CS-150-HA Series

Cast Iron with Wet-Seal 1-1/2” x 1-1/4”
Centrifugal Spray Pump

Installation and Operation Manual

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 JOHN BLUE COMPANY. 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 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... 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 JOHN BLUE TECHNICAL STAFF AT 1-800-253-2583.

WARNING: This product can expose you to certain chemicals, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to: www.P65Warnings.ca.gov.

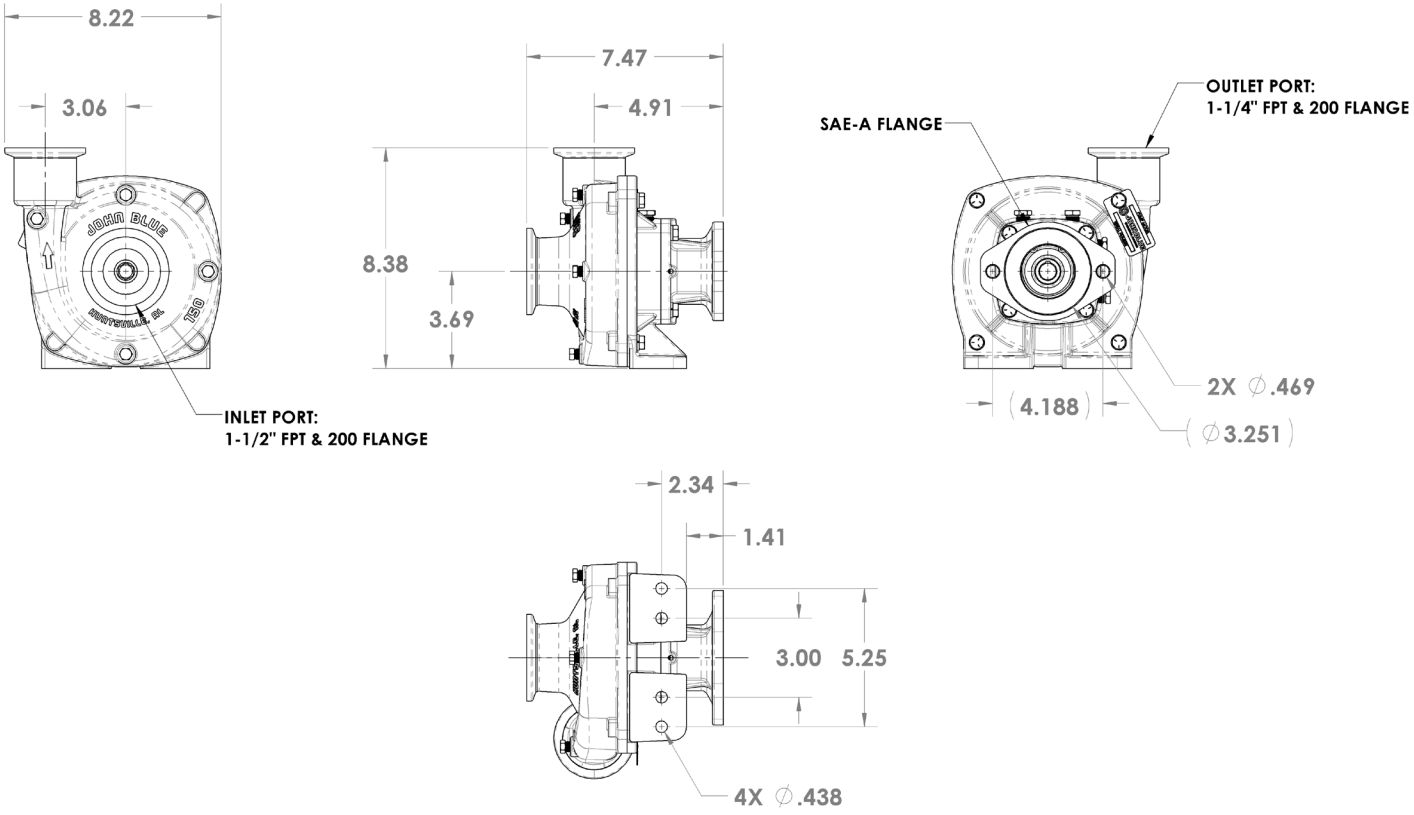
SAFETY PRECAUTIONS: EQUIPMENT SHOULD BE OPERATED BY RESPONSIBLE PEOPLE. A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT. FILL SYSTEM WITH WATER FIRST AND CHECK FOR LEAKS – REPLACE HOSES WHEN WORN OR CRACKED.

