

# 3-way flanged ball valves

Series DM150FD model A  
class 150, 12" (DN300)

Installation, maintenance and  
operating instructions



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## **READ THESE INSTRUCTIONS FIRST!**

These instructions provide information about safe handling and operation of the valve.

If you require additional assistance, please contact the manufacturer or manufacturer's representative.

## **SAVE THESE INSTRUCTIONS!**

Addresses and phone numbers are printed on the back cover.

# 1. GENERAL

## 1.1 SCOPE OF THE MANUAL

This instruction manual contains important information regarding the installation, operation and maintenance of the Jamesbury™ 12" (DN300) DM150FD 3-Way Flanged Ball Valves. Please read these instructions carefully and save them for future reference.

### WARNING

AS THE USE OF THE VALVE IS APPLICATION SPECIFIC, A NUMBER OF FACTORS SHOULD BE TAKEN INTO ACCOUNT WHEN SELECTING A VALVE FOR A GIVEN APPLICATION. THEREFORE, SOME OF THE SITUATIONS IN WHICH THE VALVES ARE USED ARE OUTSIDE THE SCOPE OF THIS MANUAL. IF YOU HAVE ANY QUESTIONS CONCERNING THE USE, APPLICATION OR COMPATIBILITY OF THE VALVE WITH THE INTENDED SERVICE, CONTACT NELES FOR MORE INFORMATION.

## 1.2 VALVE MARKINGS

The valve has an identification plate attached to the bonnet stud (see Figure 1).

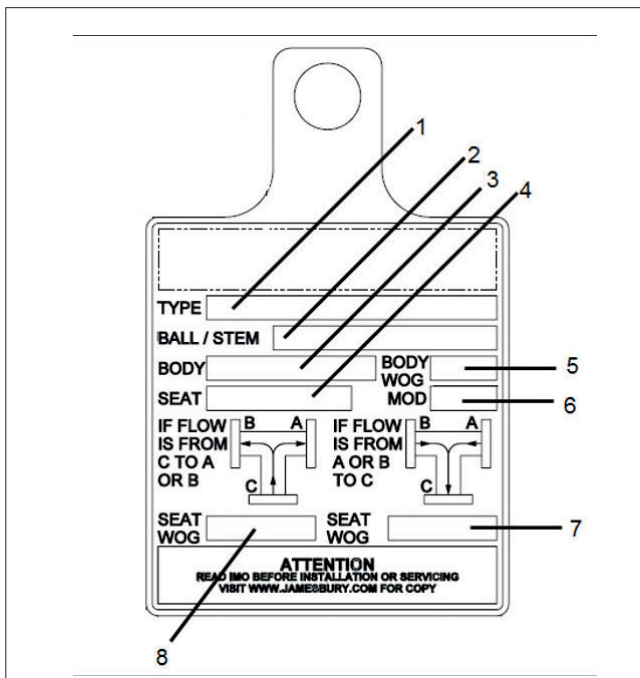


Figure 1. Identification plate

Identification plate markings:

1. Valve catalog code
2. Ball/Stem material
3. Body Material
4. Seat Material
5. Body WOG
6. Model
7. Seat WOG 2
8. Seat WOG 1

## 1.3 SAFETY PRECAUTIONS

### WARNING

#### DO NOT EXCEED THE VALVE PERFORMANCE LIMITATIONS!

EXCEEDING THE PRESSURE OR TEMPERATURE LIMITATIONS MARKED ON THE VALVE IDENTIFICATION PLATE MAY CAUSE DAMAGE AND LEAD TO UNCONTROLLED PRESSURE RELEASE. DAMAGE OR PERSONAL INJURY MAY RESULT.

### WARNING

#### SEAT AND BODY RATINGS!

THE PRACTICAL AND SAFE USE OF THIS PRODUCT IS DETERMINED BY BOTH THE SEAT AND BODY RATINGS. READ THE IDENTIFICATION PLATE AND CHECK BOTH RATINGS. THIS PRODUCT IS AVAILABLE WITH A VARIETY OF SEAT MATERIALS. SOME OF THE SEAT MATERIALS HAVE PRESSURE RATINGS THAT ARE LESS THAN THE BODY RATINGS. ALL OF THE BODY AND SEAT RATINGS ARE DEPENDENT ON VALVE TYPE AND SIZE, SEAT MATERIAL, AND TEMPERATURE. DO NOT EXCEED THESE RATINGS!

