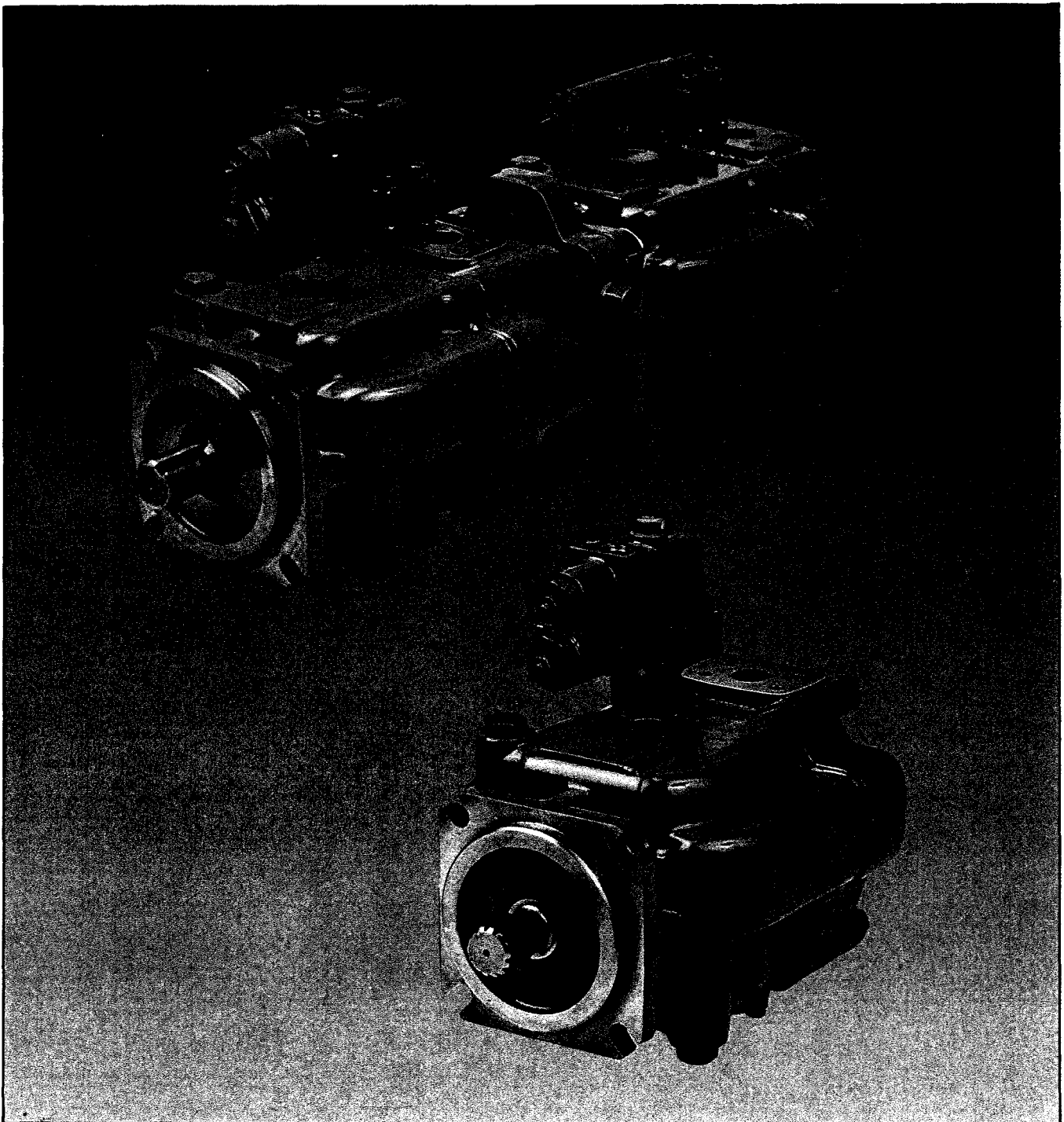


**VICKERS**

## **PVH piston pumps**

**A new line of high flow, high performance  
pumps for industrial and mobile applications**

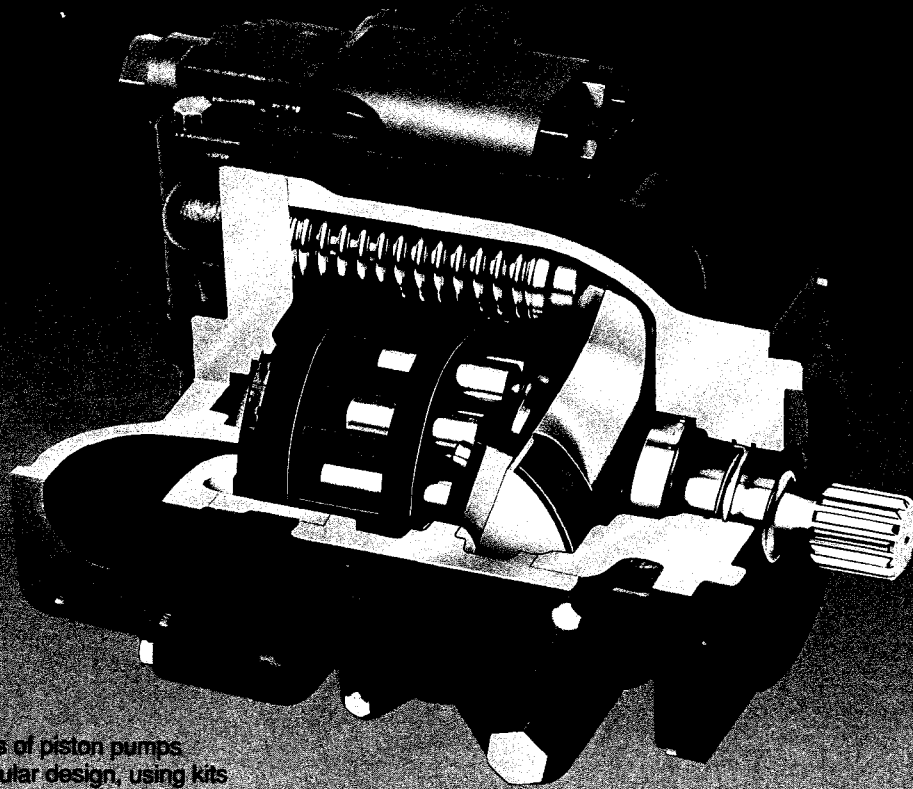


# Specify Vickers pumps for selection, versatility and dependability

- Vickers PVH piston pumps are available in an impressive combination of sizes and configurations.

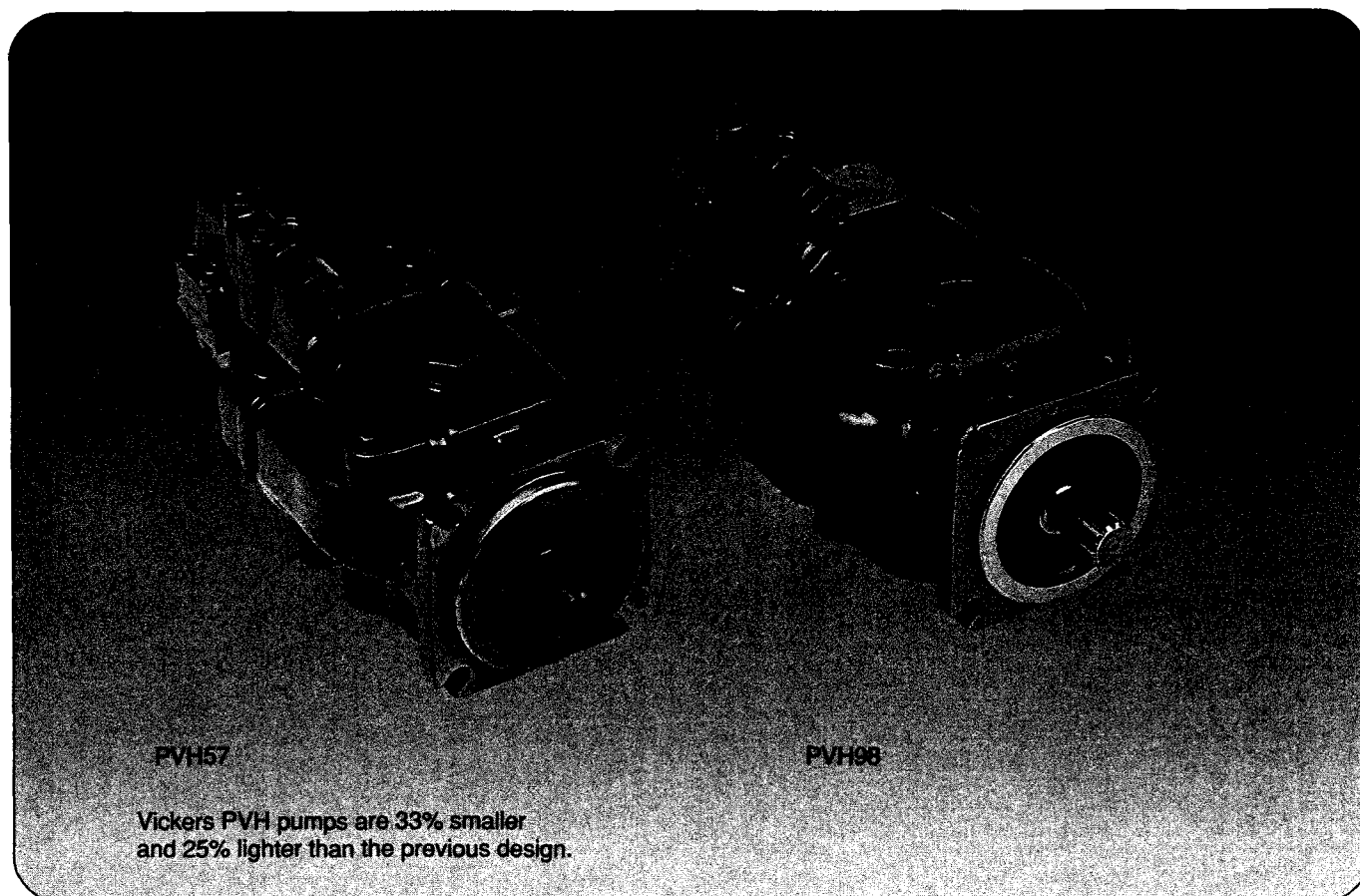
- PVH pumps deliver the controllability and reliability required in machine tool, plastics, construction, earth-moving and other energy-conscious applications.

- High performance polymer-based yoke bearing maintains excellent wear resistance and a low coefficient of friction throughout the life of the pump.



The PVH series of piston pumps features a modular design, using kits to simplify servicing.

PVH pumps are available in four sizes to meet your application requirements



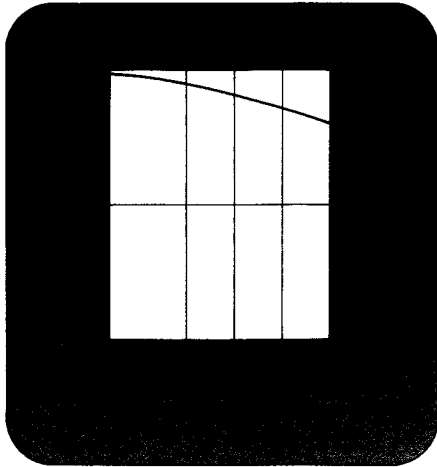
	PVH57	PVH74	PVH98	PVH131
Geometric displacement (max.) cm <sup>3</sup> /r (in <sup>3</sup> /r)	57,4 (3.5)	73,7 (4.5)	98,3 (6.0)	131,1 (8.0)
Maximum pressure* bar (psi)	275 (4000)	275 (4000)	275 (4000)	275 (4000)
Delivery at 250 bar (3625 psi) at 2000 r/min in l/min (US gpm)	105 (28)	136 (36)	181 (48)	241 (64)

\*In load sensing systems

# PVH piston pumps offer an impressive combination of features and benefits

## 1. High efficiency

The PVH series of pumps performs at high speeds and high pressures with a typical volumetric efficiency of at least 95%.



