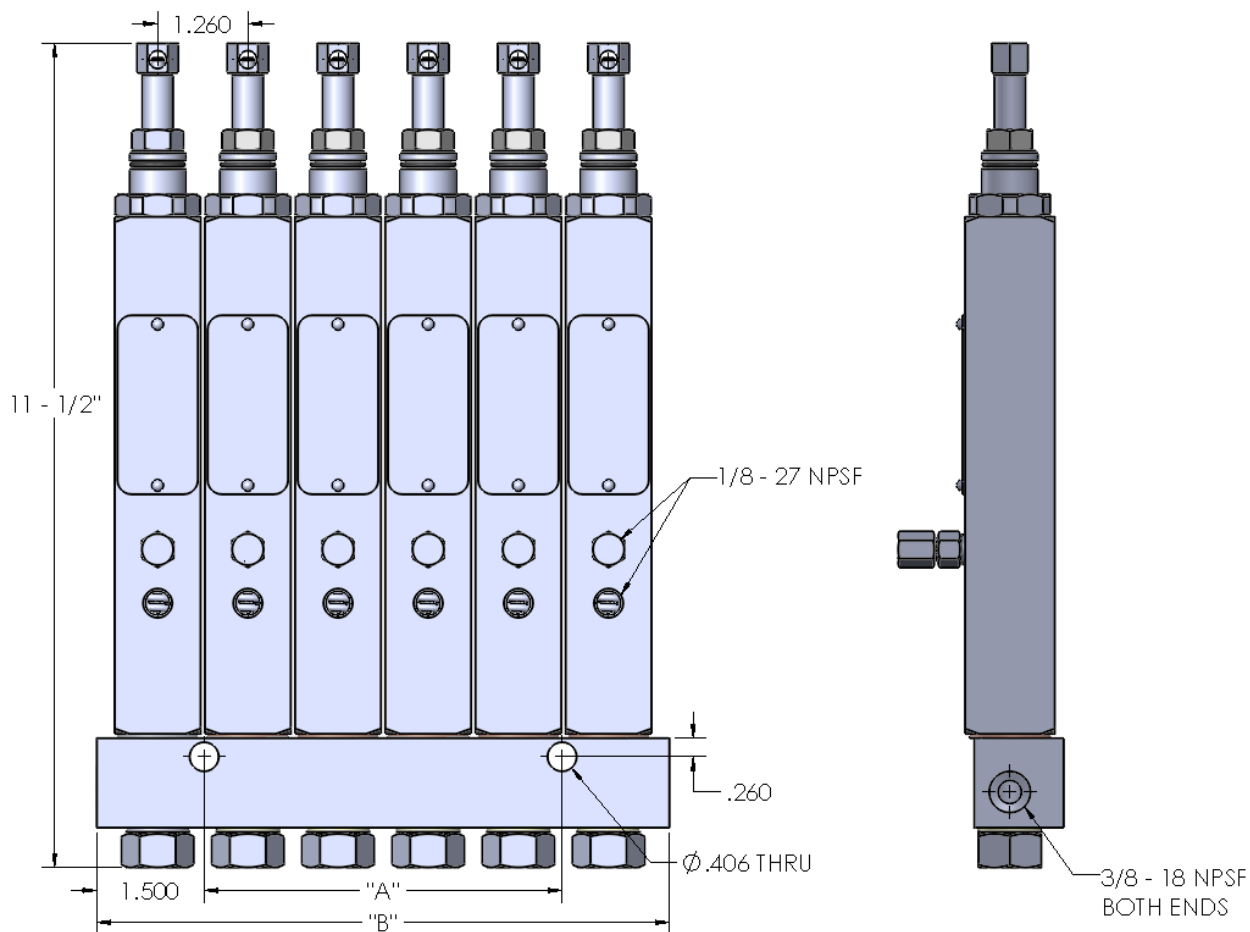


# LSL-1HO SERVICE INSTRUCTIONS

## SAFETY INSTRUCTIONS:

DO NOT EXCEED MAXIMUM WORKING PRESSURE OF INJECTOR SYSTEM. SYSTEMS SHOULD NOT BE IN OPERATION WHILE CONDUCTING ANY ASSEMBLY OR DISASSEMBLY OF COMPONENTS.

### MODELS



INJECTOR ASSEMBLY SPECIFICATIONS		
DESCRIPTION	DIMENSIONS	
	"A"	"B"
ONE POINT INJECTION	SINGLE HOLE	2.500"
TWO POINT INJECTION	SINGLE HOLE	3.000"
THREE POINT INJECTION	1.250"	4.250"
FOUR POINT INJECTION	2.500"	5.500"
FIVE POINT INJECTION	3.750"	6.750"
SIX POINT INJECTION	5.000"	8.000"

## **LSL-1HO SERVICE INSTRUCTIONS**

### **INSTALLATION INSTRUCTIONS:**

1. COMPACT SYSTEM TO MINIMIZE FEED LINE LENGTH
  2. INJECTORS ARE ADJUSTABLE AND SHOULD BE PLACED IN EASY AND SAFE SERVICING AREAS.
  3. SECURELY MOUNT INJECTORS TO FLAT SURFACES
  4. PREFILLING OF INJECTOR MANIFOLD ASSEMBLIES, FEED LINES AND INJECTION POINT LINES WILL ELIMINATE UNWANTED FLUID OR AIR IN SYSTEM.
  5. CONNECT SUPPLY LINES TO MANIFOLDS
  6. PRELIMINARY LUBE CYCLES SHOULD BE CONDUCTED WITH INJECTORS AT MAXIMUM OUTPUT. VISUALLY VERIFYING OUTPUT AND CYCLE INDICATOR PINS CYCLE AT FULL STROKE.
  7. ADJUST OUTPUT PER REQUIRED SPECIFICATIONS OF LUBE POINTS. ( SEE ADJUSTING OUTPUT VOLUME)
  8. CONNECT OUTPUT FEED LINES TO INJECTION POINTS
- 

