



SMITH PRECISION PRODUCTS

LEADER IN LIQUEFIED GAS TRANSFER SINCE 1938

CARBON DIOXIDE
 ANHYDROUS
 AMMONIA
 REFRIGERANTS
 PROPANE
 BUTANE
 HYDROCARBONS
 OIL
 JET FUEL
 DIESEL
 KEROSENE
 GASOLINE BLENDS

LIQUIDS UP TO
 20,000 cP, 2-250 GPM

POSITIVE DISPLACEMENT PUMPS, BYPASS
 VALVES, STRAINERS, AND FLEXIBLE DRIVE
 COUPLINGS FOR

- HIGH VOLUME BULK TRANSFER
- TRUCK DELIVERY
- ISO CONTAINERS
- DISPENSER SYSTEMS
- RECIRCULATION SYSTEMS
- TEST CHAMBERS
- PORTABLE UNITS



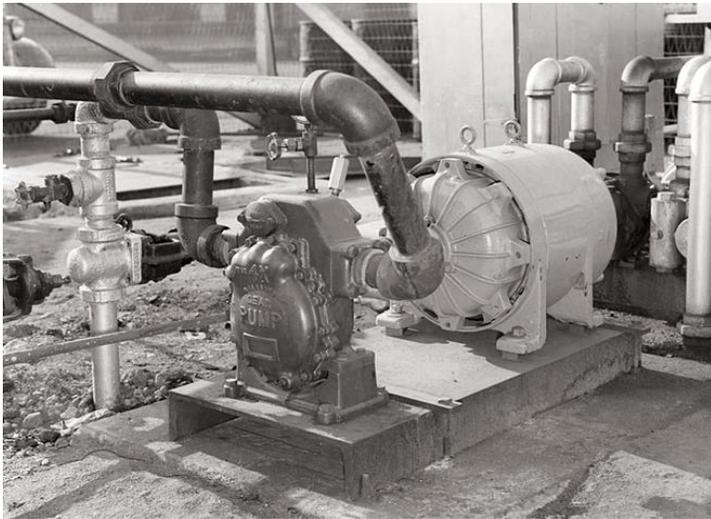
1299 LAWRENCE DRIVE
 NEWBURY PARK, CA 91320 USA
 WWW.SMITHPUMPS.COM



No One has Provided Liquefied Gas Pumps Longer than Smith

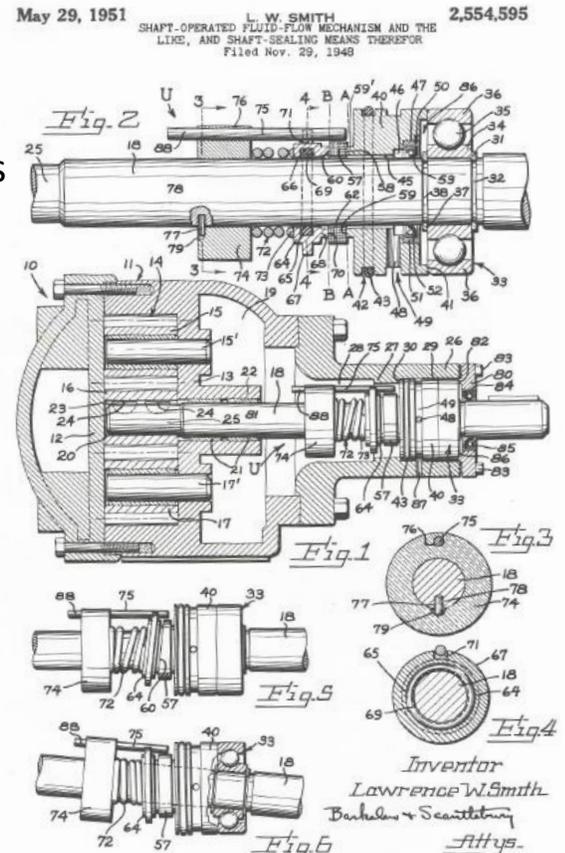
Smith Precision Products Company was started in 1938 by Reuben Stanley Smith and was the first company to provide pumps specifically for liquefied gas transfer. As a remarkable American inventor, Reuben focused on quality and provided innovative designs that would stand the test of time. He believed that when a customer encountered a problem, qualities such as understanding and compassion were important in finding a satisfactory solution.

Reuben's son, Lawrence, joined the company in 1945 and worked hard to uphold his father's values and re-engineer the original product line. By the end of the 1950s, the company developed a fairly complete product line and became involved in overseas markets. Severe duty service options were added in the 1960s, with flexible drive couplings and Y-type strainers to follow.



Installation of the 4X pump, Rueben Smith's first design, 1938

Our mission is to insure the continuation of a notable legacy—one built on Reuben's values of ethics, integrity, and compassion. If this simple philosophy is maintained, the rest is relatively easy.



First patent issued for a mechanical seal used in a liquefied gas pump. Within seven years, most pumps were using mechanical seals.

Lawrence's three sons joined the company in the 1970s and continued to follow in the family's footsteps. They placed more emphasis on customer service and achieving top certifications. As a result, the company put forward exceptional new designs and major improvements to the existing product line. Today, third and fourth generation Smiths are striving to improve and strengthen the company's ability to provide an even better level of service.

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Maximizing Engineering Potential

Balanced Load Configuration

Minimizes gear tooth contact and eliminates constant casing contact, which generates heat. Allows for smooth, non-pulsating flow and higher differential pressures

Carbon Graphite Journal Bearings

These bearings support the entire length of the drive shaft. Balanced loading eliminates the need for a duplicate ball bearing at the end of the drive shaft and a second mechanical seal

Superseal Mechanical Shaft Seal Assembly

The Superseal assembly is built as a kit onto the pump drive shaft. This allows for dynamic pressure test before assembly into pump or when supplied as a separate component. The 3-piece seal allows for slow rotation of the intermediary seal ring, greatly reducing friction –associated wear.



Gear Set is Readily Accessible

Without disrupting the mechanical seal, the gear set can be easily replaced

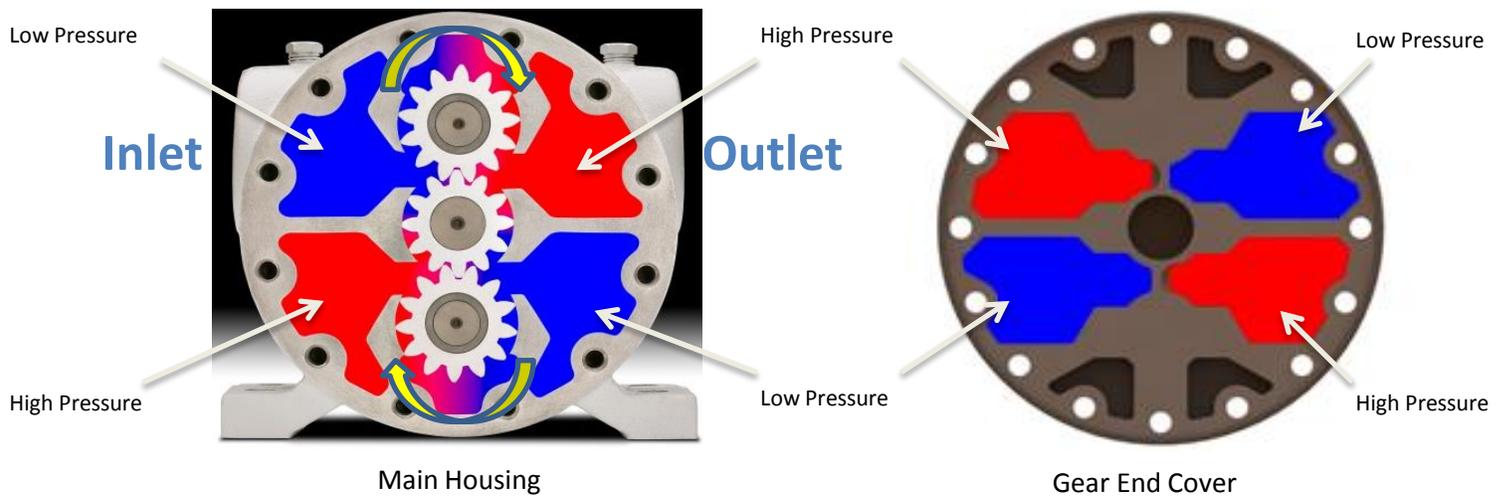
No Service Ball Bearing

Our design eliminates the requirement for periodic greasing

Conversion to Larger Capacity Pump

Higher flow rates can easily be accomplished with the addition of one, two, or three secondary gear housings, each with 50 GPM flow capacity.

Balanced Loading Design



Liquid first enters the inlet of the pump, shown as blue in the upper left corner of the pump main housing. It is also directed within the pump to the bottom right port, also shown as blue through the porting in the gear end housing.

As the drive gear in the center rotates in a counterclockwise direction, the low pressure blue liquid is directed into the spaces between the gear teeth and transferred to the red ports, as shown. The velocity of the liquid entering the gear teeth spaces is carefully matched with the speed of the gear set to minimize changes in velocity and directional changes of the liquid, thus minimizing the pressure drop in the pump. Gear pockets are designed to insure a pressure gradient is present around the outside diameter of the idler gears to suppress cavitation and maximize the transfer rate of the pump.

It is the design and efficiency of the non-contacting side of the gear teeth (in the Red Zones) that largely determines the ability of the pump to develop pressure. Permissible wear on the leading side of the gear teeth does not compromise this performance characteristic of the Smith 3-gear pump. The red ports are also integrated within the pump (high pressure).

It is important from a loading standpoint that the drive gear is exposed to a neutral load, eliminating the necessity for another ball bearing to support the other end of the drive shaft (which would also add another mechanical seal). Given that the schematic uses color to indicate pressure, the symmetric colors surrounding the drive gear illustrate that the drive gear is balanced.

As high pressure develops in the red ports, liquid maintains velocity and flows out of the pump through the outlet port shown as red in the upper right corner.

Secondary gear housings can be added to the main housing shown and are internally ported to match those of the main housing. The addition of a secondary gear housing is not to boost the pressure capability of the pump, but rather to increase the volumetric flow rate of the pump.

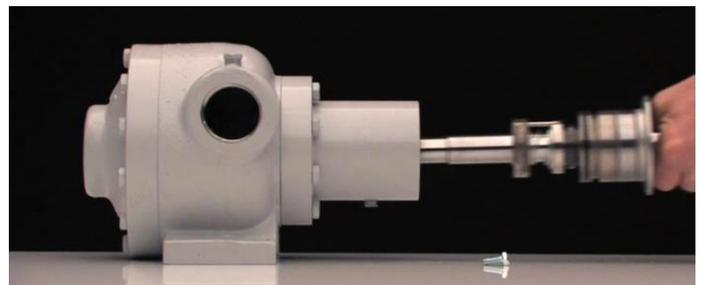
"It All Starts With the Seal"

Patented, Preassembled, Pre-tested Mechanical Seal in Every Pump



- Every mechanical seal is pre-assembled and pre-tested before leaving the factory
- No lubrication is ever required
- Unique three-piece seal design allows intermediary seal ring to see ½ the wear
- The SUPERSEAL™ option eliminates brittle carbon graphite in favor of a self-repairing thermoplastic intermediary seal ring that continually laps itself while the pump is in operation
- No loose parts, no thumbprints on seal faces, easy to remove and install

Ease of Installation



Old mechanical seal can be removed in the field in a matter of minutes! No disassembly of the pump required!

Mainline Pump Design



MC-2 series, ATC-2 series
50 GPM (190 LPM)



MC-3 series, ATC-3 series
100 GPM (380 LPM)



MC-4 series
150 GPM (570 LPM)



MC-5 series
200 GPM (758 LPM)

- Each secondary housing increases the flow capacity by 50 GPM (190 liters/min)
- Each secondary housing contains 1 drive gear, 2 idler gears
- The mechanical shaft seal assembly is exactly the same, except the length of the drive shaft is increased for each higher capacity pump model
- Ease of changing pump models if necessary

Our Pumps Can Transfer a Wide Range of Fluids

Smith Precision Products Company can provide pumping solutions for a wide array of liquids ranging in viscosities from Carbon Dioxide to Honey.

CARBON DIOXIDE

Temp Range: -40°F to +15°F (-40°C to +9°C)
Maximum Allowable Working Pressure: 500 psi (34 bar)
Maximum Differential Pressure: 50 psi (4 bar)

ANHYDROUS AMMONIA

Temp Range: -25°F TO +100°F (-32°C to +38°C)
Maximum Allowable Working Pressure: 400 psi (28 bar)
Maximum Differential Pressure: 75 psi (5 bar)

FREONS

Temp Range: -40°F TO +150°F (-40°C to 65°C)
Maximum Allowable Working Pressure: 400 psi (28 bar)
Maximum Differential Pressure: 125 psi (9 bar)

FOR ALL OTHER LIQUIDS*

Temp Range: -80°F to +400°F (-80°C to +205°C)
Inlet Pressure: 4 psiA to 400 psi (0.28 to 28 bar)
Differential Pressure: For liquids under 1 cP viscosity, general maximum differential pressure range between 50-125 psi (4-9 bar). For liquids greater than 1 cP, maximum differential pressure (intermittent duty) up to 300 psi (21 bar).
Capacity: 2 to 250 GPM (7 LPM – 945 LPM)

*General limitations, specifications will differ based on liquid service/viscosity; contact our engineering department for further details

** All pumps are built for their intended liquid service and cannot be interchanged due to differences in materials of construction. Never use a pump for a liquid service other than specified.

Proper Pump Selection

What is the Liquid Service?

Although we supply our products for a variety of liquid services, not all of our pumps are the same. Since every pump application is different, we add “special modifications” to fit the customer’s needs.

What is the Flow Rate Required?

Our available pump flow rate range is from 2 – 250 GPM. Since higher flow means less time to fill, maximum flow capacity pumps are desirable. HOWEVER, this is limited by the liquid outlet size of the tank as well as the inlet line size feeding the pump. See our pump model pages for the minimum required liquid outlet size. For pump flow rate prediction, see our pump performance curves under our pump models or visit our pump performance formula on page 35.

What is the Inlet Pressure? Differential Pressure?

The higher the differential pressure across the pump, the lower the flow rate. The differential pressure is largely determined by the pressure drop on the discharge side of the pump. The maximum recommended differential pressure for a specific pump model depends on the liquid service/viscosity of the liquid and the duty cycle. Contact our engineering department if the differential pressure cannot be determined.

Temperature Range/Viscosity?

The type of liquid, temperature, and viscosity are all important variables. When ordering a pump, specify the temperature range so we can determine the viscosity of the liquid service. General temperature limits are within -80°F to +400°F (-80°C to +205°C).

Duty Cycle?

We must know for how long the pump will be typically operated to determine the best possible product to fit your needs. For a pump operating more than 2 hours at one time, we recommend our “NSSA” option and operating the motor at slower speeds.

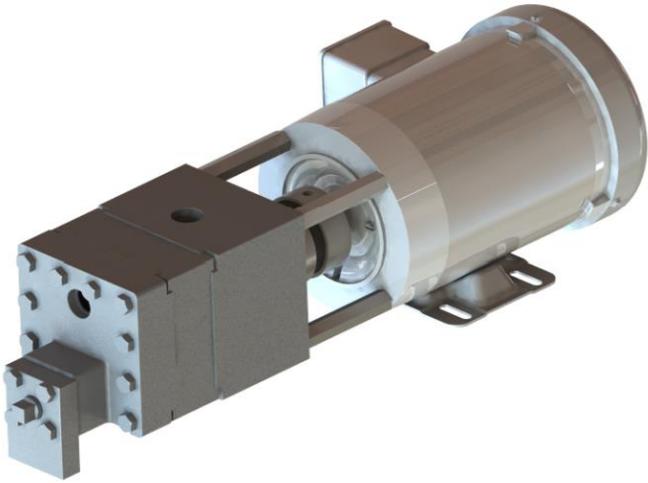
Electrical Requirements?

Specify whether a pump only or complete assembly will be required (pump, motor, coupling, coupling guard, base (if applicable)). For motor inquiries, specify voltage, Hz, and 1 or 3 phase as well as type of enclosure.

