



Top-Transfer Ball Valve A-7200/A-7240 and A-7300/A-7340

Installation, Operation & Maintenance (IOM) Manual

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1 Regulations and Safety Requirements

1.1 Regulations

Midland Top-Transfer Ball Valves are used in contact with a variety of products, many of which are hazardous materials. The acceptance and transportation of products are regulated by the DOT and AAR in the U.S.A., and in Canada by CTC and Transport Canada. Regulations of other governmental bodies must be complied with for stationary and mobile applications. All personnel should be familiar with and follow these regulations. Nothing in these instructions is intended to conflict with or supersede these regulations. The information in this document was gathered from knowledgeable sources. However, Midland Manufacturing Corporation makes no representations or guarantees about its accuracy or completeness and assumes no liability for this information.

Specifications are subject to change without notice.

Midland valves are used in connection with a variety of products, many of which are hazardous materials and could cause serious injury or damage if mishandled. This valve should only be installed, operated and maintained by qualified personnel. Read all of these instructions carefully before proceeding.

Operation of the valve must conform to all applicable specifications from TC, AAR, DOT, CFR (Parts 173.31, 174.67, etc.) and other governmental bodies, along with the operating instructions of your company.

1.2 Safety Warnings and Precautions

Please carefully read each of the following warnings and cautions prior to performing any work.

WARNING: Toxic Hazard. Always use extreme caution and proper equipment when involved with hazardous materials. To avoid exposure to toxic or hazardous materials, make sure the tank car is empty and clean, and that the work area is free of hazardous chemicals before removing or installing any valve.



WARNING

- **Wear protective clothing and equipment suitable for withstanding the materials to which you may be exposed**
- **Position yourself on the upwind side of the valve when possible**
- **Work in a well-ventilated area**
- **Work with a partner who can help you in the event of an emergency**
- **Follow approved safety precautions for hazardous or toxic materials**
- **Obtain MSDS sheets for all the commodities used with the associated valve**



CAUTION

CAUTION: Valve Leakage. Loose nuts and damaged gaskets may result in leaks at the valve-mounting joint.



CAUTION

CAUTION: Sealing Surface Damage. A damaged sealing surface on the valve flange may prevent proper sealing on the tank-car mounting and result in leakage of the tank contents.

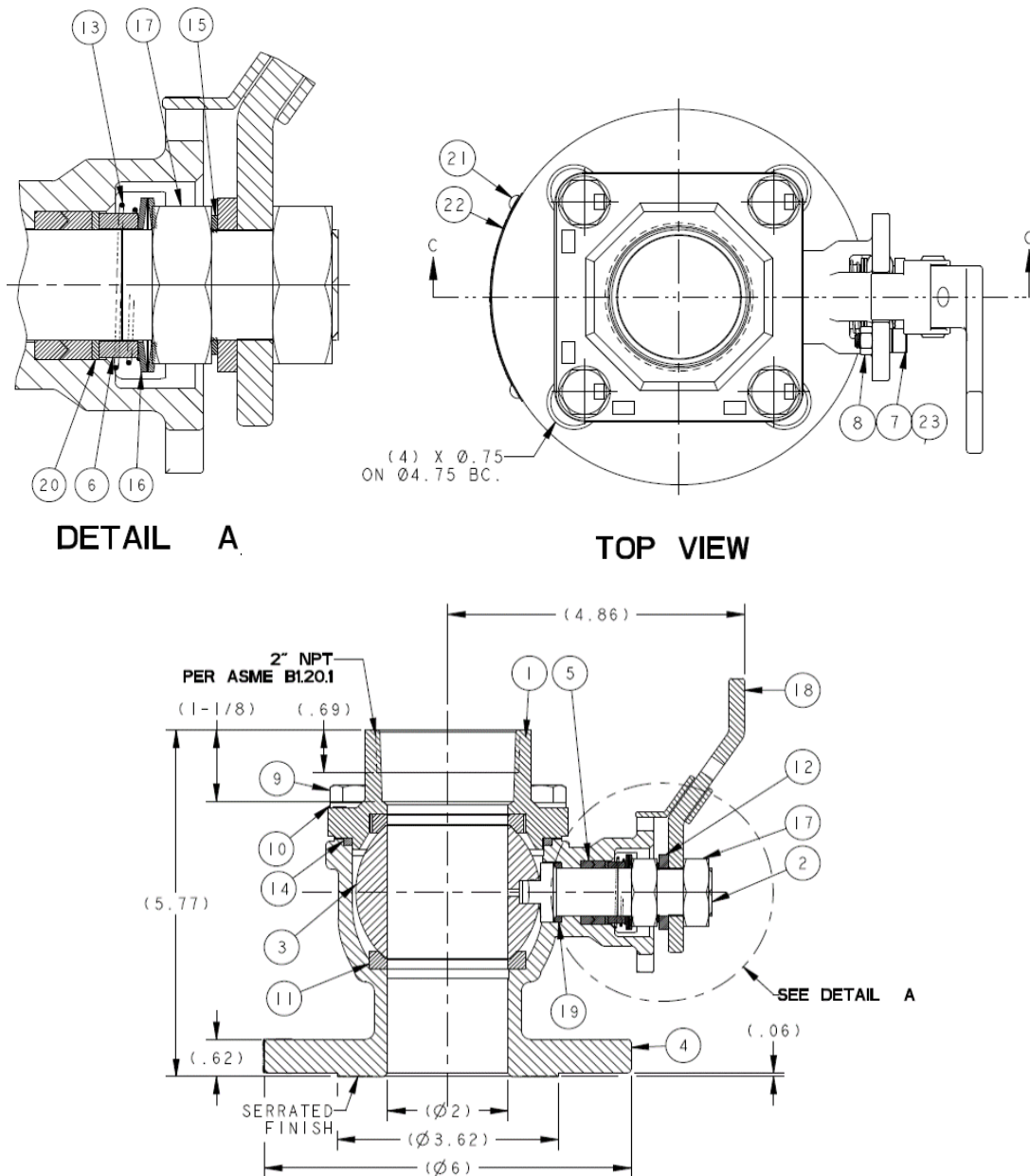
2 Introduction

The A-7200 and A-7240 Series 2" Top-Transfer Ball Valve and A-7300 and A-7340 Series 3" Top-Transfer Ball Valve offer greater resistance to abrasion. The valve also reduces the chance of leakage caused by particle contamination in harsh applications.

