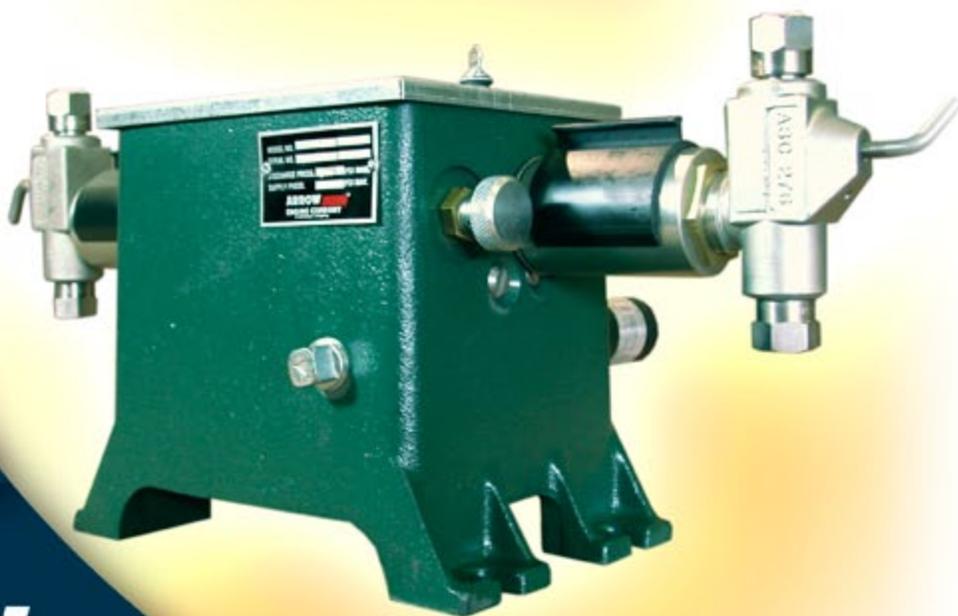


430 CHEMICAL PUMP



**ARROW
ENGINE COMPANY**



a TRIMAS company

CP430-RP-S-APR12



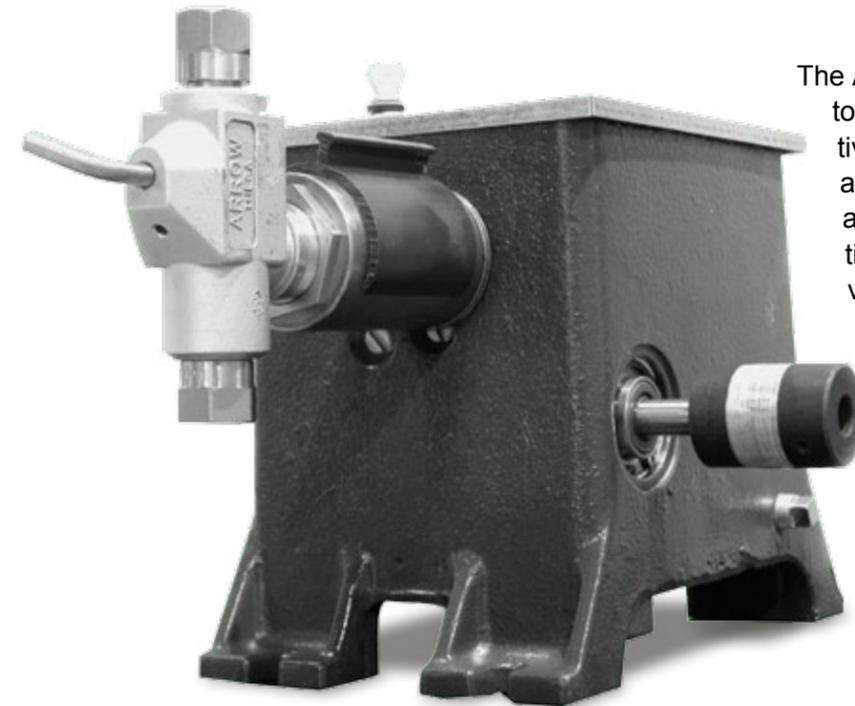
In 1955 Arrow Engine Company opened for business, beginning the tradition of providing premium service and exceptional products to the oil & gas industry, as well as the industrial engine market, throughout the world.

Arrow is a part of the Engineered Components segment formed by TriMas Corporation. Headquartered in Bloomfield Hills, Michigan, TriMas Corporation (NASDAQ- TRS) provides engineered and applied products for growing markets worldwide. TriMas Corporation is organized into the following reportable segments: Packaging, Energy, Aerospace & Defense, Engineered Components, Cequent North America, and Cequent Asia Pacific. With almost a billion dollars in sales, TriMas Corporation has approximately 4,000 employees at over 60 different facilities in 11 countries.

With a consistent focus on our customers' needs, striving to help them grow their business, and producing the most reliable equipment and parts in the industry, Arrow has forged a 55-year tradition of excellence.



430 Series



1/4HP 1725 RPM

The Arrow Series 430 Chemical Injectors are electric motor driven, positive displacement pumps utilizing an integral worm gear drive available in three different standard ratios and four plunger sizes to provide a wide selection of volumes and pressures from 1 QPD up to 80 GPD per head against pressures up to 2400 PSIG. The standard packed plunger injector head with built in priming valves are virtually trouble free. Standard pumps are available with high strength ductile iron or 316 stainless steel fluid ends to handle a wide variety of chemicals used in oil and gas production facilities, pipelines, process plants and other applications where a rugged, easy to maintain, proportioning pump is required.

Capacity Data

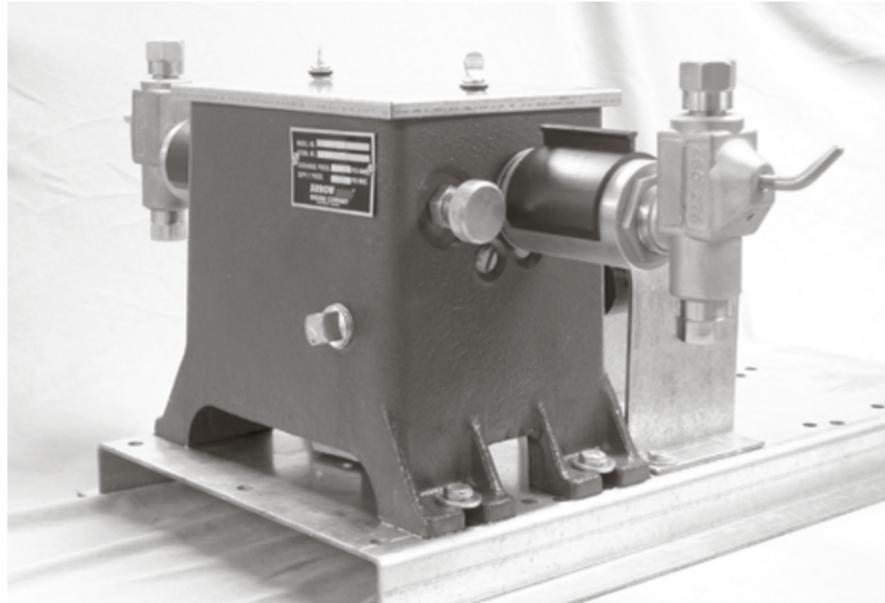
Plunger Size	Maximum Discharge Pressure	Max. Volume (Expressed in U.S. Gallons per day)								
		100:1 Ratio			50:1 Ratio			25:1 Ratio		
		Max. GPD			Max. GPD			Max. GPD		
		Model No.	60 Hz Motor 1725 RPM	50 Hz* Motor 1450 RPM	Model No.	60 Hz Motor 1725 RPM	50 Hz* Motor 1450 RPM	Model No.	60 Hz Motor 1725 RPM	50 Hz* Motor 1450 RPM
Single Head Units										
3/16"	3000 PSI	431-1.5S	2.5	2.07	430-1.5S	5	4.1	433-1.5S	10	8.3
1/4"	2400 PSI	431-2	5	4.15	430-2	10	8.3	433-2	20	16.6
3/8"	1200 PSI	431-3	12	9.96	430-3	23	19.09	433-3	46	38.18
1/2"	600 PSI	431-4	21	17.43	430-4	40	33.2	433-4	80	66.4
Double Head Units										
3/16"	3000 PSI	431-21.5S	5	4.1	430-21.5S	10	8.3	433-21.5S	20	16.6
1/4"	2400 PSI	431-22	10	8.3	430-22	20	16.6	433-22	40	33.2
3/8"	1200 PSI	431-23	24	19.9	430-23	46	38.18	433-23	92	76.4
1/2"	600 PSI	431-24	42	34.86	430-24	80	66.4	433-24	160	132.8

