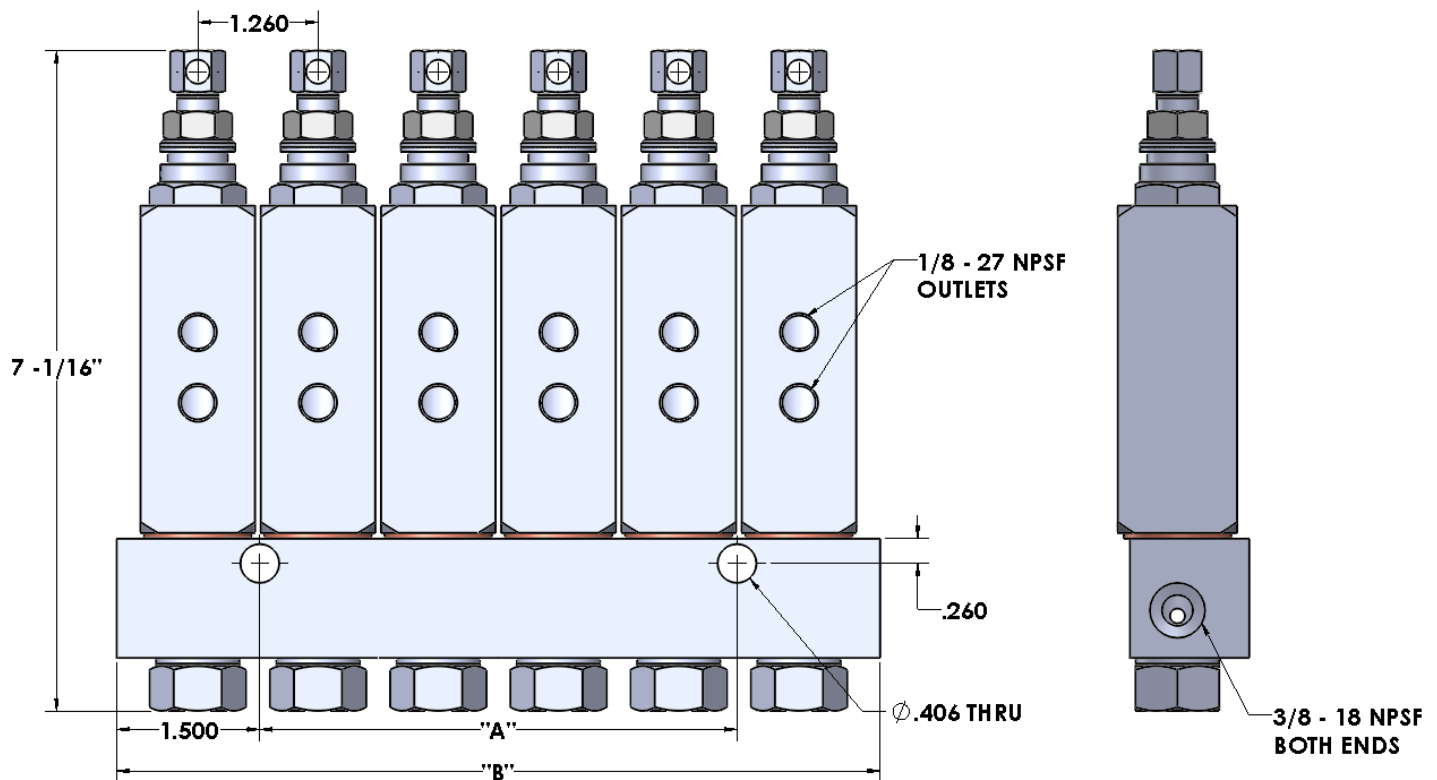


LSL-1A-R5 SERVICE INSTRUCTIONS

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.

LSL-1A-R5 MODELS



LSL-1-R5 INJECTOR ASSEMBLY SPECIFICATIONS

MODEL			DESCRIPTION	DIMENSIONS	
CARBON STEEL	303 SS	316 SS		"A"	"B"
LSL-M1A-000-R5	LSL-M1A-303-R5	LSL-M1A-316-R5	ONE POINT INJECTION	SINGLE HOLE	2.500"
LSL-M2A-000-R5	LSL-M2A-303-R5	LSL-M2A-316-R5	TWO POINT INJECTION	SINGLE HOLE	3.000"
LSL-M3A-000-R5	LSL-M3A-303-R5	LSL-M3A-316-R5	THREE POINT INJECTION	1.250"	4.250"
LSL-M4A-000-R5	LSL-M4A-303-R5	LSL-M4A-316-R5	FOUR POINT INJECTION	2.500"	5.500"
LSL-M5A-000-R5	LSL-M5A-303-R5	LSL-M5A-316-R5	FIVE POINT INJECTION	3.750"	6.750"
LSL-M6A-000-R5	LSL-M6A-303-R5	LSL-M6A-316-R5	SIX POINT INJECTION	5.000"	8.000"

