

# **DRAMM**



## **Heavy Duty Sprayer**

### **Owners Manual Model MS-O**

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# **DRAMM**

## **Heavy Duty Sprayer**

**Model: MS-O**

120 Volt 60 HZ

200 Watts

1.7 AMP

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Serial Number

### **Limited Warranty**

Dramm Corporation warrants, to the extent of the purchase price, that the Heavy Duty Sprayer, model MS-O, will be free from defects in materials and workmanship to the original purchaser for a period of six months. Parts subject to wear are not covered under this limited warranty. Defects or damages due to the misuse, non-observance of safety standards, or non-observance of EPA chemical guidelines are not covered under this limited warranty. Please read and follow the instructions and heed warnings stated in the operating manual and on the Heavy Duty Sprayer, model MS-O.

Dramm Corporation makes no other further warranty, expressed or implied, and all other or further warranties, including any warranties of merchantability or fitness for a particular purpose are expressly excluded.

In no event shall the manufacturer (s) or Dramm Corporation be liable for loss of product, profit or any other special, incidental or consequential damages including, but not limited to, plant damage, property or persons.

Dramm Corporation makes no warranty, expressed or implied, in regard to the efficacy of any pesticide or other chemical which may be applied using the Heavy Duty Sprayer.

This warranty begins on the date of original purchase. This warranty is void if there is no proof of purchase or warranty registration on file. Mail the warranty registration card to the Dramm Corporation and keep the bill of sale or invoice. If warranty service is required, please include a written description of the equipment malfunction, a return address and telephone number. The Heavy Duty Sprayer, model MS-O, must be thoroughly cleaned of all chemical residue and sent prepaid to:

MS-O Sprayer Service  
c/o Dramm Corporation  
2000 North 18th Street  
Manitowoc, WI 54220

# WARNING

## Heavy Duty Sprayer Model: MS-O

- Use only 110-115 volt electrical outlets.
- Use only 3-pronged grounded extension cords and receptacle boxes.
- Keep all electrical connections away from liquids.
- Clean after every use with warm soapy water and then rinse with clean water.
- Wear protective clothing; respirator, hood, gloves and boots when mixing and spraying chemicals.
- Do not spray into the wind. Avoid the drift of solution sprays.
- Do not direct the spray or spray gun at yourself or anyone else.
- Be certain all hoses and connections are secure prior to using the Heavy Duty Sprayer.
- Avoid dry operation, since the spray solution acts as a pump lubrication.
- Relieve the pressure before removing the hoses or spray gun.
- Apply all chemicals according to EPA Guidelines.
- Store in a clean, dry location– away from children and unauthorized personnel.
- Remove all hoses and drain the pump prior to storage.
- Do not drag the hoses over sharp objects or bend excessively.
- Repair or replace all damaged or broken hoses before using the Heavy Duty Sprayer.
- Before servicing the unit, disconnect the Heavy Duty Sprayer from the power source.
- Do not store mixed chemicals. Use all of the chemical mixture immediately.
- Do not adjust the P.R.V. (Pressure Regulator Valve) over 500 PSI. The maximum operating pressure for the Heavy Duty Sprayer, model MS-O is 500 PSI.

## Assembly & Preparation

1. Install the suction hose (black – inlet), by-pass hose (clear – outlet), discharge hose, and the spray gun. Use Teflon® tape on the discharge hose threads that connect to the spray gun. Make sure that the packings are not damaged or missing from the suction hose. Tighten all connections securely.

2. Loosen the Pressure Regulator Valve (P.R.V.) by rotating the large red knob on the pump housing counterclockwise. This lifts the spring tension off of the check valve, and allows all of the spray solution to bypass back into the chemical tank via the overflow hose.

3. Inspect the suction hose strainer for any debris that may have clogged the screen mesh.

4. Place the suction hose and overflow hose into the chemical tank.

5. Be sure the “ON/OFF” toggle switch is in the “OFF” position (DOWN).

6. Be sure the sprayer is placed on a level surface for operation so it is not likely to fall. The Heavy Duty Sprayer will vibrate, causing it to move about. Place the sprayer on the ground, floor or bolt it securely to the MS-20E.

