



# Process to Instrument and Piping Valves Double Block and Bleed (DBB)

Monoflange and Pro-Bloc® Valves  
Including Low Emissions and API 6A Valves



ENGINEERING YOUR SUCCESS.

# Introduction

Parker's range of Process to Instrument valves has evolved and grown over the last two decades. The range has been designed to meet customer requirements for both double block and bleed and single block and bleed valves in all materials used by the industry today. It covers all the pressure requirements for ASME flange ended valves up to class 2500 and for API 6A up to 15K pressures. The bore sizes start at 10mm and are offered in increments up to 54mm (2"). Many of the valves were designed to meet specific customer needs.

One of Parker's unique advantages is the offering of an integral A-LOK® two ferrule fitting or CP1™ single

ferrule fitting connections for remote mounting of an instrument or for sample and injection valves. The specification of the world renowned and universally acceptable Parker compression type connections will improve system performance, increase safety, reduce size and weight and simplify installation which ultimately reduces overall user costs.

Continuous product development may from time to time necessitate changes in the details contained in this catalogue. Parker reserves the right to make such changes at their discretion and without prior notice. All dimensions shown in this catalogue are approximate and subject to change.

Every effort is made to provide sufficient, clear and accurate information to allow the correct selection of product from this catalogue, but ultimately it is the system designer's or user's responsibility to ensure selected product is suitable for the intended application. Should you require further information please do not hesitate to contact your local Parker support.

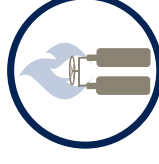
With thousands of distributor outlets and stores worldwide, and hundreds of Parker personnel and locations, Parker also offers the superior advantage of supply and support in your locale.



Upstream Oil & Gas



Downstream Oil & Gas



Industrial Gas

## Parker EHS Vision Statement:

Parker recognizes, and believes, in the importance of safeguarding natural resources and the global environment. We are committed to our employees, our communities, and our customers: their health, safety and understanding of the need for environmental stewardship.

We are committed to the concept of continuous improvement in environmental performance. Accordingly, we are committed to the following principles:

- We will seek to comply with environmental, health, and safety laws worldwide.
- We strive to minimize or eliminate the generation of waste.
- We will monitor compliance with environmental, health and safety regulations.

# General Technical Information

## Design

Parker's Process to Instrument valves are designed to meet the pressure and temperature ratings of ASME B16.34 Class 2500. Conformity to the recommendations of MSS SP-99 is also assured.

- Parker's Pro-Bloc® EP series valves conform to the EEMUA 182 specification for integral block and bleed valve manifolds for direct connection to pipework. This specification covers manifolds comprising two or more isolating valves and a vent valve, in an integral body, intended for the following applications:
- Having an inlet directly connected to the process pipework and an outlet connection not larger than DN 50 (NPS 2), whose principal use is as a replacement for individual block and bleed valves at tapping points in piping systems.
  - Arrangements having an inlet and outlet directly connected to the process pipework, whose principal use is for equipment or process isolation.

| Code/Specification            | Description   |
|-------------------------------|---|
| EEMUA 182                     | Specification for Integral Block and Bleed and Bleed Valve Manifolds for Direct Connection to Pipework              |
| ASME B16.34/ ASME VIII Div. I | Valves - Flanged, Threaded and Welding End  |
| ASME B16.5                    | Pipe Flanges and Flanged Fittings   |
| NACE MR0175 / ISO 15156       | Petroleum and Natural Gas Industries - Materials for use in H2S - Containing Environments in Oil and Gas Production |
| API 598                       | Valves Inspection and Testing   |
| API 607 / ISO 10497           | Fire Test of Soft-Seated Quarter Turn Valves<br>Fire Type-Testing Requirements                                      |
| MSS SP-25                     | Standard Marking Systems for Valves, Fittings, Flange and Unions  |
| MSS SP-61                     | Pressure Testing of Valves  |
| MSS SP-99                     | Instrument Valves   |
| ISO 15848                     | Industrial valves— Measurement, test and qualification procedures for fugitive emissions                            |
| TA Luft                       | TA-Luft 2002, Absatz 5.2.6.4 und VDI 2440 (Ausgabe Nov. 2000), Absatz 3.3.1.3                                       |

## Materials of Construction

All materials are purchased from long standing reputable sources, conforming not only to recognised national/international standards, but also to additional requirements imposed by Parker to assure suitability/usability across the widest spectrum of user applications.