## 2. Energy savings

In addition to the high volumetric efficiency, PVH pumps feature three energy efficient control options. The pressure compensator control assures the pump provides just the flow demanded. This control eliminates the wasted power of flow pumped over a relief valve as in fixed pump systems.

The load sensing control matches both flow and pressure to the load requirement, resulting in even greater efficiency. The torque limiter control allows maximum performance to be obtained from the prime mover by limiting pump input torque to a preset value.



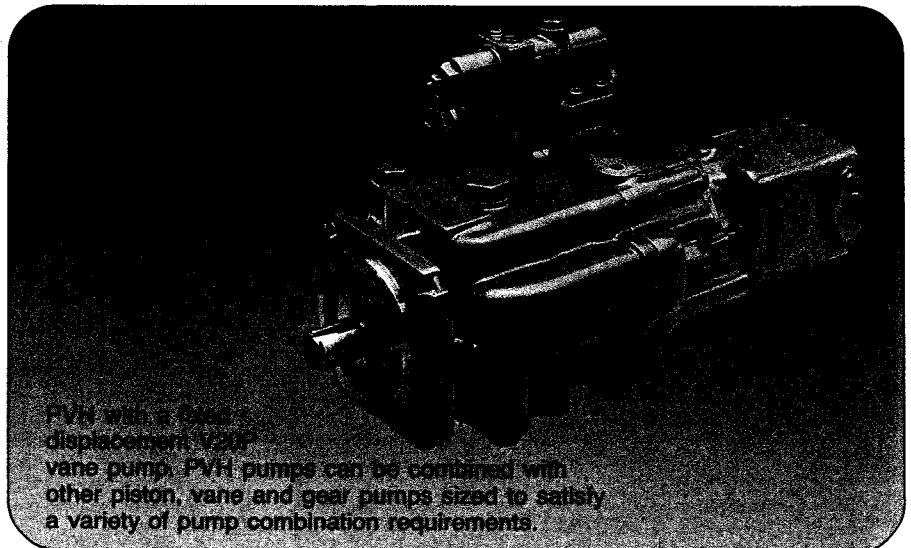
## 3. Improved control

With an inherent low coefficient of friction in the saddle bearing design, hysteresis in the pump controls is minimized.

## 4. Application flexibility

Vickers PVH pumps are available in single, tandem or through-drive configurations. All with full power available from

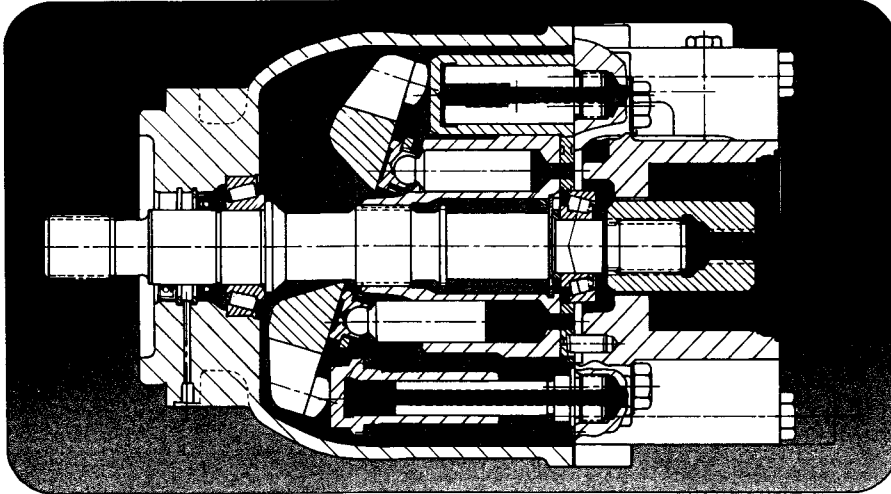
each pump. Through-drive models, available for direct mounting to a second pump, provide even more flexibility.



## 5. Low maintenance design

PVH pumps feature a simplified design coupled with heavy-duty construction for impressive reliability. The

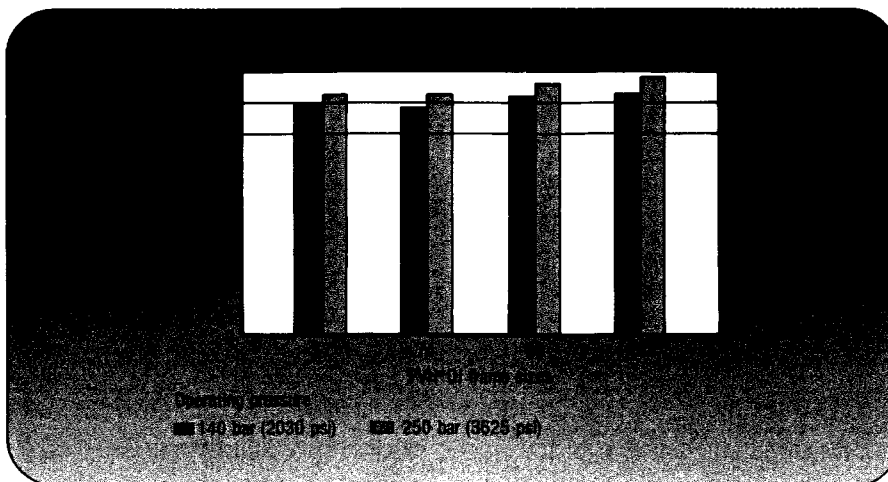
rotating group design has demonstrated outstanding reliability in tens of thousands of pumps now in use.



## 6. Low noise levels

The 'quiet' PVH\*QI series offers the low sound levels required in many industrial applications. Sound level

tests on the PVH57QI have shown a level of just 70 dB(A) at 1500 r/min, maximum flow.



## 7. Higher productivity

- Design simplicity reduces the potential for failure and improves overall integrity.
- Pump components are sized for maximum uptime, ruggedness and service life.

## 8. Smaller overall size

With their new saddle yoke design, PVH pumps are 33% smaller and 25% lighter than the pintle yoke designed pumps they replace. This makes installation easier and improves accessibility.

## 9. Complete serviceability

Modular kits which replace the rotating group, seals, valve plate and controls help simplify servicing.

## 10. Lower inventory costs

Flange adapters on PVH through-drive pumps allow conversion among SAE 'A', 'B', and 'C' rear mountings. The basic through-drive version has an SAE 'A' rear pad. With just one through-drive pump and the flange adapter kits, all three through-drive combinations are possible. Compensator kits also allow conversion between pressure compensated and load sensing pumps.

# Contents

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## 1. Introduction

The PVH, high flow, high performance pumps are a new family of variable displacement, inline piston units which incorporate the proven design, quality manufacturing techniques and operating features of other Vickers piston pumps, but in a smaller, lighter package.

The pump features a polymer-based yoke bearing. This new bearing material maintains excellent wear resistance, and low coefficient of friction, over the life of the pump.

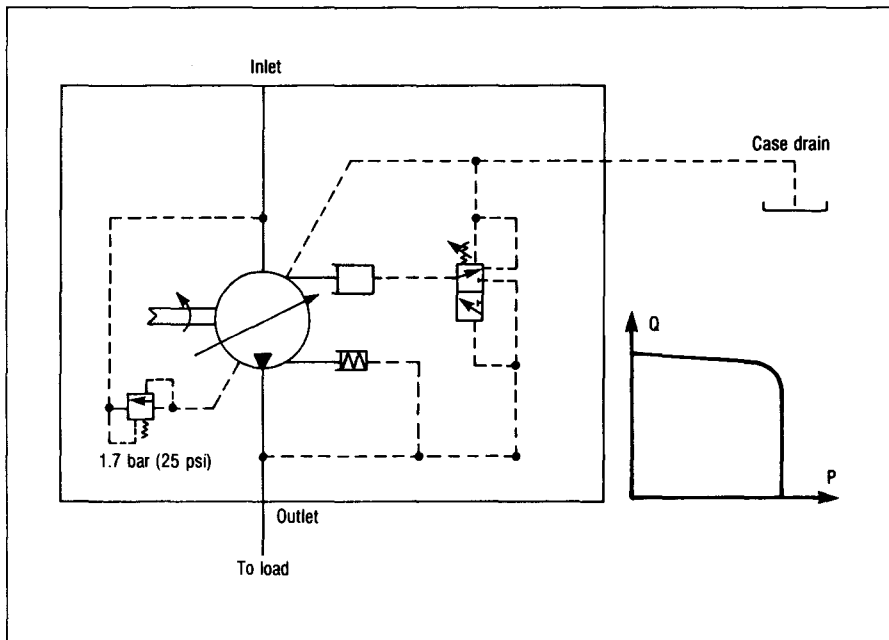
The PVH series has been specially designed to meet the 250 bar (3625 psi) continuous duty performance requirements of new generation equipment designs.

These are efficient, reliable pumps, with a selection of optional controls for maximum operational flexibility. Designed specifically for strenuous application, they provide the productivity gains and controllability improvements desired in earthmoving, construction, machine tool, plastics, and all other energy-conscious markets. As with all Vickers products, these pumps have been fully laboratory tested and field proven.

## 2. Functional symbols

### Pump with C or CM pressure compensator control

This pump will provide a continuously modulated flow to meet changing load demands at a pre-adjusted compensator pressure. At pressures below the compensator setting, the pump will operate at maximum displacement. The compensator is available in two pressure ranges. The "C" spring has an adjustment range of 70-250 bar (1015-3625 psi). The "CM" spring has an adjustment range of 20-130 bar (290-1885 psi).



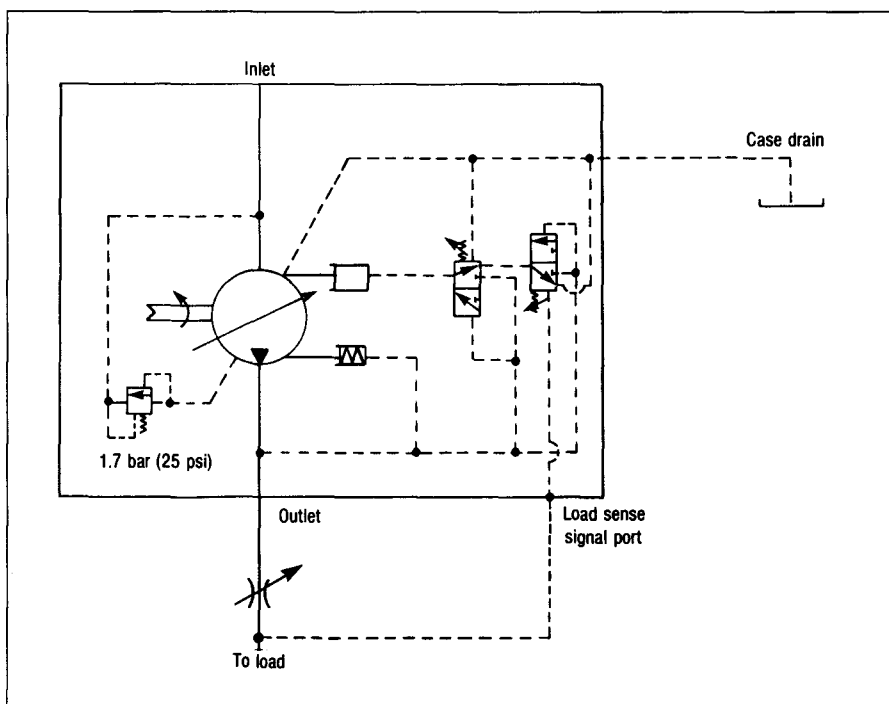
### Pump with C(M)(\*\*)/V load sensing and pressure compensator control

This pump will provide power matching of pump output to system load demand, maximizing efficiency and improving load metering characteristics of any directional control valve installed between the pump and the load.