7. Connect the power cord to a suitable 110-115 V 60 HZ receptacle. Notice that the pilot lamp will be illuminated.

**NOTE:** If an extension cord is going to be used with the Heavy Duty Sprayer, the maximum length should be no longer than 100 feet (12 gauge, grounded).

**CAUTION:** Keep all electrical connections away from liquids. Use only three-pronged grounded receptacles and extension cords.

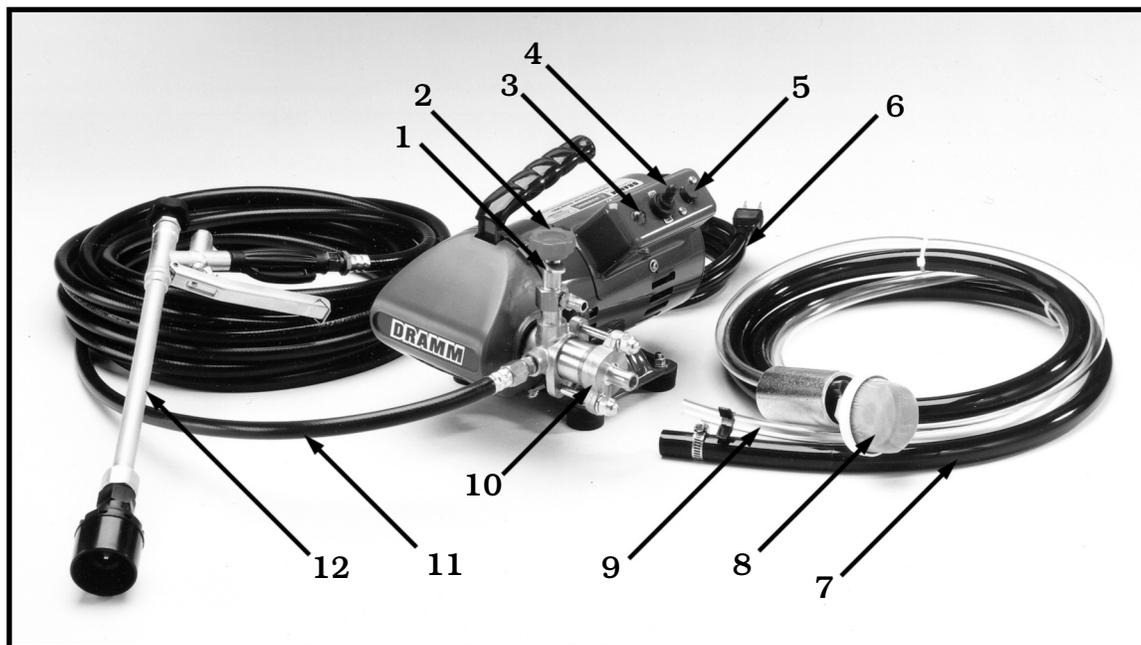


FIGURE A

1. P.R.V. Lock
2. Pressure Regulator Valve (P.R.V.)
3. Pilot Lamp
4. ON/OFF Toggle Switch
5. Reset Switch
6. Power Cord

7. Suction Hose (black)
8. Suction Hose Strainer
9. By-Pass Hose (clear)
10. Pump
11. Discharge Hose
12. Spray Gun

## Operation

1. After completing *Assembly and Preparation* flip the “ON/OFF” toggle switch to “ON” (UP).
2. Wait for the spray solution to return to the chemical tank through the overflow hose. Be sure all air bubbles are eliminated from the overflow hose.  
**NOTE:** Spray solution preparation is very important. When using any detergents, wetting agents or chemicals, follow the labeled instructions on the product container. Mix the product thoroughly with water before spraying.
3. In case the spray solution does not return to the chemical tank through the overflow hose, check the following.

A.) Make sure that the suction hose packing is not damaged or missing. Tighten the suction hose securely.

B.) The suction valve may be stuck closed. Push the suction valve open with a small rod (remove suction hose first). **Figure B.**

C.) If these remedies do not work, pour a small amount of water down the suction hose (inlet) to prime the pump.

