

Installation & Operation Manual

ISO 5211 direct-mount Class 150 & 300 2-piece reduced port, full port flanged ball valves

ISO 5211 direct-mount Class 600 2-piece reduced port, full port flanged ball valves

Applicable model no.: TF-2F-CS-150 / SF-2F-150; TF-2F-CS-150-D / SF-2F-150-D;
TF-2F-CS-300 / SF-2F-300; TF-2F-CS-300-D / SF-2F-300-D;
TR-2F-CS-600 / SR-2F-600, TF-2F-CS-600 / SF-2F-600

PRECAUTIONS

1. Before installation, user should consult pressure / temperature rating and ensure the valve is of the correct type and working pressure for intended applications. These pressure ratings must not be exceeded.
2. Check the valve and pipe flanges to make sure there are no scratches or foreign materials.
3. Valve flanges should correspond with pipe flanges.
4. Ensure the line is depressurized, drained and vented. Cycle the valve to relieve pressure in the body cavity and ensure media inside the pipeline and valve is released.
5. Do not leave the valve for any period of time on a halfway position between "open" and "closed", or it could deform the valve seats and result in internal leakage. Valves are designed for use in the full open or full closed position only.

INSTALLATION

1. Two-piece flanged valves are bi-directional, and recommended to be installed in horizontal position with the stem in upright position to prevent the seat from distortion.
2. Insert gaskets between the valve and pipe flanges and bolts through the bolt holes. Tighten the bolts evenly in a diagonal pattern and ensure the alignment of gaskets, valve and pipe flanges.

MAINTENANCE

Routine maintenance consists of tightening the adjustable packing gland periodically to compensate for the wear. Packing adjustment can be done by tightening the gland nut to the following torques:

Valve size*	Gland nut torque (in-lb)
½" & ¾" (FP)	20
1" (FP)	25
1½" – 2½" (FP)	90
2" – 3" (RP)	
3" & 4" (FP)	180
4" & 6" (RP)	
6" (FP)	450

*Note: FP = Full Port, RP = Reduced Port

DISASSEMBLY

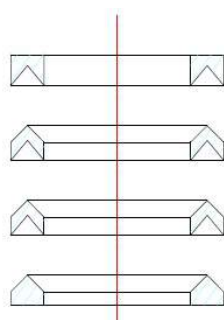
1. Depressurize the line and cycle the valve to release the pressure trapped in the cavity. Leave the valve in the open position. Do not remove the valve body from the line in the closed position, or it will damage the ball.
2. **For automated valves only:** Remove all air and electrical power from the actuator or other automation equipment. Disassemble automation assembly but retain coupling and mounting bracket / pad.
3. Loosen and remove the stud bolts and bolt nuts using diagonal pattern, to allow disassembly of the cap.
4. Remove the seat and body seal from the cap. Rotate the valve to closed position and remove the ball and secondary seat from the valve body. Take extreme care so as not to scratch the sealing surfaces and the ball.
5. **For manual valves only:** Remove the screw (or handle nut), handle, retaining ring (or stem washer) and stopper plate from the stem.
6. Remove the stem stopper pin washer, lock plate and stopper pin from the mounting pad, if any.
7. Disassemble the lock washer, gland nut, Belleville washers, gland and packings from the stem. Press the stem down into the cavity and remove it from inside the body and remove thrust washer and stem O-ring.

REASSEMBLY

1. Clean all metal parts for reuse and prepare new soft parts (seats, packings, thrust washer and body seal).
2. Install the thrust washer (and stem O-ring) on the stem and insert the stem into the body. Ensure the stem shoulder is securely seated in the bore.
3. Assemble the first seat into the body groove, and then the second seat and body seal in the cap. Mind the flat face of the seats should be facing toward the body and cap respectively.
4. Orient the ball to the closed position and carefully insert it into the body and rotate the stem to the closed position.
5. Align the body with cap and then install and hand-tighten stud bolts and bolt nuts. Bolts and nuts should be wrench-tightened evenly and gradually in a diagonal pattern to the following recommended torques.

