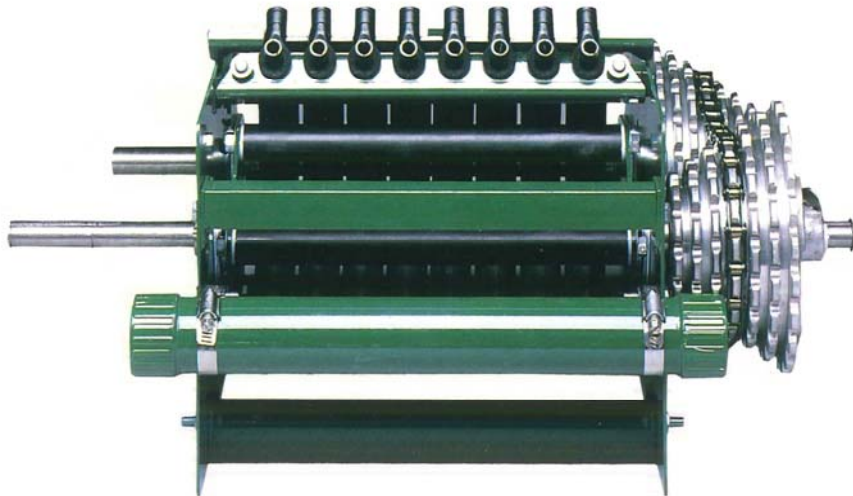




OVAL TUBE SQUEEZE TUBE PUMPS

PARTS AND INSTRUCTION MANUAL



Model 8L Shown

CDS-JOHN BLUE COMPANY

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SAFETY PRECAUTIONS

- Safety equipment such as gloves, goggles, etc. should be worn at all times while performing any repairs, adjustments, or maintenance to the pumping system
- A careful operator is the best insurance against an accident.
- Only trained and responsible people should operate equipment.
- Check all valves, fittings, hose clamps, etc. for wear / leaks before admitting process fluid to the system. Also, check again at regular intervals.
- Replace hoses when worn, cracked, or if leaking.

WARNING: USE OF THIS PRODUCT FOR ANY PURPOSES OTHER THAN ITS ORIGINAL INTENT, ABUSE OF THE PRODUCT, AND/OR MODIFICATION TO THE ORIGINAL PRODUCT IS STRICTLY PROHIBITED BY CDS-JOHN BLUE COMPANY. CDS-JOHN BLUE COMPANY RESERVES THE RIGHT TO DENY WARRANTY OR LIABILITY CLAIMS IN ANY/ALL SITUATIONS INVOLVING MISUSE, ABUSE OR MODIFICATION.

THE ORIGINAL INTENT OF THIS PRODUCT DOES NOT INCLUDE USE WHERE THE MAXIMUM ALLOWED SPEED, PRESSURE, OR TEMPERATURE IS EXCEEDED, AND IT DOES NOT INCLUDE APPLICATIONS UTILIZING FLUIDS THAT ARE NOT COMPATIBLE WITH THE PRODUCT'S COMPONENT MATERIALS. DO NOT USE THIS PRODUCT WITH FLAMMABLE OR COMBUSTIBLE FLUIDS SUCH AS GASOLINE, KEROSENE, DIESEL, ETC..., AND DO NOT USE IN EXPLOSIVE ATMOSPHERES. FAILURE TO FOLLOW THIS NOTICE MAY RESULT IN SERIOUS INJURY AND/OR PROPERTY DAMAGE AND WILL VOID THE PRODUCT WARRANTY. IF IN DOUBT ABOUT YOUR APPLICATION, CONTACT YOUR STOCKING DEALER OR THE CDS-JOHN BLUE TECHNICAL STAFF AT 1-800-253-2583.

To The Owner

This manual has been prepared and illustrated to assist you in the maintenance of your CDS – JOHN BLUE PUMP. Enter your serial number and the date of the purchase in the space provided below for future reference in service information or for ordering parts. Because our engineering department is constantly improving products, we reserve the right to make design and specification changes without notice.

Model Number: _____ Serial Number: _____ Purchase Date: _____

PUMP SPECIFICATIONS

Maximum Output per Hose:	3/8" Diameter Hose –	0.63 gpm
	5/8" Diameter Hose –	1.26 gpm
Maximum Speed:	100	
RPM Maximum Pressure:	6 psi	
Rate Range GPA:	3/8" Diameter Hose –	1.5 to 25*
	5/8" Diameter Hose –	3 to 50*

Part Number	Number of Rows	Metering Hose Size	Discharge Hose Size	Suction Hose Size
Standard Pump Models				
8B-1	8	3/8"	3/8"	1 1/4" FNPT
8L	8	5/8"	1/2"	1 1/4" FNPT
12B-1	12	3/8"	3/8"	1 1/4" FNPT
12L	12	5/8"	1/2"	1 1/4" FNPT
16B-1	16	3/8"	3/8"	1 1/4" FNPT
16L	16	5/8"	1/2"	1 1/4" FNPT
24B-1	24	3/8"	3/8"	1 1/4" FNPT

