INDUSTRIAL PUMPS
**Flooded Suction**  The liquid source is higher than the pump and flows to the pump by gravity. Flooded suction is preferred for centrifugal pump installations.

**Flow**  The liquid volume capacity of a pump measured in gallons-per-minute (gpm) or gallons-per-hour (gph).

**Head**  A measure of pressure expressed in feet. This indicates the height of a column of water being lifted by the pump (neglecting friction losses in the piping). To convert head to pressure in pounds-per-square-inch (psi), divide head by 2.31.

**Lift (Suction Lift)**  Occurs when the liquid source is lower than the pump. The pumping action creates a partial vacuum and atmospheric pressure forces liquid up to the pump. The theoretical limit of suction lift is 34 feet for water, but in practical applications it is 25 feet, or less, depending on the pump style and elevation above sea level.

**Pressure**  The force exerted on the system (pipe, tank, etc.) by the liquid within, measured in pounds-per-square-inch (psi). To convert pressure to head, in feet, multiply by 2.31 then divide by Specific Gravity.

**Prime**  The liquid required to begin pumping action.

**Seal**  A device mounted in the pump housing and/or on the pump shaft to prevent liquid leakage from the pump.

**SEAL TYPES**
- **Lip**  A flexible ring (usually rubber or similar material) with the inner edge held closely against the rotating shaft.
- **Mechanical**  A two-part seal with one rotating part and one stationary. Touching surfaces on the parts are highly polished and provide excellent sealing capability and life. The surfaces can be damaged by dirt or grit in the liquid.

**Packaging**  Rings of flexible material (foil, graphite or kevlar) held in the pump body gland or stuffing box by a packing nut. Permits adjustable sealing with minimal maintenance.

**Specific Gravity**  The ratio of the weight of a given volume of liquid to the same volume of pure water (unless stated otherwise). Power requirements increase for liquids with specific gravities greater than 1.0.

**Sump**  A well or pit that collects liquid below floor level. Sometimes refers to the waste sump or oil reservoir.

**Total Head**  The sum of discharge head, suction lift and friction losses.

**Viscosity**  The thickness of a liquid affecting its ability to flow. The more viscous the liquid, the slower the pump speed.

---

**DICTIONARY AND CONVERSION TABLE**

---

**Conversion Factors**

<table>
<thead>
<tr>
<th><strong>Flow</strong></th>
<th><strong>Pressure</strong></th>
<th><strong>Volume</strong></th>
<th><strong>Length</strong></th>
<th><strong>Mass</strong></th>
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</thead>
<tbody>
<tr>
<td>Lbs of water/hr x .002 = gal min</td>
<td>Ft of water x .433 = psi</td>
<td>Lbs of water x .119 = gal</td>
<td>Mils x .001 = inches</td>
<td></td>
</tr>
<tr>
<td>Gal/min x 500 = lbs of water/hr</td>
<td>Psi x 2.31 = ft of water</td>
<td>Gal (Brit) x 1.2 = gal (US)</td>
<td>Meters x 3.28 = feet</td>
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<tr>
<td>Lbs of fluid/hr x .002 = gal min</td>
<td>Inches Hg x .491 = psi</td>
<td>Gal x 128 = fluid ounces</td>
<td>Centimeters x .394 = inches</td>
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<tr>
<td>Specific gravity x .002 = gal min</td>
<td>Inches Hg x 1.133 = ft of water</td>
<td>Cubic ft x 7.48 = gal</td>
<td>Millimeters x .0394 = inches</td>
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<tr>
<td>Liters/min x .264 = gal/min (US)</td>
<td>ATM x 14.7 = mm Hg</td>
<td>Cubic in x .00433 = gal</td>
<td>Microns x .0000394 = inches</td>
<td></td>
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<tr>
<td>Gpm x 3.785 = liters/min</td>
<td>ATM x 33.9 = ft of water</td>
<td>Gal x 3.785 = liters</td>
<td>Metric prefixes</td>
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<tr>
<td>Cu meters/hr x 4.4 = gal/min (US)</td>
<td>Kg/sq cm x 14.22 = psi</td>
<td>Liters x .264 = gal</td>
<td>Mega = 1,000,000</td>
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<tr>
<td>Gal/min x .227 = cu meters/hr</td>
<td>Meters of water x 1.42 = psi</td>
<td>Cubic meters x 264.2 = gal</td>
<td>Kilo = 1,000</td>
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<tr>
<td>Kg of water/min x .264 = gal/min (US)</td>
<td>ATM x 760 = mm Hg</td>
<td>Cubic meters x 1,000 = liters</td>
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<td>Gal/min x 3.8 = Kg of water/min</td>
<td>mm Hg x .039 = inches Hg</td>
<td>Liters x 1,000 = cubic centimeters</td>
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<td>Pressure</td>
<td>Bar x 14.5 = psi</td>
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<tr>
<td>Flow</td>
<td>Newton/meter² x 1 = Pascal</td>
<td>Fluid ounces x 29.57 = cubic centimeters</td>
<td>Milli = .001</td>
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<td>Lbs of water x .264 = kg/sq cm</td>
<td>Kg/sq cm x 14.22 = psi</td>
<td>Liquid ounces x 29.57 = cubic centimeters</td>
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</tr>
<tr>
<td>Specific Gravity</td>
<td>Meters of water x 1.42 = psi</td>
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OUR HISTORY
MP Pumps was organized in Detroit in 1942, shortly after America’s entry into World War II. Our first pumps were used in landing craft and other amphibious vehicles where quality and reliability were absolutely essential.

