McKenzie Valve
& Machining LLC.

Flanged Top and Aux Ball Valves
Product Literature & Maintenance Guidelines

Revision September 2022

1.0 Ball Valves

1.1 Ball Valves are used to transfer commodity and/or vapor in and out of the tank car. McKenzie Valve supplies threaded and flanged designs generally used for general purpose tank cars.

1.2 The valves detailed in this IOM mount to the tank or outlet valve using flange configurations.

1.3 The valves have NPT, Flanged, or Quick Disconnect ends for customer use.

1.4 The valves are available in carbon steel or stainless steel. All valves have stainless trim.

1.5 The valves are available with Teflon or Modified (Reinforced) Teflon Seats. The valves do not contain elastomers, so the valves are not commodity specific.

VALVE SIZE	-	MODEL	-	BODY MATERIAL*	BALL MATERIAL*	SEAT MATERIAL***	SEAL MATERIALS***	-	DIRECTION TO CLOSE**	OPTIONS**
1		UFR - STRAIGHT THRU FLANGED x NPT		22 - CARBON STEEL	36 - 316 STAINLESS STEEL	T - PURE TEFLON	T - TEFLON		CW - CLOCKWISE TO CLOSE	EXT - 1.5" LONGER HANDLE
2		UFFRFP - STRAIGHT THRU FLGD FULL PORT		36 - 316 STAINLESS STEEL		R - REINFORCED TFE			CCW - COUNTERCLOCKWISE TO CLOSE	F - FLAT FACE FLANGE
3		UFD - STRAIGHT THRU FLANGED x QUICK DISCONNECT		T6 - 316 STAINLESS STEEL A262		M - MODIFIED TFE				
		UTR - STRAIGHT THRU T&G FLG x NPT							OMIT FOR STANDARD	OMIT FOR STANDARD
		UTFR - STRAIGHT THRU T&G FLG x FLG								

Table 1 – Standard Ball Valve offerings

UFR **UTR** **UFFRFP** **UTFR** **UFD**

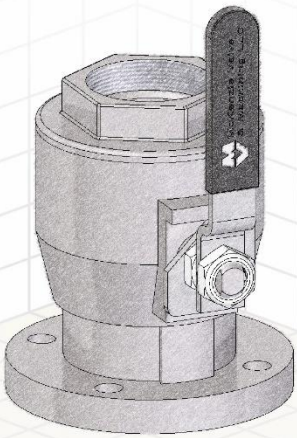
Image 1 – Standard Ball Valve Models

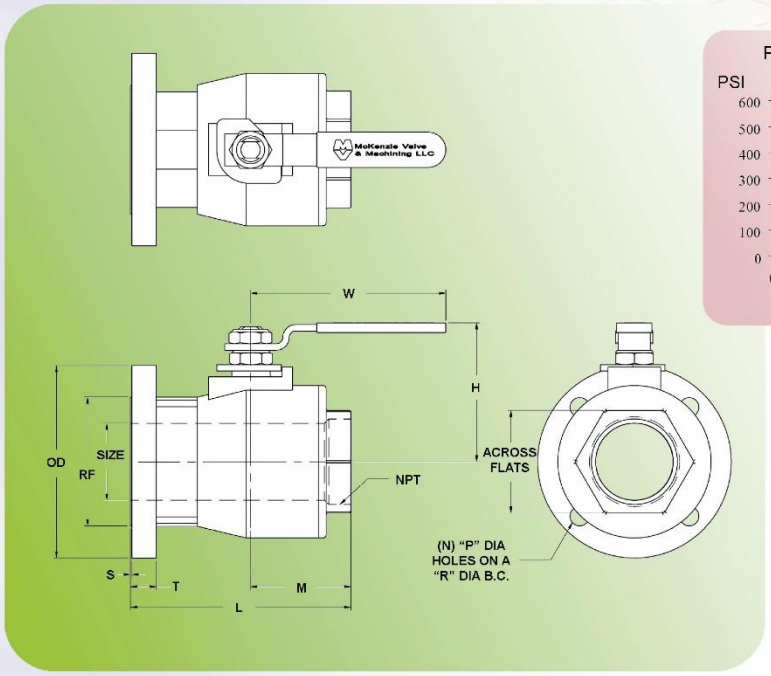
UFR

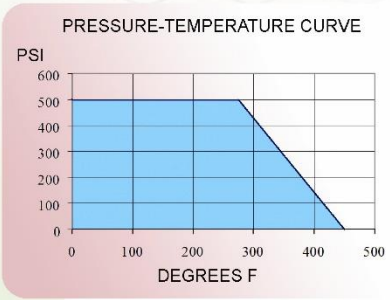
1", 2", & 3" Flanged X NPT Full Port Ball Valves

AAR Approval Number: **E-207023**

Valve Size: 1", 2", or 3"
Port: Full Port
Maximum Pressure: 500 psi (800 avail)
Maximum Temperature: 400°F
Tank Mounting: ANSI 150# Flange
Customer Connection: NPT (Pipe Thread)
Seats/Seals: Teflon or Reinforced TFE
Body: 316 Stainless or Carbon Steel
Trim (Ball/Stem): 316 Stainless Steel