- Available in carbon steel (models ending in "-00" ex: 7200) or stainless steel (models ending in "-40" ex: 7240)

2.1 Component Identification and Parts Listings

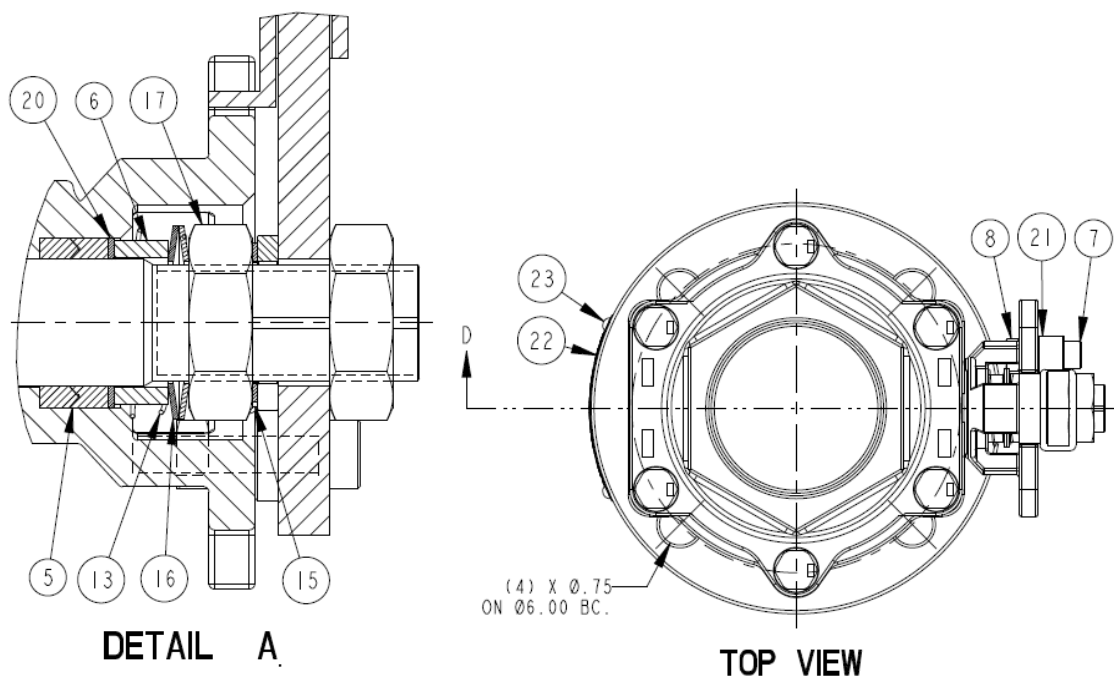
2.1.1 A-7200 and A-7240 Bill of Materials