P/N: CS-150-HA | *CAST IRON CENTRIFUGAL PUMP WITH SAE-A FLANGE*

Pump Specifications and Dimensions:

- Max flow: 158 gpm @ 4500rpm ***
- Max pressure: 115 gpm @ 4500 rpm ***
- Shaft Size 5/8” Bore Diameter
- Pump Inlet Port Size: 1-1/2” FPT & 220 Flange Inlet
- Pump Outlet Port Size: 1-1/4” FPT & 200 Flange Outlet

**** Performance values documented under optimal settings and conditions.*



CS-150-HA12 -- 2500 RPM	
Pump Flowrate	Pump Pressure
111	17
111	22
78	25
67	28
15	30
0	32

CS-150-HA12 -- 2750 RPM	
Pump Flowrate	Pump Pressure
106	23
105	28
82	30
73	33
52	35
40	37
16	40
0	42

CS-150-HA12 -- 3000 RPM	
Pump Flowrate	Pump Pressure
116	20
116	23
115	27
105	30
110	32
93	35
78	37
65	40
49	42
31	45
12	47
0	50

CS-150-HA12 -- 3250 RPM	
Pump Flowrate	Pump Pressure
126	25
126	30
124	32
124	35
119	37
93	40
91	42
28	45
61	48
32	50
22	53
4	55
0	58

CS-150-HA12 -- 3500 RPM	
Pump Flowrate	Pump Pressure
135	35
134	38
133	40
132	42
107	45
105	47
72	50
39	53
64	55
58	58
0	60
0	63
0	65

CS-150-HA12 -- 3750 RPM	
Pump Flowrate	Pump Pressure
145	37
142	40
133	43
138	45
127	47
111	50
113	52
65	55
99	58
104	60
74	63
49	65
30	67
0	70
0	73

CS-150-HA12 -- 4000 RPM	
Pump Flowrate	Pump Pressure
155	35
155	42
154	50
145	52
130	55
132	57
128	60
116	62
93	65
84	68
65	70
60	73
42	75
29	78
6	83
0	85

