

Crop Care Marker System



Model F105 Parts Manual

Model F105 Specifications

1. Power Requirements = 12 volts & 11 amps
2. Wiring Harness
 - Power Cable = 10' length
 - Control Cable = 20' length
3. 5/8" ID x 80' length Discharge Hose (Max boom length 60 ft)
4. 5 gallon capacity Solution Tank
5. 3 hour Foaming Time for 5 gal tank

Mounting Instructions

1. **Marker Unit** - Choose a convenient location that is easily accessible to mount the foam marker unit. The foam marker unit should be mounted where it gets the least dust and dirt as possible. Drill four 3/8" holes in the sprayer frame to match the holes in the foam marker frame.
2. **Wiring Harness** - Connect the red wire of the power cable to a 12-volt DC positive power source. This should be done at the battery terminal or where there is at least a 20 ampere power source. The black wire must be connected to a good ground or the negative terminal of the battery. Mount the control box at a convenient location with either velcro or by drilling holes and permanently mounting.
3. **Discharge Tubes** - The tubes should be mounted at the end of each boom using the large hose clamps supplied. It is important to be sure the discharge tube is not interfering with the spray pattern of the sprayer nozzle when you are spraying.
4. **Discharge Hoses** - Attach the 5/8" discharge hoses to the hose barbs on the solenoid. Then route the hoses along the booms to the discharge tubes. This hose may not be kinked or pinched, when the boom is in the folded or unfolded position. Cable ties are provided to secure the hoses to the booms. DO NOT over tighten these ties or kink the hose as to restrict the foam flow.

Operating Instructions

Make sure all the hoses are attached and the wiring harness is plugged together. Fill the solution tank with water than add foam concentrate according to foam specifications. Flip the control switch to the left or the right side. Allow one to two minutes for the foam to reach the discharge tube. The foam discharge rate is preset and doesn't need to be adjusted. When operating in temperature below 32 degrees, add 20% antifreeze to solution.

Maintenance Instructions

Motor

1. Bearings - These are permanently lubricated ball bearings and do not require oil.
2. Fan Blade - Inspect fan blade and fan chamber for excessive dust or dirt. Remove the dust or dirt with compressed air. Do this annually or more frequently when operating in dirty or dusty conditions.

Solenoid Valve

1. *See section on maintenace and operation of 144 Directoalve*

Filters

1. Air Intake filter - (see ref#20) This filter must be cleaned daily with compressed air . Replace filter annually or as needed.
2. Solution Intake Filter - (see ref #41) Located at the end of the solution suction tube, Rinse filter daily with clean water.
3. Inline Solution Filter and orifice disk - (see ref #38 &37) Located in solution suction line directly inside tank cap. Rinse filter (Ref #38) daily with clean water. Inspect orifice disk (ref #37) for dirt. **IMPORTANT** Do no operated unit without orifice disk (ref #37). This will result in damage to the compressor.

Annual System Shut-Down

To avoid damage to the unit this must be done before freezing conditions.

1. Add ½ gallon RV Nontoxic Antifreeze to the empty solution Tank.
2. Run the unit until both sides of the system are flushed.
3. Store in a clean dry place

