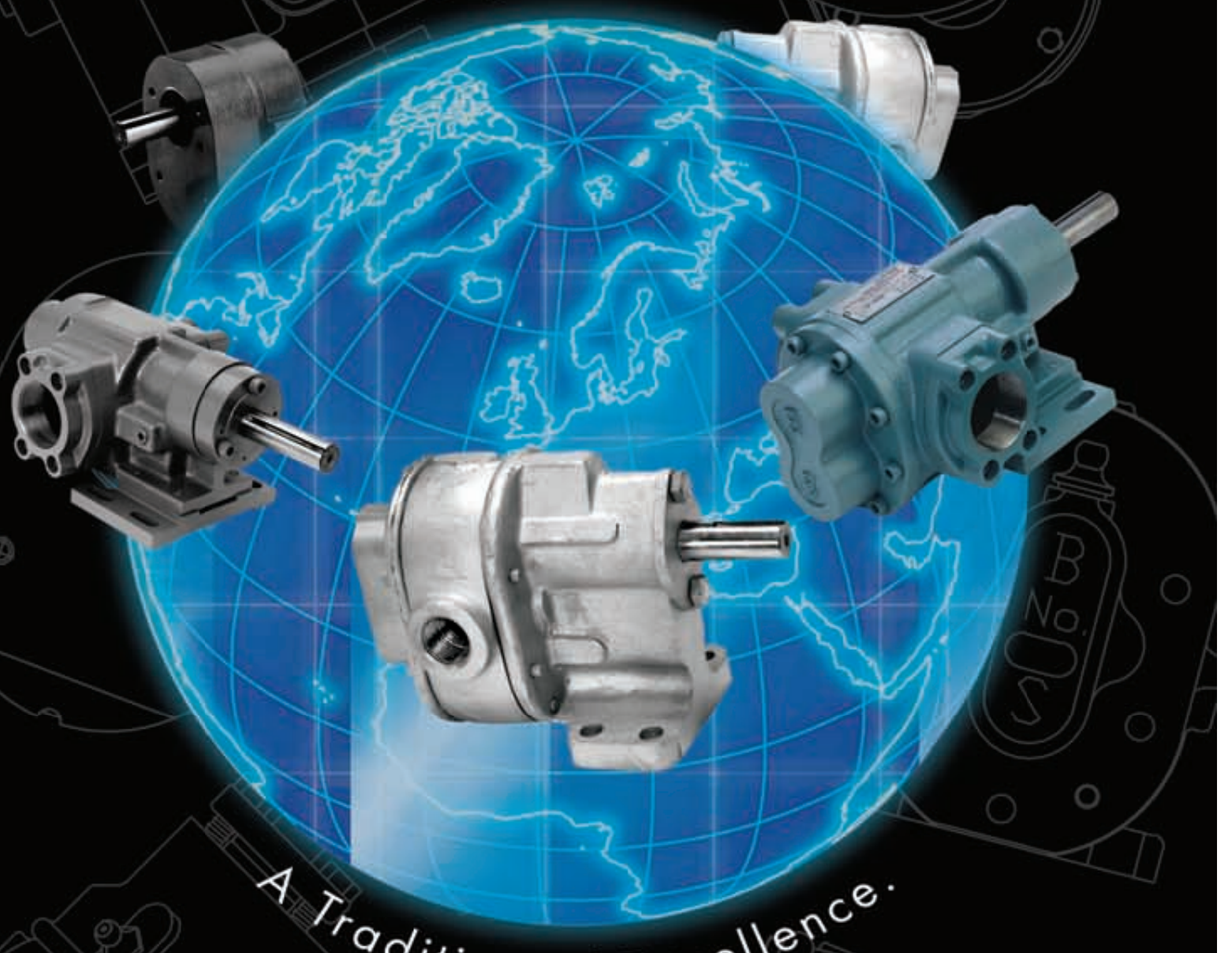
BSM Pump Corporation



A Tradition of Excellence.

BSM Pump Corporation

180 Frenchtown Road
North Kingstown, RI 02852
Ph: 800-283-3600
Fax: 401-886-2446

Quality Pumps Since 1883

PUMP SELECTION GUIDE

Pump Model No.	Max RPM	Flow@Zero PSI Max RPM	Max PSI	Port Size Inches	Mtg. Options	Integral Relief Valve	Seal Options	Bearing Options	Drive Options
00 Series Pgs. 1.1 - 1.5									
0	1800	0.5	300	0.375	Ft or Flg Mtg	No	3	Plain	A
B Series Pgs. 2.1 - 2.8									
1	900	4.6	200	0.375	Ft or Flg Mtg	Yes	1, 2, 3	Sleeve	A, D, GR, B
2	"	9.4	"	0.500	"	"	"	(Iron, Bronze, Carbon Graphite)	"
3	"	17.1	"	0.750	"	"	"	or	"
4	"	26.8	100	1.250	"	"	"	Anti Friction	"
S Series Pgs. 3.1 - 4.9									
1s	1800	4.5	200	0.375	Ft or Flg Mtg	Yes	1, 2, 3	Sleeve	E, A, D, GR, B
2s	"	9.0	"	0.500	"	"	"	Iron, Bronze, Carbon Graphite	"
3s	"	16.2	"	0.750	"	"	"	or	"
4s	"	23.2	"	1.000	"	"	"	Anti Friction	"
5s	"	32.0	"	1.250	"	"	"	"	"
6s	1200	41.2	300	2.000	Ft Mtd	No	"	"	D, GR, B
8s	"	63.9	"	3.000	"	"	"	"	"
10s	"	90.6	"	"	"	"	"	"	"
12s	"	128.8	"	4.000	"	"	"	"	"
14s	900	175.1	"	"	"	"	"	"	"
53/55 Series Pgs. 5.1 - 5.7									
53	1800	23.2	200	1.0 / .75	Ft or Flg Mtg	No	1, 2, 3	Ball Brg	A, D, GR, B
55	"	51.4	200	1.25 / 1.0	"	"	"	"	"
500 Series Pgs. 6.1 - 6.16									
507	1800	7.6	1000	0.750	Ft or Flg Mtg	Yes	1, 2, 3	Anti Friction	E, A, D, GR, B
511	"	11.1	"	"	"	"	"	or	"
517	1200	12.0	500	1.000	"	"	"	Iron, Bronze, Carbon Steel	"
525	"	17.0	"	"	"	"	"	Sleeve	"
537	"	24.5	"	1.500	"	"	"	"	"
547	"	31.1	"	"	"	"	"	"	"
557	"	37.5	"	"	"	"	"	"	"
567	"	56.4	"	2.000	"	"	"	"	"
700 Series Pgs. 7.1 - 7.8									
705	1800	0.5	2000	0.375	Ft or Flg Mtg	No	3	Anti Friction	A
710	"	1.0	"	"	"	"	"	or	"
715	"	1.5	"	"	"	"	"	Sleeve	"
720	"	2.0	"	"	"	"	"	Iron, Bronze, Carbon Graphite	"
730	"	3.0	1500	"	"	"	"	"	"
740	"	4.0	1250	"	"	"	"	"	"
750	"	5.0	1000	"	"	"	"	"	"
Seal Options: 1 = Packing, 2 = Mechanical Seal, 3 = Lip Seal									
Drive Options: A = Flange mounted pump connected to a C-Face motor by means of a flexible coupling and adapter bracket									
E = Flange mounted pump close coupled to endbell of motor									
D = Foot mounted pump coupled to motor mounted on a baseplate									
GR = Pump and motor coupled to a gear reducer									
B = Foot mounted pump connected to motor with v-belt and pulleys mounted on baseplate									
Mounting Options: Ft Mtd = Foot Mounted, Flg Mtd = Flange Mounted									

PUMP SELECTION GUIDE

Pump Model No.	Max RPM	Flow@Zero PSI Max RPM	Max PSI	Port Size Inches	Mtg. Options	Integral Relief Valve	Seal Options	Bearing Options	Drive Options
Stainless Steel Pumps Pgs. 9.1 - 9.12									
1 SST	1800	4.5	100	0.375	Ft or Flg Mtd	Yes	1, 2, 3	Sleeve	E, A, D, GR, B
2 SST	"	9.0	"	0.500	"	"	"	Carbon Graphite	"
3 SST	"	16.2	"	0.750	"	"	"	"	"
4 SST	"	23.2	"	1.000	"	"	"	"	"
5 SST	"	32.0	"	1.250	"	"	"	"	"
Bronze Pumps Pgs. 8.1 - 8.8									
21	900	4.6	100	0.375	Ft or Flg Mtd	Yes	1, 2, 3	Plain or	A, D, GR, B
22	"	9.4	"	0.500	"	"	"	Carbon Graphite	"
23	"	17.1	"	0.750	"	"	"	"	"
24	"	26.8	"	1.250	"	"	"	"	"
Automatic Reversing Gear Pumps Pgs. 10.1 - 10.6									
11	900	4.6	200	0.375	Ft Mtd	No	1	Sleeve	D, GR, B
12	"	9.4	"	0.500	"	"	"	Iron, Bronze, or	"
13	"	17.1	"	0.750	"	"	"	Graphite	"
Automatic Reversing Vane Pumps Pgs. 11.1 - 11.5									
8	1140	2.7	50	0.250	Ft Mtd	No	1	Plain	D
8021	"	2.5	100	0.375	Ft Mtd	"	"	Sleeve	D
8022	"	"	"	NA	Without Stand	"	No Seal	Carbon Graphite	Internal
8023	"	"	"	"	Without Housing	"	"	"	"
8061	"	5.2	"	0.500	Ft Mtd	"	1	"	D
8062	"	"	"	NA	Without Stand	"	No Seal	"	Internal
8063	"	"	"	"	Without Housing	"	"	"	"
8101	"	11.3	"	0.750	Ft Mtd	"	1	"	D
8102	"	"	"	NA	Without Stand	"	No Seal	"	Internal
8103	"	"	"	"	Without Housing	"	"	"	"
Centrifugal Pumps Pgs. 12.1 - 12.10									
205	1725	21.5	5	0.750	Submersible	No	No Seal	Factory Lubricated	Pump & Motor
206	"	"	"	"	"	"	"	Motor Bearing	Integral
207	"	"	"	"	"	"	"	"	"
208	"	36.5	7	1.000	"	"	"	"	"
212	"	80.0	10	1.500	"	"	"	"	"
220	"	20.5	5	1.000	Ft Mtd	"	2	"	"
225	"	80.0	10	1.250	"	"	"	"	"
240	"	20.5	5	2.000	Flg Mtd	"	"	"	"
245	1725	80.0	10	2.000	"	"	2	"	"
2515	3450	21.0	6	0.500	Submersible	"	No Seal	"	"
2518	"	"	"	"	"	"	"	"	"
2519	"	"	"	"	"	"	"	"	"
2525	"	"	"	"	"	"	"	"	"
2528	"	"	"	"	"	"	"	"	"
2529	"	"	"	"	"	"	"	"	"
2535	"	"	"	"	Flg Mtd	"	"	"	"
2538	"	"	"	"	"	"	"	"	"
2539	"	"	"	"	"	"	"	"	"
2545	"	"	"	"	"	"	"	"	"
2548	"	"	"	"	"	"	"	"	"
2549	"	"	"	"	"	"	"	"	"
2555	"	"	"	"	"	"	"	"	"
2558	"	"	"	"	"	"	"	"	"
2559	"	"	"	"	"	"	"	"	"

Seal Options: 1 = Packing, 2 = Mechanical Seal, 3 = Lip Seal

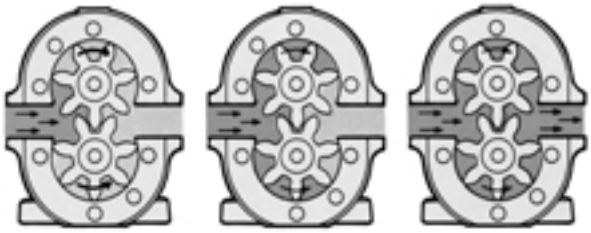
Drive Options: A = Flange mounted pump connected to a C-Face motor by means of a flexible coupling and adapter bracket
E = Flange mounted pump close coupled to endbell of motor
D = Foot mounted pump coupled to motor mounted on a baseplate
GR = Pump and motor coupled to a gear reducer
B = Foot mounted pump connected to motor with v-belt and pulleys mounted on baseplate

Mounting Options: Ft Mtd = Foot Mounted, Flg Mtd = Flange Mounted

BSM ROTARY GEAR PUMPS

PRINCIPLE OF OPERATION

BSM Rotary Gear Pumps are of the positive fixed displacement external gear type. As the gear teeth unmesh, a vacuum is created at the intake side of the pump which induces liquid into the spaces between the gear teeth. The liquid is then carried between the teeth and the pump housing to the discharge port where it is forced into the discharge line. Casings are fitted to the sides and diameters of the gears to hold slip within practical limits even at relatively high pressures.



THREE REASONS WHY THERE'S A BSM GEAR PUMP TO MEET YOUR APPLICATION — WHATEVER IT IS!

1. EACH PUMP IS AVAILABLE IN SEVERAL MODELS.

This provides the capacity you need over a wide range of operating conditions. Once you've chosen the pump, it will perform efficiently and dependably over the long term even if the operating conditions should change somewhat.

2. THREE GEAR PUMPS TO MEET MORE SPECIFIC REQUIREMENTS.

Meeting a new application is as easy as shifting gears. BSM offers three gear types — spur, helical and herringbone — to provide the capability to handle a wide range of liquid handling tasks.

Spur Gears

Rugged and accurately cut, making the spur gear pump a favorite in machine hydraulic drives, lubrication and coolant applications as well as in many other industries, including textile, printing and plastic.

Helical Gears

Provide very smooth and quiet operation at direct motor speeds in hydraulic, lubrication and transfer applications, in oil field and treater plant service as well as almost every other industry classification.

Herringbone Gears

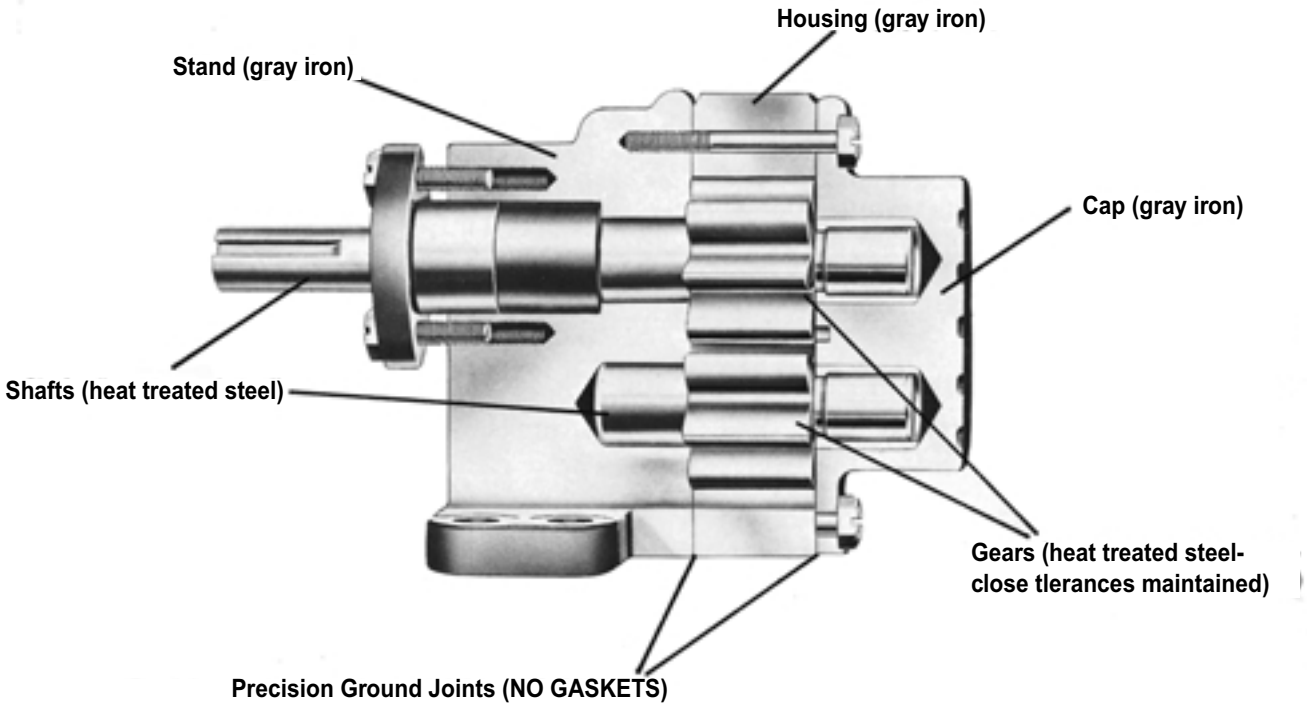
For high volume work, herringbone gears run efficiently and quietly, with no gear tooth end thrust, in high volume transfer, high pressure hydraulic service, pipe line and oil field service, and many others.

3. THE FULL LINE: STANDARD PUMPS TO MEET SPECIAL APPLICATIONS.

Including motor driven units, compact and self-contained; Automatic reversing pumps, for constant liquid flow regardless of direction of rotation of the driving shaft; bronze and stainless steel pumps for handling corrosive materials.

RUGGED CONSTRUCTION
Maintains Precision Performance

The finest materials combined with precise construction and careful assembly ensure that your BSM gear pumps will provide long-term dependable service.

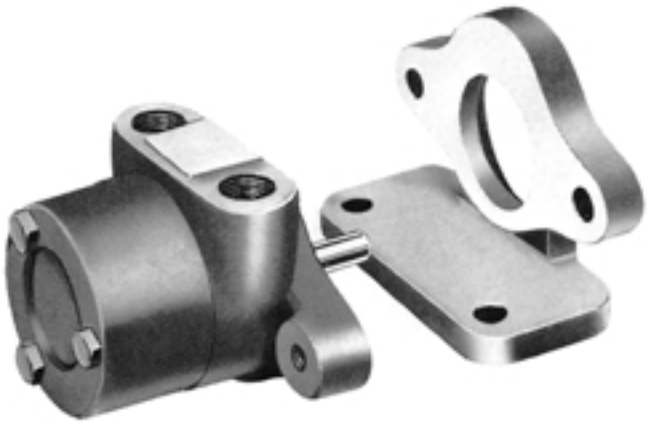


Precision Ground Joints — NO GASKETS — perhaps the biggest advantage of BSM pumps. Because gaskets are not used, original tolerances are maintained for consistent performance, and the time once lost in halting operations to replace a worn gasket is now saved.

Bearings — The Heart of the pump. Sleeve type and plain bearings are especially adapted to maintain even gear and shaft rotation for normal pump service. Anti-friction bearings minimize friction and provide higher load ratings for medium to high pressure service. Anti-friction and sleeve type bearings are replaceable.

Seals — Compression packing and mechanical seals provide an ample safeguard against liquid leakage and the entrance of air. Lip type seals are furnished for those applications involving a wide variety of liquids. Mechanical seals are easily replaceable.

00-SERIES



The 00-Series pump is ideally suited for low volume applications such as pressure lubrication, hydraulic service, fuel supply, and general liquid transfer.

Design: Drive speeds to 1800 rpm; discharge pressures to 300 psi; flow rate to .5 gpm; foot or flange mounted.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron.

Bearings: Plain.

Seal: Lip Seal.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Clockwise or counter-clockwise. Discharge is on the side of the pump opposite that toward which the shaft rotates.

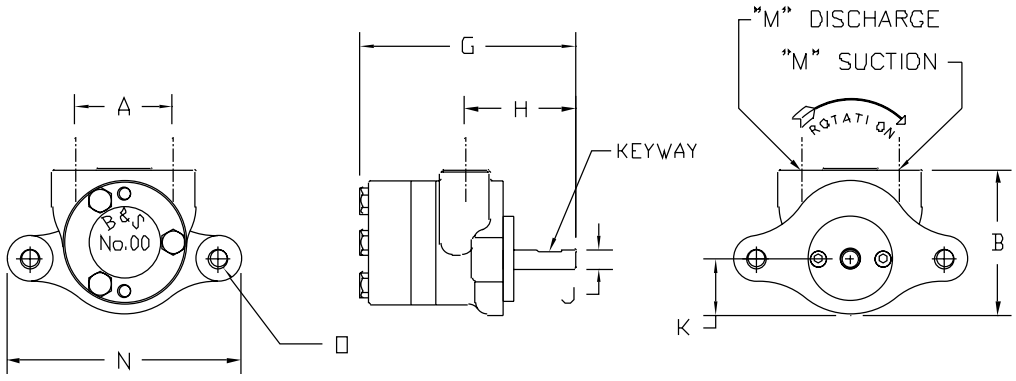
Liquid Viscosities: 32 ssu to 1750 ssu. Clean liquids having good lubricating qualities. Adaptable for handling liquids of higher or lower viscosities.

Suction Lift: Up to 28" Hg / 31 feet depending on the type of liquid being pumped.

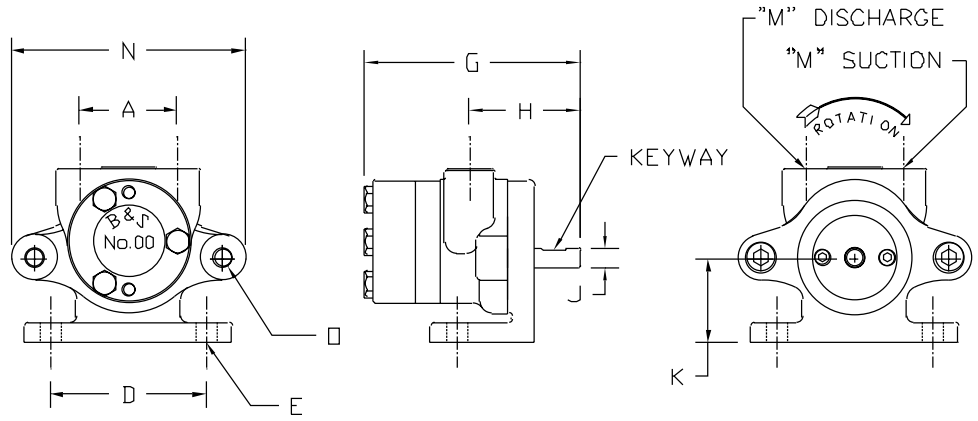
Drive Options: A-Drive (pump connected to c-face motor with adapter bracket and coupling); D-Drive (pump coupled to motor mounted on baseplate).

Accessories: Repair Kits; Gear Sets; and Seal Kits. Refer to Section 13.

DIMENSIONAL DATA 00-SERIES



PUMP ONLY



PUMP WITH FOOT ATTACHED

DIMENSIONS (INCHES)

Model	A	D	E	G	J	K	M	O	Keyway
00	1.888	3.00	.41	4.19	.38	1.63	.375	3/8-16	Flat

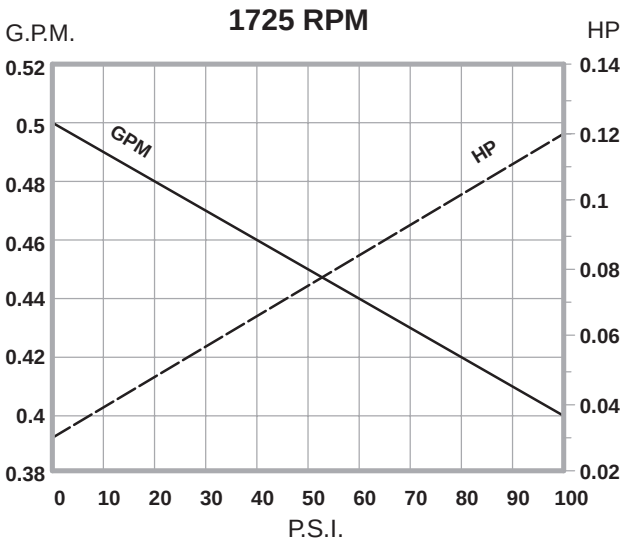
OPERATING CHARACTERISTICS

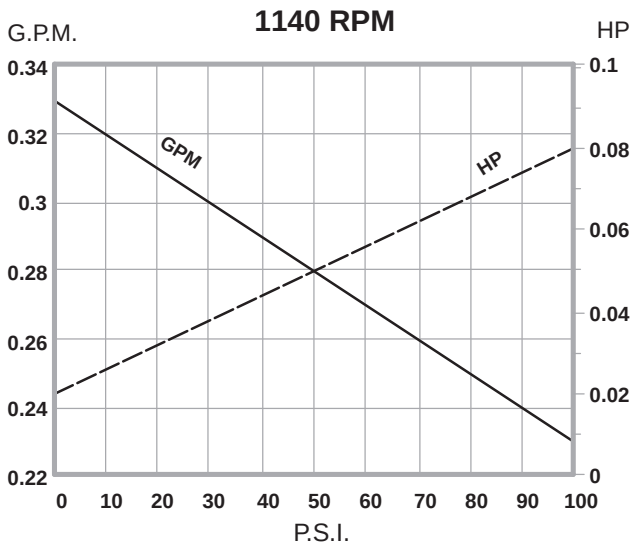
Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi		50 psi		100 psi		200 psi		300 psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
00	.00029	.0003	1140	.33	.013	.31	.036	.30	.062	.27	.110	.24	.159
			1725	.50	.020	.48	.056	.47	.093	.44	.165	.41	.238

***Delivery and input horsepower are based on liquid viscosity of 300 ssu at speed and pressures shown.**

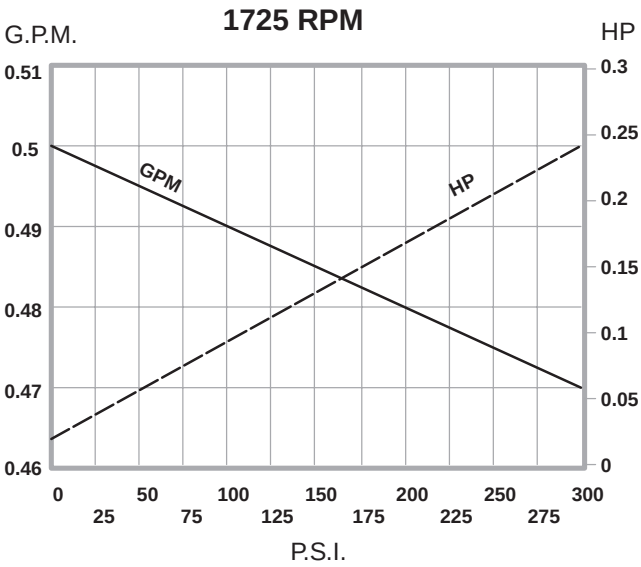
00-SERIES

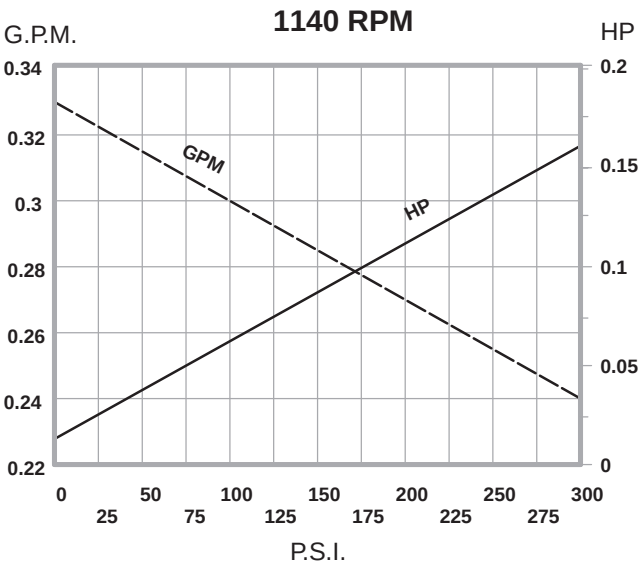
OPERATING CHARACTERISTICS, 32 SSU LIQUID





OPERATING CHARACTERISTICS, 300 SSU LIQUID



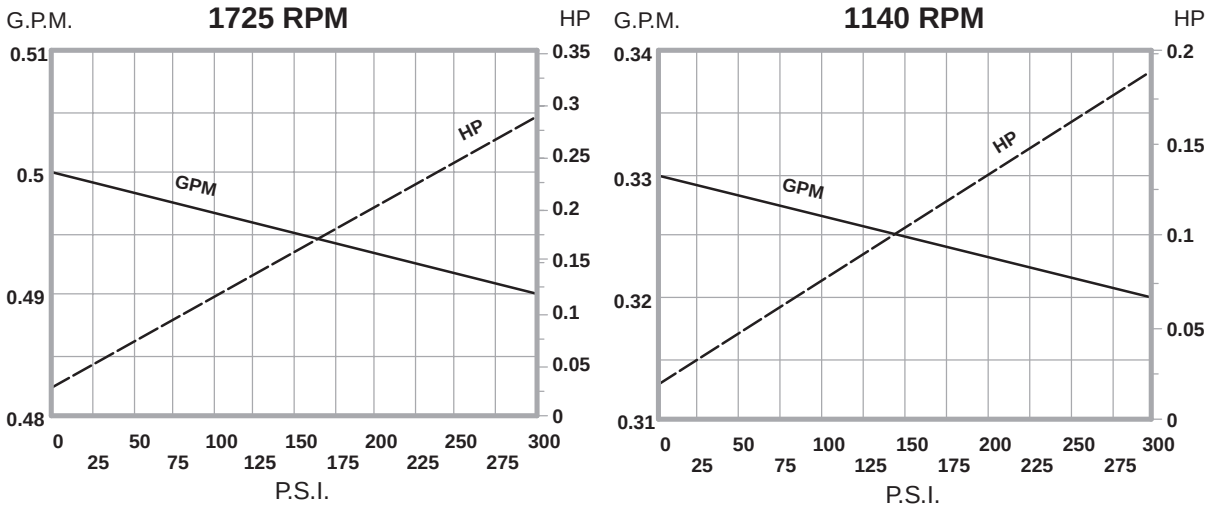


SOLID LINE = GPM

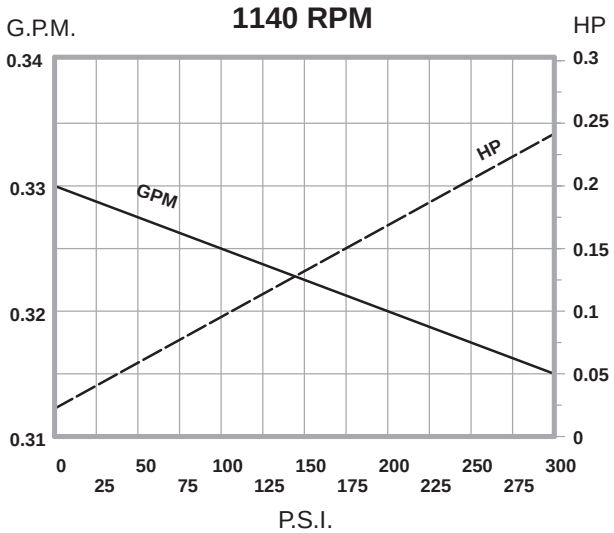
BROKEN LINE = HP

00-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



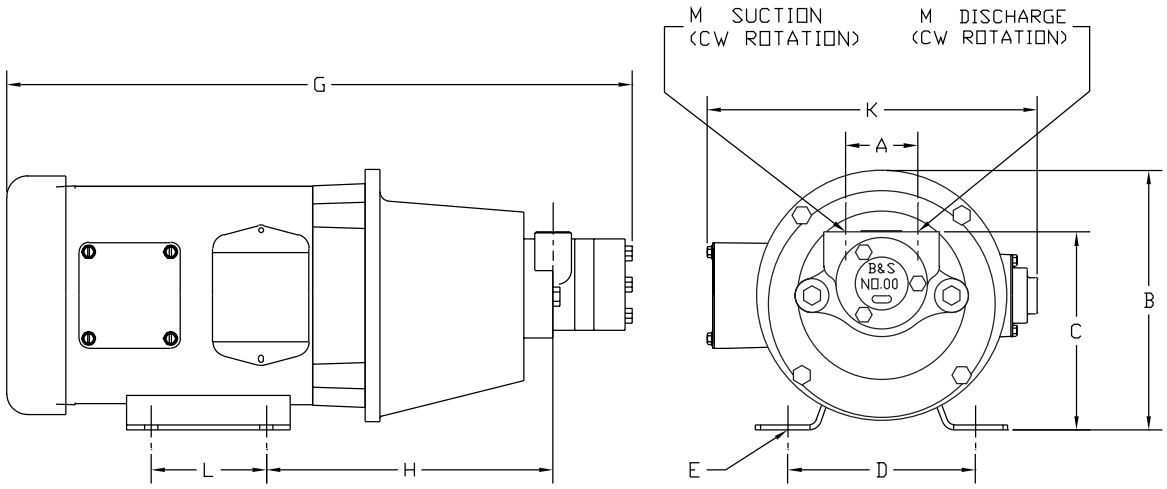
OPERATING CHARACTERISTICS, 1,750 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

00-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

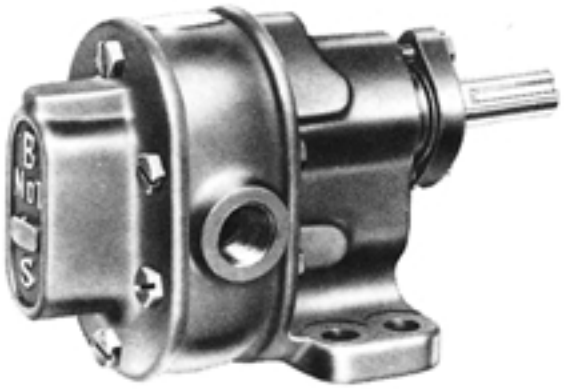
BSM 00-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM 00-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140, 1725 rpm with capacities to 0.5 gpm and pressures to 300 psi.



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
00-A	42C	1.88	4.94	4.06	3.50	0.28	13.13	5.38	4.63	1.69	3/8
	56C	1.88	7.09	5.16	4.88	0.34	18.13	7.44	8.81	3.00	3/8

B-SERIES



FT. MTD. PUMP

B-Series pumps are a good choice for a variety of recirculating, mixing, and transfer applications. Typical pumped liquids include solvents, resins, and petroleum products. These pumps are well suited for light, medium, and intermittent service.

Design: Drive speeds to 900 rpm; discharge pressures to 200 psi; flow rate to 26.8 gpm; foot or flange mounted; with or without integral relief valve.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron and Carbon Steel.

Bearings: Replaceable iron sleeve bearings. Also available with carbon graphite or bronze bearings.

Seal: Compression packing with adjustable gland. Also available with self adjusting mechanical seal or lip seal. Mechanical seal and lip seals available with different elastomers.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Pumps may be operated in either direction. Discharge is always on the side of the pump toward which the top of the shaft rotates.

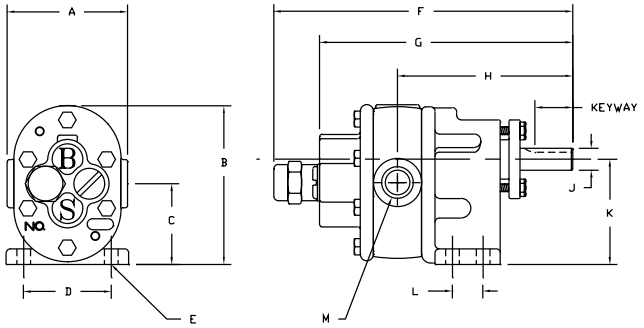
Liquid Viscosities: 32 ssu to 100,000 ssu. Adaptable for handling liquids from water soluble to molten lead.

Suction Lift: Up to 28 Hg / 31 feet depending on the type of liquid being pumped.

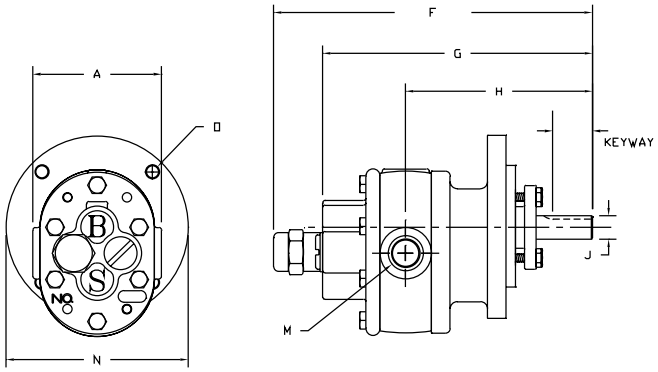
Drive Options: A-Drive (pump connected to c-face motor with adapter bracket and coupling); D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; Bearing Kits; and Seal Kits. Refer Section 13.

DIMENSIONAL DATA B-SERIES



FT. MTD. PUMP



FLG. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	F	G	H	J	K	L	M	O	Keyway
1	3.00	3.69	1.78	2.00	0.39	7.50	6.25	4.56	0.56	2.38	0.75	3/8	3/8-16	1/8 x 1/16
2	3.44	4.53	2.31	2.50	0.39	8.47	7.22	5.00	0.63	3.00	0.88	1/2	3/8-16	3/16 x 3/32
3	4.44	5.72	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	3/4	3/8-16	3/16 x 3/32
4	4.44	5.81	2.88	3.00	0.45	11.50	9.88	6.69	0.75	3.88	1.25	1 1/4	3/8-16	3/16 x 3/32

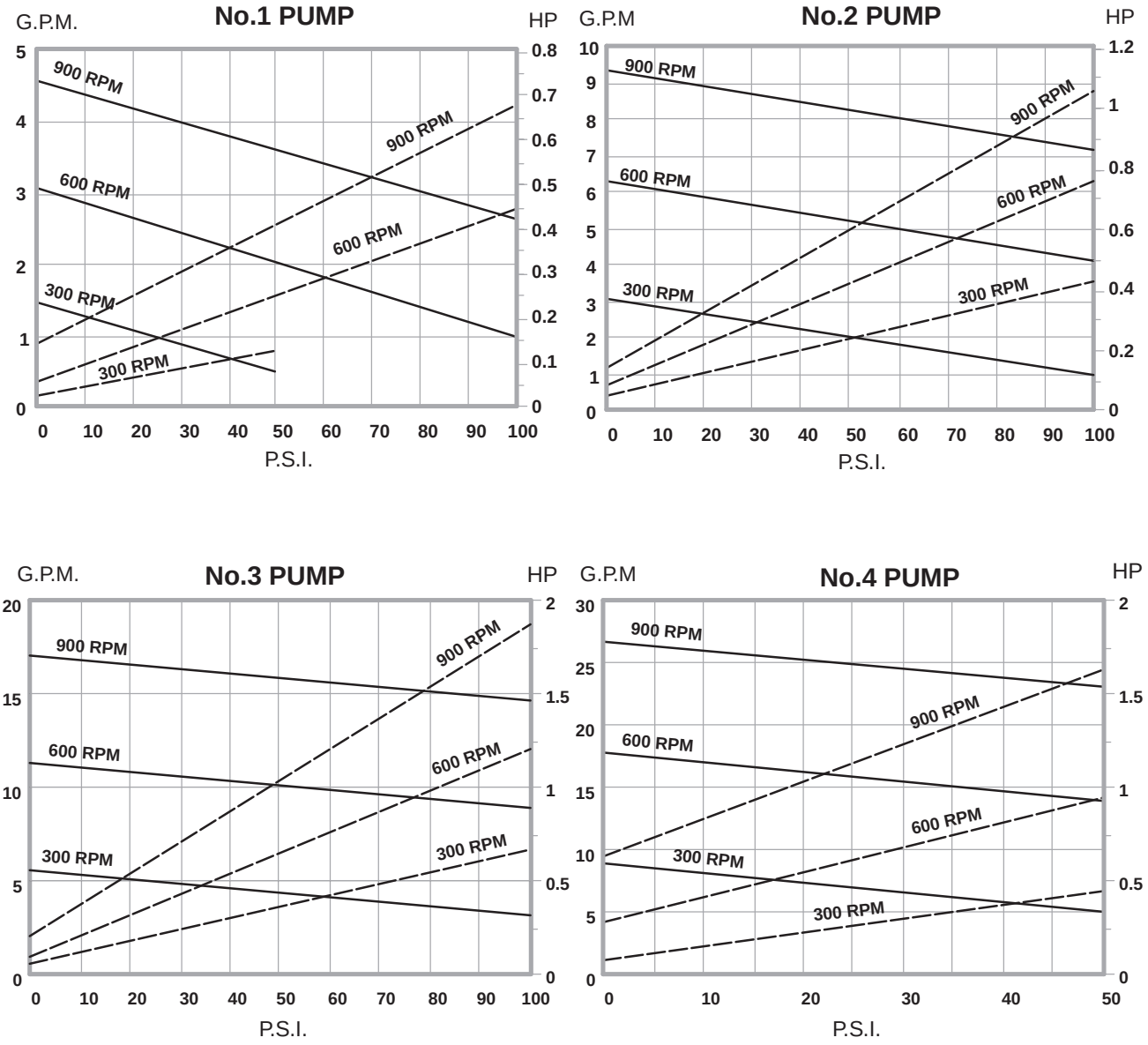
OPERATING CHARACTERISTICS

Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi		50 psi		75 psi		100 psi		200 psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
1	.00515	.0022	300	1.5	.02	1.4	.10	1.38	.14	1.3	.18	1.1	.34
			600	3.1	.05	3.0	.20	2.93	.28	2.9	.36	2.7	.66
			900	4.6	.11	4.5	.33	4.47	.35	4.4	.54	4.2	.98
2	.01043	.0023	300	3.1	.04	3.0	.19	2.95	.26	2.9	.34	2.7	.64
			600	6.3	.07	6.1	.34	6.1	.47	6.0	.61	5.8	1.1
			900	9.4	.11	9.3	.48	9.2	.66	9.1	.85	8.9	1.5
3	.01896	.0025	300	5.7	.05	5.6	.28	5.5	.41	5.4	.54	5.2	1.1
			600	11.4	.06	11.3	.47	11.2	.71	11.1	.97	10.9	2.1
			900	17.1	.17	17.0	.83	16.8	1.2	16.8	1.5	16.5	3.2
4	.02980	.0080	300	8.9	.07	8.5	.37	8.3	.57	8.1	.80	--	--
			600	17.9	.22	17.5	.77	17.3	1.1	17.1	1.4	--	--
			900	26.8	.50	26.4	1.3	26.2	1.7	26.0	2.3	--	--

*Delivery and input horsepower are based on liquid viscosity of 300 ssu at speed and pressures shown.

B-SERIES

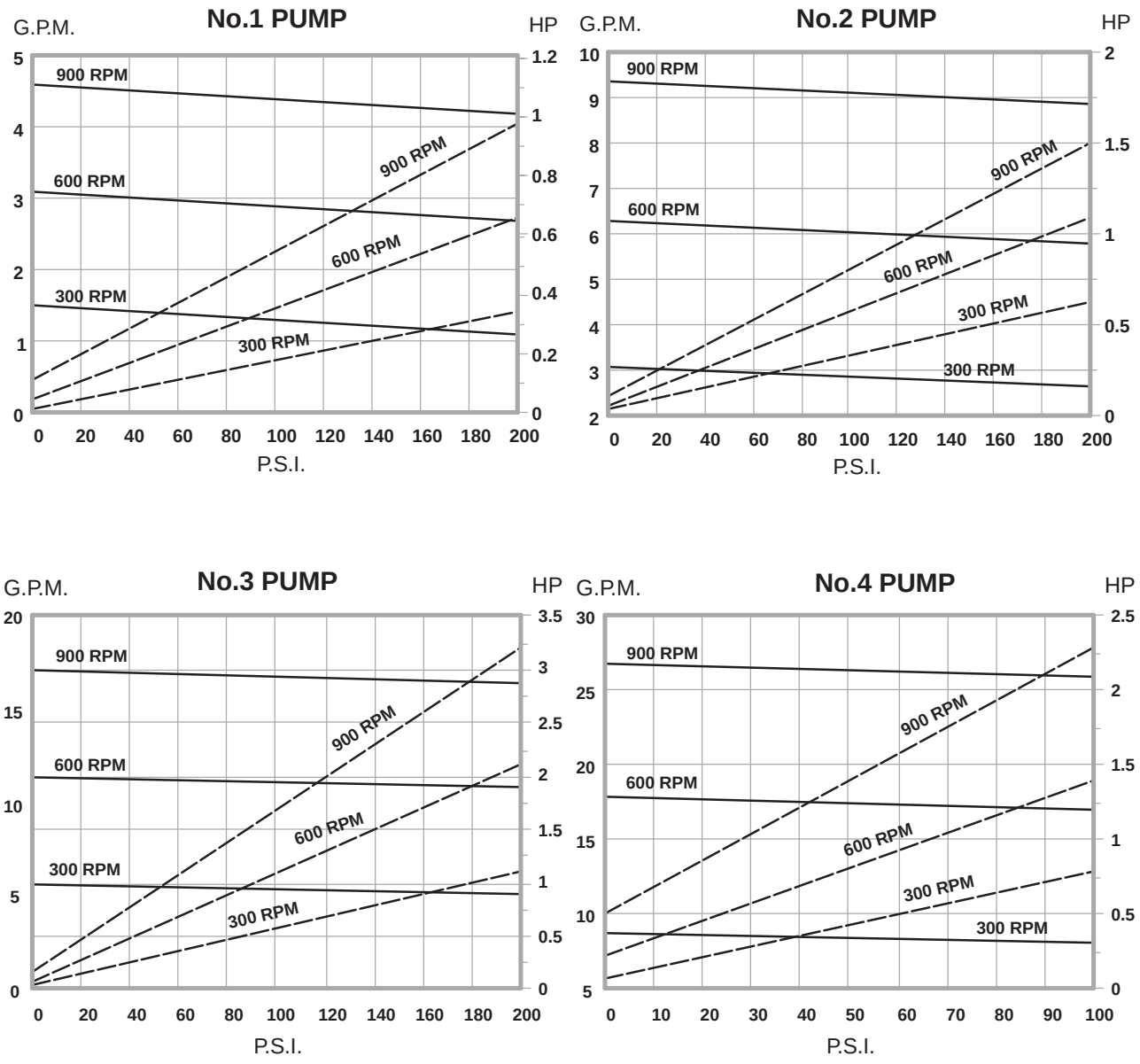
OPERATING CHARACTERISTICS, 32 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

B-SERIES

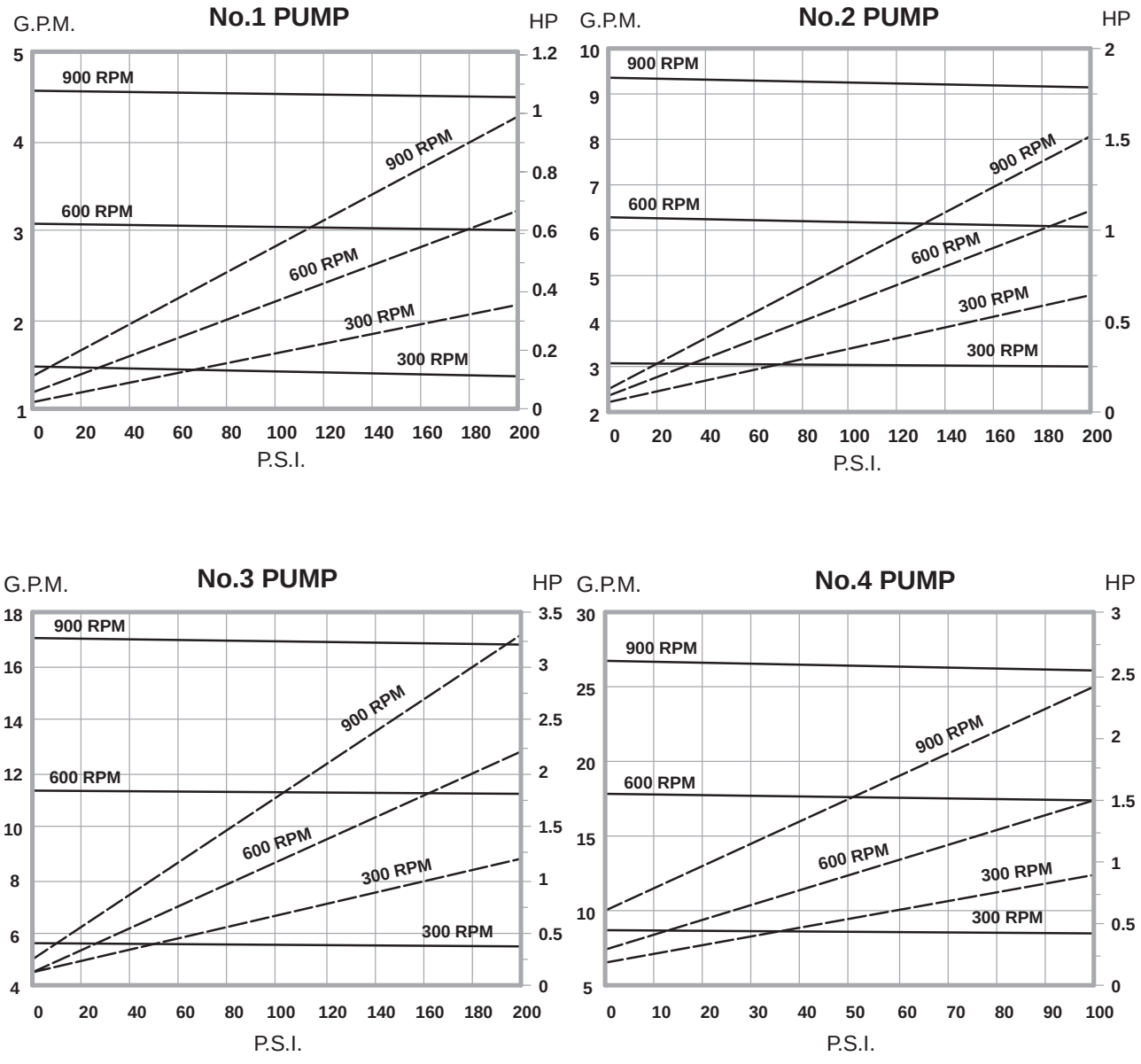
OPERATING CHARACTERISTICS, 300 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

B-SERIES

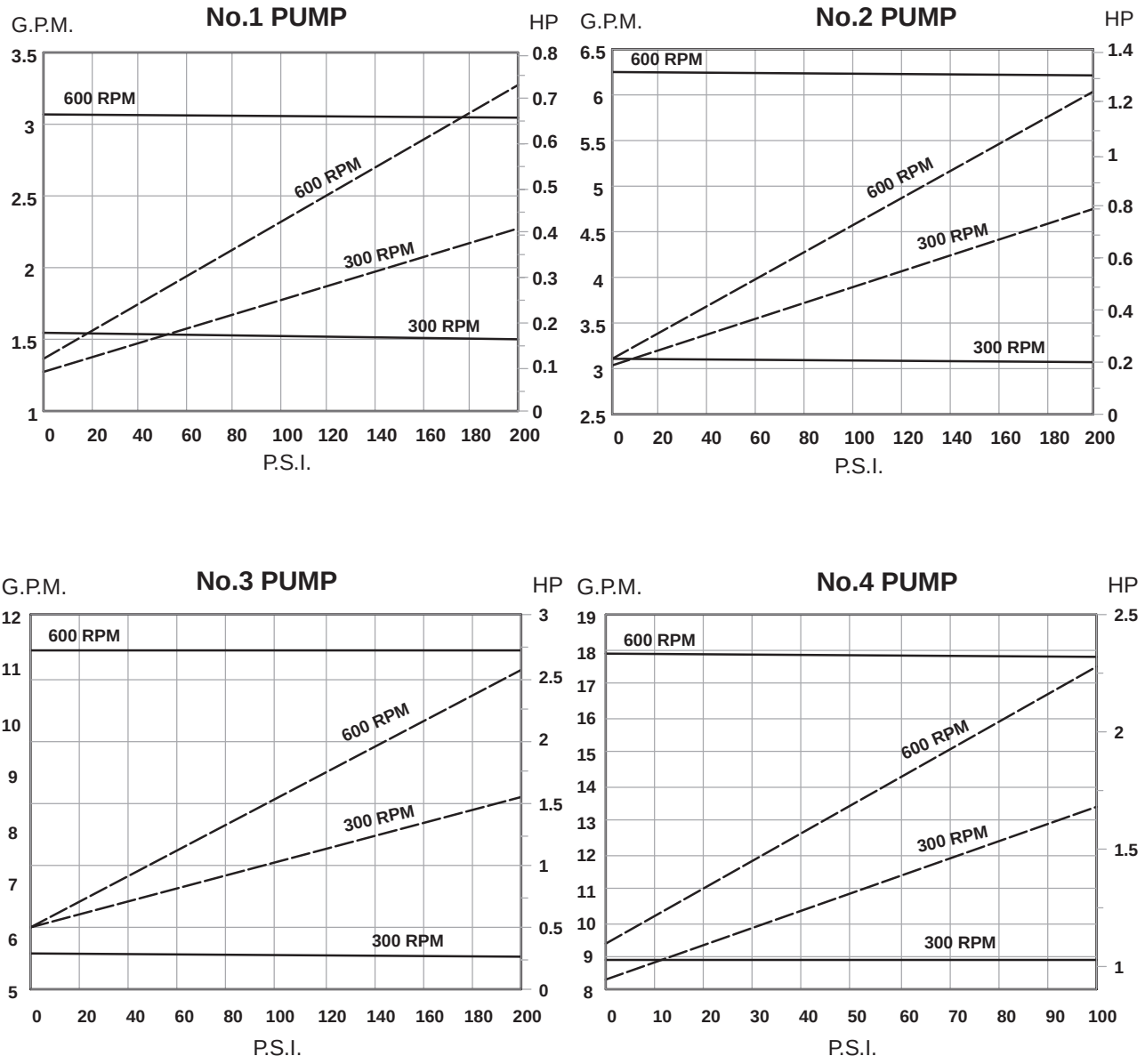
OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

B-SERIES

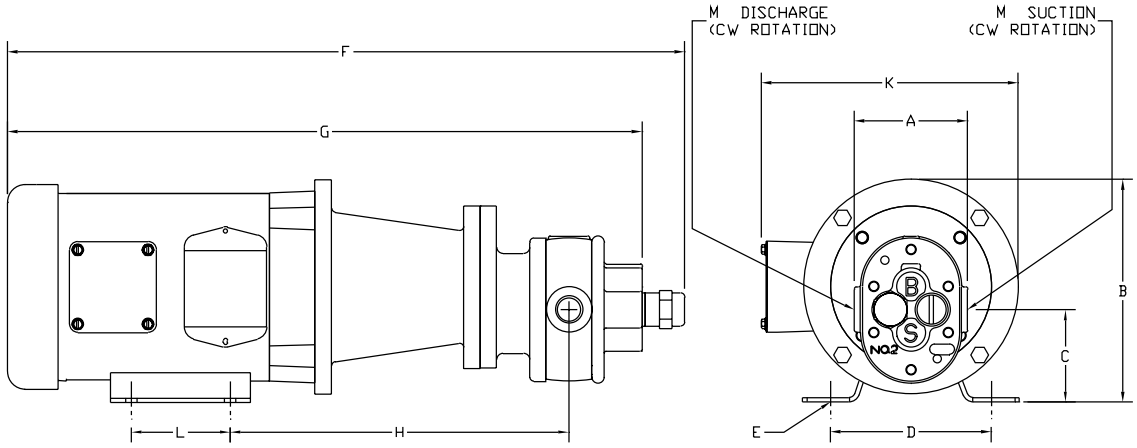
OPERATING CHARACTERISTICS, 5,000 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

B-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM B-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM B-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860 rpm with capacities to 26.8 gpm and pressures to 200 psi.

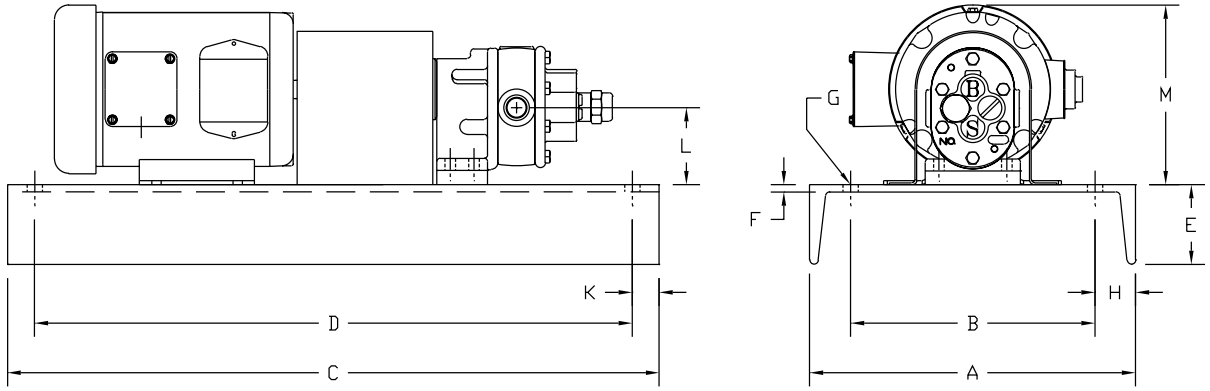


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1-A	56C	3.00	6.88	2.91	4.88	0.34	19.81	18.56	9.81	8.31	3.00	3/8
	145TC	3.00	6.88	2.91	5.50	0.34	21.53	20.28	10.12	8.56	5.00	3/8
	182TC	3.00	8.69	3.91	7.50	0.41	23.12	21.87	11.75	9.81	4.50	3/8
2-A	56C	3.44	6.88	2.81	4.88	0.34	20.78	19.53	10.25	8.31	3.00	1/2
	145TC	3.44	6.88	2.81	5.50	0.34	22.50	21.25	10.56	8.56	5.00	1/2
	182TC	3.44	8.69	3.81	7.50	0.41	24.09	22.84	12.19	9.81	4.50	1/2
	184TC	3.44	8.69	3.81	7.50	0.41	25.09	23.84	12.19	9.81	5.50	1/2
3-A	56C	4.44	6.88	2.50	4.88	0.34	22.82	21.19	11.43	8.31	3.00	3/4
	145TC	4.44	6.88	2.50	5.50	0.34	24.54	22.91	11.75	8.56	5.00	3/4
	182TC	4.44	8.69	3.50	7.50	0.41	26.13	24.50	13.37	9.81	4.50	3/4
	184TC	4.44	8.69	3.50	7.50	0.41	27.13	25.50	13.37	9.81	5.50	3/4
	213TC	4.44	10.25	4.25	8.50	0.41	29.04	27.41	14.25	12.16	5.50	3/4
	215TC	4.44	10.25	4.25	8.50	0.41	30.54	28.91	14.25	12.16	7.00	3/4
4-A	145TC	4.44	6.88	2.50	5.50	0.34	25.54	23.91	12.25	8.56	5.00	1 1/4
	182TC	4.44	8.69	3.50	7.50	0.41	27.13	25.50	13.87	9.81	4.50	1 1/4
	184TC	4.44	8.69	3.50	7.50	0.41	28.13	26.50	13.87	9.81	5.50	1 1/4
	213TC	4.44	10.25	4.25	8.50	0.41	30.04	28.41	14.75	12.16	5.50	1 1/4
	215TC	4.44	10.25	4.25	8.50	0.41	31.54	29.91	14.75	12.16	7.00	1 1/4

B-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

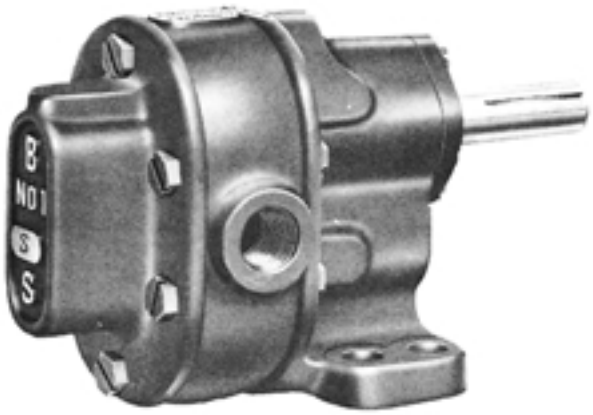
BSM B-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks (if required), lifting eye-bolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip-lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.91	8.69
2-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.81	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.81	8.69
3-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
4-D	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25

S-SERIES



FT. MTD. PUMP

S-Series pumps are designed to operate at standard motor speeds and are suitable for pumping oils, inert chemicals, petroleum products and various other liquids in transfer, circulation, lubrication, and liquid pressurization applications.

