October 2015

Type N551/N851 Packing Removal/Replacement

WARNING

Only qualified service person should attempt to repair these valves. The skill required is similar to the complexity involved in pump repair.

Before starting any type of repair, close off the upstream valves and remove all gas pressure from both the outlet and inlet sides of the Type N551 emergency shutoff valve (ESV).

Before Removing Packing

Verify that the Emergency Shutoff Valve is Type N551, and not the previous version Type N550, by confirming that it is marked with "1" as shown in Figure 2 below. Please refer to D450042T012 for Type N550/N850 packing removal/replacement Instruction Manual.

If the Type N551(1)'s operating handle closes slowly or binds in a "no flow" condition, it could be from binding in the packing gland area or from external binding, such as a bent operating handle catching on the latch block, etc. Check for some type of external binding first.

If the binding appears to be internal, it could be from uneven or over-tightened gland bolts (key 33). Try loosening these two bolts 1/2 turn each and tap the shaft (key 15) lightly side to side to align the gland and follower bearing. Snug the bolts down evenly, only tight enough to prevent leakage. If this does not free the handle, the packing must be removed and be either cleaned or replaced.

Removal of Packing

Refer to Figure 25.

Note

If there is leakage around the shaft (key 15), the packing should be replaced.

1. Reference to Type N551 also refers to Type N851.

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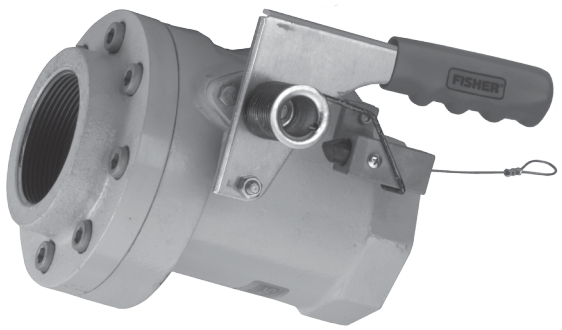

Figure 1. *Type N551 in a Closed Position.*

Table 1. *Replacement Parts to Order*

PART NUMBER	DESCRIPTION	KEY
RCN551T0012	2 washers	29
	Packing stack*	30
	O-ring	65
T12851T0012	Spring	28
T12841T0012	Follower	31

*Packing stack includes a black graphite female adaptor, a white Tetrafluoroethylene (TFE) packing ring and a white TFE male adaptor.

Refer to Table 1 for all three part numbers that must be ordered. Use Magnalube-G grease (part number T13049T0012) 1/2 oz. tube to apply lubricant to sealants.

CAUTION

Throughout the entire removal and replacement procedure, be sure that the shaft (key 15) is not pulled out of the internal lever holding the poppet assembly. If the shaft is pulled out, the Type N551 will have to be removed from the line in order to properly reassemble it. Holding the shaft in place permits the valve to be left in-line if all line pressure is removed.