Small Capacity Pumps

SQ-Series Pumps

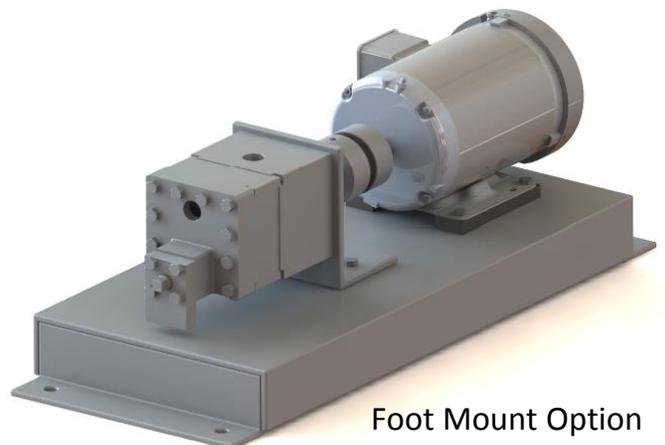
Flow Rates of 2-13 GPM (7-50 LPM)



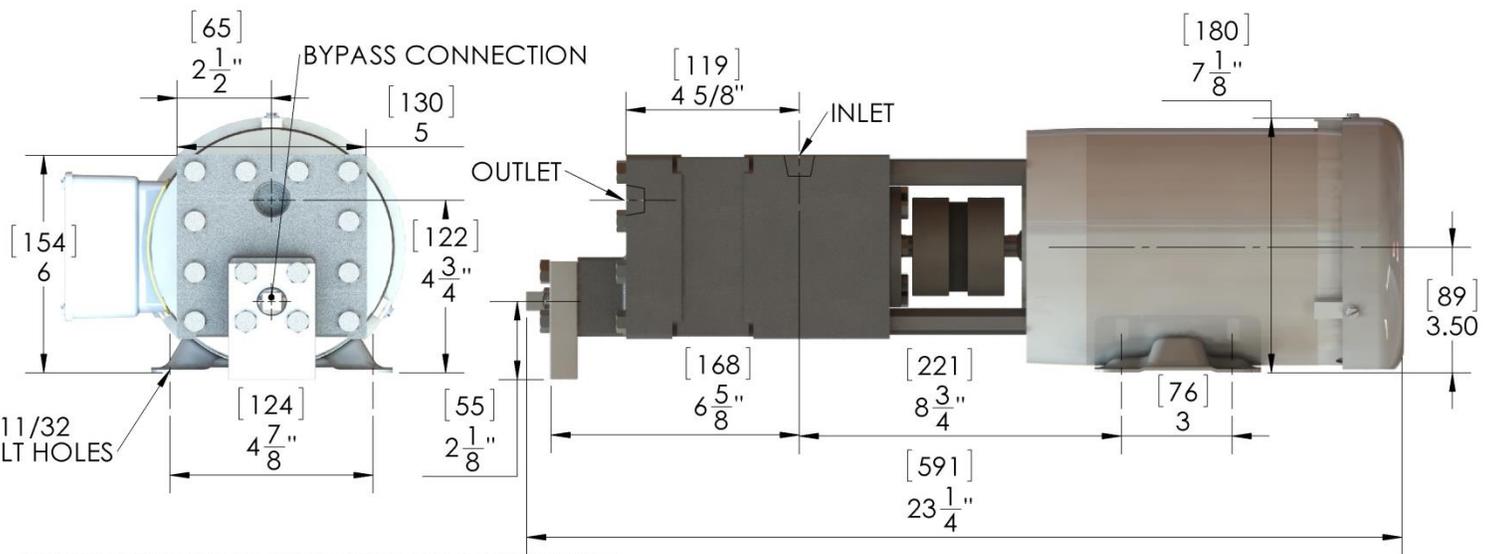
- Designed specifically for continuous duty recirculation systems
- Larger mechanical seal provides longer wear life
- Easily mounts directly to motor face with feet; no base required
- Foot mount available upon request
- No lubrication/greasing ever required

MODEL	FLOW RATE (Assume 0 psi/bar differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr
SQ-1 MAX 1800 RPM	5 GPM (19 LPM) @ 1800 RPM 2.5 GPM (10 LPM) @ 900 RPM	¾" OR 1"	¾" OR 1"	¾" – 1- ¼"	0.25 - 0.5 HP (0.19 - 0.37 kW)	6"
SQ-H MAX 1800 RPM	7 GPM (26 LPM) @ 1800 RPM 3.5 GPM (13 LPM) @ 900 RPM	¾" OR 1"	¾" OR 1"	¾" – 1- ¼"	0.25 - 1 HP (0.19 - 0.75 kW)	6"
SQ-HH MAX 1800 RPM	13 GPM (49 LPM) @ 1800 RPM 6 GPM (23 LPM) @ 900 RPM	¾" OR 1"	¾" OR 1"	¾" – 1- ¼"	0.5 - 1.5 HP (0.37 – 1.1 kW)	6"
SQ-HH8 MAX 1200 RPM	13 GPM (49 LPM) @ 1200 RPM 10 GPM (38 LPM) @ 900 RPM	¾" OR 1"	¾" OR 1"	¾" – 1- ¼"	0.5 - 1.5 HP (0.37 – 1.1 kW)	6"

The SQ-series pumps are ideal for continuous duty, broad temperature range applications as well as variable viscosity liquids for recirculation systems or test chambers. A non-adjustable external bypass valve built into the cover, preset at 90 psi (6.1 bar) over tank pressure, is standard. For applications requiring higher than 90 psid, this bypass valve is removed and an external bypass valve is recommended. 110 psi (7.5 bar) bypass valve setting is also available.



Foot Mount Option

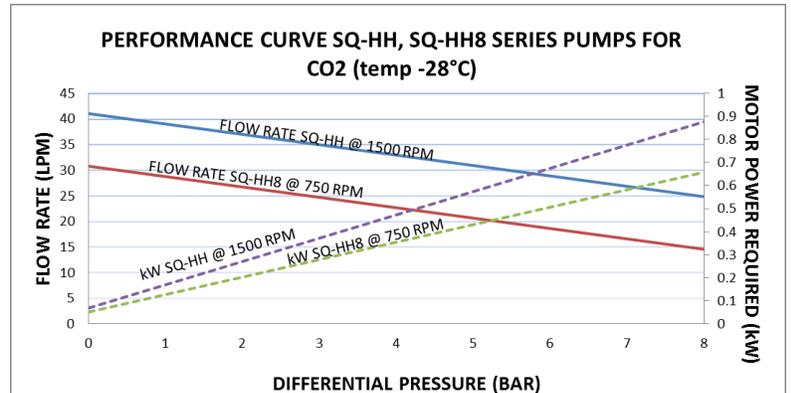
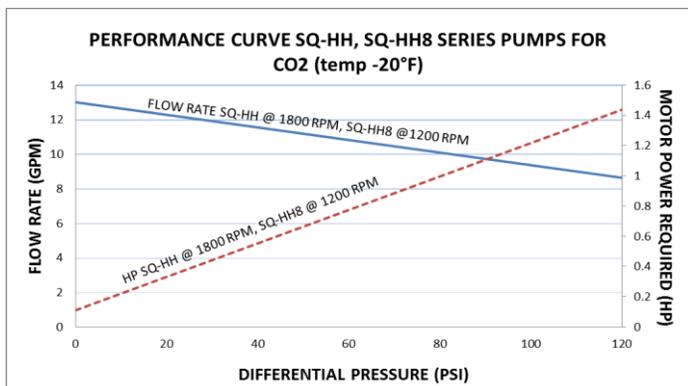
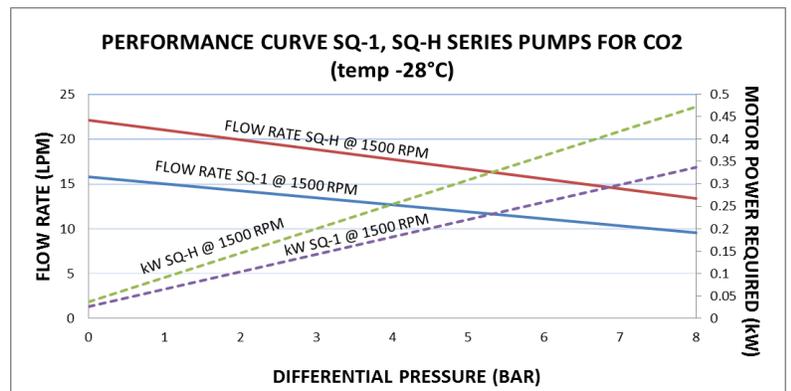
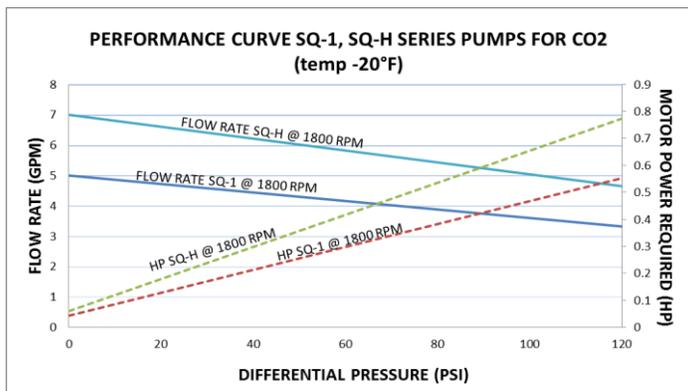


DIMENSIONS SHOWN ARE FOR 56-C FRAME MOTOR WITH FEET
 PUMP SHAFT DIAMETER = 5/8" [16] STANDARD OR 1" [25] OPTION
 MOTOR SHAFT DIAMETER = 5/8" [25] FOR 56-C FRAME MOTOR
 PUMP DIMENSIONS ARE FOR SQ-1, SQ-H, SQ-HH, AND SQ-HH8 MODELS WITH 5/8" [25] DIAMETER PUMP SHAFT
 OVERALL PUMP DIMENSIONS ARE LONGER FOR 1" [25] DIAMETER PUMP SHAFT
 3/4" FNPT INLET AND OUTLET, 1" OUTLET ALSO AVAILABLE ON TOP OR SIDE OF PUMP
 * ALL DIMENSIONS IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM



Model	Weight (Pump only)	Weight (Pump, coupling, motor)
ALL SQ MODELS	39-45 lbs (17-21 kg)	75-90 lbs (34-40 kg)

* Weight varies depending on pump model and motor, contact factory for specific weight



For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 9. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com

Small Capacity Pumps

MC-1, GC-1 Series Pumps

Flow Rates of 2.5 – 5 GPM (9-19 LPM)



MC-1 PUMP

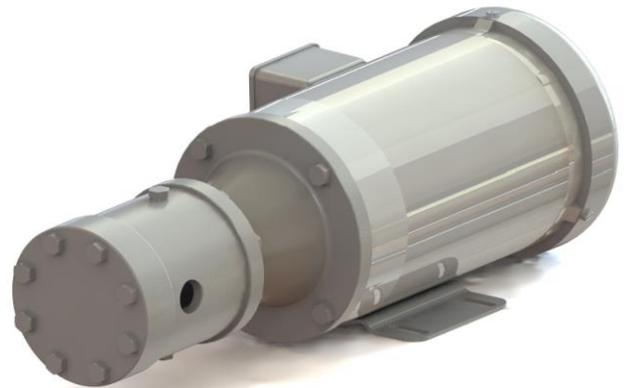
- Strongly recommended as having the lowest long-run cost where heavy duty and maximum performance are required.
- Both pump models are easily mounted directly to the motors with feet, no base required.
- Foot mount is also available.
- Both pumps can be rotated upside down to accommodate pipework inlet/outlet.

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr
MC-1 MAX 1800 RPM	5 GPM (19 LPM) @ 1800 RPM 2.5 GPM (9 LPM) @ 900 RPM	3/4"	3/4"	3/4"	0.25 – 1 HP (0.19 – 0.75 kW)	6"
GC-1 MAX 1800 RPM	5 GPM (19 LPM) @ 1800 RPM 2.5 GPM (9 LPM) @ 900 RPM	3/4"	3/4"	3/4"	0.25 – 1 HP (0.19 – 0.75 kW)	6"

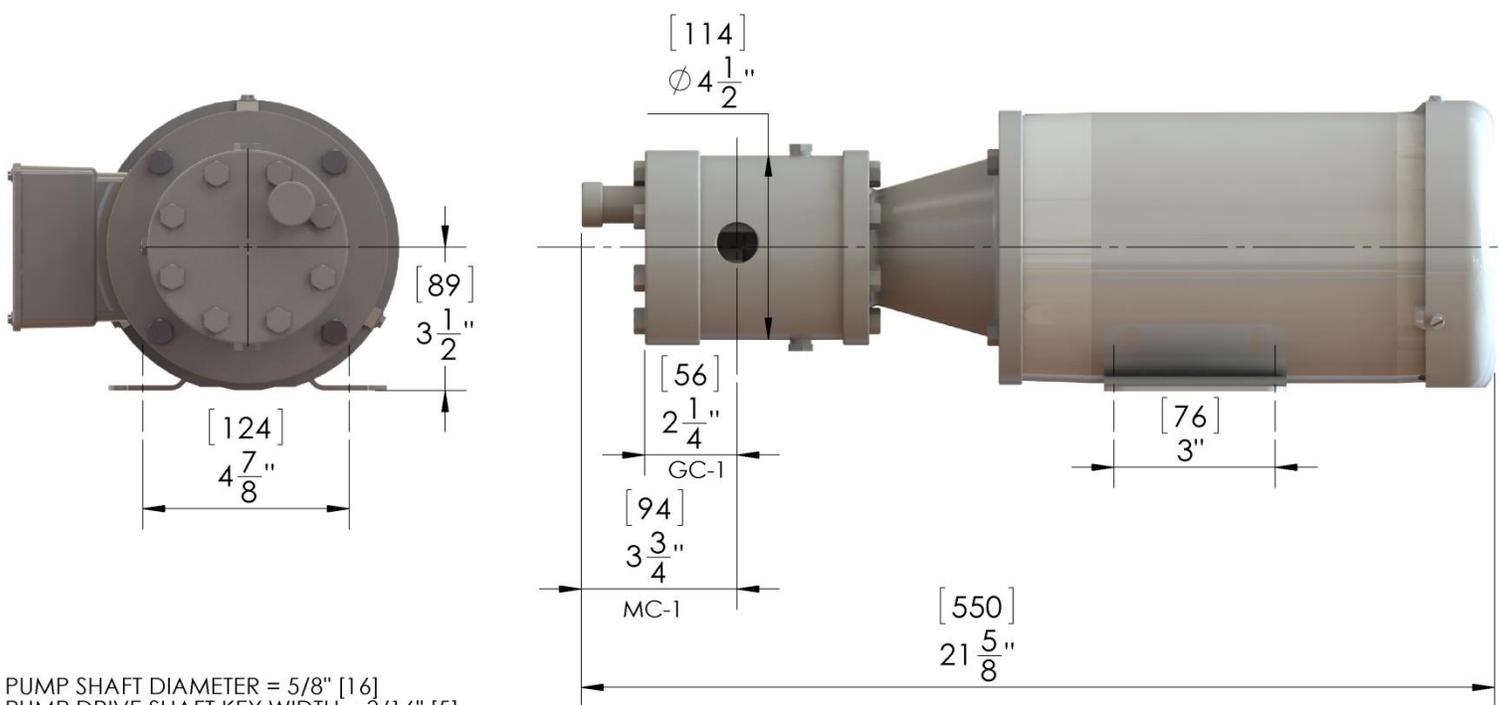
The MC-1 contains an internal, *adjustable* bypass relief valve set at 100 psid with maximum setting of 110 psid.

The GC-1 contains an internal, *permanently* set bypass valve at 100 psid. 150 psid option is also available. The GC-1 mechanical seal is exposed to inlet pressure only, extending shaft seal life.

External bypass valves are recommended.



