



# BOSCH

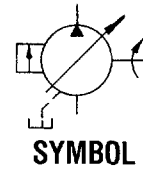
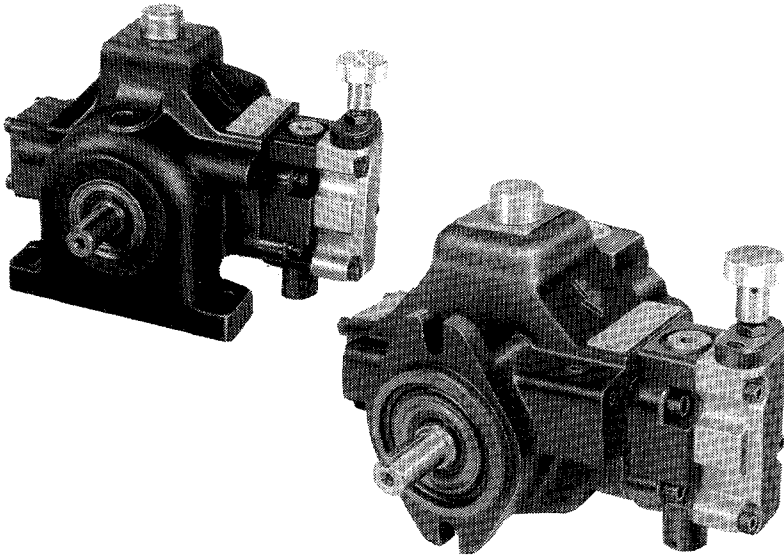
Engineering Data

## VARIABLE VOLUME VANE PUMPS

### MODEL SV-10

### MODEL SV-15

FLANGE MOUNTED  
SUBPLATE MOUNTED



SYMBOL

## SPECIFICATIONS

### QUICK REFERENCE CHART

MODEL	GPM @ 100 PSI & 1800 RPM	MAXIMUM PRESSURE (PSI)	MAXIMUM RPM	PRESSURE COMPENSATING RANGE (PSI)	THEORETICAL DISPLACEMENT IN <sup>3</sup> /REV	INPUT HP @ MAX PSI & 1800 RPM
STANDARD SV-10	8	2000	1800	400-2000	1	10.8
STANDARD SV-15	11.5	1500	1800	300-1000	1.5	11.2
LOW PRESSURE SV-10	8	750	1800	160- 750	1	4
LOW PRESSURE SV-15	11.5	750	1800	160- 750	1.5	5.75

DATA REFLECTS THE USE OF PREMIUM GRADE PETROLEUM HYDRAULIC FLUID OF 32 cSt (150 SUS) VISCOSITY.

**STANDARD PUMP** — The SV pump is a pressure compensated vane pump and is available in four basic displacements; one, two, four, and eight cubic inches. This bulletin covers the model SV-10 (one cubic inch displacement) and variations of it all of which are dimensionally the same. The SV-15 is a modified SV-10 which uses a different ring to allow the ring to shift further and increase the displacement. By increasing the ring stroke, the vanes extend further and requires the maximum pressure rating to be reduced. Increasing the flow of the basic pump allows the design engineer to reduce circuit costs by using a smaller pump instead of selecting the next larger size provided the reduced pressure rating is adequate.

**LOW PRESSURE PUMP** — On some applications, such as grinders, the pump must compensate at very low pressures which are not within the normal compensating range of the standard pump. By making internal modifications to the standard pump, the compensating range can be reduced to create a "low pressure" pump for this kind of application.

#### PRODUCT LITERATURE DISCLAIMER

SPECIFICATIONS AND/OR  
DIMENSIONS ARE SUBJECT TO  
CHANGE WITHOUT PRIOR NOTICE.  
PLEASE CONSULT FACTORY.

# SPECIFICATIONS

## STANDARD PUMP

### PRESSURE RATING —

SV-10 — 2000 psi (138 bar)  
 SV-15 — 1000 psi (69 bar)

### PRESSURE COMPENSATING RANGE —

SV-10 — 400-2000 psi (28-138 bar)  
 SV-15 — 300-1000 psi (20-69 bar)

### FLOW at 1800 rpm —

SV-10 — 7.5 gpm (28 l/min) at 1900 psi  
 SV-15 — 11 gpm (43 l/min) at 900 psi

### THEORETICAL DISPLACEMENT —

SV-10 — 1 in<sup>3</sup>/rev (16.4 ml<sup>3</sup>/rev)  
 SV-15 — 1.5 in<sup>3</sup>/rev (24.6 ml<sup>3</sup>/rev)

### MAXIMUM INLET VACUUM AT SEA LEVEL —

6 in. Hg (152 mm Hg)  
 3 in. Hg (76 mm Hg) with fluids containing water

### MAXIMUM CASE PRESSURE — 10 psi (0.7 bar)

Case drain line should be full intended size (not reduced down). Case pressure spikes can be minimized by using as straight and direct a path to tank as possible. Other drain lines should not be connected to the pump drain line. Always terminate the drain line below the fluid level in the reservoir. Failure to do so will result in loss of pump prime approximately 30 minutes after it is shut down and possible introduction of air into the circuit. Case drain line should be routed to the opposite side of the baffle in relation to the suction line.

**CASE DRAIN FLOW** — The values listed below are the average flows which occur only when the pump is compensating. When the pump is not compensating, the values are much lower.

100 in<sup>3</sup>/min (1.6 l/min) at 1000 psi (69 bar)  
 150 in<sup>3</sup>/min (2.5 l/min) at 1500 psi (103 bar)  
 200 in<sup>3</sup>/min (3.3 l/min) at 2000 psi (138 bar)

**DRIVE SPEED RANGE** — 750-1800 rpm (Consult factory Applications Dept. for higher speeds)

**MOUNTING** — Available in the following:

- Subplate
- SAE 2-Bolt Flange, side or rear ported (SAE straight thread only)

**ROTATION** — Rotation is always determined when viewing the shaft end. Rotational arrows are cast into the body of all pumps.

**FLANGE MOUNTED** — Right and left hand rotation is available.  
**SUBPLATE MOUNTED** — Right hand rotation and left hand opposite drive rotation is available. A left hand opposite drive pump is exactly the same as a right hand pump except that the shaft is turned 180° and is driven from the cover end. Thru shaft is available in right hand rotation only.

**SEALS** — Buna N and viton seals are available. Buna N is compatible with petroleum oil, water glycol, and water-in-oil emulsion. When using phosphate ester, viton seals must be specified. Viton is compatible with all of the fluids mentioned.

