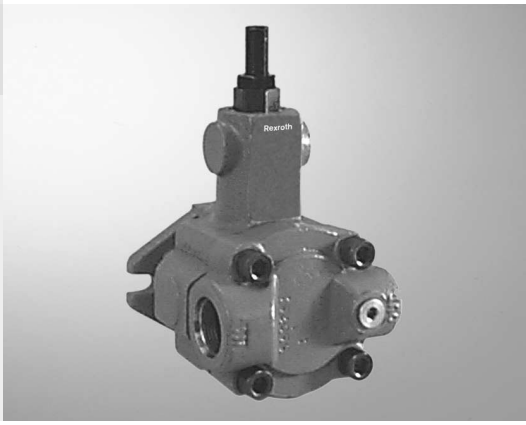
Hydraulic Vane Pumps
Subplate and Flange Mounted

RA 10 336/12.04 **1**/12
Replaces: 07.03

PVC Series



General specifications

Recommended fluids

Petroleum base and most phosphate ester fluids, water glycols and emulsions with water content not exceeding 40%. Consult factory for other fluids.

Viscosity

- Maximum at Start-up ..... 1000 SUS (220 CS)
  Optimal ..... 175 SUS
  Limits ..... See chart below)
- Start up at 1000 SUS (220 CS) is intended to be used for warm-up only. Actual hydraulic circuit should not be attempted above 400 SUS (90 CS). Be certain the entire hydraulic circuit has been warmed up before full flow full pressure application begins.

Operating pressure

Fluid temperatures up to 160°F (71°C) will not appreciably affect pump performance as long as fluid viscosity is not allowed to drop too low.. However, from a safety standpoint, temperatures above 130°F (65°C) are not recommended.

Specified operating viscosities must be followed for optimum life and performance. For continuous operating temperatures above 140°F (60°C) consult the fluid manufacturer for correct fluid at elevated temperatures.

Filtration

Suction:	Petroleum Fluids … 100 mesh screen Water Base Fluids … 60 mesh screen Phosphate Esters … 60 mesh screen
Return:	ISO 18/15 (25 micron) to 1000 psi ISO 16/13 (10 micron) to 2000 psi

These recommendations are for maximum service life. Consult with your fluid and filter manufacturer for concurrence.

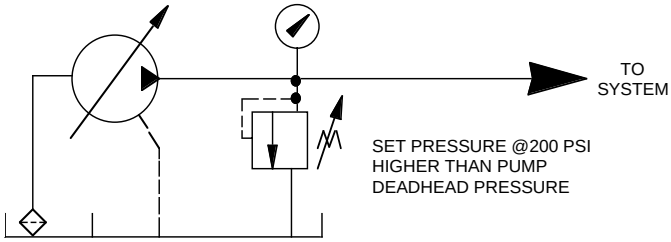
General specifications (cont.)

Drive coupling

Jaw-type with flexible web recommended. Tire type flexing elements and chain type not recommended. Belt, chain and gear drives, consult factory.