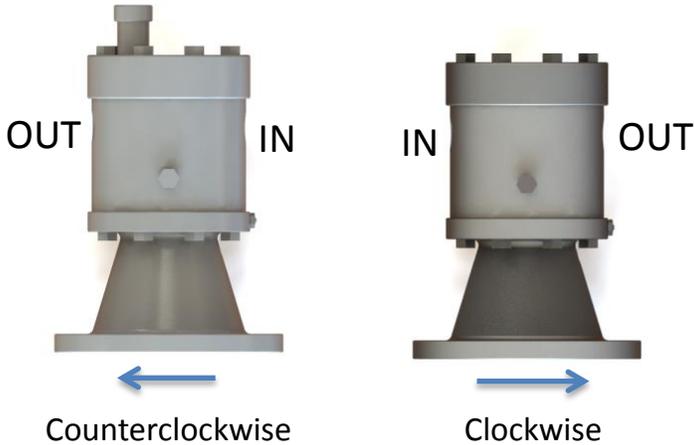
GC-1 PUMP



PUMP SHAFT DIAMETER = 5/8" [16]
 PUMP DRIVE SHAFT KEY WIDTH = 3/16" [5]
 PUMP DIMENSIONS ARE FOR MC-1 AND GC-1 PUMPS, 3/4" INLET AND OUTLET
 MOTOR SHAFT SIZE = 5/8" [16]
 MOTOR DIMENSIONS ARE FOR 56C FRAME MOTOR WITH FEET, 1 HP (.75 kW)
 * ALL DIMENSIONS ±1/16 IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM

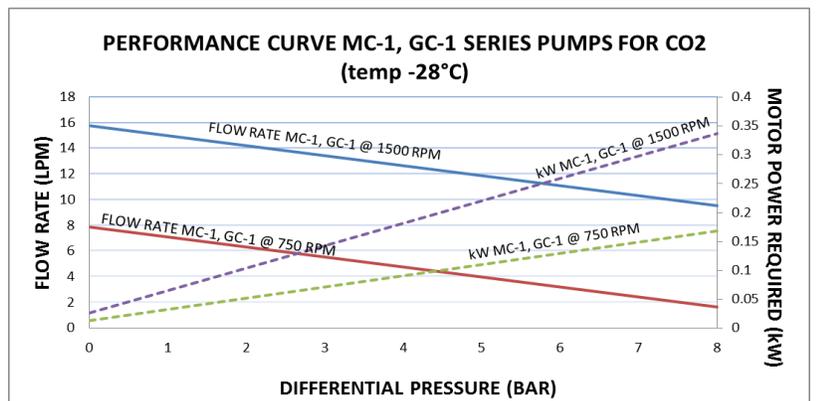
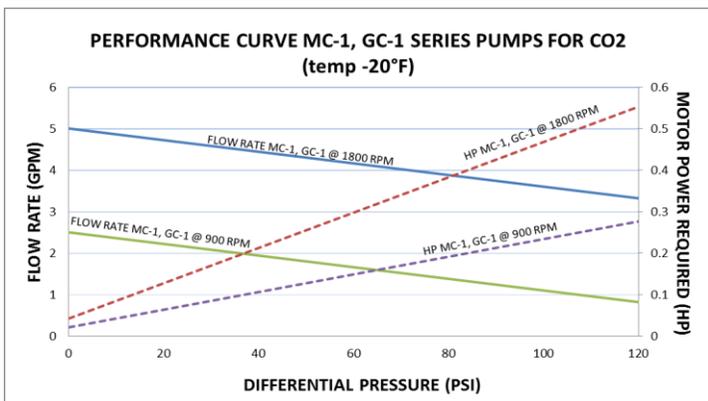
MC-1

GC-1



Model	Weight (Pump only)	Weight (Pump, coupling, motor)
MC-1, GC-1	20 lbs (9 kg)	75 lbs (34 kg)

* Weight varies depending on pump model and motor, contact factory for specific weight

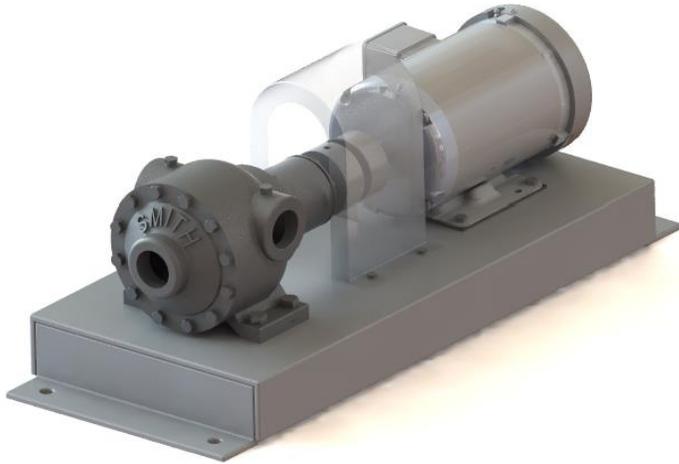


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 11. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com

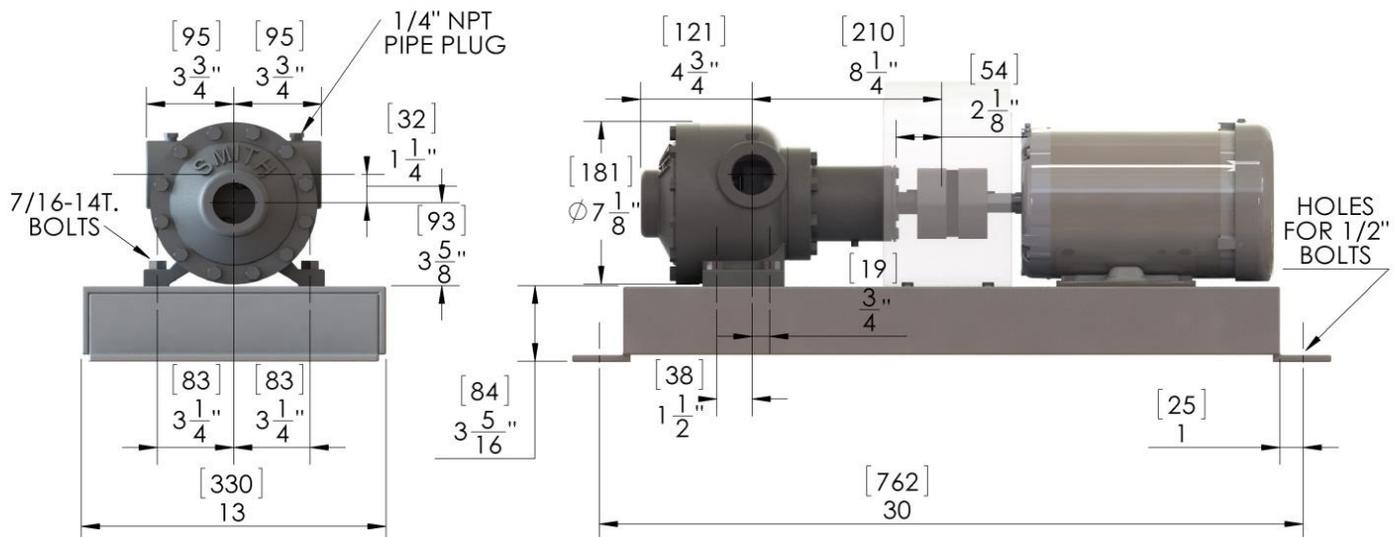
Medium Capacity Pumps

Flow Rates of 10-35 GPM (38-133 LPM)



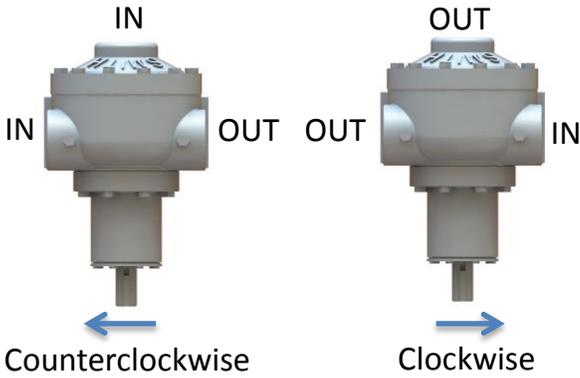
- Ideal for small bulk transfer applications or truck loading/unloading
- Extra inlet in cover eliminates elbows
- Reversible
- Two ¼" NPT ports in main housing for pressure gauge or hydrostatic relief valve

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr
MC-1044 MAX 1800 RPM	20 GPM (76 LPM) @ 1800 RPM 17 GPM (64 LPM) @ 1500 RPM 13 GPM (49 LPM) @ 1200 RPM 10 GPM (38 LPM) @ 900 RPM	1- ½"	1- ½"	1- ½" - 2"	1.5 – 2 HP (1.1 – 1.5 kW)	1 ft.
MC-1044H MAX 1800 RPM	35 GPM (133 LPM) @ 1800 RPM 29 GPM (110 LPM) @ 1500 RPM 23 GPM (87 LPM) @ 1200 RPM 18 GPM (68 LPM) @ 750 RPM	1- ½"	1- ½"	1- ½" - 2"	2 – 3 HP (1.5 – 2.2 kW)	1 ft.



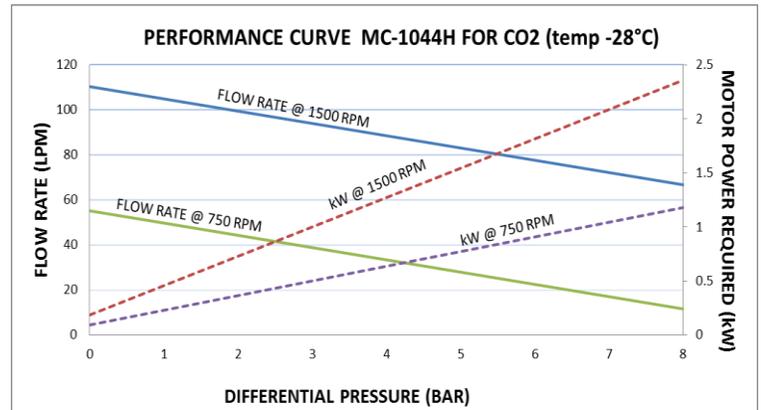
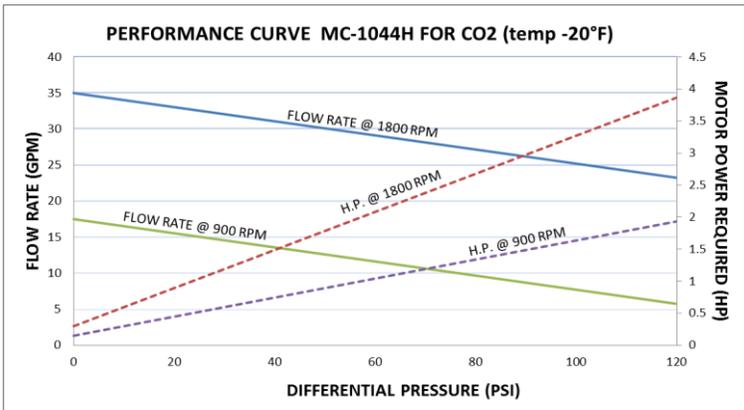
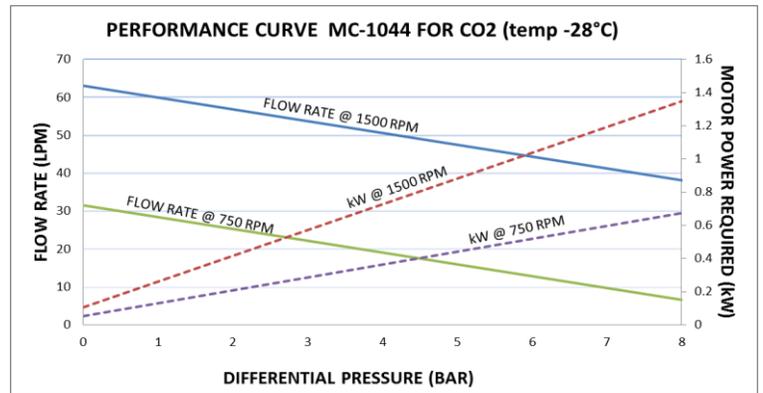
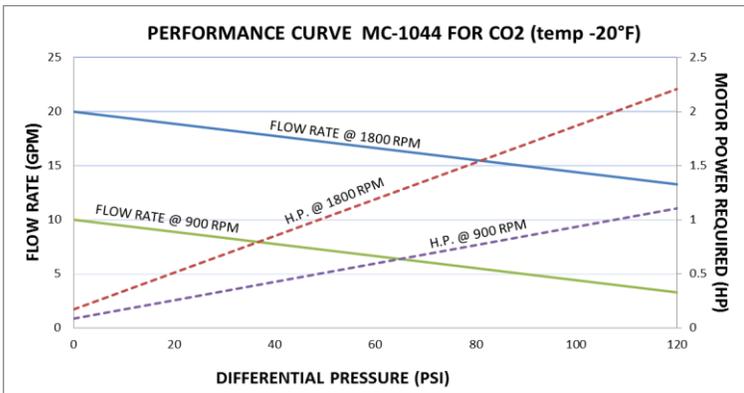
PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 BOTH MC-1044 AND MC-1044H CONTAIN SAME EXTERNAL DIMENSIONS
 MOTOR SHAFT SIZE = 7/8" [22]
 MOTOR DIMENSIONS ARE FOR 143T FRAME, 2 HP (1.5 kW), 1800 RPM MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS ±1/16 IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM

Both MC-1044 & MC-1044H pumps are reversible for loading/unloading applications



Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
MC-1044	45 lbs (21 kg)	190-230 lbs* (85-105 kg)
MC-1044H	45 lbs (21 kg)	190-265 lbs* (85-120 kg)

* Weight varies depending on motor, contact factory for specific weight

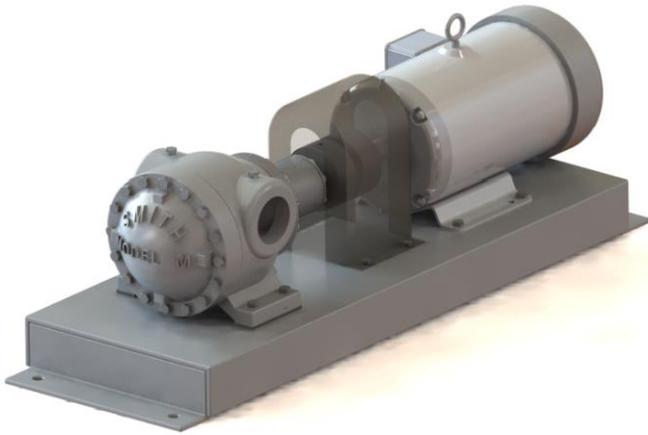


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 13. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

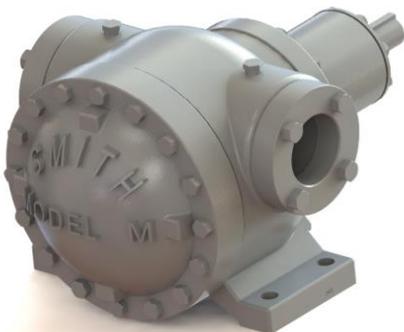
Medium Capacity Pumps

Flow Rates of 25-50 GPM (38-190 LPM)

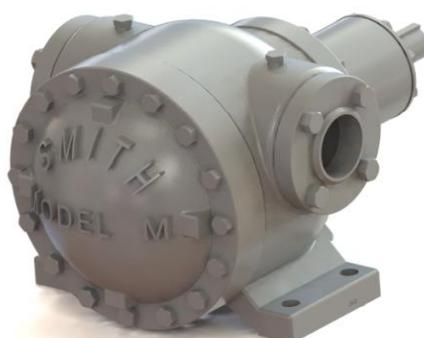


- Developed for 50 Hz Countries, the MC-2H has identical flow rate as the MC-2 (1800 RPM) when operated at 1500 RPM
- For increased pump longevity, operate a “non-H” pump at 1500 RPM or lower
- Our “F” type pumps come with flanges available in the threaded, butt-weld, or socket-weld versions
- Reversible

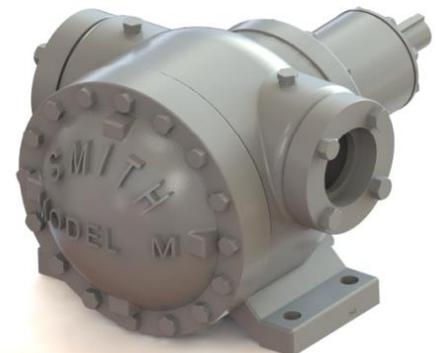
MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
MC-2 MAX 1800 RPM	50 GPM (190 LPM) @ 1800 RPM 42 GPM (159 LPM) @ 1500 RPM 25 GPM (38 LPM) @ 900 RPM	2- ½”	2- ½”	2-3”	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	NO
MC-2H MAX 1500 RPM	50 GPM (190 LPM) @ 1500 RPM 40 GPM (151 LPM) @ 1200 RPM 25 GPM (38 LPM) @ 750 RPM	2- ½”	2- ½”	2-3”	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	NO
MC-2F MAX 1800 RPM	50 GPM (190 LPM) @ 1800 RPM 42 GPM (159 LPM) @ 1500 RPM 25 GPM (38 LPM) @ 900 RPM	2”	2”	2-3”	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES
MC-2HF MAX 1500 RPM	50 GPM (190 LPM) @ 1500 RPM 40 GPM (151 LPM) @ 1200 RPM 25 GPM (38 LPM) @ 750 RPM	2”	2”	2-3”	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES



Threaded Flange



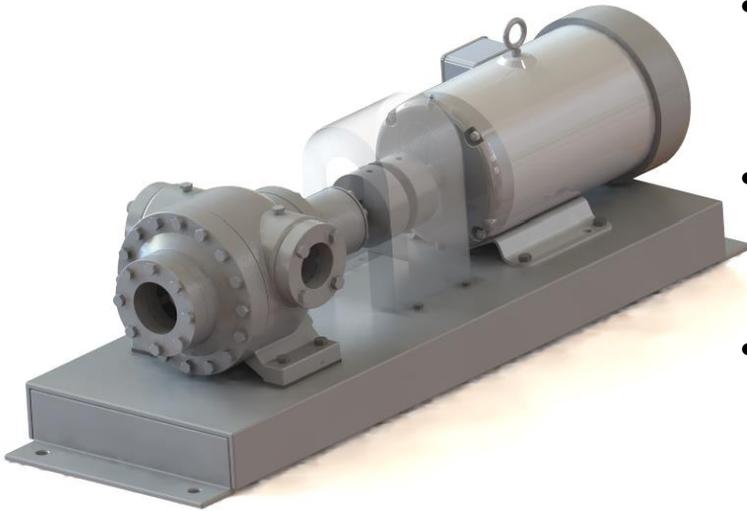
Butt-Weld Flange



Socket Weld Flange

Medium Capacity Pumps

Flow Rates of 25-50 GPM (38-190 LPM)



- ATC pumps contain an extra port on the inlet cover to eliminate elbows in the pipework
- Flanges come standard in threaded, butt-weld, or socket weld versions
- Identical to MC-2 type pumps, except extra port and flanges come standard