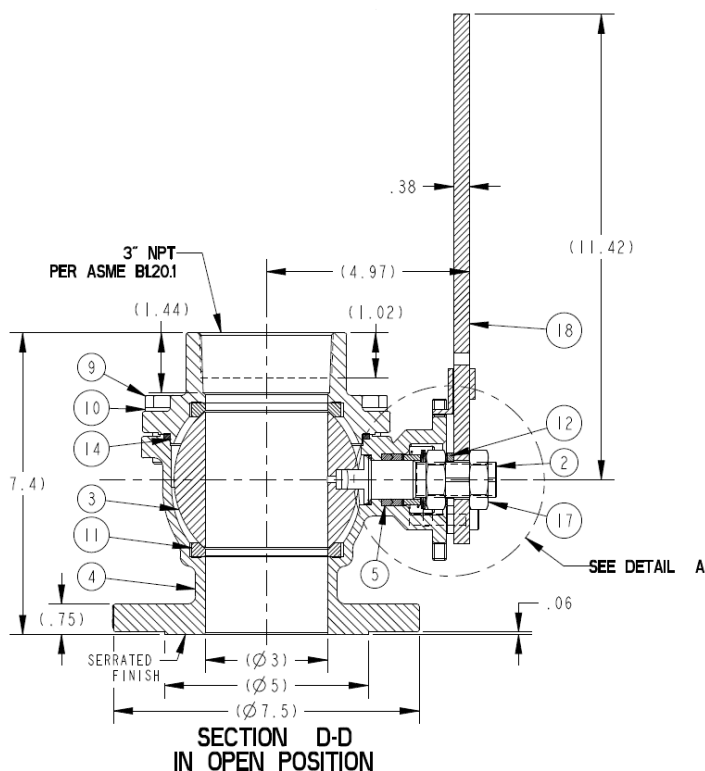


A-7200 (CARBON STEEL W/ STAINLESS STEEL TRIM)					A-7240 (STAINLESS STEEL)	
ITEM	DESCRIPTION	QTY	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER
1	END CAP	1	CARBON STEEL	7200-1-CS	316 STAINLESS STEEL	7240-1-MO
2	STEM	1	STAINLESS STEEL	7200-2-SS	STAINLESS STEEL	7200-2-SS
3	BALL	1	316 STAINLESS STEEL	7200-3-SS	316 STAINLESS STEEL	7240-3-MO
4	BODY	1	CARBON STEEL	7200-4-CS	316 STAINLESS STEEL	7240-4-MO
5	PACKING SEAL	1	PTFE	7200-5-TF	PTFE	7200-5-TF
6	SPACER	1	304 STAINLESS STEEL	7200-6-SS	304 STAINLESS STEEL	7200-6-SS
7	SOCKET HEAD CAP SC	1	304 STAINLESS STEEL	7240-7-SS	304 STAINLESS STEEL	7240-7-SS
8	NUT	1	304 STAINLESS STEEL	7240-8-SS	304 STAINLESS STEEL	7240-8-SS
9	HEX CAP SCREW	4	304 STAINLESS STEEL	7240-9-SS	304 STAINLESS STEEL	7240-9-SS
10	LOCKWASHER	4	304 STAINLESS STEEL	7240-10-SS	304 STAINLESS STEEL	7240-10-SS
11	SEAL, BALL	2	SEE TABLE	SEE TABLE	SEE TABLE	SEE TABLE
12	LOCKWASHER	1	304 STAINLESS STEEL	7200-12-SS	304 STAINLESS STEEL	7200-12-SS
13	GROUNDING SPRING	1	301 STAINLESS STEEL	7200-13-SS	301 STAINLESS STEEL	7200-13-SS
14	GASKET	1	PTFE	7200-14-TF	PTFE	7200-14-TF
15	NUT LOCK	1	304 STAINLESS STEEL	7200-15-SS	304 STAINLESS STEEL	7200-15-SS
16	DISC SPRING	2	301 STAINLESS STEEL	7200-16-SS	301 STAINLESS STEEL	7200-16-SS
17	PACKING NUT	2	304 STAINLESS STEEL	7200-17-SS	304 STAINLESS STEEL	7200-17-SS
18	HANDLE W/COVER,RH	1	ALLOY STEEL	7200-18-AS	ALLOY STEEL	7200-18-AS
19	THRUST WASHER	1	PTFE	7200-19-TF	PTFE	7200-19-TF
20	PACKING PROTECTOR	1	PTFE	7200-21-TF	PTFE	7200-21-TF
21	DRIVE SCREW	2	STAINLESS STEEL	763-11-SS	STAINLESS STEEL	763-11-SS
22	NAME PLATE	1	STAINLESS STEEL	7200-22-SS	STAINLESS STEEL	7240-22-SS
23	WASHER	1	STAINLESS STEEL	7200-20-SS	STAINLESS STEEL	7200-20-SS

VALVE PART NO.	ITEM 11, SEAL	MATERIAL
A-7200	7200-11-VTF	VIRGIN PTFE
A-7240	7200-11-VTF	VIRGIN PTFE

2.1.2 A-7300 and A-7340 Bill of Materials





A-7300 (CARBON STEEL W/ STAINLESS STEEL TRIM)					A-7340 (STAINLESS STEEL)	
ITEM	DESCRIPTION	QTY	MATERIAL	PART NUMBER	MATERIAL	PART NUMBER
1	END CAP	1	CARBON STEEL	7300-1-CS	316 STAINLESS STEEL	7340-1-MO
2	STEM	1	STAINLESS STEEL	7300-2-SS	STAINLESS STEEL	7300-2-SS
3	BALL	1	316 STAINLESS STEEL	7300-3-SS	316 STAINLESS STEEL	7340-3-MO
4	BODY	1	CARBON STEEL	7300-4-CS	316 STAINLESS STEEL	7340-4-MO
5	PACKING	1	PTFE	7300-5-TF	PTFE	7300-5-TF
6	SPACER	1	304 STAINLESS STEEL	7300-6-SS	304 STAINLESS STEEL	7300-6-SS
7	SOCKET HEAD CAP SC	1	304 STAINLESS STEEL	7340-7-SS	304 STAINLESS STEEL	7340-7-SS
8	NUT	1	304 STAINLESS STEEL	7340-8-SS	304 STAINLESS STEEL	7340-8-SS
9	HEX CAP SCREW	6	304 STAINLESS STEEL	7340-9-SS	304 STAINLESS STEEL	7340-9-SS
10	LOCKWASHER	6	304 STAINLESS STEEL	7240-10-SS	304 STAINLESS STEEL	7240-10-SS
11	SEAL, BALL	2	SEE TABLE	SEE TABLE	SEE TABLE	SEE TABLE
12	LOCKWASHER	1	304 STAINLESS STEEL	7300-12-SS	304 STAINLESS STEEL	7300-12-SS
13	GROUNDING SPRING	1	301 STAINLESS STEEL	7300-13-SS	301 STAINLESS STEEL	7300-13-SS
14	GASKET	1	PTFE	7300-14-TF	PTFE	7300-14-TF
15	NUT LOCK	1	304 STAINLESS STEEL	7300-15-SS	304 STAINLESS STEEL	7300-15-SS
16	DISC SPRING	2	301 STAINLESS STEEL	7300-16-SS	301 STAINLESS STEEL	7300-16-SS
17	PACKING NUT	2	304 STAINLESS STEEL	7300-17-SS	304 STAINLESS STEEL	7300-17-SS
18	HANDLE W/COVER	1	ALLOY STEEL	7300-181-AS	ALLOY STEEL	7300-181-AS
19	THRUST WASHER	1	PTFE	7300-19-TF	PTFE	7300-19-TF
20	PACKING PROTECTOR	1	PTFE	7300-20-TF	PTFE	7300-20-TF
21	SPACER	1	304 STAINLESS STEEL	7340-21-SS	304 STAINLESS STEEL	7340-21-SS
22	NAME PLATE	1	STAINLESS STEEL	7200-22-SS	STAINLESS STEEL	7240-22-SS
23	DRIVE SCREW	2	STAINLESS STEEL	763-11-SS	STAINLESS STEEL	763-11-SS

VALVE PART NO.	ITEM 11, SEAL	MATERIAL
A-7300	7300-11-VTF	VIRGIN PTFE
A-7340	7300-11-VTF	VIRGIN PTFE

2.2 Torque and Bolt Size Table References

Refer to these tables when selecting the necessary tooling per the instructions in Section 3.4 and Section 4.0, as well as following any guidelines for fastening torques.



NOTE: The “M” as displayed in Table 2-2’s “M 22” is referencing Metric.

Table 2-1

Valve Size	Bolt Size	Number of Bolts
2"	5/8" - 11 UNC	4
3"	5/8" - 11 UNC	4

Table 2-2

Valve Size	Packing Nut Size	Fastening Torques
2"	3/4"-10 UNC	23 - 28 ft-lb
3"	M 22	30 - 36 ft-lb

Table 2-3

Valve Size	Body Joint Bolt Size	Number of Bolts	Fastening Torques
2" or 3"	M 12	4 or 6	53 - 65 ft-lb

Table 2-4

Bolt Size	Wrench/Socket Size
5/8"	1-1/16"
3/4"	1-1/8" or M 26
M 22	M 32
M 12	M 19

3 Valve Installation

Keep the new Top-Transfer Ball Valve in its original shipping container. This will ensure that it remains clean and will protect the gasket face and ball from nicks and other damage.