Trouble Shooting

Problem

Possible Cause

Motor won't run

- Loose wires
- Blown fuse
- Switch not working

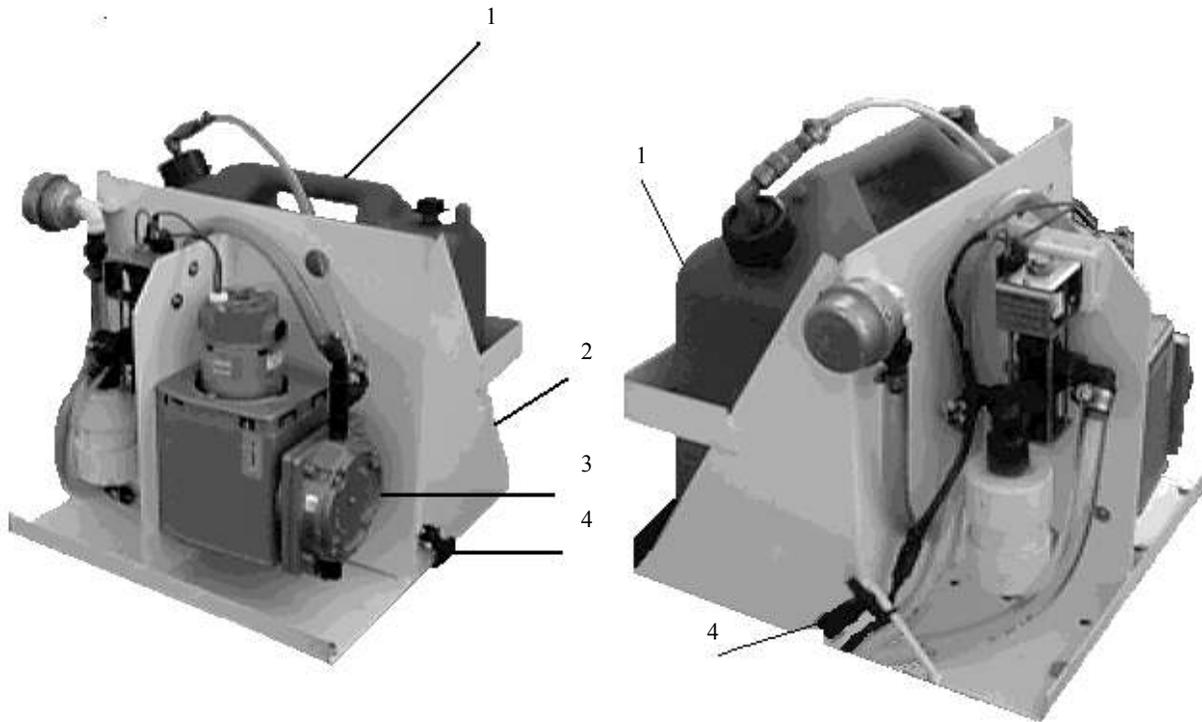
No foam at all

- discharge hose pinched or kinked
- low voltage causes solenoid valve not to open. (ref #11) (Solenoid Valve requires a minimum of 10.5 volts to operate)
- plugged solution line orifice (ref #37)
- missing air intake orifice disk (ref #24)
- clogged in line solution filter (ref #38)
- holder for in-line solution filter not turned tight, causing a air leak. (ref #36 &39)

Foam Rate Low

- not enough foam concentrate in water
NOTE for extremely hard water the concentrate must be increased
- dirty air intake filter (ref #20)
- clogged in-line solution filter (ref #38)
- holder for in-line solution filter no turned tight, causing air leaks. (ref #36 & 39)

