VARIABLE VOLUME
VANE PUMPS

MODEL SV-10
MODEL SV-15

FLANGE MOUNTED
SUBPLATE MOUNTED

SPECIFICATIONS

QUICK REFERENCE CHART

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<th>MAXIMUM RPM</th>
<th>PRESSURE COMPENSATING RANGE (PSI)</th>
<th>THEORETICAL DISPLACEMENT IN³/REV</th>
<th>INPUT HP @ MAX PSI &amp; 1800 RPM</th>
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</thead>
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<tr>
<td>STANDARD SV-10</td>
<td>8</td>
<td>2000</td>
<td>1800</td>
<td>400-2000</td>
<td>1</td>
<td>10.8</td>
</tr>
<tr>
<td>STANDARD SV-15</td>
<td>11.5</td>
<td>1500</td>
<td>1800</td>
<td>300-1000</td>
<td>1.5</td>
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</tr>
<tr>
<td>LOW PRESSURE SV-10</td>
<td>8</td>
<td>750</td>
<td>1800</td>
<td>160-750</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>LOW PRESSURE SV-15</td>
<td>11.5</td>
<td>750</td>
<td>1800</td>
<td>160-750</td>
<td>1.5</td>
<td>5.75</td>
</tr>
</tbody>
</table>

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.
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 in³/rev (16.4 ml/rev)
SV-15 — 1.5 in³/rev (24.6 ml/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
countected 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 in³/min (1.6 l/min) at 1000 psi (69 bar)
150 in³/min (2.5 l/min) at 1500 psi (103 bar)
200 in³/min (3.3 l/min) at 2000 psi (138 bar)

DRIVE SPEED RANGE — 750-1800 rpm (Consult factory Appli-
cations 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 com-
patible with petroleum oil, water glycol, and water-in-oil emul-
sion. 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 aggra-
vate the pump inlet conditions. If a suction strainer is used with
these fluids, the mesh must be coarser (60 mesh or 238 micro-
metre) 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.

<table>
<thead>
<tr>
<th>Optimum Viscosity at Operating Temperature</th>
<th>150-250 SUS (32-54 cSt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Operating Viscosity</td>
<td>100 SUS (21 cSt)</td>
</tr>
<tr>
<td>Maximum Operating Viscosity</td>
<td>1000 SUS (215 cSt)</td>
</tr>
<tr>
<td>Maximum Start-up Viscosity</td>
<td>4000 SUS (864 cSt)</td>
</tr>
</tbody>
</table>

To compensate for the reduced lubrication values of even the pre-
mium 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.

<table>
<thead>
<tr>
<th>Water Glycol</th>
<th>Water-in-Oil Emulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Pressure</td>
<td>1500 psi</td>
</tr>
<tr>
<td>Maximum RPM</td>
<td>1800 rpm</td>
</tr>
</tbody>
</table>

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 rec-
mended range. Under no circumstances should the fluid tem-
perature 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:

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

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) —

<table>
<thead>
<tr>
<th>Mounting Style</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subplate Mounted Pump</td>
<td>40 lbs. (18.2 Kg)</td>
</tr>
<tr>
<td>Flange Mounted Pump</td>
<td>45 lbs. (20.4 Kg)</td>
</tr>
<tr>
<td>Add for Screw Volume Control</td>
<td>1 lbs. (0.5 Kg)</td>
</tr>
<tr>
<td>Add for Thru Shaft</td>
<td>1 lbs. (0.5 Kg)</td>
</tr>
</tbody>
</table>

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 in³/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

SV-10 @ 1200 rpm

SV-10 @ 1800 rpm

SV-15 @ 1200 rpm

SV-15 @ 1800 rpm

DATA PLOTTED WITH OIL AT 120°F (49°C)
VISCOSITY (at 120°F) = 140 SUS (29.5 cSt)

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
DIMENSIONAL DATA

RH & LH SUBPLATE MOUNTED

PORTS

#4 SAE – 7 10-24 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.
PORTS

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

DIMENSIONAL DATA

OPTIONAL VOLUME CONTROL
(CW ROTATION REDUCES FLOW)

6.13 MAX
150.7

PUMP CENTER LINE

4.33
110.0

3.27
83.2

PUMP CONTROL MTD. DATUM 'S'

5.94
150.9

3.25 DIA.
82.5

1.87
46.7
2.71
68.8

7.96
202.2

7.25
184.4

2.50
63.5

3.96
100.6

5.85
148.6

3.00
76.2

3.25
82.5

INCHES
(MILLIMETRES)

NOTE
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE NOMINAL.
SIDE PORTED
LH FLANGE MTD.