SIZE	H	L	M	N	P	R	S	T	W	OD	RF	NPT	FLATS	Cv
1"	3.03	4.4	2.50	4	5/8	3.12	1/16	9/16	4.9	4.25	2.00	1"	1 5/8	110
2"	5.06	6.5	4.25	4	3/4	4.75	1/16	3/4	6.1	6.00	3.62	2"	3	480
3"	5.38	8.5	4.87	4	3/4	6.00	1/16	15/16	7.5	7.50	5.00	3"	4	1200

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UFR

1", 2", & 3" Flanged X NPT Ball Valves

AAR Approval Number: **E-207023**

VALVE SIZE	-	MODEL	-	BODY MATERIAL*	BALL MATERIAL*	SEAT MATERIAL***	SEAL MATERIALS** *	-	DIRECTION TO CLOSE**	-	OPTIONS
1		UFR - STRAIGHT THRU FLANGED x NPT		22 - CARBON STEEL	36 - 316 STAINLESS STEEL	T - PURE TEFLON	T - TEFLON		CW - CLOCKWISE TO CLOSE		F - FLAT FACED
2				36 - 316 STAINLESS STEEL		M - MODIFIED TFE			CCW - COUNTERCLOCKWISE TO CLOSE		
3				T6 - 316 STAINLESS STEEL A262		R - FORMER "M" DESCRIPTION "REINFORCED"			OMIT FOR STANDARD		

Common Variation Model Numbers	McKenzie Part Number
1-UFR-2236MT	509509-01
1-UFR-2236TT	509538-01
1-UFR-2236TT-F	509895-01
1-UFR-3636MT	509510-01
1-UFR-3636TT	509539-01
1-UFR-3636TT-F	509896-01
2-UFR-2236MT	509475-01
2-UFR-2236TT	507865-01
2-UFR-3636MT	509476-01
2-UFR-3636TT	507858-01
3-UFR-2236MT	509477-01
3-UFR-2236TT	509670-01
3-UFR-3636MT	509478-01
3-UFR-3636TT	510047-01

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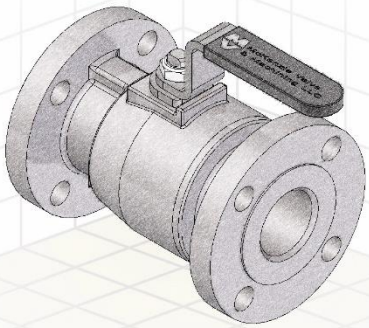
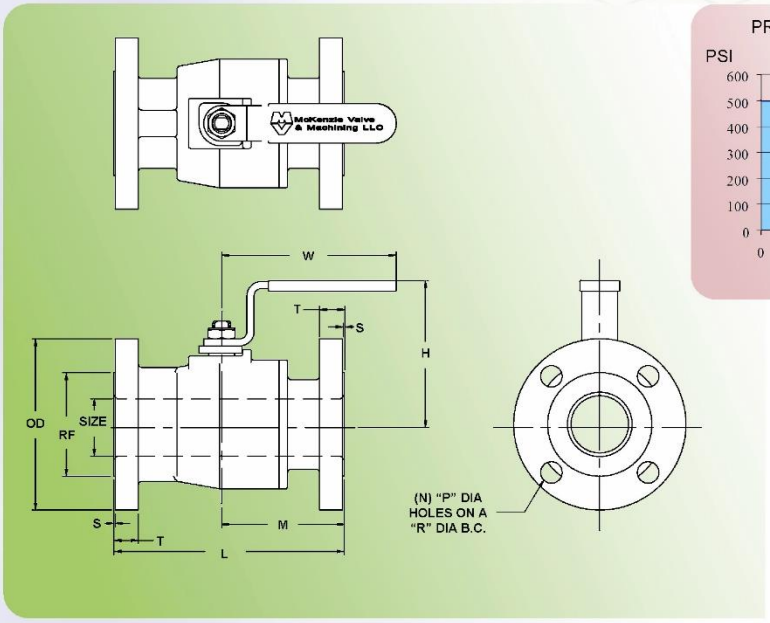
UFFRFP

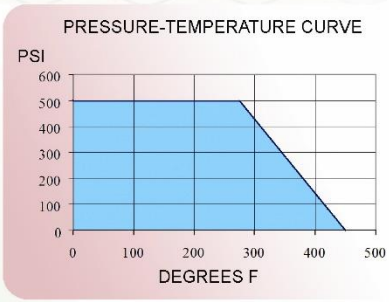
1", 2", & 3" Flanged X Flanged Full Port Ball Valves

AAR Approval Number: **E-207023**

Valve Size: 1", 2", or 3"
Port: Full Port
Maximum Pressure: 500 psi (800 avail)
Maximum Temperature: 400°F
Tank Mounting: ANSI 150# Flange
Customer Connection: ANSI 150# Flange
Seats/Seals: Teflon or Reinforced TFE
Body: 316 Stainless or Carbon Steel
Trim (Ball/Stem): 316 Stainless Steel







SIZE	H	L	M	N	P	R	S	T	W	OD	RF	Cv
1"	3.03	5.00	2.50	4	5/8	3.12	1/16	9/16	4.9	4.25	2.00	110
2"	5.06	8.00	4.25	4	3/4	4.75	1/16	3/4	6.1	6.00	3.62	480
3"	5.38	9.50	4.87	4	3/4	6.00	1/16	15/16	7.5	7.50	5.00	1200