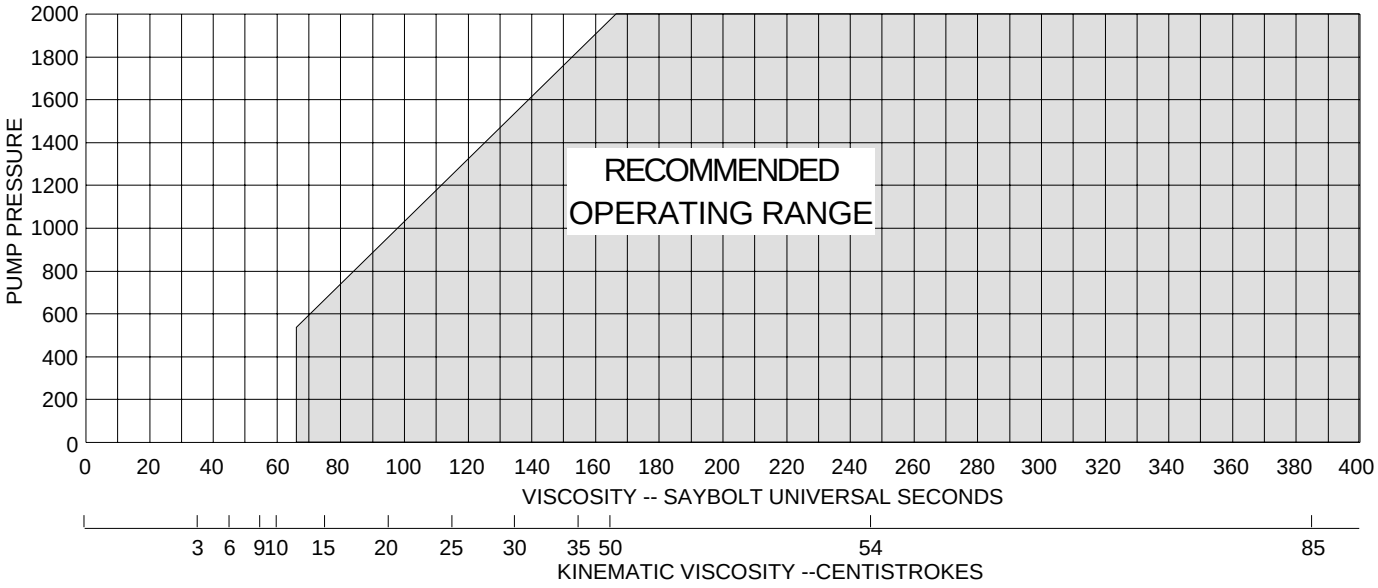
Drive shaft alignment

Pump and motor shaft alignment must be within 0.003" (.08 mm) TIR for maximum bearing life.



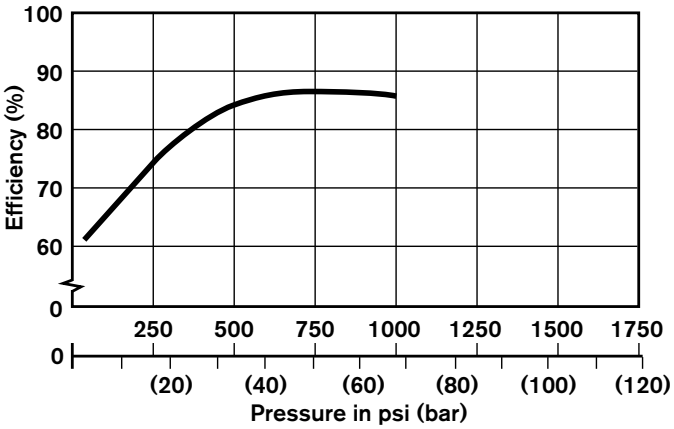
Relief valves

It is recommended that a direct-operated, differential piston relief valve be used to relieve pressure spikes and/or surges. Set the relief valve approximately 200 psi higher than the pump setting.

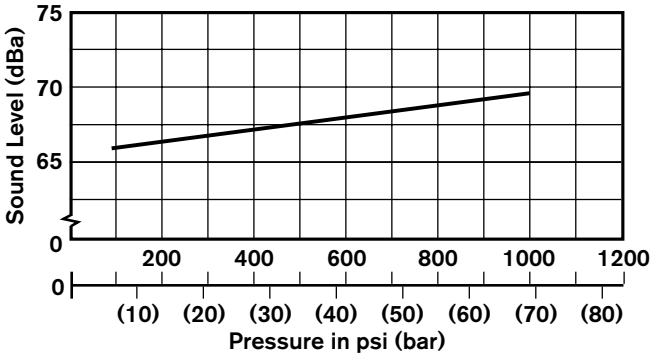


Variable displacement
Subplate mounted vane pumps

Overall efficiency (1750 rpm at Full Displacement)



