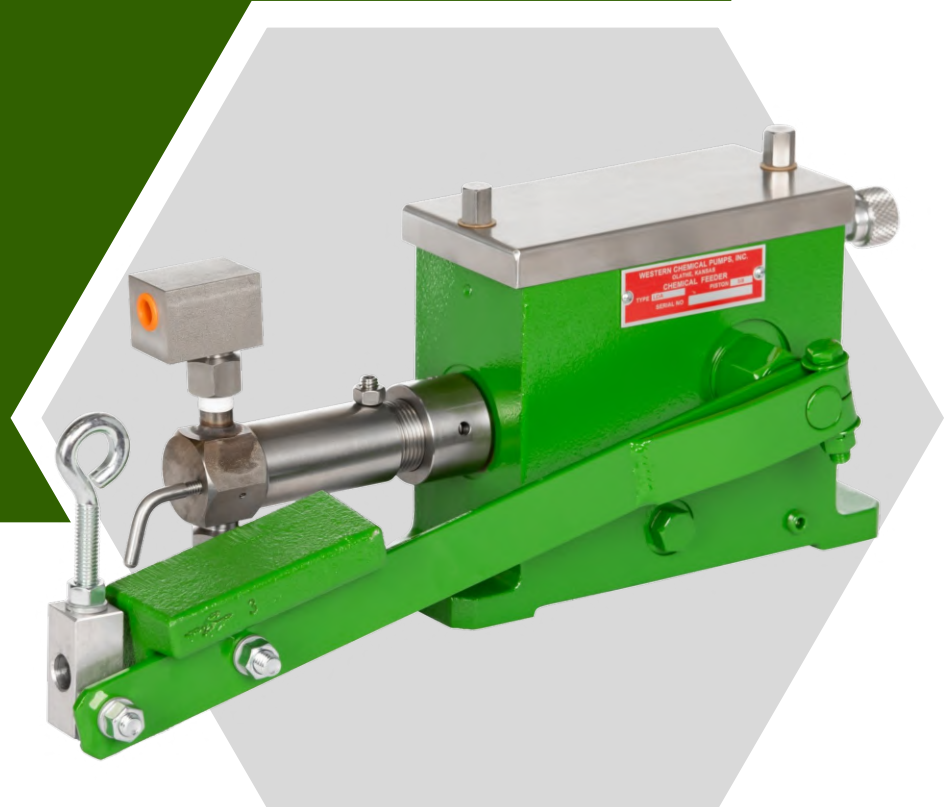


CHEMICAL INJECTION PUMP

# LEVER DRIVEN

SINGLE HEAD

LD



The model LD chemical injection pumps are designed to be driven by the motion of the walking beam. These positive displacement pumps have removable fluid ends with interchangeable check valves, and a removable stainless steel cover for easy maintenance on the drivetrain.

The pumps are available in various materials and piston sizes to meet your specific chemical injection requirements. They can also be equipped with chemical tanks and an optional I-beam base attachment for added versatility.

For decades, Western Chemical Pumps model LD pump has demonstrated reliable engineering and design, earning the trust of its users through rigorous testing and proven performance.

## FEATURES

- ◆ Simple dial controlled chemical injection flow rate
- ◆ Rod, pipe, or cable connection to walking beam
- ◆ Double piston seals with vented isolation to prevent chemical blow-by into pump box
- ◆ All models include line check valve and walking beam connection assembly
- ◆ Stainless steel piston and check valves come standard for better reliability

# WESTERN

TM



## LD PUMP CONFIGURATIONS

LDA	3/8	#1	Y	PART NUMBER
↑	↑	↑	↑	<b>Model</b>
LDA				Lever Driven
				<b>Piston Diameter</b>
	3/16			3/16"
	1/4			1/4"
	3/8			3/8"
	5/8			5/8"
				<b>Attachments</b>
		#1		No Base, No Tank
		#1B		I-Beam Clamp Base
		#2		Tank with Base
				<b>Fluid End Material</b>
				Steel (standard)
			Y	Stainless Steel
			Q	316 Stainless Steel

## OPTIONS & UPGRADES

**Material:** Upgrade to Y or Q models for enhanced corrosion resistance

**Piston Size:** Multiple sizes available to fit your required injection flow rates and pressures

**Resilient Seat Check Valves:** Added O-ring provides better sealing capability, which is ideal for low viscosity fluids, such as methanol

**Packing Seals:** Buna-N, EPDM, Neoprene, PTFE (Teflon™), FKM (Viton™)

**Rope Packing:** Graphite impregnated or PTFE (Teflon™) rope

**Prime Ball:** Ceramic or tungsten

**Tank:** Optional 5 gallon stainless steel tank

**Clamp Base:** Attach your pump to an I-beam

**Cable:** Optional cable to connect lever arm to walking beam (LD26-25)

*Other unique or special order materials are available to fit your needs. Please inquire with your Western Chemical Pumps, Inc. distributor. Specify desired options when placing order.*

PISTON DIA (IN)	MAX DISCHARGE PRESSURE (PSI)	FLOW RATE MIN - MAX (QTS / DAY)
3/16	2,000	0 - 7.6
1/4	1,125	0 - 13.6
3/8	500	0 - 30.8
5/8	180	0 - 86.0