A range of techniques and processes including PMI (Positive Material Identification) are used to validate all incoming material supplies, segregation, storage and maintenance of product quality.

### Body material options

| Material Group                       | Material Designator     | UNS No.    | ASTM Material Grade |
|--------------------------------------|-------------------------|------------|---------------------|
| Carbon Steel                         | A105 / A350-LF2         | UNS 1.0482 | A105                |
| Austenitic Stainless Steel           | 316/316L Dual Certified | UNS S31600 | A479 Gr 316         |
|                                      |                         | UNS S31603 | A479 Gr 316L        |
|                                      |                         | UNS S31254 | A479/A276           |
| Super Austenitic Stainless Steel     | 6Mo                     | UNS S31803 | A479/A276           |
| Austenitic-Ferritic Steel (Duplexes) | Duplex 22Cr             | UNS S32750 | A479/A276           |
|                                      |                         | UNS S32760 | A479/A276           |
|                                      |                         | UNS N08825 | ASTM B425           |
| Nickel Alloy                         | Alloy 825               | UNS N06625 | ASTM B446           |

All materials will meet (as applicable) the requirements of NACE MR0103/MR0175 and ISO 15156. They are further supplied as per Norsok M650/M630 as required.

## Flange Connections

### Pressure-temperature ratings for flanges ASME/ANSI B 16.5

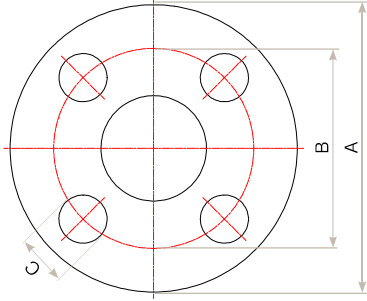
Parker's Process to Instrument valves carry the pressure-temperature ratings of their flange end interface according to ASME B16.5 dimensional specifications and pressure ratings.

| Flange Material              | °C | -29          | 38           | 50           | 100          | 150          | 200          | 250          |
|------------------------------|----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|                              | °F | -20          | 100          | 122          | 212          | 302          | 392          | 482          |
| Working Pressure - PSI (bar) |    |              |              |              |              |              |              |              |
| Class 150                    |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 284 (19.6)   | 284 (19.6)   | 278 (19.2)   | 257 (17.7)   | 229 (15.8)   | 200 (13.8)   | 175 (12.1)   |
| 316/316L St. Steel           |    | 276 (19.0)   | 276 (19.0)   | 267 (18.4)   | 235 (16.2)   | 215 (14.8)   | 199 (13.7)   | 175 (12.1)   |
| Duplex                       |    | 290 (20.0)   | 290 (20.0)   | 283 (19.5)   | 257 (17.7)   | 229 (15.8)   | 200 (13.8)   | 175 (12.1)   |
| Class 300                    |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 741 (51.1)   | 741 (51.1)   | 727 (50.1)   | 676 (46.6)   | 654 (45.1)   | 635 (43.8)   | 608 (41.9)   |
| 316/316L St. Steel           |    | 719 (49.6)   | 719 (49.6)   | 698 (48.1)   | 612 (42.2)   | 558 (38.5)   | 518 (35.7)   | 484 (33.4)   |
| Duplex                       |    | 750 (51.7)   | 750 (51.7)   | 750 (51.7)   | 735 (50.7)   | 666 (45.9)   | 619 (42.7)   | 587 (40.5)   |
| Class 600                    |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 1481 (102.1) | 1481 (102.1) | 1453 (100.2) | 1352 (93.2)  | 1308 (90.2)  | 1270 (87.6)  | 1271 (83.9)  |
| 316/316L St. Steel           |    | 1440 (99.3)  | 1440 (99.3)  | 1395 (96.2)  | 1224 (84.4)  | 1117 (77.0)  | 1034 (71.3)  | 969 (66.8)   |
| Duplex                       |    | 1500 (103.4) | 1500 (103.4) | 1500 (103.4) | 1469 (101.3) | 1333 (91.9)  | 1237 (85.3)  | 1173 (80.9)  |
| Class 900                    |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 2222 (153.2) | 2222 (153.2) | 2181 (150.4) | 2028 (139.8) | 1961 (135.2) | 1906 (131.4) | 1824 (125.8) |
| 316/316L St. Steel           |    | 2159 (148.9) | 2159 (148.9) | 2093 (144.3) | 1836 (126.6) | 1675 (115.5) | 1552 (107.0) | 1452 (100.1) |
| Duplex                       |    | 2249 (155.1) | 2249 (155.1) | 2249 (155.1) | 2204 (152.0) | 1999 (137.8) | 1856 (128.0) | 1761 (121.4) |
| Class 1500                   |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 3703 (255.3) | 3703 (255.3) | 3634 (250.6) | 3379 (233.0) | 3269 (225.4) | 3176 (219.0) | 3041 (209.7) |
| 316/316L St. Steel           |    | 3600 (248.2) | 3600 (248.2) | 3489 (240.6) | 3060 (211.0) | 2792 (192.5) | 2586 (178.3) | 2421 (166.9) |
| Duplex                       |    | 3750 (258.6) | 3750 (258.6) | 3750 (258.6) | 3674 (253.3) | 3330 (229.6) | 3093 (213.3) | 2934 (202.3) |
| Class 2500                   |    |              |              |              |              |              |              |              |
| Carbon Steel                 |    | 6171 (425.5) | 6171 (425.5) | 6058 (417.7) | 5632 (388.3) | 5447 (375.6) | 5294 (365.0) | 5069 (349.5) |
| 316/316L St. Steel           |    | 6000 (413.7) | 6000 (413.7) | 5814 (400.9) | 5099 (351.6) | 4653 (320.8) | 4310 (297.2) | 4033 (278.1) |
| Duplex                       |    | 6249 (430.9) | 6249 (430.9) | 6249 (430.9) | 6123 (422.2) | 5550 (382.7) | 5154 (355.4) | 4890 (337.2) |

