SPX®

Instruction Manual

Form No.: 95-03097

Revision: 11/2011

Read and understand this manual prior to operating or servicing this product.

Waukesha Cherry-Burrell®

300 and 350 Series Ball Valve

Manual and Pneumatic Actuators

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Warranty

Seller warrants its products to be free from defect in materials and workmanship for a period of one (1) year from the date of shipment. This warranty shall not apply to products which require repair or replacement due to normal wear and tear or to products which are subjected to accident, misuse or improper maintenance. This warranty extends only to the original Buyer. Products manufactured by others but furnished by Seller are exempted from this warranty and are limited to the original manufacturer's warranty.

Seller's sole obligation under this warranty shall be to repair or replace any products that Seller determines, in its discretion, to be defective. Seller reserves the right either to inspect the products in the field or to request their prepaid return to Seller. Seller shall not be responsible for any transportation charges, duty, taxes, freight, labor or other costs. The cost of removing and/or installing products which have been repaired or replaced shall be at Buyer's expense.

Seller expressly disclaims all other warranties, express or implied, including without limitation any warranty of merchantability of fitness for a particular purpose. The foregoing sets forth Seller's entire and exclusive liability, and Buyer's exclusive and sole remedy, for any claim of damages in connection with the sale of products. In no event shall Seller be liable for any special consequential incidental or indirect damages (including without limitation attorney's fees and expenses), nor shall Seller be liable for any loss of profit or material arising out of or relating to the sale or operation of the products based on contract, tort (including negligence), strict liability or otherwise.

Shipping Damage or Loss

If equipment is damaged or lost in transit, file a claim at once with the delivering carrier. The carrier has signed the Bill of Lading acknowledging that the shipment has been received from SPX Flow Technology in good condition. SPX Flow Technology is not responsible for the collection of claims or replacement of materials due to transit shortages or damages.

Warranty Claim

Warranty claims must have a **Returned Goods Authorization (RGA)** from the Seller before returns will be accepted.

Claims for shortages or other errors, exclusive of transit shortages or damages, must be made in writing to Seller within ten (10) days after delivery. Failure to give such notice shall constitute acceptance and waiver of all such claims by Buyer.

Safety

READ AND UNDERSTAND THIS MANUAL PRIOR TO INSTALLING, OPERATING, OR SERVICING THIS EQUIPMENT

Waukesha Cherry-Burrell recommends users of our equipment and designs follow the latest Industrial Safety Standards. At a minimum, these should include the industrial safety requirements established by:

1. Occupational Safety and Health Administration (OSHA), Title 29 of the CFR
   Section 1910.212- General Requirements for all Machines
2. National Fire Protection Association, ANSI/NFPA 79
   ANSI/NFPA 79- Electrical Standards for Industrial Machinery
3. National Electrical Code, ANSI/NFPA 70
   ANSI/NFPA 70- National Electrical Code
   ANSI/NFPA 70E- Electrical Safety Requirement for Employee Workplaces
4. American National Standards Institute, Section B11

Attention: Servicing energized industrial equipment can be hazardous. Severe injury or death can result from electrical shock, burn, or unintended actuation of controlled equipment. Recommended practice is to disconnect and lockout industrial equipment from power sources, and release stored energy, if present. Refer to the National Fire Protection Association Standard No. NFPA70E, Part II and (as applicable) OSHA rules for Control of Hazardous Energy Sources (Lockout-Tagout) and OSHA Electrical Safety Related Work Practices, including procedural requirements for:

- Lockout-tagout
- Personnel qualifications and training requirements
- When it is not feasible to de-energize and lockout-tagout electrical circuits and equipment before working on or near exposed circuit parts

Locking and Interlocking Devices: These devices should be checked for proper working condition and capability of performing their intended functions. Make replacements only with the original manufacturer's renewal parts or kits. Adjust or repair in accordance with the manufacturer's instructions.

Periodic Inspection: Industrial equipment should be inspected periodically. Inspection intervals should be based on environmental and operating conditions and adjusted as indicated by experience. At a minimum, an initial inspection within 3 to 4 months after installation is recommended. Inspection of the electrical control systems should meet the recommendations as specified in the National Electrical Manufacturers Association (NEMA) Standard No. ICS 1.3, Preventative Maintenance of Industrial Control and Systems Equipment, for the general guidelines for setting-up a periodic maintenance program.

Replacement Equipment: Use only replacement parts and devices recommended by the manufacturer to maintain the integrity of the equipment. Make sure the parts are properly matched to the equipment series, model, serial number, and revision level of the equipment.

Warnings and cautions are provided in this manual to help avoid serious injury and/or possible damage to equipment:

STOP ***DANGER:*** *marked with a stop sign.*
Immediate hazards which WILL result in severe personal injury or death.

⚠ ***WARNING:*** *marked with a warning triangle.*
Hazards or unsafe practices which COULD result in severe personal injury or death.

⚠ ***CAUTION:*** *marked with a warning triangle.*
Hazards or unsafe practices which COULD result in minor personal injury or product or property damage.

Care of Stainless Steel

Stainless Steel Corrosion

Corrosion resistance is greatest when a layer of oxide film is formed on the surface of stainless steel. If film is disturbed or destroyed, stainless steel becomes much less resistant to corrosion and may rust, pit or crack.

Corrosion pitting, rusting and stress cracks may occur due to chemical attack. Use only cleaning chemicals specified by a reputable chemical manufacturer for use with 300 series stainless steel. Do not use excessive concentrations, temperatures or exposure times. Avoid contact with highly corrosive acids such as hydrofluoric, hydrochloric or sulfuric. Also avoid prolonged contact with chloride-containing chemicals, especially in presence of acid. If chlorine-based sanitizers are used, such as sodium hypochlorite (bleach), do not exceed concentrations of 150 ppm available chlorine, do not exceed contact time of 20 minutes, and do not exceed temperatures of 104°F (40°C).

Corrosion discoloration, deposits or pitting may occur under product deposits or under gaskets. Keep surfaces clean, including those under gaskets or in grooves or tight corners. Clean immediately after use. Do not allow equipment to set idle, exposed to air with accumulated foreign material on the surface.

Corrosion pitting may occur when stray electrical currents come in contact with moist stainless steel. Ensure all electrical devices connected to the equipment are correctly grounded.

Elastomer Seal Replacement Following Passivation

Passivation chemicals can damage product contact areas of this equipment. Elastomers (rubber components) are most likely to be affected. Always inspect all elastomer seals after passivation is completed. Replace any seals showing signs of chemical attack. Indications may include swelling, cracks, loss of elasticity or any other noticeable changes when compared with new components.

Introduction

General Information

Information in this manual should be read by all personnel involved in installation, setup, operation and maintenance.

Always use installation tools and lubricants recommended by Waukesha Cherry-Burrell. Waukesha Cherry-Burrell products are subject to intensive intermediate and final leakage and functional tests.

Factory Inspection

Each Waukesha Cherry-Burrell valve is shipped completely assembled, lubricated and ready for use.

Models and Specifications

The WCB 300 Series 2-Way Ball Valve is available with a manual handle, rack and pinion actuator, or linear actuator.