Bolt size	Body bolt torque (ft-lb)
$\frac{5}{16}$ "	15 – 20
$\frac{3}{8}$ "	25 – 30
$\frac{1}{2}$ "	65 – 70
$\frac{9}{16}$ "	80 – 85
$\frac{5}{8}$ "	120 – 140
$\frac{3}{4}$ "	200 – 220

6. For fire-safe models, mount two flat packings and place the combination onto the stem. For non fire-safe ones, refer to the following diagram and description for the arrangement of concave / convex faces in different sizes.



Non fire-safe model

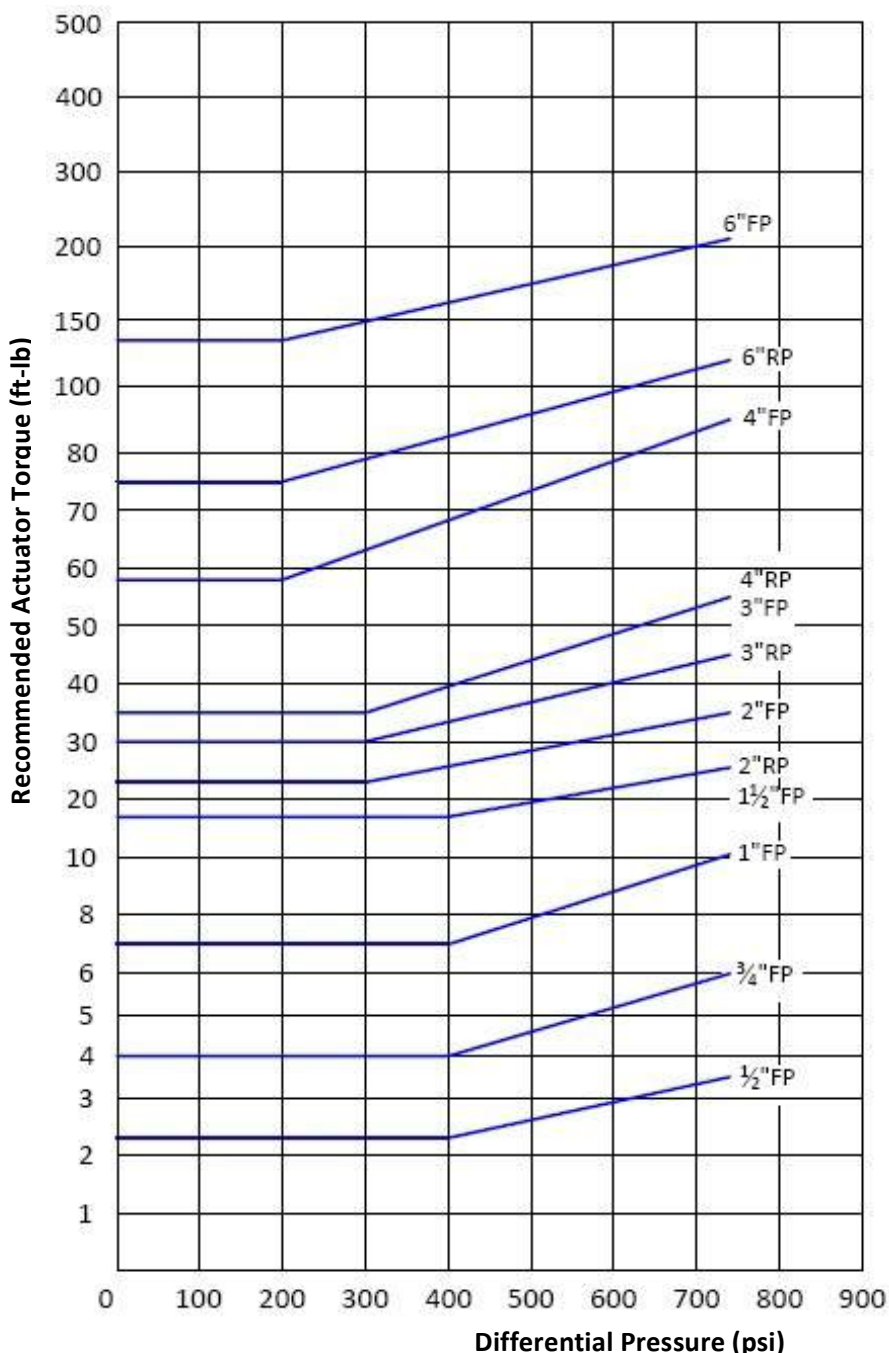
$\frac{1}{2}$ " – 1": 3 pieces

$1\frac{1}{2}$ " – $2\frac{1}{2}$ " : 4 pieces (as per indicated in the left diagram)