### WARNING

#### BEWARE OF BALL MOVEMENT!

KEEP HANDS, OTHER PARTS OF THE BODY, TOOLS AND OTHER OBJECTS OUT OF THE OPEN FLOW PORT. LEAVE NO FOREIGN OBJECTS INSIDE THE PIPELINE. WHEN THE VALVE IS ACTUATED, THE BALL FUNCTIONS AS A CUTTING DEVICE. DISCONNECT ANY PNEUMATIC SUPPLY LINES, ANY ELECTRICAL POWER SOURCES AND MAKE SURE SPRINGS IN SPRING-RETURN ACTUATORS ARE IN THE FULL EXTENDED/RELAXED STATE BEFORE PERFORMING ANY VALVE MAINTENANCE. FAILURE TO DO THIS MAY RESULT IN DAMAGE OR PERSONAL INJURY!

### WARNING

#### WHEN HANDLING THE VALVE OR VALVE/ACTUATOR ASSEMBLY, TAKE ITS WEIGHT INTO ACCOUNT!

NEVER LIFT THE VALVE OR VALVE/ACTUATOR ASSEMBLY BY THE ACTUATOR, POSITIONER, LIMIT SWITCH OR THEIR PIPING. PLACE LIFTING DEVICES SECURELY AROUND THE VALVE BODY. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN DAMAGE OR PERSONAL INJURY FROM FALLING PARTS (SEE FIGURE 2).

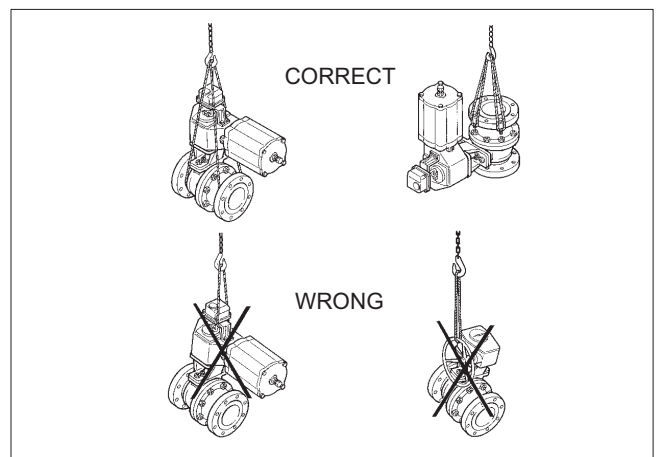


Figure 2. Lifting the valve

## 2. TRANSPORTATION AND STORAGE

Check the valve and the accompanying devices for any damage that may have occurred during transport.

Store the valve carefully. Storage indoors in a dry place is recommended.

Do not remove the flow port protectors until installing the valve.

Move the valve to its intended location just before installation.

The valve is usually delivered in the open position.

If the valve(s) are to be stored for a long duration, follow the recommendations of IMO-S1.

## 3. INSTALLATION

### 3.1 GENERAL

Remove the flow port protectors and check that the valve is clean inside. Clean valve if necessary.

Flush the pipeline carefully before installing the valve. Foreign objects, such as sand or pieces of welding electrodes, will damage the ball and seats.

### 3.2 INSTALLING IN THE PIPELINE

#### WARNING

THE VALVE SHOULD BE TIGHTENED BETWEEN FLANGES USING APPROPRIATE GASKETS AND FASTENERS COMPATIBLE WITH THE APPLICATION, AND IN COMPLIANCE WITH APPLICABLE PIPING CODES AND STANDARDS. CENTER THE FLANGE GASKETS CAREFULLY WHEN FITTING THE VALVE BETWEEN FLANGES. DO NOT ATTEMPT TO CORRECT PIPELINE MISALIGNMENT BY MEANS OF FLANGE BOLTING!

The valve may be installed in any position and offers tightness in both directions. It is recommended, however, that the valve be installed with the insert facing upstream. It is not recommended to install the valve with the stem on the underneath side because dirt in the pipeline may then enter the body cavity and potentially damage the stem packing (see **Figure 3**).