Typical sound level @ 1750 rpm



Pressure and volume adjustment sensitivity

		Pump Size	09
		Pressure Code	E
Pressure Adjustment	Pressure change/turn	psi (bar)	240 (16.6)
	Maximum torque	ft-lbs (kg-M)	4.0 (0.55)
Volume Adjustment	Flow change/turn	gpm (lpm)	4.6 (17.4)
	Approx. min. flow adj.	gpm (lpm)	1.25 (4.7)
	Maximum torque	ft-lbs (kg-M)	1.0 (0.14)

Caution: Turning the maximum volume adjustment in too far can force the cam ring over-center.

Typical performance specifications

		Pump size	**09**
Volumetric displacement (See note 1)		cu. in/rev. (ml/rev.)	1.2 (19.7)
Pump delivery at 1750 rpm (See note 1)	91.5 psi (6.3 bar)	gpm (lpm)	9.5 (36)
	Rated pressue	gpm (lpm)	8 (30.3)
Compensated pressure ranges	Rated	psi (bar)	1000 (69)
	Min.	psi (bar)	100 (7)
Operating speeds (See note 2)		Min. rpm	800
		Rated rpm	1750
		Max. rpm	3600
Power input @rated flow & pressure (1750 rpm)		hp (kw)	6 (4.4)
Inlet pressure	Max	psi (bar)	10 (0.7)
	Min. S.G.* < 1	in. hg. (bar)	7 (–0.25)
	Min. S.G.* > 1	in. hg. (bar)	5 (–0.17)
Inlet fluid velocity	Max	ft/sec (m/sec)	5 (1.5)
Nominal case drain flow	Max. pressure	cipm (mlpm)	55 (900)
	Min. pressure	cipm (mlpm)	24 (390)
Maximum case pressure		psi (bar)	10 (0.7)
Weight		lbs (kg)	20 (9)

* Specific Gravity

NOTES:

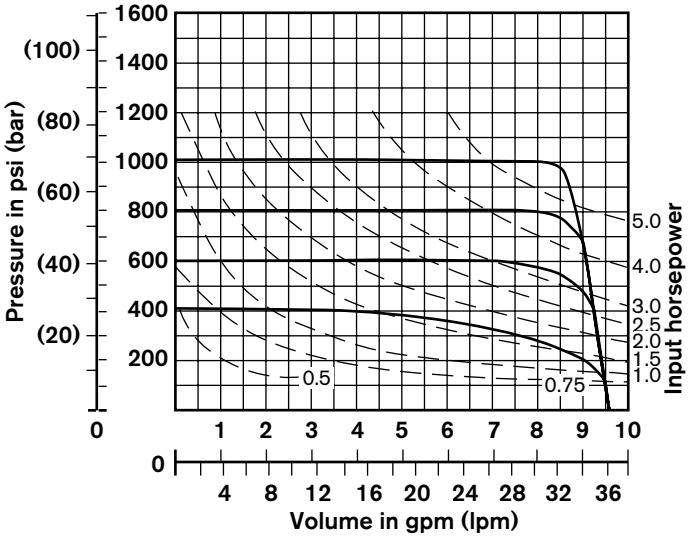
1. Volumetric displacement is measured displacement at 91.5 psi (6.3 bar) and rated rpm. Volumetric displacement varies with both pressure and rpm. Flow rates at any rpm other than rated rpm may be approximated as follows:

   $Q_2 = Q_1$ (N-142)/1667 where Q_1 = Flow (gpm) at rated rpm at 91.5 psi
   Q_2 = Flow (gpm) at N rpm
   N = rpm at which Q_2 is to be determined

2. **09** … Maximum rpm at full displacement - 2100 rpm. For higher rpm's up to 3600 rpm, pump displacement must be reduced to limit flow to 9.5 gpm (36 lpm) maximum.

