1                    | 1.5         | 2.3               | 18                     | 17   | 17    | 16   | 17                | 15   |
| A 17390     | HPF-163 | 16              | 3/8       | 6.70   | 3.10   | 1.75    | 5.1                    | 3.7         | 5.7               | 34                     | 31   | 32    | 29   | 32                | 29   |
| A 17983     | HPF-164 | 16              | 1/2       | 7.00   | 3.10   | 2.23    | 8.0                    | 5.7         | 9.1               | 34                     | 31   | 32    | 29   | 32                | 29   |
| A 17984     | HPF-165 | 16              | 5/8       | 7.30   | 3.10   | 2.18    | 10.6                   | 8.3         | 11.4              | 34                     | 31   | 32    | 29   | 32                | 29   |

### Solder Connection



| Part Number | Model   | Dessicant Cu In | Size (in) | A (in) | B (in) | Wt (lb) | Liquid Capacity (tons) |             |                   | Water Capacity (drops) |      |       |      |                   |      |
|-------------|---------|-----------------|-----------|--------|--------|---------|------------------------|-------------|-------------------|------------------------|------|-------|------|-------------------|------|
|             |         |                 |           |        |        |         | R134a                  | R404A, R507 | R22, R407C, R410A | R134a, R507            |      | R404A |      | R22, R407C, R410A |      |
|             |         |                 |           |        |        |         |                        |             |                   | 75°F                   | 125° | 75°F  | 125° | 75°F              | 125° |
| A 17389     | HPS-083 | 8               | 3/8       | 4.80   | 2.30   | 1.50    | 2.1                    | 1.5         | 2.3               | 18                     | 17   | 17    | 16   | 17                | 15   |
| A 17391     | HPS-163 | 16              | 3/8       | 5.20   | 3.10   | 1.95    | 5.1                    | 3.7         | 5.7               | 34                     | 31   | 32    | 29   | 32                | 29   |
| A 17392     | HPS-164 | 16              | 1/2       | 5.20   | 3.10   | 1.75    | 8.0                    | 5.7         | 9.1               | 34                     | 31   | 32    | 29   | 32                | 29   |
| A 17985     | HPS-165 | 16              | 5/8       | 5.40   | 3.10   | 1.96    | 10.6                   | 8.3         | 11.4              | 34                     | 31   | 32    | 29   | 32                | 29   |

# DRYMASTER® Filter Driers

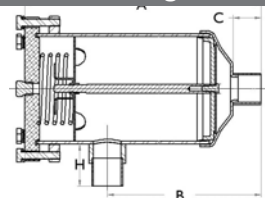
## Replaceable Core Shells



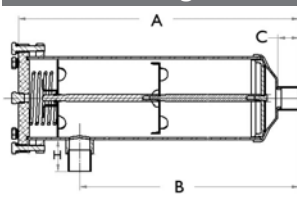
### Features:

- For use in liquid and suction lines
- Compatible with all fluorinated refrigerants
- Powder coat withstands 500 hour salt spray per ASTM B 117
- Pressure rating of 775 psi
- UL/cUL Listed and CE certified
- RoHS compliant
- Slotted Aluminum lid for ease of assembly
- Stainless Steel bolts and brass plug
- O-ring seal for ease of assembly and removal
- Replacement o-ring and carriage kits available
- Maximum Working Temperature: 160°F, 70°C

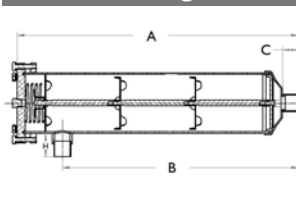
Drawing A



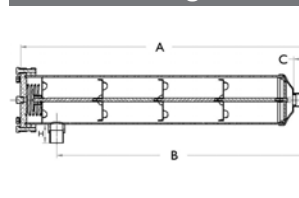
Drawing B



Drawing C



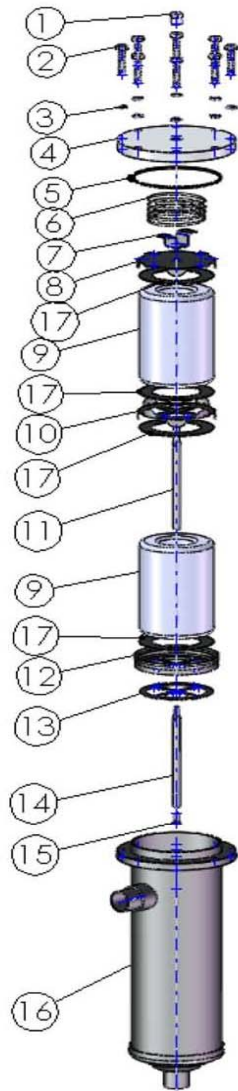
Drawing D



| Part Number | Model | Size (in) | Core Size Cu In | A (in) | B (in) | C (in) | H (in) | Wt (lb) | Drawing | Liquid Capacity (tons) |       |      |           |       | Recommended Spacing for clearance to install components (in) |
|-------------|-------|-----------|-----------------|--------|--------|--------|--------|---------|---------|------------------------|-------|------|-----------|-------|--------------------------------------------------------------|
|             |       |           |                 |        |        |        |        |         |         | R134a                  | R404A | R507 | R22/R407C | R410A |                                                              |
| A 18583     |       | 5/8       | 48              | 9.33   | 5.98   | 0.87   | 1.46   | 8.51    | A       | 22.0                   | 16.0  | 16.0 | 23.10     | 23.6  | 9.0                                                          |
| A 18584     |       | 7/8       | 48              | 9.53   | 6.18   | 1.06   | 1.65   | 8.57    | A       | 37.3                   | 26.7  | 26.0 | 39.4      | 40.0  | 9.0                                                          |
| A 18585     |       | 1 1/8     | 48              | 9.61   | 6.26   | 1.14   | 1.73   | 8.64    | A       | 52.8                   | 37.9  | 37.0 | 56.20     | 57.0  | 9.0                                                          |
| A 18586     |       | 1 3/8     | 48              | 9.72   | 6.38   | 1.26   | 1.85   | 8.77    | A       | 73.1                   | 52.3  | 52.0 | 77.4      | 78.6  | 9.0                                                          |
| A 18587     |       | 1 5/8     | 48              | 9.80   | 6.46   | 1.34   | 1.93   | 8.80    | A       | 83.9                   | 60.7  | 60.0 | 89.8      | 91.4  | 9.0                                                          |
| A 18588     |       | 2 1/8     | 48              | 10.08  | 6.34   | 1.65   | 2.24   | 9.14    | A       | 124.1                  | 92.6  | 90.0 | 131.3     | 137.3 | 9.0                                                          |
| A 18664     |       | 2 5/8     | 48              | 10.30  | 6.24   | 2.17   | 2.36   | 11.46   | A       | 91.5                   | 67.0  | 65.0 | 95.6      | 99.1  | 9.0                                                          |
| A 18589     |       | 7/8       | 96              | 15.24  | 11.89  | 1.06   | 1.65   | 17.55   | B       | 38.1                   | 27.2  | 27.0 | 40.1      | 40.6  | 14.0                                                         |
| A 18590     |       | 1 1/8     | 96              | 15.32  | 11.97  | 1.14   | 1.73   | 11.62   | B       | 59.6                   | 43.0  | 42.0 | 63.4      | 64.2  | 14.0                                                         |
| A 18591     |       | 1 3/8     | 96              | 15.43  | 12.09  | 1.26   | 1.85   | 17.55   | B       | 77.1                   | 55.2  | 54.0 | 81.9      | 83.0  | 14.0                                                         |
| A 18592     |       | 1 5/8     | 96              | 15.51  | 12.17  | 1.34   | 1.93   | 17.55   | B       | 93.4                   | 66.9  | 66.0 | 99.2      | 100.9 | 14.0                                                         |
| A 18593     |       | 2 1/8     | 96              | 15.75  | 12.05  | 1.65   | 2.24   | 17.55   | B       | 136.3                  | 99.7  | 97.0 | 142.3     | 147.6 | 14.0                                                         |
| A 18665     |       | 2 5/8     | 96              | 16.00  | 11.95  | 2.17   | 2.36   | 17.55   | B       |                        |       |      |           |       |                                                              |
| A 18604     |       | 1 1/8     | 144             | 20.63  | 17.28  | 1.14   | 1.73   | 20.08   | C       | 59.3                   | 42.5  | 42.0 | 63.2      | 64.0  | 19.5                                                         |
| A 18605     |       | 1 3/8     | 144             | 20.75  | 17.40  | 1.26   | 1.85   | 14.35   | C       | 84.9                   | 60.6  | 60.0 | 90.3      | 91.6  | 19.5                                                         |
| A 18606     |       | 1 5/8     | 144             | 20.83  | 17.48  | 1.34   | 1.93   | 20.08   | C       | 95.1                   | 68.3  | 67.0 | 101       | 102.6 | 19.5                                                         |
| A 18607     |       | 2 1/8     | 144             | 21.10  | 17.36  | 1.65   | 2.24   | 20.08   | C       | 118.2                  | 85.1  | 84.0 | 125.9     | 128.3 | 19.5                                                         |
| A 18608     |       | 1 3/8     | 192             | 26.69  | 23.35  | 1.26   | 1.85   | 22.60   | D       | 88.4                   | 63.7  | 63.0 | 94.2      | 95.7  | 25.0                                                         |
| A 18609     |       | 1 5/8     | 192             | 26.77  | 23.43  | 1.34   | 1.93   | 22.60   | D       | 102.9                  | 74.4  | 73.0 | 110       | 111.8 | 25.0                                                         |
| A 18610     |       | 2 1/8     | 192             | 27.01  | 23.31  | 1.65   | 2.24   | 17.70   | D       | 128.7                  | 92.3  | 91.0 | 136.4     | 138.8 | 25.0                                                         |

# DRYMASTER® Filter Driers

## Replaceable Core Shells



| Position | Description                 |
|----------|-----------------------------|
| 1        | Pipe Plug (1/4" NPTF)       |
| 2        | Bolts 8 x 1.25              |
| 3        | Lock Washer                 |
| 4        | Lid                         |
| 5        | Lid O-Ring                  |
| 6        | Spring                      |
| 7        | Wing Nut                    |
| 8        | Inlet Plate                 |
| 9        | Core / Filter Element       |
| 10       | Separator Plate             |
| 11       | Plate Connecting Rod        |
| 12       | Screen Plate                |
| 13       | Outlet Plate                |
| 14       | Outlet Plate Connecting Rod |
| 15       | Outlet Bolt                 |
| 16       | Filter Drier Shell          |
| 17       | Gasket or Felt              |

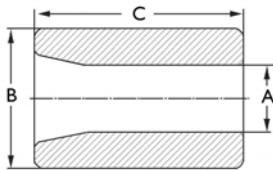
| Part Number | Replacement Kits     | Components                      |
|-------------|----------------------|---------------------------------|
| A 18715     | Single Core Carriage | 6, 7, 8, 10, 11, 12, 13, 15     |
| A 18716     | 2 Core Carriage      | 6, 7, 8, 10, 11, 12, 13, 14, 15 |
| A 18717     | 3 Core Carriage      | 6, 7, 8, 10, 11, 12, 13, 14, 15 |
| A 18718     | 4 Core Carriage      | 6, 7, 8, 10, 11, 12, 13, 14, 15 |
| A 18719     | Hardware Kit         | 1, 2 (8 each), 3 (8 each)       |
| A 18734     | Lid O-ring Kit       | 5 (20 each)                     |

# DRYMASTER® Cores and Filters



## Charcoal Core

- Wax removal
- Liquid or suction line applications



## High Capacity Core

- High drying capacity
- Liquid or suction line applications



## Suction Core

- High acid adsorption
- Liquid or suction line applications



## Suction Line Filter

- Filter solid contaminants
- Low pressure drop
- Bi-directional

### Charcoal Core

| Part Number | Size Cu In | A (in) | B (in) | C (in) | Wt (lb) | Water Capacity (drops) |       |       |       |      |       |      |       |       |       |       |       |
|-------------|------------|--------|--------|--------|---------|------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|
|             |            |        |        |        |         | R134a                  |       | R404A |       | R507 |       | R22  |       | R407C |       | R410A |       |
|             |            |        |        |        |         | 75°F                   | 125°F | 75°F  | 125°F | 75°F | 125°F | 75°F | 125°F | 75°F  | 125°F | 75°F  | 125°F |
| P 37267     | 48         | 1.77   | 3.70   | 5.51   | 1.50    | 533                    | 414   | 551   | 414   | 497  | 347   | 497  | 347   | 364   | 231   | 339   | 186   |

Water capacity data rated according to AHRI 710 standards.

### High Capacity Core

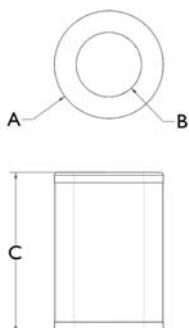
| Part Number | Size Cu In | A (in) | B (in) | C (in) | Wt (lb) | Water Capacity (drops) |       |       |       |      |       |      |       |       |       |       |       |
|-------------|------------|--------|--------|--------|---------|------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|
|             |            |        |        |        |         | R134a                  |       | R404A |       | R507 |       | R22  |       | R407C |       | R410A |       |
|             |            |        |        |        |         | 75°F                   | 125°F | 75°F  | 125°F | 75°F | 125°F | 75°F | 125°F | 75°F  | 125°F | 75°F  | 125°F |
| P 36818     | 48         | 1.77   | 3.70   | 5.51   | 1.68    | 1584                   | 1402  | 1671  | 1517  | 1456 | 1276  | 1456 | 1276  | 1326  | 1012  | 1084  | 889   |
| P 36818 (2) | 96         | 1.77   | 3.70   | 5.51   |         | 3169                   | 2798  | 3342  | 3034  | 2912 | 2552  | 2912 | 2552  | 2651  | 2024  | 2169  | 1778  |
| P 36818 (3) | 144        | 1.77   | 3.70   | 5.51   |         | 4753                   | 4204  | 5014  | 4554  | 4368 | 3828  | 4368 | 3828  | 3977  | 3035  | 3254  | 2667  |
| P 36818 (4) | 192        | 1.77   | 3.70   | 5.51   |         | 6337                   | 5606  | 6685  | 6068  | 5824 | 5104  | 5824 | 5104  | 5303  | 4047  | 4338  | 3553  |

Water capacity data rated according to AHRI 710 standards.

### Suction Core

| Part Number | Size Cu In | A (in) | B (in) | C (in) | Wt (lb) | Water Capacity (drops) |       |       |       |      |       |      |       |       |       |       |       |
|-------------|------------|--------|--------|--------|---------|------------------------|-------|-------|-------|------|-------|------|-------|-------|-------|-------|-------|
|             |            |        |        |        |         | R134a                  |       | R404A |       | R507 |       | R22  |       | R407C |       | R410A |       |
|             |            |        |        |        |         | 75°F                   | 125°F | 75°F  | 125°F | 75°F | 125°F | 75°F | 125°F | 75°F  | 125°F | 75°F  | 125°F |
| P 37266     | 48         | 1.77   | 3.70   | 5.51   | 1.82    | 587                    | 466   | 605   | 462   | 534  | 384   | 534  | 384   | 397   | 263   | 358   | 194   |

Water capacity data rated according to AHRI 710 standards.



### Suction Line Filter

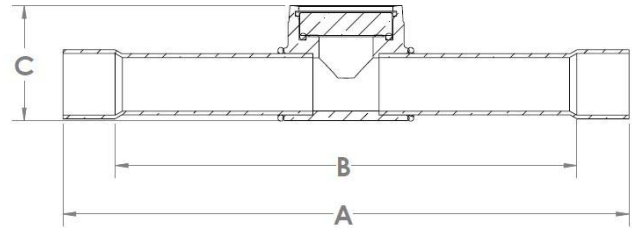
| Part Number | Size Cu In | A (in) | B (in) | C (in) | Wt (lb) | Filtration |
|-------------|------------|--------|--------|--------|---------|------------|
|             |            |        |        |        |         |            |
| A 18733C    | 48         | 3.75   | 2.40   | 5.58   | 3.08    | 10 microns |

# Sight Glass/ Moisture Indicators

## Hermetically Sealed, Solder x Solder Extended Tube

### Features:

- Maximum abnormal pressure (MAP): Charted Below
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Solid Brass construction, hermetically sealed
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions

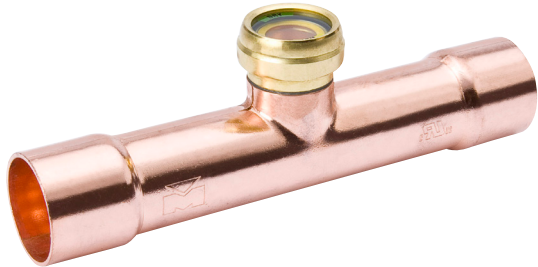


| Part Number | Size |    | A    |     | B    |     | C    |    | MAP  |     | Wt   |      |
|-------------|------|----|------|-----|------|-----|------|----|------|-----|------|------|
|             | in   | mm | in   | mm  | in   | mm  | in   | mm | psig | bar | lb   | kg   |
| A 18114     | 1/4  | 6  | 4.79 | 122 | 4.20 | 107 | 0.91 | 23 | 1305 | 90  | 0.16 | 0.07 |
| A 18115     | 3/8  | 10 | 4.58 | 116 | 3.86 | 98  | 0.91 | 23 | 1305 | 90  | 0.16 | 0.07 |
| A 18116     | 1/2  | 13 | 5.75 | 146 | 2.02 | 51  | 1.17 | 30 | 775  | 53  | 0.27 | 0.12 |
| A 18117     | 5/8  | 17 | 5.75 | 146 | 4.69 | 119 | 1.17 | 30 | 775  | 53  | 0.27 | 0.12 |
| A 18118     | 3/4  | 19 | 6.44 | 164 | 5.14 | 131 | 1.49 | 38 | 775  | 53  | 0.45 | 0.21 |
| A 18119     | 7/8  | 22 | 6.44 | 164 | 4.88 | 124 | 1.49 | 38 | 775  | 53  | 0.47 | 0.21 |

| HFC and HCFC<br>Refrigerants | Moisture Content PPM    |            |                          |            |
|------------------------------|-------------------------|------------|--------------------------|------------|
|                              | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                              | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                          | 5                       | 20         | 10                       | 35         |
| R22                          | 30                      | 125        | 45                       | 185        |
| R134a                        | 35                      | 110        | 45                       | 175        |
| R404A                        | 20                      | 75         | 25                       | 130        |
| R407C                        | 30                      | 145        | 55                       | 230        |
| R410a                        | 75                      | 165        | 45                       | 300        |
| R502                         | 10                      | 45         | 20                       | 65         |
| R507                         | 15                      | 75         | 30                       | 140        |

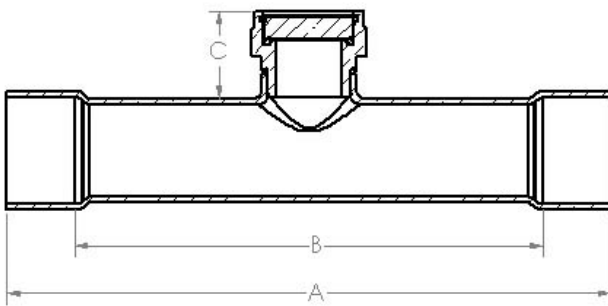
# Sight Glass/ Moisture Indicators

Hermetically Sealed, Copper Body, Solder x Solder



## Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



| Part Number | Size  |    | A    |     | B    |     | C    |    | Wt   |      |
|-------------|-------|----|------|-----|------|-----|------|----|------|------|
|             | in    | mm | in   | mm  | in   | mm  | in   | mm | lb   | kg   |
| A 18120     | 1 1/8 | 29 | 6.30 | 160 | 4.49 | 114 | 0.98 | 25 | 0.59 | 0.27 |
| A 18121     | 1 3/8 | 35 | 7.87 | 200 | 5.95 | 151 | 0.98 | 25 | 0.75 | 0.34 |
| A 18122     | 1 5/8 | 41 | 7.87 | 200 | 5.71 | 145 | 0.98 | 25 | 1.01 | 0.46 |
| A 18123     | 2 1/8 | 54 | 7.87 | 200 | 5.20 | 132 | 0.98 | 25 | 1.40 | 0.64 |

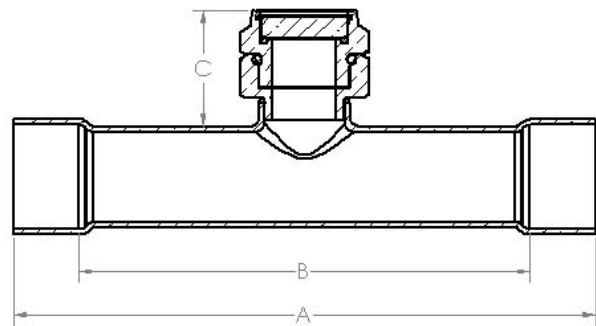
| Moisture Content PPM      |                         |            |                          |            |
|---------------------------|-------------------------|------------|--------------------------|------------|
| HFC and HCFC Refrigerants | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                           | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                       | 5                       | 20         | 10                       | 35         |
| R22                       | 30                      | 125        | 45                       | 185        |
| R134a                     | 35                      | 110        | 45                       | 175        |
| R404A                     | 20                      | 75         | 25                       | 130        |
| R407C                     | 30                      | 145        | 55                       | 230        |
| R410a                     | 75                      | 165        | 45                       | 300        |
| R502                      | 10                      | 45         | 20                       | 65         |
| R507                      | 15                      | 75         | 30                       | 140        |

# Sight Glass/ Moisture Indicators

## Replaceable Element, Copper Body, Solder x Solder

### Features:

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



| Part Number | Size  |    | A    |     | B    |     | C    |    | Wt   |      |
|-------------|-------|----|------|-----|------|-----|------|----|------|------|
|             | in    | mm | in   | mm  | in   | mm  | in   | mm | lb   | kg   |
| A 18124     | 1 1/8 | 29 | 6.30 | 160 | 4.49 | 114 | 1.26 | 32 | 0.67 | 0.30 |
| A 18125     | 1 3/8 | 35 | 7.87 | 200 | 5.95 | 151 | 1.26 | 32 | 0.67 | 0.30 |
| A 18126     | 1 5/8 | 41 | 7.87 | 200 | 5.71 | 145 | 1.26 | 32 | 0.67 | 0.30 |
| A 18127     | 2 1/8 | 54 | 7.87 | 200 | 5.20 | 132 | 1.26 | 32 | 0.67 | 0.30 |

| HFC and HCFC<br>Refrigerants | Moisture Content PPM    |            |                          |            |
|------------------------------|-------------------------|------------|--------------------------|------------|
|                              | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                              | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                          | 5                       | 20         | 10                       | 35         |
| R22                          | 30                      | 125        | 45                       | 185        |
| R134a                        | 35                      | 110        | 45                       | 175        |
| R404A                        | 20                      | 75         | 25                       | 130        |
| R407C                        | 30                      | 145        | 55                       | 230        |
| R410a                        | 75                      | 165        | 45                       | 300        |
| R502                         | 10                      | 45         | 20                       | 65         |
| R507                         | 15                      | 75         | 30                       | 140        |