**FILTRATION** — A 10 micrometre return line filter is recommended for increased pump life. If a suction strainer is used, it should not be finer than 100 mesh (149 micrometre) when using petroleum fluids. The higher specific gravity of fire resistant fluids and the higher vapor pressure of the water containing fluids will aggravate the pump inlet conditions. If a suction strainer is used with these fluids, the mesh must be coarser (60 mesh or 238 micrometre) than what is used with petroleum oil or the surface area increased to reduce the pressure drop.

**OVERHUNG LOAD** — Radial and axial forces on the shaft are not recommended. Pump and prime mover should be mounted with shafts inline (coaxial) and connected with a flexible coupling. Consult factory Applications Dept. for applications with overhung load.

### MAXIMUM ADDITIONAL HP ON THRU SHAFT —

11 HP (8.2 Kw) at 1800 rpm  
 7.25 Hp (5.4 Kw) at 1200 rpm

**FLUID RECOMMENDATIONS** — A premium quality hydraulic oil with zinc complex anti-wear additives is highly recommended.

Optimum Viscosity at Operating Temperature	150-250 SUS (32-54 cSt)
Minimum Operating Viscosity	100 SUS (21 cSt)
Maximum Operating Viscosity	1000 SUS (215 cSt)
Maximum Start-up Viscosity	4000 SUS (864 cSt)

To compensate for the reduced lubrication values of even the premium quality water containing fluids (glycols and water-in-oil emulsions), it is necessary to limit system pressure and rpm to the values listed in the table below for an equivalent life.

	Water Glycol	Water-in-Oil Emulsion
<b>Maximum Pressure</b>	1500 psi	1000 psi
<b>Maximum RPM</b>	1800 rpm	1200 rpm

Fluid suppliers should be consulted regarding proper fluid maintenance when using fire resistant fluids containing water.

**TEMPERATURE** — The temperature of the fluid in the reservoir should not exceed 130°F (54°C). The pump will operate with fluid at higher temperatures provided the viscosity is within the recommended range. Under no circumstances should the fluid temperature exceed 160°F (71°C). When using fire resistant fluids containing water, the fluid temperature should not exceed 120°F (49°C) to prevent an excessive rate of water evaporation.

**SCREW VOLUME CONTROL** — The screw volume control is an adjustable stop which is used to reduce the maximum pump flow and is optional. Turning clockwise will reduce the flow in direct proportion to the displacement of the adjusting screw. During initial start-up, the flow setting should be at least 30% of the maximum pump flow.

SV-10 — 1/4 turn (90°) clockwise will reduce the flow approximately 1.6 gpm (6.1 l/min) when the pump is driven at 1800 rpm.

SV-15 — 1/4 turn (90°) clockwise will reduce the flow approximately 2.2 gpm (8.3 l/min) when the pump is driven at 1800 rpm.

When a volume control is used to reduce the maximum flow of the pump, the horsepower required to drive the pump is also reduced. To determine the input HP, use the following formula:

$$\text{Input HP} = \frac{\text{gpm} \times \text{psi}}{1714} + \text{Deadhead HP at the compensator setting}$$

**MOUNTING POSITION** — Unrestricted. Caution must be exercised with vertical mounting to prevent the weight or end thrust of the prime mover from being applied to the pump shaft.

**SHAFT ALIGNMENT** — Shaft alignment should be within 0.003" total indicator reading. If the shafts are not properly aligned, increased mechanical noise from the unit will result.

**START-UP** — To insure priming on initial start-up, air in the pump and inlet line must be allowed to escape. If the pump outlet is normally blocked, it must be temporarily vented. This can be accomplished by opening the valve, temporarily cracking a fitting, or installing an air bleed valve (refer to Bulletin J-34).

**CONTROL OPTIONS** — Many energy saving controls are available in addition to the standard two-stage pressure compensator. Refer to Bulletin A-11 for performance and dimensional data.

**COMBINATION MOUNTING** — To simplify multi-pump circuits, adaptor kits are available to mount additional pumps in combination on the rear cover of the flange mounted (side ported) pumps. Refer to Bulletin A-14 for horsepower limitations, adaptors available, dimensional data, and How-To-Order.

**WEIGHT (Approximate) —**

Subplate Mounted Pump .....	40 lbs. (18.2 Kg)
Flange Mounted Pump .....	45 lbs. (20.4 Kg)
Add for Screw Volume Control .....	1 lbs. (0.5 Kg)
Add for Thru Shaft .....	1 lbs. (0.5 Kg)

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**LOW PRESSURE PUMP**

**NOTE:** All of the specifications for the standard pump also pertain to the low pressure pump except those listed below.

**PRESSURE RATING —**

- SV-10 - 750 psi (52 bar)
- SV-15 - 750 psi (52 bar)

**PRESSURE COMPENSATING RANGE —**

- SV-10 — 160-750 psi (11-52 bar)
- SV-15 — 160-750 psi (11-52 bar)

**FLOW RATING AT 1800 rpm —**

- SV-10 — 8 gpm (30.3 l/min) at 650 psi (45 bar)
- SV-15 — 11 gpm (43.5 l/min) at 650 psi (45 bar)

**CASE DRAIN FLOW —**

210 in<sup>3</sup>/min (3.4 l/min) at 750 psi (52 bar)

**ROTATION —**

Right hand only. Clockwise when viewing the shaft end.

**SEALS —**

Viton seals are standard.

**SCREW VOLUME CONTROL —**

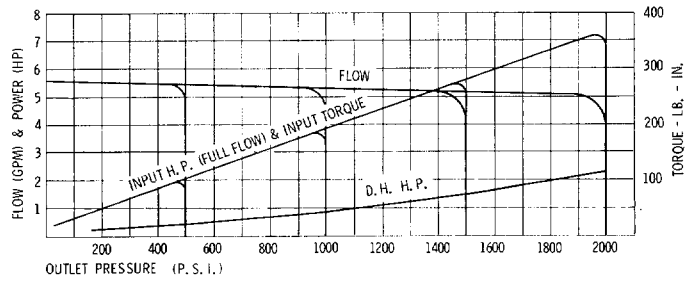
The screw volume control is standard.