After the war, we continued to grow along with our reputation for superior design, engineering and manufacturing of centrifugal pumps for a wide variety of applications. In 1984, MP Pumps built and occupied a 100,000-square-foot facility in Fraser, Michigan. The facility houses all of our manufacturing and engineering operations as well as our administrative and marketing staffs.

Nearly 20,000 square feet of our Fraser headquarters is devoted to parts warehousing. We stock over 10,000 different parts to ensure prompt delivery of replacement parts to MP Pumps’ customers worldwide.

OUR FUTURE
MP Pumps remains committed to designing and developing innovative products to meet the fluid handling requirements of both current and emerging markets. To maintain our role as a leader in the design and manufacture of centrifugal pumps, we will continue to invest in the best equipment and people.

RESEARCH & DEVELOPMENT
A strong research and development program is fundamental to innovation. A highly trained and experienced research staff is backed by a fully equipped laboratory for conducting rigorous performance and endurance testing.

Development projects range from endurance testing of new seal materials to performance testing of custom housing geometries. Prototypes are frequently subjected to elevated conditions...

Exceeding customer expectations ... that’s what we’re all about at MP Pumps. Whether you use one of our many standard centrifugal pumps or have us design a new one to meet your specific requirements, our only goal is your complete satisfaction.

Greg Peabody, President
ambient conditions to simulate actual operating environments and gain more reliable data.

Laboratory facilities include dynamometers ranging from 3 to 125 horsepower, two test cells for measuring impeller radial and thrust loads and provision for testing self-priming pumps up to 25 feet of static lift.

**ENGINEERING**

Solid modeling design software for manufacturing techniques and fast prototype capability gives MP Pumps’ Engineering Department the ability to move rapidly from initial concept to first production.

**MANUFACTURING**

Speed, uniformity and consistent high quality translates into customer satisfaction.

Computer numerical control (CNC) machining centers on the factory floor are linked to a central server for rapid loading of machine programs. This direct interface speeds set-up, which, in turn, boosts productivity.

Automated machining also improves precision in milling, boring, facing, drilling and other critical operations. Greater accuracy and repeatability means consistent high quality — your next MP pump will perform as well as your last.

**QUALITY CONTROL**

At MP Pumps, quality is designed into every component and every pump we build. From concept, through development and on into production, our focus is to provide durable and reliable products that satisfy every customer requirement.

- **American Bureau of Shipping (ABS) Certification** for select models.
- **ISO 9001 certification** assures our customers that all products are manufactured with an uncompromised commitment to quality, and that’s something every employee at MP Pumps, Inc. takes personally.

Our application design expertise encompasses a broad range of markets, among them:
- Industrial
- Transportation
- Agriculture
- Marine

Similarly, our engineers are accustomed to working with a wide range of materials. Commonly used materials include bronze, ductile iron, aluminum, cast iron and stainless steel.

Typical CAD Workstation With Solid Modeling

Vertical CNC Machining Center

Computer Controlled Coordinate Measuring System (CMM)

… Driven To Innovate
SELF PRIMING CENTRIFUGAL PUMP FEATURES

■ CLOSED COUPLED TO ELECTRIC MOTOR

■ PUMPAK ONLY TO MOUNT TO STANDARD NEMA “C” FACE MOTOR

■ FLOWS - 100-750 GPM

■ PRESSURES - 100-230 FEET HEAD

■ AVAILABLE IN: CAST IRON AND BRONZE
  FLOMAX 5 AND FLOMAX 8 ALSO AVAILABLE IN ALUMINUM
  FLOMAX 8 AND FLOMAX 15 ALSO AVAILABLE IN STAINLESS STEEL

■ WITH OR WITHOUT ELECTRIC MOTOR

■ IMPELLER - CAST IRON, BRONZE, ALUMINUM & STAINLESS STEEL
  FLOMAX 40 CAST IRON, BRONZE & STAINLESS STEEL
  FLOMAX 30 DUCTILE IRON & BRONZE