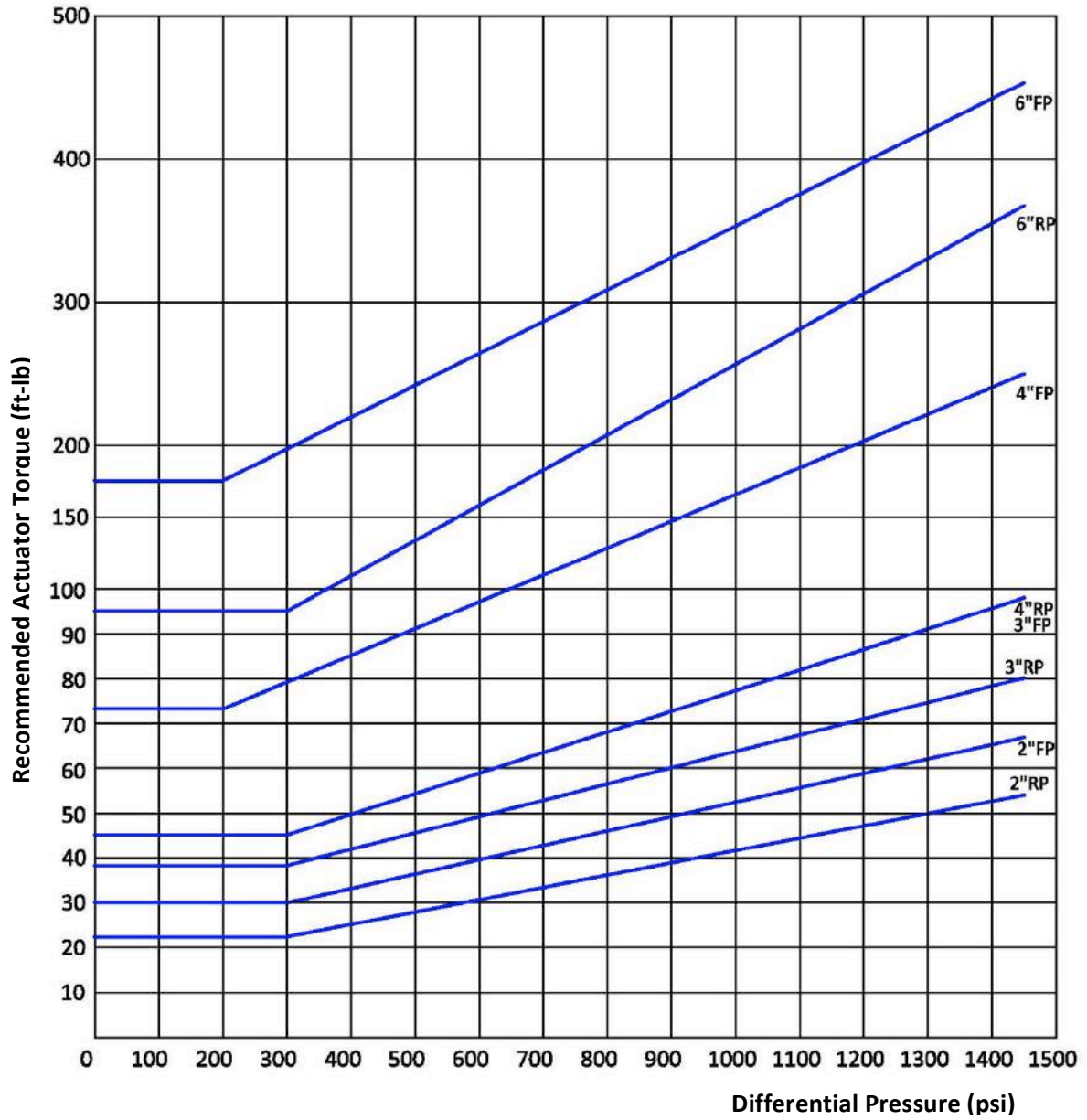
3" – 6" : 5 pieces

7. Assemble gland, two Belleville washers – the first concave facing down and the second concave facing up, gland nut, and lock washer onto the stem in the order given.
8. **For manual valves only:** Install the stopper pin washer, lock plate and stopper pin onto the mounting plate, if any. Assemble stopper plate, retaining