# General Technical Information

## Flange Connections

### Flange dimensions



| Nominal Pipe Size<br>inch | Dimensions inch (mm) |              |       | Number of<br>Mounting Holes |
|---------------------------|----------------------|--------------|-------|-----------------------------|
|                           | A                    | B            | C     |                             |
| Class 150                 |                      |              |       |                             |
| 1/2                       | 3 1/2 (88.9)         | 2 3/8 (60.5) | 1/2   | 4                           |
| 3/4                       | 3 7/8 (98.6)         | 2 3/4 (69.8) | 1/2   | 4                           |
| 1                         | 4 1/4 (108)          | 3 1/8 (79.2) | 1/2   | 4                           |
| 1 1/2                     | 5 (127)              | 3 7/8 (98.6) | 1/2   | 4                           |
| 2                         | 6 (152)              | 4 3/4 (121)  | 5/8   | 4                           |
| Class 300/Class 600       |                      |              |       |                             |
| 1/2                       | 3 3/5 (95.2)         | 2 5/8 (66.5) | 1/2   | 4                           |
| 3/4                       | 4 5/8 (117)          | 3 1/4 (82.6) | 5/8   | 4                           |
| 1                         | 4 7/8 (124)          | 3 1/2 (88.9) | 5/8   | 4                           |
| 1 1/2                     | 6 1/8 (155)          | 4 1/2 (114)  | 3/4   | 4                           |
| 2                         | 6 1/2 (165)          | 5 (127)      | 5/8   | 8                           |
| Class 900/Class 1500      |                      |              |       |                             |
| 1/2                       | 4 3/4 (121)          | 3 1/4 (82.6) | 3/4   | 4                           |
| 3/4                       | 5 1/8 (130)          | 3 1/2 (88.9) | 3/4   | 4                           |
| 1                         | 5 7/8 (149)          | 4 (102)      | 7/8   | 4                           |
| 1 1/2                     | 7 (178)              | 4 7/8 (124)  | 1     | 4                           |
| 2                         | 8 1/2 (216)          | 6 1/2 (165)  | 7/8   | 8                           |
| Class 2500                |                      |              |       |                             |
| 1/2                       | 5 1/4 (134)          | 3 1/2 (88.9) | 3/4   | 4                           |
| 3/4                       | 5 1/2 (140)          | 3 3/4 (95.2) | 3/4   | 4                           |
| 1                         | 6 1/4 (159)          | 4 1/4 (108)  | 7/8   | 4                           |
| 1 1/2                     | 8 (203)              | 5 3/4 (156)  | 1 1/8 | 4                           |
| 2                         | 9 1/4 (235)          | 6 3/4 (171)  | 1     | 8                           |

Note: Dimensions are for reference only and are subject to change.