STROKES PER MINUTE	FLOW RATE (QTS / DAY)							
	3/16" PISTON		1/4" PISTON		3/8" PISTON		5/8" PISTON	
	HALF STROKE	FULL STROKE	HALF STROKE	FULL STROKE	HALF STROKE	FULL STROKE	HALF STROKE	FULL STROKE
6	1.2	2.4	2.0	4.0	4.8	9.2	12.8	26.0
8	1.6	3.2	2.8	5.6	6.0	12.4	17.3	34.4
10	2.0	4.0	3.6	6.8	7.6	15.6	21.6	43.2
12	2.4	4.8	4.0	8.4	9.2	18.4	26.0	51.6
14	2.8	5.6	4.8	9.6	10.8	21.6	30.0	60.4
16	3.2	6.4	5.6	11.2	12.4	24.8	34.4	68.8
18	3.6	6.8	6.0	12.4	14.0	28.0	38.8	77.6
20	4.0	7.6	6.8	13.6	15.6	30.8	43.2	86.0



Pictured with 5 gallon tank option

PISTON DIA (IN)	FLOW RATE (QTS / DAY)
3/16	= 0.0194 x SPM x ROT
1/4	= 0.0344 x SPM x ROT
3/8	= 0.0774 x SPM x ROT
5/8	= 0.2150 x SPM x ROT

SPM: Piston strokes per minute

ROT: Number of feed control knob counterclockwise rotations

### CAUTION

**ENERGY STORED IN COMPRESSED SPRING CAN RELEASE CAUSING SEVERE INJURY. USE CAUTION WHEN DISASSEMBLING PUMP.**

**ENSURE CHECK VALVE FLOW IS IN THE DIRECTION OF THE ARROW. INCORRECT DIRECTION COULD CAUSE PUMP TO OVER PRESSURE.**

### INSTALLATION & OPERATION

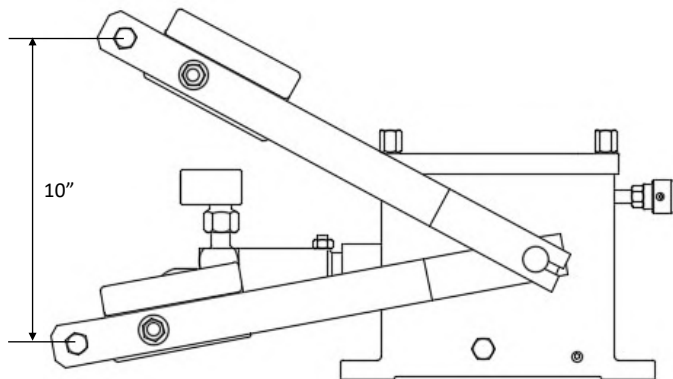
Bolt pump securely to concrete pad or platform. Position the pump to allow a straight upward pull on the pump lever as the walking beam rises.

Attach the beam clamp assembly (LD24/25) to the walking beam. Position for approximately 10 inches of total travel measured at the end of the pump lever.

Connect the pump lever to the beam clamp assembly using a cable through the eye bolts. When cable is used, ensure lever weight (LD11-2) is attached to keep cable taut. Alternatively, connect using a 1/4" - 1/2" pipe or rod through the holes in the swivel blocks. Lock pipe in place using eye bolts as setscrews.

Fill gearbox with 1-1/4 quarts SAE 20 or SAE 30 oil to partially submerge the pump cam and piston.

Connect the suction and discharge lines to the fluid end. Turn the flow rate control dial counterclockwise (out) to the stop. Open prime valve (D16-2Y) on the fluid end. Repeatedly stroke piston by lifting and lowering the pump lever. When a continuous flow of chemical begins to exit the bleed hole, close the prime valve.



### FLOW RATE CONTROL

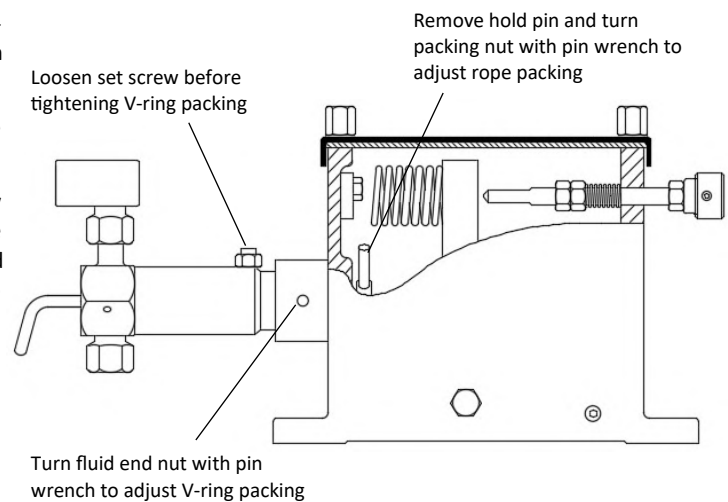
The rate can be adjusted from no stroke to full stroke in fine increments by rotating the flow control dial. The flow rate is dependent on the flow control dial setting and the strokes per minute of the piston. Rotate the flow control dial clockwise (in) to decrease the flow rate and counterclockwise (out) to increase the flow rate.

To set an approximated flow rate, turn feed control dial clockwise (in) to the stop. Every rotation counterclockwise (out) will increase the feed rate. By counting the number of counterclockwise rotations and using the provided flow rate tables, an approximate flow rate can be set. There are 20 rotations of the flow control dial from no stroke to full stroke of the piston.

### MAINTENANCE & TROUBLESHOOTING

**Chemical Leakage:** This can be detected by chemical leaking around the fluid end nut (LD12-4B). To correct this issue, tighten the V-ring packing (D12B). First, loosen the setscrew (LD12-2) and nut (D47-1A) on top of the fluid end. Using the supplied packing wrench (D44-3), insert in holes of fluid end nut and rotate. Hold fluid end upright while rotating the fluid end nut. The rotation will compress the V-ring packing around the piston. Tighten the setscrew and nut on top of the fluid end. Overtightening the V-ring packing can prevent the piston from completing a full stroke.