■ SHAFT SLEEVE - STAINLESS STEEL

■ FASTENERS - STAINLESS STEEL

■ SEALS - STANDARD VITON, OPTIONAL SEALS AVAILABLE
  PRESSURE LUBRICATED DOUBLE SEALS

■ OPTIONS:
  - ENGINE DRIVES
  - PEDESTAL MODELS
  - HYDRAULIC DRIVES AND CLUTCHPAKS

■ ABS TYPE APPROVAL FOR MANY SHIPBOARD SERVICES

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<th>Suction</th>
<th>Discharge</th>
<th>Max. Solid Size</th>
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<td>FLOMAX 5</td>
<td>1 1/2” NPT</td>
<td>1 1/2” NPT</td>
<td>.56”</td>
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<td>FLOMAX 8</td>
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<td>FLOMAX 10</td>
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<td>2” NPT</td>
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<td>FLOMAX 15</td>
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<td>.625”</td>
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<td>FLOMAX 30</td>
<td>3” NPT</td>
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<td>.60”</td>
</tr>
<tr>
<td>FLOMAX 40</td>
<td>4” NPT</td>
<td>4” NPT</td>
<td>.65”</td>
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</table>
Self-Priming Centrifugal Pump Selection
Flomax 8 Pump Performance Curves

Other Performance Curves Available Upon Request
Flomax 10 Pump Performance Curves

Other Performance Curves Available Upon Request
Flomax 15 Pump Double Seal Performance Curves

MODEL FLOMAX 15 D.S.
SIZE 3 X 3
IMPELLER 5.94 DIA.

TOTAL HEAD - FEET
GALLONS PER MINUTE

3500 RPM
34%
40
45
49%
49%
45
10 HP
7.5
30
20
10

1750 RPM
34%
5
2 HP
NPSHR FT.

2850
125
100
75
50
25
0

25'
20'
15'
10'
5'

GALLONS PER MINUTE

MODEL FLOMAX 15 D.S.
SIZE 3 X 3
SPEED 3500 RPM

5.94 DIA.
5.50
40%
45
49%
49%
45
10 HP
7.5
30
20
10

NPSHR

TOTAL HEAD - FEET
GALLONS PER MINUTE

25'
20'
15'
10'
5'

Other Performance Curves Available Upon Request
Flomax 40 Pump Performance Curves

Other Performance Curves Available Upon Request
**Flomax 5 Dimensions**

![Flomax 5 Dimensions diagram]

**Flomax 8 Dimensions**

![Flomax 8 Dimensions diagram]
### Flomax 10 Dimensions

![Flomax 10 Dimensions Diagram]

### Flomax 15 Dimensions

![Flomax 15 Dimensions Diagram]
ECONOMICAL SELF-PRIMING PUMP FEATURES

■ ALL CAST IRON CONSTRUCTION

■ CHEMICAL DUTY CARBON/CERAMIC/VITON SEAL

■ 303SS DRIVE SLEEVE

■ CLOSE-COUPLED C-FACE MOTOR, ENGINES OR BEARING PEDESTAL

■ BACK PULL-OUT DESIGN FOR EASY MAINTENANCE

■ PUMP AND MOTOR COMPLETE IN A COMPACT, LIGHT WEIGHT PACKAGE

■ IN STOCK FOR IMMEDIATE SHIPMENT

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<th>Suction</th>
<th>Discharge</th>
<th>Max. Solid Size</th>
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<tr>
<td>EMAX 8</td>
<td>2&quot; NPT</td>
<td>2&quot; NPT</td>
<td>.56&quot;</td>
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EMAX Dimensions

![EMAX Dimensions Diagram]
EMAX Pump Performance Curves

EMAX Dimensions

PUMPAK FOR ELECTRIC MOTOR

PUMPAK FOR ENGINE

Other Performance Curves Available Upon Request
SELF PRIMING TRASH PUMP FEATURES

- CLOSED COUPLED TO ELECTRIC MOTOR OR PEDESTAL FOR STANDARD MOTOR
- FLOW - TO 210 GPM
- PRESSURES - TO 125 FEET HEAD
- CAST IRON CONSTRUCTION
- ELECTRIC MOTOR DRIVE
- IMPELLER - DUCTILE IRON
- SHAFT SLEEVE - 304 STAINLESS STEEL
- SEALS - CARBON/CERAMIC VITON MECHANICAL SEAL
- OPTIONS:
  - HYDRAULIC DRIVES
- 2CT AND 2CT-3 AVAILABLE FOR CLOSE-COUPLE TO 145TC MOTOR (MAXIMUM 5HP) OR PEDESTAL
- 2CT-3HS AVAILABLE FOR CLOSE-COUPLE TO 184TC AND 215TC MOTOR

<table>
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<th>MODEL</th>
<th>Suction</th>
<th>Discharge</th>
<th>Max. Solid Size</th>
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<tr>
<td>2CT</td>
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<td>1.5&quot;</td>
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<td>2CT-3</td>
<td>3&quot; NPT</td>
<td>3&quot; NPT</td>
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<td>2CT-3HS</td>
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<td>3&quot; NPT</td>
<td>1.25&quot;</td>
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</table>
2CT Pump Performance Curves