Prior to installation, ensure that the valve remains clean and the gasket-sealing surfaces are not damaged.

3.1 Installation and Required Tools

SAE Wrench	Component(s)/Description
1-1/16" Wrench	5/8" Mounting Bolts
Other Tools Supplies and Equipment	
Solvent	To clean the mounting and sealing surfaces
Clean Cloth	To clean sealing surfaces

- 3.1.1 Ensure the stud threads are clean.
- 3.1.2 Examine the sealing surface to verify that there are no dents or burrs.
- 3.1.3 Up to this point, the new valve should have been kept in its original shipping container and a special plastic protector should have been positioned over the sealing surface on the bottom of the valve.
- 3.1.4 Remove plastic protector from bottom of the valve.
- 3.1.5 If the valve is reconditioned, or retested, inspect the sealing surface to ensure it is free of nicks, gouges and burrs.
- 3.1.6 Properly install a new mounting gasket (not provided by Midland).
- 3.1.7 Start all four (4) hex nuts on the studs while lowering the valve into position or the valve will need to be lifted off the studs and the hex nuts started to give clearance.
- 3.1.8 Gently lower the valve down onto the cover plate.
- 3.1.9 Wrench-tighten the nuts a little bit at a time, going alternately in a crisscross pattern, from 1 to 3, then 2 to 4. Do not tighten down too much on one side because this will shift the valve at an angle and may make it impossible to get a tight gasket seal.
- 3.1.10 Torque the nuts to a level prescribed by your engineering department. In absence of a recommended company practice, on clean and lubricated threads it should be safe to torque the mounting nuts to 200 ft-lbs max.

3.2 Leak Inspection

- 3.2.1 Test all newly installed valves to verify that they conform to car-owner specifications. No leaks should be present.

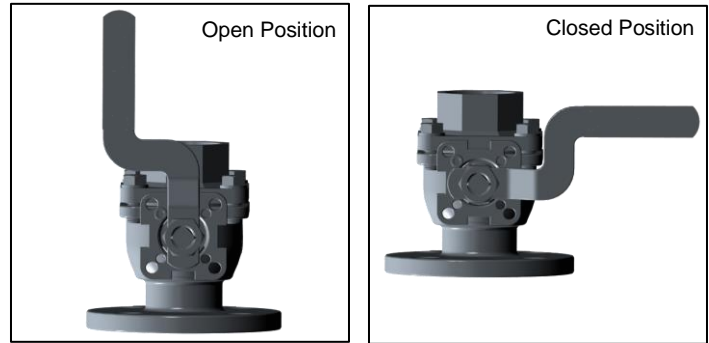
3.3 Valve Operation Notes and Precautions



NOTICE

NOTICE: Valve Operation. Operation and use of the valve must conform with all applicable TC, AAR and DOT (Parts 173.31, 174.68, etc.) regulations, other governmental bodies and the operating instructions of your company.

- 3.3.1 Rotate bar handle to operate valve open (figure on left) and close (figure on right).
- 3.3.2 To ensure the valve is fully open, or closed, fully engage the handle to the pin stops.



4 Valve Qualification

Follow these instructions and guidelines for assessing the condition of a leaking ball valve prior to rebuilding it.



NOTICE: To ensure best practice and consistency of your qualification procedure, gaskets, O-rings, valve seats and wire seals should always be replaced.

4.1 Valve Disassembly and Required Tools

SAE Wrench	Component(s)/Description
1-1/8" Wrench* Or M26 Wrench*	Packing Nut (item 17)
M19 Wrench	Cap Screws (item 9)
Other Tools, Supplies and Equipment	
Thread Go/No-Go Gauge 3/4-10UNC, M22	Stem (item 2)

* Refer to Table 2-4 to select the correct tooling

- 4.1.1 Set the valve to the closed position (Figure 4-1). This must be done to allow removal of the valve ball.
- 4.1.2 Hold the valve securely by the flange for safety and rigidity during hardware removal.



Figure 4-1

- 4.1.3 Remove the nut (item 17) from the stem (item 2) by turning it counterclockwise. Then remove the handle (item 18) and lockwasher (item 12). (Figure 4-2)

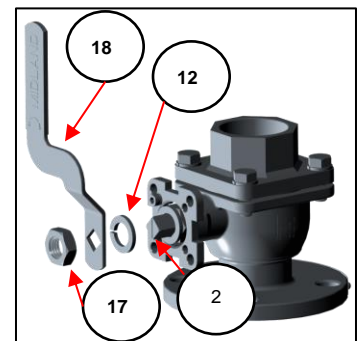


Figure 4-2

- 4.1.4 Remove the four (4) socket hex-head cap screws (item 9) and lockwashers (item 10) from the end cap (Item 1). (Figure 4-3)

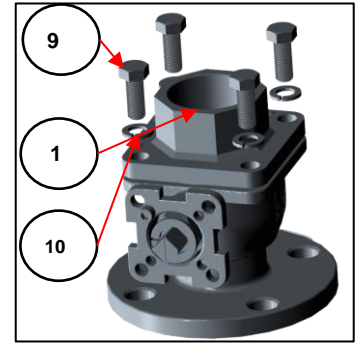


Figure 4-3

- 4.1.5 Carefully lift off the end cap (item 1) taking care to avoid contacting it with the valve ball (item 3). Remove gasket (item 14) from the body (item 4).
4.1.6 Remove the ball seal (Item 11) from the end cap (item 1). (Figure 4-4)

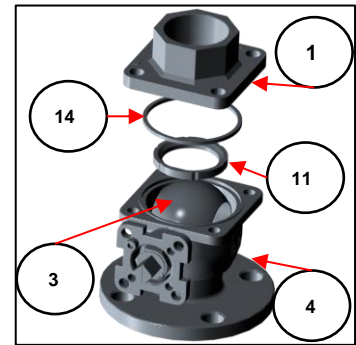


Figure 4-4

- 4.1.7 Reach both hands into the valve body (item 4) on either side of the valve ball (item 3). Lift the ball out of the body and set it on a padded surface. (Figure 4-5)