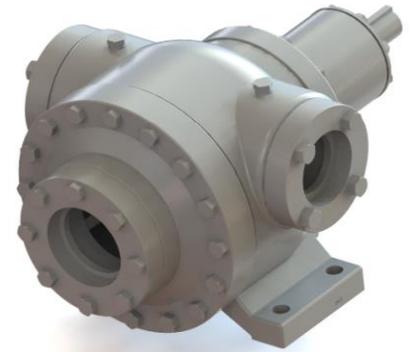
MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
ATC-2R MAX 1800 RPM	50 GPM (190 LPM) @ 1800 RPM 42 GPM (159 LPM) @ 1500 RPM 25 GPM (38 LPM) @ 900 RPM	2- ½"	2"	2-3"	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES
ATC-2RH MAX 1500 RPM	50 GPM (190 LPM) @ 1500 RPM 40 GPM (151 LPM) @ 1200 RPM 25 GPM (38 LPM) @ 750 RPM	2- ½"	2"	2-3"	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES
ATC-2L MAX 1800 RPM	50 GPM (190 LPM) @ 1800 RPM 42 GPM (159 LPM) @ 1500 RPM 25 GPM (38 LPM) @ 900 RPM	2- ½"	2"	2-3"	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES
ATC-2LH MAX 1500 RPM	50 GPM (190 LPM) @ 1500 RPM 40 GPM (151 LPM) @ 1200 RPM 25 GPM (38 LPM) @ 750 RPM	2- ½"	2"	2-3"	3 – 5 HP (2.2 – 3.7 kW)	1 ft.	YES



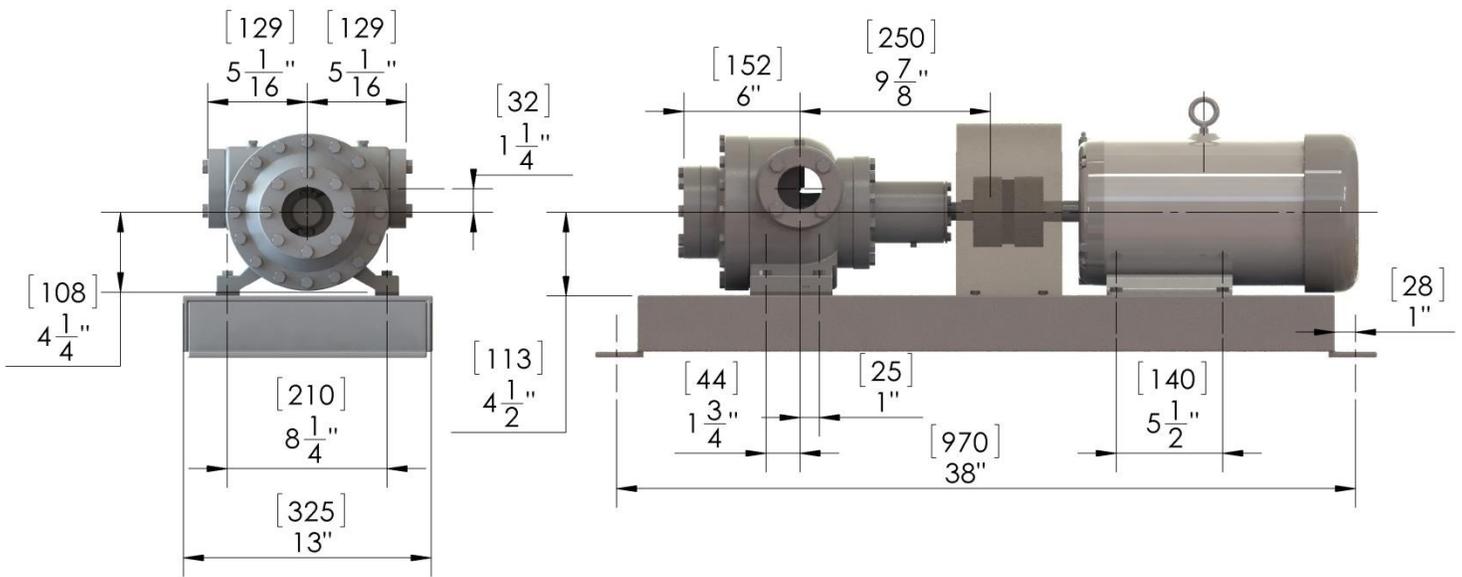
Threaded Flange



Butt-Weld Flange



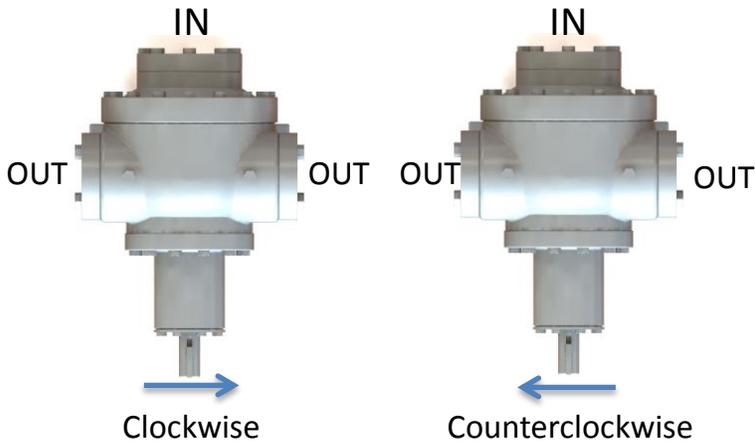
Socket Weld Flange



PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE $\frac{1}{4}$ " [6] X $\frac{1}{4}$ " [6]
 PUMP DIMENSIONS ARE FOR ATC-2L, ATC-2LH, ATC-2R, ATC-2RH PUMPS, 2-1/2" NPT INLET, 2" NPT OUTLET
 MOTOR SHAFT SIZE 1-1/8" [29]
 MOTOR DIMENSIONS ARE FOR 184T FRAME, 1800 RPM, 5 HP (3.7kW) MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS $\pm 1/16$ IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM

ATC-2R, ATC-2RH

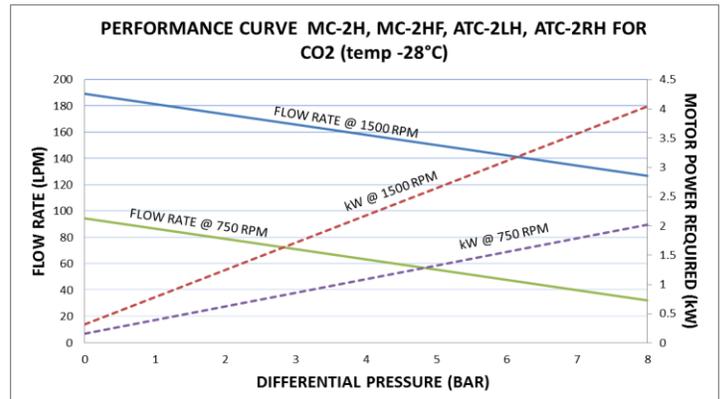
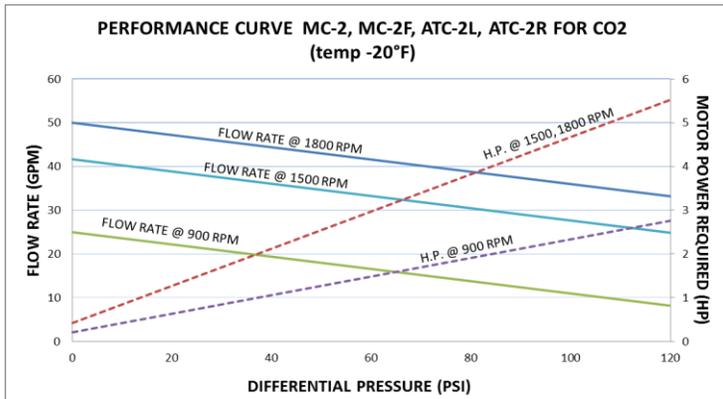
ATC-2L, ATC-2LH



Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
ATC-2L, ATC-2LH, ATC-2R, ATC-2RH	75 lbs (34 kg)	285-350 lbs* (129-159 kg)

NOTE: ONE OUTLET MAY BE USED WITH BLIND FLANGE INSTALLED ON UNUSED OUTLET PORT. (BLIND FLANGE IS SHIPPED WITH PUMP)

* Weight varies depending on motor, contact factory for specific weight

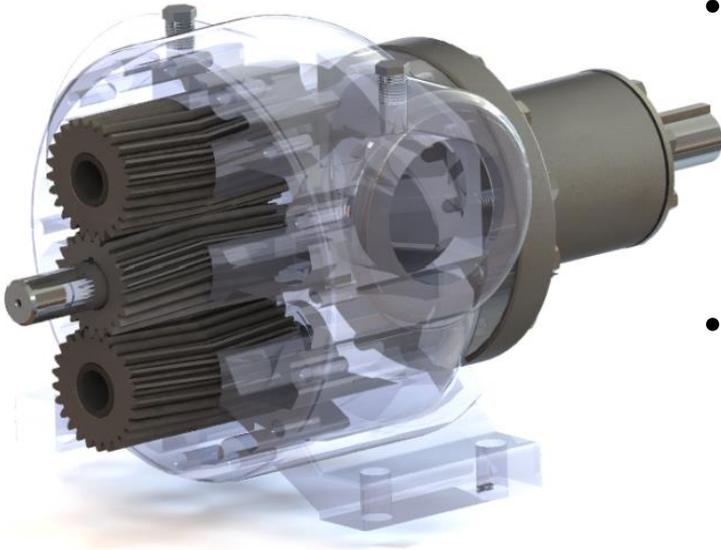


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 17. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

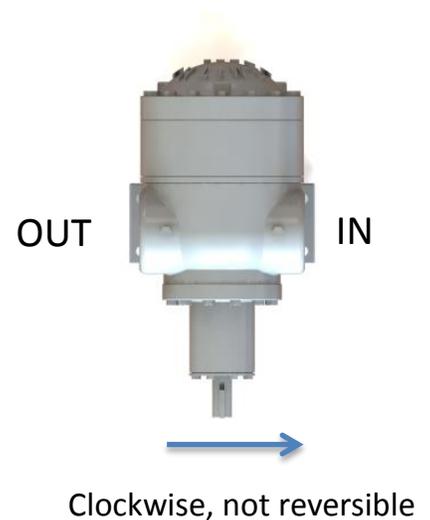
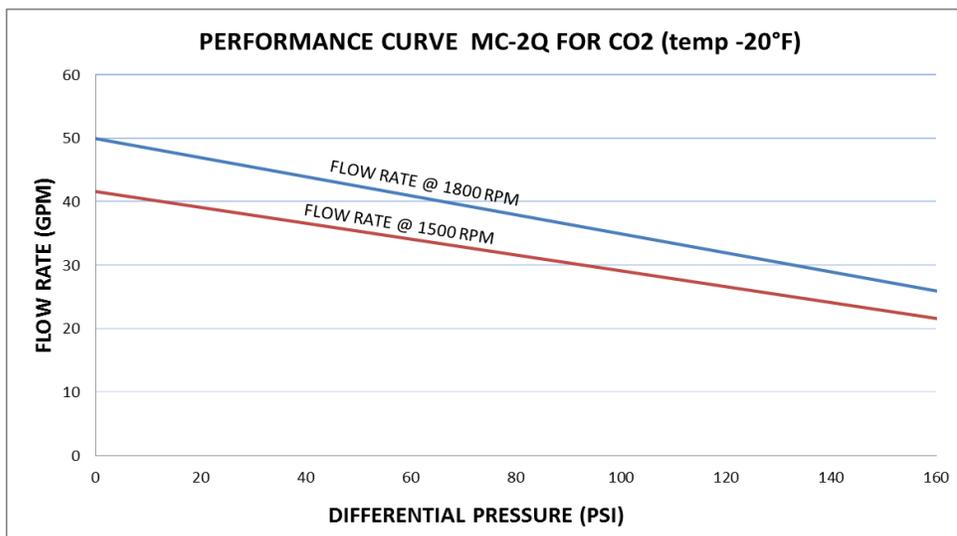
Medium Capacity Pumps

High Differential Pressure MC-2Q Pump



- Capable of differential pressures of up to 150 psi (over 10 bar) for liquids under 1 cP such as CO2 or LPG
- Unique helical gear design provides higher differential pressures and quieter operation

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
MC-2Q MAX 1800 RPM	50 GPM (190 LPM) @ 1800 RPM 42 GPM (160 LPM) @ 1500 RPM	2- 1/2"	2- 1/2"	2-3"	7- 1/2" HP (5.6 kW)	1 ft.	NO

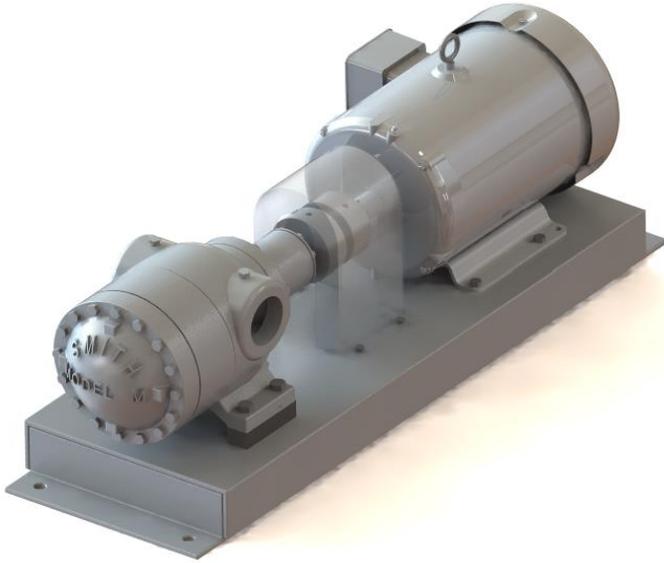


For liquids between 1-110 cP, predicted pump output will be the same as pump chart above. Actual pump output will be approximately 5-10% greater than predicted. For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

MC-2Q pump external dimensions and weight same as MC-3 pump on page 21.

Large Capacity Pumps

Flow Rates of 50 – 100 GPM (133 – 380 LPM)



- Ideal for loading/offloading
- For increased pump longevity, operate a “non-H” pump at 1500 RPM or lower
- Our “F” type pumps come with flanges available in the threaded, butt-weld, or socket-weld versions
- Reversible

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
MC-3 MAX 1800 RPM	100 GPM (380 LPM) @ 1800 RPM 83 GPM (314 LPM) @ 1500 RPM 50 GPM (190 LPM) @ 900 RPM	2- ½”	2- ½”	3”	5- 7- ½” HP (3.7 – 5.6 kW)	1 ft.	NO
MC-3H MAX 1500 RPM	100 GPM (380 LPM) @ 1500 RPM 80 GPM (303 LPM) @ 1200 RPM 50 GPM (190 LPM) @ 750 RPM	2- ½”	2- ½”	3”	5- 7- ½” HP (3.7 – 5.6 kW)	1 ft.	NO
MC-3F MAX 1800 RPM	100 GPM (380 LPM) @ 1800 RPM 83 GPM (314 LPM) @ 1500 RPM 50 GPM (190 LPM) @ 900 RPM	2”	2”	3”	5- 7- ½” HP (3.7 – 5.6 kW)	1 ft.	YES
MC-3HF MAX 1500 RPM	100 GPM (380 LPM) @ 1500 RPM 80 GPM (303 LPM) @ 1200 RPM 50 GPM (190 LPM) @ 750 RPM	2”	2”	3”	5- 7- ½” HP (3.7 – 5.6 kW)	1 ft.	YES