D.) Avoid dry operation as the spray solution also acts as a lubricant for the pump.

E.) Do not allow spray solution to contact the motor or pump.

4. Slowly increase the operating pressure by turning the P.R.V. clockwise. This increases the tension on the check valve.
5. Open the spray gun by rotating the handle on the gun. As the handle is rotated, the spray pattern changes from a fine mist to a concentrated stream. Adjust the operating pressure as necessary while spraying.
6. When the spray solution has been emptied from the chemical tank close the spray gun and turn the machine “OFF”. Avoid dry operation as the spray solution also acts as a lubricant for the pump.

7. Rotate the P.R.V. counterclockwise to release tension on the check valve.

8. If there is spray solution remaining and you wish to stop spraying for a short time, lift the suction hose and overflow hose out of the chemical tank and flip the “ON/OFF” toggle switch to “OFF” when all spray solution has been emptied into the chemical tank from the overflow hose.

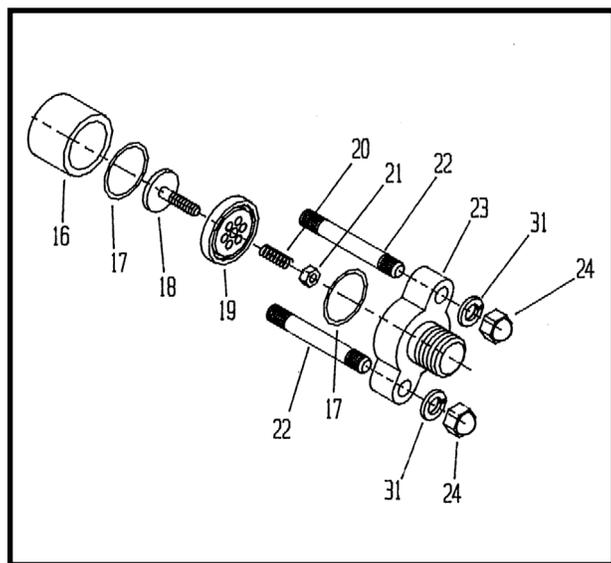


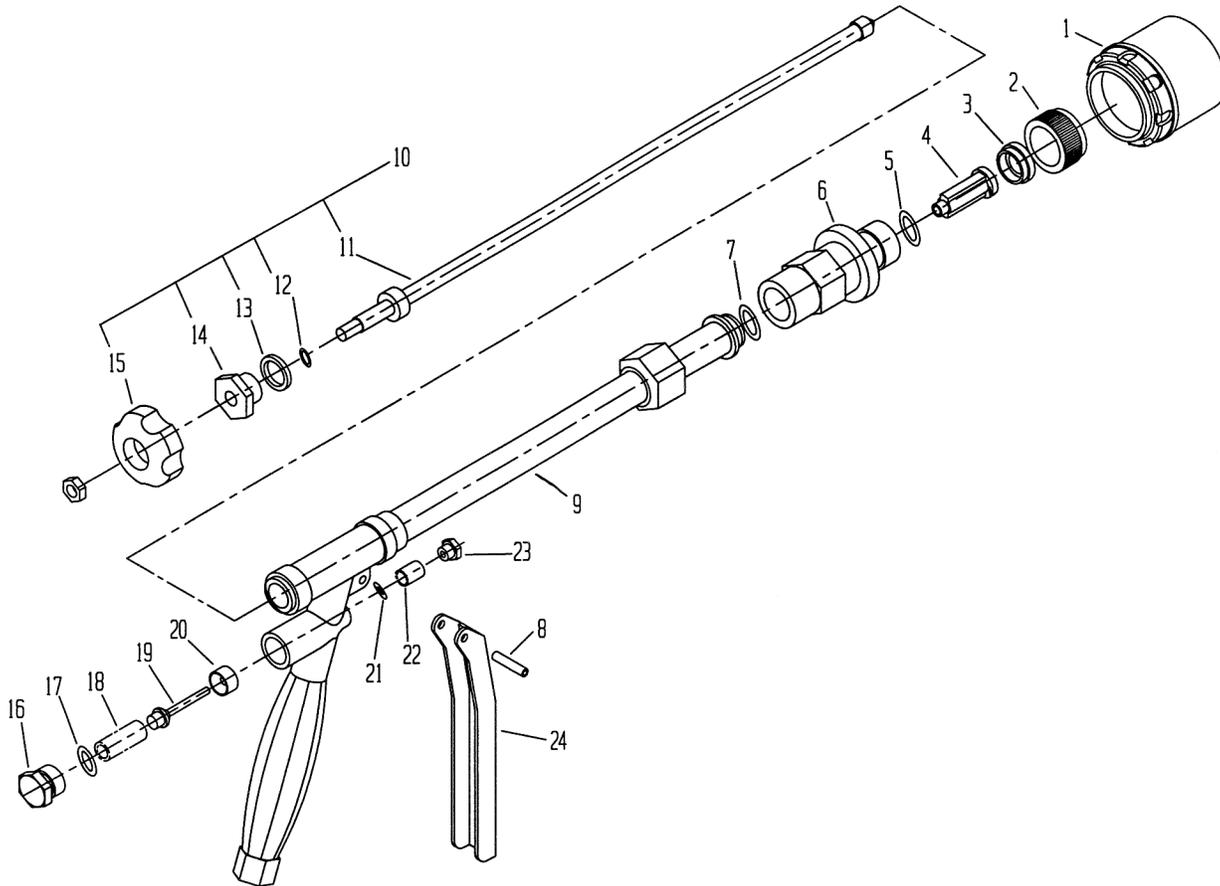
FIGURE B

## Cleaning & Storage

1. Flush the pump and discharge hose with warm soapy water for a few minutes. This will clean the pump and discharge hose.
2. Unplug the electrical cord. Make sure the electrical cord is not damaged in any way.
3. Wipe off the motor and pump housing with a damp cloth so it is clean for the next operation.
4. Store the Heavy Duty Sprayer in a clean, dry, dust-free area. Protect the motor from moisture with a plastic covering.

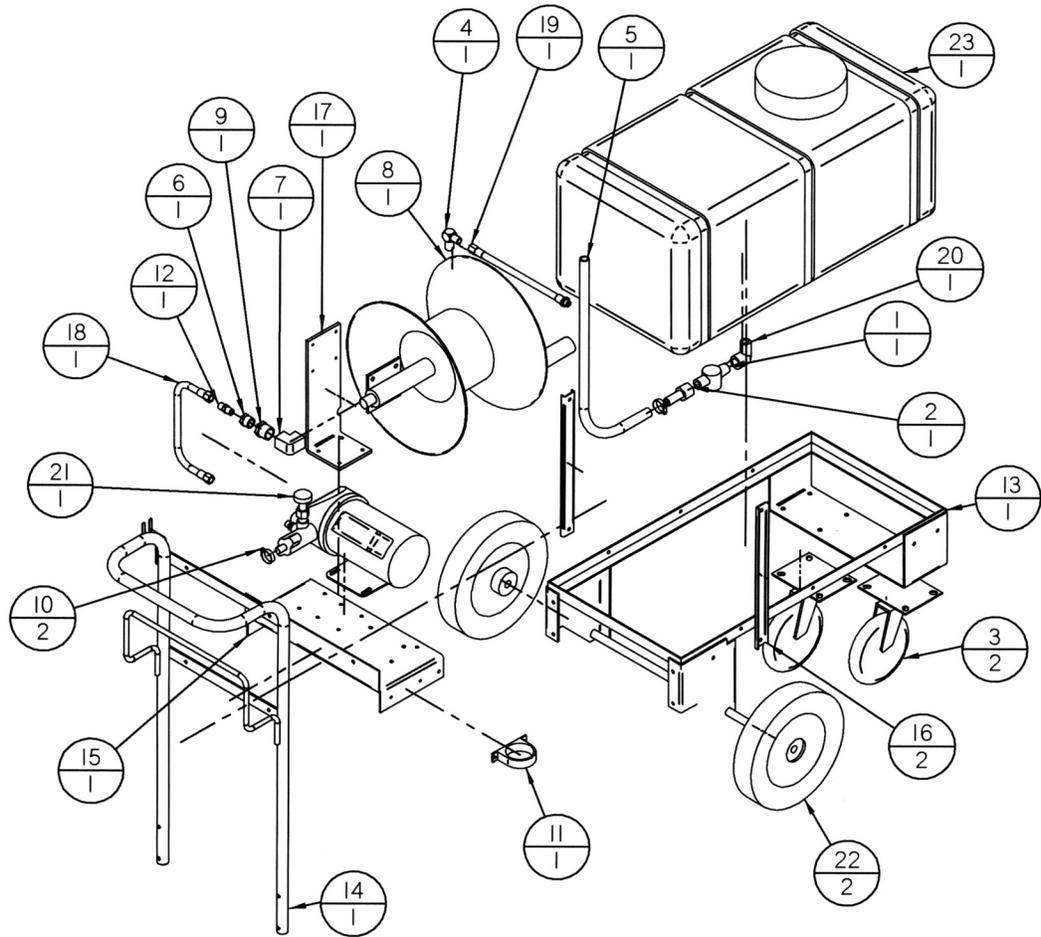
**CAUTION:** Do not store the Heavy Duty Sprayer in areas where freezing temperatures may occur.

