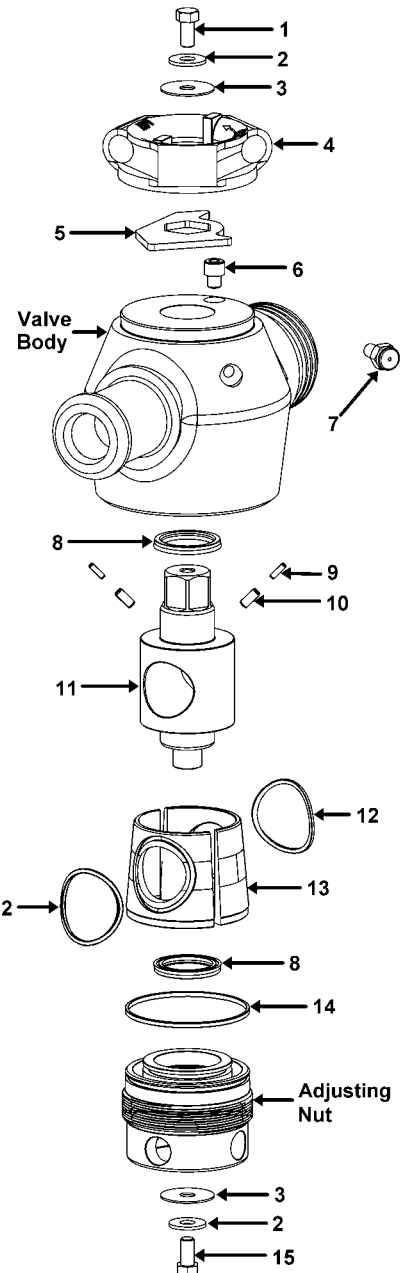


Repair Guide - LT Plug Valve



Assembly

- Secure the valve body in a vise or other fixed position with the valve pocket facing up.
- Clean and visually inspect all new and used parts. Make sure all dirt, rust and old grease is removed prior to assembly.
- Lubricate the plug seal glands of the valve/adjusting nut with grease and install the plug seals (8) with the metal backup ring adjacent to the seal glands and facing away from the valve cavity.
- Install the o-ring (14) onto the adjusting nut.
- Apply a thin film of plug valve grease onto the primary sealing surface of the inserts (13) and install onto the adjusting nut. **Split inserts are installed after the plug is inserted into the adjusting nut.*
- Apply a thin film of plug valve grease onto the large diameter of the plug (11) and carefully insert the lower end of the plug, opposite the hex/keyway, down through the inserts (13) until it seats into the adjusting nut. **When using split inserts, the plug is seated into the adjusting nut first. The inserts are then evenly spaced around the plug, hooking onto the adjusting nut.*
- Install the insert o-rings (12) by pressing them into the grooves of the inserts (13) with plug valve grease.
- Tilt the subassembly and install the bottom capscrew (15) and washers (2)(3) through the bottom of the adjusting nut and into the plug (11). **When using a GreaseSeal® plug, the capscrew is replaced by a SafeTap® grease fitting and a 3/4" flat washer.*
- Apply anti-seize compound to the adjusting nut threads and o-ring area and lubricate the valve pocket below the threads with all-purpose grease.
- Install the plug (11), inserts (13), and adjusting nut assembly into the valve body. Make sure that the roll pins (9)(10) in the body are aligned with the slots of the inserts as you screw the subassembly into the adjusting nut.
- Screw in the adjusting nut until proper alignment is obtained between the valve bore and the insert and plug. Do not tighten beyond proper alignment. If sight through the bore is not possible, then screw in the adjusting nut until no more than one half of a thread or no threads are visible.
- Install the SafeTap® grease fitting (7) into the valve body plug using 50-60 ft-lbs of torque. *Teflon tape should not be used with SafeTap grease fittings since they do not seal on the threads. See back page for more details on the SafeTap® grease fitting.*
- Install the stop bolt (6) and stop collar (5) if required.
- Install the handle (4), top capscrew (1), and washers (2)(3) onto the top of the valve. *If the valve has an actuator or gear operator, bolt it back on the valve body and verify full 90° rotation. Adjust limit stops as necessary.*
- Remove excess grease from the valve bore and inspect plug alignment. Adjust as necessary with adjusting nut.
- Grease the valve in the open position to approximately 3000psi, cycle once, and then grease one more time. GreaseSeal® plugs should be greased in the open position to pack the valve cavity but may also be greased in the closed position prior to testing or while in service. **See back page for more details on GreaseSeal® plugs.**