* Allow 10 to 12 weeks delivery time on 50 Hz motors.
GPD=Gallon per 24 hour day



Models Available

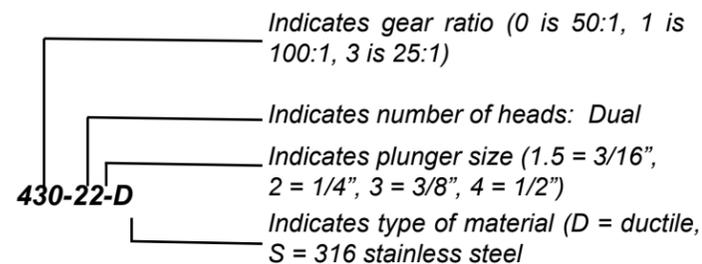
The Arrow Series 430 with coupling, utilizes electric motors, v-belt, pneumatic motors or gasoline engines as a power source. The chemical injector pump is available with one to eight plunger head assemblies in a choice of gear ratios (25:1, 50:1, 100:1). The required horsepower is ¼ H.P. for 1 to 2 heads with will accommodate all plunger sizes (3/16", 1/4", 3/8", 1/2"). The standard injector heads are supplied with ductile iron body and stainless steel trim. All stainless steel is available as an option. Teflon packing and metal-to-metal seats are available as alternatives to standard injector head parts at no additional cost. Viton O-ring type resilient check seats are standard on all heads. The Arrow Series 430 is available from the factory with or without electric motor only. Allow 10-12 week delivery time on 50 HZ motor.



Ordering

- To complete pump part number, include plunger size and head material, add 2 for 1/4", 3 for 3/8" and 4 for 1/2". Add "D" for ductile, "S" for 316 stainless steel.
- When ordering pump without power unit, specify frame size of motor to be used to insure receiving correct coupling

Example: For series 430 (50:1), dual head, 1/4" plunger with ductile head. No tank, no base.

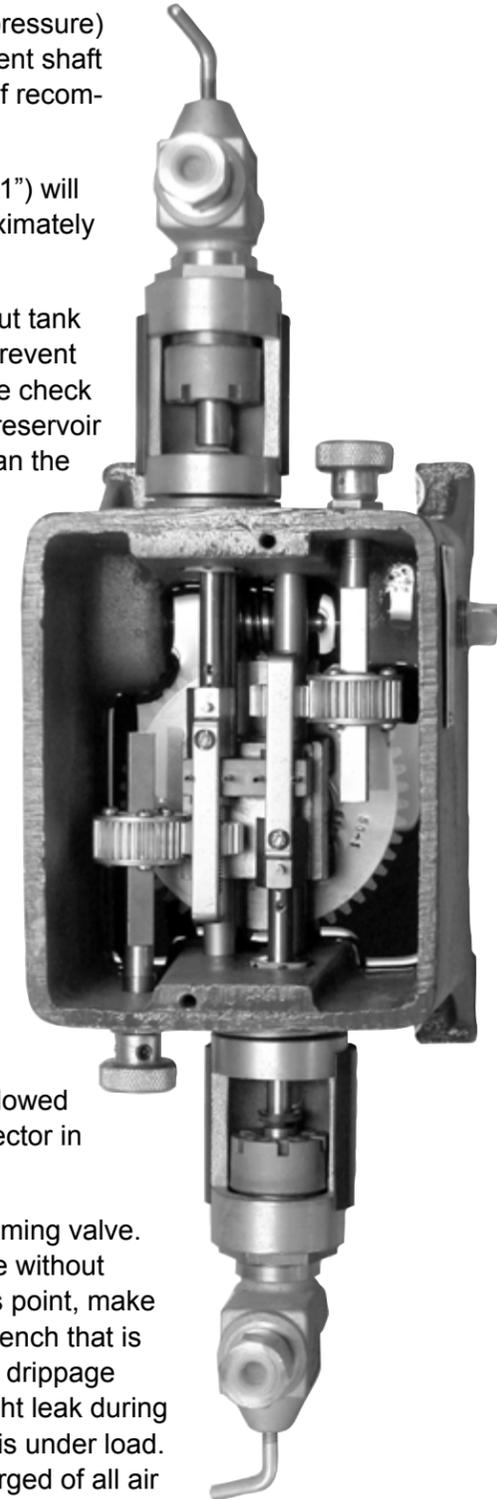


Reference Example	Base Pump	Basic Pump
Example part number for series 430 (50:1) single ductile head, 1/4" plunger.	430.....	430-2D
Example part number for series 431 (100:1) single ductile head, 1/4" plunger.	431.....	431-2D
Example part number for series 433 (25:1) 2 316 SS heads, 1/4" plunger.	433.....	433-22S

Order options as separate part numbers

Installation

- Bolt holes are provided for a permanent mounting (see drawing for dimensions).
- Remove the gear box lid and fill gear box with 80/90 EP (extreme pressure) gear oil. The oil should be maintained level with the stroke adjustment shaft (ASA-4330-BA). A lubricant tag is attached to the pump with a list of recommended oils.
- Adjust the stroke length to the desired volume. A full stroke length (1") will pump the maximum volume as shown in the data sheet. For approximately 50% volume, use a 1/2" stroke.
- Connect the suction line to pump head. If a power unit model without tank was purchased, a strainer should be piped into the suction line to prevent sand, rust or other particles from injuring the plunger and fouling the check valves. When positioning the chemical reservoir and pump, locate reservoir as close as practical to the pump with the reservoir outlet higher than the suction bushing of the pump.
- Connect the discharge line. A 1/4" line check is provided. This valve should be installed as close to the point of injection as possible. Note: The Arrow on the check valve indicates the direction of flow. The top connection on the pump head is the outlet and has a 1/4" female pipe thread connection.
- Mount the motor if pump was ordered less motor. The pump input shaft speed should not exceed 1800 RPM and will operate the pump in either direction of rotation. The volume flows are based on a standard 1750 RPM motor.
- After careful alignment with shaft coupling (not furnished on all pumps) bolt motor securely in place. Shaft alignment is very important. Misalignment will cause the bearings in the motor and pump as well as the coupling to wear out. Shim the motor if necessary. To check free rotation, turn motor and pump over by grasping the coupling and rotating. A minimum of 1/16" spacing should be allowed between coupling ends for expansion. The use of an overload protector in the motor circuit and restart is recommended.
- Start motor and prime the pump head by opening the ASA-1497 priming valve. After the pump discharges fluid through the priming valve discharge without bubbles, slowly close the priming valve for normal operation. At this point, make a visual check of the packing drip, and using the ASA-315 gland wrench that is included in the package, slowly tighten the gland to prevent excess drippage and waste of chemicals. Do not over tighten plunger packing. A slight leak during the break-in is beneficial. Do not tighten packing when pump head is under load. The pump head, fluid discharge line and other fittings should be purged of all air bubbles.



Maintenance

Check oil level in gear box regularly. **An optional oil level indicator (ASA-4066) is available.**

Each Arrow series 430 pump has an external adjustment for the required stroke length. To adjust stroke length use 205-46 adjustment knob. Visually inspect plunger outside of case to determine length of desired stroke. The stroke may be adjusted while the pump is running.