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UFFRFP

1", 2", & 3" Flanged X Flanged Full Port Ball Valves

AAR Approval Number: **E-207023**

VALVE SIZE	-	MODEL	-	BODY MATERIAL*	BALL MATERIAL*	SEAT MATERIAL***	SEAL MATERIALS***	-	DIRECTION TO CLOSE**	HANDLE**
1 2 3		UFFRFP - FLGD FULL PORT		22 - CARBON STEEL 36 - 316 STAINLESS STEEL T6 - 316 STAINLESS STEEL A262	36 - 316 STAINLESS STEEL	T - PURE TEFLON M - MODIFIED TFE R - FORMER "M" DESCRIPTION "REINFORCED"	T - TEFLON		CW - CLOCKWISE TO CLOSE CCW - COUNTERCLOCKWISE TO CLOSE OMIT FOR STANDARD	EXT - 1.5" LONGER OMIT FOR STANDARD

Common Variation Model Numbers	McKenzie Part Number
1-UFFRFP-2236MT	509499-01
1-UFFRFP-2236TT	509497-01
1-UFFRFP-3636MT	509500-01
1-UFFRFP-3636TT	509498-01
2-UFFRFP-2236MT	509483-01
2-UFFRFP-2236TT	509481-01
2-UFFRFP-3636MT	509484-01
2-UFFRFP-3636TT	509482-01
3-UFFRFP-2236MT	509487-01
3-UFFRFP-2236MT-EXT	510080-02
3-UFFRFP-2236TT	509485-01
3-UFFRFP-2236TT-EXT	510080-01
3-UFFRFP-3636MT	509488-01
3-UFFRFP-3636MT-EXT	510080-04
3-UFFRFP-3636TT	509486-01
3-UFFRFP-3636TT-EXT	510080-03
3-UFFRFP-T636MT-EXT	510080-06
3-UFFRFP-T636TT-EXT	510080-05

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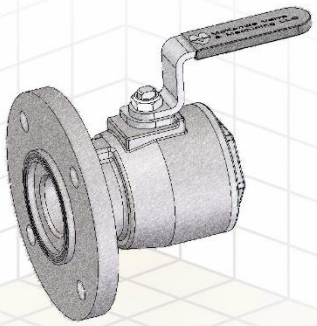
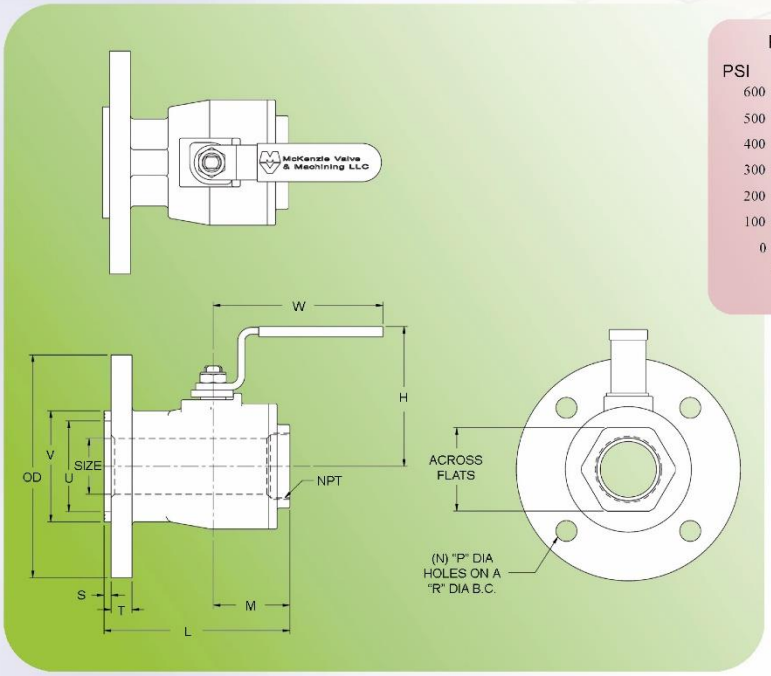
UTR

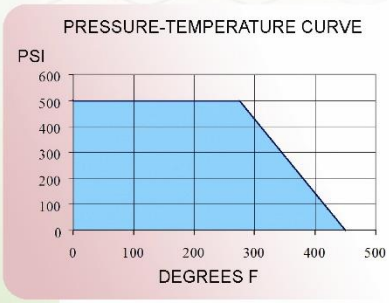
2" & 3" AAR Tongue X NPT Full Port Ball Valves

AAR Approval Number: **E-207023**

Valve Size: 2" or 3"
Port: Full Port
Maximum Pressure: 500 psi (800 avail)
Maximum Temperature: 400°F
Tank Mounting: AAR Tongued Flange
Customer Connection: NPT (Pipe Thread)
Seats/Seals: Teflon or Reinforced TFE
Body: 316 Stainless or Carbon Steel
Trim (Ball/Stem): 316 Stainless Steel







SIZE	H	L	M	N	P	R	S	T	W	OD	U	V	NPT	FLATS	Cv
2"	5.06	8.00	4.25	4	7/8	6.25	1/4	0.75	6.1	8.0	3.255	3.995	2"	3	480
3"	5.38	9.50	4.87	4	7/8	6.25	1/4	0.75	7.5	8.0	3.255	3.995	3"	4	1200