The compensator simultaneously senses pump outlet and load pressures separately and modulates pump displacement in proportion to the differential pressure. Typically, the differential pressure is that between the pressure inlet and service port of a proportionally controlled directional valve, or a load sensing directional control valve.

It also functions in an energy-saving stand-by mode when the system is not demanding power. To achieve the low pressure, no flow, stand-by mode, the load sense signal line must be drained to the tank by external valving.

The standard load sense differential pressure setting is 20 bar (290 psi). The adjustment range is 17-30 bar (247-435 psi). In addition, the pump displacement is destroyed if load pressure reaches the setting of the pressure limiter.



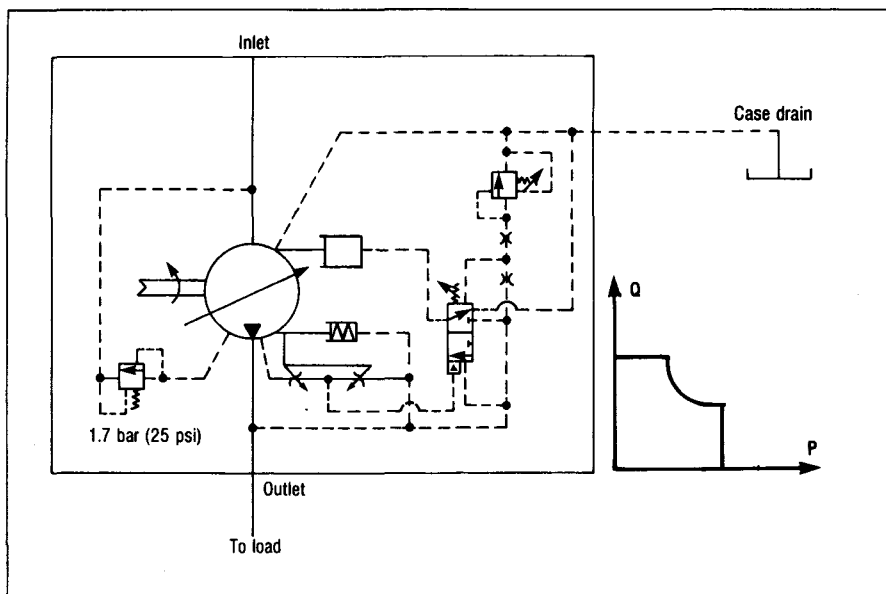


### Pump with C(\*\*)T pressure and torque limiter control

This pump senses pressure and flow and starts destroying the pump at a predetermined input torque level. The rate of flow reduction is normally tailored to follow the maximum power capability curve of the prime mover, to obtain maximum performance. Input torque is limited to a preset value, while the pressure compensator limits system pressure.

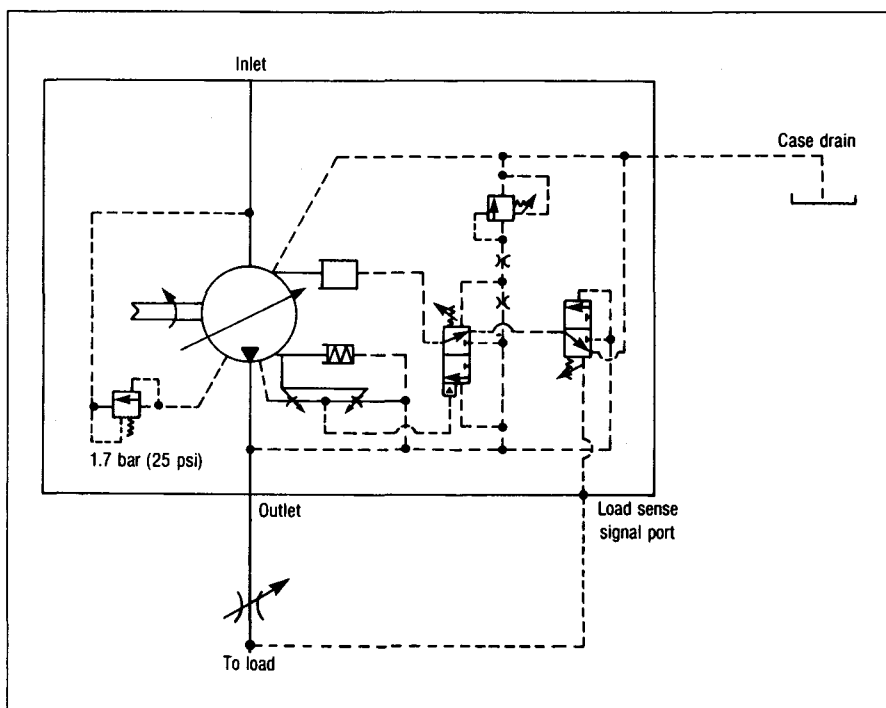
When the input speed remains constant, the torque limiter acts as an input power limiter. At low load levels, the control permits high pump displacement and high load speeds. Under heavy loads speed is reduced, preventing stalling of the prime mover.

The control is set at the factory, as indicated by the model code. The torque setting selected must be 30-80% of the actual pressure compensator setting.



### Pump with C(\*\*)VT pressure and torque limiting plus load sensing control

Essentially, this pump provides the pressure and load sensing control of the C(\*\*)V and the pressure and torque limiting control of the C(\*\*)T. Please refer to the two previous descriptions for details.



### 3. Model codes

#### Industrial pumps

PVH \*\*\* QI \* - \* \* \* - \* \* S - 1 \* - C(M) \*\* \*\* \*\*) - \*\*

1
2
3
4
5
6
7
8
9
10
11
12
13

#### Mobile pumps

PVH \*\*\* C - \* \* \* - \*\* \* - 1\* - C (\*\* \*\* \*\*) - \*\*

1
2
3
4
5
6
7
8
9
10
11
12
13

#### 1 Maximum geometric displacement

57 = 57.4 cm<sup>3</sup>/r (3.5 in<sup>3</sup>/r)  
 74 = 73.7 cm<sup>3</sup>/r (4.5 in<sup>3</sup>/r)  
 98 = 98.3 cm<sup>3</sup>/r (6.0 in<sup>3</sup>/r)  
 131 = 131.1 cm<sup>3</sup>/r (8.00 in<sup>3</sup>/r)

#### 2 Mounting flange, prime mover end

C = SAE 'C' 4-bolt type  
 (SAE J744-127-4)  
 M = ISO 3019/2 size 125B4HW.  
 (Option for PVH57QI  
 and PVH74QI pumps only.  
 Available 3rd quarter 1990.)

#### 3 Shaft rotation, viewed at prime mover end

R = Right hand, clockwise  
 (Standard on QI models)  
 L = Left hand, counter clockwise  
 (Optional on QI models)

#### 4 Configuration

Blank = Non-through-drive (single pump)  
 A = Through-drive pump with SAE 'A' 2-bolt rear flange mounting (SAE J744-82-2)  
 B = Through-drive pump with SAE 'B' 2- and 4-bolt rear flange mountings † (SAE J744-101-2/4)  
 C = Through-drive pump with SAE 'C' 2- and 4-bolt rear flange mountings † (SAE J744-127-2/4)

#### 5 Main ports

F = SAE 4-bolt flange pads (standard)  
 M = SAE 4-bolt pads with metric mounting bolt tappings (optional)

#### 6 Shaft-end type, at prime mover end

Code	Shaft type	Description	Model	Configuration Single	Through- drive
N	VDMA	Short Straight keyed	PVH57QI PVH74QI	●	
1	SAE "C" (J744-32-1)	Straight, keyed	PVH57 PVH74 PVH98	● ● ●	●
2	SAE "C" (J744-32-4)	Splined 14 tooth 12/24 D.P.	PVH57 PVH74 PVH98	● ● ●	●
3	SAE "CC" (J744-38-4)	Splined 17 tooth 12/24 D.P.	PVH74 PVH98 PVH131		● ● ●
13	SAE "CC" (J744-38-1)	Straight, keyed	PVH74 PVH98 PVH131		● ●
16	SAE "D" (J744-44-1)	Straight, keyed	PVH131	●	●

#### 7 Shaft seal, prime mover end

S = Single, one-way (standard)  
 D = Double, two-way (optional mobile version)

#### 8 Pump design number †† 10 series

#### 9 Pressure compensator adjustment range

C = 70-250 bar (1015-3625 psi) (standard)  
 CM = 20-130 bar (290-1885 psi) (optional QI version)

#### 10 Pressure compensator factory setting in tens of bar.

25 = Normal factory setting of 250 bar for "C" models.  
 7 = Normal factory setting of 70 bar for "CM" models.

### 11 Additional control functions

- Blank = No additional controls  
V = Load sensing, 20 bar differential pressure setting  
T = Torque limiter (Available 2nd quarter 1991.)  
VT = Load sensing and torque limiter (Available 2nd quarter 1991.)

### 12 Torque limiter factory setting

- \*\* = Customer desired torque limiter setting specified in ten bar (145 psi) increments, e.g. 8 = 80 bar (1160 psi) 18 = 180 bar (2610 psi)  
The torque setting range is from 30-80% of the specified compensator setting.

### 13 Control design number†

30 series for type C, CM or C\*\*V controls  
10 series for type C(\*\*)T or C(\*\*)VT controls

† Built from a pump with an SAE "A" rear pad to which a suitable flange adapter is bolted. For the best price, availability and flexibility, order a PVH SAE 'A' through-drive pump and either an SAE 'B' or 'C' adaptor kit separately (see Through-drive data on page 17).

†† Subject to change. Installation dimensions unaltered for design numbers \*0 to \*9 inclusive.

## Preferred model selection

The standard codes listed represent those models which are in regular volume production and are therefore most readily available at competitive prices. Other models constructed from the model code may be subject to the quantity requested. Please check price and availability before ordering.