Design: Drive speeds to 1800 rpm; discharge pressures to 200 psi; flow rate to 32.0 gpm; foot or flange mounted; with or without integral relief valve.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron and Steel.

Bearings: Replaceable iron sleeve bearings. Also available with carbon graphite or bronze bearings.

Seal: Mechanical seal. Also available with compression packing or lip seal. Mechanical seal and lip seals available with different elastomers for pumping different types of liquids.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Pumps are available for clockwise or counter-clockwise rotation. Discharge is always on the side of the pump toward which the top of the shaft rotates. Specify at time of order.

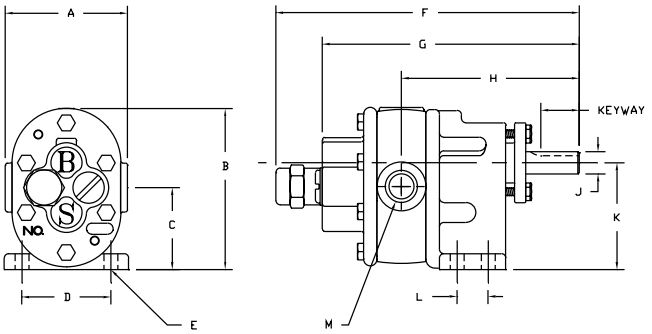
Liquid Viscosities: 32 ssu to 100,000 ssu. Adaptable for handling liquids from water soluble to molten lead.

Suction Lift: 28" Hg / 31 feet depending on the type of liquid being pumped.

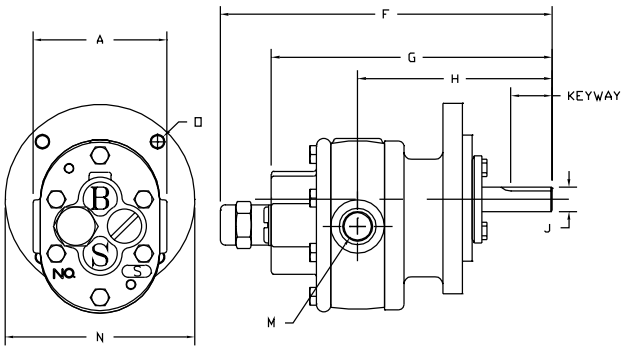
Drive Options: E-Drive (pump close coupled to motor); A-Drive (pump connected to c-face motor with adapter bracket and coupling); D-Drive (pump coupled to motor mounted on baseplate);GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; Bearing Kits; and Seal Kits. Refer to Section 13.

DIMENSIONAL DATA S-SERIES



FT. MTD. PUMP



FLG. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	F	G	H	J	K	L	M	N	O	Keyway
1S	3.00	3.69	1.78	2.00	0.39	7.50	6.25	4.56	0.56	2.38	0.75	3/8	4 7/8	3/8-16	1/8 x 1/16
2S	3.44	4.53	2.31	2.50	0.39	8.47	7.22	5.00	0.68	3.00	0.88	1/2	"	3/8-16	3/16 x 3/32
3S	4.44	5.72	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	3/4	"	3/8-16	3/16 x 3/32
4S	4.44	5.91	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	1	"	3/8-16	3/16 x 3/32
5S	5.00	5.97	2.88	3.00	0.45	10.50	8.88	6.69	0.75	3.88	1.25	1 1/4	"	3/8-16	3/16 x 3/32

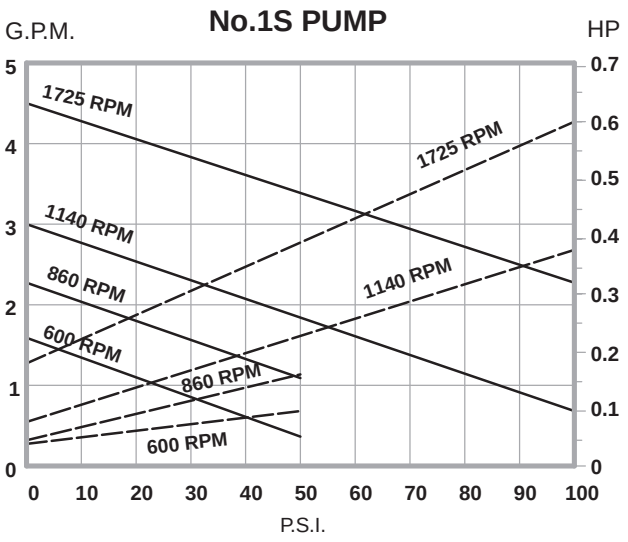
OPERATING CHARACTERISTICS

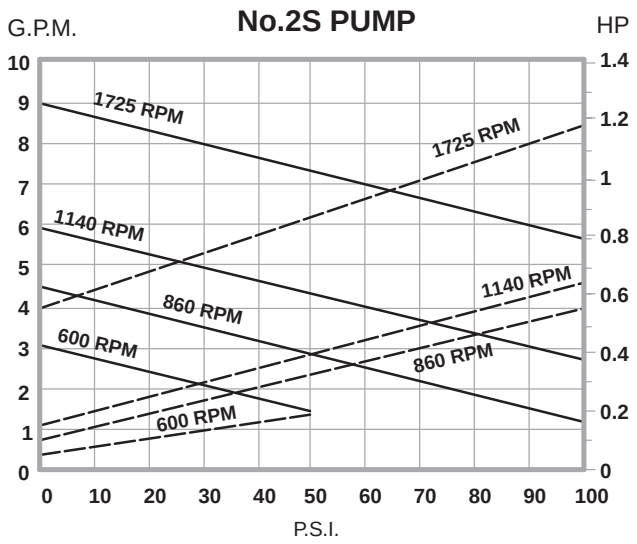
Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi gpm	0 psi hp	50 psi gpm	50 psi hp	75 psi gpm	75 psi hp	100 psi gpm	100 psi hp	200 psi gpm	200 psi hp
1S	.00262	.0024	600	1.6	.03	1.5	.08	1.4	.11	1.3	.15	1.1	.33
			860	2.3	.04	2.1	.13	2.07	.18	2.0	.23	1.8	.49
			1140	3.0	.06	2.9	.17	2.8	.23	2.7	.30	2.5	.63
			1725	4.5	.14	4.4	.29	4.3	.36	4.28	.48	4.0	.95
2S	.00521	.0035	600	3.1	.05	3.0	.15	2.9	.24	2.8	.31	2.4	.65
			860	4.5	.08	4.3	.22	4.2	.34	4.1	.45	3.8	.93
			1140	5.9	.13	5.8	.31	5.7	.41	5.6	.51	5.2	1.0
			1725	9.0	.44	8.8	.64	8.7	.78	8.6	.94	8.3	1.6
3S	.00947	.0026	600	5.7	.08	5.6	.34	5.5	.47	5.4	.60	5.2	1.1
			860	8.1	.25	8.0	.54	7.9	.68	7.8	.83	7.6	1.5
			1140	10.8	.38	10.7	.77	10.6	.97	10.5	1.1	10.2	2.0
			1725	16.2	.92	16.1	1.4	16.0	1.7	15.9	2.0	15.7	3.1
4S	.0135	.009	600	8.1	.30	7.9	.50	7.8	.60	7.7	.80	7.4	1.2
			860	11.6	.40	11.3	.70	11.2	.90	11.1	1.1	10.7	1.8
			1140	15.3	.50	15.0	.90	14.8	1.20	14.7	1.45	14.2	2.3
			1725	23.2	.80	22.7	1.40	22.5	1.80	22.3	2.2	21.4	3.5
5S	.0186	.02	600	11.1	.45	10.8	.55	10.6	.75	10.4	.95	9.7	1.6
			860	15.9	.65	15.5	.80	15.2	1.0	15.0	1.3	14.0	2.3
			1140	21.1	.80	20.5	1.1	20.2	1.4	19.8	1.8	18.5	3.1
			1725	32.0	1.30	31.0	1.6	30.5	2.1	30.0	2.7	28.0	4.7

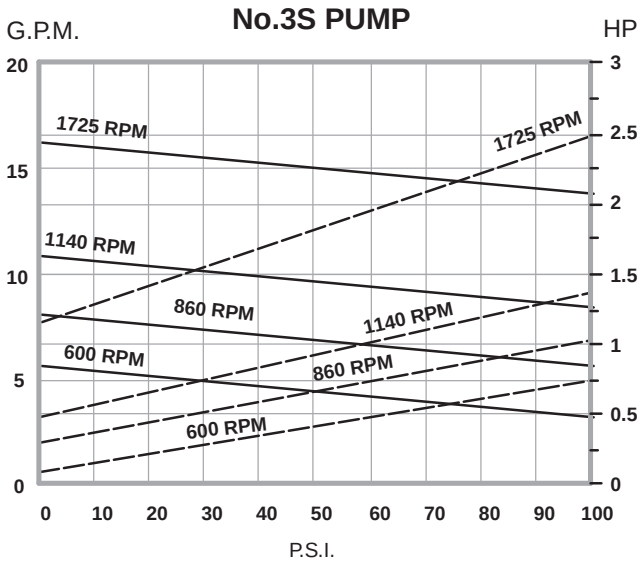
*Delivery and input horsepower are based on liquid viscosity of 300 ssu at speed and pressures shown.

S-SERIES

OPERATING CHARACTERISTICS, 32 SSU LIQUID



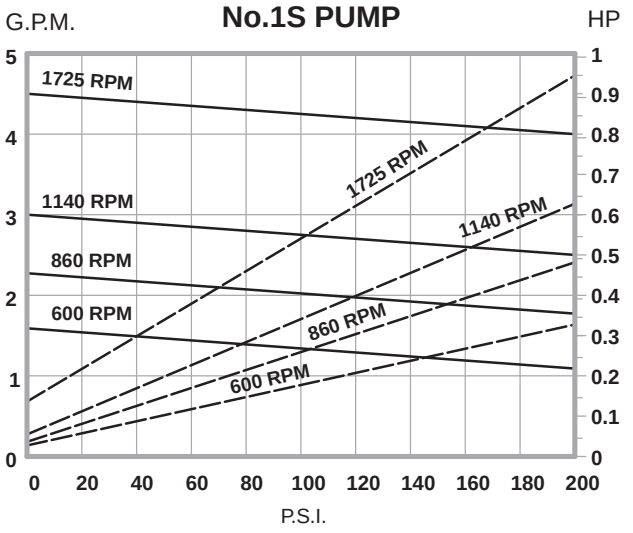


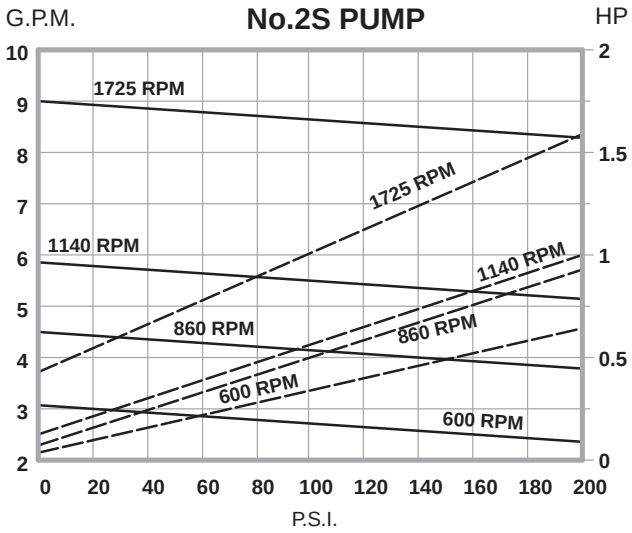


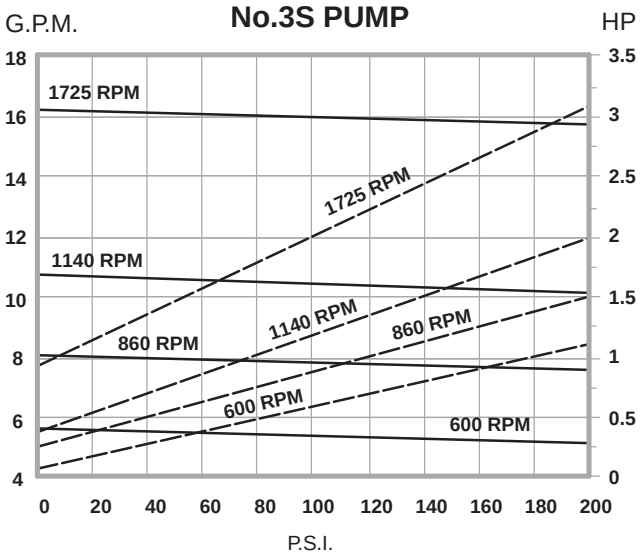
SOLID LINE = GPM
BROKEN LINE = HP

S-SERIES

OPERATING CHARACTERISTICS, 300 SSU LIQUID



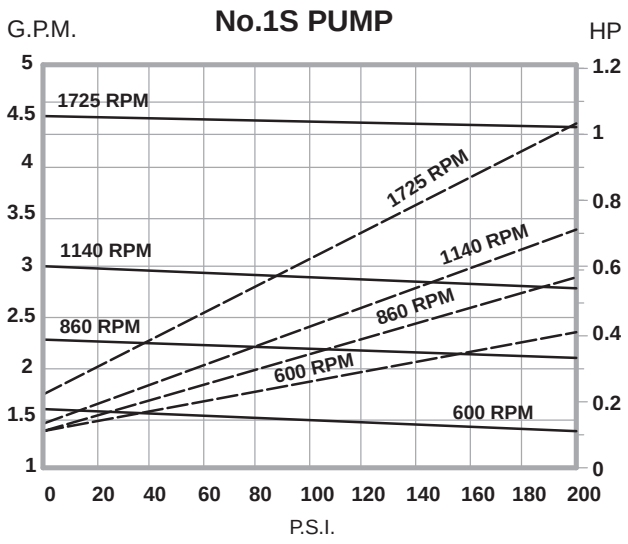


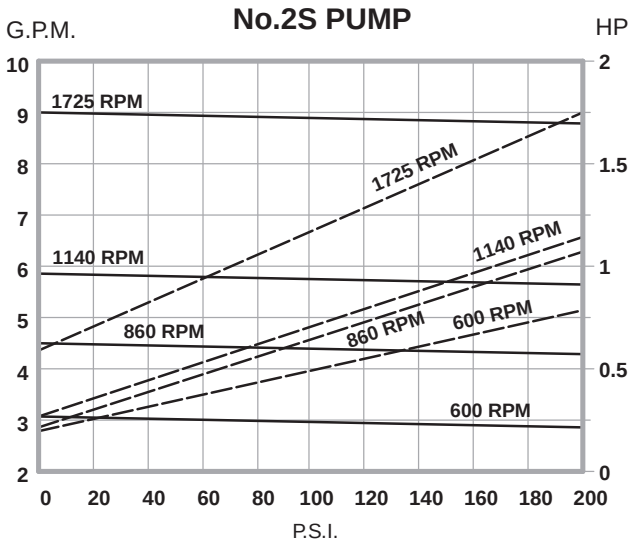


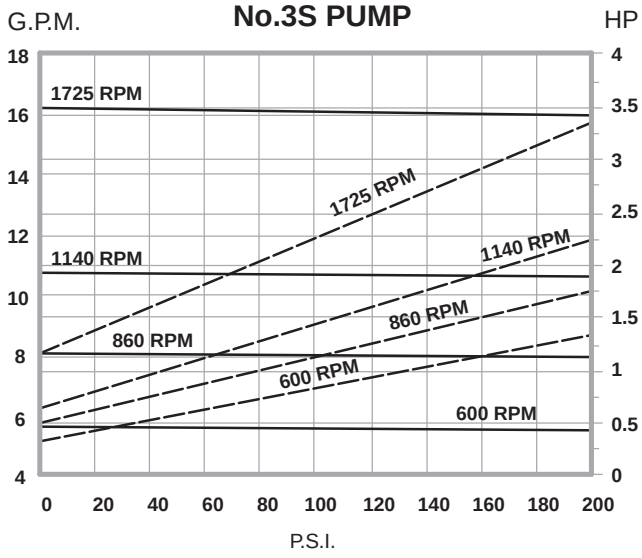
SOLID LINE = GPM
BROKEN LINE = HP

S-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



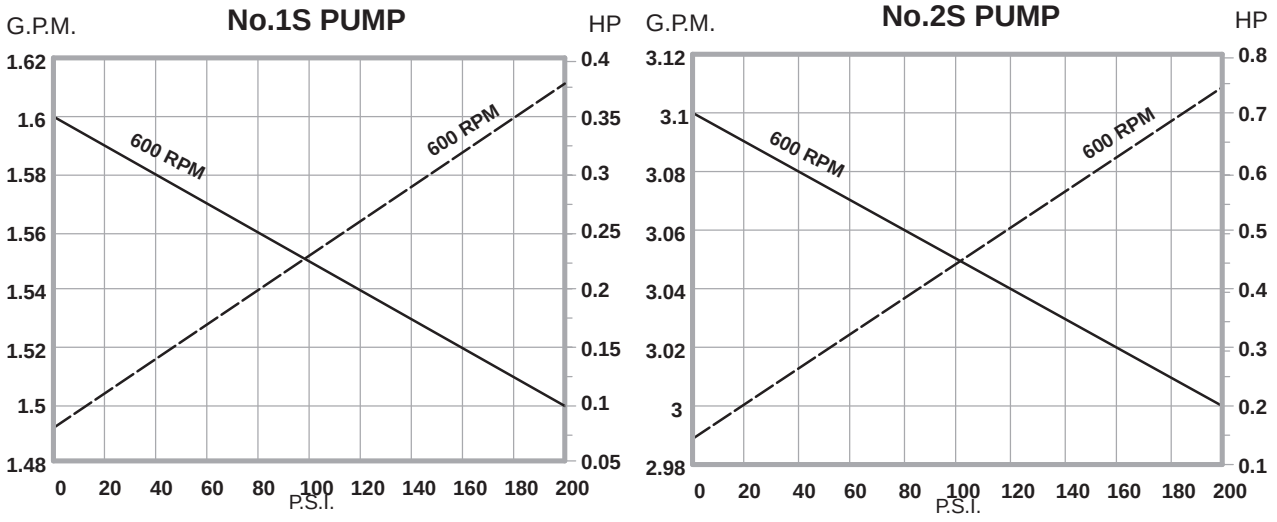


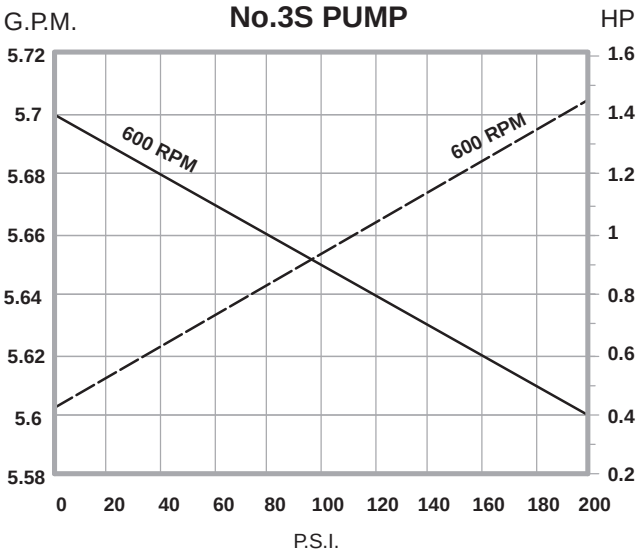


SOLID LINE = GPM
BROKEN LINE = HP

S-SERIES

OPERATING CHARACTERISTICS, 5,000 SSU LIQUID

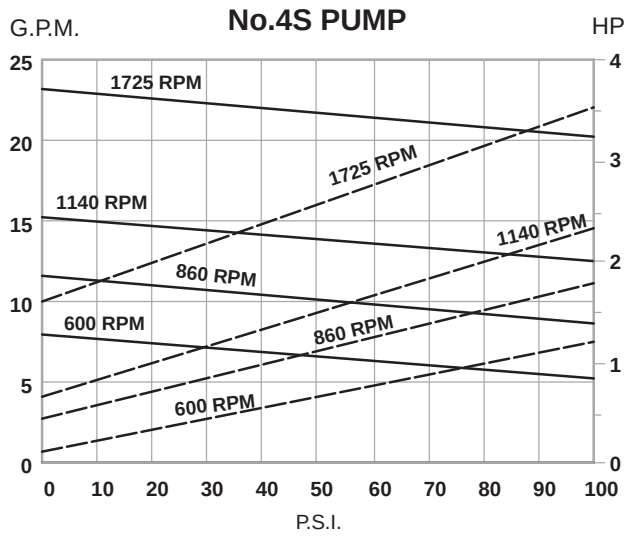


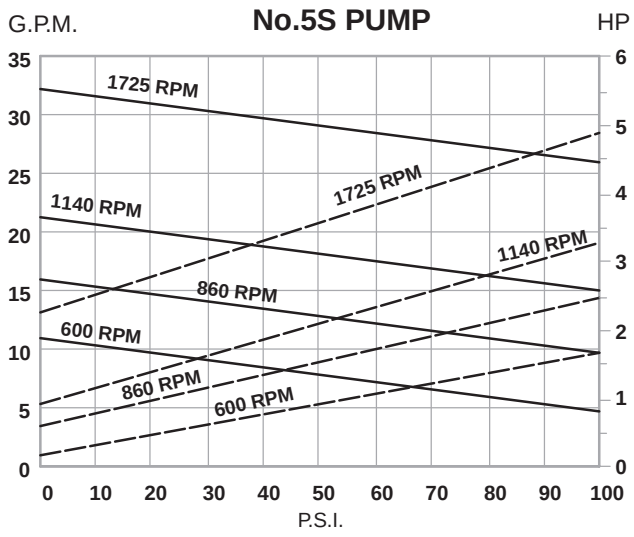


SOLID LINE = GPM
BROKEN LINE = HP

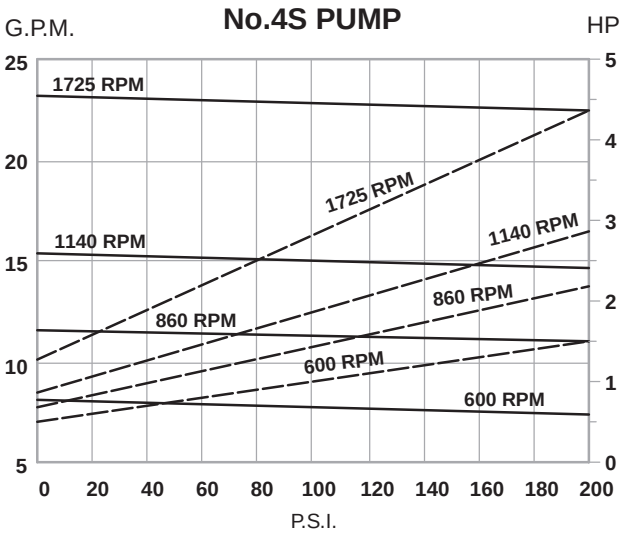
S-SERIES

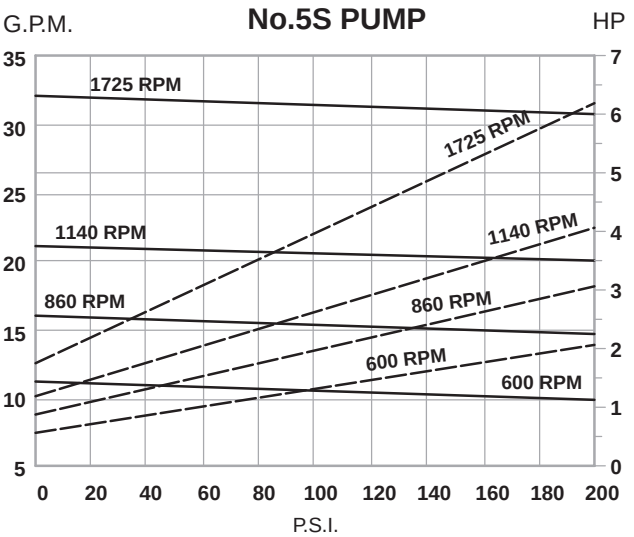
OPERATING CHARACTERISTICS, 32 SSU LIQUID





OPERATING CHARACTERISTICS, 300 SSU LIQUID



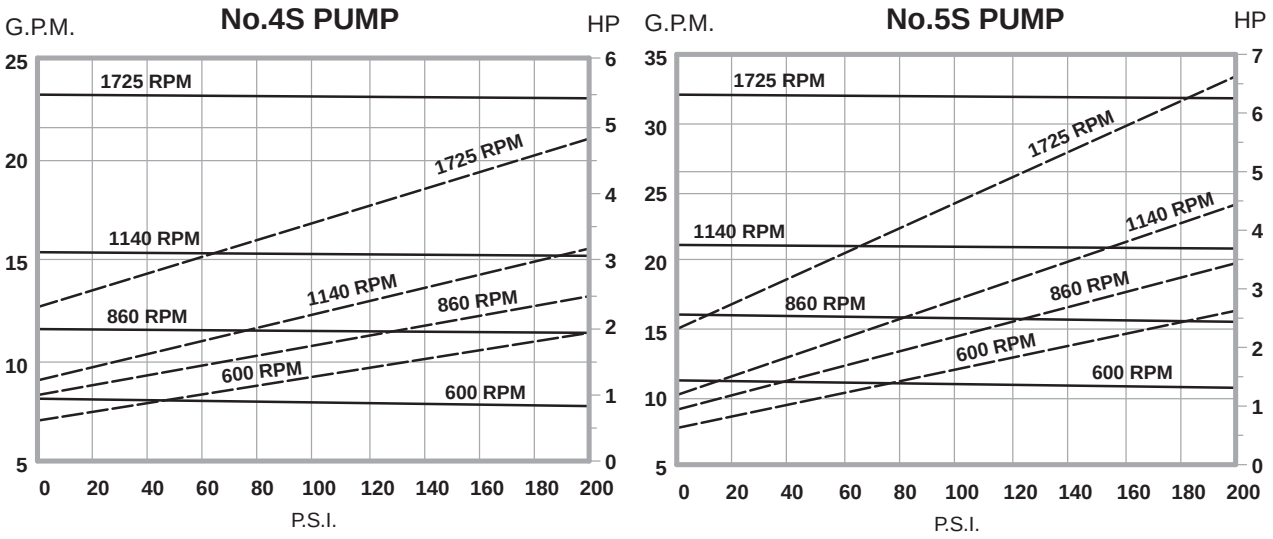


SOLID LINE = GPM

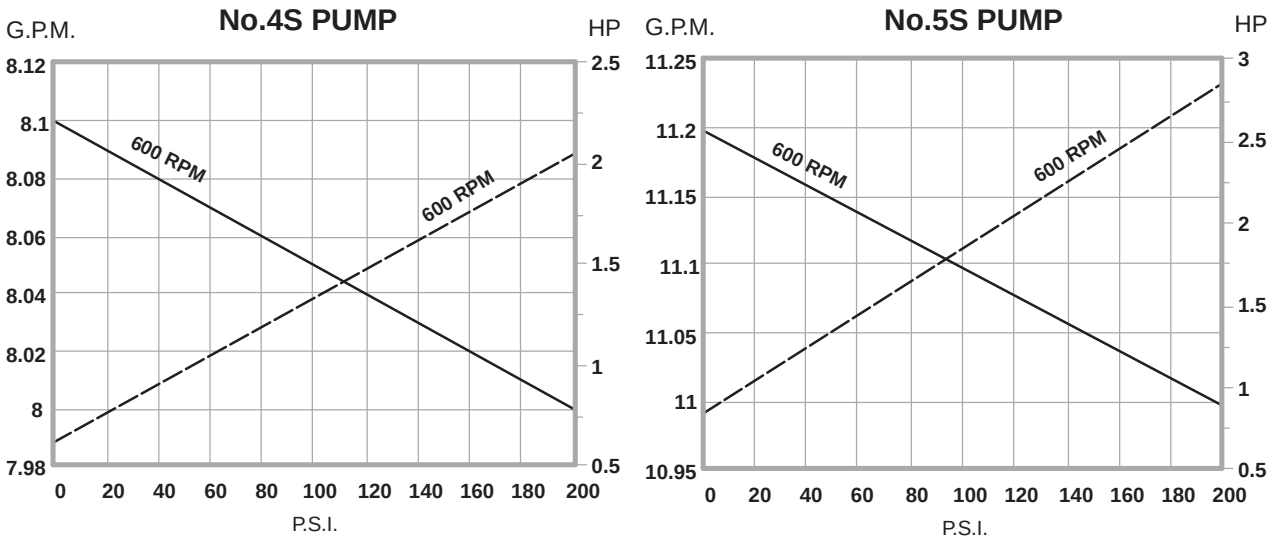
BROKEN LINE = HP

S-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



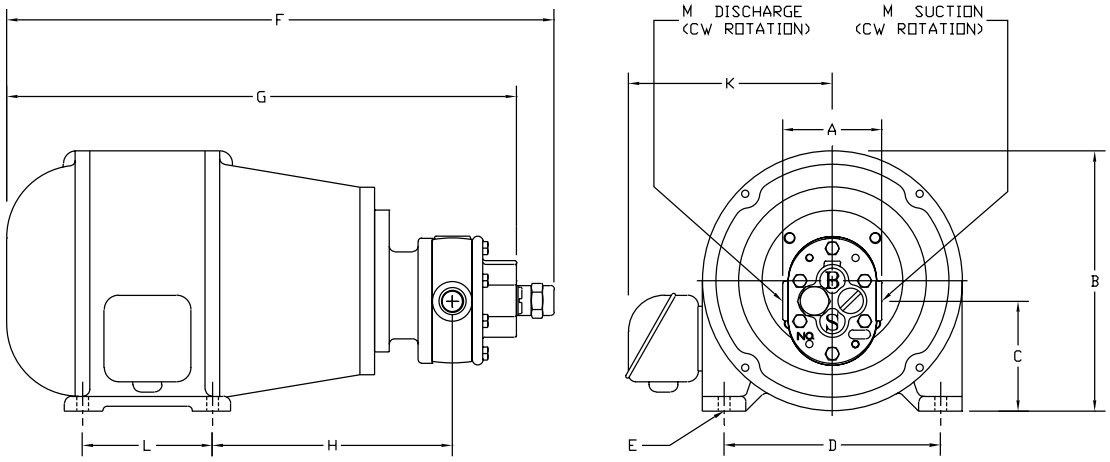
OPERATING CHARACTERISTICS, 5,000 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

S-SERIES CLOSE COUPLED MOTOR DRIVEN ROTARY GEAR PUMPS (E-DRIVE)

BSM S-Series pumps are available direct coupled to the end bell of a foot mounted motor. This assembly, referred to as an E-Drive, ensures accurate alignment and requires less space than a pump connected to the C-Face of a motor. BSM S-Series Close Coupled Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 32.0 gpm and pressures to 200 psi.

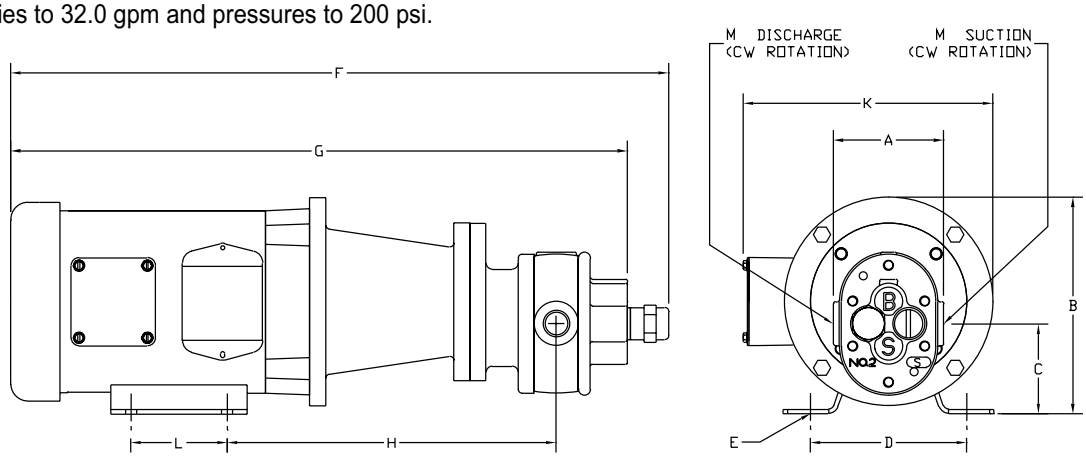


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1S-E	182	3.00	9.00	3.90	7.50	.406	17.94	16.69	7.88	7.06	4.50	3/8
2S-E	182	3.44	9.00	3.81	7.50	.406	18.91	17.66	8.31	7.06	4.50	1/2
	184	3.44	9.00	3.81	7.50	.406	19.91	18.66	8.31	7.06	5.50	"
	213	3.44	10.38	4.56	8.50	.406	21.47	20.22	9.12	7.94	5.50	"
3S-E	182	4.44	9.00	3.50	7.50	.406	20.94	19.31	9.50	7.06	4.50	3/4
	184	4.44	9.00	3.50	7.50	.406	21.94	20.31	9.50	7.06	5.50	"
	213	4.44	10.38	4.25	8.50	.406	23.50	21.88	10.31	7.94	5.50	"
	215	4.44	10.38	4.25	8.50	.406	24.00	22.38	10.31	7.94	7.00	"
4S-E	182	4.44	9.00	3.50	7.50	.406	20.94	19.31	9.50	7.06	4.50	1
	184	4.44	9.00	3.50	7.50	.406	21.94	20.31	9.50	7.06	5.50	"
	213	4.44	10.38	4.25	8.50	.406	23.54	21.88	10.31	7.94	5.50	"
	215	4.44	10.38	4.25	8.50	.406	24.00	22.38	10.31	7.94	7.00	"
	254U	4.44	12.38	5.25	6.03	.406	26.19	24.56	12.49	9.81	8.25	"
5S-E	182	5.00	9.00	3.47	7.50	.406	21.94	20.31	10.00	7.06	4.50	11/4
	184	5.00	9.00	3.47	7.50	.406	22.94	21.31	10.00	7.06	5.50	"
	213	5.00	10.38	4.22	8.50	.406	24.50	22.88	10.81	7.94	5.50	"
	215	5.00	10.38	4.22	8.50	.406	25.00	23.38	10.81	7.94	7.00	"
	254U	5.00	12.38	5.22	6.03	.406	27.19	25.56	12.99	9.81	8.25	"

S-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM S-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM S-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 32.0 gpm and pressures to 200 psi.

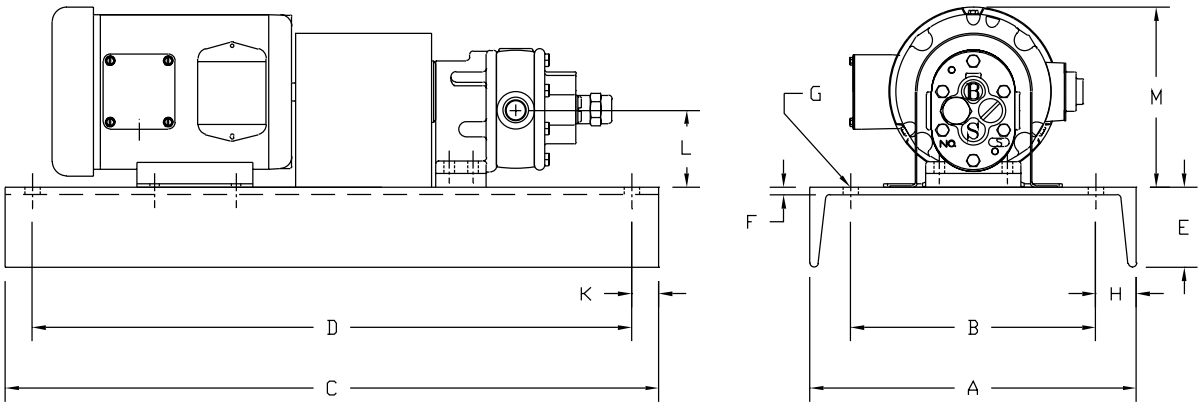


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1S-A	56C	3.00	6.88	2.91	4.88	0.34	19.81	18.56	9.81	8.31	3.00	3/8
	145TC	3.00	6.88	2.91	5.50	0.34	21.53	20.28	10.12	8.56	5.00	3/8
	182TC	3.00	8.69	3.91	7.50	0.41	23.12	21.87	11.75	9.81	4.50	3/8
2S-A	56C	3.44	6.88	2.81	4.88	0.34	20.78	19.53	10.25	8.31	3.00	5/8
	145TC	3.44	6.88	2.81	5.50	0.34	22.50	21.25	10.56	8.56	5.00	5/8
	182TC	3.44	8.69	3.81	7.50	0.41	24.09	22.84	12.19	9.81	4.50	5/8
	184TC	3.44	8.69	3.81	7.50	0.41	25.09	23.84	12.19	9.81	5.50	5/8
3S-A	56C	4.44	6.88	2.50	4.88	0.34	22.82	21.19	11.43	8.31	3.00	3/4
	145TC	4.44	6.88	2.50	5.50	0.34	24.54	22.91	11.75	8.56	5.00	3/4
	182TC	4.44	8.69	3.50	7.50	0.41	26.13	24.50	13.37	9.81	4.50	3/4
	184TC	4.44	8.69	3.50	7.50	0.41	27.13	25.50	13.37	9.81	5.50	3/4
	213TC	4.44	10.25	4.25	8.50	0.41	29.04	27.41	14.25	12.16	5.50	3/4
	215TC	4.44	10.25	4.25	8.50	0.41	30.54	28.91	14.25	12.16	7.00	3/4
4S-A	56C	4.44	6.88	2.50	4.88	0.34	22.82	21.19	11.43	8.31	3.00	1
	145TC	4.44	6.88	2.50	5.50	0.34	24.54	22.91	11.75	8.56	5.00	1
	182TC	4.44	8.69	3.50	7.50	0.41	26.13	24.50	13.37	9.81	4.50	1
	184TC	4.44	8.69	3.50	7.50	0.41	27.13	25.50	13.37	9.81	5.50	1
	213TC	4.44	10.25	4.25	8.50	0.41	29.04	27.41	14.25	12.16	5.50	1
	215TC	4.44	10.25	4.25	8.50	0.41	30.54	28.91	14.25	12.16	7.00	1
5S-A	56C	5.00	6.88	2.50	4.88	0.34	23.20	21.57	11.63	8.31	3.00	1 1/4
	145TC	5.00	6.88	2.50	5.50	0.34	24.92	23.29	11.95	8.56	5.00	1 1/4
	182TC	5.00	8.69	3.50	7.50	0.41	26.51	24.88	13.57	9.81	4.50	1 1/4
	184TC	5.00	8.69	3.50	7.50	0.41	27.51	25.88	13.57	9.81	5.50	1 1/4
	213TC	5.00	10.25	4.25	8.50	0.41	29.42	27.79	14.45	12.16	5.50	1 1/4
	215TC	5.00	10.25	4.25	8.50	0.41	30.92	29.29	14.45	12.16	7.00	1 1/4
	254TC	5.00	12.88	5.25	10.00	0.53	37.26	35.63	16.19	16.09	8.25	1 1/4

S-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

BSM S-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks, (if required) lifting eye-bolts, and mounting hardware. The fabricated steel or channel iron bases are available with optional features such as drip-lip construction, drain plugs, mounting lugs, casters, etc..

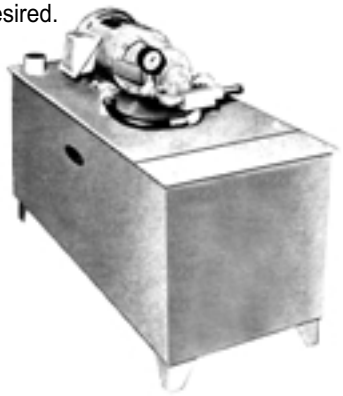


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1S-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.91	8.69
2S-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.81	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.81	8.69
3S-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
4S-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.63	2.00	1.00	4.25	10.25
5S-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	254TC	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.25	12.88

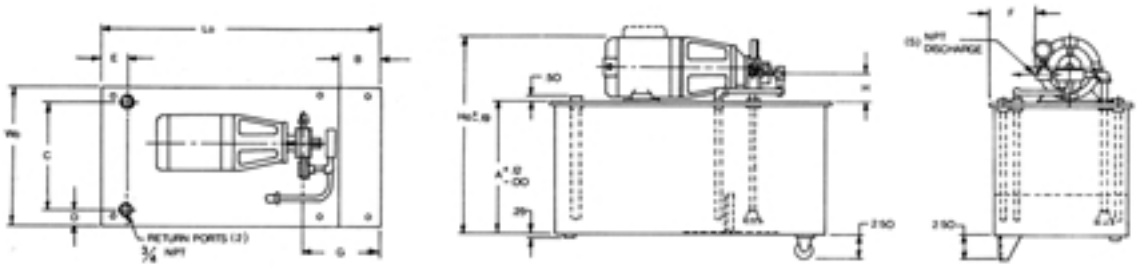
"PUMPAC" WITH MOTOR DRIVEN ROTARY GEAR PUMPS

The precision-built, positive displacement pump has heat treated steel gears supported by substantial bearings to ensure continuous service. Pump shaft seal requires no adjustment. Motor is continuous duty type. Rabbeted assembly guarantees accurate alignment of pump and motor. Drive is through flexible coupling. Rigid welded sheet steel tank, 16 or 32 gallons, has tank cover plate supporting pump and motor resting on rubber gasket for vibration free service. Without disturbing pump assembly or piping, an access cover can be easily removed to check strainer and condition of oil. Return lines extending below liquid level and a baffle in tank are supplied to prevent turbulence. Other standard built-in extras include a pressure gage, relief valve, strainer, and suction piping to pump, also a bypass line from relief valve to tank. When ordering, specify pump number, RPM, H.P., and tank capacity desired.

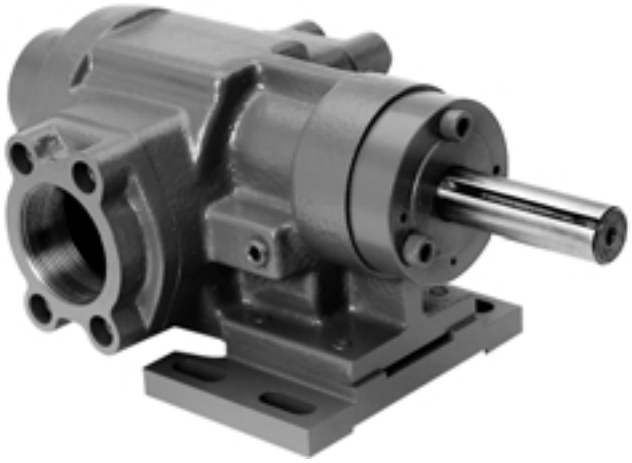


DIMENSIONAL DATA

Pump No.	MOTOR RPM	MOTOR HP	MOTOR Frame	GPM at Max PSI	Max. PSI	Tank Cap., Gal.	DIMENSIONS (inches) Lo	Ho	Wo	A	B	C	D	E	F(+.12)	G	H	S
1SA	1725	¼	56	4.4	35	16	27	19.31	13	12.19	5.00	10.25	1.38	2.44	3.31	8.38	2.91	⅝
	1725	½	56	4.3	60	16												
	1725	½	56	4.26	105	16												
	1140	½	56	2.7	105	16												
	1140	½	56	2.59	165	16												
2SA	1725	¾	56	8.74	70	16	27	19.31	13	12.19	5.00	10.25	1.38	2.44	3.062	8.38	2.81	⅝
	1725	1	56	8.60	110	16												
	1140	½	56	5.74	65	16												
	1140	½	56	5.59	100	16												
	1140	¾	56	5.41	150	16												
	1140	1	145T	5.24	200	16												
3SA	1725	1½	56	16.07	50	16	27	19.31	13	12.19	5.00	10.25	1.38	2.44	2.56	8.38	2.50	⅝
	1725	2	145T	15.95	95	16												
	1140	¾	56	10.68	45	16												
	1140	1	145T	10.59	80	16												
1SA	1725	½	56	4.3	70	32	37	22.31	16	15.19	5.00	13.25	1.38	3.75	3.31	13.38	2.91	½
	1725	½	56	4.26	105	32												
	1140	½	56	2.7	105	32												
	1140	½	56	2.59	165	32												
2SA	1725	¾	56	8.74	70	32	37	22.31	16	15.19	5.00	13.25	1.38	3.75	3.06	13.38	2.81	½
	1725	1	56	8.60	110	32												
	1140	½	56	5.74	65	32												
	1140	½	56	5.59	100	32												
	1140	¾	56	5.41	150	32												
	1140	1	145T	5.24	200	32												
3SA	1725	1½	56	16.07	50	32	37	22.31	16	15.19	5.00	13.25	1.38	3.75	2.56	13.38	2.50	⅝
	1725	2	145T	15.95	95	32												
	1140	¾	56	10.68	45	32												
	1140	1	145T	10.59	80	32												



HEAVY DUTY S-SERIES



FT. MTD. PUMP

The Heavy Duty S-Series pumps are designed to handle a wide variety of liquids and are particularly suitable for bulk transfer applications where long life and dependable service is required. The pumps are easy to install and maintain and are available in different materials to meet specific requirements.

Design: Drive speeds to 1140 rpm; discharge pressures to 300 psi; flow rate to 175.0 gpm; foot mounted. Bronze or Ductile Iron thrust plates.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron.

Bearings: Anti-friction. Also available with iron or carbon graphite sleeve bearings.

Seal: Mechanical seal. Also available with packed seal.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Clockwise or counter-clockwise rotation. A reversible back drain permits direction of rotation to be easily changed in the field.

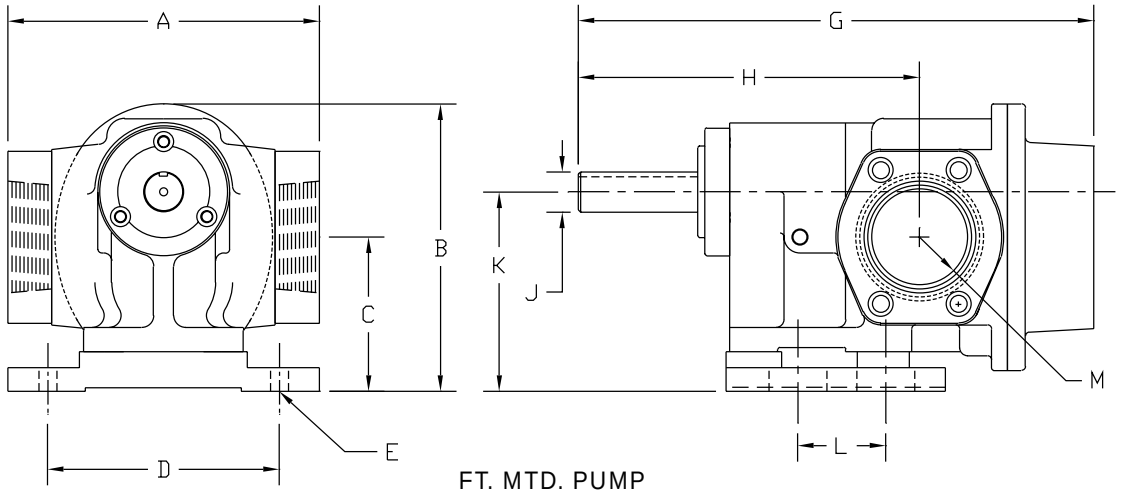
Liquid Viscosities: 100 ssu to 100,000 ssu. Clean liquids having good lubricating qualities. Adaptable for handling liquids of higher or lower viscosities.

Suction Lift: 28 Hg / 31 feet depending on the type of liquid being pumped.

Drive Options: D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; and Seal Kits. Refer to Section 13.

DIMENSIONAL DATA HEAVY DUTY S-SERIES



FT. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	G	H	J	K	M	Keyway
6S	8.00	6.25	2.91	5.25	13.88	9.56	1	4.25	2"	1/4 x 1/8
8S	9.75	9.00	4.58	7.25	16.13	10.63	1 1/4	6.25	3"	"
10S	9.75	9.00	4.58	7.25	16.13	10.63	"	6.25	3"	"
12S	12.125	11.56	6.06	10.00	18.50	11.94	1 1/2	8.00	4"	3/8 x 3/16
14S	12.125	11.56	6.06	10.00	18.50	11.94	"	8.00	4"	"

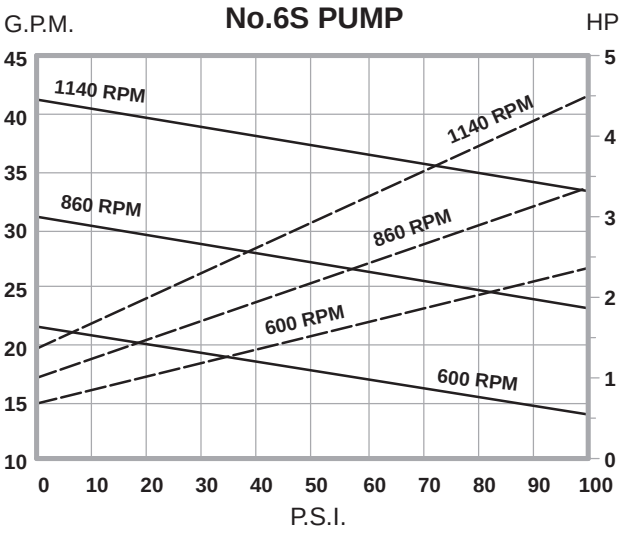
OPERATING CHARACTERISTICS

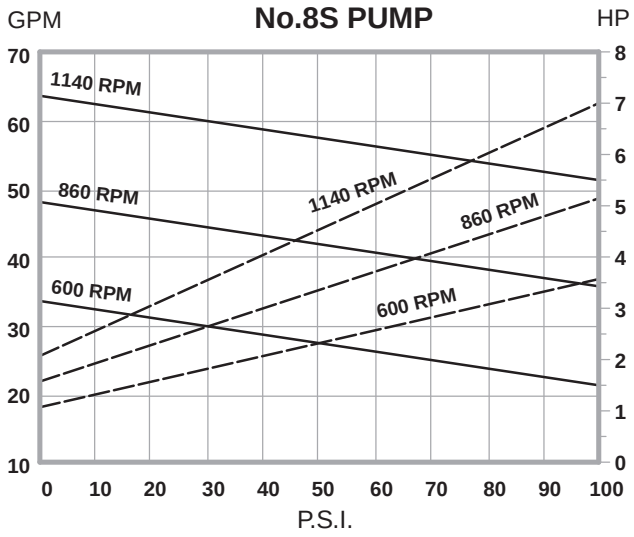
Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi		50 psi		75 psi		100 psi		200 psi		300 Psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
6S	0.0361	0.008	600	21.7	.6	21.5	1.3	21.4	1.6	21.3	1.9	20.8	3.2	20.4	4.5
			860	31.1	.8	30.8	1.8	30.6	2.3	30.5	2.7	29.8	4.6	29.2	6.5
			1140	41.2	1.1	40.8	2.4	40.6	3.0	40.4	3.6	39.5	6.1	38.7	8.6
8S	0.056	0.013	600	33.6	.9	33.3	1.9	33.2	2.5	32.9	2.9	32.3	4.9	31.6	7.0
			860	48.2	1.3	47.8	2.8	47.5	3.5	47.2	4.2	46.2	7.1	45.3	10.0
			1140	63.9	1.7	63.3	3.7	63.0	4.7	62.6	5.6	61.3	9.4	60.0	13.3
10S	0.079	0.018	600	47.7	1.3	47.2	2.7	47.0	3.5	46.7	4.2	45.8	7.1	44.8	9.9
			860	68.3	1.8	67.7	3.9	67.4	5.0	67.0	6.0	65.6	10.1	64.3	14.3
			1140	90.6	2.4	89.7	5.2	89.3	6.6	88.8	7.9	87.0	13.4	85.2	18.9
12S	0.113	0.026	600	67.8	1.8	67.1	3.8	66.8	4.9	66.4	5.9	65.1	10.1	63.7	14.1
			860	97.2	2.6	96.2	5.5	95.7	7.0	95.2	8.4	93.2	14.4	91.3	20.2
			1140	128.8	3.4	127.5	7.3	126.9	9.3	126.2	11.2	123.6	19.1	121.0	26.8
14S	0.204	0.035	600	122.2	3.2	121.0	6.9	120.3	8.8	119.7	10.6	117.3	18.1	114.8	25.5
			860	175.1	4.6	173.4	9.9	172.5	12.6	171.6	15.2	168.1	25.9	164.6	36.5

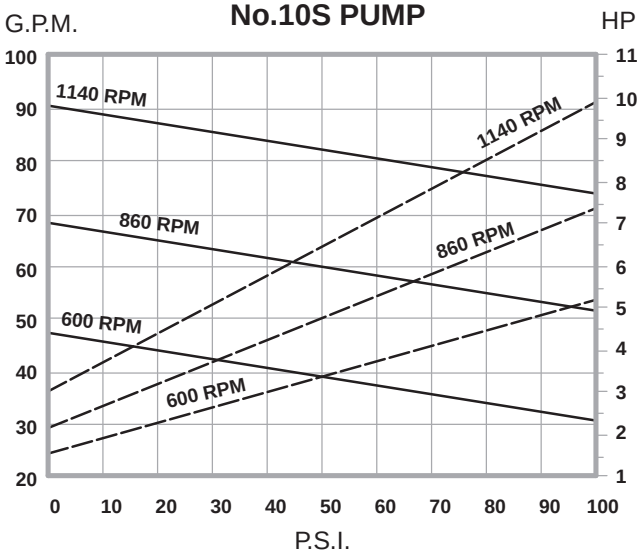
* Delivery and input horsepower are based on liquid viscosity of 300 ssu.