## MS-TG Trigger Style Spray Gun Parts List Model MSO



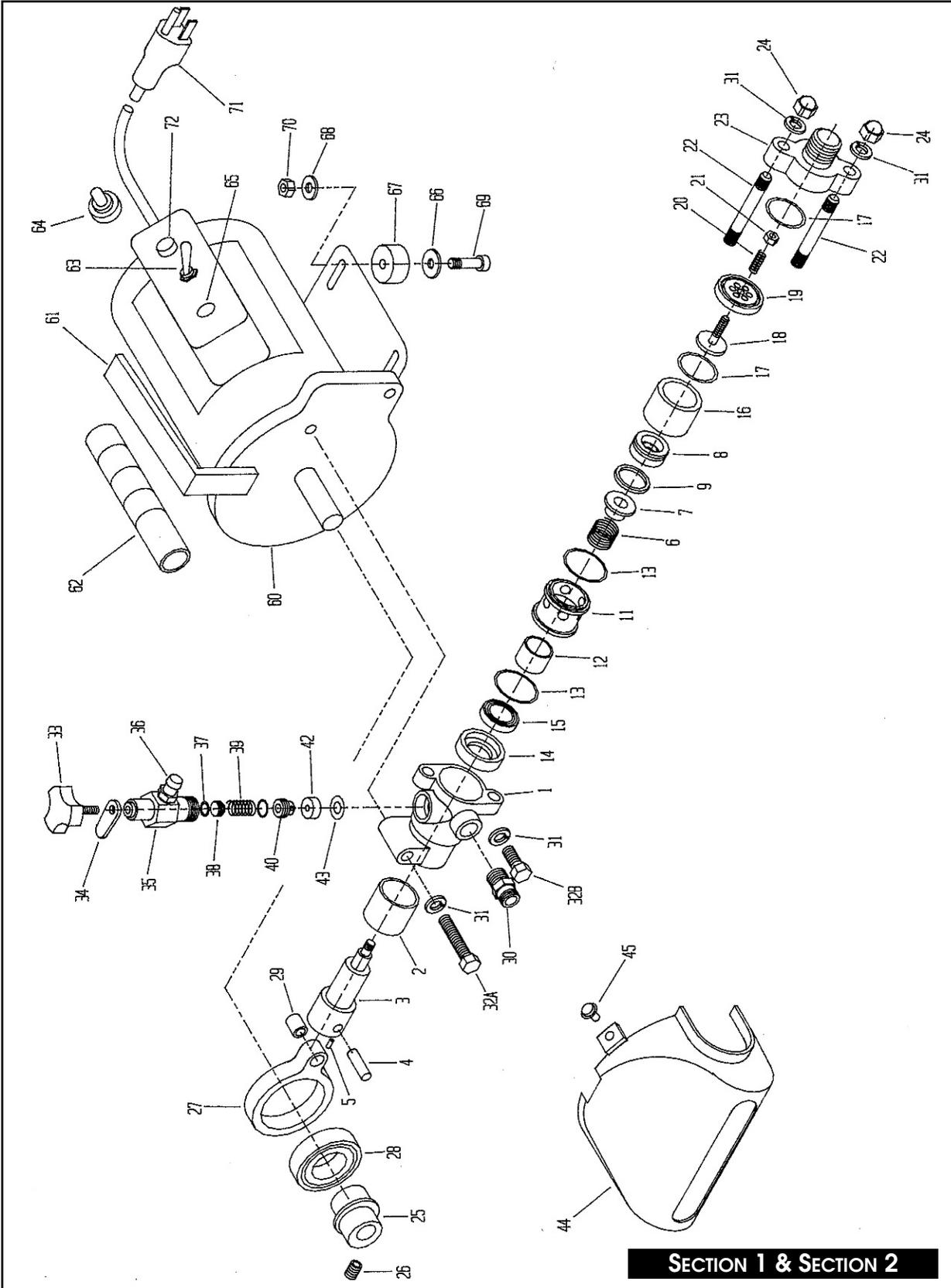
ITEM #	PART #	DESCRIPTION	QUANTITY
1-1	100069	Hood	1
1-2	103173	Cap	1
1-3	115427	Orifice (Z0-10)	1
1-4	115428	Core	1
1-5	11345	O-Ring (P11)	1
1-6	115429	Core Holder	1
1-7	19285	O-Ring	1
1-8	106078	Spring Pin	1
1-9	590803	House Assembly	1
1-10	590805	Valve Rod Assembly	1
1-11	115431	Valve Rod	1
1-12	22056	O-Ring	1
1-13	28819	Packing	1
1-14	106075	Packing Nut	1
1-15	106076	Knob	1
1-16	106085	Spring Retainer	1
1-17	11343	O-Ring	1
1-18	106084	Spring	1
1-19	106083	Push Rod Assembly	1
1-20	106082	Valve Seat	1
1-21	19115	O-Ring	1
1-22	106081	O-Ring Retainer	1
1-23	106080	Spring	1
1-24	106079	Lever Assembly	1