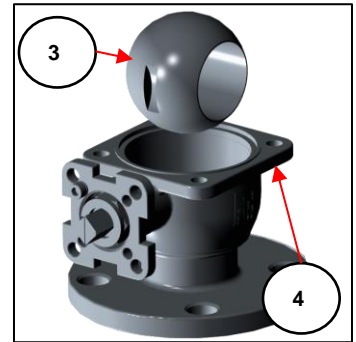


Figure 4-5

- 4.1.8 Remove the packing nut (Item 17) from the valve stem (item 2) by turning it counterclockwise. (Figure 4-6)

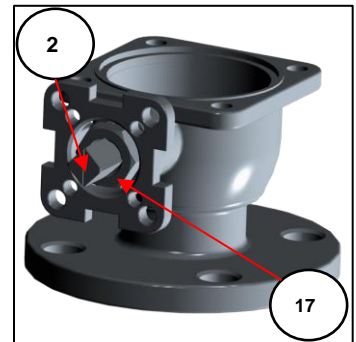


Figure 4-6

4.1.9 Remove the disc springs (item 16) and spring (item 13). (Figure 4-7)

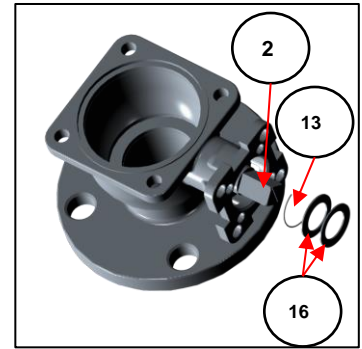


Figure 4-7

4.1.10 Carefully press the valve stem (item 2) into the body (item 4) cavity and remove it. (Figure 4-8)

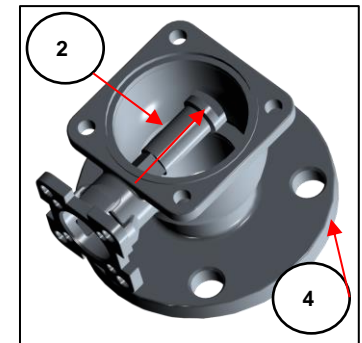


Figure 4-8

4.1.11 Remove the stainless-steel spacer collar (item 6), packing protector (item 20), and packing seals (item 5) from the valve-stem bore. Avoid scratching or gouging the interior surfaces for the valve-stem bore. (Figure 4-9)

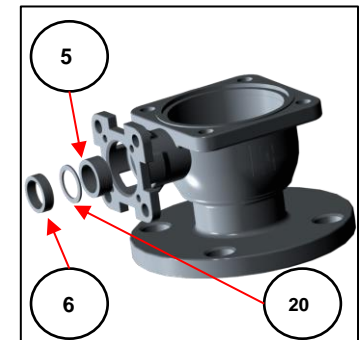


Figure 4-9

4.1.12 Carefully remove the ball seal (item 11) from the inside-bottom of the valve body (item 4). (Figure 4-10)

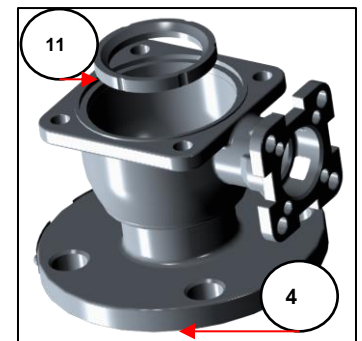


Figure 4-10

4.2 Component Inspection



NOTICE: Without consent from the valve manufacturer or car owner, repair work is limited to cleaning and polishing. See AAR M 1002, Paragraph A3.11.1 of the Tank-Car Specifications.



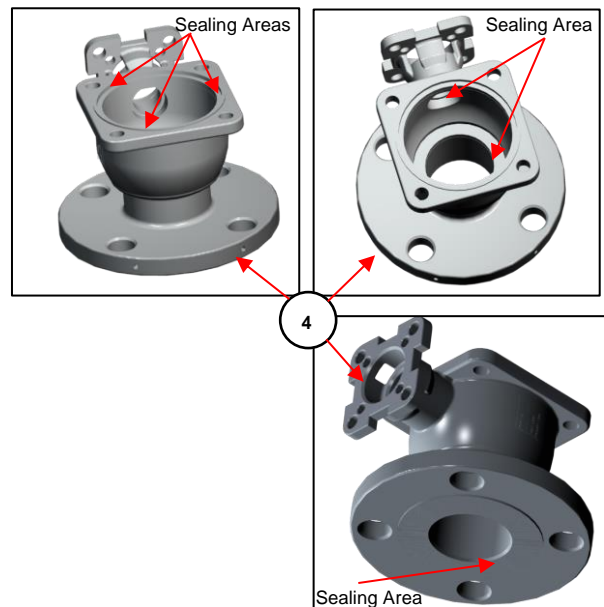
NOTICE: Procedures may not cover all conditions encountered in the field. Therefore, it is the responsibility of the repair agency to obtain approval from Midland for inspection, evaluation, repair and maintenance procedures not covered herein. Evaluation of critical component metal surfaces of the valves after cleaning, inspection and specialized testing performed by agencies other than Midland are the responsibility of the repair facility. Where numerical tolerances can be provided, the disposition of the internal integrity and surface quality of parts is under the jurisdiction of the repair facility and dependent on its experience and judgment.

4.2.1 Valve-Body Inspection

- 4.2.1.1 Check the valve body (item 4) and the ball-seal surfaces for signs of corrosion, cracks and scratches. No defects are allowed.
- 4.2.1.2 Inspect the packing sealing area. Ensure there is no visible corrosion, intrusions or voids in the sealing area.
- 4.2.1.3 Outside the sealing area, the depth of the voids/intrusions must not exceed 0.060" in depth and 0.090" in width.

A maximum of one void per square inch is allowable outside the sealing area. Total void area must not exceed 5% of total surface.