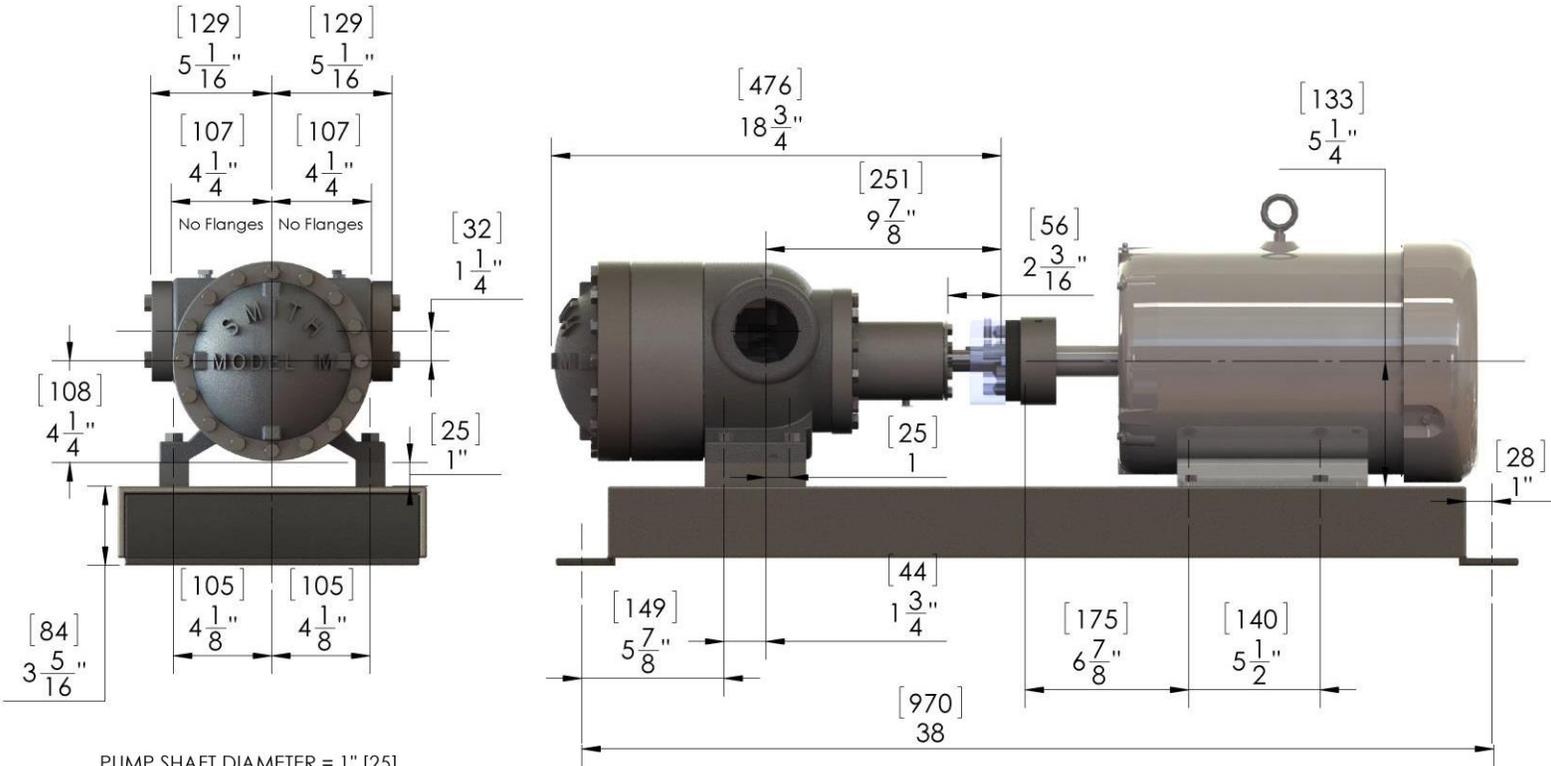
Threaded Flange



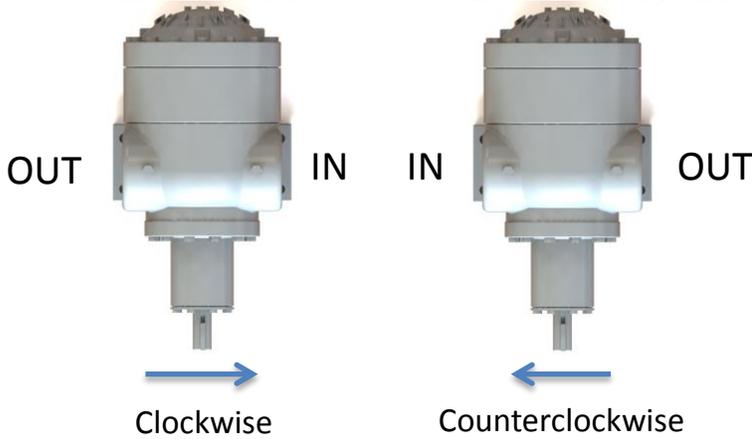
Butt-Weld Flange



Socket Weld Flange



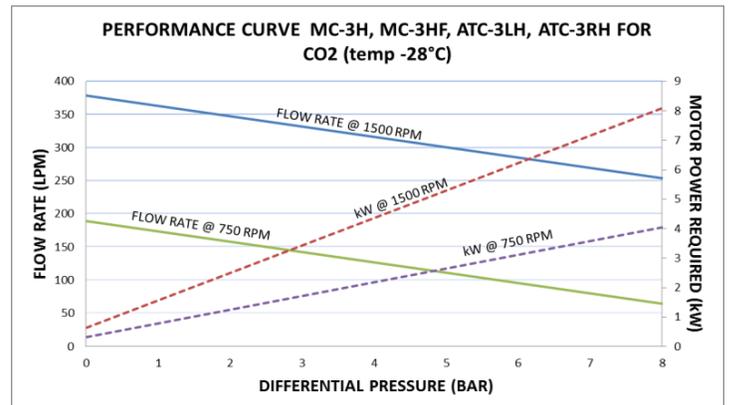
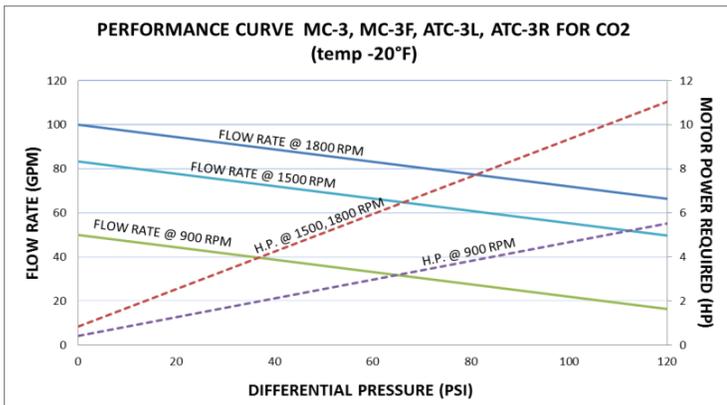
PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 PUMP DIMENSIONS ARE FOR MC-3, MC-3F, MC-3H, MC-3HF, & MC-2Q PUMP MODELS
 2-1/2" INLET AND OUTLET W/O FLANGES, 2" INLET AND OUTLET W/FLANGES
 MOTOR SHAFT SIZE 1-3/8" [35]
 MOTOR DIMENSIONS ARE FOR 21.3T FRAME, 7-1/2HP (5.6kW) MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM



For models MC-3, MC-3F, MC-3H, MC-3HF

Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
MC-3, MC-3F, MC-3H, MC-3HF, MC-2Q	100 lbs (45 kg)	350-400 lbs* (159-182 kg)

* Weight varies depending on motor, contact factory for specific weight

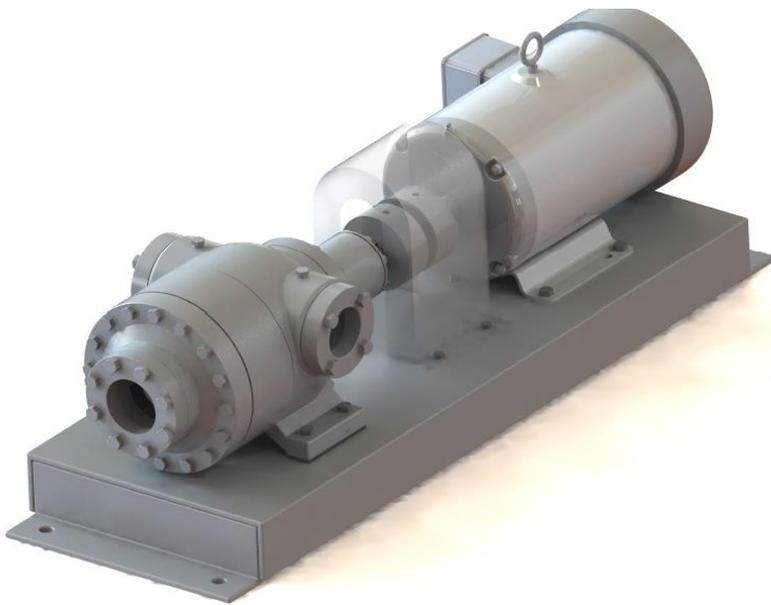


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 20. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

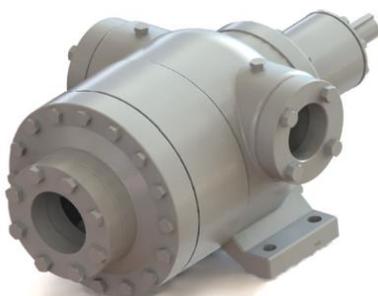
Large Capacity Pumps

Flow Rates of 50 – 100 GPM (190 – 380 LPM)



- ATC pumps contain an extra port on the inlet cover to eliminate extra elbows in pipework
- Flanges come standard in threaded, butt-weld, or socket weld versions
- Identical to MC-3 type pumps, except extra port and flanges come standard

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
ATC-3R MAX 1800 RPM	100 GPM (380 LPM) @ 1800 RPM 83 GPM (314 LPM) @ 1500 RPM 50 GPM (190 LPM) @ 900 RPM	2- ½"	2"	3"	5- 7- ½" HP (3.7 – 5.6 kW)	1 ft.	YES
ATC-3RH MAX 1500 RPM	100 GPM (380 LPM) @ 1500 RPM 80 GPM (303 LPM) @ 1200 RPM 50 GPM (190 LPM) @ 750 RPM	2- ½"	2"	3"	5- 7- ½" HP (3.7 – 5.6 kW)	1 ft.	YES
ATC-3L MAX 1800 RPM	100 GPM (380 LPM) @ 1800 RPM 83 GPM (314 LPM) @ 1500 RPM 50 GPM (190 LPM) @ 900 RPM	2- ½"	2"	3"	5- 7- ½" HP (3.7 – 5.6 kW)	1 ft.	YES
ATC-3LH MAX 1500 RPM	100 GPM (380 LPM) @ 1500 RPM 80 GPM (303 LPM) @ 1200 RPM 50 GPM (190 LPM) @ 750 RPM	2- ½"	2"	3"	5- 7- ½" HP (3.7 – 5.6 kW)	1 ft.	YES



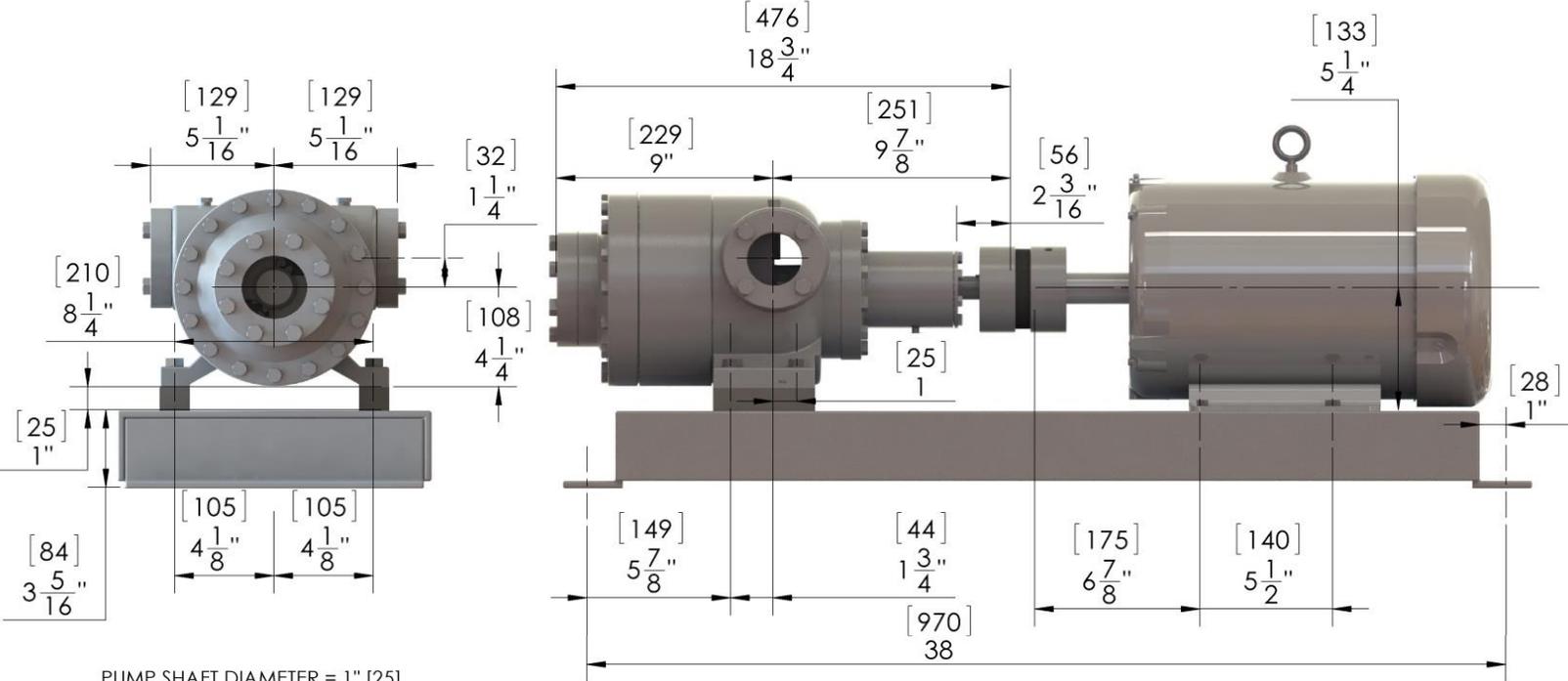
Threaded Flange



Butt-Weld Flange

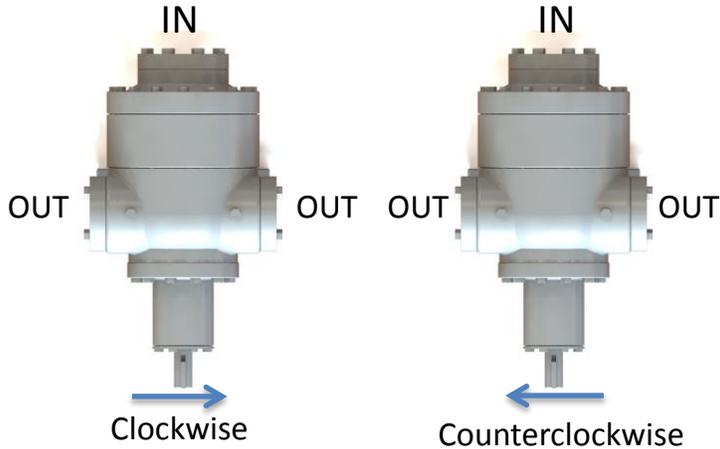


Socket Weld Flange



PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 PUMP DIMENSIONS ARE FOR ATC-3R, ATC-3RH, ATC-3L, & ATC-3LH MODELS
 2-1/2" INLET AND OUTLET W/O FLANGES, 2" INLET AND OUTLET W/FLANGES
 MOTOR SHAFT SIZE 1-3/8" [35]
 MOTOR DIMENSIONS ARE FOR 213T FRAME, 7-1/2HP (5.6kW) MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM

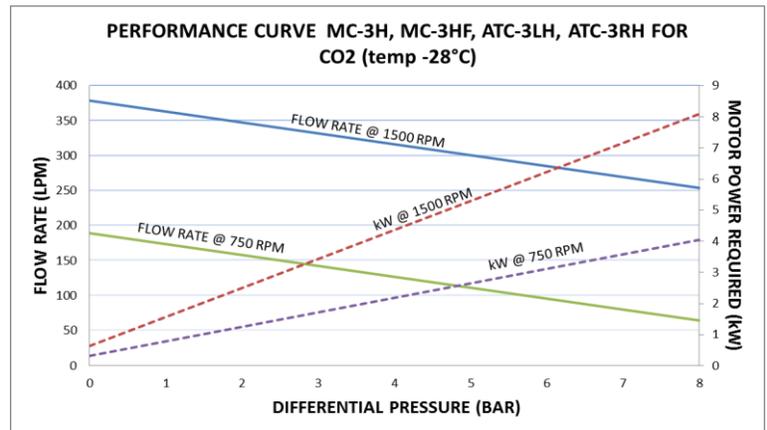
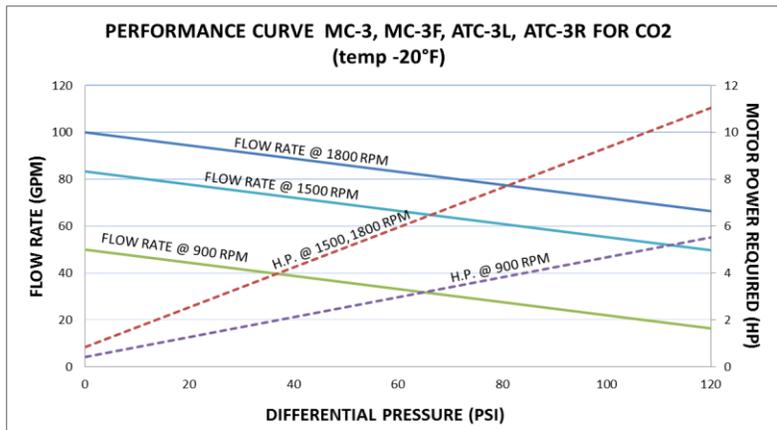
ATC-3R, ATC-3RH ATC-3L, ATC-3LH



NOTE: ONE OUTLET MAY BE USED WITH BLIND FLANGE INSTALLED ON UNUSED OUTLET PORT.
 (BLIND FLANGE IS SHIPPED WITH PUMP)

Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
ATC-3L, ATC-3LH, ATC-3R, ATC-3RH	100 lbs (45 kg)	350-400 lbs* (159-182 kg)

* Weight varies depending on motor, contact factory for specific weight

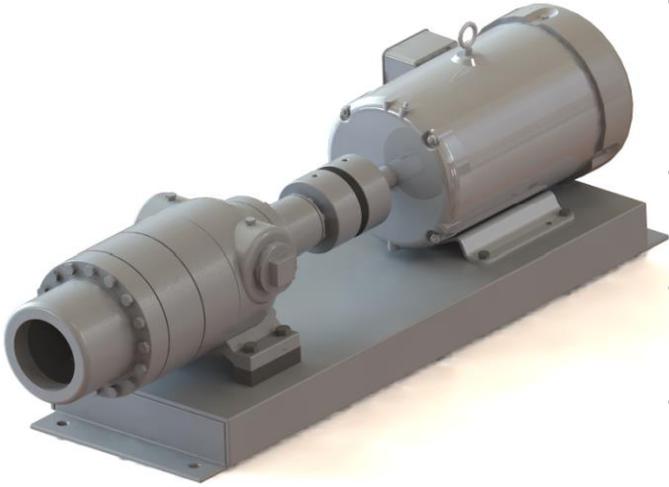


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 22. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