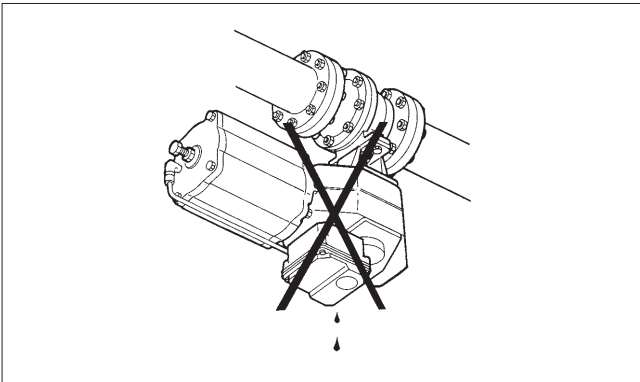


Figure 3. Avoid this mounting position

Refer to the **Section 4, MAINTENANCE** for stem seal adjustment. If there is weepage past the stem seals upon installation, it means the valve may have been subject to wide temperature variations in shipment. Leak-tight performance will be restored by a simple stem seal adjustment described in the **MAINTENANCE** section.

### 3.3 VALVE INSULATION

If necessary, the valve may be insulated. Insulation must not continue above the upper level of the valve (see **Figure 4**).

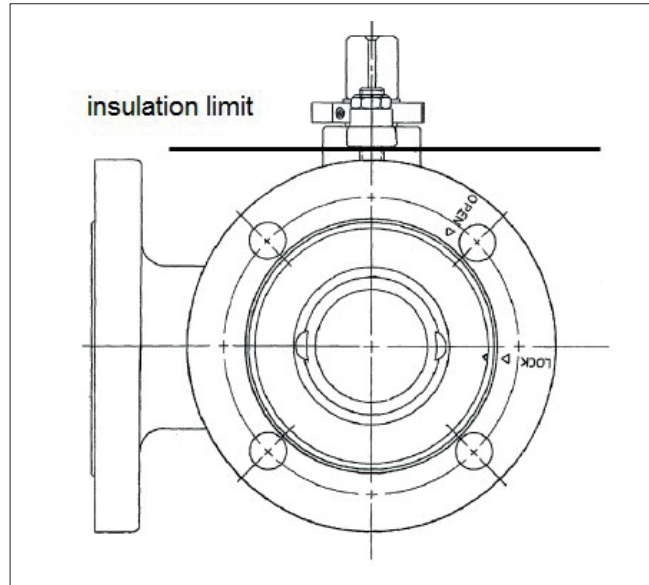


Figure 4. Insulation of the valve

### 3.4 ACTUATOR

#### WARNING

WHEN INSTALLING THE ACTUATOR ON THE VALVE, MAKE SURE THAT THE VALVE ASSEMBLY FUNCTIONS PROPERLY. INFORMATION ON ACTUATOR INSTALLATION IS GIVEN IN **SECTION 5** OR IN THE SEPARATE ACTUATOR INSTRUCTIONS.

The actuator should be installed in a manner that allows plenty of room for its removal.

The upright position is recommended for the actuator.

The actuator must not touch the pipeline, because pipeline vibration may interfere with its operation.

In certain cases, it may be considered advantageous to provide additional support to the actuator. These cases will normally be associated with large actuators, extended stems, or where severe vibration is present. Please contact Neles for advice.

### 3.5 COMMISSIONING

Ensure that there is no dirt or foreign objects left inside the valve or pipeline. Flush the pipeline carefully. Make sure that the valve is fully open when flushing.

Ensure that all nuts, fittings, and cables are properly fastened.

If so equipped, check that the actuator positioner and/or switch are correctly adjusted. To adjust any accompanying device(s) refer to the separate control equipment instruction manuals.

## 4. MAINTENANCE

### 4.1 GENERAL

Although Neles *Jamesbury* valves are designed to work under severe conditions, proper preventative maintenance can significantly help to prevent unplanned downtime and in real terms reduce the total cost of ownership. Neles recommends inspecting valves at least every five (5) years. The inspection and maintenance frequency depends on the actual application and process condition. Routine maintenance consists of tightening the bonnet screws (11) per **Section 4.6**. If weeping still occurs, tighten another ¼ turn.

#### WARNING

THE VALVE STEM (4) IS SEALED BY THE STEM SEALS. LOOSENING OR REMOVING BONNET SCREW (11) WILL RELEASE PIPELINE PRESSURE TO THE ATMOSPHERE. FAILURE TO COMPLETELY REMOVE ANY PIPELINE PRESSURE PRIOR TO LOOSENING OR REMOVING BONNET SCREW (11) COULD RESULT IN EJECTION OF STEM (4) FROM THE VALVE, DAMAGE AND/OR PERSONAL INJURY.