## Meeting the ISO Standard

From 2007 EU's IPPC directive 96/61/EC legislates for the minimisation of pollution from industrial sources (Many other regions and countries have similar legislation). An important part of this legislation is reducing Ultra-Low emissions, which will have significant consequences for all processes. According to the IPPS all plants and factories which fail to comply with the standards set by the directive may be closed from this point.

To put the scale of the challenge into perspective, a typical European refinery loses between 600 and 10,000 tonnes of emissions per annum. Around 70% of these losses are estimated to be caused by plant equipment such as pipe flanges, pumps, valves and vessels. Leakage from valves is often the biggest culprit, reportedly accounting for around 50% of the Ultra-Low emissions within the chemical and petrochemical industries.

Irrespective of the environmental impact, there is a tremendous financial burden on industry because it represents a huge loss of product, and cause of plant inefficiency. However, the true costs to industry are not always appreciated, as many of the costs associated with Ultra-Low emissions are hidden, such as labour and materials to repair leaks, wasted energy, environmental fines and clean up costs. Lost sales due to a poor green image, claims for personal injury and more. In this way, reducing Ultra-Low emissions not only protects the environment, but can save companies time and money.

With the above in mind, the legislation introduces a concept of Best Available Technique (BAT), urging plants to find the best available solution for reducing Ultra-Low emissions throughout the process, from areas such as design, product selection, fitting and fitter training, to maintenance, site monitoring, and so on.

With regard to the design and site monitoring of Ultra-Low emissions ISO 15848 parts 1 and 2 have been developed respectively.

Part 1 covers the classification system and qualification procedure for type testing of valves. The standard specifies three tightness classes of leakage with respect to stem sealing diameter. These classes are class A, B and C. Class A having the smallest environmental leakage. Each class level is one hundred fold lower than the class above i.e. a class B product may have a leakage of 100 times that of a class A product. The standard also specifies the duty that the valve has been tested to.

Parker Hannifin is now able to offer our full range of

flanged products with a class A approval to ISO 15848-1. These products are identified as the Ultra-Low Emissions range and are certified as ISO FE AH-C01-SSA1-t (RT,180°C)-ANSI2500-ISO 15848-1. This states that the product has been classified as meeting the ISO 15848-1 standard with the following criteria;

- Class A tested with Helium
- Endurance class C01 – a mechanical valve which has been tested throughout 500 mechanical actuations with two thermal cycles
- Temperature class RT-180°C – Fully thermal cycled and tested from -29°C to +180°C Pressure class ANSI 2500 – 6000 psi in 316 st.st.

Part 2 of the standard covers production acceptance testing of valves. This production testing can only be carried out to product which has already been approved to part 1 of the standard. Production testing can be carried out to and sampling percentage specified by the purchaser with a minimum of one per lot. The production testing is a simpler helium sniffer test which is carried out at room temperature with no mechanical actuations.







## ISO 15848 standard

ISO 15848 parts 1&2 (defining a classification system and qualification procedures, and production acceptance test of industrial valves, respectively) specify new Ultra-Low standards for emissions. This standard is becoming the requirement for oil and gas and petrochemical organisations worldwide. The standard was originally created for process valves and control valves but is now being applied to Instrumentation valves which include primary isolation valves, especially on environmentally sensitive projects.

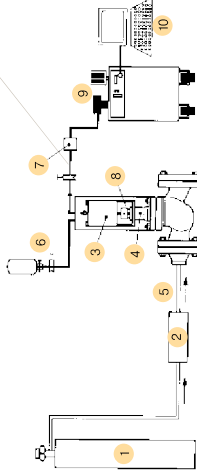
Meeting these low levels is a challenge, which Parker Instrumentation has solved with the new ball and needle valve designs used in these Double Block and Bleed valves and monoflanges. These designs meet the highest class 'A' level over the temperature range -29°C to +180°C celsius, alongside the standard instrumentation manifold pressure ranges.

