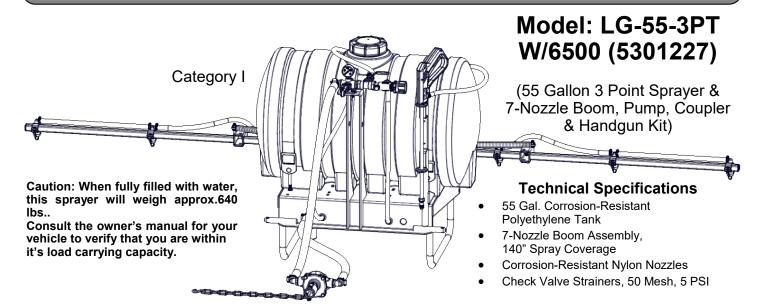
# **OWNER'S MANUAL**



BEFORE RETURNING THIS PRODUCT FOR ANY REASON, PLEASE CALL 1-800-831-0027

IF YOU SHOULD HAVE A QUESTION OR EXPERIENCE A PROBLEM WITH YOUR FIMCO INDUSTRIES PRODUCT:

1-800-831-0027

BEFORE YOU CALL, PLEASE HAVE THE FOLLOWING INFORMATION AVAILABLE: SALES RECEIPT & MODEL NUMBER. IN MOST CASES, A FIMCO INDUSTRIES EMPLOYEE CAN RESOLVE THE PROBLEM OVER THE PHONE.

# **General Information**

Thank you for purchasing this product. The purpose of this manual is to assist you in operating and maintaining your 3-Point sprayer.



**WARNING:** To reduce the risk of injury, the user must read and understand the operator's manual before using this product.



WARNING: Cancer and Reproductive Harm www.P65Warnings.ca.gov

Retain a copy of your receipt for your unit,
as it will be required to validate any warranty service

Products are warranted against manufacturer or workmanship
defects for one year from date of purchase for home owner
usage and 90 days for commercial usage.

For technical assistance, visit our website @ www.fimcoindustries.com or call: TOLL FREE @ 1-800-831-0027
Our Technical Support Representatives will be happy to help you.
To obtain prompt, efficient service, always remember to give the following information...

- Correct Part Description and/or part number
- Model #/Serial # of your sprayer

  Part descriptions and numbers can be obtained from the illustrated parts list section(s) of this manual.

# Information About the Sprayer

Roller pumps are positive displacement pumps, which means that the entire solution being pumped must go somewhere or the pump will break. In this roller pumping system, solution is drawn from the tank and forced to a planned source, such as boom nozzles or handgun. The pressure is controlled by a pressure relief valve, which is a spring-loaded device that controls the amount of fluid bypassed (recirculated) to the tank. The gray handle is to be tightened to increase pressure and loosened to decrease pressure.

The 'directo-valve' is the on/off control which allows the operator to manually control the solution going to the boom.

# Assembly Instructions

Most of the sprayer has been assembled at the factory.

Join the center boom member to the carrier frame with the (2) u-bolts and (4) whiz nuts provided. See exploded view later in this manual for reference.

Attach the boom feeder hose to the boom after routing it through the underside of the carrier frame as needed. Secure in place with a hose clamp provided.

Poly hose fittings (5010209) are included to be joined to the pump. A torque chain, 'S'-Hook and hardware are also included for the pump. The pump **IS** included with this unit. It is intended for the pump to be mounted directly to the tractor PTO.



# www.fimcoindustries.com

1000 FIMCO Lane, P.O. Box 1700, North Sioux City, SD 57049 Toll Free Phone: 800-831-0027 : Toll Free Fax: 800-494-0440 [5008161 (11/18)]

**IMPORTANT:** Remove tank lid and be sure the tank is clean and free of any foreign material. Rinse tank out of any tank residue before filling with water to test.

### **Testing the Sprayer**

Attach the sprayer to the tractor 3 point hitch. Mount the pump to the PTO and affix the torque chain. Open the tank lid and be sure the tank is clean and free of foreign material.

<u>NOTE:</u> It is important that you test your sprayer for leakage and proper spray patters with plain water before chemical application is attempted. This will also give you the opportunity to familiarize yourself with the operation of the sprayer.

Fill the tank about 1/2 full with plain water.

Before starting, open the suction line valve (located underneath the carrier frame), turn the relief valve handle out to lower the line pressure. This will help prime the pump.

**CAUTION:** Always be sure that the water (or solution) has reached the pump before starting your sprayer. If the pump is allowed to run dry, serious damage to the pump will result.