Hydraulic Pump Models				
8B-1H	8	3/8"	3/8"	1 1/4" FNPT
8L-H	8	5/8"	1/2"	1 1/4" FNPT
12B-1H	12	3/8"	3/8"	1 1/4" FNPT
12L-H	12	5/8"	1/2"	1 1/4" FNPT
16B-1H	16	3/8"	3/8"	1 1/4" FNPT
16L-H	16	5/8"	1/2"	1 1/4" FNPT

Combination Pump Models				
8B-1/8L	16	3/8 & 5/8"	3/8 & 1/2"	1 1/4" FNPT
12B-1/8L	20	3/8 & 5/8"	3/8 & 1/2"	1 1/4" FNPT

Double Pump Models				
24LD	24	5/8"	1/2"	1 1/4" FNPT
32BD-1	32	3/8"	3/8"	1 1/4" FNPT
40BD-1	40	3/8"	3/8"	1 1/4" FNPT
48BD-1	48	3/8"	3/8"	1 1/4" FNPT

Note:

* GPA rating based on 5 MPH, 30 inch rows.

- B-1 pumps have stainless steel fittings.
- L pumps have plastic fittings.
- Combination pumps have B-1 pump at front (input drive end).

INSTALLATION INSTRUCTIONS

1. Pump Location

The CDS-John Blue Squeeze Tube Pump should always be mounted even with or lower than the fertilizer tank for accurate metering. The pump can be mounted to any flat surface. There is no need to have the pump mounted in the middle of the equipment. The pump creates enough pressure to place it at the end of the implement. Make sure all connections, filters and couplings are tight so the pump can lift and pull product to it. The speed should not exceed 100 RPM.

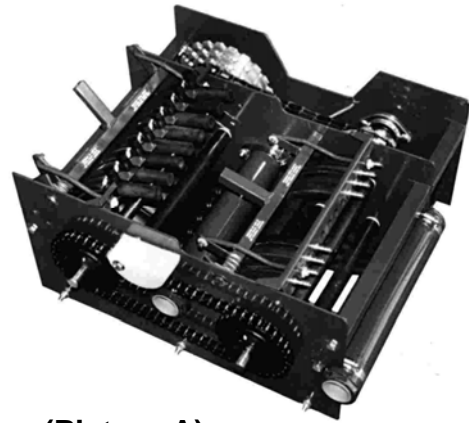
Any shaft that turns in ratio to the ground can be considered to drive the pump. The pump only requires a small amount of torque to turn it. Typically it is one of the seed shafts, which can be used, but try to have it before the transmission so that if you change seed population the fertilizer rate remains unchanged.

2. Pump Mounting

Two angle iron bars with holes are supplied and can be bolted to each side of the pump. Undo the frame end plate bolts, match up the holes in the angle iron and retighten the nuts. The hook bolts supplied can be used over the angle iron or the frame channel to bolt the pump to your equipment.

3. Pump Mounting of Combination Pumps

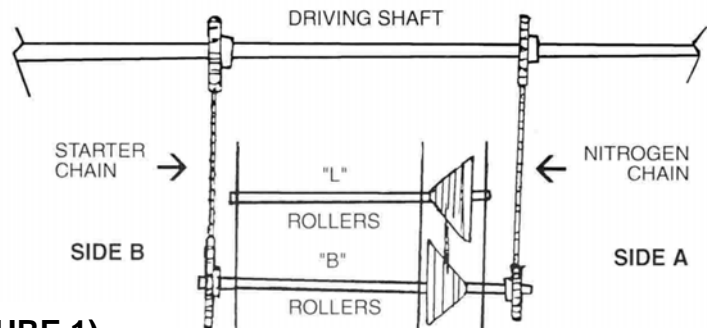
The mounting of combination and double pumps is not different than what is described above as to location and drive system. The exception is when you want to keep the starter fertilizer always at the same rate and want to use the coned sprockets to vary the nitrogen rates. Figure 1 shows this type of system, where you drive both sides of the pump.



(Picture A)

Special plumbing is needed because both manifolds will have product flowing to it. If two different products are to be pumped, two independent plumbing systems must be used. As the center manifold is fed through the chain it is important to check the clearance with the hose and fittings used.

Note: The sprockets that come on the side across from the coned sprockets are not used and must be removed.



(FIGURE 1)

Tube tension needs to be put on both rollers, see section 7. Rates of application are the same as for a single pump and are detailed in the rate chart. Remember, “L” tubes apply twice as much product as “B” tubes at the same RPM. You must calculate the effect of the sprockets for both.

4. Hose Arrangement

When you do not require all the squeeze tubes to be used, remove the tubes uniformly starting in the middle taking one tube first from one side then the other. The plugs supplied should be installed in the manifold in place of the tubes.