LT Valve Parts List

STANDARD SERVICE

NO.	DESCRIPTION	QTY	1"	1.3"	1.75"	2"	2.5"	3"	4"	5"
1	TOP CAPSCREW	1	HC0004	N/A	HC0009	HC0009	HC0009	HC0009	N/A	N/A
2	SMALL FLAT WASHER	2	HC0002	N/A	HC0006	HC0006	HC0006	HC0006	HC0006	N/A
3	LARGE FLAT WASHER	2	HC0027	N/A	HC0007	HC0007	HC0007	HC0007	HC0007	HC0109
4	HANDLE ADAPTER	1	VC0063	N/A	VC0062	VC0062	VC0062	VC0062	N/A	N/A
5	STOP COLLAR	1	N/A	N/A	VC0061	VC0061	VC0061	VC0061	N/A	N/A
6	STOP BOLT	1	HC0005	N/A	HC0008	HC0008	HC0008	HC0008	N/A	N/A
7	GREASE FITTING (SafeTap)	1	HC0226	N/A	HC0226	HC0226	HC0226	HC0226	HC0226	HC0226
8	PLUG SEAL	2	VC0016	N/A	VC0060	VC0060	VC0060	VC0060	VC0313	VC0313
9	BACKUP ROLL PIN	2	HC0011	N/A	HC0011	HC0011	HC0011	HC0011	HC0011	HC0011
10	ROLL PIN	2	HC0003	N/A	HC0003	HC0003	HC0003	HC0003	HC0003	HC0003
11	PLUG	1	VC0037	N/A	VC0051	VC0024	VC0021	VC0056	VC0310	N/A
11	PLUG (GreaseSeal)**	1	VC0542	N/A	VC0545	VC0458	VC0547	VC0457	VC0474	VC0488
12	O-RING - INSERT	2	OC0006	N/A	OC0010	OC0011	OC0021	OC0001	OC0048	OC0083
13	INSERT SET (SPLIT)	1	VC0036	N/A	VC0069S	VC0027S	VC0019S	VC0068S	VC0311S	N/A
13	INSERT SET (UNIsert)*	1	N/A	N/A	VC0069	VC0027	VC0019	VC0068	VC0311	VC0469
14	O-RING - ADJUSTING NUT	1	OC0005	N/A	OC0009	OC0012	OC0022	OC0003	OC0047	OC0084
15	BOTTOM CAPSCREW	1	HC0004	N/A	HC0009	HC0009	HC0009	HC0009	N/A	N/A
	SEAL KIT	1	VA0065	N/A	VA0069	VA0067	VA0070	VA0066	VA0347	VA0562
	REPAIR KIT (SPLIT INSERTS)	1	VA0073	N/A	VA0077S	VA0078S	VA0076S	VA0072S	VA0405S	N/A
	REPAIR KIT (UNIsert)*	1	N/A	N/A	VA0077	VA0078	VA0076	VA0072	VA0405	N/A
	REPAIR KIT (UNIsert/GreaseSeal)**	1	N/A	N/A	VA0629	VA0101	VA0630	VA0100	VA0572	VA0596