Always have the pressure line open to the tips so that the air which may be trapped in the line will be forced (or purged) out. Start the tractor PTO. Check the entire system for leaks. Once the pump is primed, the pressure may be increased by turning the handle of the pressure relief valve in. Keep the pressure line open to the tips when setting the pressure. Set the pressure and then lock the relief valve handle in place. Shut off the directo-valve and check for leaks again. Pressure will increase when the pressure line valve is closed and then return to the preset pressure when the valve is opened again.

During the testing period, be sure to observe the spray pattern given by the spray nozzles. If there is any pattern distortion, it will be necessary to remove and clean the affected tips.

**Caution:** Never use a metal object or other sharp item for cleaning a nozzle tip. It is better to use a nozzle brush (NOT wire brush) or compressed air for tip cleaning.

Conditions of weather and terrain must be considered when setting the sprayer. Do not spray on windy days. Protective clothing must be worn in some cases

Be sure to read the chemical label(s) before application!

### **Operation & Calibration**

The performance of any agricultural chemical depends upon the proper application.

The tips supplied as standard with the sprayer can be used for a wide variety of spraying applications. Other tip sizes are available for different coverages. The speed and pressure charts shown indicate the rates can be changed considerably by changing speed and pressure. The nozzles on the boom will spray a 140" wide swath. The proper nozzle height is a minimum of 17"-20" above the object being sprayed. The pumping system draws solution from the tank through the strainer/filter and to the pump. The pump forces the solution under pressure to the handgun and/or boom nozzles.

- Activate the handgun by squeezing the handle lever
- Rotating the adjustable nozzle tip on the handgun will change the tip pattern from a straight stream to a cone pattern (fine mist)

**WARNING:** Some chemicals will damage the pump valves if allowed to soak untreated for a length of time! ALWAYS flush the pump as instructed after each use. DO NOT allow chemicals to sit in the pump for extended times of idleness. Follow the chemical manufacturer's instructions on disposal of all waste water from the sprayer.

When you are ready to spray, mix chemicals as follows. Add the proper amount of water to the tank. Run the sprayer while adding chemical to the water. Do NOT spray through the boom at this time. This will allow the solution to return ('bypass') to the tank. The movement of solution through the bypass will aid in mixing the water and chemicals. If this water movement is not enough to keep the chemical in suspension, it may be necessary to add an optional agitator kit. You should now be ready to spray.

Four things must be considered before spraying with the boom.

- How much chemical must be mixed in the tank.
- 2. Rate of spray (gallons per acre to be sprayed).
- 3. What pressure (p.s.i.) will be used.
- 4. Speed traveled (mph) while spraying.
- \* Refer to the chemical label to determine your chemical mixture
- \* See the tip chart to determine the pressure to be used. The chart will also show the speed used when spraying.

Chemical labels may show application rates in gallons per acre, gallons per 1000 square feet or gallons per 100 square feet. You will note that the tip chart shows 2 of these rating systems.

Once you know how much you are going to spray, then determine (from the tip chart) the spraying pressure (PSI), and the spraying speed (MPH). The pressure can be set by running the sprayer with the boom nozzles 'on' and then adjusting the relief valve until the gauge reads the desired pressure. Notice that the pressure will go up when the boom line is shut off. This is normal and the pressure will return as before when you open the boom line. When selecting pressure from the tip chart, it is a good idea to try for the 20 or 30 p.s.i. range as this allows an excellent nozzle pattern. Spraying at 10 p.s.i. begins to break up the pattern and at 40 p.s.i. you may notice some drift.

Determining the proper speed of the pulling vehicle can be done by marking off 100, 200 & 300 feet. The speed chart indicates the number of seconds it takes to travel the distances. Set the throttle and with a running start, travel the distances. Adjust the throttle until you travel the distances in the number of seconds indicated by the speed chart. Once you have reached the throttle setting needed, mark the throttle location so you can stop and go again, returning to the same speed.

Add water and proper amount of chemical to the tank and drive to the starting place for spraying.

Speed Chart			
	Time Required	in seconds to tr	avel a distance of
Speed in M.P.H.			
(Miles Per Hour)	100 Ft.	200 Ft.	300 Ft.
1.0	68 sec.	136 sec.	205 sec.
2.0	34	68	102
3.0	23	45	68
4.0	17	34	51
5.0	14	27	41
6.0	11	23	34
7.0	9.7	19	29
8.0	8.5	17	26
9.0	7.6	15	23
10.0	6.8	14	20