5. Plumbing

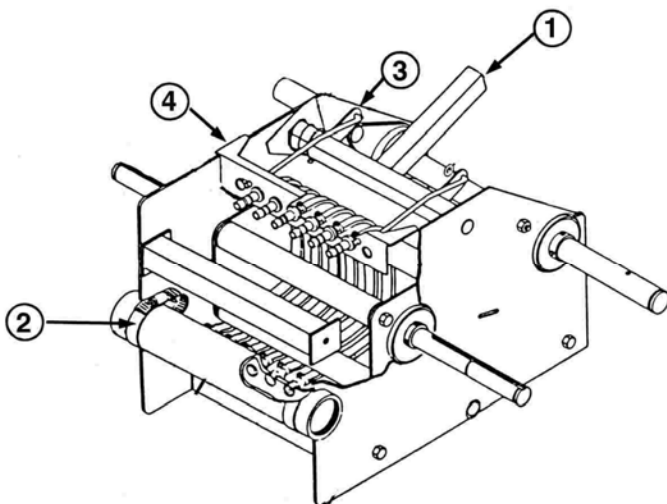
CDS-John Blue Company recommends using 1-1/4” ID hose between the tank and the pump. Smaller lines may starve the pump reducing the application rate. Filters are recommended, but when rates are lower than anticipated many times it is a filter that is clogged or the strainer mesh is too small.

A loop at the end of the delivery line will prevent product from draining as it will stop air from entering the hose to displace product. Since the pump is holding the product all that will drain is the small amount that can be displaced by air up to the loop in the line. A ball valve should be used to shut off any system when not in use to ensure no leakage occurs.

Always use Teflon tape or pipe joint compound on all connections. Never over tighten fittings as this may cause them to crack. **Check** the squeeze tube screw clamps, as they may need to be retightened. The screw clamps when installed on new squeeze tubes can cause the tubes to extrude slightly under pressure of the clamp. As this occurs over time it is best to retighten the screw clamps slightly before starting a new pump. **Only retighten the screw clamps on the inlet side where the tube is attached to the manifold. Do not retighten the fittings in the manifold; they are sealed at the factory.**

6. Chain Adjustment

The chain between the CDS-John Blue Squeeze Tube coned sprockets is adjusted by removing the master link and moving the chain to the correct position.



7. Tube Tension Adjustment

The oval-shaped tubes need to be stretched across the four rollers in order to perform efficiently. To tighten the tension on the tubes insert the handle, supplied with the pump, on the tube tension bar #1 (see drawing). Using the handle pull forward toward the manifold #2 until the latch #3 engages into the notch on the frame end plate. When engaged the outlet fitting rack #4 will have been pushed forward and will stay in the forward position. There are two notches on the frame end plate, use only the minimum tension to stop product from flowing through the pump. For new pumps this is the first notch. The pump will not work without tube tension. When the pump is not being used, the tension should be taken off the tubes by releasing the latch #3.

Check the filter size to make sure product can flow easily, open the ball valve and check for leaks. Before going to the field, always check the rates as there can be variables that can cause a difference between calculated rates and actual rates.

8. Hydraulic Pumps

Tractor hydraulics can be used to power the CDS-John Blue Squeeze Tube Pumps. Hydraulic pumps come with the hydraulic motor and control valve, which is connected with standard hose and fittings. There are many power take-off options associated with different tractor manufacturers so it is best to consult your local tractor supplier for proper installation.

MAINTENANCE

When the pump is not in use, **always** take the tension off the tubes by releasing the latch. See #7, Tube Tension Adjustment instructions.

DRIVE FACTOR EQUATIONS

The information and charts are provided to assist you in the initial set up of your squeeze tube pump. The attached information provides the basic calculations for a squeeze pump installation. This information is also available online at www.cds-johnblue.com under "Calculate your Rates." It is highly recommended that you take advantage of the website to assist you in your rate calculations.

COMPLETE THE FOLLOWING FOR ALL APPLICATIONS

_____ Row Spacing = actual distance in inches between each point of application.

_____ GPA Desired = amount of material to be applied in gallons per acre (GPA).

_____ Wheel Diameter = ground wheel diameter in inches.
(If using a rub wheel measure the rub wheel diameter.)

_____ Speed = the speed you will be traveling in MPH.

Step 1 Finding Pump RPM

$$\frac{\text{_____}}{\text{Row Spacing}} \times \frac{\text{_____}}{\text{GPA Desired}} \times \begin{matrix} .134 \text{ for B pump or} \\ .067 \text{ for L pump} \end{matrix} = \frac{\text{_____}}{\text{RPM of Mainshaft}}$$

Example: Row spacing is 12 inches; you want 29 GPA using an "L" pump.
Correct answer: 12 x 29 x .067 = 23 RPM (Round off to whole number)

Never operate the pumps over 100 RPM, this is affected by ground speed; see "Adjustment for Speed."

**** For Hydraulic Driven Pumps; see "Adjustment for Speed." ****

Step 2 Finding Sprocket Ratio

The sprocket ratio is used to determine the size sprocket needed on the ground wheel and pump jackshaft.

$$\frac{1681}{\text{RPM Main Shaft} \times \text{Wheel Diameter}} = \frac{\text{Ratio Pump Jackshaft to Ground Wheel}}{\text{Ratio Pump Jackshaft to Ground Wheel}}$$

Example: RPM is 23 (from step 1) and your wheel diameter is 30 inches.

Correct answer: $\frac{1681}{(23)(30)} = 2.4$: Divide 1681 by 23 then divide the answer 73 by 30 = 2.4

Step 3 Finding Actual Sprockets to Use

Count the number of teeth on the driving sprocket you are using. The driving sprocket is the sprocket on the ground wheel, rub wheel or existing shaft.