LSL-1A-R5 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
-

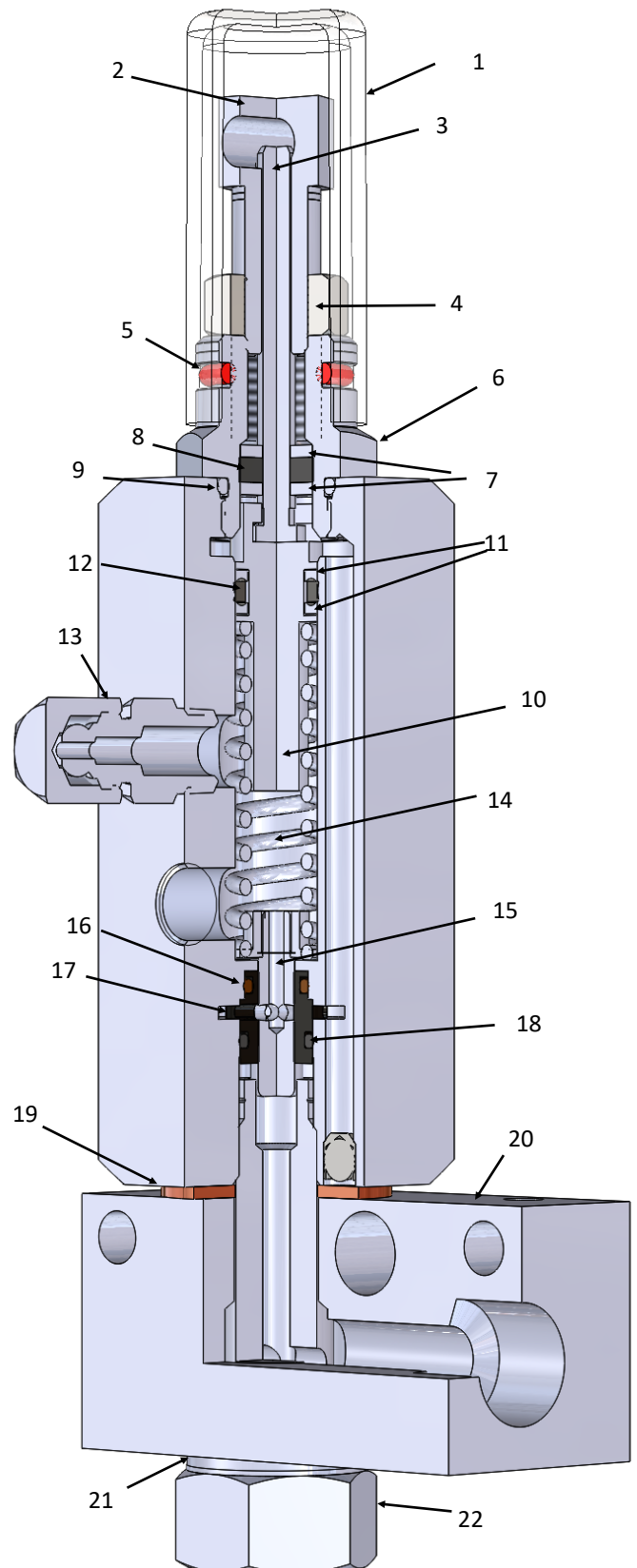
WARNING

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

LSL-1A-R5 SERVICE PARTS

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	1
21	STEEL WASHER	1
22	INLET BOLT	1



LSL-1A-R5 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.

STEP 3: Remove slide insert bushing from injector body.