HEAVY DUTY S-SERIES

OPERATING CHARACTERISTICS, 32 SSU LIQUID



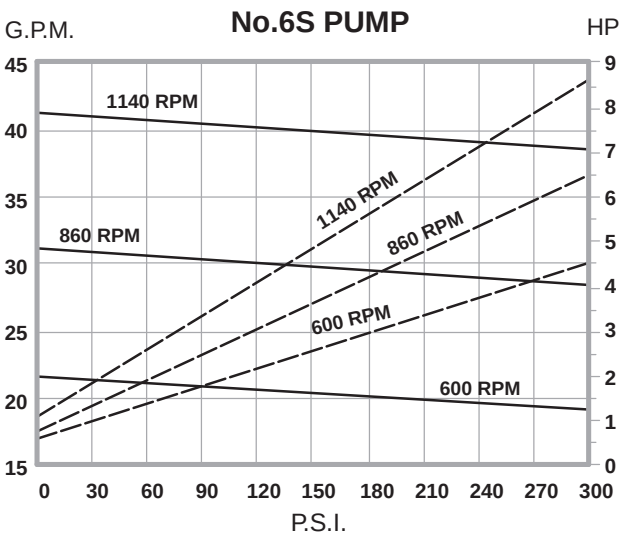


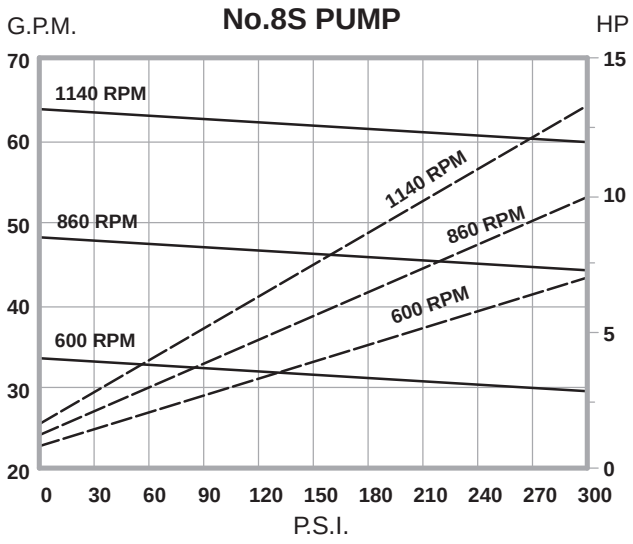


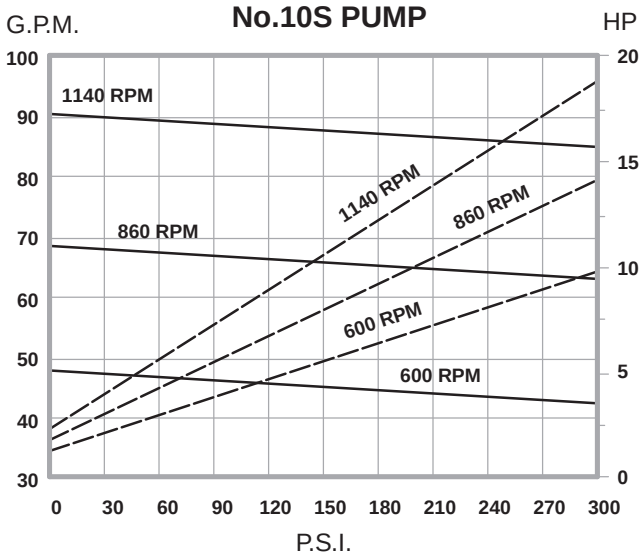
SOLID LINE = GPM
BROKEN LINE = HP

HEAVY DUTY S-SERIES

OPERATING CHARACTERISTICS, 300 SSU LIQUID



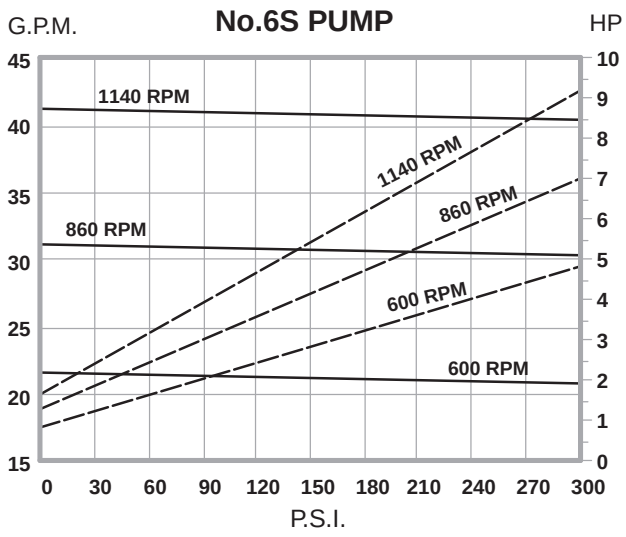


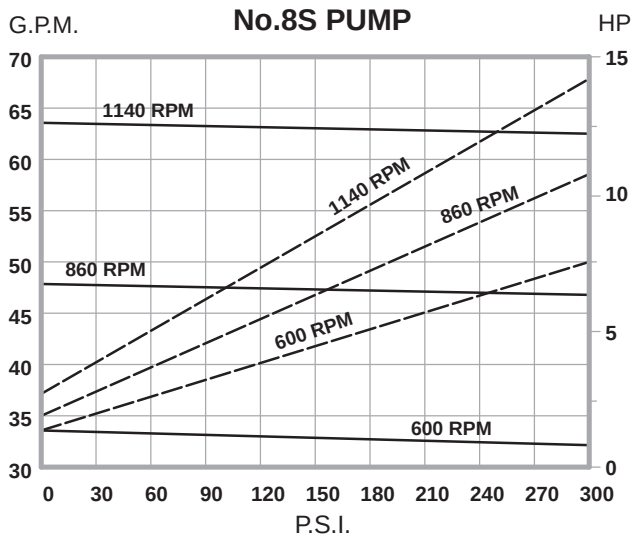


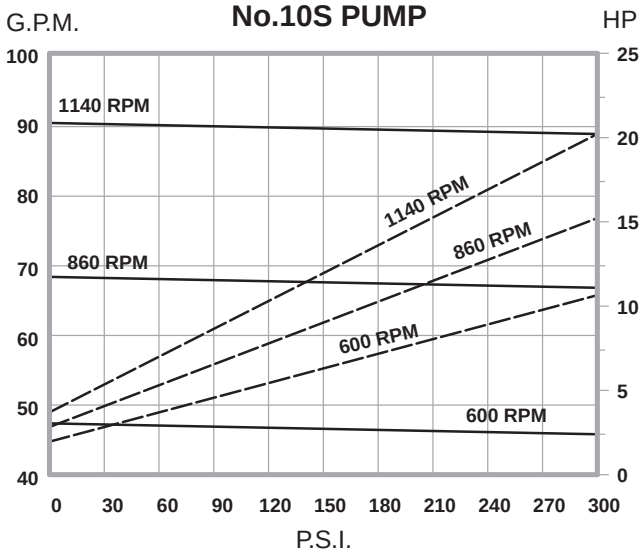
SOLID LINE = GPM
BROKEN LINE = HP

HEAVY DUTY S-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



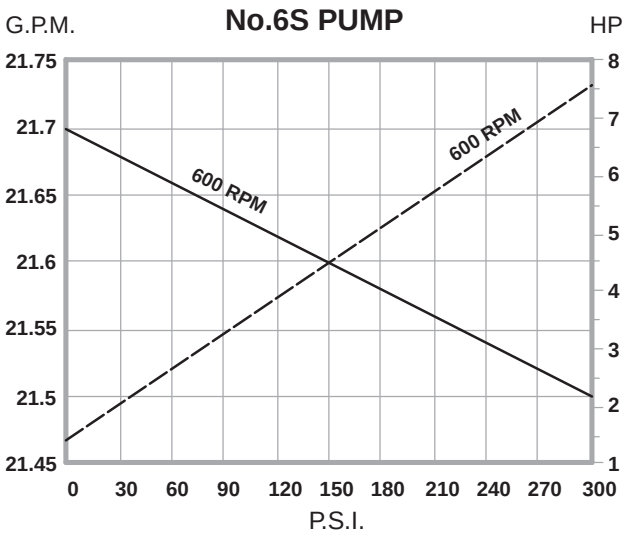


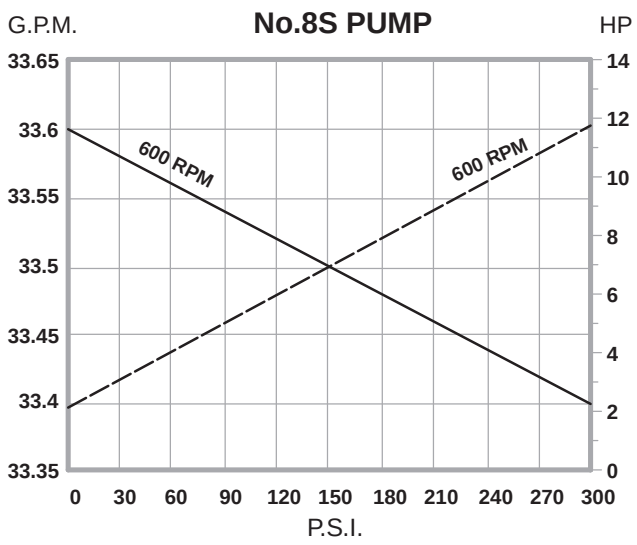


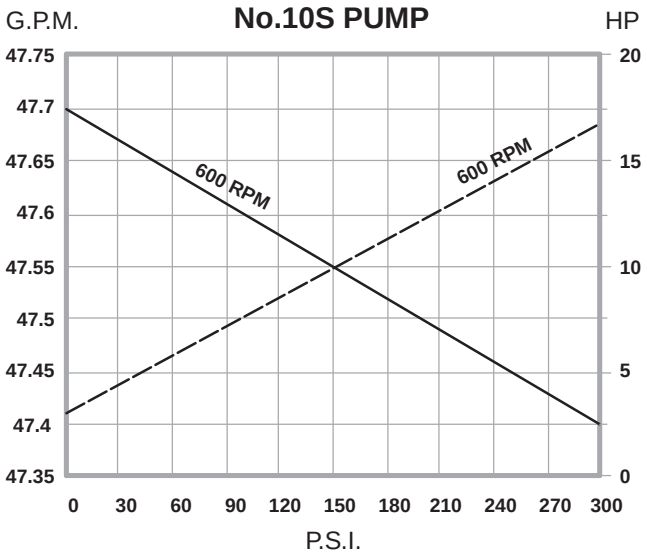
SOLID LINE = GPM
BROKEN LINE = HP

HEAVY DUTY S-SERIES

OPERATING CHARACTERISTICS, 5,000 SSU LIQUID



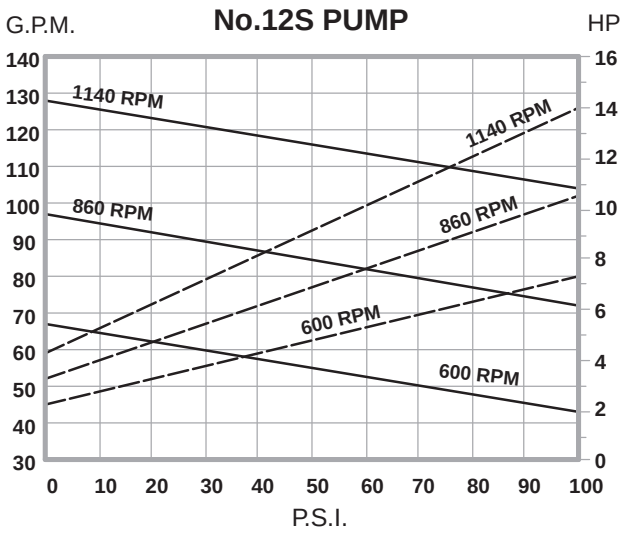


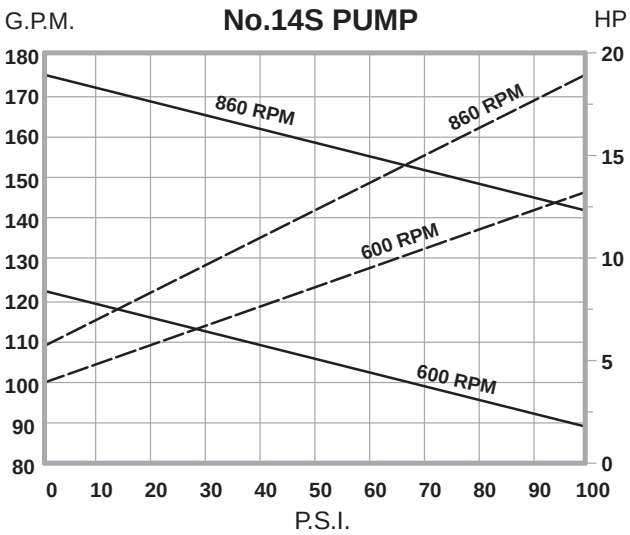


SOLID LINE = GPM
BROKEN LINE = HP

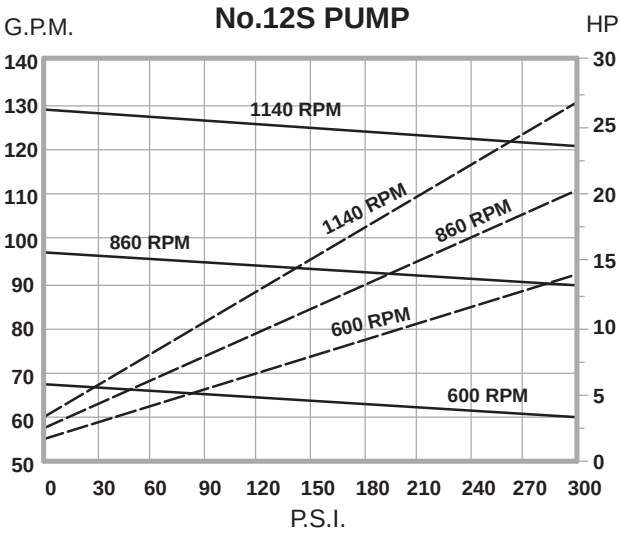
HEAVY DUTY S-SERIES

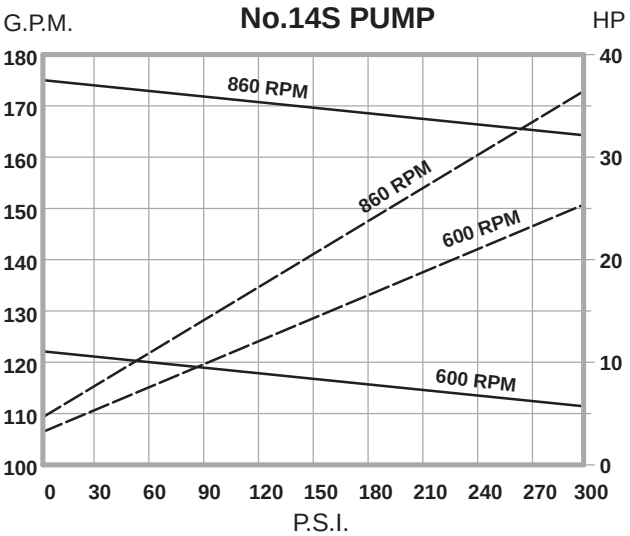
OPERATING CHARACTERISTICS, 32 SSU LIQUID





OPERATING CHARACTERISTICS, 300 SSU LIQUID

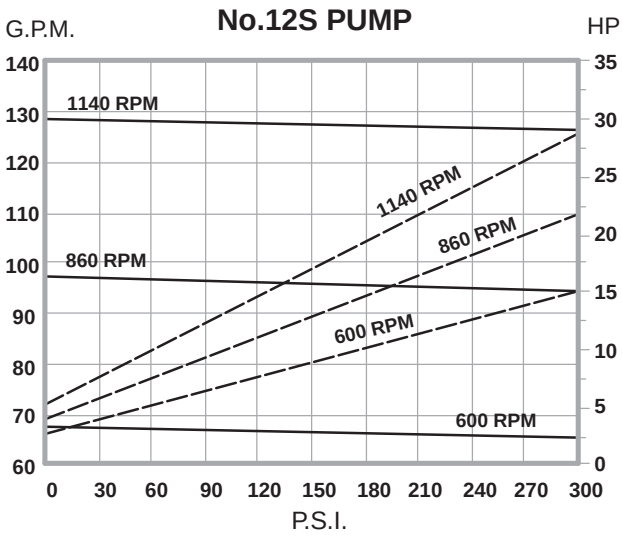


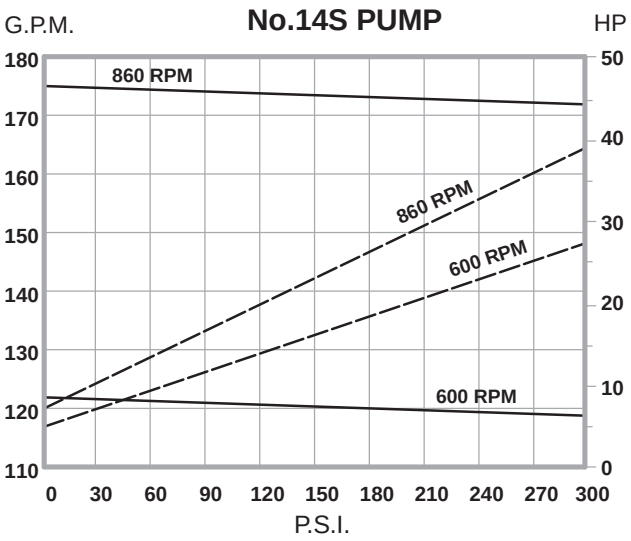


SOLID LINE = GPM
BROKEN LINE = HP

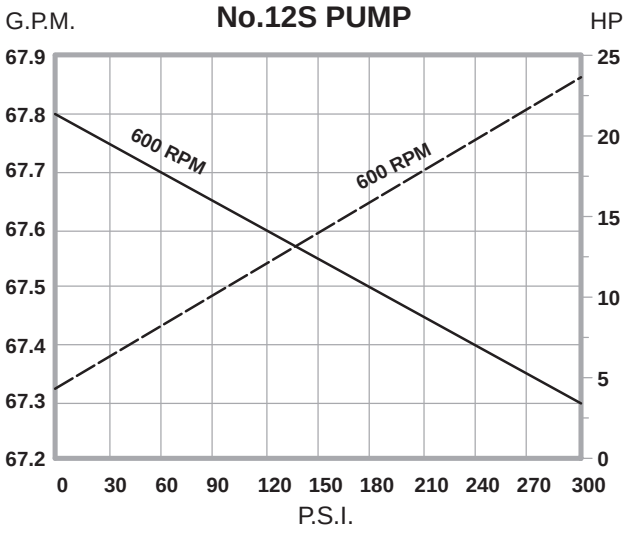
HEAVY DUTY S-SERIES

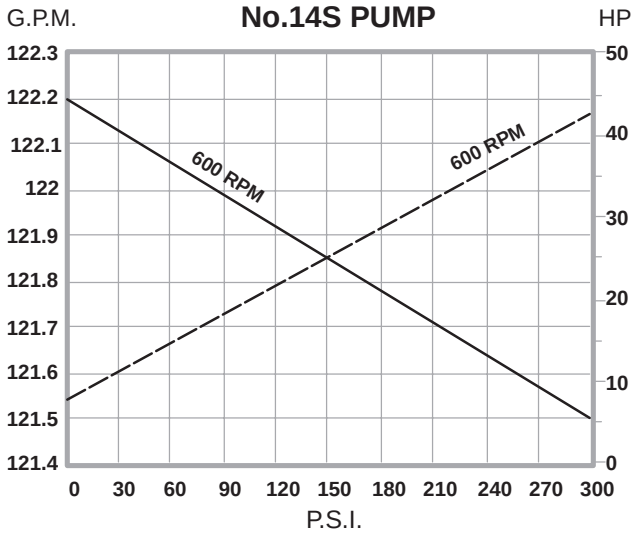
OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





OPERATING CHARACTERISTICS, 5,000 SSU LIQUID

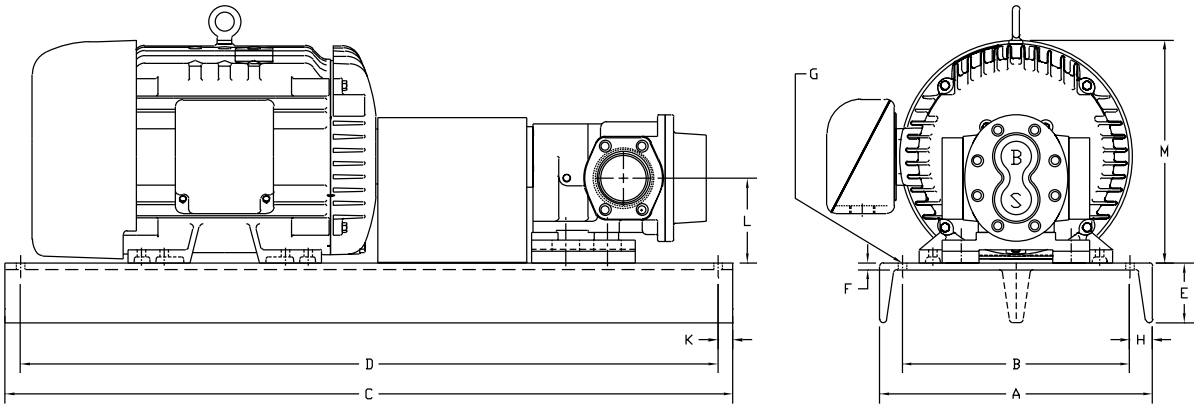




SOLID LINE = GPM
BROKEN LINE = HP

HEAVY DUTY S-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

BSM Heavy Duty S Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks, (if required) lifting eyebolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
6S-D	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.16	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.16	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.16	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	5.16	12.88
8S-D	215T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	4.83	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	4.83	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	4.83	12.88
	284T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	5.58	14.63
	286T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	5.58	14.63
10S-D	215T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	4.83	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	4.83	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	4.83	12.88
	284T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	5.58	14.63
	286T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	5.58	14.63
12S-D	254T	18.00	15.00	48.00	46.00	3.95	0.45	0.56	1.50	1.00	6.06	12.88
	256T	18.00	15.00	48.00	46.00	3.95	0.45	0.56	1.50	1.00	6.06	12.88
	284T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	6.06	14.63
	286T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	6.06	14.63
	324T	30.00	26.00	60.00	56.00	3.72	0.72	0.63	2.00	2.00	6.06	16.50
	326T	30.00	26.00	60.00	56.00	3.72	0.72	0.75	2.00	2.00	6.06	16.50
14S-D	254T	18.00	15.00	48.00	46.00	3.95	0.45	0.75	1.50	1.00	6.06	12.88
	256T	18.00	15.00	48.00	46.00	3.95	0.45	0.56	1.50	1.00	6.06	12.88
	284T	24.00	20.00	48.00	44.00	3.17	0.51	0.56	2.00	2.00	6.06	14.63
	286T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	6.06	14.63
	324T	30.00	26.00	60.00	56.00	3.72	0.72	0.63	2.00	2.00	6.06	16.50
	326T	30.00	26.00	60.00	56.00	3.72	0.72	0.75	2.00	2.00	6.06	16.50
	364T	30.00	26.00	60.00	56.00	3.72	0.72	0.75	2.00	2.00	7.06	18.50

53/55-SERIES

FT. MTD. PUMP

These pumps operate quietly at nominal motor speeds and discharge large volumes of liquid at medium pressures. Typical applications for these pumps are hydraulic power for positioning devices, lifts, machine actuation, liquid pressurization for fuel burners and blenders as well as general transfer in all industries.

Design: Drive speeds to 1725 rpm; discharge pressures to 200 psi; flow rate to 51.4 gpm; foot or flange mounted.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron.

Bearings: Anti-friction.

Seal: Mechanical seal. Also available with packed seal.

Lubrication: Self lubricating using the pumped liquid.

Rotation: Clockwise or counter-clockwise. Specify at time of order.

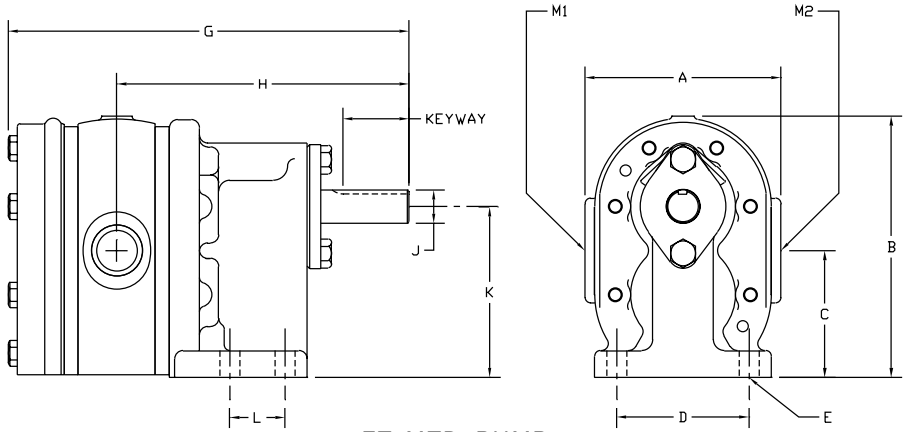
Liquid Viscosities: 100 ssu to 3,000 ssu. Clean liquids having good lubricating qualities. Adaptable for handling liquids of higher or lower viscosities.

Suction Lift: 28" Hg / 31 feet depending on the type of liquid being pumped.

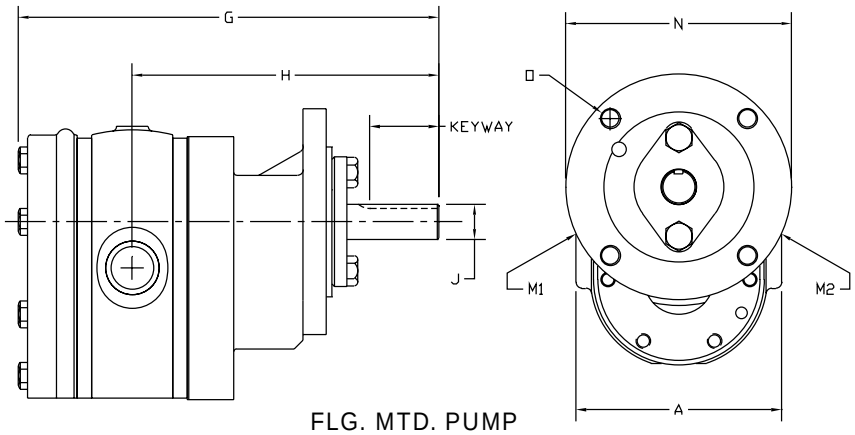
Drive Options: A-Drive (pump connected to C-Face motor with adapter bracket and coupling); D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; Bearing Kits; and Seal Kits. Refer to Section 13.

DIMENSIONAL DATA 53/55-SERIES



FT. MTD. PUMP



FLG. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	G	H	J	K	L	M1	M2	N	O	Keyway
53	4.52	6.03	2.88	3.00	29/64	9.13	6.63	.75	3.88	1.25	1	3/4	4 7/8	3/8-16	3/16 x 3/32
55	5.00	6.03	2.88	3.00	29/64	10.13	7.13	.75	3.88	1.25	1 1/4	1.00	"	"	3/16 x 3/32

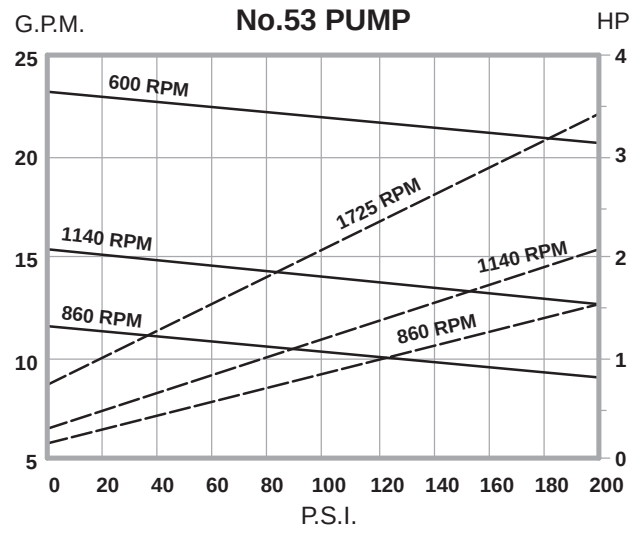
OPERATING CHARACTERISTICS

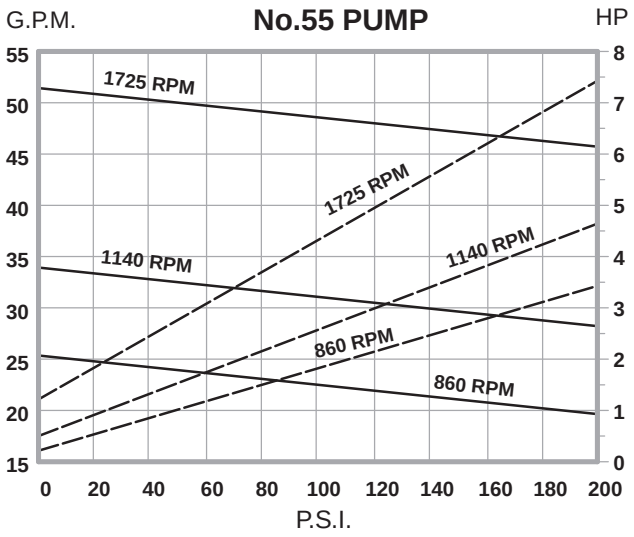
Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi gpm	0 psi hp	50 psi gpm	50 psi hp	75 psi gpm	75 psi hp	100 psi gpm	100 psi hp	200 psi gpm	200 psi hp
53	.01347	.0090	860	11.6	.2	11.1	.5	10.9	.7	10.7	.2	9.8	1.6
			1140	15.4	.3	14.9	.8	14.7	1.0	14.5	1.2	13.6	2.2
			1725	23.2	.8	22.7	1.4	22.5	1.8	22.3	2.1	21.4	3.5
55	.02984	.0200	860	25.6	.3	24.6	1.0	24.1	1.4	23.6	1.8	21.6	3.5
			1140	35.0	.5	34.0	1.5	33.5	2.0	33.0	2.6	31.0	4.7
			1725	51.4	1.3	50.4	2.6	49.9	3.4	49.4	4.2	47.4	7.5

*Delivery and input horsepower are based on liquid viscosity of 100 ssu

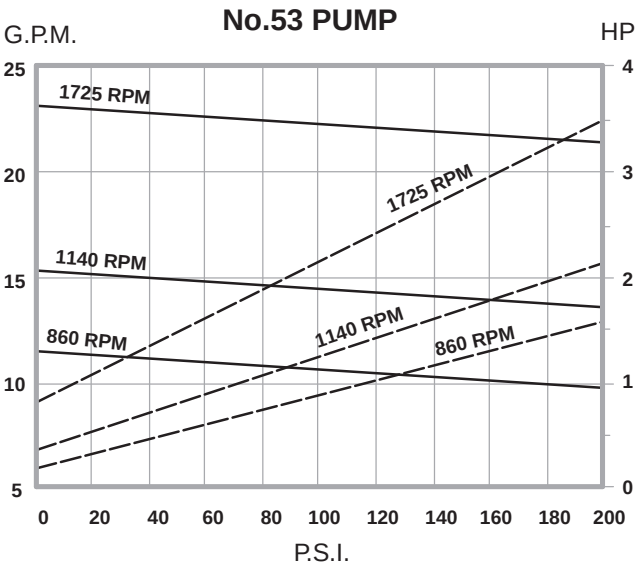
53/55-SERIES

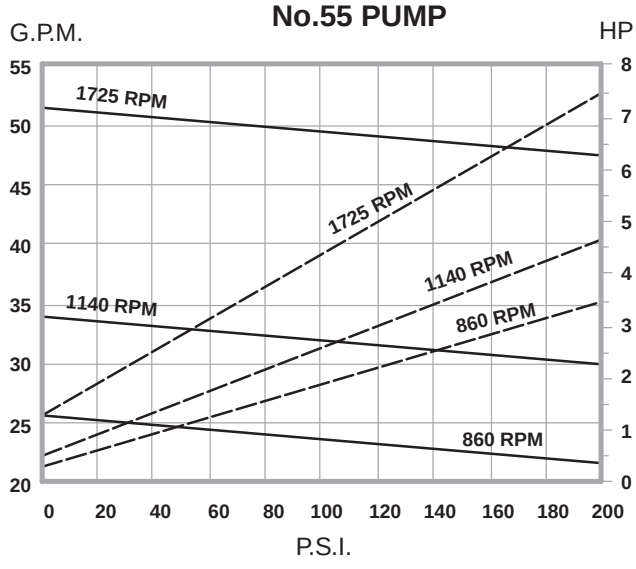
OPERATING CHARACTERISTICS, 70 SSU LIQUID





OPERATING CHARACTERISTICS, 100 SSU LIQUID

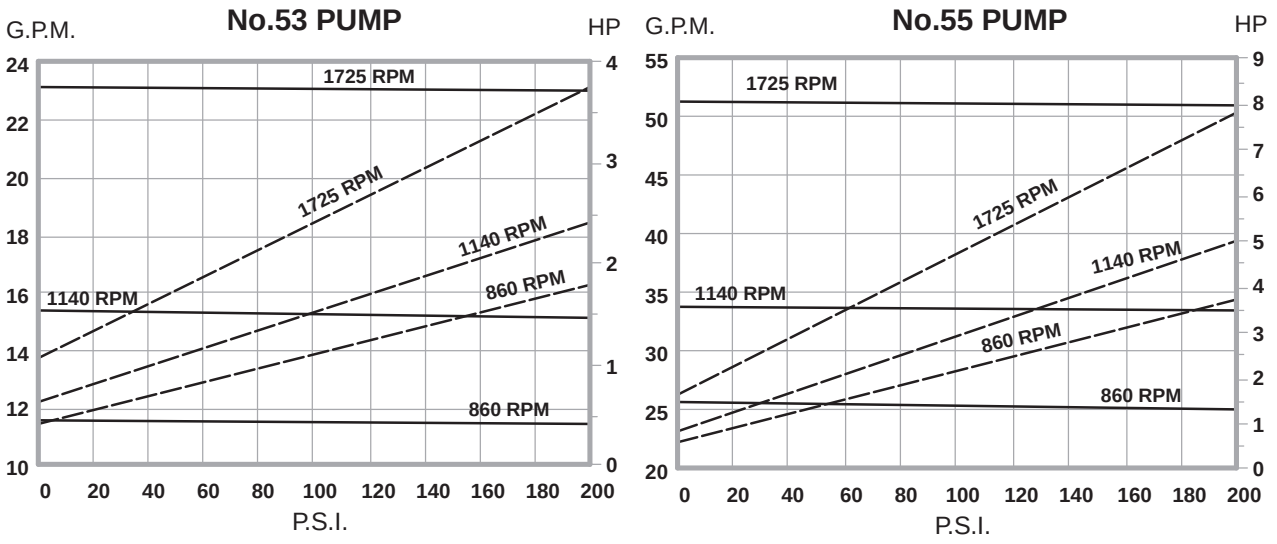




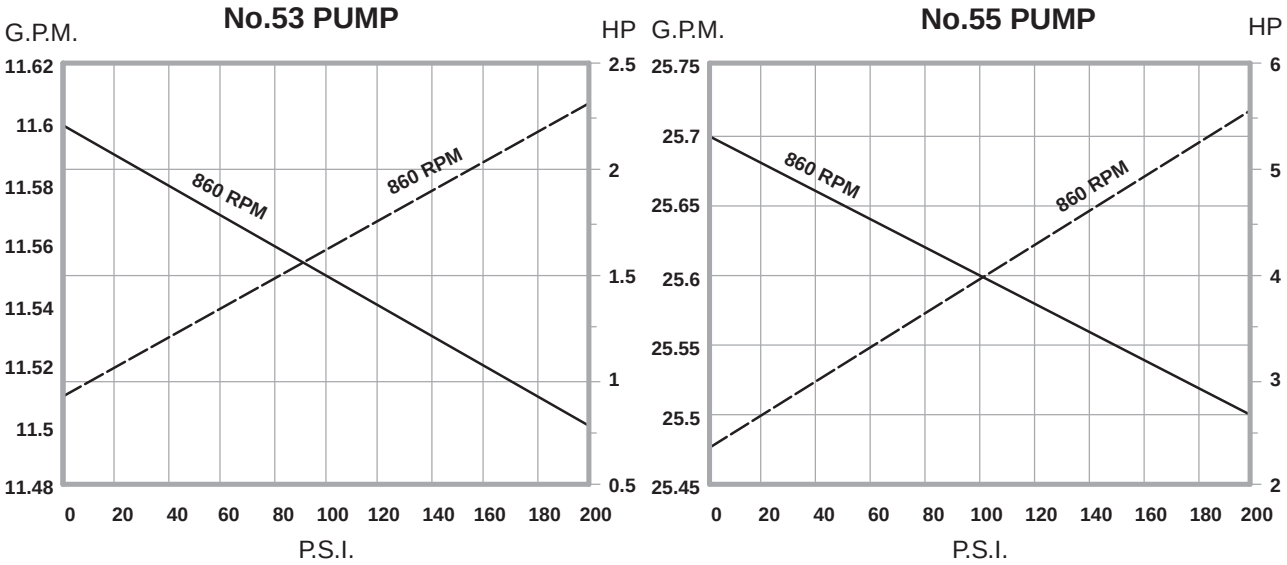
SOLID LINE = GPM
BROKEN LINE = HP

53/55-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



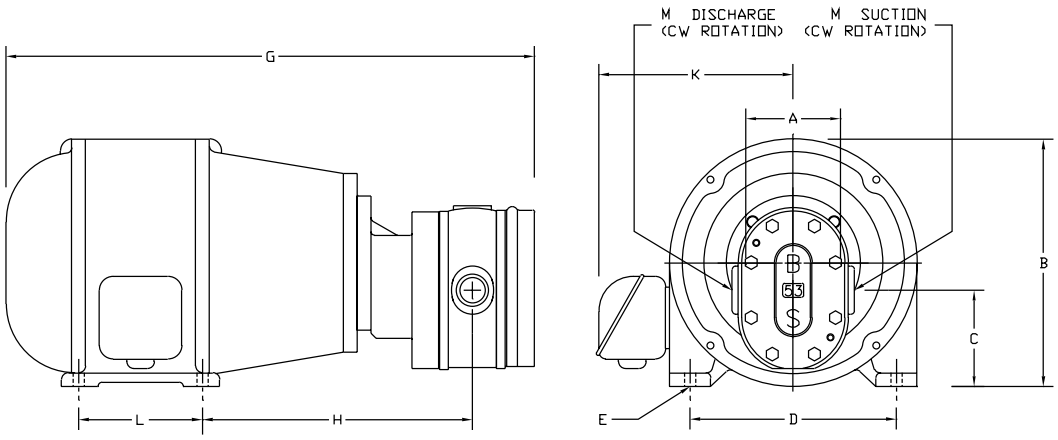
OPERATING CHARACTERISTICS, 3,000 SSU LIQUID



SOLID LINE = GPM
BROKEN LINE = HP

53/55-SERIES CLOSE COUPLED MOTOR DRIVEN ROTARY GEAR PUMPS (E-DRIVE)

BSM 53/55-Series pumps are available direct coupled to the end bell of a foot mounted motor. This assembly, referred to as an E-Drive, ensures accurate alignment and requires less space than a pump connected to the C-Face of a motor. BSM 53/55 Close Coupled Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 51.4 gpm and pressures to 200 psi.

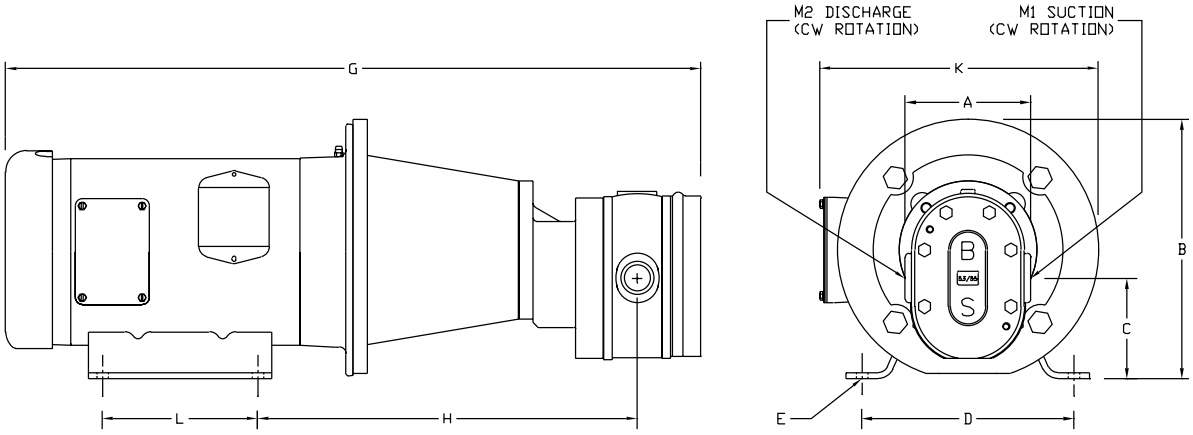


DIMENSIONS (INCHES)

Model	Motor Frame	A	B	C	D	E	G	H	K	L	M1	M2
53-E	182	4.44	9.00	3.50	7.50	0.41	18.31	8.94	7.06	4.50	3/4	1
	184	4.44	9.00	3.50	7.50	0.41	19.31	8.94	7.06	5.50	3/4	1
	213	4.44	10.38	4.25	8.50	0.41	20.88	9.75	7.94	5.50	3/4	1
	215	4.44	10.38	4.25	8.50	0.41	21.38	9.75	7.94	7.00	3/4	1
	254U	4.44	12.38	5.25	10.00	0.41	23.56	11.93	9.81	8.25	1	1 1/4
55-E	182	5.00	9.00	3.50	7.50	0.41	19.68	10.82	7.06	4.50	1	1 1/4
	184	5.00	9.00	3.50	7.50	0.41	20.68	10.82	7.06	5.50	1	1 1/4
	213	5.00	10.38	4.25	8.50	0.41	22.25	11.63	7.94	5.50	1	1 1/4
	215	5.00	10.38	4.25	8.50	0.41	22.75	11.63	7.94	7.00	1	1 1/4
	254U	5.00	12.38	5.25	10.00	0.41	24.93	13.81	9.81	8.25	1	1 1/4

53/55-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM 53/55-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM 53/55 Motor Driven Rotary Gear Pumps are available in motor speeds of 860,1140, 1725 rpm with capacities to 51.4 gpm and pressures to 200 psi.

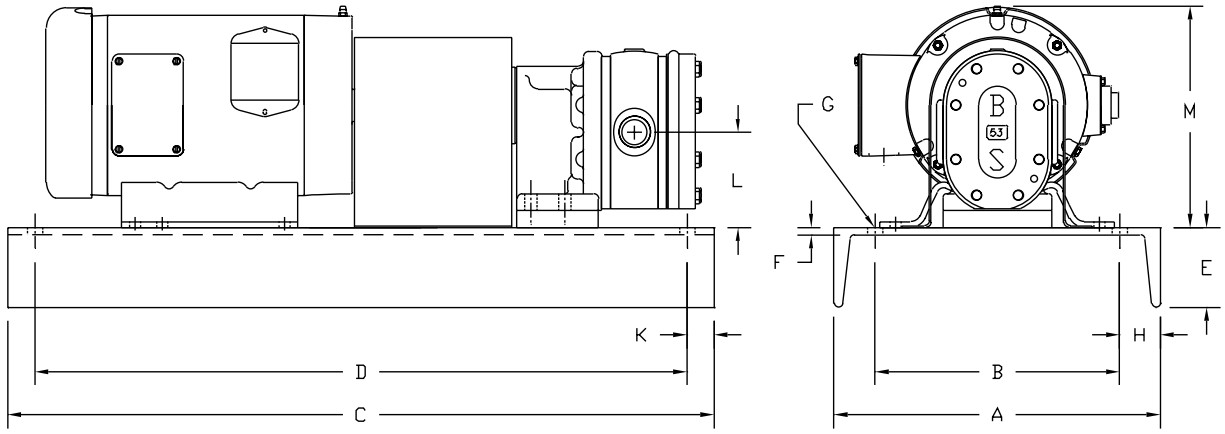


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M1	M2
53-A	56C	4.44	6.88	2.50	4.88	0.34	21.19	11.74	8.31	3.00	3/4	1
	145TC	4.44	6.88	2.50	5.50	0.34	22.91	12.06	8.56	5.00	3/4	1
	182TC	4.44	8.69	3.50	7.50	0.41	24.50	13.68	9.81	4.50	3/4	1
	184TC	4.44	8.69	3.50	7.50	0.41	25.50	13.68	9.81	5.50	3/4	1
55-A	56C	5.00	6.88	2.50	4.88	0.34	22.19	12.24	8.31	3.00	1	1 1/4
	145TC	5.00	6.88	2.50	5.50	0.34	23.91	12.56	8.56	5.00	1	1 1/4
	182TC	5.00	8.69	3.50	7.50	0.41	25.50	14.18	9.81	4.50	1	1 1/4
	184TC	5.00	8.69	3.50	7.50	0.41	26.50	14.18	9.81	5.50	1	1 1/4
	213TC	5.00	10.25	4.25	8.50	0.41	28.41	15.06	12.16	5.50	1	1 1/4
	215	5.00	10.25	4.25	8.50	0.41	29.91	15.06	12.16	7.00	1	1 1/4

53/55-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

BSM 53/55-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks, (if required) lifting eye-bolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
53-D	56	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145T	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182T	15.00	12.00	30.00	28.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	184T	15.00	12.00	30.00	28.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
55-D	56	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25

500-SERIES

FLG. MTD. PUMP PUMP FOOT

The BSM 500-Series pumps are designed to provide quiet and efficient service at standard motor speeds, moderately high pressures. Typical applications are supplying hydraulic power on machine tools and construction equipment, as well as oil field gathering line service, and deep hole drilling applications.

Design: Drive speeds to 1725 rpm; discharge pressures to 1000 psi; flow rate to 60.0 gpm; foot or flange mounted.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts. Pumps are also available in Ductile Iron.

Bearings: Anti-friction needle bearings. Also available with carbon graphite or bronze bearings.

Seal: Mechanical seal. Also available with packed seal.

Lubrication: Self lubricating using the pumped liquid.

Rotation: Clockwise or counter-clockwise. A reversible back drain permits direction of rotation to be easily changed in the field.

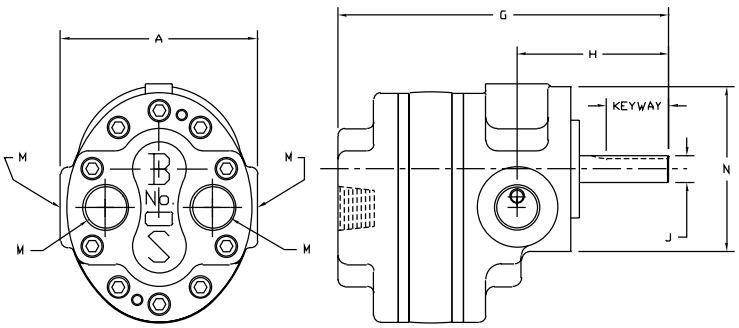
Liquid Viscosities: 100 ssu to 1,000 ssu recommended. Clean liquids having good lubricating qualities. Adaptable for handling liquids of higher or lower viscosities.

Suction Lift: Up to 28" Hg / 31 feet depending on the type of liquid being pumped.

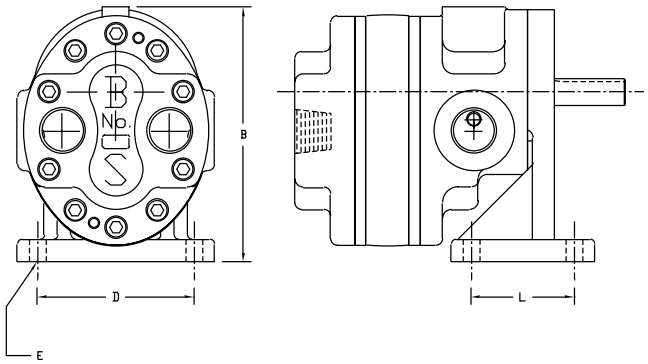
Drive Options: E-Drive (pump close coupled to motor); A-Drive (pump connected to C-Face motor with adapter bracket and coupling), D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; Bearing Kit, and Seal Kits. Refer to Section 13.

DIMENSIONAL DATA 500-Series



FLG. MTD. PUMP



FT. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	G	H	J	K	L	M	N	O	Keyway
507	4.00	5.19	3.19	3.00	.39	7.56	3.38	5/8	3.50	2.38	3/4	3.25	5/16-18	3/16 x 3/32
511	4.00	5.19	3.19	300	.39	8.06	3.38	5/8	3.50	2.38	3/4	3.25	5/16-18	3/16 x 3/32
517	5.50	7.13	3.66	4.38	.47	9.25	4.25	3/4	4.75	2.88	1	4.68	7/16-14	3/16 x 3/32
525	5.50	7.13	3.66	4.38	.47	9.75	4.25	3/4	4.75	2.88	1	4.68	7/16-14	3/16 x 3/32
537	6.25	8.00	4.38	5.00	.53	10.75	4.50	1.00	5.63	3.38	1 1/2	4.68	7/16-14	1/4 x 1/8
547	6.25	8.00	4.38	5.00	.53	11.25	4.50	1.00	5.63	3.38	1 1/2	4.68	7/16-14	1/4 x 1/8
557	6.25	8.00	4.38	5.00	.53	11.75	4.50	1.00	5.63	3.38	1 1/2	4.68	7/16-14	1/4 x 1/8
567	6.25	8.00	4.38	5.00	.53	13.25	4.50	1.00	5.63	3.38	2	4.68	7/16-14	1/4 x 1/8

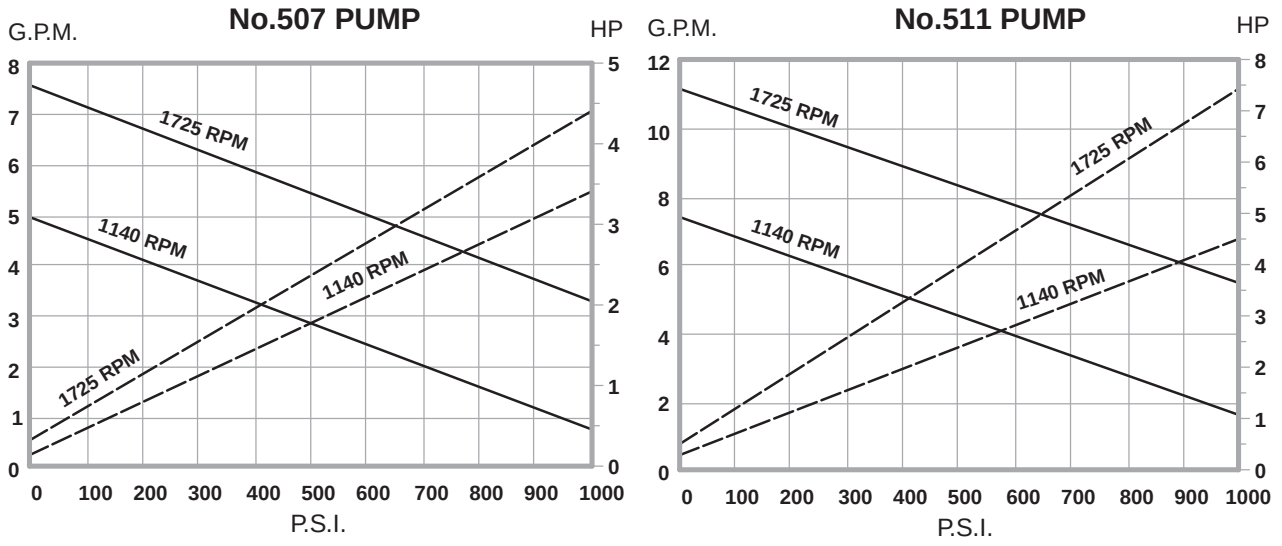
OPERATING CHARACTERISTICS

Model	Drive Speed	0 psi		100 psi		200 psi		300 psi		400 psi		500 psi		1000 psi	
	rpm	gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
507	1140	5.0	.20	4.7	.50	4.4	.85	4.1	1.2	3.8	1.5	3.5	1.9	2.0	3.5
	1725	7.6	.40	7.3	.80	7.0	1.2	6.7	1.6	6.4	2.0	6.1	2.5	4.6	4.5
511	1140	7.5	.40	7.0	.80	6.7	1.2	6.3	1.6	5.9	2.0	5.5	2.5	3.5	4.6
	1725	11.1	.60	10.7	1.3	10.3	2.0	9.8	2.6	9.4	3.3	9.0	4.0	7.0	7.5
517	1140	12.0	.40	11.3	1.2	11.0	1.8	10.5	2.6	10.0	3.2	9.5	3.9	--	--
525	1140	17.0	.50	15.5	1.5	15.0	2.6	14.2	3.6	13.5	4.5	12.7	5.5	--	--
537	1140	24.5	.60	22.5	2.2	20.5	3.6	19.0	5.0	17.0	6.4	15.0	7.9	--	--
547	1140	31.1	.70	29.0	2.7	27.0	4.5	25.3	6.3	23.5	8.1	21.5	9.9	--	--
557	1140	37.5	.80	35.5	3.2	33.5	5.4	31.5	7.6	30.0	9.8	28.0	12.0	--	--
567	1140	57.9	1.20	56.0	4.9	54.0	8.3	52.1	11.7	50.2	15.1	48.3	18.5	--	--

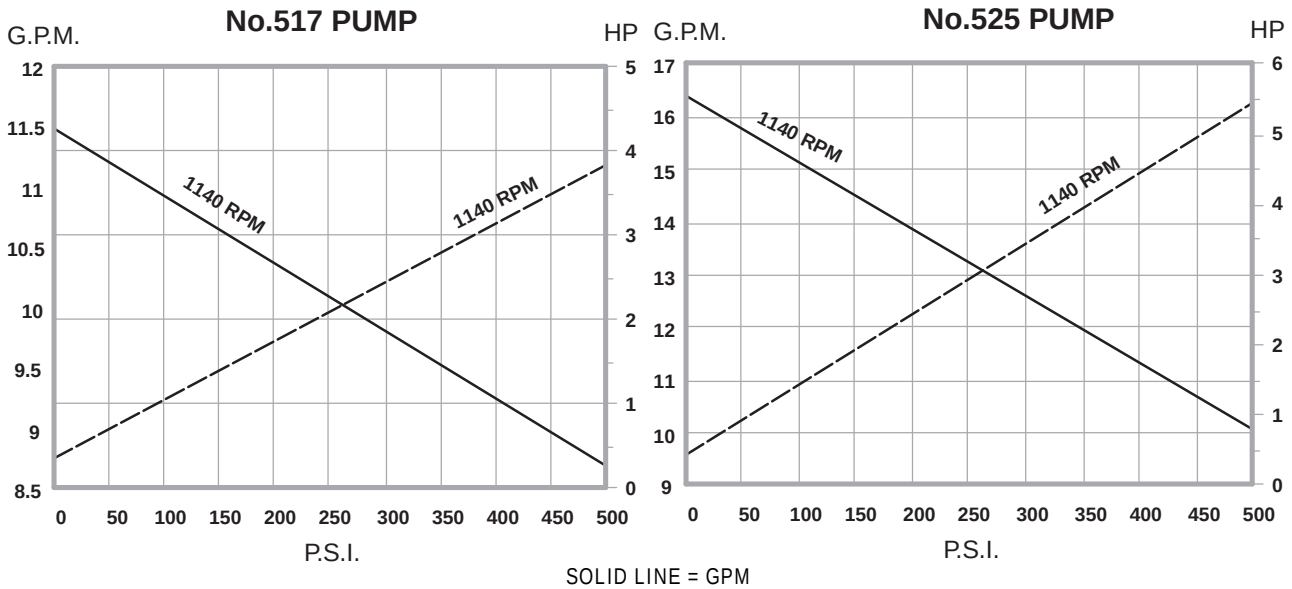
*Delivery and input horsepower are based on liquid viscosity of 100 ssu at speed and pressures shown.