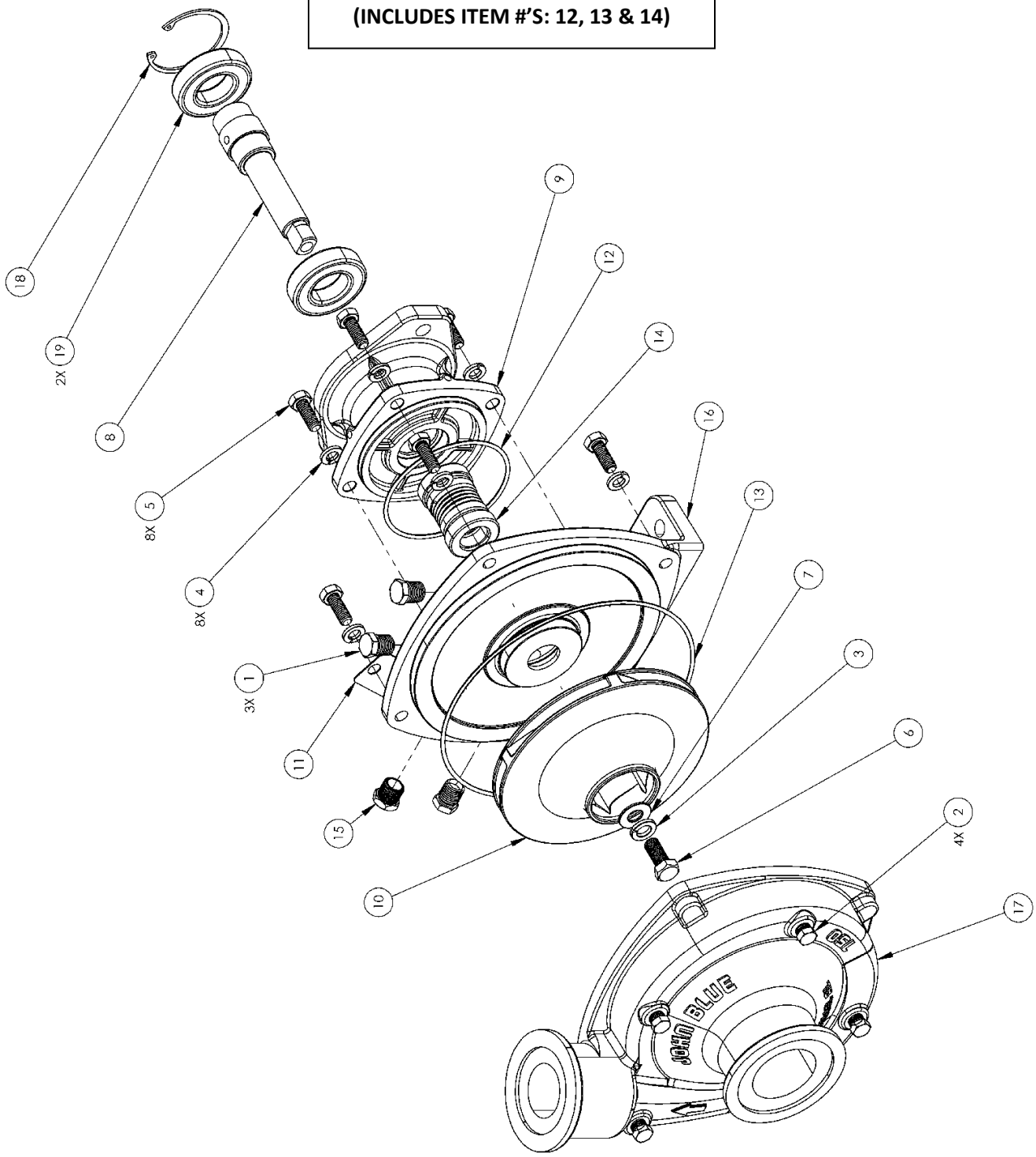
CS-150-HA12 -- 4250 RPM	
Pump Flowrate	Pump Pressure
157	37
157	40
157	43
157	45
156	48
156	52
152	58
129	60
119	63
93	65
115	72
98	75
94	78
67	80
80	82
59	85
39	87
32	90
25	93
12	95
0	97

CS-150-HA12 -- 4500 RPM	
Pump Flowrate	Pump Pressure
158	55
156	58
151	60
153	62
152	65
149	68
138	70
127	72
136	75
126	77
120	80
114	83
100	85
97	88
85	90
72	92
58	95
34	98
13	103
8	105
5	108
2	110
0	112
0	115

P/N: CS-150-HA

****CS-150-HA SEAL REPLACEMENT KIT:**
PART # 116814-01

(INCLUDES ITEM #'S: 12, 13 & 14)