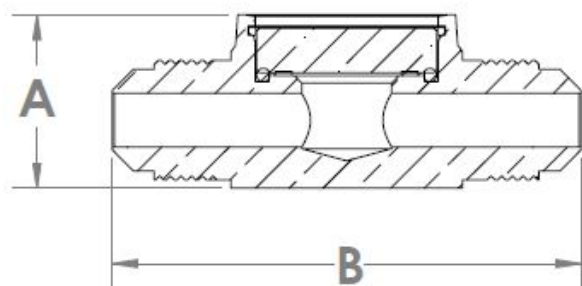
# Sight Glass/ Moisture Indicators

Hermetically Sealed, Flare x Flare



## Features:

- Maximum abnormal pressure (MAP): 1305 psig, 90 bar
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Solid Brass construction, hermetically sealed
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



| Part Number | Size |    | A    |    | Thread     | B    |    | Wt   |      |
|-------------|------|----|------|----|------------|------|----|------|------|
|             | in   | mm | in   | mm |            | in   | mm | lb   | kg   |
| A 18101     | 1/4  | 6  | 0.90 | 23 | 7/16-20UNF | 2.22 | 56 | 0.18 | 0.08 |
| A 18102     | 3/8  | 10 | 0.90 | 23 | 5/8-18 UNF | 2.45 | 62 | 0.21 | 0.10 |
| A 18103     | 1/2  | 13 | 1.26 | 32 | 3/4-16 UNF | 2.74 | 70 | 0.39 | 0.18 |
| A 18104     | 5/8  | 17 | 1.26 | 32 | 7/8-14 UNF | 3.00 | 76 | 0.43 | 0.20 |

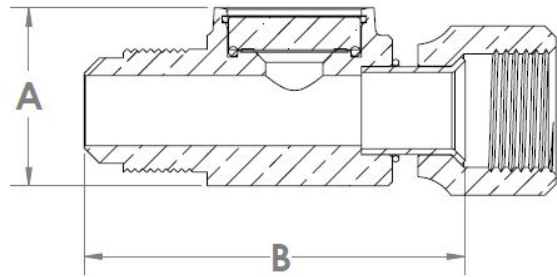
| Moisture Content PPM      |                         |            |                          |            |
|---------------------------|-------------------------|------------|--------------------------|------------|
| HFC and HCFC Refrigerants | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                           | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                       | 5                       | 20         | 10                       | 35         |
| R22                       | 30                      | 125        | 45                       | 185        |
| R134a                     | 35                      | 110        | 45                       | 175        |
| R404A                     | 20                      | 75         | 25                       | 130        |
| R407C                     | 30                      | 145        | 55                       | 230        |
| R410a                     | 75                      | 165        | 45                       | 300        |
| R502                      | 10                      | 45         | 20                       | 65         |
| R507                      | 15                      | 75         | 30                       | 140        |

# Sight Glass/ Moisture Indicators

## Hermetically Sealed, Flare x Swivel

### Features:

- Maximum abnormal pressure (MAP): 1305 psig, 90 bar
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Solid Brass construction, hermetically sealed
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



| Part Number | Size |    | A    |    | B    |    | Wt   |      |
|-------------|------|----|------|----|------|----|------|------|
|             | in   | mm | in   | mm | in   | mm | lb   | kg   |
| A 18110     | 1/4  | 6  | 0.90 | 23 | 2.18 | 55 | 0.20 | 0.09 |
| A 18111     | 3/8  | 10 | 0.90 | 23 | 2.43 | 62 | 0.25 | 0.11 |
| A 18112     | 1/2  | 13 | 1.26 | 32 | 2.52 | 64 | 0.43 | 0.20 |
| A 18113     | 5/8  | 17 | 1.26 | 32 | 2.72 | 69 | 0.49 | 0.22 |

| HFC and HCFC<br>Refrigerants | Moisture Content PPM    |            |                          |            |
|------------------------------|-------------------------|------------|--------------------------|------------|
|                              | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                              | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                          | 5                       | 20         | 10                       | 35         |
| R22                          | 30                      | 125        | 45                       | 185        |
| R134a                        | 35                      | 110        | 45                       | 175        |
| R404A                        | 20                      | 75         | 25                       | 130        |
| R407C                        | 30                      | 145        | 55                       | 230        |
| R410a                        | 75                      | 165        | 45                       | 300        |
| R502                         | 10                      | 45         | 20                       | 65         |
| R507                         | 15                      | 75         | 30                       | 140        |

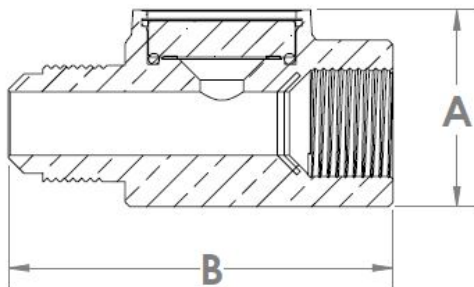
# Sight Glass/ Moisture Indicators

Hermetically Sealed, M x F Flare



## Features:

- Maximum abnormal pressure (MAP): 1305 psig, 90 bar
- Continuous operating temperature (COT): -40°F/185°F, -40°C/85°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Recognized, Conforms to Pressure Equipment Directive 97/23/EC
- Solid Brass construction, hermetically sealed
- Designed for maximum flow and minimum pressure drop
- Large viewing window and indicator for better visibility
- Provides accurate identification of system conditions



| Part Number | Size |    | A    |    | Thread      | B    |    | Wt   |      |
|-------------|------|----|------|----|-------------|------|----|------|------|
|             | in   | mm | in   | mm |             | in   | mm | lb   | kg   |
| A 18106     | 1/4  | 6  | 0.90 | 23 | 7/16-20 UNF | 2.02 | 51 | 0.17 | 0.08 |
| A 18107     | 3/8  | 10 | 1.26 | 32 | 5/8-18 UNF  | 2.25 | 57 | 0.40 | 0.18 |
| A 18108     | 1/2  | 13 | 1.26 | 32 | 3/4-16 UNF  | 2.47 | 63 | 0.39 | 0.18 |

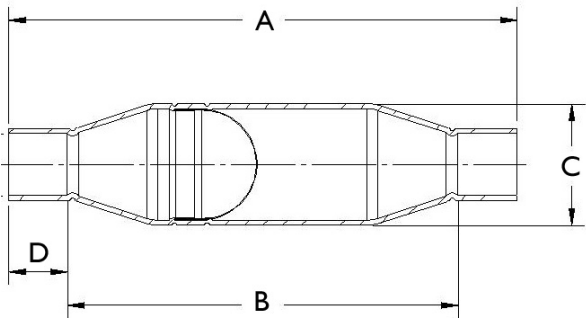
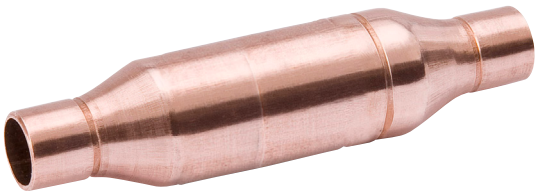
| Moisture Content PPM      |                         |            |                          |            |
|---------------------------|-------------------------|------------|--------------------------|------------|
| HFC and HCFC Refrigerants | 75°F Liquid Refrigerant |            | 100°F Liquid Refrigerant |            |
|                           | Green/Dry               | Yellow/Wet | Green/Dry                | Yellow/Wet |
| R12                       | 5                       | 20         | 10                       | 35         |
| R22                       | 30                      | 125        | 45                       | 185        |
| R134a                     | 35                      | 110        | 45                       | 175        |
| R404A                     | 20                      | 75         | 25                       | 130        |
| R407C                     | 30                      | 145        | 55                       | 230        |
| R410a                     | 75                      | 165        | 45                       | 300        |
| R502                      | 10                      | 45         | 20                       | 65         |
| R507                      | 15                      | 75         | 30                       | 140        |

# Strainers

## Copper Inline, Solder

**Features:**

- Maximum abnormal pressure (MAP): 700 psig, 48 bar
- Continuous operating temperature (COT): -40°F/300°F, -40°C/149°C
- Compatible with all CFC, HCFC and HFC refrigerants and oils
- UL/cUL Listed, Conforms to Pressure Equipment Directive 97/23/EC



| Part Number | Size |     | A    |    | B    |    | C    |    | D    |    | Internal Assembly Volume | Screen Mesh | Screen Area | Filtration Capacity | Wt   |      |
|-------------|------|-----|------|----|------|----|------|----|------|----|--------------------------|-------------|-------------|---------------------|------|------|
|             | in   | mm  | in   | mm | in   | mm | in   | mm | in   | mm |                          |             |             |                     | lb   | kg   |
| A 18025     | 3/8  | 3/8 | 3.12 | 79 | 2.50 | 64 | 0.75 | 19 | 0.31 | 8  | 0.79                     | 100         | .4          | 175                 | 0.06 | 0.03 |

# 45° Flare Fittings



## Features:

- Recommended Maximum abnormal pressure (MAP): 700 psig, 48 bar
- In conformance with Refrigeration Fitting Standards SAE J513, Military Standards MS-35867 through MS-35873 inclusive, MS-35919, MS-24815 and MS-16993
- Fabricated from brass forgings or drawn brass rod eliminating the possibility of seepage by porosity
- Accurately machined and fully protected against damage during shipping, handling and storage to assure tight leak-proof joints
- Smooth interior finish provides unrestricted flow and reduced pressure drop

Tees are described by first sizing the run (1 to 2) and then the branch (3).



The letter in the first position of the catalog number is derived from the name of the fitting. Examples:

B - Bonnets  
U - Unions  
T - Tees  
N - Nuts  
E - Elbows  
F - Fuse Plugs

The numeral in the second position of the catalog number designates the combination of threads on the fitting.

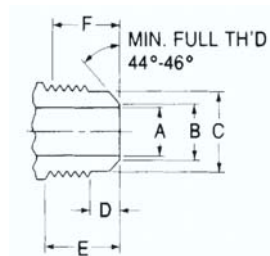
4 - Forged Nut  
1 - External Pipe Thread (U1, E1, T1)  
2 - Flare to Flare Fitting (U2, E2, T2)

Indicators preceding the numeral in the second position of the catalog number designate the following:

R - Internal pipe to flare fitting (excludes tees)  
S - Short (forged nuts)  
R - Reducing flare nut (forged nuts)  
R - Pipe thread to flare on the run (tees)

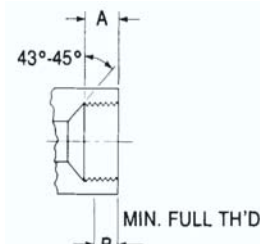
The last two characters in the catalog number designate the size. (Flare sizes are designated by numerals, pipe sizes are designated by letters.)

|          |         |
|----------|---------|
| 3 - 3/16 | A - 1/8 |
| 4 - 1/4  | B - 1/4 |
| 5 - 5/16 | C - 3/8 |
| 6 - 3/8  | D - 1/2 |
| 8 - 1/2  | E - 3/4 |
| 10 - 5/8 | F - 1   |
| 12 - 3/4 |         |



## External Flare:

| Size | A (in) | B (in) | C (in) | D (in) | E (in) | Min Rull Thread F (in) | Size Thread |
|------|--------|--------|--------|--------|--------|------------------------|-------------|
| 3/16 | 0.13   | 0.16   | 0.30   | 0.13   | 0.44   | 0.43                   | 3/8 - 24    |
| 1/4  | 0.19   | 0.22   | 0.34   | 0.16   | 0.50   | 0.41                   | 7/16 - 20   |
| 5/16 | 0.22   | 0.25   | 0.41   | 0.19   | 0.56   | 0.47                   | 1/2 - 20    |
| 3/8  | 0.28   | 0.31   | 0.53   | 0.22   | 0.53   | 0.53                   | 5/8 - 18    |
| 1/2  | 0.41   | 0.44   | 0.64   | 0.25   | 0.75   | 0.66                   | 3/4 - 16    |
| 5/8  | 0.50   | 0.53   | 0.75   | 0.28   | 0.88   | 0.75                   | 7/8 - 14    |
| 3/4  | 0.63   | 0.72   | 0.94   | 0.28   | 1.00   | 0.91                   | 1 1/16 - 14 |

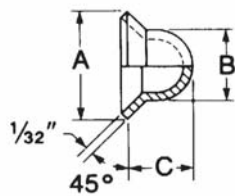


## Internal Flare:

| Size | A (in) | Min Rull Thread F (in) | Size Thread |
|------|--------|------------------------|-------------|
| 3/16 | 0.28   | 0.22                   | 3/8 - 24    |
| 1/4  | 0.34   | 0.27                   | 7/16 - 20   |
| 5/16 | 0.38   | 0.30                   | 1/2 - 20    |
| 3/8  | 0.44   | 0.34                   | 5/8 - 18    |
| 1/2  | 0.53   | 0.44                   | 3/4 - 16    |
| 5/8  | 0.66   | 0.55                   | 7/8 - 14    |
| 3/4  | 0.78   | 0.67                   | 1 1/16 - 14 |

# 45° Flare Fittings

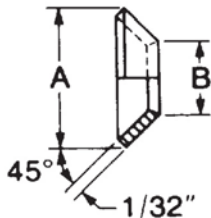
## Copper Flare Bonnets and Gaskets



**Copper Flare Seal Bonnets**

**Copper Flare Seal Bonnets**

| Cat Number | Part Number | Size Flare | A (in) | B (in) * | C (in) | Box Qty | Wt(lb) |
|------------|-------------|------------|--------|----------|--------|---------|--------|
| B1-3       | A 04737     | 3/16       | 0.31   | 0.16     | 0.16   | 25      | 0.001  |
| B1-4       | A 00414     | 1/4        | 0.36   | 0.22     | 0.22   | 100     | 0.001  |
| B1-5       | A 04935     | 5/16       | 0.42   | 0.28     | 0.28   | 50      | 0.004  |
| B1-6       | A 00415     | 3/8        | 0.55   | 0.36     | 0.34   | 100     | 0.005  |
| B1-8       | A 00416     | 1/2        | 0.66   | 0.47     | 0.41   | 100     | 0.007  |
| B1-10      | A 00485     | 5/8        | 0.77   | 0.61     | 0.44   | 20      | 0.010  |
| B1-12      | A 04738     | 3/4        | 0.95   | 0.72     | 0.56   | 25      | 0.015  |



**Copper Flare Gaskets**

**Copper Flare Gaskets**

| Cat Number | Part Number | Size Flare | A (in) | B (in) * | C (in) | Box Qty | Wt(lb) |
|------------|-------------|------------|--------|----------|--------|---------|--------|
| B2-4       | A 00401     | 1/4        | 0.36   | 0.19     |        | 100     | 0.001  |
| B2-5       | A 04811     | 5/16       | 0.42   | 0.22     |        | 50      | 0.017  |
| B2-6       | A 00402     | 3/8        | 0.55   | 0.28     |        | 100     | 0.002  |
| B2-8       | A 00403     | 1/2        | 0.66   | 0.41     |        | 100     | 0.002  |
| B2-10      | A 05186     | 5/8        | 0.77   | 0.50     |        | 50      | 0.003  |
| B2-12      | A 04822     | 3/4        | 0.95   | 0.63     |        | 25      | 0.005  |

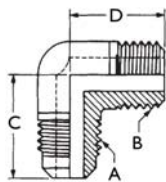
\* C Dimension: Copper Flare Seal Bonnet +/- 1/64

# 45° Flare Fittings

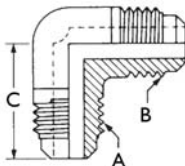
## 90° Elbows



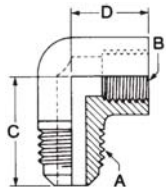
Half Union - Flare to NPTFE



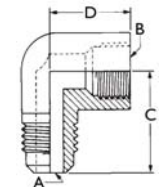
Union - Flare to Flare



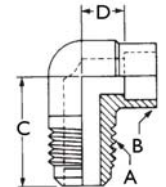
External Flare to NPTFI



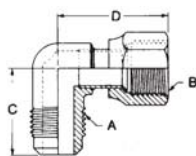
External FI to Internal FI



Half Union - Flare to Solder



Ext FI to Int FI Swivel



### Half Union - Flare to NPTFE

| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| E1-4A      | A 00335     | 1/4          | 1/8    | 0.94   | 0.78   | 25      | 0.040  |
| E1-4B      | A 04890     | 1/4          | 1/4    | 0.91   | 0.94   | 25      | 0.055  |
| E1-4C      | A 04812     | 1/4          | 3/8    | 0.94   | 1.03   | 25      | 0.082  |
| E1-6A      | A 04937     | 3/8          | 1/8    | 1.03   | 0.91   | 25      | 0.080  |
| E1-6B      | A 00337     | 3/8          | 1/4    | 1.06   | 1.06   | 25      | 0.077  |
| E1-6C      | A 04889     | 3/8          | 3/8    | 1.06   | 1.09   | 25      | 0.108  |
| E1-6D      | A 04886     | 3/8          | 1/2    | 1.13   | 1.34   | 25      | 0.160  |
| E1-8B      | A 05044     | 1/2          | 1/4    | 1.22   | 1.19   | 10      | 0.135  |
| E1-8C      | A 00339     | 1/2          | 3/8    | 1.22   | 1.13   | 15      | 0.140  |
| E1-8D      | A 04887     | 1/2          | 1/2    | 1.28   | 1.38   | 15      | 0.180  |
| E1-8E      | A 05072     | 1/2          | 3/4    | 1.34   | 1.38   | 10      | 0.231  |
| E1-10C     | A 04856     | 5/8          | 3/8    | 1.47   | 1.25   | 10      | 0.225  |
| E1-10D     | A 04538     | 5/8          | 1/2    | 1.47   | 1.44   | 10      | 0.240  |
| E1-10E     | A 05054     | 5/8          | 3/4    | 1.47   | 1.50   | 10      | 0.255  |

### Union - Flare to Flare

| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| E2-4       | A 00147     | 1/4          | 1/4    | 0.91   |        | 25      | 0.074  |
| E2-6       | A 00146     | 3/8          | 3/8    | 1.06   |        | 25      | 0.095  |
| E2-8       | A 00145     | 1/2          | 1/2    | 1.22   |        | 15      | 0.150  |
| E2-10      | A 04539     | 5/8          | 5/8    | 1.47   |        | 10      | 0.250  |

### External Flare to NPTFI

| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| E3-4A      | A 04630     | 1/4          | 1/8    | 0.91   | 0.91   | 25      | 0.050  |
| E3-4B      | A 05007     | 1/4          | 1/4    | 1.06   | 0.66   | 25      | 0.140  |

### External Flare to Internal Flare

| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| E4-44      | A 04898 *   | 1/4          | 1/4    | 0.94   | 0.88   | 25      | 0.065  |
| E4-66      | A 08082 *   | 3/8          | 3/8    | 1.22   | 1.06   | 25      | 0.170  |

### Half Union - Flare to Solder

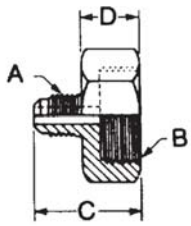
| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| ES2-44     | A 03449     | 1/4          | 1/4    | 0.84   | 0.36   | 25      | 0.035  |
| ES2-66     | A 03511     | 3/8          | 3/8    | 1.08   | 0.47   | 20      | 0.081  |
| ES2-88     | A 07851     | 1/2          | 1/2    | 1.22   | 0.47   | 10      | 0.120  |

### External Flare to Internal Flare Swivel

| Cat Number | Part Number | Flare A (in) | B (in) | C (in) | D (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| ES4-44     | A 15940     | 1/4          | 1/4    | 0.91   | 1.25   | 4       | 0.103  |
| ES4-66     | A 15941     | 3/8          | 3/8    | 1.08   | 1.42   | 4       | 0.133  |
| ES4-88     | A 15943     | 1/2          | 1/2    | 1.22   | 1.53   | 4       | 0.202  |

# 45° Flare Fittings

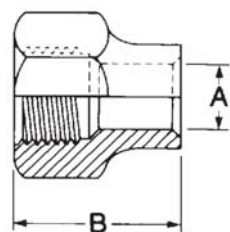
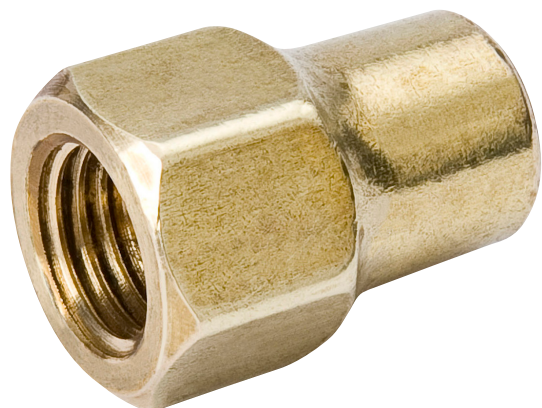
## Adaptors



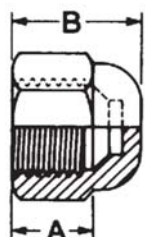
| Refrigerant Drum Adapters |             |                 |                  |        |        |       |            |        |                       |
|---------------------------|-------------|-----------------|------------------|--------|--------|-------|------------|--------|-----------------------|
| Cat Number                | Part Number | Flare<br>A (in) | NPSM<br>B (in) * | C (in) | D (in) | Hex   | Box<br>Qty | Wt(lb) | Replacement<br>Gasket |
| K1-1                      | A 08073     | 1/4             | 3/4              | 1.13   | 0.44   | 1 1/4 | 10         | 0.159  | A 08074               |
| K1-3                      | A 08274     | 3/8             | 3/4              | 1.25   | 0.44   | 1 1/4 | 10         | 0.187  | A 08074               |
| K1-5                      | A 08276     | 1/2             | 3/4              | 1.38   | 0.44   | 1 1/4 | 10         | 0.194  | A 08074               |
| K1-8                      | A 08166     | 1/4             | 1/2              | 1.13   | 0.44   | 1 1/8 | 10         | 0.148  | A 08167               |