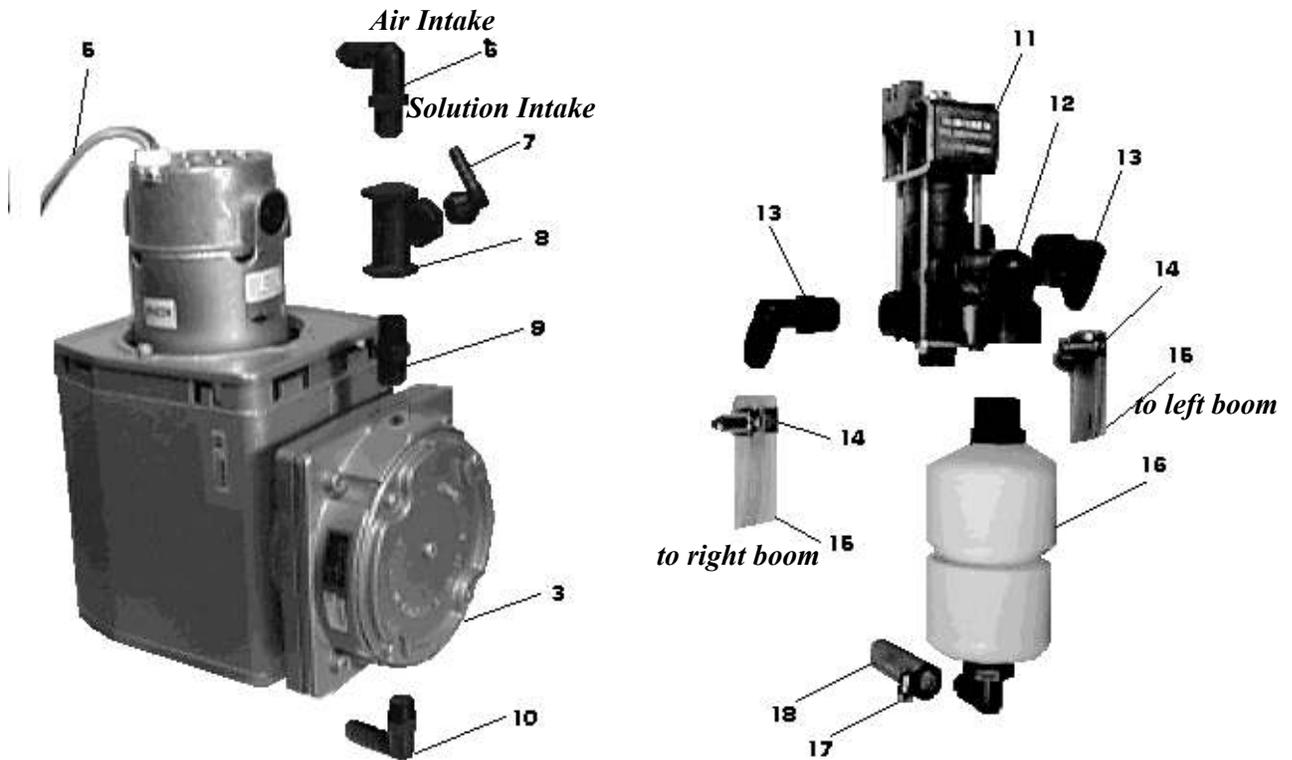
F105 Foam Marker



<u>Ref #</u>	<u>Part #</u>	<u>Description</u>
1	81052	solution tank
2	F500	foamer frame
3	DOA-P101-JH	compressor gas
Not Shown	F502	foamer cover
4	35S	rubber latch

DOA-P101-JH Compressor

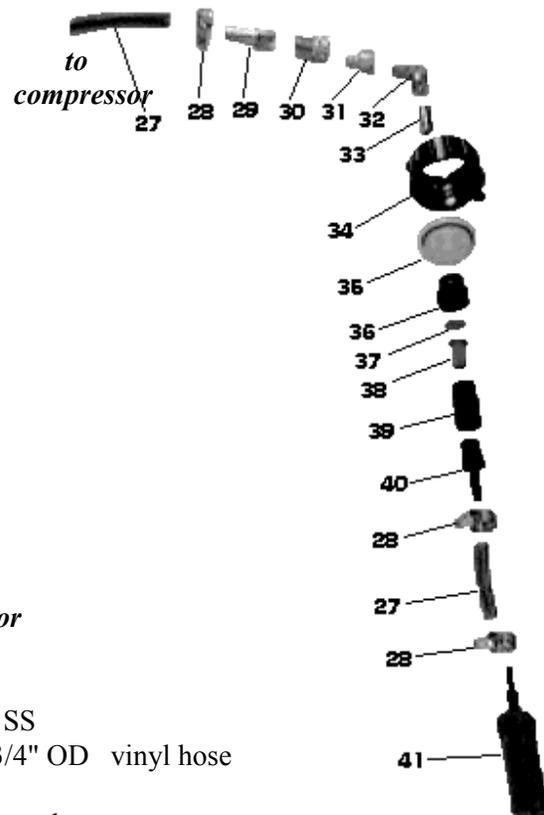
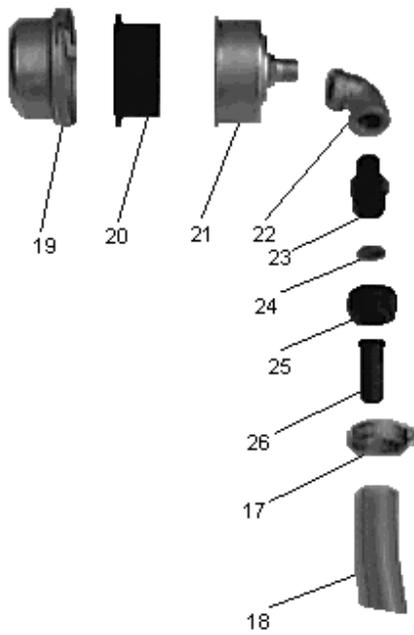
144 Directvalve & Mixing Chamber