REASSEMBLY INSTRUCTIONS

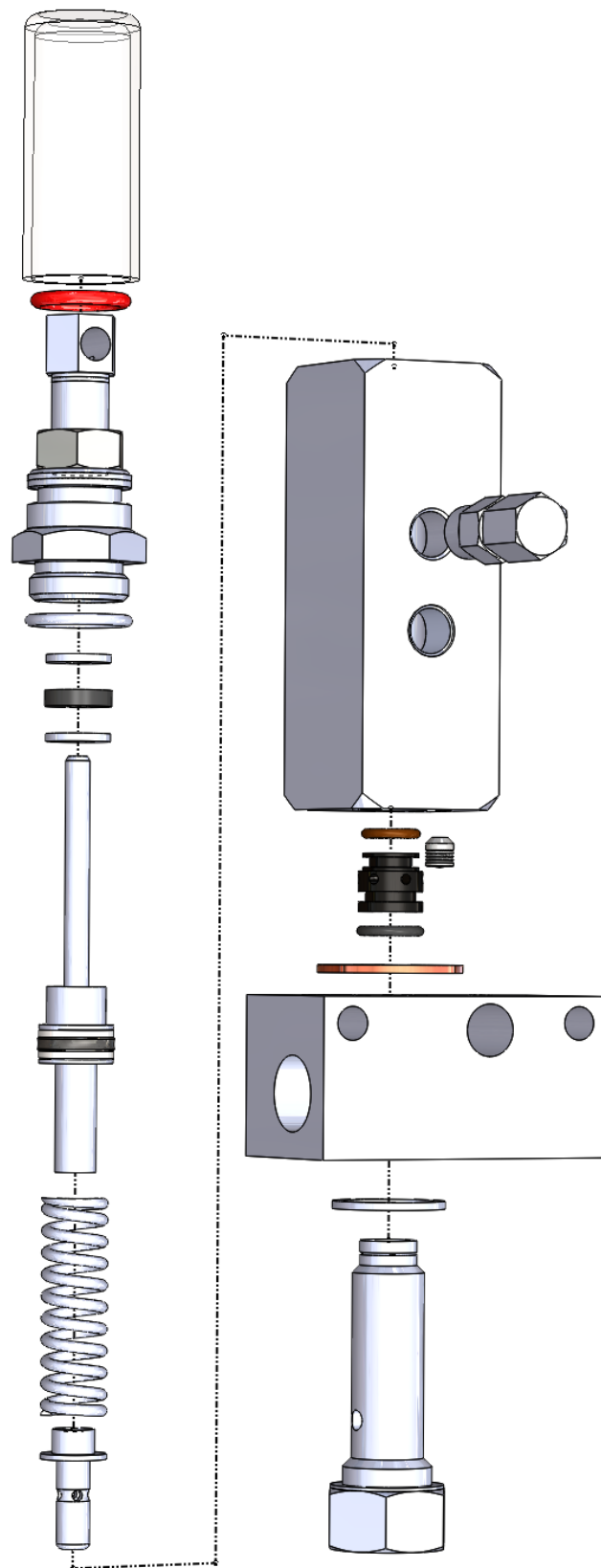
STEP 1: Clean all injector components and inspect for wear. Replace parts and lube O-rings as necessary.

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.

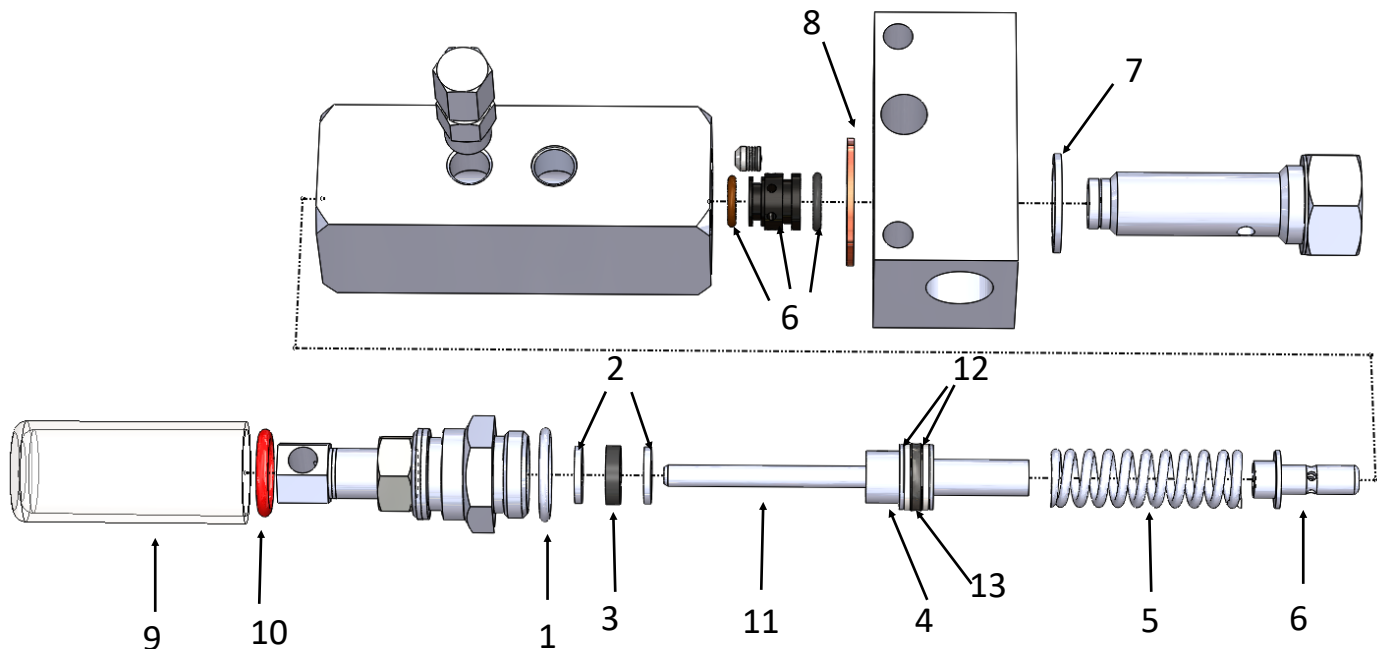
STEP 3: Install O-Ring, sealing gland, and two washers to adjustment housing and install to injector body using plenty of o-ring lube to guide the indicator pin smoothly.

