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1.0 Introduction

Dropmaster's family of tools utilises the most advanced combination vacuum siphoning and water discharge system available on the market to aid the fire protection contractor during the change out of sprinkler heads. Our innovative design allows for a clean effective way to change sprinkler heads. The Dropmaster will allow a sprinkler fitter to change heads with no residual odor or water coming from the sprinkler piping network when a head is removed or the system is breached. Sprinkler fitters will only need a minute or two to change each sprinkler head in a finished ceiling area. The Dropmaster's unique combination of water siphoning and discharge will allow the fire protection contractors' fitters to work in a safe, clean environment while producing cost effective results. The Fire Protection Contractor benefits by saving time, the client benefits because there is less disruption, less down time and less clean up.

Dropmaster siphoning system utilizes technology that removes odor and water from a sprinkler system by creating a vacuum in the sprinkler piping network; when a sprinkler head is removed or the system is breached a siphoning action takes place removing both water and odor. Dropmaster is designed to maintain a .34 bar vacuum at all times. The machine is designed to maintain that level of vacuum because the manufacturers of grooved couplings recommend not exceeding .34 bar of vacuum pressure.

The 20 feet (6.096 m) of flexible vacuum hose allows for a quick and easy connection to any drain. Connect the hose, activate the power source and the Dropmaster is ready to go.

The Dropmaster is rugged, portable and constructed to be transported in a service truck or van. The unit is built on a handcart and designed to fit through a hospital, nursing home, motel or office standard door opening. Dropmaster comes with an electric motor (230-volt 20-amp circuit required). No extension cords.

The Dropmaster comes standard with an automatic draining system. Please note the draining system should be protected from freezing temperatures.

Dropmaster benefits:
1. Odor free, bacteria free working environment
2. Maximum vacuum pressure allowed on fire sprinkler systems
3. Easy set up, easy clean up
4. Less down time
2.0 Safety Instructions

1. Read all instructions before operation. Retain instructions for your permanent records.
2. Disconnect power source before servicing or cleaning unit.
3. Do not permit unauthorized persons to use the unit at any time.
4. Do not pull alcohol or other combustible materials in the vacuum tank.
5. Never operate vacuum at pressures or speeds in excess of those recommended by manufacturer.
6. Some elements on the unit may be quite warm in normal operation. Do not touch or permit combustible materials to come in contact with these components.
7. Do not touch moving parts while Dropmaster is in service.
8. Technician operating Dropmaster should utilise eye and hearing protection at all times.
9. Unit should be operated in a clean and well-ventilated area.
10. Dropmaster is to be used for siphoning water or non-combustible antifreeze from sprinkler systems or similar type of piping systems.
11. Use caution when transporting Dropmaster unit, make sure unit is properly secured in transporting vehicle. Transport unit upright.
12. Please note separate safety instructions are enclosed for the vacuum pump used in the Dropmaster. This must be reviewed before operating Dropmaster.

3.0 Dropmaster Operating Procedures

1. Follow normal procedure for shutting down and draining sprinkler system before connecting the Dropmaster.
2. Connect Dropmaster to proper electrical connection (230 v 20 amp) and turn unit on.
3. Check the Fire Department Connection to make certain tight fitting caps are in place if above the alarm valve.
4. Close all outlets from the Sprinkler System other than the one the Dropmaster will be connected to.
5. Connect the suction side of the Dropmaster to your choice of outlet and put 25mm drain hose to your choice.
6. With unit on and suction valve open, allow the Dropmaster to pull a vacuum on the system. Check vacuum gauge for proper reading of .34 bar.
7. Open an outlet (Inspector test drain, auxiliary drain or sprinkler outlet) on far side of system from where work is to occur. Allow the Dropmaster to remove any trapped water from the mains.
8. When water has been removed close the outlet that was opened in step 6.
9. Begin working. Always start at the farthest point and work back toward the unit.
10. If at any point the Dropmaster gets flooded see trouble shootings #5.
11. Check the strainer daily, remove basket to clean corrosion build up.
13. Drain barrel daily.
4.0 Water Calculations

**Please Note**
Utilise this worksheet to perform calculations at project site to determine residual water that will be captured by Dropmaster tank before placing Dropmaster in service.