Overhaul maintenance consists of replacing seats and seals. A standard repair kit consisting of these parts may be obtained through your authorized Neles Distributor.

**NOTE:** Repair kits contain two seats (5), two O-rings (31), one body seal (6), one stem seals (7) and one stem bearing (8).

Refer to the Repair Kit chart (see **Table 1**).

#### WARNING

AS THE USE OF THE VALVE IS APPLICATION SPECIFIC, MANY FACTORS SHOULD BE CONSIDERED WHEN SELECTING A VALVE FOR A GIVEN APPLICATION. THEREFORE, SOME OF THE SITUATIONS IN WHICH THE VALVES ARE USED ARE OUTSIDE THE SCOPE OF THIS MANUAL.

IF YOU HAVE ANY QUESTIONS CONCERNING THE USE, APPLICATION OR COMPATIBILITY OF THE VALVE WITH THE INTENDED SERVICE, CONTACT NELES FOR MORE INFORMATION.

TABLE 1			
Repair Kits			
Valve Description	PTFE Kit	MTFE Kit	Double Block & Bleed MTFE"
12" DM150FD & FB	RKA-80TT	RKA-80MT	RKD-12MT 52 with Buna O-ring
			RKD-12MT 53 with Viton O-ring

#### WARNING

FOR YOUR SAFETY, IT IS IMPORTANT THE FOLLOWING PRECAUTIONS BE TAKEN PRIOR TO REMOVAL OF THE VALVE FROM THE PIPELINE OR BEFORE ANY DISASSEMBLY:

1. WEAR ANY PROTECTIVE CLOTHING OR EQUIPMENT NORMALLY REQUIRED WHEN WORKING WITH THE FLUID INVOLVED.
2. DEPRESSURIZE THE PIPELINE AND CYCLE THE VALVE AS FOLLOWS:
  - A. PLACE THE VALVE IN THE OPEN POSITION AND DRAIN THE PIPELINE.
  - B. CYCLE THE VALVE TO RELIEVE RESIDUAL PRESSURE IN THE BODY CAVITY BEFORE REMOVAL FROM THE PIPELINE.
  - C. AFTER REMOVAL AND BEFORE ANY DISASSEMBLY, CYCLE THE VALVE AGAIN SEVERAL TIMES

### 4.2 ACTUATED VALVE

It is generally most convenient to detach the actuator and its auxiliary devices before removing the valve from the pipeline. If the valve package is small or if it is difficult to access, it may be more practical to remove the entire assembly.

**NOTE:** To ensure proper reassembly, observe the position of the actuator and positioner/limit switch with respect to the valve before detaching the actuator.

#### WARNING

ALWAYS DISCONNECT THE ACTUATOR FROM ITS POWER SOURCE, PNEUMATIC, HYDRAULIC OR ELECTRICAL, BEFORE ATTEMPTING TO REMOVE IT FROM THE VALVE!

#### WARNING

DO NOT REMOVE A SPRING-RETURN ACTUATOR UNLESS A STOP-SCREW IS CARRYING THE SPRING FORCE!

1. Detach the air supply, electrical supply, hydraulic supply and control signal cables or pipes from their connectors.
2. Unscrew the actuator mounting bracket screws.
3. If the valve assembly has a split no-play (clamped) coupling, loosen the coupling screws.
4. Lift the actuator straight up in line with the valve stem until the coupling between actuator drive and valve stem is completely disengaged.
5. Place actuator in a safe location to avoid damage or personal injury.

## 4.3 MANUAL VALVE

1. Remove the stem screw (24), the washer (25), loosen the adapter set screw (23) and then remove the "T" handle adapter (22) and handle (15). The handle (15) can be removed from the "T" handle adapter (22) by loosening the second set screw (23). This is not necessary. Lift the handle (22) straight up in line with the valve stem until it is completely disengaged.
2. Place all disassembled handle parts in small basket or bag to prevent damage or loss.

## 4.4 DISASSEMBLY

The *Jamesbury* 12"-DM150FD 3-Way Flange Ball Valve is a trunnion mounted valve containing a bolted-on insert. See **Table 2** for recommended insert assembly torque.