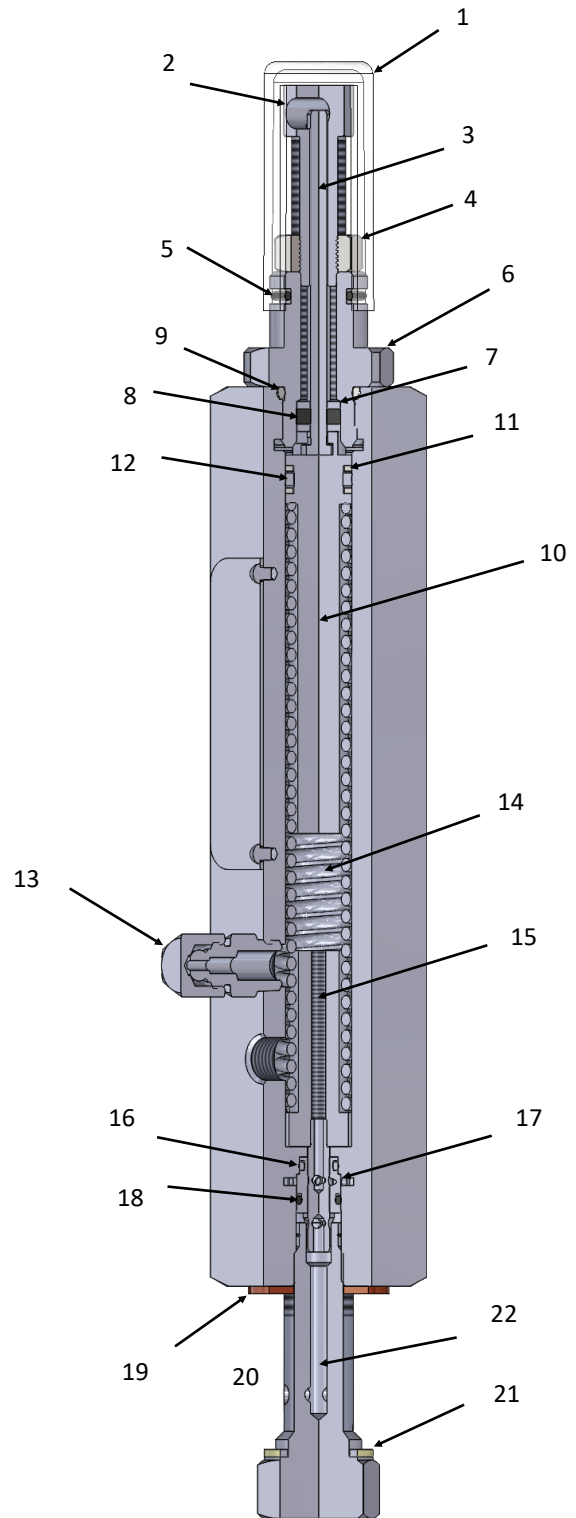
### **WARNING**

TO PREVENT RUPTURING AND LEAKS DUE TO OVER-PRESSURIZING, ONLY USE LINES AND FITTINGS THAT MEET OR EXCEED THREE PRESSURE RATING OF INJECTORS.

LSL-1HO SERVICE INSTRUCTIONS

WITH 1X TECHNOLOGY

ITEM	DESCRIPTION	QTY
1	INDICATOR COVER	1
2	ADJUSTMENT SCREW	1
3	INDICATOR PIN	1
4	LOCK NUT	1
5	INDICATOR COVER ORING	1
6	ADJUSTMENT HOUSING	1
7	WASHER	2
8	SEAL PACKING	1
9	ADJUSTMENT HOUSING ORING	1
10	PISTON BODY	1
11	BACK UP RING	2
12	QUAD RING	1
13	FILL STUD AND CAP ASSEMBLY	1
14	SPRING	1
15	SLIDE INSERT ASSEMBLY	1
16	SLIDE BUSHING ORING	1
17	SLIDE BUSHING	1
18	SLIDE BUSHING ORING	1
19	COPPER WASHER	1
20	MANIFOLD (NOT SHOWN)	1
21	STEEL WASHER	1
22	INLET BOLT	1



## LSL-1HO DISASSEMBLY/ASSEMBLY INSTRUCTIONS

### WITH 1X TECHNOLOGY

#### DISASSEMBLY INSTRUCTIONS

**STEP 1:** Remove piston stop plug from top of injector body. Remove its contents (two washers & 1 gland), piston assembly, spring, and plunger assembly.

**STEP 2:** Remove adapter bolt from manifold and injector body. Remove injector internal, by first turning injector upside down. Push out Plunger assembly of with a long, thin object from inlet side of injector. It should fall out towards adjustment adapter.