Bottom of the voids must be visible, well-rounded and without inclusions.
- 4.2.1.4 Using a light, visually inspect the valve-stem bore for gouges or corrosion. It must be free of defects. (Figures 4-11, 4-12, 4-13)



Figures 4-11, 4-12, 4-13

4.2.2 Valve-Ball Inspection

- 4.2.2.1 Clean the valve ball (item 3) with soap and water or in an ultrasonic bath, or both, to remove adhering product.
- 4.2.2.2 Slide your fingernail over scratches to determine severity. If your fingernail is unable to "catch" in an abrasion, it is not of a depth that would allow leakage or affect the ball seals. (Figure 4-14)
- 4.2.2.3 If any of the scratches fail the fingernail test in the seal or functional seal areas (Figure 4-15, 4-16, 4-17), replace the ball. It cannot be repaired.

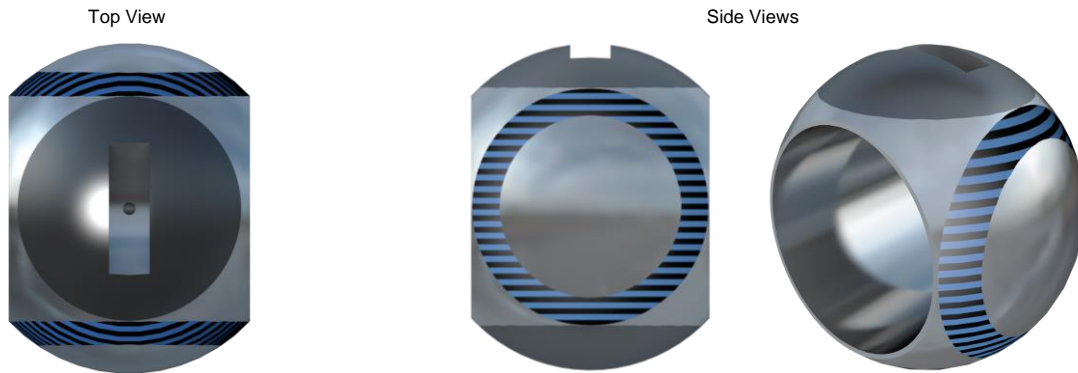
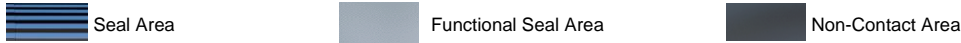


Figure 4-14

Seal Area: Where the seal rests when the ball is in the closed position

Functional Seal Area: Where the seal will be in contact as the ball changes between the open and closed positions

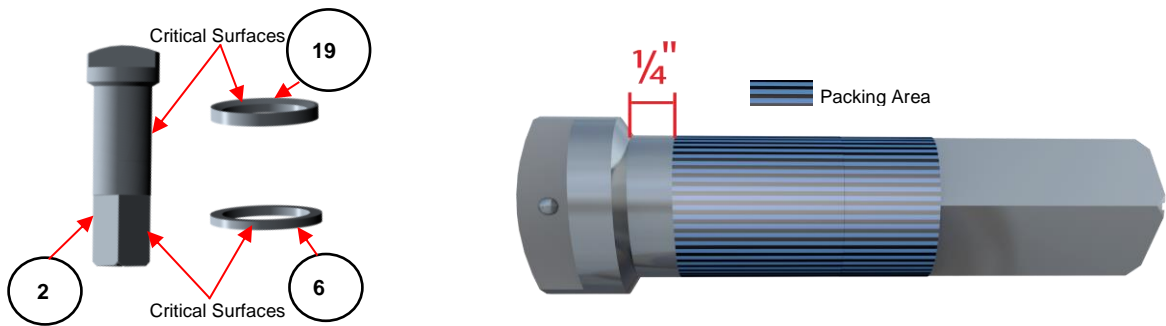
Non-Contact Area: This area will not have contact with the seal at all



Figures 4-15, 4-16, 4-17

4.2.3 Valve-Stem Component Inspection

- 4.2.3.1 The stem (item 2) 3/4"-10 UNC threads should pass a thread-ring Go-NoGo-Gauge test. If the threads exhibit striping or irreparable damage, replace the valve stem.
- 4.2.3.2 Inspect the surfaces of the spacer (item 6) bushing that contacts the stem packing and thrust washer (item 19) as show in Figure 4-18. Also, inspect the surface of the stem shaft where the packing comes in contact with. These surfaces should be smooth and clean. (Figure 4-19)
- 4.2.3.3 All nicks, burrs, pits, scratches, etc., must be eliminated, or discard the stem. Inspect for cracks in the thread root area. If any are detected, discard the stem. If any of the threads are stripped or corroded, discard the stem.



Figures 4-18 and 4-19

4.2.4 Valve End Cap Inspection

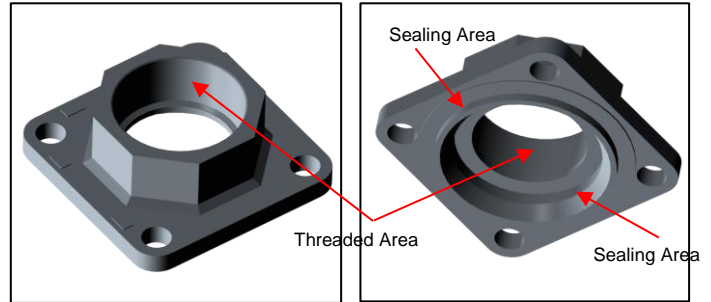
- 4.2.4.1 Check the valve end cap (item 1) and the ball-seal surfaces for signs of corrosion, cracks and scratches. No defects are allowed.

4.2.4.2 Inspect the sealing area. Ensure there is no visible corrosion, intrusions or voids in the sealing area.

4.2.4.3 Outside the sealing area, the depth of the voids/intrusions must not exceed 0.060" in depth and 0.090" in width.

A maximum of one void per square inch is allowable outside the sealing area. Total void area must not exceed 5% of total surface.

Figures 4-20 and 4-21



Bottom of voids must be visible, well-rounded and without inclusions. (Figures 4-20 and 4-21)

4.2.4.4 The surfaces where the gasket (item 15) fits and the flat gasket surfaces must be free of nicks, scratches and pits.

4.2.4.5 Similarly, the 2" or 3" NPT must be in good condition. It can be checked with the standard NPT gage per ASME B1.20.1.