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UTR

2" & 3" AAR Tongue X NPT Full Port Ball Valves

AAR Approval Number: **E-207023**

VALVE SIZE	-	MODEL	-	BODY MATERIAL*	BALL MATERIAL*	SEAT MATERIAL***	SEAL MATERIALS***	-	DIRECTION TO CLOSE**
2		UTR - STRAIGHT THRU FLANGED x NPT WITH 3.255 X 3.995 X 1/4" TONGUE		22 - CARBON STEEL	36 - 316 STAINLESS STEEL	T - PURE TEFLON	T - TEFLON		CW - CLOCKWISE TO CLOSE
3				36 - 316 STAINLESS STEEL		M - MODIFIED TFE			CCW - COUNTERCLOCKWISE TO CLOSE
				T6 - 316 STAINLESS STEEL A262		R - FORMER "M" DESCRIPTION "REINFORCED"			
									OMIT FOR STANDARD

Common Variation Model Numbers	McKenzie Part Number
2-UTR-2236MT	510574-01
2-UTR-2236TT	510576-02
2-UTR-3636MT	510575-01
2-UTR-3636TT	510577-01
2-UTR-T636MT	510575-02
2-UTR-T636TT	510577-02
3-UTR-2236MT	510578-01
3-UTR-2236TT	510580-01
3-UTR-3636MT	510579-01
3-UTR-3636TT	510581-01
3-UTR-T636MT	510579-02
3-UTR-T636TT	510581-02

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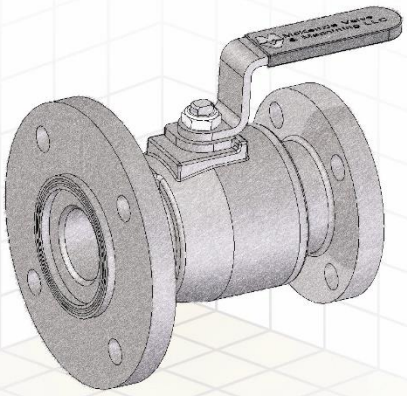
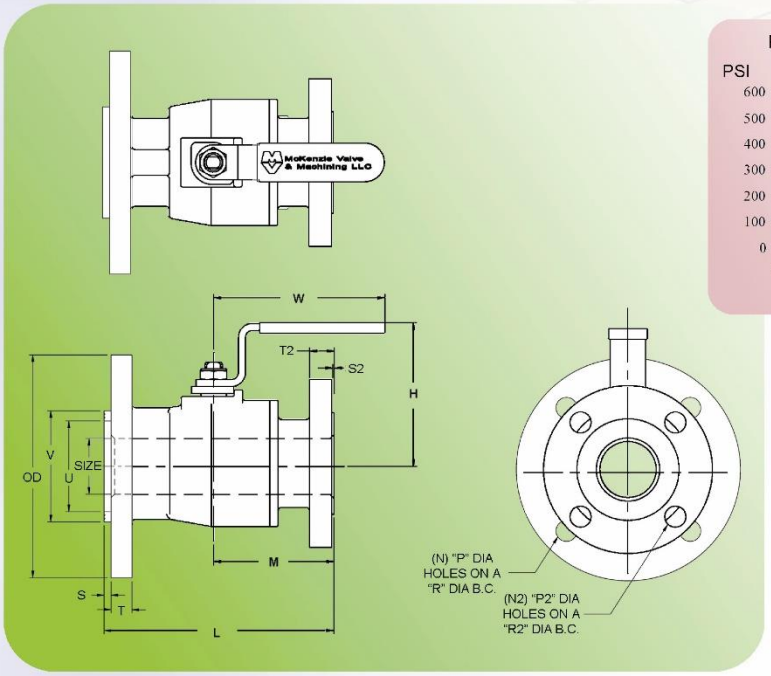
UTFR

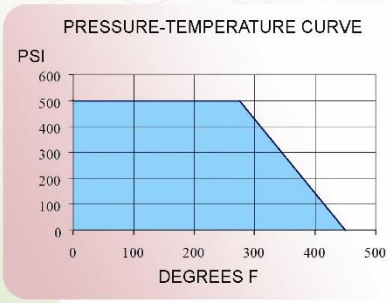
2" & 3" AAR Tongue X ANSI Flange Full Port Ball Valves

AAR Approval Number: **E-207023**

Valve Size: 2" or 3"
Port: Full Port
Maximum Pressure: 500 psi (800 avail)
Maximum Temperature: 400°F
Tank Mounting: AAR Tongued Flange
Customer Connection: ANSI Flange
Seats/Seals: Teflon or Reinforced TFE
Body: 316 Stainless or Carbon Steel
Trim (Ball/Stem): 316 Stainless Steel







SIZE	H	L	M	N	P	R	S	T	OD	U	V	N2	P2	R2	S2	T2	OD2	W	Cv
2"	5.06	8.13	4.38	4	7/8	6.25	1/4	0.75	8.0	3.255	3.995	4	3/4	4.75	1/16	0.85	6.0	6.1	480
3"	5.38	9.50	4.87	4	7/8	6.25	1/4	0.75	8.0	3.255	3.995	4	3/4	6.00	1/16	1.00	7.5	7.5	1200