D450355T012

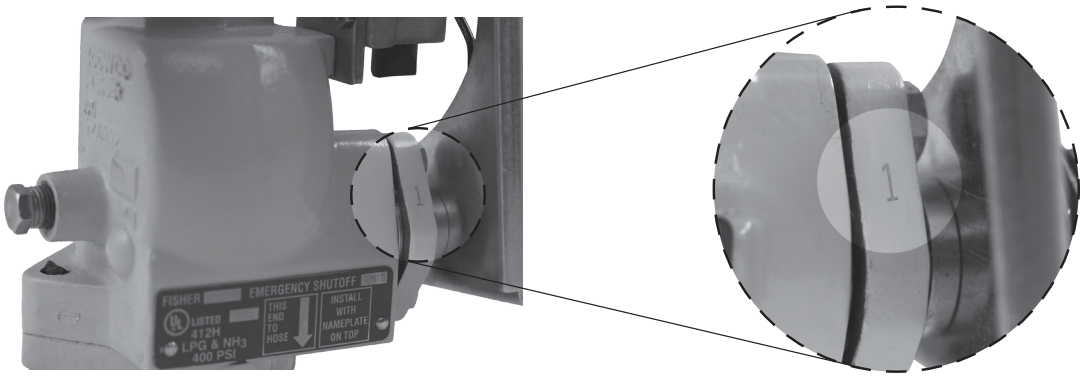

Figure 2. *Type N551 marked with "1"*

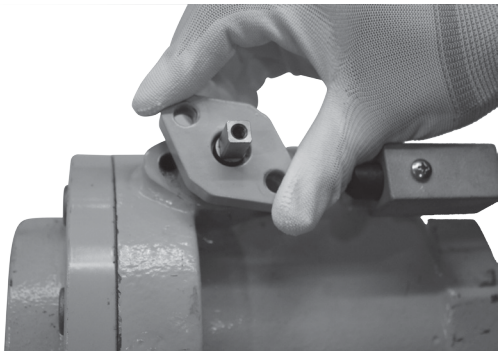

Figure 3. *Turn gland retainer (step 3)*

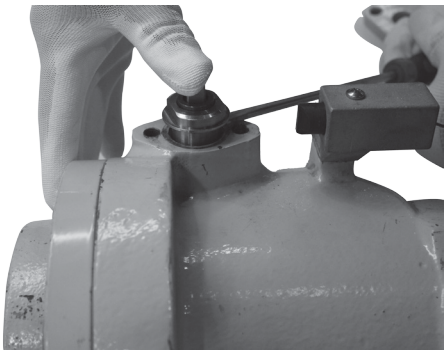

Figure 4. *Pry out gland (step 5)*

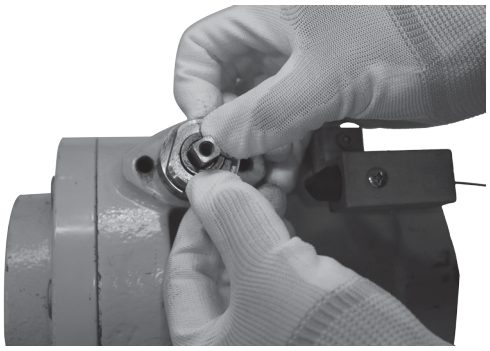

Figure 5. *Remove gland (step 6)*

Figure 6. *Remove O-ring (step 7)*

1. Remove the operating handle (key 18), fuse link assembly (key 22) and retainer (key 24) by unscrewing the bolt (key 23).
2. Take out the two gland bolts (key 33).
3. Turn the gland retainer (key 32) 1/2 turn counterclockwise, refer to Figure 3.
4. Remove the gland retainer from the gland (key 27).
5. Holding the valve's shaft firmly in place, pry out the gland with a screwdriver, Figure 4.
6. Still holding the shaft in place, work the gland over the end of shaft to remove the gland, Figure 5.
7. The O-ring (key 65) is on the gland groove. Remove O-ring as shown in Figure 6. The O-ring should be discarded and a new one used when reassembling.
8. Carefully remove the packing stack (key 30) from the rear of the gland. Use a screwdriver, Figure 7, to push between the coils of the spring (key 28) to avoid cutting the packing or scratching the gland.

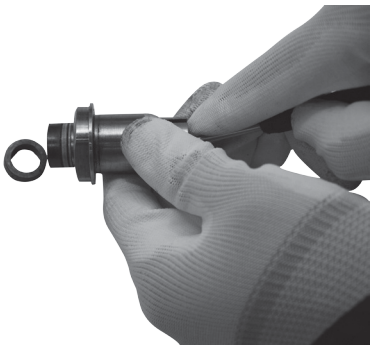

Figure 7. *Remove packing carefully (step 8)*

9. The part shown in Figure 8 will be removed from the gland: a follower bearing (key 31), a packing stack (key 30 that includes a graphite female adaptor, a TFE packing ring and a TFE male adaptor), 2 washers (key 29) and a packing spring (key 28).
10. Clean the packing (if it is to be reused), the gland and the shaft of dirt, grease and paint.