The WCB 350 Series 3-Way Ball Valve is available with a manual handle or rack and pinion actuator.

Materials

- Ball and Body: 316L Stainless Steel
- Seat: PTFE

Equipment Serial Number

For Waukesha Cherry-Burrell valves with actuators, the valves are identified by a serial number found on the label on the actuator cylinder. Valves with a manual handle are not labeled with a serial number.

Operating Parameters

Temperature Range

- 300 Series 2-Way Ball Valve: 0° to 300°F (-17° to 148°C)
- 350 Series 3-Way Ball Valve: 0° to 350°F (-17° to 175°C)

Solenoid valves may not be used in the control module in room environments below 32°F (0°C) and over 140°F (60°C), as function cannot be guaranteed.

Pressure Range

Valve Type	Valve Size	Operating Pressure:
300 Series 2-Way	1/2” - 3/4"	up to 1300 psi (90 bar)
	1” – 1 1/2"	up to 1100 psi (76 bar)
	2’’ – 4’’	up to 900 psi (62 bar)
350 Series 3-Way	1/2” - 2”	up to 1000 psi (69 bar)
	2 1/2” - 4”	up to 800 psi (55 bar)

Torque Values

Valve Type	Size	Minimum Torque Required to Rotate Valve	
		in-lb	N-m
300 Series 2-Way	1/2"	42	4.75
	3/4"	58	6.55
	1"	93	10.51
	1 1/2"	285	32.20
	2"	350	39.54
	2 1/2"	782	88.35
	3"	951	107.45
	4"	1232	139.20
350 Series 3-Way	1/2"	40	4.52
	3/4"	40	4.52
	1"	50	5.65
	1 1/2"	125	14.12
	2"	125	14.12
	2 1/2"	200	22.60
	3"	200	22.60
	4"	250	28.25

Installation

Air Supply

Install the valves using dry, filtered air. Lubrication is not required. If using lubricated air, refer to the solenoid manufacturer's specifications. The air supply must be a 40 to 120 psi (3 to 8 bar) (with Rack & Pinion actuator).

Pipeline Support

As a general rule, support pipelines in such a way that they "float." This is particularly important when lines contain automatic valves. Temperature changes in the lines may cause expansion and contraction that can distort valve bodies, causing leaks. Contact WCB at 1-800-252-5200 for more information on our wide variety of fittings for all applications.

Install adequate supports to prevent strain on the fittings, valves and equipment connections.

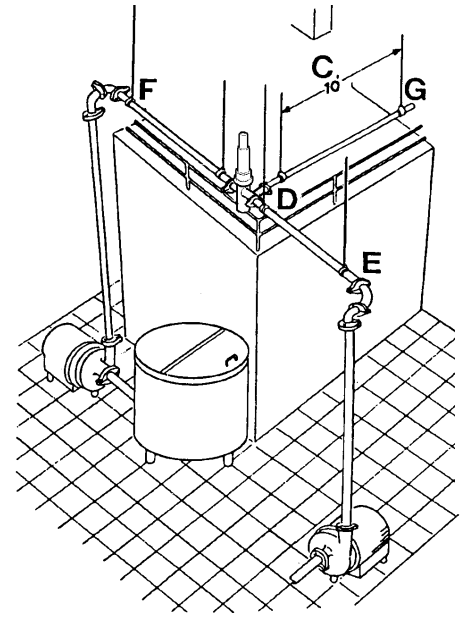


Figure 1 - Pipeline Support

1. Install supports at least every 10 feet on straight runs of piping. (Figure 1, item C).
2. Install supports on both sides of the valves as close as possible to the connections. (Figure 1, item D).
3. Install supports at each change of pipeline direction. (Figure 1, item E and F).
4. For pipelines passing through walls, floors or ceilings, provide at least 1 inch (25 mm) of clearance around the pipe to allow for expansion and contraction. (Figure 1, item G).

⚠ ***CAUTION:*** *Before attempting to butt-weld an automatic valve into a line, disassemble the body from the actuator. Dissipate heat away from the valve body to prevent warping.*

Maintenance

Maintenance Intervals

Maintain adequate stock of replacement parts. See the items listed under "Replacement Kits" on page 19 for 300 Series 2-Way Ball Valves, and page 23 for 350 Series 3-Way Ball Valves.

Maintenance intervals should be determined by the user and specific application, based on the following conditions:

- Daily operation period
- Switching frequency
- Application parameters, such as temperature, pressure, and flow
- Product type

Inspection

Inspect the following on a regular basis:

- Valve body gaskets and ball seats
- Pneumatic connections:
  - Air pressure at supply connection
  - Air lines for kinks and leaks
  - Threaded connections for tight fit
  - Clean air filter at regular intervals
- Electrical connections secure on control module:
  - Wire connections tight on terminal strip
  - Electrical connections to control module
  - Threaded strain relief for tight fit.

Lubrication

No lubrication is required other as than noted in the disassembly and assembly procedures. (Use food grade non-petroleum (silicone) grease on seals and o-rings.)

Apply Bostik Never-Seez® White Food Grade with PTFE or equivalent to all bolts and threaded stem parts.

300 Series 2-Way Ball Valve Disassembly

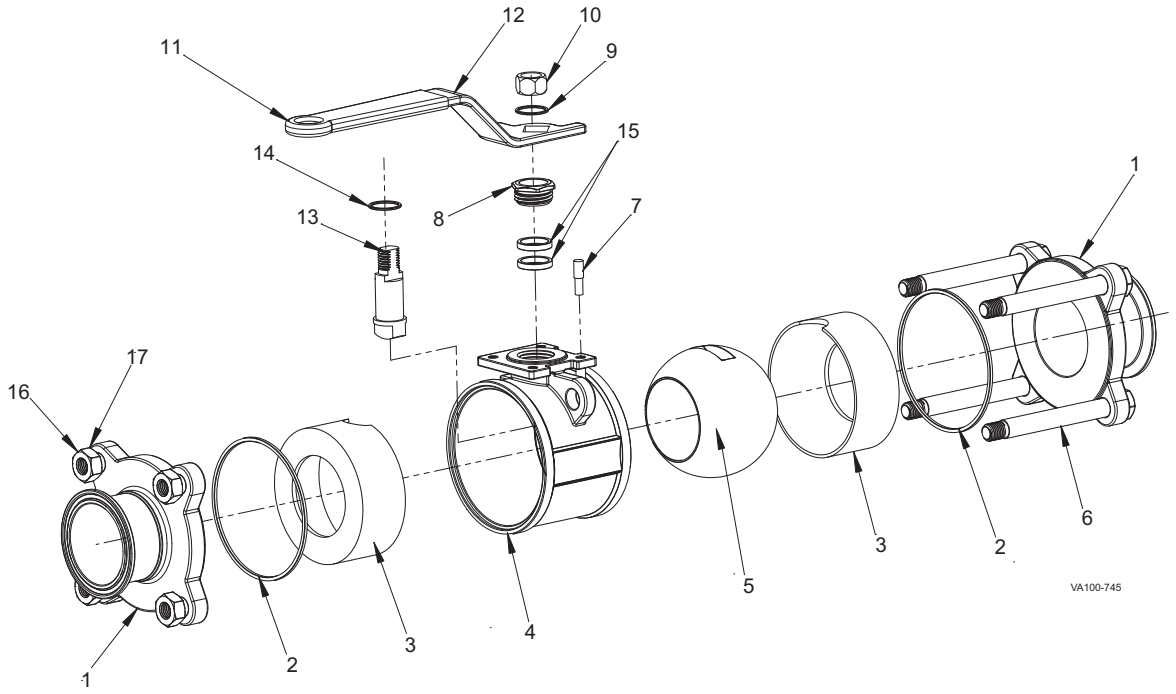


Figure 2 - 300-Series 2-Way Ball Valve

1. Remove the nut and washer (Figure 2, items 9 and 10) and slide off the manual handle (item 11).

   To install the appropriate actuator for this valve, see pages 14 and 15.
   To complete disassembly, continue to step 2.