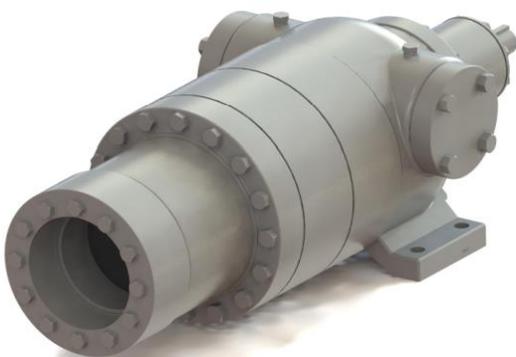
Large Capacity Pumps

Flow Rates of 75 – 150 GPM (284 – 568 LPM)

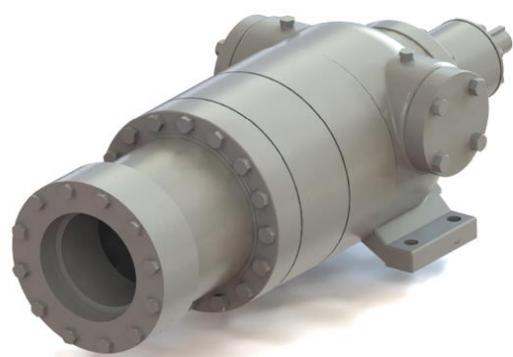


- Developed for 50 Hz Countries, the MC-4H has identical flow rate as the MC-4 (1800 RPM) when operated at 1500 RPM
- For increased pump longevity, operate a “non-H” pump at 1500 RPM or lower
- Inlet through the cover to eliminate elbows
- Our “F” type pumps come with flanges available in the threaded or welded versions

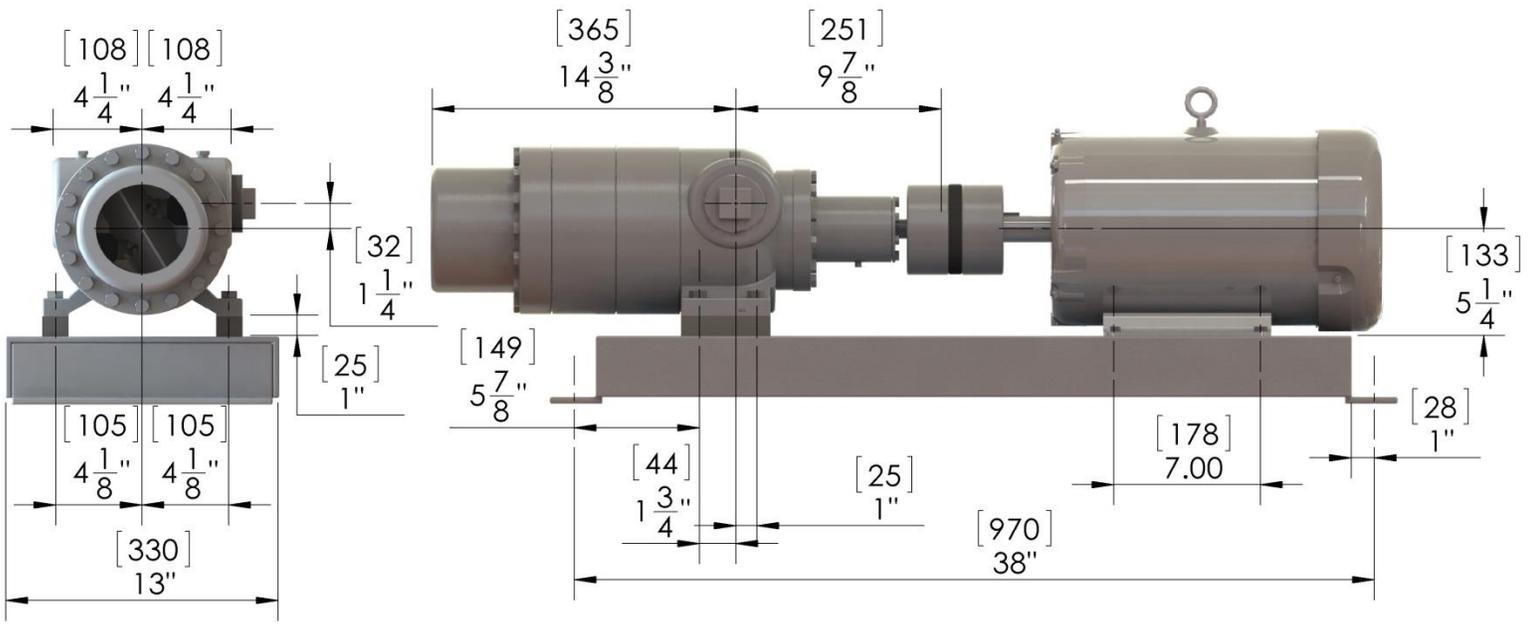
MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
MC-4 MAX 1800 RPM	150 GPM (568 LPM) @ 1800 RPM 125 GPM (473 LPM) @ 1500 RPM 75 GPM (284 LPM) @ 900 RPM	4"	2- ½"	3"	7- ½ - 10 HP (5.6 – 7.5 kW)	1.5 ft.	NO
MC-4H MAX 1500 RPM	150 GPM (568 LPM) @ 1500 RPM 120 GPM (454 LPM) @ 1200 RPM 75 GPM (284 LPM) @ 750 RPM	4"	2- ½"	3"	7- ½ - 10 HP (5.6 – 7.5 kW)	1.5 ft.	NO
MC-4F MAX 1800 RPM	150 GPM (568 LPM) @ 1800 RPM 125 GPM (473 LPM) @ 1500 RPM 75 GPM (284 LPM) @ 900 RPM	4"	2"	3"	7- ½ - 10 HP (5.6 – 7.5 kW)	1.5 ft.	YES
MC-4HF MAX 1500 RPM	150 GPM (568 LPM) @ 1500 RPM 120 GPM (454 LPM) @ 1200 RPM 75 GPM (284 LPM) @ 750 RPM	4"	2"	3"	7- ½ - 10 HP (5.6 – 7.5 kW)	1.5 ft.	YES



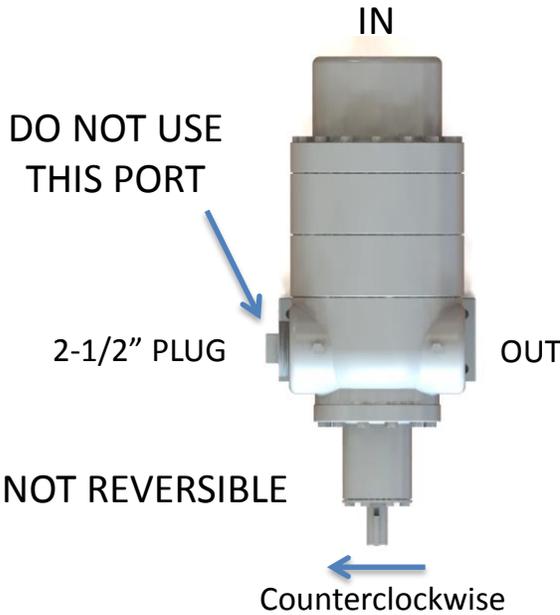
Threaded Flange



Welded Flange

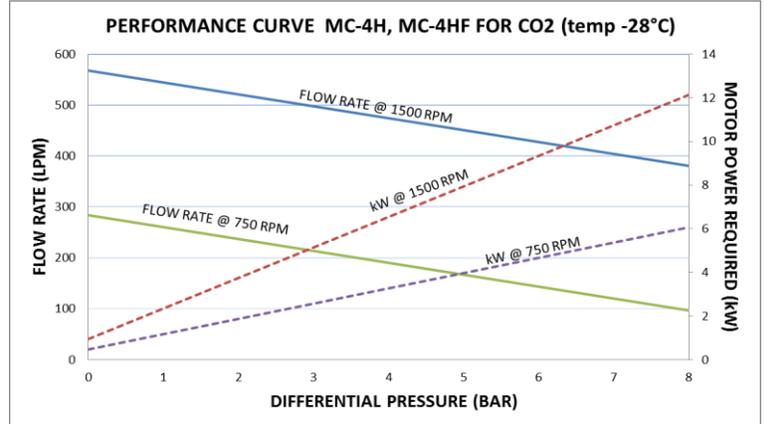
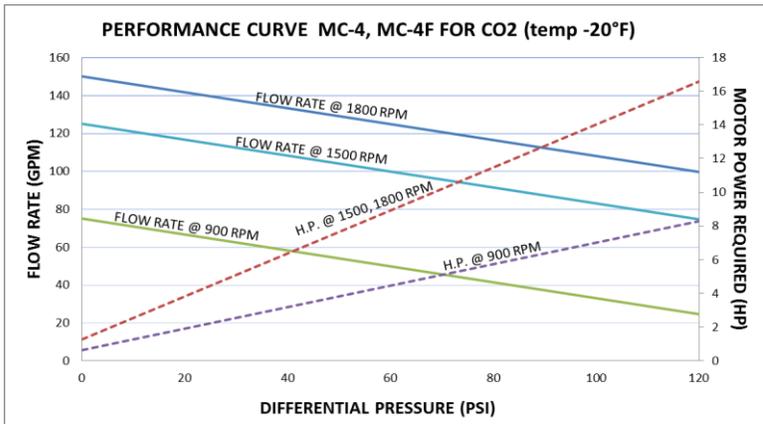


PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 PUMP DIMENSIONS ARE FOR STANDARD NON-FLANGED PUMP MODELS, MC-4 & MC-4H
 4" NPT INLET, 2-1/2" NPT OUTLET
 MOTOR SHAFT SIZE 1-3/8" [35]
 MOTOR DIMENSIONS ARE FOR 215T FRAME, 10 HP (7.5 kW) MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS ±1/16 IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM



Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
MC-4, MC-4F, MC-4H, MC-4HF	135 lbs (62 kg)	450-500 lbs* (204-227 kg)

* Weight varies depending on motor, contact factory for specific weight

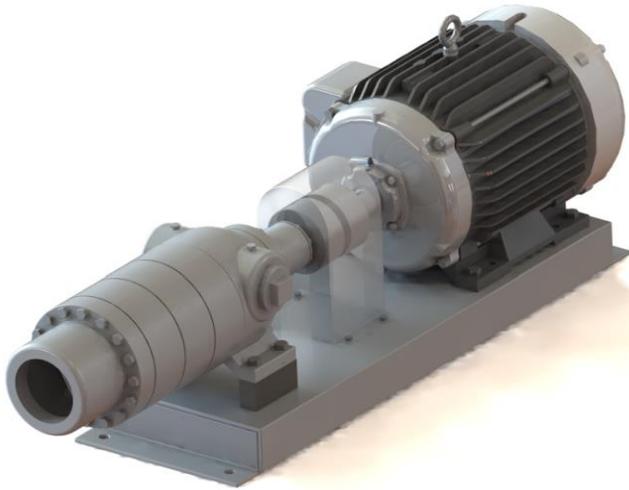


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 24. Actual pump output will be approximately 5-10% greater than predicted above.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

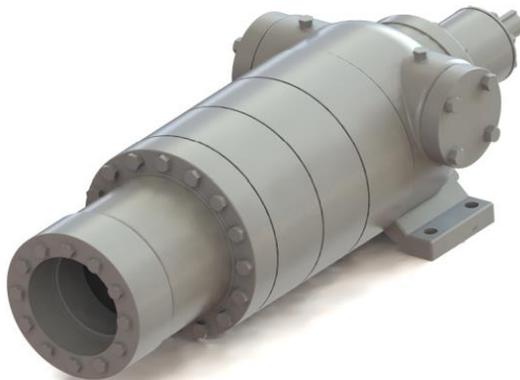
Large Capacity Pumps

Flow Rates of 100– 250 GPM (379 – 946 LPM)

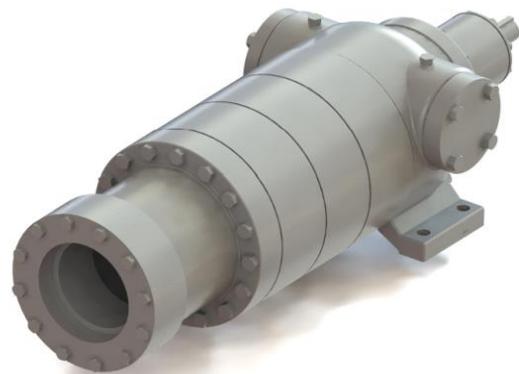


- Ideal for high capacity bulk transfer
- For higher flow rates, specify our “Large” gear option for 250 GPM
- For increased pump longevity, operate a “non-H” pump at 1500 RPM or lower
- Inlet through the cover to eliminate elbows
- Our “F” type pumps come with flanges available in the threaded or welded versions

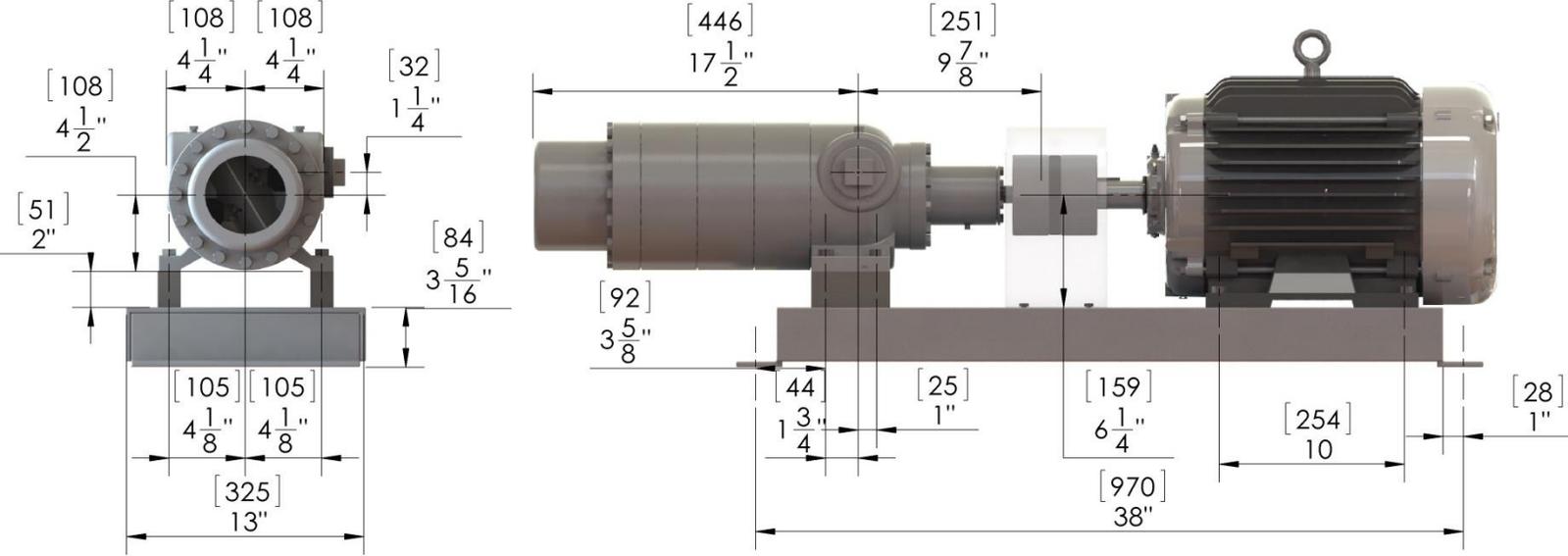
MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	MOTOR	NPSHr	FLANGE
MC-5 MAX 1800 RPM	200 GPM (757 LPM) @ 1800 RPM 167 GPM (632 LPM) @ 1500 RPM 100 GPM (379 LPM) @ 900 RPM	4"	2- ½"	4"-6"	10 – 20 HP (7.5 – 14.9 kW)	2-3 ft.	NO
MC-5H MAX 1500 RPM	200 GPM (757 LPM) @ 1500 RPM 160 GPM (606 LPM) @ 1200 RPM 100 GPM (379 LPM) @ 750 RPM	4"	2- ½"	4"-6"	10 – 20 HP (7.5 – 14.9 kW)	2-3 ft.	NO
MC-5F MAX 1800 RPM	200 GPM (757 LPM) @ 1800 RPM 167 GPM (632 LPM) @ 1500 RPM 100 GPM (379 LPM) @ 900 RPM	4"	2"	4"-6"	10 – 20 HP (7.5 – 14.9 kW)	2-3 ft.	YES
MC-5HF MAX 1500 RPM	200 GPM (757 LPM) @ 1500 RPM 160 GPM (606 LPM) @ 1200 RPM 100 GPM (379 LPM) @ 750 RPM	4"	2"	4"-6"	10 – 20 HP (7.5 – 14.9 kW)	2-3 ft.	YES