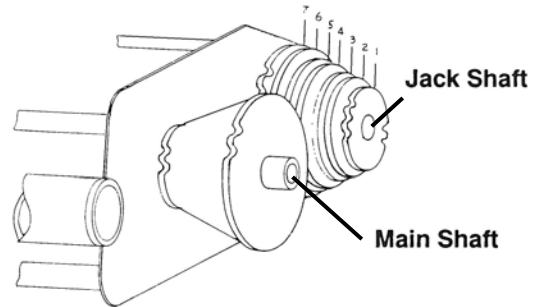
$$\frac{\text{Ratio from Step 2}}{\text{Ratio from Step 2}} \times \frac{\text{Teeth on Driving Sprocket}}{\text{Teeth on Driving Sprocket}} = \frac{\text{Teeth on Jack Shaft Sprocket}}{\text{Teeth on Jack Shaft Sprocket}}$$

Example: The number of teeth on your driving sprocket is 10.

Correct Answer: $2.4 \times 10 = 24$ tooth sprocket on pump's jackshaft.

Note that you may also use the coned sprockets to adjust the sprocket ratio between the Jack (input) shaft and Main shaft according to this chart:

Sprocket Pair #	Main shaft speed vs. Jack
1	0.45
2	0.60
3	0.77
4	1.00 (default)
5	1.28
6	1.66
7	2.20



Direct Couple to Existing Shaft

When you want to turn the pump's jackshaft directly from an existing shaft, complete Step 1 to find the main shaft RPM for the desired GPA. At the desired speed of application count the RPM of the existing shaft and divide that number by the mainshaft RPM to find the sprocket ratio.

$$\frac{\text{RPM of Existing Shaft}}{\text{Mainshaft RPM from Step 1}} = \frac{\text{Ratio Jackshaft to Existing Shaft}}{\text{Ratio Jackshaft to Existing Shaft}}$$

Example: RPM from Step 1 is 40 and your shaft turns 80 RPM's at 5 MPH.

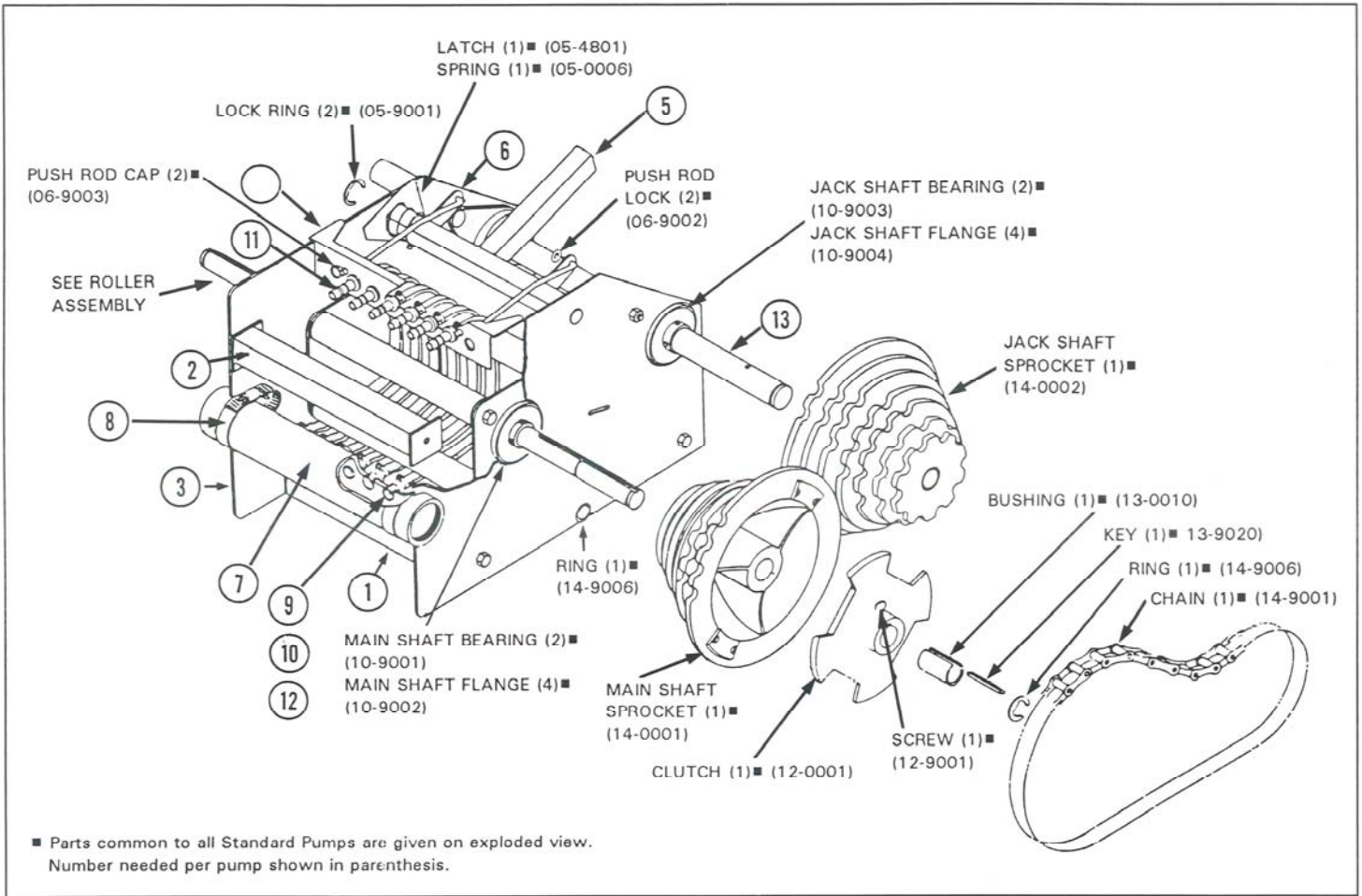
Correct Answer: 80 divided by 40 = 2.0 This is the ratio between the pump's jackshaft and your driving shaft. Use this factor in Step 3 above to select the correct cone sprocket position.