P/N: CS-150-HA

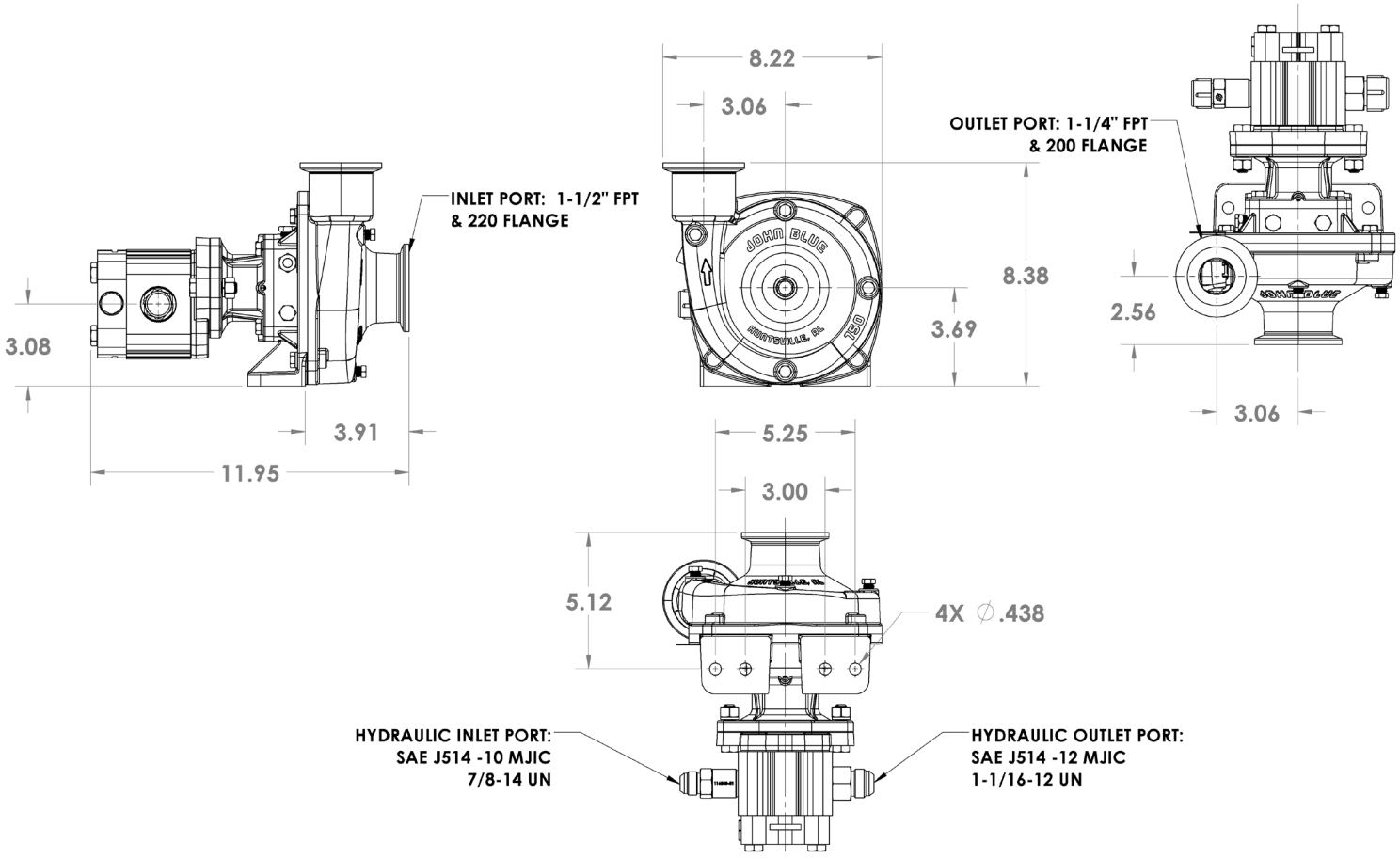
ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	C-431-B	1/4 NPT PIPE PLUG, HEX DRIVE	3
2	A-29	1/8 NPT PIPE PLUG, HEX DRIVE	4
3	93025	3/8 LOCK WASHER, STAINLESS	1
4	93023	5/16 LOCK WASHER - PLATED	8
5	91013	5/16-18 X 7/8 HHMB, PLATED	8
6	90649	3/8-24 X 7/8 HHMB, STAINLESS	1
7	54-9003	3/8 FLAT WASHER, 18-8	1
8	116787-01	IMPELLER SHAFT, CS-150	1
9	116783-01	BEARING HOUSING MACHINING, CS-150	1
10	116595-91	CS-150 POLY IMPELLER ASSY	1
11	116495-01	NAME PLATE W/ BOLT MOUNTING HOLE	1
12	116390-01	2-152 O-RING, BUNA-N	1
13	116389-01	2-166 O-RING, VITON	1
14	116386-01	DOUBLE SEAL, VITON, 3/4" SHAFT	1
15	116384-01	1/4" NPT WINDOW SIGHT	1
16	116381-01	PEDESTAL, 150 SPRAY PUMP	1
17	116380-01	VOLUTE, 150 SPRAY PUMP, CW	1
18	115915-01	INTERNAL RETAINING RING FOR 2" BORE	1
19	104027-01	1" ID X 2" OD X 0.5" THICK SEALED BALL BEARING, STEEL	2

PART NUMBER	TORQUE (FT-LBS)
91013	8-10
90649	17-19

P/N: CS-150-HA12 | *CS-150-HA PUMP WITH 12 GPM HYDRAULIC MOTOR & FITTINGS*

Pump Specifications and Dimensions:

- Max flow: 158 GPM
- Max pressure: 115 PSI
- Shaft Size 5/8” Bore Diameter
- Pump Inlet Port Size: 1-1/2” FPT & 220 Flange Inlet
- Pump Outlet Port Size: 1-1/4” FPT & 200 Flange Outlet