Production testing and certification is available upon request. Please specify sample quantity required for production testing with your order.

O-ring material grade is a fluororelastomer FKM tetrapolymer, specially formulated for explosive decompression (ED) resistance. The seals are qualified to the stringent Norsok M-710 standard that covers both ED resistance and sour gas (H<sub>2</sub>S) ageing tests.

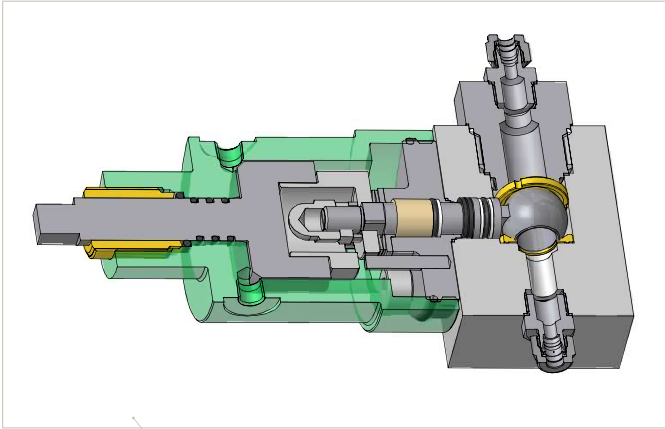
### Features

- Class 'A' leakage rates achieved
- Bolted ball valve bonnet assembly
- All threads sealed from the media
- All ball valves are bi-directional
- Firesafe design available



Prototype testing schematic as per ISO 15848-1

| Reference | Description              |
|-----------|--------------------------|
| 1         | Helium at 97% purity     |
| 2         | Pressure control         |
| 3         | Actuator                 |
| 4         | Vacuum                   |
| 5         | Helium                   |
| 6         | Standard calibrated leak |
| 7         | Vacuum safety            |
| 8         | Tested stem sealing      |
| 9         | Helium mass spectrometer |
| 10        | Data acquisition         |



Ball valve ISO 15848-1  
Prototype testing assembly

# Pro-Bloc® - Three Piece DBB Valve

## TP Series - Trunnion Mount

### Overview

Parker's Pro-Bloc® TP series trunnion mounted valves with a low operating torque are available with either soft or metal seat options for bubble-tight sealing, spanning a wide range of pressures and temperatures.

The valves have double block and bleed function and consist of two separate isolating balls and one vent in a single unit. This three-piece construction offers space and weight saving benefits over the traditional method of using three separate valves in process piping applications. These valves (excluding 15 mm bore) are supplied to the API 6D standard.



### Markets / Applications:

- Petrochemical
- Low temperature and LNG (tankers, terminals, platforms, plants, air separation)
- Chemical
- Oil and Gas

