Repair Instructions for Gemini 76, 86 & 96 Series Valves

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86 and 96 Series Valves

The Gemini Series 86 and 96 valves are of two piece body design, which permits disassembly for inspection and repair. Care in cleaning and handling of valve components is particularly important when overhauling ball valves, as a small nick or scratch, causing by mishandling, can be the source of leakage in service. These instructions deal with valve equipped with lever handles. If your valve has another type handle or is equipped with an actuator, the steps required to complete the stem assembly will differ somewhat from those referred to in the instruction sheet.

Procedure

1. Place valve body in vise with end plug facing upward. The use of smooth vice jaws will prevent maring of the valve. Break end plug loose with wrench; remove end plug.

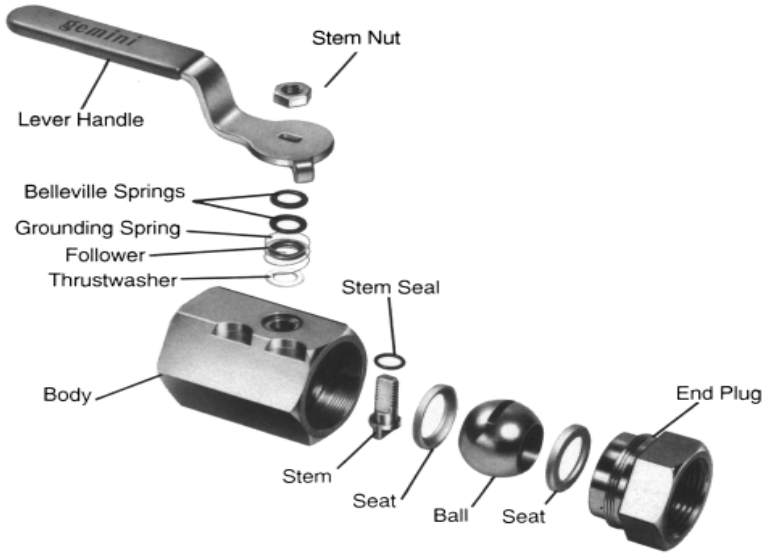
2. Remove valve from vise, turn handle to “closed” position. Remove ball. Remove seat from valve body. Remove stem nut, handle, grounding spring, Belleville springs, follower and thrustwasher. Remove stem by pushing into valve. Make sure stem seal is removed when stem is withdrawn from body. Remove seat from valve body and from end plug. Discard used seats, stem seal and thrustwasher.

3. Clean all parts. Inspect area of end plug and body, which forms metal to metal seal, for scratches and / or burrs. Lubricate all parts with a lubricant giving special attention to the end plug / body seal area and the end plug threads.

4. Place new stem seal on stem, position stem in body, place new thrustwasher over stem, install follower (small flat metal washer) over stem. Position two Belleville springs (cupped) on stem with concave surfaces facing one another, place grounding spring in position over stem. Complete stem assembly by placing handle on stem and securing with stem nut. Tighten stem nut until Belleville springs become fully compressed (flatten); the torque required to tighten the nut further increases sharply when this point is reached. Do not tighten the stem nut beyond this point.

5. Place new seat in body. Turn handle to closed position, insert ball, making sure that lower end of stem engages slot in ball. Turn handle to “open” position. Place valve body in vise as in step 1. Install new seat in end plug. Tighten end plug into body to torque given in chart.

6. Test valve. Reinstall.



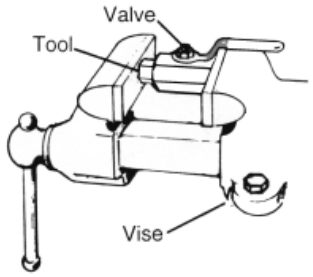
Assembly Torque Specifications				
Valve Size & Series		Foot - Pounds Values For End Plugs		
86	96	Brass	Carbon	Stainless
1/4 & 3/8	-	40	50	70
1/2	-	40	50	70
3/4	1/2	50	70	120
1	3/4	60	120	150
1-1/4	1	100	150	225
1-1/2	1-1/4	180	250	295
2	1-1/2	180	250	295