MODEL  2CT
SIZE   2 X 2
IMPELLER DIA.  5.82

Other Performance Curves Available Upon Request
2CT-3 High Speed Performance Curves

Other Performance Curves Available Upon Request
2CT-3HS Dimensions

3" NPT DISCHARGE

1 1/2" NPT INLET

3" NPT DISCHARGE

3" NPT INLET

(4) .56 DRILL THRU HOLES EQ. SPACED AS SHOWN ON A 7.250 B.C.
C-FACE FOR 215-TC ELECTRIC MOTOR

Other Performance Curves Available Upon Request
END SUCTION CENTRIFUGAL PUMP FEATURES

- SERIES 30, 60, 80, 110, 120, 130, 200, 300 & 700 CLOSED COUPLED TO ELECTRIC MOTOR
- SERIES 300 PEDESTAL PUMP, OR FOOT MOUNTED FOR BELT OR DIRECT DRIVE
- SERIES 700 PEDESTAL PUMP FOR BELT OR DIRECT DRIVE
- PUMPAK ONLY TO MOUNT TO STANDARD NEMA “C” FACE MOTOR .3-40 HP
- NEMA JP PUMP MOTOR UP TO 25HP
- FLOWS - 40-800 GPM
- PRESSURES - 40-190 FEET HEAD

AVAILABLE IN:
- SERIES 30 CAST IRON, BRONZE CONSTRUCTION
- SERIES 60 CAST IRON
- SERIES 80, 110, 120, 130 & 200 CAST IRON & BRONZE
- SERIES 300 CAST IRON AND CAST IRON STAINLESS STEEL FITTED
- SERIES 700 DUCTILE IRON CONSTRUCTION

- VERTICAL OR HORIZONTAL DISCHARGE

- IMPELLER:
  - SERIES 30 AVAILABLE IN CAST IRON, BRONZE
  - SERIES 60, 110, 130 AND 200 AVAILABLE IN CAST IRON & BRONZE
  - SERIES 80 & 120 AVAILABLE IN BRONZE (CAST IRON OPTIONAL)
  - SERIES 300 & 700 AVAILABLE IN DUCTILE IRON-ENCLOSED

- SHAFT SLEEVE:
  - SERIES 30, 60, 80, 110, 130 & 200 STAINLESS STEEL
  - SERIES 300 STEEL
  - SERIES 700 STEEL OR STAINLESS STEEL

- FASTENERS - STAINLESS STEEL

- SEALS - STANDARD VITON, OPTIONAL SEALS AVAILABLE (CONSULT FACTORY)

- OPTIONS:
  - ENGINE DRIVES
  - PEDESTAL MODELS
  - HYDRAULIC DRIVES
  - CLUTCHPAKS
  - MOTOR DRIVES
### MODEL Specifications

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Series 80 Pump Performance Curves

Series 110 Pump Performance Curves

Other Performance Curves Available Upon Request
Series 200 Style A Pump Performance Curves

Series 200 Style C Pump Performance Curves

Other Performance Curves Available Upon Request
Series 110 Dimensions

1 1/4" NPT DISCHARGE

5.53

1 1/2" NPT SUCTION

3.82

56C, 145TC ELECTRIC MOTOR

FOR MOTOR SPECS AND DIMENSIONS CONSULT FACTORY

Series 120 Dimensions

1 1/2" NPT DISCHARGE

8.01

2" NPT SUCTION

5.16

182JM, 184JM ELECTRIC MOTOR

FOR MOTOR SPECS AND DIMENSIONS CONSULT FACTORY

Series 130 Dimensions

1 1/2" NPT DISCHARGE

5.78

2" NPT SUCTION

4.16

56C, 145TC ELECTRIC MOTOR

FOR MOTOR SPECS AND DIMENSIONS CONSULT FACTORY
Series 200 Dimensions

*FOR MOTOR SPECS AND DIMENSIONS CONSULT FACTORY

182TC, 184TC, 213C, 215C
ELECTRIC MOTOR

2" NPT DISCHARGE

Series 300 Dimensions

.25 X 2.12 SQUARE KEY

.688 x.w. (4) HOLES

Series 700 Dimensions

.688 THRU (8) HOLES
EQ. SPACED AS SHOWN ON
A 7.500 B.C.
END SUCTION CENTRIFUGAL PUMP FEATURES

- CHEMFLO 1, 2, 3 & 4 - INVESTMENT-CAST, 316 STAINLESS
  CHEMFLO 5, 6, 7, 8 & 9 - 316 CF8M STAINLESS STEEL HOUSING, SEAL HOUSING & IMPELLER

- PRESSURES - 105-460 FEET HEAD

- FLOWS - 100-450 GPM

- CHEMFLO 1, 2, 3, 4 PUMPAKS FOR 56C AND 145TC ELECTRIC MOTORS
  CHEMFLO 5, 6, 7, 8, AND 9 PUMPAKS FOR ELECTRIC MOTOR FRAME SIZE 145TC THROUGH 286TCS