### Design Standards:

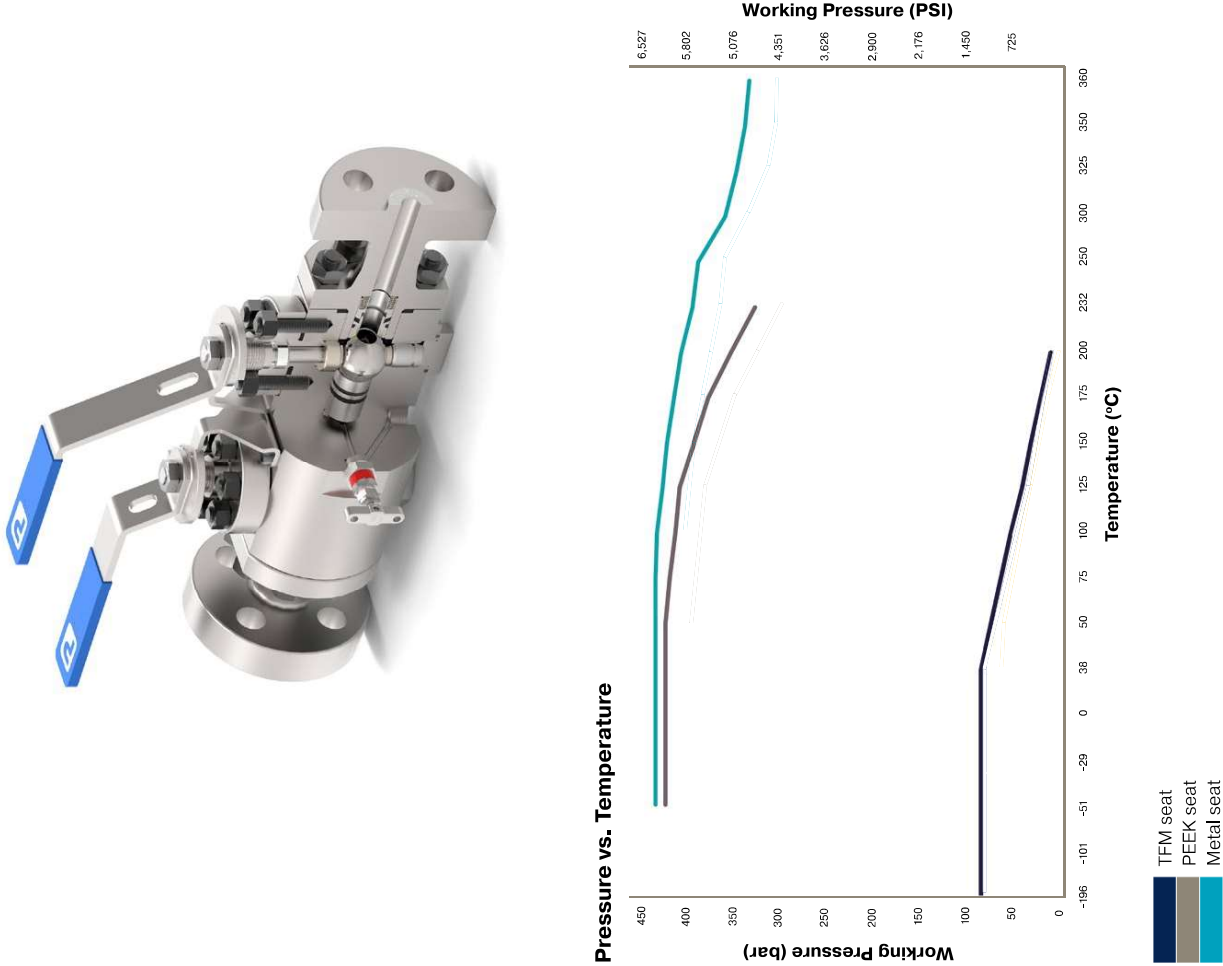
- Design: ASME B 16.34, EEMUA 182
- Design pressure: ASME B16.34
- Body wall thickness: ASME B16.34, ASME VIII Div. 1
- Fire safe: API 6FA and API 607

### Technical Specifications

|                          |   |
|--------------------------|---|
| Bore sizes               | 15 mm, 25 mm, 38 mm, 50 mm                    |
| Seat materials           | TFM, PEEK, Metal                              |
| Body materials           | 316 Stainless Steel ASTM A182-F316/UNS S31600 |
|                          | Duplex ASTM A182-F51 / UNS S31803             |
|                          | Super Duplex ASTM A182-F53/F55                |
|                          | Low Temp Carbon Steel ASTM A350 LF2           |
| Valve configurations     | Alloy 625 UNS N06625                          |
|                          | Alloy 825 UNS N08825                          |
|                          | Flange x screw                                |
| Max. Working Temperature | Flange x flange                               |
|                          | 360°C   |
| Min. Working Temperature | -196°C  |
| Max. Working Pressure    | 6,250 PSI (431 bar)                           |