Performance curve

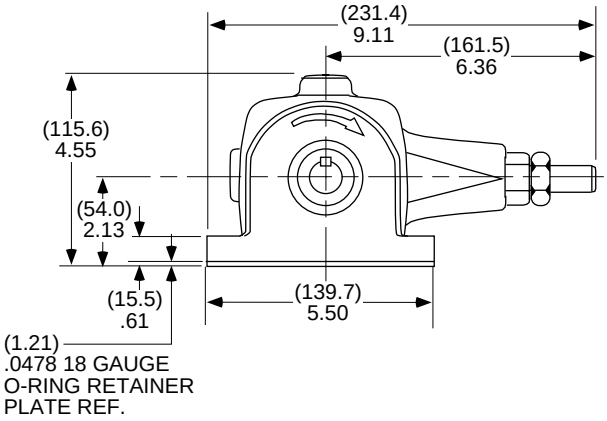
09E (1750 rpm)

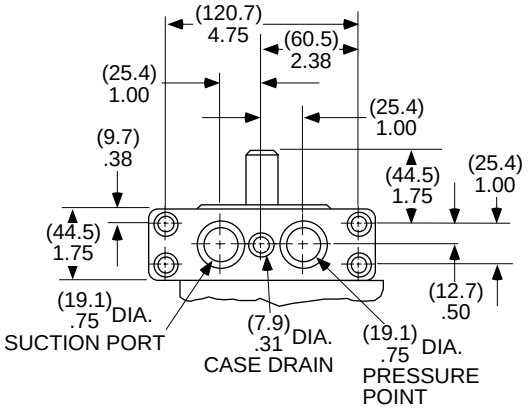


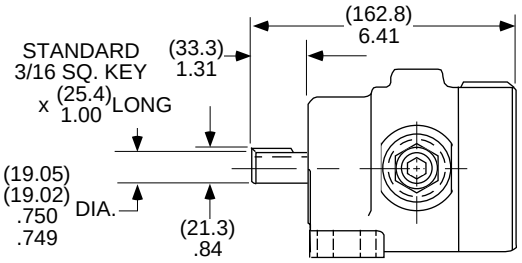
Note: Typical performance curves based on ISO VG46 oil at 120°F (49°C). Above 400 SUS, add 2% hp/100 SUS.

Deadhead horsepower is read from curves @ 0 gpm flow and pressure compensator setting psi.

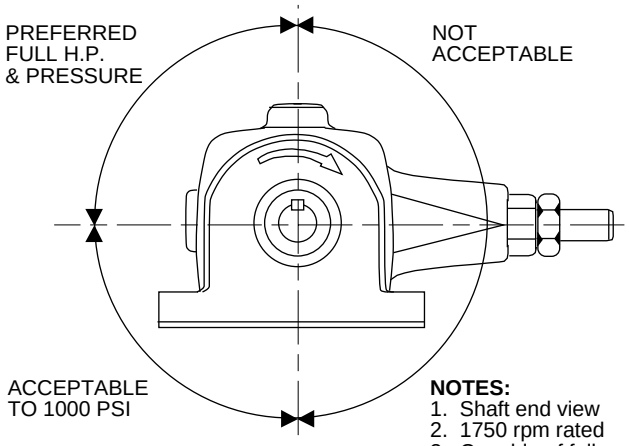
Mechanical options: dimensions shown in (millimeters) inches







Side load drives (i.e. belt, chain, gear)



NOTES:
1. Shaft end view
2. 1750 rpm rated
3. Capable of full pump horsepower (load to radiate out from shaft)