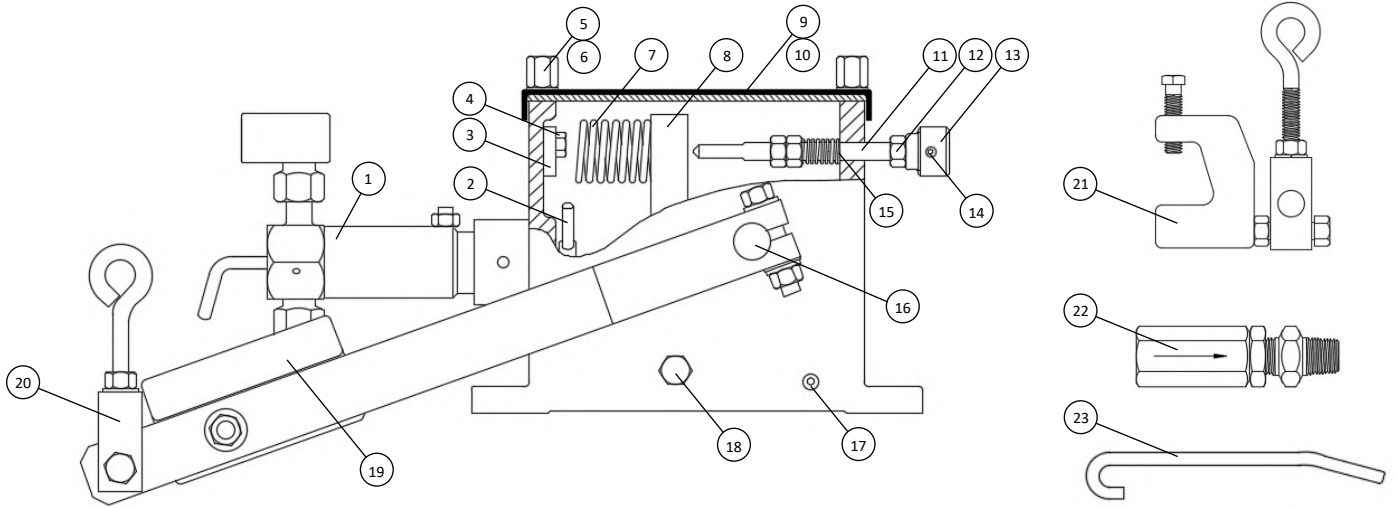
**Preventing Pump Box Oil Leakage Into Fluid End:** This can be detected by oil leaking around the fluid end nut (LD12-4B). To correct this issue, tighten the rope packing (LD15-1). First, remove the cover (LD2-2A) of the pump. Remove the hold pin (LD15-3) from the packing nut (LD15Y) inside the pump box. Using the supplied packing wrench (D44-3), insert in holes of packing nut and rotate. Do not overtighten rope packing.



### TIPS FOR BEST OPERATION

- Plan ahead for proper pump mounting location
- Short flooded suction lines and clean chemicals with no debris perform best
- Chemical lines should be rigid and have no abrupt change in elevation to prevent trapping gas bubbles
- Fluid end must be vertical for ball check valves to operate properly
- Keep oil clean and at the recommended fill level to partially submerge piston

## LDA #1 PUMP: PARTS LIST



LDA #1							
1 FLUID END ASSY	***	8 YOKE ASSY	LD5MZ	15 SPRING	LD7-2A	22 LINE CHECK VALVE	D461
2 HOLD PIN	LD15-3	9 COVER	LD2-2A	16 CAMSHAFT ASSY	LD8Z	23 PACKING WRENCH	D44-3
3 SLUG	LD10-1	10 GASKET	LD2-3	17 DRAIN PLUG	LD2P	<b>NOT PICTURED</b>	
4 BOLT	LD10-2	11 CONTROL SCREW	LD7	18 PIVOT SHAFT	LD5-1	BUSHING	LD2BB**
5 THUMB SCREW	LD23-2	12 NUT	D1-2A	19 WEIGHT ASSY	LD11-2Z	KNOCKOUT DISC	LD2BD**
6 GASKET	LD23-2A	13 KNOB	LD7-1	20 SWIVEL BLOCK ASSY	LD25Z	CABLE, 25FT	LD26-25*
7 SPRING	LD100	14 SETSCREW	LD7-1A	21 BEAM CLAMP ASSY	LD24/25		