500-SERIES

OPERATING CHARACTERISTICS, 70 SSU LIQUID



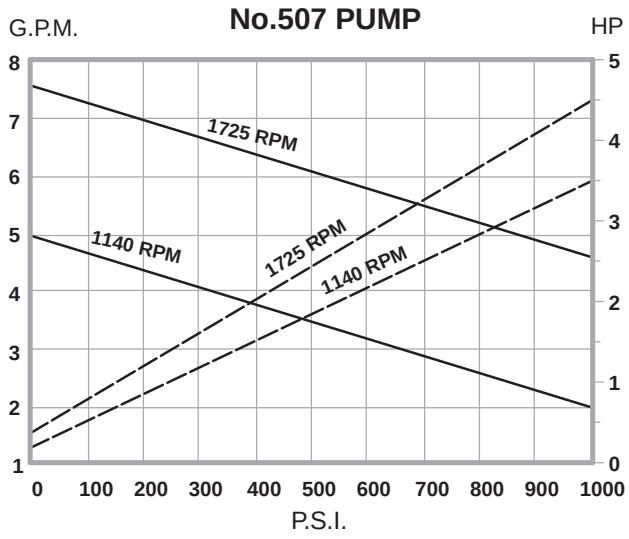
OPERATING CHARACTERISTICS, 70 SSU LIQUID

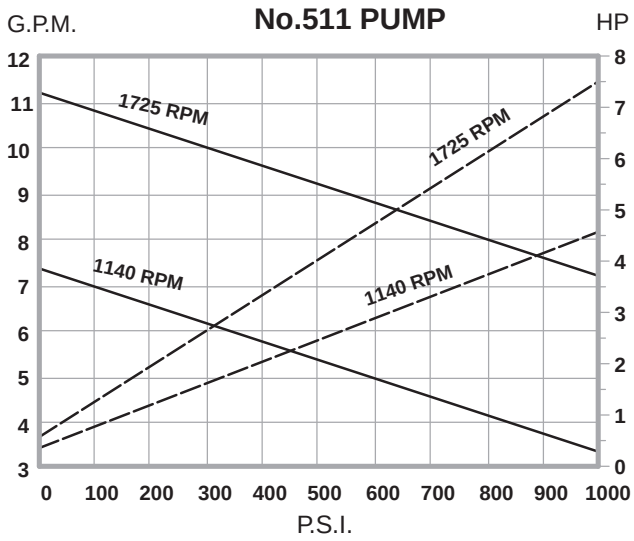


SOLID LINE = GPM
BROKEN LINE = HP

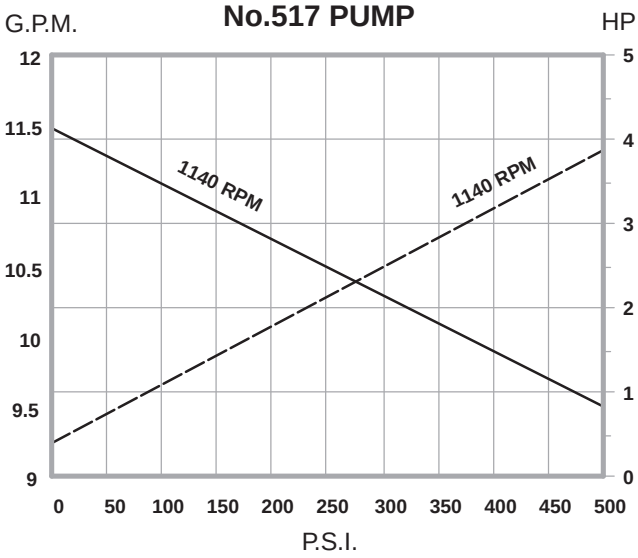
500-SERIES

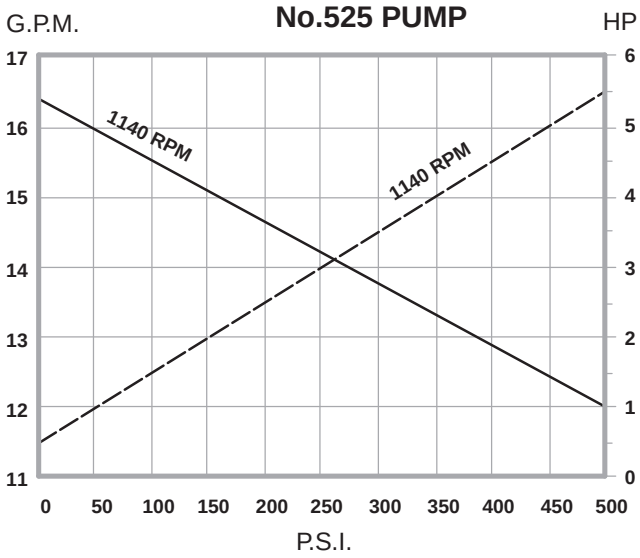
OPERATING CHARACTERISTICS, 100 SSU LIQUID





OPERATING CHARACTERISTICS, 100 SSU LIQUID

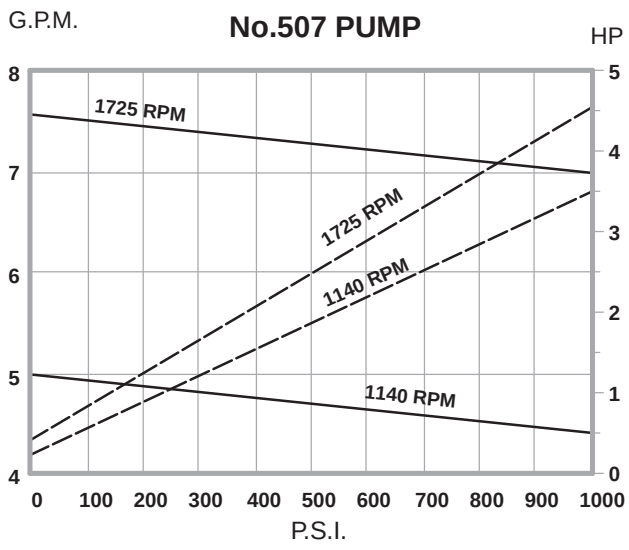


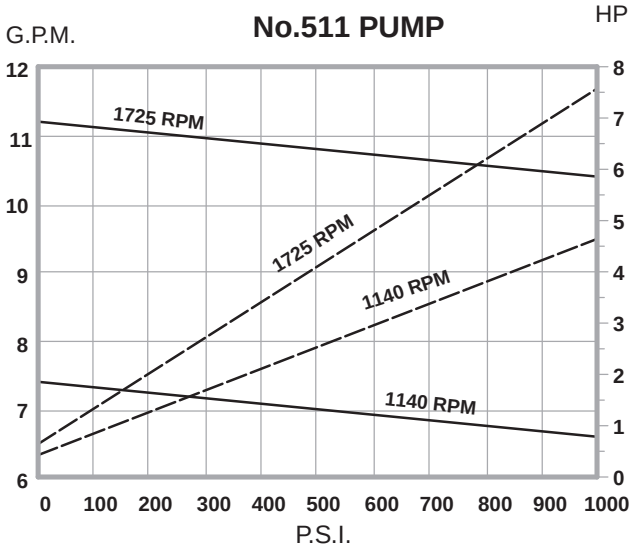


SOLID LINE = GPM
BROKEN LINE = HP

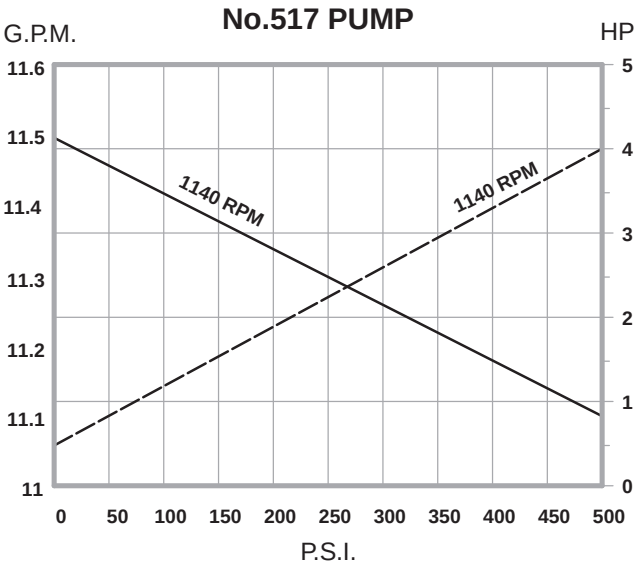
500-SERIES

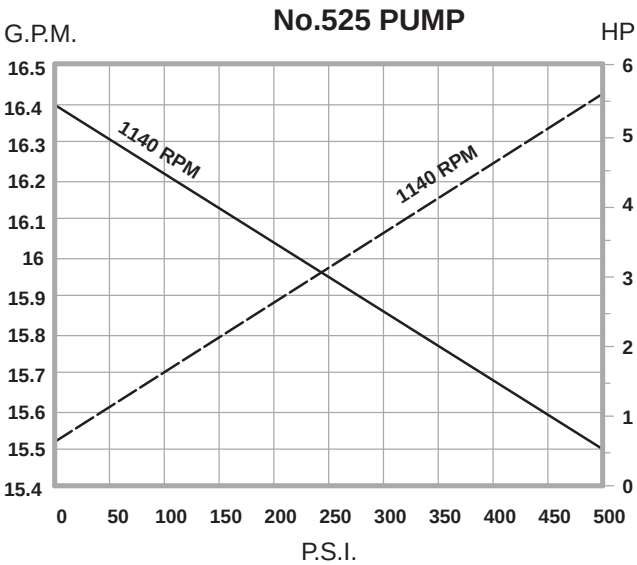
OPERATING CHARACTERISTICS, 500 SSU LIQUID





OPERATING CHARACTERISTICS, 500 SSU LIQUID

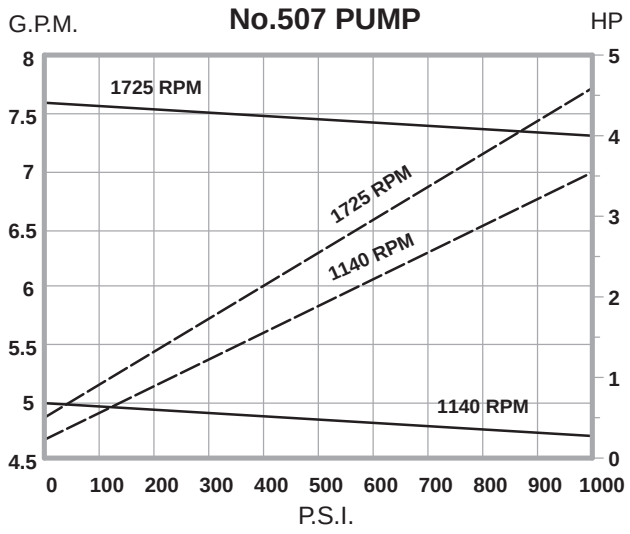


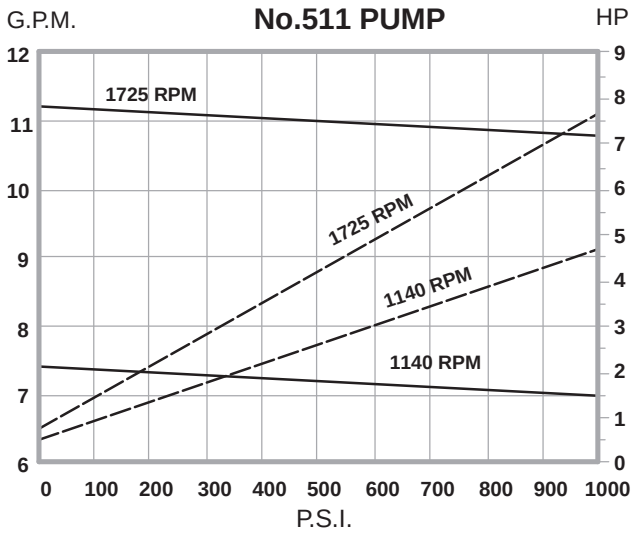


SOLID LINE = GPM
BROKEN LINE = HP

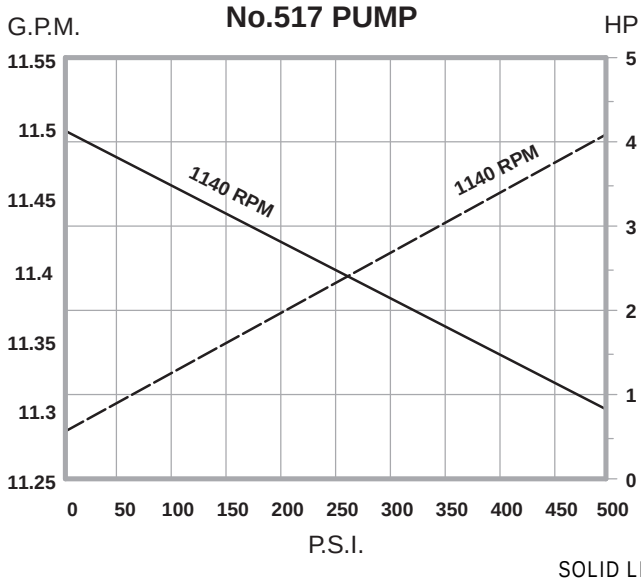
500-SERIES

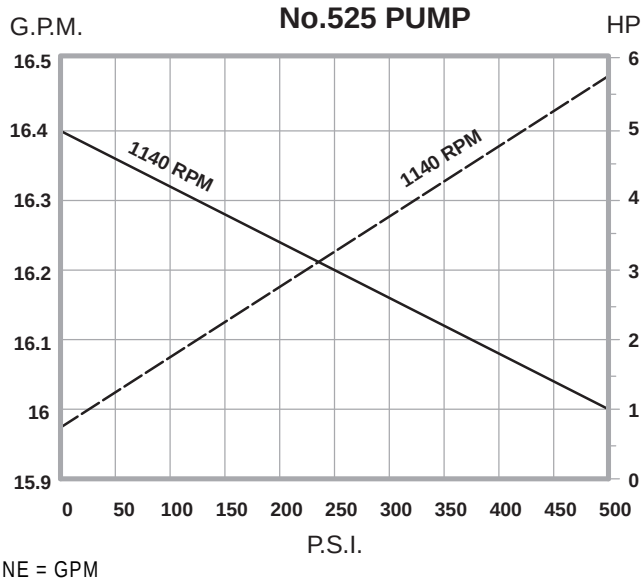
OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





OPERATING CHARACTERISTICS, 1,000 SSU LIQUID

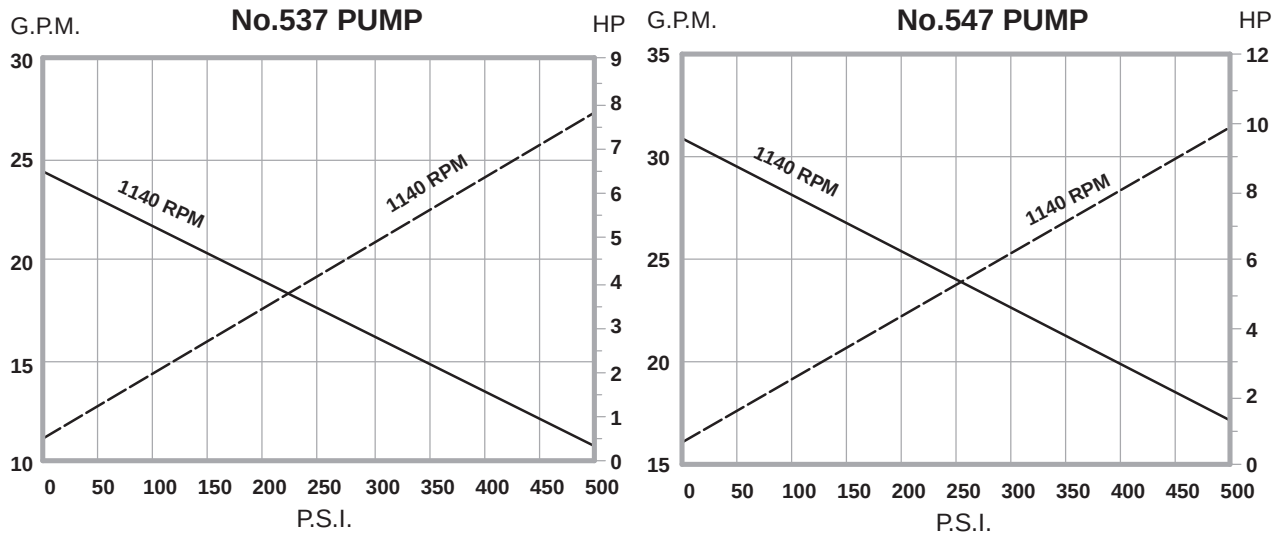




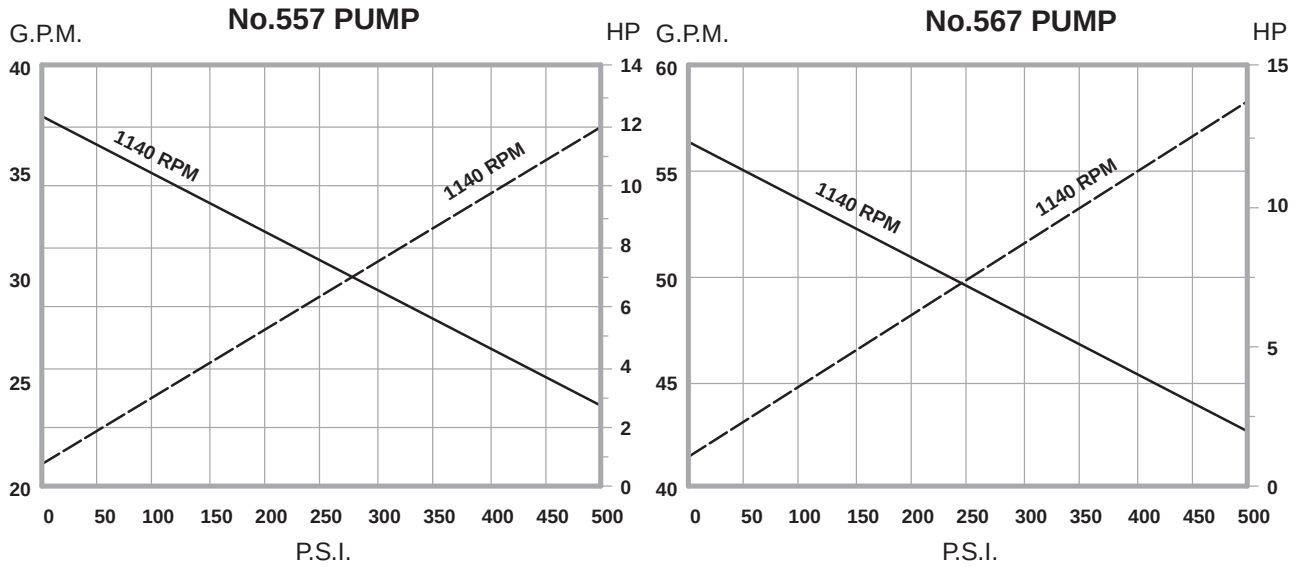
SOLID LINE = GPM
BROKEN LINE = HP

500-SERIES

OPERATING CHARACTERISTICS, 70 SSU LIQUID



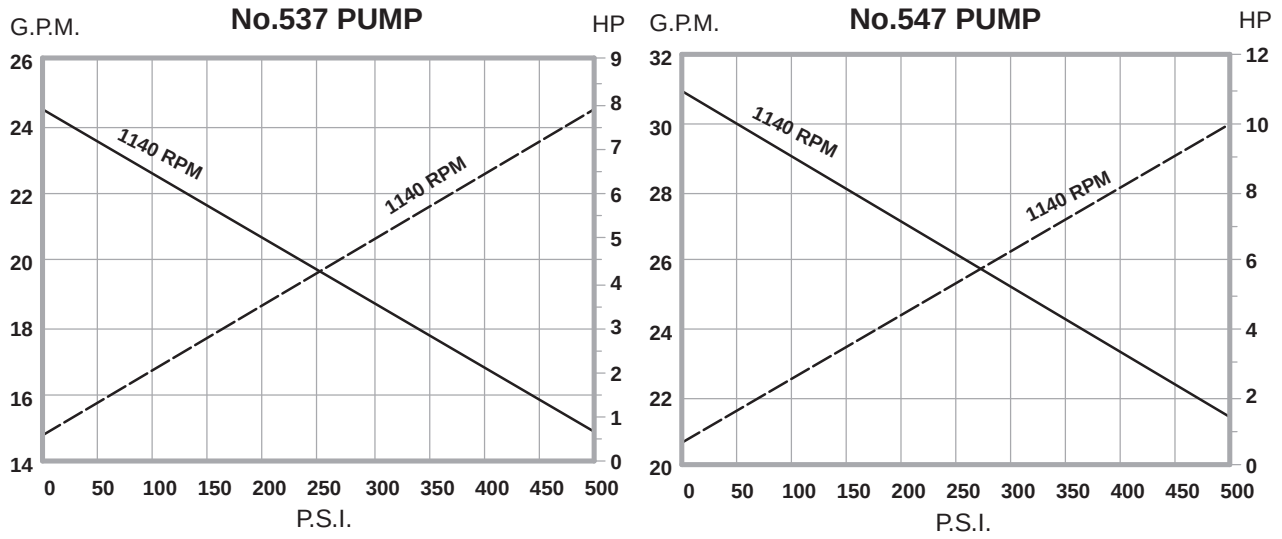
OPERATING CHARACTERISTICS, 70 SSU LIQUID



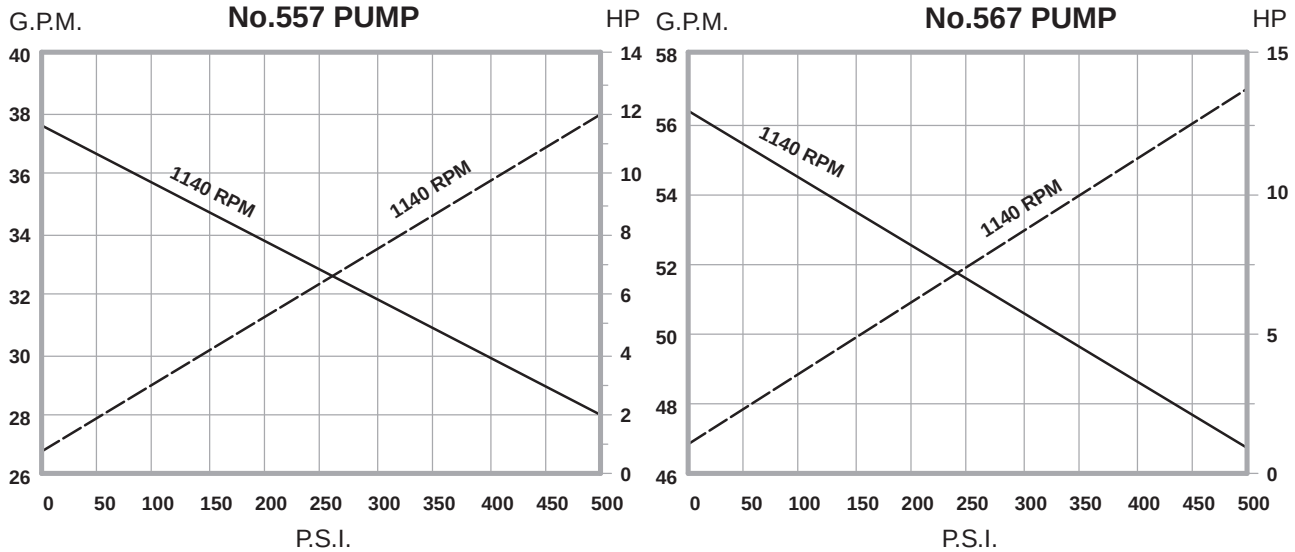
SOLID LINE = GPM
BROKEN LINE = HP

500-SERIES

OPERATING CHARACTERISTICS, 100 SSU LIQUID



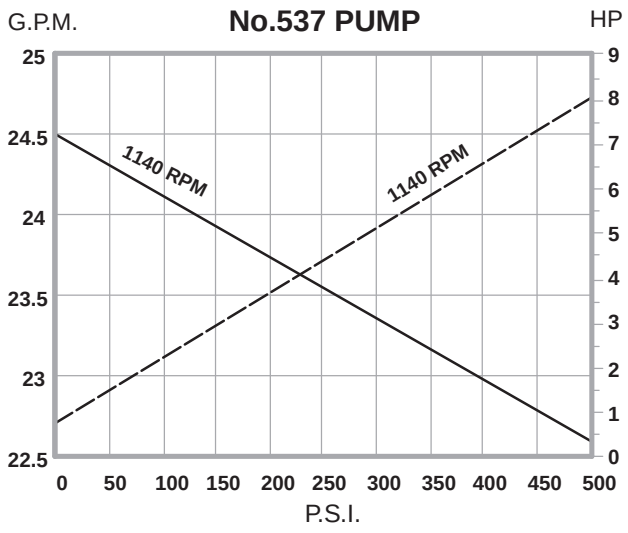
OPERATING CHARACTERISTICS, 100 SSU LIQUID

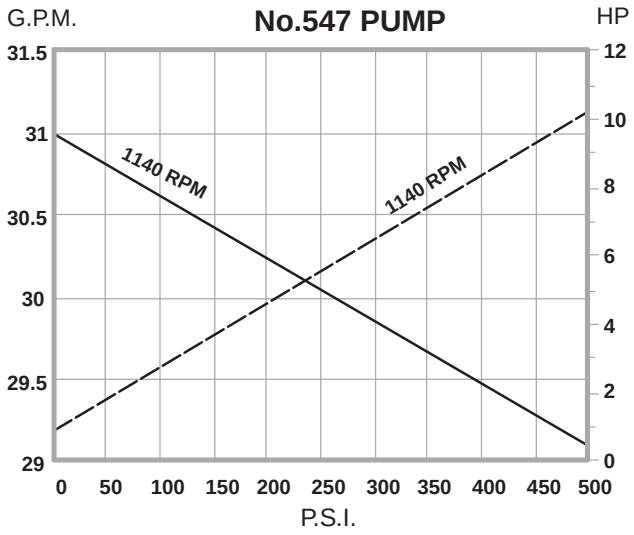


SOLID LINE = GPM
BROKEN LINE = HP

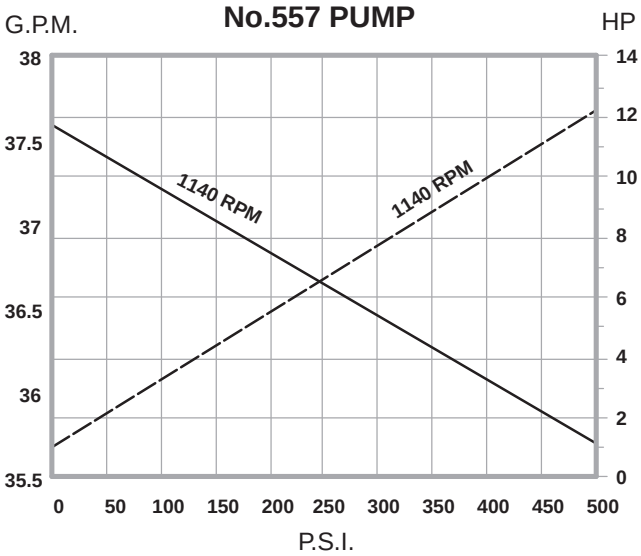
500-SERIES

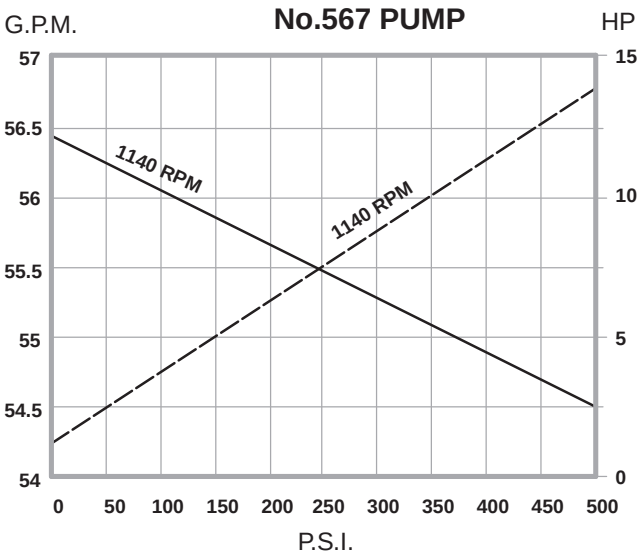
OPERATING CHARACTERISTICS, 500 SSU LIQUID





OPERATING CHARACTERISTICS, 500 SSU LIQUID

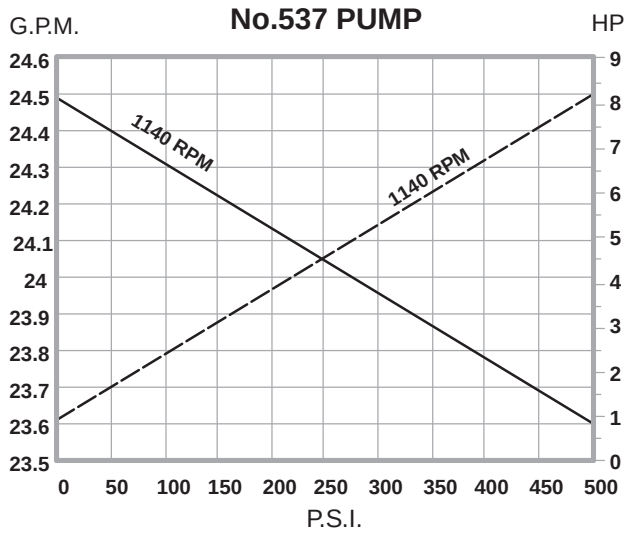


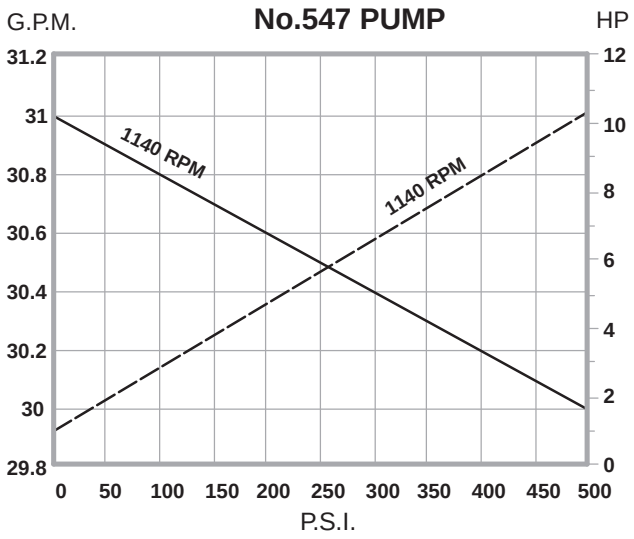


SOLID LINE = GPM
BROKEN LINE = HP

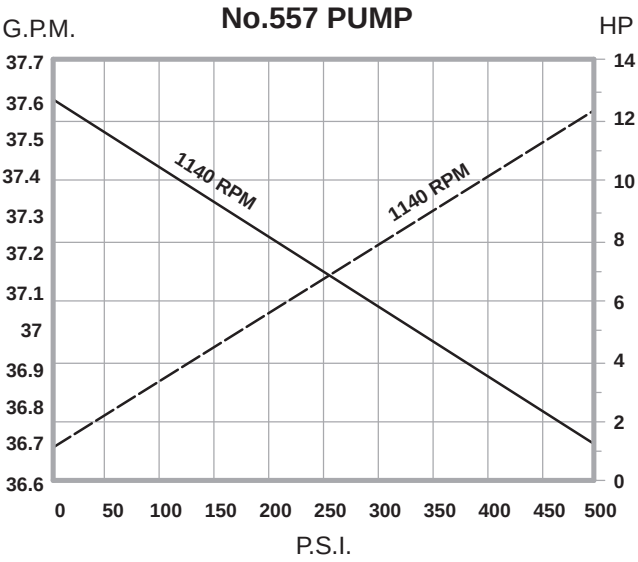
500-SERIES

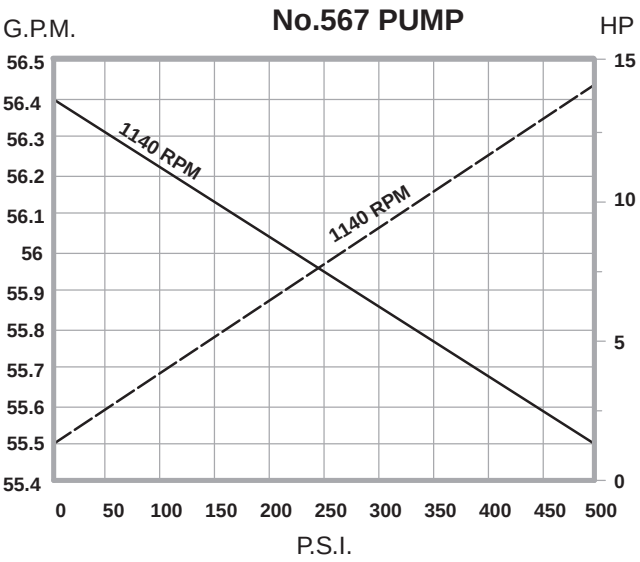
OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





OPERATING CHARACTERISTICS, 1,000 SSU LIQUID

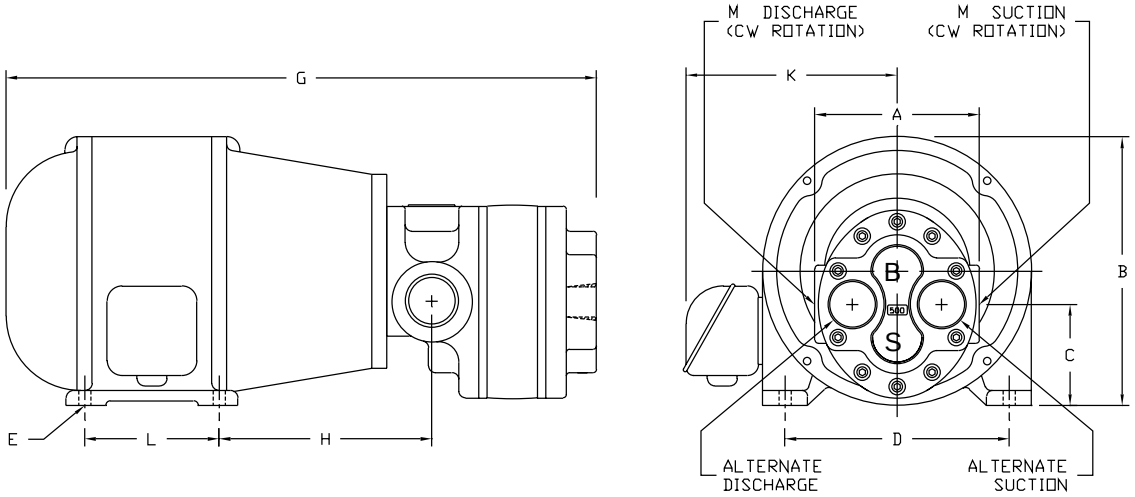




SOLID LINE = GPM
BROKEN LINE = HP

500-SERIES CLOSE COUPLED MOTOR DRIVEN ROTARY GEAR PUMPS (E-DRIVE)

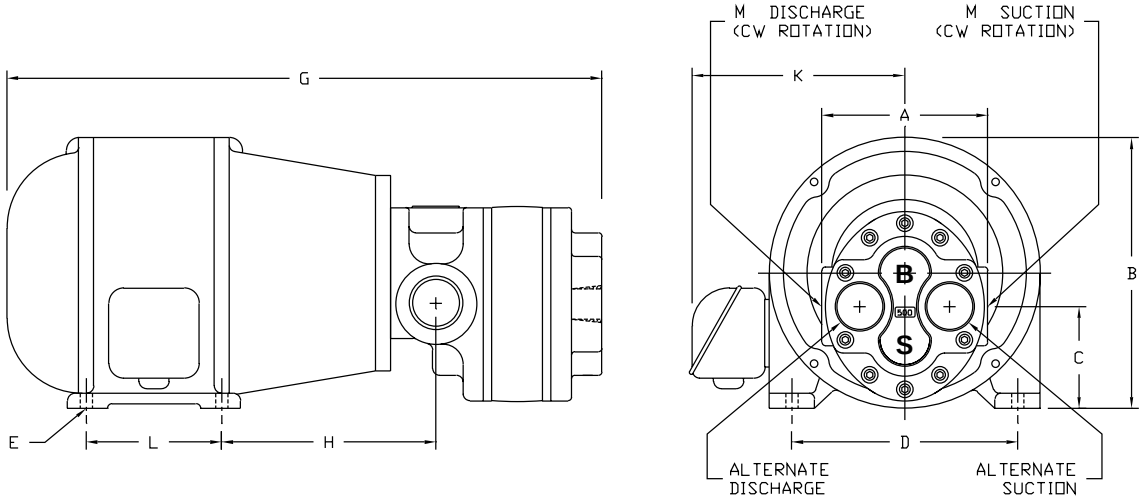
BSM 500-Series pumps are available direct coupled to the end bell of a foot mounted motor. This assembly, referred to as an E-Drive, ensures accurate alignment and requires less space than a pump connected to the C-Face of a motor. BSM 500-Series Close Coupled Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 60.0 gpm and pressures to 1000 psi.



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
507-E	182	4.00	9.00	4.19	7.50	.406	N/A	17.81	6.50	7.06	4.50	3/4
	184	4.00	9.00	4.19	7.50	.406	N/A	18.81	6.50	7.06	5.50	"
	213	4.00	10.38	4.94	8.50	.406	N/A	20.38	7.31	7.94	5.50	"
	215	4.00	10.38	4.94	8.50	.406	N/A	21.88	7.31	7.94	7.00	"
	254U	4.00	12.38	5.94	10.00	.531	N/A	24.56	8.13	9.81	8.25	"
511-E	182	4.00	9.00	4.19	7.50	.406	N/A	18.31	6.50	7.06	4.50	3/4
	184	4.00	9.00	4.19	7.50	.406	N/A	19.31	6.50	7.06	5.50	"
	213	4.00	10.38	4.94	8.50	.406	N/A	20.88	7.31	7.94	5.50	"
	215	4.00	10.38	4.94	8.50	.406	N/A	22.38	7.31	7.94	7.00	"
	254U	4.00	12.38	5.94	10.00	.531	N/A	25.06	8.12	9.81	8.25	"
	256U	4.00	12.38	5.94	10.00	.531	N/A	26.81	8.12	9.81	10.00	"
517-E	213	5.50	10.38	4.16	8.50	.406	N/A	21.69	7.83	7.94	5.50	1
	215	5.50	10.38	4.16	8.50	.406	N/A	23.19	7.83	7.94	7.00	1
	254U	5.50	12.38	5.16	10.00	.531	N/A	25.88	8.63	9.81	8.25	1
525-E	213	5.50	10.38	4.16	8.50	.406	N/A	22.19	7.81	7.94	5.50	1
	215	5.50	10.38	4.16	8.50	.406	N/A	23.69	7.81	7.94	7.00	1
	254U	5.50	12.38	5.16	10.00	.531	N/A	26.38	8.63	9.81	8.25	1
	256U	5.50	12.38	5.16	10.00	.531	N/A	28.13	8.63	9.81	10.00	1

500-SERIES CLOSE COUPLED MOTOR DRIVEN ROTARY GEAR PUMPS (E-DRIVE)

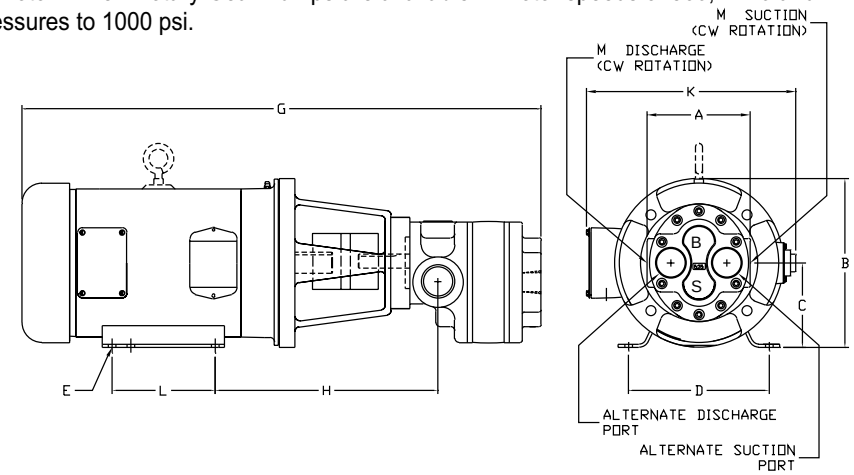


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
537-E	213	6.25	10.38	4.00	8.50	.406	N/A	23.19	8.06	7.94	5.50	1 1/2
	215	6.25	10.38	4.00	8.50	.406	N/A	24.69	8.06	7.94	7.00	"
	254U	6.25	12.38	5.00	10.00	.531	N/A	27.38	8.88	9.81	8.25	"
	256U	6.25	12.38	5.00	10.00	.531	N/A	29.13	8.88	9.81	10.00	"
	284U	6.25	13.94	5.75	11.00	.531	N/A	29.50	9.19	10.75	9.50	"
547-E	213	6.25	10.38	4.00	8.50	.406	N/A	23.69	8.06	7.94	5.50	1 1/2
	215	6.25	10.38	4.00	8.50	.406	N/A	25.19	8.06	7.94	7.00	"
	254U	6.25	12.38	5.00	10.00	.531	N/A	27.88	8.88	9.81	8.25	"
	256U	6.25	12.38	5.00	10.00	.531	N/A	29.63	8.88	9.81	10.00	"
	284U	6.25	13.94	5.75	11.00	.531	N/A	30.00	9.19	10.75	9.50	"
557-E	213	6.25	10.38	4.00	8.50	.406	N/A	24.19	8.06	7.94	5.50	1 1/2
	215	6.25	10.38	4.00	8.50	.406	N/A	25.69	8.06	7.94	7.00	"
	254U	6.25	12.38	5.00	10.00	.531	N/A	28.38	8.88	9.81	8.25	"
	256U	6.25	12.38	5.00	10.00	.531	N/A	30.13	8.88	9.81	10.00	"
	284U	6.25	13.94	5.75	11.00	.531	N/A	30.50	9.19	10.75	9.50	"
	286U	6.25	13.94	5.75	11.00	.531	N/A	32.00	9.19	10.75	11.00	"
	324U	6.25	15.94	6.75	12.50	.656	N/A	32.75	10.00	12.13	10.50	"
567-E	213	6.25	10.38	4.00	8.50	.406	N/A	25.69	8.06	7.94	5.50	2
	215	6.25	10.38	4.00	8.50	.406	N/A	27.19	8.06	7.94	7.00	"
	254U	6.25	12.38	5.00	10.00	.531	N/A	29.88	8.88	9.81	8.25	"
	256U	6.25	12.38	5.00	10.00	.531	N/A	31.63	8.88	9.81	10.00	"
	284U	6.25	13.94	5.75	11.00	.531	N/A	32.00	9.19	10.75	9.50	"
	286U	6.25	13.94	5.75	11.00	.531	N/A	33.50	9.19	10.75	11.00	"
	324U	6.25	15.94	6.75	12.50	.656	N/A	34.25	10.00	12.13	10.50	"

500-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

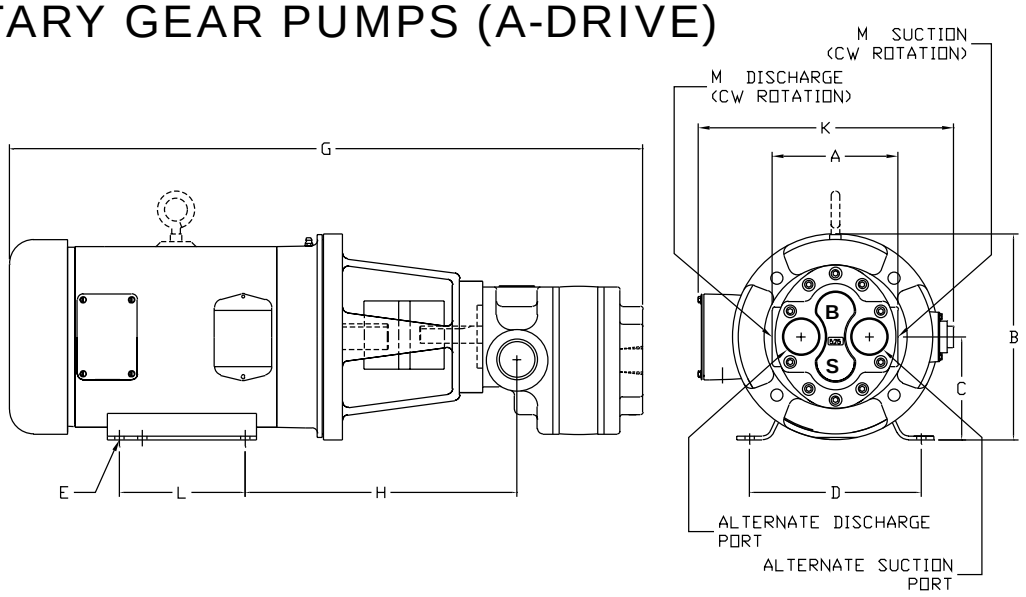
BSM 500-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM 500-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 and 1725 rpm with capacities to 60.0 gpm and pressures to 1000 psi.



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
507-A	56C	4.00	6.88	2.88	4.88	0.34	20.19	8.93	8.31	3.00	3/4
	145TC	4.00	6.88	2.88	5.50	0.34	21.91	9.25	8.56	5.00	3/4
	182TC	4.00	8.69	3.88	7.50	0.41	23.50	10.87	9.81	4.50	3/4
	184TC	4.00	8.69	3.88	7.50	0.41	24.50	10.87	9.81	5.50	3/4
	213TC	4.00	10.25	4.63	8.50	0.41	26.41	11.75	12.16	5.50	3/4
	215TC	4.00	10.25	4.63	8.50	0.41	27.91	11.75	12.16	7.00	3/4
511-A	56C	4.00	6.88	2.88	4.88	0.34	20.69	8.93	8.31	3.00	3/4
	145TC	4.00	6.88	2.88	5.50	0.34	22.41	9.25	8.56	5.00	3/4
	182TC	4.00	8.69	3.88	7.50	0.41	24.00	10.87	9.81	4.50	3/4
	184TC	4.00	8.69	3.88	7.50	0.41	25.00	10.87	9.81	5.50	3/4
	213TC	4.00	10.25	4.63	8.50	0.41	26.91	11.75	12.16	5.50	3/4
	215TC	4.00	10.25	4.63	8.50	0.41	28.41	11.75	12.16	7.00	3/4
517-A	56C	5.50	6.88	2.88	4.88	0.34	21.88	9.06	8.31	3.00	1
	145TC	5.50	6.88	2.88	5.50	0.34	23.60	9.38	8.56	5.00	1
	182TC	5.50	8.69	3.88	7.50	0.41	25.31	11.88	9.81	4.50	1
	184TC	5.50	8.69	3.88	7.50	0.41	26.31	11.88	9.81	5.50	1
	213TC	5.50	10.25	4.63	8.50	0.41	28.22	12.75	12.16	5.50	1
	215TC	5.50	10.25	4.63	8.50	0.41	29.72	12.75	12.16	7.00	1
525-A	56C	5.50	6.88	2.88	4.88	0.34	22.38	9.06	8.31	3.00	1
	145TC	5.50	6.88	2.88	5.50	0.34	24.10	9.38	8.56	5.00	1
	182TC	5.50	8.69	3.88	7.50	0.41	25.81	11.88	9.81	4.50	1
	184TC	5.50	8.69	3.88	7.50	0.41	26.81	11.88	9.81	5.50	1
	213T	5.50	10.25	4.63	8.50	0.41	28.72	12.75	12.16	5.50	1
	215TC	5.50	10.25	4.63	8.50	0.41	30.22	12.75	12.16	7.00	1
	254TC	5.50	12.88	5.63	10.00	0.53	32.31	13.25	16.09	8.25	1

500-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

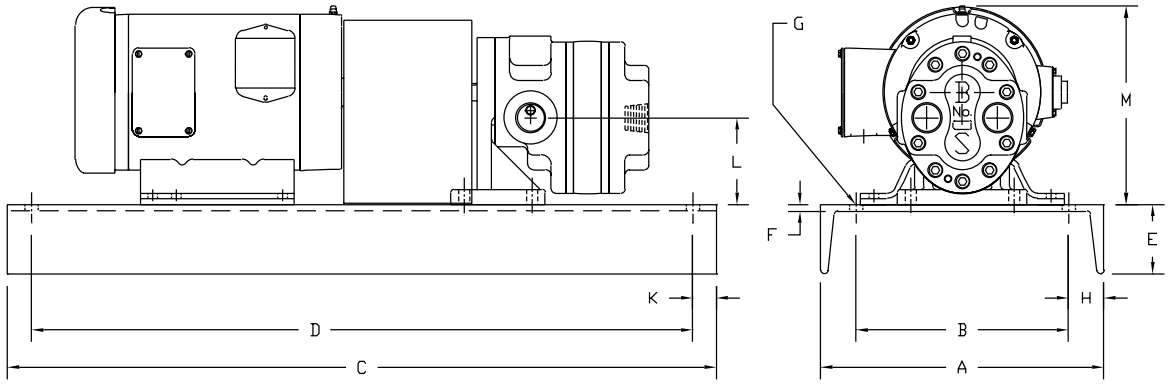


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
537-A	182TC	6.25	8.69	3.25	7.50	0.41	26.81	12.13	9.81	4.50	1 1/2
	184TC	6.25	8.69	3.25	7.50	0.41	27.81	12.13	9.81	5.50	1 1/2
	213TC	6.25	10.25	4.00	8.50	0.41	29.72	13.00	12.16	5.50	1 1/2
	215TC	6.25	10.25	4.00	8.50	0.41	31.22	13.00	12.16	7.00	1 1/2
	254TC	6.25	12.88	5.00	10.00	0.53	33.31	14.00	16.09	8.25	1 1/2
	256TC	6.25	12.88	5.00	10.00	0.53	35.06	14.00	16.09	10.00	1 1/2
547-A	182TC	6.25	8.69	3.25	7.50	0.41	27.31	12.13	9.81	4.50	1 1/2
	184TC	6.25	8.69	3.25	7.50	0.41	28.31	12.13	9.81	5.50	1 1/2
	213TC	6.25	10.25	4.00	8.50	0.41	30.22	13.00	12.16	5.50	1 1/2
	215TC	6.25	10.25	4.00	8.50	0.41	31.72	13.00	12.16	7.00	1 1/2
	254TC	6.25	12.88	5.00	10.00	0.53	33.81	14.00	16.09	8.25	1 1/2
	256TC	6.25	12.88	5.00	10.00	0.53	35.56	14.00	16.09	10.00	1 1/2
557-A	182TC	6.25	8.69	3.25	7.50	0.41	27.81	12.13	9.81	4.50	1 1/2
	184TC	6.25	8.69	3.25	7.50	0.41	28.81	12.13	9.81	5.50	1 1/2
	213TC	6.25	10.25	4.00	8.50	0.41	30.72	13.00	12.16	5.50	1 1/2
	215TC	6.25	10.25	4.00	8.50	0.41	32.22	13.00	12.16	7.00	1 1/2
	254TC	6.25	12.88	5.00	10.00	0.53	34.31	14.00	16.09	8.25	1 1/2
	256TC	6.25	12.88	5.00	10.00	0.53	36.06	14.00	16.09	10.00	1 1/2
	286TC	6.25	14.63	5.75	11.00	0.53	37.44	14.00	20.44	11.00	1 1/2
567-A	182TC	6.75	8.69	3.25	7.50	0.41	29.88	12.13	9.81	4.50	2
	184TC	6.75	8.69	3.25	7.50	0.41	30.88	12.13	9.81	5.50	2
	213TC	6.75	10.25	4.00	8.50	0.41	32.79	13.00	12.16	5.50	2
	215TC	6.75	10.25	4.00	8.50	0.41	34.29	13.00	12.16	7.00	2
	254TC	6.75	12.88	5.00	10.00	0.53	36.38	14.00	16.09	8.25	2
	256TC	6.75	12.88	5.00	10.00	0.53	38.13	14.00	16.09	10.00	2
	286TC	6.75	14.63	5.75	11.00	0.53	39.51	14.50	14.50	11.00	2

500-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

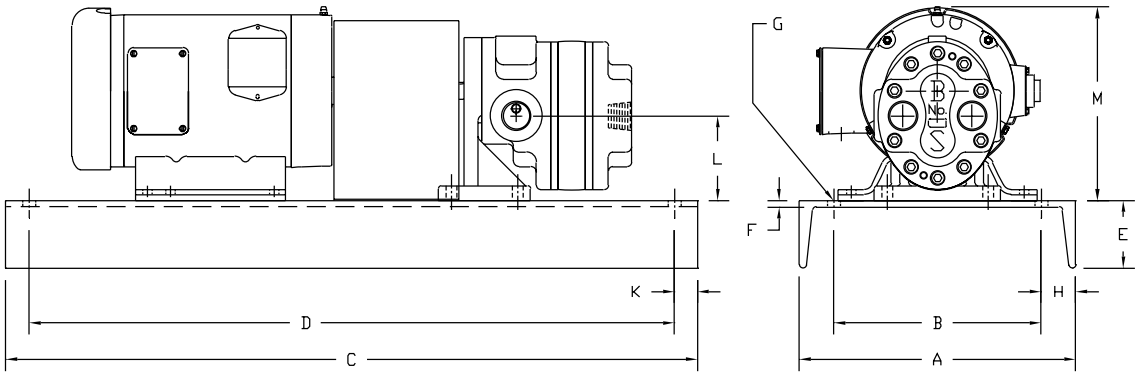
BSM 500-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks (if required) lifting eye-bolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip-lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
507-D	56	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	145T	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	182T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.88	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.88	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
511-D	56	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	145T	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	182T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.88	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.88	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
517-D	56	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	145T	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	182T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.88	8.69
	184T	12.00	9.00	32.00	30.00	2.94	0.28	0.56	1.50	1.00	3.88	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
525-D	56	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	145T	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.88	6.88
	182T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.88	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.28	0.56	1.50	1.00	3.88	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.63	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.63	12.88

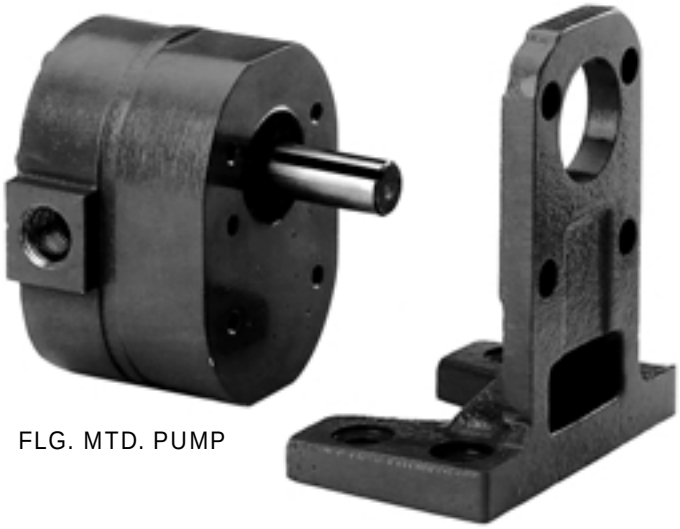
500-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
537-D	182T	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.25	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.25	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
547-D	182T	12.00	9.00	30.00	28.00	2.94	0.41	0.56	1.50	1.00	3.25	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.25	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	254T	18.00	15.0	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
557-D	182T	12.00	9.00	30.00	28.00	2.94	0.41	0.56	1.50	1.00	3.25	8.69
	184T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.25	8.69
	213T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	254T	18.00	15.00	42.00	40.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
	256T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
	284T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	1.00	5.75	14.63
567-D	182T	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.25	8.69
	184T	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	3.25	8.69
	213T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	215T	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.00	10.25
	254T	18.00	15.00	44.00	42.00	3.95	0.45	0.56	1.50	1.00	5.00	12.88
	256T	18.00	15.00	48.00	46.00	3.95	.045	0.56	1.50	1.00	5.00	12.88
	286T	24.00	20.00	48.00	44.00	3.17	0.51	0.63	2.00	2.00	5.75	14.63

700-SERIES



FLG. MTD. PUMP

PUMP FOOT

The BSM 700-Series pumps are designed to provide quiet and efficient service at standard motor speeds, high pressures. Typical applications are hydraulic and metering service.

Design: Drive speeds to 1725 rpm; discharge pressures to 2000 psi; flow rate to 5.0 gpm; foot or flange mounted.

Material: Cast Iron casings with precision machined, heat treated steel gears and case hardened steel shafts. Pumps are also available in Ductile Iron.

Bearings: Anti-friction needle bearings.

Seal: Lip Seal.

Lubrication: Self lubricating using the pumped liquid.

Rotation: Clockwise or counter-clockwise. Specify at time of order.

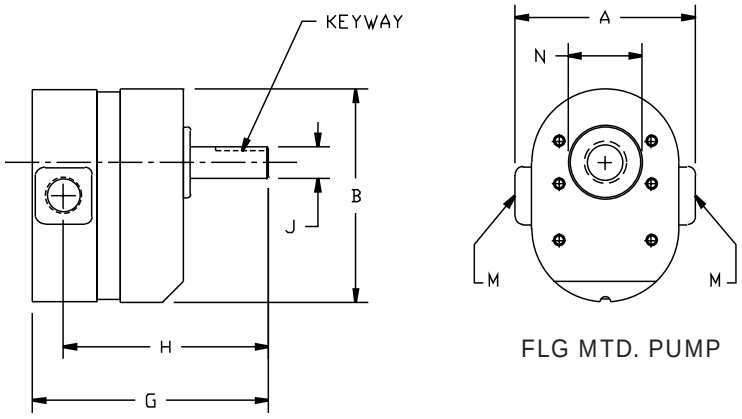
Liquid Viscosities: 100 ssu to 1000 ssu recommended. Clean liquids having good lubricating qualities.

Suction Lift: Up to 28" Hg / 31 feet depending on the type of liquid being pumped.

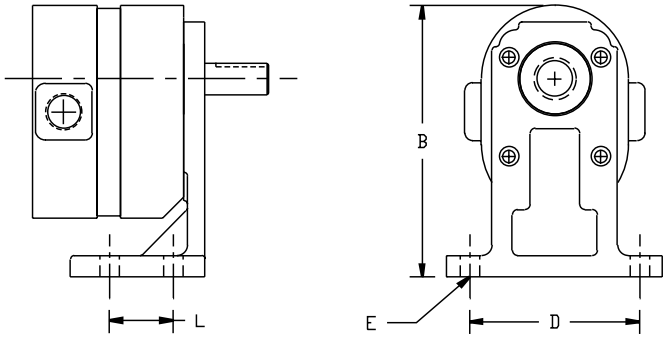
Drive Options: A-Drive (pump connected to C-Face motor with adapter bracket and coupling).

Accessories: Bearing Kit, and Seal.
Refer to Section 13.

DIMENSIONAL DATA 700-SERIES



FLG MTD. PUMP



PUMP WITH FOOT

DIMENSIONS (INCHES)

Model	A	B	D	E	G	H	J	L	M	N	Keyway
705	3.19	4.81	3.00	11/32	3.84	3.27	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
710	3.19	4.81	3.00	11/32	3.95	3.38	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
715	3.19	4.81	3.00	11/32	4.05	3.47	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
720	3.19	4.81	3.00	11/32	4.14	3.56	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
730	3.19	4.81	3.00	11/32	4.34	3.77	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
740	3.19	4.81	3.00	11/32	4.55	3.97	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8
750	3.19	4.81	3.00	11/32	4.75	4.17	0.56	1.13	3/8 NPT	1.25	1/8 x 1/16 x 7/8

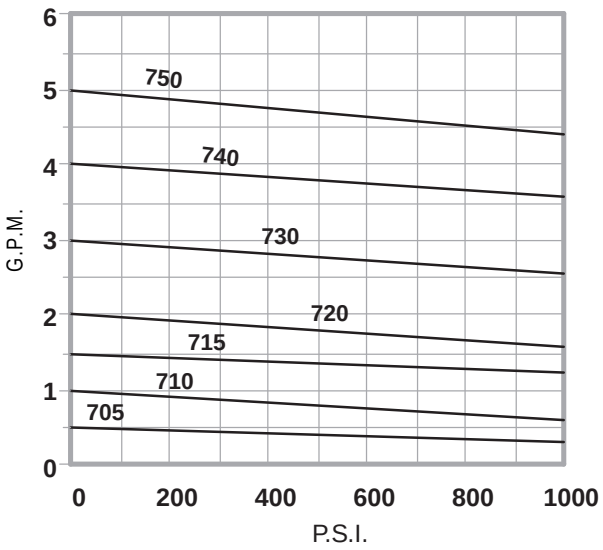
OPERATING CHARACTERISTICS

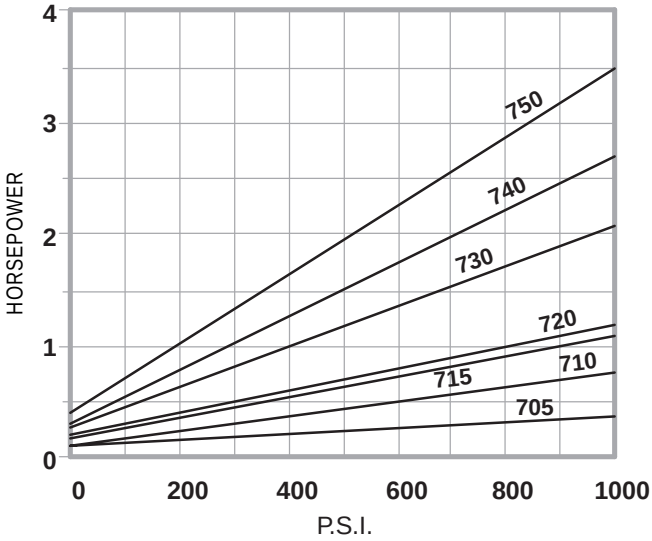
Model No.	Displ GPR	Slip GPM PSI	Drive Speed RPM	0 psi		500 psi		1000 psi		1500 psi		2000 psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
705	.0003	.00013	1725	.50	.11	.43	.25	.37	.40	.31	.55	--	--
710	.0006	.0002	1725	1.00	.14	.90	.45	.80	.77	.70	1.12	.60	1.45
715	.0009	.0002	1725	1.50	.21	1.40	.65	1.30	1.30	1.20	1.68	1.10	2.20
720	.0012	.0002	1725	2.00	.25	1.90	.85	1.80	1.50	1.70	2.22	1.60	2.90
730	.0018	.0003	1725	3.00	.31	2.85	1.15	2.70	2.10	2.55	3.10	--	--
740	.0024	.0003	1725	4.00	.36	3.85	1.47	3.70	2.75	3.63	3.37	--	--
750	.0030	.0004	1725	5.00	.45	4.80	1.90	4.60	3.55	--	--	--	--

* Delivery and input horsepower are based on liquid viscosity of 100 ssu.