Spray Tip Rate Chart (20" Spacing)									
	_		Gallons Per Acre - Based on Water						
Tip No.	Pressure (psi)	(GPM)	1 MPH	2 MPH	3 MPH	4 MPH	5 MPH	6 MPH	8 MPH
	15	.12	35.6	17.8	11.8	8.9	7.1	5.9	4.5
AIXR11002VP	20	.14	41.6	20.8	13.8	10.4	8.3	6.9	5.2
AIXKI1002VP	30	.17	50.4	25.2	16.8	12.6	10.1	8.4	6.3
	40	.20	59.6	29.8	19.8	14.9	11.9	9.9	7.4
				Gallons Per 1000 Sq. Ft Based on Water					
Tip No.	Pressure (psi)	(GPM)	1 MPH	2 MPH	3 MPH	4 MPH	5 MPH	6 MPH	8 MPH
	15	.12		.41	.27	.20	.16		
AIXR11002VP	20	.14		.48	.32	.24	.19		
	30	.17		.58	.39	.29	.23		
	40	.20		.68	.45	.34	.27		

### **Maintenance During/After Spraying**

Periodically close the suction line valve and check the strainer and clean the screen. Always flush the entire plumbing system with water or a neutralizing agent, such as Nutra-Sol after completing the spraying operation.

Proper care and maintenance will prolong the life of your sprayer.

After use, fill the sprayer tank part way with water. Start the sprayer and allow the clear water to be pumped through the plumbing system and out through the spray nozzles. Refill the tank about half full with plain water and use FIMCO Tank Neutralizer and Cleaner and repeat cleaning instructions above. Flush the entire sprayer with the neutralizing/cleaning agent, then flush out one more time with plain water. Follow the chemical manufacturer's disposal instructions of all wash or rinsing water. For the boom (if applicable) remove the tips and screens from the nozzle assemblies. Wash these items out thoroughly. Blow the orifice clean and dry. If the orifice remains clogged, clean it with a fine bristle (NOT WIRE) brush or with a toothpick. Do not damage the orifice. Water rinse and dry the tips before storing.

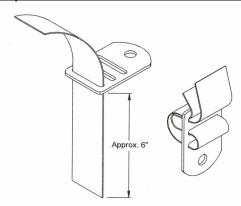
**WARNING:** Some chemicals will damage the pump valves if allowed to soak untreated for a length of time! ALWAYS flush the pump as instructed after each use. DO NOT allow chemicals to sit in the pump for extended times of idleness. Follow the chemical manufacturer's instructions on disposal of all waste water from the sprayer.

# Winter Storage

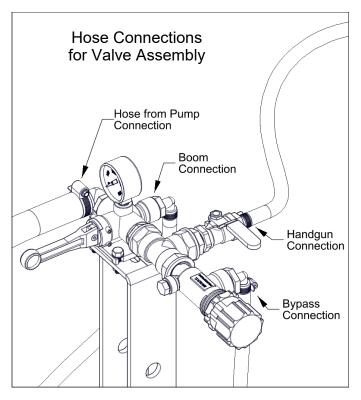
Drain all water out of your sprayer, paying special attention to the pump, handgun and valve(s). These items are especially prone to damage from chemicals and freezing weather.

The sprayer should be winterized before storage by pumping a solution of automotive antifreeze (containing a rust inhibitor) through the entire plumbing system. This antifreeze solution should remain in the plumbing system during the winter months. When spring time comes and you are preparing your sprayer for the spray season, rinse the entire plumbing system out, clearing the lines of the antifreeze solution. Proper care and maintenance will prolong the life of your sprayer.

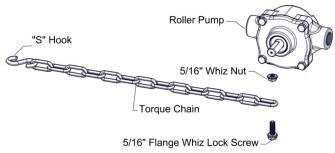
# Strap/Buckle Detail Strap Attachment to a "Flat" Buckle



The nylon straps are to be inserted in and out of the slots in the buckle, as shown. Be sure the straps are snug before tightening the hook bolts. In most cases, it will be necessary to re-tighten the straps after filling the tank with liquid.



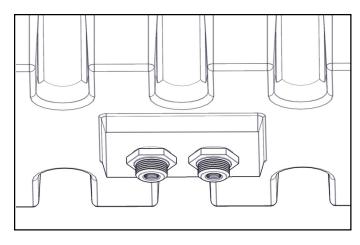
### **Torque Chain Attachment to a Roller Pump**



A torque chain, 'S' hook, nut and bolt are included in this assembly to secure your pump during operation.