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-1A-R5 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

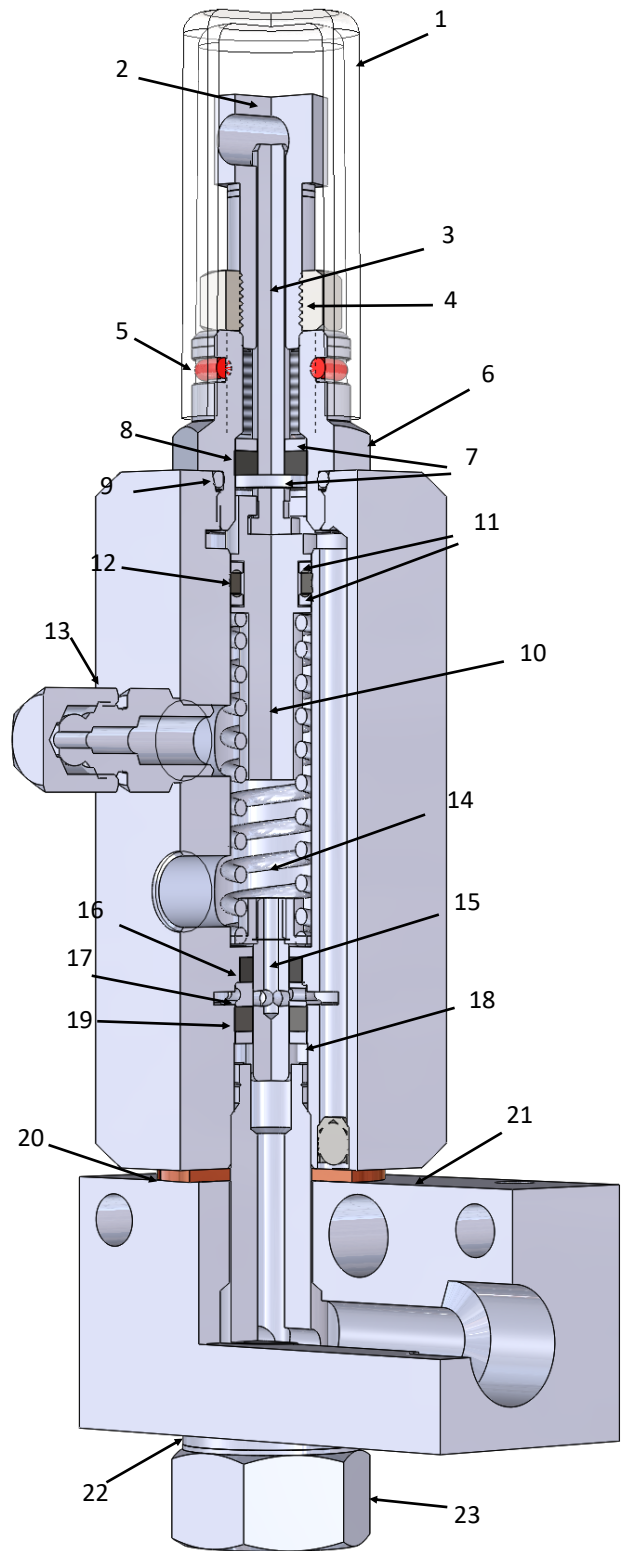
MASTER REBUILD KIT NO. LSL-1XMRK				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	LSL81713-022	ADJUSTMENT HOUSING ORING	1	1
2	LSL85497-009	ADJUSTMENT HOUSING WASHER	1	2
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
4	LSL81713-011A	PISTON BODY ASSEMBLY	2	1
5	LSL81713-013-P	SPRING	3	1
6	LSL81713-004XA	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	LSL81713-011-002	INDICATOR PIN	2	1