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UTFR

2" & 3" AAR Tongue X ANSI Flange Full Port Ball Valves

AAR Approval Number: **E-207023**

VALVE SIZE	-	MODEL	-	BODY MATERIAL*	BALL MATERIAL*	SEAT MATERIAL***	SEAL MATERIALS** *	-	DIRECTION TO CLOSE**
2		UTFR - STRAIGHT THRU AAR FLANGE x ANSI FLANGE WITH 3.255 X 3.995 X 1/4" TONGUE		22 - CARBON STEEL	36 - 316 STAINLESS STEEL	T - PURE TEFLON	T - TEFLON		CW - CLOCKWISE TO CLOSE
3				36 - 316 STAINLESS STEEL		M - MODIFIED TFE			CCW - COUNTERCLOCKWISE TO CLOSE
				T6 - 316 STAINLESS STEEL A262		R - FORMER "M" DESCRIPTION "REINFORCED"			OMIT FOR STANDARD

Common Variation Model Numbers	McKenzie Part Number
2-UTFR-2236MT	510588-01
2-UTFR-2236TT	510586-01
2-UTFR-3636MT	510589-01
2-UTFR-3636TT	510587-01
2-UTFR-T636MT	510589-02
2-UTFR-T636TT	510587-02
3-UTFR-2236MT	510592-01
3-UTFR-2236TT	510590-01
3-UTFR-3636MT	510593-01
3-UTFR-3636TT	510591-01
3-UTFR-T636MT	510593-02
3-UTFR-T636TT	510591-02

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2.0 General Warnings and Disclosures:

2.1 The following guidelines describe McKenzie Valve and Machining LLC's standard disassembly and reassembly instructions. These are not meant to conflict, override, supersede or be used in place of a company's safety, production, and engineering standards or government rules and regulations. All DOT, AAR, CTC, national, federal, local, and other regulations that apply must be followed.

2.2 Only trained, qualified personnel should perform any procedures described within this IOM.

2.3 Read and understand the entire procedure before attempting any service or inspection.

2.4 These valves are used in numerous services and complete information about the commodity should be obtained, verified, and reviewed before any inspection or maintenance is performed.

2.5 To avoid exposure to toxic or hazardous conditions and materials, ensure that the direct area and all components are free of hazardous materials before performing any maintenance.

During maintenance, use appropriate personal protection equipment based on the service in which the valve may have been used or exposed. Residual materials may still be in the valve, so appropriate precautions need to be taken.

During installation, take care to ensure the valve is in purchased condition; clean, free of debris, and free of scratches that can lead to leakage. Use appropriate gaskets, fasteners, torque, tools, and methods to install the valve.

2.6 To avoid physical harm, use appropriate equipment to handle the valves.

3.0 Ball Valve Installation:

3.1 Standard Flanged ball valves are designed using three standard mounting styles.

- ANSI 150# Raised Face Flange
- ANSI 150# Flat Face Flange
- AAR Flange (Tongue and Groove)

3.2 All new valves are assembled and tested at the McKenzie facility to ensure the quality of the valve. Prior to installation, the valve should be handled appropriately and inspected to ensure that the gasket sealing surfaces are clean and undamaged. If damage is found, the valve will require maintenance.

3.3 As each manufacturer may impose different requirements based on service and design, install the valve using the tank car manufacturer's, or other end user's, specified materials and procedures.

3.4 The valve is designed to be installed with the handle pointing away from the tank when the valve is open (perpendicular to mounting surface). Inspect the sealing surfaces and position the appropriate gasket between the valve and its mounting surface. Carefully lower the valve into position taking care to align the gasket and mounting surface.

3.5 Check to ensure that the fastener threads are clean and have appropriate lubrication. As the fasteners are installed, they should be equally tightened in increments to ensure

proper alignment and even gasket compression. As a general rule, the increments should be hand tight, then one third of required torque, then two-thirds, then the complete torque. The fasteners should not be tightened in a circular, or rotational, pattern as this may distort the gasket and result in uneven sealing. A criss-cross, or star, pattern should be used. Once the fasteners are fully tightened, a circular pattern can be used to check the torques.

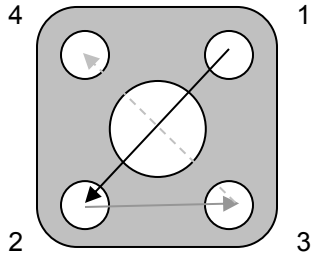

Figure 1 – Standard Tightening Pattern

3.6 After the valve is installed, check for leakage around the newly installed gasket. If any leaks are detected, the valve should be removed, the valve and mounting surfaces should be inspected, and a new gasket installed.

4.0 Ball Valve Operation:

4.1 All ball valves should be stored in the open position. Before operating a valve for the first time, inspect the opening of the valve. If the valve is not close to 100% open or 100% closed, the seat may have slightly deformed into the ball over time. If the seat has deformed, carefully operate the valve into to the closest fully open or closed position and let set overnight. If the seat does not recover, the valve will require rebuild.

4.2 McKenzie Ball valves are designed to rotate 90° (1/4 turn) between open and closed. By default, this operation is Clockwise to close. This direction can be changed by flipping the cam stop during rebuild. Ensure the cam stop is correctly oriented for the application.