CAUTION

Paint on the shaft may damage the packing.

Reassembly of Packing

Refer to Figure 26.

Note

Figure 9 shows packing spring (key 28), 2 washers (key 29), a packing stack (key 30 that includes a graphite female adaptor, a TFE packing ring and a TFE male adaptor) and a follower bearing (key 31). O-ring (key 65) along with parts identified in Figure 9 are to be replaced.

1. Lubricate a new O-ring (key 65) with Magnalube®-G grease and install it on the gland (key 27) root, Figure 10. Note the 2 grooves on the back of the gland, Figure 11. These 2 grooves must engage the end of the closing spring (key 25) when the gland is installed in the body.
2. Insert the gland into the body and slowly turn the gland while pushing it into place. When the closing spring snaps in one of the gland's groove, the gland fits in the body as deeply as it had originally.
3. Install the packing spring and the two washers into the gland, Figure 12.

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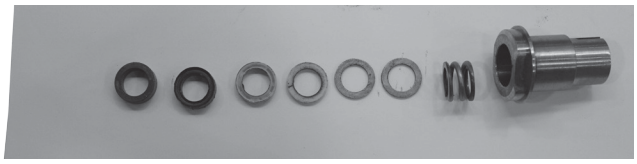

Figure 8. *Remove packing carefully (step 8)*

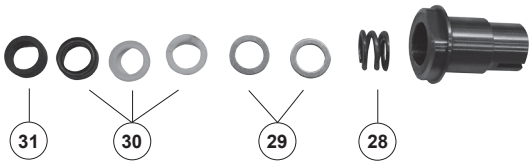

Figure 9. *Replacement parts for gland*

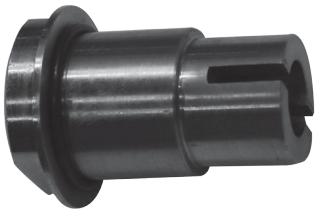

Figure 10. *Install O-ring on gland root (step 1)*

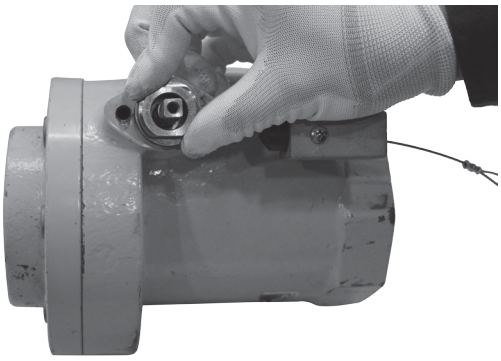

Figure 11. *Grooves at the back of gland (step 1)*

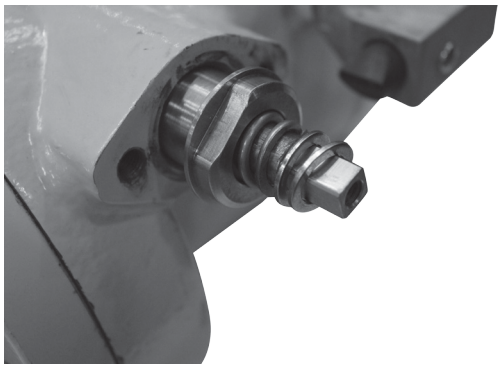

Figure 12. *Spring and two washers (step 3)*

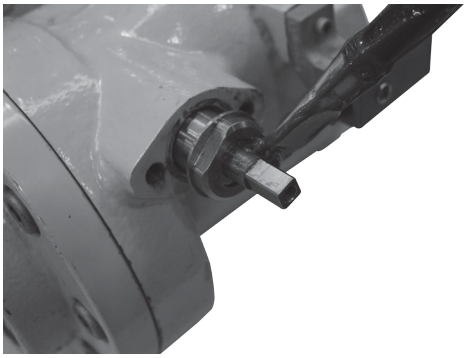

Figure 13. *Lubricate parts (step 4)*

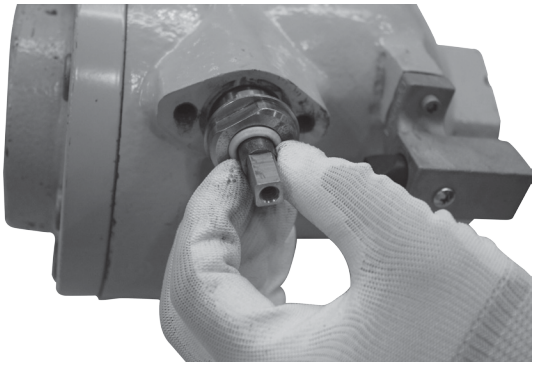

Figure 14. *Install adaptor (step 5)*

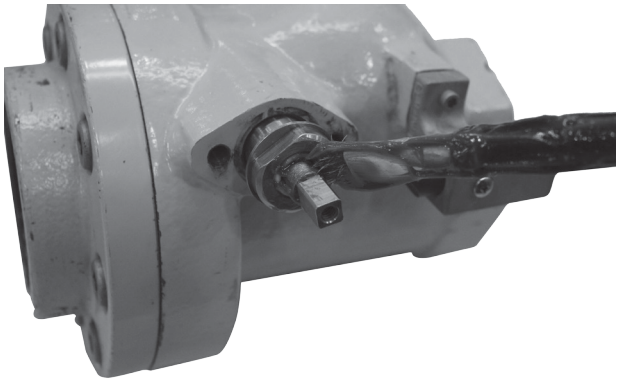

Figure 15. *Lubricate (step 5)*

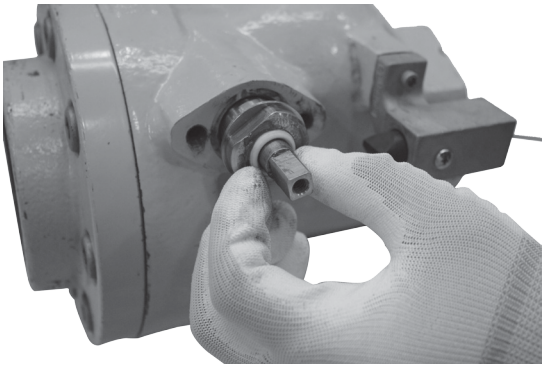

Figure 16. *Install packing ring (step 6)*

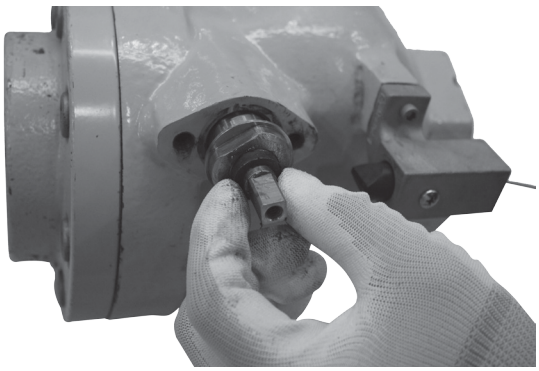

Figure 17. *Install graphite adaptor (step 7)*

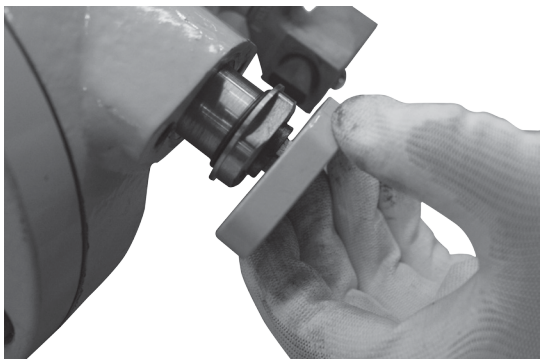

Figure 18. *Install follower bearing (step 8)*

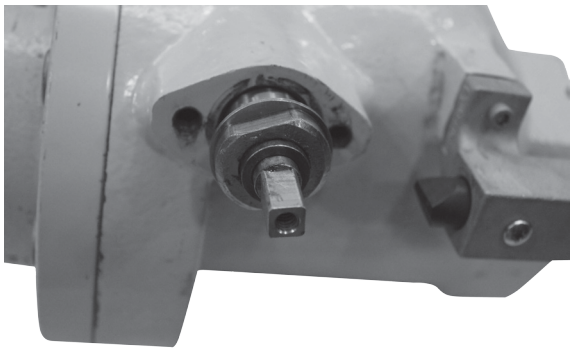

Figure 19. *Follower bearing (step 8)*

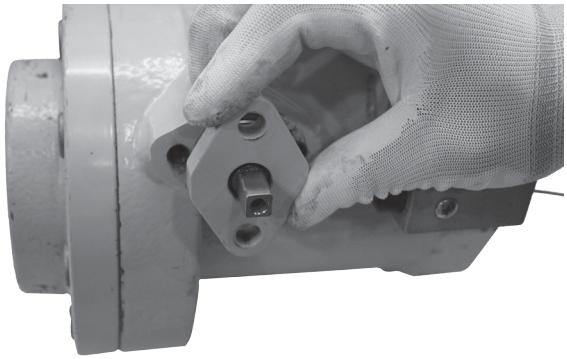

Figure 20. *Turn retainer (step 9)*