**PERFORMANCE CHARACTERISTICS**

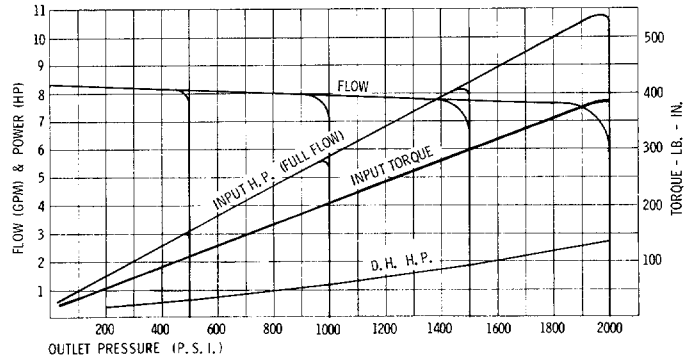
**STANDARD PUMP**

DATA PLOTTED WITH OIL AT 120°F (49°C)  
 VISCOSITY @ 120°F = 140 SUS (29.6 cSt)

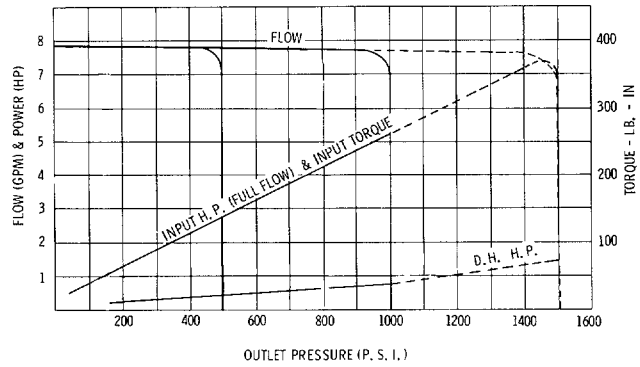
**SV-10 @ 1200 rpm**



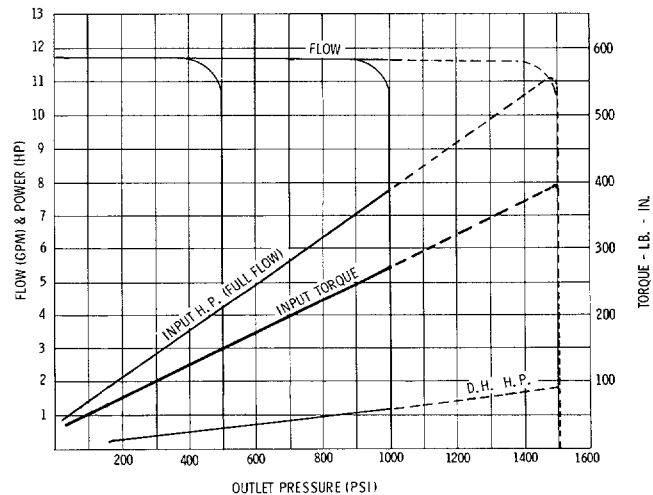
**SV-10 @ 1800 rpm**



**SV-15 @ 1200 rpm**



**SV-15 @ 1800 rpm**

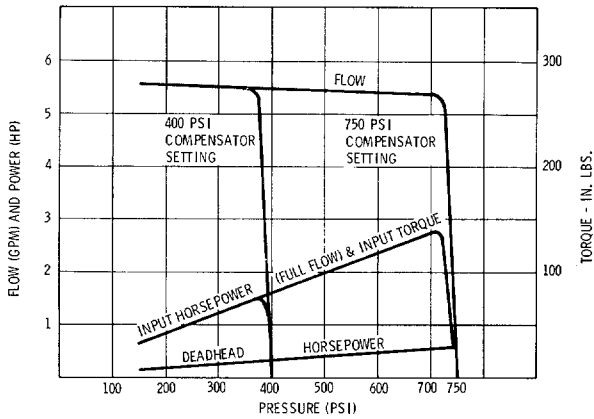


--- PRESSURE SPIKES LIMITED TO 2500 PSI

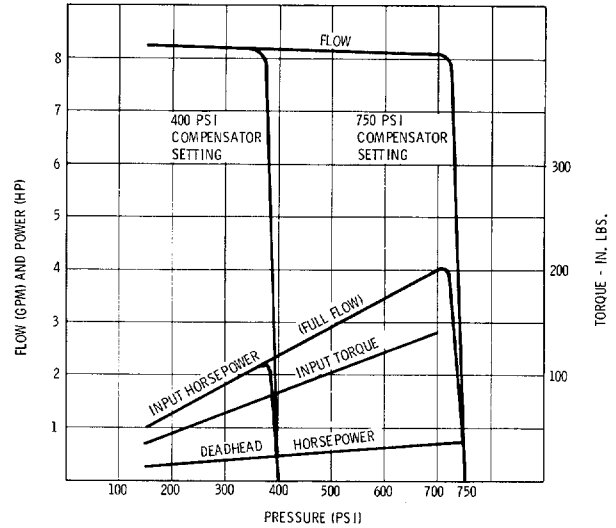
DATA PLOTTED WITH OIL AT 120°F (49°C)  
 VISCOSITY @ 120°F = 140 SUS (29.6 cSt)