- Attach one end of the torque chain over the threaded stem of the bolt
- 2. Thread the whiz nut onto the bolt. Hand-tighten
- 3. Thread the bolt, chain and nut 'pre-assembly' into the threaded hole on the underside of the pump. Tighten sufficiently
- 4. Affix the 'S' Hook to your frame (or hitch). Wrap the chain around the frame or hitch and 'S-Hook' it in place. Make sure this connection is very secure! Not having a good, tight connection may result in the pump spinning on your PTO shaft and damaging some components of your sprayer

\*\*\* Insure that this connection point will not allow the roller pump to spin on the PTO shaft \*\*\*

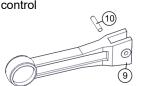


1/2" Bulkhead Fitting TF50DTN

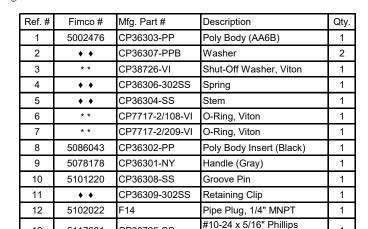
# 'Directo Valve' - Manually Operated Control Valve

- Corrosion Resistant Materials: Wetted Parts Polypropylene, 316SS and Polyethylene
- Maximum Pressure = 150 p.s.i.
- Large Capacity 12.5 G.P.M. @ 5 p.s.i. Pressure Drop
- 3/4" NPT (F) Inlet Connection
- 1/2" NPT (F) Spray Line Connection
- 3/4" NPT (F) Continuous By-Pass Connection

• Valves may be connected w/close nipples for multiple section spray control







Truss Head Machine Screw

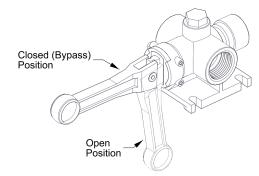
23120



5117281

♦ •: Only Available in Complete Assembly

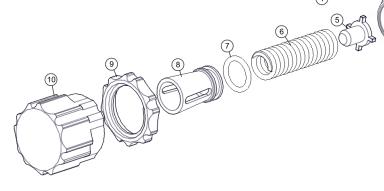




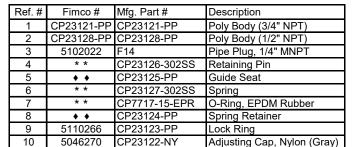
# Piston Type Pressure Relief/Regulating Valves

CP38725-SS

- Polypropylene with stainless steel spring
- Excellent chemical resistance
- EPDM O-Rings
- Fore pressure to 150 p.s.i.
- 1/4" port for pressure gauge
- Choice of 1/2" or 3/4" NPT (M) inlet & (F) outlet connections

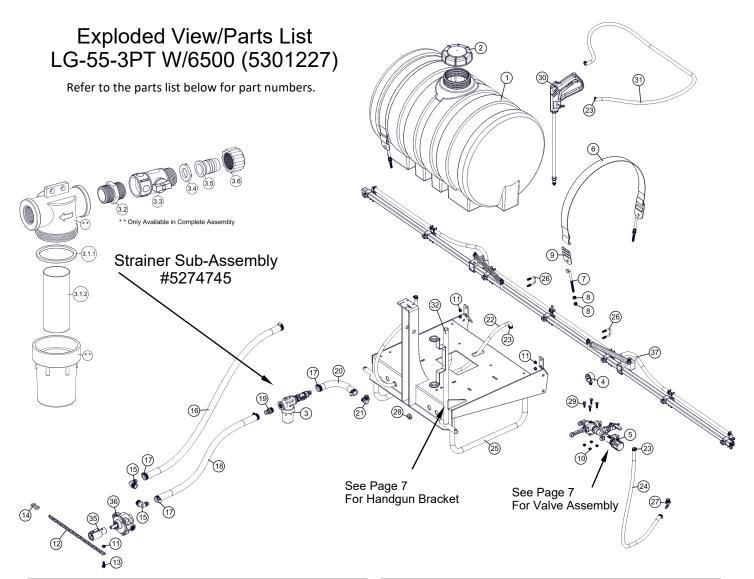


Fimco #	Mfg. Part#	Description
5143199	23120-3/4-PP	Pressure Relief Valve (3/4" NPT)
5143200	23120-1/2-PP	Pressure Relief Valve (1/2" NPT)
5168717	PK-AB23120-KIT	Repair Kit, Items Marked * *



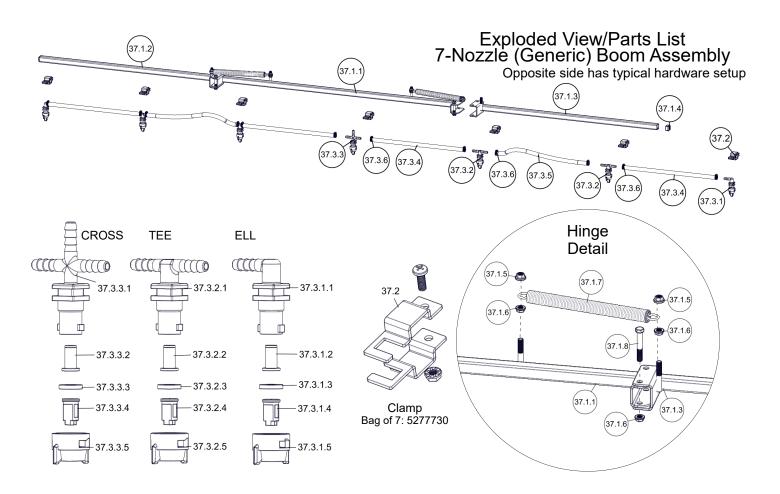
- \* \* Available only in Repair Kit
- ◆: Only Available in Complete Assembly