2. Place the handle (item 11) back on the stem (item 13) and turn the handle to close the valve.

3. Remove the handle (item 11) and gland hex nut (item 8), then tip the valve upside down to retrieve the stem packing (item 15).

4. Remove the bolt nuts and washers (items 16 and 17). Pull off the flange tail pieces (item 1).

5. Rotate and push the ball toward the ball seats (item 3), creating some movement on the seats. Once one of the ball seats (item 3) moves out of the valve body (item 4), press the ball seat out of the valve body with your fingers.

6. The ball (item 5) should now fall out of the body. Push the remaining ball seat (item 3) out of the valve from the open end.

7. Push the stem (item 13) down from the top into the valve, and remove it with the thrust washer (item 14).

8. The valve is now fully disassembled.

300 Series 2-Way Ball Valve Assembly

1. See Figure 2 on page 12. Slide the thrust washer (item 14) over the stem (item 13). Holding the stem threads up, guide the stem from inside the body (item 4) up through the center hole. Turn the stem to align the key along the flow direction.
2. Drop the stem packing washers (item 15), then the gland hex nut (item 8) onto the stem from the top. Hand-tighten the gland hex nut (item 8) while making sure the stem key remains in position.
3. Slide the ball (item 5) into the valve, making sure the slot on the ball centers on the stem key. Press one ball seat (item 3) into the body. Place the Teflon™ gasket (item 2) on the body (item 4).
4. Align the first valve flange tail piece (item 1) with the bolt holes of the valve body, on the same side that the ball seat (item 3) was inserted in step 3.
5. Flip the sub assembly over, placing the clamp face of the first flange tail piece (item 1) down on a flat surface. Slide the opposite side ball seat (item 3) into the valve body. Place the Teflon™ gasket (item 2) on the body (item 4).
6. Align the opposite valve flange tail piece (item 1) with the bolt holes of the valve body (item 4). Slide the bolts (item 6) through the top valve flange to the bottom flange. Hand-tighten the washers and nuts (items 17 and 16) onto the bolts (item 6).
7. Tighten down the gland hex nut (item 8) and bolts (item 6).
8. Drop the handle (item 11) down onto the stem. Thread in the stopper pin (item 7) onto the mounting pad of valve. Drop the washer (item 9) on the stem over the handle, then thread the hex nut (item 10) onto the stem (item 13).
9. Turn the handle and inspect the ball to ensure the proper open and close positions. The handle should hit the stopper pin (item 7) in fully open and fully closed positions.

300 Series 2-Way Ball Valve Actuator Assembly

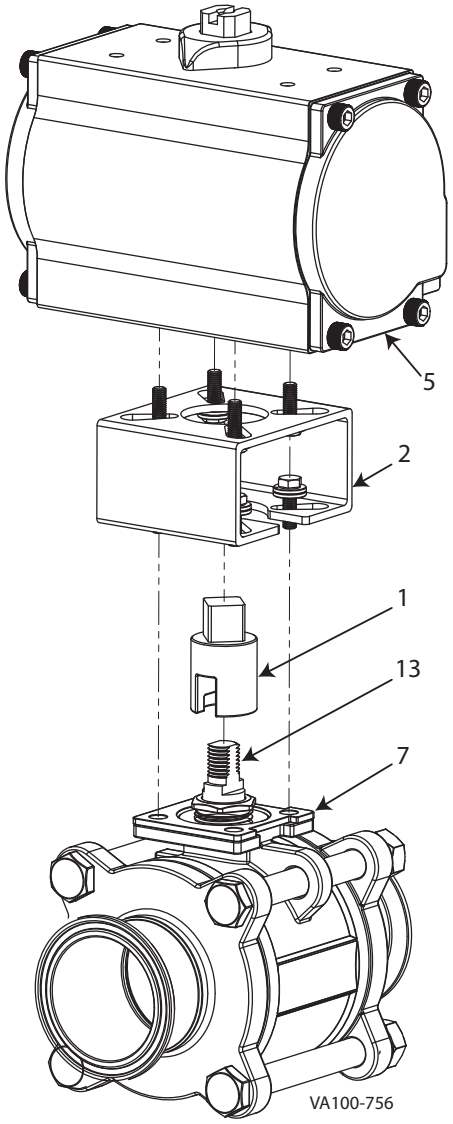


Figure 3 - Mount Rack & Pinion Actuator

Mounting a Rack & Pinion actuator on the 300 Series 2-Way Manual Ball Valve

1. Per the instructions in step 1 on page 12, remove the handle nut and handle from the ball valve.
2. See Figure 3. Determine the actuator and valve shaft orientation, then slide the coupling adapter (item 1) onto the valve shaft (item 13).
3. Attach the mounting bracket (item 2) to the mounting pad (item 7) of the valve with hex bolts and flat and lock washers.
4. Insert the square end of the coupling adapter (item 1) into the actuator (item 5), then bolt the actuator on the mounting bracket (item 2) with hex bolts and flat and lock washers. See page 20 for parts lists, including bolts and washers.

NOTE: *A double square actuator insert may be required between the coupling adapter and the actuator. See parts list on page 20.*

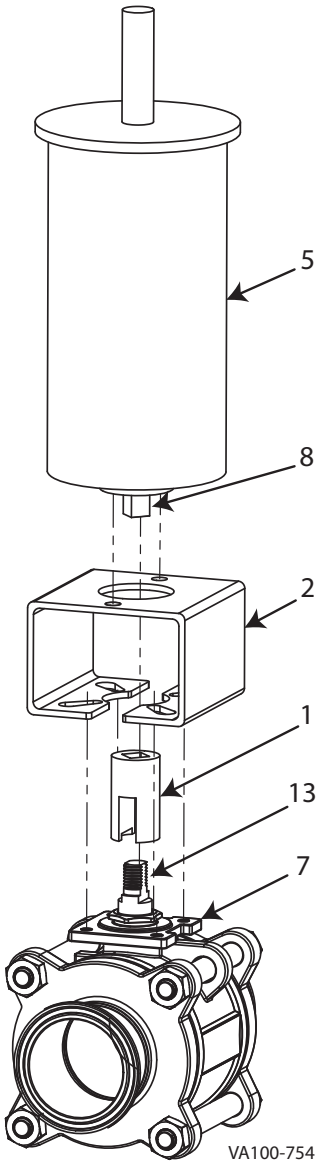


Figure 4 - Mount Linear Actuator

Mounting a Linear actuator on the 300 Series 2-Way Manual Ball Valve

1. Per the instructions in step 1 on page 12, remove the handle nut and handle from the ball valve.
2. See Figure 4. Determine the actuator and valve shaft orientation, then slide the coupling adapter (item 1) onto the valve shaft (item 13).
3. Attach the mounting bracket (item 2) to the mounting pad (item 7) of the valve with hex bolts and flat and lock washers.
4. Insert the actuator stem (item 8) into the coupling adapter (item 1), then bolt the actuator on the mounting bracket (item 2) with hex bolts. See page 21 for parts lists, including bolts and washers.