LOW PRESSURE PUMP

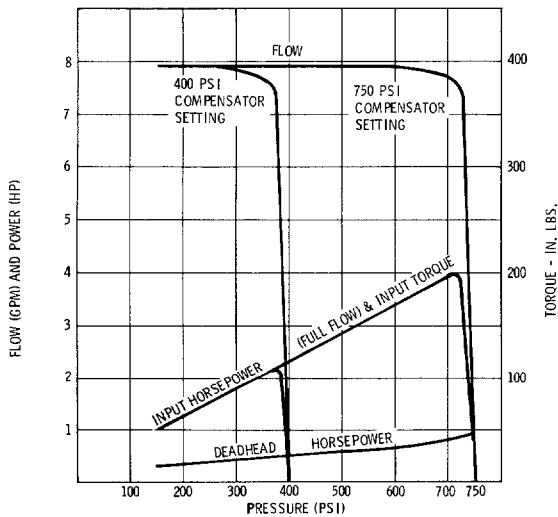
SV-10 @ 1200 rpm



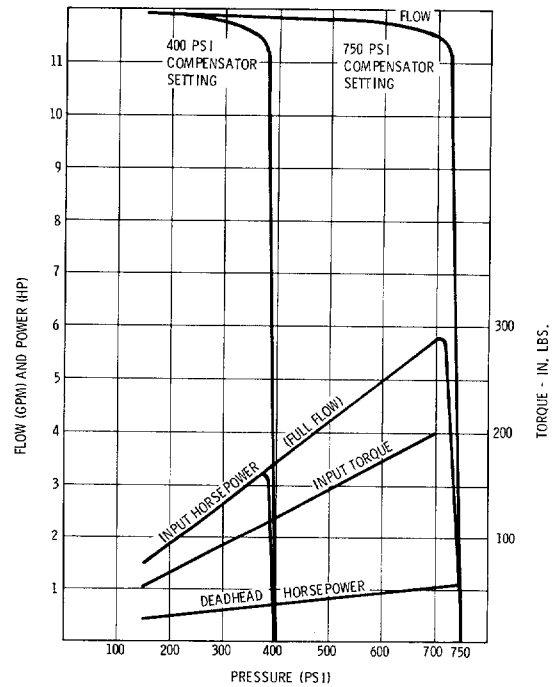
SV-10 @ 1800 rpm



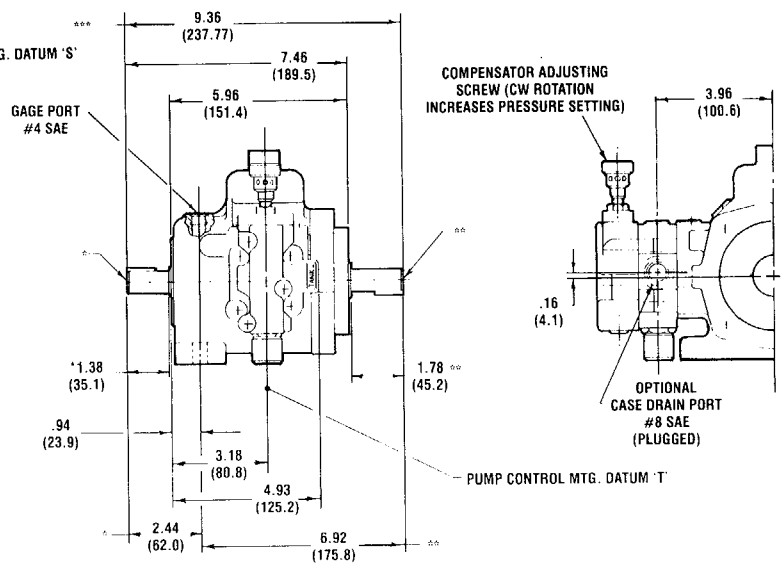
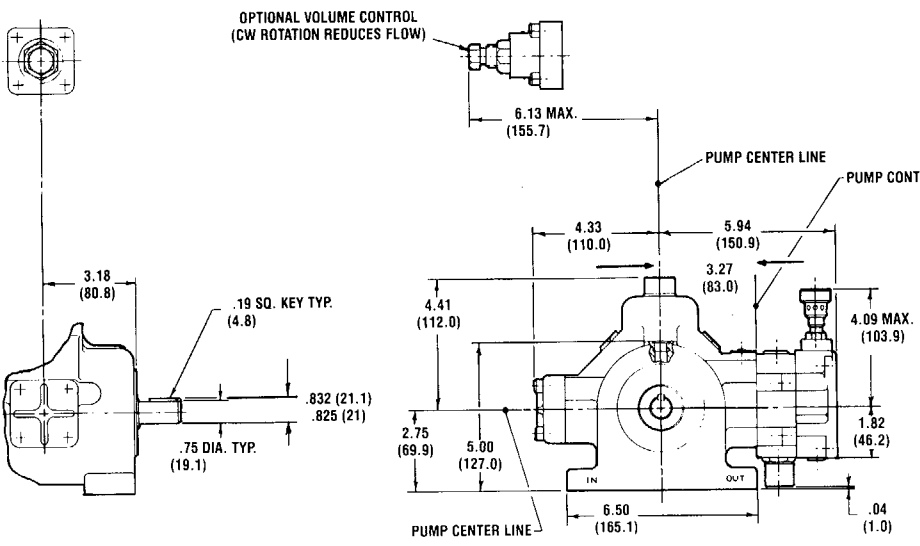
SV-15 @ 1200 rpm



SV-15 @ 1800 rpm



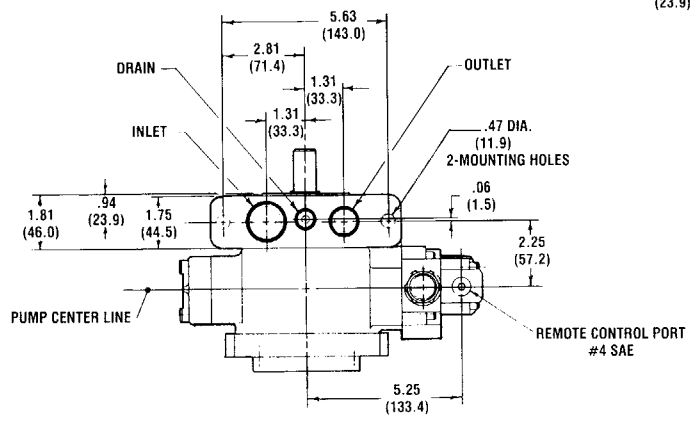
RH & LH SUBPLATE MOUNTED



**PORTS**  
#4 SAE - 7 16-20 STRAIGHT THREAD  
#8 SAE - 3 4-16 STRAIGHT THREAD

INCHES  
(MILLIMETRES)

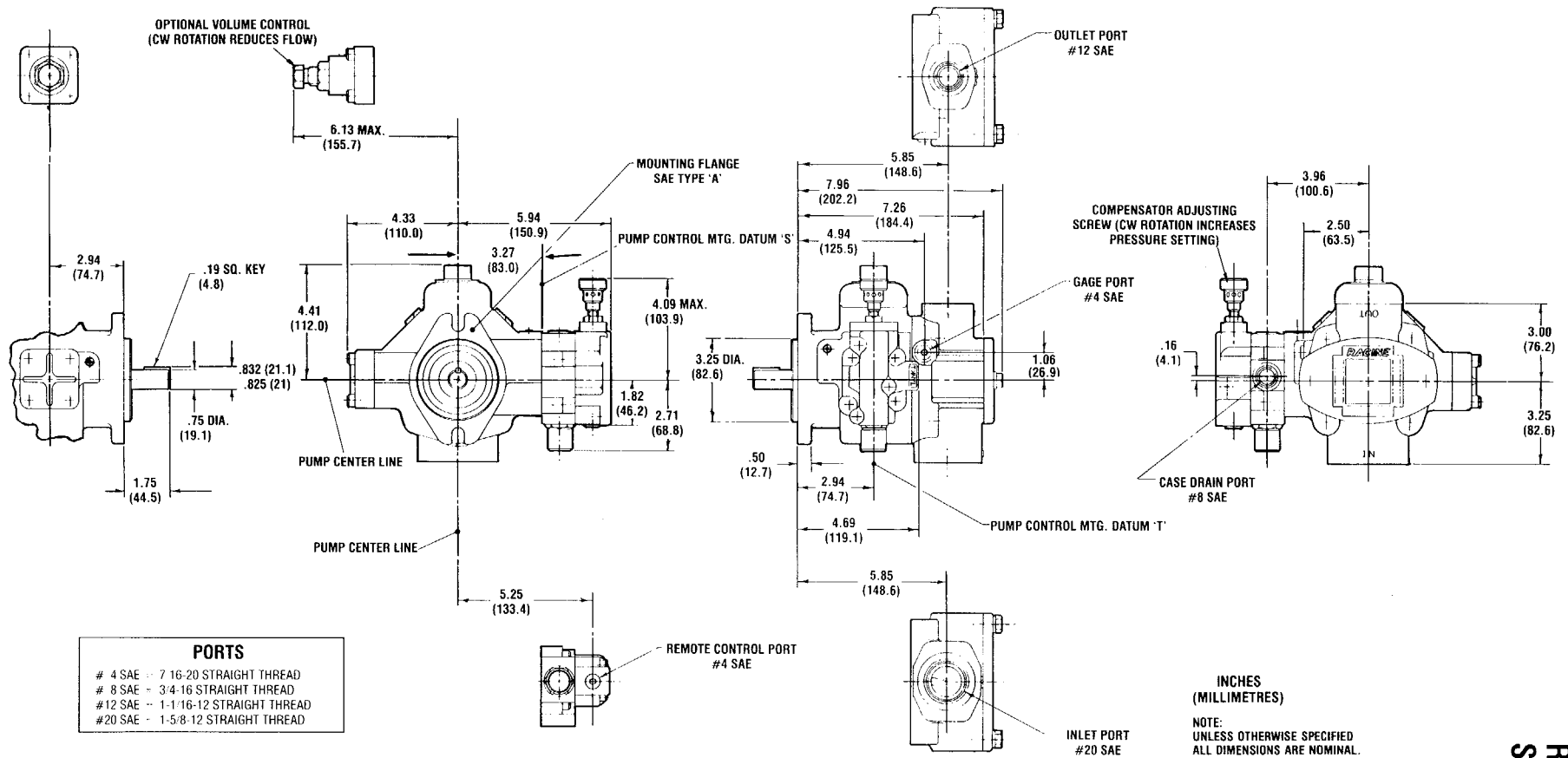
NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE NOMINAL.