Adjusting for Speed

All calculations are based on 5 MPH. You need to adjust for the speed you plan to travel for hydraulic driven pumps to get the right RPM. For ground driven pumps we need to insure that the pump operates fewer than 100 RPM's at the speed you travel. Take the RPM from Step 1 or if you use the coned sprockets the adjusted RPM and multiply as follows:

3 MPH	RPM _____ x 0.6 = _____	7 MPH	RPM _____ x 1.4 = _____
4 MPH	RPM _____ x 0.8 = _____	8 MPH	RPM _____ x 1.6 = _____
5 MPH	RPM _____ x 1.0 = _____	9 MPH	RPM _____ x 1.8 = _____
6 MPH	RPM _____ x 1.2 = _____	10 MPH	RPM _____ x 2.0 = _____

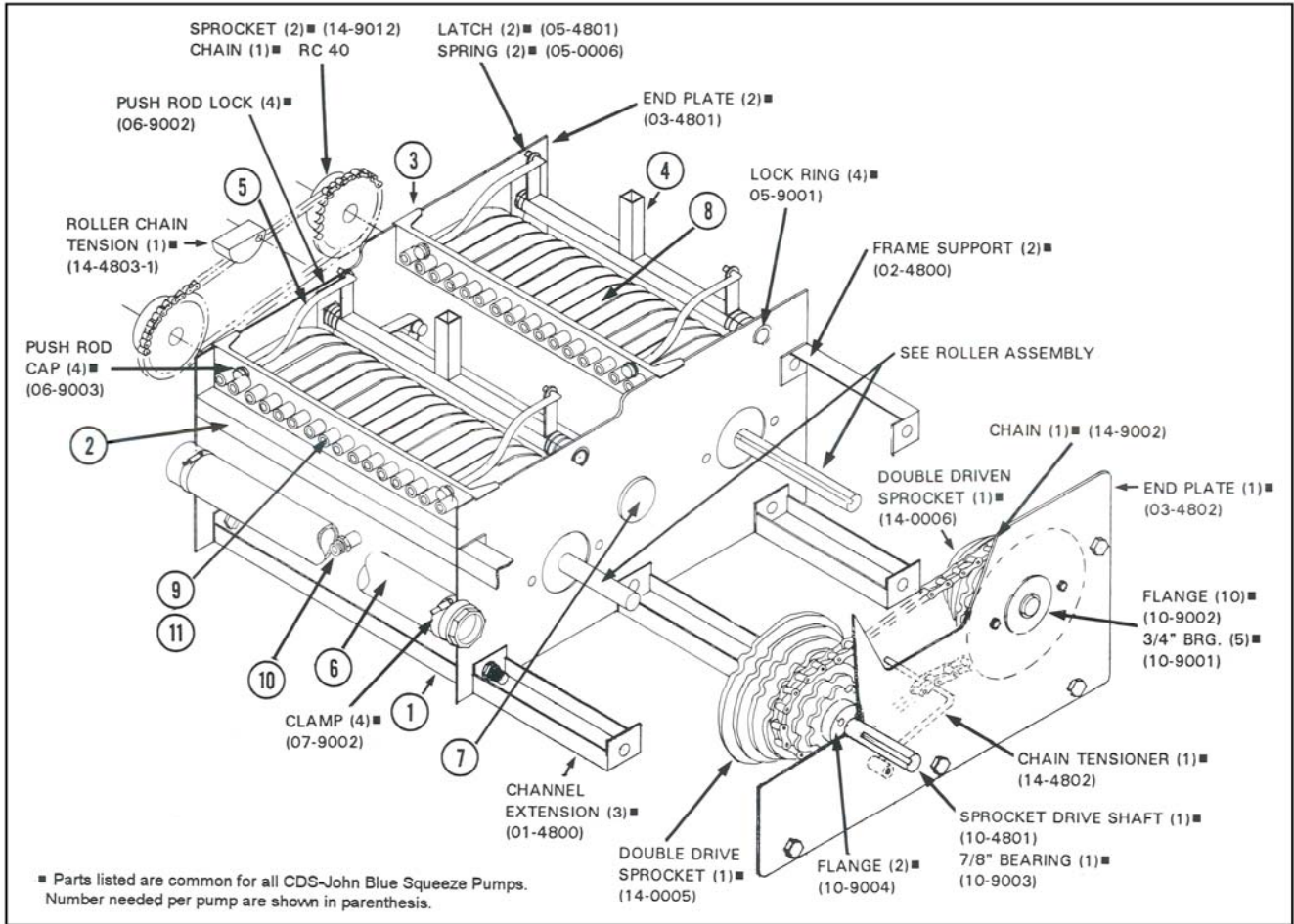
PARTS LIST: STANDARD SQUEEZE TUBE PUMP



Item #	Description	24B-1	16L	16B-1	12L	12B-1	8L	8B-1
1	Base Channel (2)	01-2410	01-1620	01-1610	01-1220	01-0820	01-0820	01-0810
2	Frame End Support	02-2410	02-1620	02-1610	02-1220	02-0820	02-0820	02-0810
3	Frame End Plate (2)	03-2410	03-2410	03-1610	03-2410	03-1610	03-1610	03-1610
4	Outlet Fitting Rack	04-2410	04-1620	04-1610	04-1220	04-1210	04-0820	04-0810
5	Tube Tension Rack	05-2410	05-1620	05-1610	05-1220	05-1210	05-0820	05-0810
6	Push Rod (2)	06-0011	06-0021	06-0011	06-0021	06-0011	06-0021	06-0011
7	Supply Manifold	07-2410	07-1620	07-1610	07-1220	07-1210	07-0820	07-0810
8	Manifold Clamp (2)	07-9002	07-9002	07-9001	07-9002	07-9001	07-9001	07-9001
9	Squeeze Tube*	08-0010	08-0020	08-0010	08-0020	08-0010	08-0020	08-0010
10	Inlet Fitting * Plastic	n/a	08-0021	n/a	08-0021	n/a	08-0021	n/a
	Inlet Fitting * SS	08-0015	n/a	08-0015	n/a	08-0015	n/a	08-0015
11	Outlet Fitting *	n/a	08-0022	n/a	08-0022	n/a	08-0022	n/a
	Outlet Fitting * SS	08-0013	n/a	08-0013	n/a	08-0013	n/a	08-0013
12	SS Screw Clamps*	08-9003	08-9004	08-9003	08-9004	08-9003	08-9004	08-9003
13	Jack Shaft	10-2411	10-1621	10-1611	10-1221	10-0821	10-0821	10-0811
	Manifold Plug*	08-9001	08-9002	08-9001	08-9002	08-9001	08-9002	08-9001