1 Gallon of water = 8.344 lbs. = 3.784 kg

<table>
<thead>
<tr>
<th>Pressure</th>
<th>Vacuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 psi</td>
<td>2.036 inches H.G.</td>
</tr>
<tr>
<td>5 psi</td>
<td>10.18 inches H.G.</td>
</tr>
<tr>
<td>10 psi</td>
<td>20.36 inches H.G.</td>
</tr>
<tr>
<td>15 psi</td>
<td>30.54 inches H.G.</td>
</tr>
</tbody>
</table>

4.1 Water In Pipes By Size

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>Schedule 40 Litres</th>
<th>Schedule 10 Litres</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.54cm per 30.48cm</td>
<td>0.170</td>
<td>0.185</td>
</tr>
<tr>
<td>3.175cm per 30.48cm</td>
<td>0.295</td>
<td>0.322</td>
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<tr>
<td>3.81cm per 30.48cm</td>
<td>0.401</td>
<td>0.435</td>
</tr>
<tr>
<td>5.08cm per 30.48cm</td>
<td>0.659</td>
<td>0.719</td>
</tr>
<tr>
<td>6.35cm per 30.48cm</td>
<td>0.939</td>
<td>1.071</td>
</tr>
<tr>
<td>7.62cm per 30.48cm</td>
<td>1.450</td>
<td>1.640</td>
</tr>
<tr>
<td>10.16cm per 30.48cm</td>
<td>2.498</td>
<td>2.801</td>
</tr>
<tr>
<td>15.24cm per 30.48cm</td>
<td>5.681</td>
<td>6.242</td>
</tr>
</tbody>
</table>

5.0 Trouble Shooting

1. **IF NOT RUNNING**
   - Verify cord set is plugged into active outlet.
   - Make sure main electric switch is in on position. Green electric motor should be operating.

2. **IF NO VACUUM**
   - Verify 12.7 mm tank drain plug is installed.
   - 25mm suction valve should be in closed position. Vacuum gauge should indicate 0.34 bar vacuum.
   - Check the loose nuts on tank flanges and check barrel ring bolt.

3. **IF LOW OR NO VACUUM AT END OF SUCTION HOSE:**
   - Clean out 2.54cm wye strainer—remove 9.52mm plug and then remove large bushing and pull out strainer basket.
   - Check for any blockages.
4. IF GAUGE READS 10 AND THERE IS NO SUCTION ON END OF SUCTION HOSE
   • With 25mm valve—open reset anti flood device.

5. TO RESET ANTI-FLOOD DEVICE
   • Unplug unit and remove 12.7 mm drain plug from back of tank, remove all water from tank, lightly tap the tank and a “thud” should be heard. The anti flood is now reset. Replace 12.7mm drain plug.

6. IF MOTOR IS NOT RUNNING
   • Motors are manual thermal overload protected. Allow 30-40 minutes for unit to cool.
   • To reset/push rubber button until you hear it click
   • Use proper electrical supply (230v 20amp)

7. IF NO WATER DISCHARGE
   • Please call Ampac Safety.

6.0 Maintenance

Daily
   • Check for any unusual noise, failure to build vacuum, overheating, vibration and correct before damage of a serious nature can develop.
   • Check and add oil to vacuum pump reservoir, if necessary.
   • Flush and clean storage tank after daily use.
   • Unit should be stored indoors in a clean, dry location.
   • Check and clean strainer. Remove the strainer basket and ensure they are free of debris or sludge. Replace the basket.
   • Remove and drain used oil from Muffler/Oil catch, dispose of used oil properly.

Weekly
   • Keep compressor clean for efficient operation.

Monthly
   • Check and tighten all bolts as required. Check air connections and joints for leaks – tighten if necessary.

7.0 Model Information

Model  DM12  230 Volt  3/4 Horse Power Electric

Standard Equipment:  Mounted on a portable handcart
   • 6.1m of 25mm flexible hose suction
   • 6.1m of 25mm flexible hose discharge
   • 6.1m electrical cord GFI
   • 3.785 liter holding tank
   • 120 Volt Automatic Draining System
   • Anti-flood device
   • 25.4cm Pneumatic Wheels

Options:
   • 2.5mm Flexible Hose
   • 6.1m thru 30.48m custom hoses are available
   • Solid Rubber Tires
   • Custom paint to match company colors is available
Replacement Parts In Stock:
1. 2.54cm x 6.1m Flexible Hose
2. Vacuum Pump
3. Electric Motor
4. Shaft couplings and inserts
5. Relief Valve
6. Discharge pump
7. Basket Strainers
8. 25mm Pneumatic Wheels