\* This shaft and dimensions are for pumps with right hand rotation.

\*\* This shaft and dimensions are for pumps with left hand rotation. To convert a right hand pump to left hand, the shaft is turned 180° (end for end).

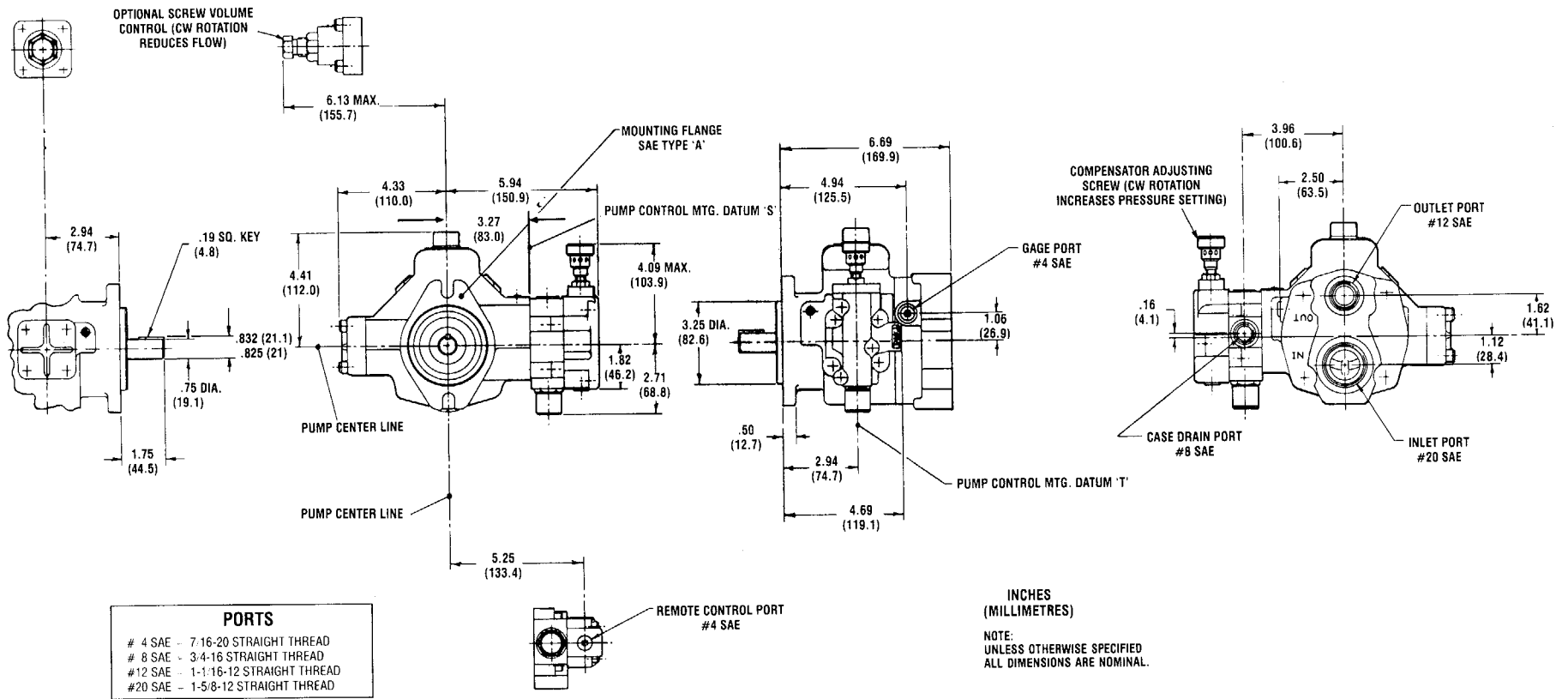
\*\*\* This dimension plus the right hand and left hand dimensions are used for optional thru shaft.