- HORSEPOWER - 1-40 HP

- OPTIONAL ELASTOMERS AVAILABLE

- HYDRAULIC MOTOR DRIVE AVAILABLE

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<tbody>
<tr>
<td>CHEMFLO 1 &amp; 2</td>
<td>1½&quot; NPT</td>
<td>1&quot; NPT</td>
</tr>
<tr>
<td>CHEMFLO 3 &amp; 4</td>
<td>2&quot; NPT</td>
<td>1½&quot; NPT</td>
</tr>
<tr>
<td>CHEMFLO 5</td>
<td>2&quot; ANSI 125 Flange</td>
<td>1½&quot; ANSI 125 Flange</td>
</tr>
<tr>
<td>CHEMFLO 6</td>
<td>3&quot; ANSI 125 Flange</td>
<td>2&quot; ANSI 125 Flange</td>
</tr>
<tr>
<td>CHEMFLO 7</td>
<td>2&quot; ANSI 125 Flange</td>
<td>1&quot; ANSI 125 Flange</td>
</tr>
<tr>
<td>CHEMFLO 8</td>
<td>3&quot; ANSI 125 Flange</td>
<td>1½&quot; ANSI 125 Flange</td>
</tr>
<tr>
<td>CHEMFLO 9</td>
<td>2&quot; ANSI 125 Flange</td>
<td>1&quot; ANSI 125 Flange</td>
</tr>
</tbody>
</table>
CHEMFLO Selection

<table>
<thead>
<tr>
<th>TOTAL HEAD - FEET</th>
<th>GALLONS PER MINUTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>480</td>
<td></td>
</tr>
<tr>
<td>400</td>
<td></td>
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<tr>
<td>320</td>
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<td>160</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td></td>
</tr>
<tr>
<td>0</td>
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</tbody>
</table>

| CHEMFLO 9        | #1                  |
| CHEMFLO 7        | #2                  |
| CHEMFLO 8        | #3                  |
| CHEMFLO 6        | #4                  |
| CHEMFLO 5        |                     |

CHEMFLO 6
CHEMFLO 8
CHEMFLO 7
CHEMFLO 9
CHEMFLO 3 Pump Performance Curves

Other Performance Curves Available Upon Request
CHEMFLO 7 Pump Performance Curves

- Model: CHEMFLO 7
- Size: 2 x 1
- Speed: 3500 RPM
- Impeller Varies

- Total Head - Feet vs. GALLONS PER MINUTE
- Total Head - Meters vs. CUBIC METERS PER HOUR

CHEMFLO 8 Pump Performance Curves

- Model: CHEMFLO 8
- Size: 3 x 1.5
- Speed: 3500 RPM
- Impeller Varies

- Total Head - Feet vs. GALLONS PER MINUTE
- Total Head - Meters vs. CUBIC METERS PER HOUR

Other Performance Curves Available Upon Request
CENTRIFUGAL HOT OIL PUMP FEATURES

- APPLICATIONS: PLASTICS, CHEMICAL, FOOD, AND PROCESSING INDUSTRIES WHICH REQUIRE PUMPING OF HIGH TEMPERATURE FLUIDS

- UTILIZES AN ISOLATED SEAL CHAMBER, EFFECTIVELY COOLED BY A FAN CLAMP, WHICH COUPLES THE UNIT TO THE SHAFT OF A C-FRAME MOTOR

- STANDARD CARBON/SILICON CARBIDE MECHANICAL SEAL WITH VITON ELASTOMERS, STAINLESS STEEL FITTED

- CARBON GRAPHITE ISOLATOR BUSHING SEPARATES MECHANICAL SEAL FROM HIGH TEMPERATURE FLUIDS

- STAINLESS STEEL DRIVE SLEEVE AND ALUMINUM DRIVE CLAMP COUPLES PUMP UNIT TO MOTOR

- VERTICAL & HORIZONTAL DISCHARGE

- A UNIQUE CENTRIFUGAL PUMP (PATENTED) DESIGNED FOR HIGH TEMPERATURE APPLICATIONS WITHOUT REQUIRING EXTERNAL FLUSHES OR JACKET COOLING

- CAPACITIES - 10-500 GPM

- HEADS - UP TO 190' TDH

- TEMPERATURES - TO 650°F

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Suction</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>HTO 80</td>
<td>1 1/2&quot; NPT (Flange Option)</td>
<td>1 1/4&quot; NPT (Flange Option)</td>
</tr>
<tr>
<td>HTO 120</td>
<td>2&quot; NPT (Flange Option)</td>
<td>1 1/2&quot; NPT (Flange Option)</td>
</tr>
<tr>
<td>HTO 180</td>
<td>3&quot; ANSI 150 Flange</td>
<td>1 1/2&quot; ANSI 150 Flange</td>
</tr>
<tr>
<td>HTO 300</td>
<td>3&quot; ANSI 150 Flange</td>
<td>1 1/2&quot; ANSI 150 Flange</td>
</tr>
</tbody>
</table>
Other Performance Curves Available Upon Request
Horsepower requirements based upon 0.85 specific gravity. Calculations can be applied for fluids of other specific gravities.