4.3 Valve Assembly and Testing Requirements



NOTICE: Valve assembly and testing is to be done at a recommended temperature of 70°F (21°C). The acceptable temperature range for valve assembly is 40°F to 100°F (4°C to 38°C).

4.3.1 Test Equipment Requirements

4.3.1.1 Test Stand and Gauge Requirements

The test stand must have an appropriate mounting for the valve being tested. The pressure gauge must meet the requirements of D4.5 Test Gauge Standards and be date-tagged.

4.3.1.2 Valve Testing Procedure

If your company has its own reassembly/test procedure, follow it. If it does not, the following procedure provides the essential guidelines.

4.4 Valve Assembly and Testing Procedure

SAE Wrench	Component(s)/Description	Torque (ft-lb)
1-1/8" Torque Wrench Or M 32 Torque Wrench	Packing Nut (item 17)	Refer to Table 2-2 in Section 2.2
M19 Torque Wrench	Cap Screws (item 9)	Refer to Table 2-3 in Section 2.2
Other Tools, Supplies and Equipment		
Solvent	To clean the mounting and tongue	
Clean Cloth	To clean sealing surfaces	
Locktite®		
Filler Gauge		
Food-Grade Oil		

* Refer to Table 2-4 to select the correct tooling



NOTICE: Perform this procedure only after you have conducted procedures in Section 4 Valve Qualification for determining the condition of the valve components, repairing and replacing them.



NOTICE: Allow the valve ball to return to room temperature before continuing.

4.4.1 Thoroughly clean the valve components to remove paint, oils and tank-car product from all surfaces. Clean the valve ball (item 3) with water or immerse it in a heated, ultrasonic bath to ensure the valve ball (item 3) is clean. Dry and wipe down the valve ball and all valve interior surfaces with a clean cloth. Secondary cleaning is recommended during the reassembly procedure.

4.4.2 Mount the valve body (item 4) onto the assembly fixture and secure it in place.

4.4.3 Wipe down one of the ball seats (item 11) and then place it into the bottom seat of the valve body (item 4), flat side downward. Be very careful to avoid damaging the seat during installation. (Figure 4-22)

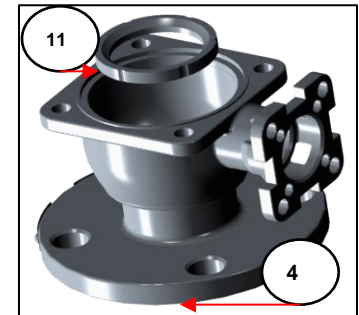


Figure 4-22

4.4.4 Install the thrust washer (item 19) onto the valve stem (item 2). (Figure 4-23)

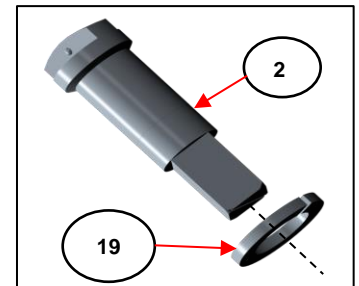


Figure 4-23

- 4.4.5 Insert the valve stem (item 2) through the shaft bore from inside the valve body (item 4). Push the stem into the body until it extrudes, as shown. (Figure 4-24)

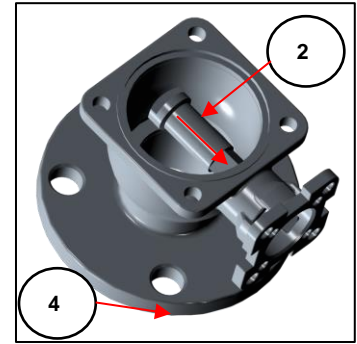


Figure 4-24

- 4.4.6 Align the stem so that it is vertical as seen in Figure 4-25. Then place two (2) packing seals (item 5) in the correct orientation onto the valve stem (see Sections 2.1.1 and 2.1.2, Detail A – Packing), pushing them onto the shaft bore.
- 4.4.7 Followed by a packing protector (item 20) and spacer (item 6).

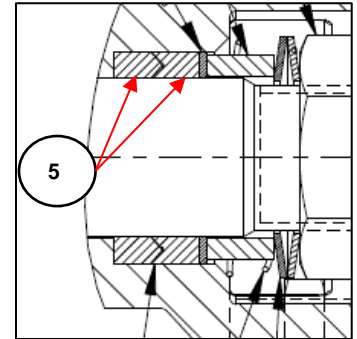
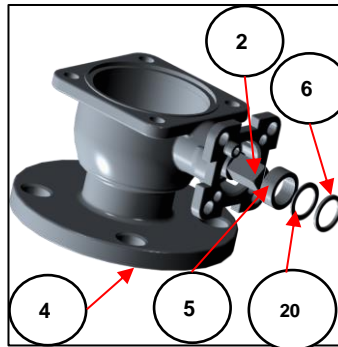


Figure 4-25

Detail A – Packing

- 4.4.8 Place the spring (item 13) on the stem (item 2).
- 4.4.9 Place the two (2) disc springs (item 16) on top of one another so that the concave surfaces are facing each other. Then place the disc springs on the stem (item 2). (Figure 4-26)

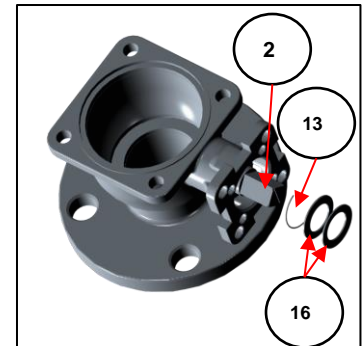


Figure 4-26

- 4.4.10 Install packing nut (item 17) and torque the packing nut according to Table 2-2 in Section 2.2. (Figure 4-27)