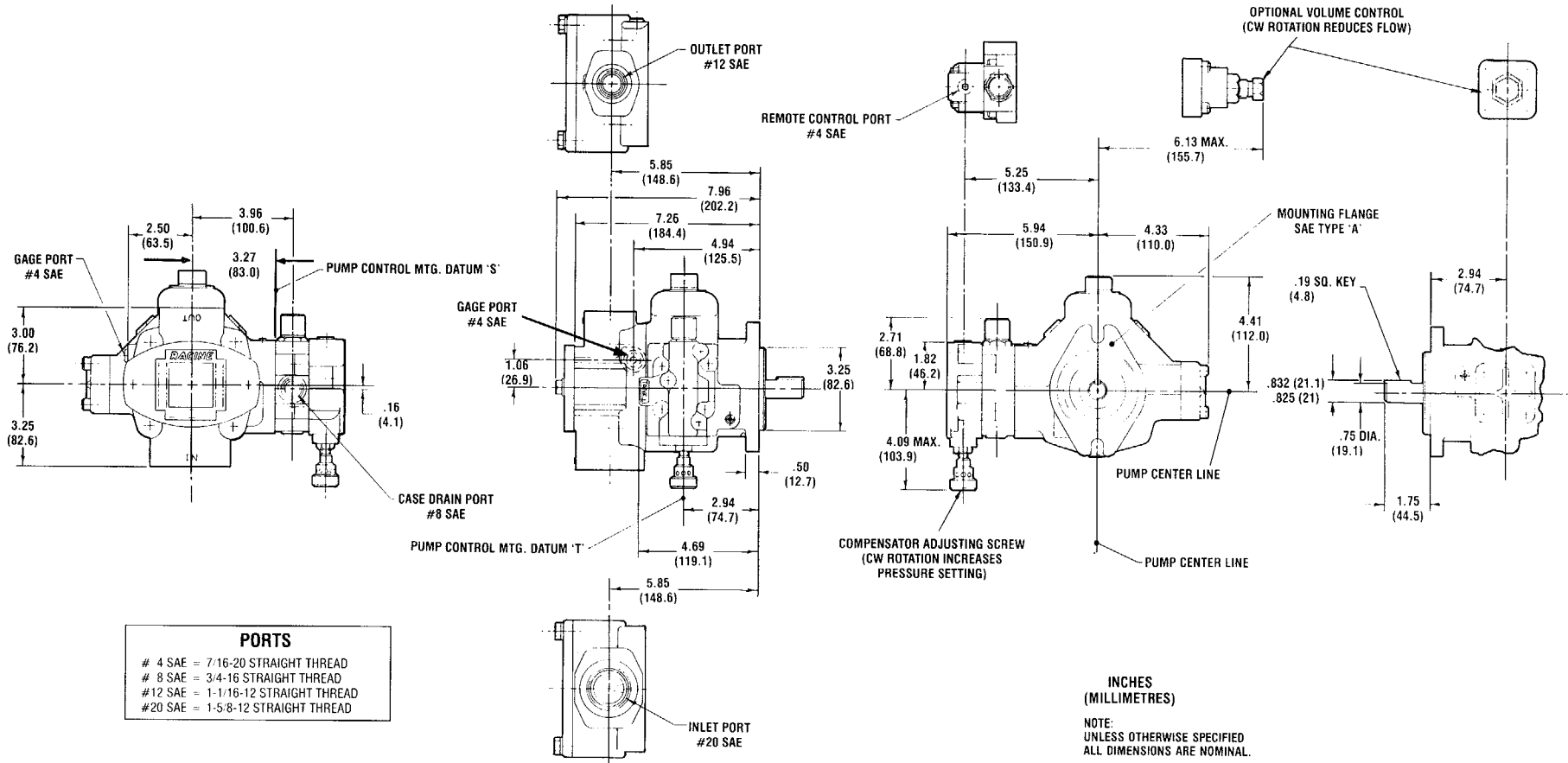


**RH FLANGE MTD.  
SIDE PORTED**

**DIMENSIONAL DATA**

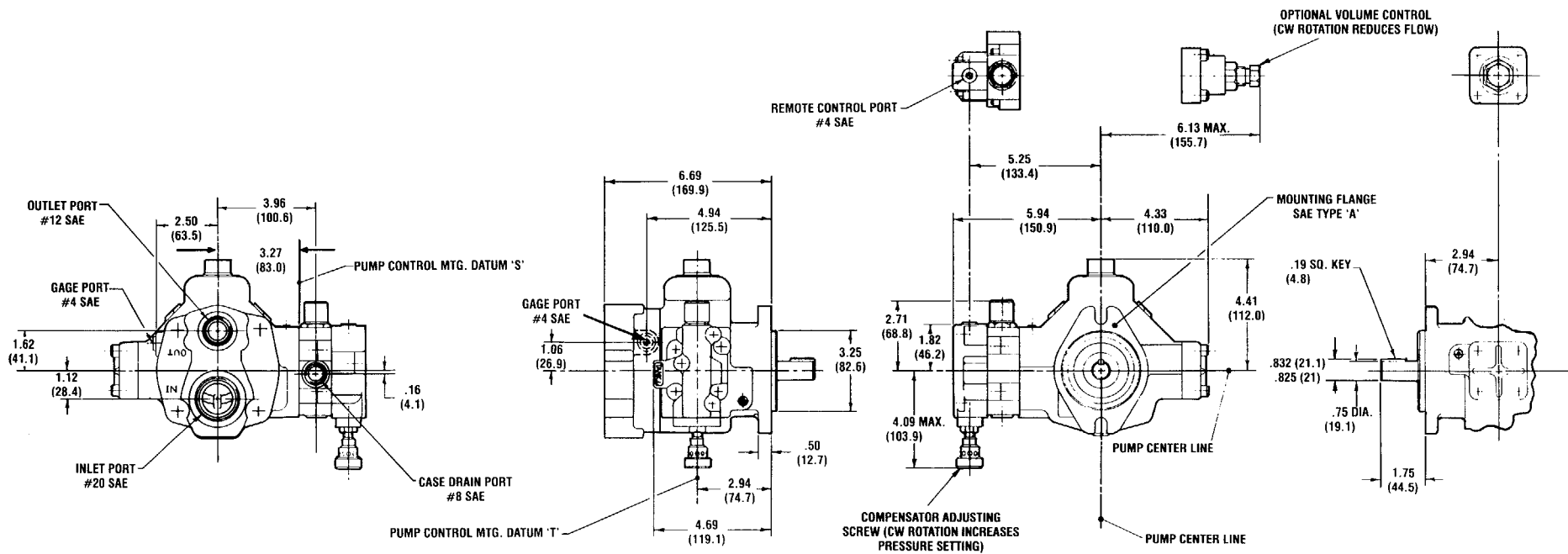
RH FLANGE MTD.  
REAR PORTED





**DIMENSIONAL DATA**  
**LH FLANGE MTD.**  
**SIDE PORTED**

LH FLANGE MTD.  
REAR PORTED

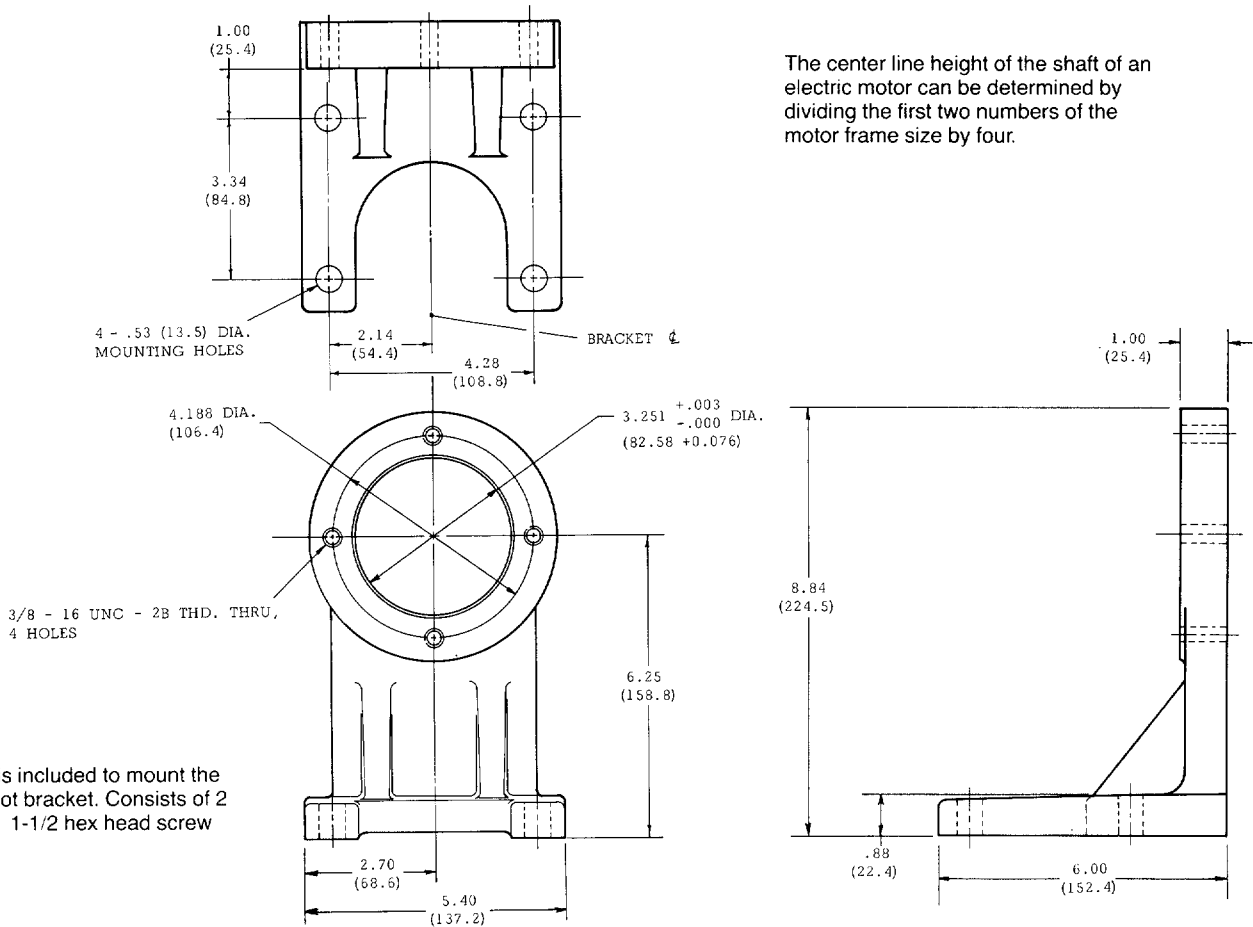


PORTS	
# 4 SAE	= 7/16-20 STRAIGHT THREAD
# 8 SAE	= 3/4-16 STRAIGHT THREAD
# 12 SAE	= 1-1/16-12 STRAIGHT THREAD
# 20 SAE	= 1-5/8-12 STRAIGHT THREAD

INCHES  
(MILLIMETRES)

NOTE:  
UNLESS OTHERWISE SPECIFIED  