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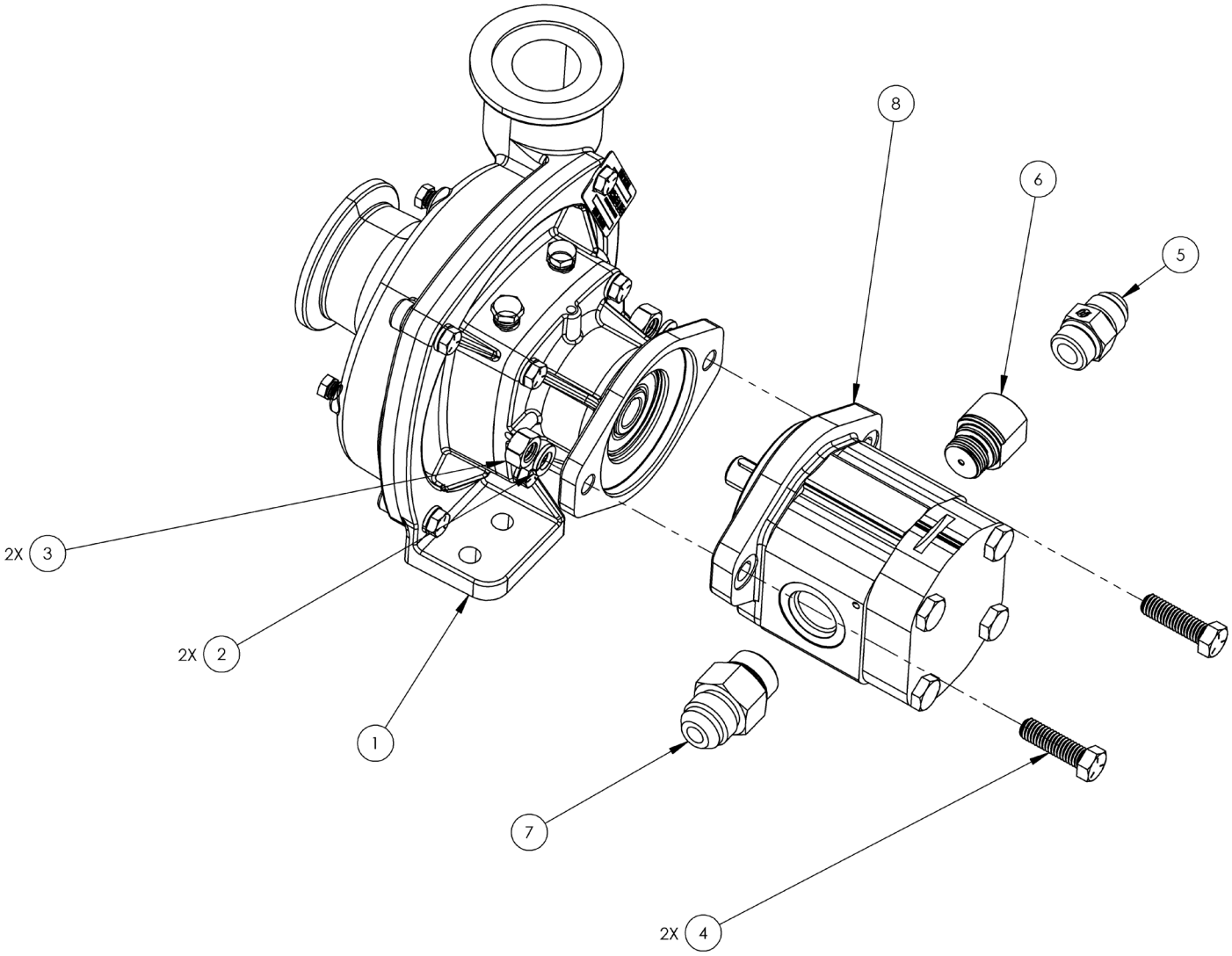

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	CS-150-HA	1-1/2" X 1-1/4" SPRAY CENTRIF, HYD - SAE-A FLG	1
2	93026	3/8 LOCK WASHER, PLATED	2
3	92028	7/16-14 HEX NUT, PLATED	2
4	90938	7/16-14 X 1-1/2 HHMB - STAINLESS	2
5	116803-01	HYD FITTING, -10MORB, -10MJIC, PLATED	1
6	116800-91	HYDRAULIC ORIFICE ASSY, .104 INCH THRU HOLE	1
7	116793-01	CHECK VALVE -12ORBM / -12JICM	1
8	116792-01	HYDRAULIC MOTOR, 9.6CC, CW ROTATION	1

Installation:

This configuration is designed to drive the pump via a hydraulic motor.