### PVH57

Right hand rotation  
PVH57C-RF-IS-10-C25-30  
PVH57C-RF-IS-10-C25V-30  
PVH57C-RF-2S-10-C25V-30  
PVH57QIC-RF-IS-10-C25-30  
PVH57QIC-RF-IS-10-C25V-30

Right hand rotation (through-drive)  
PVH57C-RAF-IS-10-C25-30  
PVH57C-RAF-2S-10-C25V-30  
PVH57QIC-RAF-IS-10-C25-30  
PVH57QIC-RAF-IS-10-C25V-30

Left hand rotation  
PVH57C-LF-IS-10-C25-30  
PVH57C-LF-2S-10-C25-30  
PVH57C-LF-IS-10-C25V-30  
PVH57C-LF-2S-10-C25V-30

Left hand rotation (through-drive)  
PVH57C-LAF-2S-10-C25-30  
PVH57C-LAF-2S-10-C25V-30

### PVH74

Right hand rotation  
PVH74C-RF-IS-10-C25-30  
PVH74C-RF-IS-10-C25V-30  
PVH74C-RF-2S-10-C25V-30  
PVH74QIC-RF-IS-10-C25-30  
PVH74QIC-RF-IS-10-C25V-30

Right hand rotation (through-drive)  
PVH74C-RAF-3S-10-C25-30  
PVH74QIC-RAF-13S-10-C25-30  
PVH74C-RAF-3S-10-C25V-30  
PVH74QIC-RAF-13S-10-C25V-30

Left hand rotation  
PVH74C-LF-IS-10-C25-30  
PVH74C-LF-IS-10-C25V-30  
PVH74C-LF-2S-10-C25-30  
PVH74C-LF-2S-10-C25V-30

Left hand rotation (through-drive)  
PVH74C-LAF-3S-10-C25-30  
PVH74C-LAF-3S-10-C25V-30  
PVH74C-LAF-13S-10-C25-30  
PVH74C-LAF-13S-10-C25V-30

### PVH98

Right hand rotation  
PVH98C-RF-IS-10-C25-30  
PVH98C-RF-IS-10-C25V-30  
PVH98C-RF-2S-10-C25V-30  
PVH98QIC-RF-IS-10-C25-30  
PVH98QIC-RF-IS-10-C25V-30

Right hand rotation (through-drive)  
PVH98C-RAF-3S-10-C25-30  
PVH98C-RAF-3S-10-C25V-30  
PVH98QIC-RAF-13S-10-C25-30  
PVH98QIC-RAF-13S-10-C25V-30

Left hand rotation  
PVH98C-LF-IS-10-C25-30  
PVH98C-LF-IS-10-C25V-30  
PVH98C-LF-2S-10-C25-30  
PVH98C-LF-2S-10-C25V-30

Left hand rotation (through-drive)  
PVH98C-LAF-3S-10-C25-30  
PVH98C-LAF-3S-10-C25V-30

### PVH131

Right hand rotation  
PVH131C-RF-3S-10-C25-30  
PVH131C-RF-3S-10-C25V-30  
PVH131C-RF-13S-10-C25-30  
PVH131C-RF-13S-10-C25V-30  
PVH131QIC-RF-13S-10-C25-30  
PVH131QIC-RF-13S-10-C25V-30

Right hand rotation (through-drive)  
PVH131C-RAF-3S-10-C25-30  
PVH131C-RAF-3S-10-C25V-30  
PVH131C-RAF-16S-10-C25-30  
PVH131QIC-RAF-16S-10-C25-30  
PVH131QIC-RAF-16S-10-C25V-30

Left hand rotation  
PVH131C-LF-3S-10-C25-30  
PVH131C-LF-3S-10-C25V-30

PVH131C-LF-13S-10-C25-30  
PVH131C-LF-13S-10-C25V-30

Left hand rotation (through-drive)  
PVH131C-LAF-3S-10-C25-30  
PVH131C-LAF-3S-10-C25V-30

## 4. Operating data

Performance data is typical with SAEIOW anti-wear hydraulic oil at 50°C (122°F) and at zero pump inlet pressure except where otherwise indicated.

### Rated characteristics of PVH\*\*QI industrial pumps

Parameters	PVH57QI	PVH74QI	PVH98QI	PVH131QI
Geometric displacement, max. cm <sup>3</sup> /r (in <sup>3</sup> /r)	57.4 (3.5)	73.7 (4.5)	98.3 (6.0)	131.1 (8.0)
Rated pressure bar (psi)	250 (3625)†	250 (3625)†	250 (3625)†	250 (3625)†
Rated speeds in r/min at various inlet pressures				
127 mm Hg (5" Hg)	1500	1500	1500	1200
Zero pressure	1800	1800	1800	1500
0,48 bar (7 psi)	1800	1800	1800	1800
Typical effective flow in l/min (US gpm) at 250 bar (3625 psi)				
at 1500 r/min	82 (22)	104 (27)	140 (37)	186 (49)
at 1800 r/min	98 (26)	125 (33)	170 (45)	222 (59)

### Moment of inertia single pump rotating group

Model	Nm·sec <sup>2</sup>	(lb.in.sec <sup>2</sup> )
PVH57	0,0054	(0.0475)
PVH74	0,0078	(0.0692)
PVH98	0,0134	(0.1189)
PVH131	0,0210	(0.1862)

### Rated characteristics of PVH\*\*\*C mobile pumps

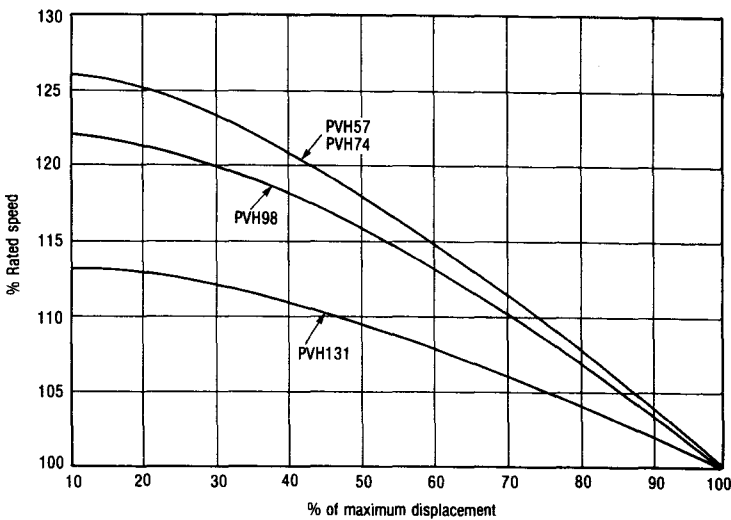
Parameters	PVH57	PVH74	PVH98	PVH131
Geometric displacement, max. cm <sup>3</sup> /r (in <sup>3</sup> /r)	57.4 (3.5)	73.7 (4.5)	98.3 (6.0)	131.1 (8.0)
Rated pressure bar (psi)	250 (3625)†	250 (3625)†	250 (3625)†	250 (3625)†
Rated speeds in r/min at various inlet pressures				
127 mm Hg (5" Hg)	2000	1850	1750	1650
Zero pressure	2400	2200	2100	2000
0,48 bar (7 psi)	3000	2750	2600	2500
Typical effective flow in l/min (US gpm) at 250 bar (3625 psi) and 2000 r/min	105 (28)	136 (36)	181 (48)	241 (64)

† In load sensing systems the compensator can be set at 275 bar (4000 psi).

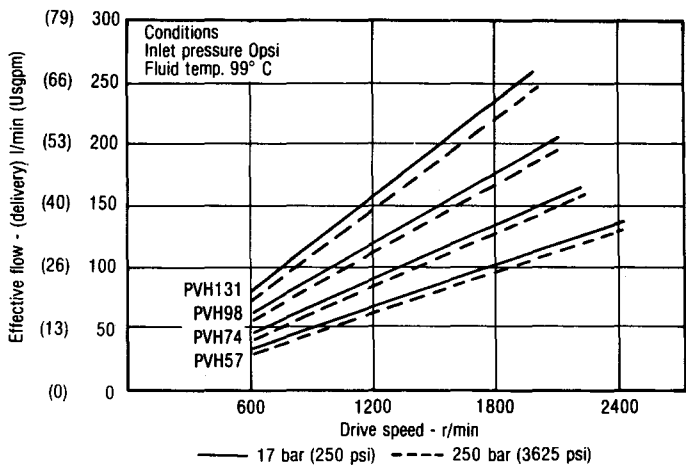
# Performance characteristics

Performance data is typical with SAE 10W anti-wear hydraulic oil at 50°C (120°F) and at zero pump inlet pressure, except where otherwise indicated.

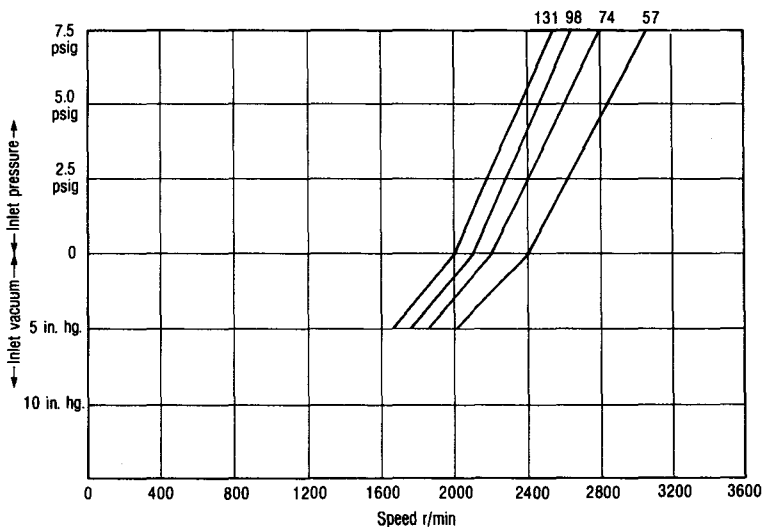
Rated speed at reduced displacement and zero inlet pressure



Effective flow at maximum torque



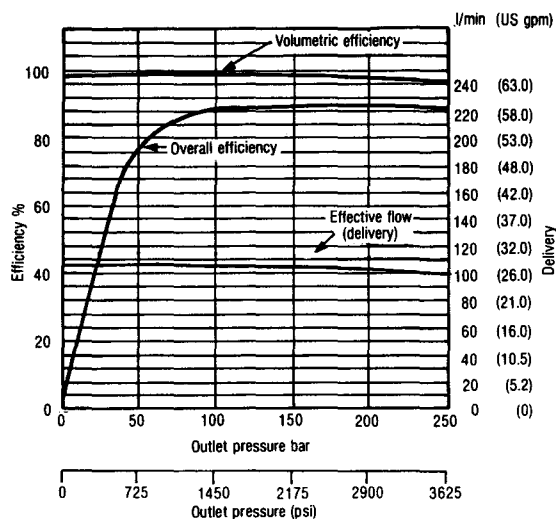
Inlet pressure/vacuum versus speed, non-QI models



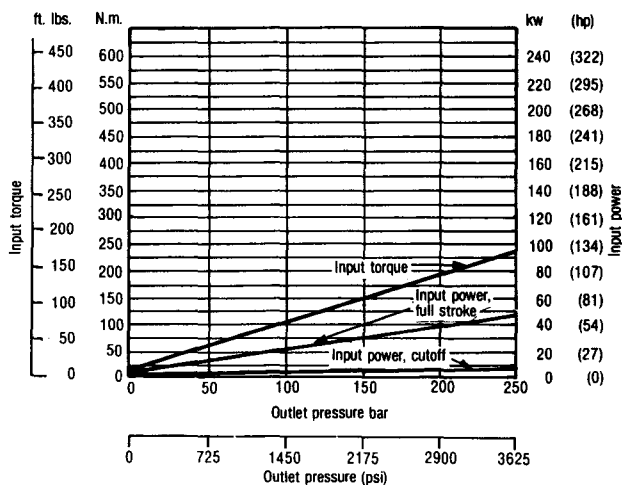
# Effective performance at stated speeds

## PVH 57

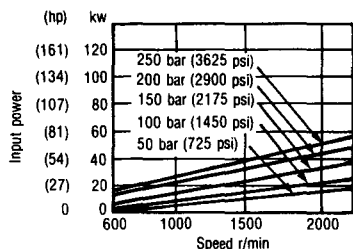
Delivery and efficiency versus outlet pressure at 1800 r/min