5143199	23120-3/4-PP	Pressure Relief Valve (3/4" NPT)
5143200	23120-1/2-PP	Pressure Relief Valve (1/2" NPT)
5168717	PK-AB23120-KIT	Repair Kit, Items Marked * *
		<u> </u>



Ref. #	Part #	Description	
1	5169247	55 Gallon Leg Tank, White, (2) 1/2" Fittings	1
1.1	TF50DTN	1/2" Bulkhead Fitting Assembly	2
2	5058189	5" Lid (NO Lanyard)	1
3	5274745	Strainer Sub-Assembly	1
3.1	5116322	3/4" Black Poly Strainer	1
3.1.1	5072229	EPDM Gasket	1
3.1.2	5116323	40 Mesh Screen	1
3.2	5005196	Poly Adapter, 3/4" MNPT x 3/4" MGHT	1
3.3	5143419	Swivel Shut-Off	1
3.4	5016066	Garden Hose Washer	1
3.5	5149037	Poly Swivel, 3/4" Flat Seat Hose Barb	1
3.6	5006209	Poly Knurled Swivel Nut, 3/4" FGHT	1
4	5167005	Gauge, 0-400 p.s.i. (Dry)	1
5	5277754	Valve Sub-Assembly	1
5,1	5010209	Poly Elbow, 3/4" MNPT x 3/4" HB	
5,2	5143316	Directo-Valve (AA6B)	1
5,3	5010202	Poly Elbow, 1/2" MNPT x 3/8" HB	1
5,4	5011140	Poly Close Nipple, 3/4" MNPT	
5,5	5010231	Poly Tee, 3/4" FNPT	1
5,6	5011147	Poly Reducing Nipple, 3/4" MNPT x 1/2" MNPT	1
5,7	5143197	1/2" T-800 Brass Ball Valve	1
5,8	5067130	Poly Fitting, 1/2" MNPT x 3/8" HB	1
5,9	5143199	Pressure Relief Valve, (3/4" NPT)	1
5.10	5010206	Poly Elbow, 3/4" MNPT x 3/8" HB	1
6	5133100	Nylon Strap, 60"	2
7	5034734	3/8" x 6" Hook Bolt	4
8	5006259	3/8-16nc Hex Flanged Whiz Nut Gr. 5	
9	5108042	Tank Strap Buckle, Straight	4
10	5006306	1/4-20nc Hex Flanged Whiz Nut Gr. 5	4

Ref. #	Part #	Description	Qty
11	5006307	5/16-18nc Hex Flanged Whiz Nut Gr. 5	5
12	5049017	Torque Chain, 24"	1
13	5117300	H.H.C.S. Flanged 5/16"-18nc x 1" Long	1
14	5082006	"S" Hook	1
15	5010209	Poly Elbow, 3/4" MNPT x 3/4" HB	2
16	5020227	Hose, 3/4"-1 Brd. x 48"	1
17	5051024	Hose Clamp, 3/4"	6
18	5020105	Hose, 3/4"-2 Brd. x 36"	1
19	5067127	Poly Fitting, 3/4" MNPT x 3/4" HB	1
20	5020387	Hose, 3/4"-2 Brd. x 10"	1
21	5010205	Poly Elbow, 1/2" MNPT x 3/4" HB	1
22	5020134	Hose, 3/8"-1 Brd. x 60"	1
23	5051144	Hose Clamp, 3/8"	6
24	5020538	lose, 3/8"-1 Brd. x 43" 1	
25	5273023	.G-55 3-Point Weldment (Red)	
26	5034159	Square U-Bolt, 5/16" x 1 5/16" x 1 7/8"	2
27	5010202	Poly Elbow, 1/2" MNPT x 3/8" HB	1
28	5041105	Snap Bushing 2	
29	5117301	H.H.C.S. Flanged 1/4"-20nc x 1" Long	
30	5273959	Deluxe Pistol-Grip Handgun w/X-26 Tip	1
30.1	5018331	Brass Handgun Tip (X-26)	1
31	5020099	Hose, 3/8"-2 Brd. x 25 Ft.	1
32	5273305	Hose & Handgun Holder Weldment 1	
33	5117307	H.H.C.S. Flanged 3/8"-16nc x 1" Long 1	
34	5075014	Rubber Grommet (Black)	2
35	5005047	Coupler (1 3/8" x 540 RPM) 1	
36	5271706	6-Roller Pump Assembly (6500C)	
37	5301897	7-Nozzle Boom Assembly	1