4.3 If the valve is new or has been stored for an extended period of time, the initial operation (known as set-break torque) will be noticeably higher than real break torque and operating torque.

4.4 The handle indicates flow. When the handle is parallel to the siphon pipe (perpendicular to mounting surface) the valve is open. When the handle is parallel to the mounting surface, the valve is closed.

4.5 The valve should be opened and closed slowly, rather than with a quick motion. Some commodities may solidify, crystallize, or polymerize inside the valve if the valve is quickly closed, without allowing time for the valve cavity to drain.

4.6 Do not loosen the packing stem nut at any time. If a stem leak develops, retorque the stem nut. The stem nut should not be continually retorqued as this will damage packing over time.

5.0 Ball Valve Disassembly:

5.1 Read and understand the entire procedure before attempting any service or inspection. Follow all safety procedures applicable.

5.2 Before disassembling the valve, note the operational direction of the valve. Most common is clockwise to close. Remove any and all station stencils.

5.3 All standard ball valves have two or more tack welds between the body and the retainer. These tack welds prohibit the accidental loosening of the retainer from the body. Before proceeding, the weld must be cut. The common method is to use the edge of a cut-off disc. The seal is not directly under the seam, so the weld should be cut slightly lower than the body or retainer.

Weld before cutting Weld after cutting

Image 2 – Typical parting of the welds

5.4 The retainer on the valve varies depending on valve size and model.

UFR / UTR	
1"	1 5/8 SOCKET
2"	3" SOCKET
3"	4" SOCKET
UFD	
1"	1 5/8 SOCKET
2"	DEEPWELL 3" SOCKET
3"	DEEPWELL 4" SOCKET
UFFRFR / UTFR	
1"	CUST SPANNER (4) 9/16 PINS ON 3 1/8 DIA BOLT CIRCLE
2"	CUST SPANNER (4) 5/8 PINS ON 4 3/4 DIA BOLT CIRCLE
3"	CUST SPANNER (4) 5/8 PINS ON 6 DIA BOLT CIRCLE

Table 2 – Retainer Tool Sizes

5.5 The valves are assembled to a point where they might be metal to metal. Once a metal to metal contact is made, the retainer is very difficult to break free, even with the welds

parted. Assembly torque on the 3" valve is 600 ft-lbs. It may take as much as 1500 ft-lbs to break it free; then the retainer will loosen with very little force. Long handled wrenches and/or cheater pipes may not be effective in applying such high loads. High force impact wrenches, or an impact force, near the retainer end, on a cantilevered wrench will usually break this connection free.

5.6 Remove the Retainer and then remove the seat from the retainer. Discard the seat immediately or package for analysis.


Image 3 – Retainer Removal and disassembly

5.7 Rotate the valve to the closed position and remove the ball. The ball has a radius slot that will allow the ball to pivot about the stem as it is removed.


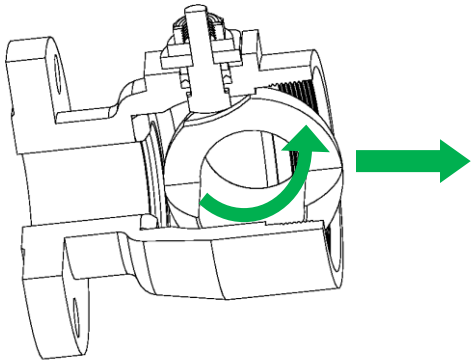

Image 4 – Ball Removal

5.8 Remove the body seal. This may be on the retainer or still inside the valve. Discard the seal immediately or package for analysis.

5.9 Remove the Bottom Seat. Discard the seat immediately or package for analysis.

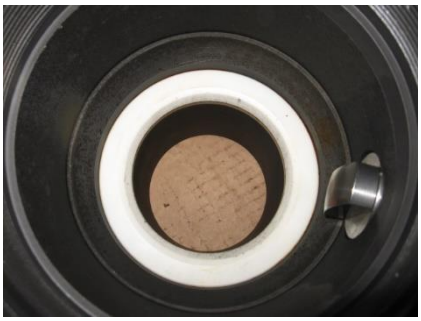


Image 5 – Seat Removal

5.10 Older 3 inch valves were built with two stem nuts. This is no longer required. If the valve has two stem nuts, remove the first nut and the handle, then the second nut. If the valve only has one stem nut, remove the stem nut and the handle.