<u>Ref#</u>	<u>Part#</u>	<u>Description</u>
3	DOA-P101-JH	compressor Gast
6	3EL1412	1/4" mp X 1/2" barb elbow (to air intake)
7	3EL1414	1/4" mp X 1/4" barb elbow (to solution tank)
8	3TT14	1/4" poly threaded tee
9	3M14	1/4" poly pipe nipple
10	3EL1412	1/4" mp X 1/2" barb elbow (to mixing chamber)
11	AA144F13	Directvalve 3/4" solenoid valve
12	3SE34	3/4" poly street elbow
13	3EL1258	1/2" mp X 5/8" barb elbow
14	6810	hose clamps SS
15	1959	5/8" ID X 7/8" OD vinyl discharge hose (to discharge tubes)
16	F504	mixing chamber
17	62606	hose clamps SS
18	1957	1/2" ID X 3/4" OD vinyl hose

Air Intake Filter

Solution Suction Line

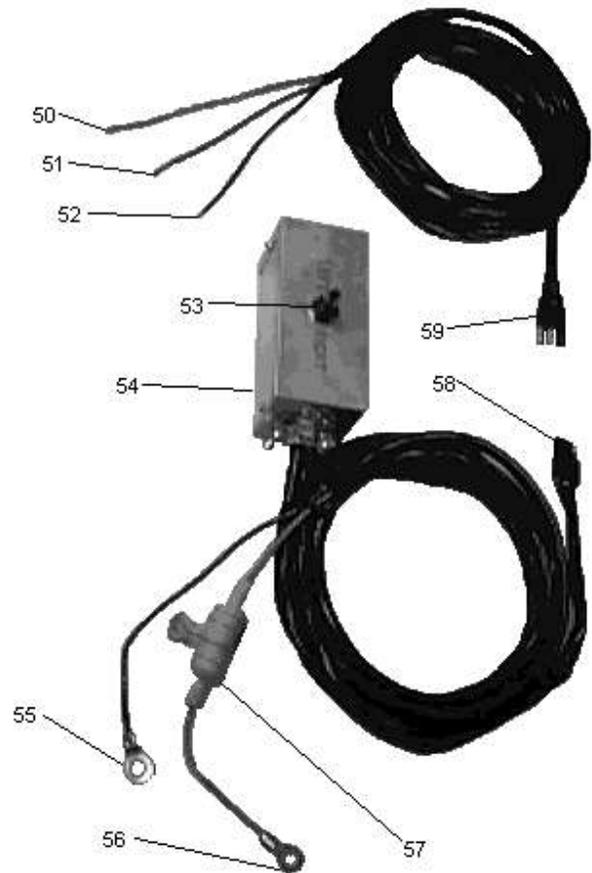


<u>Ref#</u>	<u>Part #</u>	<u>Description</u>
17	62606	hose clamps SS
18	1957	1/2" ID X 3/4" OD vinyl hose
19	N/A	filter cover
20	5Z768	replacement filter element
21	N/A	filter housing
Not Listed	FS04025	complete filter assembly (Ref # 19,20,21)
22	L14G	1/4" elbow (welded to frame)
23	CP1322	1/2" mp poly adapter
24	DVP3	air intake orifice disc green
25	38027	poly nozzle cap
26	3K8417	1/2" poly hose barb
27	1954	1/4" ID X 3/8" OD vinyl hose
28	62602	hose clamps SS
29	A1814BR	1/8" X 1/4" barb brass adapter
30	BST1	quick coupler female 1/8" NPT
31	BSTN1	quick coupler male 1/8" NPT
32	SE18BR	street elbow 1/8" NPT
33	N18HBR	nipple 1/8" Hex
34	84004	tank cap
35	F503	washer clear lexan
36	4676NYB18	female adapter nylon 1/8" NPT
37	CP491626	orifice disk SS
38	8079PP100	inline filter SS 100 mesh
39	CP12094NYN	male adapter 1/4" FNPT
40	3A1414	1/4" MNPT X 1/4" hose barb
41	7160	Solution Intake Filter

