**WARNING:**
Do not use the proportioner where water pressure exceeds 90 psig (620 KPa). Do not use the proportioner with a water supply temperature above 170°F... eyewear and gloves to prevent contact with the chemicals. Failure to follow these instructions may result in personal injury.

For more specific information on the safety of the various CIMCOOL metalworking fluids, obtain the Product Information Folder(s) and follow the recommendations provided.

**OPERATING INSTRUCTIONS/INSTALLATION GUIDE**

**DESCRIPTION**

The CIMCOOL Mix Master Automatic Proportioner is a simple, economical, and accurate method to mix CIMCOOL metalworking fluid concentrate with water. The proportioner automatically mixes CIMCOOL metalworking fluid concentrate with water and fills a reservoir to a pre-determined level. The most important requirement in the use of metalworking fluids is maintaining the proper mix ratio. This is easily controlled with the use of the CIMCOOL Automatic Mix Master Proportioner.

The CIMCOOL Mix Master Automatic Proportioner is mounted vertically on a fluid reservoir wall. The siphon hose is placed in a 55-gallon (208 L) concentrate drum. A water line is connected to the proportioner. When the ball valve is turned to the "on" position (water line open), the metalworking fluid concentrate is siphoned from the 55-gallon (208 L) drum, mixed with water, and discharged into the reservoir at approximately 3 to 4 gallons per minute until the reservoir is filled to the pre-determined level at which time the proportioner automatically shuts off.

The two main requirements for successful operation of the equipment are a minimum water pressure of 15 psig (101 KPa) (flow pressure) and selection of the proper metering tip.

The unit features a vacuum breaker to prevent backflow of fluid concentrate to the tap water line (in compliance with OSHA regulation 29 CFR section 1910.141 (b)(iii)).

**INSTALLATION**

**MOUNTING**

The CIMCOOL Mix Master Automatic Proportioner must be mounted in a vertical position—not tilted in any direction as noted by visual inspection, and not connected to the concentrate drum. A water line is connected to the proportioner. When the ball valve is turned to the "on" position (water line open), the metalworking fluid concentrate is siphoned from the 55-gallon (208 L) drum, mixed with water, and discharged into the reservoir at approximately 3 to 4 gallons per minute until the reservoir is filled to the pre-determined level at which time the proportioner automatically shuts off.

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B. Discharge Hose: The discharge hose (B) must be installed for the proportioner to properly mix the metalworking fluids. Attach the flooding ring end of the discharge hose to the venturi body by using slip joint pliers to slide the clamp over the venturi mixer outlet groove. The discharge hose is placed in the reservoir at a point below the mix level where the flow activates the magnetic valve to refill the reservoir. This will prevent foaming. Extending the discharge hose length will affect the concentration ratio due to back pressure. If a longer hose is required, it will be necessary to determine the correct metering tip by trial and error.

C. Metering Tip: Select the proper metering tip (C) (See Table 1). Contact CIMCOOL Technical Service (513-458-8199) for selecting the proper metering tip to obtain the recommended metalworking fluid concentration. Thread the metering tip into the orifice retainer by hand (see detail, Key 15, in Figure 2). One set of color-coded plastic metering tips is enclosed with each unit. Please refer to Table 1 for the tip identification chart.

D. Siphon Hose: Insert the weighted foot valve into the concentrated drum. Attach the opposite end of the siphon hose (D) to the orifice retainer.

E. Level Adjustment: The adjustable chain length (E) permits use of the CIMCOOL Mix Master Automatic Proportioner on shallow or deep reservoirs. Position the float at the desired level.

F. On-Off Valve: The manual on-off valve (F) is used to turn off the CIMCOOL Mix Master Automatic Proportioner when not in use. Turn off when changing the metering tip or concentrate drum, and when draining the reservoir for cleaning or maintenance.

MIX RATIOS
The CIMCOOL Mix Master Automatic Proportioner is a venturi type proportioner which depends on water pressure and a metering tip to obtain a particular mix ratio.

The mix ratios were obtained at a flow pressure of 40 psig (275 KPa). Checking the actual mix ratio or concentration obtained at startup with a refractometer or titration kit is recommended. Variation in fluid temperatures and water pressures will have a slight affect on the mix ratio. These variations can be minimized by:

1. Installing a pressure regulator on the water line (remembering that the minimum water pressure is 15 psig (101 KPa) to operate the proportioner).
2. Using the fluid concentrate at room temperature

Please be aware that changing the discharge hose length will affect the mix ratio. The standard Mix Master Automatic Proportioner has approximately two feet (.6 m) of discharge hose. The discharge hose must have an open or gravity discharge and the flooding ring must be installed in the discharge hose for proper operation of the proportioner.