Replacing Scale or Stroke Adjusting Assembly

To replace scale or stroke adjusting assembly, remove wing nut and washer, round head screw and roll pin (holding plunger to stroke adjusting assembly). Then remove ASA-4333-BA crosshead back and replace necessary parts.

Disassembly of the Power Mechanism

1. Disconnect and remove pump head from power unit.
2. Remove ASA-4228 rod retainers and ASA-1961 O-rings from each end of ASA-4229 bearing rod.
3. Using proper size punch, push bearing rods through ASA-4333-BA crosshead and out opposite side of gear box.

To remove ASA-4065 crosshead bearing from worm gear, remove ASA-4333-BA crosshead and lift bearing off ASA-4064 bearing stud.

Removing Worm Gear and Shaft, Shaft End Bearing and/or Oil Seal

It is not necessary to remove crosshead, guide rods or worm gear in order to remove the drive shaft and its component parts.

1. Disconnect flexible coupling and remove motor from base. If unit is equipped with container on base, it is best to remove entire gear box from base.
 - a. Remove 11A-N5000-165 Truarc ring.
 - b. Remove ASA-4302-BA expansion cup plug.
2. To walk shaft out of case, insert proper size punch and tap lightly on end of worm gear while turning worm shaft. Care should be taken when driving shaft out through opposite side of housing. When changing the needle bearing, take drift punch and drive cup and needle bearing while walking the shaft out. During installation of a new needle bearing, Arrow recommends using a mandrel and positioning the needle bearing flush to 1/8" inside wall of casting boss. A replacement plug (ASA-4302-BA) will be required when these repairs are made.



As the shaft is being driven out, care should be taken to see that the large worm gear turns. This will "walk" or disengage the gear teeth. As the shaft emerges from the side of housing, it will force out the oil seal (ASA-2064), seal cartridge (ASA-4045) and ball bearing (ASA-2285). Withdraw the shaft from pump housing.

In order to remove ball bearing (ASA-2285) from shaft, it is necessary to remove one or both Truarc rings (10A-5100-59). Upon replacing, care should be taken to walk the two worm gears back together. Be sure the two Truarc rings are in place. Be sure the seal and seal housing are in properly (the seal lips and seal expander springer should face into the pump). Make sure the O-ring (ASA-1961) is in its proper place. Lubricating the O-ring with gear lube is recommended prior to assembly. Care should be taken to avoid shaving the O-ring upon reinstallation.

The shaft assembly should be inserted into the pump until shaft bearing (ASA-2285) shoulders against the Truarc ring located near the inner edge of the holes into which the shaft is inserted.

Arrow recommends a run of one-half hour with no load when replacing gears.

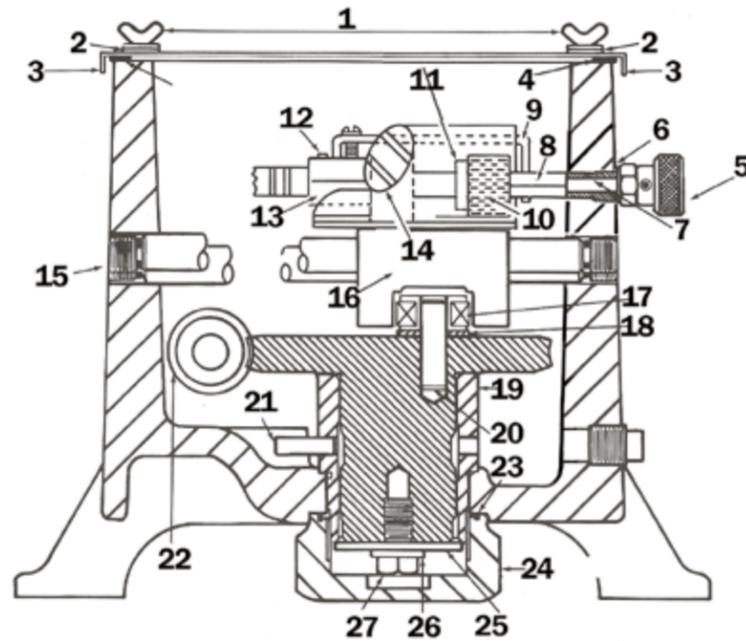
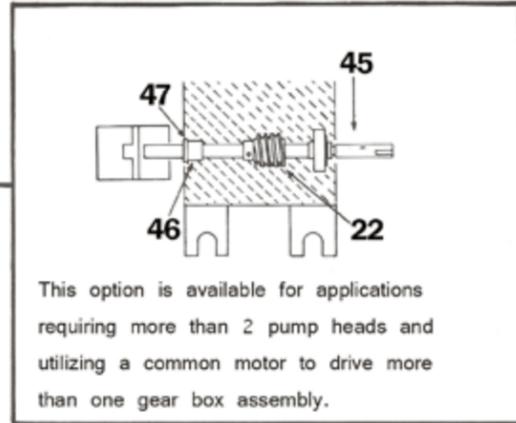
Removing Bull Gear (ASB-616) and Bearing from Gearbox

1. Remove Cap (ASA-1921) from bottom of pump.
2. Remove hex-head machine screw, spring washer and bottom thrust washer. You can now remove the bull gear and bearing through the top of the housing.
3. Upon replacing, be certain the gear roll pin is located in its proper place. Hold the bearing (ASB-619) in proper alignment.

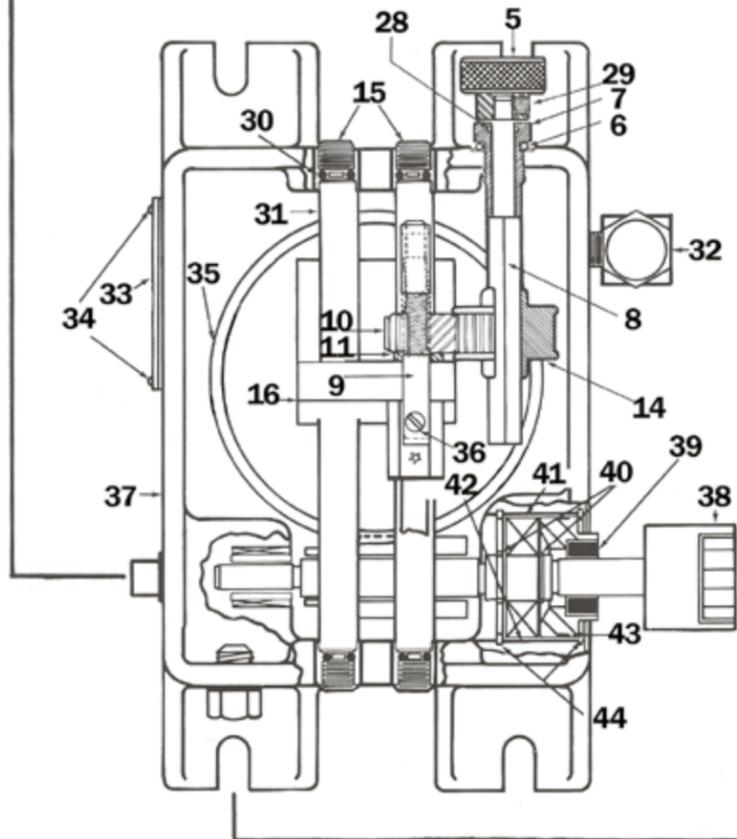
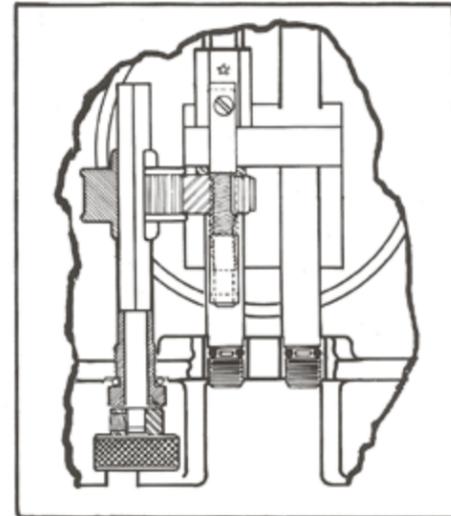