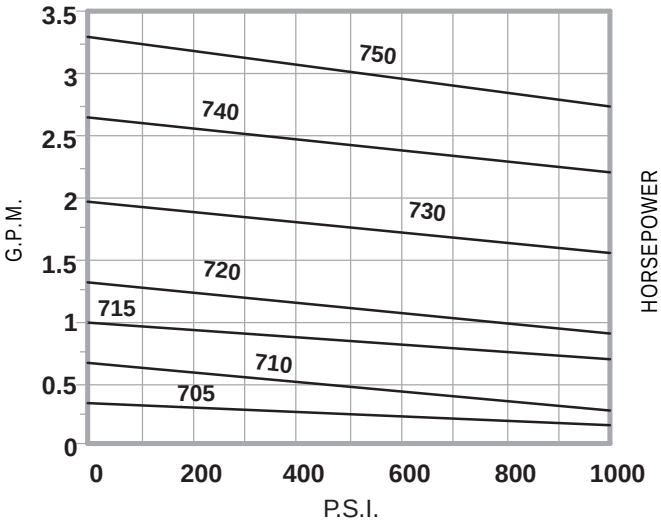
700-SERIES

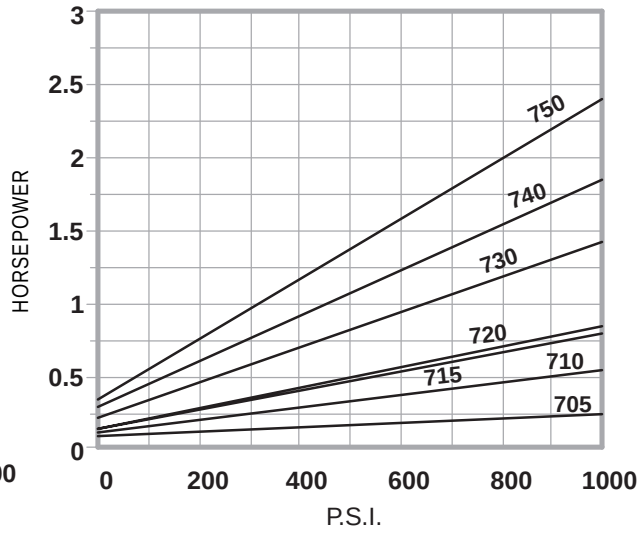
OPERATING CHARACTERISTICS
1725 RPM -70 SSU LIQUID





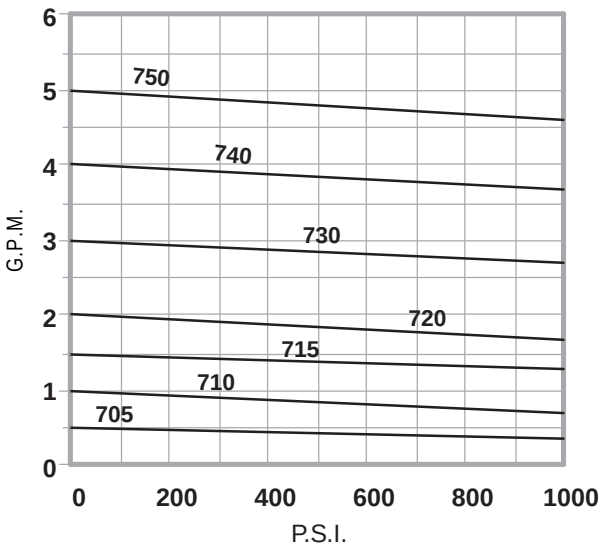
OPERATING CHARACTERISTICS
1140 RPM -70 SSU LIQUID

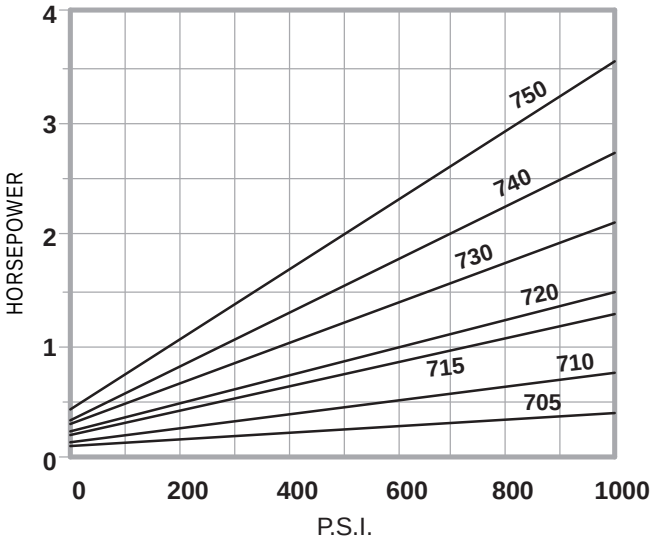




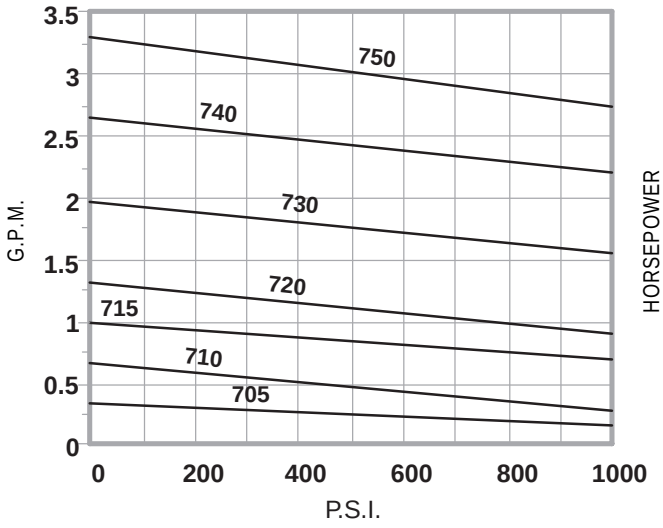
700-SERIES

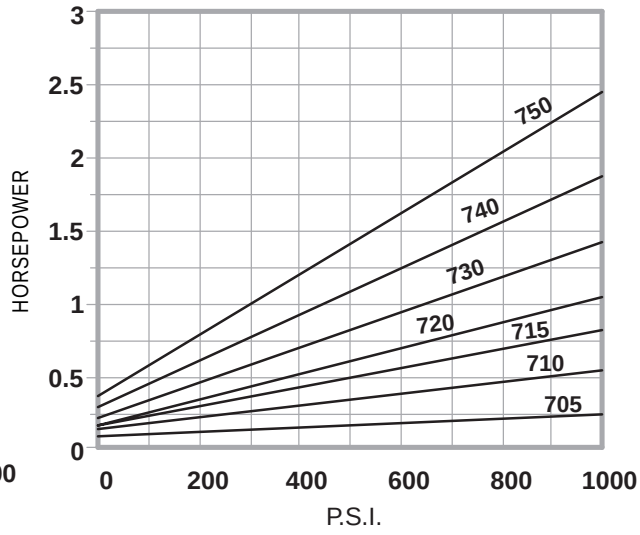
OPERATING CHARACTERISTICS
1725 RPM -100 SSU LIQUID





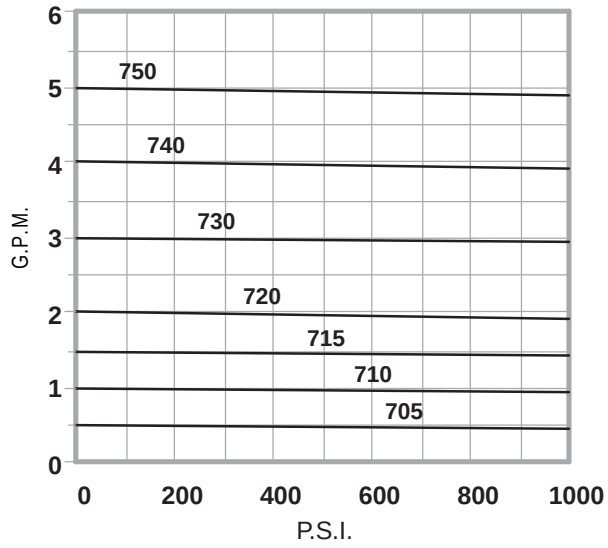
OPERATING CHARACTERISTICS
1140 RPM -100 SSU LIQUID

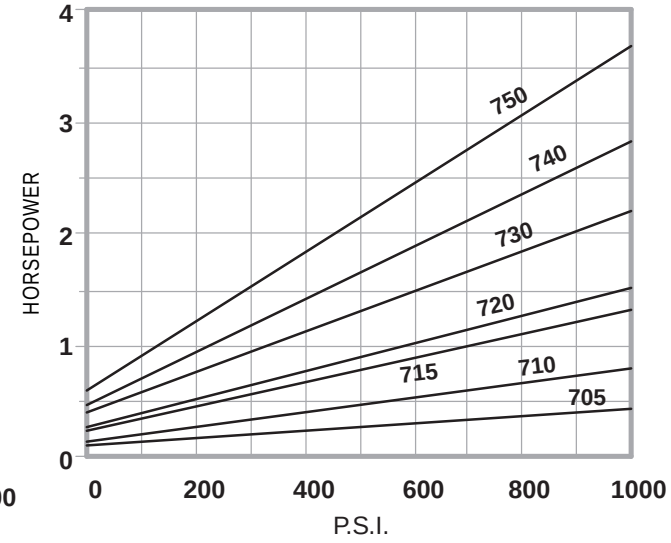




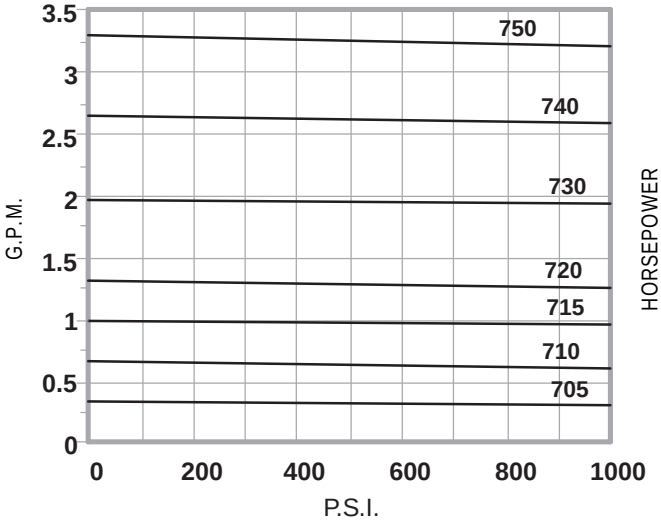
700-SERIES

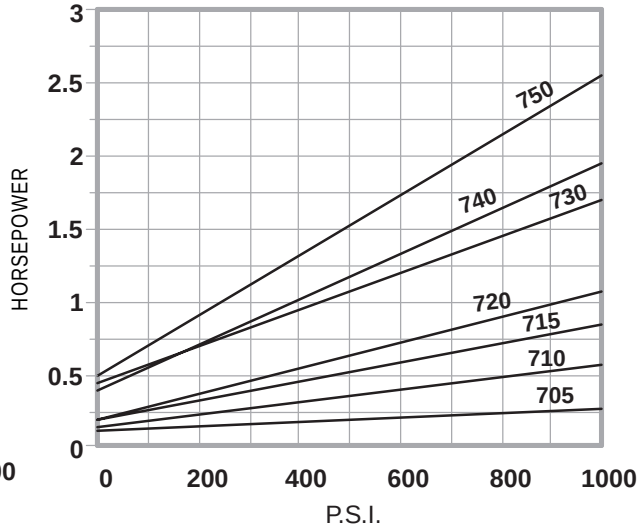
OPERATING CHARACTERISTICS
1725 RPM -500 SSU LIQUID





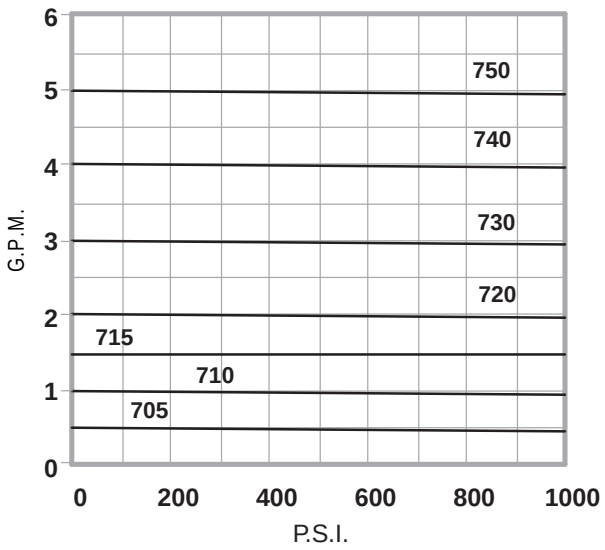
OPERATING CHARACTERISTICS
1140 RPM -500 SSU LIQUID

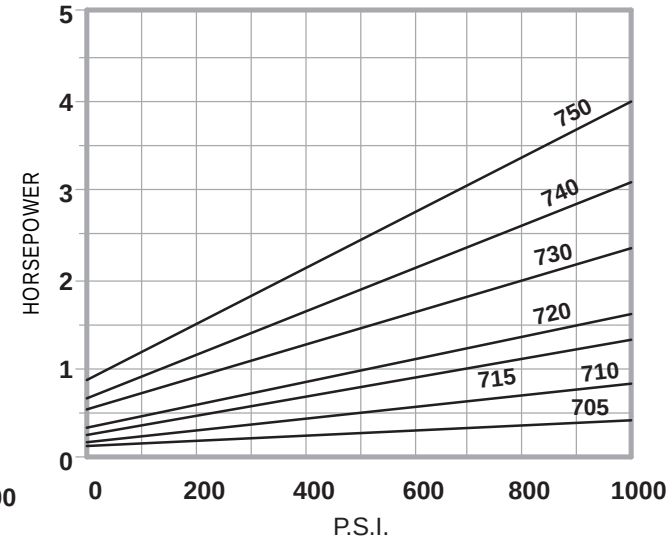




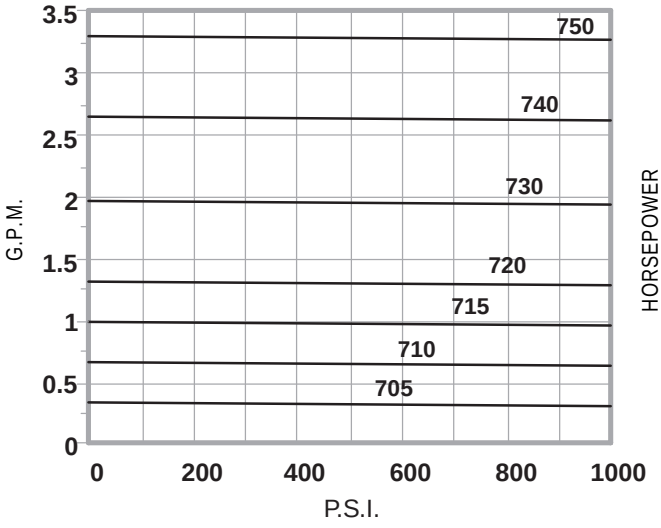
700-SERIES

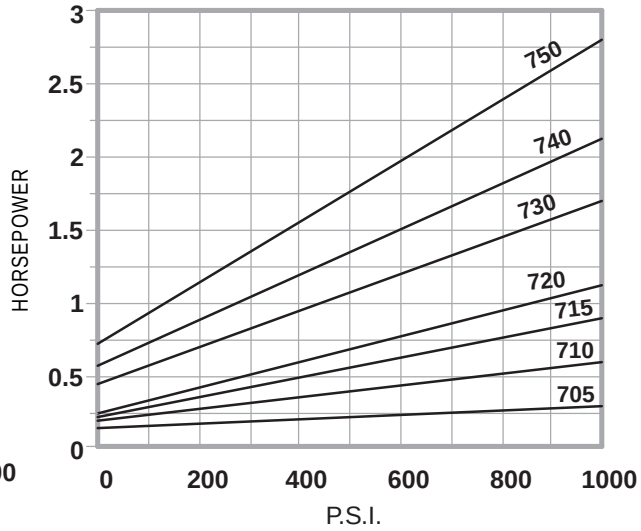
OPERATING CHARACTERISTICS
1725 RPM -1,000 SSU LIQUID





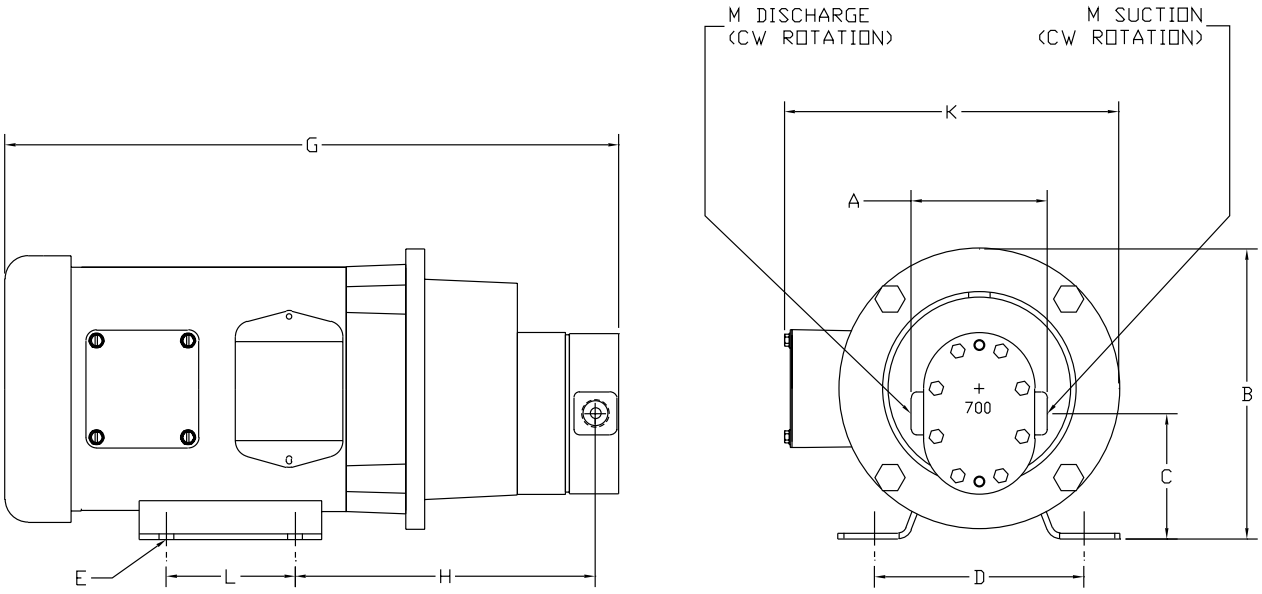
OPERATING CHARACTERISTICS
1140 RPM -1,000 SSU LIQUID





700-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS

BSM 700 Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly is the same as the A Drive, except it utilizes a shorter adapter bracket resulting in a more compact assembly. As with all A-Drive assemblies, this method of coupling the pump to a motor ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM 700-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 and1725 rpm with capacities to 5.0 gpm and pressures to 2000 psi.

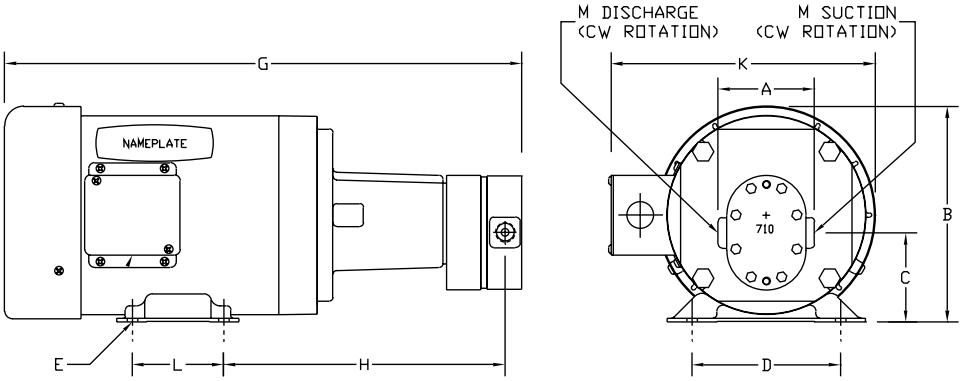


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
705-SB	56C	3.16	6.88	2.92	4.88	0.34	14.28	6.98	8.31	3.00	3/8
710-SB	56C	3.16	6.88	2.92	4.88	0.34	14.38	7.08	8.31	3.00	3/8
715-SB	56C	3.16	6.88	2.92	4.88	0.34	14.48	7.18	8.31	3.00	3/8
720-SB	56C	3.16	6.88	2.92	4.88	0.34	14.58	7.28	8.31	3.00	3/8
730-SB	56C	3.16	6.88	2.92	4.88	0.34	14.78	7.48	8.31	3.00	3/8
740-SB	56C	3.16	6.88	2.92	4.88	0.34	14.98	7.68	8.31	3.00	3/8
750-SB	56C	3.16	6.88	2.92	4.88	0.34	15.18	7.88	8.31	3.00	3/8

700-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM 700-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM 700-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 and 1725 rpm with capacities to 5.0 gpm and pressures to 2000 psi.



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
705-A	56C	3.16	6.88	2.92	4.88	0.34	16.86	9.13	8.31	3.00	3/8
710-A	56C	3.16	6.88	2.92	4.88	0.34	16.96	9.23	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	18.68	9.54	8.56	5.00	3/8
715-A	56C	3.16	6.88	2.92	4.88	0.34	17.06	9.33	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	18.78	9.64	8.56	5.00	3/8
	182TC	3.16	8.69	3.92	7.50	0.41	20.31	10.83	9.81	4.50	3/8
	184TC	3.16	8.69	3.92	7.50	0.41	20.31	10.83	9.81	5.50	3/8
720-A	56C	3.16	6.88	2.92	4.88	0.34	17.16	9.43	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	18.88	9.74	8.56	5.00	3/8
	182TC	3.16	8.69	3.92	7.50	0.41	20.41	10.93	9.81	4.50	3/8
	184TC	3.16	8.69	3.92	7.50	0.41	20.41	10.93	9.81	5.50	3/8
730-A	56C	3.16	6.88	2.92	4.88	0.34	17.36	9.63	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	19.08	9.91	8.56	5.00	3/8
	182TC	3.16	8.69	3.92	7.50	0.41	20.61	11.13	9.81	4.50	3/8
	184TC	3.16	8.69	3.92	7.50	0.41	20.61	11.13	9.81	5.50	3/8
	213TC	3.16	10.25	4.67	8.50	0.41	22.52	12.01	12.16	5.50	3/8
740-A	56C	3.16	6.88	2.92	4.88	0.34	17.56	9.83	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	19.28	10.14	8.56	5.00	3/8
	182TC	3.16	8.69	3.92	7.50	0.41	20.81	11.33	9.81	4.50	3/8
	184TC	3.16	8.69	3.92	7.50	0.41	20.81	11.33	9.81	5.50	3/8
	213TC	3.16	10.25	4.67	8.50	0.41	22.72	12.21	12.16	5.50	3/8
750-A	56C	3.16	6.88	2.92	4.88	0.34	17.76	10.03	8.31	3.00	3/8
	145TC	3.16	6.88	2.92	5.50	0.34	19.48	10.34	8.56	5.00	3/8
	182TC	3.16	8.69	3.92	7.50	0.41	21.01	11.53	9.81	4.50	3/8
	184TC	3.16	8.69	3.92	7.50	0.41	21.01	11.53	9.81	5.50	3/8
	213TC	3.16	10.25	4.67	8.50	0.41	22.92	12.41	12.16	5.50	3/8

BRONZE-SERIES

FT. MTD. PUMP

BSM bronze pumps are ideal for use where corrosion resistant materials are required such as providing circulation on water-jacketed engines, pumping saline solutions as well as a variety of marine and other corrosive atmosphere applications.

Design: Drive speeds to 900 rpm; discharge pressures to 100 psi; flow rate to 26.8 gpm; foot or flange mounted

Material: All bronze construction except models 23 & 24 which are equipped with corrosion resistant stainless steel shafts.

Bearings: Plain.

Seal: Compression packing.

Lubrication: Pumps are equipped with grease fittings.

Rotation: Clockwise or counter-clockwise rotation. Either connection may be used for suction.

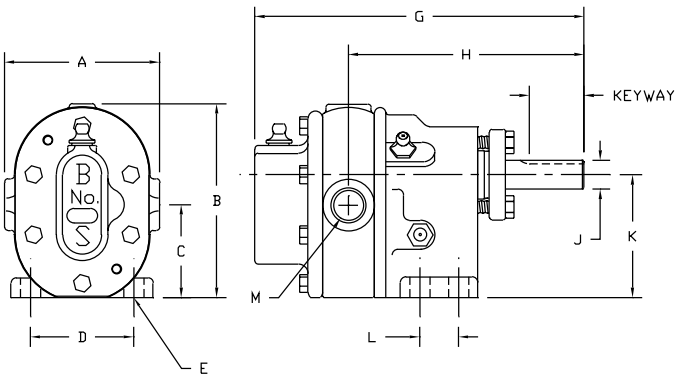
Liquid Viscosities: A wide range of clean or corrosive liquids.

Suction Lift: Up to 15" Hg / 17 feet depending on the type of liquid being pumped.

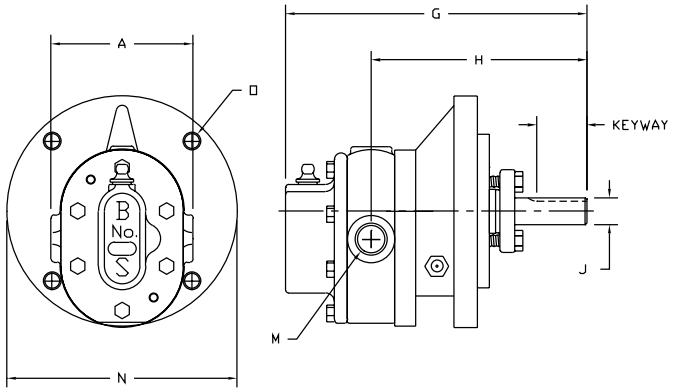
Drive Options: A-Drive (pump connected to C-Face motor with adapter bracket and coupling), D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B- Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; and Packing. Refer to Section 13.

DIMENSIONAL DATA BRONZE-SERIES



FT. MTD. PUMP



FLG. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	F	G	H	J	K	L	M	O	Keyway
21	3.00	3.69	1.78	2.00	0.39	7.50	6.25	4.56	0.56	2.38	0.75	3/8	3/8-16	1/8x1/16
22	3.44	4.53	2.31	2.50	0.39	8.47	7.22	5.00	0.63	3.00	0.88	1/2	3/8-16	3/16x3/32
23	4.44	5.72	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	3/4	3/8-16	3/16x3/32
24	4.44	5.81	2.88	3.00	0.45	11.50	9.88	6.69	0.75	3.88	1.25	1 1/4	3/8-16	3/16x3/32

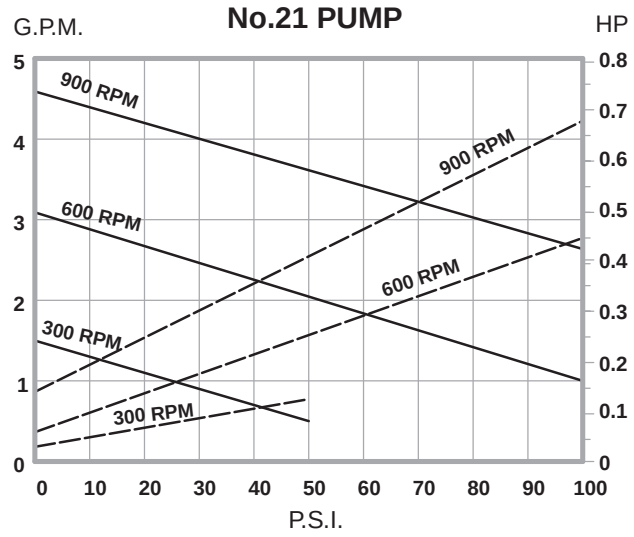
OPERATING CHARACTERISTICS

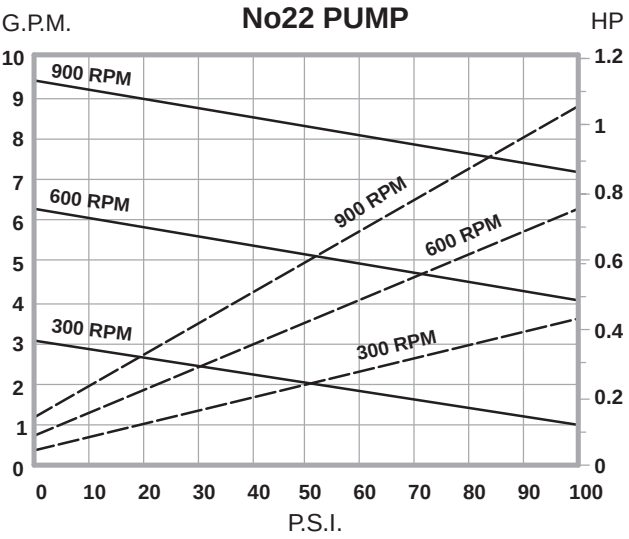
Model No.	Displ GPR	Slip GPM PSI	Drive Speed RPM	0 psi		50 psi		75 psi		100 psi		200 psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
21	.00515	.0022	300	1.5	.02	1.4	.10	1.38	.14	1.3	.18	1.1	.34
			600	3.1	.05	3.0	.20	2.93	.28	2.9	.36	2.7	.66
			900	4.6	.11	4.5	.33	4.47	.35	4.4	.54	4.2	.98
22	.01043	.0023	300	3.1	.04	3.0	.19	2.95	.26	2.9	.34	2.7	.64
			600	6.3	.07	6.1	.34	6.1	.47	6.0	.61	5.8	1.1
			900	9.4	.11	9.3	.48	9.2	.66	9.1	.85	8.9	1.5
23	.01896	.0025	300	5.7	.05	5.6	.28	5.5	.41	5.4	.54	5.2	1.1
			600	11.4	.06	11.3	.47	11.2	.71	11.1	.97	10.9	2.1
			900	17.1	.17	17.0	.83	16.8	1.2	16.8	1.5	16.5	3.2
24	.02980	.0080	300	8.9	.07	8.5	.37	8.3	.57	8.1	.80	--	--
			600	17.9	.22	17.5	.77	17.3	1.1	17.1	1.4	--	--
			900	26.8	.50	26.4	1.3	26.2	1.7	26.0	2.3	--	--

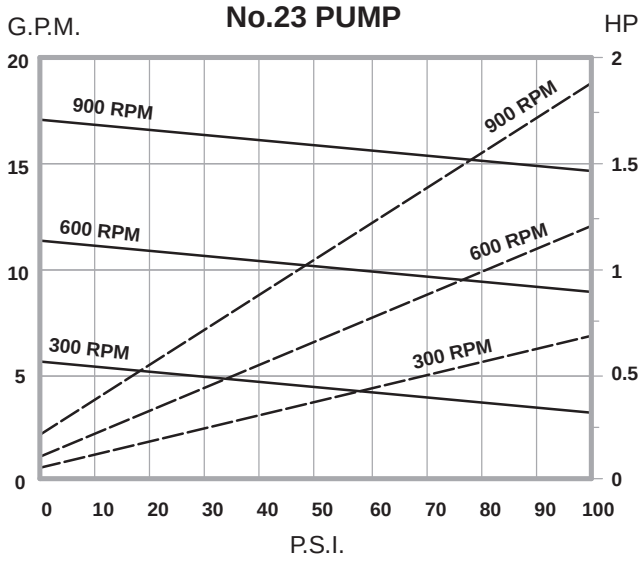
*Delivery and input horsepower are based on liquid viscosity of 300 ssu

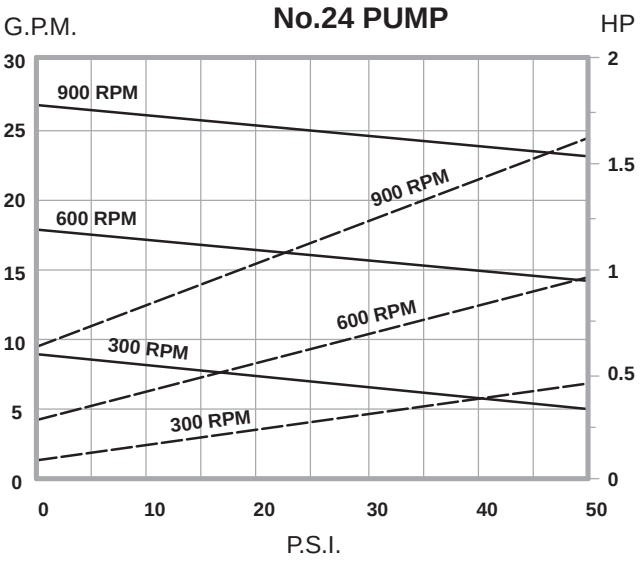
BRONZE-SERIES

OPERATING CHARACTERISTICS, 32 SSU LIQUID







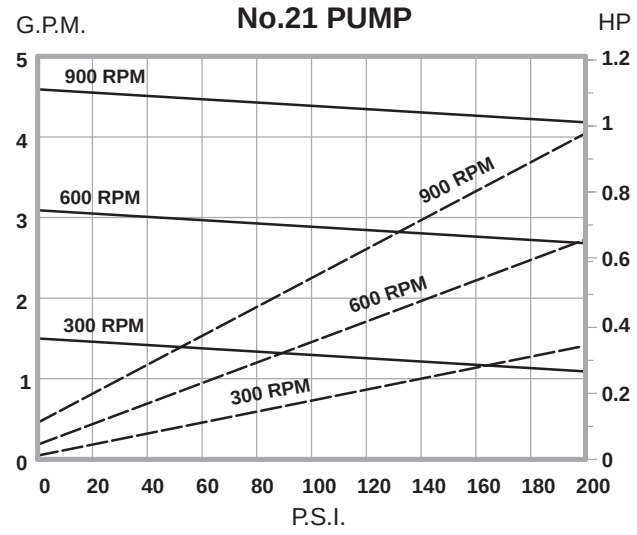


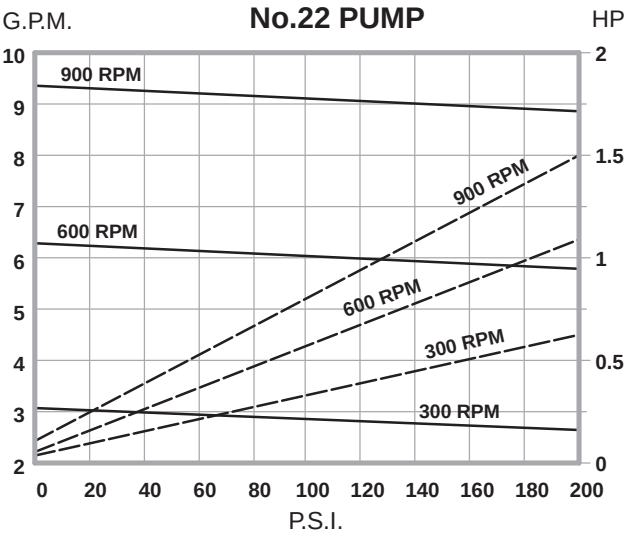
SOLID LINE = GPM

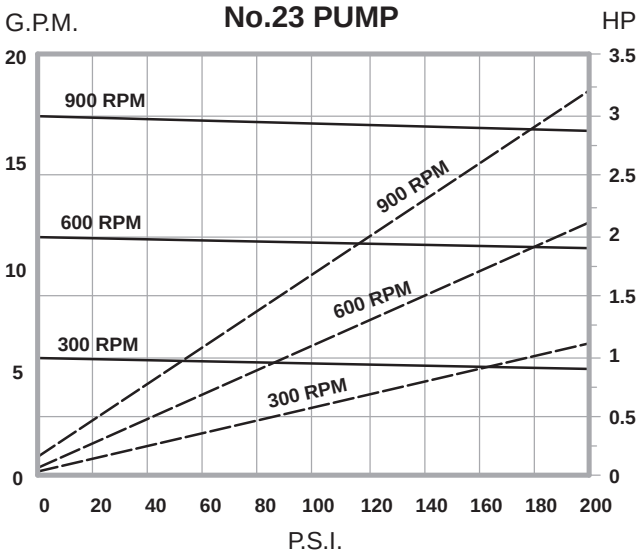
BROKEN LINE = HP

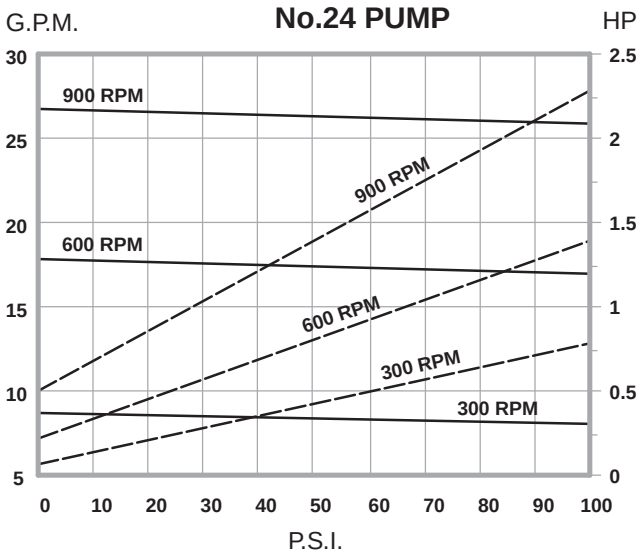
BRONZE-SERIES

OPERATING CHARACTERISTICS, 300 SSU LIQUID





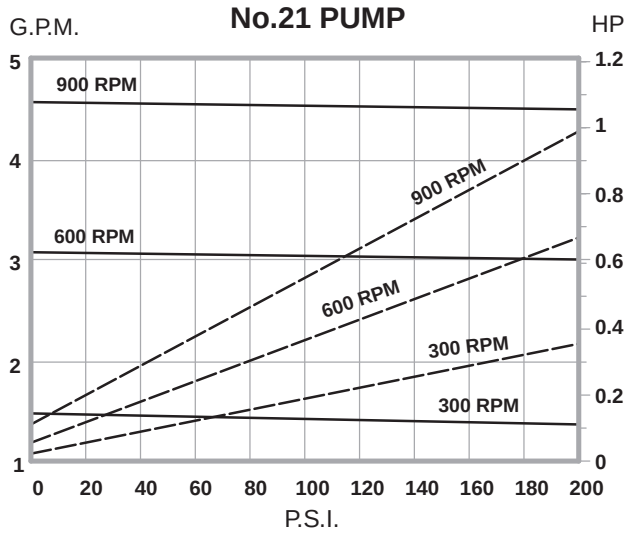


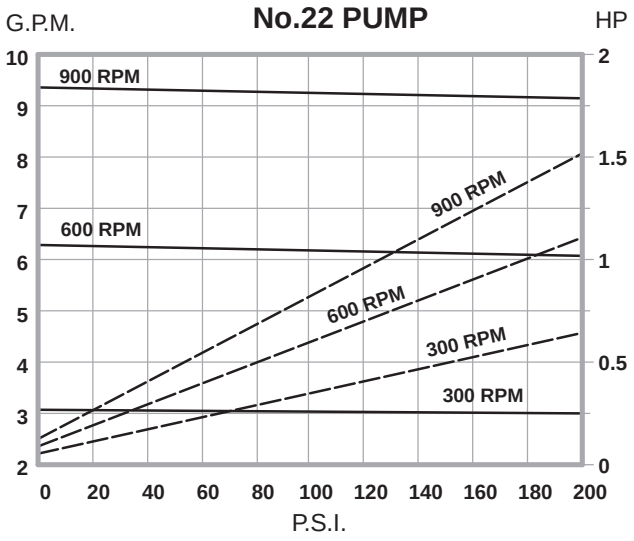


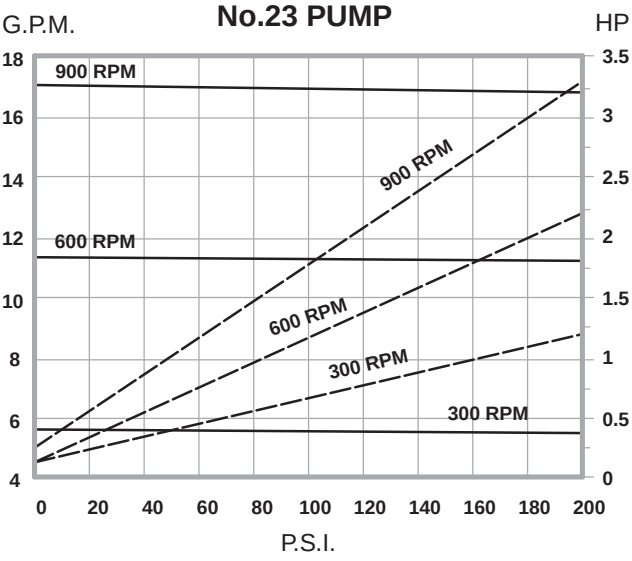
SOLID LINE = GPM
BROKEN LINE = HP

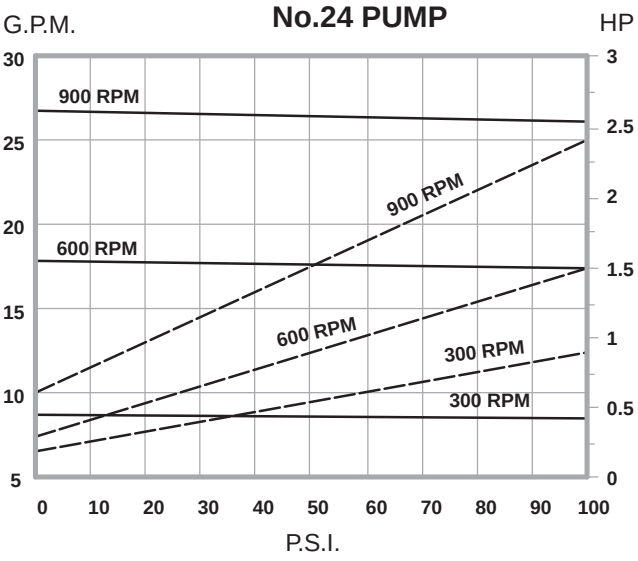
BRONZE-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





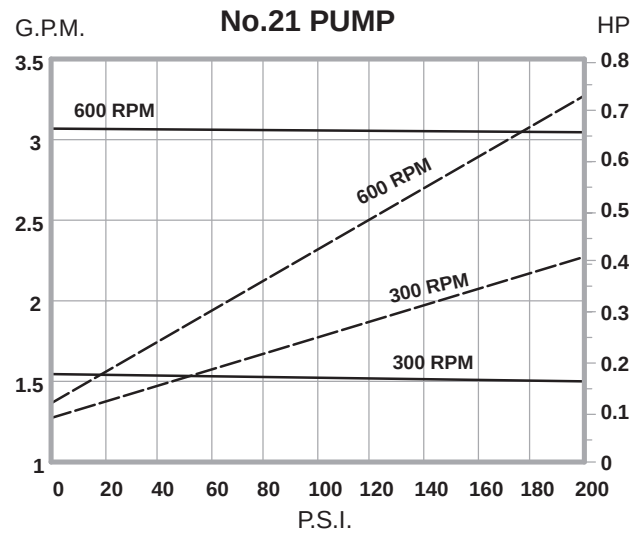


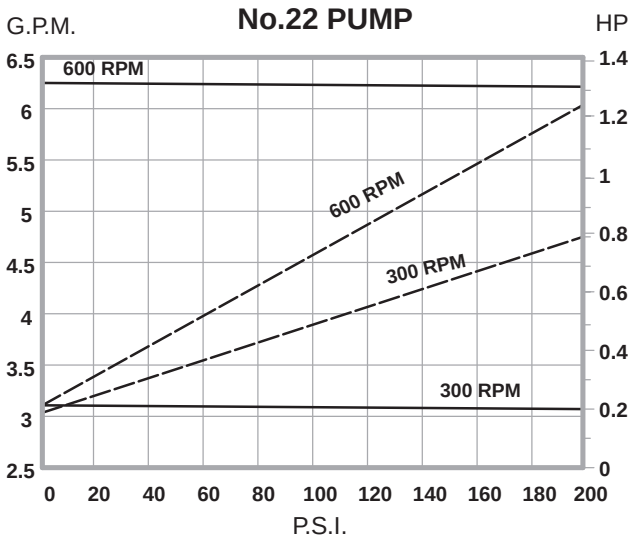


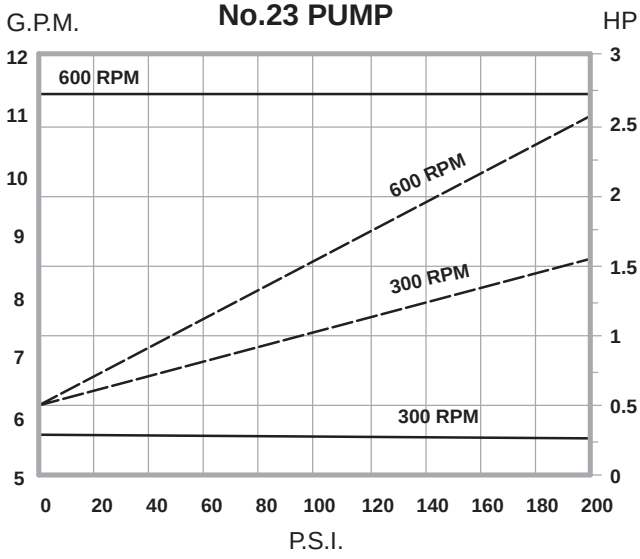
SOLID LINE = GPM
BROKEN LINE = HP

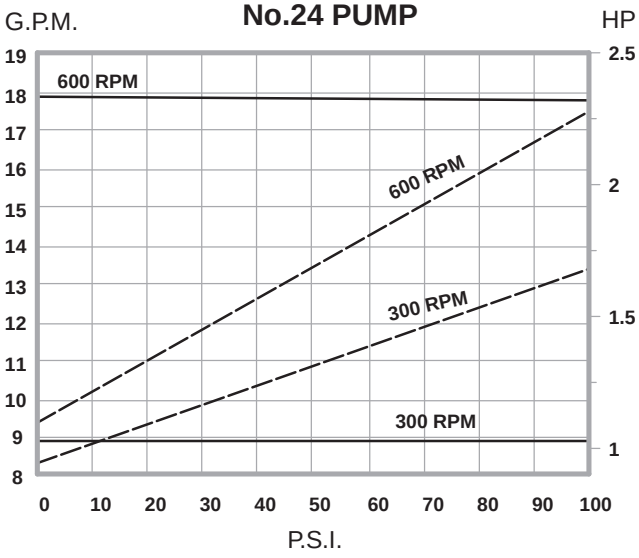
BRONZE-SERIES

OPERATING CHARACTERISTICS, 5,000 SSU LIQUID





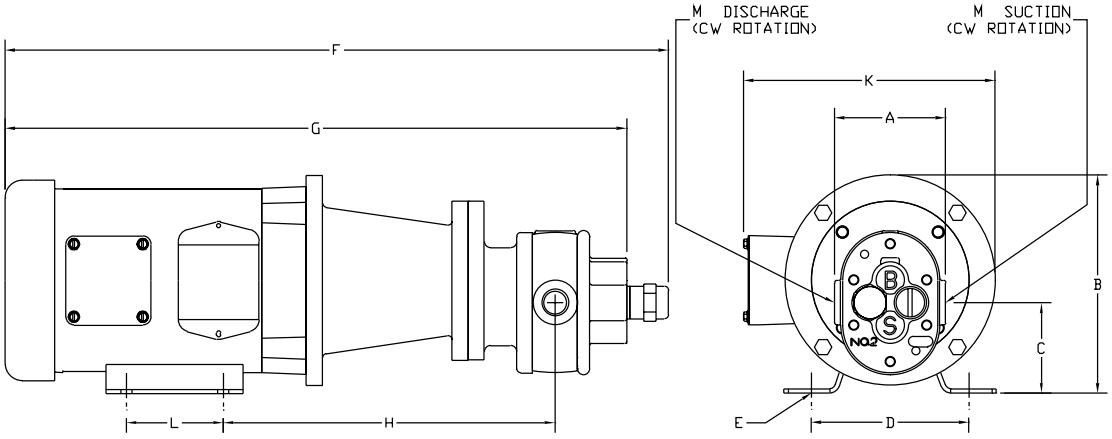




SOLID LINE = GPM
BROKEN LINE = HP

BRONZE-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM Bronze-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM Bronze-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860 rpm with capacities to 26.8 gpm and pressures to 200 psi.

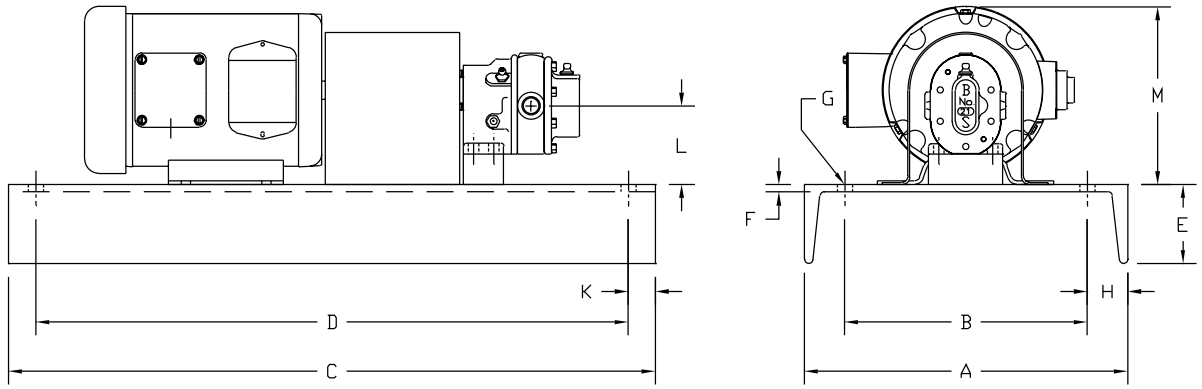


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
21-A	56C	3.00	6.88	2.91	4.88	0.34	18.56	9.81	8.31	3.00	3/8
	145TC	3.00	6.88	2.91	5.50	0.34	20.28	10.12	8.56	5.00	3/8
	182TC	3.00	8.69	3.91	7.50	0.41	21.87	11.75	9.81	4.50	3/8
22-A	56C	3.44	6.88	2.81	4.88	0.34	19.53	10.25	8.31	3.00	1/2
	145TC	3.44	6.88	2.81	5.50	0.34	21.25	10.56	8.56	5.00	1/2
	182TC	3.44	8.69	3.81	7.50	0.41	22.84	12.19	9.81	4.50	1/2
	184TC	3.44	8.69	3.81	7.50	0.41	23.84	12.19	9.81	5.50	1/2
23-A	56C	4.44	6.88	2.50	4.88	0.34	21.19	11.43	8.31	3.00	3/4
	145TC	4.44	6.88	2.50	5.50	0.34	22.91	11.75	8.56	5.00	3/4
	182TC	4.44	8.69	3.50	7.50	0.41	24.50	13.37	9.81	4.50	3/4
	184TC	4.44	8.69	3.50	7.50	0.41	25.50	13.37	9.81	5.50	3/4
	213TC	4.44	10.25	4.25	8.50	0.41	27.41	14.25	12.16	5.50	3/4
	215TC	4.44	10.25	4.25	8.50	0.41	28.91	14.25	12.16	7.00	3/4
24-A	145TC	4.44	6.88	2.50	5.50	0.34	23.91	12.25	8.56	5.00	1 1/4
	182TC	4.44	8.69	3.50	7.50	0.41	25.50	13.87	9.81	4.50	1 1/4
	184TC	4.44	8.69	3.50	7.50	0.41	26.50	13.87	9.81	5.50	1 1/4
	213TC	4.44	10.25	4.25	8.50	0.41	28.41	14.75	12.16	5.50	1 1/4
	215TC	4.44	10.25	4.25	8.50	0.41	29.91	14.75	12.16	7.00	1 1/4

BRONZE-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

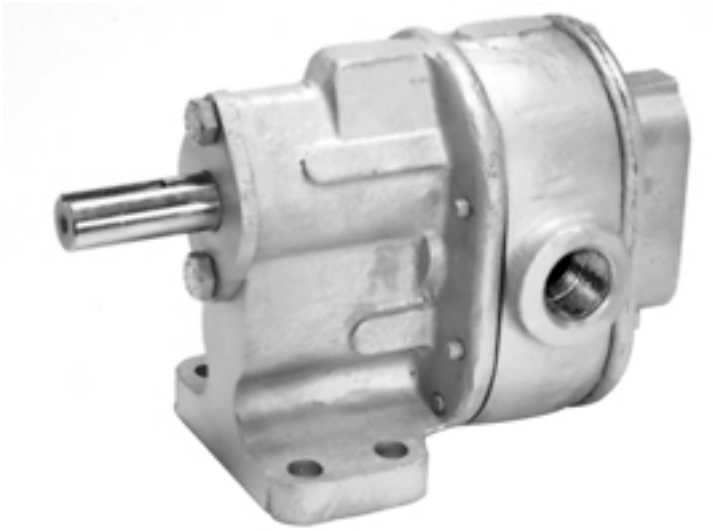
BSM Bronze-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks (if required), lifting eye-bolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip-lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
21-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.91	8.69
22-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.81	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.81	8.69
23-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
24-D	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25

STAINLESS STEEL-SERIES



FT. MTD. PUMP

BSM Stainless Steel Pumps are designed to handle the toughest Chemical Processing Applications.

Design: Drive speeds to 1800 rpm; discharge pressures to 200 psi; flow rate to 32.0 gpm; foot or flange mounted; with or without integral relief valve.

Material: 316 stainless steel casings with precision machined, 17-4 stainless steel gears and case hardened shafts.

Bearings: Replaceable carbon graphite sleeve bearings with carbon graphite thrust plates.

Seal: Mechanical seal. Also available with compression packing or lip seal. Mechanical seal and lip seals available with different elastomers for pumping different types of liquids.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Pumps are available for clockwise or counter-clockwise rotation. Discharge is always on the side of the pump toward which the top of the shaft rotates.

Liquid Viscosities: 32 ssu to 100,000 ssu.

Suction Lift: Up to 28" Hg / 31 feet depending on the type of liquid being pumped.

Drive Options: E-Drive (pump close coupled to motor); A-Drive (pump connected to C-Face motor with adapter bracket and coupling), D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Repair Kits; Gear Sets; Bearing Kit, and Seal Kits. Refer to Section 13.