# 45° Flare Fittings

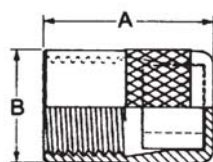
## Nuts



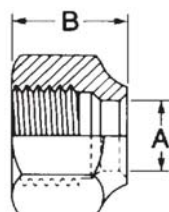
Long Forged Nuts



Flare Seal Cap



Flare Seal Cap  
Finger Tightening



Short Forged

### Long Forged Nuts

| Cat Number | Part Number | Flare A (in) | Size Tube | Hex    | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-----------|--------|--------|--------|---------|--------|
| N4-4       | A 00440     | 1/4          | 1/4       | 5/8    | 0.26   | 0.94   | 25      | 0.048  |
| N4-6       | A 00441     | 3/8          | 3/8       | 13/16  | 0.38   | 1.06   | 25      | 0.075  |
| N4-8       | A 00442     | 1/2          | 1/2       | 15/16  | 0.51   | 1.19   | 10      | 0.108  |
| N4-10      | A 01112     | 5/8          | 5/8       | 1 1/16 | 0.63   | 1.44   | 5       | 0.185  |
| N4-12      | A 04731     | 3/4          | 3/4       | 1 5/16 | 0.76   | 1.75   | 5       | 0.345  |

### Flare Seal Caps

| Cat Number | Part Number | Flare A (in) | Size Tube | Hex    | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-----------|--------|--------|--------|---------|--------|
| N5-4       | A 04544     | 1/4          |           | 9/16   | 0.34   | 0.56   | 50      | 0.025  |
| N5-5       | A 04758     | 5/16         |           | 5/8    | 0.38   | 0.56   | 25      | 0.027  |
| N5-6       | A 04545     | 3/8          |           | 3/4    | 0.44   | 0.69   | 25      | 0.045  |
| N5-8       | A 04546     | 1/2          |           | 7/8    | 0.55   | 0.81   | 25      | 0.069  |
| N5-10      | A 04560     | 5/8          |           | 1 1/16 | 0.63   | 0.94   | 10      | 0.137  |
| N5-12      | A 04951     | 3/4          |           | 1 5/16 | 0.75   | 1.09   | 10      | 0.210  |

### Flare Seal Caps - Finger Tightening

| Cat Number | Part Number | Flare A (in) | Size Tube | Hex | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-----------|-----|--------|--------|---------|--------|
| NFTS-4     | A 16447     | 1/4          |           |     | 0.56   | 0.48   | N/A     | 0.014  |
| NFTS-6     | A 16448     | 3/8          |           |     | 0.73   | 0.67   | N/A     | 0.038  |

### Short Forged Reducing Nuts

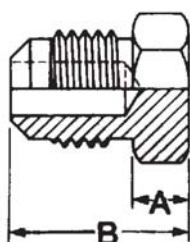
| Cat Number | Part Number | Flare A (in) | Size Tube | Hex    | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-----------|--------|--------|--------|---------|--------|
| NRS4-43    | A 05132     | 1/4          | 3/16      | 5/8    | 0.19   | 0.59   | 10      | 0.027  |
| NRS4-54    | A 05247     | 5/16         | 1/4       | 11/16  | 0.26   | 0.63   | 10      | 0.055  |
| NRS4-64    | A 05140     | 3/8          | 1/4       | 13/16  | 0.26   | 0.69   | 25      | 0.060  |
| NRS4-65    | A 05282     | 3/8          | 5/16      | 13/16  | 0.32   | 0.69   | 10      | 0.027  |
| NRS4-86    | A 05141     | 1/2          | 3/8       | 15/16  | 0.38   | 0.81   | 15      | 0.094  |
| NRS4-108   | A 05228     | 5/8          | 1/2       | 1 1/16 | 0.51   | 0.94   | 15      | 0.125  |

### Short Forged Nuts

| Cat Number | Part Number | Flare A (in) | Size Tube | Hex    | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-----------|--------|--------|--------|---------|--------|
| NS4-3      | A 05238     | 3/16         | 3/16      | 1/2    | 0.19   | 0.53   | 50      | 0.024  |
| NS4-4      | A 05051     | 1/4          | 1/4       | 5/8    | 0.26   | 0.59   | 50      | 0.035  |
| NS4-5      | A 05239     | 5/16         | 5/16      | 11/16  | 0.32   | 0.63   | 25      | 0.040  |
| NS4-6      | A 05052     | 3/8          | 3/8       | 13/16  | 0.38   | 0.69   | 25      | 0.052  |
| NS4-8      | A 05053     | 1/2          | 1/2       | 15/16  | 0.51   | 0.81   | 15      | 0.084  |
| NS4-10     | A 05157     | 5/8          | 5/8       | 1 1/16 | 0.63   | 0.94   | 10      | 0.120  |
| NS4-12     | A 05222     | 3/4          | 3/4       | 1 5/16 | 0.76   | 1.13   | 10      | 0.235  |

# 45° Flare Fittings

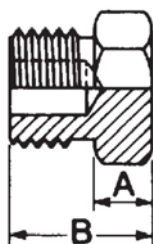
## Plugs



**Flare Plug**

### Flare Plugs

| Cat Number | Part Number | Flare A (in) | Hex    | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|--------|--------|--------|---------|--------|
| P2-3       | A 05045     | 3/16         | 3/8    | 0.16   | 0.59   | 15      | 0.016  |
| P2-4       | A 00121     | 1/4          | 7/16   | 0.19   | 0.69   | 25      | 0.022  |
| P2-5       | A 00124     | 5/16         | 1/2    | 0.22   | 0.78   | 15      | 0.034  |
| P2-6       | A 00122     | 3/8          | 5/8    | 0.25   | 0.88   | 25      | 0.070  |
| P2-8       | A 00123     | 1/2          | 3/4    | 0.31   | 1.06   | 25      | 0.095  |
| P2-10      | A 04536     | 5/8          | 7/8    | 0.31   | 1.19   | 15      | 0.137  |
| P2-12      | A 04757     | 3/4          | 1 1/16 | 0.31   | 1.31   | 10      | 0.225  |



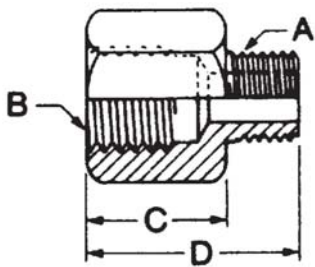
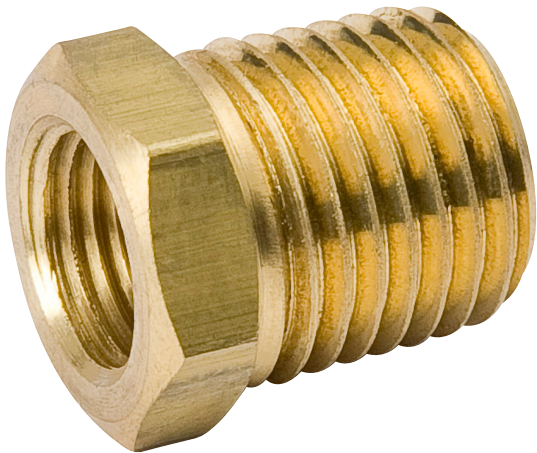
**Brass Pipe Plug**

### Brass Pipe Plugs

| Cat Number | Part Number | Flare A (in) | Hex   | A (in) | B (in) | Box Qty | Wt(lb) |
|------------|-------------|--------------|-------|--------|--------|---------|--------|
| P3-A       | A 00250     | 1/8          | 1/2   | 0.19   | 0.63   | 50      | 0.030  |
| P3-B       | A 00249     | 1/4          | 11/16 | 0.25   | 0.81   | 50      | 0.056  |
| P3-C       | A 00425     | 3/8          | 11/16 | 0.25   | 0.75   | 25      | 0.058  |
| P3-D       | A 04759     | 1/2          | 7/8   | 0.31   | 0.88   | 25      | 0.108  |
| P3-E       | A 05004     | 3/4          | 1 1/8 | 0.31   | 1.03   | 10      | 0.305  |

# 45° Flare Fittings

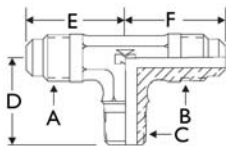
## Bushings



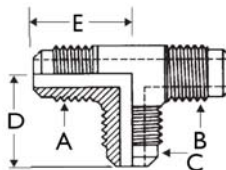
| External Pipe Thread to Internal Pipe Thread |             |                |                |        |        |        |            |        |
|----------------------------------------------|-------------|----------------|----------------|--------|--------|--------|------------|--------|
| Cat Number                                   | Part Number | NPTE<br>A (in) | NPTI<br>B (in) | C (in) | D (in) | Hex    | Box<br>Qty | Wt(lb) |
| R1-AB                                        | A 08756     | 1/8            | 1/4            | 0.61   | 0.92   | 11/16  | 25         | 0.054  |
| R1-BA                                        | A 00630     | 1/4            | 1/8            | 0.19   | 0.69   | 9/16   | 25         | 0.020  |
| R1-CB                                        | A 00631     | 3/8            | 1/4            | 0.25   | 0.75   | 11/16  | 25         | 0.034  |
| R1-DB                                        | A 00492     | 1/2            | 1/4            | 0.28   | 0.84   | 7/8    | 25         | 0.080  |
| R1-DC                                        | A 00632     | 1/2            | 3/8            | 0.28   | 0.84   | 7/8    | 25         | 0.051  |
| R1-EC                                        | A 00493     | 3/4            | 3/8            | 0.31   | 0.92   | 1 1/16 | 10         | 0.111  |
| R1-ED                                        | A 00633     | 3/4            | 1/2            | 0.31   | 0.92   | 1 1/16 | 10         | 0.092  |

# 45° Flare Fittings

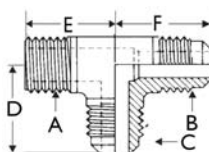
## Tees



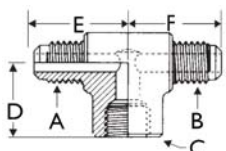
**Two-Way**



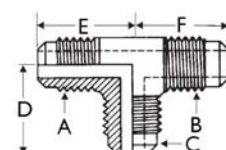
**Three-Way**



**Right Angle Two-Way**



**Three-Way, Internal Branch**



**Three-Way Reducing**

### Two-Way

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | Flare  | NPTFE  |        |        |        |         |        |
| T1-4A      | A 00345     | 1/4    | 1/4    | 1/8    | 0.81   | 0.94   | 0.94   | 25      | 0.066  |
| T1-4B      | A 04859     | 1/4    | 1/4    | 1/4    | 1.03   | 0.91   | 0.91   | 25      | 0.103  |
| T1-8C      | A 00349     | 1/2    | 1/2    | 3/8    | 1.13   | 1.22   | 1.22   | 15      | 0.191  |

### Three-Way

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | Flare  | Flare  |        |        |        |         |        |
| T2-4       | A 00340     | 1/4    | 1/4    | 1/4    | 0.94   | 0.94   |        | 25      | 0.065  |
| T2-6       | A 00342     | 3/8    | 3/8    | 3/8    | 1.06   | 1.06   |        | 15      | 0.143  |
| T2-8       | A 00344     | 1/2    | 1/2    | 1/2    | 1.22   | 1.22   |        | 15      | 0.196  |
| T2-12      | A 04749     | 3/4    | 3/4    | 3/4    | 1.66   | 1.66   |        | 5       | 0.502  |

### Right Angle Two-Way

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | NPTFE  | Flare  | Flare  |        |        |        |         |        |
| T3-4A      | A 00127     | 1/8    | 1/4    | 1/4    | 0.94   | 0.80   | 0.94   | 25      | 0.070  |
| T3-4B      | A 04998     | 1/4    | 1/4    | 1/4    | 0.94   | 1.06   | 0.94   | 25      | 0.088  |
| T3-6C      | A 04941     | 3/8    | 3/8    | 3/8    | 1.06   | 1.09   | 1.06   | 25      | 0.140  |
| T3-8C      | A 04778     | 3/8    | 1/2    | 1/2    | 1.22   | 1.13   | 1.22   | 15      | 0.182  |

### Three-Way, Internal Branch

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | Flare  | Flare  |        |        |        |         |        |
| T6-4       | A 06330 *   | 1/4    | 1/4    | 1/4    | 0.94   | 0.91   |        | 25      | 0.085  |

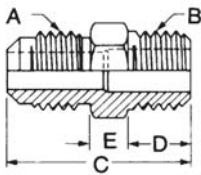
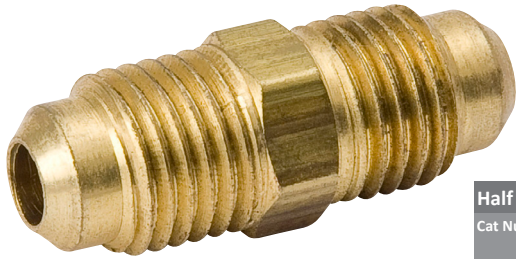
### Three-Way Reducing

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | Flare  | NPTFE  |        |        |        |         |        |
| TR2-68     | A 04547     | 3/8    | 3/8    | 1/2    | 1.22   | 1.13   |        | 15      | 0.194  |
| TR2-86     | A 04559     | 1/2    | 1/2    | 3/8    | 1.13   | 1.22   |        | 15      | 0.191  |

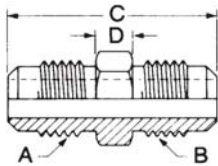
\*Gasket Furnished

# 45° Flare Fittings

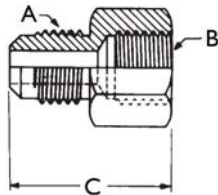
## Connectors



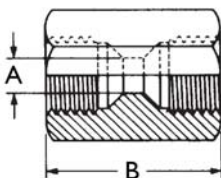
Half Union - Flare to NPTFE



Union- Flare to Flare



Half Union - Flare to NPTFI



Internal Flare Union

### Half Union - Flare to NPTFE

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | NPTFE  |        |        |        |        |         |        |
| U1-3A      | A 01117     | 3/16   | 1/8    | 1.00   | 0.38   | 0.19   | 7/16   | 15      | 0.025  |
| U1-4A      | A 00330     | 1/4    | 1/8    | 1.06   | 0.38   | 0.19   | 7/16   | 25      | 0.030  |
| U1-4B      | A 04585     | 1/4    | 1/4    | 1.25   | 0.56   | 0.19   | 9/16   | 25      | 0.047  |
| U1-4C      | A 01197     | 1/4    | 3/8    | 1.31   | 0.56   | 0.25   | 11/16  | 25      | 0.071  |
| U1-4D      | A 04628     | 1/4    | 1/2    | 1.56   | 0.75   | 0.31   | 7/8    | 25      | 0.114  |
| U1-5A      | A 00331     | 5/16   | 1/8    | 1.16   | 0.38   | 0.31   | 1/2    | 25      | 0.040  |
| U1-5B      | A 05036     | 5/16   | 1/4    | 1.34   | 0.56   | 0.22   | 9/16   | 25      | 0.055  |
| U1-5C      | A 01198     | 5/16   | 3/8    | 1.38   | 0.56   | 0.25   | 11/16  | 25      | 0.075  |
| U1-6A      | A 05003     | 3/8    | 1/8    | 1.25   | 0.38   | 0.25   | 5/8    | 25      | 0.065  |
| U1-6B      | A 00332     | 3/8    | 1/4    | 1.44   | 0.56   | 0.25   | 5/8    | 25      | 0.075  |
| U1-6C      | A 01199     | 3/8    | 3/8    | 1.44   | 0.56   | 0.25   | 11/16  | 25      | 0.090  |
| U1-6D      | A 04993     | 3/8    | 1/2    | 1.69   | 0.75   | 0.31   | 7/8    | 25      | 0.135  |
| U1-8A      | A 05034     | 1/2    | 1/8    | 1.44   | 0.38   | 0.31   | 3/4    | 10      | 0.094  |
| U1-8B      | A 04439     | 1/2    | 1/4    | 1.63   | 0.56   | 0.31   | 3/4    | 10      | 0.108  |
| U1-8C      | A 00334     | 1/2    | 3/8    | 1.63   | 0.56   | 0.31   | 3/4    | 10      | 0.119  |
| U1-8D      | A 04780     | 1/2    | 1/2    | 1.81   | 0.75   | 0.31   | 7/8    | 10      | 0.155  |
| U1-8E      | A 05066     | 1/2    | 3/4    | 1.94   | 0.75   | 0.44   | 1 1/16 | 10      | 0.228  |
| U1-10B     | A 05035     | 5/8    | 1/4    | 1.81   | 0.56   | 0.38   | 7/8    | 10      | 0.155  |
| U1-10C     | A 01195     | 5/8    | 3/8    | 1.81   | 0.56   | 0.38   | 7/8    | 10      | 0.168  |
| U1-10D     | A 04540     | 5/8    | 1/2    | 2.00   | 0.75   | 0.38   | 7/8    | 10      | 0.180  |
| U1-10E     | A 04827     | 5/8    | 3/4    | 2.06   | 0.75   | 0.44   | 1 1/16 | 5       | 0.250  |
| U1-12C     | A 05005     | 3/4    | 3/8    | 2.00   | 0.56   | 0.44   | 1 1/16 | 10      | 0.265  |
| U1-12D     | A 04739     | 3/4    | 1/2    | 2.19   | 0.75   | 0.44   | 1 1/16 | 5       | 0.286  |
| U1-12E     | A 04740     | 3/4    | 3/4    | 2.19   | 0.75   | 0.44   | 1 1/16 | 5       | 0.290  |

### Unions - Flare to Flare

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|--------|---------|--------|
|            |             | Flare  | Flare  |        |        |        |        |         |        |
| U2-4       | A 00325     | 1/4    | 1/4    | 1.19   | 0.19   |        | 7/16   | 25      | 0.026  |
| U2-5       | A 00326     | 5/16   | 5/16   | 1.34   | 0.22   |        | 1/2    | 25      | 0.050  |
| U2-6       | A 00327     | 3/8    | 3/8    | 1.50   | 0.25   |        | 5/8    | 25      | 0.092  |
| U2-8       | A 00329     | 1/2    | 1/2    | 1.81   | 0.31   |        | 3/4    | 15      | 0.141  |
| U2-10      | A 04845     | 5/8    | 5/8    | 2.13   | 0.38   |        | 7/8    | 10      | 0.215  |
| U2-12      | A 04733     | 3/4    | 3/4    | 2.44   | 0.44   |        | 1 1/16 | 10      | 0.368  |

### Half Union - Flare to NPTFI

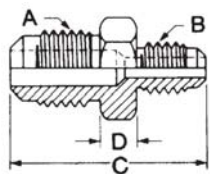
| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | Hex   | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|-------|---------|--------|
|            |             | Flare  | NPTFI  |        |        |        |       |         |        |
| U3-4A      | A 04622     | 1/4    | 1/8    | 1.03   |        |        | 9/16  | 25      | 0.042  |
| U3-4B      | A 04625     | 1/4    | 1/4    | 1.25   |        |        | 11/16 | 25      | 0.065  |
| U3-4C      | A 04961     | 1/4    | 3/8    | 1.28   |        |        | 13/16 | 15      | 0.081  |
| U3-6A      | A 04927     | 3/8    | 1/8    | 1.13   |        |        | 5/8   | 10      | 0.103  |
| U3-6B      | A 04624     | 3/8    | 1/4    | 1.31   |        |        | 11/16 | 25      | 0.083  |
| U3-6C      | A 04627     | 3/8    | 3/8    | 1.38   |        |        | 13/16 | 15      | 0.100  |
| U3-6D      | A 08104     | 3/8    | 1/2    | 1.63   |        |        | 1     | 15      | 0.163  |
| U3-8B      | A 04928     | 1/2    | 1/4    | 1.41   |        |        | 3/4   | 15      | 0.112  |
| U3-8C      | A 04727     | 1/2    | 3/8    | 1.50   |        |        | 13/16 | 15      | 0.119  |
| U3-8D      | A 04728     | 1/2    | 1/2    | 1.75   |        |        | 1     | 15      | 0.181  |
| U3-10C     | A 04929     | 5/8    | 3/8    | 1.59   |        |        | 7/8   | 10      | 0.160  |
| U3-10D     | A 04819     | 5/8    | 1/2    | 1.81   |        |        | 1     | 10      | 0.195  |
| U3-10E     | A 04977     | 5/8    | 3/4    | 1.91   |        |        | 1 1/4 | 10      | 0.286  |

### Internal Flare Unions

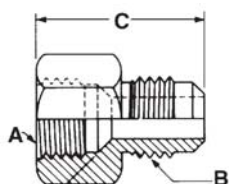
| Cat Number | Part Number |   | A (in) | B (in) | C (in) | D (in) | E (in) | Hex   | Box Qty | Wt(lb) |
|------------|-------------|---|--------|--------|--------|--------|--------|-------|---------|--------|
|            |             |   | Flare  |        |        |        |        |       |         |        |
| U4-4       | A 00385     | * | 1/4    |        | 1.00   |        |        | 5/8   | 10      | 0.065  |
| U4-6       | A 00386     | * | 3/8    |        | 1.25   |        |        | 13/16 | 10      | 0.118  |
| U4-8       | A 00387     | * | 1/2    |        | 1.44   |        |        | 15/16 | 10      | 0.175  |

\* 2 Gaskets Furnished

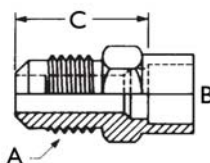
# 45° Flare Fittings Connectors



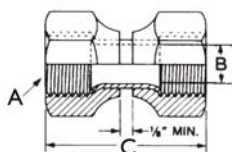
Reducing Unions - FI to FI



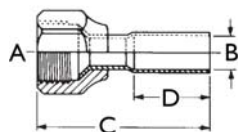
Internal FI to External FI



Half Union - Ext FI to Solder



Internal FI Swivel Unions



Internal FI to Extension Solder

## Reducing Unions - Flare to Flare

| Cat Number | Part Number | A (in)<br>Flare | B (in)<br>Flare | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|-----------------|-----------------|--------|--------|--------|--------|---------|--------|
| UR2-43     | A 05270     | 1/4             | 3/16            | 1.13   | 0.19   |        | 7/16   | 15      | 0.030  |
| UR2-54     | A 08730     | 5/16            | 1/4             | 1.28   | 0.22   |        | 1/2    | 10      | 0.046  |
| UR2-64     | A 01171     | 3/8             | 1/4             | 1.38   | 0.25   |        | 5/8    | 15      | 0.072  |
| UR2-65     | A 04981     | 3/8             | 5/16            | 1.44   | 0.25   |        | 5/8    | 10      | 0.078  |
| UR2-84     | A 00356     | 1/2             | 1/4             | 1.56   | 0.31   |        | 3/4    | 15      | 0.100  |
| UR2-86     | A 00149     | 1/2             | 3/8             | 1.69   | 0.31   |        | 3/4    | 25      | 0.127  |
| UR2-106    | A 05334     | 5/8             | 3/8             | 1.88   | 0.38   |        | 7/8    | 10      | 0.175  |
| UR2-108    | A 04846     | 5/8             | 1/2             | 2.00   | 0.38   |        | 7/8    | 15      | 0.192  |
| UR2-128    | A 04734     | 3/4             | 1/2             | 2.19   | 0.44   |        | 1 1/16 | 10      | 0.290  |
| UR2-1210   | A 04784     | 3/4             | 5/8             | 2.31   | 0.44   |        | 1 1/16 | 10      | 0.332  |