** Note that any plumbing must be supported so that its weight does not hang off the pump, this will void the warranty.

Storage:

After use, flush the pump with a solution that will neutralize the fluid you have been pumping, and then drain, then fill the pump with RV antifreeze for storage.

Maintenance:

Inspect the seal reservoir fluid level using the sight window, the fluid level should be above the middle of the window. If the fluid is dirty, drain the pump by vacuum or turning upside down, then replace with 50/50 premixed ethylene glycol antifreeze. If fluid is cloudy, impeller side seal may be leaking.

Hydraulic Drive Specifications:

Max Hydraulic Flow Rate:	12GPM
Max Hydraulic Pressure:	3000PSI
Inlet Port Size:	- 10 JICM
Outlet Port Size:	- 12 JICM

Hydraulic Motor Additional Components:

The inlet port has a fixed orifice installed and is recommended to be used in conjunction with a closed center – pressure compensating hydraulic circuit. It has been properly sized from the factory to protect the hydraulic motor from exceeding the maximum allowable shaft speed during operation which will prolong the hydraulic motor shaft seal life.

The outlet port has a one-way check valve installed from the factory which prevents the hydraulic motor from operating in the reversed rotational direction.

The hydraulic motor also comes equipped with an internal anti-cavitation valve to protect the motor gears from damage when the hydraulic fluid flow is stopped abruptly.

Hydraulic Motor Connection Guide:

The inlet hose should be sized accordingly to provide proper fluid supply to the motor. The minimum recommended hose size is 1/2” diameter.

The hydraulic motor outlet hose should be sized accordingly to minimize return pressure. The minimum allowable return hose size is 5/8” diameter while 3/4” diameter is preferred. A larger hose diameter will lower the hydraulic back pressure on the hydraulic motor seal prolonging its life expectancy.

Hydraulic Systems and Operational Steps to Setup Spray Pump:

Open Center:

An open center hydraulic system continuously circulates hydraulic fluid through a fixed displacement pump and maintains a constant fluid flow through a closed loop hydraulic circuit.

If the open center hydraulic flow rate is in excess of 12 gpm, a bypass circuit that limits flow to 12 gpm **must be** installed remotely to prevent excessive hydraulic flow that will cause hydraulic motor damage due to excessive shaft speed.

If the systems flow rate is lower than 12 gpm, the pump performance maybe limited due to the hydraulic motor not operating at its peak parameters.

Remove the factory installed fixed orifice found on the inlet of the hydraulic motor if the pump is operated on an open center hydraulic system to prevent damage to the hydraulic system. **The bypass circuit that limits flow to a maximum of 12 gpm must be installed for use with Open Center Hydraulic Systems.**

Closed Center – Pressure Compensating (PC):

A closed center - pressure compensating hydraulic system utilizes a variable displacement pump that allows the system to adapt its flow rate according to the pressure demand while maintaining a constant pressure. The factory installed fixed orifice of the hydraulic motor has been sized accordingly to maximize performance while maintaining safe operating shaft speeds prolonging the life of the motor shaft seal.

It is not recommended to remove the factory installed fixed orifice when operating on this type of hydraulic system.

Spray Pump Setup Procedure:

1. Connect hydraulic hoses running from hydraulic motor to tractors hydraulic couplers. Install hoses so that the spray pump will turn on when hydraulic systems control lever is in the lower or retract position.
2. Shut off the sprayer boom and spray nozzles.
3. Adjust the system flow control to its minimum setting.
4. Place the tractors hydraulic control lever to lower / retract position.
5. Adjust the hydraulic flow control and the spray nozzles accordingly till desired application pressure is achieved.
6. If equipped, utilize the Float position in the tractors hydraulic system when stopping the hydraulic flow to the hydraulic motor. This will improve the longevity of the entire hydraulic system by preventing the hydraulic system from remaining pressurized while the hydraulic motor is not in operation.