TABLE 2	
Insert Assembly Torque	
Cap Screw Material	Torque ft - lbs
30	175 - 195

3. Read all WARNINGS before performing any work.
4. Be sure to cycle the valve.

**NOTE:** Before starting any disassembly, note the "L" shaped groove on the top of the stem (4) that indicates the location of the ball ports. Also note the letters stamped on the bonnet face, (AC) & (AB). Turn the ball if necessary, so that the arrows point to "AC". Note also that all three body flanges have been stamped "A", "B" or "C". The insert flange should be stamped "A", the non-insert flange "B" and the third flange "C". This will be important when assembly is performed.

5. Remove the stem screw (24), washer (25), loosen the adapter set screw (23), and then remove the "T" handle adapter (22) and handle (15). The handle may be removed from the adapter (22) by loosening the second set screw (23). If not already done.
6. Remove the set screw (21) and lift off the indicator stop (12). It may be necessary to turn the stem slightly to take the pressure off the indicator stop bearing against the stop slot.
7. Remove the two socket head cap screws (11) and lift off the bonnet plate (9).
8. Remove the stem (4), the stem seal (7), and the stem bearing (8), being careful not to scratch any sealing surface.
9. Place the body (1) on a bench with the insert flange facing up. Remove the eleven socket head cap screws (20) and the one shorter socket head cap screw (32).
10. Remove the insert (2), the insert seat (5) (and O-ring (31) if double block and bleed) and the body seal (6). It may be necessary to pry the seat from the insert. Do not scratch sealing surfaces.

### BALL REMOVAL: CAUTION

**NOTE:** 3 Way balls have an unbalanced weight distribution. Always be careful when handling the ball to prevent damage to it or the seals.

11. Remove the ball (3) and the trunnion plate (27) as a sub-assembly. (The sub-assembly consists of the ball with a

trunnion plate on both ends with their appropriate bearings and spacers).

12. Pull each trunnion plate away from the ball and inspect the bearing spacers (30) and trunnion bearings (29). Trunnion bearings (29) and spacers (30) are not included in repair kits. If replacements are necessary, order by part numbers. Bearings (29) 006-0282-36 and spacers (30) 036-0288-48. Two bearings and spacers required per valve.
13. Remove the body seat (5) (and O-ring (31) if double block and bleed seats). Be careful not to scratch any sealing surfaces.

## 4.5 CHECKING PARTS

1. Clean all disassembled parts.
2. Check the stem (4) and ball (3) for damage. Pay particular attention to the sealing areas.
3. Check all sealing and gasket surfaces of the body (1) and insert (2).
4. Replace any damaged parts, including any fastener that has been stretched, corroded or heated.

**NOTE:** When ordering spare parts, always include the following information:

- a. Valve catalog code from Identification plate,
- b. If the valve is serialized – the serial number (stamped on the valve body),
- c. From **Figure 5**; the ballooned part number, part name and quantity required.

## 4.6 ASSEMBLY

A lubricant compatible with the flow medium should be applied lightly to seats, seals, ball and stem to facilitate assembly and for ease of initial operation. It is advisable to replace seats and seals if complete disassembly and re-assembly become necessary. Refer to the Repair Kit chart (See **Table 1**).

Clean all valve components if not done previously.

Re-inspect all components for damage before reassembling the valve. Look for damage to the seating areas, stem, body and insert; and look for wear in the bearing areas. Replace any damaged parts.

Carefully clean and polish the ball (3) sealing surface: It should be free of all scratches and grooves.

If the ball is slightly damaged, it may be possible to smooth the sealing surface with crocus cloth or equivalent. If deep scratches are present, replace the ball.

1. Place the body (1) in the vertical position with the insert end facing upward. Assemble a seat (5) in the body with the flat surface of the seat against the body. If double block and bleed seats are used, lubricate O-ring (31) and place ring in seat before assembling in body. This will keep O-ring in place during assembly.
2. Place a bearing spacer (30) over each ball trunnion.
3. If fitting new trunnion bearings (29), insert two trunnion bearing halves into each trunnion plate (27) counterbore. The bearing halves should butt together evenly with no overlap at the seams.