350 Series 3-Way Ball Valve Disassembly

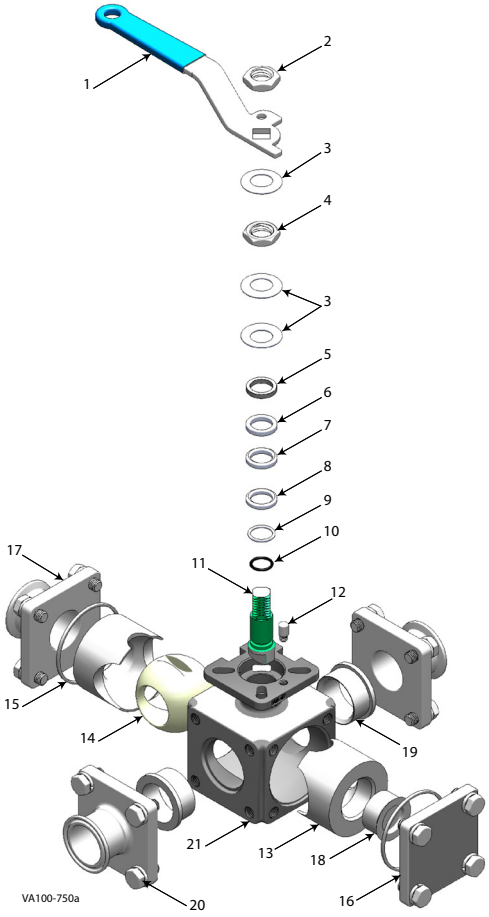


Figure 5 - 350-Series 3-Way Ball Valve

1. Remove the handle nut (item 2) and slide off the manual handle (item 1).

   (To install the appropriate actuator for this valve, see “Mounting an actuator on the 350 Series 3-Way Manual Ball Valve” on page 17.)

   To complete disassembly, continue to step 2.

2. Using a socket wrench, remove the lock nut (item 4), then tip the valve upside down to retrieve the bevel washer (item 3) and stainless ring (item 5).

3. Remove bolts and washers (items 20) from all 4 sides. Remove the no flow cap (item 16) and ferrule caps (item 17).

4. Rotate and push the ball (item 14) towards the ball seats (items 13 and 19), creating some movement on the seats.

5. Once one of the ball seats moves out of the valve body (item 21), press the ball seat out of the valve body with your fingers. Continue this for all four ball seats.

   NOTE: *Note: Ball seat 1 (item 19) does not have to be completely removed to extract the ball.*

6. Once the two ball seats (item 13) have been removed and opposite ball seats (item 19) have been slid out of the way, remove the ball from the body.

7. From the top, push the stem (item 11) down into the body of the valve. The stem o-ring and Teflon™ ring (items 9 and 10) will remain on the stem.

8. The valve is now fully disassembled.

To reassemble, reverse the steps above.

350 Series 3-Way Ball Valve Actuator Assembly

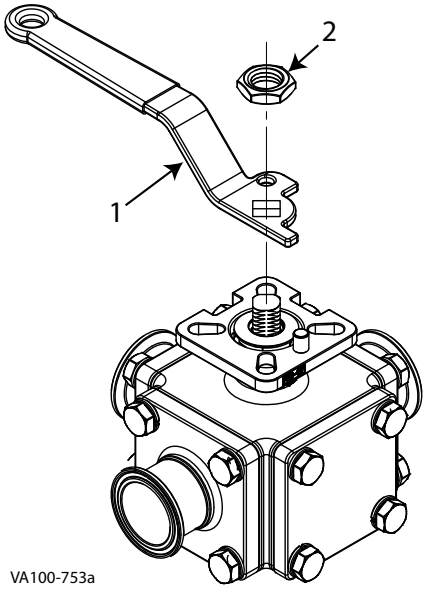


Figure 6 - Remove Handle

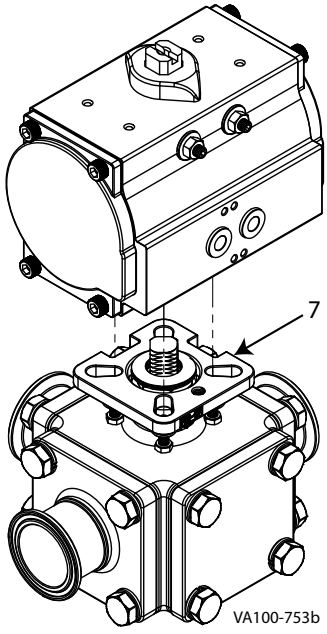


Figure 7 - Bolt on Actuator

Mounting an actuator on the 350 Series 3-Way Manual Ball Valve

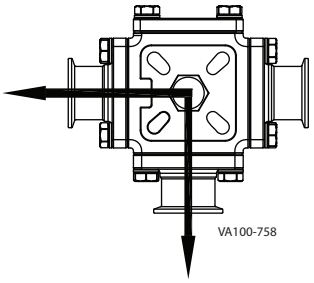
1. See Figure 6. Remove the handle nut (item 2), then remove the handle (item 1) from the ball valve.
2. Determine the actuator and valve shaft orientation.
3. See Figure 7. Place the actuator on the mounting pad (item 7), then bolt on the actuator with hex bolts and flat and lock washers. See page 24 for parts lists, including bolts and washers.