Closed center – load sensing (LS):

A closed center – load sensing hydraulic system utilizes a variable displacement pump that allows the system to adapt its flow rate according to the pressure demand while maintaining a constant pressure.

Spray Pump Setup Procedure:

1. **Remove the fixed orifice from the inlet of the hydraulic motor.**
2. Connect hydraulic hoses running from hydraulic motor to tractors hydraulic couplers. Install hoses so that the spray pump will turn on when hydraulic systems control lever is in the lower or retract position. An additional Load Sense hose will need to plumbed into the hydraulic circuit at the inlet fitting of the hydraulic motor in order for the load sense system to operate correctly.
3. Shut off the sprayer boom and spray nozzles.
4. Adjust the system flow control to its minimum setting.
5. Place the tractors hydraulic control lever to lower / retract position.
6. Increase the system flow control until sprayer shut off pressure of 100psi for both CS-150-HA12 & CS-200-HA12. The use of a pressure gauge on the discharge side of the hydraulic motor outlet is required to properly set this setup.
7. Open the spray nozzles until desired system pressure is reached.
8. If equipped, utilize the Float position in the tractors hydraulic system when stopping the hydraulic flow to the hydraulic motor. This will improve the longevity of the entire hydraulic system by preventing the hydraulic system from remaining pressurized while the hydraulic motor is not in operation.

*****NOTICE*****

This hydraulic motor is assembled from the factory with a high-pressure shaft seal. This seal has been selected to maximize the durability and protection of the hydraulic system from high pressure spikes and excessive shaft speeds extending its life of operation. A side effect of this style seal is the potential of slight weeping of hydraulic fluid during operation. Visible wetting along its mounting flange or along base of pump assembly may occur and is not cause for concern. This condition typically presents itself within the first several hours of operation as the hydraulic motor shaft and motor shaft seal wear into each other. If present, this condition will decrease over time until no more weeping is encountered.

Troubleshooting:

ISSUE	PROBABLE CAUSE
Pump makes rattling noise while running	Cavitation or pump starvation (suction lift is too high or the inlet line is too restrictive)
Reduced pump output or pressure	Clogged impeller or inlet piping (including strainer)
	Leaks in suction line or at inlet gasket
	Collapsed suction line
	Trapped air in sections of suction line
	Suction lift is too great – flooded inlet recommended
	Discharge lift is too great
	Worn or damaged parts (impeller or volute)
Pump fails to prime or slow prime	Leaks in suction line or at inlet gasket
	Suction lift is too great – flooded inlet recommended
	Collapsed suction line
Seal reservoir fluid changes level	Leak at the input shaft seal if level is low
	Leak at the impeller side seal if level is high

Hydraulic System Troubleshooting:

ISSUE	PROBABLE CAUSE
Reduced sprayer pump water flow or water pressure	Insufficient hydraulic flow or pressure from tractor
	Damaged O-rings on valves in hydraulic motor manifold see “Parts Breakdown” section above
Insufficient water pressure	No water available. Water pump exceeding water supply
	Leaks in water pressure line
External hydraulic leak	Damaged seals or loose components
	Assembly bolts loose
No water flow but maximum hydraulic pressure	Pressure and Tank lines between tractor and hydraulic motor fittings are reversed. Reverse lines on the on hydraulic motor manifold. Debris in water line stopping water pump from rotating.
Overheated hydraulic system	Excessive Hydraulic flow. Max water output available at 12 GPM hydraulic flow. Hydraulic flow in excess of 25 GPM not recommended.

Note to the Owner

The pump should be inspected annually for any wear or damage to any of the components in order to ensure proper operation. Enter the date of installation in the space provided for future reference. This information will be required for ordering replacement parts or servicing your pump.

Our engineering department constantly improves its products. We reserve the right to make design and specification changes without notice.

DATE OF INSTALLATION: _____

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. 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, John Blue Company. Any modification to the product should be approved by John Blue Company prior to use. John Blue Company will deny Warranty claims and liability in any situation involving misuse, abuse or modification.

Each new machine or component manufactured by John Blue Company through original buyer is warranted by 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 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 John Blue's original delivery thereof, be returned to John Blue's factory, transportation charges prepaid and which 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 John Blue's factory, then 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 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 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 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 John Blue Company.

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

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