Discharge Tube



Wiring Harness



<u>Ref#</u>	<u>Part#</u>	<u>Description</u>
42	6810	hose clamps SS
43	3A3458	3/4" MNPT X 5/8" hose clamps
44	3RB10034	1" MNPT X 3/4" FNPT bushings
45	3LL100	1" FNPT elbow
46	3A100114	1" MNPT X 1-1/4" hose barb
47	6820	hose clamp SS
48	3111	hose 1-1/4" ID X 16" long
49	F505	collector booth
50	-----	blue wire (positive, solenoid valve)
51	-----	red wire (positive, compressor)
52	-----	black wire (ground to compressor & solenoid valve)
53	2X469	toggle switch 15 amps
54	F501	switch box
55	-----	black wire (negative terminal)
56	-----	red wire (positive terminal)
57	281910	fuse holder
58	F507	wiring harness power end
59	F509	wiring harness compressor end

DOA-P101-JH Compressor

1	Cover	1	AF808
2	Head Gasket	1 2	AF820
5	Head	1	AF804
6	Valve Screw	2	BB317
7	Valve Limiter	1	AF856
8	Leaf Valve	2	AF817
9	Valve Retainer	1	AF819A
10	Retainer Plate	1	AF809
11	Diaphragm (compressor-Blue)	1	AF818A
12A	Spacer	1	AD996
13	Fan	1	AF533
14	Grille	1	AF807
15	Rivet	4	AE946

Maintenance & Operation of the Directo Valve AA144F-1-3

IMPORTANT - Before performing any maintenance, make sure electrical power to the coil is shut off and the line pressure is relieved

I. To replace coil only

1. Shut off power to coil
2. Disconnect wires from terminals.
3. Remove two screw (2) from top of coil cover (3).
4. Lift off coil (5) and replace with new coil
5. Replace coil (3) and attach securely with two screw (2).

II. To replace Diaphragms and Seat Washer

1. Remove the four Screws (21) and secure the Bottom Plate (20) and separate Coil subassembly. Remove Upper and Lower Diaphragm Housing. (9 & 19)
2. Remove Washer (7) and Spring (8) from Armature (10)
3. Secure hole in Armature (10) with a small tool (1/8" or allen wrench). Unscrews entire assemble with screwdriver secured in slot of Lower Diaphragm Piston (18).

NOTE - Stem/Seat/Diaphragm assemble may unscrew at Lower Diaphragm Piston (18) see step 4 or at Armature (10) see step 5

4. If Lower Diaphragm Piston (18) unscrews, remove Diaphragm (12) then slide Seat Washer Retainer (13) off and remove Seat Washer (14). Inspect and replace as necessary. Remaining Seat/Upper Diaphragm assembly may be removed from top of polypropylene port with a small round toll (3/32" or smaller allen wrench works well), unscrewing the Armature (10) and removing the Diaphragm (12) from the Seat Washer Retainer (13).
5. If Armature (10) unscrews, remove along with the Diaphragm (12) and the Seat Washer Retainer (13). Disassemble by securing stem (17) through the hole seen through the inlet port with a small toll (3/32" or smaller allen wrench), and using the screwdriver in slot of Lower Diaphragm Piston (18). Removal of Stem (17) from Seat Washer Retainer (13) is necessary to free Spacer (15) for removal of Seat Washer (14).

NOTE - While seat washer retainers and stem are removed from valve body, examine valve seat in body for nicks and roughness the may cause valve to leak

III. To Reassemble

1. Reassemble Seat Washer Retainer (13), Seat Washer (14) and Spacer (15) and slide onto one end of Stem (17).
2. Reassemble Upper Diaphragm (12) with “Fluid Side” marking facing valve body, and Armature (10) unto Stem (17).
3. Reassemble remaining Seat Washer Retainer (13), Seat Washer (14), and Spacer (15) then slide unto the other end of stem. Screw Lower Diaphragm Piston (18) with Diaphragm (12) in proper sequence into bottom end of stem assemble. Tighten Stem assembly using hole in the Armature (10) and the slot of the Lower Diaphragm Piston (18).
4. Reinstall Spring (8) over Armature (10) and Washer (7). Place Upper Diaphragm Housing (9) over Armature, Spring, and Washer. Place Coil Assembly (5) on top of Upper Diaphragm Housing (9)
5. Position polypropylene Body sub-assemble together. Mounting position is not important; the relationship of the inlet and outlets may be placed at any position relative the electrical connection on the coil assembly.
6. Replace Lower Diaphragm Housing (19) and Bottom Plate (20). Secure Coil Sub-assembly, Body sub-assemble and the Bottom Plate using four Screws (21). Care must be exercised to uniformly tightened the Retaining Screws (21).
7. Replace electrical connection. There is no positive or negative terminal.