NOTE: *A double square actuator insert may be required between the coupling adapter and the actuator. See parts list on page 24.*

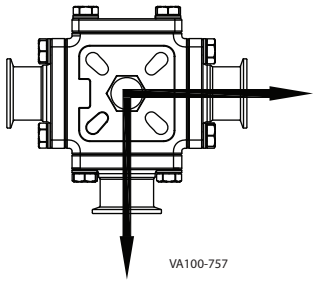
Air/Spring Rack & Pinion actuator factory setting orientations with no air on the valve

L-Port Valves

Normally Open (NO)

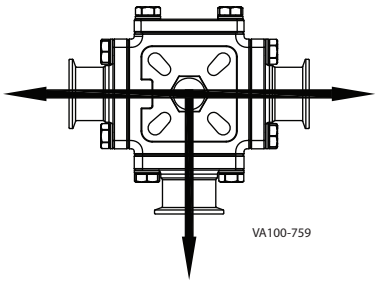


Normally Closed (NC)

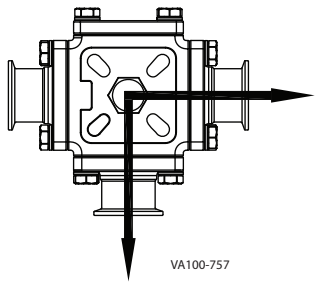


T-Port Valves

Normally Open (NO)

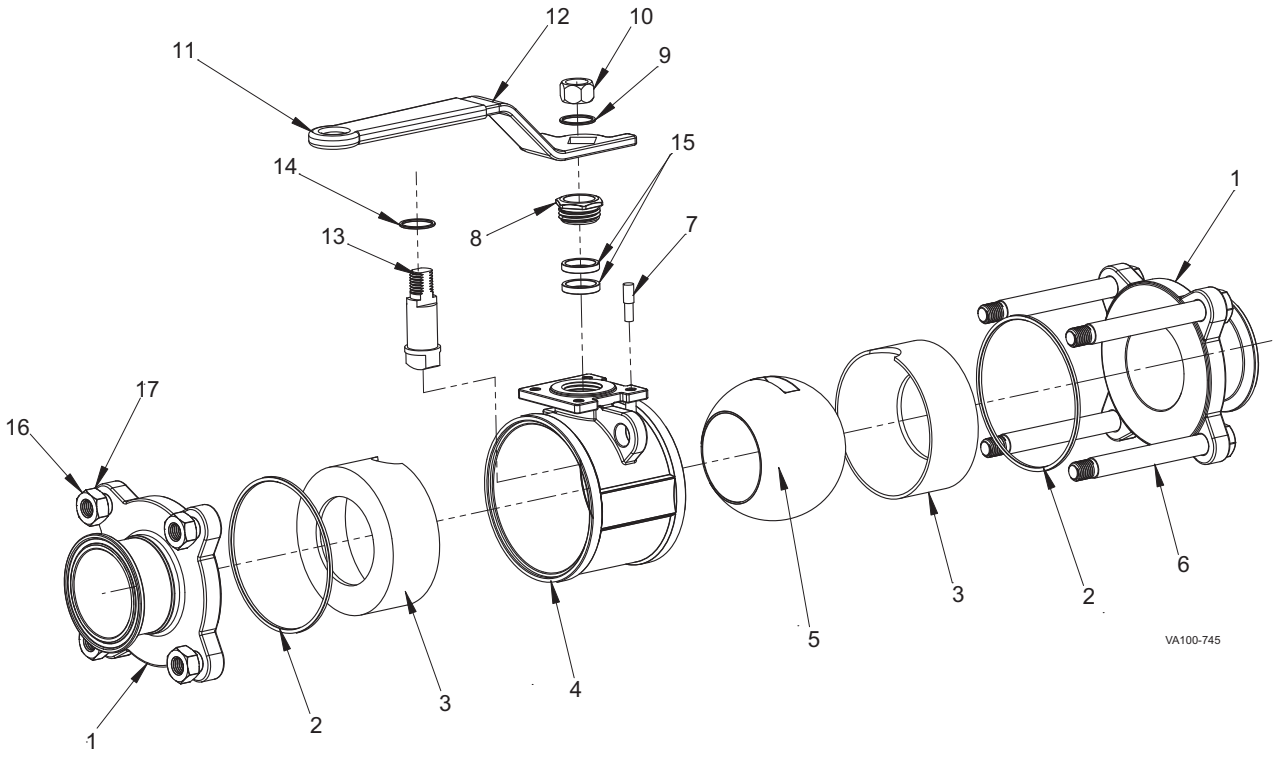


Normally Closed (NC)



Parts Lists

300 Series 2-Way Ball Valve with Manual Handle



Parts Breakdown:

	Item #	Qty.	Part Description	Material	Note
	1	2	Tail Piece	A351-CF8M	
*	2	2	Gasket	PTFE	
*	3	2	Ball Seat	PTFE	
	4	1	Body	A351-CF8M	
	5	1	Ball	A351-CF8M	
	6	4	Bolt	AISI-304	1
	7	1	Stopper Pin	AISI-304	
	8	1	Gland	AISI-304	
	9	1	Washer	AISI-304	
	10	1	Nut	AISI-304	
	11	1	Handle	AISI-304	2
	12	1	Lock Device	AISI-304	
	13	1	Stem	PTFE	
*	14	1	Thrust Washer	PTFE	
*	15	1	Stem Packing	AISI-304	
	16	4	Bolt Nut	AISI-304	1
	17	4	Bolt Washer	AISI-304	1

PL5027-CH170

* included in Replacement Kit

1. For 4" valves, quantity required is 6.
2. See Replacement Handles
3. For individual parts, please contact factory

300 Series 2-Way Ball Valve with Manual Handle

Complete (Assembled) Valve with Handle		
Valve size	**S-Line**	**Buttweld**
1/2"	WBV30000001	WBV30000002
3/4"	WBV30000003	WBV30000004
1"	WBV30000005	WBV30000006
1 1/2"	WBV30000007	WBV30000008
2"	WBV30000009	WBV30000010
2 1/2"	WBV30000011	WBV30000012
3"	WBV30000013	WBV30000014
4"	WBV30000015	WBV30000016

PL5027-CH173

Replacement Handles	
Part Description	**Part Number**
Valve Handle, 1/2” & 3/4”	2500000F00H
Valve Handle, 1”	2500000100H
Valve Handle, 1 1/2” & 2”	2500000300H
Valve Handle, 2 1/2” & 3”	2500000500H
Valve Handle, 4”	2500000600H

