KF Series FA Ball Valves

6x6 thru 12x12 API 6D, Ansi Class 150 & 300
2x2 thru 6x4 API 6D, Ansi Class 150 & 300

Installation, Operation, And Maintenance

? GUIDE

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Installation

Install KF Series FA Ball Valves in piping system using proper size and mating flanges and appropriate gaskets (for RF) or seal rings (for RTJ). Valve design allows for line flow in either direction.

Series FA Valves are provided with a flatted diameter stem (6" and 8" bores) or keyed diameter stem (10" and 12" bores) and four tapped holes in a machined top pad surface for convenient actuator or gear operator mounting. Location and dimensions of these holes are listed on KF Data Sheet DB-73.

Operation

KF Series FA Ball Valves are recommended for on-off service only. Throttling (partial opening) may cause excessive and non-uniform wear on the seats, preventing tight shut-off. Series FA Ball Valves open by rotating handle or gear operator handwheel in a counter-clockwise direction. Exact closed and open position is determined by the radial location of the stem flats or keyway with respect to the fluid bore centerline of the body. When the stem flats or keyway are perpendicular to the fluid bore, valve is closed. Positive stops and arrow indication are provided on handles and gear operators.

Double Block and Bleed Operation: KF Series FA Ball Valves are well suited for sealing fluids, concurrently, at both ends. The bleed valve (21) provides a safe and convenient method for checking closed valve seat sealing effectiveness as required for Double Block and Bleed valves.

Caution: *Before opening the bleed valve note orientation of the exhaust hole in the bleed valve body. Stand clear of this direction when opening the bleed valve. Never remove bleed valve while valve is exposed to line pressure.*

Maintenance

KF Industries uses Val-Tex 2000 for assembly purposes. After hydro-testing, Val-Tex 2000 is injected through the Seat Injection fittings, into the seat pocket. This action assists in displacing residual test fluid left behind, assisting in good corrosion prevention. The Val-Tex 2000 is suitable for most Natural Gas, CO2, H2S, Sour Crude, water and LPG's applications. The End user is ultimately responsible for properly lubricating the valves. Please contact your Lubricant/Sealant supplier for proper media compatibility.

KF warrants their products to be free from defects in materials and/or workmanship. KF is not responsible for improper use of injection equipment, incorrect lubricants and/or sealants.

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Reconditioning

KF Series FA Ball Valves may be rebuilt after removing the valve from the pipeline.

Caution: *Prior to removal, valve must first be isolated from system pressure and flow. Also, with the valve set at approximately half open, internal pressure must be bled to 0 psi. Finally, as a safety precaution, open ball cavity bleed valve (21).*

6" through 12" Bores: First, position valve with body (1) flange end down and rotate ball to full closed position. To disassemble, remove handle (19), retainer (18), stop plate (17) and stem bearing (10). These items are not included when valve is equipped with a gear operator. On gear operated valves, remove the cover for access to mounting screws. Use an Allen wrench to loosen and remove mounting screws. Segment gear position will have to be adjusted by rotating the handwheel in order to have access to each of the mounting screws. When screws are removed, lift gear operator case from valve.

Remove hex nuts (25) and lift adapter (2) from body. Carefully remove ball (4) with trunnion supports (12) from body. Next, push stem assembly (3) inward and remove through the valve body bore. Remove seat assembly (7) and wave spring (15) from both the body and adapter sections. Finally, remove split trunnion bearing (13) from trunnion supports.

Clean and inspect all parts for damage and wear. Observe seat pocket bores, stem seal bore and adapter seal area for rust pits and scale. If necessary, use fine emery for removal of deposits on the machined surfaces. Fine emery may also be used very lightly on the ball sealing surfaces. Scratches or cuts on the sealing insert surface of the seats are cause for replacement. Flush lube and sealant injection fittings and channels with two or three pumps of grease while valve is disassembled.

Reassembly

Use new replacement parts, as required. Use a liberal amount of general purpose grease (such as Mystic JT-6) on seals and machined mating surfaces. Fill the reliefs between stem O-rings with grease.

Install seat assemblies and wave springs as far as possible, by hand, into seat pockets of body and adapter. Take care to assure that O-ring seals are not pinched during assembly. Seat assemblies must be placed deep enough into seat pockets so that the wave springs are in contact with both body and seat. Insert stem assembly complete with thrust bearing into lubricated stem journal. (Note: A thin screwdriver or like tool will be required to depress the stem's side anti-static plunger in order to engage the plunger into the stem journal.) Pull stem assembly through to full engagement and rotate it to a closed position. 10" and 12" valves require that the keyway be oriented radially toward the lube fitting in the body.