## Internal Flare to External Flare

| Cat Number | Part Number | A (in)<br>Flare | B (in)<br>Flare | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|-----------------|-----------------|--------|--------|--------|--------|---------|--------|
| UR3-43     | A 05147     | 1/4             | 3/16            | 1.03   |        |        | 5/8    | 10      | 0.047  |
| UR3-46     | A 05041     | 1/4             | 3/8             | 1.13   |        |        | 5/8    | 15      | 0.070  |
| UR3-48     | A 08127     | 1/4             | 1/2             | 1.25   |        |        | 3/4    | 10      | 0.112  |
| UR3-64     | A 00479     | 3/8             | 1/4             | 1.22   |        |        | 13/16  | 15      | 0.078  |
| UR3-68     | A 04888     | 3/8             | 1/2             | 1.41   |        |        | 13/16  | 15      | 0.110  |
| UR3-84     | A 00480     | 1/2             | 1/4             | 1.38   |        |        | 15/16  | 15      | 0.107  |
| UR3-86     | A 00481     | 1/2             | 3/8             | 1.44   |        |        | 15/16  | 15      | 0.120  |
| UR3-108    | A 04770     | 5/8             | 1/2             | 1.69   |        |        | 1 1/16 | 10      | 0.180  |
| UR3-810    | A 04879     | 1/2             | 5/8             | 1.63   |        |        | 15/16  | 10      | 0.169  |
| UR3-1012   | A 04878     | 5/8             | 3/4             | 1.91   |        |        | 1 1/16 | 10      | 0.265  |
| UR3-1210   | A 04826     | 3/4             | 5/8             | 1.97   |        |        | 1 5/16 | 10      | 0.241  |

## Half Union - External Flare to Solder

| Cat Number | Part Number | A (in)<br>Flare | B (in)<br>OD | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|-----------------|--------------|--------|--------|--------|--------|---------|--------|
| US3-44     | A 03431     | 1/4             | 1/4          | 0.69   |        |        | 7/16   | 50      | 0.025  |
| US3-45     | A 03466     | 1/4             | 5/16         | 0.69   |        |        | 7/16   | 25      | 0.023  |
| US3-46     | A 03494     | 1/4             | 3/8          | 0.69   |        |        | 1/2    | 25      | 0.029  |
| US3-64     | A 03443     | 3/8             | 1/4          | 0.88   |        |        | 5/8    | 25      | 0.070  |
| US3-65     | A 03464     | 3/8             | 5/16         | 0.88   |        |        | 5/8    | 25      | 0.061  |
| US3-66     | A 03492     | 3/8             | 3/8          | 0.88   |        |        | 5/8    | 25      | 0.063  |
| US3-68     | A 03547     | 3/8             | 1/2          | 0.88   |        |        | 5/8    | 10      | 0.062  |
| US3-86     | A 03504     | 1/2             | 3/8          | 1.06   |        |        | 3/4    | 25      | 0.112  |
| US3-88     | A 03546     | 1/2             | 1/2          | 1.06   |        |        | 3/4    | 15      | 0.096  |
| US3-108    | A 03519     | 5/8             | 1/2          | 1.25   |        |        | 7/8    | 10      | 0.160  |
| US3-610    | A 06601     | 3/8             | 5/8          | 0.88   |        |        | 3/4    | 10      | 0.075  |
| US3-810    | A 02259     | 1/2             | 5/8          | 1.06   |        |        | 3/4    | 10      | 0.100  |
| US3-1010   | A 02258     | 5/8             | 5/8          | 1.25   |        |        | 7/8    | 10      | 0.155  |
| US3-1012   | A 02272     | 5/8             | 3/4          | 1.25   |        |        | 7/8    | 10      | 0.150  |
| US3-1014   | A 02378     | 5/8             | 7/8          | 1.25   |        |        | 1      | 10      | 0.166  |
| US3-1212   | A 05307     | 3/4             | 3/4          | 1.44   |        |        | 1 1/16 | 5       | 0.246  |
| US3-1214   | A 05425     | 3/4             | 7/8          | 1.31   |        |        | 1 1/16 | 5       | 0.249  |

## Internal Flare Swivel Unions

| Cat Number | Part Number | A (in)<br>Flare | B (in) | C (in) | D (in) | E (in) | Hex    | Box Qty | Wt(lb) |
|------------|-------------|-----------------|--------|--------|--------|--------|--------|---------|--------|
| US4-4      | A 13563     | 1/4             |        | 1.38   |        |        | 5/8    | 15      | 0.080  |
| US4-5      | A 13564     | 5/16            |        | 1.44   |        |        | 11/16  | 15      | 0.085  |
| US4-6      | A 13565     | 3/8             |        | 1.56   |        |        | 13/16  | 15      | 0.121  |
| US4-8      | A 13567     | 1/2             |        | 1.81   |        |        | 15/16  | 15      | 0.175  |
| US4-10     | A 13568     | 5/8             |        | 2.06   |        |        | 1 1/16 | 15      | 0.270  |

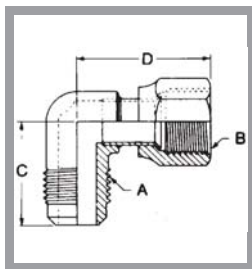
## Internal Flare to Extension Solder

| Cat Number | Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | Hex | Box Qty | Wt(lb) |
|------------|-------------|--------|--------|--------|--------|--------|-----|---------|--------|
| US5-44     | A 15725     | 1/4    | 1/4    | 1.63   | 0.81   | 0.00   |     | 25      | 0.043  |
| US5-66     | A 15726     | 3/8    | 3/8    | 1.69   | 0.81   | 0.00   |     | 25      | 0.074  |
| US5-88     | A 15727     | 1/2    | 1/2    | 1.94   | 0.88   | 0.00   |     | 20      | 0.104  |
| US5-1010   | A 15728     | 5/8    | 5/8    | 2.31   | 1.00   |        |     | 10      | 0.160  |
| US5-1212   | A 15729     | 3/4    | 3/4    | 2.88   | 1.25   | 0.00   |     | 10      | 0.318  |

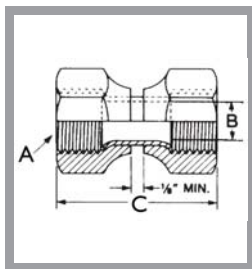
\* 2 Gaskets Furnished

# 45° Flare Fittings

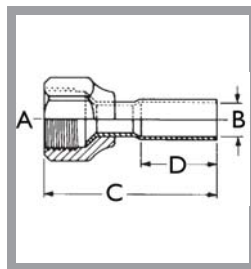
JIS Class II



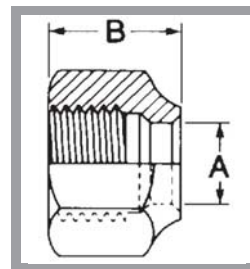
External Flare to  
Internal Flare Swivel



Internal Flare  
Swivel Union



Internal Flare to  
Extension Solder



Short Forged Nuts

## 90° Elbows

### External Flare to Internal Flare Swivel

| Part Number | Male Flare A (in) | Female Flare B (in) | C (in) | D (in) | Hex (mm) | Box Qty | Wt(lb) |
|-------------|-------------------|---------------------|--------|--------|----------|---------|--------|
| A 15940H    | 1/4               | 1/4                 | 0.91   | 1.25   | 17       | 4       |        |
| A 15941H    | 3/8               | 3/8                 | 1.08   | 1.42   | 22       | 4       |        |
| A 15943H    | 1/2               | 1/2                 | 1.25   | 1.55   | 26       | 4       |        |

## Connectors

### Internal Flare Swivel Unions

| Part Number | A (in)<br>Female Flare | B (in)<br>OD | C (in) | D (in) | Hex (mm) | Box Qty | Wt(lb) |
|-------------|------------------------|--------------|--------|--------|----------|---------|--------|
| A 13563H    | 1/4                    | 1/4          | 1.38   |        | 17       | 15      |        |
| A 13565H    | 3/8                    | 3/8          | 1.56   |        | 22       | 15      |        |
| A 13567H    | 1/2                    | 1/2          | 1.81   |        | 26       | 15      |        |
| A 13568H    | 5/8                    | 5/8          | 2.06   |        | 29       | 15      |        |

### Internal Flare to Extension Solder

| Part Number | A (in)<br>Female Flare | B (in)<br>ODS | C (in) | D (in) | Hex (mm) | Box Qty | Wt(lb) |
|-------------|------------------------|---------------|--------|--------|----------|---------|--------|
| A 15725H    | 1/4                    | 1/4           | 1.60   | 0.81   | 17       | 25      |        |
| A 15726H    | 3/8                    | 3/8           | 1.71   | 0.81   | 22       | 25      |        |
| A 15727H    | 1/2                    | 1/2           | 1.89   | 0.88   | 26       | 20      |        |
| A 15728H    | 5/8                    | 5/8           | 2.29   | 1.00   | 29       | 10      |        |
| A 15729H    | 3/4                    | 3/4           | 2.85   | 1.25   | 36       | 10      |        |

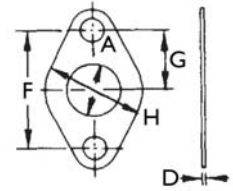
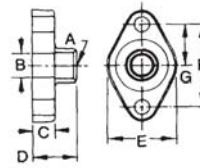
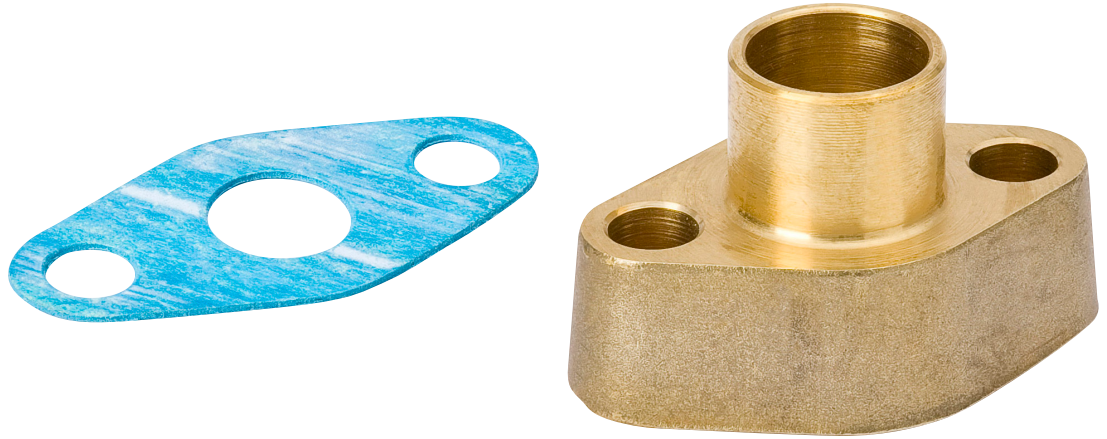
## Nuts

### Short Forged Nuts

| Part Number | Flare A (in) | Size Tube | Hex (mm) | A (in) | B (in) | Box Qty | Wt(lb) |
|-------------|--------------|-----------|----------|--------|--------|---------|--------|
| A 05051H    | 1/4          | 1/4       | 17       | 0.26   | 0.59   | N/A     | 0.040  |
| A 05052H    | 3/8          | 3/8       | 22       | 0.38   | 0.71   | N/A     | 0.080  |
| A 05053H    | 1/2          | 1/2       | 26       | 0.51   | 0.86   | N/A     | 0.130  |
| A 05157H    | 5/8          | 5/8       | 29       | 0.63   | 1.03   | N/A     | 0.180  |
| A 05222H    | 3/4          | 3/4       | 36       | 0.76   | 1.18   | N/A     |        |

# Forged Brass Solder Flanges

Two Bolt



2 Bolt, Serrated Gasket Surface

2 Bolt Gasket, Asbestos-Free

## Flange with Serrated Gasket Surface

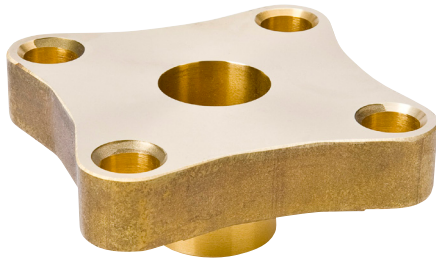
| Part Number | A (in) | B (in)  | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) |
|-------------|--------|---------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|
| A 08314     | 5/8    | 9/16    | 0.75   | 1.19   | 1.50   | 1 5/8                    | 0.81   |        | 11/32          | 1       | 0.445   |
| A 05299     | 3/4    | 11/16   | 0.75   | 1.31   | 1.50   | 1 5/8                    | 0.81   |        | 3/8            | 1       | 0.420   |
| A 09215     | 7/8    | 13/16   | 0.75   | 1.44   | 1.50   | 1 5/8                    | 0.81   |        | 11/32          | 1       | 0.395   |
| A 08315     | 7/8    | 13/16   | 0.75   | 1.44   | 2.25   | 2 3/4                    | 1.38   |        | 17/32          | 1       | 1.080   |
| A 05151     | 1 1/8  | 1 1/16  | 0.75   | 1.56   | 2.25   | 2 3/4                    | 1.38   |        | 17/32          | 1       | 1.109   |
| A 05074     | 1 3/8  | 1 19/64 | 0.75   | 1.53   | 2.25   | 2 3/4                    | 1.38   |        | 17/32          | 1       | 0.900   |

## Gasket, Asbestos-Free Material

| Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) |
|-------------|--------|--------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|
| A 04582     | 9/16   |        |        | 0.03   |        | 1 5/8                    | 0.81   | 1.13   | 11/32          | N/A     | 0.003   |
| N 02308     | 13/16  |        |        | 0.03   |        | 1 5/8                    | 0.81   | 1.50   | 11/32          | N/A     | 0.004   |
| N 02307     | 13/16  |        |        | 0.03   |        | 1 3/4                    | 0.88   | 1.50   | 11/32          | N/A     | 0.004   |
| A 05152     | 1 3/16 |        |        | 0.06   |        | 2 3/4                    | 1.38   | 2.25   | 17/32          | 20      | 0.020   |

# Forged Brass Solder Flanges

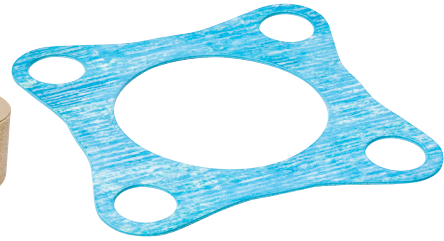
## Four Bolt



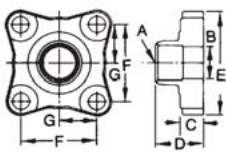
**Flange with Flat Gasket Surface**  
Compatible with Gasket A 08628



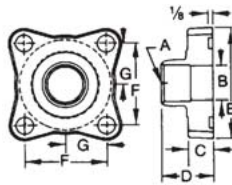
**Flange with Groove**  
Compatible with Gasket A 08634



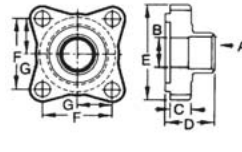
**Flat Surface Gasket, A 08628**



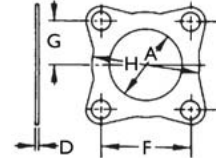
**4 Bolt, Flat  
Gasket Surface**



**4 Bolt, Groove  
Diameters  
2 25/32" x 2 1/16"**



**4 Bolt, Flat, Tongue,  
Groove Diameters  
2 3/4" x 2 3/16"**



**4 Bolt Gasket,  
Asbestos-Free**

### Flange with Flat Gasket Surface

| Part Number | A (in) | B (in)  | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) | Gasket  |
|-------------|--------|---------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|---------|
| A 08624     | 1 1/8  | 1 1/16  | 0.75   | 1.56   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.925   | A 08628 |
| A 08625     | 1 3/8  | 1 19/64 | 0.75   | 1.63   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.875   | A 08628 |
| A 08626     | 1 5/8  | 1 17/32 | 0.75   | 1.75   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.725   | A 08628 |
| A 08627     | 2 1/8  | 1 15/16 | 0.75   | 1.72   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.473   | A 08628 |

### Flange with Groove Diameters 2 25/32" x 2 1/16"

| Part Number | A (in) | B (in)  | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) | Gasket  |
|-------------|--------|---------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|---------|
| A 08630     | 1 1/8  | 1 1/16  | 0.75   | 1.56   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.805   | A 08634 |
| A 08631     | 1 3/8  | 1 19/64 | 0.75   | 1.63   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.750   | A 08634 |
| A 08261     | 1 5/8  | 1 17/32 | 0.75   | 1.75   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.640   | A 08634 |
| A 08633     | 2 1/8  | 1 15/16 | 0.75   | 1.72   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.417   | A 08634 |

### Flange with Tongue, Groove Diameters 2 3/4" x 2 3/16"

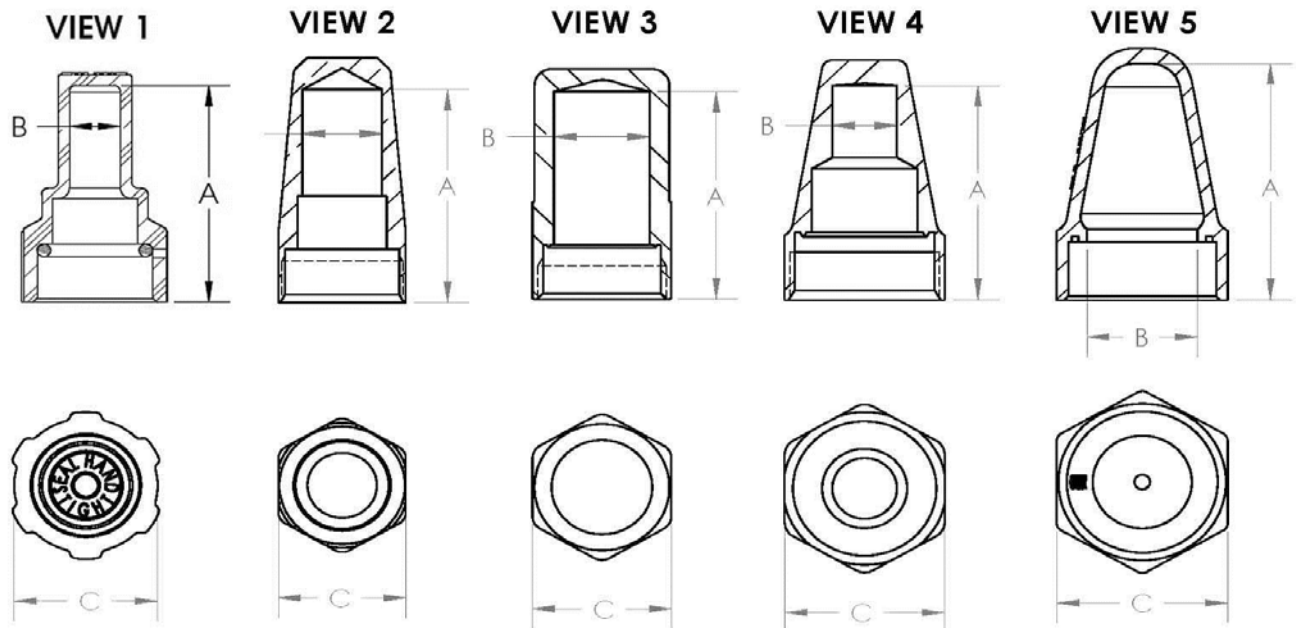
| Part Number | A (in) | B (in)  | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) | Gasket  |
|-------------|--------|---------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|---------|
| A 08629     | 1 1/8  | 1 1/16  | 0.75   | 1.72   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 2.000   | A 08634 |
| A 05150     | 1 3/8  | 1 19/64 | 0.75   | 1.78   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.977   | A 08634 |
| A 05148     | 1 5/8  | 1 17/32 | 0.75   | 1.91   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.867   | A 08634 |
| A 08632     | 2 1/8  | 1 15/16 | 0.75   | 1.88   | 3.41   | 2.50                     | 1.25   |        | 17/32          | 1       | 1.594   | A 08634 |

### Gasket, Asbestos-Free Material

| Part Number | A (in) | B (in) | C (in) | D (in) | E (in) | F (in) Bolt Hole Centers | G (in) | H (in) | Dia Bolt Holes | Box Qty | Wt (lb) | Gasket  |
|-------------|--------|--------|--------|--------|--------|--------------------------|--------|--------|----------------|---------|---------|---------|
| A 08628     | 2 1/16 |        |        | 0.03   |        | 2.50                     | 1.25   | 3      | 9/16           | N/A     | 0.012   | A 08628 |

# Component Parts

## Seal Caps and Gaskets



| Seal Cap |     | Gasket  | Seal Cap Ki | Thread Size  | Material  | View | A | B    | C    |      |
|----------|-----|---------|-------------|--------------|-----------|------|---|------|------|------|
| P 34627  | **  | NA      | NA          | 3/4" - 16    | Nylon     | 1    |   | 1.73 | 0.35 | 0.95 |
| A 04566  |     | NA      | NA          | 3/4" - 16    | Steel     | 3    |   | 1.3  | 0.56 | 0.81 |
| A 04597  |     | A 03468 | A 16474     | 3/4" - 16    | Brass     | 3    |   | 1.24 | 0.56 | 0.81 |
| S 36284  |     | A 03468 | A 18725     | 3/4" - 16    | Brass     | 3    |   | 1.71 | 0.56 | 0.81 |
| A 00409  |     | NA      | NA          | 7/8" - 18    | Steel     | 4    |   | 1.34 | 0.38 | 0.93 |
| P 34632  | **  | NA      | NA          | 1 1/16" - 18 | Valox     | 1    |   | 2.05 | 0.45 | 1.26 |
| A 04775  |     | A 04710 | A 15099     | 1 1/16" - 18 | Brass     | 2    |   | 2    | 0.7  | 1.13 |
| N 02848  | **  | P 34711 | A 17667     | 1 3/8" - 12  | Valox     | 1    |   | 2.01 | 0.91 | 1.6  |
| N 02849  | **  | P 34712 | A 17668     | 1 5/8" - 12  | Valox     | 1    |   | 2.7  | 0.76 | 1.82 |
| A 06250  |     | P 34712 | B 33816     | 1 5/8" - 12  | Cast Iron | 4    |   | 2.71 | 1.06 | 1.88 |
| S 35923  | *** | A 04710 | NA          | 1 1/16" - 18 | Brass     | 2    |   | 2.48 | 0.7  | 1.13 |
| A 06251P |     | P 35589 | A 17907     | 1 7/8" - 12  | Cast Iron | 4    |   | 3.76 | 1.38 | 2.12 |
| C 35804  | *   | P 35589 | NA          | 1 7/8" - 12  | Cast Iron | 4    |   | 3.76 | 1.38 | 2.12 |
| A 06252  |     | P 32709 | NA          | 2 1/4" - 12  | Cast Iron | 5    |   | 3.7  | 1.62 | 2.5  |