PL5027-CH171

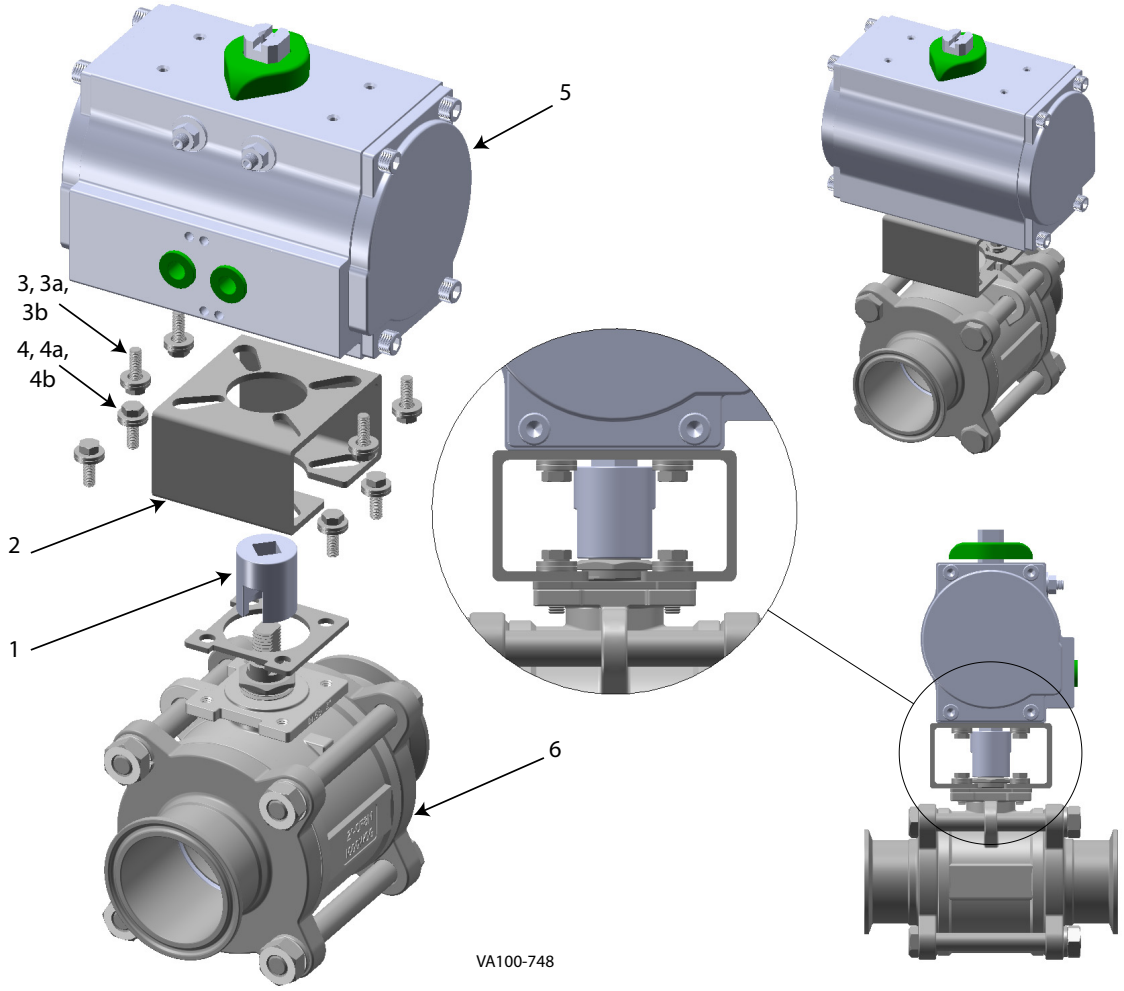
Handles reflect items 11 & 12 in the Parts Breakdown.

Replacement Kits	
Valve size	**Part Number**
1/2"	2500000EKIT
3/4"	2500000FKIT
1"	25000001KIT
1 1/2"	25000002KIT
2"	25000003KIT
2 1/2"	25000004KIT
3"	25000005KIT
4"	25000006KIT

PL5027-CH172

Kit includes items marked with * in the parts breakdown

300 Series 2-Way Ball Valve with Rack and Pinion Actuator



Item #	Part Description	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
1	Coupling Adapter	130540+		130541+	130542+		130543+		130544+
2	Mounting Bracket	130536+		130537+	130538+		130539+		
3	Valve Side Bolts (4 pieces)	10-24 x .50" (P/N 130811+)			1/4"-20 x .625" (P/N 30-181)		5/16"-18 x .75" (P/N 30-151)		3/8"-16 x 1.0" (P/N 30-30)
3a	Valve Side Flat Washers (4 pieces)	#10 WIDE (P/N 130812+)			1/4" (P/N 43-27)		5/16" (P/N 43-14)		3/8" (P/N 43-30)
3b	Valve Side Lock Washers (4 pieces)	#10 (P/N 43-21)			1/4" (P/N 43-22)		5/16" (P/N 43-15)		3/8" (P/N 43-28)
4	Actuator Side Bolts (4 pieces)	M5-0.8 x 12mm (P/N 130813+)		M6-1.0 x 12mm (P/N 130814+)			M8-1.0 x 16mm (P/N 30-633)	M10-1.5 x 20mm (130815+)	
4a	Actuator Side Flat Washers (4 pieces)	#10 WIDE (P/N 130812+)		1/4" (P/N 43-27)			5/16" (P/N 43-14)	3/8" (P/N 43-30)	
4b	Actuator Side Lock Washers (4 pieces)	#10 (P/N 43-21)		1/4" (P/N 43-22)			5/16" (P/N 43-15)	3/8" (P/N 43-28)	
5	Actuator (Air/Air)	130551+		130552+	130553+		130554+		130555+
	Actuator (Air/Spring)	130545+ (Insert 11M9)		130546+ (Insert 14M11)	130547+ (Insert 17M14)		130548+ (Insert 22M17)	130549+ (Insert 27M17)	130550+ (Insert 27M22)
6	Manual Valve	See note below							

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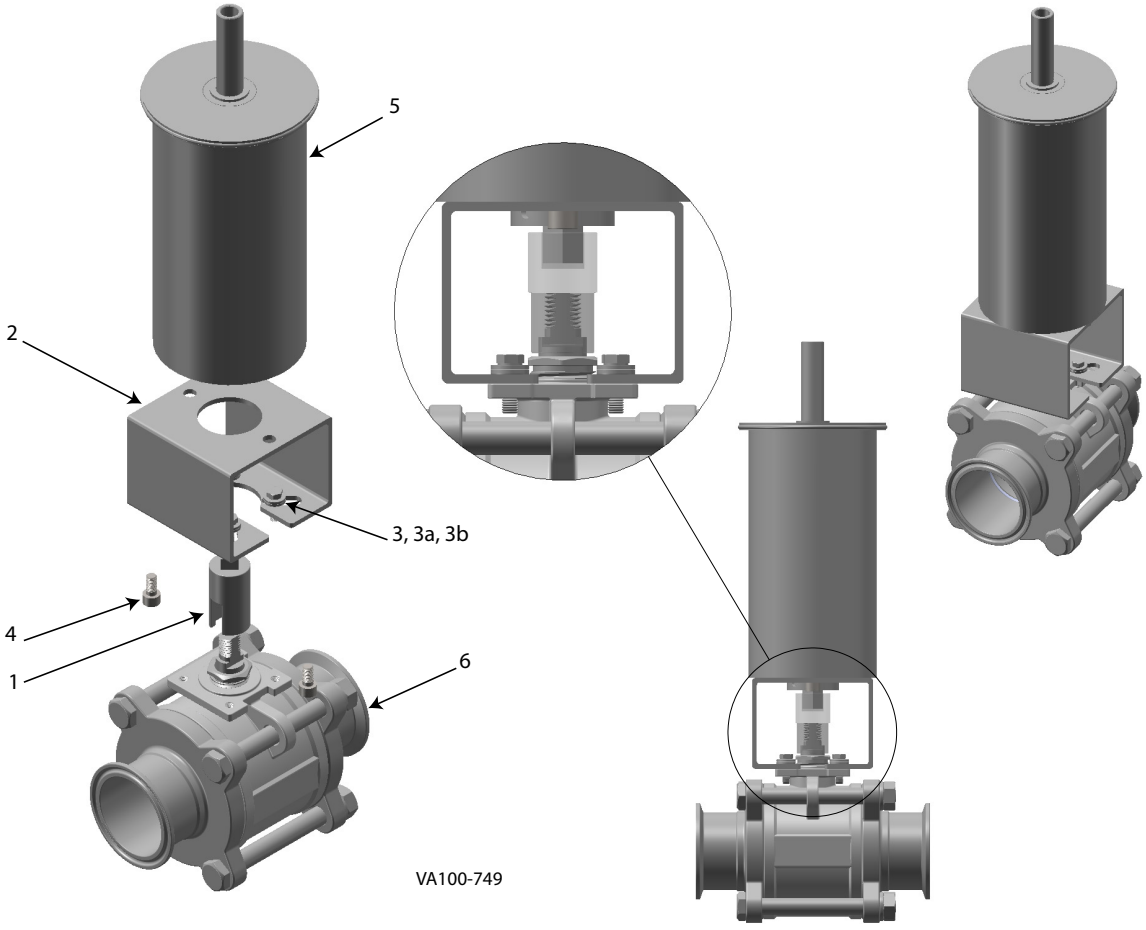
NOTE: *For item 6, see page 19.*