DIMENSIONAL DATA

PORTS

\# 4 SAE - 3/4-16 STRAIGHT THREAD
\# 8 SAE - 1/2-13 STRAIGHT THREAD
\# 8 SAE - 1/2-13 STRAIGHT THREAD

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DIMENSIONAL DATA

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.

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**

**SEALS**
- O - BUNA N
- F - VITON

**MOUNTING**
- S - SUBPLATE
- A - FLANGE, SIDE PORTED (SAE STRAIGHT THREAD)
- B - FLANGE, REAR PORTED (SAE STRAIGHT THREAD)

**FLOW**
- 10 - 7.5 GPM (6x1800 RPM)
- 15 - 11 GPM (6x1900 RPM)

**CONTROL OPTIONS**
- P - STANDARD PRESSURE COMPENSATOR
- S - SOLENOID TWO-PRESSURE (NORMALLY LOW, ENERGIZE FOR HIGH PRESSURE)
- H - SOLENOID TWO-PRESSURE (NORMALLY HIGH, ENERGIZE FOR LOW PRESSURE)
- V - SOLENOID TWO-PRESSURE (NORMALLY VENTED, ENERGIZE FOR HIGH PRESSURE)
- J - HYDRAULIC TWO-PRESSURE (NORMALLY LOW, ENERGIZE FOR HIGH PRESSURE)
- L - LOAD SENSING
- T - TORQUE LIMITING
- K - SINGLE STAGE COMPENSATOR

*Indicate the desired solenoid voltage and frequency at the end of the pump code.

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

**DESIGN DIGIT**
- 52 (SUBPLATE MOUNTED ONLY)
- 62 (FLANGE MOUNTED ONLY)
- B - HIRSCHMANN 1/2" PIPE
- C - HIRSCHMANN COMPRESSION TYPE

**SHAFT**
- M - KEYED SHAFT MEDIUM LENGTH

**ROTATION**
- R - RIGHT HAND (CLOCKWISE)
- L - LEFT HAND (COUNTERCLOCKWISE)

**PRESSURE RATING**
- H - 2000 PSI
- E - 1000 PSI (SV-15 ONLY)

*Omit when ordering with flying leads on solenoid.

**SOLENOID VOLTAGES AVAILABLE**
- 110/115 VAC 50/60 Hz (DUAL FREQUENCY)
- 220/230 VAC 50/60 Hz (DUAL FREQUENCY)
- 12 VDC
- 24 VDC

For solenoids with quick connect (HIRSCHMANN TYPE) consult factory.

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LOW PRESSURE PUMP

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

**SEALS**
- F - VITON

**MOUNTING**
- S - SUBPLATE
- A - FLANGE, SIDE PORTED (SAE STRAIGHT THREAD)
- B - FLANGE, REAR PORTED (SAE STRAIGHT THREAD)

**FLOW**
- 10 - 8 GPM (6x1800 RPM)
- 15 - 11.5 GPM (6x1800 RPM)

**CONTROL**
- P - STANDARD PRESSURE COMPENSATOR

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

**DESIGN DIGIT**
- 52 (SUBPLATE MOUNTED ONLY)
- 62 (FLANGE MOUNTED ONLY)
- B - HIRSCHMANN 1/2" PIPE
- C - HIRSCHMANN COMPRESSION TYPE

**SHAFT**
- M - KEYED SHAFT MEDIUM LENGTH

**PRESSURE RATING**
- D - 750 PSI

*Omit when ordering with flying leads on solenoid.