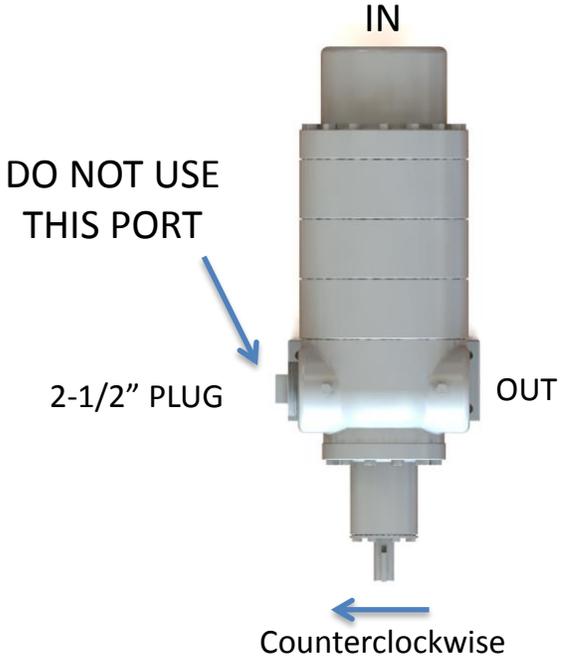
Threaded Flange



Welded Flange

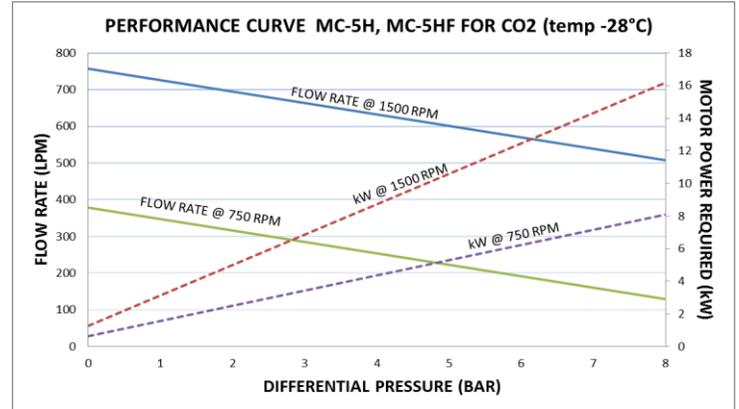
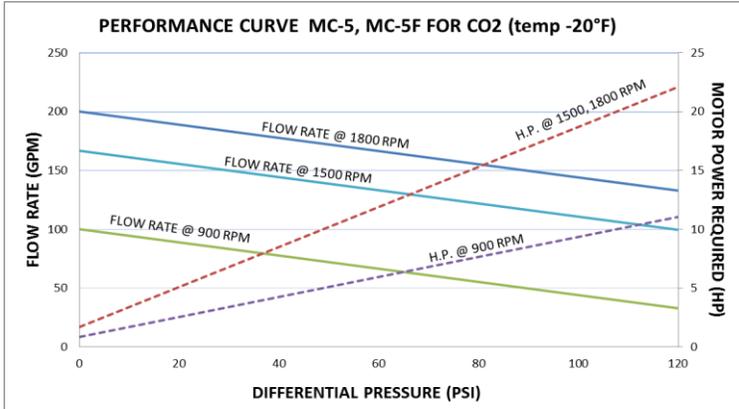


PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 PUMP DIMENSIONS ARE FOR STANDARD NON-FLANGED PUMP MODELS, MC-5 & MC-5H
 4" NPT INLET, 2-1/2" NPT OUTLET
 MOTOR SHAFT SIZE 1-5/8" [41]
 MOTOR DIMENSIONS ARE FOR 254T FRAME, 15 HP (11.2 kW) MOTOR, OTHER FRAME SIZES AVAILABLE
 * ALL DIMENSIONS ±1/16 IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, PLEASE VISIT SMITHPUMPS.COM



Model	Weight (Pump only)	Weight (Pump, base, coupling, coupling guard, motor)
MC-5, MC-5F, MC-5H, MC-5HF	170lbs (77 kg)	465-530 lbs* (211-240 kg)

* Weight varies depending on motor, contact factory for specific weight



For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 26. Actual pump output will be approximately 5-10% greater than predicted above. For 250 GPM, specify our "Large" gear option.

For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

Low Rpm Truck Pumps

Flow Rates of 35– 100 GPM (379 – 946 LPM)



TC-2

- Our low RPM truck pumps are designed for operation by power take off or by engine
- 4 Ports available for ease of pipework installation (3 ports for TC-1044H)
- Can be mounted sideways or upside down
- Available in flanged version
- Reversible

MODEL	FLOW RATE (Assume 0 psi differential pressure)	PUMP INLET SIZE	PUMP OUTLET SIZE	USUAL SIZE OF TANK LIQUID OUTLET	NPSH _r	FLANGE
TC-1044H MAX 900 RPM	35 GPM (133 LPM) @ 900 RPM	1- ½"	1- ½"	1- ½" – 2"	1 ft.	NO
TC-2 MAX 500 RPM	50 GPM (190 LPM) @ 500 RPM	2- ½"	2- ½"	2-3"	1 ft.	NO
TC-2F MAX 500 RPM	50 GPM (190 LPM) @ 500 RPM	2- ½"	2"	2-3"	1 ft.	YES
TC-3 MAX 500 RPM	100 GPM (380 LPM) @ 500 RPM	2- ½"	2- ½"	3"	1 ft.	NO
TC-3F MAX 500 RPM	100 GPM (380 LPM) @ 500 RPM	2- ½"	2"	3"	1 ft.	YES



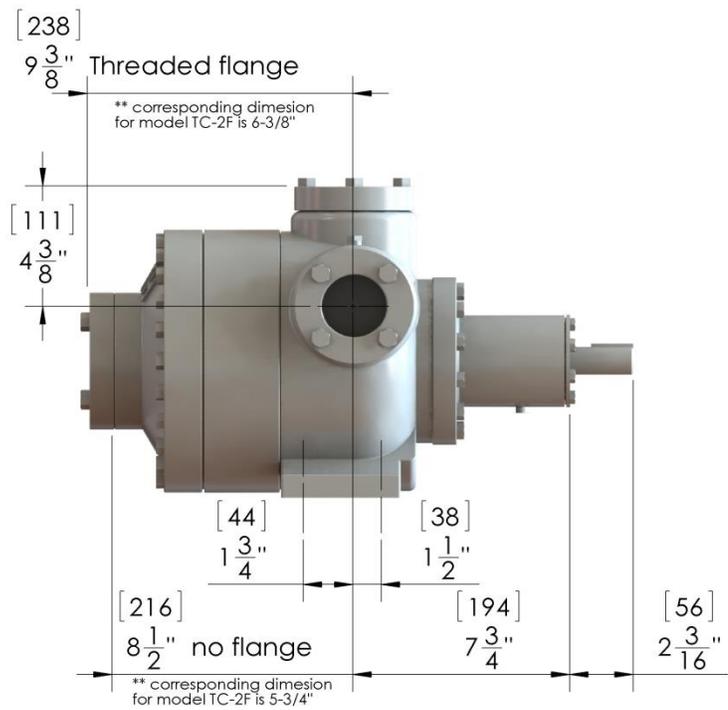
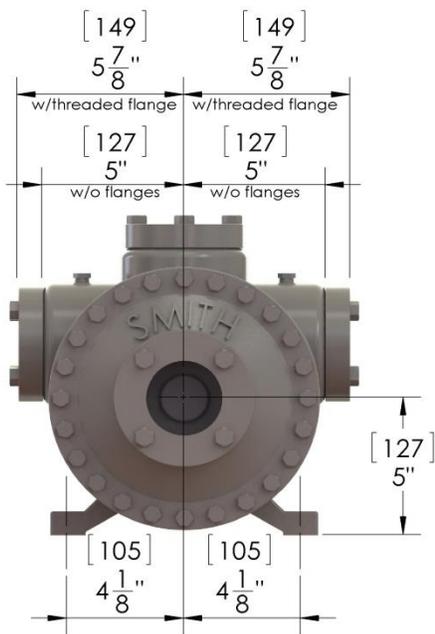
TC-3 Threaded Housing



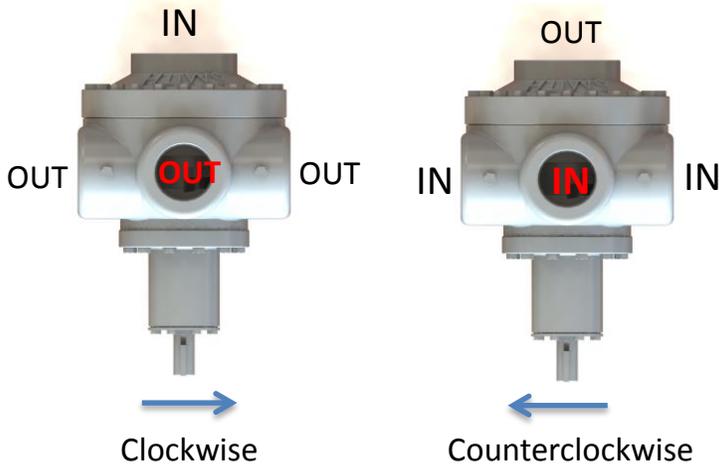
TC-3F Threaded Flange



TC-3F Butt-Weld Flange



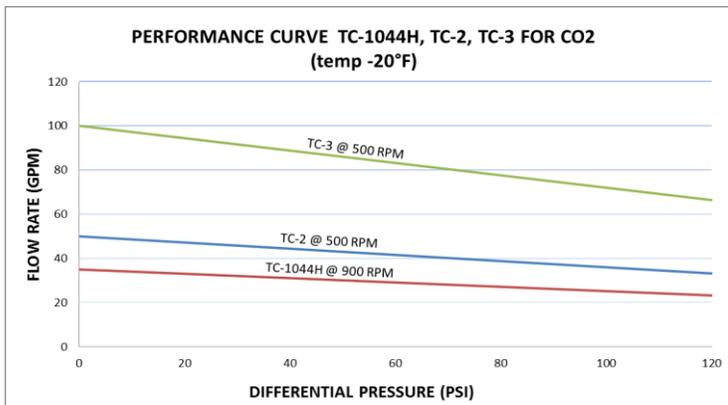
PUMP SHAFT DIAMETER = 1" [25]
 PUMP DRIVE SHAFT KEY SIZE 1/4" [6] X 1/4" [6]
 PUMP DIMENSIONS ARE FOR TC-2, TC-2F, TC-3, TC-3F PUMPS,
 2-1/2" NPT INLET AND OUTLET W/O FLANGES, 2" INLET AND
 OUTLET WITH FLANGES
 FLANGED UNITS INCLUDE BLIND FLANGES FOR UNUSED PORTS
 * ALL DIMENSIONS ±1/16 IN INCHES, [] DENOTES MM
 **FOR A MORE DETAILED DRAWING, OR FOR TC-1044H
 DRAWING, PLEASE VISIT SMITHPUMPS.COM



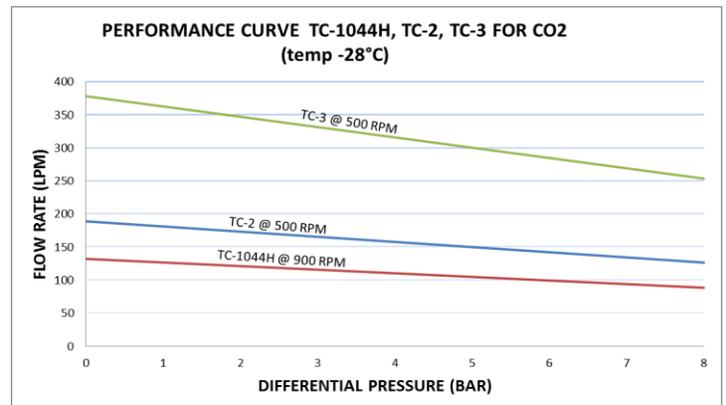
NOTE: ONE OUTLET MAY BE USED WITH 2 BLIND FLANGES INSTALLED ON UNUSED OUTLET PORTS. THE TC-1044H DOES NOT CONTAIN A TOP PORT.

Model	Weight (Pump only)
TC-1044H	50 lbs (23 kg)
TC-2, TC-2F	100 lbs (45 kg)
TC-3, TC-3F	135 lbs (62 kg)

* Weight varies depending on motor, contact factory for specific weight

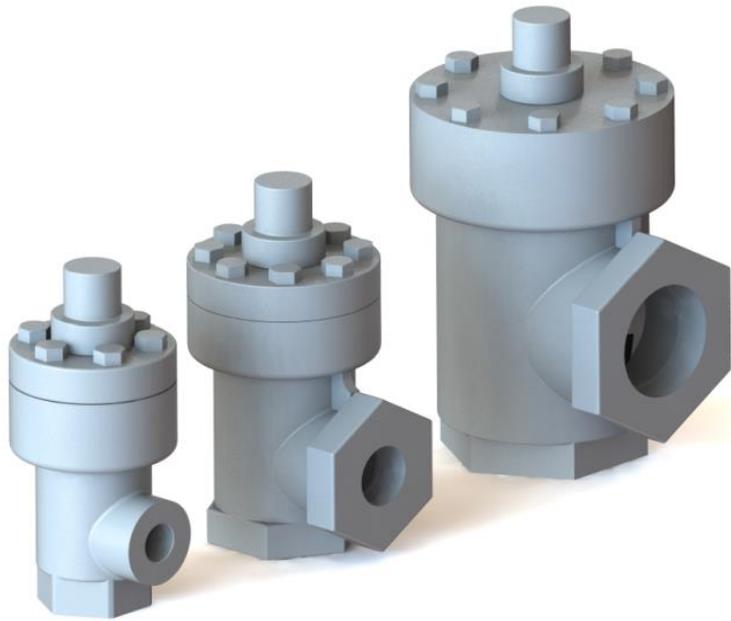


For liquids between 1-110 cP, predicted pump output will be the same as pump capacity chart on page 28. Actual pump output will be approximately 5-10% greater than predicted above.



For other liquid services or for more information on predicted pump output, please visit our pump performance calculator at smithpumps.com or contact us.

Smith Bypass Valves

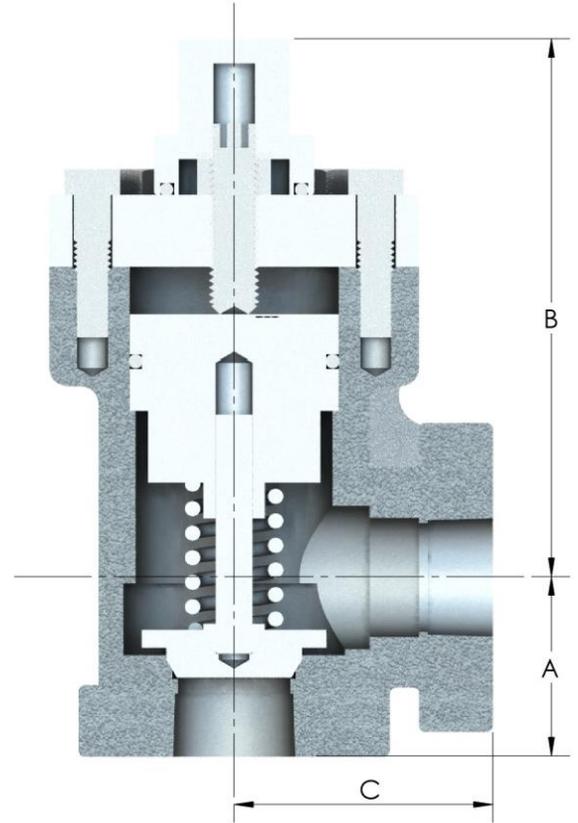


- Smith bypass valves are chatter free due to the unique guide-piston design
- Adjustable settings from 30-125 psid (2 – 9 bar) over tank pressure (higher settings available)
- Used for a wide array of liquids
- Superior materials for longest life
- Stainless steel guide piston and spring for infinite cycles
- Incorporates unique flow plate to evenly dissipate flow when valve opens
- Designed for continuous flow