SEAL KIT NO. LSL-1X-SK				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	LSL81713-022	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
12	LSL81713-012BR	TEFLON BACK UP RING	2	2
13	LSL81713-012Q	PISTON QUAD RING	2	1

LSL-1A-R5 SERVICE PARTS

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-1A-R5 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

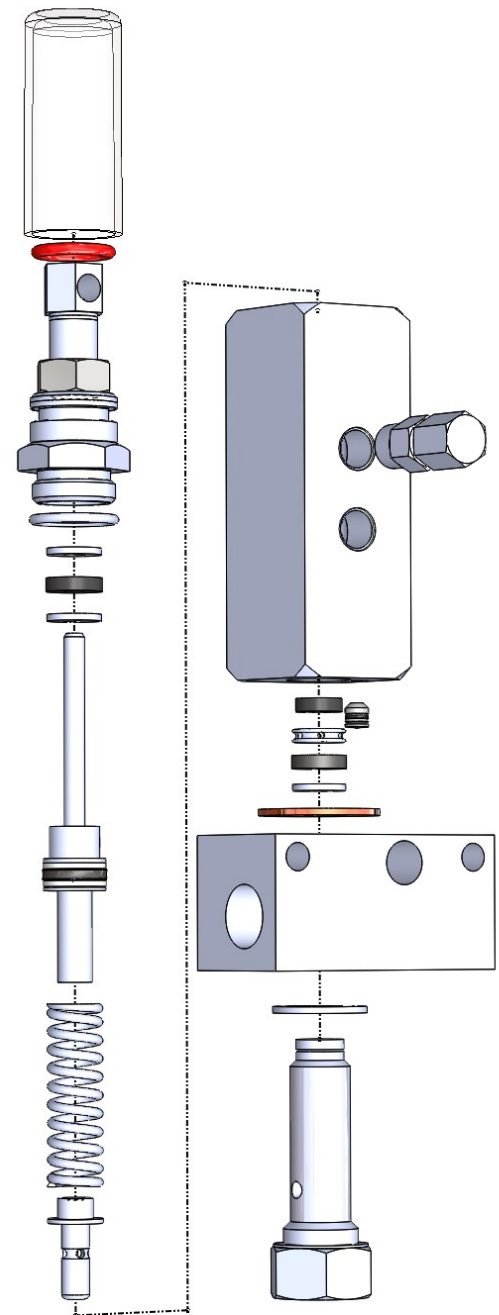
STEP 1: Clean all injector components and inspect for wear. Replace parts and lube O-rings as necessary.

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.

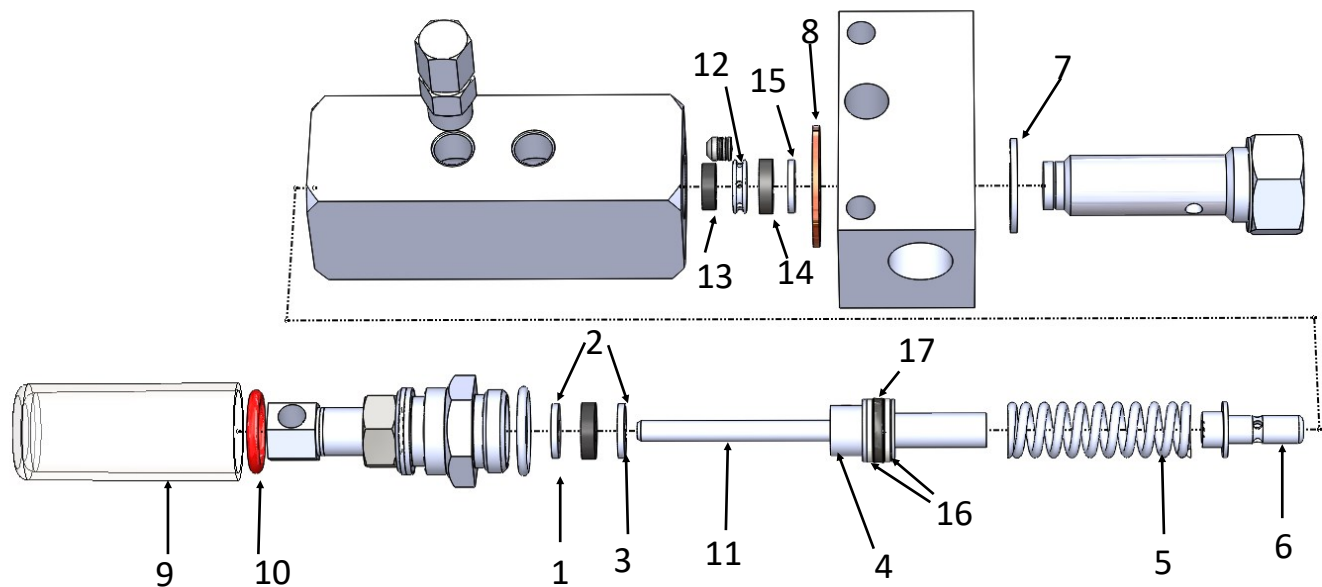
STEP 3: Install O-Ring, sealing gland, and two washers to adjustment housing and install to injector body using plenty of o-ring lube to guide the indicator pin smoothly.