Place bearings in trunnion supports then install this assembly on each trunnion of the ball. The blocks must be oriented such that the 5/16" holes face toward the body and the tapered edges conform to the mating body inside diameters. Carefully lower this assembly into the ball cavity of the body. (Note: A thin strip of steel strap held in the ball's stem slot will depress the stem end plunger smoothly as the ball trunnion blocks are lowered into position.) Assure this assembly has reached its seated position within the body by noting engagement with trunnion alignment pin (27). Place body seal (14) in position on adapter pilot diameter then align adapter with body studs such that flange end holes match body end flange holes. After adapter is in contact with body fasten evenly and securely by tightening hex nuts in a cross-opposing order. Complete

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assembly by adding stem bearing, stop plate and retainer or gear operator assembly.

2" through 4" Bores: Stand the valve on end, resting on the body pipe flange. Take care to avoid scarring the raised sealing face of the flange. To disassemble, remove handle (19), retainer (18), stop plate (17) and stem bearing (10). These items are not included with a gear operated valve. On gear operated valves, remove the hex head screws or nuts which attach the operator to the valve's mounting flange then withdraw gear operator from valve. Loosen and remove the trunnion cover cap screws (34) and trunnion cover (29). Remove the lower trunnion (6) and trunnion cover gasket (33) from the valve body. Remove the nuts (25) from the studs (26) at the adapter connection. Carefully remove the adapter (2) from the body then lift the ball (4) straight out of the body. Be careful to prevent the ball from being damaged during this procedure. Set the ball on a clean surface. Push the stem (5) inward and remove through the valve body bore. Pull the seats (7) and seat springs (15) from both the adapter and body. Remove all seals and bearings from the valve components.

Clean the parts and inspect them for damage, wear and corrosion. Observe seat pocket bores, stem seal bore and adapter seal area for rust pits and scale. If necessary, use a fine emery for removal of deposits on machined surfaces. Fine emery may also be used very lightly on the ball's spherical sealing surfaces. Scratches or cuts on the sealing insert surface of the seats are cause for replacement. Flush lube and sealant injection fittings and channels with two or three pumps of grease while valve is disassembled. Replace seals and other parts, as required.

Reassemble in reverse order. Use a liberal amount of general purpose grease (such as Mystic JT-6) on all seals and machined mating surfaces. Fill the relief area between the stem and lower trunnion o-ring grooves with grease. Finally, assemble the adapter to the body and uniformly tighten the adapter nuts.

Gear Operator Field Mounting

KF offers an optional gear operator with handwheel which can be field mounted by utilizing the following detailed instructions:

Note: *Insomuch as mounting of a gear operator may require operation of the valve (See Paragraph 3), consideration should be given to removing line pressure beforehand to avoid any sudden or unexpected flow/pressure conditions downstream from the valve.*

1. Remove existing handle (19), retaining ring (18), stop plate (17), stop screw (16) and flat nylon stem bearing (10) from valve and discard.

Notice: *Stem alignment (in either "open" or "closed" position) is critical. If stop plate was removed with the valve in full open or full closed position (stop plate "butted" up against stop screw), then correct ball position is assured. If, however, the stem is moved after the stop plate is removed then, steps must be taken to realign ball to proper position.*

2. Remove plastic plugs from gear operator mounting holes.

3. Remove gear operator cover and align the four gear operator mounting holes with mating threaded holes in the valve top pad (Note: grease may need to be removed for visibility of holes). Attach gear operator to bonnet with four socket head cap screws. Install and tighten two of the four screws, then turn segment gear via input shaft for access to the remaining two mounting screw holes. Replace grease which may have been removed to gain access to mounting holes. Replace gear operator cover.