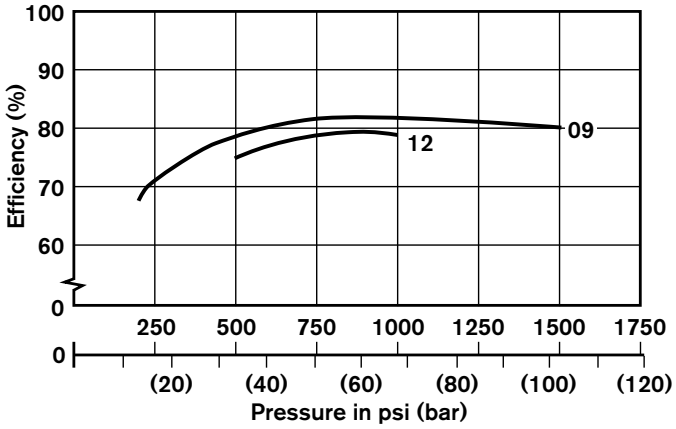
Variable displacement
Flange mounted vane pumps

Pressure and volume adjustment sensitivity

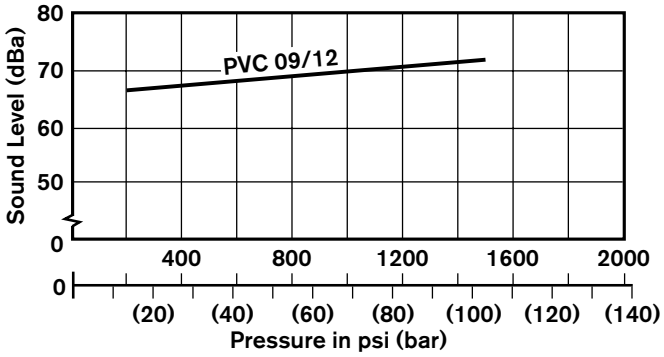
			Pump Size	09	09	12
			Pressure Code	G	C	E
Pressure Adjustment	Pressure change/turn	psi (bar)		260 (17.9)	200 (13.7)	235 (16.2)
	Maximum torque	ft-lbs (kg-M)		6.8 (0.83)	4.0 (0.55)	5.0 (0.89)
Volume Adjustment	Flow change/turn	gpm (lpm)		4.6 (17.4)		
	Approx. min. flow adj.	gpm (lpm)		1.25 (4.7)		
	Maximum torque	ft-lbs (kg-M)		2.5 (0.34)	2.5 (0.34)	1.0 (0.14)

Caution: Turning the maximum volume adjustment in too far can force the cam ring over-center.

Overall efficiency (1750 rpm at Full Displacement)



Typical sound level @ 1750 rpm



Typical performance specifications

		Pump size	09	12
Volumetric displacement (See note 1)		cu. in/rev. (ml/rev.)	1.2 (19.7)	1.4 (23.1)
Pump delivery at 1750 rpm (See note 1)	91.5 psi (6.3 bar)	gpm (lpm)	9 (34)	11 (41)
	Rated pressue	gpm (lpm)	8 (30.3)	10 (38)
Compensated pressure ranges (See note 2)	Rated	psi (bar)	1500 (103)	1000 (69)
	Min.	psi (bar)	200 (14)	300 (20)
Operating speeds (See note 3)		Min. rpm	800	800
		Rated rpm	1750	1750
		Max. rpm	3600	1800
Power input @rated flow & pressure (1750 rpm)		hp (kw)	11 (8.2)	8 (5.9)
Inlet pressure	Max	psi (bar)	20 (1.4)	10 (0.7)
	Min. *S.G. < 1	in. hg. (bar)	7 (–0.25)	
	Min. *S.G. > 1	in. hg. (bar)	5 (–0.17)	
Inlet fluid velocity	Max	ft/sec (m/sec)	5 (1.5)	
Nominal case drain flow	Max. pressure	cipm (mlpm)	37 (600)	
	Min. pressure	cipm (mlpm)	24 (390)	
Maximum case pressure		psi (bar)	10 (0.7)	
Weight		lbs (kg)	20 (9)	

* Specific Gravity

NOTES:

1. Volumetric displacement is measured displacement at 91.5 psi (6.3 bar) and rated rpm. Volumetric displacement varies with both pressure and rpm. Flow rates at any rpm other than rated rpm may be approximated as follows:

   $Q_2 = Q_1$ (N-142)/1667 where Q_1 = Flow (gpm) at rated rpm at 91.5 psi
   Q_2 = Flow (gpm) at N rpm
   N = rpm at which Q_2 is to be determined

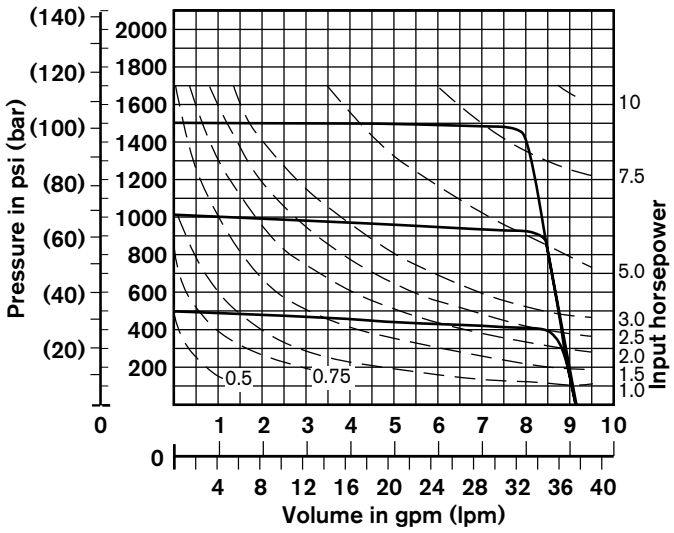
2. For specific pressure compensation ranges, please see the information on page 10.

3. **09** … Maximum rpm at full displacement – 2100 rpm. For higher rpm's up to 3600 rpm, pump displacement must be reduced to limit flow to 9.5 gpm (36 lpm) maximum.

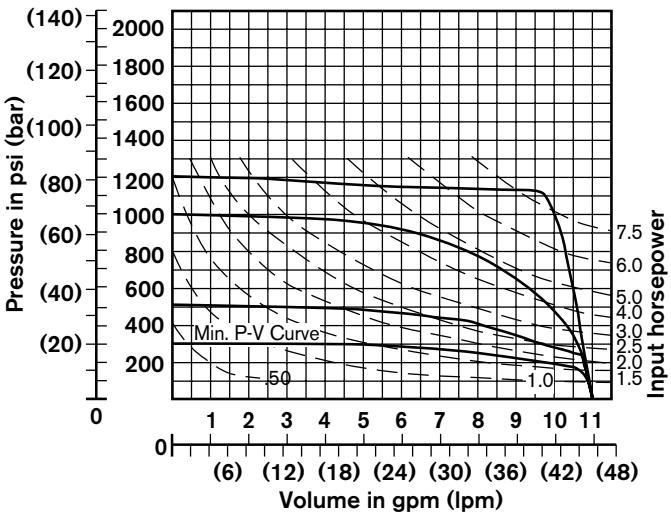
   12 … Maximum rpm at full displacement – 1800 rpm. For higher rpm's up to 3600 rpm, pump displacement must be reduced to limit flow to 9.5 gpm (36 lpm) maximum.

Performance curve

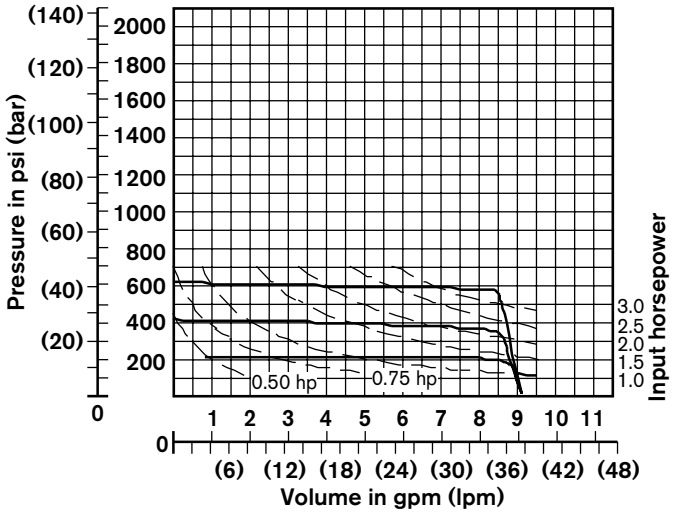
09G (1750 rpm)