Ref. #	Part #	Description	Qty
37	5301897	7-Nozzle Boom Assembly	1
37.1	5277780	7-Nozzle Boom	1
37.1.1	5277838	Center Boom Weldment 1" Sq. Tube	1
37.1.2	5277837	Outer Boom Weldment (LH) (1" Sq Tube)	1
37.1.3	5277836	Outer Boom Weldment (RH) (1" Sq Tube)	1
37.1.4	5046106	Square Cap, Black (1" Square Tube)	2
37.1.5	5006259	3/8"-16 Hex Whiz (Flange) Locknut	4
37.1.6	5006345	3/8"-16 Flange Locknut (Grade F)	6
37.1.7	5019228	Extension Spring	2
37.1.8	5034169	H.H.C.S., 3/8"-16 x 2 1/2"	2
37.2	5277923	Boom Clamp Assembly (1" Sq. Tube)	7
37.3	5277696	7-Nozzle Harness (3/8")	1
37.3.1	5281304	"ELL" Nozzle Sub-Assembly (3/8")	2
37.3.1.1	5056113	Single Hose Shank (3/8" Hose)	1
37.3.1.2	5143543	Check Valve Strainer, 50 Mesh, 5 PSI	1
37.3.1.3	5016157	Seat Washer (QJ Caps)	1
37.3.1.4	5018371	Air-Induction XR Flat Spray Tip (AIXR11002VP)	1

Ref. #	Part #	Description	Qty
37.3.1.5	5046219	Quick TeeJet Cap ONLY (Yellow)	1
37.3.2	5281307	"TEE" Nozzle Sub-Assembly (3/8")	4
37.3.2.1	5056114	Double Hose Shank (3/8" Hose)	
37.3.2.2	5143543	Check Valve Strainer, 50 Mesh, 5 PSI	1
37.3.2.3	5016157	Seat Washer (QJ Caps)	1
37.3.2.4	5018371	Air-Induction XR Flat Spray Tip (AIXR11002VP)	1
37.3.2.5	5046219	Quick TeeJet Cap ONLY (Yellow)	1
37.3.3	5281308	"Cross" Nozzle Sub-Assembly (3/8")	1
37.3.3.1	5056115	Triple Hose Shank (3/8" Hose)	1
37.3.3.2	5143543	Check Valve Strainer, 50 Mesh, 5 PSI	1
37.3.3.3	5016157	Seat Washer (QJ Caps)	1
37.3.3.4	5018371	Air-Induction XR Flat Spray Tip (AIXR11002VP)	1
37.3.3.5	5046219	Quick TeeJet Cap ONLY (Yellow)	1
37.3.4	5020510	Hose, 3/8"-1 Brd. x 19-3/8"	4
37.3.5	5020347	Hose, 3/8"-1 Brd. x 21"	2
37.3.6	5051144	Hose Clamp, 3/8"	12

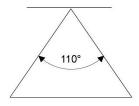
Based on the minimum overlap required to obtain uniform distribution with 110° tips and 20" spacing.

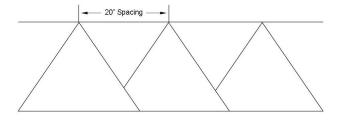
Suggested Minimum Spray Height: 16"-18" above what is being sprayed (to plant, not ground).

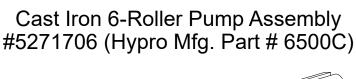
Optimum Spray Height: 20"

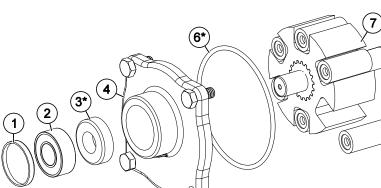
•	110° wide, tapered flat spray angle with air induction tech-
	nology for better drift management

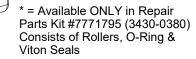
- Made of 2-piece UHMWPE polymer construction which provides excellent chemical resistance, including acids, as well as exceptional wear life
- Compact size to prevent tip damage
- Excellent for systemic products and drift management