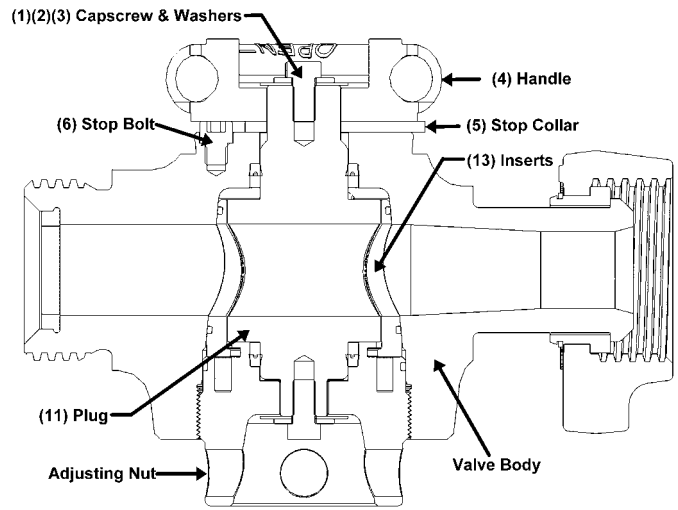
H2S (SOUR) SERVICE

NO.	DESCRIPTION	QTY	1"	1.3"	1.75"	2"	2.5"	3"	4"	5"
1	TOP CAPSCREW	1	HC0004	HC0004	HC0009	HC0009	HC0009	HC0009	N/A	N/A
2	SMALL FLAT WASHER	2	HC0002	HC0002	HC0006	HC0006	HC0006	HC0006	HC0006	N/A
3	LARGE FLAT WASHER	2	HC0027	HC0027	HC0007	HC0007	HC0007	HC0007	HC0007	HC0109
4	HANDLE ADAPTER	1	VC0063	VC0063	VC0062	VC0062	VC0062	VC0062	N/A	N/A
5	STOP COLLAR	1	N/A	N/A	VC0061	VC0061	VC0061	VC0061	N/A	N/A
6	STOP BOLT	1	HC0005	HC0005	HC0008	HC0008	HC0008	HC0008	N/A	N/A
7	GREASE FITTING (SafeTap)	1	HC0226	HC0226	HC0226	HC0226	HC0226	HC0226	HC0226	HC0226
8	PLUG SEAL	2	VC0112	VC0112	VC0005	VC0005	VC0005	VC0005	VC0391	VC0391
9	BACKUP ROLL PIN	2	HC0011	HC0011	HC0011	HC0011	HC0011	HC0011	HC0011	HC0011
10	ROLL PIN	2	HC0003	HC0003	HC0003	HC0003	HC0003	HC0003	HC0003	HC0003
11	PLUG	1	VC0030	VC0001	VC0089	VC0050	VC0043	VC0070	VC0390	N/A
11	PLUG (GreaseSeal)**	1	VC0543	VC0544	VC0546	VC0536	VC0537	VC0538	VC0539	VC0535
12	O-RING - INSERT	2	OC0013	OC0014	OC0015	OC0016	OC0025	OC0002	OC0055	OC0103
13	INSERT SET (SPLIT)	1	VC0048	VC0004	VC0091S	VC0049S	VC0035S	VC0041S	VC0389S	N/A
13	INSERT SET (UNIsert)*	1	N/A	N/A	VC0091	VC0049	VC0035S	VC0041	VC0389	VC0534
14	O-RING - ADJUSTING NUT	1	OC0017	OC0018	OC0019	OC0020	OC0026	OC0004	OC0054	OC0102
15	BOTTOM CAPSCREW	1	HC0004	HC0020	HC0009	HC0009	HC0009	HC0009	N/A	N/A
	SEAL KIT	1	VA0079	VA0081	VA0083	VA0084	VA0082	VA0088	VA0404	VA0624
	REPAIR KIT (SPLIT INSERTS)	1	VA0150	VA0151	VA0152S	VA0102S	VA0153S	VA0202S	VA0623S	N/A
	REPAIR KIT (UNIsert)*	1	N/A	N/A	VA0152	VA0102	VA0153	VA0202	VA0623	N/A
	REPAIR KIT (UNIsert/GreaseSeal)**	1	N/A	N/A	VA0631	VA0632	VA0633	VA0634	VA0635	VA0625

*The MSI UNIsert is recommended for high pressure dry gas environments.
**GreaseSeal Plugs must be paired with MSI SafeTap grease fittings

Disassembly

1. Remove the top capscrew (1), washers (2)(3), handle (4), and stop collar (5).
2. Secure the valve assembly with the adjusting nut facing up.
3. Using a bar, unscrew the adjusting nut counter-clockwise until it disengages from the valve body. Leaving the bottom cap-screw (15) in place will allow the entire internal assembly to be removed from the valve at once.
4. Remove the bottom capscrew (15) and washers (2)(3).
5. Remove the plug (11) and inserts (13) from the adjusting nut.
6. Remove the insert o-rings (12), adjusting nut o-ring (14), and plug seals (8).
7. Remove all grease and debris from all valve components.
8. Remove the grease fitting (7) from the body or plug (11).