STAINLESS STEEL PUMPS

TYPICAL INDUSTRIES

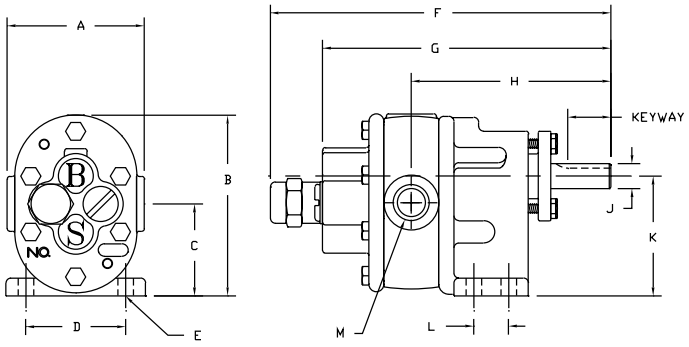
Chemical
Pharmaceutical
Textile
Plastic
Paint
Tanning
Soap
Rubber
Photographic
Plating

LIQUIDS PUMPED

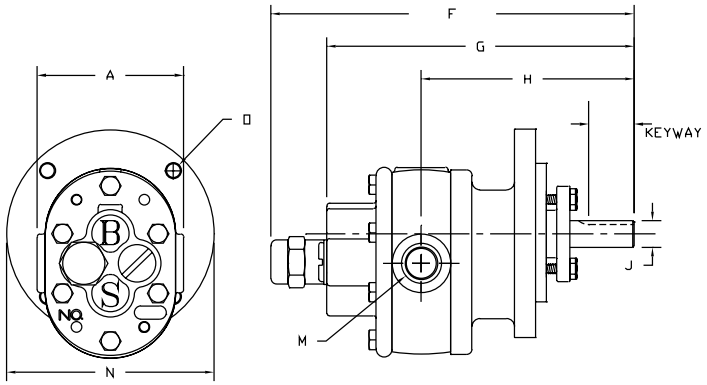
Acetate Solvents
Acetic Acid
Acetone
Acetylene
Adhesive — PVA
Alcohol
Aluminum Hydroxide 25%
Aluminum Nitrate
Aluminum Oxide
Ammonium Hydroxide
Ammonium Nitrate
Ammonium Persulfate
Anti-Freeze
Arsenic Acid
Asphalt
Beer
Beet Sugar Liquids
Calcium Chloride
Castor Oil
Cotton Seed Oil
Cresylic Acid
Fatty Acids
Formaldehyde
Gelatin
Glucose
Hydrazine
Mineral Oil
Molasses
Mustard
Naphtha
Nitric Acid - 90%
Potash
Rust Inhibitors
Sea Water
Shellac
Sodium Bicarbonate
Sodium Hydroxide — 20 %
Sodium Nitrate
Soy Bean Oil
Styrene
Turpentine
Vegetable Oil
Vinegar
Water
White Liquor (Pulp Mill)
Xyelene

Note: The liquid list is based on information from reference sources and should be used as a guide only in the selection of a pump. Changes in the liquids' concentration, temperature, etc. can influence the effect the liquid has on component materials. After pumping corrosive liquids, it is recommended that the pump be thoroughly flushed. Do not permit corrosives to remain in the pump when idle for extended periods. For a complete list of liquids that may be pumped with this series of pumps, please contact the factory

DIMENSIONAL DATA STAINLESS STEEL-SERIES



FT. MTD. PUMP



FLG. MTD. PUMP

DIMENSIONS (INCHES)

Model	A	B	C	D	E	F	G	H	J	K	L	M	O	Keyway
1SST	3.00	3.69	1.78	2.00	0.39	7.50	6.25	4.56	0.56	2.38	0.75	3/8	3/8-16	1/8x1/16
2SST	3.44	4.53	2.31	2.50	0.39	8.47	7.22	5.00	0.68	3.00	0.88	1/2	3/8-16	3/16x3/32
3SST	4.44	5.72	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	3/4	3/8-16	3/16x3/32
4SST	4.44	5.81	2.88	3.00	0.45	10.50	8.88	6.19	0.75	3.88	1.25	1	3/8-16	3/16x3/32
5SST	5.00	5.97	2.88	3.00	0.45	10.50	8.88	6.69	0.75	3.88	1.25	1 1/4	3/8-16	3/16x3/32

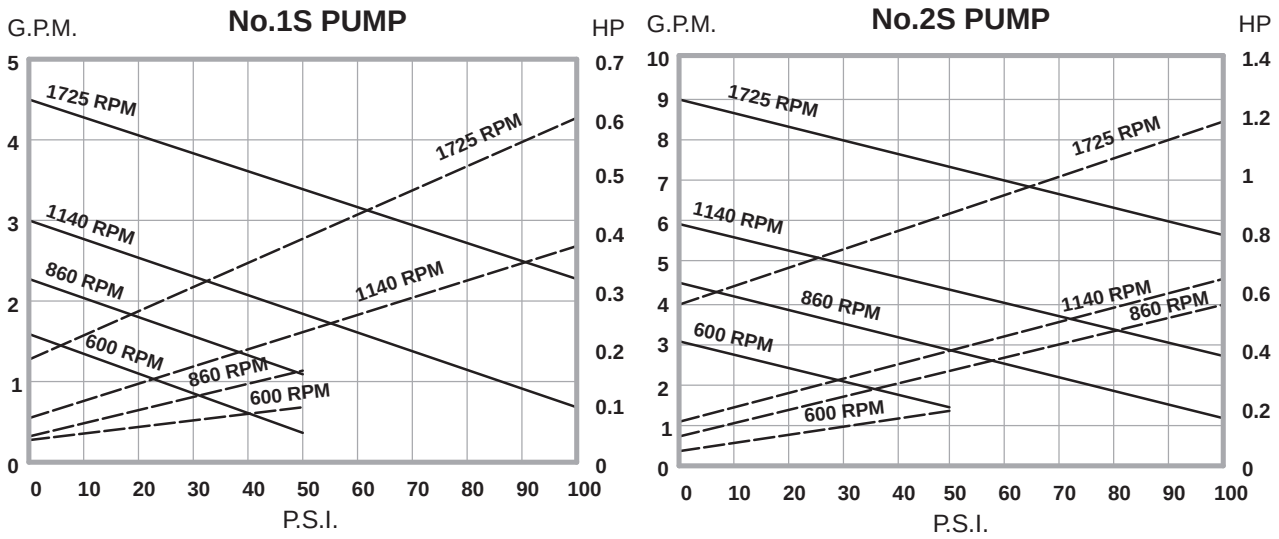
OPERATING CHARACTERISTICS

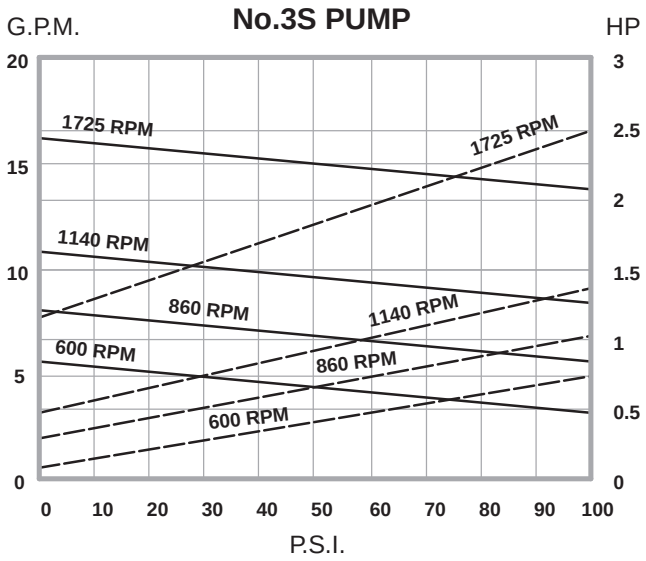
Model No.	Displ GPR	Slip GPM PSI	Drive Speed RPM	0 psi		50 psi		75 psi		100 psi		200 psi	
				gpm	hp	gpm	hp	gpm	hp	gpm	hp	gpm	hp
1SST	.00262	.0024	600	1.6	.03	1.5	.08	1.4	.11	1.3	.15	1.1	.33
			860	2.3	.04	2.1	.13	2.0	.18	2.0	.23	1.8	.49
			1140	3.0	.06	2.9	.17	2.8	.23	2.7	.30	2.5	.63
			1725	4.5	.14	4.4	.29	4.3	.36	4.28	.48	4.0	.95
2SST	.00521	.0035	600	3.1	.05	3.0	.15	2.9	.24	2.8	.31	2.4	.65
			860	4.5	.08	4.3	.22	4.2	.34	4.1	.45	3.8	.93
			1140	5.9	.13	5.8	.31	5.7	.41	5.6	.51	5.2	1.00
			1725	9.0	.44	8.8	.64	8.7	.78	8.6	.94	8.3	1.60
3SST	.00947	.0026	600	5.7	.08	5.6	.34	5.5	.47	5.4	.60	5.2	1.10
			860	8.1	.25	8.0	.54	7.9	.68	7.8	.83	7.6	1.50
			1140	10.8	.38	10.7	.77	10.6	.97	10.5	1.10	10.2	2.00
			1725	16.2	.92	16.1	1.40	16.0	1.70	15.9	2.00	15.7	3.10
4SST	.00135	.009	600	8.1	.30	7.9	.50	7.8	.60	7.7	.80	7.4	1.20
			860	11.6	.40	11.3	.70	11.2	.90	11.1	1.10	10.7	1.80
			1140	15.3	.50	15.0	.90	14.8	1.20	14.7	1.45	14.2	2.30
			1725	23.2	.80	22.7	1.40	22.5	1.80	22.3	2.20	21.4	3.50
5SST	.0186	.02	600	11.1	.45	10.8	.55	10.6	.75	10.4	.95	9.7	1.60
			860	15.9	.65	15.5	.80	15.2	1.00	15.0	1.30	14.0	2.30
			1140	21.1	.80	20.5	1.10	20.2	1.45	19.8	1.80	18.5	3.10
			1725	32.0	1.30	31.0	1.60	30.5	2.10	30.0	2.70	28.0	4.70

*Delivery and input horsepower are based on oil viscosity of 300 ssu at speed and pressures shown.

STAINLESS STEEL-SERIES

OPERATING CHARACTERISTICS, 32 SSU LIQUID

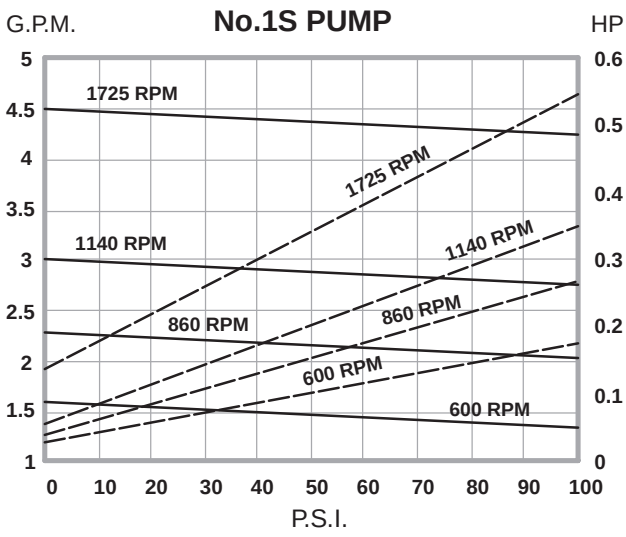


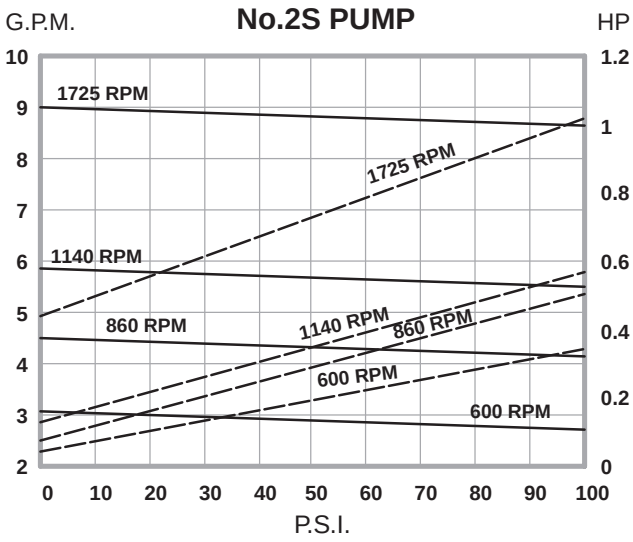


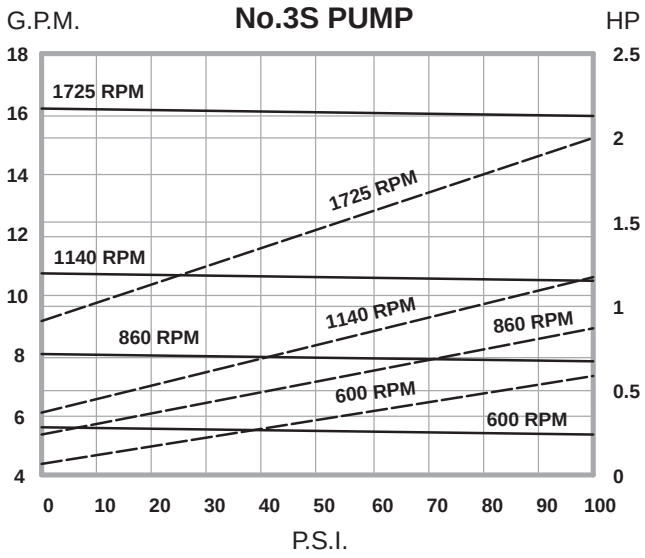
SOLID LINE = GPM
BROKEN LINE = HP

STAINLESS STEEL-SERIES

OPERATING CHARACTERISTICS, 300 SSU LIQUID



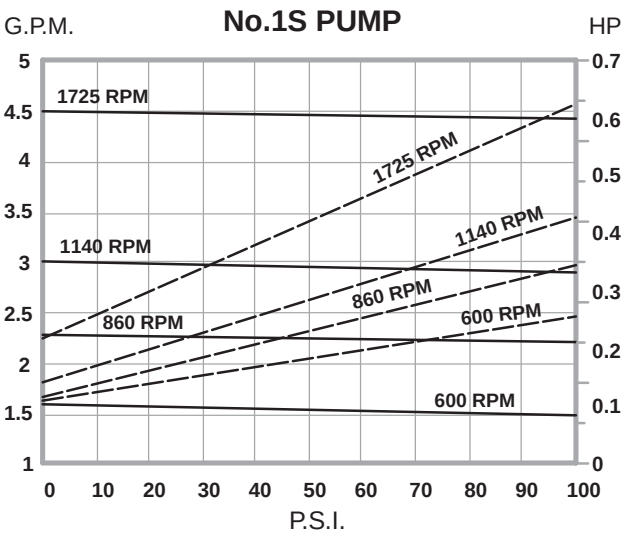


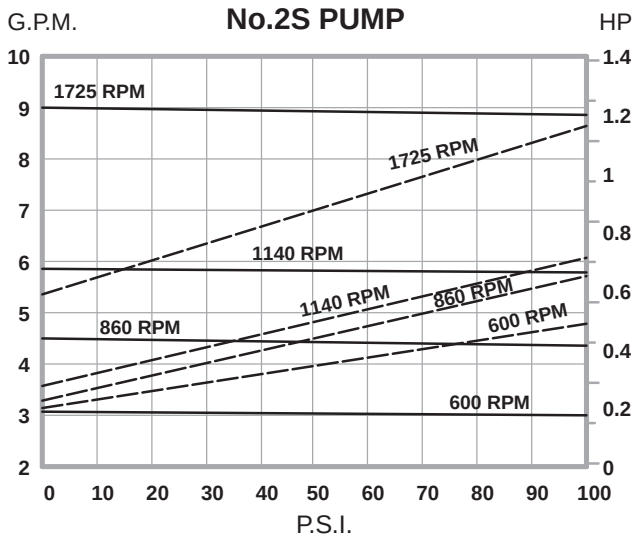


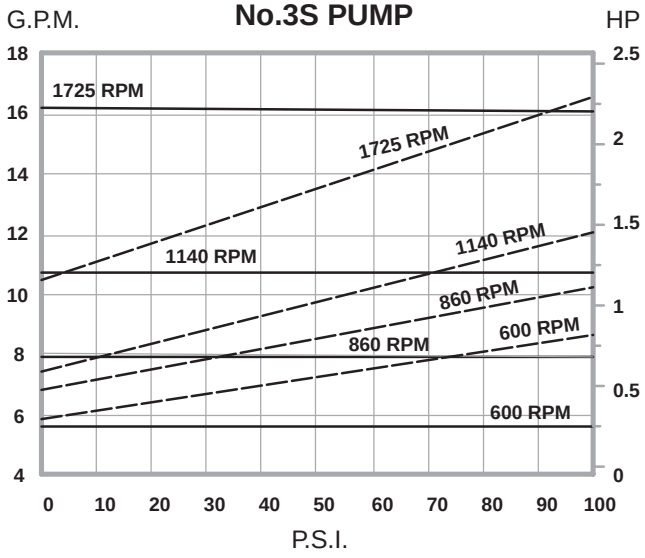
SOLID LINE = GPM
BROKEN LINE = HP

STAINLESS STEEL-SERIES

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





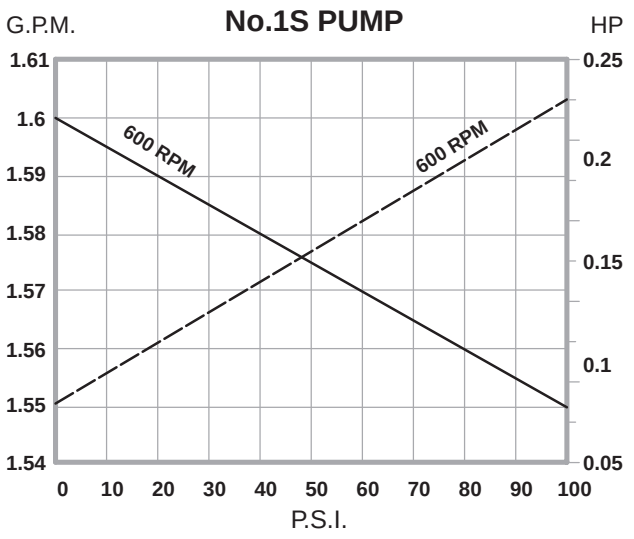


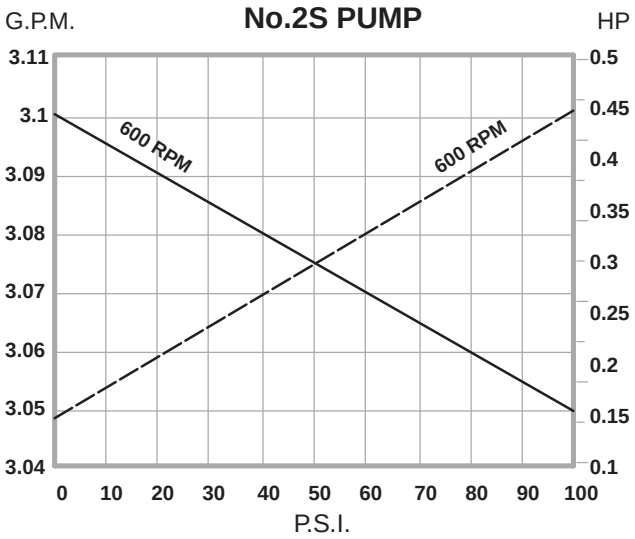
SOLID LINE = GPM

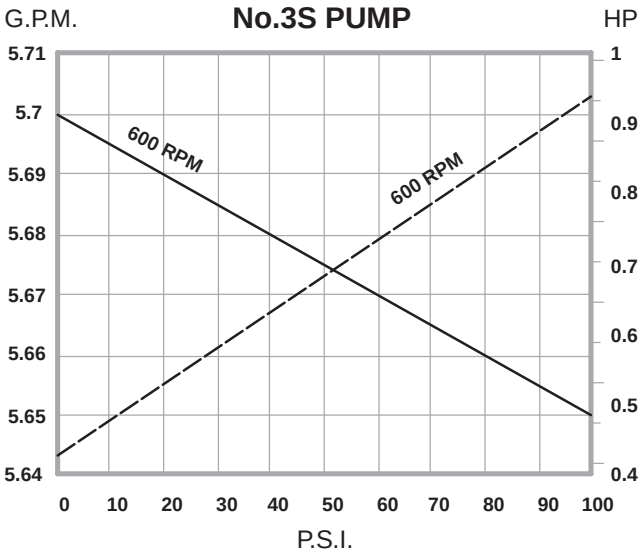
BROKEN LINE = HP

STAINLESS STEEL-SERIES

OPERATING CHARACTERISTICS, 5,000 SSU LIQUID



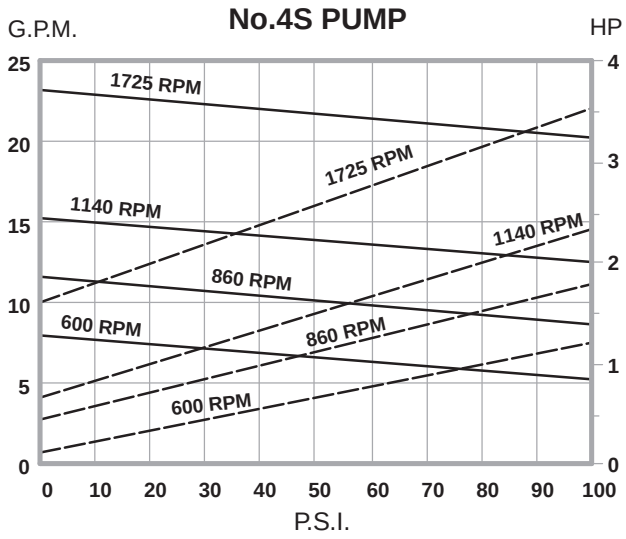


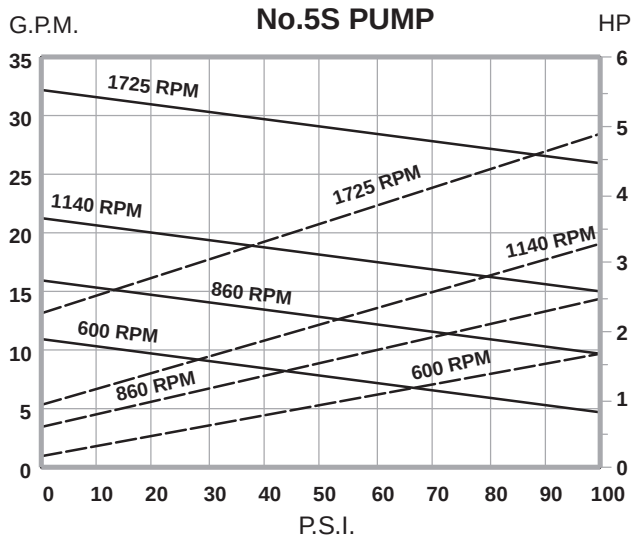


SOLID LINE = GPM
BROKEN LINE = HP

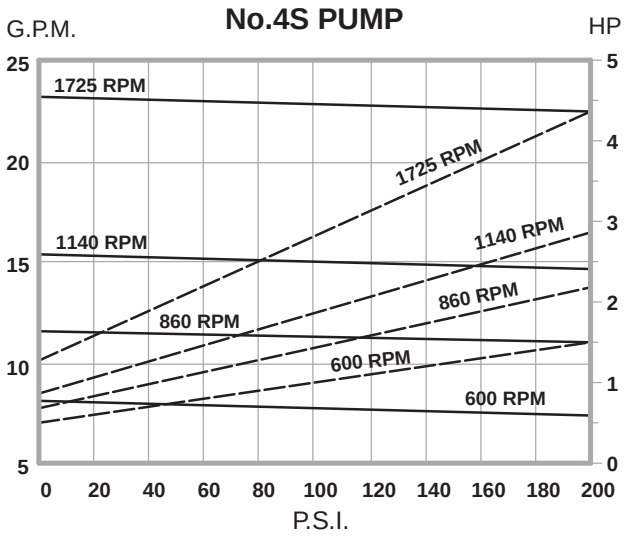
STAINLESS STEEL-SERIES

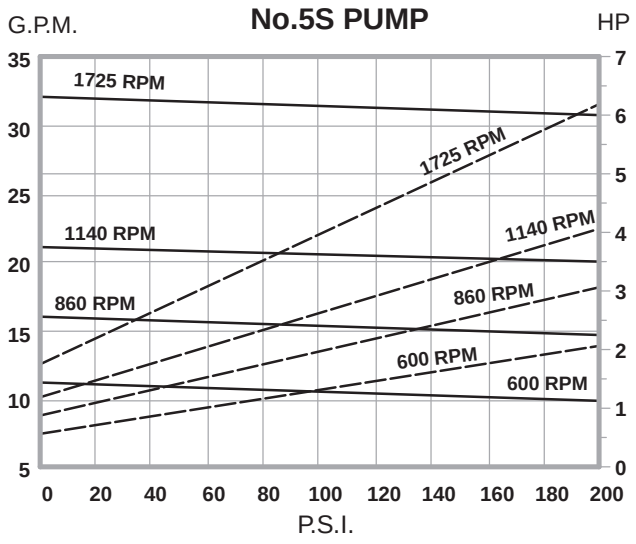
OPERATING CHARACTERISTICS, 32 SSU LIQUID





OPERATING CHARACTERISTICS, 300 SSU LIQUID

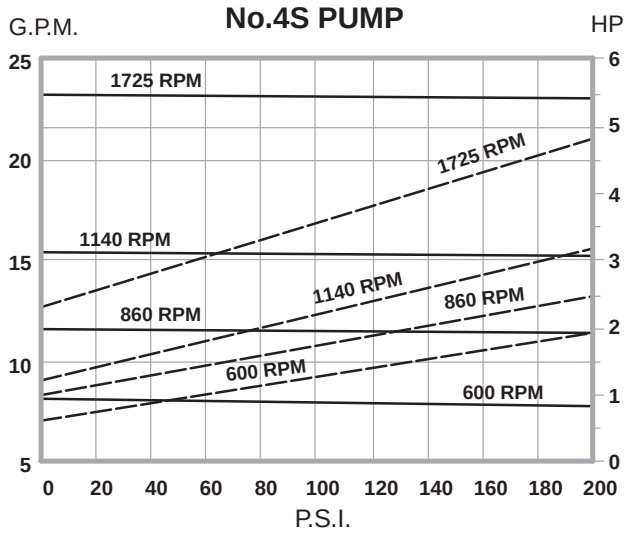


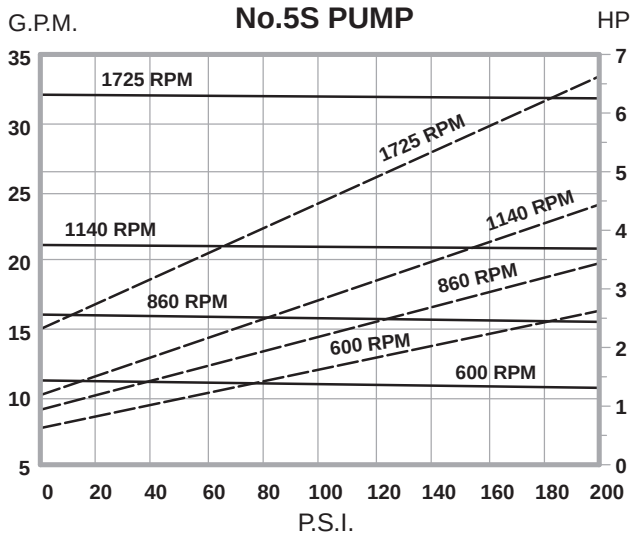


SOLID LINE = GPM
BROKEN LINE = HP

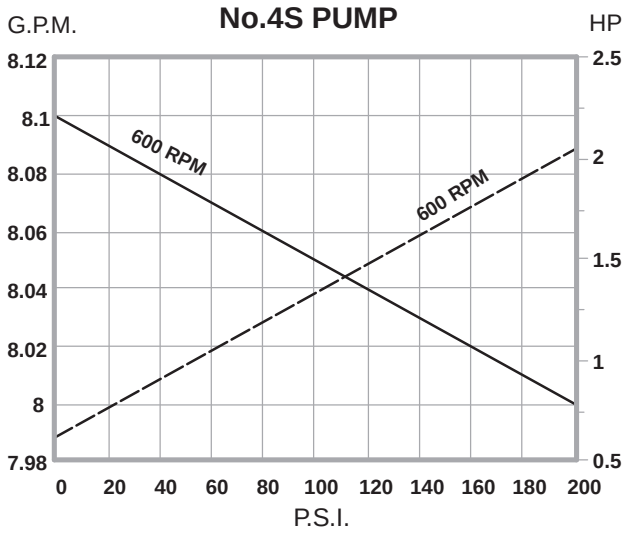
STAINLESS STEEL-SERIES

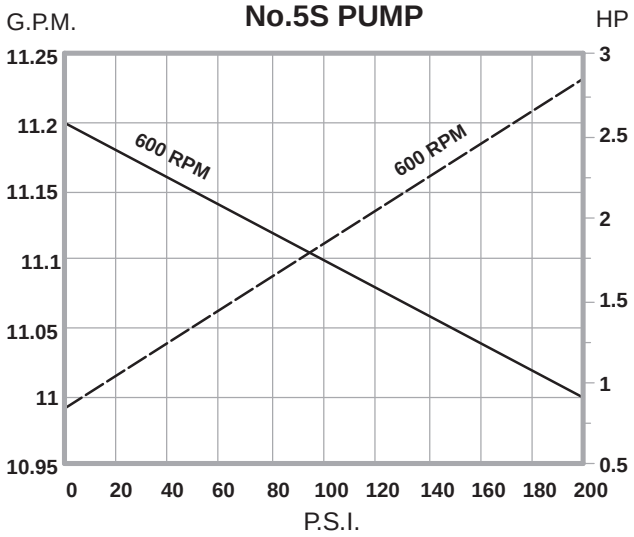
OPERATING CHARACTERISTICS, 1,000 SSU LIQUID





OPERATING CHARACTERISTICS, 5,000 SSU LIQUID



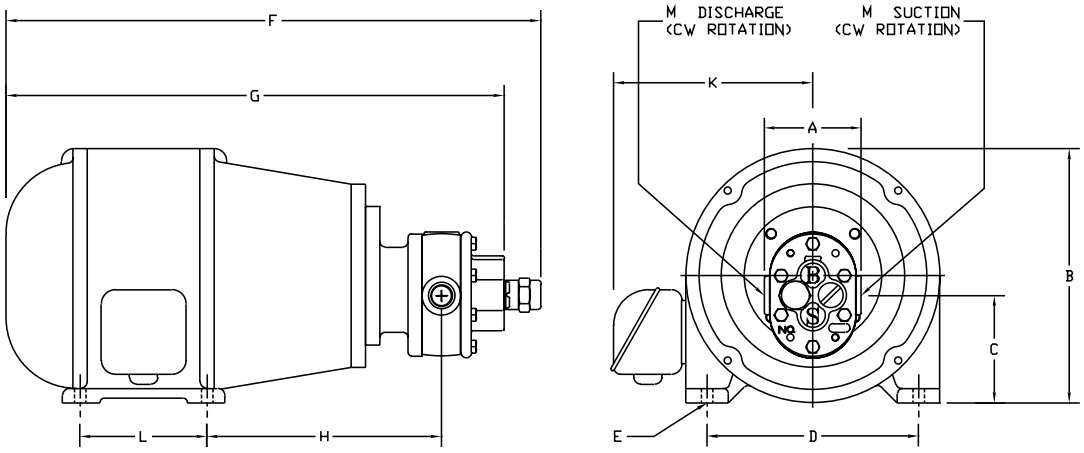


SOLID LINE = GPM

BROKEN LINE = HP

STAINLESS STEEL SERIES CLOSE COUPLED MOTOR DRIVEN ROTARY GEAR PUMPS (E-DRIVE)

BSM Stainless Steel-Series pumps are available direct coupled to the end bell of a foot mounted motor. This assembly, referred to as an E-Drive ensures accurate alignment and requires less space than a pump connected to the C-Face of a motor. BSM Stainless Steel Series Close Coupled Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 32.0 gpm and pressures to100 psi.

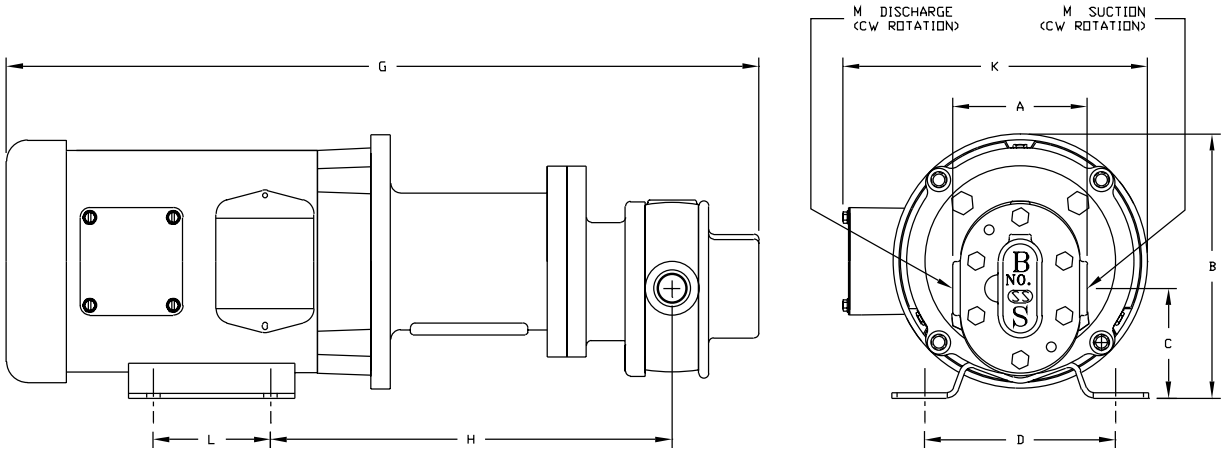


DIMENSIONS (INCHES)

Model	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1SST-E	182	3.00	9.00	3.90	7.50	.406	17.94	16.69	7.88	7.06	4.50	3/8
2SST-E	182	3.44	9.00	3.81	7.50	.406	18.91	17.66	8.31	7.06	4.50	1/2
	184	3.44	9.00	3.81	7.50	.406	19.91	18.66	8.31	7.06	5.50	"
	213	3.44	10.38	4.56	8.50	.406	21.47	20.22	9.12	7.94	5.50	"
3SST-E	182	4.44	9.00	3.50	7.50	.406	20.94	19.31	9.50	7.06	4.50	3/4
	184	4.44	9.00	3.50	7.50	.406	21.94	20.31	9.50	7.06	5.50	"
	213	4.44	10.38	4.25	8.50	.406	23.50	21.88	10.31	7.94	5.50	"
	215	4.44	10.38	4.25	8.50	.406	24.00	22.38	10.31	7.94	7.00	"
4SST-E	182	4.44	9.00	3.50	7.50	.406	20.94	19.31	9.50	7.06	4.50	1
	184	4.44	9.00	3.50	7.50	.406	21.94	20.31	9.50	7.06	5.50	"
	213	4.44	10.38	4.25	8.50	.406	23.50	21.88	10.31	7.94	5.50	"
	215	4.44	10.38	4.25	8.50	.406	24.00	22.38	10.31	7.94	7.00	"
	254U	4.44	12.38	5.25	6.03	.406	26.19	24.56	12.49	9.81	8.25	"
5SST-E	182	5.00	9.00	3.47	7.50	.406	21.94	20.31	10.00	7.06	4.50	1 1/4
	184	5.00	9.00	3.47	7.50	.406	22.94	21.31	10.00	7.06	5.50	"
	213	5.00	10.38	4.22	8.50	.406	24.50	22.88	10.81	7.94	5.50	"
	215	5.00	10.38	4.22	8.50	.406	25.00	23.38	10.81	7.94	7.00	"
	254U	5.00	12.38	5.22	6.03	.406	27.19	25.56	12.99	9.81	8.25	"

STAINLESS STEEL-SERIES MOTOR DRIVEN ROTARY GEAR PUMPS (A-DRIVE)

BSM Stainless Steel-Series pumps are available direct coupled to a Nema C-Face foot mounted motor. This assembly, referred to as an A-Drive, ensures accurate alignment and requires less space and is less costly than a pump and motor mounted on a baseplate. BSM Stainless Steel-Series Motor Driven Rotary Gear Pumps are available in motor speeds of 860, 1140 & 1725 rpm with capacities to 32.0 gpm and pressures to 100 psi.

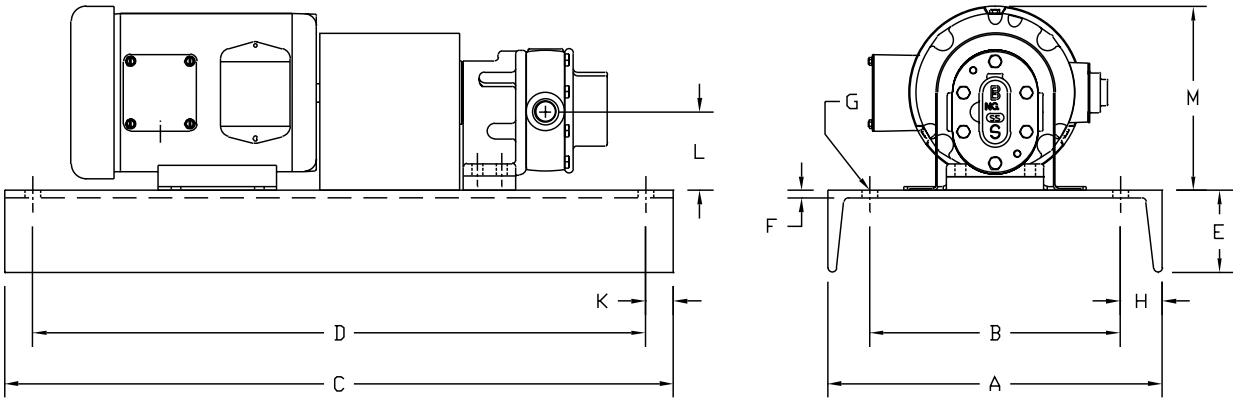


DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	G	H	K	L	M
1SST-A	56C	3.00	6.88	2.91	4.88	0.34	18.56	9.81	8.31	3.00	3/8
	145TC	3.00	6.88	2.91	5.50	0.34	20.28	10.12	8.56	5.00	3/8
	182TC	3.00	8.69	3.91	7.50	0.41	21.87	11.75	9.81	4.50	3/8
2SST-A	56C	3.44	6.88	2.81	4.88	0.34	19.53	10.25	8.31	3.00	1/2
	145TC	3.44	6.88	2.81	5.50	0.34	21.25	10.56	8.56	5.00	1/2
	182TC	3.44	8.69	3.81	7.50	0.41	22.84	12.19	9.81	4.50	1/2
	184TC	3.44	8.69	3.81	7.50	0.41	23.84	12.19	9.81	5.50	1/2
3SST-A	56C	4.44	6.88	2.50	4.88	0.34	21.19	11.43	8.31	3.00	3/4
	145TC	4.44	6.88	2.50	5.50	0.34	22.91	11.75	8.56	5.00	3/4
	182TC	4.44	8.69	3.50	7.50	0.41	24.50	13.37	9.81	4.50	3/4
	184TC	4.44	8.69	3.50	7.50	0.41	25.50	13.37	9.81	5.50	3/4
	213TC	4.44	10.25	4.25	8.50	0.41	27.41	14.25	12.16	5.50	3/4
	215TC	4.44	10.25	4.25	8.50	0.41	28.91	14.25	12.16	7.00	3/4
4SST-A	56C	4.44	6.88	2.50	4.88	0.34	21.19	11.43	8.31	3.00	1
	145TC	4.44	6.88	2.50	5.50	0.34	22.91	11.75	8.56	5.00	1
	182TC	4.44	8.69	3.50	7.50	0.41	24.50	13.37	9.81	4.50	1
	184TC	4.44	8.69	3.50	7.50	0.41	25.50	13.37	9.81	5.50	1
	213TC	4.44	10.25	4.25	8.50	0.41	27.41	14.25	12.16	5.50	1
	215TC	4.44	10.25	4.25	8.50	0.41	28.91	14.25	12.16	7.00	1
5SST-A	56C	5.00	6.88	2.50	4.88	0.34	21.57	11.63	8.31	3.00	1 1/4
	145TC	5.00	6.88	2.50	5.50	0.34	23.29	11.95	8.56	5.00	1 1/4
	182TC	5.00	8.69	3.50	7.50	0.41	24.88	13.57	9.81	4.50	1 1/4
	184TC	5.00	8.69	3.50	7.50	0.41	25.88	13.57	9.81	5.50	1 1/4
	213TC	5.00	10.25	4.25	8.50	0.41	27.79	14.45	12.16	5.50	1 1/4
	215TC	5.00	10.25	4.25	8.50	0.41	29.29	14.45	12.16	7.00	1 1/4
	254TC	5.00	12.88	5.25	10.00	0.53	35.63	16.19	16.09	8.25	1 1/4

STAINLESS STEEL-SERIES BASE MOUNTED ASSEMBLIES (D-DRIVE)

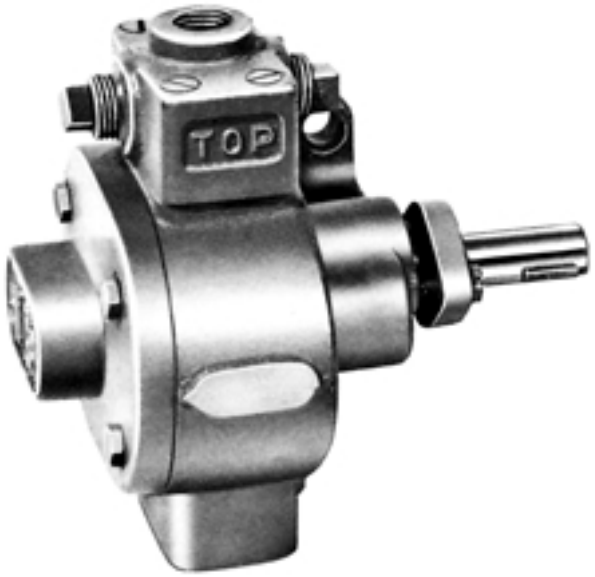
BSM Stainless Steel-Series pumps are available as base mounted pump and motor assemblies. Each assembly includes the base, flexible coupling, coupling guard, riser blocks, (if required) lifting eyebolts, and mounting hardware. The fabricated steel or channel steel bases are available with optional features such as drip lip construction, drain plugs, mounting lugs, casters, etc..



DIMENSIONS (INCHES)

Model No.	Motor Frame	A	B	C	D	E	F	G	H	K	L	M
1SST-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.91	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.91	8.69
2SST-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.81	6.88
	182TC	15.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.81	8.69
	184TC	12.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.81	8.69
3SST-D	56C	12.00	9.00	24.00	22.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
4SST-D	145TC	12.00	9.00	26.00	24.00	2.94	0.28	0.56	1.50	1.00	2.50	6.88
5SST-D	182TC	12.00	9.00	30.00	28.00	2.94	0.28	0.56	1.50	1.00	3.50	8.69
	184TC	15.00	12.00	32.00	30.00	3.41	0.41	0.56	1.50	1.00	3.50	8.69
	213TC	15.00	12.00	34.00	32.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25
	215TC	15.00	12.00	36.00	34.00	3.41	0.41	0.56	1.50	1.00	4.25	10.25

AUTOMATIC REVERSING GEAR PUMPS



FT MTD PUMP

BSM Automatic Reversing Gear Pumps are designed to maintain the same direction of delivery regardless of the direction of rotation of the driving shaft.These pumps are used on machine tools and other reversing mechanisms which require a constant flow of liquid.

Design: Drive speeds to 900 rpm; discharge pressures to 200 psi; flow rate to 17.1 gpm.

Material: Cast Iron casings with precision machined, heat treated gears and case hardened shafts.

Bearings: Plain.

Seal: Compression packing with adjustable gland.

Lubrication: Self lubricating using the pumped liquid. Also available for handling non-lubricating liquids.

Rotation: Vertical foot type, right hand furnished. Left hand mounting optional. Reversible. Discharge is always from the top of the pump. Top valve cover may be transposed with the bottom for left or right hand mounting on foot.

Liquid Viscosities: Liquids having good lubricating qualities are recommended.

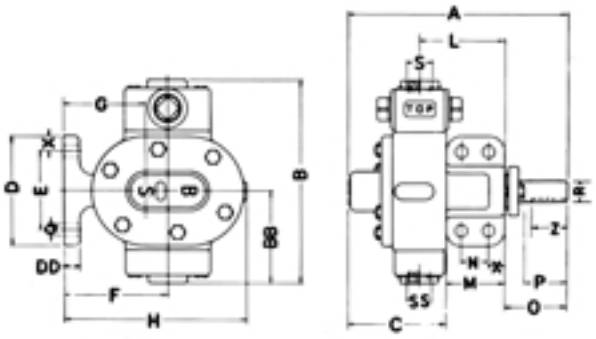
Suction Lift: Up to 15" Hg recommended. Consult the factory for higher suction lift recommendations.

Drive Options: D-Drive (pump coupled to motor mounted on baseplate); GR-Drive (pump coupled to gear reducer coupled to motor mounted on baseplate); B-Drive (pump and motor connected by V-belt and pulleys mounted on baseplate).

Accessories: Gear Sets; Bearing Kit, and Packing Kits. Refer to Section 13.

MODELS 11, 12, 13 AUTOMATIC REVERSING GEAR PUMPS

DIMENSIONAL DATA



Dimensions (inches)

Model	A	B	BB	C	D	DD	E	F	G*	H
11	6 3/16	5 1/8	2 9/16	2 1/8	2 1/4	1/2	2	2 23/32	2 1/8	5
12	7 1/16	6 7/16	2 15/16	3 1/8	3 1/2	1/2	2 1/2	3 5/16	2 1/8	5 7/8
13	8 15/16	8 1/16	3 1/2	4 1/2	4	3/4	3	4 1/4	3 1/4	7 7/16

L	M	N	O	P	Q	R	S NPT	SS NPT	X	Z	Key-way
2 1/4	1 1/2	3/4	2 1/16	1 3/8	25/64	9/16	3/8	3/8	3/8	1 1/16	1/8 x 1/16
2 3/4	1 7/8	7/8	2 1/16	1 1/4	25/64	5/8	1/2	1/2	1/2	1 1/16	3/16 x 3/32
3 3/4	2 1/4	1 1/4	2 5/16	1 11/32	29/64	3/4	3/4	1 1/4	1/2	1 1/16	3/16 x 3/32

*G is distance from bottom of stand to center of drive shaft; plus or minus .005".

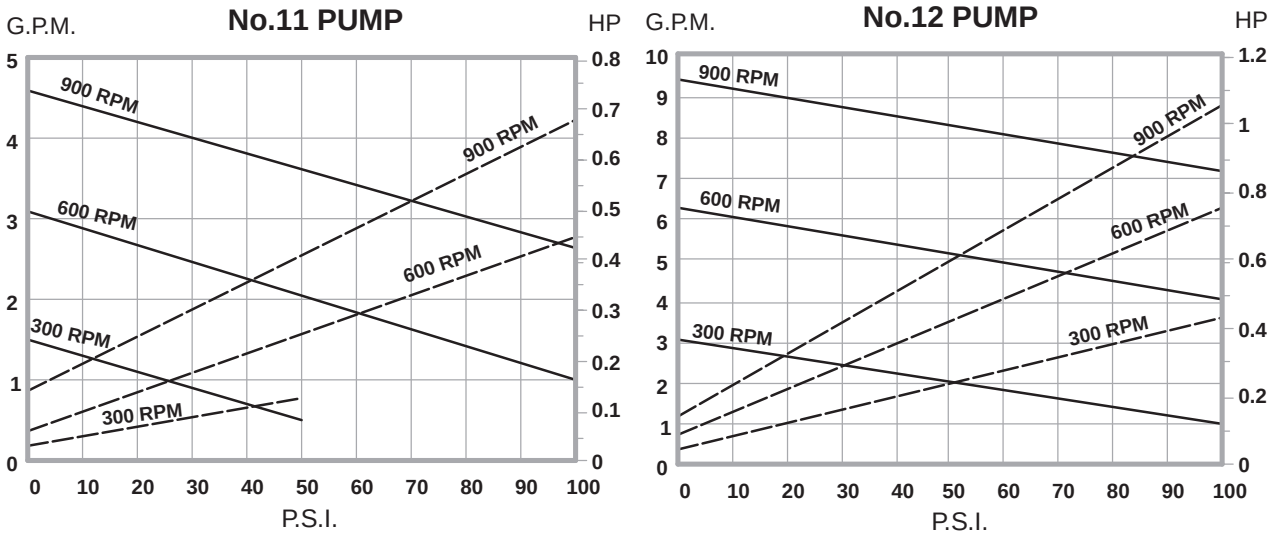
OPERATING CHARACTERISTICS*

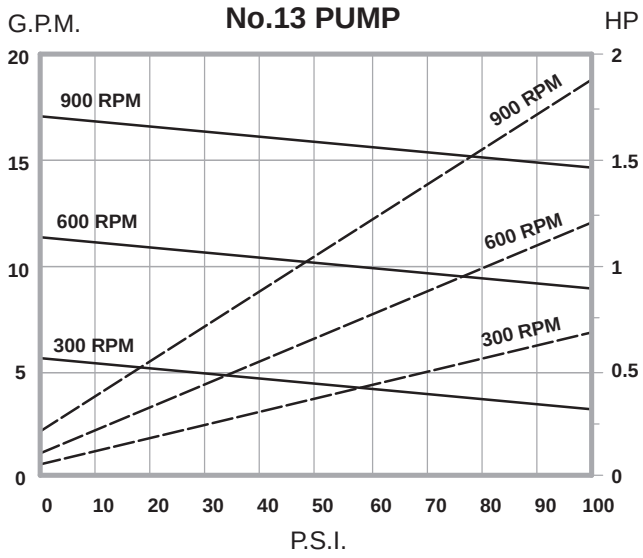
Model	Displmnt gals per rev.	Slip gpm/psi	Drive Speed rpm	0 psi gpm	0 psi hp	50 psi gpm	50 psi hp	75 psi gpm	75 psi hp	100 psi gpm	100 psi hp	200 psi gpm	200 psi hp
			300	1.5	.02	1.4	.10	1.38	.14	1.3	.18	1.1	.34
11	.00515	.0022	600	3.1	.05	3.0	.20	2.93	.28	2.9	.36	2.7	.66
			900	4.6	.11	4.5	.33	4.47	.35	4.4	.54	4.2	.98
			300	3.1	.04	3.0	.19	2.95	.26	2.9	.34	2.7	.64
12	.01043	.0023	600	6.3	.07	6.1	.34	6.1	.47	6.0	.61	5.8	1.1
			900	9.4	.11	9.3	.48	9.2	.66	9.1	.85	8.9	1.5
			300	5.7	.05	5.6	.28	5.5	.41	5.4	.54	5.2	1.1
13	.01896	.0025	600	11.4	.06	11.3	.47	11.2	.71	11.1	.97	10.9	2.1
			900	17.1	.17	17.0	.83	16.8	1.2	16.8	1.5	16.5	3.2

*Delivery and input horsepower are based on liquid viscosity of 300 ssu at speed and pressures shown.
*For operating characteristics at other viscosities and pressure, consult factory.

AUTOMATIC REVERSING GEAR PUMPS

OPERATING CHARACTERISTICS, 32 SSU LIQUID

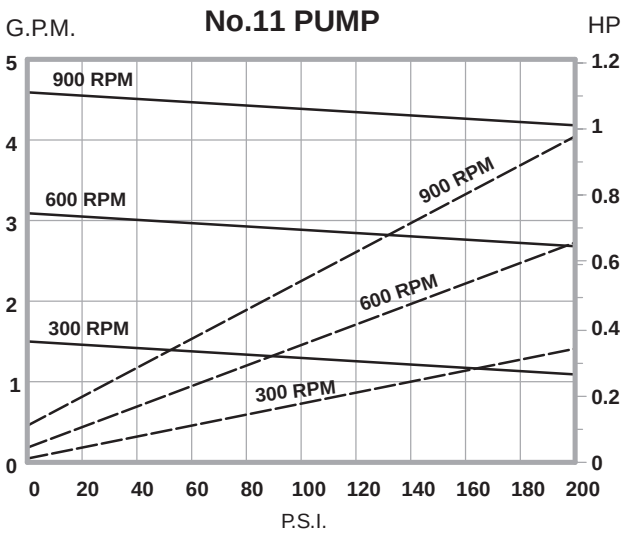


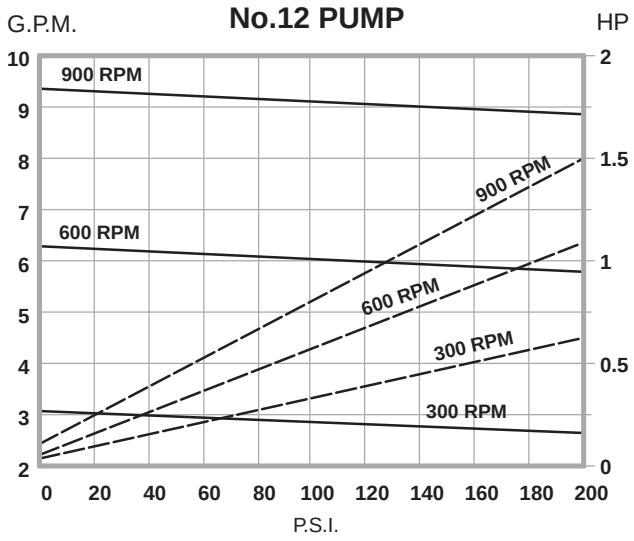


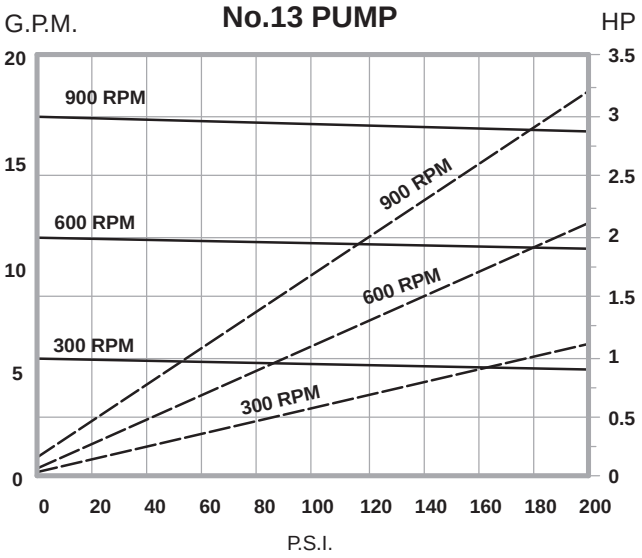
SOLID LINE = GPM
BROKEN LINE = HP

AUTOMATIC REVERSING GEAR PUMPS

OPERATING CHARACTERISTICS, 300 SSU LIQUID



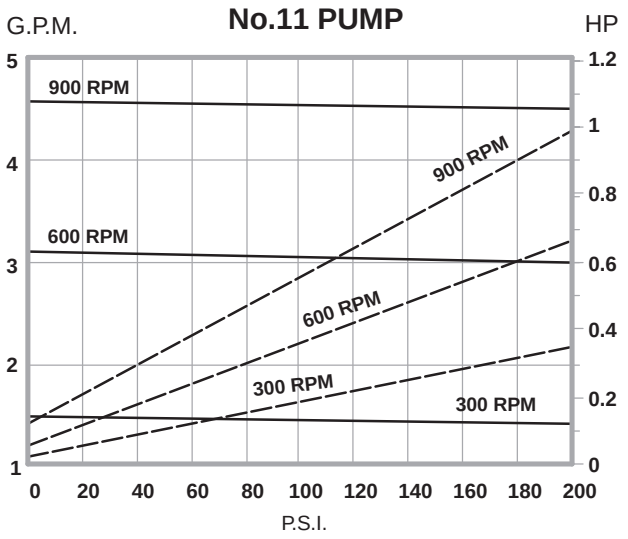


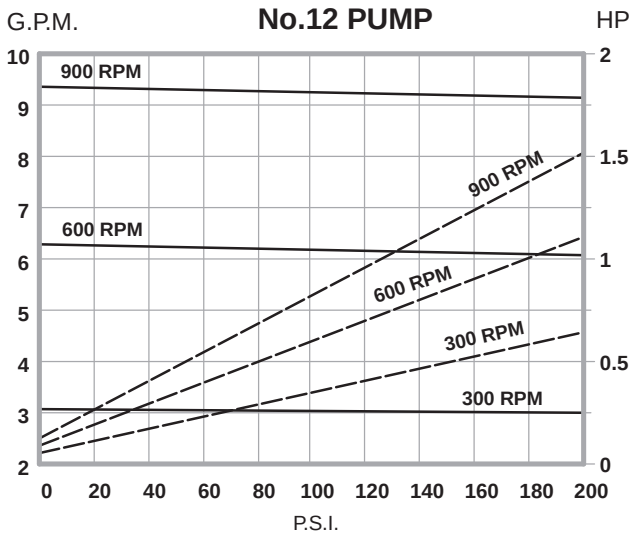


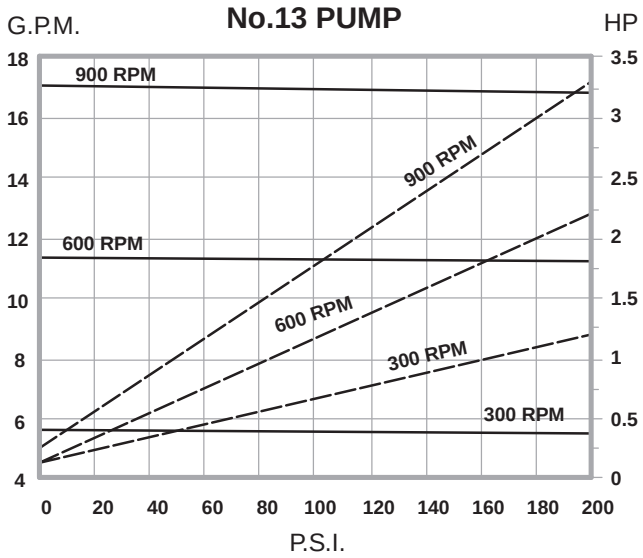
SOLID LINE = GPM
BROKEN LINE = HP

AUTOMATIC REVERSING GEAR PUMPS

OPERATING CHARACTERISTICS, 1,000 SSU LIQUID



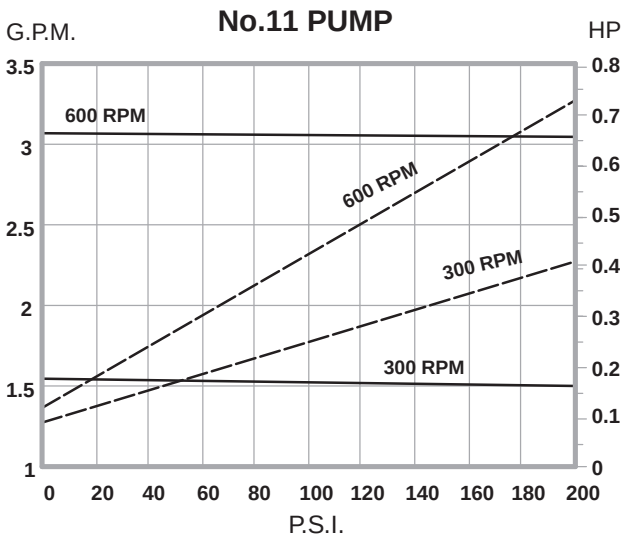


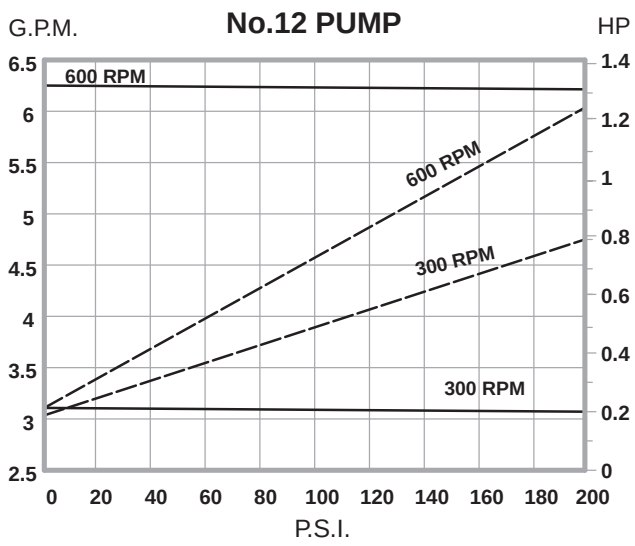


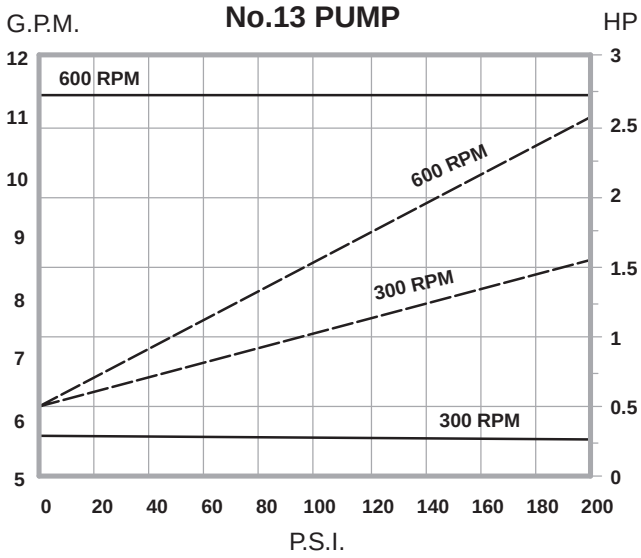
SOLID LINE = GPM
BROKEN LINE = HP

AUTOMATIC REVERSING GEAR PUMPS

OPERATING CHARACTERISTICS, 5,000 SSU LIQUID







SOLID LINE = GPM
BROKEN LINE = HP

BSM AUTOMATIC REVERSING VANE PUMPS

PRINCIPLE OF OPERATION

Vanes sliding in a rotor are held against the internal surface of an eccentric by springs and hydraulic pressure. The vanes alternately create suction and pressure as the rotor turns. The pump discharges a constant flow of liquid in one direction regardless of the direction of rotation of the driving shaft.