300 Series 2-Way Ball Valve with Linear Actuator



Item #	Part Description	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
1	Coupling Adapter	130498+		130499+	130500+		130501+		130503+
2	Mounting Bracket	130494+		130495+	130496+		130497+		
3	Valve Side Bolts (4 pieces)	10-24 x .50" (P/N 130811+)			1/4"-20 x .625" (P/N 30-181)		5/16"-18 x .50" (P/N 30-163)		3/8"-16 x 1.0" (P/N 30-30)
3a	Valve Side Flat Washers (4 pieces)	#10 WIDE (P/N 130812+)			1/4" (P/N 43-27)		5/16" (P/N 43-14)		3/8" (P/N 43-30)
3b	Valve Side Lock Washers (4 pieces)	#10 (P/N 43-21)			1/4" (P/N 43-22)		5/16" (P/N 43-15)		3/8" (P/N 43-28)
4	Actuator Side Bolts (2 pieces)	M8 x 12mm (P/N 130809+)					M10 x 14mm (P/N 130810+)		
5	Actuator (Air/Air) for control unit	H328357					H328358		
	Actuator (Air/Spring) for control unit	H203918					H328353		
	Actuator (Air/Air)	H328360					H328361		
	Actuator (Air/Spring)	H203917					H328355		
6	Manual Valve	See note below							

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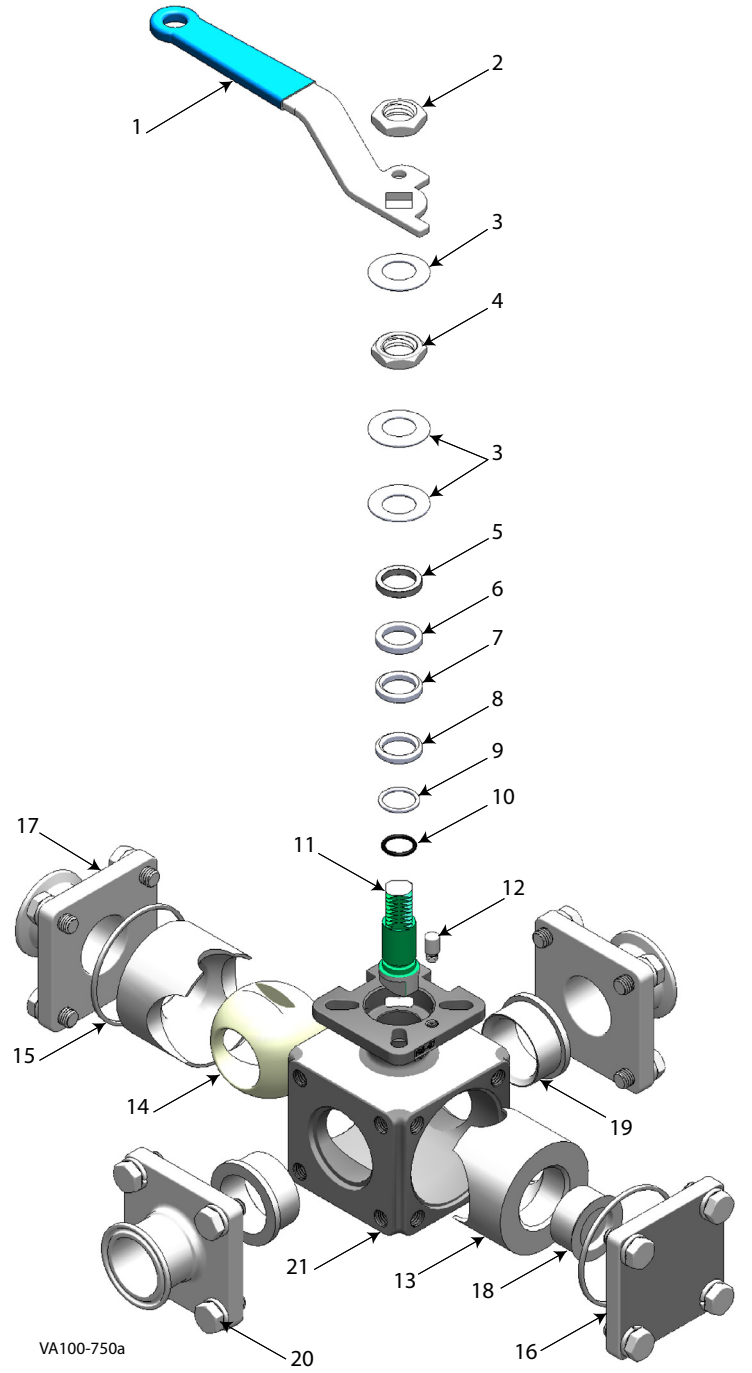
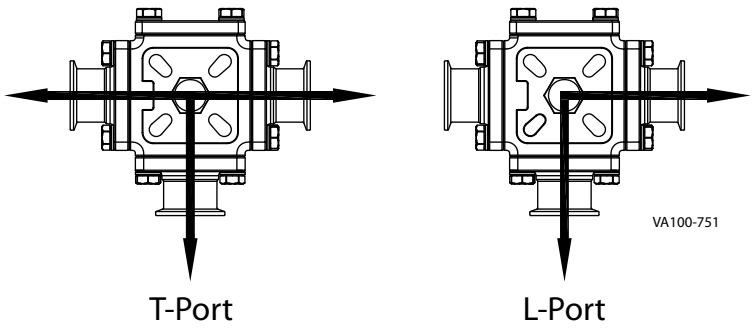
NOTE: *For item 6, see page 19.*

350 Series 3-Way Ball Valve with Manual Handle





350 Series 3-Way Ball Valve with Manual Handle

Parts Breakdown:

	Item #	Qty.	Part Description	Material	Note
	1	1	Handle	AISI 304	
	2	1	Handle Nut	AISI 304	
	3	3	Bevel Washer	AISI 301	
	4	1	Lock Nut	AISI 304	
	5	1	Stainless Ring	AISI 304	
*	6	1	Female Bevel Washer	PTFE	
*	7	1	Double Bevel Washer	PTFE	
	8	1	Bevel Washer	PTFE	
	9	1	Teflon Ring	PTFE	3
*	10	1	Stem O-Ring	FKM	3
	11	1	Stem	AISI 316	3
	12	1	Stop Pin	AISI 304	
*	13	2	Ball Seat #2	PTFE	
	14	1	Ball	A351-CF8M	
*	15	2	Gasket	PTFE	
	16	1	No Flow Cap	AISI 316	
	17	3	Ferrule Cap	AISI 316	
*	18	1	Seat Cap	PTFE	
*	19	2	Ball Seat #1	PTFE	
	20	16	Bolt with Lock Washer	AISI 304	
	21	1	Valve Body	AISI 316	

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* included in Replacement Kit

1. For individual parts, please contact factory
2. 2 1/2” - 4” sizes come with a bolt to hold in the tube-style handle, not listed.
3. Items 9, 10, and 11 are inside the Valve Body when assembled

Complete (Assembled) Valve with Handle		
Size	**Style**	**S-Line**
1/2"	L-Port	WBV35000001
	T-Port	WBV35000002
3/4"	L-Port	WBV35000003
	T-Port	WBV35000004
1"	L-Port	WBV35000005
	T-Port	WBV35000006
1 1/2"	L-Port	WBV35000007
	T-Port	WBV35000008
2"	L-Port	WBV35000009
	T-Port	WBV35000010
2 1/2"	L-Port	WBV35000011
	T-Port	WBV35000012
3"	L-Port	WBV35000013
	T-Port	WBV35000014
4"	L-Port	WBV35000015
	T-Port	WBV35000016

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Replacement Kits	
Valve size	**Part Number**
1/2"	350000EKIT
3/4"	350000FKIT
1"	3500001KIT
1 1/2"	3500002KIT
2"	3500003KIT
2 1/2"	3500004KIT
3"	3500005KIT
4"	3500006KIT

PL5027-CH179

Kit includes items marked with * in the parts breakdown

Replacement Handles	
Part Description	**Part Number**
Valve Handle, 1/2” through 2”	130618+
Valve Handle, 2 1/2” through 4"	130619+

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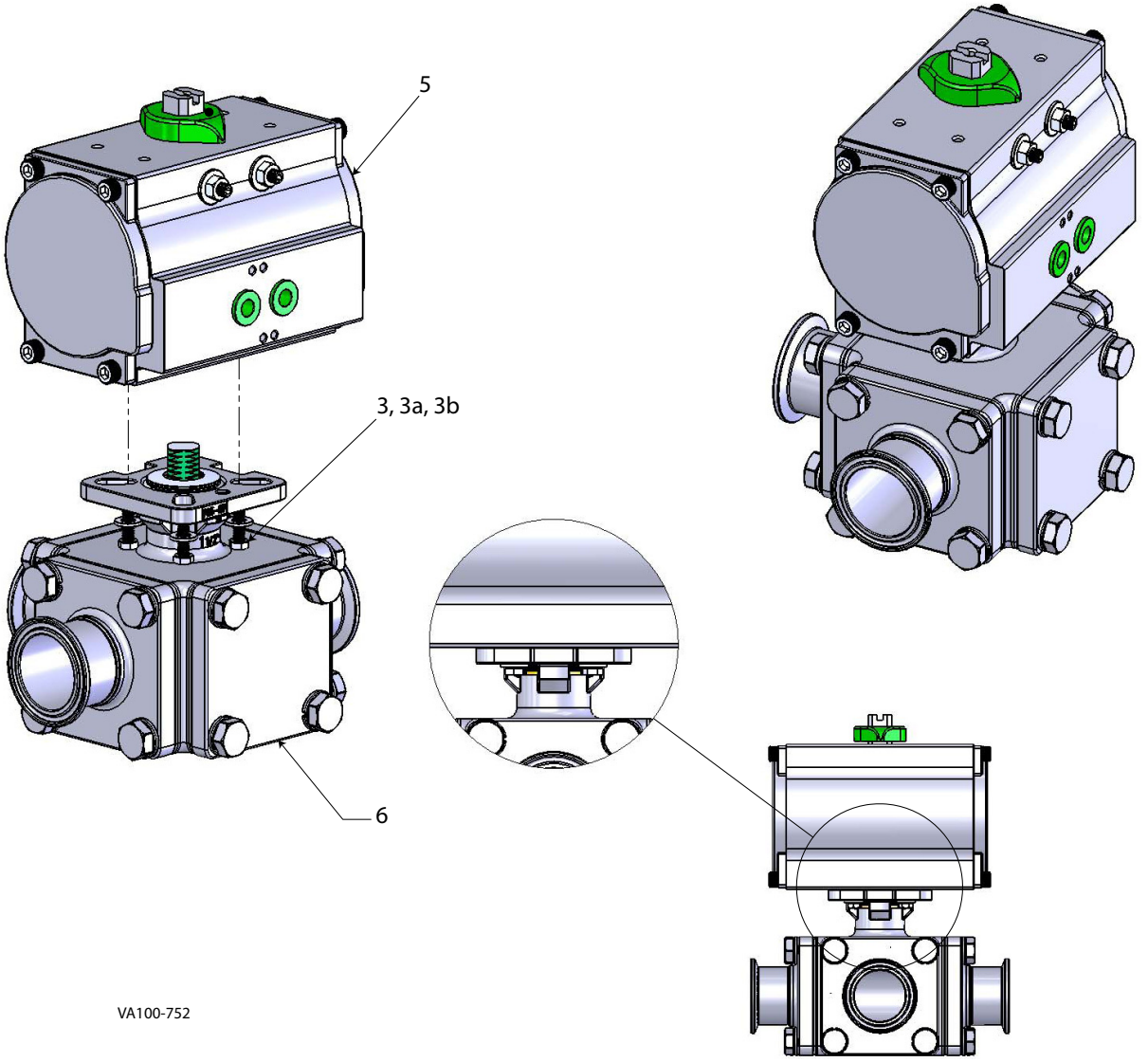
The handle is item 1 in the Parts Breakdown.

350 Series 3-Way Ball Valve with Rack and Pinion Actuator



Item #	Part Description	1/2"	3/4"	1"	1 1/2"	2"	2 1/2"	3"	4"
3	Bolts (4 pieces)	M5-0.8 x 12mm (P/N 130813+)			M8-1.0 x 16mm (P/N 30-633)				
3a	Flat Washers (4 pieces)	#10 WIDE (P/N 130812+)			5/16" (P/N 43-14)				
3b	Lock Washers (4 pieces)	#10 (P/N 43-21)			5/16" (P/N 43-15)				
5	Actuator (Air/Air)	130551+		130552+	130553+		130554+	130555+	
	Actuator (Air/Spring)	130545+ (Insert 11M9)		130545+ (no insert)	130547+ (Insert 17M14)		130547+ (no insert)	130548+ (no insert)	
6	Manual Valve	See note below							

PL5027-CH181

NOTE: *For item 6, see page 23.*

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