#### REASSEMBLY INSTRUCTIONS

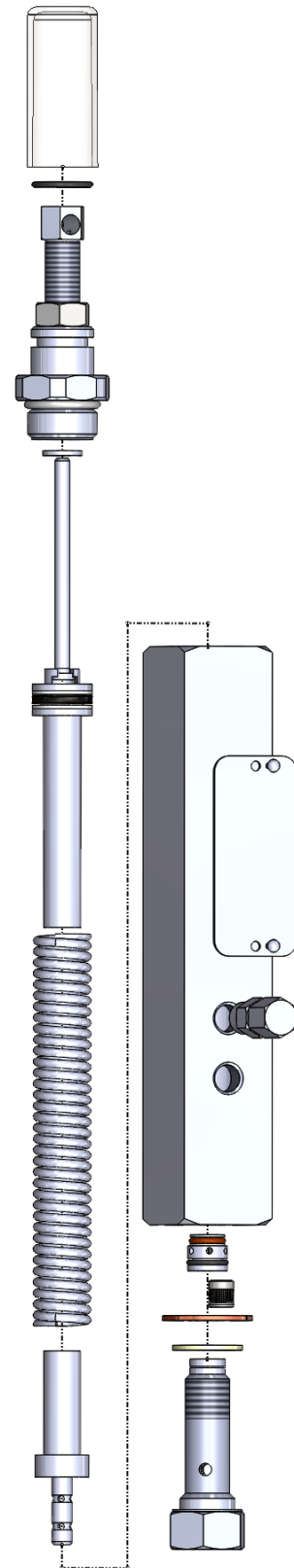
**STEP 1:** Clean all injector components and inspect for wear. Replace parts and lube O-rings as necessary.

**STEP 2:** Install slide bushing (smaller side first) using plenty of o-ring lube from bottom side of injector. Install slide insert assembly and spring into injector body. Install backup rings and quad ring onto piston assembly and guide piston assembly into the spring.

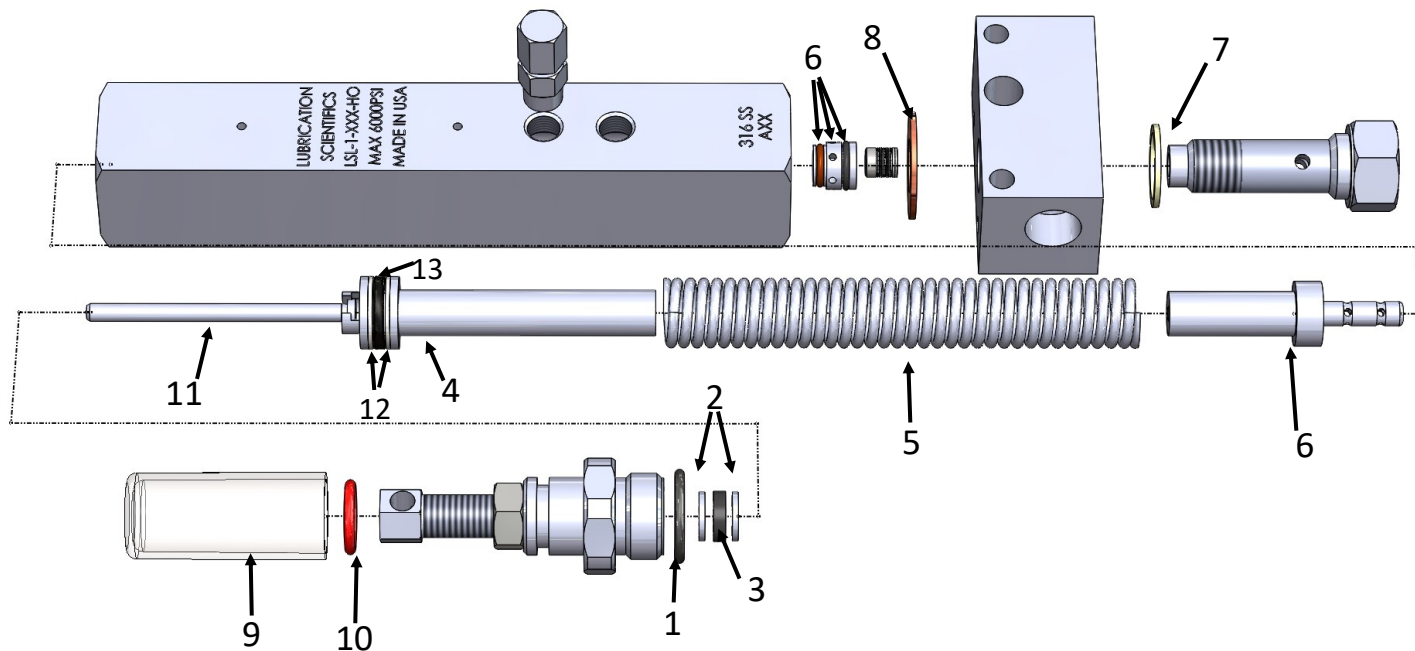
**STEP 3:** Install O-Ring, sealing gland, and two washers to adjustment housing and install to injector body using plenty of o-ring lube to guide the indicator pin smoothly.

**STEP 4:** Install lock nut and adjustment screw.

**STEP 5:** Place carbon steel gasket over adapter bolt and insert into manifold followed by copper gasket and install into injector body as shown.