Input torque and power versus outlet pressure

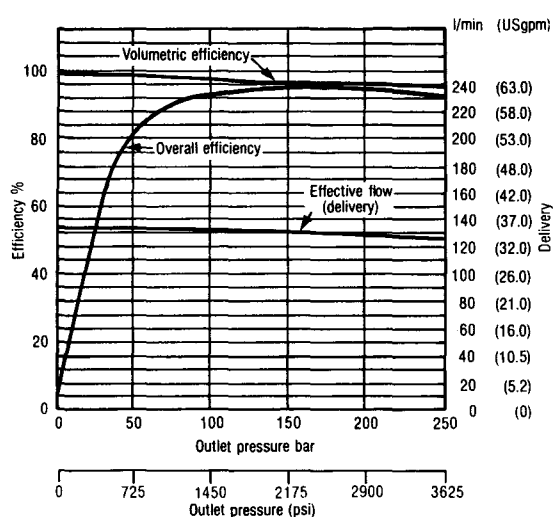


Input power versus speed

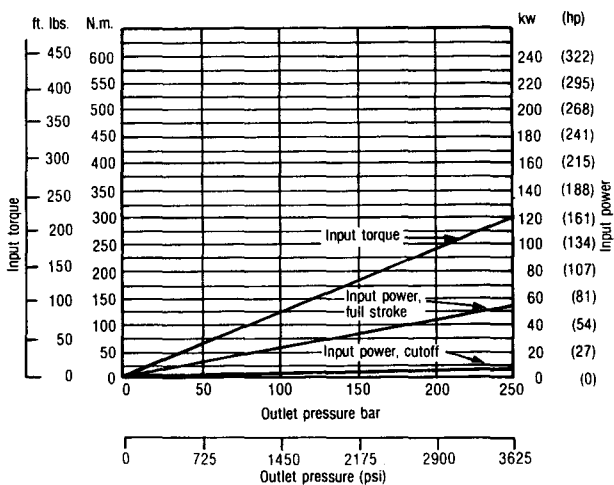


## PVH 74

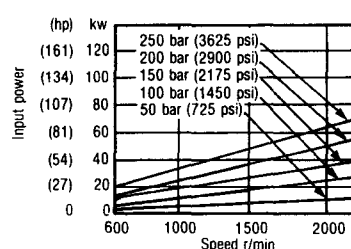
Delivery and efficiency versus outlet pressure at 1800 r/min



Input torque and power versus outlet pressure

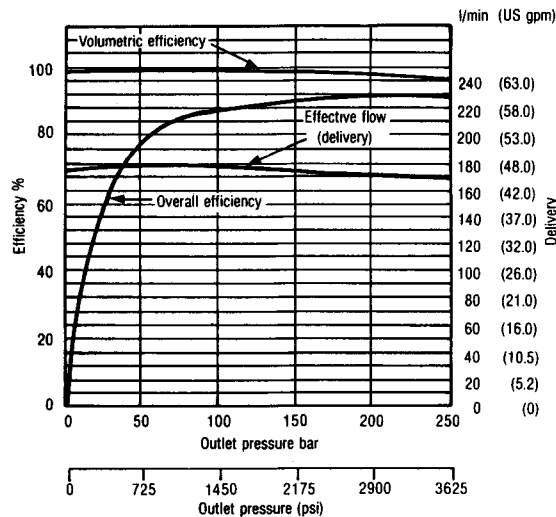


Input power versus speed

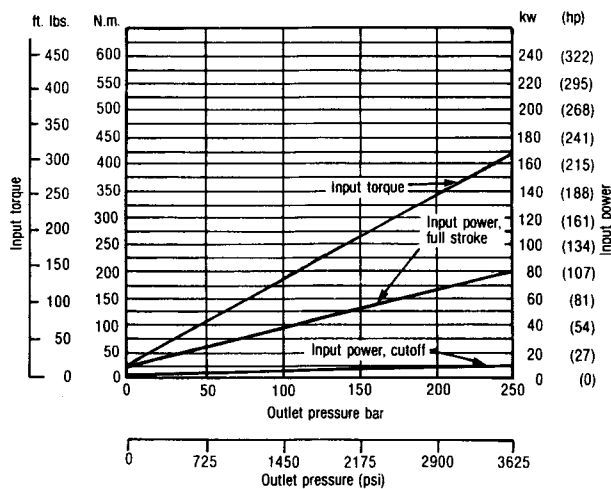


# Effective performance at stated speeds

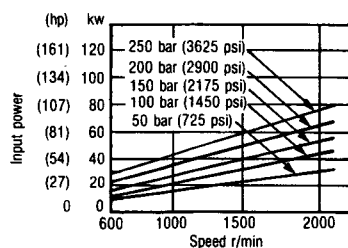
**PVH 98**  
Delivery and efficiency versus  
outlet pressure at 1800 r/min



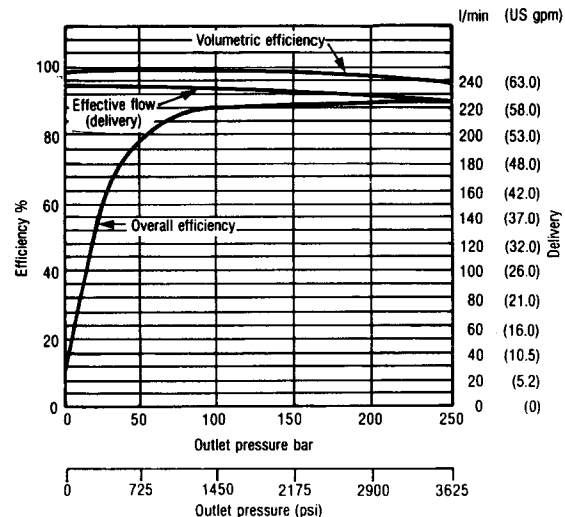
Input torque and power  
versus outlet pressure



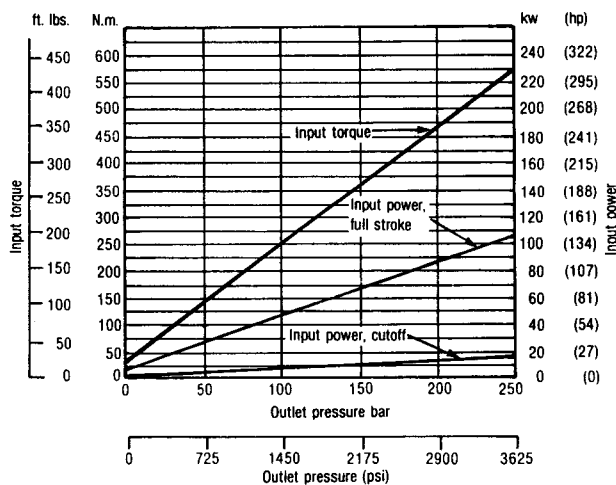
Input power  
versus speed



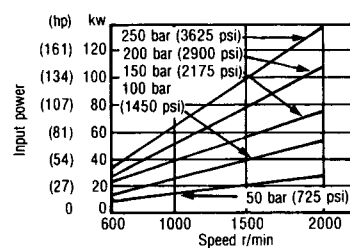
**PVH 131**  
Delivery and efficiency versus  
outlet pressure at 1800 r/min



Input torque and power  
versus outlet pressure



Input power  
versus speed



## Performance data

### PVH57 (QI), 74, 98, 131 sizes

### Sound levels

Vickers new PVH pumps are designed to provide the highest levels of system performance with noise levels within OSHA requirements. The standard models exhibit low sound levels across a wide range of operating speeds and pressures to accommodate the conditions necessary for high performance mobile vehicles. In addition, the quieter QI models provide even lower sound levels at typical in-plant conditions.

Sound is generated by a variety of factors associated with the system, machine and environment. For more information concerning the causes and nature of noise in machinery, and methods to reduce sound levels, refer to Vickers "More Sound Advice" bulletin 390.

## 5. PVH application data

### Hydraulic fluids and temperature ranges

Use antiwear hydraulic oil, or automotive type crankcase oil designations SC, SD, SE or SF per SAE J183 FEB80.

Select a viscosity grade that will allow optimum viscosity, between 40 cSt (180 SUS) and 16 cSt (80 SUS), to be achieved within the optimum performance envelope shown.

PVH pumps can be used with water glycol, polyol ester and high-water content fluids. Consult your Vickers representative for the pump ratings with these fluids.

Cold start capability at 5000 cSt.  
Max intermittent temp. 104°C (220°F).

For further information see Vickers data sheets B-920 or I-286-S for industrial applications or M2950-S for mobile applications.

## Response data

Model	Yoke response † (typical)	
	On stroke	Off stroke
PVH57-C	.100 sec	.015 sec
PVH57-CV	.080 sec	.014 sec
PVH74-C	.097 sec	.018 sec
PVH74-CV	.088 sec	.028 sec
PVH98-C	.134 sec	.019 sec
PVH98-CV	.118 sec	.029 sec
PVH131-C	.140 sec	.019 sec
PVH131-CV	.121 sec	.029 sec

† Based on 100,000 psi/sec pressure rise rate at rated speed and pressure.

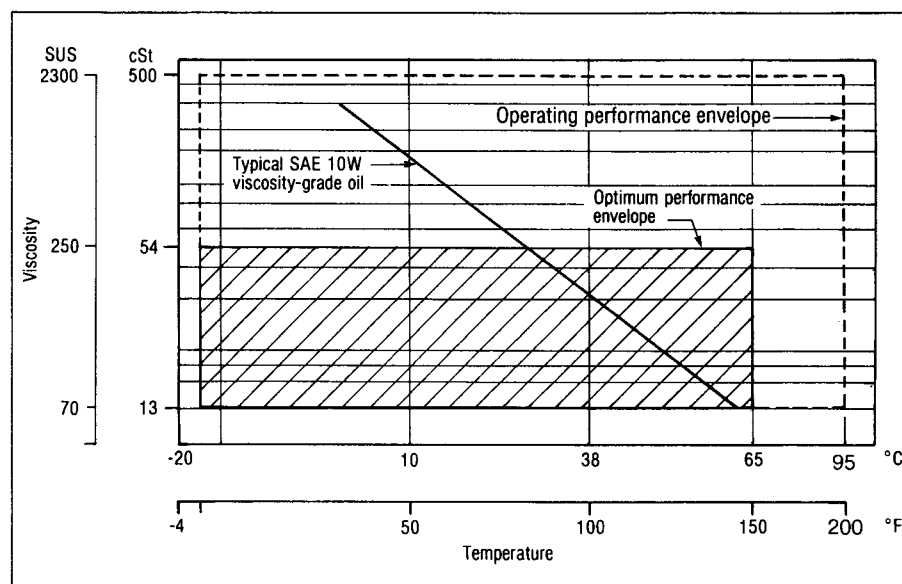
### Mobile version – sound level dB(a) DIN (NFPA) ††

Pressure bar (psi)	PVH57		PVH74		PVH98		PVH 131	
	1200 r/min	1800 r/min	1200 r/min	1800 r/min	1200 r/min	1800 r/min	1200 r/min	1800 r/min
70 (1015)	69 (71)	75 (76)	69 (71)	74 (76)	69 (71)	73 (75)	74 (76)	78 (82)
140 (2030)	74 (76)	76 (78)	74 (76)	76 (78)	71 (74)	76 (78)	79 (81)	85 (87)
210 (3045)	75 (77)	79 (81)	75 (77)	79 (81)	75 (77)	80 (82)	81 (88)	87 (89)
250 (3625)	75 (77)	79 (81)	75 (77)	79 (81)	76 (78)	82 (84)	81 (83)	88 (90)

### Industrial version – sound level dB(a) DIN (NFPA) ††

Pressure bar (psi)	PVH57QI		PVH74QI		PVH98QI		PVH131QI	
	1200 r/min	1800 r/min	1200 r/min	1800 r/min	1200 r/min	1800 r/min	1200 r/min	1800 r/min
70 (1015)	62 (64)	69 (71)	63 (65)	71 (73)	67 (69)	73 (75)	73 (75)	78 (80)
140 (2030)	64 (66)	71 (73)	67 (69)	73 (74)	68 (70)	74 (76)	75 (77)	82 (84)
210 (3025)	68 (70)	74 (76)	71 (73)	75 (77)	73 (75)	78 (80)	79 (80)	85 (87)
250 (3625)	69 (71)	76 (78)	71 (73)	76 (78)	75 (77)	80 (82)	80 (82)	87 (89)

†† DIN: Analytic semi-anechoic values per DIN 45635. NFPA: Recorded in a semi-anechoic chamber in accordance with NFPA Recommended Standard T3.9.70.12. All values shown are the higher of either maximum displacement or fully compensated conditions. **Due to the rounding of numbers during conversion, the difference between DIN and NFPA ratings may be one or two numbers; for example 69 (71) or 69 (72).**





## Filtration recommendations

For consistent, efficient performance, filtration must maintain fluid cleanliness to ISO 4406: 19/15 class or cleaner. This task is made easier by good system design, installation and maintenance practices as described in data sheets B-965 or I-500001.

