



3B3/3BD3 Series MAB3XPK/MAB3XPKD MPI Type 3-Way, 3/16" Bore High Pressure Ball Valve

Installation and Maintenance Manual

Manual: 02-0036ME | June 2022



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Parker Instrumentation Products Division (IPD)

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NOTES:

Model #:

Serial #:

Drawing #:

Order #:

Mfg. Date:

Complete information above for future reference.



FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

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Product Drawings

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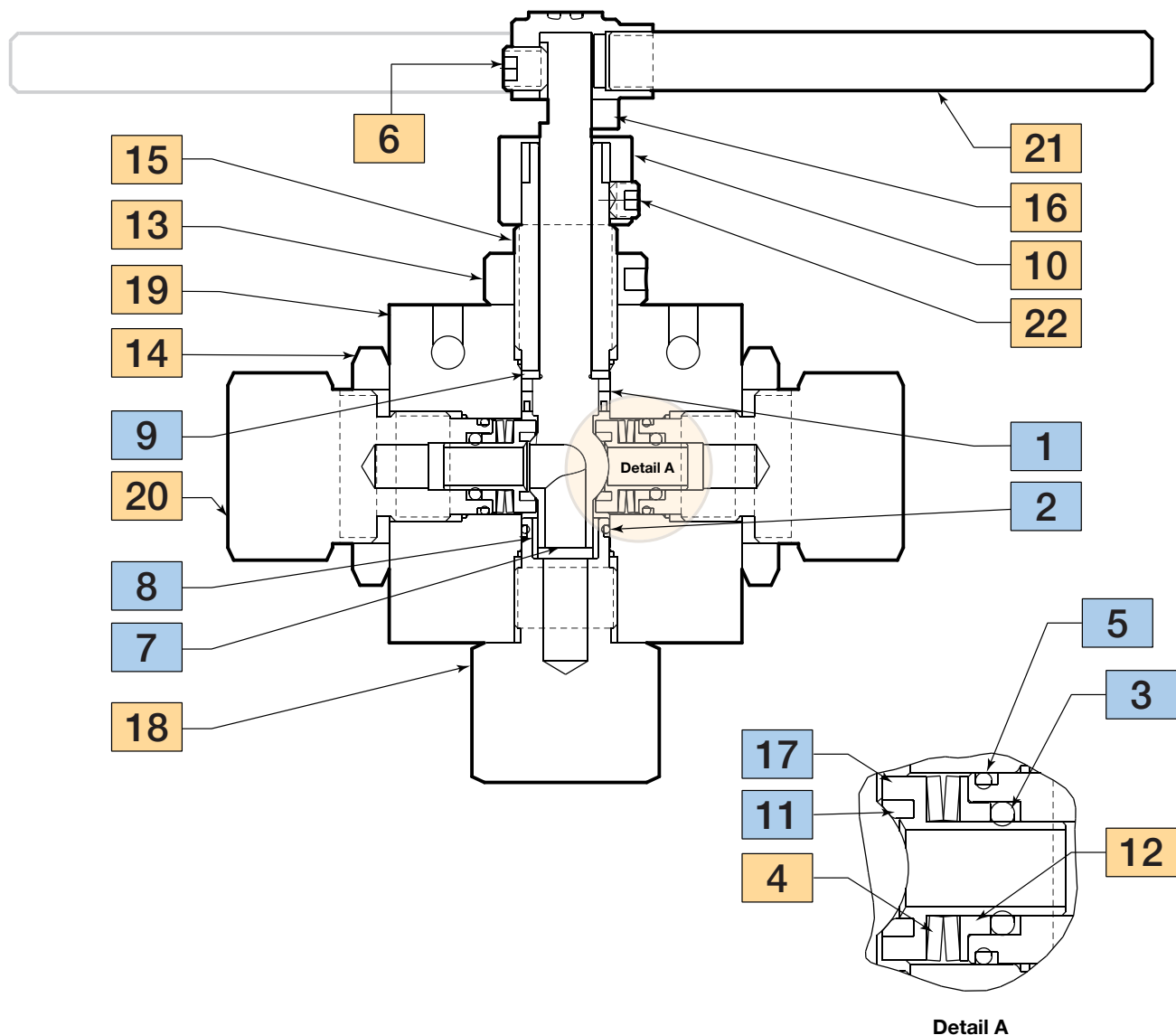
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Note: * = 3B3/3BD3 Series and MAB3XPK/MAB3XPKD MPI Type



3B3/3BD3/MAB3* Series: Parts List and Material



Material of Construction:

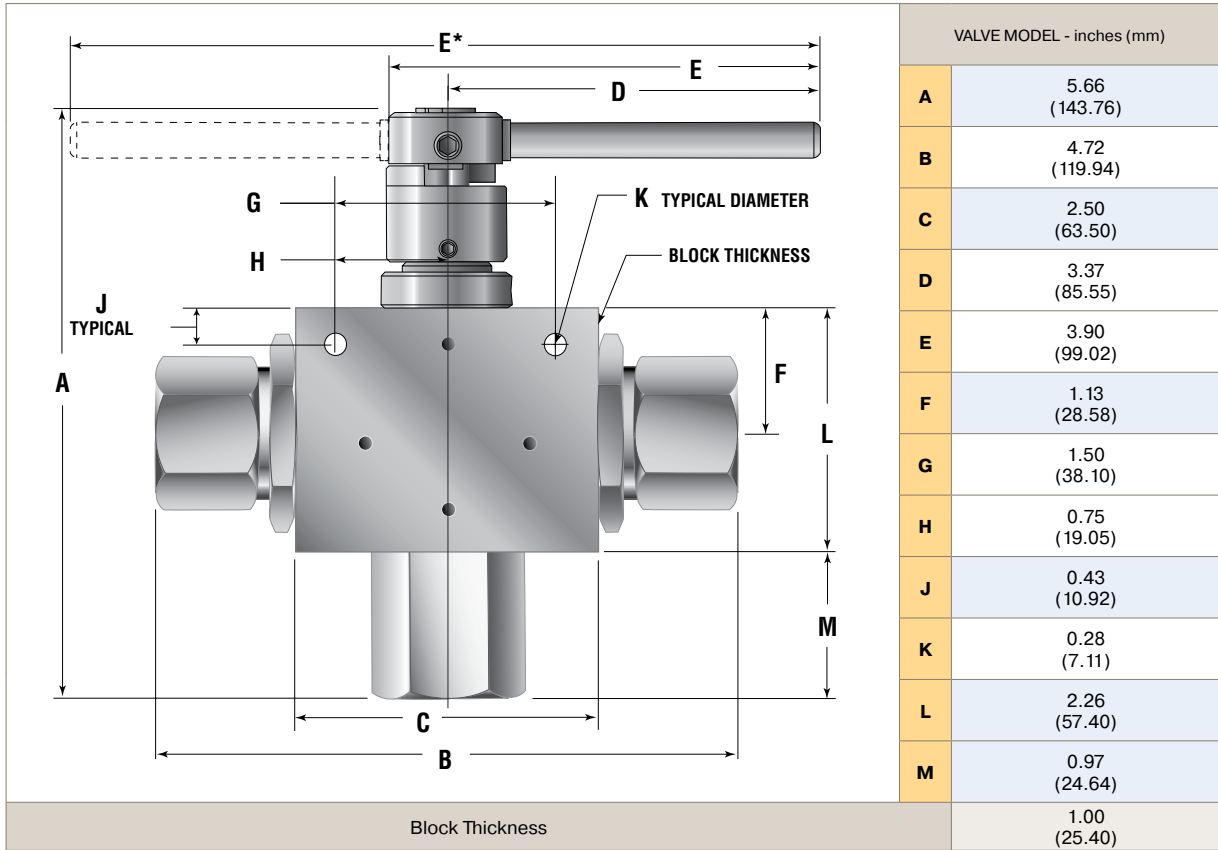
Item #	Description	Material
1	Stem Seal w/ Spring	PTFE w/ Graphite
2	O-Ring	FKM
3	O-Ring	FKM
4	Belleville Washer	17-7PH
5	O-Ring	90 Duro FKM
6	Set Screw, 3/8-16	316 CW SS
7	Stem	316 CW SS
8	Bottom Bearing	AMPCO 45
9	Thrust Washer	AMPCO 45
10	Stopping Device	316 SS
11	Seat Retainer	15-5 PH

Item #	Description	Material
12	Belleville Washer Backup	316 CW SS
13	Locking Piece	316 SS
14	Locknut	316 SS
15	Packing Gland	316 CW SS
16	Handle Hub	316 SS
17	Seat	PEEK
18	Bottom Gland	316 CW SS
19	Body	316 CW SS
20	Seat Gland	316 CW SS
21	Handle	304 SS
22	Set Screw, 5/16-24	Stainless