ALL DIMENSIONS ARE NOMINAL.

### FOOT BRACKET (PSV-10-50B)

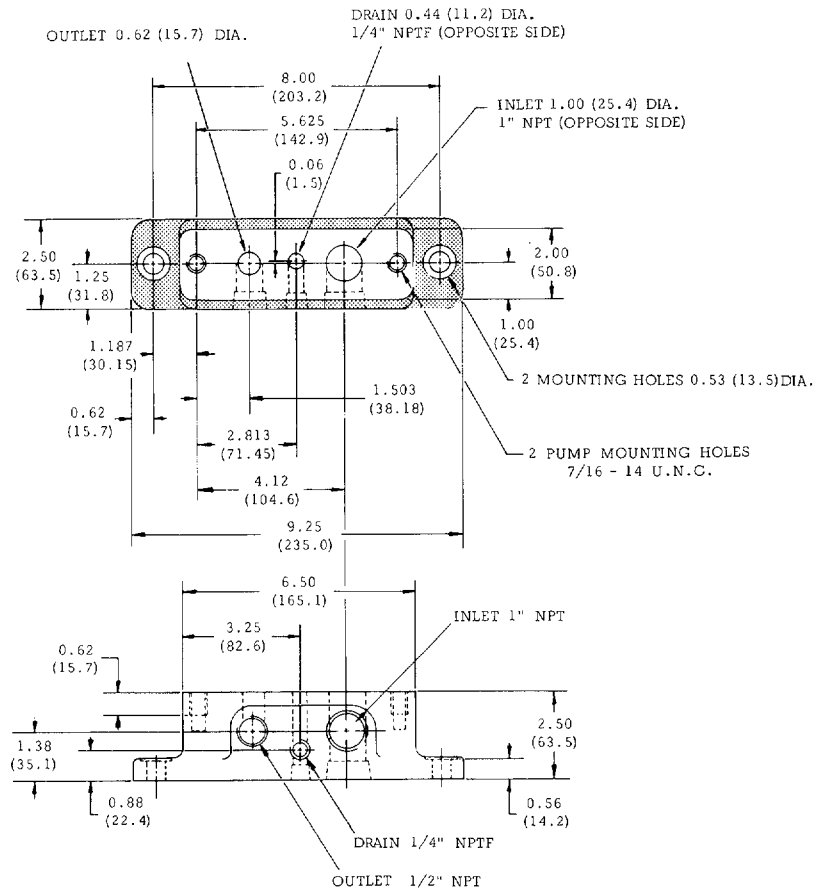


The center line height of the shaft of an electric motor can be determined by dividing the first two numbers of the motor frame size by four.

Bolt kit B-123 is included to mount the pump to the foot bracket. Consists of 2 each 3/8-16 x 1-1/2 hex head screw and washer.

### SUBPLATE (PSV-10-30S)

The height of the pump shaft center line is 5.25 inches (133.4 mm) when the pump is mounted to the subplate.