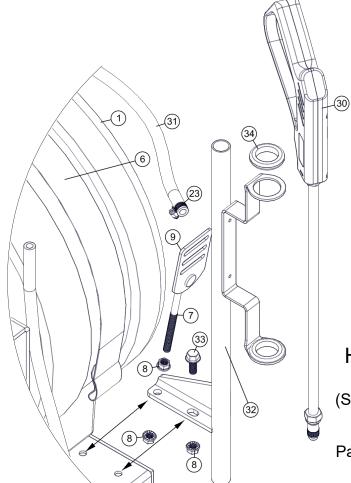


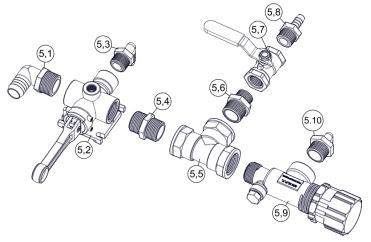
◆ ◆ Available ONLY in Complete Assembly



Ref. #	Fimco Part #	Mfg. Part #	Description	Qty
1	5017481	2300-0021	Bearing Cover	1
2	5031113	2000-0010	Ball Bearing (Sealed)	2
3*	5110052	2107-0002	Seal (Viton)	2
4	<b>* *</b>	0200-6600C	Endplate (Cast Iron) w/Seal	1
5	5034038		H.H.C.S. 5/16"-18nc x 3/4"	4
6*	5072056	1720-0008	O-Ring Gasket for Endplate	1
7	5172038	0300-6600C	Rotor/Shaft Assembly	1
8*	5112030	1005-0004	Super Roller (Standard)	6
9	<b>* *</b>	0100-6600C	Body (Cast Iron) w/Seal	1
10	5017480	2300-0023	Shaft Bearing Cover	1

9





Valve Sub-Assembly #5277754 (See Parts List on Page 5 for Part Numbers)

Handgun Bracket (See Parts List on Page 5 for Part Numbers)

# Roller Pump General Safety Information

- Use a pressure relief device on the discharge side of the pump to prevent damage from pressure buildup when the pump discharge is blocked or otherwise closed and the power source is still running.
- WARNING: Never pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc. Never use in explosive atmospheres. The pump should be used only with liquids compatible with the pump component materials. Failure to follow this warning can result in personal injury and/or property damage and will void the product warranty.
- 3. Never pump acids (i.e. acid fertilizer) with Super Rollers!
- 4. Never run the pump faster than maximum recommended speed
- Never pump at pressures higher than the maximum recommended pressure.
- Never pump liquids at temperatures higher than the recommended maximum temperatures (140°F/60°C).
- Make certain that the power source conforms to the requirements of your equipment.
- Provide adequate protection in guarding around the moving parts such as the shaft and pulleys.

- 9. Disconnect power before servicing.
- Release all pressure within the system before servicing any component.
- Drain all liquids from the system before servicing any component.
- Check all hoses for weak or worn condition before each use.
   Make certain that all connections are tight and secure.
- 13. Periodically inspect the pump and the system components. Perform routine maintenance as required.
- Never operate a gasoline engine in an enclosed area. Be sure the area is well ventilated.
- 15. Use only pipe, hose and fittings rated for the maximum psi rating of the pump.
- Never use pump for pumping water or other liquids for human or animal consumption.

# Roller Pump Operation & Maintenance

WARNING: Never pump corrosive or abrasive liquids as these will cause rapid wear or deterioration of the body, rotor, shaft and seals in the pump. The pump should be used on with liquids compatible with pump component materials. Never exceed maximum specified rpm and pressure. Never run pump dry. Failure to follow this warning will void the product warranty.

#### Priming the Pump:

To help prime the pump, keep the inlet or suction line as short as possible with a minimum of bends, elbows and kinks. Make sure all connections are tight and do not leak air. Make sure line strainer is free of debris. If pump does not self-prime, disconnect suction hose, fill with water and reconnect to liquid source. Often a squirt of oil into the ports of the pump will seal clearance and help priming.

#### Care of the Pump:

Proper care and maintenance will keep your pump wear at a minimum and will keep it running smoothly and trouble-free for a long time.

#### Flush the Pump After Each Use

One of the common causes of faulty pump performance is "gumming" or corrosion inside the pump. This prevents rollers from moving freely in their rotor slots. Flush the pump with a solution that will neutralize liquid pumped, mixed according to to manufacturer's directions.

#### **To Prevent Corrosion:**

After cleaning pump as above, flush it with a 50-50 solution of permanent-type automotive antifreeze (containing a rust inhibitor) and water. A rust inhibitor can also be squirted into the ports of the pump. Turn shaft several times to draw protective liquid through pump and coat entire inner surface. Drain pump and plug ports to keep out air during storage. For short periods of idleness, noncorrosive liquids may be left in the pump, but air must be kept out. Plug ports or seal port connections.