4. Lubricate the shaft, gland, packing and follower bearing with a liberal amount of Magnalube®-G grease, Figure 13.
5. Replace the male TFE packing adaptor with the flat side in, Figure 14, working it over the shaft and into the gland. Be careful not to damage this adaptor. Apply a liberal amount of Magnalube®-G grease on the face of this adaptor, Figure 15, that it will be trapped under the next ring.
6. Install one TFE packing ring with the female side in, Figure 16, using the same procedure as in step 5. Again apply a liberal layer of Magnalube®-G grease.
7. Install the graphite adaptor flat side out, Figure 17.
8. Install the follower bearing and press it in place with the gland retainer, Figure 18. The bearing will extend about 1/8-in. / 3.2 mm from the gland, Figure 19.
9. Install the gland retainer over the gland. Turn the retainer about 1/4 turn clockwise, Figure 20, then let the spring turn the gland back until it stops.

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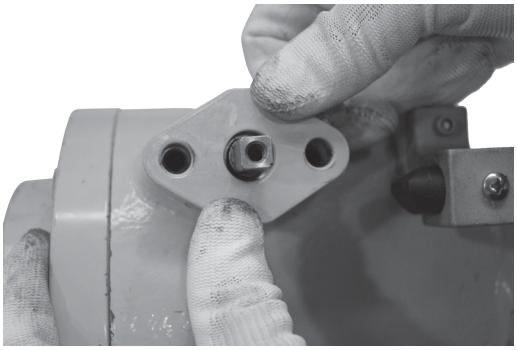