12E (1750 rpm)



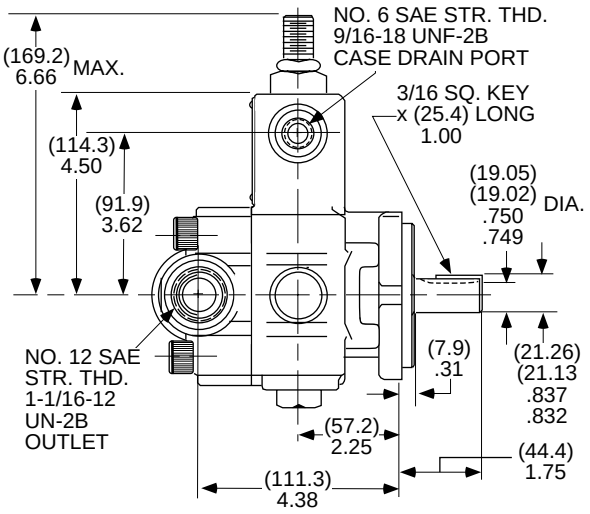
09C (1750 rpm)

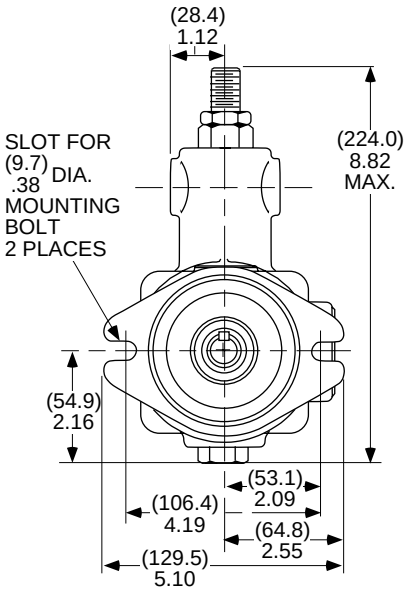


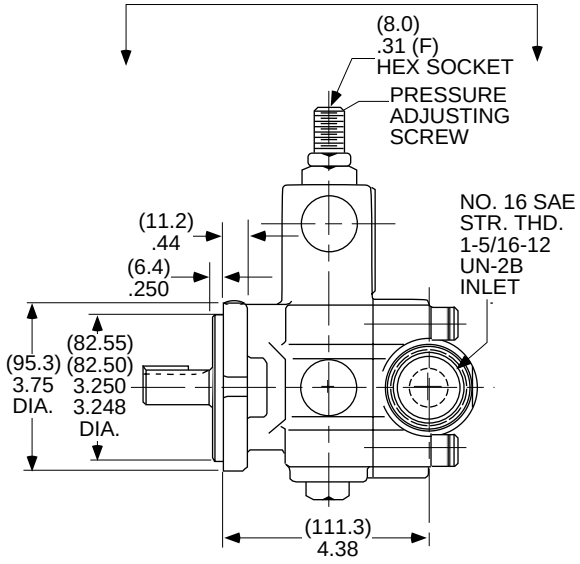
Note: Typical performance curves based on ISO VG46 oil at 120°F (49°C). Above 400 SUS, add 2% hp/100 SUS.

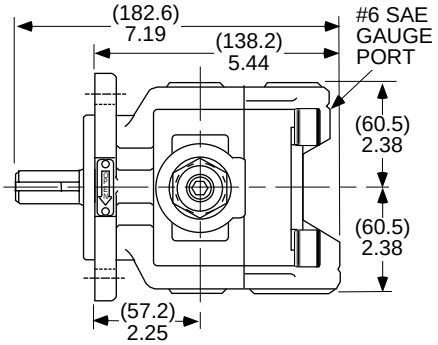
Deadhead horsepower is read from curves @ 0 gpm flow and pressure compensator setting psi.