ring (or stem washer) and handle, and then tighten the screw (or handle nut).
9. **For automated valves only:** Reinstall automation assembly with coupling and mounting bracket / pad and then reconnect power. While installing the actuator, refer to the charts below for torque requirements.

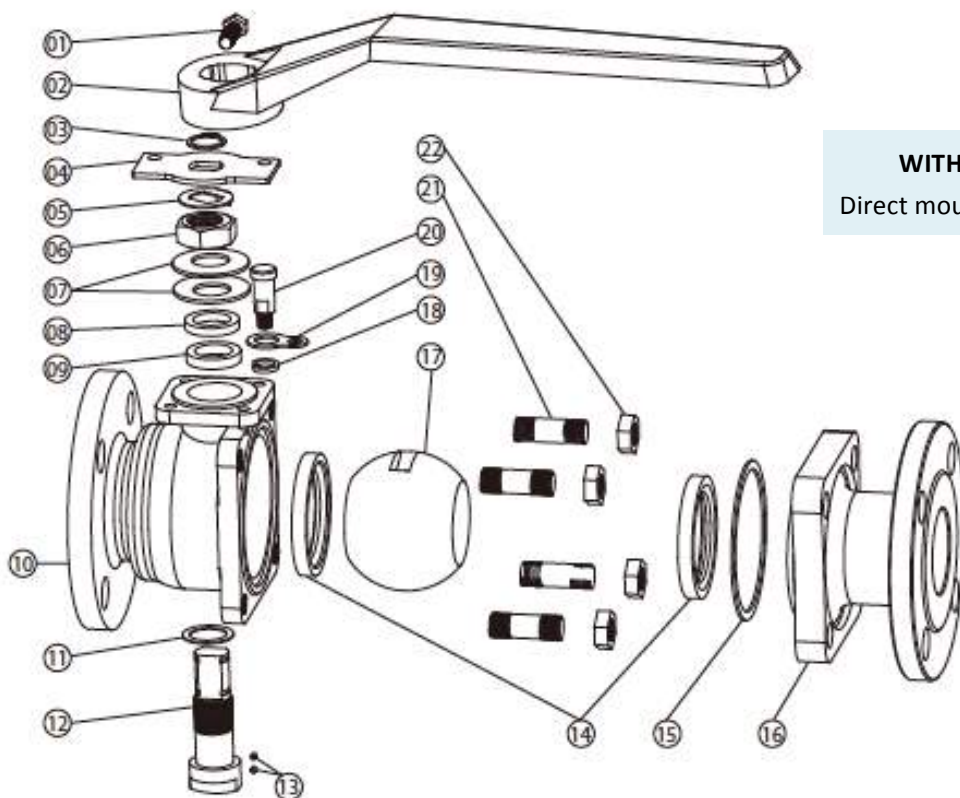
ANSI Class 150 and 300 Valve Operating Torque Data