4. Fit a trunnion plate (27) over each ball trunnion until the plate rests against the bearing spacer (30). The trunnion plates are rectangles, with the trunnion hole off center. Assemble the plates to the ball with the long end of the plates facing the insert side. The following operation must be performed with care and without excessive force, or the bearing may be damaged. The plate should be started squarely on the trunnion and evenly tapped with a plastic mallet. With new bearings it may be necessary to tap and rotate the plate all the way on. Lubrication is helpful. Once installed, without cocking, the plate will be snug but can be smoothly rotated with a mallet or block of wood.
5. With one ball port facing the "A" insert flange and the other facing "C" flange and the stem slot facing the bonnet hole, lower the ball/trunnion plate subassembly slowly and carefully into the body and guide the trunnion plates for proper seating. **BE AWARE THAT THE BALL IS UNBALANCED, WEIGHT WISE, AND WILL TEND TO ROTATE IF EXTREME CAUTION IS NOT TAKEN.**
6. Insert the stem (4) as a temporary means of holding the ball, with the stem "L" shaped groove pointing to the "A" and "C" flanges. Turn the ball clockwise. This provides a closed ball face for inserting the insert seat.
7. Insert the second seat (5) with the proper surface facing the ball. If double block and bleed seats are used, assemble the same way as in step 1 above. Insert the body seal (6) with the chamfered I.D. away from the ball.
8. Wipe a liberal amount of lubricant on the body seal to help prevent tearing when assembling the insert.
9. Place the insert into the body, after aligning the special clear hole over the dowel pin (26) protruding from the body.
10. Place the short socket head cap screw (32) into the threaded hole closest to the "C" flange. Assemble the remaining eleven socket head cap screws and torque all twelve cap screws to the torque shown in **Table 2**.
11. Remove the stem (4) and insert the stem seal (7) into the body with the chamfer on the I.D. facing down. The stem should be tapped into place gently to avoid cutting the seal. The "L" shaped slot in the stem should be pointing to the "B" and "C" flange.
12. Place the stem bearing (8) over the stem (4) large diameter first and slide down to the stem shoulder. Assemble the bonnet plate (9) down over the stem with the indicator stop slot facing up. Check that the marking on the plate agrees with the orientation shown in **Figure 5**.
13. Place a socket head cap screw (11) into each bonnet plate hole and tighten evenly and alternately until the stem seals are seated. Then tighten another 3/4 of a turn.
14. Place the indicator stop (12) over the stem (arrows on the stop facing up ) and push it down into the bonnet plate groove. Indicator stop arrows should be pointing to the "BC" stamped on the bonnet plate face. Tighten the set screw (21) in the indicator stop (12).
15. Place the "T" handle adapter (22) over the stem (4). Install the cap screw (24) and washer (25), tighten the lower adapter set screw (21). Insert the pipe handle (15) and tighten the upper set screw (23).

## 4.7 TESTING THE VALVE

### WARNING

WHEN PRESSURE TESTING, EXERCISE CAUTION AND MAKE SURE ALL EQUIPMENT USED IS IN GOOD WORKING CONDITION AND APPROPRIATE FOR THE INTENDED PRESSURE.

If the valve is to be tested prior to returning to service, make sure the test pressures are in accordance with an applicable standard.

When testing the valve for external tightness, keep the ball in the half open position.

If testing the valve seat tightness, please contact Neles for advice.

### WARNING

WHEN PERFORMING ANY TESTS, NEVER EXCEED THE MAXIMUM OPERATING PRESSURE OR MAXIMUM SHUT-OFF PRESSURE LISTED ON THE IDENTIFICATION PLATE!

## 5. ACTUATOR MOUNTING

**IMPORTANT:** When these valves are equipped with an actuator and the actuator is removed to service the valve, **PROPER ALIGNMENT OF THE ACTUATOR DRIVER AND VALVE STEM IS ESSENTIAL WHEN THE ACTUATOR IS REMOUNTED.** In the case of valves and actuators connected with a split no-play (clamped) coupling, tighten the coupling bolts before final tightening of the valve bracket bolts. In the case of valves and actuators with solid, loose-fit couplings, the actuator should be positioned on the valve without any side loading of the coupling in both the open and closed positions before final tightening of the valve bracket bolts

## WARNING

FOR YOUR SAFETY, IT IS IMPORTANT THAT THE FOLLOWING PRECAUTIONS BE TAKEN!