MAINTAINS SAME DIRECTION OF DELIVERY WHEN ROTATION OF THE DRIVING SHAFT IS REVERSED

This is an essential feature in any operation where liquids must be pumped in a machine whose driving shaft reverses. BSM Vane Pumps feature a simple, rugged design, a wide range of capacities, and three different mounting arrangements to provide you with the greatest convenience and efficiency in meeting your liquid handling requirements.

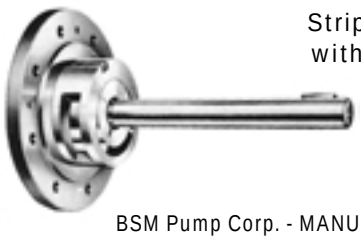
THREE MOUNTING ARRANGEMENTS TO FIT ANY APPLICATION

Regular models

Suction and discharge can be positioned most conveniently for piping because these pumps can be installed in the original position or at any 90 degree or 180 degree position from the original by merely removing bolts and turning housing to desired position on stand.

Stripped models with housing

These pumps simplify installation, particularly where internal discharge and suction ports are not readily incorporated in the machine design, or where outside piping is desirable. A minimum number of easy concentric boring and turning operations are required with readily located tapped holes.



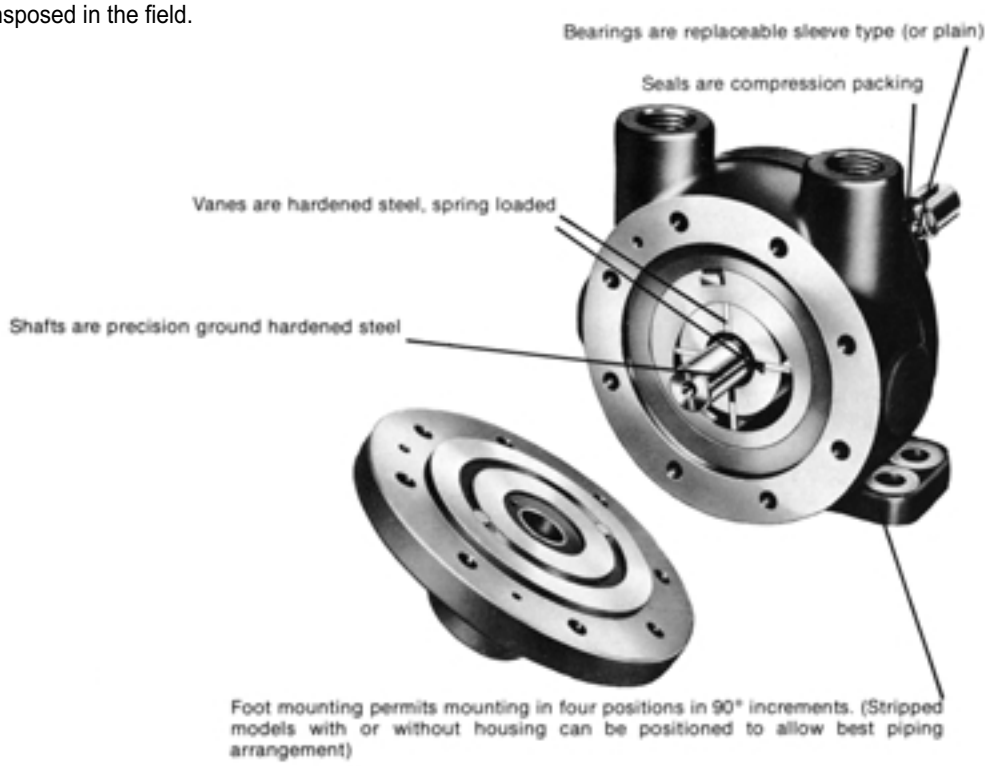
Stripped models without housing

Made for manufacturers who wish to utilize pumps as integral parts of machines with suction and discharge ports incorporated in the machine castings. Provide compact installation and minimum projection from machine surfaces. Furnished with mounting holes and cap screws to simplify installation.

BSM AUTOMATIC REVERSING VANE PUMPS

PRECISION MADE FOR RELIABLE SERVICE

Springs and hydraulic pressure hold the four hardened steel sliding vanes in the rotor against the internal surface of an eccentric and compensate automatically for any wear resulting from contact with the eccentric. Discharge port can be readily transposed in the field.



Bearings — Replaceable sleeve type and plain bearings are especially adapted for normal pump service to provide long life. Special bearings for unusual or difficult conditions are available.

Seals — Compression packing provides an ample safeguard against oil leakage and the entrance of air and is suitable for use with a wide variety of liquids. Special seals for handling corroding liquids are available.

Shafts and vanes — Drive shafts are precision ground hardened steel. Vanes are hardened steel, spring loaded to provide snug fit against the eccentric and to compensate automatically for any wear resulting from contact with the eccentric.

Typical applications — Lubrication of gear cases where reversing cycle is employed; used as a hydraulic brake in mechanical transmissions; general transfer, lubrication, low pressure hydraulic and industrial service.

BSM AUTOMATIC REVERSING VANE PUMPS

MODELS 8 WITH 2 VANES
8021, 8061, 8101 REGULAR WITH 4 VANES
8022, 8062, 8102 STRIPPED WITH 4 VANES WITH HOUSING
8023, 8063, 8103 STRIPPED WITH 4 VANES WITHOUT HOUSING

Design Rating: Up to 1140 RPM; up to 100 PSI; up to 11.5 GPM

Material: Gray iron casings and hardened steel vanes and shafts

Bearings: Replaceable sleeve type (plain bearings are furnished with model No. 8)

Seal: Compression packing

Lubrication: Self-lubricating using liquid being pumped

Mountings: Foot – Models 8, 8021, 8061, 8101;
Flange, front connected – Model 8022, 8062, 8102
Flange, back connected – Models 8023, 8063, 8103

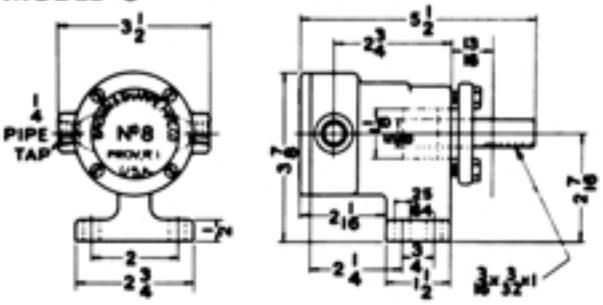
Liquid Viscosities: Clean, lubricating liquids recommended

Inlet Suction: To obtain best results, pump should be located as near as possible to liquid level (up to 20" Hg possible)

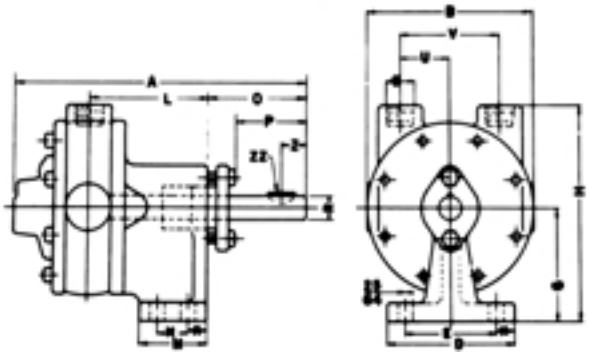
Drives: Direct recommended (outboard permissible)

Rotation: Reversible. Either port may be used for discharge. Normally furnished with right hand discharge (facing shaft end of pump)

MODEL 8



MODELS 8021, 8061, 8101



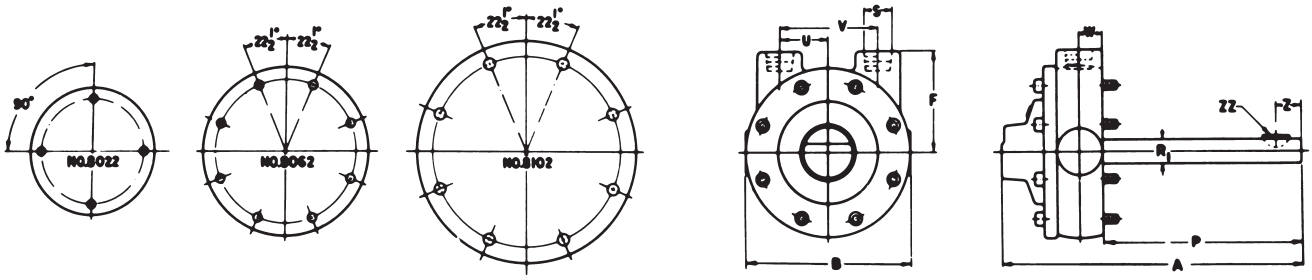
DIMENSIONS (INCHES)

Model	A	B	D	E	G	H	L	M	N	O
8	5 1/2	3 1/2	2 3/4	2	2 7/16	3 7/8	2 3/4	1 1/2	3/4	NA
8021	6 5/8	3 1/2	2 3/4	2	2 3/8	4 3/8	2 39/64	1 1/2	3/4	2 5/16
8061	8 1/8	4 5/8	3 1/2	2 1/2	3	5 3/4	3 5/16	1 7/8	7/8	2 3/4
8101	9 1/16	6	4	3	3 7/8	7 1/2	3 13/16	2 1/4	1 1/4	2 3/4

Model	P	R	S (P.T.)	U	V	X	Z	ZZ
8	1 1/8	5/8	1/4	NA	NA	3/8	NA	3/16 x 3/32
8021	1 9/16	.500	3/8	1	2	3/8	1/2	1/8 x 1/2
8061	1 15/16	.625	1/2	1 3/8	2 3/4	1/2	1/2	3/16 x 3/4
8101	1 15/16	.750	3/4	1 3/4	3 1/2	1/2	3/4	3/16 x 3/4

BSM AUTOMATIC REVERSING VANE PUMPS

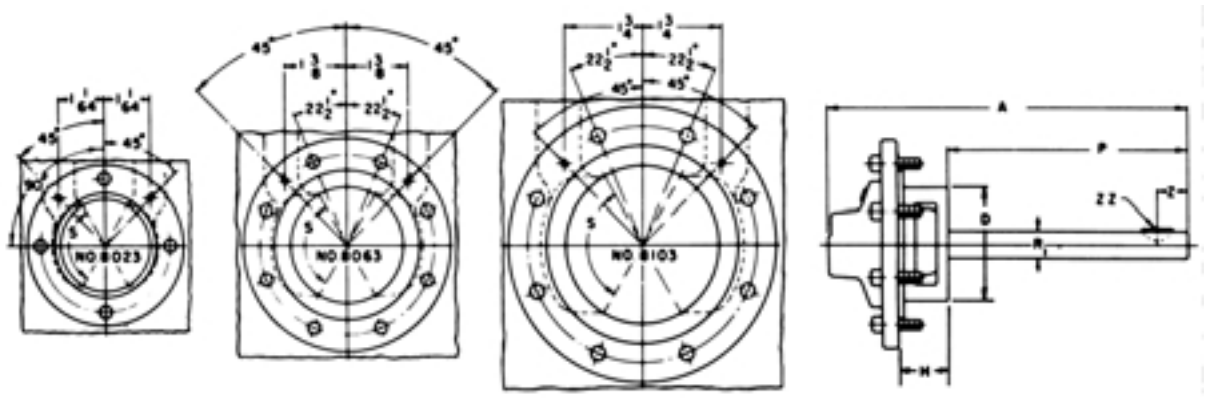
MODELS 8022, 8062, 8102



DIMENSIONS (INCHES)

Model	A	B	F	P	R	S (P.T.)	U	V	W	Z	ZZ
8022	6 5/8	3 1/2	2	4 13/32	.500	3/8	1	2	17/32	1/2	1/8 x 1/2
8062	8 1/8	4 5/8	2 3/4	5 9/16	.625	1/2	1 3/8	2 3/4	5/8	1/2	3/16 x 3/4
8102	9 1/16	6	3 5/8	5 15/16	.750	3/4	1 3/4	3 1/2	3/4	3/4	3/16 x 3/4

MODELS 8023, 8063, 8103



DIMENSIONS (INCHES)

Model	A	P	R	S	Z	ZZ	D	H
8023	6 5/8	4 1/2	.500	Min. 90º - Max. 120º	1/2	1/8 x 1/2	2	27/32
8063	8 1/8	5 9/16	.625	Min. 90º - Max. 120º	1/2	3/16 x 3/4	2 1/2	1
8103	9 1/16	5 15/16	.750	Min. 90º - Max. 120º	3/4	3/16 x 3/4	3 3/8	1 1/4

OPERATING CHARACTERISTICS

Model	Displmnt gals. per rev.	Slip gpm/psi	Drive Speed rpm	0 psi gpm	0 psi hp	25 psi gpm	25 psi hp	50 psi gpm	50 psi hp	100 psi gpm	100 psi hp
8	.0023	.0075	600	1.3	.08	1.2	.12	1.0	.15	---	---
			1140	2.7	.15	2.5	.22	2.3	.28	---	---
8021			300	.6	.02	.4	.04	.3	.06	---	---
8022	.0022	.0065	600	1.2	.05	1.1	.09	.9	.12	.6	.20
8023			1140	2.5	.08	2.3	.15	2.1	.21	1.8	.35
8061			300	1.4	.02	1.2	.09	.9	.16	.4	.30
8062	.0045	.0100	600	2.7	.04	2.5	.12	2.2	.20	1.7	.36
8063			1140	5.2	.08	4.9	.18	4.7	.27	4.2	.47
8101			300	2.9	.07	2.7	.25	2.6	.40	2.2	.75
8102	.0099	.0080	600	5.9	.15	5.7	.35	5.5	.55	5.1	.95
8103			1140	11.3	.30	11.1	.55	10.9	.77	10.5	1.25

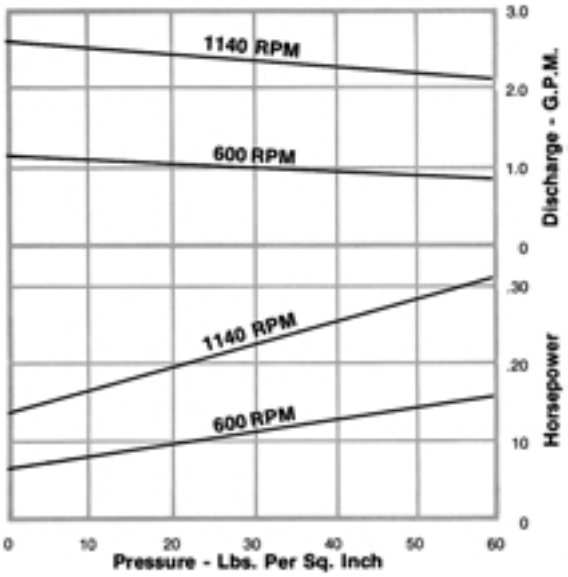
* Delivery and input horsepower are based on liquid viscosity of 300 ssu at speed and pressure shown.

MODELS 8, 8021, 8022, 8023, 8061, 8062, 8063, 8101, 8102, 8103

OPERATING CHARACTERISTICS

CHARACTERISTICS OF No. 8 PUMP

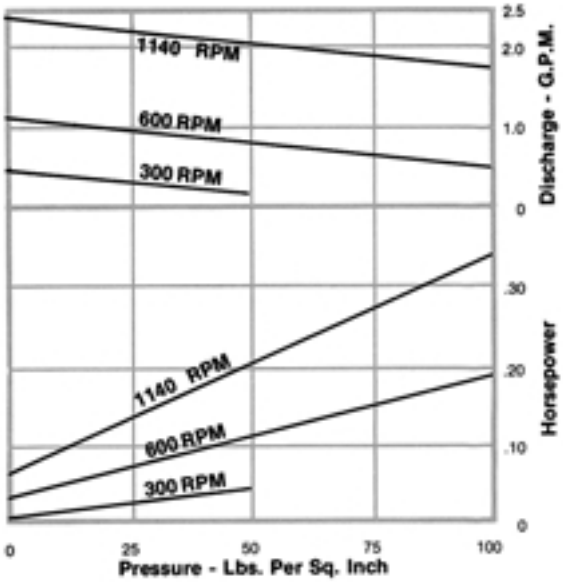
Based on 300 S.S.U. Liquid



For operating characteristics at other viscosities and pressures, consult factory.

CHARACTERISTICS OF NO. 8021, 8022, and 8023 PUMPS

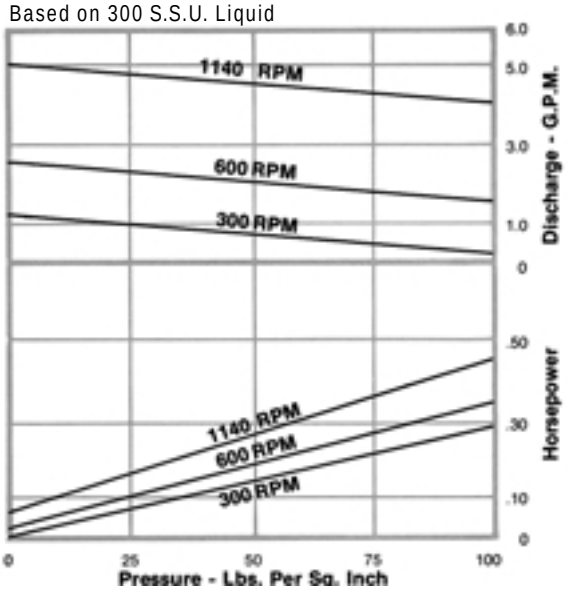
Based on 300 S.S.U. Liquid



For operating characteristics at other viscosities and pressures, consult factory.

CHARACTERISTICS OF NO. 8061, 8062 and 8063 PUMPS

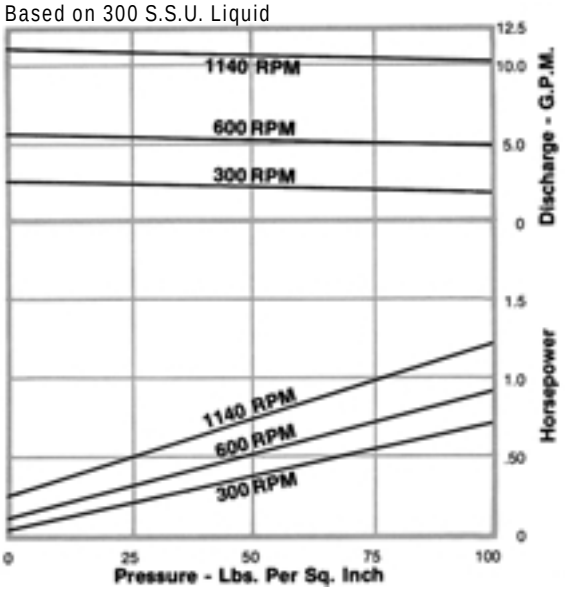
Based on 300 S.S.U. Liquid



For operating characteristics at other viscosities and pressures, consult factory.

CHARACTERISTICS OF NO. 8101, 8102 and 8103 PUMPS

Based on 300 S.S.U. Liquid



For operating characteristics at other viscosities and pressures, consult factory.

BSM MOTOR DRIVEN CENTRIFUGAL PUMPS

PRINCIPLE OF OPERATION

A hydraulically and dynamically balanced impeller with raised vane sections discharges liquid as a result of the centrifugal force developed in rotation. The head developed is entirely the result of the velocity imparted to the liquid. The impeller is always located below the minimum liquid level. Pumps have a fixed and relatively low discharge head with a rapid falling off of discharge as head or viscosity increases.

impeller is submerged in liquid | **vanes impart centrifugal action to liquid** | **centrifugal action discharges liquid**

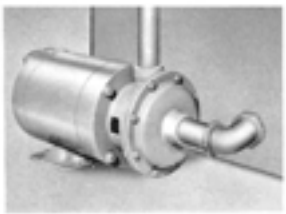
USED WHEREVER HIGH VOLUMES OF LOW VISCOSITY LIQUIDS ARE HANDLED

BSM Motor Driven Centrifugal Pumps – proof once again that the instrument designed to do a particular job does that job best – in this case, BSM Centrifugal Pumps are unsurpassed for supplying coolant on machine tool applications. Unsurpassed because they have been carefully designed for handling large volumes of low viscosity liquids containing particles of grit and abrasives at operating heads (pressures) up to 25 feet of water (10.82 psi).

3 MOUNTING TYPES TO MEET MORE SPECIFIC REQUIREMENTS

BSM Centrifugal Pumps are available in a wide range of capacities to meet all your applications. Just as importantly, they are available in three mounting styles:

Submersible — Pump submerged in liquid with motor above liquid level. Pump shaft supported by grease-sealed motor bearings. No metal-to-metal contact below liquid level. Motors are NEMA Type C, totally enclosed, flat face. Pumps are ideal for handling large volumes where abrasive or grit may be present in liquid.

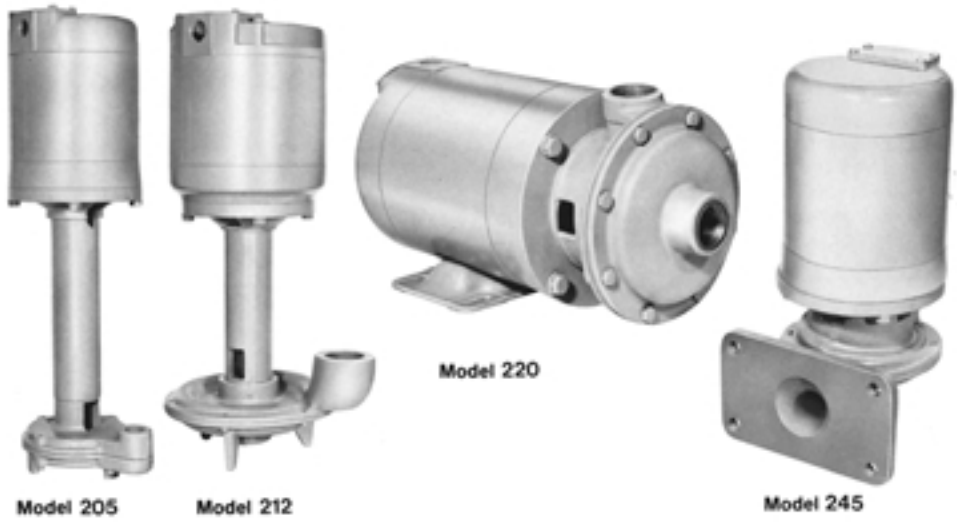


Outside Foot Mounted — Models 220 and 225 have all the advantages described for the flange mounted models, except that they are foot mounting types to meet JIC recommendations. The foot permits mounting either vertically or horizontally.

Outside Flange Mounted — Convenient flange permits integral mounting either vertically or horizontally. Motors are NEMA Type C, totally enclosed, flat face, of ample power and speed to assure large volume delivery and continuous, long-life operation.

BSM MOTOR DRIVEN CENTRIFUGAL PUMPS

Models 205, 206, 207, 208, 212, 220, 225, 240, & 245



THE DESIGN

Impellers Balanced dynamically (also hydraulically on submerged type units) and their design provides radial and axial stability without use of a lower bearing at the impeller end of the shaft (no metal to metal contact). Liquid enters through the center of the underside of the base and is forced outward in a streamline flow along the vanes. Modified open design minimizes clogging and wear.

Bearings Factory greased and sealed ball bearings require no further lubrication and afford protection against grit and other foreign substances. No bearings surfaces are exposed to the action of coolant or abrasive charged liquids.

Motors Totally enclosed, giving much more protection against the entrance of dust and vapor than open type motors. Also, all pumps are furnished with NEMA Type C flat face motors with standard shaft extensions, simplifying the replacement of motor of any manufacture in the event of unexpected failure or repair minimizing costly delays and downtime.

Seals Spring loaded mechanical type on Outside Mounted Models to prevent leakage along the shaft to the motor. Ports to prevent leakage to the motor are designed into the column housing the pump shaft in Submersible Pump Types, hence no seals are required in these models.

BSM MOTOR DRIVEN CENTRIFUGAL PUMPS

MODELS 205, 206, 207, 208, 212, 220,225, 240, & 245

BSM Motor Driven Centrifugal Pumps are designed to handle large volumes of low viscosity liquids containing particles of grit and abrasives at operating heads up to 25 feet of water (10.82 psi). They are unsurpassed for supplying coolant on machine tool applications.

Design Rating: Up to 80 gpm; up to 25 feet of water.

Material: Gray iron casings, hardened steel shafts, gray iron, bronze, or aluminum impellers. Materials for handling corrosive liquids are available.

Bearings: Motor bearings are factory lubricated for life. No bearings are required for pump section.

Seals: Models 220, 225, 240 and 245 have mechanical seals.

Mountings: Models 205, 206, 207, 208, and 212 are submersible type pumps; Models 240 and 245 are outside flange mounted. Models 220 and 225 are outside foot mounted.

Liquid Viscosities: These pumps are powered to handle maximum viscosities as follows: 300 ssu — 208, 212, 225, 245; 1000 ssu — 205, 206, 207, 220, 240.

Inlet Suction: Flooded inlet required. Inlet should always be located below minimum liquid level.

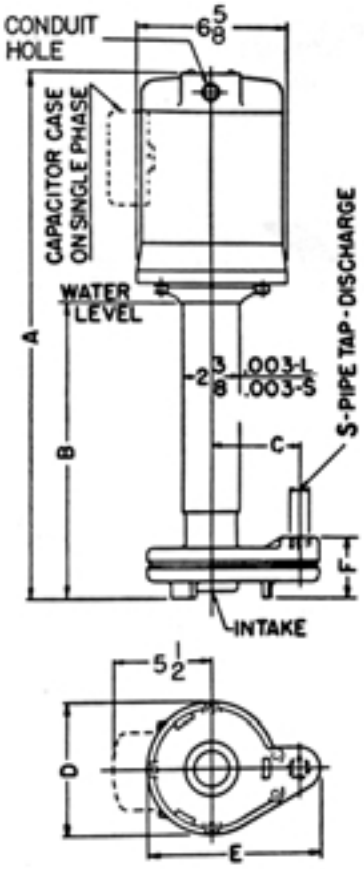
Motors: Nema C-Face furnished with or without base depending on pump model. Motors with special characteristics are available.

OPERATING CHARACTERISTICS

Model	Motor HP	RPM	Liquid	Discharge in GPM at total head feet						
				4	6	8	12	16	20	24
205, 206, 207	1/4	1725	Water	21.5	19.0	15.5	5.0	..	..	..
			Oil 440	17.5	16.0	13.5	4.0	..	..	..
208	1/4	1725	Water	36.5	33.0	29.0	21.0	12.0	..	..
			Oil 160	30.0	29.0	26.0	20.0	11.0	..	..
212	1/2	1725	Water	80.0	75.0	70.0	59.0	48.0	36.0	14.0
			Oil 300	70.0	66.0	60.0	50.5	40.0	30.0	8.0
220, 240	1/4	1725	Water	20.5	18.0	15.0	5.0	..	..	..
			Oil 440	17.0	15.0	12.5	4.5	..	..	..
225, 245	1/2	1725	Water	80.0	75.0	70.0	59.0	48.0	36.0	14.0
			Oil 300	70.0	66.0	60.0	50.0	40.0	30.0	8.0

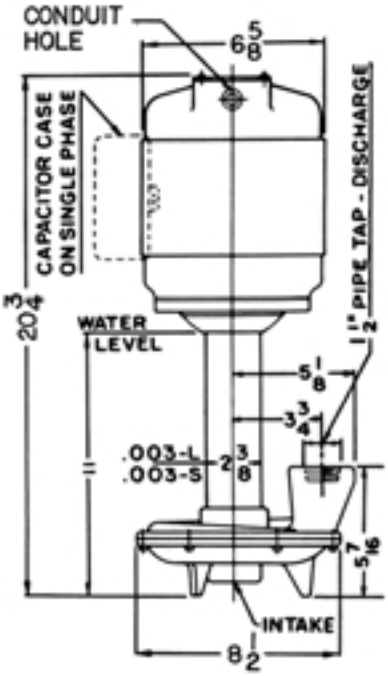
MODELS 205, 206, 207, 208 and 212 SUBMERSIBLE PUMPS

DIMENSIONAL DATA



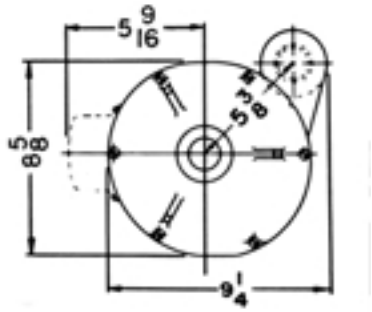
MODEL	205	206	207	208
A*	15 15/16	19 3/16	21 5/8	21 3/4
B	6 3/4	9 15/16	12 7/16	12 9/16
C	3 13/16	3 13/16	3 13/16	4 1/4
D	5 1/2	5 1/2	5 1/2	6 7/8
E	7 3/8	7 3/8	7 3/8	8 13/16
F	2 5/8	2 5/8	2 5/8	3
S	3/4	3/4	3/4	1

*Overall height (A) is given for all voltages, 3 phase, 60/50 cycles. Single phase motors extend height up to 1" for all models.



MODEL 212

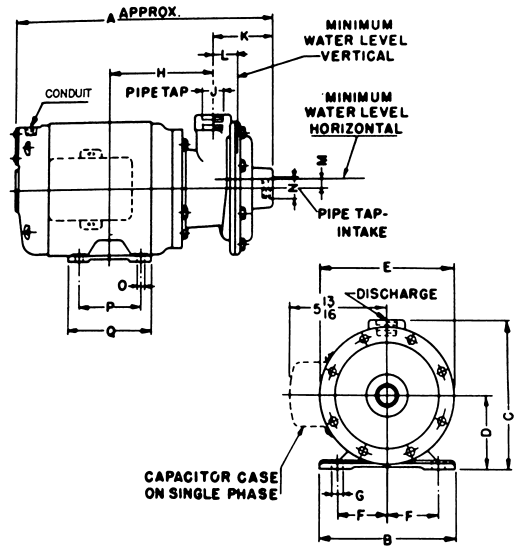
A	Electrical Characteristics
23 1/16	All voltages 60/50, 60 and 25 cycle
23 13/16	115 or 230 volt, D.C.



MODELS 220, 225, 240, & 245
OUTSIDE MOUNTED PUMPS

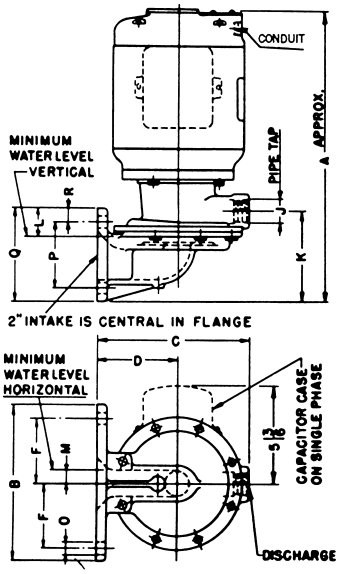
DIMENSIONAL DATA

MODELS 220 & 225



	MODEL			
	220	225	240	245
A	12 5/8	14 5/16	14 3/16	15 1/2
B	6 1/2	8 1/2	7 1/2	7 1/2
C	7	8 3/8	7 1/2	9 3/4
D	3 1/2	4 1/8	4	5 1/2
E	6 1/2	7 1/2		
F	2 7/16	2 15/16	3 1/8	3 1/8
G	1 7/32	1 31/32		
H	6 1/16	7 11/16		
J	1	1 1/4	1	1 1/4
K	2 13/16	2 11/16	4 3/8	4 7/8
L	1 1/8	15/16	1 1/4	5/8
M	9/16	7/8	5/8	7/8
N	1	1 1/2		
O	11/32	15/32	9/16	9/16
P	3	5	3 1/4	3 1/4
Q	4	6 1/8	4 1/2	4 1/2
R			5/8	5/8

MODELS 240 & 245

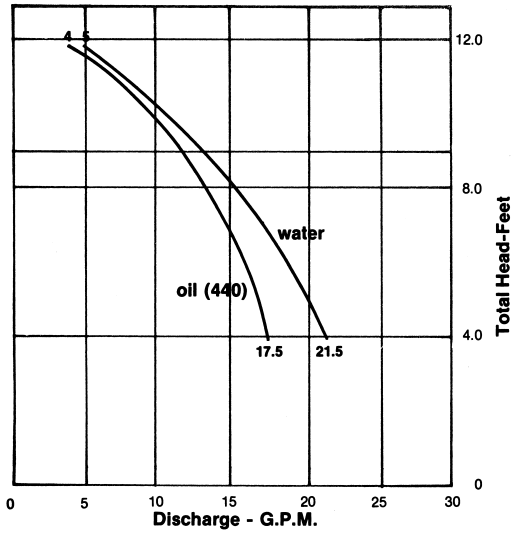


* All voltages 3 phase. 60/50 cycles. For other electrical characteristics, max. overall height (A): Model 220, 14 11/16"; Model 225, 17¼"; Model 240, 16¼"; Model 245, 18⅝".

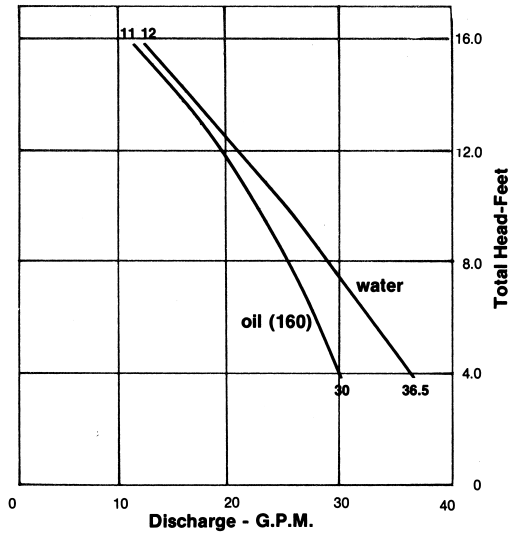
MODELS 205, 206, 207, 208, 212, 220, 225, 240, & 245

OPERATING CHARACTERISTICS

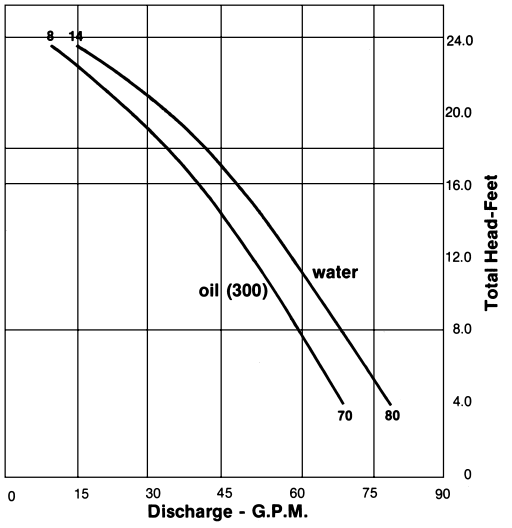
CHARACTERISTICS OF
NO. 205, 206 AND 207 PUMPS
Based on ¼ H.P. — 1725 RPM



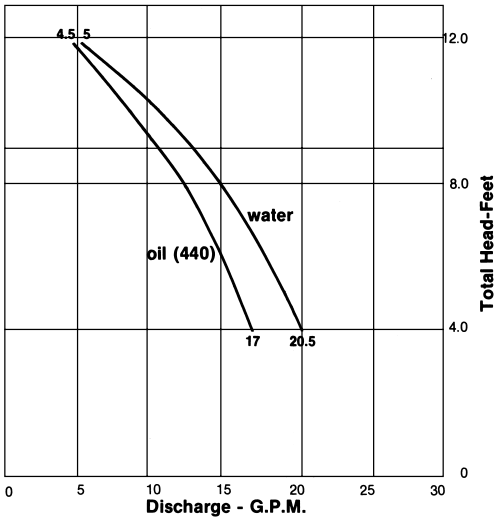
CHARACTERISTICS OF NO. 208 PUMP
Based on ¼ H.P. — 1725 RPM



CHARACTERISTICS OF
NO. 212, 225, AND 245 PUMPS
Based on ½ H.P. — 1725 RPM



CHARACTERISTICS OF NO. 220 AND 240 PUMPS
Based on ¼ H.P. — 1725 RPM



MIDGET HI-FLO SERIES

Ideal for general coolant applications for machine tools, light machinery or installation where dirt or abrasives are present. Motor has ample power to handle liquids up to 300 ssu viscosity.

OUTSIDE MOUNTED TYPE

IMMERSED TYPE TOP DISCHARGE

IMMERSED TYPE BOTTOM DISCHARGE

Design Rating: Up to 21 GPM; up to 14 feet of water.

Material: Gray iron casings with steel shaft and bronze or Delrin impeller.

Bearings: Motor bearings are factory lubricated for life. No bearings are required for pump section.

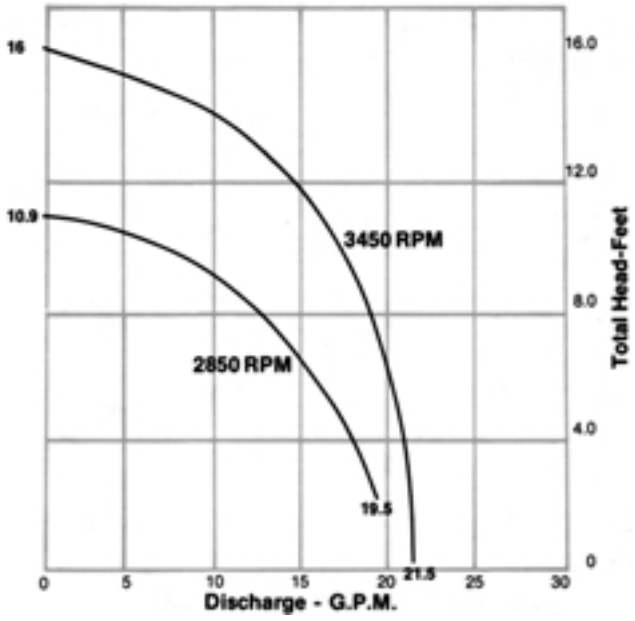
Mounting: Integral flange mounting bracket.

Liquid Viscosities: Units powered to handle maximum viscosity of 300 ssu.

Motors: 1/8 hp, single or three phase, standard voltages.

CHARACTERISTICS OF MIDGET HI-FLO PUMPS

Water Based Coolant



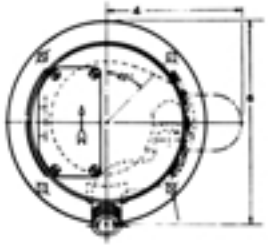
BSM MOTOR DRIVEN CENTRIFUGAL PUMPS

2500-SERIES

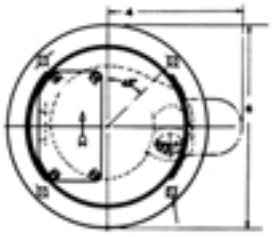
IMMERSED TYPE
(each available in 3 heights)

PLAN VIEWS

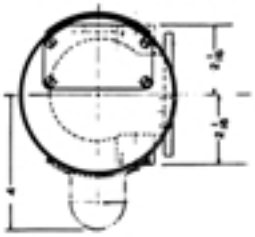
Top Discharge Type



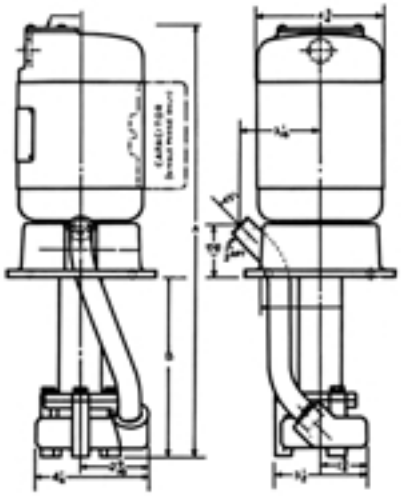
Bottom Discharge Type



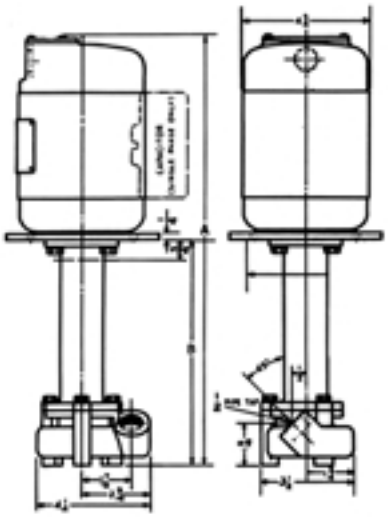
Outside Mounted Type



TOP DISCHARGE



BOTTOM DISCHARGE



HEIGHT DIMENSIONS

HEIGHT DIMENSIONS

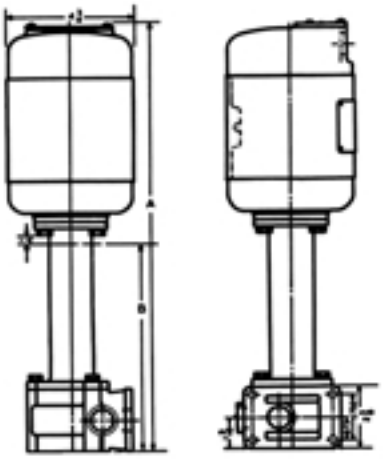
Electrical Characteristics

H.P.	R.P.M.	VOLTS	PHASE	CYCLE	Model 2515 A	Model 2515 B	Model 2518 A	Model 2518 B	Model 2519 A	Model 2519 B	Model 2525 A	Model 2525 B	Model 2528 A	Model 2528 B	Model 2529 A	Model 2529 B
1/8	3450	115/230	1	60	15 3/16	4 3/4	17 3/16	6 3/4	19 3/16	8 3/4	15 3/16	6 1/2	17 3/16	8 1/2	19 3/16	10 1/2
1/8	3450/2850	208-220/380-440	3	60/50	14 3/16	4 3/4	16 3/16	6 3/4	18 3/16	8 3/4	14 3/16	6 1/2	16 3/16	8 1/2	18 3/16	10 1/2
1/8	3450/2850	550	3	60/50	14 3/16	4 3/4	16 3/16	6 3/4	18 3/16	8 3/4	14 3/16	6 1/2	16 3/16	8 1/2	18 3/16	10 1/2

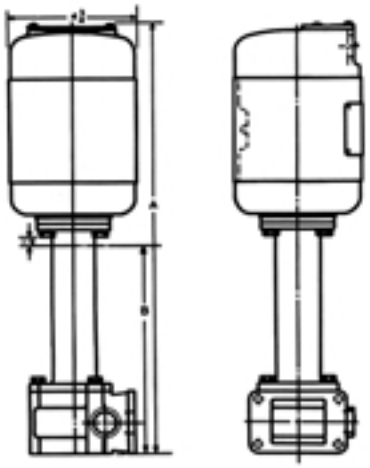
MIDGET HI-FLO-SERIES

IMMERSED TYPE
(each available in 3 heights)

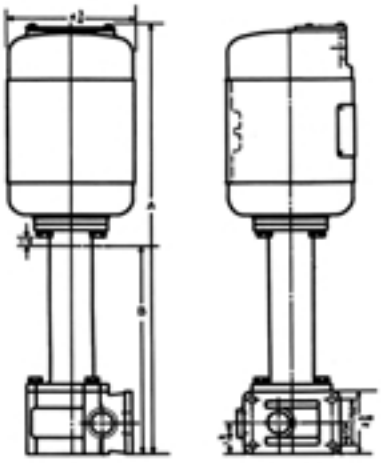
RIGHT HAND DISCHARGE



LEFT HAND DISCHARGE



CENTER DISCHARGE



HEIGHT DIMENSIONS

Model 2535		Model 2538		Model 2539	
A	B	A	B	A	B
15 9/16	6	17 9/16	8	19 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10

HEIGHT DIMENSIONS

Model 2545		Model 2548		Model 2549	
A	B	A	B	A	B
15 9/16	6	17 9/16	8	19 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10

HEIGHT DIMENSIONS

Model 2555		Model 2558		Model 2559	
A	B	A	B	A	B
15 9/16	6	17 9/16	8	19 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10
14 9/16	6	16 9/16	8	18 9/16	10

TANK UNITS WITH MIDGET HI-FLO PUMPS

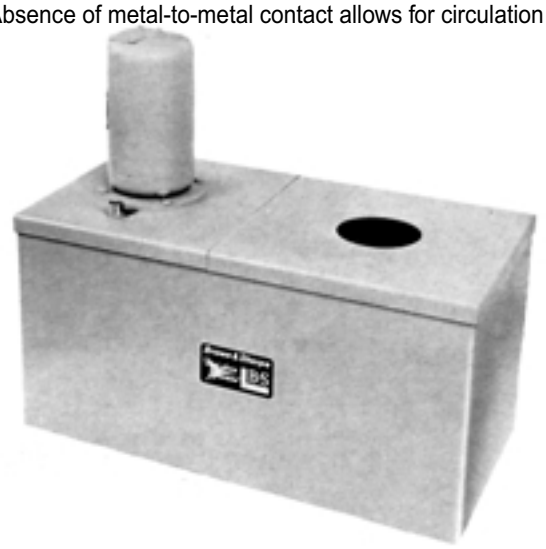
AUXILIARY COMPONENTS OR PRIMARY SOURCE OF LUBRICATION OR HYDRAULIC POWER

Tank and pump units (16 or 32 gallon capacity) are particularly suitable for general purpose coolant supply on machine tools.

Rigid welded sheet steel construction, yet lightweight for portability. Two baffles aid in settling chips and sludge.

Midget Hi-Flo Centrifugal Pumps provide adequate volumes of coolant for small and large machines. Pumps are hydraulically balanced and contain no bearings or seals in the liquid area.

Absence of metal-to-metal contact allows for circulation of clean or abrasive laden coolants.



PERFORMANCE DATA

Total Head-Feet		4	7	10	14
Discharge-G.P.M.	3450 R.P.M.	21	20	17.5	10
(Soluble Coolant)	2850 R.P.M.	18	14.5	7	....

Pumps powered to handle 300 SSU viscosity oil.

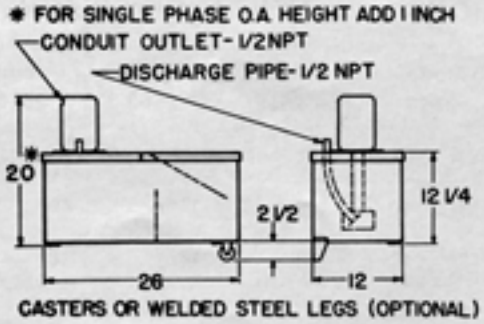
Electrical Characteristics

H.P.	R.P.M.	VOLTS	PHASE	CYCLE	ORDERING NO., 16 GAL.	ORDERING NO., 32 GAL.
1/8	3450	115/230	1	60	713-9016-3	713-9032-3
1/8	3450 / 2850	208-220 / 380-440	3	60 / 50	713-9016-8	713-9032-8
1/8	3450 / 2850	550	3	60 / 50	713-9016-30	713-9032-30

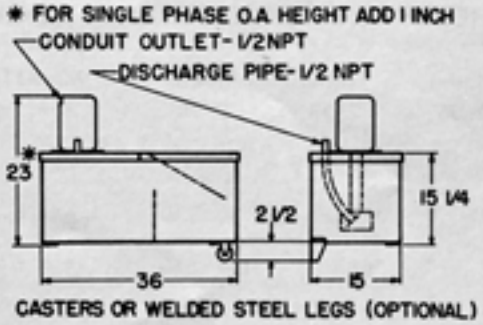
Available with lugs, standard.
For unit with swivel casters, add (-1) to ordering number.
For unit with welded steel legs, add (-2) to ordering number.

DIMENSIONAL DATA

16 Gallon Unit



32 Gallon Unit



ACCESSORIES

Adapter Brackets For Motor Driven Rotary Gear Pumps (A-Drive)

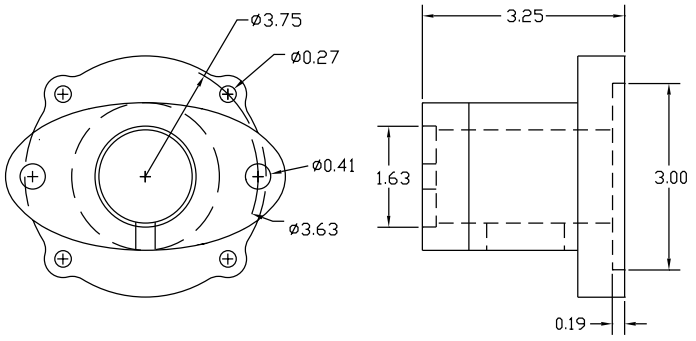
SELECTION GUIDE

Pump Model	C Face Motor Frame	Adapter Bracket
00	42C	713-00-160-1
	56C, 145TC	713-00-160
1, 2, 3 & 4	48C, 56C, 143TC, 145TC, 182C, 184C, 187AC	713-20-160
	182TC, 184TC, 213TC, 215TC	713-30-160
1S, 2S, 3S, 4S & 5S	48C, 56C, 143TC, 145TC, 182C, 184C, 187AC	713-20-160
	182TC, 184TC, 213TC, 215TC	713-30-160
1SST, 2SST, 3SST, 4SST & 5SST	48C, 56C, 143TC, 145TC, 182C, 184C, 187AC	713-20-160
	182TC, 184TC, 213TC, 215TC	713-30-160
21, 22, 23 & 24	48C, 56C, 143TC, 145TC, 182C, 184C, 187AC	713-20-160
	182TC, 184TC, 213TC, 215TC	713-30-160
53 & 55	48C, 56C, 143TC, 145TC, 182C, 184C, 187AC	713-20-160
	182TC, 184TC, 213TC, 215TC	713-30-160
502, 504, 507 & 511	56C, 143TC, 145TC,	713-507-160
	182TC, 184TC, 213C, 213TC, 215C, 215TC	713-511-160
517 & 525	56C, 66C, 143TC & 145TC	713-525-160
517, 525, 537, 547, 557 & 567	182TC, 184TC, 213TC, 215TC	713-517-160
705, 710, 715, 720, 730, 740 & 750	56C	713-700-160
	182TC, 184TC, & 213TC	713-700-260

ACCESSORIES

Adapter Brackets For Motor Driven Rotary Gear Pumps

DIMENSIONAL DATA (INCHES)



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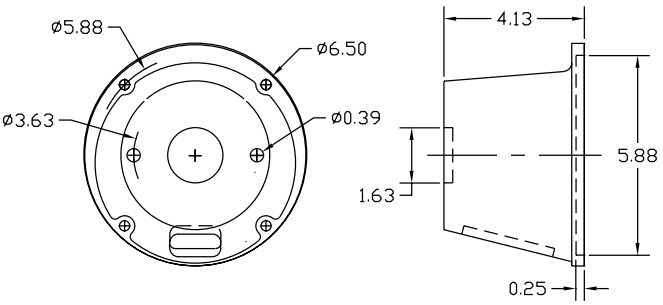

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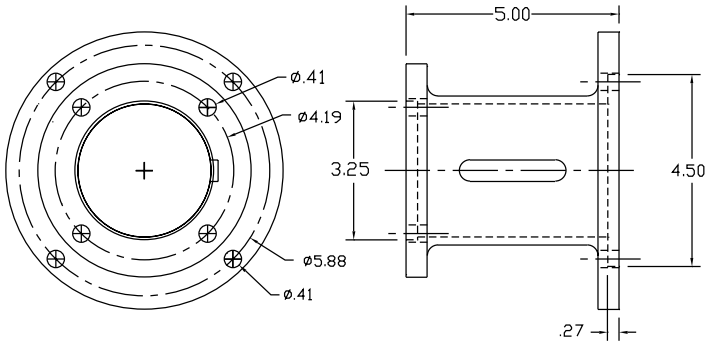

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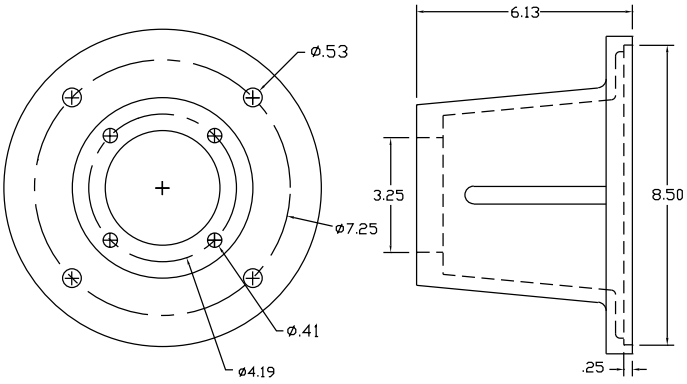
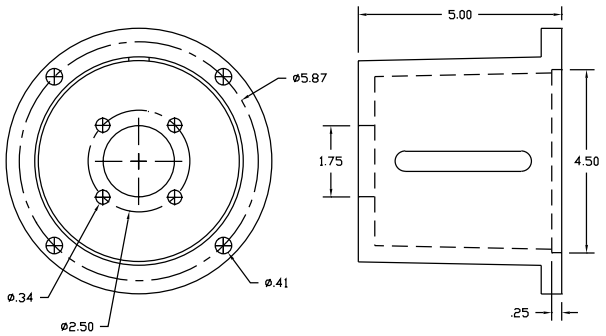


BRACKET MODEL NO. 713-30-160-1

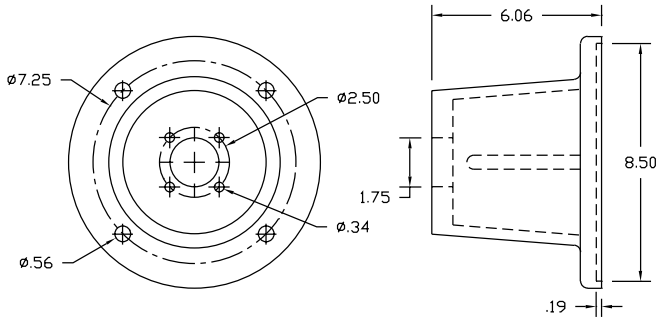
ACCESSORIES

Adapter Brackets For Motor Driven Rotary Gear Pumps

DIMENSIONAL DATA (INCHES)



BRACKET MODEL NO. 713-507-160



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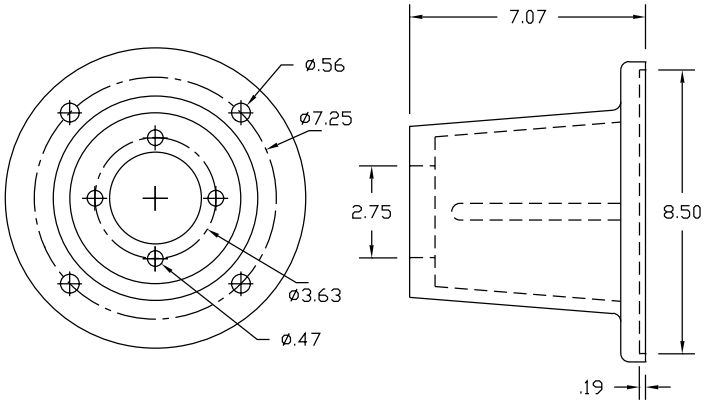

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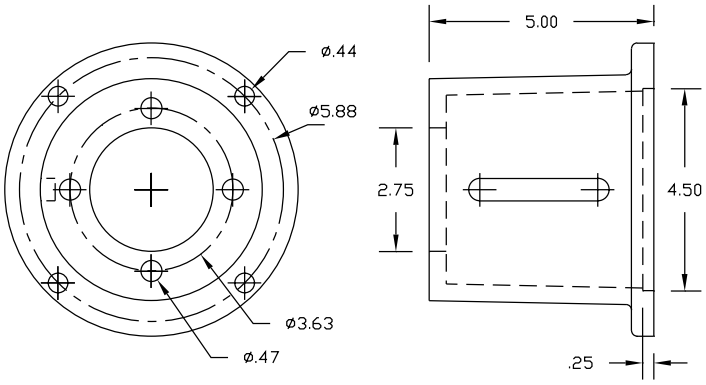
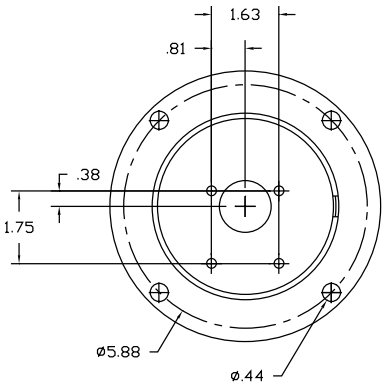


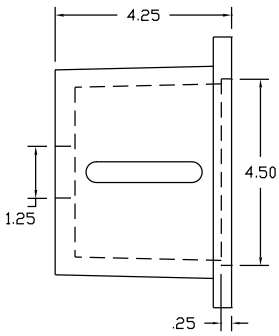
BRACKET MODEL NO. 713-525-160

ACCESSORIES

Adapter Brackets For Motor Driven Rotary Gear Pumps

DIMENSIONAL DATA (INCHES)





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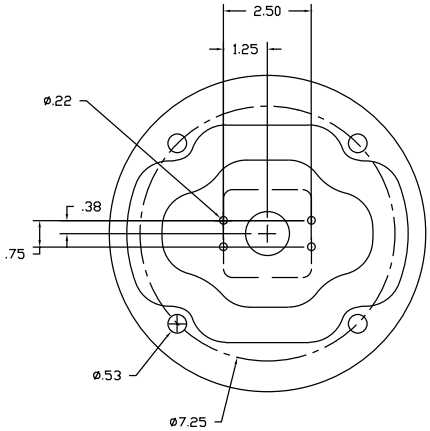

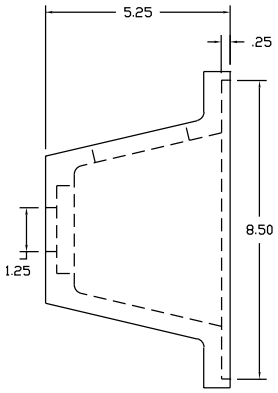

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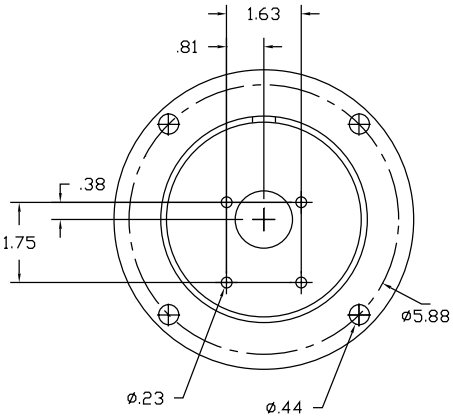
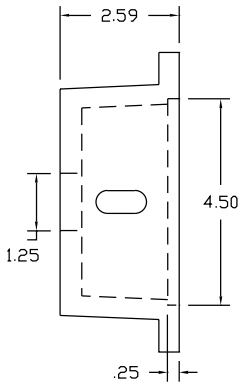




BRACKET MODEL NO. 213-700-060*

***Note:** Use of this bracket requires that the motor and or pump shaft be modified. Contact the factory for assistance.