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.



LSL-1A-R5 REBUILD KIT—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

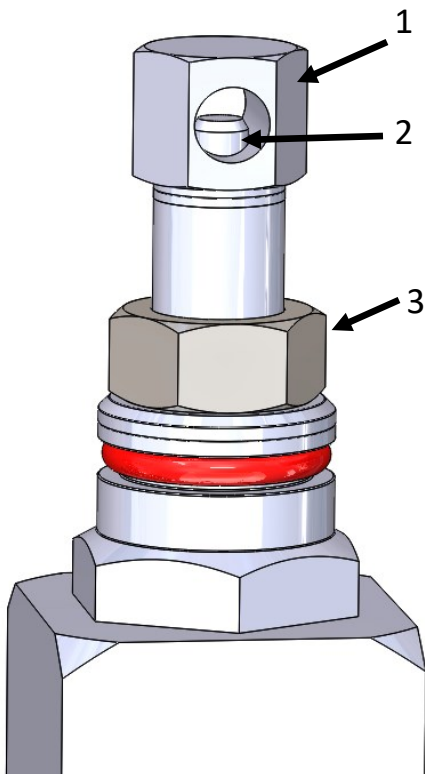
MASTER REBUILD KIT NO. LSL-1MRK				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	LSL81713-022	ADJUSTMENT HOUSING ORING	1	1
2	LSL85497-009	ADJUSTMENT HOUSING WASHER	1	2
3	LSL85497-006	ADJUSTMENT HOUSING SEAL PACKING	1	1
4	LSL81713-011A	PISTON BODY ASSEMBLY	2	1
5	LSL81713-013-P	SPRING	2	1
6	LSL81713-004A	SLIDE 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	LSL81713-011-002	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				
ITEM	PART NO.	DESCRIPTION	BAG NO.	QTY
1	LSL81713-022	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	LSL81713-012BR	TEFLON BACK UP RING	3	2
17	LSL81713-012Q	PISTON QUAD RING	3	1

LSL-1A-R5 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 LSL-1 VOLUME ADJUSTMENT TABLE)

LSL-1A-R5 VOLUME ADJUSTMENT TABLE		
DESCRIPTION	ADJUSTMENT TURNS	VOLUME cu. In. / cc
MAX OUTPUT	0	0.080 / 1.31
360° CLOCKWISE TURN	1	0.071 / 1.16
360° CLOCKWISE TURN	2	0.062 / 1.02
360° CLOCKWISE TURN	3	0.053 / 0.87
360° CLOCKWISE TURN	4	0.044 / 0.72
360° CLOCKWISE TURN	5	0.035 / 0.57
360° CLOCKWISE TURN	6	0.026 / 0.43
360° CLOCKWISE TURN	7	0.017 / 0.28
MIN OUTPUT	8	0.008 / 0.13

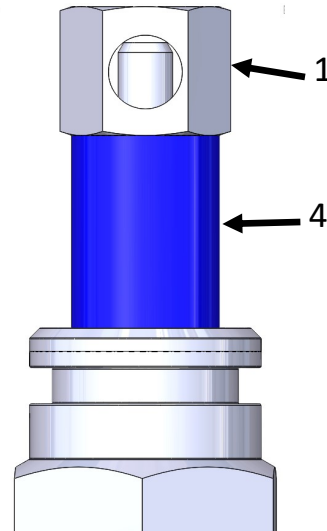
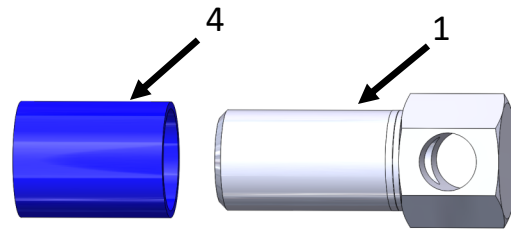