	Troubleshooting				
Symptom	Probable Cause(s)	Corrective Action			
	Leak in suction line	Check hose and fittings for leaks and correct			
	Obstruction in suction line	Inspect hose for debris or loose inner liner in hose			
Pump Does Not Prime	Suction hose sucked to bottom or side of tank	Cut a notch or "V" in end of suction hose			
	Rollers stuck in pump	Disassemble pump and inspect rollers			
	Pump seals leaking air	Replace seals			
	Clogged suction strainer	Check strainer and clean it regularly			
	Kinked or blocked suction hose	Inspect suction hose and repair as necessary			
	Air leak in inlet side plumbing	Check hose and connections for leaks			
	All leak in inlet side plumbing	Use pipe joint sealant and retighten connections			
Loss of Pressure	Relief valve setting too low or weakened spring	Check relief valve and correct setting			
	Faulty Gauge	Replace gauge			
	Pump seals leak air	Replace seals			
	Nozzle orifices worn	Replace nozzles			
	Pump worn	Repair pump			
	Corrosion (rust), scale or residue	Loosen endplate bolts. Squirt oil into ports to help free rotor.			
Pump will not turn	Corrosion (rust), scale of residue	Retighten bolts.			
	Solid object lodged in pump.	Disassemble pump and remove objects			

# Warranty

#### LIMITED WARRANTY FOR NEW FIMCO, IND. EQUIPMENT

WHO MAY USE THIS LIMITED WARRANTY. This limited warranty (the "Limited Warranty") is provided by Fimco, Ind. to the original purchaser ("you") of the Equipment (as defined below) from Fimco, Ind. or one of Fimco, Ind.'s authorized dealers. This Limited Warranty does not apply to any subsequent owner or other transferee of the Equipment. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

WHAT THIS LIMITED WARRANTY COVERS AND FOR HOW LONG. Fimco, Ind. warrants that any new Equipment will be free from defects in material and workmanship for a period of **one (1) year** (homeowner), **90 days** (commercial user), after delivery of the Equipment to you (the "Warranty Period"). The Warranty Period is not extended if Fimco, Ind. repairs or replaces the Equipment.

WHAT IS NOT COVERED BY THIS LIMITED WARRANTY. This Limited Warranty does not apply to: (1) used Equipment; (2) any Equipment that has been altered, changed, repaired or treated since its delivery to you, other than by Fimco, Ind. or its authorized dealers; (3) damage or depreciation due to normal wear and tear; (4) defects or damage due to failure to follow Fimco, Ind.'s operator's manual, specifications or other written instructions, or improper storage, operation, maintenance, application or installation of parts; (5) defects or damage due to misuse, accident or neglect, "acts of God" or other events beyond Fimco, Ind.'s reasonable control; (6) accessories, attachments, tools or parts that were not manufactured by Fimco, Ind., whether or not sold or operated with the Equipment; or (7) rubber parts, such as tires, hoses and grommets.

HOW TO OBTAIN WARRANTY SERVICE. To obtain warranty service under this Limited Warranty, you must (1) provide written notice to Fimco, Ind. of the defect during the Warranty Period and within **thirty (30)** days after the defect becomes apparent or the repair becomes necessary, at the following address: Fimco, Ind., 1000 Fimco Lane, North Sioux City, SD 57049; and (2) make the Equipment available to Fimco, Ind. or an authorized dealer within a reasonable period of time. For more information about this Limited Warranty, please call: **800-831-0027**.

WHAT REMEDIES ARE AVAILABLE UNDER THIS LIMITED WARRANTY. If the conditions set forth above are fulfilled and the Equipment or any part thereof is found to be defective, Fimco, Ind. shall, at its own cost, and at its option, either repair or replace the defective Equipment or part. Fimco, Ind. will pay for shipping and handling fees to return the repaired or replacement Equipment or part to you.

LIMITATION OF IMPLIED WARRANTIES AND OTHER REMEDIES. THE REMEDIES DESCRIBED ABOVE ARE YOUR SOLE AND EXCLUSIVE REMEDIES, AND FIMCO, IND.'S SOLE LIABILITY, FOR ANY BREACH OF THIS LIMITED WARRANTY. TO THE EXTENT APPLICABLE, ANY IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL BE LIMITED IN DURATION TO THE WARRANTY PERIOD, AND THE REMEDIES AVAILABLE FOR BREACH THEREOF SHALL BE LIMITED TO THE REMEDIES AVAILABLE UNDER THIS EXPRESS LIMITED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IN NO EVENT SHALL FIMCO, IND.'S LIABILITY UNDER THIS LIMITED WARRANTY EXCEED THE ACTUAL AMOUNT PAID BY YOU FOR THE DEFECTIVE EQUIPMENT, NOR SHALL FIMCO, IND. BE LIABLE, UNDER ANY CIRCUMSTANCES, FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL OR PUNITIVE DAMAGES OR LOSSES, WHETHER DIRECT OR INDIRECT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.