ACCESSORIES

Gear Sets & Repair Kits

Pump Model Number	Gear Set Ordering Number	Repair Kit Ordering Number
00	713-9000-205	713-9000-280
1 & 11	713-9001-105	713-9001-280
2 & 12	713-9002-105	713-9002-280
3 & 13	713-9003-105	713-9003-280
4	713-9004-105	713-9004-280
1S	713-9010-205	713-9010-280
2S	713-9020-205	713-9020-280
3S	713-9030-205	713-9030-280
4S	713-9040-205	713-9040-280
5S	713-9050-205	713-9050-280
6S	713-9060-205	713-9060-280
8S	713-9080-205	713-9080-280
10S	713-9100-205	713-9100-280
12S	713-9120-205	713-9120-280
14S	713-9140-205	713-9140-280
21	713-9021-405	713-9021-280
22	713-9022-405	713-9022-280
23	713-9023-405	713-9023-280
24	713-9024-405	713-9024-280
53	713-9053-205	713-9053-280
55	713-9055-205	713-9055-280
507	713-9507-305	713-9507-280
511	713-9511-305	713-9511-280
517	713-9517-305	713-9517-280
525	713-9525-305	713-9525-280
537	713-9537-305	713-9537-280
547	713-9547-305	713-9547-280
557	713-9557-305	713-9557-280
567	713-9567-305	713-9567-280
1SST	713-9010-205-SS	713-9010-280-SS
2SST	713-9020-205-SS	713-9020-280-SS
3SST	713-9030-205-SS	713-9030-280-SS
4SST	713-9040-205-SS	713-9040-280-SS
5SST	713-9050-205-SS	713-9050-280-SS

Note: Each repair kit consist of the following components (1) housing; (1) gear set; (4) bearings; and(1) mechanical seal or (1) set of compression packing.

Renewable Bearings

Pump Model Number	Bearing Ordering Number
1, 11, & 1S	713-9001-107 (set of 4)
2, 12, & 2S	713-9002-107 (set of 4)
3, 4, 13, 3S, 4S, & 5S	713-9003-107 (set of 4)
53, & 55	423-1646 (3) 423-1647 (1)
6S	423-11 (4)
8S, & 10S	423-9 (4)
12S, & 14S	423-10 (4)
507, 508, 511, & 512	713-9507-107 (set of 4)
517, 518, 525, & 526	713-9517-107 (set of 4)
537, 538, 547, 557, 558, & 567	713-9537-107 (set of 4)
700 Series	422-39 (4)
1SST	213-1-108 (4)
2SST	213-2-108 (4)
3SST, 4SST, & 5SST	213-2-108 (4)

ACCESSORIES

Mechanical Seals

Pump Model Number	Mechanical Seal Ordering Number
1, & 1S	713-9010-270
2, & 2S	713-9020-270
3, 4, 3S, 4S, & 5S	713-9030-270
6S	466-137-2
8S, 10S	466-292
12S, 14S	466-143-2
502, 504, 507, 508, 511, & 512	713-9507-270
517, 518, 525, & 526	713-9517-270
537, 538, 547, 557, 558, & 567	713-9537-270
1SST	713-9010-270SST
2SST	713-9020-270SST
3SST, 4SST, 5SST	713-9030-270SST

Note: Mechanical seals available with different elastomers, contact the factory for assistance

Lip Seals

Pump Model Number	Lip Seal Ordering Number
00	466-3948
700 series and PFG series	466-279 (Buna N)
700 series and PFG series	215-10118 (Viton)

Note: Lip Seals are available with different elastomers, contact the factory for assistance.

Compression Packing

Pump Model Number	Packing Kit Ordering Number
1, 1S, 11, 21, & 1SST	466-3161-4
	466-192 (Teflon)
2, 2S, 12, 22, & 2SST	466-3162-4
	466-193 (Teflon)
3, 3S, 4S, 5S, 13, 23, 24, 3SST, 4SST, 5SST	466-3163-4
	466-194 (Teflon)

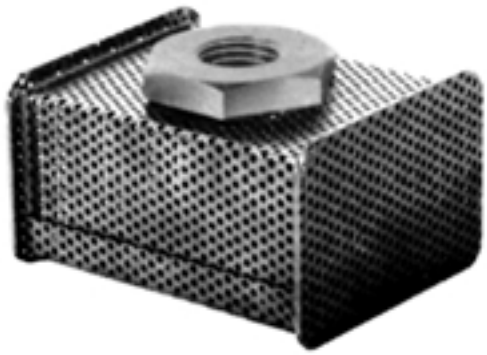
ACCESSORIES

External Relief Valves

Size	A	B	C	D	E	F	G	H	Order Number
1/4	1/4	1	1-1/4	1/4	1	15/16	1-7/16	3-5/8	713-9001-20
3/8	3/8	1-1/4	1-7/16	3/8	1-1/4	1-1/8	1-3/4	4-3/16	713-9001-21
1/2	1/2	1-3/8	1-9/16	1/2	1-3/8	1-1/4	1-15/16	4-9/16	713-9001-22
3/4	3/4	1-5/8	2	3/4	1-5/8	1-1/2	2-5/16	5-3/16	713-9001-23
1	1	2	2-3/4	2	2	2-1/4	3-9/16	7-11/16	713-9001-24

Note: The 1/4 to 3/4 relief valves are suitable for pressure settings up to 100 psi. Higher pressure settings are possible by changing the spring. The1" relief valve is suitable for pressure settings up to 200 psi. Contact the factory for assistance.

Strainers



Strainer No.	Size (inches)	Pipe Connection (inches)	Ordering Number
8	3-1/8 x 2-3/8 x 1-5/8	1/4	713-9008-10
11	4-5/8 x 3-1/8 x 1-7/8	3/8	713-9001-11
12	6-1/8 x 3-5/8 x 2-3/8	1/2	713-9002-12
13	7-1/8 x 4-5/8 x 3-1/8	3/4	713-9003-13

PUMP SELECTION PROCEDURE

The following are general considerations only for the application of BSM pumps. It is recommended that unusual or difficult design and application problems be referred to BSM Pump Corp. for evaluation.

1. TYPE OF SERVICE

The majority of applications for BSM Pumps fall into the following categories: (a) Transfer, (b) Lubrication, (c) Hydraulic, (d) Coolant and (e) General.

Rotary Gear Pumps: Applicable to the handling of all reasonably clean liquids, preferably having some lubricating value. Also suitable for handling non-lubricating liquids under limited conditions of operation with grease fittings or carbon bearings.

Automatic Reversing Vane Pumps: Provide mounting flexibility for circulating clean liquids under low pressure, regardless of direction of rotation.

Motor Driven Centrifugal Pumps: Give long, trouble free performance handling coolants or liquids which may be contaminated with abrasive particles or other materials.

2. LIQUID TO BE HANDLED

Type: Lubricating, corrosive, abrasive or caustic qualities of the liquid to be handled affect selection of pump type and size and its materials of construction. Specific gravity and viscosity at operating temperature determine speed and horsepower requirements.

Lubricity: Rotary Gear and Vane Pumps depend upon the liquid being circulated for lubrication of moving parts. However, the addition of grease fittings will frequently assist in the handling of non-lubricating liquids. Centrifugal Pumps are specifically suited for handling non-lubricating liquids.

Temperature: Operating temperature at the pump is an important factor affecting overall performance. Consideration should be given to any combination of ambient and liquid temperatures plus the heat rise resulting from resistance in the system that will affect the liquid viscosity. Generally, the lowest temperature to be encountered should be used to determine power requirements.

3. DELIVERY AND PRESSURE

Operating Characteristics: Detailed characteristics over a wide range of operating conditions are given with Specifications and Operating Characteristics for specific pump types. Performance data is based on the specific viscosities given and ratings are for continuous duty. Pump capacities and performance other than those tabulated are available to meet a wide range of conditions. (Consult BSM for specific recommendations).

Factors in Selection: Determination of the required volume of liquid and operating pressure should include consideration of pipe sizes and pressure losses due to friction and height to which liquid must be raised. This is particularly important in the selection of Centrifugal pumps.

4. SPEED

Recommended drive speeds meet standard operating speeds for electric motors and other driving mechanisms and are usually applicable for the majority of installations. Considerable variation in operating speed is possible to maintain high efficiency in the handling of a wide range of viscosities. Consult BSM for special drive speed recommendations.

Horsepower: Power requirements should be computed on the basis of highest liquid viscosity and system pressure. Generally, when power requirements fall between standard motor or engine ratings, the larger unit is selected for safety. (See Specifications and Operating Characteristics for type of pump to be used.)

PUMP SELECTION PROCEDURE

STEP 1 - Determine Delivery Required in Gallons Per Minute (gpm) and Pressure Required at the Work in Pounds Per Square Inch (psi).

STEP 2 - Determine Pump Inlet Conditions Including Suction Pipe Size and Total Suction Head.

STEP 3 - Determine Pump Discharge Conditions Including Discharge Pipe Size and Total Head.

STEP 4 - Select the Pump and Determine Power Required.

STEP 1

Convert the quantity of liquid required to gpm and the amount of pressure required at the work to pounds per square inch (psi).

Conversion Factors

1 inch of mercury (Hg) equals 1.13 feet of water
15 inches of mercury (Hg) equals 17 feet of water
1 foot of water equals .433 pounds per square inch (psi)
1 pound per square inch (psi) equals 2.31 feet of water
17 feet of water or 15 inches of mercury equals 7.36 psi

STEP 2

Vertical Lift

Vertical Lift is the amount of pressure required to lift the liquid from its lowest level to the centerline of the pump.

a) Measure the vertical distance between lowest liquid level and centerline of pump, equals Distance of Lift.
b) Distance of Lift (feet) x Specific Gravity of liquid x.433 equals Vertical Lift (psi)

(A maximum Vertical Lift of 7.36 psi or 15 inches of mercury is recommended for normal applications. Higher lifts are permissible with reduced volume - Consult BSM Pump Corp. for recommendations).

Suction Pipe Size

Having determined that Vertical Lift does not exceed 7.36 psi, refer to Table, Recommended Suction Line Sizes, pg. 14.3, and select pipe size opposite nearest required delivery and viscosity.

To Find Total Suction Head

a) Measure entire length of suction pipe including fittings converted to equivalent feet of straight pipe. Refer to table on pg. 14.3.
b) Refer to Table Friction Loss Multipliers, pg.14.3, and find the multiplier (M) opposite pipe size and liquid viscosity at delivery required.

Total Suction Head (psi) equals (M x Total feet of suction pipe x Specific Gravity of liquid) plus or minus Vertical Lift (Add Vertical Lift when liquid level is below centerline of pump, and Subtract Vertical Lift when liquid level is above centerline of pump).

STEP 3

Assume a Discharge Pipe Size the same as Suction Pipe for calculating Friction Head. If smaller pipe is required, liquid velocity should not exceed 10 feet per second. Generally, a Discharge Pipe Size the same as Pump Outlet Connection will prove satisfactory.

Total Head

a) Find Static Head – (measure vertical distance between centerline of pump and highest point of discharge, equals Height of Lift).
   Static Head (psi) equals Height of Lift x Spec. Gravity x .433
b) Find Friction Head – (measure entire length of discharge pipe including fittings converted to equivalent feet of straight pipe from pump discharge connection to point of discharge. (See table Equivalent Feet of Straight Pipe for Fittings, pg. 14.3). Add equivalent feet for valves and other accessories in discharge line to the foregoing.

Refer to Table Friction Loss Multipliers, pg. 14.3, and find the multiplier (M) opposite pipe size and liquid viscosity at delivery required.

Friction Head (psi) equals M x Spec. Gravity xTotal length of Discharge pipe.

STEP 4

Select Pump from Specifications and Operating Characteristics by determining which preliminary selection will meet requirements most efficiently. Power required is determined from Tabulated Power Requirements shown with Operating Characteristics and corrected for liquid viscosity.

ENGINEERING DATA FOR PUMP SELECTION

RECOMMENDED SUCTION LINE SIZES

when Vertical Lift does not exceed 7.36 psi or 15" Hg.

	VISCOSITY (ssu)								
gpm	50	100	300	500	1000	1500	2000	5000	10,000
.5	⅜	⅜	⅜	⅜	½	½	½	¾	1
1	⅜	⅜	⅜	⅜	½	½	¾	1	1
3	⅜	⅜	½	½	¾	¾	1	1¼	1¼
5	⅜	⅜	½	¾	¾	1	1	1¼	1½
7	½	½	¾	¾	1	1	1	1¼	1½
10	½	¾	¾	¾	1	1¼	1¼	1½	2
15	¾	¾	1	1	1¼	1¼	1¼	1½	2
20	1	1	1	1	1¼	1¼	1½	2	2
30	1¼	1¼	1¼	1¼	1¼	1½	1½	2	2½
50	1¼	1¼	1¼	1¼	1½				
80	1¼	1½	1½	1½	2				

Table above represents best choice for optimum results. Smaller sizes can be used but with increased fluid velocity and the possibility of turbulence, noise and greater frictional resistance.

EQUIVALENT FEET OF STRAIGHT PIPE FOR FITTINGS

	PIPE SIZES							
	⅜	½	¾	1	1¼	1½	2	2½
45° elbow	.6	.8	1.0	1.3	1.7	2.0	2.5	3.0
90° std. elbow	1.3	1.6	2.2	2.8	3.7	4.4	5.2	6.4
std. tee	2.7	3.3	4.5	5.7	7.6	9.2	11.5	14.0
globe valve (open)	13.	17.	21.	28.	37.	43.	54.	65.
gate valve open	.27	.35	.45	.60	.80	.95	1.3	1.4
¼ closed	1.5	2.0	2.7	3.5	4.5	5.5	7.0	8.0
½ closed	6.0	10.	14.	17.5	22.	26.	33.	40.
¾ closed	35.	43.	57.	75.	103.	125.	150.	175.

gpm at one foot per second velocity

Pipe Size	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½
gpm	.18	.32	.60	.95	1.66	2.69	4.65	6.35	10.5	14.9

Data above is based on average piping conditions and is for approximate use only.

FRICTION LOSS MULTIPLIERS

del. gpm	pipe size in.	VISCOSITY (ssu) 32	50	100	150	200	300	500	1000*
.5	⅜	.012	.025	.10	.15	.20	.30	.49	.95
	½	.004	.009	.02	.03	.04	.06	.10	.20
	¾	.0005	.001	.006	.009	.013	.02	.04	.08
	1	.0003	.0009	.002	.004	.006	.010	.019	.04
	1¼	.0001	.0004	.001	.0015	.002	.003	.005	.01
1	⅜	.019	.040	.12	.17	.23	.34	.55	1.1
	½	.006	.015	.04	.06	.08	.11	.21	.41
	¾	.002	.005	.01	.02	.03	.04	.07	.15
	1	.001	.002	.005	.007	.01	.015	.025	.06
	1¼	.0002	.0007	.002	.003	.0035	.005	.009	.02
5	⅜	.30	.51	.52	.77	1.0	1.6	2.7	5.4
	½	.10	.16	.20	.30	.40	.60	1.1	2.2
	¾	.025	.045	.07	.11	.15	.21	.35	.70
	1	.008	.01	.025	.035	.05	.08	.13	.26
	1¼	.002	.003	.01	.015	.02	.03	.05	.10
10	½	.45	.60	.85	1.0	1.15	1.5	2.1	4.4
	¾	.09	.13	.18	.24	.30	.41	.70	1.5
	1	.03	.04	.05	.07	.10	.15	.25	.50
	1¼	.008	.014	.019	.027	.035	.05	.09	.18
	1½	.003	.006	.009	.015	.02	.03	.05	.10
15	¾	.18	.30	.40	.49	.58	.75	1.08	2.2
	1	.06	.10	.12	.135	.15	.22	.40	.80
	1¼	.016	.026	.032	.045	.05	.08	.14	.27
	1½	.005	.013	.014	.023	.03	.04	.07	.15
	2	.002	.003	.005	.008	.01	.015	.03	.05
20	1	.05	.15	.20	.205	.21	.30	.50	1.1
	1¼	.026	.04	.06	.065	.07	.10	.18	.35
	1½	.012	.021	.025	.032	.04	.06	.10	.20
	2	.003	.006	.007	.010	.015	.02	.035	.07
	2½	.001	.002	.003	.005	.007	.011	.018	.036
30	1¼	.06	.10	.12	.135	.15	.18	.26	.52
	1½	.026	.04	.05	.055	.06	.08	.15	.30
	2	.007	.013	.016	.018	.02	.03	.05	.10
	2½	.003	.005	.007	.009	.01	.015	.025	.05
50	1¼	.15	.23	.30	.33	.35	.41	.45	.90
	1½	.06	.10	.13	.135	.14	.14	.23	.46
	2	.019	.03	.04	.04	.045	.05	.09	.18
	2½	.008	.013	.017	.0175	.018	.03	.046	.08
80	1¼	.45	.66	.85	.95	1.0	1.2	1.3	2.5
	1½	.18	.30	.35	.36	.40	.42	.50	1.0
	2	.06	.09	.11	.12	.13	.14	.25	.50
	2½	.02	.04	.04	.04	.045	.045	.06	.13

*Multipliers for higher viscosities are proportional, e.g. 2000 ssu for .5 gpm, ⅜" pipe is 1.9, 10,000 ssu is 9.5 etc.
Multipliers are based on use of steel pipe, Schedule 40, or smooth bore rubber hose and have a safety factor of approximately 15%.

ENGINEERING DATA HELPFUL INFORMATION

A foothead of water represents .4331 lbs. per sq.in. at 60ºF. In common practice 1/2 lb. per sq. in. is used.

Mean atmospheric pressure at sea level is 14.7 lbs.per sq. in. and is equivalent to a column of mercury 29.92 inches high or a column of water 33.97 ft. high.

Doubling the diameter of a pipe increases its capacity per unit length 4 times. Friction of low viscosity liquids such as water varies approximately as the square of the velocity. Friction of viscous liquids such as oil varies under normal conditions directly as the velocity.

Static Suction Head is the vertical distance from liquid level to center line of pump in feet when level is higher than pump.

Static Suction Lift is the vertical distance from liquid level to center line of pump in feet when level is lower than pump. Friction Head is the resistance to flow caused by contact between liquid and pipe and, in addition, other frictional losses within the liquid itself as it moves in the pipe.

Discharge Head is the vertical distance between center line of pump and point of discharge.

Velocity Head is the pressure required to produce the velocity of the liquid and is equal to $\frac{V^2}{64.4}$ when V equals feet per second velocity.

Total Head is the sum of total of the suction, friction, discharge and velocity head.

Power required for pumping may be computed by use of the following formula:

H.P. = WxH/33,000xE or .000584 QP/E, where W is the weight of the liquid pumped per min. in pounds, H is the total head in feet (including frictional losses) and E is the efficiency of the pump. Q=gals per min.;P=lbs. per sq. in.

Viscosity is that property of a liquid which resists any force tending to produce flow. The greater the resistance to flow, the higher the viscosity. Thus, molasses has a higher viscosity than water. Viscosity is usually expressed in Saybolt Universal Seconds (S.S.U.) although there are various other systems.

Specific gravity is the ratio of the weight of a known volume of a material to the weight of an equal volume of water at 40ºF. Thus at 40ºF, the specific gravity of water is 1.0. Material having a specific gravity of .90 has a weight per unit volume of 90% that of water.

When handling heavy liquids or liquid of a high viscosity, it is recommended that the pump speed be reduced and pipe sizes increased.

Conversion Table - Feet of Water to Inches of Mercury

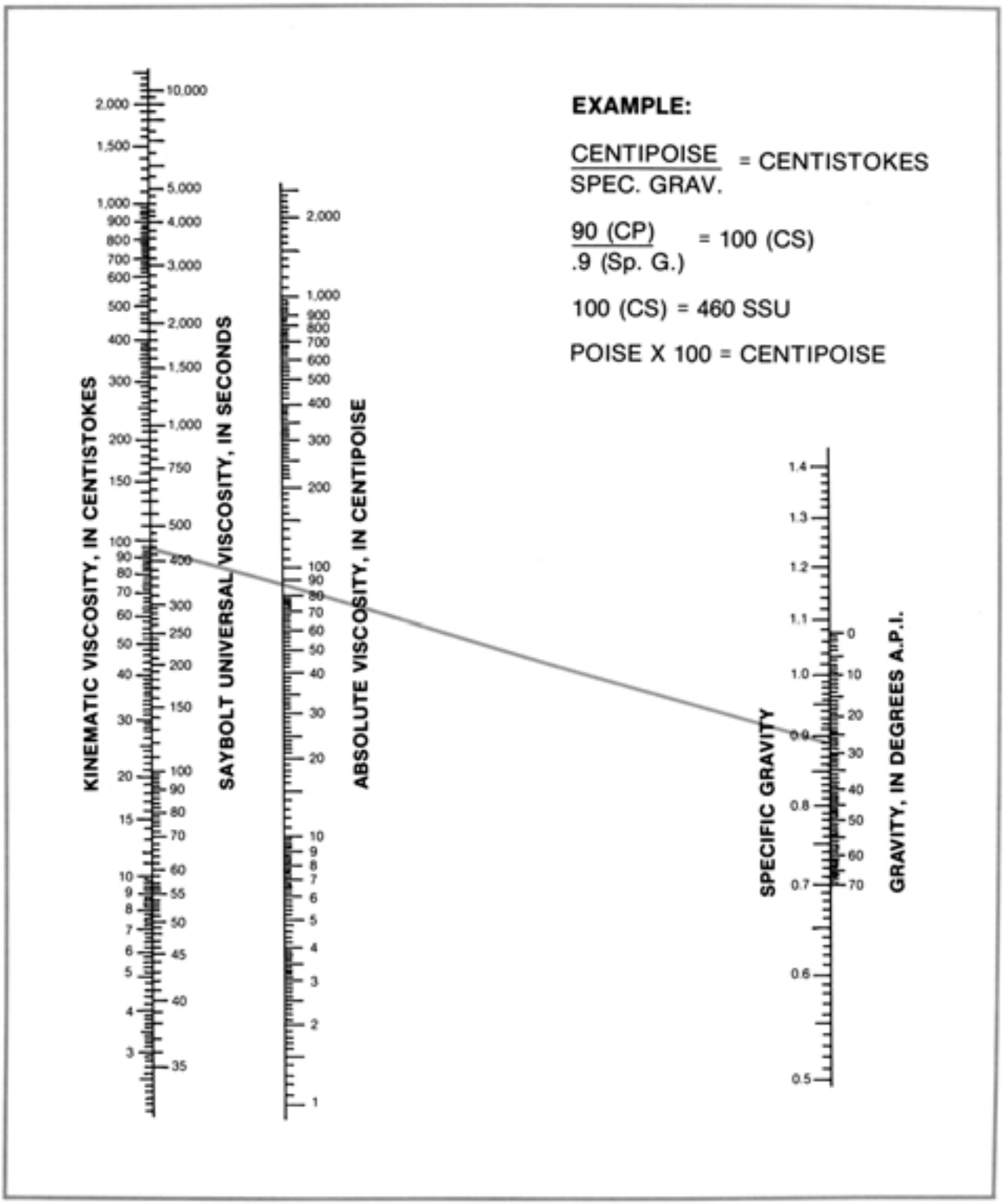
Feet	Inches, Hg	Feet	Inches, Hg	Feet	Inches, Hg	Feet	Inches, Hg
1	.885	8	7.08	15	13.27	23	20.35
2	1.77	9	7.96	16	14.15	24	21.24
3	2.65	10	8.85	17	15.05	25	22.12
4	3.54	11	9.74	18	15.93	26	23.00
5	4.42	12	10.62	19	16.81	27	23.90
6	5.30	13	11.50	20	17.70	28	24.78
7	6.20	14	12.39	21	18.59	29	25.66
				22	19.47	30	26.55

Conversion Table - Feet of Water to Pounds Per Square Inch

Feet	P.S.I.	Feet	P.S.I.	Feet	P.S.I.	Feet	P.S.I.
1	.43	20	8.66	120	51.97	275	119.10
2	.87	30	12.99	130	56.30	300	129.93
3	1.30	40	17.32	140	60.63	325	140.75
4	1.73	50	21.65	150	64.96	350	151.58
5	2.17	60	25.99	160	69.29	400	173.24
6	2.60	70	30.32	170	73.63	500	216.55
7	3.03	80	34.65	180	77.96	600	259.85
8	3.40	90	38.98	190	83.29	700	303.16
9	3.90	100	43.31	200	86.62	800	346.47
10	4.33	110	47.64	225	97.45	900	389.78
				250	108.27	1000	433.09

VISCOSITY CONVERSION

CONVERTING KINEMATIC AND SAYBOLT VISCOSITY TO ABSOLUTE VISCOSITY

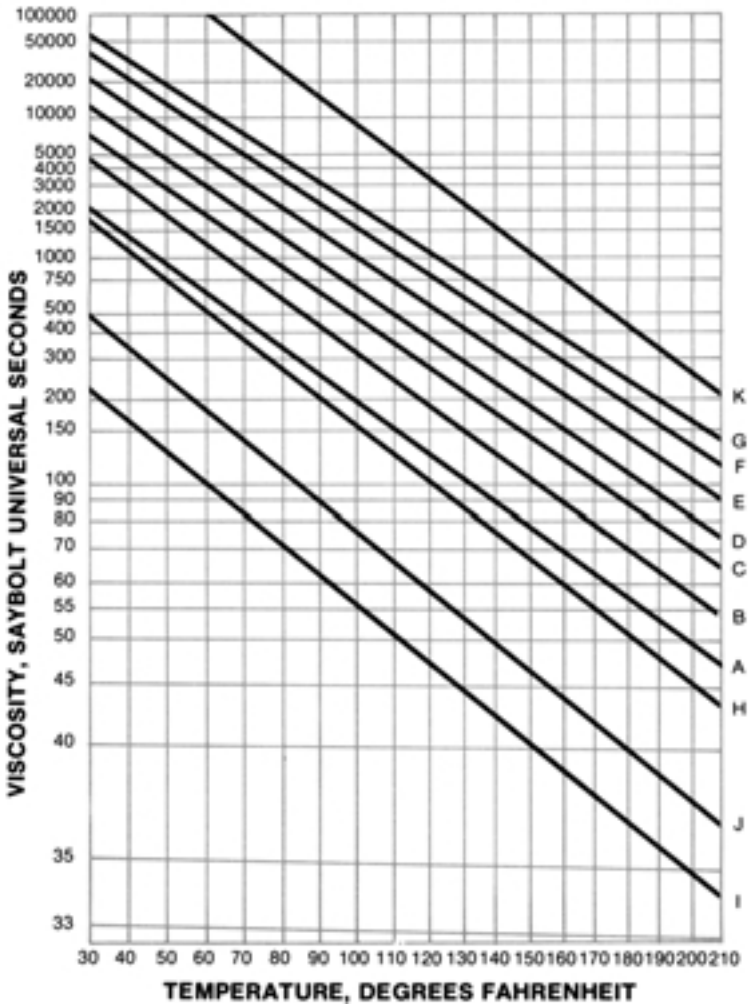


S.A.E. VISCOSITY CLASSIFICATION and VISCOSITIES OF OILS

S.A.E. Viscosity Classification

S.A.E. Viscosity Number	Viscosity Range, Saybolt Universal Viscosity (S.S.U.) At 130 Degrees Fahrenheit Minimum	Maximum	At 210 Degrees Fahrenheit Minimum	Maximum
10	90	Less than 120	-----	-----
20	120	Less than 185	-----	-----
30	185	Less than 255	-----	----
40	255	-----	-----	Less than 80
50	------	-----	80	Less than 105
60	-----	-----	105	Less than 125
70	-----	-----	125	Less than 150
80	-----	100,000 @ 0ºF	-----	-----
90	800	1500 @ 100ºF	-----	-----
140	-----	-----	120	Less than 200
250	-----	-----	200	-----

Chart Showing Viscosities of Oils



A.....S.A.E. #10 OIL
B.....S.A.E. #20 OIL
C.....S.A.E. #30 OIL
D.....S.A.E. #40 OIL
E.....S.A.E. #50 OIL
F.....S.A.E. #60 OIL
G.....S.A.E. #70 OIL
H.....D.T.E. Light Hydraulic Oil
I.....#2 Fuel Oil
(Maximum Viscosity)
J.....#4 Fuel Oil
(Maximum Viscosity)
K.....#6 Fuel Oil
(Maximum Viscosity)

Curves for S.A.E. numbered oils show average viscosities based on Dean and Davis viscosity index of 100.

Curves for fuel oil are based on oils having maximum allowable viscosities.

Curve for Light Hydraulic Oil is based on a commonly used viscosity.
ºCelsius = (ºFahrenheit —32) x 5/9

MATERIALS REQUIRED FOR PUMPING VARIOUS LIQUIDS

The materials listed for use in the construction of pumps for different liquids are for general application only. In the selection of materials consideration should be given to general practice and the experience of the user in handling the liquids. In handling food, medicinal and similar products consideration must be given, also to laws and regulations inforce at the locality where the pump is to be used.

All Iron pumps are constructed with steel gears, iron casings, and iron bearings.

All Bronze pumps are constructed of bronze casings with bronze gears and shafts. For some applications the shafts of these pumps may be stainless steel.

Standard Fitted pumps are similar to All Iron pumps. If necessary, bronze or carbon bearings may be used instead of iron bearings.

Stainless Steel pumps are constructed of 316 stainless steel casings with 17-4 stainless steel gears and shafts.

Liquid	Condition	Chemical Symbol	Materials Permissible
Acid, Acetic		CH_3COOH	All Bronze, Monel, Stainless Steel
Acid, Arsenic (Arsenic Penta-oxide)		AS_2O_4	All Iron, Stainless Steel
Acid, Carbolic	Dil.	C_4H_5OH	All Iron
Acid, Carbolicin H2O	Aqueous Sol.		Standard Fitted
Acid, Cabonicin H2O	Conc. (M.P. 105¡F)	CO_2H_2O	All Bronze
Acid, Hydrocyanic		HCN	All Iron
Acid, Pyroligneous	PH<4-5	CH_3CO_3H	All Bronze, Stainless Steel
Acid, Sulphuic, 93%		H_3SO_4	All Iron, Stainless Steel
Acid, Tannc (m-Digallic acid)		$C_{44}H_{16}O_9$	All Bronze, Monel, Stainless Steel
Acetone	66¡ Be Cold	CH_5COCH_3	All Iron
Alcohol, Grain (Ethanol)		CH_3CH_3OH	All Bronze
Alcohol, Wood (Methanol)		CH_3OH	All Bronze
Ammonia, Aqua		NH_4OH	All Iron
Ammonium Bicarbonate		NH_4HCO_3	All Iron
Ammonium Chloride		NH_4Cl	All Iron, Stainless Steel
Ammonium Nitrate	Aqueous Sol.	NH_4NO_3	All Iron, Stainless Steel
Ammonium Orthophosphate	Aqueous Sol.	$(NH_4)_3HPO_4$	All Iron, Stainless Steel
Ammonium Sulfate	Aqueous Sol.	$(NH_4)_2SO_4$	All Iron, Stainless Steel
Aniline	Aqueous Sol.	$C_4H_3NH_2$	All Iron
Asphaltum	Aqueous Sol.		Stanard Fitted
Barium Chloride		$BaCl_3$	All Iron, Stainless Steel
Barium Nitrate	Hot	$Ba(NO_3)_2$	All Iron, Stainless Steel
Beer			All Bronze, Stainless Steel
Beer Wort			All Bronze, Stainless Steel
Beet Juice (thin)			All Bronze, Stainless Steel

MATERIALS REQUIRED FOR PUMPING VARIOUS LIQUIDS

Liquid	Condition	Chemical Symbol	Materials Permissible
Benzene (Benzol)		C_4H_4	All Iron
Bitterwasser		$CaCl_3$	All Bronze, Stainless Steel
Brine, Calcium Chloride	Aqueous Sol.		All Iron
Brine, Calcium & Sodium Chloride		Na Cl	All Bronze, Stainless Steel
Brine, Sodium Chloride	3% Salt		All Iron, All Bronze, Stainless Steel
Brine, Sodium Chloride	Over 3%		All Bronze, Monel, Stainless Steel
Brine, Sea Water			All Iron, All Bronze, Stainless Steel
Cachaza			Standard Fitted
Calcium Hypochlorite		$Ca(OC_1)_8$	All Iron, Stainless Steel
Calcium Magnesium Chloride			All Bronze
Cane Juice			Standard Fitted
Carbon Bisulfide		CS_2	All Iron
Carbonate of Soda	(See Soda Ash)		
Carbon Tetrachloride		CCl_4	All Iron
Caustic Potash	(See Potassium Hydroxide)		
Caustic Soda	(See Sodium Hydroxide)		
Chloride of Lime	(See Calcium Hypochlorite)		
Chlorobenzene		C_4H_3Cl	Standard Fitted, Stainless Steel
Copperas (Green Vitriol)	(See Ferrous Sulphate)		
Creosote			All Iron
Cresol, Meta		$CH_3C_4H_4OH$	All Iron
Cyanide	(See Sod, Cyanide & Pot. Cyanide)		All Iron
Cyanogen	In Water	C_2N_2 (gas)	All Iron
Diphenyl	In Alcohol	$C_4H_5C_4H_5$	All Iron
Ethyl Acetate		$CH_3COOC_2H_3$	All Iron, Stainless Steel
Ferrous Sulphate		$FeSO_4$	All Iron
Furfural		C_4H_3OCHO	All Iron, Stainless Steel
Gasolene			Standard Fitted
Glaubers Salt	(See Sodium Sulfate)		Standard Fitted
Glue	Hot		Standard Fitted
Glycerol (Glycerin)			All Bronze, Stainless Steel
Heptane		$CH_2(CH_2)_3CH_3$	Standard Fitted
Hydrogen Peroxide	Com'l	H_2O_2	All Iron, Stainless Steel
Lard	Hot		All Iron
Lead, Molten			All Iron
Lime Water (Milk of Lime)		$Ca(OH)_3$	All Iron
Lye, Caustic	(See Potassium & Sod. Hydroxide)		
Magnesium Sulfate (Epson Salts)	Aqueous Sol.	$Mg\ SO_4$	All Iron, Stainless Steel
Magma (thick residue)			All Bronze, Stainless Steel
Magnese Chloride	Aqueous Sol.	$MnCl_2$	All Bronze, Stainless Steel
Manganese Sulfate	Aqueous Sol.	$MnSO_4$	All Iron, All Bronze, Stainless Steel
Mash			All Bronze, Stainless Steel
Methyl Chloride		CH_3Cl	All Iron
Methylene Chloride		CH_3Cl_3	All Iron, Stainless Steel
Milk of Lime	(See Lime Water)		
Mine Water			All Bronze Stainless Steel
Molasses			Standard Fitted
Naphtha			Standard Fitted

MATERIALS REQUIRED FOR PUMPING VARIOUS LIQUIDS

Liquid	Condition	Chemical Symbol	Materials Permissible
Nitre	(See Potassium Nitrate)		
Oil, Crude(Asphalt Base)	Hot		Standard Fitted
Oil, Crude (Paraffine Base)			Standard Fitted
Oil, Fuel			Standard Fitted
Oil, Kerosene			Standard Fitted
Oil, Lubricating(Lt. Or Hy.)			Standard Fitted
Oil, Mineral			Standard Fitted
Oil, Vegetable			All Iron
Oil, Purifying			All Iron
Oil, Coal Tar			All Iron
Oil, Cresote			All Iron
Oil, Turpentine			All Iron
Oil. Linseed			All Iron, Stainless Steel, Monel
Oil, Rapeseed			All Bronze, Stainless Steel, Monel
Paraffine	Hot		Standard Fitted
Peroxide or Hydrogen	(See Hydrogen Peroxide)		
Petroleum Ether	(See Benzene)		
Phenol	(See Carbolic Acid)		
Potash	(See Potassium Carbonate)		
Potassium Bichromate	Aqueous Sol.	K_3Cr_3O1	All Iron
Potassium Carbonate	Aqueous Sol.	K_3CO_3	All Iron
Potassium Chlorate	Aqueous Sol.	$KclO_8$	All Iron, Stainless Steel
Potassium Chloride	Aqueous Sol.	KCl	All Bronze, Stainless Steel
Potassium Cyanide	Aqueous Sol.	KCN	All Iron
Potassium Hydroxide	Aqueous Sol.	KOH	All Iron, Stainless Steel
Potassium Nitrate	Aqueous Sol.	KNO_3	All Iron, Stainless Steel
Potassium Sulfate	Aqueous Sol.	K_3SO_4	All Iron, All Bronze, Stainless Steel
Pyridine			All Iron
Salammoniac	(See Ammonium Chloride)		
Salt Cake	Aqueous Sol.	Na_2SO_4+IMPURITIES	All Iron, All Bronze, Stainless Steel
Salt Water	(See Brines)		
Sea Water	(See Brines)		
Sewage			Standard Fitted
Slop, Brewery			Standard Fitted
Soap Liquor	Thin		All Iron
Soda, Ash (Sodium Carbonate)	Aqueous Sol.	Na_3CO_3	All Iron
Sodium Bicarbonate		$NaHCO_3$	All Iron, Stainless Steel
Sodium Chloride	(See Brines)		
Sodium Cyanide	Aqueous Sol.	Na CN	All Iron, Stainless Steel
Sodium Hydroxide	Aqueous Sol.	Na OH	All Iron, Stainless Steel
Sodium Nitrate	Aqueous Sol.	$NaNO_3$	All Iron, Stainless Steel
Sodium Sulfate	Aqueous Sol.	Na_2SO_4	All Iron
Sodium Sulfide	Aqueous Sol.	Na_3S	All Iron, All Bronze, Stainless Steel
Sodium Sulfite	Aqueous Sol.	Na_2SO_3	All Bronze, Stainless Steel
Starch			Standard Fitted
Stronfium Nitrate	Aqueous Sol.	$Sr(NO_3)_3$	All Iron, Stainless Steel
Sugar			All Bronze
Sulfur	In Water	S	All Iron, All Bronze
Sulfer Chloride	Cold	S_3Cl_2	All Iron

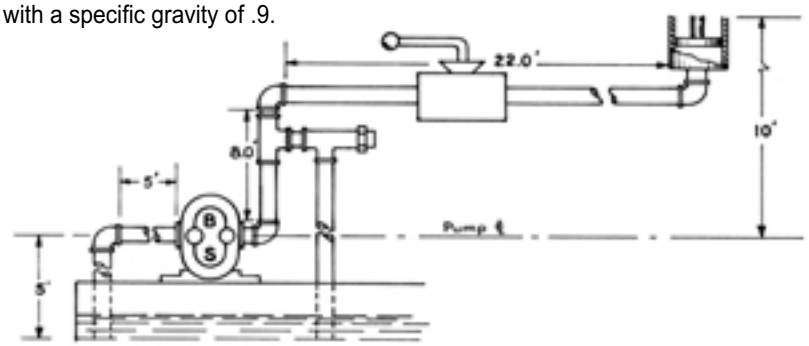
MATERIALS REQUIRED FOR PUMPING VARIOUS LIQUIDS

Liquid	Condition	Chemical Symbol	Materials Permissible
Syrup			All Bronze
Tanning Liquors (veg.)			All Bronze, Stainless Steel
Tar			All Iron
Tar and Ammonia	Aqueous Sol.		All Iron
Tetraethyl Lead		$Pb\ (C_2H_3)_4$	All Iron
Toluene (toluol)		$C_4H_3CH_2$	All Iron, Standard Fitted
Trichloroethylene		$CHC1{:}CCl_2$	All Iron
Varnish			All Bronze, Montel
Vinegar			All Bronze, Stainless Steel
Vitriol, Oil of	(See Acid, Sulfuric)		
Vitriol, White	(See Zinc Sulfate)		
Water (Distilled)			All Bronze
Water (Fresh)			All Bronze
Water (Salt and Sea)	(See Brines)		
Whiskey			All Bronze
Wine			All Bronze
Wood Pulp	Not Digested		All Bronze
Wood Vinegar	(See Pyroligenous Acid)		
Wort			All Bronze
Yeast			All Bronze
Zinc Sulfate	Aqueous Sol.	$ZnSO_4$	All Bronze, Stainless Steel

A TYPICAL HYDRAULIC APPLICATION

Problem:

Required: a pump to operate a hydraulic cylinder using a clean light hydraulic oil of 100 ssu viscosity at operating temperature of 120ºF with a specific gravity of .9.



Step 1 — CYLINDER REQUIREMENTS

5 inch diameter; 19.64 square inches cylinder area; 20inch stroke; 1.7 gallons displacement; travel 60 inches per minute (20 seconds per stroke); 11,500 pounds load; requires 5.17 gpm, 585 psi.

Step 2 — PUMP INLET CONDITIONS

Vertical Lift = Distance of Lift (5) x Spec. Gravity (.9) x .433
= 1.9 psi

Suction Pipe Size = 3/8 for 100 ssu at 5 gpm (from table, pg. 14.3).

Total Length of Suction Pipe = 10 feet plus 1.3 feet equivalent straight pipe for 90º elbow (from Table, pg. 14.3)
= 11.3 feet

Friction Loss Multiplier for 3/8 pipe and 100 ssu at 5 gpm (from Table, pg. 14.3) M=.52

Total Suction Head = M (.52) x Total Length of Pipe (11.3) x Specific Gravity (.9) plus Vertical Lift (1.9 psi)
= 7.2 psi

Step 3 — PUMP DISCHARGE CONDITIONS

Discharge Pipe Size = 3/8 "

Static Head = Vertical distance between pump and cylinder (10) x .433 x Specific Gravity (.9)
= 3.9 psi.

Friction Head = Total Length of Straight pipe (30) plus 3-90º 3/8 elbows (3.9) plus estimated straight pipe for throw valve (1) or 34.9 x M (.52) x Spec. Gravity (.9)
= 16.3 psi

Total Head = Friction head (16.3 psi) plus Total Suction Head (7.2 psi) plus Working Pressure Required (585 psi)
= 608.5 psi

Step 4 — PUMP SELECTION

Requires 5.17 gpm and 610 psi. We find that Models 507 and 511 are satisfactory for Hydraulic Service, and are rated for 1000 psi service while discharge at 0 psi is sufficient to meet requirements. From Performance Data for these pumps on pg. 6.2, we find the #507 delivers 5.8 gpm at 610 psi and requires 2.9 horsepower at 1725rpm. (Capacity at 1140 rpm is insufficient to meet requirements). #511 delivers 5.1 gpm at 610 psi and requires 2.9 horsepower at 1140 rpm.

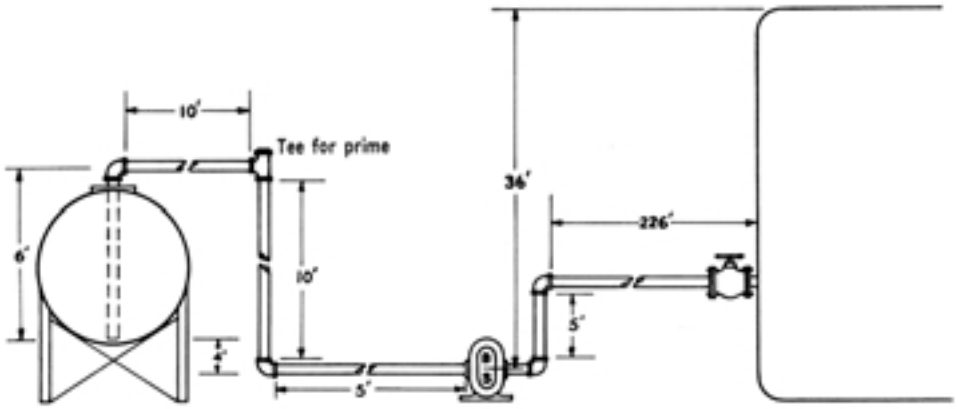
CONCLUSION

Select Pump #511 at lower speeds for long-life service. Select #507 at 1725 rpm for lower first cost.

TYPICAL TRANSFER APPLICATION

Problem:

To deliver oil at 20 barrels per hour from a storage tank to a treater tank, using 1 1/2" new iron pipe. Assume viscosity of 300 ssu. Specific Gravity is .88



Step 1 — CAPACITY REQUIRED

20 bbls. per hr x 42 gals. per bbl. ÷ 60=14gpm

Step 2 — PUMP INLET CONDITIONS

Find Total Suction Head
Suction Pipe Size is given as 1 1/2"

Vertical Lift = Distance of Lift (4) x Spec. Gravity (.88) x .433 = 1.52 psi

In this case, Vertical Lift is a positive factor since the bottom of the tank is higher than the pump inlet) Friction loss Multiplier (M) for 1 1/2 pipe at 15 gpm for 300 ssu viscosity is .04 (from Table, pg.14.3).

Suction = M (.04) x (31 total length of pipe plus 18' equivalent straight pipe for 2-90º elbows and 1-Tee) x Specific Gravity (.88) = 1.7 psi

Total Suction Head = 1.7 minus Vertical Lift (1.5) = 0.2 psi

Step 3 — PUMP DISCHARGE CONDITIONS

Find Total Head
Discharge Pipe Size is given as 1 1/2"

Static Head = 36" maximum height of lift x .88 Specific Gravity x .433 = 13.7 psi

Friction Loss Multiplier (M) for 1 1/2" pipe at 15 gpm and 300 ssu is .04 (from Table, pg. 14.3).

Friction Head = M (.04) x (231 Total Length of Discharge Pipe, plus 2-90º elbows (8.8') plus .95 equiv. for gate valve normally open) x .88 Spec. Gravity = 8.5 psi

Total Head = Static head (13.7 psi) plus Friction Head (8.5 psi) plus Suction Head (0.2 psi) = 22.4 psi

Step 4 — PUMP SELECTION

Required 14 gpm and 22.4 psi We find that Rotary Geared Pumps Nos. 3, 3S 13, 23, 53 and 525 all nominally meet requirements. In checking Performance Data for these pumps we can eliminate #13 which is reversible and has approx. the same capacity as #3 and #23 which is of bronze construction. Pump #3 delivers 17.0 gpm at 50 psi and 900 rpm and requires .83 hp. Pump #3S delivers 16.1 gpm at 50 psi and 1725 rpm requires 1.4 hp. Pump #53 delivers 14.9 gpm at 50 psi and1140 rpm and requires .8 hp . Pump #525 delivers 16.3 gpm at 50 psi and 1140 rpm and requires 1.0 hp.

While any of these pumps is capable of performing the job satisfactorily, #53 requires the least amount of power and operates at a standard motor speed.

Note: Given pipe size and pump port may differ and require reducer connection at pump.

A TYPICAL COOLANT APPLICATION

Problem:

Required: a pump to deliver 15 gpm of coolant having a viscosity of 32 ssu at operating temperature and using 3/4" piping. Specific Gravity is 1.0

Step 1 — (Given)

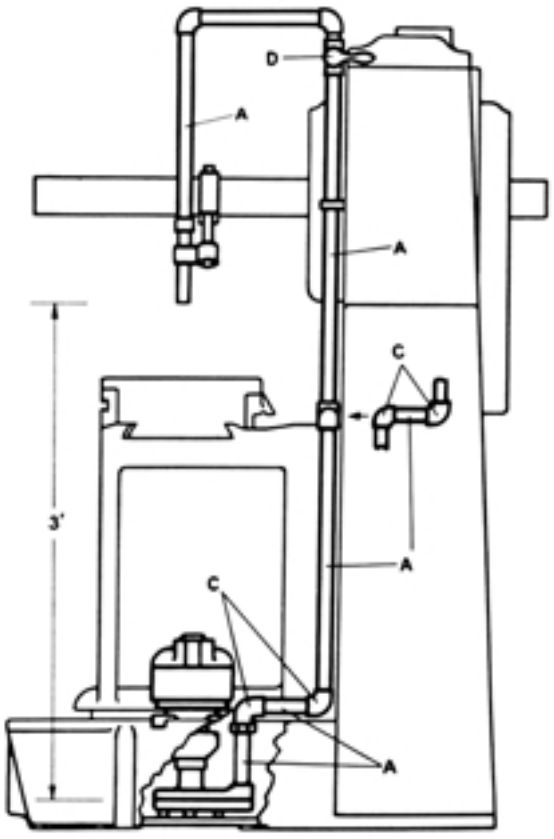
15 gpm required

Step 2 — PUMP INLET CONDITIONS

Since this problem involves the use of a Submersible Type Centrifugal Pump, we can assume that no inlet losses are present.

Step 3 — PUMP DISCHARGE

Discharge Pipe Size is given as 3/4"Static Head Vertical Distance between pump and point of discharge (3) x .433 = 1.3 psi (Specific Gravity being 1.0 need not be calculated).



Friction Loss Multiplier for 3/4 pipe at 15 gpm for 32 ssu (from Table, pg.120 is .18.

Friction Head = Total Length of straight pipe A (8.5) plus 6-90º elbows (13.2) plus estimated equiv. straight pipe for straight cock(1') or 22.7 x M (.18)
= 4.08 psi

Velocity Head = $\frac{V^2}{64.4}$ (Velocity Head is that pressure required to produce the velocity of the liquid and is equal to the formula at the left when V equals feet per second velocity)

1 foot per second velocity for 3/4" pipe = 1.66 gpm (from Table, pg.14.3)

Velocity for 15gpm = $\frac{15}{1.66}$ = 9.03 feet per second

Velocity Head = $\frac{(9.03)^2}{64.4 \times .433}$ = .56 psi

Total Head = Static Head (1.3 psi) plus Friction Head (4.08 psi) plus Velocity Head (.56 psi)
= 5.94 psi

To convert Total Head to Feet of Oil:
Total Head = 5.94 x 2.31 x Spec Gravity (1.0)
= 13.72 feet

Step 4 — PUMP SELECTION

Required 15 gpm and 13.72 Total head. We find the Motor Driven Centrifugal Pump #208 will meet delivery requirements and has a maximum head of 16 feet. Performance Data, pg. 12.3, shows that Pump #208 will deliver 19 gpm at 13 feet Total Head and has a 1/4 hp electric motor operating at 1725 rpm. This selection will provide a safety margin to meet coolant supply requirements in the event that head is increased because of contamination of the fluid.

TROUBLE SHOOTING

IT MIGHT BE ONE OF THESE	TO FIX IT
Not delivering fluid properly?	
• *Pump may be driven in the wrong direction of rotation -*	• Stop immediately to prevent seizure. Check direction of drive rotation (proper rotation direction is indicated by arrow on the head).
• *Drive shaft broken, or shaft key sheared (direct drive) -*	• Remove pump from mounting and determine internal damage. Replace parts if necessary.
• *Intake pipe from reservoir blocked or viscosity too heavy to prime -*	• Drain system. Add clean fluid of proper viscosity and specifications. Filter as recommended. Check system filter for cleanliness.
• *Intake air leaks (foam in oil) -*	• Check intake connections. Tighten securely. Squirt oil around seal. If foam in discharge line stops, seal is leaking and must be replaced.
• *Pump not priming -*	• Loosen connection in outlet line. Bleed air until fluid flows. Check direction of rotation and suction conditions. Check for air leaks as above.
• *Fluid level too low -*	• Reservoir fluid level must be above the opening of the intake pipe. (The system should always be checked at initial start-up to make certain it is filled with fluid).
System pressure too low?	
• *Relief valve set too low -*	• Adjust the relief valve, check setting with a pressure gage.
• *Worn pump parts causing extreme internal leakage -*	• Replace gears and take required corrective steps after examination internal leakage of pumps parts.
Not delivering fluid properly?	
• *Partly clogged intake strainer or restricted intake pipe -*	• Pump must receive intake fluid freely or cavitation results. Drain system, clean the intake pipe, and clean or replace the strainer. Add new fluid and strain by recommended procedures.
• *Defective bearing -*	• Replace cap or head as required (bearings available only as Assembled in cap and head). Inspect the shafts and replace if necessary.
• *Air leak at pump intake pipe joints or shaft seal -*	• Pour fluid on joints and around the drive shaft seal while listening for a change in sound. Tighten joints as required. Replace the shaft seal if necessary.
• *Drive speed too fast or too slow -*	• Drive pump within its recommended speed range.
• *Drive shaft misalignment -*	• Check the bearings and seal. Replace pump if necessary and realign the shafts. Always check before start up. Shaft must not be out of line more than .002 with the power source shaft. Shaft ends should have a gap of 1/8 minimum.

TROUBLE SHOOTING

IT MIGHT BE ONE OF THESE	TO FIX IT
Shaft seal leaking?	
• Seal worn or damaged -	• Replace seals (See Reassembly)
• Excessive pressure on seals -	• Check for restriction or blockage of internal backdrain to the seal of the pump head. Inlet pressure should not exceed 5psi. Make certain that the hole through the drive shaft is clear.
House leaking?	
• Pipe fitting too tight -	• Check pump cap for warping. Inspect cap, housing and head for flatness and replace as necessary
• Dirt in joints, housing scored -	• Clean cap, housing and head. Carefully remove scoring by lightly Tapping or stoning
Excessive heat?	
• Discharge or pump temperature -	• When over 160ºF or hot in comparison with circuit lines, pump should be shut down immediately. Inspect for excessive wear or bearing failure. Before restarting, insure that fluid cooling capacity is adequate to remove system generated heat.
Rapid wear?	• Inspect fluid for grit and dirt. Check pipe fittings; over tightening will warp cap and cause premature water.

BSM ROTARY GEAR PUMPS

APPLICATION WORKSHEET

By: _____

Date: _____

Customer: _____

_____

_____

Contact: _____

Phone / Fax: _____

Type of Pump: _____

Type of Service: _____

_____

_____

_____

_____

A. Gallons per minute: _____

B. Type of liquid: _____

C. Viscosity _____ **SSU at** _____ **ºF Temperature.**

D. Operating temperature: Max. _____ **ºF Min** _____ **ºF Norm** _____ **ºF**

E. Operating pressure: _____ **psi or** _____ **Head Feet**

F. Motor: _____ **Volts** _____ **Phase** _____ **Cycles** _____ **Open Drip Proof**

_____ **Tot. Enclosed** _____ **Explosion Proof**

Quantities to quote: _____

BSM ROTARY GEAR PUMPS

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