\* Powder Coated (500 hour)

\*\* C dimension indicates diameter

\*\*\* Full Flow

# Competitive Cross Reference

## Ball Valves

### CYCLEMASTER® Ball Valves

#### Standard

| Size  | Inlet | Outlet | Mueller  | Universal | Danfoss  | Emerson | Henry | Parker   | Sherwood   |
|-------|-------|--------|----------|-----------|----------|---------|-------|----------|------------|
| 1/4   |       |        | AP17859  |           | 009G7020 | BVE014  |       | EBV-1020 |            |
| 3/8   |       |        | AP17860C |           | 009G7021 | BVE038  |       | EBV-1030 | 586WA-6ST  |
| 1/2   |       |        | AP17861C |           | 009G7022 | BVE012  |       | EBV-1040 | 586WA-8ST  |
| 5/8   |       |        | AP17862C |           | 009G7023 | BVE058  |       | EBV-1050 | 586WA-10ST |
| 3/4   |       |        | AP17863  |           | 009G7024 | BVE034  |       | EBV-1060 | 587WA-12ST |
| 7/8   |       |        | AP17864C |           | 009G7025 | BVE078  |       | EBV-1070 | 587WA-14ST |
| 1 1/8 |       |        | AP17865  |           | 009G7026 | BVE118  |       | EBV-1090 | 591WA-11ST |
| 1 3/8 |       |        | A 17866  |           | 009G7027 | BVE138  |       | EBV-1110 | 592WA-13ST |
| 1 5/8 |       |        | A 17867  |           | 009G7028 | BVE158  |       | EBV-1130 | 593WA-15ST |
| 2 1/8 |       |        | A 17868  |           | 009G7029 | BVE218  |       | EBV-1170 | 594WA-21ST |
| 2 5/8 |       |        | A 17869  |           | 009G7959 |         |       | EBV-1210 | 595WA-25ST |
| 3 1/8 |       |        | A 17870  |           | 009G7980 |         |       | EBV-1250 | 596WA-31ST |
| 2 5/8 |       |        | A 17871  |           | 009G7036 | BVE258  |       | EBV-2210 | 594WA-25ST |
| 3 1/8 |       |        | A 17872  |           | 009G7037 | BVE318  |       | EBV-2250 | 594WA-31ST |

### CYCLEMASTER® Ball Valves

#### Standard With Access Port

| Size  | Inlet | Outlet | Mueller  | Universal | Danfoss  | Emerson | Henry  | Parker    | Sherwood    |
|-------|-------|--------|----------|-----------|----------|---------|--------|-----------|-------------|
| 1/4   |       |        | AQ17859  |           | 009G7050 | BVS014  |        | EBVT-1020 |             |
| 3/8   |       |        | AQ17860C |           | 009G7051 | BVS038  | 937202 | EBVT-1030 | 586WAS-6ST  |
| 1/2   |       |        | AQ17861C |           | 009G7052 | BVS012  | 937203 | EBVT-1040 | 586WAS-8ST  |
| 5/8   |       |        | AQ17862C |           | 009G7053 | BVS058  | 937204 | EBVT-1050 | 586WAS-10ST |
| 3/4   |       |        | AQ17863  |           | 009G7054 | BVS034  |        | EBVT-1060 | 587WAS-12ST |
| 7/8   |       |        | AQ17864C |           | 009G7055 | BVS078  | 937205 | EBVT-1070 | 587WAS-14ST |
| 1 1/8 |       |        | AQ17865  |           | 009G7056 | BVS118  | 937307 | EBVT-1090 | 591WAS-11ST |
| 1 3/8 |       |        | AC17866  |           | 009G7057 | BVS138  | 937409 | EBVT-1110 | 592WAS-13ST |
| 1 5/8 |       |        | AC17867  |           | 009G7058 | BVS158  | 937511 | EBVT-1130 | 593WAS-15ST |
| 2 1/8 |       |        | AC17868  |           | 009G7059 | BVS218  |        | EBVT-1170 | 594WAS-21ST |
| 2 5/8 |       |        | AC17869  |           | 009G7960 |         |        | EBVT-1210 |             |
| 3 1/8 |       |        | AC17870  |           | 009G7981 |         |        | EBVT-1250 |             |
| 2 5/8 |       |        | AC17871  |           | 009G7066 | BVS258  |        | EBVT-2210 | 594WAS-25ST |
| 3 1/8 |       |        | AC17872  |           | 009G7067 | BVS318  |        | EBVT-2250 | 594WAS-31ST |

# Competitive Cross Reference

## Check Valves

### Check Valves

#### 90° Angle

| Size  | Inlet | Outlet | Mueller  | Universal | Danfoss  | Emerson | Henry | Parker | Sherwood |
|-------|-------|--------|----------|-----------|----------|---------|-------|--------|----------|
| 7/8   |       |        | A 18383C |           |          |         |       |        |          |
| 7/8   |       |        | A 18565C |           |          |         |       |        |          |
| 7/8   |       |        | A 18566C |           | 020-1020 |         |       |        |          |
| 1 1/8 |       |        | A 18659C |           | 020-1021 |         |       |        |          |
| 1 3/8 |       |        | A 18660C |           | 020-1026 |         |       |        |          |
| 3/4   |       |        | A 18838  |           |          |         |       |        |          |

### Check Valves

#### Flare to Flare

| Size | Inlet | Outlet | Mueller | Universal | Danfoss  | Emerson | Henry   | Parker | Sherwood |
|------|-------|--------|---------|-----------|----------|---------|---------|--------|----------|
| 1/4  |       |        | A 15620 |           | 020-1040 |         | 119-1/4 |        | 802B-4   |
| 3/8  |       |        | A 15621 |           | 020-1041 |         | 119-3/8 |        | 802B-6   |
| 1/2  |       |        | A 15622 |           | 020-1042 |         | 119-1/2 |        | 802B-8   |
| 5/8  |       |        | A 15623 |           | 020-1043 |         | 119-5/8 |        | 802B-10  |

### Check Valves

#### Solder to Solder

| Size | Inlet | Outlet | Mueller | Universal | Danfoss  | Emerson | Henry   | Parker | Sherwood |
|------|-------|--------|---------|-----------|----------|---------|---------|--------|----------|
| 3/8  |       |        | A 15629 |           |          |         | 116003  |        |          |
| 1/2  |       |        | A 15630 |           |          |         | 116004  |        |          |
| 5/8  |       |        | A 15631 |           |          |         | 116005  |        |          |
| 1/4  |       |        | A 15632 |           | 020-1010 |         | 120-1/4 |        |          |
| 3/8  |       |        | A 15633 |           | 020-1011 |         | 120-3/8 |        |          |
| 1/2  |       |        | A 15634 |           | 020-1012 |         | 120-1/2 |        |          |
| 5/8  |       |        | A 15635 |           | 020-1018 |         | 120-5/8 |        |          |

### Check Valves

#### Magnetic

| Size  | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood  |
|-------|-------|--------|---------|-----------|---------|---------|-------|--------|-----------|
| 1/4   |       |        | A 17934 |           |         | ACK-4   |       |        | 900MA-4S  |
| 3/8   |       |        | A 17935 |           |         | ACK-6   |       |        | 900MA-6S  |
| 1/2   |       |        | A 17936 |           |         | ACK-8   |       |        | 900MA-8S  |
| 5/8   |       |        | A 17937 |           |         | ACK-10  |       |        | 900MA-10S |
| 3/4   |       |        | A 17938 |           |         | ACK-12  |       |        | 900MA-12S |
| 7/8   |       |        | A 17939 |           |         | ACK-14  |       |        | 900MA-14S |
| 1 1/8 |       |        | A 17940 |           |         | ACK-18  |       |        | 900MA-11S |
| 1 3/8 |       |        | A 17941 |           |         | ACK-22  |       |        | 900MA-13S |
| 1 5/8 |       |        | A 17942 |           |         | ACK-26  |       |        | 900MA-15S |
| 2 1/8 |       |        | A 17943 |           |         | ACK-34  |       |        | 900MA-21S |
| 2 5/8 |       |        | A 17944 |           |         | ACK-42  |       |        | 900MA-25S |
| 3 1/8 |       |        | A 17981 |           |         |         |       |        |           |

### Check Valves

#### Four-Bolt

| Size  | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|-------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 7/8   |       |        | B 34235 |           |         |         |       |        | 805C-14S |
| 1 1/8 |       |        | B 34236 |           |         |         |       |        | 806C-11S |
| 1 3/8 |       |        | B 34237 |           |         |         |       |        | 807C-13S |
| 1 5/8 |       |        | B 34238 |           |         |         |       |        | 808C-15S |
| 2 1/8 |       |        | B 34239 |           |         |         |       |        | 809C-21S |
| 2 5/8 |       |        | B 34240 |           |         |         |       |        | 884C-25S |
| 3 1/8 |       |        | B 34241 |           |         |         |       |        | 885C-31S |

# Competitive Cross Reference

## Check Valves

### Check Valves

#### Piston

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 3/4  |       |        | A 18838 |           |         |         |       |        |          |

### Check Valves

#### Screw Bonnet

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood  |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|-----------|
| 1/4  |       |        | A 17953 |           |         |         |       |        | 802B-4S   |
| 3/8  |       |        | A 17954 |           |         |         |       |        | 802B-6S   |
| 1/2  |       |        | A 17955 |           |         |         |       |        | 802B-8S   |
| 5/8  |       |        | A 17956 |           |         |         |       |        | 803B-10S  |
| 3/4  |       |        | A 17957 |           |         |         |       |        | 804A-12S  |
| 7/8  |       |        | A 17958 |           |         |         |       |        | 804A-14S  |
| 5/8  |       |        | B 34873 |           |         |         |       |        | 804A-10S  |
| 1/4  |       |        | AT17953 |           |         |         |       |        | 802B-4ST  |
| 3/8  |       |        | AT17954 |           |         |         |       |        | 802B-6ST  |
| 1/2  |       |        | AT17955 |           |         |         |       |        | 802B-8ST  |
| 5/8  |       |        | AT17956 |           |         |         |       |        | 803B-10ST |
| 7/8  |       |        | AT17958 |           |         |         |       |        | 804A-14ST |

# Competitive Cross Reference

## Line Valves

| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
|------------------------------------------------|-------|--------|---------|-----------|---------|---------|--------|--------|-----------|
| Backseating NPTFE Inlet to Flare               |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 1/2                                            |       |        | A 13220 |           |         |         |        |        | 605-8D    |
| 1/2                                            |       |        | A 13183 |           |         |         |        |        | 606B-10D  |
| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
| Backseating NPTFE Inlet to Solder              |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 3/4                                            |       |        | A 13979 |           |         |         |        |        | 607-14S   |
| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
| Non-Backseating Internal Swivel Flare to Flare |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 1/4                                            |       |        | A 17429 |           |         |         |        |        | 600B-4U4  |
| 3/8                                            |       |        | A 17474 |           |         |         |        |        | 600B-6U6  |
| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
| Non-Backseating NPTFE Inlet to Flare           |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 1/4                                            |       |        | A 11031 |           |         |         | 7761-B |        | 600A-4B   |
| 1/4                                            |       |        | A 11030 |           |         |         | 7763-B |        | 600A-6B   |
| 3/8                                            |       |        | A 13613 |           |         |         | 7764-B |        | 600A-4C   |
| 3/8                                            |       |        | A 13503 |           |         |         | 7766-B |        | 600A-6C   |
| 3/8                                            |       |        | A 11042 |           |         |         | 7767-B |        | 605-8C    |
| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
| Non-Backseating Solder to Flare                |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 1/4                                            |       |        | A 17502 |           |         |         |        |        | 617A-4S4  |
| 3/8                                            |       |        | A 17503 |           |         |         |        |        | 617A-6S6  |
| Packed Line Valves, Angle                      |       |        |         |           |         |         |        |        |           |
| Non-Backseating, NPTFE x NPTFI, NPTFI x NPTFE  |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
| 1/4                                            |       |        | A 13502 |           |         |         | 7771-B |        | 600A-B4   |
| Transducer Valves                              |       |        |         |           |         |         |        |        |           |
| NPTFI X NPTFE                                  |       |        |         |           |         |         |        |        |           |
| Size                                           | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood  |
|                                                |       |        | B 33837 |           |         |         |        |        | 600AX7-JB |

# Competitive Cross Reference

## Diaphragm Valves

### Packless Diaphragm Valves

#### Angle, NPTFE to Flare

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 1/4  |       |        | A 15525 |           |         |         |       |        | 114-4B   |
| 1/4  |       |        | A 15526 |           |         |         |       |        | 114-4C   |
| 3/8  |       |        | A 15527 |           |         |         |       |        | 114-6B   |
| 3/8  |       |        | A 15528 |           |         |         |       |        | 114-6C   |
| 1/2  |       |        | A 15530 |           |         |         |       |        | 115-8C   |
| 1/2  |       |        | A 15531 |           |         |         |       |        | 116-10D  |

### Packless Diaphragm Valves

#### Angle, Solder to Solder

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 1/4  |       |        | A 15539 |           |         |         | 5461  |        | 114-4S   |
| 1/2  |       |        | A 15541 |           |         |         | 5464  |        | 115-8S   |
| 5/8  |       |        | A 15542 |           |         |         |       |        | 116-10S  |

### Packless Diaphragm Valves

#### Straight, Flare to Flare

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 1/4  |       |        | A 14833 |           |         |         | 5151  |        | 214-4    |
| 3/8  |       |        | A 14835 |           |         |         | 5153  |        | 214-6    |
| 1/2  |       |        | A 14836 |           |         |         | 5154  |        | 215-8    |
| 5/8  |       |        | A 14837 |           |         |         | 5155  |        | 216-10   |

### Packless Diaphragm Valves

#### Straight, Solder to Solder

| Size | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|---------|-----------|---------|---------|-------|--------|----------|
| 1/4  |       |        | A 14838 |           |         |         | 5160  |        | 214-4S   |
| 3/8  |       |        | A 14840 |           |         |         | 5163  |        | 214-6S   |
| 1/2  |       |        | A 14841 |           |         |         | 5164  |        | 215-8S   |
| 5/8  |       |        | A 14842 |           |         |         | 5165  |        | 216-10S  |

### Packless Diaphragm Valves

#### Straight, Solder to Solder Extended Ends

| Size | Inlet | Outlet | Mueller  | Universal | Danfoss | Emerson | Henry | Parker | Sherwood |
|------|-------|--------|----------|-----------|---------|---------|-------|--------|----------|
| 1/4  |       |        | A 14848  |           |         |         | 5171  |        | 214-4ST  |
| 3/8  |       |        | A 14850C |           |         |         |       |        | 214-6ST  |
| 1/2  |       |        | A 14851  |           |         |         | 5174  |        | 215-8ST  |
| 5/8  |       |        | A 14852  |           |         |         | 5175  |        | 216-10ST |

# Competitive Cross Reference

## Pressure Relief Valves

| Pressure Relief Valves |       |        |         |           |         |         |       |        |            |
|------------------------|-------|--------|---------|-----------|---------|---------|-------|--------|------------|
| Angle NPTFE to Flare   |       |        |         |           |         |         |       |        |            |
| Size                   | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood   |
|                        | 1/4   | 3/8    | B 33746 |           |         |         | 526EA |        | 3212 3212C |
|                        | 3/8   | 3/8    | A 15512 |           |         |         | 526E  |        | 3214 3214C |
|                        | 3/8   | 1/2    | A 15513 |           |         |         | 526EB |        | 3215 3215C |
|                        | 1/2   | 5/8    | A 15514 |           |         |         | 527E  |        | 3220 3220C |
|                        | 3/8   | 1/2    | A 18784 |           |         |         |       |        | 3216 3216C |

| Pressure Relief Valves    |       |        |         |           |         |         |       |        |            |
|---------------------------|-------|--------|---------|-----------|---------|---------|-------|--------|------------|
| Atmospheric - NPTFE Inlet |       |        |         |           |         |         |       |        |            |
| Size                      | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry | Parker | Sherwood   |
|                           | 1/8   |        | A 15508 |           |         |         | 5220  |        | 3000 3000C |
|                           | 1/4   |        | A 15509 |           |         |         | 5221  |        | 3001 3001C |
|                           | 3/8   |        | A 17430 |           |         |         | 5223  |        | 3002 3002C |
|                           | 1/4   |        | B 33755 |           |         |         |       |        | 3001 3001C |

| Pressure Relief Valves                      |       |        |         |           |         |         |        |        |            |
|---------------------------------------------|-------|--------|---------|-----------|---------|---------|--------|--------|------------|
| Straight Thru - NPTFE Inlet to Flare Outlet |       |        |         |           |         |         |        |        |            |
| Size                                        | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry  | Parker | Sherwood   |
|                                             | 1/4   | 3/8    | A 15501 |           |         |         | 5230   |        | 3012 3012C |
|                                             | 3/8   | 3/8    | A 15502 |           |         |         | 5231   |        | 3014 3014C |
|                                             | 3/8   | 1/2    | A 15503 |           |         |         | 5231-A |        | 3015 3015C |
|                                             | 1/2   | 5/8    | A 15504 |           |         |         | 5232   |        | 3020 3020C |
|                                             | 1/4   | 3/8    | B 33752 |           |         |         | 5230   |        | 3012 3012C |
|                                             | 3/8   | 5/8    | A 18737 |           |         |         | 5233A  |        |            |
|                                             | 3/8   | 1/2    | A 18783 |           |         |         |        |        | 3016 3016C |

| Pressure Relief Valves                      |       |        |         |           |         |         |          |        |            |
|---------------------------------------------|-------|--------|---------|-----------|---------|---------|----------|--------|------------|
| Straight Thru - NPTFE Inlet to NPTFI Outlet |       |        |         |           |         |         |          |        |            |
| Size                                        | Inlet | Outlet | Mueller | Universal | Danfoss | Emerson | Henry    | Parker | Sherwood   |
|                                             | 1/2   | 1/2    | A 18356 |           |         |         | 5232B    |        | 3030 3030C |
|                                             | 1/2   | 3/4    | A 18357 |           |         |         | 5235A    |        | 3031 3031C |
|                                             | 3/4   | 3/4    | A 15506 |           |         |         |          |        | 3045 3045C |
|                                             | 3/4   | 3/4    | A 18358 |           |         |         |          |        | 3045 3045C |
|                                             | 1     | 1      | A 18387 |           |         |         |          |        | 3060 3060C |
|                                             | 1 1/4 | 1 1/4  | A 17834 |           |         |         |          |        | 3075 3075C |
|                                             | 3/8   | 3/4    | A 18736 |           |         |         | 5234A    |        |            |
|                                             | 1/2   | 3/4    | A 18762 |           |         |         | 5235A    |        |            |
|                                             | 3/4   | 1      | A 18735 |           |         |         | 5244-3/4 |        |            |

# Competitive Cross Reference

## Liquid Line Filter Driers

### DRYMASTER® Filter Driers

#### Liquid Line Flare

| Size | Dess. Cu In | Mueller | Mueller High Capacity | Universal | Danfoss | Emerson | Henry | Parker |
|------|-------------|---------|-----------------------|-----------|---------|---------|-------|--------|
| 1/4  | 3           | A 16600 | A 18184               | FL-032    |         | EK-032  | H032  | C-032  |
| 3/8  | 3           | A 16601 | A 18185               | FL-033    |         | EK-033  | H033  | C-033  |
| 1/4  | 5           | A 16606 | A 18186               | FL-052    |         | EK-352  | H352  | C-052  |
| 3/8  | 5           | A 16607 | A 18187               | FL-053    |         | EK-053  | H053  | C-053  |
| 1/4  | 8           | A 16608 | A 18188               | FL-082    |         | EK-082  | H082  | C-082  |
| 3/8  | 8           | A 16609 | A 18189               | FL-083    |         | EK-083  | H083  | C-083  |
| 1/2  | 8           | A 16610 | A 18190               | FL-084    |         | EK-084  | H084  | C-084  |
| 1/4  | 16          | A 16612 | A 18191               | FL-162    |         | EK-162  | H162  | C-162  |
| 3/8  | 16          | A 16613 | A 18192               | FL-163    |         | EK-163  | H163  | C-163  |
| 1/2  | 16          | A 16614 | A 18193               | FL-164    |         | EK-164  | H164  | C-164  |
| 5/8  | 16          | A 16615 | A 18194               | FL-165    |         | EK-165  | H165  | C-165  |
| 3/8  | 30          | A 16618 | A 18195               | FL-303    |         | EK-303  | H303  | C-303  |
| 1/2  | 30          | A 16619 | A 18196               | FL-304    |         | EK-304  | H304  | C-304  |
| 5/8  | 30          | A 16620 | A 18197               | FL-305    |         | EK-305  | H305  | C-305  |
| 3/8  | 41          | A 16623 | A 18198               | FL-413    |         | EK-413  | H413  | C-413  |
| 1/2  | 41          | A 16624 | A 18199               | FL-414    |         | EK-414  | H414  | C-414  |
| 5/8  | 41          | A 16625 | A 18200               | FL-415    |         | EK-415  | H415  | C-415  |