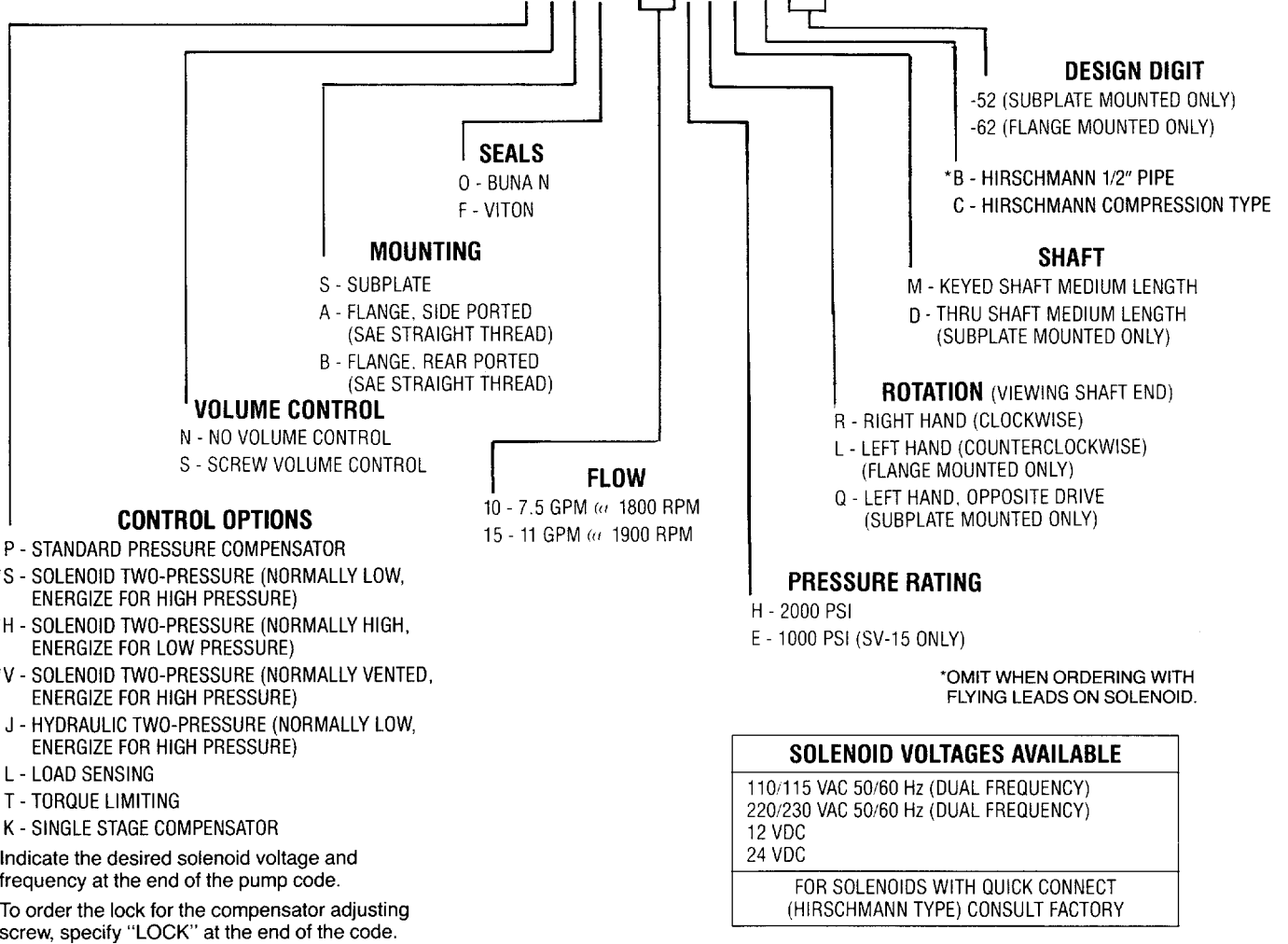
Bolt kit B-105 is included to mount the pump to the subplate. Consists of 2 each 7/16-14 x 1-1/4 socket head cap screws.

When subplate is not used, a machined pad as shown by clear area must be provided for mounting. Pad must be flat within 0.0003 in/in with a surface finish of 63 RMS.

**HOW TO ORDER**

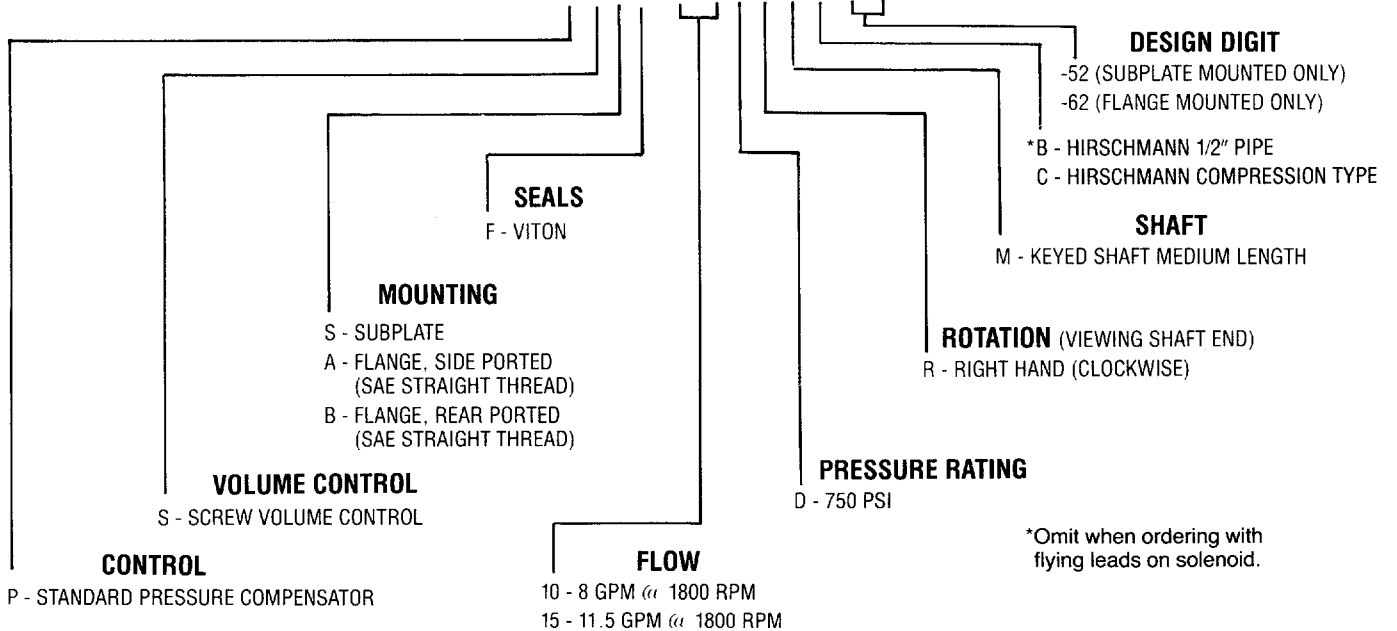
**STANDARD PUMP**

**PSV - PNSO - 10HRMB-52**



**LOW PRESSURE PUMP**

**PSV - PSSF - 10DRMB-52**



To order the lock for the compensator adjusting screw, specify "LOCK" at the end of the code.

9 535 233 084  
HPUS AKY 003/1 US (5.95)

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