## LSL-1HO REBUILD KITS—WITH 1X TECHNOLOGY



**WARNING!**

**DO NOT USE 1X TECHNOLOGY (HONED METAL FIT) REBUILD KITS ON LEGACY STYLE INJECTORS**

**DO NOT USE LEGACY STYLE ( SEAL GLANDS) REBUILD KITS ON 1X TECHNOLOGY STYLE INJECTORS**

MASTER REBUILD KIT NO. LSL-1XMRK-HO				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	12661-0051	ADJUSTMENT HOUSING ORING	1	1
2	LSL85497-009	ADJUSTMENT HOUSING WASHER	1	2
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
4	LSL81713-011HOA	PISTON BODY ASSEMBLY	2	1
5	LSL81713-013-HO-P	SPRING	3	1
6	LSL81713-004HOXA	SLIDE INSERT/BUSHING ASSEMBLY	3	1
7	LSL81713-019	BOTTOM STEEL WASHER	4	1
8	LSL81713-018	UPPER COPPER WASHER	4	1
9	LSL81713-021	INDICATOR VINYL COVER	4	1
10	12661-0087	INDICATOR COVER ORING	4	1
11	LDD50-0008	INDICATOR PIN	2	1

REBUILD KIT NO. LSL-1X-SK-HO				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	12661-0051	ADJUSTMENT HOUSING ORING	1	1
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
9	LSL81713-021	INDICATOR VINYL COVER	2	1
10	12661-0087	INDICATOR COVER ORING	2	1
12	LSL81713-113BR	TEFLON BACK UP RING	3	2
13	LSL81713-113Q	PISTON QUAD RING	3	1

# LSL-1HO DISASSEMBLY/ASSEMBLY INSTRUCTIONS

## LEGACY STYLE

### DISASSEMBLY INSTRUCTIONS

**STEP 1:** Remove piston stop plug from top of injector body. Remove its contents (two washers & 1 gland), piston assembly, spring, and plunger assembly.

**STEP 2:** Remove adapter bolt from manifold and injector body. Remove injector internal, by first turning injector upside down. Push out Plunger assembly with a long, thin object from inlet side of injector. It should fall out towards adjustment adapter.

**STEP 3:** Remove sealing glands and inlet disc from bottom side of injector.

### REASSEMBLY INSTRUCTIONS

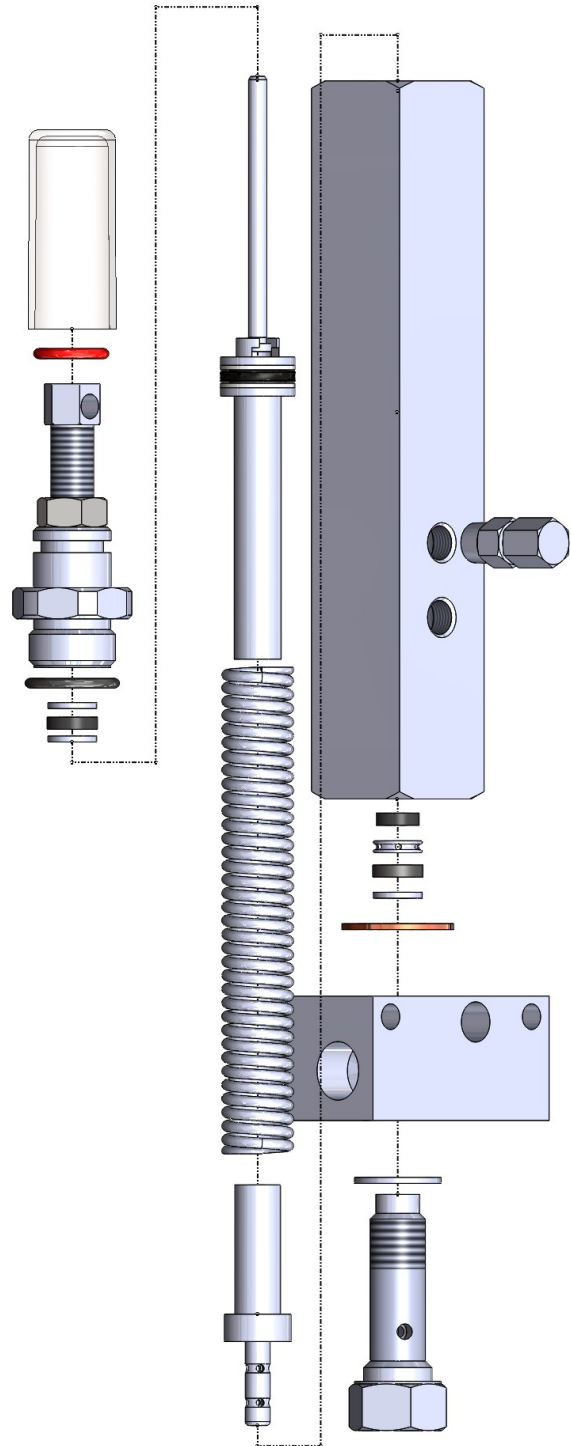
**STEP 1:** Clean all injector components and inspect for wear. Replace parts and lube O-rings as necessary.

**STEP 2:** Install small sealing gland followed by inlet disc then large sealing gland from bottom side of injector. Install slide insert assembly and spring into injector body. Install backup rings and quad ring onto piston assembly and guide piston assembly into the spring.

**STEP 3:** Install O-Ring, sealing gland, and two washers to adjustment housing and install to injector body using plenty of o-ring lube to guide the indicator pin smoothly.

**STEP 4:** Install lock nut and adjustment screw.

**STEP 5:** Place carbon steel gasket over adapter bolt and insert into manifold followed by copper gasket and install into injector body as shown.