### DRYMASTER® Filter Driers

#### Liquid Line Solder

| Size  | Dess. Cu In | Mueller | Mueller High Capacity | Universal | Danfoss | Emerson | Henry  | Parker  |
|-------|-------------|---------|-----------------------|-----------|---------|---------|--------|---------|
| 1/4   | 3           | A 16640 | A 18598               | SD-032    |         | EK-032S | H032-S | C-032-S |
| 3/8   | 3           | A 16641 | A 18599               | SD-033    |         | EK-033S | H033-S | C-033-S |
| 1/4   | 5           | A 16646 | A 18654               | SD-052    |         | EK-052S | H052-S | C-052-S |
| 3/8   | 5           | A 16647 | A 18655               | SD-053    |         | EK-053S | H053-S | C-053-S |
| 1/4   | 8           | A 16648 | A 18656               | SD-082    |         | EK-082S | H082-S | C-082-S |
| 3/8   | 8           | A 16649 | A 18657               | SD-083    |         | EK-083S | H083-S | C-083-S |
| 1/2   | 8           | A 16650 | A 18658               | SD-084    |         | EK-084S | H084-S | C-084-S |
| 3/8   | 16          | A 16653 | A 18699               | SD-163    |         | EK-163S | H163-S | C-163-S |
| 1/2   | 16          | A 16654 | A 18700               | SD-164    |         | EK-164S | H164-S | C-164-S |
| 5/8   | 16          | A 16655 | A 18701               | SD-165    |         | EK-165S | H165-S | C-165-S |
| 3/4   | 16          | A 16657 | A 18702               | SD-166    |         | EK-166S |        |         |
| 7/8   | 16          | A 16656 | A 18703               | SD-167    |         | EK-167S | H167-S | C-167-S |
| 3/8   | 30          | A 16658 | A 18741               | SD-303    |         | EK-303S |        | C-303-S |
| 1/2   | 30          | A 16659 | A 18742               | SD-304    |         | EK-304S | H304-S | C-304-S |
| 5/8   | 30          | A 16660 | A 18743               | SD-305    |         | EK-305S | H305-S | C-305-S |
| 7/8   | 30          | A 16662 | A 18744               | SD-307    |         | EK-307S | H307-S | C-307-S |
| 1 1/8 | 30          | A 16661 | A 18745               | SD-309    |         | EK-309S | H309-S |         |
| 3/8   | 41          | A 16663 | A 18746               | SD-413    |         |         |        |         |
| 1/2   | 41          | A 16664 | A 18747               | SD-414    |         | EK-414S |        | C-414-S |
| 5/8   | 41          | A 16665 | A 18748               | SD-415    |         | EK-415S | H415-S | C-415-S |
| 7/8   | 41          | A 16667 | A 18749               | SD-417    |         | EK-417S | H417-S | C-417-S |
| 1 1/8 | 41          | A 16668 |                       | SD-419    |         | EK-419S | H419-S | C-419-S |

# Competitive Cross Reference

## Suction Line and Heat Pump Driers

### DRYMASTER® Filter Driers

#### Suction Line Flare

| Size | Dess. Cu In | Mueller | Mueller High Capacity | Universal  | Danfoss | Emerson | Henry | Parker |
|------|-------------|---------|-----------------------|------------|---------|---------|-------|--------|
| 1/2  | 16          | A 17225 |                       | FDF-164-TT |         |         |       |        |
| 5/8  | 16          | A 17226 |                       | FDF-165-TT |         |         |       |        |

### DRYMASTER® Filter Driers

#### Suction Line Solder

| Size  | Dess. Cu In | Mueller | Mueller High Capacity | Universal  | Danfoss | Emerson | Henry | Parker |
|-------|-------------|---------|-----------------------|------------|---------|---------|-------|--------|
| 1/2   | 16          | A 17224 |                       | FDS-164-TT |         |         |       |        |
| 5/8   | 16          | A 17227 |                       | FDS-165-TT |         |         |       |        |
| 3/4   | 16          | A 17228 |                       | FDS-166-TT |         |         |       |        |
| 7/8   | 16          | A 17229 |                       | FDS-167-TT |         |         |       |        |
| 1 1/8 | 16          | A 17230 |                       | FDS-169-TT |         |         |       |        |
| 1 1/8 | 30          | A 17231 |                       | FDS-309-TT |         |         |       |        |
| 5/8   | 30          | A 17300 |                       | FDS-305-TT |         |         |       |        |
| 3/4   | 30          | A 17301 |                       | FDS-306-TT |         |         |       |        |
| 7/8   | 30          | A 17302 |                       | FDS-307-TT |         |         |       |        |

### DRYMASTER® Heat Pump Driers

#### Flare Connection

| Size | Dess. Cu In | Mueller | Mueller High Capacity | Universal | Danfoss | Emerson | Henry | Parker |
|------|-------------|---------|-----------------------|-----------|---------|---------|-------|--------|
| 3/8  | 8           | A 17388 |                       | HPF-083   |         |         |       |        |
| 3/8  | 16          | A 17390 |                       | HPF-163   |         |         |       |        |
| 1/2  | 16          | A 17983 |                       | HPF-164   |         |         |       |        |
| 5/8  | 16          | A 17984 |                       | HPF-165   |         |         |       |        |

### DRYMASTER® Heat Pump Driers

#### Solder Connection

| Size | Dess. Cu In | Mueller | Mueller High Capacity | Universal | Danfoss | Emerson | Henry | Parker |
|------|-------------|---------|-----------------------|-----------|---------|---------|-------|--------|
| 3/8  | 8           | A 17389 |                       | HPS-083   |         |         |       |        |
| 3/8  | 16          | A 17391 |                       | HPS-163   |         |         |       |        |
| 1/2  | 16          | A 17392 |                       | HPS-164   |         |         |       |        |
| 5/8  | 16          | A 17985 |                       | HPS-165   |         |         |       |        |

# Competitive Cross Reference

## Replaceable Filter Drier Cores and Shells

### DRYMASTER® Filter Driers

#### Replaceable Core Shells

| Size  | Dess. Cu In | Mueller | Danfoss   | Emerson                 | Henry     | Parker       | Sporlan   |
|-------|-------------|---------|-----------|-------------------------|-----------|--------------|-----------|
| 5/8   |             | A 18583 | DCR 485   | STAS 485T               | SRC-485   | P 485        | C 485 G   |
| 7/8   |             | A 18584 | DCR 487   | STAS 487T               | SRC-487   | P 487        | C 487 G   |
| 1 1/8 |             | A 18585 | DCR 489   | STAS 489T               | SRC-489   |              | C 489 G   |
| 1 3/8 |             | A 18586 | DCR 4811  | STAS 4811T, STAS 4811SV | SRC-4811  | P 4811       | C 4811 G  |
| 1 5/8 |             | A 18587 | DCR 4813  | STAS 4813SV, STAS 4813T | SRC-4813  | P 4813       | C 4813 G  |
| 2 1/8 |             | A 18588 | DCR 4817  | STAS 4817SV             | SRC-4817  | P 4817       |           |
| 2 5/8 |             | A 18664 | DCR 4821  | STAS 4821SV             |           | P 4821       |           |
| 7/8   |             | A 18589 | DCR 967   | STAS 967T               | SRC-967   | P 967, P 489 | C 967 G   |
| 1 3/8 |             | A 18608 | DCR 19211 | STAS 19211T             | SRC-19211 | P 19211      | C 19211 G |
| 1 5/8 |             | A 18609 | DCR 19213 | STAS 19213T             | SRC-19213 | P 19213      | C 19213 G |
| 2 1/8 |             | A 18610 | DCR 19217 | STAS 19217T             | SRC-19217 | P 19217      | C 19217 G |
| 2 1/8 |             | A 18593 | DCR 9617  | STAS 9617T, STAS 9617SV | SRC-9617  | P 9617       |           |
| 1 1/8 |             | A 18590 | DCR 969   | STAS 969T               | SRC-969   | P 969        | C 969 G   |
| 1 3/8 |             | A 18591 | DCR 9611  | STAS 9611T              | SRC-9611  | P 9611       | C 9611 G  |
| 1 5/8 |             | A 18592 | DCR 9613  | STAS 9613T              | SRC-9613  | P 9613       | C 9613 G  |
| 1 1/8 |             | A 18604 | DCR 1449  | STAS 1449T              | SRC-1449  | P 1449       | C 1449 G  |
| 1 3/8 |             | A 18605 | DCR 14411 | STAS 14411T             | SRC-14411 | P 14411      | C 14411 G |
| 1 5/8 |             | A 18606 | DCR 14413 | STAS 14413T             | SRC-14413 | P 14413      | C 14413 G |
| 2 1/8 |             | A 18607 | DCR 14417 | STAS 14417T             | SRC-14417 | P 14417      |           |
| 2 5/8 |             | A 18665 | DCR 9621  | STAS 9621SV             |           | P 9621       |           |

### DRYMASTER® Filter Drier Cores

#### High Capacity Core

| Size | Dess. Cu In | Mueller | Danfoss    | Emerson            | Henry    | Parker               | Sporlan          |
|------|-------------|---------|------------|--------------------|----------|----------------------|------------------|
| 48   |             | P 36818 | 48DC, 48DM | H-48, HX-48, UK-48 | S-848-CM | PCK-48, PCX-48, Z-48 | RCW-48, RCW-48GL |
| 48   |             | P 37267 |            | W-48-HH            | S-848-CC | PCK-48HH             | RC-4864-HH       |
| 48   |             | P 37266 | 48-DA      | D-48               |          | PCK-48               | RC-4864          |

# Competitive Cross Reference

## Sight Glass/Moisture Indicators

| Sight Glass/ Moisture Indicators                   |         |           |          |         |       |        |
|----------------------------------------------------|---------|-----------|----------|---------|-------|--------|
| Hermetically Sealed, Solder x Solder Extended Tube |         |           |          |         |       |        |
| Size                                               | Mueller | Universal | Danfoss  | Emerson | Henry | Parker |
| 1/4                                                | A 18114 |           |          | 065405  |       |        |
| 3/8                                                | A 18115 |           |          | 065406  |       |        |
| 1/2                                                | A 18116 |           |          | 065407  |       |        |
| 5/8                                                | A 18117 |           |          | 065408  |       |        |
| 3/4                                                | A 18118 |           |          | 065409  |       |        |
| 7/8                                                | A 18119 |           |          | 065410  |       |        |
| 1 1/8                                              | A 18120 |           |          | 065411  |       |        |
| 1 3/8                                              | A 18121 |           | 020-4000 |         |       |        |
| 1 5/8                                              | A 18122 |           |          |         |       |        |
| 2 1/8                                              | A 18123 |           |          |         |       |        |
| 1 1/8                                              | A 18124 |           |          | 060853  |       |        |
| 1 3/8                                              | A 18125 |           |          | 061030  |       |        |
| 1 5/8                                              | A 18126 |           |          | 061031  |       |        |
| 2 1/8                                              | A 18127 |           |          | 061032  |       |        |
| 3/8                                                | A 18111 |           |          |         |       |        |
| 1/2                                                | A 18112 |           |          |         |       |        |
| 5/8                                                | A 18113 |           |          |         |       |        |
| 1/4                                                | A 18101 |           |          | 065391  |       |        |
| 3/8                                                | A 18102 |           |          | 065392  |       |        |
| 1/2                                                | A 18103 |           |          | 065393  |       |        |
| 5/8                                                | A 18104 |           |          | 065394  |       |        |
| 1/4                                                | A 18106 |           |          | 065396  |       |        |
| 3/8                                                | A 18107 |           |          | 065397  |       |        |
| 1/2                                                | A 18108 |           |          | 065398  |       |        |

# Competitive Cross Reference

## 45° Flare Fittings

| Universal | Mueller | Universal | Mueller | Universal | Mueller | Universal | Mueller |
|-----------|---------|-----------|---------|-----------|---------|-----------|---------|
| B1-3      | A 04737 | N4-6      | A 00441 | T2-8      | A 00344 | U3-8C     | A 04727 |
| B1-4      | A 00414 | N4-8      | A 00442 | T2-10     | A 04541 | U3-8D     | A 04728 |
| B1-5      | A 04935 | N4-10     | A 01112 | T2-12     | A 04749 | U3-10C    | A 04929 |
| B1-6      | A 00415 | N4-12     | A 04731 | T3-4A     | A 00127 | U3-10D    | A 04819 |
| B1-8      | A 00416 | N5-4      | A 04544 | T3-4B     | A 04998 | U3-10E    | A 04977 |
| B1-10     | A 00485 | N5-5      | A 04758 | T3-6B     | A 00133 | U4-4      | A 00385 |
| B1-12     | A 04738 | N5-6      | A 04545 | T3-6C     | A 04941 | U4-6      | A 00386 |
| B2-3      | A 05156 | N5-8      | A 04546 | T3-8C     | A 04778 | U4-8      | A 00387 |
| B2-4      | A 00401 | N5-10     | A 04560 | T3-8D     | A 04944 | UR2-43    | A 05270 |
| B2-5      | A 04811 | N5-12     | A 04951 | T3-10D    | A 04779 | UR2-54    | A 08730 |
| B2-6      | A 00402 | NFT5-4    | A 16447 | T6-4      | A 06330 | UR2-64    | A 01171 |
| B2-8      | A 00403 | NFT5-6    | A 16448 | TR2-46    | A 04994 | UR2-65    | A 04981 |
| B2-10     | A 05186 | NRS4-43   | A 05132 | TR2-64    | A 04574 | UR2-84    | A 00356 |
| B2-12     | A 04822 | NRS4-54   | A 05247 | TR2-68    | A 04547 | UR2-86    | A 00149 |
| E1-4A     | A 00335 | NRS4-64   | A 05140 | TR2-84    | A 04558 | UR2-106   | A 05334 |
| E1-4B     | A 04890 | NRS4-65   | A 05282 | TR2-86    | A 04559 | UR2-108   | A 04846 |
| E1-4C     | A 04812 | NRS4-86   | A 05141 | TR2-810   | A 04991 | UR2-128   | A 04734 |
| E1-6A     | A 04937 | NRS4-108  | A 05228 | U1-3A     | A 01117 | UR2-1210  | A 04784 |
| E1-6B     | A 00337 | NS4-3     | A 05238 | U1-4A     | A 00330 | UR3-43    | A 05147 |
| E1-6C     | A 04889 | NS4-4     | A 05051 | U1-4B     | A 04585 | UR3-46    | A 05041 |
| E1-6D     | A 04886 | NS4-5     | A 05239 | U1-4C     | A 01197 | UR3-48    | A 08127 |
| E1-8B     | A 05044 | NS4-6     | A 05052 | U1-4D     | A 04628 | UR3-64    | A 00479 |
| E1-8C     | A 00339 | NS4-8     | A 05053 | U1-5A     | A 00331 | UR3-68    | A 04888 |
| E1-8D     | A 04887 | NS4-10    | A 05157 | U1-5B     | A 05036 | US3-44    | A 03431 |
| E1-8E     | A 05072 | NS4-12    | A 05222 | U1-5C     | A 01198 | US3-45    | A 03466 |
| E1-10C    | A 04856 | P2-3      | A 05045 | U1-6A     | A 05003 | US3-46    | A 03494 |
| E1-10D    | A 04538 | P2-4      | A 00121 | U1-6B     | A 00332 | US3-64    | A 03443 |
| E1-10E    | A 05054 | P2-5      | A 00124 | U1-6C     | A 01199 | US3-65    | A 03464 |
| E1-12D    | A 04776 | P2-6      | A 00122 | U1-6D     | A 04993 | US3-66    | A 03492 |
| E1-12E    | A 04746 | P2-8      | A 00123 | U1-8A     | A 05034 | US3-68    | A 03547 |
| E2-4      | A 00147 | P2-10     | A 04536 | U1-8B     | A 04439 | US3-86    | A 03504 |
| E2-6      | A 00146 | P2-12     | A 04757 | U1-8C     | A 00334 | US3-88    | A 03546 |
| E2-8      | A 00145 | P3-A      | A 00250 | U1-8D     | A 04780 | US3-108   | A 03519 |
| E2-10     | A 04539 | P3-B      | A 00249 | U1-8E     | A 05066 | US3-610   | A 06601 |
| E2-12     | A 04745 | P3-C      | A 00425 | U1-10B    | A 05035 | US3-810   | A 02259 |
| E3-4A     | A 04630 | P3-D      | A 04759 | U1-10C    | A 01195 | US3-1010  | A 02258 |
| E3-4B     | A 05007 | P3-E      | A 05004 | U1-10D    | A 04540 | US3-1012  | A 02272 |
| E3-6B     | A 04632 | P3-F      | A 04850 | U1-10E    | A 04827 | US3-1014  | A 02378 |
| E4-44     | A 04898 | R1-AB     | A 08756 | U1-12C    | A 05005 | US3-1212  | A 05307 |
| E4-66     | A 08082 | R1-BA     | A 00630 | U1-12D    | A 04739 | US3-1214  | A 05425 |
| E4-88     | A 04897 | R1-CB     | A 00631 | U1-12E    | A 04740 | US4-4     | A 13563 |
| ES2-44    | A 03449 | R1-DB     | A 00492 | U2-3      | A 04621 | US4-5     | A 13564 |
| ES2-66    | A 03511 | R1-DC     | A 00632 | U2-4      | A 00325 | US4-6     | A 13565 |
| ES2-68    | A 07852 | R1-EC     | A 00493 | U2-5      | A 00326 | US4-8     | A 13567 |
| ES2-88    | A 07851 | R1-ED     | A 00633 | U2-6      | A 00327 | US4-10    | A 13568 |
| ES2-1010  | A 06611 | T1-4A     | A 00345 | U2-8      | A 00329 | US5-44    | A 15725 |
| ES4-44    | A 15940 | T1-4B     | A 04859 | U2-10     | A 04845 | US5-66    | A 15726 |
| ES4-66    | A 15941 | T1-4C     | A 04771 | U2-12     | A 04733 | US5-88    | A 15727 |
| ES4-88    | A 15943 | T1-6B     | A 00347 | U3-4A     | A 04622 | US5-1010  | A 15728 |
| ES4-1010  | A 15944 | T1-6C     | A 04922 | U3-4B     | A 04625 | US5-1212  | A 15729 |
| K1-1      | A 08073 | T1-8B     | A 05246 | U3-4C     | A 04961 | UR3-84    | A 00480 |
| K1-3      | A 08274 | T1-8C     | A 00349 | U3-6A     | A 04927 | UR3-86    | A 00481 |
| K1-5      | A 08276 | T1-8D     | A 04924 | U3-6B     | A 04624 | UR3-108   | A 04770 |
| K1-8      | A 08166 | T1-10D    | A 04754 | U3-6C     | A 04627 | UR3-810   | A 04879 |
| N4-4      | A 00440 | T2-4      | A 00340 | U3-6D     | A 08104 | UR3-1012  | A 04878 |
| N4-5      | A 01110 | T2-6      | A 00342 | U3-8B     | A 04928 | UR3-1210  | A 04826 |

# Cross Reference

## Inactive Part Number Replacements

| INACTIVE | ACTIVE   | DESCRIPTION                                  |
|----------|----------|----------------------------------------------|
| A 04597  | A 16474  | Seal Cap & Gasket                            |
| A 15599  | A 17958  | 7/8 Screw Bonnet Check Vlv                   |
| A 16317  | B 34552  | 7/8 Brass Compressor Valve                   |
| A 16493  | A 15586  | 2 1/8 Comp. Valve, Flanged Union, Cast Iron  |
| A 16496  | B 32337  | 1 5/8 CI Comp Valve                          |
| A 16600  | A 18184  | 1/4 FL DRYMASTER Plus Drier 3 CU IN          |
| A 16601  | A 18185  | 3/8 FL DRYMASTER Plus Drier 3 CU IN          |
| A 16606  | A 18186  | 1/4 FL DRYMASTER Plus Drier 5 CU IN          |
| A 16607  | A 18187  | 3/8 FL DRYMASTER Plus Drier 5 CU IN          |
| A 16608  | A 18188  | 1/4 FL DRYMASTER Plus Drier 8 CU IN          |
| A 16609  | A 18189  | 3/8 FL DRYMASTER Plus Drier 8 CU IN          |
| A 16610  | A 18190  | 1/2 FL DRYMASTER Plus Drier 8 CU IN          |
| A 16612  | A 18191  | 1/4 FL DRYMASTER Plus Drier 16 CU IN         |
| A 16613  | A 18192  | 3/8 FL DRYMASTER Plus Drier 16 CU IN         |
| A 16614  | A 18193  | 1/2 FL DRYMASTER Plus Drier 16 CU IN         |
| A 16615  | A 18194  | 5/8 FL DRYMASTER Plus Drier 16 CU IN         |
| A 16618  | A 18195  | 3/8 FL DRYMASTER Plus Drier 30 CU IN         |
| A 16619  | A 18196  | 1/2 FL DRYMASTER Plus Drier 30 CU IN         |
| A 16620  | A 18197  | 5/8 FL DRYMASTER Plus Drier 30 CU IN         |
| A 16623  | A 18198  | 3/8 FL DRYMASTER Plus Drier 41 CU IN         |
| A 16624  | A 18199  | 1/2 FL DRYMASTER Plus Drier 41 CU IN         |
| A 16625  | A 18200  | 5/8 FL DRYMASTER Plus Drier 41 CU IN         |
| A 16640  | A 18598  | 1/4 SD DRYMASTER Plus Drier 3 CU IN          |
| A 16641  | A 18599  | 3/8 SD DRYMASTER Plus Drier 3 CU IN          |
| A 16646  | A 18654  | 1/4 SD DRYMASTER Plus Drier 5 CU IN          |
| A 16647  | A 18655  | 3/8 SD DRYMASTER Plus Drier 5 CU IN          |
| A 16648  | A 18656  | 1/4 SD DRYMASTER Plus Drier 8 CU IN          |
| A 16649  | A 18657  | 3/8 SD DRYMASTER Plus Drier 8 CU IN          |
| A 16650  | A 18658  | 1/2 SD DRYMASTER Plus Drier 8 CU IN          |
| A 16653  | A 18699  | 3/8 SD DRYMASTER Plus Drier 16 CU IN         |
| A 16654  | A 18700  | 1/2 SD DRYMASTER Plus Drier 16 CU IN         |
| A 16655  | A 18701  | 5/8 SD DRYMASTER Plus Drier 16 CU IN         |
| A 16656  | A 18703  | 7/8 SD DRYMASTER Plus Drier 16 CU IN         |
| A 16657  | A 18702  | 3/4 SD DRYMASTER Plus Drier 16 CU IN         |
| A 16658  | A 18741  | 3/8 SD DRYMASTER Plus Drier 30 CU IN         |
| A 16659  | A 18742  | 1/2 SD DRYMASTER Plus Drier 30 CU IN         |
| A 16660  | A 18743  | 5/8 SD DRYMASTER Plus Drier 30 CU IN         |
| A 16661  | A 18745  | 1 1/8 SD DRYMASTER Plus Drier 30 CU IN       |
| A 16662  | A 18744  | 7/8 SD DRYMASTER Plus Drier 30 CU IN         |
| A 16663  | A 18746  | 3/8 SD DRYMASTER Plus Drier 41 CU IN         |
| A 16664  | A 18747  | 1/2 SD DRYMASTER Plus Drier 41 CU IN         |
| A 16665  | A 18748  | 5/8 SD DRYMASTER Plus Drier 41 CU IN         |
| A 16667  | A 18749  | 7/8 SD DRYMASTER Plus Drier 41 CU IN         |
| A 17260  | AP17860C | 3/8 Ball Valve Drilled & Tapped              |
| A 17261  | AP17861C | 1/2 Ball Valve Drilled & Tapped              |
| A 17262  | AP17862C | 5/8 Ball Valve Drilled & Tapped              |
| A 17263  | AP17863  | 3/4 Ball Valve Drilled & Tapped              |
| A 17264  | AP17864C | 7/8 Ball Valve Drilled & Tapped              |
| A 17265  | AP17865  | 1 1/8 Ball Valve Drilled & Tapped            |
| A 17266  | A 17866  | 1 3/8 Ball Valve Standard                    |
| A 17267  | A 17867  | 1 5/8 Ball Valve Standard                    |
| A 17268  | A 17868  | 2 1/8 Ball Valve Standard                    |
| A 17269  | A 17871  | 2 5/8 Ball Valve Standard (Reduced Port)     |
| A 17270  | A 17872  | 3 1/8 Ball Valve Standard (Reduced Port)     |
| A 17460  | AQ17860C | 3/8 Ball Valve Drilled & Tapped, Access Port |
| A 17461  | AQ17861C | 1/2 Ball Valve Drilled & Tapped, Access Port |