### Features, Benefits and Values

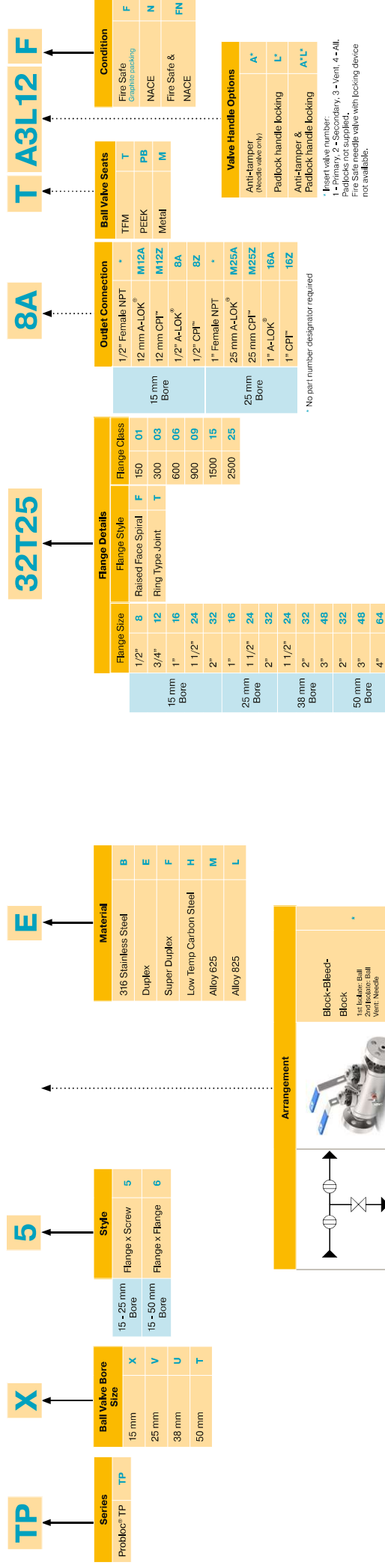
| Feature                     | Benefit   | Value  |
|-----------------------------|---|--|
| Trunnion mount ball         | Low operating torque<br>Minimises seat wear and improves performance and service life | Ease of operation<br>Performance and reliability |
| Three piece design          | Suitable for various piping configurations  | Flexibility                                      |
| Anti-blow out stem          | Valve integrity   | Safety   |
| Double D drive on stems     | Facilitates correct lever realignment if removed                                      | Ease of assembly                                 |
| Cavity relief on seats      | Over-pressure protection of ball cavity   | Safety   |
| Lockable handles option     | Prevents accidental operation   | Safety   |
| Graphite packing to API 622 | Low emission to atmosphere  | Safety, performance and reliability              |
| Fire safe design            | Conforms to industry codes  | Safety   |



# Pro-Bloc® - Three Piece DBB Valve

TP Series - Trunnion Mount

## Ordering Information



## Standard Offering

|   |  |
|---|--|
| <b>Arrangement</b>                              | Block-Bleed-Block  |
| <b>Outlet</b>                                   | <ul style="list-style-type: none"> <li>1/2" Female NPT - standard for 15 mm bore</li> <li>1" Female NPT - standard for 25 mm bore</li> </ul> |
| <b>Vent</b>                                     | 1/2" NPT Female  |
| <b>Packing Material (Ball and Needle Valve)</b> | Graphite API 622 standard with Fire safe design  |

**Notes:**

- All non-wetted parts will be supplied in standard stainless steel for corrosion resistant alloys. For carbon steel construction trim materials will be supplied in stainless steel.
- For flange x flange construction when the required flanges are different sizes, specify flange 1 details (flange size, flange style and flange class) followed by flange 2 details (flange size, flange style and flange class). For example: for flange 1 (flange size 1", Raised Face Spiral, Class 900) and flange 2 (flange size 1 1/2", Raised Face Spiral, Class 900) insert 16R0924F09.
- For customer specific options not covered here engineering will allocate a part number at quotation stage.
- Certification requirements and customer specifications MUST be provided at enquiry and order stage.



# Complementary Products for Complete Installation Solutions

## Flushing Rings (Spoofs)

Flushing Rings, historically referred to as drip rings are used between an isolation valve and the diaphragm seal of a pressure transmitter. Side ports on the rings allow media to be injected/ejected so that the diaphragm seal can be flushed free of deposits that affect transmitter measurement accuracy.

Parker offers a bespoke range of flushing rings in number of different styles and configurations. Historically, drip rings are secured between the two raised faces **only** and held in position by the force exerted through the bolts. The Parker Flushing Ring solution is held in place by the through bolting, this allows for ease of installation and give positive locating. Options with this range of flushing rings include captive studs. This gives the added benefit of the flushing ring staying in place if either the process valve side or diaphragm side require removal.