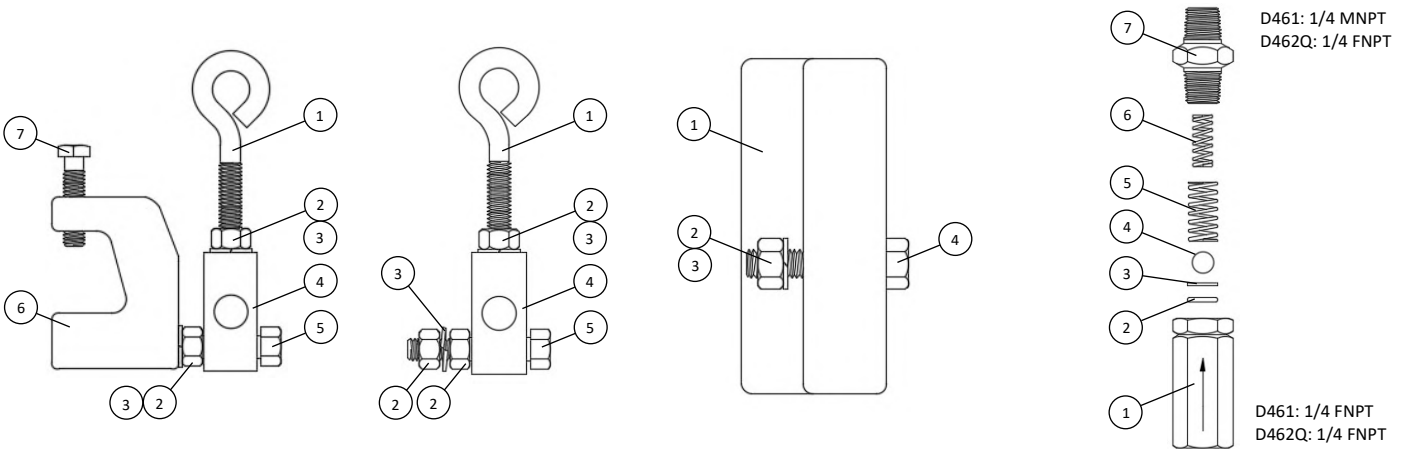
\*\*\* See subassembly drawing for part number

\*\* Location: pressed into pump box to support LD8Z rotation

\* Optional equipment

Subassembly detail shown in following drawings

## LDA #1 PUMP: SUBASSEMBLIES



BEAM CLAMP ASSY LD24/25	
1 EYE BOLT	LD25-1
2 NUT	D1-2A
3 LOCK WASHER	M4L
4 SWIVEL BLOCK	LD25
5 CAP SCREW	LD24-2
6 BEAM CLAMP	LD24
7 SETSCREW	LD24-1

SWIVEL BLOCK ASSY LD25Z	
1 EYE BOLT	LD25-1
2 NUT	D1-2A
3 LOCK WASHER	M4L
4 SWIVEL BLOCK	LD25
5 CAP SCREW	LD24-2

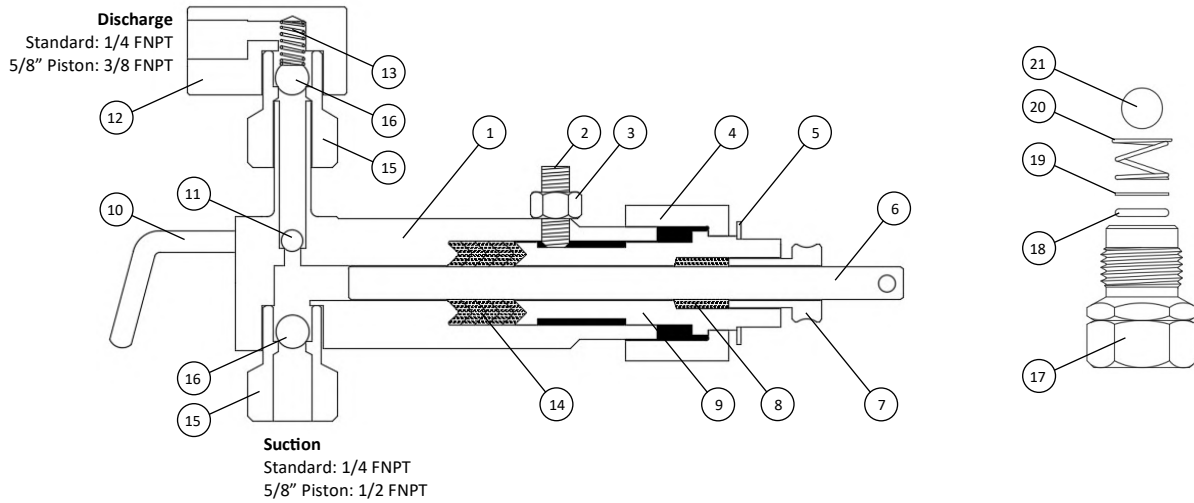
WEIGHT ASSY LD11-2Z	
1 WEIGHT	LD11-2
2 NUT	D1-2A
3 LOCK WASHER	M4L
4 CAP SCREW	LD24-2

LINE CHECK VALVE D461 D462Q		
1 BODY / CAGE	D461B	D176BQ
2 O-RING, TEFLON™	M170-55T*	D170-5T*
3 RING	D461R	D177
4 BALL, CERAMIC	D17-5C	D17-6C
5 SPRING	D461S	D178
6 SPRING	D18-1Y	D462SQ
7 NIPPLE / BODY	D461A	D462BFQ

\*Alternate materials: Buna-N, Viton™, Neoprene, EPDM

All images are for illustrative purposes. Actual product may differ.