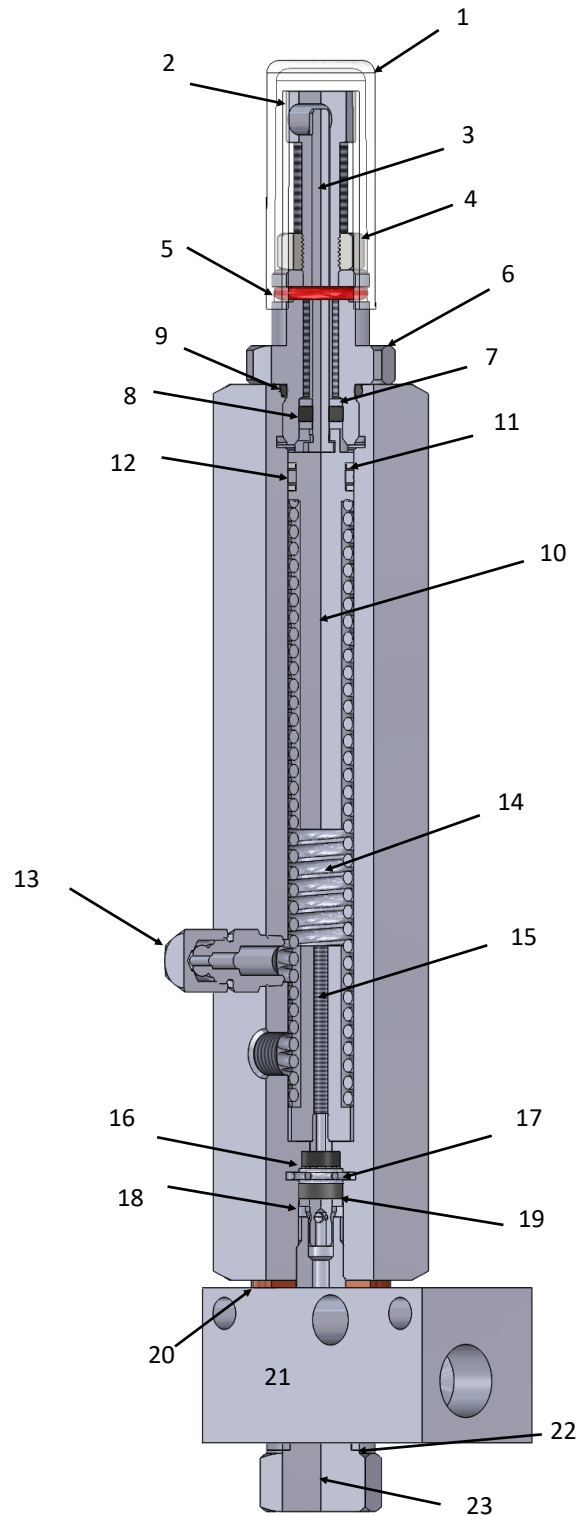


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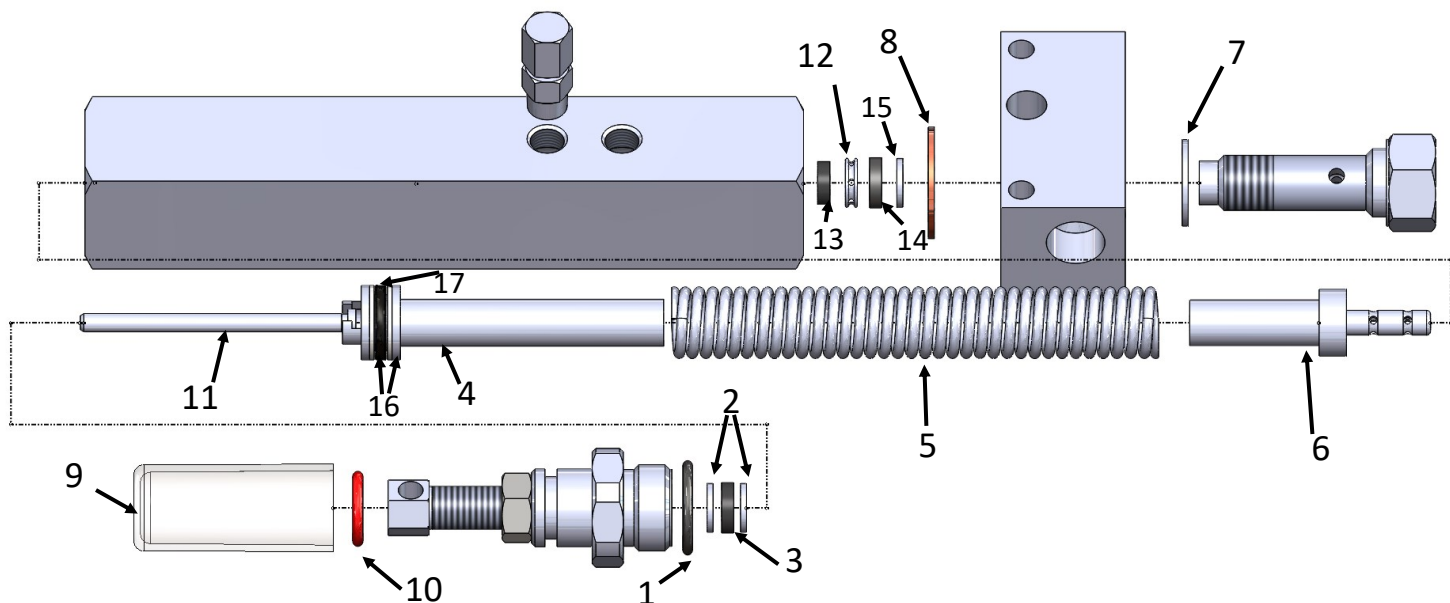
## LSL-1HO SERVICE INSTRUCTIONS