*Requirements based on number of outlets

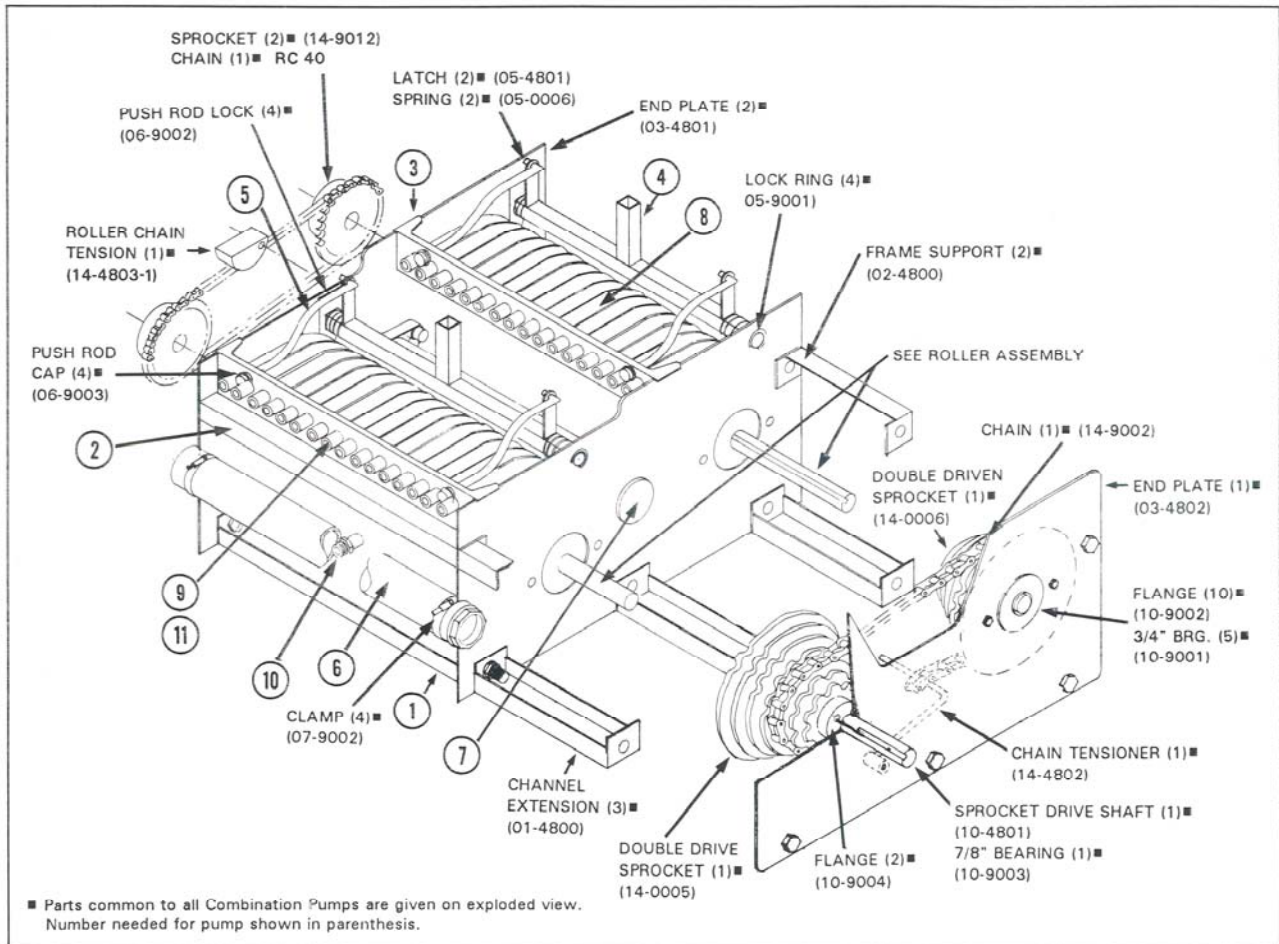
PARTS LIST: DOUBLE SQUEEZE TUBE PUMPS



Item	Description	24LD	32BD-1	40BD-1	48BD-1
1	Base Channel (3)	01-1220	01-1610	01-1620	01-2410
2	Frame Support Bar (2)	02-1220	02-1610	02-1620	02-2410
3	Outlet Fitting Rack (2)	04-1220	04-1610	04-2010	04-2410
4	Tube Tension Bar (2)	05-1220	05-1610	05-2010	05-2410
5	Push Rod (4)	06-0021	06-0011	06-0011	06-0011
6	Manifold - Front	07-1220	07-3211	07-2010	07-2410