BEFORE INSTALLING THE VALVE AND ACTUATOR, BE SURE THE INDICATOR POINTER ON TOP OF THE ACTUATOR IS CORRECTLY INDICATING THE VALVE'S POSITION. FAILURE TO ASSEMBLE THESE TO INDICATE THE CORRECT VALVE POSITION COULD RESULT IN DAMAGE OR PERSONAL INJURY!

WHEN INSTALLING A LINKAGE KIT OR SERVICING THE VALVE/ACTUATOR ASSEMBLY, THE BEST PRACTICE IS TO REMOVE THE ENTIRE ASSEMBLY FROM SERVICE!

AN ACTUATOR SHOULD BE REMOUNTED ON THE SAME VALVE FROM WHICH IT WAS REMOVED. THE ACTUATOR MUST BE ADJUSTED FOR THE PROPER "OPEN" AND "CLOSE" POSITIONS EACH TIME IT IS REMOVED!

THE LINKAGE KITS HAVE BEEN DESIGNED TO SUPPORT THE WEIGHT OF THE NELES ACTUATOR AND RECOMMENDED ACCESSORIES. USE OF THE LINKAGE TO SUPPORT ADDITIONAL EQUIPMENT OR ADDITIONAL WEIGHT SUCH AS PEOPLE, LADDERS, ETC., MAY RESULT IN THE FAILURE OF THE LINKAGE, VALVE, OR ACTUATOR; AND MAY CAUSE DAMAGE OR PERSONAL INJURY!

## 6. SERVICE / SPARE PART

We recommend that valves be directed to our service centers for maintenance. The service centers are equipped to provide rapid turn-around at a reasonable cost and offer new valve warranty with all reconditioned valves.

**NOTE:** When sending goods to the service center for repair, do not disassemble them. Clean the valve carefully and flush the valve internals. Include the material safety datasheet(s) (MSDS) for all media flowing through the valve. Valves sent to the service center without MSDS datasheet(s) will not be accepted.

For further information on spare parts and service or assistance visit our web-site at [www.neles.com/valves](http://www.neles.com/valves).

**NOTE:** When ordering spare parts, always include the following information:

- Valve catalog code from identification plate,
- If the valve is serialized – the serial number (from identification plate)
- From **Figure 5**, the ballooned part number, part name and quantity required.

## 5.1 OPEN/CLOSE POSITION ADJUSTMENT

**NOTE:** Refer to the appropriate Installation, Maintenance, and Operating Instructions (IMO) for specific directions on how to adjust the actuator travel stops or limit switch (see **Table 3**).

TABLE 3

Actuator Installation, Maintenance and Operating Instructions

Actuator	IMO
QPX	215
VPVL	553
B1C	6 BC 71
B1J	6 BJ 71
BCH	6 BCH 70
M	549
ADC	I4400, I4500 or I4600
ESR	I7016
I	I6500, I6600 or I6700
LCR	I1262
LCU	I1263
Q6	I1227 or I1383
QX	I3000
V	I2100, I2475, I2500, I2700 or I5500
Torq-Handle®	71