CHEMPUMP 430 PARTS

Thru Shaft Detail



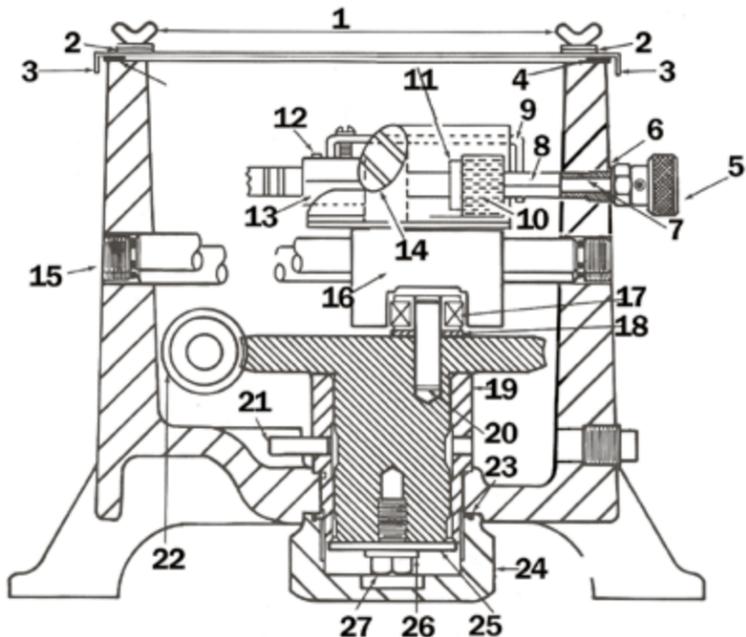
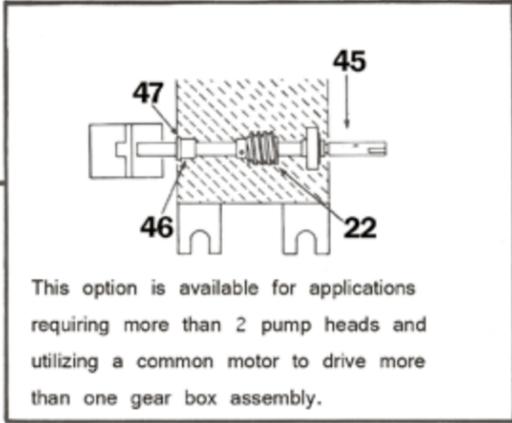
Dual Headed Pump Cutaway



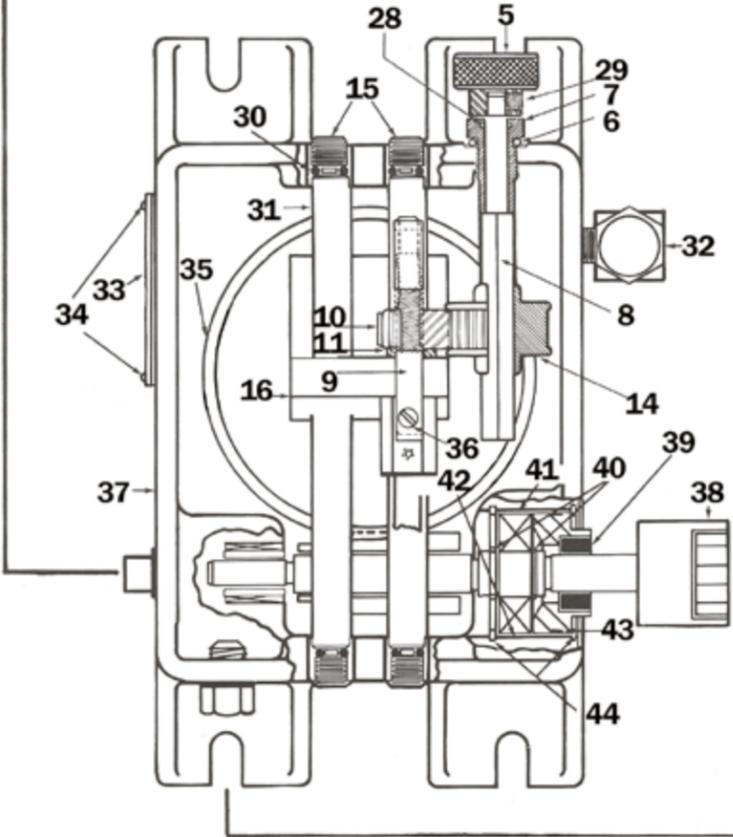
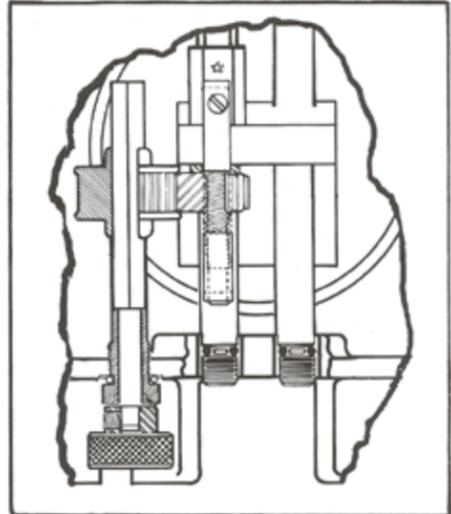
PART NO.	DESCRIPTION	MATERIAL	QTY	SPARE PARTS	
1	ASA-136	Thumbscrew	Carbon Steel Cadmium Plated	2	
2	ASA-4324-2-BA	Washer	Neoprene	2	
3	ASC-476	Cover with Gasket	Galvanized Carbon Steel	1	
4	ASA-1923	Gasket	Neoprene	1	
5	205-46	Governor Adjustment Knob	Steel	1	
6	ASA-5049-BA	O-Ring	Buna-N	1	
7	ASA-4332-BA	Stroke Adjustment Guide	303 Stainless Steel	1	
8	ASA-4330-BA	Stroke Adjustment Bar	304 Stainless Steel	1	
9	ASA-4336-BA	Stroke Adjustment Strap	Carbon Steel	1	
10	ASA-4334-BA	Stroke Adjustment Gear		1	
11	ASA-4335-BA	Washer	Carbon Steel	1	
12	ASA-290	Pin	Carbon Steel	1	
13	ASA-1924	Bolt	Carbon Steel	1	
14	ASA-4329-BA	Idler Gear		1	
15	ASA-4228	Rod Retainer	Carbon Steel	4	
16	ASA-4333-BA	Crosshead Electric Pump	Cast Iron	1	
17	ASA-4065	Bearing	Carbon Steel	1	x
18	1B-3/8	Standard Flat Washer	Carbon Steel	1	
19	ASB-619	Bearing	Steel	1	
20	ASA-4064	Dowel Pin	Carbon Steel	1	
21	41A-1/4x3/4	Roll Pin	Carbon Steel Cadmium Plated	1	
22	ASA-1871	Helical Gear Assembly - 25:1	Carbon Steel	1	
	ASA-1871-LS	Worm Gear Only - 25:1	Carbon Steel	1	
	ASA-2250	Helical Gear Assembly - 50:1	Carbon Steel	1	
	ASA-2250-LS	Worm Gear Only - 50:1	Carbon Steel	1	
	ASA-1755	Helical Gear Assembly - 100:1	Carbon Steel	1	
	ASA-1755-LS	Worm Gear Only - 100:1	Carbon Steel	1	
23	ASA-2457	O-Ring	Buna-N	1	x
24	ASA-1921	Cap Gear Box Assembly	Carbon Steel	1	
25	ASA-1930	Washer	Carbon Steel	1	
26	1A-5/8	Plated Lockwasher	Carbon Steel	1	
27	7A-3/816x5/8	Hex Head Capscrew	Carbon Steel	1	
28	ASA-5014-BA	Cross Section O-Ring	Viton	1	
29	19A-1/428x1/4	Socket Head Set Screw	Steel	1	
30	ASA-3849	O-Ring	Buna-N	4	x
31	ASA-4229	Crosshead Guide Rod	Carbon Steel	2	
32	ASA-4066	Oil Gauge Assembly with Nipple	Brass with Glass	1	
33	ANP-33	Chemical Pump Name Plate	Aluminum	1	
34	ASA-4087-BA	Drive Screw	Brass	2	

CHEMPUMP 430 PARTS, continued...