### LEGACY STYLE

ITEM	DESCRIPTION	QTY
1	INDICATOR COVER	1
2	ADJUSTMENT SCREW	1
3	INDICATOR PIN	1
4	LOCK NUT	1
5	INDICATOR COVER ORING	1
6	ADJUSTMENT HOUSING	1
7	WASHER	2
8	SEAL PACKING	1
9	ADJUSTMENT HOUSING ORING	1
10	PISTON BODY	1
11	BACK UP RING	2
12	QUAD RING	1
13	FILL STUD AND CAP ASSEMBLY	1
14	SPRING	1
15	SLIDE INSERT ASSEMBLY	1
16	SMALL SEALING GLAND	1
17	INLET DISC	1
18	WASHER	
19	LARGE SEALING GLAND	1
20	COPPER WASHER	1
21	MANIFOLD	1
22	STEEL WASHER	1
23	INLET BOLT	1



**LSL-1HO REBUILD KITS—LEGACY STYLE**



**WARNING!**

**DO NOT USE 1X TECHNOLOGY (HONED METAL FIT) REBUILD KITS ON LEGACY STYLE INJECTORS**

**DO NOT USE LEGACY STYLE ( SEAL GLANDS) REBUILD KITS ON 1X TECHNOLOGY STYLE INJECTORS**

MASTER REBUILD KIT NO. LSL-1MRK-HO				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	12661-0051	ADJUSTMENT HOUSING ORING	1	1
2	LSL85497-009	ADJUSTMENT HOUSING WASHER	1	2
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
4	LSL81713-011HOA	PISTON BODY ASSEMBLY	2	1
5	LSL81713-013HO-P	SPRING	2	1
6	LSL81713-004HOA	SLIDE INSERT	3	1
7	LSL81713-019	BOTTOM STEEL WASHER	4	1
8	LSL81713-018	UPPER COPPER WASHER	4	1
9	LSL81713-021	INDICATOR VINYL COVER	4	1
10	12661-0087	INDICATOR COVER ORING	4	1
11	LDD50-0008	INDICATOR PIN	2	1
12	LSL81713-009	INLET DISC	3	1
13	LSL81713-010	SMALL SEALING GLAND	3	1
14	LSL81713-014	LARGE SEALING GLAND	3	1
15	LSL81713-007	INLET WASHER	3	1

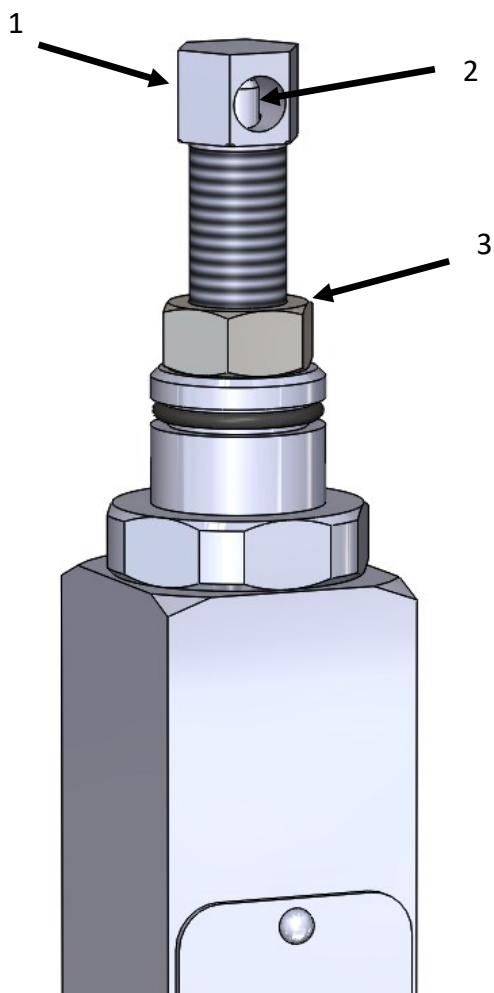
SEAL KIT NO. LSL-1RK-HO				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	12661-0051	ADJUSTMENT HOUSING ORING	1	1
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
9	LSL81713-021	INDICATOR VINYL COVER	1	1
10	12661-0087	INDICATOR COVER ORING	1	1
13	LSL81713-010	SMALL SEALING GLAND	2	1
14	LSL81713-014	LARGE SEALING GLAND	2	1
16	LSL81713-113BR	TEFLON BACK UP RING	3	2
17	LSL81713-113Q	PISTON QUAD RING	3	1