Contact your authorized Neles Distributor for copies of these instructions



12" DM150FD

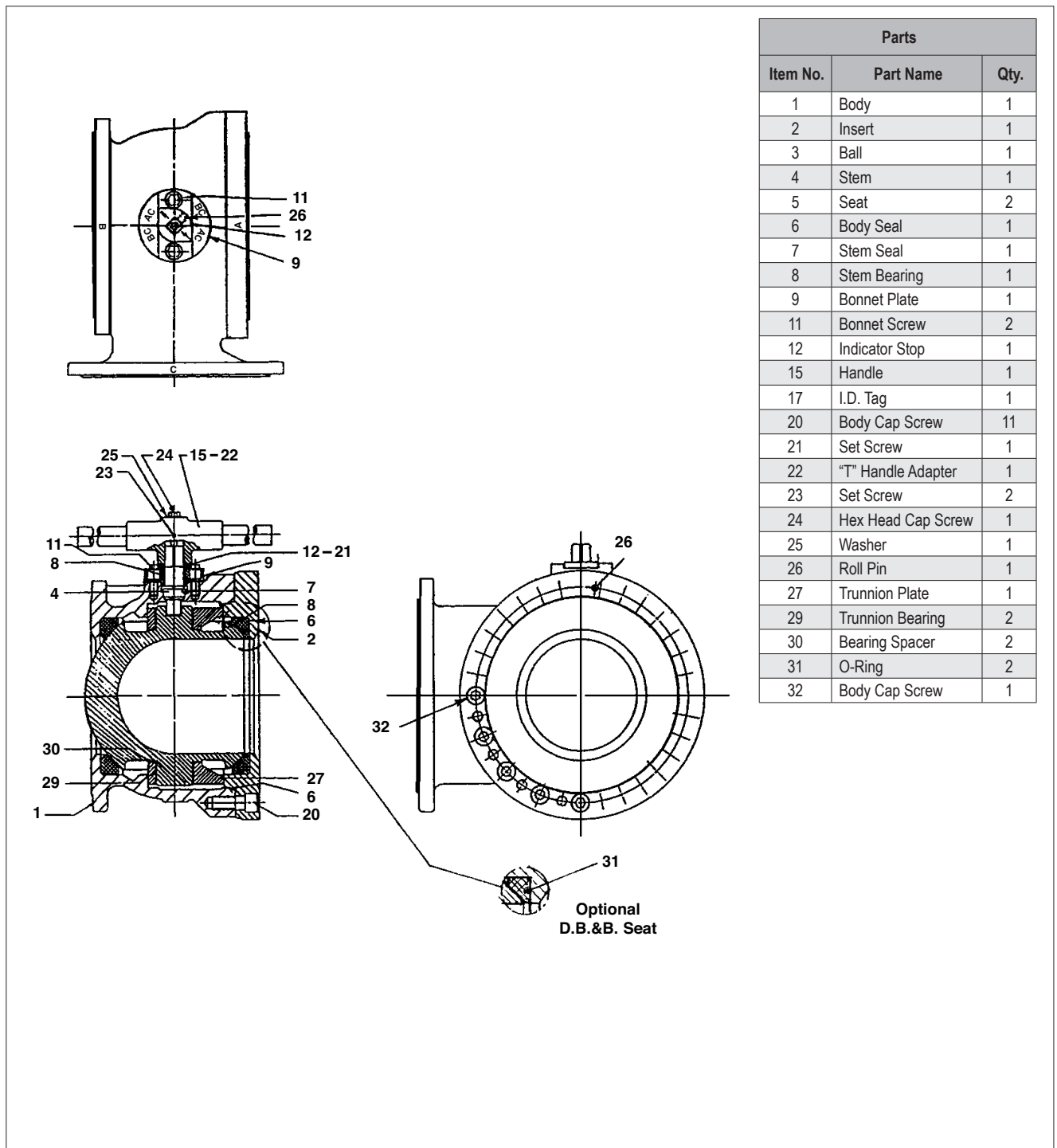


Figure 5.

Figure 5

**WARNING:**

As the use of the valve is application specific, a number of factors should be taken into account when selecting a valve for a given application. Therefore, some of the situations in which the valves are used are outside of the scope of this manual. If you have any questions concerning the use, application or compatibility of the valve with the intended service, contact Neles for more information.

**JAMESBURY BRAND 3-WAY FLANGED BALL VALVE, SERIES AM & DM**

1	2	3	4	5	6	7	8	9
4"	AM	150	FB	2TR	DBB	2236	MT	52

1	VALVE SIZE ( inch / mm )
INCHES	2, 3, 4, 6, 8, 10, 12
DN	50, 80, 100, 150, 200, 250, 300

2	BODY STYLE
	inches (DN)
AM	2" - 4" (DN50 - 10)
DM	6" - 12" (DN150-300)

3	BODY RATING
150	ASME Class 150

4	PORTS
FB <sup>1</sup>	Bottom ported flanged body
FD <sup>2</sup>	Side ported flanged body

5	CONFIGURATION
-	Basic Design
2TR	2 position valve with dual ported ball
3TR	3 position valve with dual ported ball

6	Special
DBB	Double block and bleed seats

7	BODY / TRIM MATERIAL
2236	Carbon steel body / 316 stainless steel trim
3600	316 stainless steel body / 316 stainless steel trim

8	SEAT / SEAL MATERIAL
TT	PTFE seat / PTFE seals
MT	Filled PTFE Seat / PTFE seals

9	O-RING / STEM SELECTION
2" thru 8"	
52	Buna N
53	Viton
6" thru 12"	
AO	Buna N with operating stem
DO	Viton with operating stem

1 2" - 8" only

2 Not available with 2TR / 3TR Configuration



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