4. Both open and closed travel stops on gear operator must now be set to insure proper ball port orientation.

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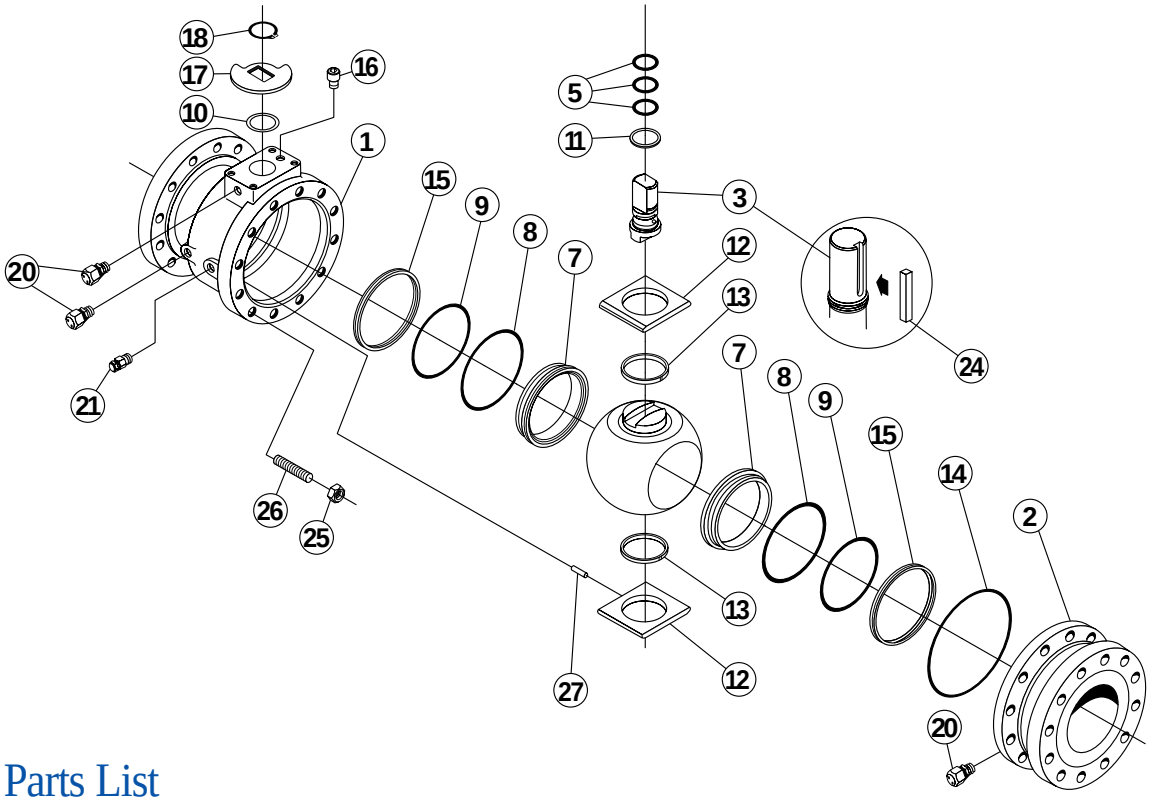
Component Parts ? GUIDE

Caution: *Care must be taken to set the travel stops accurately, since a partially open or "throttled" ball position will result in premature seat failure.*



Parts List

No.	Description
1	Body
2	Adapter
3	Stem Assembly
4	Ball
5	Stem Seal
7	Seat
8	Seat O-Ring
9	Seat Sub Seal

No.	Description
10	Stem Bearing
11	Thrust Bearing
12	Trunnion Support
13	Trunnion Bearing
14	Body Seal
15	Wave Spring
16	Stop Screw
17	Stop Plate

No.	Description
18	Retainer
20	Injection Fitting
21	Bleed Valve
24	Key (10"FP thru 12"FP only)
25	Hex Nut
26	Stud
27	Trunnion Alignment Pin

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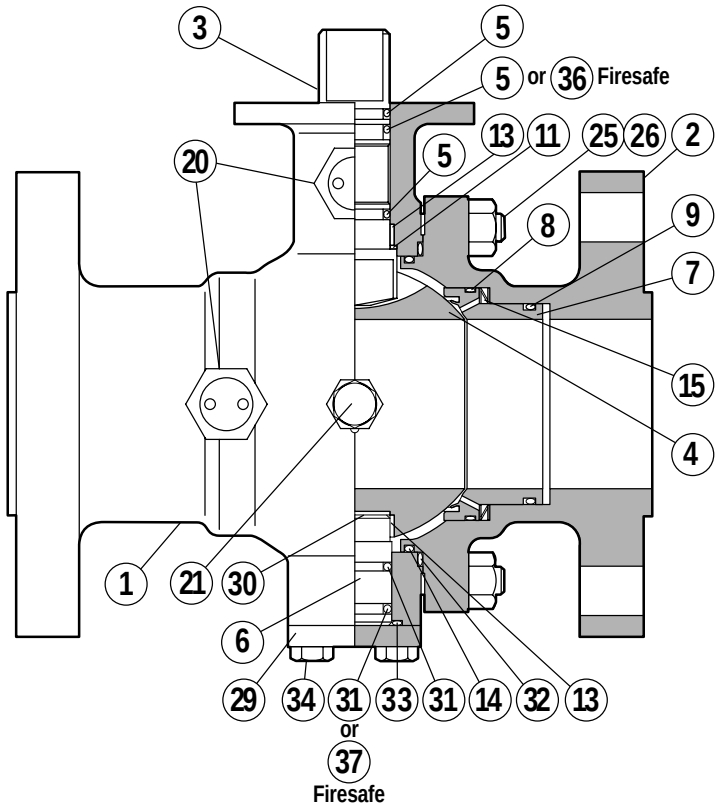

Parts List

No.	Description
1	Body
2	Adapter
3	Stem Assembly
4	Ball
5	Stem Seal
6	Trunnion
7	Seat
8	Seat O-Ring
9	Seat Sub Seal

No.	Description
9	Seat Sub Seal
11	Thrust Bearing
13	Trunnion Bearing
14	Body Seal
15	Wave Spring
20	Injection Fitting
21	Bleed Valve
25	Hex Nut
26	Stud

No.	Description
29	Trunnion Cover
30	Thrust Bearing
31	Trunnion Seal
32	Body Seal
33	Trunnion Cover Seal
34	Trunnion Cover Screw
36	Stem Packing
37	Trunnion Packing

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