# MSO20E Cart and Reel Assembly



ITEM #	PART #	DESCRIPTION	QUANTITY
1	14297-1	Filter Housing	1
2	1435-005	1/2 FPT to 1/2 Barb	1
3	1899041	6" Caste	2
4	25A-06X04	1/4" Elbow	1
5	2T05R0812	1/2 ID Hose	1
6	42060	Bushing 1/2 MPT X 1/4 FPT	1
7	42070	1/2 Elbow	1
8	4413-B	Hose Reel	1
9	48335K211	Reducing Bushing	1
10	62003	Clamp	2
11	8871T39	Gun Holder	1
12	896-WM	1/4 M to M Fitting	1
13	D11093A	MS-O 20 Cart	1
14	D11096	Handle Assembly	1
15	D11120A	MS-O Pump Bracket	1
16	D11121	Side Leg	2
17	D11150C	Reel Mount	1
18	D11306	Pressure Line	1
19	HOSE ASSY	150' Hose	1
20	M412-005	1/2 Street Elbow	1
21	MS-O Pump	MS-O Pump	1
22	SN10275-OP 5/8	10 X 2 Wheel	2
23	SP0020-LC	20 Gallon Tank	1

# MS-O Pump & Electrical Parts Diagram



SECTION 1 & SECTION 2

**SECTION 1****Pump Parts List Model MS-O**

<b>ITEM #</b>	<b>PART #</b>	<b>COMPONENT #</b>	<b>DESCRIPTION</b>	<b>QTY.</b>
1	512010001		Discharge Port	1
2	512010002		Bushing (large)	1
3	512010003		Plunger	1
4	512010004		Pin	1
5	512010005		Bolt (4.0mm X 4mm)	2
6	512010006		Spring	1
7	512010007		Discharge Valve	1
8	512010008		Piston	1
9	512010009		Piston Packing	1
10	512010010		U-nut (6.0mm)	1
11	512010011		Guide ring	1
12	512010012		Bushing (small)	1
13	512010013		O-Ring (S-28)	2
14	512010014		Spacer	1
15	512010015		U-Packing	1
16	512010016		Cylinder	1
17	512010017		O-Ring (S-25)	2
18	512010018		Suction Valve	1
19	512010019		Suction Valve Seat	1
20	512010020		Spring	1
21	512010021		U-nut (5.0mm)	1
22	512010022		Stud bolt (8.0mm X 60mm)	2
23	512010023		Suction Port	1
24	512010024		Blind Nut (8.0mm X 60mm)	2
25	512010025		Eccentric Collar	1
26	512010026		Bolt (8.0mm X 10mm)	1
27	512010027		Connecting Rod	1
28	512010028		Ball Bearing (6005ZZ)	1
29	512010029		Needle metal	1
30	512010030		Discharge fitting	1
31	512010031		Spring washer (8.0mm)	2
32-1	512010321		Bolt (long- 8.0mm X 40mm)	1
32-2	512010322		Bolt (short- 8.0mm X 20mm)	1
33	512010033		P.R.V. Screw	1
34	512010034		Hexagon Nut (6.0mm)	1
35	512010035		P.R.V. body	1
36	512010036		Hose Joint	1
37	512010037		O-Ring (P-7)	1
38	512010038		Spring Retainer	1