LSL-1A-R5 SERVICE INSTRUCTIONS

SPECTRUM ADJUSTMENT SLEEVES

SPECTRUM SLEEVE INSTALL INSTRUCTIONS:

1. REMOVE ADJUSTMENT SCREW (1) AND LOCK NUT (3) . LOCK NUT WILL NOT BE USED.
2. PLACE DESIRED OUTPUT RATIO SPECTRUM SLEEVE (4) OVER ADJUSTMENT SCREW (1)
3. REINSTALL ADJUSTMENT SCREW (1) WITH SPECTRUM SLEEVE (4) ON INJECTOR BODY AND TIGHTEN SECURELY



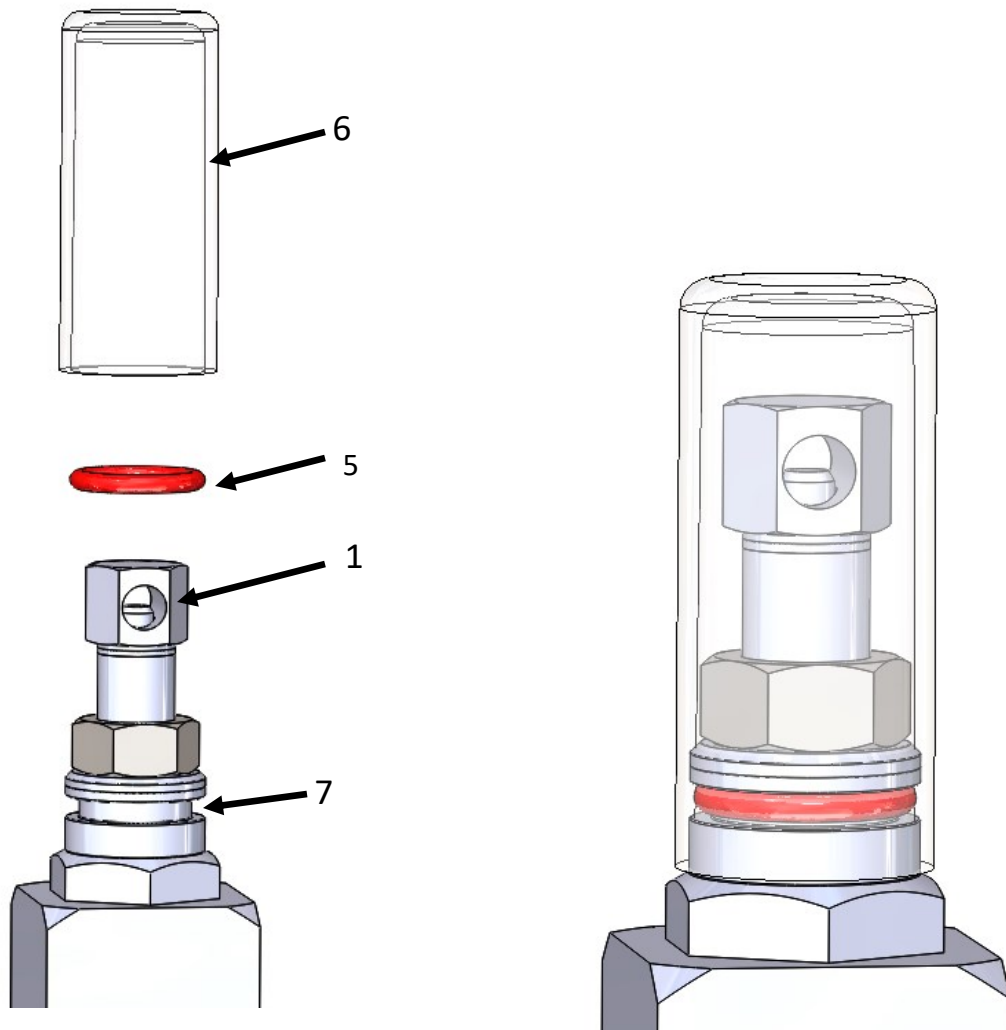
STANDARD PACK: 5 EACH			
MODEL NUMBER (5 PACK)	OUTPUT in3 (cc)	RATIO FROM MAXIMUM OUTPUT	SLEEVE COLOR
LSL-1A-ADJ025	0.020 (0.328)	25%	
LSL-1A-ADJ050	0.040 (0.655)	50%	
LSL-1A-ADJ075	0.060 (.983)	75%	
LSL-1A-ADJ100	0.080 (1.31)	100%	