Thru Shaft Detail

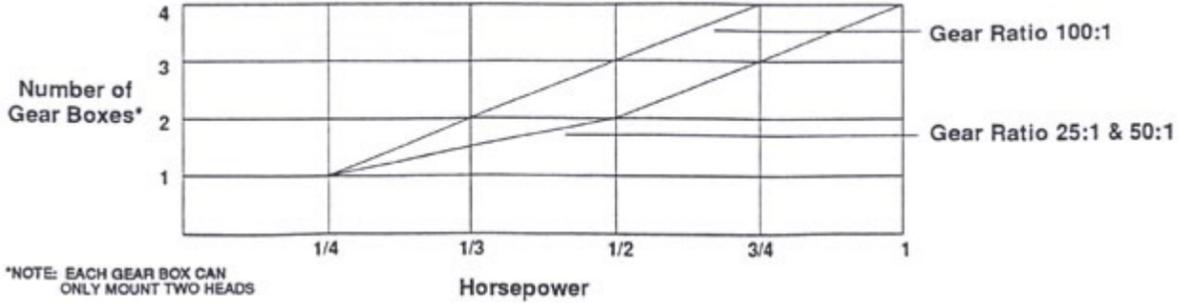


Dual Headed Pump Cutaway



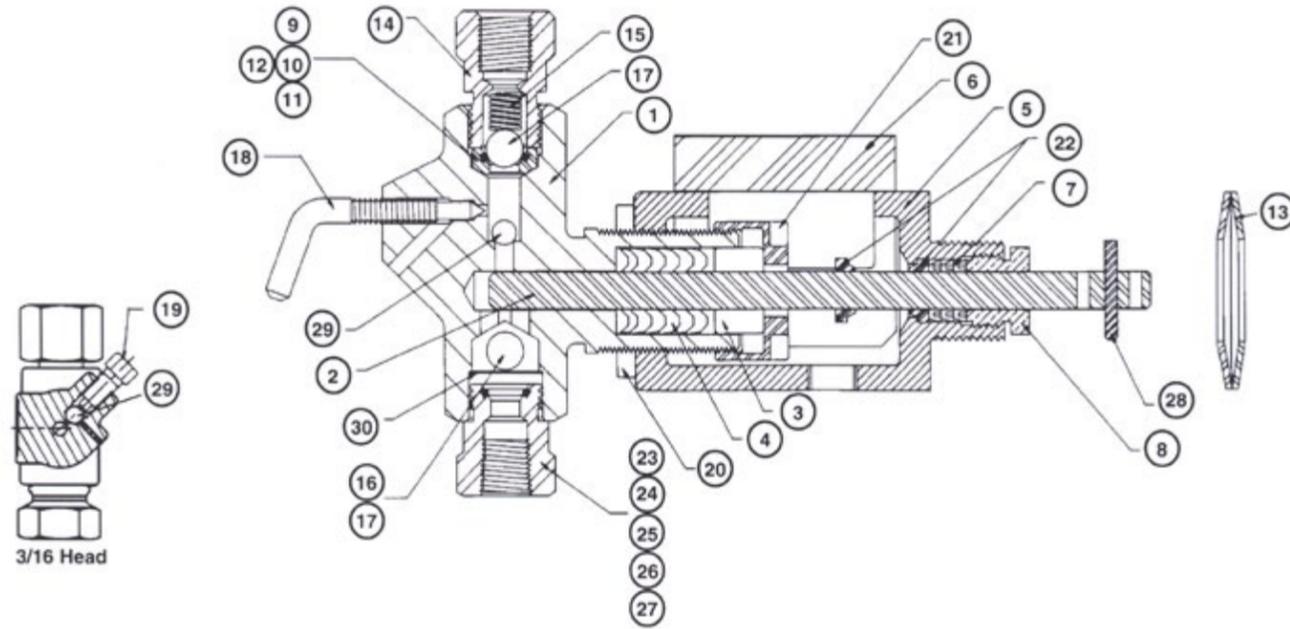
PART NO.	DESCRIPTION	MATERIAL	QTY	SPARE PARTS
35	ASB-616	Bull Gear - 50:1	1	
	ASB-621	Bull Gear - 25:1	1	
	ASB-623	Bull Gear - 100:1	1	
36	12A-832x3/8	Round Head Machine Screw	1	
37	ASD-492	Electric Pump Housing	1	
38	ASA-1653	Coupling	1	
	ASA-1836	Coupling	1	
39	ASA-2064	Seal	1	x
40	10A-5100-59	External Retaining Ring	2	
41	ASA-2285	Bearing	1	x
42	ASA-4045	Seal Cartridge	1	x
43	ASA-1961	O-Ring	1	x
44	11A-N5000-165	Internal Retaining Ring	2	
45	AS-4101-LG	Multi Head Shaft	1	
46	ASA-4326-BA	Bearing	1	
47	ASA-4327-BA	Seal	1	
	1A-#8	Plated Lockwasher	1	
	12A-832x5/8	Round Head Machine Screw	1	
	ASA-2286	Bearing	1	x
	ASA-2287	Inner Race	1	x
	ASA-3325	Nipple	1	
	ASA-4302-BA	Expansion Plug	1	
	PF4-3/4	3/4 Square Hd. Pipe Plug	1	