## Drive data

Mounting attitude should be horizontal but consult your local sales engineer if a different arrangement is required.

Direction of shaft rotation, viewed at the prime mover end, must be as indicated in the model designation on the pump; see 3 in Model code section.

Drive arrangement should be by direct drive through a flexible coupling. Check pump installation drawing for concentricity and squareness tolerances.

Torque capability of shafts in single (non-through-drive) pumps is well in excess of that needed for operation at rated pressure and maximum displacement. Limitations for multiple pumps formed by PVH through-drive as front-end sections are specified in the chart on this page.

## 6. Through-drive data

Multiple pump arrangements can be formed by a PVH through-drive pump and any suitable pump (single or multiple) that can be installed on the SAE 'A', 'B', or 'C' rear-mounting option available for the through-drive pump.

It is important to check that maximum (PxV) values for individual pump sections, or complete pumps, occurring in a specific application will not exceed the limits tabled above, where:

$P_1, P_2, \text{ to } P_N$  = Maximum pressures occurring simultaneously in successive pump sections, starting with the through-drive pump.

$V_1, V_2, \text{ to } V_N$  = Corresponding geometric displacements in the respective sections.

## Maximum (PxV) in bar x cm<sup>3</sup>/r (psi x in<sup>3</sup>/r)

Through-drive pump Basic model	Input shaft Code	Type	Complete multiple pump †	Rear pump †
PVH57	1	SAE 'C' (J44-32-1) straight keyed	22.100 (19,555)	16.450 (14,555)
	2	SAE 'C' (J744-32-4) splined	31.450 (27,828)	16.450 (14,555)
PVH74	13	SAE 'CC' (J744-38-1) straight keyed	37.600 (32,270)	22.600 (19,997)
	3	SAE 'CC' (J744-38-4) splined	59.750 (52,870)	22.600 (19,997)
PVH98	13	SAE 'CC' (J744-38-1) straight keyed	37.600 (32,270)	31.450 (27,828)
	3	SAE 'CC' (J744-38-4) splined	59.750 (52,870)	31.450 (27,828)
PVH131	16	SAE 'D' (J744-44-1) straight keyed	59.000 (52,205)	31.450 (27,828)
	3	SAE 'CC' (J744-38-4) splined	59.750 (52,870)	31.450 (27,828)

† To assure the developed through-drive loads are within the PVH pump limitations, the calculated 'PV' values must be less than the amounts shown above.  $P_1, P_2, P_N$  = maximum pressure of section in bar, referenced from the shaft end.  $V_1, V_2, V_N$  = maximum displacement in cm<sup>3</sup>/r, referenced from the shaft end.  $(P_1 \times V_1) + (P_2 \times V_2) + (P_N \times V_N) = P_N$  in bar cm<sup>3</sup>/r. Example: The PV value for a PVH98/PVH74 pump combination, if the PVH98 is operating at 200 bar (2900 psi) and the PVH74 is at 250 bar (3625 psi) is calculated as follows – metric only – Total PV =  $(200 \times 98) + (250 \times 74) = 38,100$  bar cm<sup>3</sup>/r. The PV for the complete assembly is less than 59.750, but is greater than 37.600. Rear PV =  $(250 \times 74) = 18,500$  bar cm<sup>3</sup>/r. The PV for rear pumps is less than 31.450. This application is acceptable for number 3 splined shaft, but not for number 13 keyed shaft.

## PVH through-drive flange kits and coupling part numbers

Model	SAE (J744) mounting flange	Mounting flange adapter kit number †† Metric threads	Inch threads	Shaft coupling part number ▲
PVH57	A (J744-82-2)	None required	None required	526682
	B (J744-101-2/4)	876394	876390	526694
	C (J744-127-2/4)	876392	876389	526696
PVH74	A (J744-82-2)	None required	None required	864460
	B (J744-101-2/4)	876394	876390	864457
	C (J744-127-2/4)	876392	876389	864458
PVH98	A (J744-82-2)	None required	None required	877039
	B (J744-101-2/4)	876394	876390	877040
	C (J744-127-2/4)	876392	876389	877045
PVH131	A (J744-82-2)	None required	None required	877039
	B (J744-101-2/4)	876394	876390	877040
	C (J744-127-2/4)	876392	876389	877045
	CC (J744-127-2/4)	876392	876389	877046

†† The basic PVH through-drive pump has an SAE 'A' pad on the rear. An SAE 'B' or 'C' pad rear mounting requires flange adapters. The required adapters can be provided if they have been specified in the pump model code. The best combination of price, availability and flexibility is achieved by ordering a PVH SAE 'A' through-drive model and the applicable PVH mounting flange adapter separately. For example, a PVH74C-R-CF-3S-IO-C-30 may also be ordered as a PVH74C-R-AF-3S-IO-30 and an 876389 flange adapter.

▲ Through-drive shaft couplings must be ordered separately to drive the second pump.

## Typical rear pump options for PVH through-drive assemblies

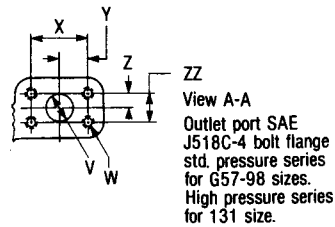
Mounting	Piston pump series	Shaft code	Vane pump series	Shaft code	Gear pump series	Shaft code
SAE A	PVB5/6	S124	V10 V20	11 62	G5 G5-5	15 25
SAE B	PVPQ10/15 PVE19	S124 9	25V V2020	11 11	G20 G2020	12 12
SAE C	PVH57 PVH74 PVH98	2 2 2	35V  352*V	11  11	G30 G3020 G3030	12 12 12
SAE CC	PVH131	3				

NOTE: The above pumps are typical examples of rear pumps for the PVH series through-drives. The through-drive torque limitation (PV values) identified in the chart on the previous page must not be exceeded when applying these multiple pump systems.

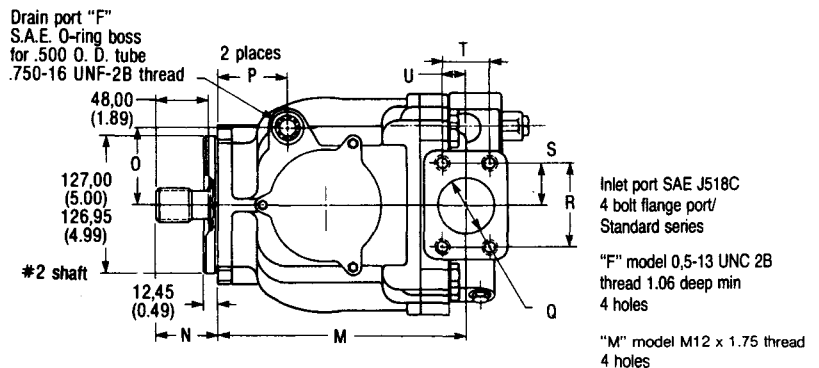
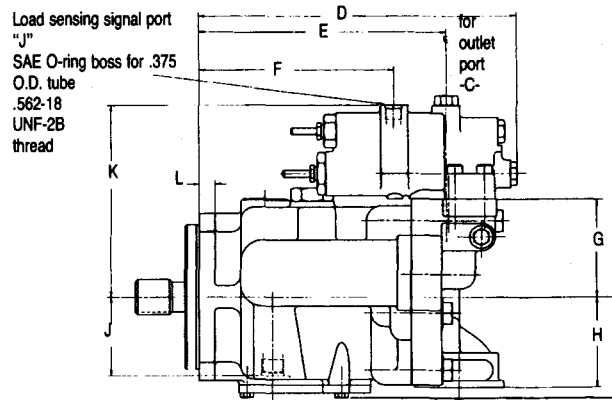
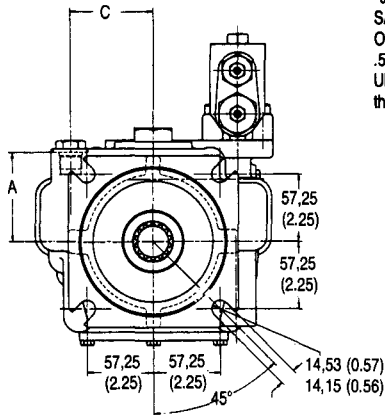
## 7. Installation dimensions in mm (inches)

PVH (QI) basic version with 20 design pressure compensator and load sense controls

3rd angle projection



Optional drain port "F" for .500 O. D. tube .750-16 UNF-2B thread



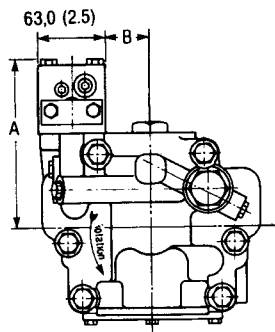
For shaft options and dimensions see page 23.

	A	B	C	D	E	F	G	H	I
PVH57	76,0 (2.99)	71,0 (2.79)	78,5 (3.09)	277,7 (10.93)	216,4 (8.52)	171,1 (6.73)	86,0 (3.39)	79,0 (3.11)	88,0 (3.46)
PVH74	88,0 (3.46)	70,0 (2.75)	85,0 (3.35)	300,5 (11.83)	241,2 (9.50)	194,3 (7.65)	92,00 (3.62)	94,0 (3.70)	95,0 (3.74)
PVH98	93,1 (3.67)	85,0 (3.35)	78,5 (3.09)	312,7 (12.31)	241,3 (9.89)	206,1 (8.11)	94,5 (3.72)	87,5 (3.44)	97,1 (3.82)
PVH131	109,4 (4.31)	88,8 (3.50)	117,0 (4.61)	345,5 (13.60)	280,4 (11.04)	230,4 (9.07)	120,0 (4.72)	102,4 (4.23)	102,4 (4.23)

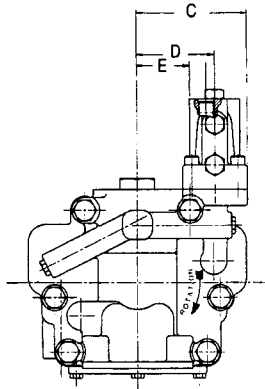
J	K	L	M	N	O	P	Q	R
69,0 (2.71)	165,1 (6.5)	14,0 (0.55)	227,4 (8.95)	56,1 (2.24)	71,0 (2.80)	64,8 (2.55)	50,8 (2.0)	77,76 (3.06)
81,0 (3.19)	171,1 (6.74)	15,0 (0.59)	250,1 (9.85)	56,0 (2.20)	70,0 (2.75)	68,1 (2.68)	50,8 (2.0)	77,76 (3.06)
80,1 (3.15)	173,6 (6.83)	16,0 (6.30)	269,3 (10.60)	56,0 (2.20)	85,0 (3.35)	74,2 (2.92)	63,5 (2.5)	88,9 (3.50)
84,8 (3.34)	199,1 (7.83)	15,0 (0.59)	298,6 (11.75)	62,0 (2.44)	88,8 (3.50)	70,6 (2.78)	63,5 (2.5)	88,9 (3.50)