# LSL-1HO SERVICE INSTRUCTIONS

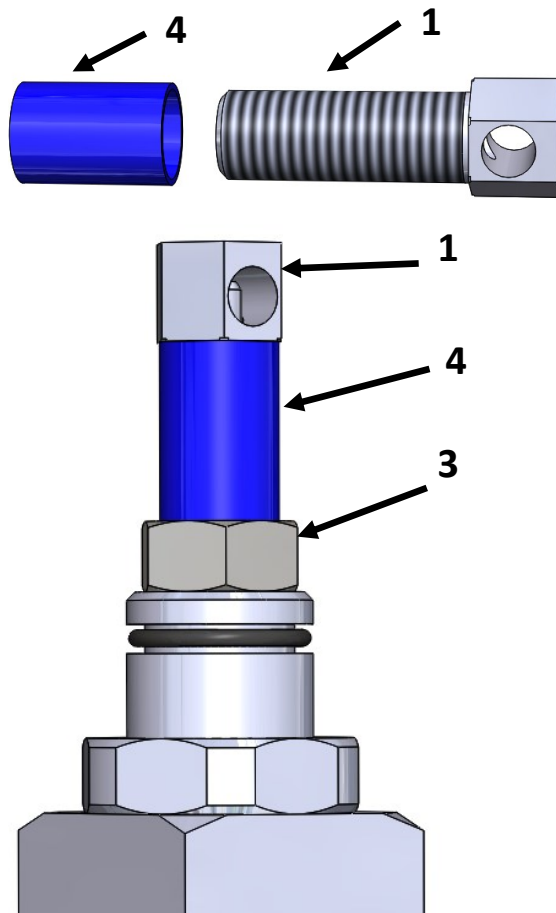
## ADJUSTING OUTPUT VOLUME:

1. MAXIMUM OUTPUT : SET ADJUSTMENT SCREW ( 1) SO IT JUST MAKES CONTACT WITH INDICATOR PIN (2) (FACTORY SETTING)
2. TO REDUCE OUTPUT: LOOSEN LOCK NUT (3), TURN ADJUSTMENT SCREW CLOCKWISE (SEE VOLUME ADJUSTMENT TABLE)







VOLUME ADJUSTMENT TABLE		
DESCRIPTION	ADJUSTMENT TURNS	VOLUME cu. In. / cc
MAX OUTPUT	0	0.31 / 4.92
720° CLOCKWISE TURN	2	0.27 / 4.42
720° CLOCKWISE TURN	4	0.24 / 3.93
720° CLOCKWISE TURN	6	0.21 / 3.44
720° CLOCKWISE TURN	8	0.18 / 2.95
720° CLOCKWISE TURN	10	0.15 / 2.46
720° CLOCKWISE TURN	12	0.12 / 1.97
720° CLOCKWISE TURN	14	0.09 / 1.47
720° CLOCKWISE TURN	16	0.06 / 0.98
MIN OUTPUT	18	0.03 / 0.50

# LSL-1HO SERVICE INSTRUCTIONS



## SPECTRUM SLEEVE INSTALL INSTRUCTIONS:

1. REMOVE ADJUSTMENT SCREW (1) AND LOCK NUT (3) .
2. PLACE DESIRED OUTPUT RATIO SPECTRUM SLEEVE (4) OVER ADJUSTMENT SCREW (1)
3. REINSTALL ADJUSTMENT SCREW (1) WITH SPECTRUM SLEEVE (4) AND LOCK NUT (3) ON INJECTOR BODY AND TIGHTEN SECURELY

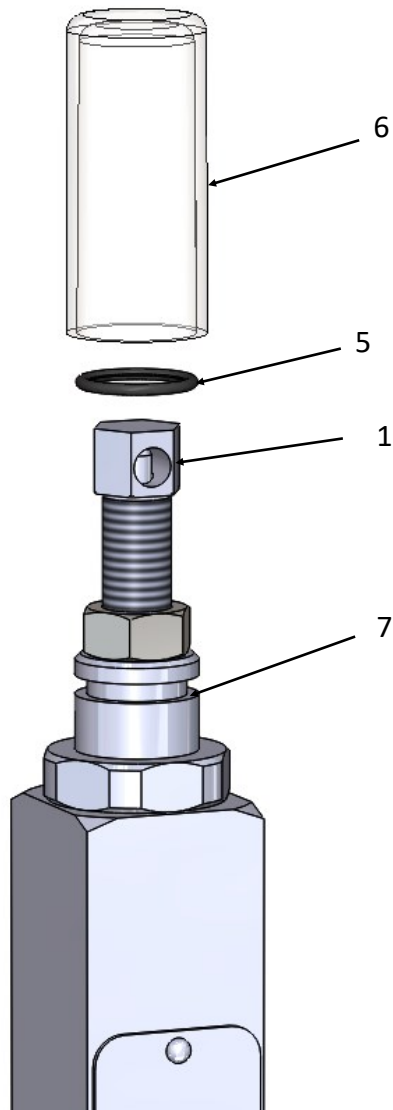
STANDARD PACK: 5 EACH			
MODEL NUMBER (5 PACK)	OUTPUT in3 (cc)	RATIO FROM MAXIMUM OUTPUT	SLEEVE COLOR
LSL-1HO-ADJ025	0.075 (1.22)	25%	
LSL-1HO-ADJ050	0.150 (2.45)	50%	
LSL-1HO-ADJ075	0.225 (3.68)	75%	
LSL-1HO-ADJ100	0.300 (4.91)	100%	

# LSL-1HO SERVICE INSTRUCTIONS

## INDICATOR COVER

### INDICATOR COVER INSTALL INSTRUCTIONS: (KIT PART # LSL-1HO-CAP-VK)

1. INSTALL ORING ( 5 ) ON TO ADJUSTMENT HOUSING GROOVE.
2. SLIDE VINYL INDICATOR COVER (6) OVER ADJUSTMENT SCREW (1) AND HOUSING FAR ENOUGH TO COVER GROOVE (7) AND MAKE CONTACT WITH FLARED SURFACE. (APPLYING SMALL AMOUNTS OF CLEAR ORING LUBE WILL FACILITATE INSTALL)