For full details see Data Sheet ref. 4190-FR.



## ProSpool

The Parker ProSpool feature a combined, single-piece valve consisting of a double block and bleed configuration with an integral flushing spool. It can be easily installed and, having fewer component parts, reduces inventory and purchase orders.

With the captive stud option torquing of the nuts is simplified. Extremely useful in restricted spaces.

For full details see Data Sheet ref. 4190-PSV.



## Ball Valves and Manifolds Hi-Pro Series

These high performance bi-directional Ball Valves & Manifolds offer the user full cold working pressure ratings up to 10,000 psi (689 bar), giving 100% bubble tight shut off and continuous repeatable performance. These products are suitable for the most demanding applications in the oil, gas and process control industries. All valves also meet the requirements of ANSI B31.1 for use in power plants. The design reduces potential body leakage paths to a minimum. With the added opportunity to select Parker Superior Advantage integral compression ends the user can eliminate the use of taper threads and thread sealant, thus avoiding system contamination, reducing leakage paths, installation costs, weight and space.

For full details see Catalogues ref. 4190-HBV and 4190-HBM.



## Air Header Distribution Manifolds - LPAHM Series

These air header distribution manifolds are designed to distribute air from the compressor to the actuators on pneumatic instruments, such as steam flow meters, pressure controllers and valve positioners. They are widely used in industrial chemical processing, plastic processing and energy industries and are approved for low pressure applications up to 275 psi. Manufactured from AISI 316 Stainless Steel material, the air header distribution manifolds offer complete customer system compatibility that reduces installation time and potential leak paths. The coded welded construction with non-destructive tested design minimises the number of potential leak paths, rather than fabricating with instrumentation connections with tubing, therefore reducing labour costs. These manifolds are designed for use with air only and are supplied with a number of lockable ball valves on opposite sides, right side or left side only to prevent unauthorized access.

For full details see Catalogue ref. 4190-DM.



## Air Header Distribution Manifolds - HPAHM Series

These distribution manifolds are designed for applications that use liquid or gas, low temperature steam and hydraulic actuation. The pressure rating of these manifolds is dictated by the inlet/outlet Flange Class or the thread connection. These distribution manifolds feature an ergonomic vinyl sleeve on the valve handle to provide positive grip and to ensure ease of operation. Each nut has an innovative domed design, which prevents ingress of moisture and contamination of the thread, therefore preventing corrosion. They feature a part-welded construction, with all welds carried out by coded welders, providing assurance of their robustness and performance. These manifolds are NDT (Non-Destructive Testing) applied, giving the customer greater assurance.

For full details see Catalogue ref. 4190-DM.



## Hi-Pro Modular Distribution Manifold

Unique to Parker, these manifolds are the ideal choice when ultimate flexibility is required within a distribution manifold. They are approved to operate at pressures up to 6,000 psi and are used extensively in the oil, gas, chemical and petrochemical industries to provide safety and performance. These innovative Hi-Pro modular distribution manifolds can be easily arranged in a layout to suit a wide range of different applications to distribute liquid or gas. They use standard components, therefore making it more affordable for the customer. The Hi-Pro modular distribution manifolds feature an ergonomic vinyl sleeve on the valve handle to provide positive grip and to ensure ease of operation. Each nut is domed in shape, which prevents ingress of moisture and contamination of the thread, which could cause corrosion. This manifold is available with up to 20 valves (even numbers only - spare valves can be blanked off). Temperature range is up to 232°C with PEEK seats.

For full details see Catalogue ref. 4190-DM.



## Lapped Joint Tube Adaptor

Available in the full range of fitting materials and sizes up to 1/2" (M12) as standard, these lapped joint tube adaptors are suitable for applications involving small flanged process valves and offer a simple, safe and effective conversion to instrument lines.



## Flange Connector - Flange to Parker Tube Fittings

Offered in a range of materials and with either A-LOK® or CP1™ tube fitting technology, these flange connectors deliver huge flexibility in terms of offering. Tube connections up to 1" (25mm), flange connections up to 2" NB and pressures to ANSI Class 2500 (6,000 PSI Nom.). The one-piece integral connection adaptors allow the safe, easy and efficient transition from process to instrumentation in just one step.