7	Manifold - Center	07-2420	07-3212	07-4010	07-4812
8	Squeeze Tube*	08-0020	08-0010	08-0010	08-0010
9	Outlet Fitting * Plastic	08-0022	n/a	n/a	n/a
	Outlet Fitting * SS	n/a	08-0013	08-0013	08-0013
10	Inlet Fitting * Plastic	08-0021	n/a	n/a	n/a
	Inlet Fitting * SS	n/a	08-0015	08-0015	08-0015
11	SS Screw Clamps	08-9004	08-9003	08-9003	08-9003
	Manifold Plug*	08-9002	08-9001	08-9001	08-9001

*Requirements based on number of outlets

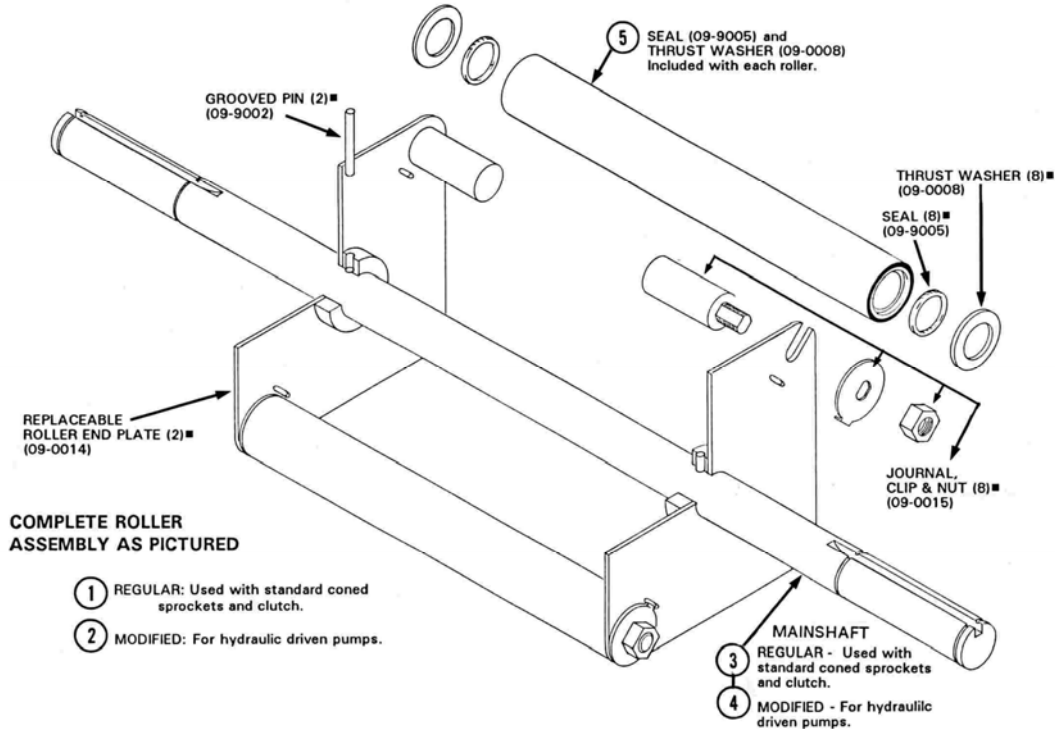
PARTS LIST: COMBINATION SQUEEZE TUBE PUMPS