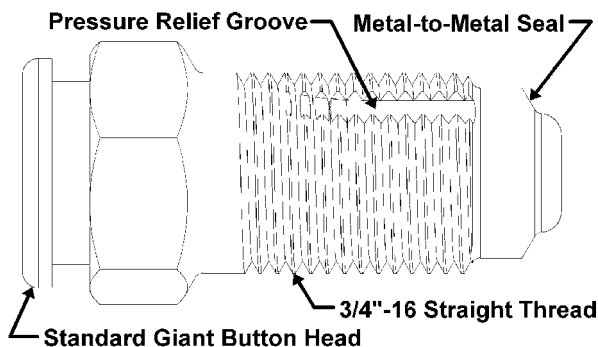
Inspection and Repair

1. After degreasing the parts, visually inspect for wear, corrosion, or any other physical damage.
2. Inspect the primary sealing surface of the plug (11) and inserts (13) for any scratches or dings. Parts with heavy dings or deep scratches in the sealing surfaces should be replaced. For light wear or superficial blemishes, use 600-grit sandpaper along with a solvent to polish.
3. All surfaces which contact the elastomeric seals must be smooth and free of rust and pitting. Use sandpaper to polish. Parts with excessive pitting and rust should be replaced.
4. Lubricate and screw the adjusting nut (without the o-ring) completely into the valve body to check for damaged threads. It should turn easily all the way.
5. Check the roll pins (10) in the valve body by gently sliding a set of inserts (13) into the valve. The inserts should move freely up and down the length of the roll pin slots without interference.
6. Inspect the grease fitting (7) for damaged threads or sealing surface.

SafeTap® Grease Fitting

SafeTap® grease fittings are design to provide maximize safe operation in the field with these key features:

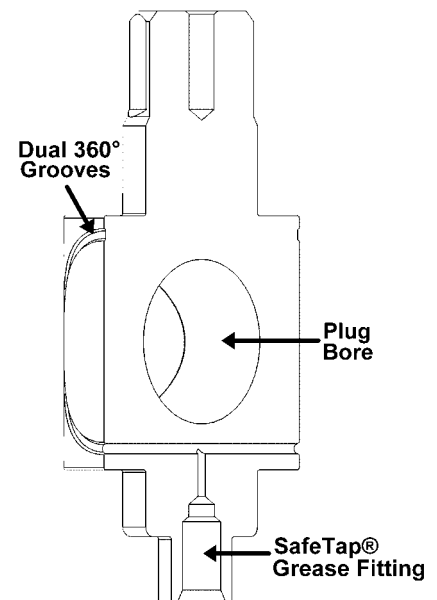
- The unique metal-to-metal seal eliminates wetted threads and pipe taps. Since the threads do not perform a sealing function they do not require Teflon tape or other sealing aids.
- The heavier cross section stands up better to impacts.
- Each fitting has a slot machined through the threads which serves as a pressure relief path in the event of a leak.
- The metal-to-metal seal and the pressure relief slot of the SafeTap® grease fitting also allows a means to safely bleed any residual internal pressure.



GreaSeal® Plug

The patented GreaSeal® plug is designed to provide maximum lubrication in the harshest field conditions. Key features include:

- The only plug that allows greasing in the opened or closed position while in service.
- Dual 360° grease channels
- Forces grease into 360° of the seal area when closed.
- Allows for complete distribution of lubricant immediately prior to opening a valve when exposure to high temperatures and well fluids may have compromised the existing grease.
- Greasing in the closed position can stop or significantly slow leaks in valves with worn or damaged parts.



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