As the fluid level rises in the reservoir, the maximum fill level can be set by adjusting the float chain length (E). When the float rises, the magnetic valve will close, stopping the water flow to the proportioner. When the reservoir level is lowered, through withdrawal of premixed fluid, the float level will fall, thereby opening the magnetic valve and sending water to the proportioner. In this manner the automatic proportioner will continue to maintain a reservoir full of premixed fluid, where the fluid level will vary approximately two inches (5.0 cm) in the tank.

TABLE 1: TIP IDENTIFICATION CHART

<table>
<thead>
<tr>
<th>COLOR</th>
<th>ORIFICE DIAMETER</th>
<th>DRILL SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gray</td>
<td>.126</td>
<td>30</td>
</tr>
<tr>
<td>Black</td>
<td>.096</td>
<td>40</td>
</tr>
<tr>
<td>Light Brown/Beige</td>
<td>.070</td>
<td>50</td>
</tr>
<tr>
<td>Red</td>
<td>.052</td>
<td>55</td>
</tr>
<tr>
<td>White</td>
<td>.043</td>
<td>57</td>
</tr>
<tr>
<td>Blue</td>
<td>.040</td>
<td>60</td>
</tr>
<tr>
<td>Medium Brown/Tan</td>
<td>.035</td>
<td>65</td>
</tr>
<tr>
<td>Green</td>
<td>.028</td>
<td>70</td>
</tr>
<tr>
<td>Orange</td>
<td>.025</td>
<td>72</td>
</tr>
<tr>
<td>Dark Brown</td>
<td>.023</td>
<td>74</td>
</tr>
<tr>
<td>Yellow</td>
<td>.020</td>
<td>76</td>
</tr>
<tr>
<td>Purple</td>
<td>.014</td>
<td>79</td>
</tr>
<tr>
<td>Pink</td>
<td>.010</td>
<td>87</td>
</tr>
<tr>
<td>Clear</td>
<td>Your Choice (No Hole)</td>
<td></td>
</tr>
</tbody>
</table>

TROUBLESHOOTING

1. Unable to obtain proper mix ratio
   - Check water pressure
   - Check metering tip
   - Check foot valve/strainer
   - Check discharge hose/flooding ring
   - Check fluid temperature
   - Check venturi/metering tip for residue or scale
   - Inspect/tighten water hose fitting and on/off ball valve
   - Clean/replace gasket on vacuum breaker
   - Clean with warm cleaning fluid (consider use of deionized water)
   - Check manual operation of solenoid

2. Mix ratio varies
   - Check metering tip
   - Check foot valve
   - Check discharge hose/flooding ring
   - Clean with warm cleaning fluid (consider use of deionized water)

3. Proportioner leaks
   - Check foot valve
   - Check discharge hose/flooding ring
   - Inspect/tighten water hose fitting and on/off ball valve
   - Check manual operation of solenoid

4. Water enters concentrate drum
   - Check metering tip
   - Check foot valve
   - Inspect/tighten water hose fitting and on/off ball valve

5. Scale forms on venturi or metering tip
   - Inspect/tighten water hose fitting and on/off ball valve
   - Check manual operation of solenoid

6. Unable to obtain water flow
   - Check metering tip
   - Check foot valve
   - Check discharge hose/flooding ring
   - Inspect/tighten water hose fitting and on/off ball valve
   - Clean with warm cleaning fluid (consider use of deionized water)

7. Float does not activate solenoid
   - Check metering tip
   - Check foot valve
   - Check discharge hose/flooding ring
   - Clean with warm cleaning fluid (consider use of deionized water)

(1) Install pressure regulator to minimize changes in tap water pressure. Minimum flow pressure to be 15 psig (101 KPa).

MAINTENANCE
The CIMCOOL Mix Master Automatic Proportioner features simple operation and low maintenance. With few moving parts there is little to wear out. However, it is recommended that the venturi assembly and metering tip area are inspected periodically to insure that no residue is forming on the unit. If a residue or scale is forming (most likely due to hard water reacting with the product), cleaning with warm water and a cleaning fluid designed to remove scale is recommended. As the tubing shows signs of deterioration, replacement is recommended.

SALES
The CIMCOOL Mix Master Automatic Proportioner part number is EQ02513. Use this part number when placing an order with your Milacron Distributor.

SERVICE
For additional information contact: your Milacron Industrial Distributor or Milacron Customer Service: 888-246-2665

SPARE PARTS
Spare parts are available from your Milacron Industrial Distributor. (See Figure 2).

FIGURE 1