HORSEPOWER REQUIREMENTS FOR MULTI-HEADED UNITS



*NOTE: EACH GEAR BOX CAN ONLY MOUNT TWO HEADS

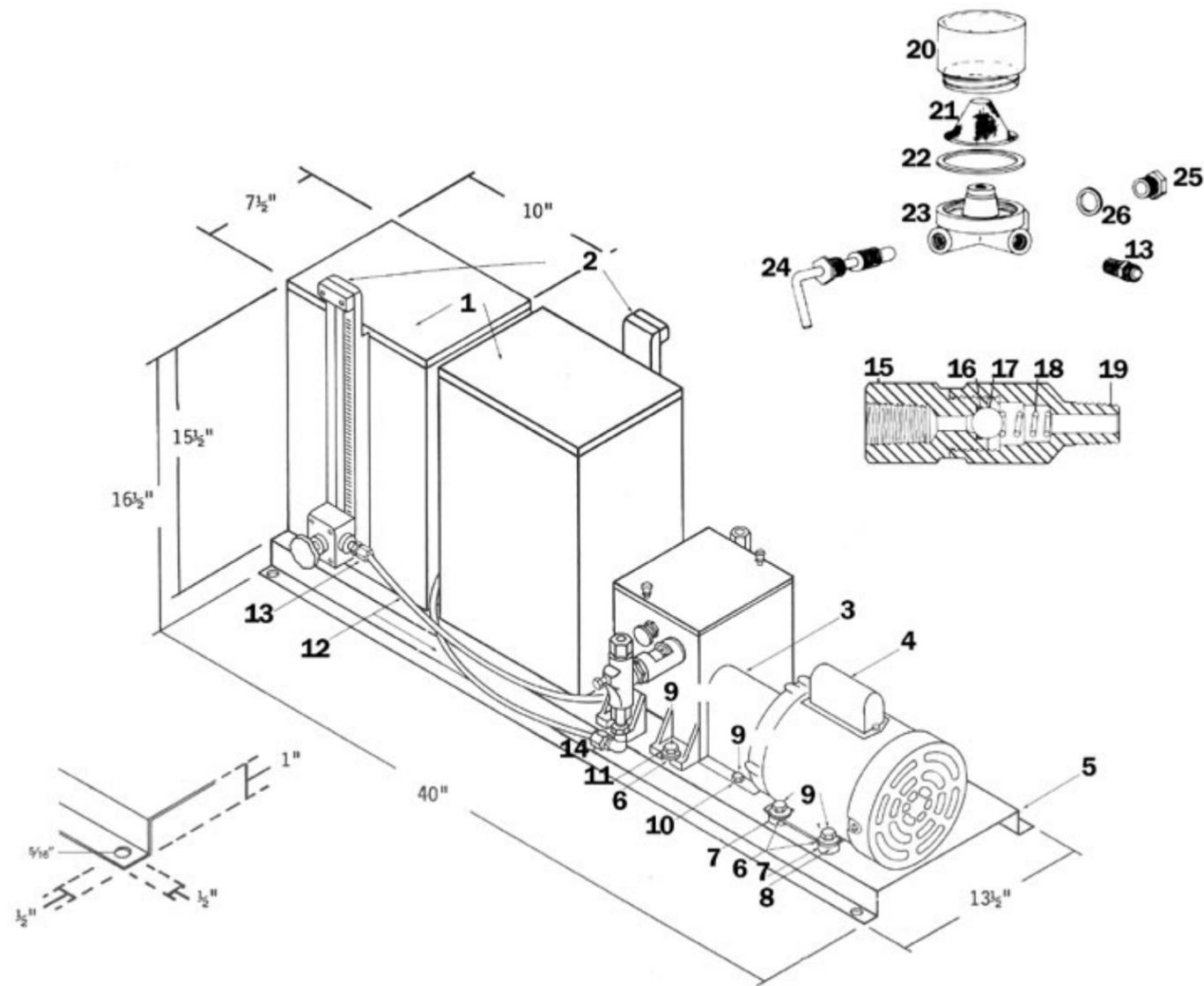




HEAD ASSEMBLIES AND PARTS

	PART NO	DESCRIPTION	MATERIAL	3/16"		1/4"		3/8"		1/2"	
				S	D	S	D	S	D	S	D
	ASC-2041	Head Assembly 3/16"	Stainless Steel	x							
	ASC-1582	Head Assembly 1/4"	Stainless Steel			x					
	ASC-1578	Head Assembly 1/4"	Carbon Steel		x						
	ASC-1583	Head Assembly 3/8"	Stainless Steel					x			
	ASC-1579	Head Assembly 3/8"	Carbon Steel				x				
	ASC-1584	Head Assembly 1/2"	Stainless Steel							x	
	ASC-1580	Head Assembly 1/2"	Carbon Steel							x	
1	ASC-2040	Head Body 3/16	Stainless Steel	x							
	ASC-291	Head Body 1/4"	Stainless Steel			x					
	ASC-275	Head Body 1/4"	Carbon Steel		x						
	ASC-425	Head Body 3/8"	Stainless Steel					x			
	ASC-276	Head Body 3/8"	Carbon Steel				x				
	ASB-349	Head Body 1/2"	Stainless Steel								x
	ASC-272	Head Body 1/2"	Carbon Steel							x	
2	ASB-1471	Plunger 3/16	17-4PH Stainless Steel	x							
	ASB-1175	Plunger 1/4"	17-4PH Stainless Steel		x	x					
	ASB-1176	Plunger 3/8"	17-4PH Stainless Steel				x	x			
	ASB-1177	Plunger 1/2"	17-4PH Stainless Steel						x	x	
3	ASA-5642	Packing Gland 3/16"	Stainless Steel	x							
	ASA-1463	Packing Gland 1/4"	Stainless Steel		x	x					
	ASA-957	Packing Gland 3/8"	Stainless Steel				x	x			
	ASA-1219	Packing Gland 1/2"	Stainless Steel						x	x	

	PART NO	DESCRIPTION	MATERIAL	3/16"		1/4"		3/8"		1/2"	
				S	D	S	D	S	D	S	D
4	ASA-3969	Plunger Packing 3/16"	Buna-N	x							
	ASA-1461	Plunger Packing 1/4"	Buna-N		x	x					
	ASA-1456	Plunger Packing 3/8"	Buna-N					x	x		
	ASA-959	Plunger Packing 1/2"	Buna-N							x	x
	ASA-3967	Plunger Packing 3/16"	Viton	x							
	ASA-4102	Plunger Packing 1/4"	Viton		x	x					
	ASA-4101	Plunger Packing 3/8"	Viton					x	x		
	ASA-4103	Plunger Packing 1/2"	Viton							x	x
	ASA-3948	Plunger Packing 3/16"	Hard	x							
	ASA-2295	Plunger Packing 1/4"	Hard		x	x					
	ASA-1875	Plunger Packing 3/8"	Hard					x	x		
	ASA-1874	Plunger Packing 1/2"	Hard							x	x
5	ASB-1173	Yoke	Ductile Iron	x	x	x	x	x	x	x	x
6	ASC-1604	Yoke Cover	Plastic	x	x	x	x	x	x	x	x
7	ASA-4127	Yoke Packing	Buna/Rubber	x	x	x	x	x	x	x	x
8	ASA-4094	Yoke Packing Nut	Brass	x	x	x	x	x	x	x	x
9	ASA-806	Seat - Metal to Metal	Stainless Steel		x	x	x	x	x	x	x
10	ASB-737	Seat with Vitron O-Ring	Stainless Steel		x	x	x	x	x	x	x
11	ASB-737-0	Seat with Buna-N O-Ring	Stainless Steel		x	x	x	x	x	x	x
12	ASB-737-TFE	Seat with Teflon O-Ring	Stainless Steel	x	x	x	x	x	x	x	x
13	ASA-4256	Washer (2)	Steel	x	x	x	x	x	x	x	x
14	ASA-1496	Injector Head Top Bushing	Stainless Steel		x	x	x	x	x	x	x
15	ASA-77	Spring	Stainless Steel		x	x	x	x	x	x	x
16	ASA-54	Ball 3/8"	Stainless Steel	x	x	x	x	x	x	x	x
17	ASA-53	Ball 1/2"	Stainless Steel	use only with the ASA-771 (Item 23)							
18	ASA-1497	Priming Valve	Stainless Steel		x	x	x	x	x	x	x
19	ASA-5462	Priming Valve 3/16"	Stainless Steel	x	x	x	x	x	x	x	x
20	ASA-225	Injection Head Lock	Brass	x	x	x	x	x	x	x	x
21	ASA-1220	Packing Nut Gland	Stainless Steel	x	x	x	x	x	x	x	x
22	ASA-4095	Wiper Drip Ring (2)	Buna-N	x	x	x	x	x	x	x	x
23	ASA-771	Bottom Bushing Metal to Metal	Stainless Steel		x	x	x	x	x	x	x
24	ASB-736	Bottom Bushing w Vitron O-Ring	Stainless Steel		x	x	x	x	x	x	x
25	ASB-736-0	Bottom Bushing w Buna O-Ring	Stainless Steel		x	x	x	x	x	x	x
26	ASB-736-TFE	Bottom Bushing w Teflon O-Ring	Stainless Steel	x	x	x	x	x	x	x	x
27	ASA-1216	Bottom Bushing 3/16"	303 Stainless Steel		x	x	x	x	x	x	x
28	ASA-290	Pin	Steel	x	x	x	x	x	x	x	x
29	ASA-126	Ball 1/4"	Stainless Steel		x	x	x	x	x	x	x