S	T	U	V	W	X	Y	Z	ZZ
38,88 (1.53)	42,88 (1.69)	21,44 (0.84)	25,4 (1.0)	M10x1,5 (.375-16)	52,37 (2.06)	26,19 (1.03)	26,19 (1.03)	13,10 (0.52)
38,88 (1.53)	42,88 (1.69)	21,44 (0.84)	25,4 (1.0)	M10x1,5 (.375-16)	52,37 (2.06)	26,19 (1.03)	26,19 (1.03)	13,10 (0.52)
44,45 (1.75)	50,8 (2.0)	25,4 (1.0)	25,4 (1.0)	M10x1,5 (.375-16)	52,37 (2.06)	26,19 (1.03)	26,19 (1.03)	13,10 (0.52)
44,45 (1.75)	50,8 (2.0)	25,4 (1.0)	31,75 (1.25)	M14x2,0 (.375-16)	66,68 (2.63)	33,34 (1.31)	31,75 (1.25)	15,88 (0.63)

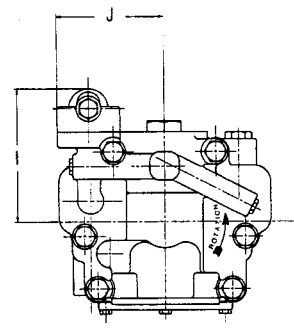
PVH (QI) basic version



Right hand rotation  
pressure compensated and  
torque limit model



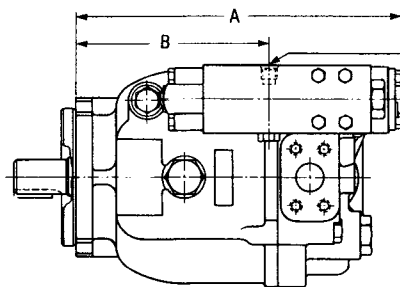
Left hand rotation pressure  
compensated and load sensing  
model



Right hand rotation  
pressure compensated

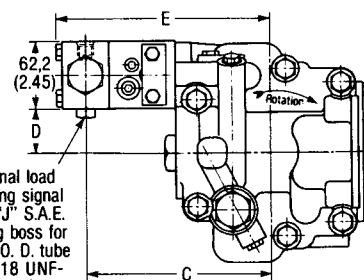
	A	B	C	D	E	F	G	H	I	J
PVH57	176,45 (6.95)	41,0 (1.61)	102,7 (4.04)	80,5 (3.16)	50,5 (1.99)	176,6 (6.95)	203,0 (7.99)	101,5 (4.00)	127,0 (5.0)	102,7 (4.04)
PVH74	182,45 (7.18)	47,5 (1.87)	109,2 (4.30)	71,0 (2.79)	57,0 (2.24)	182,6 (7.18)	224,0 (8.82)	112,0 (4.41)	133,0 (5.23)	109,2 (4.30)
PVH98	184,95 (7.28)	41,0 (1.61)	102,7 (4.04)	64,5 (2.53)	50,5 (1.99)	185,1 (7.28)	233,0 (9.17)	116,5 (4.59)	135,5 (5.33)	102,7 (4.04)
PVH131	210,5 (8.29)	63,6 (2.5)	125,2 (4.92)	87,0 (3.42)	73,0 (2.87)	210,6 (8.29)	254,2 (10.0)	127,1 (5.0)	161,0 (6.37)	125,2 (4.92)

PVH with pressure compensation, load sense and torque limit controls



Left hand rotation pressure  
compensated with load sense  
and torque limit model

Optional load  
sensing signal  
port "J" S.A.E.  
O-ring boss for  
.375 O. D. tube  
.562-18 UNF-  
2B thread

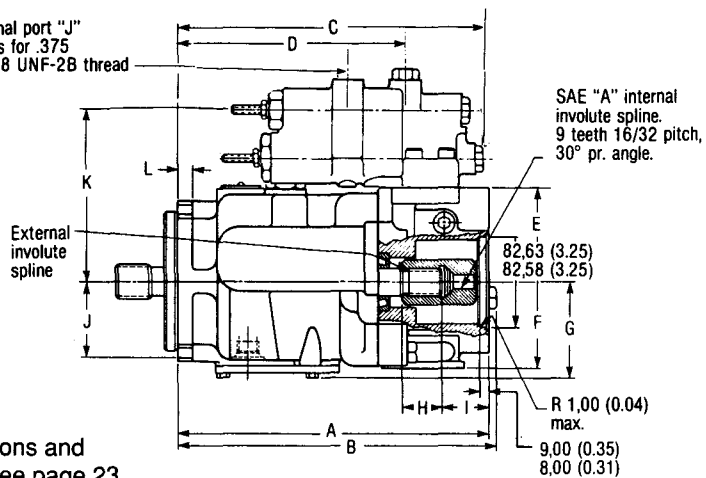


Optional load  
sensing signal  
port "J" S.A.E.  
O-ring boss for  
.375 O. D. tube  
.562-18 UNF-  
2B thread  
(Plugged)

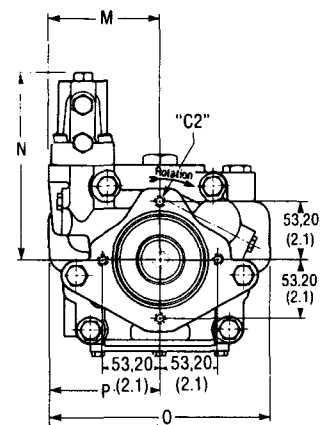
	A	B	C	D	E
PVH57	300,2 (11.82)	177,4 (6.98)	168,1 (6.62)	41,4 (1.63)	195,4 (7.69)
PVH74	322,9 (12.71)	200,1 (7.88)	174,1 (6.85)	47,9 (1.86)	201,4 (7.93)
PVH98	335,1 (13.19)	212,3 (8.36)	176,6 (6.95)	41,4 (1.63)	203,9 (8.02)
PVH131	359,5 (14.15)	236,6 (9.31)	202,2 (7.96)	63,8 (2.51)	229,5 (9.04)

# PVH through-drive with SAE 'A' rear pad

Load sensing signal port "J"  
S.A.E. O-ring boss for .375  
O. D. tube .562-18 UNF-2B thread



For shaft options and dimensions see page 23.



Right hand rotation  
pressure compensated  
and load sensing model

	A	B	C	D	E	F	G	H
PVH57	287,9 (11.3)	295,4 (11.6)	277,7 (10.93)	216,4 (8.52)	86,0 (3.38)	79,0 (3.11)	88,0 (3.46)	36,4 (1.43)
PVH74	310,6 (12.23)	318,1 (12.52)	300,5 (12.34)	241,2 (9.5)	92,0 (3.62)	94,0 (3.70)	95,0 (3.74)	38,5 (1.51)
PVH98	322,8 (12.71)	N/A	312,7 (12.34)	251,3 (9.89)	94,5 (3.72)	87,5 (3.44)	97,1 (3.82)	33,0 (1.30)
PVH131	347,1 (13.66)	N/A	345,5 (13.60)	280,4 (11.40)	120,0 (4.72)	109,0 (4.29)	107,4 (4.23)	35,3 (1.39)

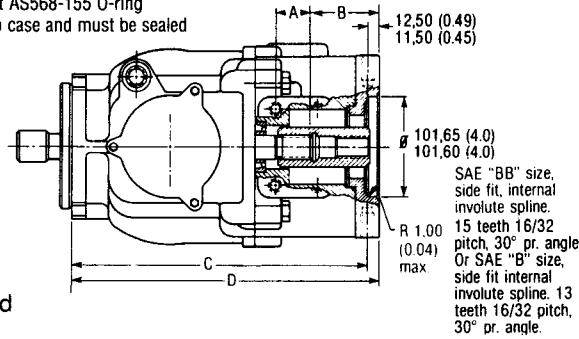
I	J	K	L	M	N	O	P
43,6 (1.72)	69,0 (2.71)	165,1 (6.5)	14,0 (0.55)	102,7 (4.04)	176,6 (6.95)	203,0 (7.99)	101,5 (4.00)
43,8 (1.72)	81,0 (3.19)	171,1 (6.74)	15,0 (0.59)	109,2 (4.3)	182,6 (7.18)	224,0 (8.82)	112,0 (4.41)
44,6 (1.75)	80,1 (3.15)	173,6 (6.83)	16,0 (6.30)	102,7 (4.04)	185,1 (7.28)	233,0 (9.17)	116,5 (4.59)
44,7 (1.76)	84,8 (3.34)	199,1 (7.83)	15,0 (0.59)	125,2 (4.93)	210,6 (8.29)	254,2 (10.0)	127,1 (5.0)

### Through-drive version with SAE 'B' rear pad adapters

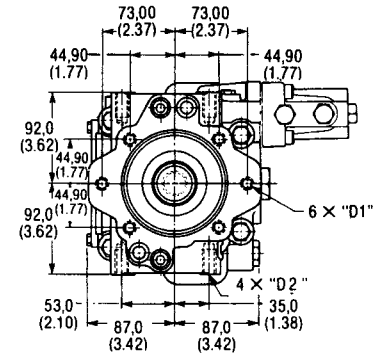
#### SAE 'B' rear mounting

Mounting pad is machined to accept AS568-155 O-ring

Mounting pad is connected to pump case and must be sealed



Through-drive pumps must have support located by dimension "C".

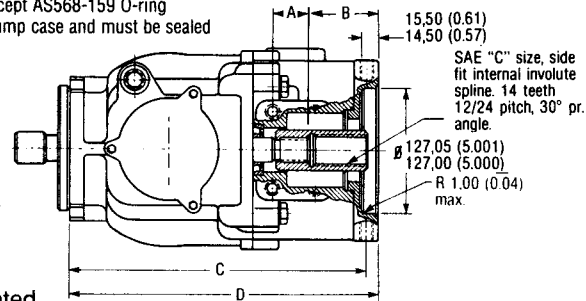


### Through-drive version with SAE 'C' rear pad adapters

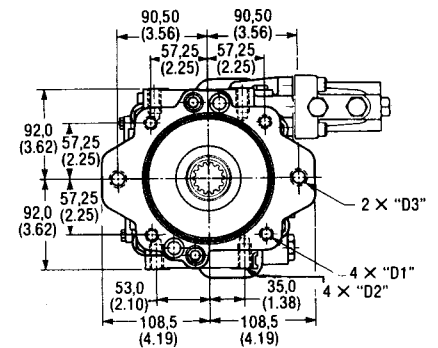
#### SAE 'C' rear mounting

Mounting pad is machined to accept AS568-159 O-ring

Mounting pad is connected to pump case and must be sealed



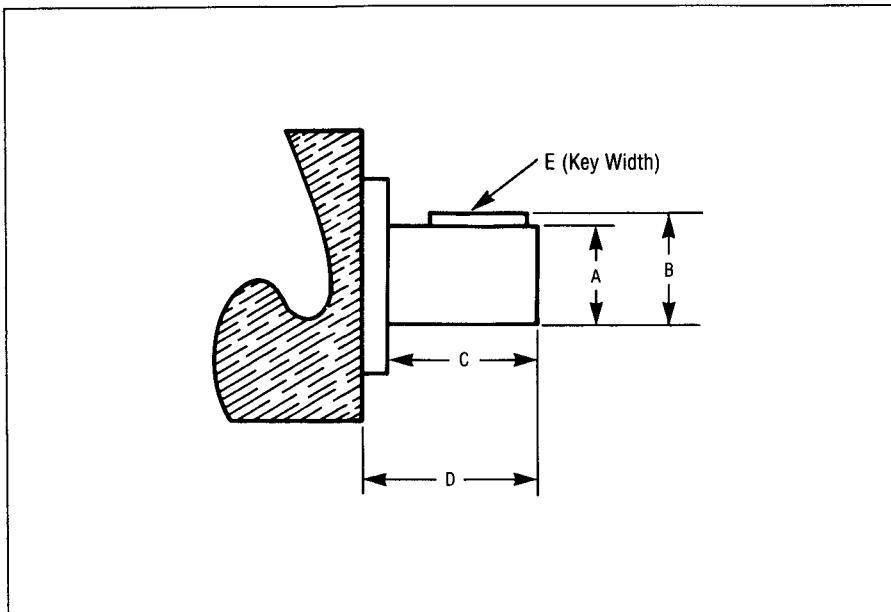
Through-drive pumps must have support located by dimension "C".