3/4"-10 UNC	23 - 28 ft-lb
M 22	30 - 36 ft-lb

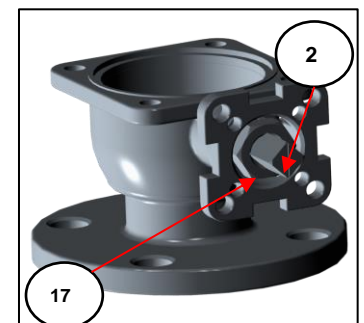


Figure 4-27

- 4.4.11 Rotate the valve stem (item 2) so that the end that engages the ball (item 3) slot is oriented vertically.
- 4.4.12 Carefully place the valve ball (item 3) into the valve body (item 4), aligning the ball slot with the stem end.
- 4.4.13 Check the inside surfaces of the cap plate (item 1) for nicks and debris.
- 4.4.14 Wipe down the second ball seat (item 11) and then place it into the seat of the end cap (item 1) with the flat side downward. Be very careful to avoid damaging the seat during installation. (Figure 4-28)

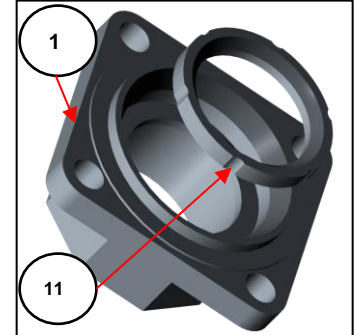


Figure 4-28

- 4.4.15 Wipe down the gasket (item 14) and install onto the body (item 4).
- 4.4.16 Place the end cap (item 1) with the seal (item 11) onto the valve body (item 4). (Figure 4-29)

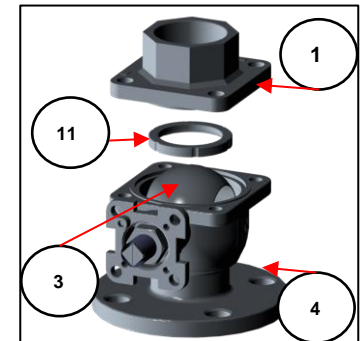


Figure 4-29

- 4.4.17 Place a lock washer (item 10) on all four (4) of the hex cap screws (item 9). Then place and thread the cap screws (item 9) into the body so that they are hand-tight. (Figure 4-30)
- 4.4.18 Make sure the ball is in the closed position.
- 4.4.19 Tighten the four (4) cap screws (item 9) in a crisscross sequence. The bolts should be tightened evenly until the cap (item 1) is in contact with the body and should be torqued according to Table 2-3.

M 12	53 - 65 ft-lb
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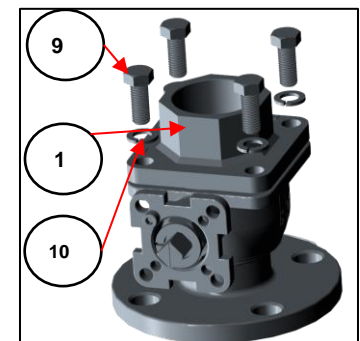
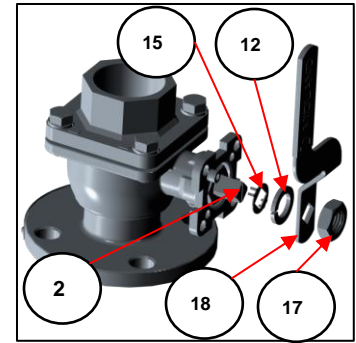


Figure 4-30

- 4.4.20 In the following order, place the nut lock (item 15), a lock washer (item 12) and the handle (item 18) onto the stem (item 2). Then thread a second packing nut (item 17) onto the stem (item 2) and tighten with a torque wrench. (Figure 4-31)
- 4.4.21 Using a torque wrench, tighten the packing nut (item 17) per Table 2-2 in Section 2.2.

3/4"-10 UNC	23 - 28 ft-lb
M 22	30 - 36 ft-lb

Figure 4-31



Once the valve is fully assembled be sure to turn the valve from the closed position to the open position three (3) times to make sure seals are working properly.

Use an applicable valve handle to fully close the ball valve [with the handle (item 18) contacting the socket head capscrew (item 7)].

- 4.4.22 Place the valve in a suitable test fixture and pour water into the valve outlet port so that it covers the sealing area.
- 4.4.23 Apply air pressure to the valve at 300 psig.
- 4.4.24 Brush away initial bubbles and look for any new ones during a two-minute dwell period. No new bubbles are allowed. If any new bubbles appear during test period, the valve must be rejected.
- 4.4.25 Siphon or wipe the water from the valve port. Blow it dry with an air gun.
- 4.4.26 Depressurize the valve body (item 4).
-
- 4.4.27 Adjust the valve so that it is half open (approximately 45 degrees).
- 4.4.28 Install a 2" or 3" test plug, size respective to A-7200 or A-7300 series.
- 4.4.29 Apply air pressure to the valve at 300 psig for two minutes.
- 4.4.30 During this period, apply leak-detecting fluid (Snoop or equivalent) to the contact areas between the base of the body (item 4) and flanges, the body and cap (item 1), and the shaft packing area. No leaks are allowed.
-
- 4.4.31 Depressurize the valve body (item 4) and remove the test plug. Wipe off any remaining leak-detection fluid.
- 4.4.32 Fully open the valve and install a protective plug in the outlet port.
- 4.4.33 Remove the valve from the assembly/test fixture.

5 Routine Maintenance

5.1 Leak Checking in the Field

Because of the Top-Transfer Ball Valve's simplicity, the only maintenance procedure consists of checking the valve for leaks. If the valve is leaking from its outlet port, rebuild or replace it. If minor leakage is detected only at the valve-stem packing, remove the handle and increase the tightening torque on the packing nut (item 17). If this fails to stop the leak, rebuild or replace the ball valve.

With every use be sure to check the threads of the outlet cap to ensure that the threads are in good shape. If there are any nicks, burrs, pits, scratches, cracks, etc., the part must be discarded and replaced. If any of the threads are stripped or corroded, discard and replace the cap, as well.

To ensure that the valve is properly functioning, periodic observation of the valve is required. How often it will need to be observed will depend on the application and commodity. Routine maintenance consists of tightening the packing nut (item 17) periodically to compensate for stem-seal wear. More frequent observation is recommended under extreme operating conditions.

WARNING: Do not exceed the upper limit noted in Table 2-2 in Section 2.2 of torque when tightening the locknut (item 17).



3/4"-10 UNC	23 - 28 ft-lb
M 22	30 - 36 ft-lb