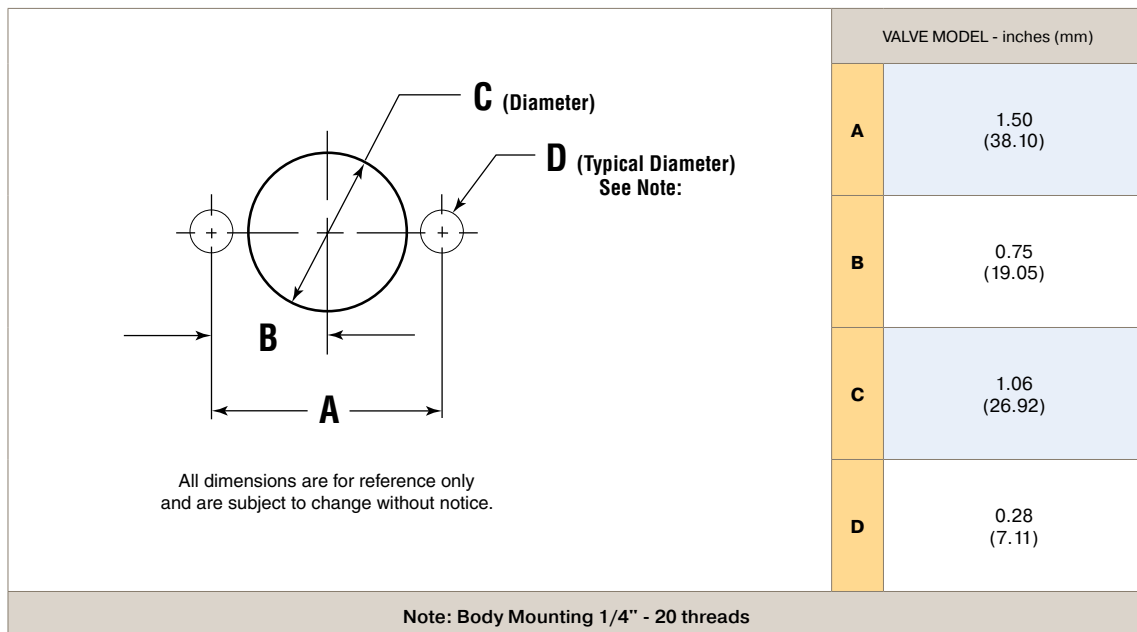
Typical spare parts found in Repair Kits



3B3/3BD3/MAB3* Series: Dimensional View (3/8")



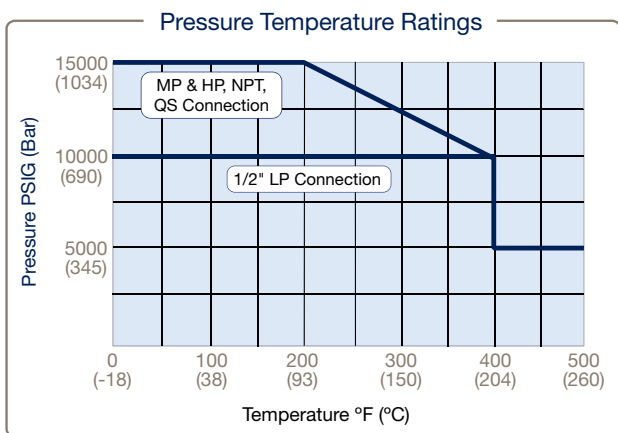
3B3/3BD3/MAB3* Series: Panel Mounting



Installation Information

Section 1.0 Introduction

The Parker Autoclave Engineers 3B3/3BD3 Series ball valve can be used at pressures up to 15,000 psi with side port pressure inlet and 20,000 psi with bottom port pressure inlet (MPI Type limited to 15,000 psi), depending on the tubing connections and operating temperatures. The maximum operating media pressure at room temperature is etched on the valve body. The curve shown below can be used to find the maximum operating pressure at various media temperatures.



Section 2.0 Precautions

Hold the seat glands and bottom gland with a wrench when tightening or loosening the tubing connections.

WARNING

DO NOT OPERATE the valve with more than 30 in-lbs. (3.38 Nm) applied to the seat glands.

Ball valves can trap pressurized media inside the valve. Relieve this pressure by turning the handle to the “half-open” position before disassembling the valve.

Section 3.0 Installation

Refer to the instruction section of the [Parker IPD \(Autoclave Engineers\) Valves, Fittings, and Tubing Catalog](#) for proper tubing connection installation.

Refer to the manufacturer’s literature when using air or electric operators.

CAUTION

While testing has shown O-rings to provide satisfactory service life, both cyclic and shelf life may vary widely with differing service conditions, properties of reactants, pressure and temperature cycling, and age of the O-ring. Frequent inspection should be made to detect any deterioration and O-rings replaced as required.

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Section 4.0 Installation Summary Chart & Repair Kit Identification