39	512010039		Spring	1
40	512010040		Pressure Regulator Valve (P.R.V.)	1
42	512010042		P.R. Valve Seat	1
43	512010043		Seat Packing	1
44	512010044		Pump cover	1
45	512010045		Bolt (5.0mm X 8mm)	3
46	512010046		Washer (5.0mm)	3
80	512010080		Strainer	1
81-84	512018184		Suction Hose Assembly	1
85	512010085		By-Pass Hose	1

**SECTION 2****Electrical Parts List Model MS-O**

ITEM #	PART #	COMPONENT #	DESCRIPTION	QTY.
60		512020060	Motor Assembly	1
61	512020061		Handle	1
62	512020062		Handle cover	1
63	512020063		Switch	1
64	512020064		Switch Cap	1
65	512020065		Pilot lamp	1
66-70		512026770	Buffer assembly	4

**SECTION 3****Spray Gun Parts List Model MS-O**

ITEM #	PART #	COMPONENT #	DESCRIPTION	QTY.
80	512030080		Strainer	1
81-84		512038184	Suction Hose Assembly	1
85	512030085		By-Pass Hose	1
86	MS-DH33		Standard 33' Discharge hose	1
86	MS-DH100		Optional 100' Discharge hose	1
91	512030091		Hood Cap	1
92	512030092		Nozzle orifice	1
93	512030093		Nozzle packing	1
94	512030094		Nozzle Seat Plate	1
95	512030095		Nozzle body	1
96	512030096		Adjusting Rod	1
97	512030097		Nozzle Gland Packing	1
98	512030098		Vinyl Packing	1
99	512030099		Nozzle Gland Packing	1
100		MS-G	Spray Gun for MS-O	1
101	512030101		Knob	1
102	512030102		Nut	1

**SECTION 4****Sprayer Accessories**

ITEM #	PART #	COMPONENT #	DESCRIPTION	QTY.
-	MS-20E		Cart & 20 Gallon Tank for MS-O	1
-	L-5		Telescoping Extension Lance	1
-	MS-R		Reel for MS-20E Cart & Tank	1

## MS-20E Cart with 20 Gallon Tank



For complete mobility and easy operation... use a Dramm MS-20E Cart— designed especially for the Heavy Duty Sprayer, model MS-O, along with the MS-R hose reel.

The MS-20E Cart is delivered complete with a 20 gallon tank, hard rubber wheels and a bracket that holds the MS-O pump. Constructed of corrosion resistant powder coated steel, this handy cart is not only durable, but lightweight too! The MS-20E is only 22" wide for effortless maneuvering. Also available, the MS-R reel. Neatly holds up to 150 feet of hose. Order an MS-20E Cart or MS-R reel from your Dramm Distributor today!