Pump Model	A	B	C	D
PVH57	36,4 (1.43)	68,8 (2.71)	300,4 (11.82)	312,9 (12,32)
PVH74	33,5 (1.32)	68,3 (2.69)	323,1 (12.72)	335,6 (13,21)
PVH98	33,0 (1.30)	69,8 (2.75)	335,3 (13.20)	347,8 (13.69)
PVH131	35,3 (1.39)	69,7 (2.74)	359,6 (14.16)	372,1 (14.65)

	D1	D2	D3
Metric	M14x2,00 25 deep	M12x1,75 25 deep	M16x2,00 25 deep
Inch	0.500-13 UNC-2B 1.0 deep	0.500-13 UNC-2B 1.0 deep	0.625-11 UNC-2B 1.0 deep

## Shaft installation dimensions



### Straight keyed shaft options

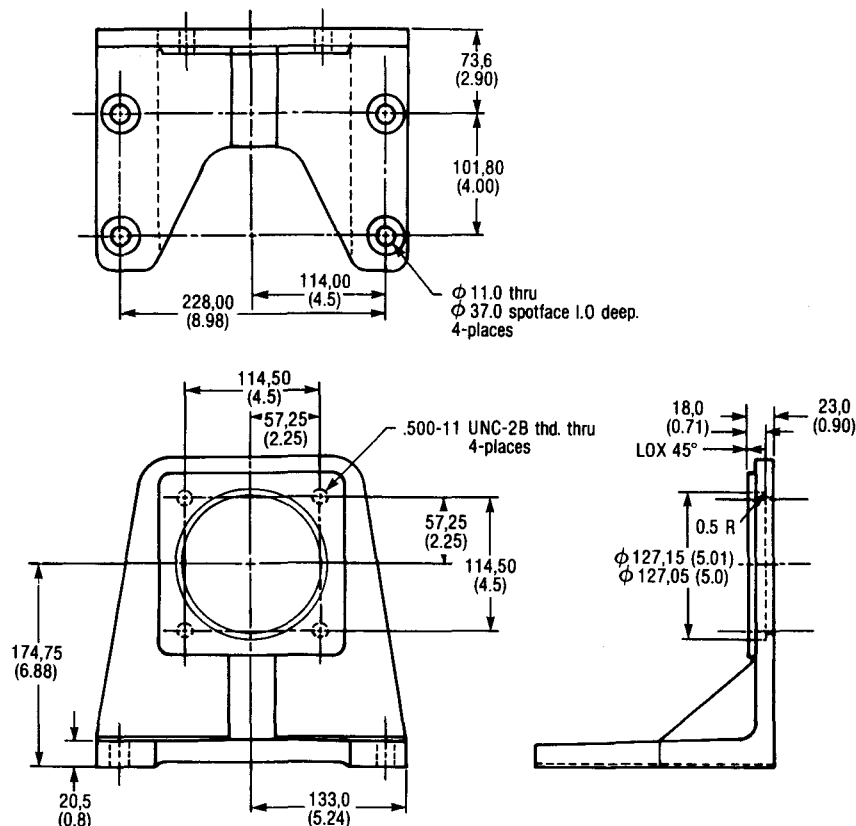
Pump model	Shaft	Shaft designation	A	B	C	D	E
PVH57 single PVH57 through-drive PVH74 single PVH98 single	1	SAE "C" (J744-32-1)	31,75 (1.25)	35,32 (1.38)	48,0 (1.89)	56,0 (2.20)	7,93 (.3125)
PVH74 through-drive PVH98 through-drive PVH131 single	13	SAE "CC" (J744-38-1)	38,1 (1.50)	42,39 (1.67)	54,0 (2.125)	62,0 (2.44)	9,52 (.375)
PVH131 through-drive	16	SAE "D" (J744-44-1)	44,45 (1.75)	49,46 (1.95)	67,0 (2.64)	75,0 (2.95)	11,11 (.4375)
PVH57QI Single PVH74QI Single	N	VDMA Short version	32,00 (1.26)	35,00 (1.38)	58,0 (2.28)	68,10 (2.68)	10,0 (.393)

### Spline shaft options

Pump model	Shaft	Shaft designation	Number of teeth	C	D
PVH57 single PVH57 through-drive PVH74 single PVH98 single	2	SAE "C" (J744-32-4)	14	48,0 (1.89)	56,0 (2.20)
PVH57 through-drive PVH98 through-drive PVH131 single PVH131 through-drive	3	SAE "CC" (J744-38-4)	17	54,0 (2.13)	62,0 (2.44)

## Foot mounting bracket, model FB-C4-10

Suitable for all PVH pumps in this catalog



## 8. Ordering procedure

Order PVH pumps by the full model designation. Pump displacement, mounting flange type, direction of rotation, pump configuration, shaft end type, seals, pressure adjustment range, specific control functions, and torque limiter settings are all specified in the full model code.

## 9. Installation and start-up (comissioning)

The installation of PVH pumps must be in accord with the guidance in the "Drive data" and "Through-drive data" sections on page 17.

Before a PVH pump is started, fill the case through the uppermost drain port with hydraulic oil of the type to be used. The case drain line must be connected directly to the reservoir. Maximum continuous pressure at the case drain port must not exceed 0,5 bar (7 psi). For multiple pump arrangements that include non-PVH sections, the requirements of the non-PVH units must be considered.

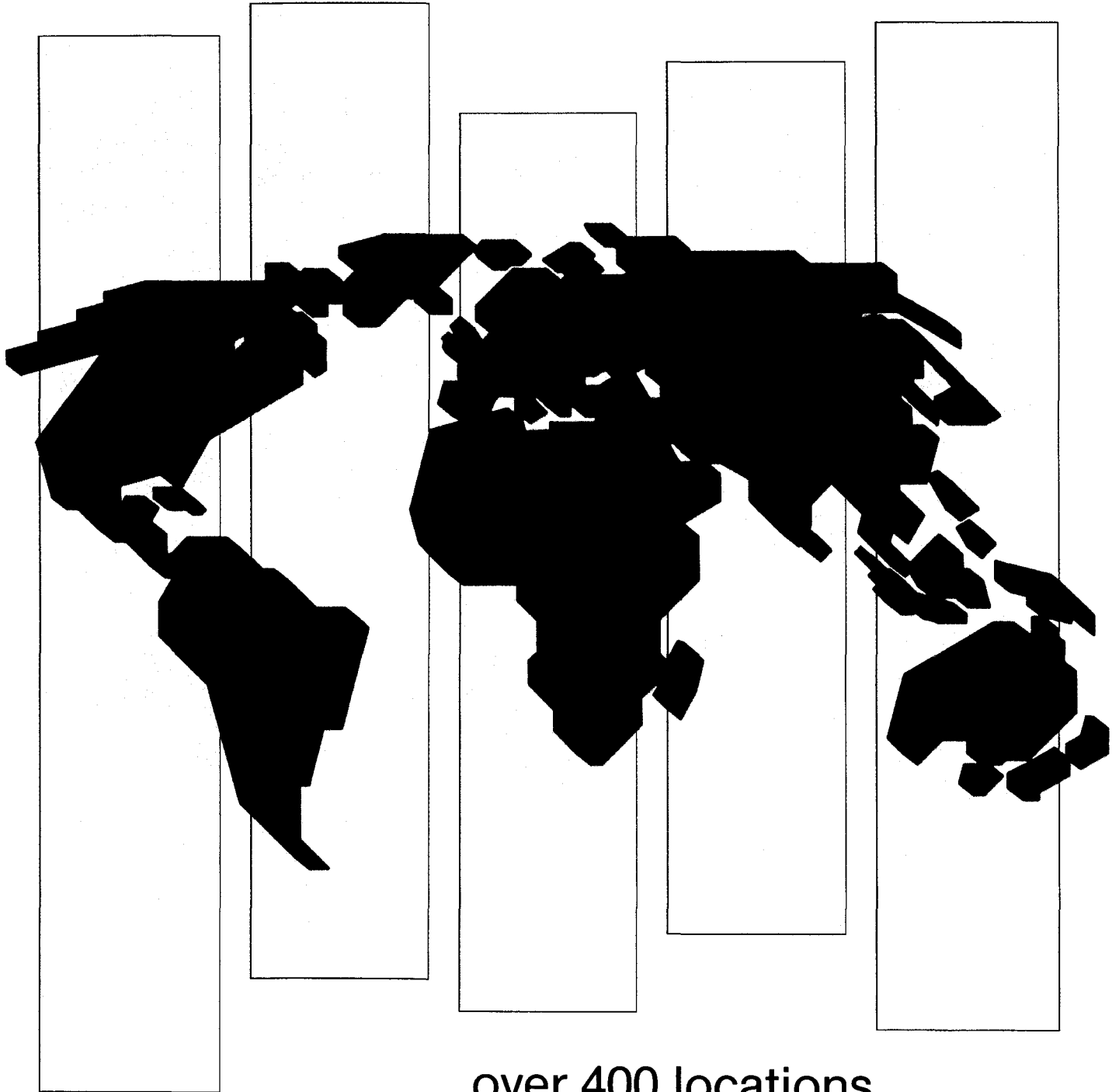
Mass, kg (lb) Model	Single pump	Through-drive pump SAE 'A'
PVH57-CV	33 (72)	34 (75)
PVH74-CV	43 (94)	45 (99)
PVH98-CV	46 (102)	47 (104)
PVH131-CV	64 (141)	65 (143)



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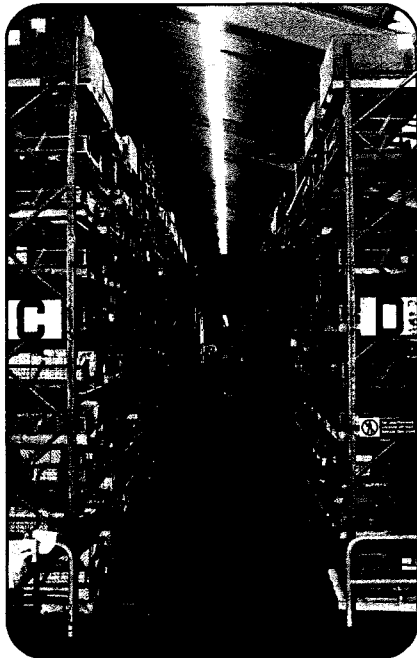


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