TANKS, BASES AND MOTOR ASSEMBLY

	PART NO	DESCRIPTION	QUANTITY		
			Single Tank	Double Tank	Multi-Head per each unit added
1	ASA-664	Reservoirs	1	2	
2	ASB-871-NS	Tank Gauge with Tubing and Fittings	1	2	
3	ASB-1 1167	Coupling Guard	1	1	1
	ASA-4308-BA-OP	115/230V 48 Fr Motor, ODP, 1 pH, 1/4 HP, 60Hz	1	1	1
	ASA-4311-BA-OP	115/230V 48 Fr Motor, 1pH, 60Hz, TEFC	1	1	1
4	ASA-4312-BA-OP	230/460V 48 Fr Motor, 3 pH, 60Hz, TEFC	1	1	1
	ASA-4313-BA-OP	115/230 56 Fr Motor, 1 pH, 60Hz, Explosion Proof	1	1	1
	ASA-4314-BA-OP	230/460V 56 Fr Motor, 3 pH, 60Hz, Explosion Proof	1	1	1
	ASA-4199-BA-XLB	Double Tank Pump Base - 53"		1	
5	ASA-4199-BA-LB	Single Tank Pump Base - 43"	1		
	ASA-4199-BA	No Tank Pump Base - 20"			
6	7A-1/420x1	Hex Head Capscrew	4	4	
7	ASA-1741	Electric Meter Spacer	4	4	
8	1B-1/4	Flat Washer Std	8	8	4
9	29A-1/420	Finished Hex Nut	10	10	6
10	7A-1/420x7/8	Hex Head Capscrew	1	2	2
11	1A-1/4	Plated Lockwasher	8	8	4
12	ASA-4170-BA	Polyflo Tubing - In	1	1	
13	ASA-3118	Connector	1	2	
14	ASA-3116	Elbow	1	2	
	1B-5/16	Flat Washer Std	2	4	
	7A-1/420x5/8	Hex Head Capscrew	1	2	2
	7A-11/420x11/4	Hex Head Capscrew	4	4	4
	29A-5/1618	Finished Hex Nut	1	1	
	ASA-226	Long Nut	1	1	
	ASA-675	Stainless Steel Line Check	1	1	1
	ASA-676	Brass Line Check	1	1	1
	ASB-38	Sight Feed Assembly	1	2	

Accessories

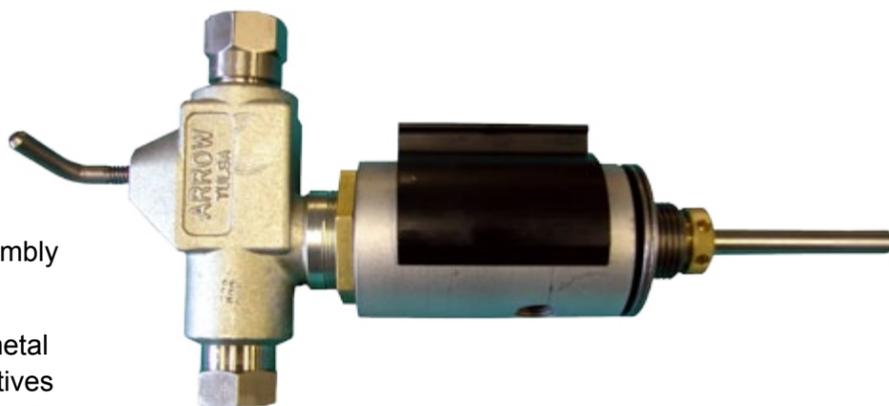
OPTIONAL EQUIPMENT

	PART NO.	DESCRIPTION	QTY.	
15	ASA-1297	Inlet End	1	
16	ASA-2597	O-Ring/Buna	1	
	ASA-2580	O-Ring/Vitron	1	
17	ASA-54	Steel Ball-3/8	1	
18	ASA-391	Spring	1	
19	ASA-1296	Outlet End	1	
	ASA-675	Stainless Steel Line Check	1	
	ASA-676	Brass Line Check	1	
	ASA-677	Long Line Check	1	
	ASA-678	Short Line Check	1	
	ASB-38	Sight Feed Assembly - 20-26 & 13	1	
	20	ASA-98	Bowl/Sight Feed Assembly	1
	21	ASA-206	Sight Feed Strainer	1
22	ASA-104	Sight Feed Bowl Gasket	1	
23	ASB-39	Sight Feed Body	1	
24	ASA-101	Shut Off Assembly	1	
25	ASA-302	Strainer Bushing Assembly	1	
26	ASA-306	Gasket-Sight Foreword Assembly	1	

INJECTOR HEAD

FEATURES

- ▶ The standard injector heads have steel bodies with stainless steel trim. A 316 stainless steel head assembly is available as an option.
- ▶ Teflon packing and metal-to-metal seats are available as alternatives to standard injector head parts at no additional cost when specified on new pumps.
- ▶ Buna-N O-Ring type resilient check seats are standard on all heads.

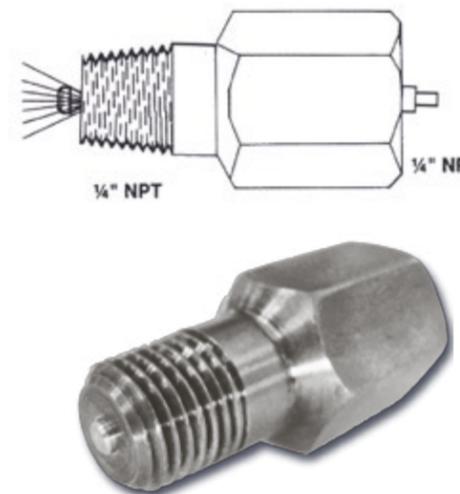


AM-0001 ATOMIZER

FEATURES

- ▶ Makes chemical more effective by breaking it up at point of injection
- ▶ Accelerates the mixing of liquids or promotes atomization of liquid into gas
- ▶ Use for line check or as a backup for line check
- ▶ All stainless steel construction

Team up the AM-0001 Atomizer with an Arrow Chemical Pump for the best possible combination.



LINE CHECKS

FEATURES

- ▶ Available in 1/4" brass (ASA-676) 3000 psi max working pressure
- ▶ Available in 1/4" stainless steel (ASA-675) 6000 psi max working pressure
- ▶ Available in 1/2" stainless steel (ASB-283) 6000 psi max working pressure



A line check should be installed in the discharge line as close to the point of injection as possible to prevent backup and contamination of chemical.

TANK PLUGS

- ▶ Patch and/or permanently repair holes in storage tanks
- ▶ Fills a puncture or opening with a permanent and durable seal

PART NO.	DESCRIPTION
1/4-TP	1/4" Tank Plug
3/8-TP	3/8" Tank Plug
1/2-TP	1/2" Tank Plug



TANK PATCHES

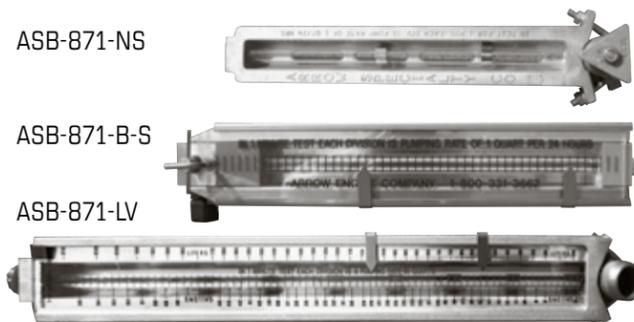
- ▶ Special heat treated, shear proof, solid hinge pin
- ▶ Wetted parts, heavy duty cadmium plated
- ▶ Thick 1/8" neoprene gaskets
- ▶ Installation is easy with only a screwdriver & wrench
- ▶ Patches a 3/4" to 2" hole



PART NO.	DESCRIPTION
ASST-TP	(6) 1/4", (6) 3/8", & (2) 1/2" Tank Plugs
AS-316	Tank Patch w/Lever Operation
AS-317	Vertical Application Toggle-Type Patch