If stroke adjustment is needed

1. Unscrew Jam Nut (1)
2. Push up the Lower Diaphragm (18) until Seat Washer contact body seating surface.
3. While holding Lower Diaphragm Piston up, turn Armature Stop (4) in until is just makes contact with Armature (10)
4. Turn Armature Stop (4) out 1/8 turn and lock with Jam Nut (1).

Troubleshooting the 144F-1-3 Directo Valve

<p>1. Valve won't open</p>	<p>A. Insufficient electrical power to valve</p> <p>B. Stem movement restricted.</p> <p>C. Stroke too long</p> <p>D. Coil failure</p>	<p>check and clean electrical connections inspect Electrical system . Voltage should be no less than 12 volts DC at coil Manually activate stem by pushing on lower diaphragm piston. If more than 5 lbs of force is required to move stem, check lower outlet for obstructions. If no obstructions, remove coil and inspect armature and armature stop. If corrosion is found disassemble valve, inspect and clean all parts. Apply a light coat of mineral oil on corroded parts after cleaning. Reset stroke according in instructions.</p> <p>check coil, resistance should be approx 6 ohms.</p>
<p>2. Pressure too high</p>	<p>A. Pressure too high</p> <p>B. Power on at valve</p> <p>C. Stem movement restricted</p> <p>D. Seat Washer blown out of retainer or worn</p> <p>E. Seat washer worn or damaged</p> <p>F. Stem bent from over tightening</p>	<p>maximum pressure at valve should not exceed 50 PSI disconnect one wire from valve, if valve shuts off, check elec system Manually activate stem by pushing on lower diaphragm piston. If more than 5 lbs of force is required to move stem, check upper outlet for obstructions. If no obstructions, remove coil and inspect armature and armature stop. If corrosion is found, disassemble valve, inspect and clean all parts. Apply a light coat of mineral oil on corroded parts after cleaning. Disassemble valve and inspect seat washer and diaphragm for damage. Replace is necessary Disassemble valve and inspect body seat for damage. Replace if necessary Disassemble valve and assemble all internal stem components minus the diaphragms and body. Hand tighten. Roll stem assembly across a flat surface, is stem "wobbles" replace all stem components</p>
<p>3. Leakage around coil for lower diaphragm piston</p>	<p>A. Ruptured Diaphragm</p>	<p>Disassemble and replace diaphragm</p>
<p>4. Blowing Fuses</p>	<p>A. Short circuit of power</p> <p>B. Short with the coil</p>	<p>Check and clean electrical connections. Inspect electrical system. Remove connections from coil and activate switch, making sure connections don't touch. If fuse doesn't blow, replace coil.</p>

Parts List AA144F-1-3

1	CP15168-IENP	Jam Nut, Steel electroless nickel plated
2	CP14933-SS	Screw, stainless steel (2 required)
3	CP15166-I-IZP	Coil Cover, Steel, Zinc Plated
4	CP38073-IENP	Armature Stop, Steel-Electroless Nickel Plated
5	CP15163-NYB	Coil Assembly, Nylon Encapsulated (black)
6	CP14927-4IZP	Strap, Steel, Zinc Plated
7	CP15169-1-SS	Washer, Type 302 stainless steel
8	CP38076-302SS	Spring, type 302 stainless steel
9	CP38074-NYB	Upper Diaphragm Housing, nylon-glass filled (Black)
10	CP38072-IENP	Armature, steel-electroless nickel plated
11	CP14813-1-IENP	Retaining Ring, steel-electroless nickel plated
12	CP14818-EPR	Diaphragm, EPDM Rubber (2 required)
13	CP25678	Seat Washer, retainer, brass (2 required)
14	CP14802-1EPR	Seat Washer, EPDM Rubber (2 required)
15	CP14811	Spacer, brass (2 required)
16	CP21672-1-PPB	Body, polypropylene (black) for model AA144F-1-3 (NPT)
17	CP21674	Stem Brass
18	CP15162	Lower Diaphragm Piston, brass
19	CP38075-NYB	Lower Diaphragm Housing, nylon-glass filled (black)
20	CP14804-3-IZP	Bottom Plate, steel, zinc plated
21	CP21673-SS	Screw, stainless steel (4 required)
22	CP21737-NYB	Connecting Nipple, nylon (black) use for multiple unit