## LDA #1 PUMP: SUBASSEMBLIES CONTINUED



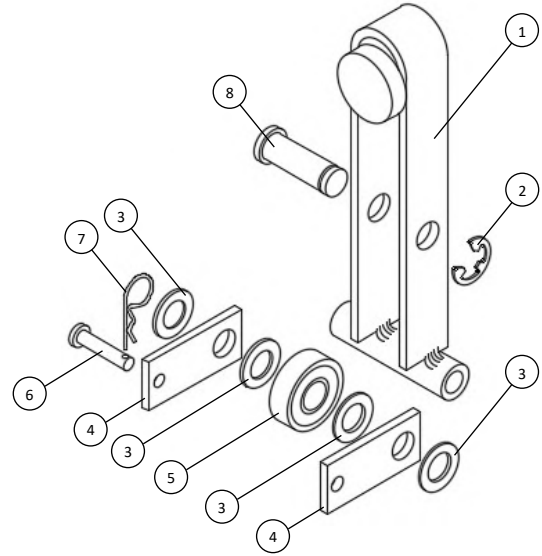
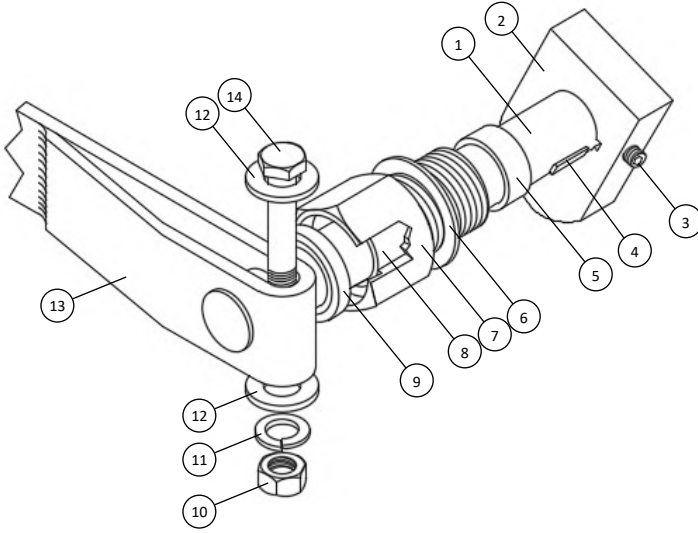
PISTON DIA (IN) MATERIAL	3/16		1/4		3/8			5/8	
	Standard	Standard	Y	Q	Standard	Y	Q	Y	Q
<b>LD FLUID END ASSY</b>	<b>LD163Z1</b>	<b>LD164Z1</b>	<b>LD164Z1Y</b>	<b>LD164Z1Q</b>	<b>LD160Z1</b>	<b>LD160Z1Y</b>	<b>LD160Z1Q</b>	<b>LD165Z1Y</b>	<b>LD165Z1Q</b>
1 FLUID END BODY	LD163	LD164	LD164Y	LD164Q	LD160	LD160Y	LD160Q	M161Y	M161Q
2 SETSCREW	LD12-2	LD12-2	LD12-2Q	LD12-2Q	LD12-2	LD12-2Q	LD12-2Q	LD12-2Q	LD12-2Q
3 NUT	D47-1A	D47-1A	D47-1AQ	D47-1AQ	D47-1A	D47-1AQ	D47-1AQ	D47-1AQ	D47-1AQ
4 FLUID END NUT	LD12-4B	LD12-4B	LD12-4BY	LD12-4BQ	LD12-4B	LD12-4BY	LD12-4BQ	M121-48BY	M121-48BQ
5 GASKET	LD12-1	LD12-1	LD12-1	LD12-1	LD12-1	LD12-1	LD12-1	M121-1	M121-1
6 PISTON	LD143Y	LD144Y	LD144Y	LD144Q	LD14Y	LD14Y	LD14Q	LD145Y	LD145Q
7 ROPE PACKING NUT	LD15Y	LD15Y	LD15Y	LD15Q	LD15Y	LD15Y	LD15Q	M151Y	M151Q
8 ROPE PACKING, GRAPHITE	LD15-1	LD15-1	LD15-1	LD15-1*	LD15-1	LD15-1	LD15-1*	M151-1	M151-1*
8 ROPE PACKING, TEFLON™	LD15-1T*	LD15-1T*	LD15-1T*	LD15-1T	LD15-1T*	LD15-1T*	LD15-1T	M151-1T*	M151-1T
9 CYLINDER	LD124-4AY	LD124-4AY	LD124-4AY	LD124-4AQ	LD12-4AY	LD12-4AY	LD12-4AQ	M121-4AY	M121-4AQ
10 PRIME VALVE	D16-2Y	D16-2Y	D16-2Y	D16-2Q	D16-2Y	D16-2Y	D16-2Q	D16-2Y	D16-2Q
11 PRIME BALL, CERAMIC	D17-4C	D17-4C	D17-4C	D17-4C	D17-4C	D17-4C	D17-4C	D17-6C	D17-6C
11 PRIME BALL, TUNGSTEN	D17-4T*	D17-4T*	D17-4T*	D17-4T*	D17-4T*	D17-4T*	D17-4T*	D17-6T*	D17-6T*
12 SQUARE ELL	D170-4	D170-4	D170-4Y	D170-4Q	D170-4	D170-4Y	D170-4Q	M171-4Y	M171-4Q
13 SPRING	D18-1Y	D18-1Y	D18-1Y	D18-1Y	D18-1Y	D18-1Y	D18-1Y	M181-1Y	M181-1Y
<b>14 V-RING PACKING</b>	<b>HTH</b>	<b>HHHHH</b>	<b>BTBTB</b>	<b>VTVTV</b>	<b>HHHHH</b>	<b>BTBTB</b>	<b>VTVTV</b>	<b>TBSB</b>	<b>TVSV</b>
PACKING, EPDM (B)	-	D124B*	D124B (3)	D124B*	D12B*	D12B (3)	D12B*	D121B (2)	D121B*
PACKING, BUNA-N (H)	D136H (2)	D124H (5)	D124H*	D124H*	D12H (5)	D12H*	D12H*	D121H*	D121H*
PACKING, NEOPRENE (N)	-	D124N*	D124N*	D124N*	D12N*	D12N*	D12N*	D121N*	D121N*
PACKING, TEFLON™ (T)	D136T (1)	D124T*	D124T (2)	D124T (2)	D12T*	D12T (2)	D12T (2)	D121T (1)	D121T (1)
PACKING, VITON™ (V)	-	D124V*	D124V*	D124V (3)	D12V*	D12V*	D12V (3)	D121V*	D121V (2)
SPACER (S)	-	-	-	-	-	-	-	LD121Y (1)	LD121Q (1)
<b>CHECK VALVE</b>	<b>-</b>	<b>D17Y</b>	<b>D17Y</b>	<b>D17Q</b>	<b>D17Y</b>	<b>D17Y</b>	<b>D17Q</b>	<b>D172Y</b>	<b>D172Q</b>
15 CAGE	-	D17BY	D17BY	D17BQ	D17BY	D17BY	D17BQ	D172B	D172BQ
16 CHECK BALL, CERAMIC	-	D17-6C	D17-6C	D17-6C	D17-6C	D17-6C	D17-6C	D171-2C	D171-2C
16 CHECK BALL, TUNGSTEN	-	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D171-2T*	D171-2T*
<b>RESILIENT CHECK VALVE</b>	<b>D179ZYT</b>	<b>D176ZYT*</b>	<b>D176ZYT*</b>	<b>D176ZQT*</b>	<b>D176ZYT*</b>	<b>D176ZYT*</b>	<b>D176ZQT*</b>	<b>D172ZYT*</b>	<b>D172ZQT*</b>
17 CAGE	D179B	D176B	D176B	D176BQ	D176B	D176B	D176BQ	D172B	D172BQ
18 O-RING, TEFLON™	M170-55T**	D170-5T**	D170-5T**	D170-5T**	D170-5T**	D170-5T**	D170-5T**	D171-8T**	D171-8T**
19 RING	D181	D177	D177	D177	D177	D177	D177	D173	D173
20 SPRING	D182	D178	D178	D178	D178	D178	D178	D174	D174
21 CHECK BALL, CERAMIC	D17-5C	D17-6C	D17-6C	D17-6C	D17-6C	D17-6C	D17-6C	D171-2C	D171-2C
21 CHECK BALL, TUNGSTEN	D17-5T*	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D17-6T*	D171-2T*	D171-2T*