LSL-1A-R5 SERVICE INSTRUCTIONS

INDICATOR COVER

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

1. INSTALL ORING (5) ON TO ADJUSTMENT HOUSING GROOVE.
2. SLIDE INDICATOR VINYL 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-1A-R5 SERVICE INSTRUCTIONS

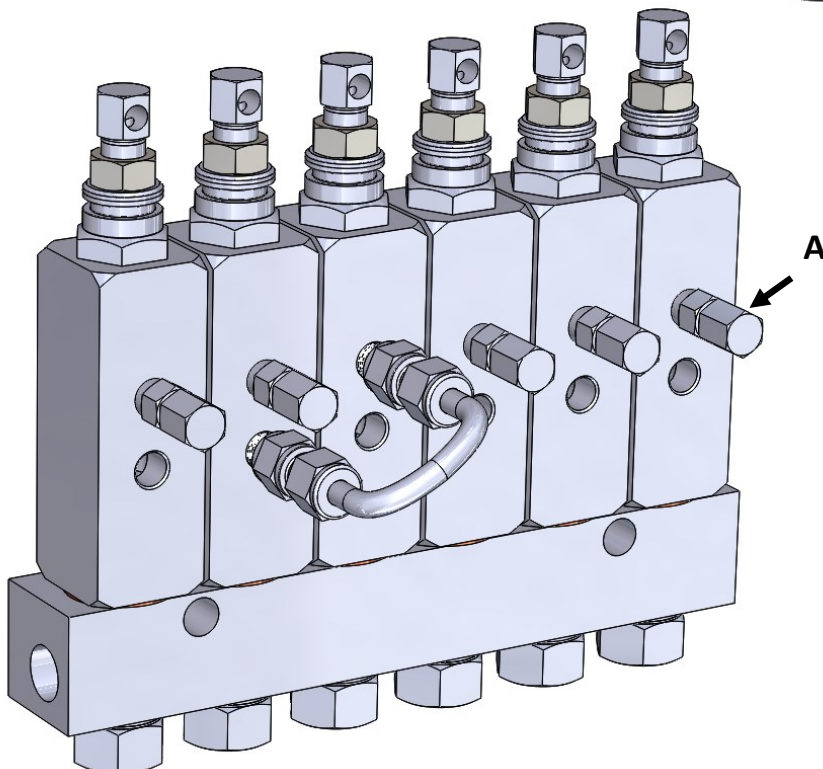
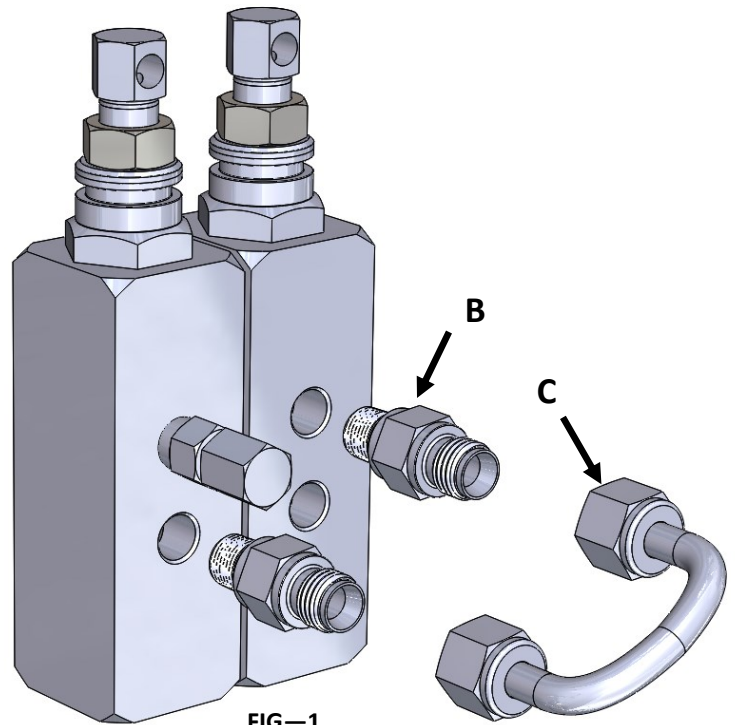
CROSSPORTING — KIT PART # LSL-1A-CPK

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



LSL-1A-R5 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