## Troubleshooting

PROBLEM	CAUSE	REMEDY
<ul style="list-style-type: none"> <li>•Sprayer will not turn on. Pilot lamp does not illuminate.</li> </ul>	<ul style="list-style-type: none"> <li>•Sprayer is not plugged in.</li> <li>•Pressure is too high for motor capacity.</li> <li>•Defective electric motor.</li> </ul>	<ul style="list-style-type: none"> <li>•Plug sprayer into a 110-115 volt electrical outlet.</li> <li>•Reduce the pressure setting. Turn the Pressure Regulator Valve counterclockwise.</li> <li>•Have the electric motor serviced by a qualified electrician or contact the Damm Corporation Service Department at 800-258-0848.</li> </ul>
<ul style="list-style-type: none"> <li>•Sprayer pump will not draw up solution.</li> </ul>	<ul style="list-style-type: none"> <li>•Suction hose is not securely fastened to the pump or the suction hose packing is damaged.</li> <li>•Suction valve is stuck to suction valve seat.</li> <li>•Dry operation has pressurized the pump cylinder with air.</li> <li>•Suction hose strainer is clogged.</li> </ul>	<ul style="list-style-type: none"> <li>•Tighten the suction hose coupling to the pump or replace the hose packing.</li> <li>•Remove the suction hose and push the suction valve open with a small rod.</li> <li>•Remove the discharge hose to eliminate air from the pump.</li> <li>•Clean the strainer screen thoroughly. Replace if necessary.</li> </ul>
<ul style="list-style-type: none"> <li>•No pressure.</li> </ul>	<ul style="list-style-type: none"> <li>•P.R.V. is defective or damaged.</li> <li>•No spray solution returns through the overflow hose.</li> <li>•Clogged nozzle (poor spray pattern).</li> </ul>	<ul style="list-style-type: none"> <li>•Overhaul; replace valve and valve seat.</li> <li>•Replace spray gun nozzle orifice disk.</li> <li>•Clean nozzle thoroughly.</li> </ul>

## Troubleshooting

PROBLEM	CAUSE	REMEDY
<ul style="list-style-type: none"> <li>• Gradual pressure reduction with no recovery.</li> </ul>	<ul style="list-style-type: none"> <li>• Clogged suction hose or strainer.</li> <li>• P.R.V. is defective or damaged.</li> </ul>	<ul style="list-style-type: none"> <li>• Clean strainer screen thoroughly and replace if necessary.</li> <li>• Repair or replace Pressure Regulator Valve.</li> </ul>
<ul style="list-style-type: none"> <li>• Solution is leaking from the pump assembly.</li> </ul>	<ul style="list-style-type: none"> <li>• Damaged U-packing, part #512010015 (item #15 on the parts diagram).</li> </ul>	<ul style="list-style-type: none"> <li>• Replace damaged U-packings.</li> </ul>
<ul style="list-style-type: none"> <li>• Unstable pressure. Suction hose and discharge hose vibrate significantly.</li> </ul>	<ul style="list-style-type: none"> <li>• Air is being drawn into the pump.</li> <li>• Valves and valve seats are stuck together.</li> <li>• P.R.V. and valve seat are damaged.</li> </ul>	<ul style="list-style-type: none"> <li>• Tighten suction hose securely to the pump and check packing.</li> <li>• Check suction valve and discharge valve for damage. Clean or replace as necessary.</li> <li>• Replace damaged parts.</li> </ul>

## Service

The warranty begins on the date of original purchase. The warranty is void if there is no proof of purchase or warranty registration on file. Mail the warranty registration card to the Damm Corporation and keep the bill of sale or invoice. If warranty service is required, please include a written description of the equipment malfunction, a return address and telephone number. The Heavy Duty Sprayer, model MS-O, must be thoroughly cleaned of all chemical residue and sent prepaid to:

**MS-O Sprayer Service**  
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**2000 North 18th Street**  
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**800-258-0848**  
**Fax: 920-684-4499**