Maximum operating temperature is 650°F. Maximum working pressure is 150 PSI.
HTO 80 Dimensions

3 PHASE TYPICAL TEFC ROUND BODY MOTOR

<table>
<thead>
<tr>
<th>FRAME</th>
<th>HP</th>
<th>PH</th>
<th>&quot;A&quot; DIM TEFC</th>
</tr>
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<tbody>
<tr>
<td>56C</td>
<td>1</td>
<td>3</td>
<td>9.31</td>
</tr>
<tr>
<td>56C</td>
<td>1.5</td>
<td>3</td>
<td>9.94</td>
</tr>
<tr>
<td>56C</td>
<td>2</td>
<td>3</td>
<td>11.25</td>
</tr>
<tr>
<td>56C</td>
<td>3</td>
<td>3</td>
<td>12.12</td>
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</tbody>
</table>

Pump dimensions certifiable for construction purposes. Motor dimensions dependent upon motor manufacturer.

HTO 120 Dimensions

Pump dimensions certifiable for construction purposes. Motor dimensions dependent upon motor manufacturer.
HIGH HEAD CENTRIFUGAL PUMP FEATURES

- **1 1/2 x 1 1/2**
  2 X 2 HIGH HEAD

- PUMPAK ONLY TO MOUNT TO STANDARD NEMA “C” FACE MOTOR

- **“C” FACE ELECTRIC MOTOR DRIVE 5-7.5 HP**

- PEDESTAL DRIVE

- HYDRAULIC DRIVE AND CLUTCHPAK’S

- FLOWS - TO 140 GPM

- PRESSURES - TO 190 TDH

- CAST IRON OR BRONZE CONSTRUCTION

- DRIVE SLEEVE - 304 STAINLESS STEEL

- FASTENERS - STAINLESS STEEL

- SEALS - STANDARD CARBON, CERAMIC, STAINLESS STEEL AND VITON WITH OTHER OPTIONS AVAILABLE (CONSULT FACTORY)

- ABS TYPE APPROVED FOR MANY SHIPBOARD SERVICES

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Suction</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>HHLF</td>
<td>1 1/2”-2” NPT</td>
<td>1 1/2”-2” NPT</td>
</tr>
</tbody>
</table>

**Dimensions**

- 182TC, 184TC, 213C, 215C ELECTRIC MOTOR

- **1” N.P.T. FILL PLUG**

- 10.25 (1.5”)
  12.43 (2.0”)

- 1 1/2” N.P.T. DRAIN PLUG

- 8.00 (2) PLACES

- 10.47 (1.5”)
  12.25 (1.5”)

- 5.81 (1.5”)
  5.19 (2.0”)

- 7.31
  9.51

- 4.19
  7.63

- 5.25
  6.01

- 38 TYP.
Pump Performance Curves

MODEL: HHLF
SIZE: 2 x 2
IMPELLER DIA: 6.70
MAX SOLIDS: .28

TOTAL HEAD - FEET
TOTAL HEAD - METERS
GALLONS PER MINUTE
CUBIC METERS PER HOUR

Other Performance Curves Available Upon Request
HYDRASUB 20, 25 & 30

HYDRAULIC MOTOR DRIVEN SUBMERSIBLE PUMP FEATURES

■ TOTALLY SUBMERSIBLE
■ COMPACT, LIGHT WEIGHT, PORTABLE
■ NO PRIMING REQUIRED
■ CAN RUN DRY WITHOUT DAMAGE
■ FOR OPEN OR CLOSED CENTER OPERATION
■ HYDRAULIC CONNECTIONS 3/4-16 SAE O-RING
■ OIL FLOW RANGE 5-14 GPM
■ MAXIMUM OIL PRESSURE 2,000 PSI
■ MAXIMUM BACK PRESSURE 100 PSI
■ INTEGRAL, ANODIZED ALUMINUM SUCTION STRAINER HANDLES 1/2" SOLID SPHERES
■ IMPELLER - STAINLESS STEEL
■ DISCHARGE CONNECTION 2", 2.5" OR 3", A-TYPE CAM FITTING INCLUDED
■ REMOVES LIQUID DOWN TO 3/4" DEPTH

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Discharge</th>
<th>Solid Size</th>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>2&quot;</td>
<td>1/2&quot;</td>
<td>11 LBS</td>
<td>11.5&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>25</td>
<td>2.5&quot;</td>
<td>1/2&quot;</td>
<td>13 LBS</td>
<td>11.5&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>30</td>
<td>3&quot;</td>
<td>1/2&quot;</td>
<td>13 LBS</td>
<td>11.5&quot;</td>
<td>10&quot;</td>
</tr>
</tbody>
</table>
HYDRASUB 20 Dimensions