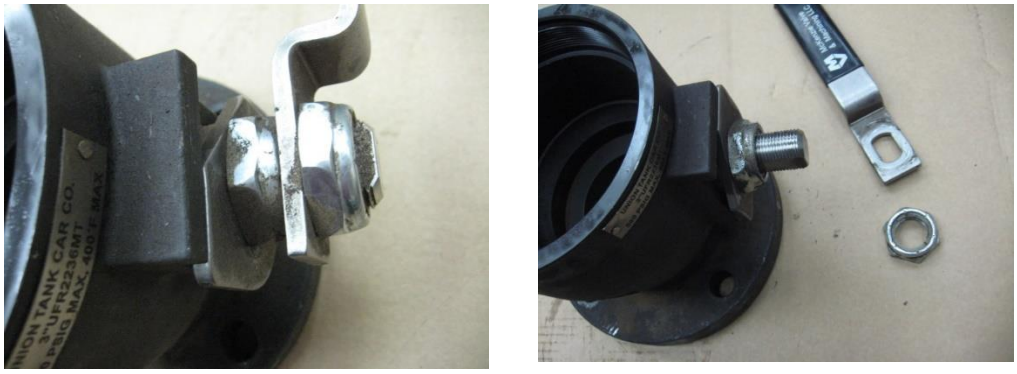

Image 6 – Stem Nut and Handle Removal

5.11 Remove the cam stop and the packing gland (metal ring)

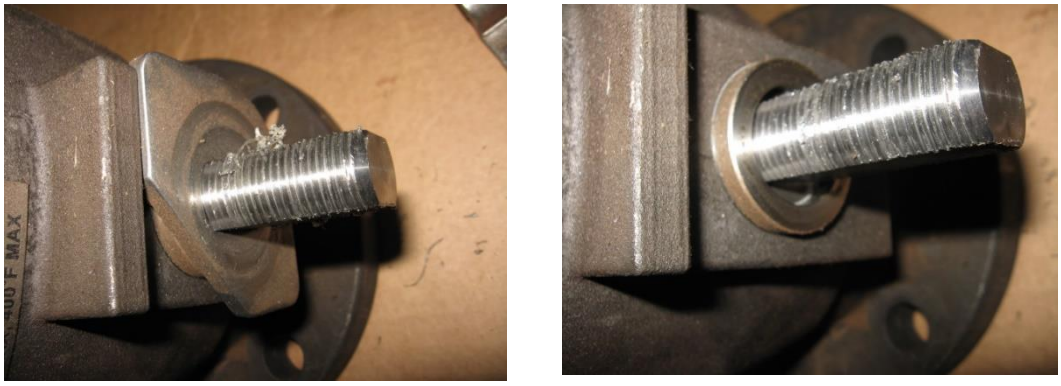

Image 7 – Cam Stop and Packing Gland Removal

5.12 Remove the stem by pushing inward towards the center of the valve.

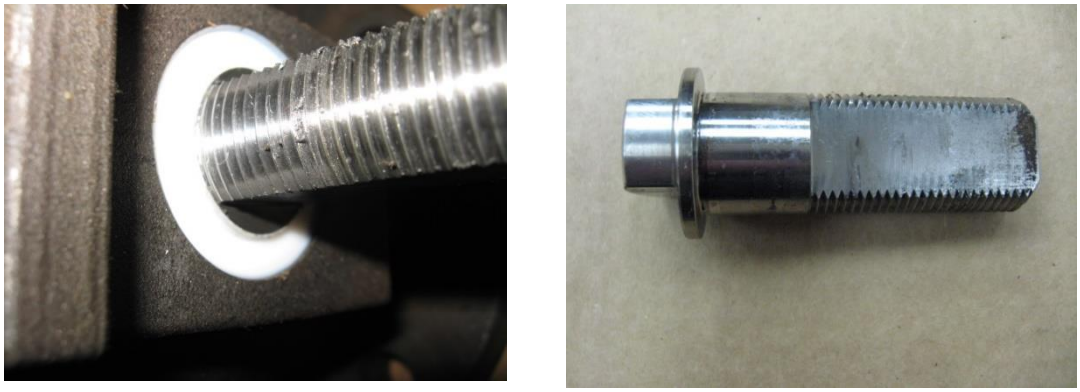

Image 8 – Stem Removal

5.13 Remove the two piece packing from the outside of the stem bore, and the thrust washers from inside the stem bore. If tools are uses, use non-marring tools such as plastic or brass tools to ensure no scratches or gouges are created. The Thrust washers may be two or three pieces. Discard the seals immediately or package for analysis.

Image 9 – Packing and Thrust Washer Removal

6.0 Ball Valve Component Inspection:

6.1 All soft parts must be replaced. Inspection of these parts falls under Root Cause and are not described in this standard.

6.2 Any obviously failed components should be set aside and replacements used.

6.3 The ball should be inspected for scratches deep enough to be felt with the thumbnail. Scratches in sealing areas or material raised above the surface of the ball in any area is grounds for rejection. Do not bead blast the ball unless it is necessary to remove commodity. Scotch-Brite or equivalent may be used to buff small areas of the ball.

6.4 Thoroughly clean all remaining metallic components before inspection. This can include glass bead blasting.

6.5 All metallic parts should be inspected for sharp edges, scratches, corrosion, erosion, and abrasion. Allowable amounts may vary between users. Any excessively thin walled components should be replaced.

6.6 Inspect the sealing surfaces. Any excessive pitting or irregularities, which can be seen or felt, may be cause for rejecting the part. Do not attempt to remachine any sealing surfaces.

6.5 Clean all threads with thread file, thread chasers, or similar. These may include the retainer thread, the lock nut threads on the stem, and pipe threads on the retainer (if applicable).

6.6 Inspect Stem

1. Wire brush or bead blast the entire length of stem, if required, to remove scale, solidified product and any foreign matter.
2. Visually inspect stem for defects and overall condition including threads and stem for cracks, nicks, and/or pits caused by corrosion, etc. Repair work is limited to cleaning and polishing.
3. If the threads are slightly galled, run the correct size thread die over the affected area. Stems with severely galled area of thread shall be replaced.