Item	Description	8B-1 / 8L	12B-1 / 8L
1	Base Channel (3)	01-0820	01-0820
2	Frame Support Bar (2)	02-0820	02-0820
3	Outlet Fitting Rack (2)	8B 04-1210 8L 04-0820	12B 04-1210 8L 04-0820
4	Tube Tension Bar (2)	8B 05-1210 8L 05-0820	12B 05-1210 8L 05-0820
5	Push Rod (4)	8B 06-0011 8L 06-0021	12B 06-0011 8L 06-0021
6	Manifold - Front	07-1611	07-1610
7	Manifold - Center	07-1622	07-1622
8	Squeeze Tube*	B 08-0010 L 08-0020	B 08-0010 L 08-0020
9	Outlet Fitting * SS Outlet Fitting * Plastic	B 08-0013 L 08-0022	B 08-0013 L 08-0022
10	Inlet Fitting * SS Inlet Fitting * Plastic	B 08-0015 L 08-0021	B 08-0015 L 08-0021
11	SS Screw Clamps	B 08-9003 L 08-9004	B 08-9003 L 08-9004
	Manifold Plug*	L 08-9002 B 08-9001	L 08-9002 B 08-9001

*Requirements based on number of outlets

Parts List Complete Roller Assembly



Standard Squeeze Tube Pump

Item	Description	24B-1	16L	16B-1	12L	12B-1	8L	8B-1
1	Regular Roller	09-2410	09-1620	09-1610	09-1220	09-0820	09-0820	09-0810
2	Modified Roller	09-2412	09-1622	09-1612	09-1222	09-0822	09-0822	09-0812
3	Regular Mainshaft	10-2410	10-1620	10-1610	10-1220	10-0820	10-0820	10-0810
4	Modified Mainshaft	10-2412	10-1622	10-1612	10-1222	10-0822	10-0822	10-0812
5	Rollers (4)	09-2411	09-1621	09-1611	09-1221	09-0821	09-0821	09-0811

Double and Combination Squeeze Tube Pumps

Item	Description	24LD		32BD-1		40BD-1		48BD-1	
		Front	Center	Front	Center	Front	Center	Front	Center
1	Regular Roller Assem	09-2423	09-2424	09-3213	09-3214	09-4010	09-4011	09-4813	09-4814
2	Modified Roller	09-2423	09-2424	09-3213	09-3214	09-4010	09-4011	09-4810	09-4811
3	Regular Mainshaft	10-2423	10-2424	10-3212	10-3214	10-3223	10-3224	10-4813	10-4814
4	Modified Mainshaft	10-2423	10-2424	10-3212	10-3214	10-3223	10-3224	10-4813	10-4814
5	Rollers (4)	09-1221	09-1221	09-1611	09-1611	09-1621	09-1621	09-2411	09-2411

Item	Description	8B-1 / 8L		12B-1 / 8L	
		Front	Center	Front	Center
1	Regular Roller	09-1623	09-1624	09-1623	09-1624
2	Modified Roller	09-1623	09-1624	09-1623	09-1624
3	Regular Mainshaft	10-1623	10-1624	10-1623	10-1624
4	Modified Mainshaft	10-1623	10-1624	10-1623	10-1624
5	Rollers (4)	09-0821	09-0821	09-0821	09-0821

LIMITED WARRANTY

THIS WARRANTY IS IN LIEU OF ALL OTHER WRITTEN OR EXPRESS WARRANTIES AND REPRESENTATIONS. ANY IMPLIED WARRANTIES INCLUDING MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY LIMITED TO THIS WRITTEN WARRANTY. CDS-JOHN BLUE COMPANY SHALL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES.

Use of this product for any purpose other than its original intent, abuse of the product, and/or any modification to the original product is strictly prohibited by the manufacturer, CDS-John Blue Company. Any modification to the product should be approved by CDS-John Blue Company prior to use. CDS-John Blue Company will deny Warranty claims and liability in any situation involving misuse, abuse or modification.

Each new machine or component manufactured by CDS-John Blue Company through original buyer is warranted by CDS-John Blue Company to buyer and to any party or parties to whom buyer may resell, lease or lend the equipment to be free from defects in material and workmanship under normal use and service. This obligation of CDS-John Blue Company under this warranty is limited to the repair or replacement of defective parts or correction of improper workmanship of any parts of such equipment which shall within one year from the date of CDS-John Blue's original delivery thereof, be returned to CDS-John Blue's factory, transportation charges prepaid and which CDS-John Blue Company shall determine to its satisfaction upon examination thereof to have been thus defective. When it is impractical to return the defective parts of such equipment to CDS-John Blue's factory, then CDS-John Blue shall have no liability for the labor cost involved in repairing or replacing any such parts and shall be liable solely for supplying the material necessary to replace or repair the defective parts, provided that prior thereto CDS-John Blue Company shall have determined to its satisfaction that any such parts are thus defective.

This warranty shall not apply to any equipment which shall have been repaired or altered outside CDS-John Blue's factory in any way so as to affect its durability, nor which has been subjected to misuse, abuse, negligence or accident, or operated in any manner other than in accordance with operating instructions provided by CDS-John Blue Company. This warranty does not extend to repairs made necessary by the use of inferior or unsuitable parts or accessories, or parts or accessories not recommended by CDS-John Blue Company.

CDS-John Blue Company makes no warranties in respect to parts, accessories or components not manufactured by CDS-John Blue Company, same ordinarily being warranted separately by their respective manufacturers.

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