# LSL-1HO SERVICE INSTRUCTIONS

## CROSSPORTING — PART # LSL-1A-CPK

**STEP 1:** Remove fill stud (A) from one injector.

**STEP 2:** Install fittings (B) as shown in FIG-1 using pipe thread sealer

**STEP 3:** Install tubing (C)

**STEP 4:** Install outlet tubing/hose

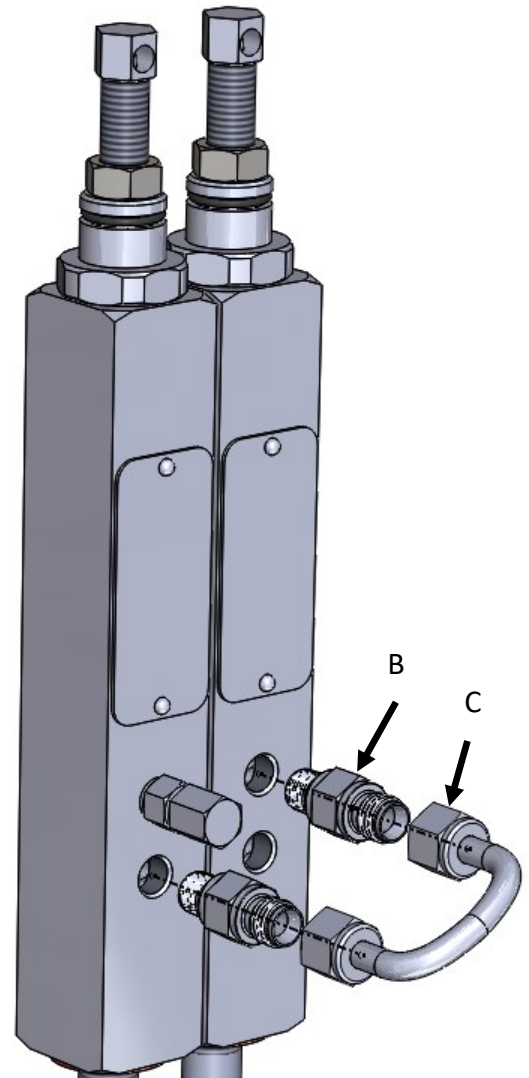
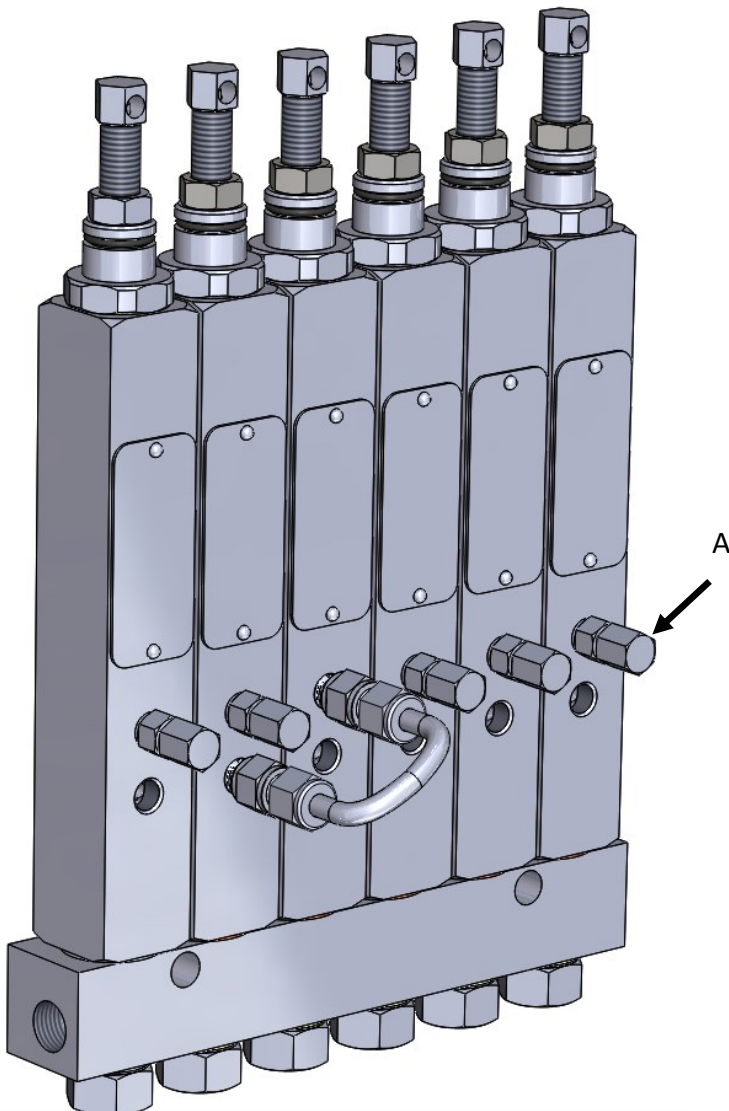


FIG — 1



# LSL-1HO SERVICE INSTRUCTIONS

## MANIFOLD PLUG—PART NUMBER (SEE CHART)

**STEP 1:** Place copper washer (A) and cap (B) on open manifold (C) segment.

**STEP 2:** Place carbon steel washer (D) on inlet bolt (E) and thread into cap (B) through bottom side of manifold.

**STEP 3:** Holding cap (B) stationary torque inlet bolt (E) to 50-55 ft/lbs

MANIFOLD PLUG PART NUMBER		
CARBON STEEL	303 STAINLESS	316 STAINLESS
LSL-1A-PLUG	LSL-1A-PLUGSS3	LSL-1A-PLUGSS6