| INACTIVE | ACTIVE   | DESCRIPTION                                    |
|----------|----------|------------------------------------------------|
| A 17462  | AQ17862C | 5/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17463  | AQ17863  | 3/4 Ball Valve, Drilled & Tapped, Access Port  |
| A 17464  | AQ17864C | 7/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17465  | AQ17865  | 1 1/8 Ball Valve Drilled & Tapped, Access Port |
| A 17466  | AC17866  | 1 3/8 Ball Valve, Standard with Access Port    |
| A 17467  | AC17867  | 1 5/8 Ball Valve, Standard with Access Port    |
| A 17468  | AC17868  | 2 1/8 Ball Valve, Standard with Access Port    |
| A 17469  | AC17871  | 2 5/8 Ball Valve, Standard with Access Port    |
| A 17470  | AC17872  | 3 1/8 Ball Valve, Standard with Access Port    |
| A 17501  | AP17859  | 1/4 Ball Valve Drilled & Tapped                |
| A 17539  | AU17860  | 3/8 3-Way Ball Valve w/ Access                 |
| A 17540  | AU17861  | 1/2 3-Way Ball Valve w/ Access                 |
| A 17541  | AU17862  | 5/8 3-Way Ball Valve w/ Access                 |
| A 17543  | AU17864  | 7/8 3-Way Ball Valve w/ Access                 |
| A 17544  | AU17865  | 1 1/8 3-Way Ball Valve w/ Access               |
| A 17547  | AU17868  | 2 1/8 3-Way Ball Valve w/ Access               |
| A 17548  | AU17871  | 2 5/8 3-Way Ball Valve w/ Access               |
| A 17549  | AU17872  | 3 1/8 3-Way Ball Valve w/ Access               |
| A 17563  | AQ17860C | 3/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17564  | AQ17861C | 1/2 Ball Valve Drilled & Tapped, Access Port   |
| A 17565  | AQ17862C | 5/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17567  | AQ17864C | 7/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17568  | AQ17865  | 1 1/8 Ball Valve Drilled & Tapped, Access Port |
| A 17569  | AC17866  | 1 3/8 Ball Valve, Standard with Access Port    |
| A 17570  | AC17867  | 1 5/8 Ball Valve, Standard with Access Port    |
| A 17571  | AC17868  | 2 1/8 Ball Valve, Standard with Access Port    |
| A 17572  | AC17871  | 2 5/8 Ball Valve, Standard with Access Port    |
| A 17573  | AC17872  | 3 1/8 Ball Valve, Standard with Access Port    |
| A 17681  | B 32337  | 1 5/8 CI Comp Valve                            |
| A 17699  | AQ17860C | 3/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17700  | AQ17861C | 1/2 Ball Valve Drilled & Tapped, Access Port   |
| A 17701  | AQ17862C | 5/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17702  | AQ17863  | 3/4 Ball Valve, Drilled & Tapped, Access Port  |
| A 17703  | AQ17864C | 7/8 Ball Valve Drilled & Tapped, Access Port   |
| A 17704  | AQ17865  | 1 1/8 Ball Valve Drilled & Tapped, Access Port |
| A 17705  | AC17866  | 1 3/8 Ball Valve, Standard with Access Port    |
| A 17706  | AC17867  | 1 5/8 Ball Valve, Standard with Access Port    |
| A 17707  | AC17868  | 2 1/8 Ball Valve, Standard with Access Port    |
| A 17708  | AC17871  | 2 5/8 Ball Valve, Standard with Access Port    |
| A 17709  | AC17872  | 3 1/8 Ball Valve, Standard with Access Port    |
| A 17711  | AU17860  | 3/8 3-Way Ball Valve w/ Access                 |
| A 17712  | AU17861  | 1/2 3-Way Ball Valve w/ Access                 |
| A 17713  | AU17862  | 5/8 3-Way Ball Valve w/ Access                 |
| A 17714  | AU17863  | 3/4 3-Way Ball Valve w/ access                 |
| A 17715  | AU17864  | 7/8 3-Way Ball Valve w/ Access                 |
| A 17716  | AU17865  | 1 1/8 3-Way Ball Valve w/ Access               |
| A 17759  | AP17859  | 1/4 Ball Valve Drilled & Tapped                |
| A 17760  | AP17860C | 3/8 Ball Valve Drilled & Tapped                |
| A 17761  | AP17861C | 1/2 Ball Valve Drilled & Tapped                |
| A 17762  | AP17862C | 5/8 Ball Valve Drilled & Tapped                |
| A 17763  | AP17863  | 3/4 Ball Valve Drilled & Tapped                |
| A 17764  | AP17864C | 7/8 Ball Valve Drilled & Tapped                |
| A 17765  | AP17865  | 1 1/8 Ball Valve Drilled & Tapped              |
| A 17766  | AP17866  | 1 3/8 Ball Valve Drilled & Tapped              |
| A 17767  | AP17867  | 1 5/8 Ball Valve Drilled & Tapped              |
| A 17768  | AP17868  | 2 1/8 Ball Valve Drilled & Tapped              |
| A 17769  | AP17871  | 2 5/8 Ball Valve Drilled & Tapped              |

# Cross Reference

## Inactive Part Number Replacements

| INACTIVE  | ACTIVE   | DESCRIPTION                                                        |
|-----------|----------|--------------------------------------------------------------------|
| A 17786   | A 17869  | 2 5/8 Ball Valve Standard (Full Flow)                              |
| A 17787   | AC17869  | 2 5/8 Ball Valve, Standard with Access Port (Full Flow)            |
| A 17793   | AW17861  | 1/2 Actuated Ball Valve, Standard                                  |
| A 17794   | AW17862  | 5/8 Actuated Ball Valve, Standard                                  |
| A 17795   | AW17863  | 3/4 Actuated Ball Valve, Standard                                  |
| A 17796   | AW17864  | 7/8 Actuated Ball Valve, Standard                                  |
| A 17797   | AW17865  | 1 1/8 Actuated Ball Valve, Standard                                |
| A 17798   | AW17866  | 1 3/8 Actuated Ball Valve, Standard                                |
| A 17799   | AW17867  | 1 5/8 Actuated Ball Valve, Standard                                |
| A 17800   | AW17868  | 2 1/8 Actuated Ball Valve, Standard                                |
| A 17801   | AW17871  | 2 5/8 Actuated Ball Valve, Standard                                |
| A 17802   | AW17872  | 3 1/8 Actuated Ball Valve, Standard                                |
| A 17805   | AY17861  | 1/2 3-way Actuated Ball Valve                                      |
| A 17806   | AY17862  | 5/8 3-way Actuated Ball Valve                                      |
| A 17807   | AY17863  | 3/4 3-way Actuated Ball Valve                                      |
| A 17808   | AY17864  | 7/8 3-way Actuated Ball Valve                                      |
| A 17809   | AY17865  | 1 1/8 3-way Actuated Ball Valve                                    |
| A 17812   | AY17868  | 2 1/8 3-way Actuated Ball Valve                                    |
| A 17813   | AY17871  | 2 5/8 3-way Actuated Ball Valve                                    |
| A 17814   | AY17872  | 3 1/8 3-way Actuated Ball Valve                                    |
| A 17859   | AP17859  | 1/4 Ball Valve Drilled & Tapped                                    |
| A 17860   | AP17860C | 3/8 Ball Valve Drilled & Tapped                                    |
| A 17861   | AP17861C | 1/2 Ball Valve Drilled & Tapped                                    |
| A 17862   | AP17862C | 5/8 Ball Valve Drilled & Tapped                                    |
| A 17863   | AP17863  | 3/4 Ball Valve Drilled & Tapped                                    |
| A 17864   | AP17864C | 7/8 Ball Valve Drilled & Tapped                                    |
| A 17865   | AP17865  | 1 1/8 Ball Valve Drilled & Tapped                                  |
| A 18454   | A 15099  | Seal Cap & Gasket                                                  |
| AC17860   | AQ17860C | 3/8 Ball Valve Drilled & Tapped, Access Port                       |
| AC17861   | AQ17861C | 1/2 Ball Valve Drilled & Tapped, Access Port                       |
| AC17862   | AQ17862C | 5/8 Ball Valve Drilled & Tapped, Access Port                       |
| AC17864   | AQ17864C | 7/8 Ball Valve Drilled & Tapped, Access Port                       |
| AC17865   | AQ17865  | 1 1/8 Ball Valve Drilled & Tapped, Access Port                     |
| ACX17866  | AQM17866 | 1 3/8 Ball Valve, Standard with Access, 1 pc brass cap             |
| ACX17867  | AQM17867 | 1 5/8 Ball Valve, Standard with Access, 1 pc brass cap             |
| ACX17868  | AQM17868 | 2 1/8 Ball Valve, Standard with Access, 1 pc brass cap             |
| ACX17869  | AQM17869 | 2 5/8 Ball Valve, Standard with Access, 1 pc brass cap (Full Flow) |
| ACX17870  | AQM17870 | 3 1/8 Ball Valve, Standard with Access, 1 pc brass cap (Full Flow) |
| ACX17871  | AQM17871 | 2 5/8 Ball Valve, Standard with Access, 1 pc brass cap             |
| ACX17872  | AQM17872 | 3 1/8 Ball Valve, Standard with Access, 1 pc brass cap             |
| AG17865   | AG17865  | 1 1/8 Ball Valve Standard with fitting end/access                  |
| AP17860   | AP17860C | 3/8 Ball Valve Drilled & Tapped                                    |
| AP17861   | AP17861C | 1/2 Ball Valve Drilled & Tapped                                    |
| AP17862   | AP17862C | 5/8 Ball Valve Drilled & Tapped                                    |
| AP17864   | AP17864C | 7/8 Ball Valve Drilled & Tapped                                    |
| AP17865A  | AP17865  | 1 1/8 Ball Valve Drilled & Tapped                                  |
| APX17859  | APM17859 | 1/4 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17860C | APM17860 | 3/8 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17861C | APM17861 | 1/2 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17862C | APM17862 | 5/8 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17863  | APM17863 | 3/4 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17864C | APM17864 | 7/8 Ball Valve Drilled & Tapped, 1 pc brass cap                    |
| APX17865A | APM17865 | 1 1/8 Ball Valve Drilled & Tapped, 1 pc brass cap                  |
| APX17866  | APM17866 | 1 3/8 Ball Valve Drilled & Tapped, 1 pc brass cap                  |
| APX17867  | APM17867 | 1 5/8 Ball Valve Drilled & Tapped, 1 pc brass cap                  |
| APX17868  | APM17868 | 2 1/8 Ball Valve Drilled & Tapped, 1 pc brass cap                  |
| APX17871  | APM17871 | 2 5/8 Ball Valve Drilled & Tapped, 1 pc brass cap                  |
| AQ17860   | AQ17860C | 3/8 Ball Valve Drilled & Tapped, Access Port                       |
| AQ17861   | AQ17861C | 1/2 Ball Valve Drilled & Tapped, Access Port                       |
| AQ17862   | AQ17862C | 5/8 Ball Valve Drilled & Tapped, Access Port                       |

| INACTIVE  | ACTIVE   | DESCRIPTION                                                       |
|-----------|----------|-------------------------------------------------------------------|
| AQ17865A  | AQ17865  | 1 1/8 Ball Valve Drilled & Tapped, Access Port                    |
| AQX17859  | AQM17859 | 1/4 Ball Valve Drilled & Tapped with access, 1 pc brass cap       |
| AQX17860C | AQM17860 | 3/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap      |
| AQX17861C | AQM17861 | 1/2 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap      |
| AQX17862C | AQM17862 | 5/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap      |
| AQX17863  | AQM17863 | 3/4 Ball Valve, Drilled & Tapped with Access Port, 1 pc brass cap |
| AQX17864C | AQM17864 | 7/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap      |
| AQX17865A | AQM17865 | 1 1/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap    |
| AQX17866  | AQM17866 | 1 3/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap    |
| AQX17867  | AQM17867 | 1 5/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap    |
| AQX17868  | AQM17868 | 2 1/8 Ball Valve Drilled & Tapped, Access Port, 1 pc brass cap    |
| AW17865   | AW17865  | 1 1/8 Actuated Ball Valve, Standard                               |
| AW18423   | BW33755  | 1/4 NPTF Pressure Relief Valve (551-700)                          |
| AX17866   | APM17866 | 1 3/8 Ball Valve Standard, 1 pc brass cap                         |
| AX17867   | APM17867 | 1 5/8 Ball Valve Standard, 1 pc brass cap                         |
| AX17868   | APM17868 | 2 1/8 Ball Valve Standard, 1 pc brass cap                         |
| AX17869   | APM17869 | 2 5/8 Ball Valve Standard (Full Flow), 1 pc brass cap             |
| AX17870   | APM17870 | 3 1/8 Ball Valve Standard (Full Flow), 1 pc brass cap             |
| AX17871   | APM17871 | 2 5/8 Ball Valve Standard (Reduced Port), 1 pc brass cap          |
| AX17872   | APM17872 | 3 1/8 Ball Valve Standard (Reduced Port), 1 pc brass cap          |
| B 33367   | B 34556  | 1 1/8 Brass Compressor Valve                                      |
| B 33529   | B 34841  | 1 1/8 X 1 5/8 Ball Valve                                          |
| B 33530   | B 34842  | 1 3/8 X 1 5/8 Ball Valve                                          |
| B 33531   | B 34843  | 1 5/8 X 1 5/8 Ball Valve                                          |
| B 33613   | B 34557  | 7/8 Brass Compressor Valve                                        |
| B 33784   | A 15587  | 2 5/8 Comp. Valve, Flanged Union, Cast Iron                       |
| B 33926   | B 35164  | 3/4OD 1 5/8 BC Comp. Valve, Straight Port, cap w/ hole            |
| B 34124   | AP17861C | 1/2 Ball Valve Drilled & Tapped                                   |
| B 34125   | AP17862C | 5/8 Ball Valve Drilled & Tapped                                   |
| B 34126   | AP17863  | 3/4 Ball Valve Drilled & Tapped                                   |
| B 34127   | AP17864C | 7/8 Ball Valve Drilled & Tapped                                   |
| B 34128   | AP17865  | 1 1/8 Ball Valve Drilled & Tapped                                 |
| B 34129   | A 17866  | 1 3/8 Ball Valve Standard                                         |
| B 34130   | A 17867  | 1 5/8 Ball Valve Standard                                         |
| B 34131   | A 17868  | 2 1/8 Ball Valve Standard                                         |
| B 34132   | A 17871  | 2 5/8 Ball Valve Standard (Reduced Port)                          |
| B 34133   | A 17872  | 3 1/8 Ball Valve Standard (Reduced Port)                          |
| B 34168   | B 33794  | 3 1/8 CI Comp Valve                                               |
| B 34253   | B 35498  | 3/8 ODI X 1/2 ODE Receiver Valve                                  |
| B 34260   | A 17870  | 3 1/8 Ball Valve Standard (Full Flow)                             |
| B 34312   | B 35225  | 1 3/8 Shutoff Valve (Cap w/ Vent Hole)                            |
| B 34313   | B 35226  | 1 5/8 Shutoff Valve (Cap w/ Vent Hole)                            |
| B 34314   | B 34661  | 2 5/8 ODI CI Comp Valve                                           |
| B 34315   | B 34670  | 3 5/8 CI Valve 500 HR Salt Spray                                  |
| B 34411   | B 35224  | 1 1/8 Solder x Solder Angle Isolation Valve (Cap w/ Vent Hole)    |
| B 34429   | B 34671  | 2 1/8 CI Valve 500 HR Salt Spray                                  |
| B 34437   | A 18390  | ABV Hub Kit Series 1A                                             |
| B 34438   | A 18392  | ABV Hub Kit Series 1B                                             |
| B 34439   | A 18394  | ABV Hub Kit Series 2C                                             |
| B 34440   | A 18396  | ABV Hub Kit Series 2D                                             |
| B 34441   | A 18395  | ABV Hub Kit Series 3D                                             |
| B 34442   | A 18395  | ABV Hub Kit Series 3D                                             |
| B 34498   | A 15587  | 2 5/8 Comp. Valve, Flanged Union, Cast Iron                       |
| B 34839   | B 32197  | 7/8 OD Compressor Valve, Straight Port                            |
| B 34929   | B 33795  | 4 1/8 CI Comp Valve                                               |
| B 35471   | AJ17954  | 5/8 SBC CHECK VLV 50#                                             |
| N 02843   | P 34711  | 1 5/8 CI COMP. VLV. SEAL CAP                                      |

# Order and Schedule Policy

## Scope

The Terms and Conditions and Order Policy ("Terms") contained herein shall apply to all quotations and offers made by and purchase orders accepted by Mueller Streamline Co. These terms apply to all sales made by Mueller Streamline Co except the extent the Terms conflict with an agreement signed by Mueller and Buyer. These Terms apply in lieu of any course of dealing between the parties or usage of trade in the industry. These Terms may in some instances conflict with some of the terms and conditions affixed to the purchase order of other procurement document issued by the Buyer. In such case, the Terms contained herein shall govern, and acceptance of Buyer's order is conditioned upon Buyer's acceptance of the terms and conditions herein, irrespective of whether the Buyer accepts these conditions by a written acknowledgement, by implication, or acceptance and/or payment of products ordered hereunder. Mueller Streamline Co's failure to object to provisions contained in any communication from Buyer shall not be deemed a waiver of the provisions herein. Any changes in the Terms contained herein must specifically be agreed to in writing signed by a representative of Mueller Streamline Co. before becoming binding on either party.

## Scheduling and Cancellation

**Standard Product:** Product is considered standard product if it is listed in the Mueller Streamline Co., general product catalog, or in published product literature sheets.

**Scheduling Standard Product Orders:** Manufacturer will build product according to the customers' written scheduled releases or forecasts for each order. Products scheduled to ship within a thirty-day (30) window from original ship date on P.O> are non-cancelable and may only be rescheduled one time. Products scheduled to ship within a 31-60 day window may be rescheduled, but the product must be taken within three months of the original scheduled date and may only be rescheduled one time.

**Cancellation of Standard Product:** If Seller determines the Product being cancelled to be Standard Product, the amount of the cancellation charge will vary according to the (a) quantity being cancelled, (b) time frame between Buyer's request to Seller to cancel and the scheduled ship date for the order, and (c) dollar amount of order being cancelled. The calculation of the exact cancellation charge will be governed by Sellers published policies as amended from time to time at Seller's discretion. In no case will the cancellation charge be less than twenty percent (20%) of the original agreed upon purchase price.

**Custom Product:** Product is considered custom if it is not listed in the Mueller Streamline Co.'s general product catalog or in other published product literature.

**Scheduling Custom Product Orders:** Manufacturer will build product according to the customers' written scheduled releases or forecasts for each order. Products scheduled to ship within a ninety (90) day window from date of request are non-cancelable. Products scheduled to ship within a 60-90 day window from date of request may be rescheduled. The product must be taken within three (3) months of the rescheduled date and may only be rescheduled one time. In the event Mueller has established a stocking program in an effort to support customer production schedules, any uniquely purchased materials, finished goods inventory, or work in process required to build modified or custom product is the responsibility of, and must be paid for by the customer in the event of a cancellation or product modification that may result in obsolete inventory.

**Cancellation of Custom Products:** If the Product cancelled is Custom Product, Buyer agrees to pay Seller for all of Seller out of pocket costs associated with the cancellation or modification to parts or orders including, but not limited to: (i) raw materials, (ii) work in process, (iii) finished goods inventory, (iv) inventory carrying costs, (v) scrapping and disposal fees, (vi) administrative fees, (vii) reasonable and equitable profit for Seller (collectively, "Cancellation Expenses"). In no case will the cancellation charge be less than the Seller's actual costs (including overhead and other indirect costs). The amount of cancellation charge to be paid by Buyer shall be determined at the sole discretion of Seller and may equal 100% of the amount of the order cancelled or modified. Buyer shall be entitled to receive all raw materials and work in process, and Seller agrees to ship such goods to Buyer at Buyer's expense upon receipt of payment in full or Cancellation Expenses incurred by Seller.

**Expedited Order Fees:** If an order is received, or quantities are increased, for a non-stocked part, without proper lead time, Buyer's expense will include applicable surcharges for inefficiencies and costs created in production and scheduling if Seller can meet requested receipt dates. Expenses shall be determined at the sole discretion of the Seller and will minimally be the greater value of \$150 or 10% of the order total.

# Order and Return Policy

## Standard Order Information

**Minimum Order Requirements:** A minimum charge of \$50 net applies to all orders from Mueller Streamline Co. Orders less than this amount may be subject to special charges or requirements.

**Package Requirements:** Standard cataloged parts must be ordered in packaged quantities. If the order does not comply, Mueller Streamline Co. reserves the right to increase or decrease to the nearest standard package quantity.

**Order Visibility:** The customer recognizes that Mueller Streamline Co. requires visibility to complete an order in an accurate and timely manner. Depending on the part ordered, quantity required and stock on hand, the customer will be provided with lead-time information at the time of order.

**Emergency Orders:** Mueller Streamline Co. reserves the right to charge a special service fee for orders that are placed with short lead-time or considered emergency requirements. The charge may include a standard order fee for the entire order, a per piece fee for each part ordered, or fees to cover extraordinary costs including overtime or scheduling charges.

## Special Order Information

**Minimum Order Requirements:** A minimum charge of \$100 net and 25 pieces minimum applies to all orders. Orders less than this amount may be subject to special charges or requirements.

**Package Requirements:** Depending on the part, specialized packaging may require adjustments to the order quantities to meet appropriate packaged quantities. This is subject to inquiry at the time of the order.