\*Optional equipment, please specify when ordering

\*\*Alternate materials: Buna-N, Viton™, Neoprene, EPDM

All images are for illustrative purposes. Actual product may differ.

## LDA #1 PUMP: SUBASSEMBLIES CONTINUED

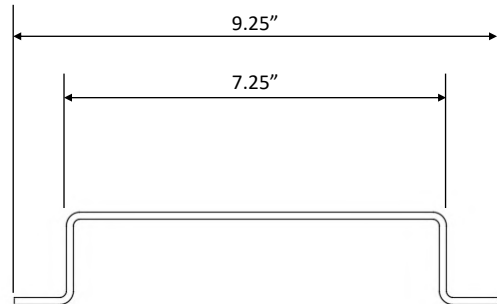
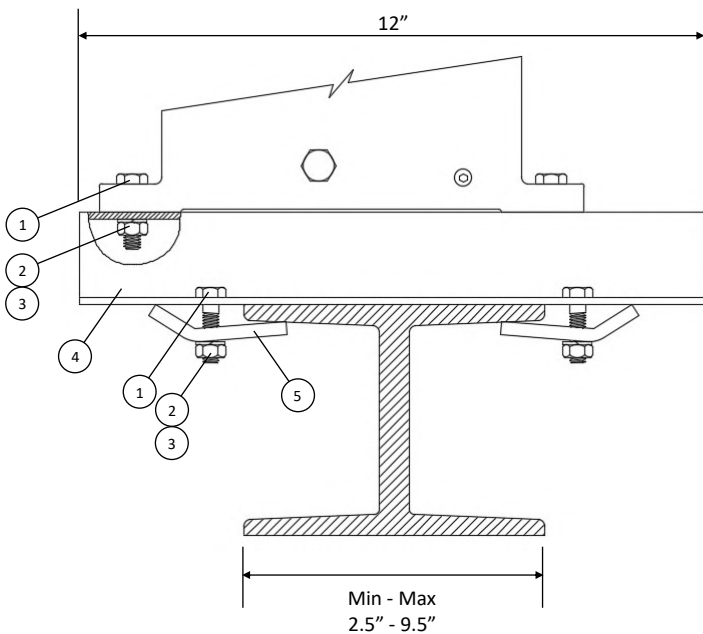


CAMSHAFT ASSY		LD8Z	
1	CAMSHAFT	LD8K-1	8 BUSHING
2	CAM	LD8-1K	9 LIP SEAL
3	SETSCREW	LD8-4	10 NUT
4	KEY	LD8-5	11 LOCK WASHER
5	SPACER	LD8-2	12 WASHER
6	GASKET	LD12-1	13 LEVER
7	SEAL HOUSING	LD9A-1	14 CAPSCREW
			LD2BB
			LD9S
			D1-2A
			M4L
			D21-2
			LD11
			LD24-2

YOKE ASSY		LD5MZ	
1	YOKE	LD5M	5 BEARING
2	RETAINING RING	M20D4	6 PIN
3	SPACER	LD5-3M	7 COTTER PIN
4	LINK	LD13M	8 SHAFT
			LD6M
			LD13-1
			LD13-2
			LD5-2M