2" A-TYPE CAM & GROOVE COUPLING
3/4-16 UNF-2B SAE #8

HYDRASUB 25 Dimensions

2-1/2" A-TYPE CAM & GROOVE COUPLING
7/8-14 UNF-2B SAE #10

HYDRASUB 30 Dimensions

3" A-TYPE CAM & GROOVE COUPLING
3/4-16 UNF-2B SAE #8

Other Performance Curves Available Upon Request
Other Performance Curves Available Upon Request
STAINLESS MAX FLOW FEATURES

DESIGN FEATURES
■ AVAILABLE HORSEPOWER: 1HP, 1.5HP, AND 2HP
■ AVAILABLE CONNECTION: FLANGE MOUNTED
■ AVAILABLE FLOW RATE: 350GPM AT 7PSI
SMF PERFORMANCE CURVE

SMF DIMENSIONS

145TC ELECTRIC MOTOR: 2HP, 1PH, 1750 RPM, TEFC, W/O BASE

TOTAL HEAD - FEET

GALLONS PER MINUTE

MODEL SMF
SIZE 3.5 X 3.0
IMPELLER DIA. 5.50
SPEED 1750 RPM

1/2 NPT PLUG

45° TYP.

4(4) Ø.750 HOLES THRU ON A 6.008 B.C. AS SHOWN

3.50 SUCTION
FRACTIONAL HP CENTRIFUGAL PUMP FEATURES

■ CLOSE COUPLED TO ELECTRIC MOTORS

■ 316 SS CONSTRUCTION
   FRX 50-R POLYPHENYLENE HOUSING AND COVER

■ FLOWS: 8-50 GPM

■ PRESSURES: 9 TO 85 FEET HEAD

■ IMPELLER: 316 STAINLESS STEEL

■ FRX 75-SP: SUCTION LIFT TO 12 FEET

■ MECHANICAL SEALS: CARBON/CERAMIC/VITON

■ MOTOR OPTIONS: AC AND DC
   FRX 125 AC ONLY

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Suction</th>
<th>Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>FRX 50</td>
<td>1/2” NPT/1” HOSE</td>
<td>1/2” NPT/1” HOSE</td>
</tr>
<tr>
<td>FRX 50-R</td>
<td>1” HOSE</td>
<td>1” HOSE</td>
</tr>
<tr>
<td>FRX 75</td>
<td>3/4” NPT</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>FRX 75-SP</td>
<td>3/4” NPT</td>
<td>3/4” NPT</td>
</tr>
<tr>
<td>FRX 100</td>
<td>1” NPT</td>
<td>1” NPT</td>
</tr>
<tr>
<td>FRX 125</td>
<td>1 1/4” NPT</td>
<td>1” NPT</td>
</tr>
</tbody>
</table>
FRX 50 & FRX 50-R Performance Curves

12V DC MOTOR
FOR 24 V DC MOTOR
DIVIDE AMPS BY TWO

GALLONS PER MINUTE

TOTAL HEAD - FEET

AMPS

GALLONS PER MINUTE

115V AC MOTOR

GALLONS PER MINUTE

TOTAL HEAD - FEET

AMPS
**FRX 75 115V Dimensions**

36 FRAME PSC MOTOR
115 VAC, 60 Hz
1/6 HP, 3500 RPM, 2.0 FLA
CONTINUOUS DUTY
AUTOMATIC THERMAL OVERLOAD
OPEN DRIP PROOF
UL/CSA RECOGNIZED

---

**FRX 75 12 or 24V Dimensions**

1. 18.0" LONG 14 GA WIRE LEADS
2. 20 AMPS IN-LINE FUSE LOCATED ON RED (POSITIVE) WIRE

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**FRX 75 115V Dimensions**

36 FRAME PSC MOTOR
115 VAC, 60 Hz
1/6 HP, 3500 RPM, 2.0 FLA
CONTINUOUS DUTY
AUTOMATIC THERMAL OVERLOAD
OPEN DRIP PROOF
UL/CSA RECOGNIZED
FRX 100 Dimensions

FRX 125 Dimensions
MP Pumps Operates In A Global Marketplace.
We are keenly aware of the need to provide prompt delivery of our products to customers worldwide and have in place an international network of distributors to meet this need.