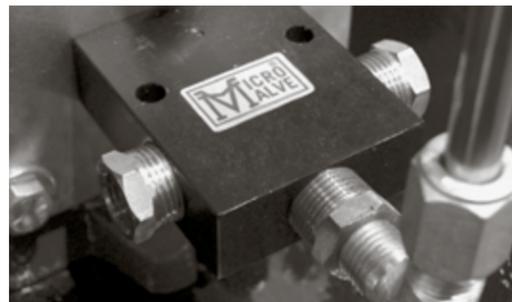
GAUGES

PART NO.	DESCRIPTION
ASB-871-NS	Tank gauge for a 5-gal tank (new style)
ASB-871-B-S	Tank gauge for a 5-gallon tank
ASB-871-LV	Barrel gauge for a 55-gallon barrel



MICRO VALVE

- ▶ Trouble free Microvalve replaces ASA-4147 lapped disk
- ▶ Operates slowly one stroke every two minutes to twenty strokes per minute.
- ▶ Kit available to convert existing pumps part number ASB-446-MV
- ▶ Complete pump with Microvalve



Replace the Pilot Valve Assembly in your 5100Series TXT or Older 510 Arrow Pump with the new Microvalve Assembly

CHEMICAL PUMP AND CHEMICAL PUMP PARTS WARRANTY

I. TERMS OF EXPRESS LIMITED WARRANTY

Arrow Engine Company warrants that it will repair or replace, at its election and expense, a chemical pump or chemical pump part (hereinafter referred to as "Products") manufactured by Arrow Engine Company, which proves to have had a defect in material or workmanship. All warranty work must be pre-approved by Arrow Engine Company.

II. TERM LIMITATIONS OF EXPRESS LIMITED WARRANTY

This coverage shall commence upon shipment of Product and shall expire 1 year after ship date.

III. ARROW ENGINE COMPANY'S RESPONSIBILITIES UNDER THE EXPRESS LIMITED WARRANTY

Arrow Engine Company shall be responsible for:

- The repair or replacement, at Arrow Engine Company's election, of covered product and all reasonable labor required regarding a warranted failure during the express limited warranty and term. All such labor shall be provided by Arrow Engine Company's authorized contractor or distributor.
- Reasonable and necessary travel (total mileage not to exceed 300 miles) and expenses incurred by Arrow Engine Company's authorized contractors or distributor. Additional mileage and/or travel by air, water or land will need preauthorization from Arrow Engine Company.
- Replacement of lubricating oil, coolant, filter elements, or other normal maintenance items that are contaminated and/or damaged as a direct result of a warranted failure.

NOTWITHSTANDING THE FOREGOING, ARROW ENGINE COMPANY SHALL NOT BE RESPONSIBLE FOR LABOR COSTS ASSOCIATED WITH WARRANTY CLAIMS.

IV. OWNER/ DISTRIBUTOR/ CONTRACTOR'S RESPONSIBILITIES UNDER THE EXPRESS LIMITED WARRANTY

Owner shall be responsible for:

- The operation and maintenance of the Product within the guidelines established by Arrow Engine Company.
- Making the Product available to Arrow Engine Company or authorized contractors or distributors for any warranty repair, during normal business hours.
- All additional costs incurred for premium or overtime labor, should owner request that repairs be made on a premium overtime schedule.
- All costs incurred as the result of removal or reinstallation of the Product as may be required to effect any warranted repair.
- All administrative costs and expenses resulting from a warranted failure.
- Any costs of transportation, towing, repair facilities, or associated costs.
- Loss of revenue and loss of/or damage to real and/or personal property.
- All warranty work must be pre-approved by Arrow Engine Company
- Warranted repairs not to exceed 50% of the product replacement cost without prior approval from Arrow Engine Company. Replacement cost equates to distributor net price from factory.

V. LIMITATION OF ARROW ENGINE COMPANY'S OBLIGATIONS

The obligations of Arrow Engine Company under this express limited warranty shall be waived and voided, and Arrow Engine Company shall not, thereafter, be responsible for:

- Any failure resulting from owner or operator abuse or neglect, including but not by way of limitation, any operation, installation, application, or maintenance practice not in accordance with guidelines or specifications established by Arrow Engine Company; or
- Any failure resulting from unauthorized modifications or repairs of the Products or;
- Any failure resulting from overload, overspeed, overheat, accident, improper storage; or
- Failure of owner, contractor or distributor to promptly provide notice of a claimed defect. All warranty claims must be authorized, documented and submitted within 30 days of the failure date while under the warranty period; or
- Failure of Products for which Arrow Engine Company did not receive properly completed start-up reports; or
- Repairs of a covered failure performed with non-genuine Arrow Engine Company parts; or
- Repairs of a covered failure performed by non-authorized contractors or distributors; or
- Failure to make Products available to Arrow Engine Company or its authorized representatives, or
- Failure to supply documents such as drawing and specifications relating to the specific application of the Products.

VI. APPLICABILITY AND EXPIRATION

The warranties set out above are extended to all owners in the original chain of distribution. The warranties and obligations of Arrow Engine Company shall expire and be of no further effect upon the dates of expiration of the applicable warranty periods. The foregoing sets forth Arrow Engine Company's only obligations and owners' exclusive remedy for breach of warranty, whether such claims are based on breach of contract, tort (including negligence and strict liability), or other theories, and the foregoing is expressly in lieu of other warranties whatsoever expressed, implied, and statutory, including without limitation, the IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS.

Notwithstanding the preceding, in no event shall Arrow Engine Company be liable for any direct, special, incidental or consequential damages (whether denominated in contract, tort, strict liability, negligence or other theories) arising out of this Agreement or the use of any Products provided under this Agreement. Any action arising hereunder or relating hereto, whether based on breach of contract, tort (including negligence and strict liability), or other theories must be commenced within one (1) year after the cause of action accrues or it shall be barred.

With respect to products not manufactured by Arrow Engine Company, Arrow makes no representations or warranties of whatsoever nature, directly or indirectly, expressed or implied including but not limited to any representations or warranties with respect to suitability, durability, fitness for a particular purpose or merchantability, except to the extent that Arrow can enforce warranties provided by the manufacturers of such parts.

Effective 5/17/06 and supersedes all previously issued warranty.

ARROW MANUFACTURED
**REPLACEMENT
PARTS**

Caterpillar® Engines

G379 G3304
G398 G3306
 G399

Waukesha® Engines

F2895 P9390
F3521 145G/F817
F5108 140G/F554
L5790 WAK/1197
 L7042

Fairbanks Morse® Engines

ZC-118 ZC-503
ZC-208 ZC-739
 ZC-346

Ajax® Engines

5 x 6½
EA-22, 6½ x 8 CMA
EA-30, 7¼ x 8 CMA
E-30, 7½ x 10 CMA
E-42, 8½ x 10 CMA
DP-60, 9½ x 10 CMA
DP-70/80/160, 11 x 14 CMA
DP-115/230, 13¼ x 16

Piston & Rod Assemblies
180
360
600
800

Waukesha®, VHP®, and VGF® are registered trademarks of Dresser Industries, Inc., Caterpillar®, is a registered trademark of Caterpillar, Inc., Fairbanks Morse® is a registered trademark of Coltec Industries, Inc., and Ajax® is a registered trademark of Cameron International Corporation.

OEM

C-Series

*C-46 *C-96
*C-66 *C-101
*C-106 *C-255

VR-Series

VR-155 VR-310
VR-220 *VR-330
VR-232 *VR-330CF
*VR-260 VR-265
VR-283 *VR-380

A-Series

*A42 *A54 *A62

K6 Slow Speed Engine

*

Lufkin Engines

L-333 L-1770
*L-795 L-2165

Witte Engines

98 E15 F32
B12 E20 F42

Arrow Chemical Pumps

* 10 Series (beam operated)
* 12 & 13 Series (pneumatic)
* 430 Series (electric)
* 500 & 510 Series (pneumatic)
* Solar Chempump

Gas Compressors

* VRC-2 * VRC-CNG

Gas Products

* Volume Tanks
* Vertical & Horizontal Separators
* Suction Scrubbers
* Meter Runs
* Coalescers
* Skids



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