Pump dimensions: dimensions shown in (millimeters) inches







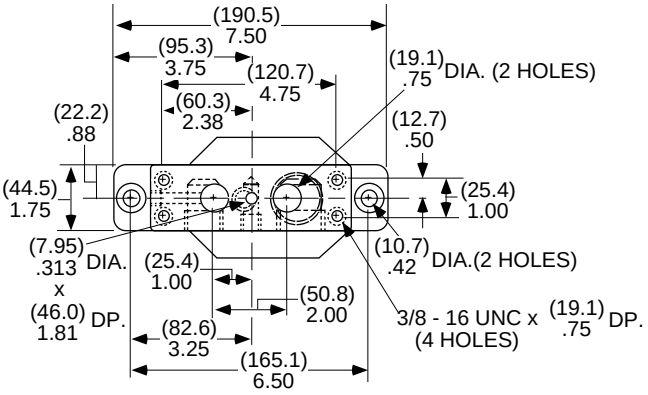


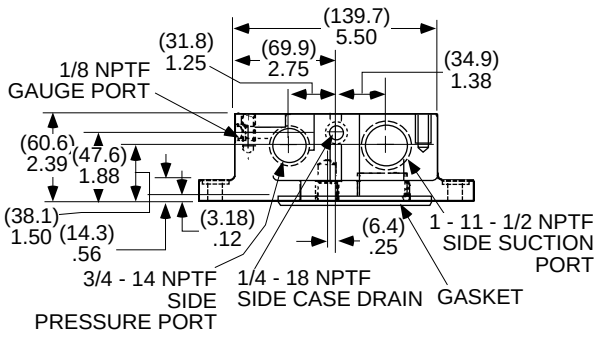
Ordering information

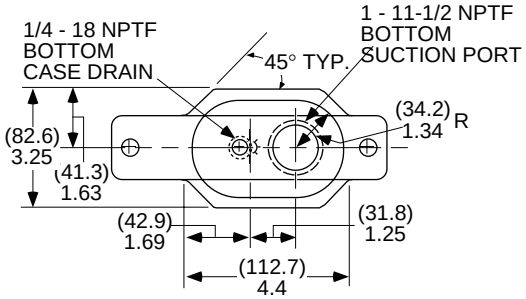
PVC	P	S		F	09		R	M	

- Standard pressure compensation = **P**
- Pump supplied with mechanical stroke limiter = **S**
- Flange mounted = **C**
- Subplate mounted = **S**
- Viton seals = **F**
- **09** = 1.2 cid
- **12** = 1.4 cid
- **C** = 600 psi (42 bar)
- **E** = 1000 psi (69 bar)
- **G** = 1500 psi (103 bar)
- **R** = RH rotation only
- **M** = Standard keyed shaft
- Design series Assigned at factory

PVC series subplate for PVC PSSF pump: dimensions shown in (millimeters) inches







Subplate ordering information

Part numer	Description
R978715447	Subplate PVC PSSF pump

Includes gasket and plugs for ports

Service parts information

Part number	Description
R978715448	Seal kit PVC PSCF
R878715450	Seal kit PVC PSSF
R978715451	Repair kit PVC PSCF 09GRM
R978715452	Repair kit PVC PSCF 12ERM
R978715453	Repair kit PVC PSSF 09ERM
R978014567	Seal plate for subplate mounting

Released options

Part number	Description	Pressure Compensation Range
R978715439	PVC PSCF 09GRM -01	500–1500 psi
R878715440	PVC PSCF 12ERM -01	300–1000 psi
R978715441	PVC PSSF 09ERM -01	400–1000 psi
R978715557	PVC PSCF 09CRM-01	200–600 psi

Notes

Notes

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