**Order Visibility:** Due to the nature of special orders, the customer recognizes Mueller Streamline Co. may not have stock available at the time of order. Due to this, Mueller Streamline Co. will require a minimum of 2 weeks to process any new part orders. Depending on the part ordered, quantity required and stock on hand, the customer may be provided with better lead-time information at the time of order.

**Emergency Orders:** Mueller Streamline Co. reserves the right to charge a special service fee for orders that are placed with short lead-time or considered emergency requirements. The charge may include a standard order fee for the entire order, a per piece fee for each part ordered, or fees to cover extraordinary costs including overtime or scheduling charges.

## Return Policy

**Return Requests:** All returns to Mueller Streamline Co. must be issued a Return Material Authorization (RMA) number prior to the return of the product. The number will be provided by a Customer Service Representative. Mueller Streamline Co. reserves the right to refuse any product that has not been accompanied by an RMA number. All buyer/credit requests are to be made within 12 months of the Buyer's receipt of goods. Buyer shall provide specific original purchase information or documentation for all RMA/Credit requests. If no such information can be provided, Seller reserves the right to establish all RMA/Credit pricing.

**Stocking Fees:** Buyer shall assume a minimum 20% restock fee for all returns of current product where no fault was attributable to the Seller. Product must be returned in original packaging, unused, and be packaged to eliminate any possibility of damage in shipment. Mueller Streamline Co. may opt to charge a higher fee, depending on the part being returned, the quantity, or the age of the product. At any time, Mueller may decide that it will not allow the return of product based on its discretion.

**Package and Shipping Requirements:** The seller reserves the right to refuse returned product that upon inspection by the Seller is determined to be in "non-sellable" condition. Unless authorized by the Seller on a Mueller Streamline Co. RMA, the Buyer shall assume all return freight charges. In Seller authorized exceptions, only Mueller Streamline Co. approved carrier may be used. Any freight damaged or shipment shortage issues must be presented to the freight carrier or Seller within 15 days of the Buyer's receipt of goods.

# Terms and Conditions of Sale

THE FOLLOWING CONSTITUTE THE TERMS AND CONDITIONS OF SALE FOR ALL PRODUCTS MANUFACTURED, DISTRIBUTED AND/OR SOLD BY MUELLER STREAMLINE CO. (SELLER).

ACCEPTANCE OF SELLER'S OFFER TO SELL OR BUYER'S ORDER IS EXPRESSLY MADE CONDITIONAL ON BUYER'S ACCEPTANCE OF THE PROVISIONS STATED HEREIN. BUYER'S ACCEPTANCE OF EACH SHIPMENT OF GOODS SHALL BE DEEMED TO BE AN ACCEPTANCE OF THE PROVISIONS HEREOF NOTWITHSTANDING ANY ACT OF SELLER, INCLUDING SHIPMENT, ACCEPTANCE OF PAYMENTS, AND NOTWITHSTANDING ANY TERM OR CONDITION CONTAINED IN ANY FORM OF BUYER, AND ANY PROPOSAL FOR ADDITIONAL OR DIFFERENT TERMS OR ANY ATTEMPT BY BUYER TO VARY ANY OF THE PROVISIONS HEREIN IS HEREBY DEEMED A MATERIAL ALTERATION AND REJECTED. THE PROVISIONS HEREIN MAY NOT BE ADDED TO, MODIFIED, SUPERSEDED, OR ALTERED EXCEPT BY WRITTEN AGREEMENT OR MODIFICATION SIGNED BY AN OFFICER OF SELLER, NOTWITHSTANDING ANY TERMS WHICH MAY NOW OR IN THE FUTURE APPEAR ON BUYER'S FORMS OR COMMUNICATIONS, ALL OF WHICH ARE REJECTED WITHOUT FURTHER ACTION OF SELLER.

NO PERSON (EXCEPT AN OFFICER OF SELLER) IS AUTHORIZED TO BIND SELLER TO ANY ORDER FOR ANY GOODS EXCEPT ACCORDING TO THE PROVISIONS HEREIN.

1. **PRICES.** All prices for SELLER's products are subject to change or withdrawal without notice. Unless otherwise stated by SELLER, prices, terms of payment and pricing policies will be those of the SELLER in effect at the time of shipment. SELLER reserves the right to make price changes within the periods of contracts, including installment contracts or blanket orders. The cost of packing and crating other than in accordance with the standards of SELLER may constitute an additional charge and may at SELLER's discretion be added to the sales price(s). SELLER also reserves the right to divide Buyer's order into separate shipments and to invoice and otherwise treat each shipment as a separate contract subject to these Terms and Conditions. All sales and shipments are subject at all times to credit approval by SELLER.

2. **TRANSPORTATION AND RISK OF LOSS.** Unless otherwise agreed in advance in writing by SELLER, delivery of products hereunder shall be F.O.B. shipping point, with transportation expenses paid by Buyer unless standard SELLER freight prepayment qualifications are met and the risk of loss or damage to products in transit shall fall upon Buyer (whose responsibility it shall be to file claims with carrier at delivery to Buyer at Buyer's premises) upon delivery (a) to Buyer's designated representative, or (b) to a common carrier or other designated shipper (not including SELLER), whichever of the foregoing occurs earlier. SELLER in its discretion shall select the appropriate transportation method and routing. All orders, unless otherwise agreed in writing, are for shipment at SELLER's earliest convenience. Stated delivery dates are approximate and will be calculated from the date that SELLER has received all information necessary to permit SELLER to proceed with work immediately and without interruption. If any or all products are not delivered when ready due to the request of Buyer, SELLER reserves the right to invoice Buyer at any time thereafter and to place such products in storage with all risk of loss or damage borne by Buyer and with all expenses and costs attributable thereto for the account of Buyer, which shall be payable by Buyer upon submission of SELLER's invoices to Buyer.

3. **DELAYS.** SELLER shall not be liable for any delays in delivery due or resulting in whole or in part from or made impossible or impractical by any cause beyond the control of SELLER including but not limited to fire, explosion, epidemics, accident, material and significant breakdown, strike or labor disputes, adverse weather conditions, loss or damage in shipment, shortage or lack of materials, fuel or power, sale or transfer of manufacturing facilities, embargo, acts of God, acts (including delay or failure to act) of any governmental authority (de jure or de facto) or any other contingency or delay or failure or cause beyond SELLER's control. If, due to any such occurrence, SELLER is unable to supply total demands for any goods specified, SELLER may, but shall not be obligated to, allocate production, inventory and deliveries (in any manner fair and reasonable to the extent that goods are not special or unique) and will notify Buyer reasonably that there will be delay or non-delivery.

4. **TAXES.** All prices are exclusive of any applicable foreign or U.S.A. federal, state or local sales, use, excise or other taxes, which SELLER may be required to pay or collect, under any existing or future law, upon or with respect to the sale, delivery, storage, processing, use or consumption of any of the products covered hereby, which shall be for the account of Buyer, who shall promptly pay the amount thereof to SELLER upon demand.

5. **PAYMENT TERMS AND SECURITY INTEREST.** Payment terms are set forth in SELLER's quotation to BUYER. All payments not made within such time may be subject to a carrying charge of one percent per month on the unpaid balance or the highest rate permitted by applicable law, whichever is less. Until the entire amount due hereunder is paid, SELLER reserves a security interest in all products sold, with all rights, privileges and remedies of a selling secured party in the jurisdiction to which the goods may be shipped or within which they may be kept at any time. In pursuance thereof, Buyer agrees to timely execute any documents that SELLER may request from time to time in order to give notice of, perfect or otherwise give effect to the existence of said security interest.

6. **TERMINATION.** Any cancellations, changes, or terminations by Buyer received after order placement will be subject to Seller's approval and payment by Buyer of all actual expenses incurred or for which Seller has become obligated related to the affected goods. Seller may terminate any order or any part thereof upon written notice to Buyer. Buyer waives all claims to damages upon such termination, including, without limitation, any cost of cover to obtain substitute goods.

7. **PERMISSIBLE VARIATIONS.** Seller reserves the right to ship and Buyer agrees to accept, overages or shortages of up to 10% of the quantity ordered by Buyer and any such overage or shortage will be charged or credited to Buyer.

8. **FINANCIAL RESPONSIBILITY.** If Seller has any reasonable doubt at any time as to Buyer's financial condition and ability to perform, Seller, at its option, may (a) decline to make further shipments other than on a cash in advance basis or upon Buyer providing other security satisfactory to Seller, or (b) terminate this agreement.

9. **RECEIVING AND INSPECTION.** Any claim by Buyer based upon or relating to any claimed defect in the products ascertainable upon visual inspection thereof, including without limitation any claim relating to size, type, quantity or shipping damage and the like, must be presented to SELLER or its representative within fifteen (15) days following the date of receipt of the product by Buyer. Buyer's receipt of any product delivered hereunder shall be an unqualified acceptance, and a waiver by Buyer of any and all such claims with respect to such product unless Buyer gives SELLER notice of claim within fifteen (15) days after such receipt. Unless otherwise agreed in advance in writing by SELLER, variations in the products as to composition, dimensions, quantity and the like shall be permissible and not cause for Buyer's rejection or revocation if within prevailing industry (United States of America) standards. Buyer assumes all risk and liability for results.

10. **TOOLING.** Buyer will indemnify, defend and hold SELLER harmless from and against any liability, damage, loss or expense arising from the use or handling of any tooling supplied or designed by Buyer from which products are to be cast or manufactured by SELLER.

11. **PATENT INDEMNITY.** SELLER agrees to protect, indemnify and hold harmless the Buyer, its successors, assigns, customers and users of its products against any liability, loss, damage or expense whatsoever resulting from any infringement of any United States Letters Patent by any thing, number, material, design, composition, or processing of SELLER's origin or practice supplied by SELLER. With respect to any thing, number, material or design, composition, or processing, specified by Buyer and not of SELLER's origin or practice, BUYER agrees to save SELLER harmless from any liability, loss damage or expense whatsoever resulting from any infringement of any United States Letters Patent arising out of SELLER's making, using or selling the same for or to BUYER in fulfillment of its orders or contracts. SELLER and BUYER severally agree to notify the other in writing promptly of any charge of infringement made and of any suit brought in respect to such device or composition and to assume or tender to the other the full control of the defense or settlement of such suit in accordance herewith.

# Terms and Conditions of Sale

12. **WARRANTY.** Seller warrants only to Buyer that products furnished of Seller's own manufacture will conform to prevailing (United State of America) industry standards as to quality, inspections, composition, quantity and type, and will be free from defects in workmanship and materials under normal conditions of use and service for a period of one year from the date of receipt by Buyer, or 18 months from the date of manufacture of the products. This warranty will not apply to damage resulting from normal wear, improper installation, misuse or neglect. Seller does not warrant any aspect of product representation, installation, modifications or manufacturing carried out by parties other than Seller nor does Seller's warranty extend to any products used in combination with Seller's goods, and Buyer indemnify, defend and hold harmless Seller for any loss, cost or expense to which Seller may be exposed as a result of any such activities by Buyer, Buyer's customers or other suppliers. Weight figures shown in Seller's catalogue and price sheets, and documents of sale are approximate only. Product is sold on a per unit basis not on a weight basis. Seller's sole obligation for failure to comply with this warranty will be, at its election, to repair or replace the defective product where Buyer notifies Seller and such product is made available to Seller for inspection F.O.B. Seller's facility or point of manufacture [within the year warranty period. Except to the extent that (1) descriptions of size, quality and type, which may appear on Seller invoices and other documents, and (2) statements of conformity of products with specification of certain industry, government, or professional organizations standards, which may appear as product information disclosures in Seller's literature and documents, may from time to time be construed to be express warranties. THIS WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

13. **LIMITATION OF LIABILITY.** Under no circumstances will Seller's liability in the aggregate to Buyer under any legal theory, including without limitation, breach of contract or warranty, or commission of any tort, including negligence and strict liability, or claims for indemnification, exceed the invoice price for the affected product. Buyer must commence any action at law or in equity against Seller within one year after the product is delivered to Buyer. Buyer will not have any recourse against Seller for any loss, which reasonably could be prevented by cover or otherwise. Exceptions to Seller's warranty and limitation of liability provisions or waivers of the same granted by Seller will not constitute a precedent, default or waiver of Seller's rights to enforce such provisions in whole or in part in the future. SELLER WILL NOT BE LIABLE TO ANY PERSON FOR ANY INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES OF ANY KIND WHATSOEVER, WHETHER ANY CLAIM OR POTENTIAL CLAIM IS BASED UPON THEORIES OF CONTRACT, NEGLIGENCE, OR TORT AND INCLUDING WITHOUT LIMITATION, SELLER WILL HAVE NO LIABILITY FOR SHIPPING CHARGES, LABOR, INSTALLATION, COSTS OR ANY OTHER LOSSES OR EXPENSES RELATED TO OR ASSOCIATED WITH THE INSPECTION, REPAIR OR REPLACEMENT OF THE WARRANTED PRODUCTS.

14. **DEFAULT.** Buyer will be in default if (a) Buyer fails to pay Seller any amount when due under this agreement, (b) Buyer otherwise fails for a period of five days after receiving written notice from Seller to fulfill or perform any provisions of this agreement, (c) Buyer becomes insolvent or bankrupt, or a petition is filed voluntarily or involuntarily and not dismissed within 30 days of filing, or (d) Buyer makes a general assignment for the benefit of its creditors, or a receiver is appointed, or a substantial part of Buyer's assets are attached or seized under legal process and not released within 30 days thereafter.

Upon buyer's default, Seller may, at its option, without prejudice to any of its other rights and remedies, and without demand for payments past due, (a) make shipments subject to receipt of cash in advance, (b) terminate this agreement and declare immediately due and payable the obligations of Buyer for goods previously shipped, notwithstanding any other provision in these terms and conditions, (c) demand reclamation, or (d) suspend any further deliveries until the default is corrected, without releasing Buyer from its obligations under this agreement. In any event, Buyer will remain liable for all loss and damage sustained by Seller because of Buyer's default.

15. **OTHER.** (a) SELLER accepts no responsibility to BUYER or to any person claiming by or through BUYER, for compliance with any statute, governmental rule or regulation made applicable to this contract by reason of BUYER's intended use of the products unless SELLER has received from BUYER prior timely written notification of such statute, rule or regulation and has accepted the same by a separate writing signed by an officer of SELLER.

(b) SELLER's forbearance or failure to enforce any of these conditions as set forth herein or to exercise any right accruing from any default of BUYER shall not affect, impair or waive SELLER's right if such default continues or if any subsequent default of BUYER occurs.

© The provisions herein constitute the entire agreement between BUYER and SELLER and no terms or conditions other than those stated herein and no agreement or understanding oral or written in any way purporting to modify these conditions shall be binding on SELLER unless hereafter made in writing and signed by SELLER's authorized representative. All orders are subject to acceptance at SELLER's offices and BUYER and SELLER's contract shall be construed in accordance with the laws of Tennessee. Any disputes arising under these terms and conditions, and the orders to which they pertain, shall be brought exclusively in Shelby County, Tennessee.

(d) The provisions of this agreement shall be considered severable. In the event that any of the provisions, or portions or applications thereof, of this agreement are held to be unenforceable or invalid by any court of competent jurisdiction, all remaining portions shall remain in full force and effect in accordance with the spirit of this agreement.

€ The rights and obligations of BUYER and SELLER hereunder shall not be assigned to any third party without the prior written consent of the other party.

(f) ACCEPTANCE OF THE PRODUCTS SOLD HEREUNDER SHALL CONSTITUTE ASSENT TO THESE CONDITIONS AND SELLER HEREBY OBJECTS TO AND REJECTS ANY AND ALL ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER, WHETHER CONTAINED IN BUYER'S PURCHASING OR SHIPPING RELEASE FORMS OR ELSEWHERE. ALL PROPOSALS, NEGOTIATIONS, AND REPRESENTATIONS, IF ANY, MADE PRIOR AND WITH REFERENCE HERETO ARE MERGED HEREIN, AND ANY PROPOSED ADDITIONS, MODIFICATIONS, DELETIONS OR CHANGES NOT IN SEPARATE WRITINGS SIGNED BY AN OFFICER OF SELLER ARE REJECTED WITHOUT FURTHER ACTION BY SELLER.

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| A 17506     | 37 | A 18119     | 65 | A 18656     | 59 | AH18724     | 23 | B 33752     | 52 | MSBVINS     | 19 |
| A 17513     | 34 | A 18120     | 66 | A 18657     | 59 | AH18838     | 23 | B 33753     | 52 | N 02307     | 83 |
| A 17521     | 34 | A 18121     | 66 | A 18658     | 59 | AP17859     | 6  | B 33754     | 49 | N 02308     | 83 |
| A 17522     | 34 | A 18122     | 66 | A 18659C    | 21 | AP17860C    | 6  | B 33755     | 50 | N 02848     | 85 |
| A 17523     | 34 | A 18123     | 66 | A 18660C    | 21 | AP17861C    | 6  | B 33788     | 34 | N 02848     | 85 |
| A 17535     | 34 | A 18124     | 67 | A 18664     | 62 | AP17862C    | 6  | B 33793     | 36 | N 02849     | 85 |
| A 17545     | 13 | A 18125     | 67 | A 18665     | 62 | AP17863     | 6  | B 33794     | 36 | N 02849     | 85 |
| A 17546     | 13 | A 18126     | 67 | A 18673     | 8  | AP17864C    | 6  | B 33803     | 38 | P 34627     | 85 |
| A 17810     | 14 | A 18127     | 67 | A 18674     | 8  | AP17865     | 6  | B 33837     | 41 | P 34632     | 85 |
| A 17811     | 14 | A 18184     | 58 | A 18675     | 8  | AQ17859     | 7  | B 33964     | 39 | P 36214     | 54 |
| A 17834     | 53 | A 18185     | 58 | A 18699     | 59 | AQ17860C    | 7  | B 34183     | 36 | P 36818     | 64 |
| A 17840     | 53 | A 18186     | 58 | A 18700     | 59 | AQ17861C    | 7  | B 34235     | 25 | P 37266     | 64 |
| A 17855     | 8  | A 18187     | 58 | A 18701     | 59 | AQ17862C    | 7  | B 34236     | 25 | P 37267     | 64 |
| A 17856     | 8  | A 18188     | 58 | A 18702     | 59 | AQ17863     | 7  | B 34237     | 25 | S 35923     | 85 |
| A 17866     | 6  | A 18189     | 58 | A 18703     | 59 | AQ17864C    | 7  | B 34238     | 25 | S 36284     | 85 |
| A 17867     | 6  | A 18190     | 58 | A 18720     | 23 | AQ17865     | 7  | B 34239     | 25 |             |    |
| A 17868     | 6  | A 18191     | 58 | A 18721     | 23 | AT17953     | 24 | B 34240     | 25 |             |    |
| A 17869     | 6  | A 18192     | 58 | A 18722     | 23 | AT17954     | 24 | B 34241     | 25 |             |    |
| A 17870     | 6  | A 18193     | 58 | A 18723     | 23 | AT17955     | 24 | B 34247     | 38 |             |    |
| A 17871     | 6  | A 18194     | 58 | A 18724     | 23 | AT17956     | 24 | B 34252     | 39 |             |    |
| A 17872     | 6  | A 18195     | 58 | A 18733C    | 64 | AT17958     | 24 | B 34254     | 41 |             |    |
| A 17921     | 56 | A 18196     | 58 | A 18735     | 53 | AU17860     | 13 | B 34255     | 39 |             |    |
| A 17922     | 56 | A 18197     | 58 | A 18736     | 53 | AU17861     | 13 | B 34261     | 38 |             |    |
| A 17923     | 56 | A 18198     | 58 | A 18737     | 52 | AU17862     | 13 | B 34287     | 41 |             |    |
| A 17924     | 56 | A 18199     | 58 | A 18741     | 59 | AU17863     | 13 | B 34288     | 39 |             |    |
| A 17934     | 22 | A 18200     | 58 | A 18742     | 59 | AU17864     | 13 | B 34412     | 45 |             |    |
| A 17935     | 22 | A 18351     | 16 | A 18743     | 59 | AU17865     | 13 | B 34413     | 45 |             |    |
| A 17936     | 22 | A 18352     | 16 | A 18744     | 59 | AU17868     | 13 | B 34414     | 44 |             |    |
| A 17937     | 22 | A 18353     | 16 | A 18745     | 59 | AU17871     | 13 | B 34415     | 44 |             |    |
| A 17938     | 22 | A 18354     | 16 | A 18746     | 59 | AU17872     | 13 | B 34417     | 44 |             |    |
| A 17939     | 22 | A 18355     | 16 | A 18747     | 59 | AW17861     | 14 | B 34418     | 44 |             |    |
| A 17940     | 22 | A 18356     | 53 | A 18748     | 59 | AW17862     | 14 | B 34425     | 51 |             |    |
| A 17941     | 22 | A 18357     | 53 | A 18749     | 59 | AW17863     | 14 | B 34444     | 53 |             |    |
| A 17942     | 22 | A 18358     | 53 | A 18762     | 53 | AW17864     | 14 | B 34519     | 53 |             |    |
| A 17943     | 22 | A 18383C    | 21 | A 18783     | 52 | AW17865     | 14 | B 34550     | 56 |             |    |
| A 17944     | 22 | A 18387     | 53 | A 18784     | 49 | AW17866     | 14 | B 34559     | 56 |             |    |
| A 17953     | 24 | A 18424     | 53 | A 18800     | 59 | AW17867     | 14 | B 34580     | 53 |             |    |
| A 17954     | 24 | A 18425     | 53 | A 18801     | 58 | AW17868     | 14 | B 34594     | 45 |             |    |
| A 17955     | 24 | A 18444     | 53 | A 18823     | 59 | AW17869     | 14 | B 34595     | 45 |             |    |
| A 17956     | 24 | A 18473     | 51 | A 18838     | 23 | AW17870     | 14 | B 34654     | 56 |             |    |
| A 17957     | 24 | A 18540     | 53 | A 18937     | 12 | AW17871     | 14 | B 34661     | 34 |             |    |
| A 17958     | 24 | A 18565C    | 21 | A 18938     | 12 | AW17872     | 14 | B 34670     | 34 |             |    |
| A 17970     | 51 | A 18566C    | 21 | A 18939     | 12 | AW18422     | 53 | B 34671     | 34 |             |    |
| A 17971     | 54 | A 18583     | 62 | A 18940     | 12 | AY17861     | 14 | B 34715     | 36 |             |    |
| A 17981     | 22 | A 18584     | 62 | A 18941     | 10 | AY17862     | 14 | B 34761     | 36 |             |    |
| A 17983     | 61 | A 18585     | 62 | A 18942     | 10 | AY17863     | 14 | B 34778     | 45 |             |    |
| A 17984     | 61 | A 18586     | 62 | A 18943     | 10 | AY17864     | 14 | B 34909     | 6  |             |    |

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