8.0 Warranty

Dropmaster warrants to the original purchaser thereof (the “Original Purchaser”) that the Dropmaster and parts thereof furnished by GECCO, Inc. – (“GECCO”) will, when properly installed, used operated and maintained by the Original Purchaser, be free from defects in material and workmanship for a period of Ninety (90) Days from the date of delivery to the Original Purchaser. Any Dropmaster that is found not to meet these standards by GECCO within this ninety-day period will, at GECCO's sole option, be repaired or replaced without charge. Any defect or condition that has been caused by misuse, unauthorised use or modification, or abnormal conditions of operation or maintenance, will be repaired by GECCO or its designee at GECCO’s then current repair charges. In this case, upon the request of the Original Purchaser, GECCO will submit an estimate of the repair cost to the purchaser prior to making the repairs. Any defective Dropmaster or component thereof should be returned promptly to GECCO at the sole expense of the Original Purchaser. Any loss or damage during shipment of a defective Dropmaster or component thereof shall be at the Original Purchaser’s sole risk.

The motor and compressor are warranted One Year (1) from the date of delivery from the manufacturer. Owner responsibility includes providing normal maintenance as required by Gecco, Inc. This warranty does not apply (1) if the pump(s) has been damaged due to improper use, neglect, accident, misuse, and exposure to extremities of dryness or humidity (2) if pump(s) has been serviced or modified by other than Gecco, Inc. authorised personnel.

No other warranty expressed or implied is given. The repair or replacement of the pump(s) is your exclusive remedy. Any implied warranty of merchantability or fitness is limited to the declaration of this written warranty. In no event shall Gecco, Inc. be liable for consequential or incidental damages. Some states do not allow the exclusion or limitation of this warranty so the above exclusions or limitations may not apply to you. This warranty gives you specific legal rights and you may have other rights, which vary, from state to state.

Discharge water pump has a ninety (90) day warranty.
This warranty does not cover product failure resulting from:
1. Normal wear.
2. User abuse, including immersing non-submersible products, Dents or Damage to Barrel.

WARRANTY EXCLUSIONS. EXCEPT AS EXPRESSLY PROVIDED HEREIN, GECCO MAKES NO WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE WITH RESPECT TO THE DROPMASTER INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE SOLE AND EXCLUSIVE REMEDY OF THE ORIGINAL PURCHASER FOR BREACH OF GECCO OF ANY WARRANTY SET FORTH HEREIN SHALL BE LIMITED, AT GECCO’S SOLE ELECTION, OF THE REPAIR AND REPLACEMENT OF THE DROPMASTER OR ANY COMPONENT THEREOF. GECCO NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT, ANY ADDITIONAL LIABILITY OR RESPONSIBILITY IN CONNECTION WITH THE DROPMASTER AND NO AGENT, EMPLOYEE OR REPRESENTATIVE OF GECCO HAS THE RIGHT TO MODIFY OR EXPAND THE WARRANTIES SET FORTH HEREIN AND NO SUCH MODIFICATION OR EXPANSION SHOULD BE RELIED UPON BY THE ORIGINAL PURCHASER.

The warranty shall not apply to a Dropmaster unit or to any component thereof if it has been subjected to operations in excess of design limitations, negligent maintenance, abuse, or damage by alteration not expressly authorized in writing by GECCO.
8.1 Limitations Of Liability
To the extent allowable under law, GECCO's liability for consequential and incidental damages is expressly disclaimed. GECCO's liability in all events is limited to and shall not exceed the purchase price of the Dropmaster.

We undertake no responsibility for work done or expense incurred in connection with repair or replacement except on specific authority. We accept no liability hereunder, whatsoever, for consequential damages of, or for the negligence of others. The foregoing warranties are exclusive and there are no warranties, which extend beyond the period set forth herein. These express warranties are in lieu of all other warranties whether written, oral or implied and GECCO, Inc. hereby expressly excludes the implied warranties of merchantability and fitness for a particular purpose.

8.2 Warranty Claims
All warranty claims shall be made to Ampac Safety, and shall be supported by satisfactory evidence in respect of conditions herein noted. For a warranty claim please call Ampac Safety for further instructions. Any part which is determined to be defective in material or workmanship and returned to Ampac Safety as instruction will be, as the exclusive remedy, repaired and replaced at Ampac Safety's option.
9.0 Appendix A

9.1 Maintenance Manual For Vapor Oil Pumps
MODEL – DM12

IMPORTANT - READ BEFORE INSTALLATION OF THIS UNIT

WIRING

INSTALLATION INSTRUCTIONS
All wiring for the installation of this unit should be done by a licensed electrician according to National and Local Electrical Regulations.

SINGLE PHASE MOTOR UNITS
All single phase motors are wired for proper direction of rotation. Unless otherwise requested motors are wired for low voltage service.