Figure 21. *Line up holes (step 10)*

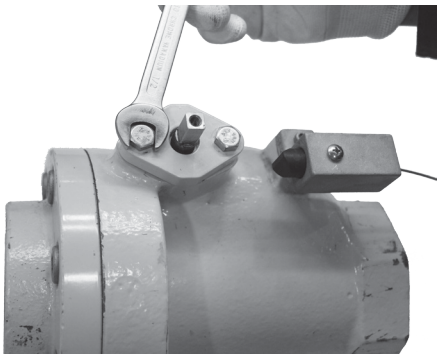


Figure 22. *Wind retainer, install bolts (step 11)*

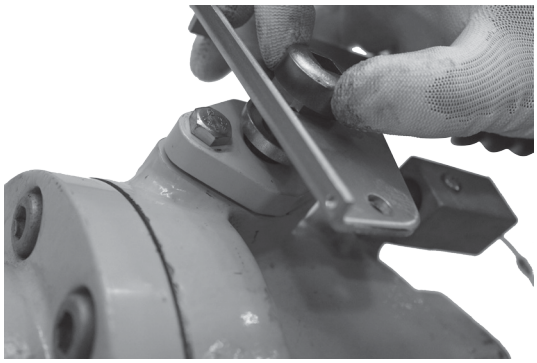


Figure 23. *Install handle (step 12)*

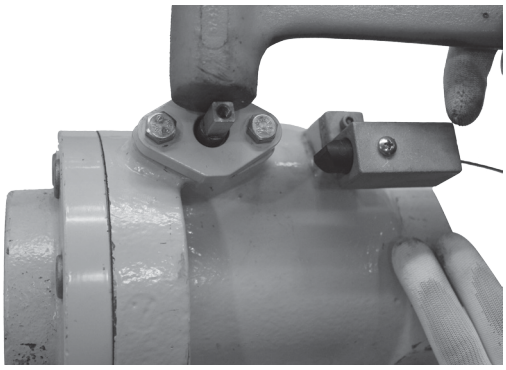


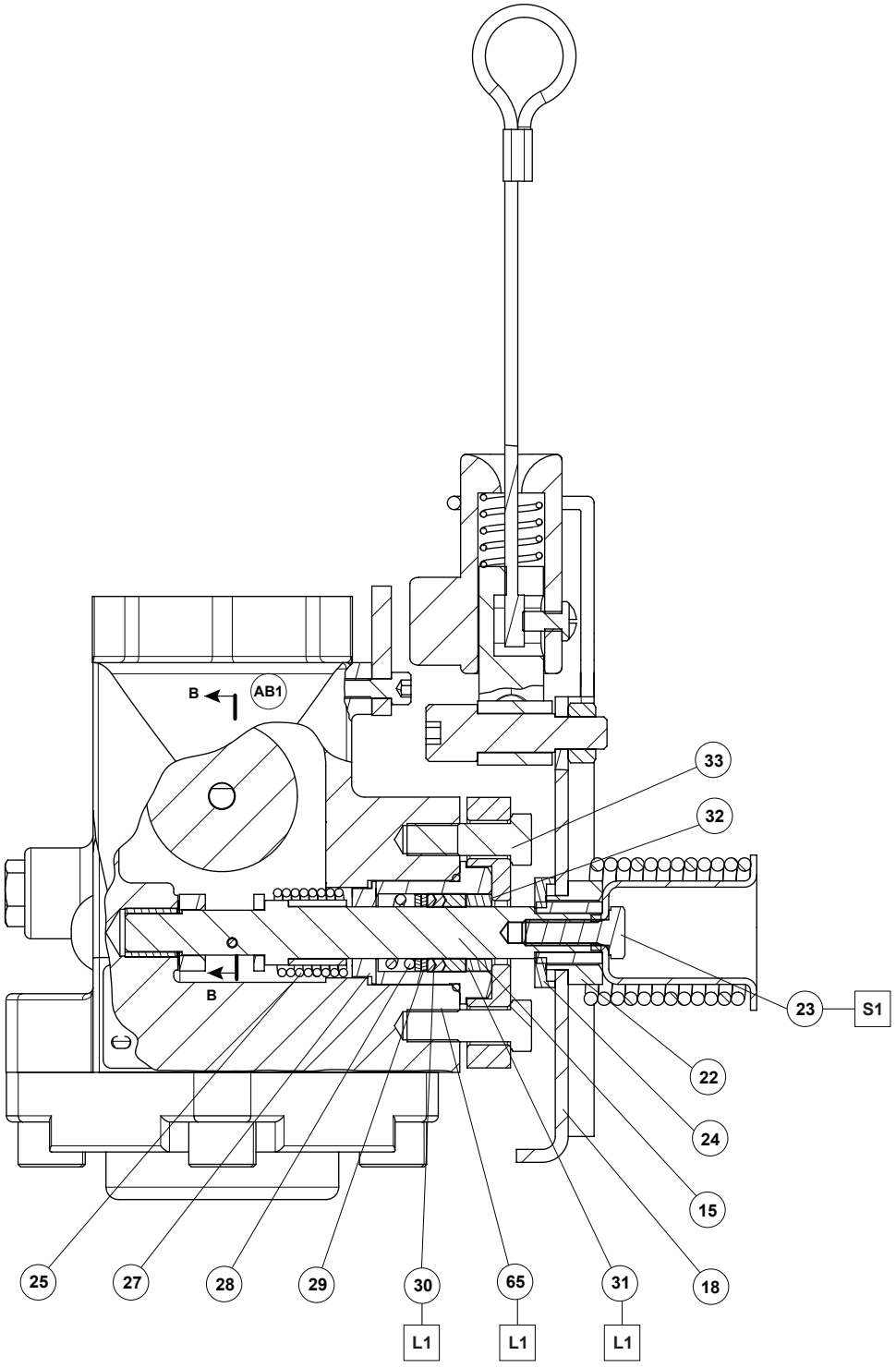
Figure 24. *Align parts (step 13)*

10. Remove the retainer and fit it back on the gland so that the bolt holes line up as closely as possible with bolt holes in the body, Figure 21.
11. Wind the gland retainer 1/2 turn clockwise and install the bolts (key 33), Figure 22.

Note

Winding the retainer tightens the closing spring. If the spring is wound more than one-half turn, it may bind and pull the end out of the gland when the valve is opened. If not wound enough, the valve may be sluggish on closing.

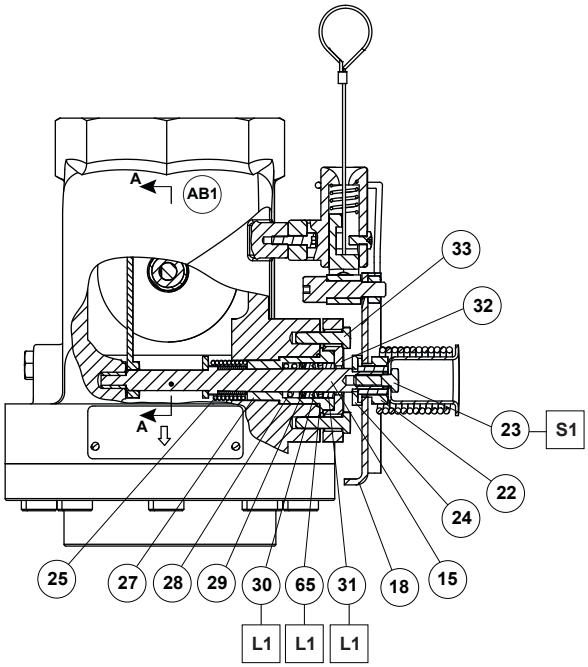
12. Install the handle assembly (key numbers 18, 22, 23 and 24), Figure 23 and carefully open the valve. If there is binding before the handle goes fully open, the closing spring has been wound too tightly. Repeat steps 9 to 11 to get the proper spring winding before proceeding.
13. If the handle moves freely to the open position, tap the shaft lightly side to side, Figure 24, to align the follower bearing. The valve should now be ready for service.
14. Carefully repressure the line and check for leaks.



☐ **APPLY LUBRICANT OR SEALANT(1)**
L1 = POLYTETRAFLUOROETHYLENE (PTFE) GREASE LUBRICANT
S1 = THREADLOCK SEALANT

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 25. *Type N551 Replacement Packing Assembly for 1-1/4 to 2 NPT Bodies*



☐ **APPLY LUBRICANT OR SEALANT(1)**
L1 = PTFE GREASE LUBRICANT (MAGNALUBE®-G, PART NUMBER T13049T0012)
S1 = THREADLOCK SEALANT

1. Lubricant and sealant must be selected such that they meet the temperature requirements.

Figure 26. *Type N551 Replacement Packing Assembly for 3 NPT Body*

Parts List

Key	Description
15	Shaft
18	Handle Assembly
22	Fuse Link assembly
23	Bolt
24	Retainer
25	Closing Spring
27	Gland
28	Packing Spring
29	Washer
30	Packing Stack
31	Follower Bearing
32	Gland Retainer
33	Bolt (2 required)
65	O-ring

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