“it is the policy of MP Pumps to satisfy customers by consistently supplying them with products that fully meet their requirements.
Customer Satisfaction Today, Tomorrow, Always.”
— Mission Statement

Our computerized inventory control system tracks the more than 10,000 parts we stock in our 20,000-square-foot parts warehouse. We also maintain E-mail capability and a site on the worldwide web to speed communication between us, our distributor network and our customers.
MP PUMPS, INC. LIMITED WARRANTY
FOR NEW PUMPS MANUFACTURED BY MP PUMPS

A. PRODUCTS WARRANTED

MP PUMPS, Inc., a Michigan Company (“MP PUMPS”) subject to the limitations contained below, will at its option, repair or replace, without charge for parts or labor only, any part of a new pump manufactured by MP PUMPS (an “MP Pump”) which is found, upon examination by MP PUMPS’ factory in Fraser, Michigan, to be DEFECTIVE IN MATERIAL AND/OR WORKMANSHIP if received by such factory for such examination within twelve months from the date of sale to the original consumer purchaser.

B. PRODUCTS AND ITEMS NOT WARRANTED

1. Alterations or Modifications of MP Pump
   All obligations under this warranty shall be terminated if the new MP Pump is altered or modified in any way.


3. Any MP Pump which is not completely and properly decontaminated prior to return to MP PUMPS.

4. Any MP Pump returned without an identification of the material pumped by your MP Pump on the “Return Goods Authorization Form.”

This warranty covers only parts of a new MP Pump which are found upon examination to be defective in material or workmanship as delivered to the original consumer purchaser. This warranty does not cover defects caused by depreciation or damage caused by normal wear, accidents, improper maintenance, improper use or abuse of the product, failure to follow the instructions contained in an Instruction Bulletin for the operation of the pump and parts. The cost of normal maintenance and replacement of service items which are not defective, shall be paid for by the original consumer purchaser. This warranty is VOID if an MP Pump is not decontaminated prior to return to MP PUMPS or if the material pumped is not identified as provided below.

C. SECURING WARRANTY SERVICE

Warranty service can be arranged by contacting MP PUMPS, Inc., c/o Service Manager, 34800 Bennett Drive, Fraser, Michigan 48026. Warranty service can only be performed by MP PUMPS at its factory in Fraser, Michigan. At the time of requesting warranty service, evidence must be presented of the date of sale to the original consumer purchaser. MP PUMPS, at its option, will supply you with a “Return Goods Authorization Form” (“RGA”) or will prepare an RGA on your behalf and provide you with an RGA reference number. The product pumped must be identified on the RGA. All parts returned to MP PUMPS for any reason must be completely and properly decontaminated prior to delivery to MP PUMPS. If the product pumped requires a Material Safety Data Sheet (“MSDS”), reference to this fact must be indicated under “Application Information” on the RGA form which must be returned with the part(s) or if an RGA was completed on your behalf you must provide your RGA reference number. The product pumped must be identified on the RGA. All parts returned to MP PUMPS for any reason must be completely and properly decontaminated prior to delivery to MP PUMPS. If the product pumped requires a Material Safety Data Sheet (“MSDS”), reference to this fact must be indicated under “Application Information” on the RGA form which must be returned with the part(s) or if an RGA was completed on your behalf you must provide your RGA reference number. A copy of the MSDS must also be included with the returned RGA forms or with your RGA reference number. New or unused parts need not be decontaminated. This fact must be indicated under “Application Information” on the RGA form which must be returned with the part(s). The original consumer purchaser shall pay any charges for making service calls and/or for transporting the product to and from the place where the inspection and/or warranty work is performed. The part submitted for inspection and/or warranty work will be returned to the sender at the sender’s expense or scrapped at MP PUMPS. No credits will be issued. The original consumer purchaser shall be responsible for any damage or loss incurred in connection with the transportation of the MP Pump and/or of part or parts of the MP Pump submitted for inspection and/or warranty work.

D. NO ADDITIONAL WARRANTIES OR REPRESENTATIONS

The foregoing EXPRESS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. Neither MP PUMPS nor any of its affiliates make any warranties, representations or promises, written or verbal, as to the quality of the MP PUMP or its parts other than those set forth herein.

ANY IMPLIED WARRANTIES (INCLUDING, BUT NOT LIMITED TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) TO THE EXTENT EITHER APPLIES TO A PART OF AN MP PUMP SHALL BE LIMITED IN DURATION TO THE PERIODS OF THE EXPRESS WARRANTIES AS DEFINED IN PARAGRAPH A. Some States do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

E. LIMITATION OF DAMAGES

IN NO EVENT WILL MP PUMPS BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES AND/OR EXPENSES. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may have other legal rights which vary from State to State.

F. NO DISTRIBUTOR/DEALER WARRANTY

MP PUMPS neither assumes nor authorizes any other person, natural or corporate, to assume for MP PUMPS any other obligations or liabilities in connection with or with respect to any part or parts of an MP Pump. The seller, dealer or distributor of a part or parts of an MP Pump has no authority to make any representations or promises on behalf of MP PUMPS or to modify the terms or limitations of this warranty in any way. The seller, dealer or distributor makes no warranty of his own on any item warranted by MP PUMPS and makes no warranty on other items, unless such seller or dealer delivers to the purchaser a separate written warranty document in which the seller or the dealer individually and specifically on its own behalf, warrants the terms of items.