6.7 Clean and inspect the body of the valve.

7.0 Ball Valve Assembly:

7.1 If possible, obtain a drawing of specific valve being assembled.

7.2 Apply a light coat of food grade silicone lubricant to all Teflon seals (seats, packing, and thrust washers) as they are assembled. Dow Corning (Molycote) 111 is the standard default lubricant used. Graphite parts do not need lubricant.

7.3 Apply a light coat of anti-seize lubricant to retainer threads and stem threads as they are assembled (wipe excess clean).

7.4 Insert a lubricated seat into the valve body. Ensure it is pressed completely into place.

7.5 Insert the Thrust Washers. Current designs and kits include one Graphite washer to be placed against the valve body, followed by the TFE washer. Older designs used TFE-Graphite-TFE arrangement.

7.5 Insert the stem. Rotate it to the closed position.

7.6 Carefully rotate the ball into the valve. Leave the valve in the closed position.

7.7 Insert a lubricated seat into the retainer. Ensure it is pressed completely into place.

7.8 Place a lubricated body seal around the retainer. Ensure it is completely in place.

7.9 Carefully thread the retainer to the body. Take caution to keep the body seal straight and in place as this is done.

7.10 Tighten the retainer as follows. The ball must be in the fully closed position during installation and tightening of the retainer.

1” Valves

Tighten retainer to 650 ft-lbs of torque, using a 200-1000 ft-lb “click type” torque wrench or automated torque applier. (600 ft-lbs can be used as a standard for all three size valves).

2” Valves, except angle

Tighten retainer to 650 ft-lbs of torque, using a 200-1000 ft-lb “click type” torque wrench or automated torque applier. (600 ft-lbs can be used as a standard for all three size valves).

3” Valves

Tighten retainer to 650 ft-lbs of torque, using a 200-1000 ft-lb “click type” torque wrench or automated torque applier. (600 ft-lbs can be used as a standard for all three size valves).

7.11 Install the packing, the packing gland, the cam stop, handle and Lock nut.

7.12 Tighten the stem nut as follows using a 0-250 ft-lb “click type” torque wrench.

Stem Nut Torque	
1"	30 ft-lbs
2"	50 ft-lbs
3"	50 ft-lbs

7.13 Open and close the valve several times to check that the valve stops in the fully open and closed positions.

7.14 Cycle the valve a few times to ensure that the ball centered and fully seated.

7.15 Remove any old tags and station stencils.

7.16 Allow the valve to sit for 15 hours minimum, stored in the fully open or fully closed position, in a moderate environment (50F – 100F). Never store any valve in the partially open position.

7.17 Retorque the retainer and stem nut to the appropriate torque listed above.

7.18 Tack weld the cap to the body applying two welds spaced equally apart (spaced 180° ± 10° from each other). Welds should not exceed 1/8" depth of penetration.

8.0 Ball Valve Testing:

8.1 Assemble the valve in a fixture that can allow the valve to be pressurized. Ensure that operating the valve will not cause the ball to hit the fixture.

8.2 Operate the valve 3 times from open to close and back again

8.3 Open the valve half way.

8.4 With the valve half open, and empty of liquid, pressurize the valve to 90 psi +/- 10 psi using air or nitrogen

8.5 Close the valve to trap the air pressure in the valve cavity and ball.

8.6 Remove the valve from the fixture.

8.7 Apply an approved leak detect solution to each end of the valve and observe for leakage for 1 minute minimum each side. Also check the stem area and the body/retainer joint for leaks as applicable. Any visible leakage is cause for rejection. Typical approved leak detection fluid is Sherlock Type CG.

8.8 Do not leave the valves with test fluid in them for extended periods of time. Many test fluids can dissolve lubricants and surface conditionings.

8.9 Relieve the test pressure from the valve cavity. If the valve did not have pressure inside the cavity, noted by an audible pop sound or release of pressure, retest or reject as appropriate.

8.10 Ensure that the valve is free of test fluid, this can be done by draining and/or blowing off with shop air. Some test fluids can promote rust, even on stainless, if a large amount is allowed to evaporate of the surface. Minor films and moist surfaces are not considered large amounts.

9.0 Ball Valve Marking and Storage:

9.1 After assembly and successful testing, the valve should be marked with appropriate information.

9.2 The serial number can be reused. Information including tester, test equipment, and date tested should be documented for future reference. Follow local policy on documentation requirements.

9.3 Apply the local station stencil, indicating where the valve was last resealed/rebuilt and tested.

9.4 Open the valve to the 100% open position.

9.5 For uncoated carbon steel valves, wrap valve in oil paper or other protective cover to discourage rusting.

9.6 Mark packaging with clearly identifiable part number or model number and status indicator showing that the valve has past tests and is acceptable to use.

9.7 The valve should be stored in a dry, dust and debris free environment. End Caps and/or plastic bags are recommended. Placing valves directly on wood or rough surfaces is not acceptable, as sealing surfaces may get damaged.

These instructions are intended to be guidelines for standard installation, operation, disassembly and reassembly. These instructions are not meant to conflict, override, supersede or be used in place of a company's safety, production, and engineering standards or government rules and regulations. All DOT, AAR, CTC, national, federal, local, and other regulations that apply must be followed.

Always check for the current guidelines for McKenzie Valve and Machining LLC's products at:

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