## LDA #1B PUMP: PARTS LIST

Includes all parts from LDA #1



LDA #1B	
CLAMP BASE ASSY	LD1CZ
1	BOLT
2	NUT
3	LOCK WASHER
4	BASE
5	CLAMP
	D23-2
	D47-1A
	D47-1L
	LD1C5
	LD1C1

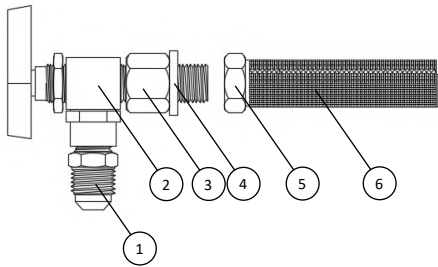
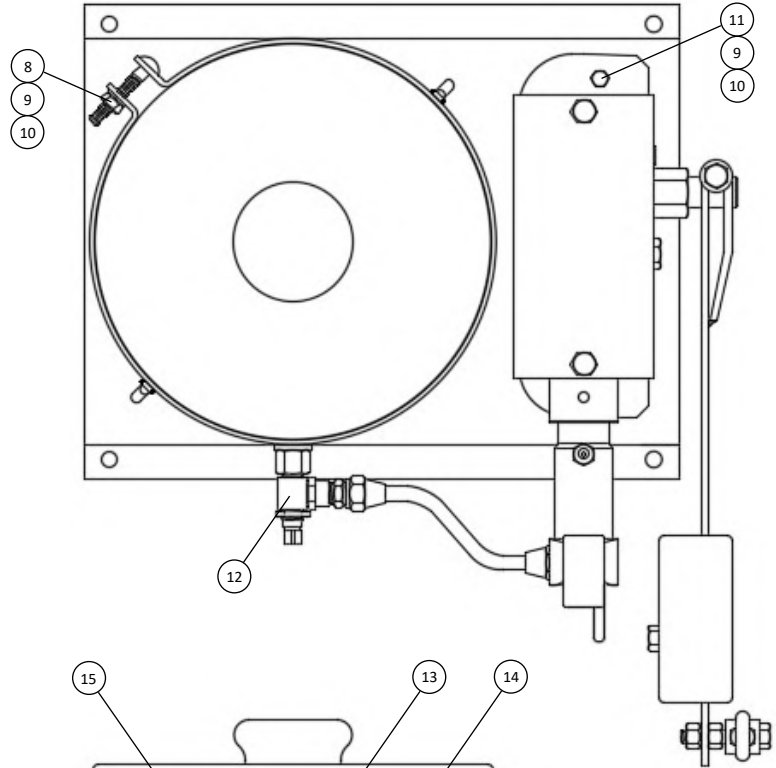
All images are for illustrative purposes. Actual product may differ.

## LDA #2 PUMP: PARTS LIST

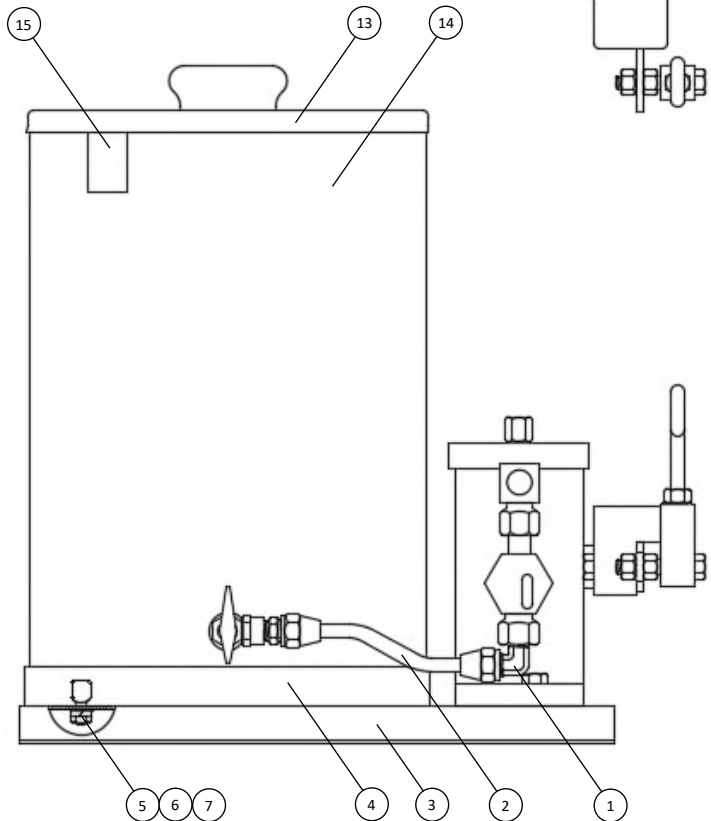
Includes all parts from LDA #1

LDA #2		
1	ELL	D17-3
2	TUBE ASSY	D34
BASE ASSY		LD4Z
3	BASE	LD4B
4	TANK BAND	LD4R
5	NUT	M26-1B
6	LOCK WASHER	M26-1L
7	WASHER	M5-3
8	BOLT	D47-1C
9	NUT	D47-1A
10	LOCK WASHER	D47-1L
11	BOLT	D23-2
TANK ASSY		D48ZY
12	TANK VALVE ASSY	D29
12	TANK VALVE ASSY	D29Y*
13	TANK LID WITH KNOB	D48-1Y
14	TANK	D48Y
15	GAUGE STICK	D49
<b>NOT PICTURED</b>		
	LEVEL SIGHT GAUGE	929-1-S*