ANSI Class 600 Valve Operating Torque Data

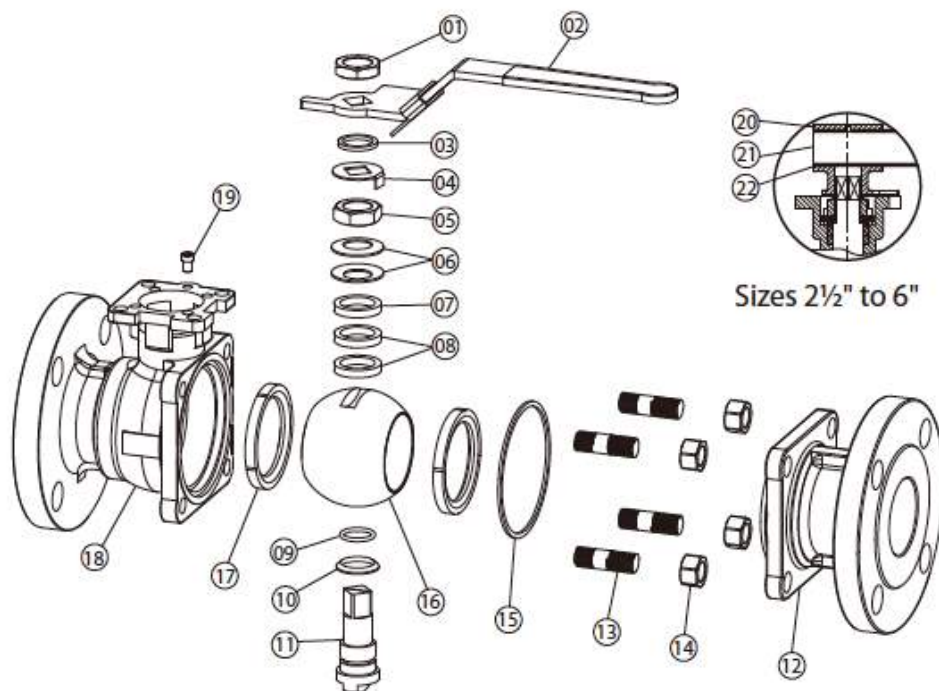


PARTS LIST (1)



Item	Part name	Qty
1	Screw	1
2	Handle	1
3	Retaining ring	1
4	Stopper plate	1
5	Lock washer	1
6	Gland nut	1
7	Belleville washer	2
8	Gland	1
9	Packing	1 set
10	Body	1
11	Thrust washer	1
12	Stem	1
13	Anti-static device	2 sets
14	Seat	2
15	Body seal	1
16	Cap	1
17	Ball	1
18	Stopper pin washer	1
19	Lock plate	1
20	Stopper pin	1
21	Stud bolt	1 set
22	Bolt nut	1 set

PARTS LIST (2)



WITH Direct mounting pad
Applicable to TF-2F-CS-150-D /
SF-2F-150-D; TF-2F-CS-300-D /
SF-2F-300-D;

Item	Part name	Qty
1	Handle nut	1
2	Handle	1
3	Stem washer	1
4	Lock washer	1
5	Gland nut	1
6	Belleville washer	2
7	Gland	1
8	Packing	1 set
9	Stem O-ring	1
10	Thrust washer	1
11	Stem	1
12	Cap	1
13	Stud bolt	1 set
14	Bolt nut	1 set
15	Body seal	1
16	Ball	1
17	Seat	2
18	Body	1
19	Stopper pin	1
20	Screw	1
21	Pipe	1
22	Handle adapter	1