76 Series Valves

Although Series 76 valves which have become unserviceable are ordinarily replaced rather than repaired, renewal of the seats and stem seal will permit their being returned to service in many cases. The Series 76 is not regarded as a maintainable product by Gemini Valve, and the publication of these instructions should not be interpreted as implying the advisability of attempting repairs. The use of a tool is necessary in dismantling and reassembling the valve. A design is suggestion is offered below. These instructions deal with valves which are equipped with lever handles. If your valve has another style handle or is equipped with an actuator, the steps required to complete the stem assembly will differ somewhat for those referred to in this instruction sheet. When the repaired valve is reinstalled, the insert should face upstream.

Procedure

1. Place tool in wrenching slots of insert. Place valve with the inserted tool in vise lengthwise.



2. Break insert loose by turning tool with a wrench while holding valve body with a second wrench. Remove valve from vise, unscrew insert, remove seat from insert and discard.

3. Turn handle to “closed” position, remove ball. Remove seat from body and discard. Remove stem nut, handle grounding spring, Belleville springs, follower, and thrustwasher. Remove stem by pushing into valve. Discard thrustwasher. Make sure stem seal is removed when stem is withdrawn from valve body; discard stem seal.

4. Clean all parts. The use of a lubricant is recommended on all parts.

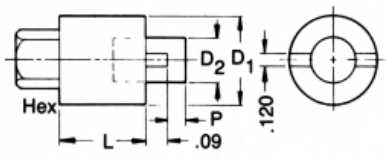
5. Place new stem seal on stem, position stem in body, place new thrustwasher over stem, install follower (flat metal washer) over stem. Position two Belleville springs (cupped) on stem with concave surfaces facing one another, put grounding spring over stem, position handle on stem atop Belleville springs. Secure assembly with stem nut. Tighten stem nut until Belleville springs become fully compressed (flattened); the torque required to tighten the nut further increases sharply when this point is reached. Do not tighten the stem nut beyond this point.

6. Position new seat in valve. Place new seat in loose insert. With handle in “closed” position, insert ball, making sure that the lower end of the stem engages the slot in ball. Turn handle to “open” position. Reassemble insert to body hand tight using assembly tool. Place valve and tool in vise as in Step 1, tighten insert to torque value given in chart.

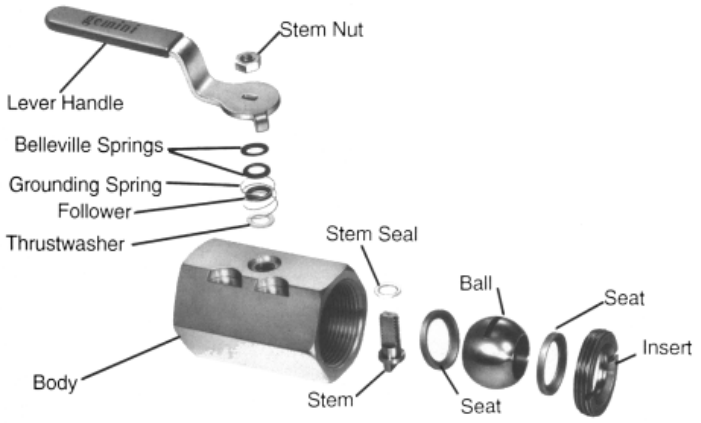
Assembly Torque Specifications			
76 Series	Foot - Pound Values For Inserts		
Size	Brass	Carbon	Stainless
1/2	18	28	40
3/4	30	40	80
1	50	70	120
1-1/4	60	120	150
1-1/2	100	150	225
2	180	250	295

7. Test valve for leak tightness in upstream-to-downstream direction. If leaks appear through valve, retighten the insert. if valve leaks through stem, increase torque on stem nut. Retest valve.

Suggested Tool Design



Tool Dimensions - Inches				
76 Series	D1	D2	L	P
1/2	.62	.355	1.00	5/32
3/4	.87	.485	1.00	5/32
1	1.12	.610	1.00	5/32
1-1/4	1.42	.790	1.12	3/16
1-1/2	1.66	.960	1.12	3/16
2	2.12	1.240	1.25	3/16



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