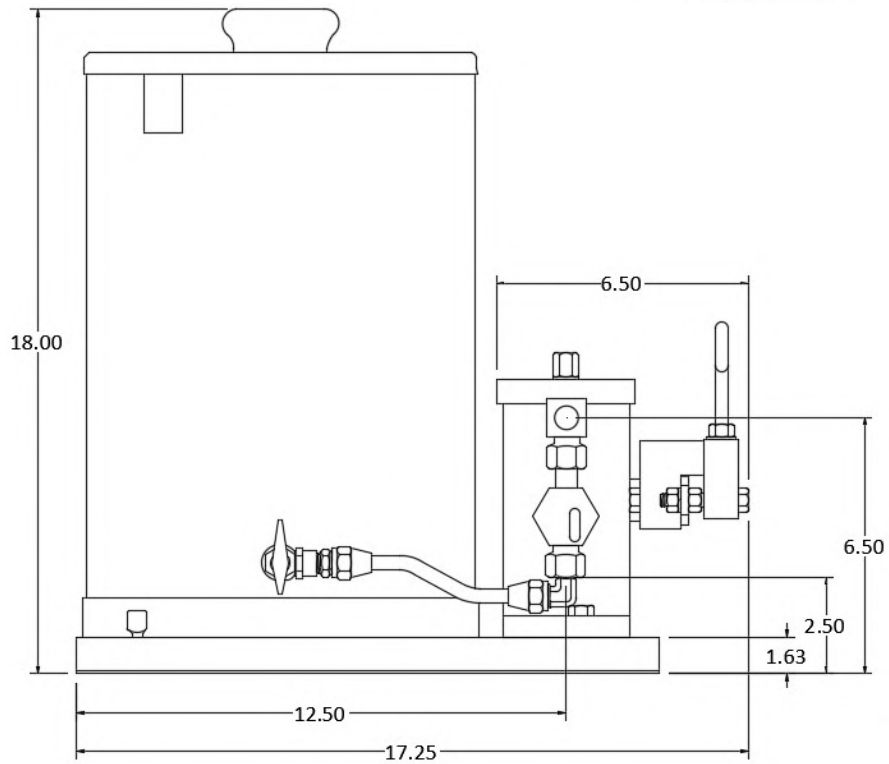
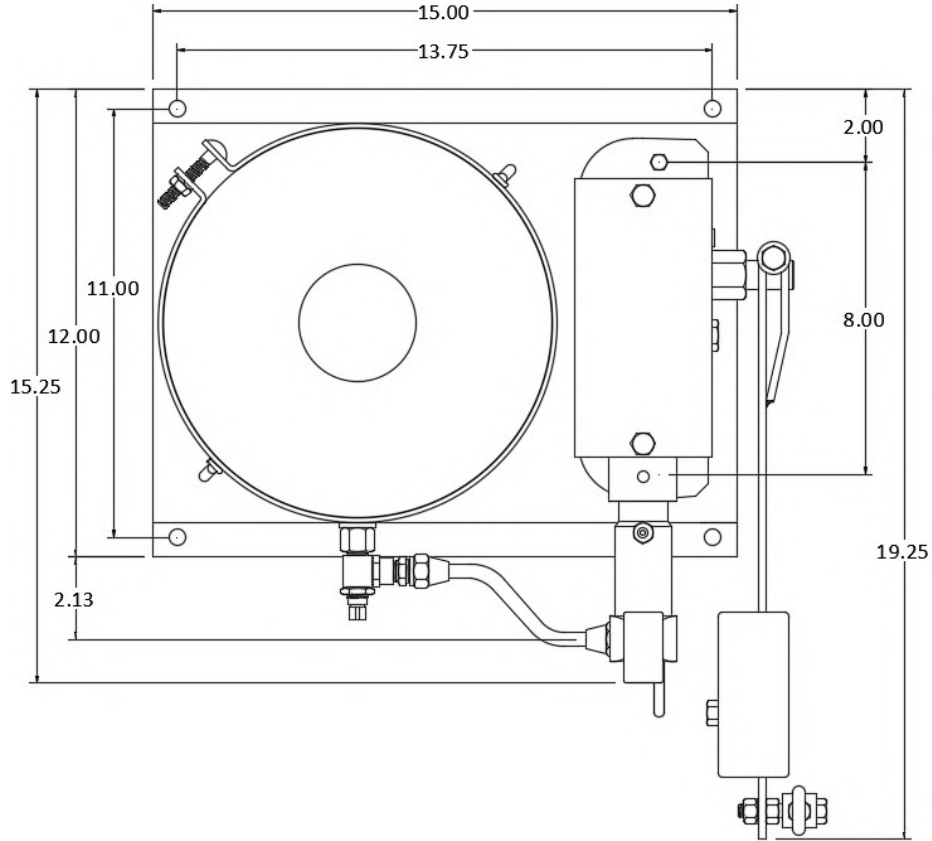
\*Optional equipment



TANK VALVE ASSY	D29	D29Y	
1	ADAPTER	D32-2	D17-3Y
2	BALL VALVE	D29V	D29VY
3	ADAPTER	D29A	D29AY
4	GASKET	D28-8	D28-8
5	NUT	D28-4Y	D28-4Y
6	STRAINER	D28-3	D28-3



All images are for illustrative purposes. Actual product may differ.



Western Chemical Pumps, Inc.  
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Dimensions are in inches. Actual product may have variance in measurements.  
 All images are for illustrative purposes. Actual product may differ.

Western Chemical Pumps, Inc. reserves the right to make changes in specifications and features shown herein, or discontinue the product described at any time without notice or obligation. Contact your Western Chemical Pumps, Inc. distributor for the most current information.