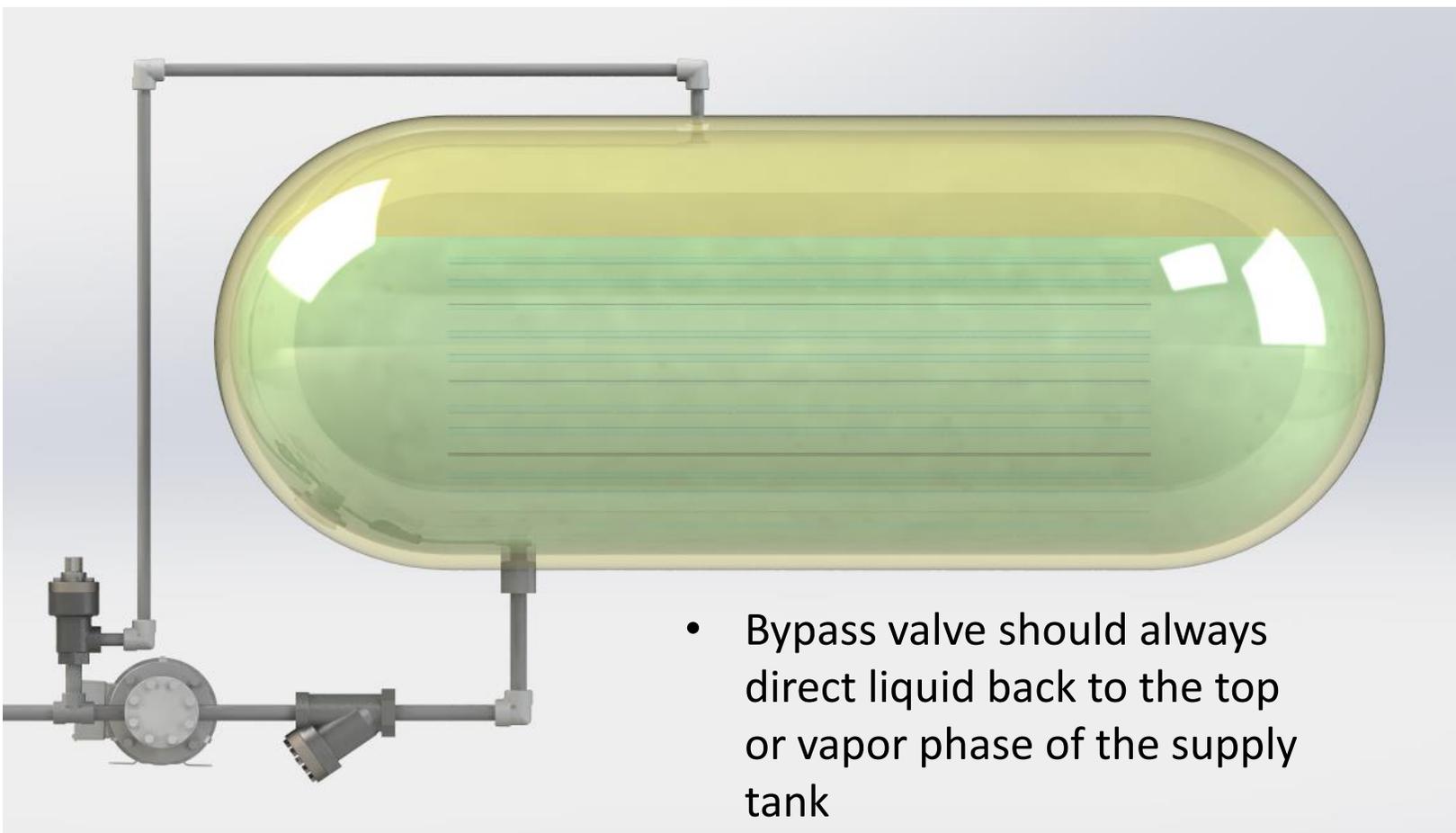
MODEL	SIZE (FNPT)	PUMP RECOMMENDED	FLOW
WW-120	½ X ½	SQ-1, SQ-H, MC-1, GC-1	2-10 GPM (8-38 LPM)
WW-340	¾ X ¾	SQ-HH, SQ-HH8	10-15 GPM (38-57 LPM)
WW-100	1 X 1	MC-1044, MC-1044H, TC-1044H	15-35 GPM (57-132 LPM)
WW-114	1- ¼ X 1- ¼	MC-2, MC-2H, MC-2Q, ATC-2R, ATC-2RH, ATC-2L, ATC-2LH, TC-2	35-50 GPM (132 – 189 LPM)
WW-112	1- ½ X 1- ½	MC-3, MC-3H, ATC-3R, ATC-3RH, ATC-3L, ATC-3LH, TC-3	50-100 GPM (189-379 LPM)
WW-200	2 X 2	MC-4, MC-4H	100-150 GPM (379- 568 LPM)
WW-212	2- ½ X 2- ½	MC-5, MC-5H	150-250 GPM (568 – 946 LPM)

WW-Series Dimension Table

MODEL	SIZE (FNPT inches)	A	B	C
WW-120 WW-340	½ X ½ ¾ X ¾	1 - 5/8" [42 mm]	5 - 7/16" [138 mm]	1 - ¾" [44 mm]
WW-100 WW-114 WW-112	1 X 1 1 - ¼ X 1 - ¼ 1 - ½ X 1 - ½	1 - 7/8" [48mm]	5 - 5/8" [143 mm]	2 - 5/8" [67 mm]
WW-200 WW-212	2 X 2 2 - ½ X 2 - ½	3" [76 mm]	6 - 1/8" [156 mm]	3 - ¼" [83 mm]



Typical Bypass Valve Installation

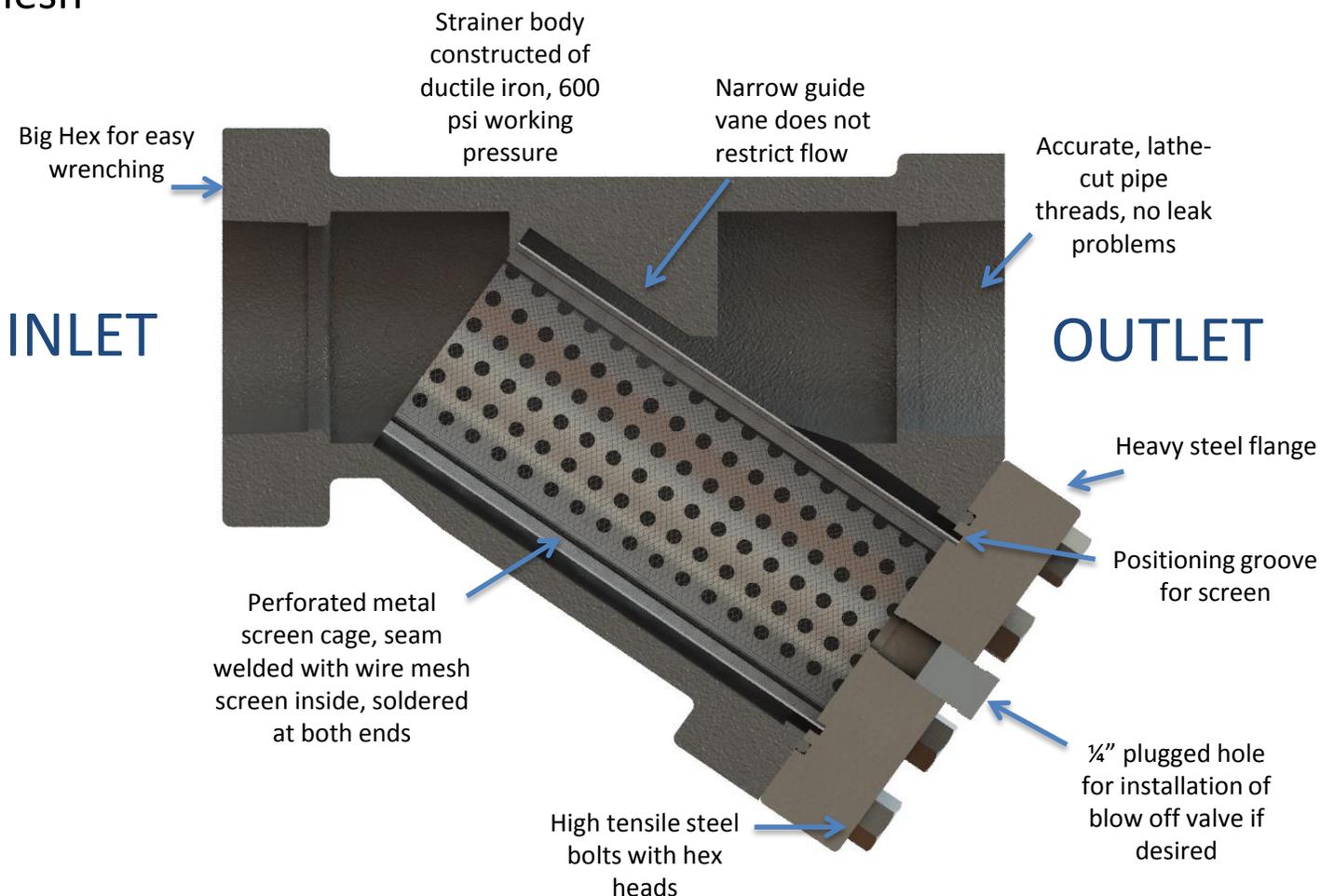


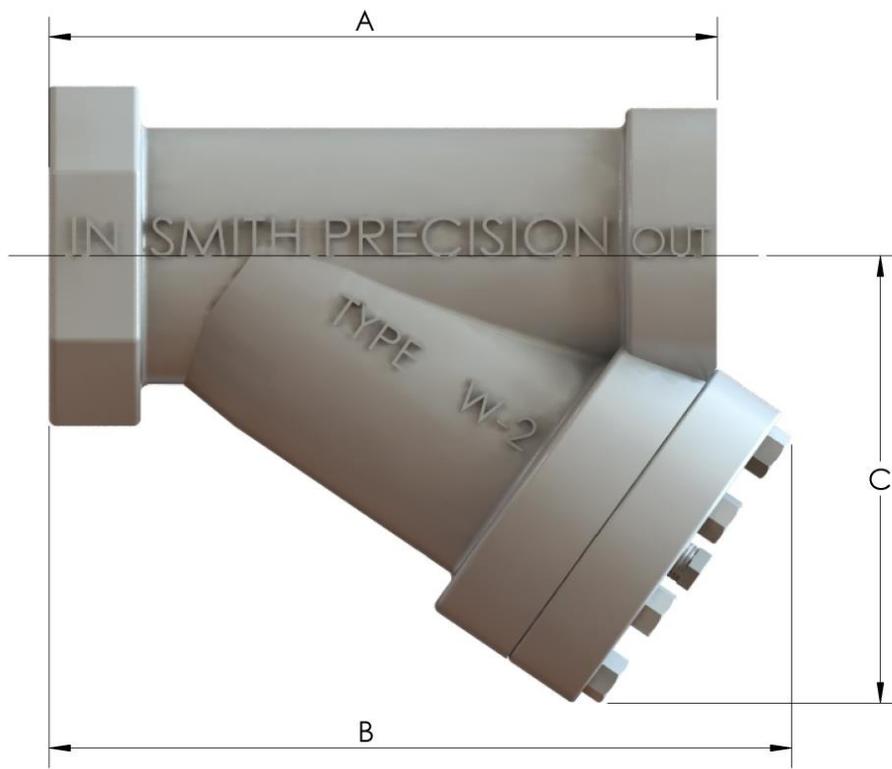
- Bypass valve should always direct liquid back to the top or vapor phase of the supply tank

Smith Y-Type Strainers



- Only strainer designed specifically for liquefied gases
- Oversized design allows for minimal pressure drop
- Removable screen provides ease of maintenance
- Ductile iron construction
- 600 psi (40 bar) working pressure
- 3/4" to 3" and combination sizes available
- Screens available in brass 40 mesh or 300- series stainless steel 80 mesh





MODEL*	INLET	OUTLET	A	B	C
W-1-034-034A	¾"	¾"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-1-100-034A	1"	¾"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-1-100-100A	1"	1"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-1-114-034A	1- ¼"	¾"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-1-114-100A	1- ¼"	1"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-1-114-114A	1- ¼"	1- ¼"	6- 3/8" [162mm]	7" [178 mm]	4- ½" [114 mm]
W-2-112-112A	1- ½"	1- ½"	8- 3/16" [208 mm]	9" [229 mm]	6-5/8" [169 mm]
W-2-200-112A	2"	1- ½"	8- 3/16" [208 mm]	9" [229 mm]	6-5/8" [169 mm]
W-2-200-200A	2"	2"	10- ¼" [260 mm]	11- ¼" [286 mm]	7- ½" [191 mm]
W-3-212-212A	2- ½"	2- ½"	10- ¼" [260 mm]	11- ¼" [286 mm]	7- ½" [191 mm]
W-3-300-212A	3"	2- ½"	10- ¼" [260 mm]	11- ¼" [286 mm]	7- ½" [191 mm]
W-3-300-300A	3"	3"	10- ¼" [260 mm]	11- ¼" [286 mm]	7- ½" [191 mm]

*For LCO2 service, we recommend our stainless steel 80 mesh screen denoted with the letter "A" at the end of the model number.

For other liquids such as LPG, we recommend our brass 40 mesh screen, which does not contain an "A" in the model number.

For inquiries about screen size/type of liquid, please contact our engineering department.

Smith Flexible Drive Couplings



- Machined in house to our own quality specifications
- High strength continuous-cast ferrous alloy
- Hardened steel set screw and drive pins
- High quality machining provides concentric bore diameters
- Balanced
- Flexible nitrile coupling insert (Teflon available for heavy duty applications)

HP OF MOTOR	RPM	RECOMMENDED COUPLING MODEL	HP OF MOTOR	RPM	RECOMMENDED COUPLING MODEL
¼ TO 1 [0.18-0.75 kW]	1800	**VC-20 (FOR MC-1, GC-1 PUMPS); **VC-30 (FOR SQ-1, SQ-H, SQ-HH PUMPS)	5 [3.7 kW]	1800	VC-40
	1200			VC-40	
	900			VC-50	
1- ½ [1.1 kW]	1800	VC-30	7- ½ [5.6 kW]	1800	VC-40
	1200	VC-35		1200	VC-50
	900	VC-35		900	VC-50
2 [1.9 kW]	1800	VC-35	10 [7.5 kW]	1800	VC-50
	1200	VC-35		1200	VC-50
	900	VC-40		900	VC-50
3 [2.2 kW]	1800	VC-35	15 [11.2 kW]	1800	VC-50
	1200	VC-40		1200	VC-50
	900	VC-40		900	VC-50
			20 [14.9 kW]	1800	VC-50

When ordering a coupling, specify pump model, diameter of motor shaft, and HP & RPM of motor. For a Teflon insert, add the letter "T" to the end of the model number

Smith Pump Performance Formula

The Smith pump performance formula is the same formula used when deriving pump performance curves. The performance formula, however, gives a very accurate representation of pump characteristics, such as taking temperature into account. Since proper installation has a very important bearing on performance of a positive displacement pump, our engineering department will gladly review a proposed piping layout. Supply us with a complete drawing or detailed sketch showing size/length of inlet and outlet lines, including any elbows, valves, tees, etc. The more information provided, the better we are able to recommend the best piping installation possible.

Formula 1: $Q_d = Q_r \left[\frac{N_d}{N_r} - F_s P_d \right]$

Formula 2: $HP = \left[\frac{8.5 (N_d)(Q_r)}{N_r} \times 10^{-4} \right] \times [10 + P_d]$

Not a math person? Visit our pump performance calculator on our website for quick and easy calculations

- Q_d = Actual Pump Flow Rate (GPM)
- Q_r = Rated Flow Rate (GPM)
- P_d = Differential Pressure being pumped against (psi)
- HP = Horsepower Required
- N_d = Actual Drive Speed of Pump Shaft (RPM)
- N_r = Rated Speed of Pump found in Table A
- F_s = Slippage Factor, a temperature dependent viscosity variable found in Table B

- Note actual pump output may be 5-10% greater than predicted value, Q_d
- For liquids between 1 – 120 cP viscosity, assume slippage factor to be 0.
- For liquids greater than 120 cP, please contact our engineering department
- For other liquids between 0 – 1 cP besides those listed in TABLE B, see our slippage factor graph on our website or contact us direct
- For pumps operating over 2 hours continuously, the motor shaft speed must be reduced to speeds between 750-1200 RPM and our NSSA option must be specified
- Pumps using our medium sized gear option will increase the flow rate by 10%, large gears by 20%

TABLE A: Rated Transfer Capacities

Model	Rated Flow Rate (Q_r , GPM)	Rated Shaft Speed (N_r , RPM)
SQ-1, MC-1, GC-1	5	1800
SQ-H	7	1800
SQ-HH	13	1800
SQ-HH8	13	1200
MC-1044	20	1800
MC-1044H	35	1800
MC-2, MC-2F, ATC-2L, ATC-2R	50	1800
MC-2H, MC-2HF, ATC-2LH, ATC-2RH	50	1500
MC-3, MC-3F, ATC-3L, ATC-3R	100	1800
MC-3H, MC-3HF, ATC-3LH, ATC-3RH	100	1500
MC-4, MC-4F	150	1800
MC-4H, MC-4HF	150	1500
MC-5, MC-5F	200	1800
MC-5H, MC-5HF	200	1500

TABLE B: Slippage Factor, F_s

	+100°F [+38°C]	+80°F [+27°C]	+60°F [16°C]	+40°F [4°C]	+20°F [-7°C]	0°F [-18°C]	-20°F [-29°C]	-40°F [-40°C]
Carbon Dioxide					0.0036	0.0032	0.0028	.0024
Anhydrous Ammonia	0.0049	0.0045	0.0042	0.0038	0.0033	0.0030	0.0026	
Propane	0.0033	0.0032	0.0031	0.0028				
Butane	0.0042	0.0040	0.0038	0.0036	0.0034	0.0033	0.0032	

Smith Exchange Pump Program

For many pump owners that do not want to remove the pump from service for repairs, order an exchange pump. Once received, install the exchange pump and send the old pump back to us for a generous credit. All exchange pumps are backed by the same warranty provided for new pumps.

The exchange program also applies to the mechanical seal. By returning the old shaft seal assembly, you will receive a credit, that can be applied towards future exchange shaft seal assemblies. It's that simple.

Literature

For more information regarding our products, please call our sales or engineering department or visit our website at smithpumps.com.

Distributors

To find your local distributor, please contact us for more information.



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