VAPOR OIL PUMPS
Use a 10W-30 Oil for all Conde Vapor Oil Pumps. When starting new Vapor Oil Pumps fill oil reservoir above the fittings in which the wicks are inserted. This will give the Pump extra oil for the first two hours of operation. When refilling, fill to just below oil wicks. Capacities: Model 3 0.946 Litre Maximum.

VACUUM RELIEF VALVE
The adjustable Vacuum Relief Valve is preset at 10IN/Hg, do not exceed.

OPERATIONAL LIMITS
Max Vacuum (Continuous) 15IN/Hg = 0.508 bar
Max Vacuum (Intermittent) 25IN/Hg = 0.846 bar

FLUSHING INSTRUCTIONS FOR CONDE VAPOR OIL PUMPS
It may be necessary to flush your Conde Vapor Oil Pump to remove any gum or varnish buildup inside the pump that causes the vanes to stick in their slots. This is a simple maintenance operation and should be one of the first steps when troubleshooting a loss of vacuum in a system.

1. Remove the oil tube at the oil reservoir—Long tube from reservoir to vacuum.
2. Be sure the exhaust is directed away from the motor. Be careful to contain any mist or spray.
3. Use kerosene or diesel fuel fluid for flushing process. While the pump is running under vacuum, simply insert the tube into the cleaning fluid and allow the pump to draw the fluid in. Alternately let air into the tube with the cleaning fluid. It can take up to 118.3mL of cleaning fluid to clean the pump.
4. In the same manner draw in about 5 ounces of oil to complete the flushing process.
5. Replace to its original location. The unit is now ready to return to service.
INSTRUCTION OF DISASSEMBLY & ASSEMBLY

DISASSEMBLY

Fig. A - Remove cooling fans
Fig. B - Remove dowel pins, cap screws, bearing cove & shins
Fig. C - Slide collar over shaft and tighten screws securely.
Fig. D - Screw the bolts into the 3 threaded holes in the opposite side of the pump that the collar is on. Turn the bolts alternating (no more that 1 turn at a time) until endplate slides off the pump shaft.
Fig. E - Remove the bearings from the endplate. (This can be done easily since the bearing is a slip in the endplate.)
Fig. F - Put the plate just removed back in place without the bearings then slide the collar over the shaft and tighten.
Fig. G - Remove the opposite endplate using the 3 bolts as previously done.
ASSEMBLY
1. Before assembly deburr all parts with a fine file. Determine correct rotor rotation (see drawing). Check the vane slots for free movement of vanes.
2. On model 2 Pumps start assembly with side of housing that has the dowel pin holes on the lift side of the housing. On model 3 start on side with dowel pin holes on the right. Note: dowel pin holes are always on the exhaust side of the pump. On oil lubricated pumps press the shaft seal in place and place the paper gasket in position on the housing. Install the endplate with the six hex screws and finger tighten. Drive the 2 dowel pins in place then tighten hex screws securely.
3. Insert rotor into housing according to rotor rotation and rotation arrows on the pump. (The pump must be assembled in the same position. This will align the rotor with the endplates and housing.)
4. Install the slinger over shaft. (green disk)
5. Press bearing on the shaft using a bearing installation tool or arbor press. IMPORTANT—press on the inner race of bearing only. Pressing on the plastic seal may cause damage to roller bearings.
6. Invert pump assembly and install the vanes into the slots.
7. Invert 2nd endplate as previously done but do not tighten screws and leave dowel pins out. Install bearing and slinger.
8. Apply downward pressure to rotor shaft so that the rotor bottoms out on the 1st endplate, while pressure is applied tighten hex screws evenly. Drive in dowel pins.
9. Shim the pump and install new bearing covers. IMPORTANT—The pump should spin freely by hand when complete, if any binding is noticed repeat step 9.
10. Install cooling fans. Install all safety guards prior to starting unit.

VAPOR OIL PUMP PARTS
1  Pump Housing
2  CW Endplate
3  CCW Endplate
4  Rotor
5  Oil Vane-GME137
6  Bearing Cover
7  Clutch Plate
8  Oiler Tank-GME140
9  Paper Gasket
10  Clutch
11  Oil Tube
12  Bearing
13  Seal
14  Clutch Stud
15  Lock Washer
16  LockNut
17  Hex Screw
18  Mounting Plate Screw
19  Bearing Cover Screw
20  Clutch Nut or Screw
21  Key
22  Dowel Pin-GME154
23  Repair Kit-GME155 (Model3 Vapor Oil)