Valve Series	Connection	Seat Gland Hex Size in (mm)	Locknut Hex Size in (mm)	Repair Kit Part Number				Bottom Gland Hex Size in (mm)	Tube Gland Hex Size in (mm)	Tube Gland Torque ft-lbs (Nm)
				FKM	FFKM	-EPR	Buna-N			
3B3 3BD3	W125	1.0 (25.4)	1.19 (30.2)	R3B3S or R3BD3S	R3B3S-HT or R3BD3S-HT	R3B3S-EPR or R3BD3S-EPR	R3B3S-BO or R3BD3S-BO	1.00 (25.4)	.38 (9.7)	*
	SW250	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.63 (15.9)	*
	SW375	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.75 (19.1)	*
	SW500	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.94 (23.8)	*
	SF250CX	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.50 (12.7)	25 (33.9)
	SF375CX	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.63 (15.9)	30 (40.7)
	SF562CX	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.94 (23.8)	55 (74.6)
	F250C	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.63 (15.9)	25 (33.9)
	F375C	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.81 (20.6)	50 (67.8)
	F562C	1.38 (34.9)	1.75 (44.5)					1.38 (34.9)	1.19 (30.2)	110 (149.2)
	1/4" FNPT	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	-	-
	3/8" FNPT	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.	-
	1/2" FNPT	1.38 (34.9)	1.75 (44.5)					1.38 (34.9)	-	-
	QS250	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.63 (15.9)	**
	QS375	1.0 (25.4)	1.19 (30.2)					1.00 (25.4)	.75 (19.1)	***
MAB3XPK MAB3XPKD	4MP7	1.0 (25.4)	1.19 (30.2)	1.00 (25.4)	.56 (14.3)	***				
	6MP7	1.0 (25.4)	1.19 (30.2)	1.00 (25.4)	.69 (17.5)	***				
	8MP7	1.0 (25.4)	1.19 (30.2)	1.00 (25.4)	.94 (23.8)	***				
	9MP7	1.19 (30.2)	1.19 (30.2)	1.19 (30.2)	1.0 (25.4)	***				

* = Torque wrench not required for PAE Speedbite tube connections. Tighten gland until sleeve begins to grip tubing then 1-1/4 turn.

** = Tighten gland nut until sleeve begins to grip tubing. Then 1-1/4 turns.

*** = Use Preset Tool. For **MPI** tighten 1/2 turn in connection. For **QSS** tighten 1/4 turn in connection.

**** = Repair kit part numbers shown above for 316SS material only. Contact Factory for part numbers of optional materials.



Section 5.0 Assembly

General Assembly Procedure for 3/16" Port 3-Way Ball Valve

1. Press bottom bearing into bottom gland.
2. Install o-ring onto bottom gland and lubricate with o-ring grease.
3. Lubricate bottom gland threads with Jet Lube SS301 & assemble into bottom port of body so that the gland bottoms out against the body. Then tighten gland against the valve body with a wrench.
4. Using packing gland, delicately slide the stem seal and backup onto the upper shoulder of stem and lubricate the outside of the seal and ball surface with o-ring grease.
5. Lubricate the bottom bearing area of the stem with o-ring grease.
6. With the stem flat to the left, assemble packing gland, stem and stem seal with backup into the body center opening until the seal assembly fully enters the bore of the body.
7. Remove packing gland.
8. Lubricate both sides of the thrust washer with Jet Lube SS301 and place over the stem.
9. Lubricate the packing gland threads with Jet Lube SS301 and slip the packing gland over the stem and screw into the body until the hole in the ball is aligned with the center of the side ports of the body. Back packing gland out one and a half turns.
10. Press seats into seat retainers (using flat faced vise if necessary).
11. Assemble 2 belleville washers onto seat retainer with the inside diameters of the washers face to face.
12. Place belleville backup washer on the seat retainers against the belleville washers with the large face of the washer facing the bellevilles.
13. Place the small o-ring onto the seat retainer behind the belleville backup washer and lubricate with o-ring grease.
14. Assemble locknut onto seat gland and lubricate the seat gland threads with Jet Lube SS301.
15. Install o-rings onto the seat glands and lubricate the o-rings with o-ring grease.
16. Press retainer assemblies into the seat glands.
17. While keeping the ball in the open position, torque seat glands into body using 30 in-lbs torque in 10 in-lbs alternating increments.
18. While holding seat glands in place with a wrench, tighten locknuts against the valve body.
19. Hand tighten packing gland.
20. Assemble locking piece onto packing gland.

¹ MP-50 is a registered trademark of Jet-Lube Corporation

Section 6.0 Maintenance

Routine maintenance consists of tightening the seat glands periodically to compensate for seat wear. With no pressure in the valve, use the following procedures:

- 4.1 Seat Glands
 - 4.1.1 Remove lock device from seat glands
 - 4.1.2 While holding the seat glands and the body secure, loosen the tubing connections
 - 4.1.3 With the handle in the "Full Open" position, gradually tighten the glands alternating from one gland to the other in increments of 10 in. lbs. (1.12 Nm) until 30 in. lbs. (3.38 Nm) has been reached.
 - 4.1.4 While holding seat gland secure with a wrench, tighten seat gland locknuts to the valve body.

Do Not Apply More Than 30 In. Lbs. (3.385 Nm)



Maintenance Notes

Lined area for writing maintenance notes.



Maintenance Notes

Lined area for writing maintenance notes.



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Instrumentation Products Division

Operation and Maintenance Manual (OM)
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