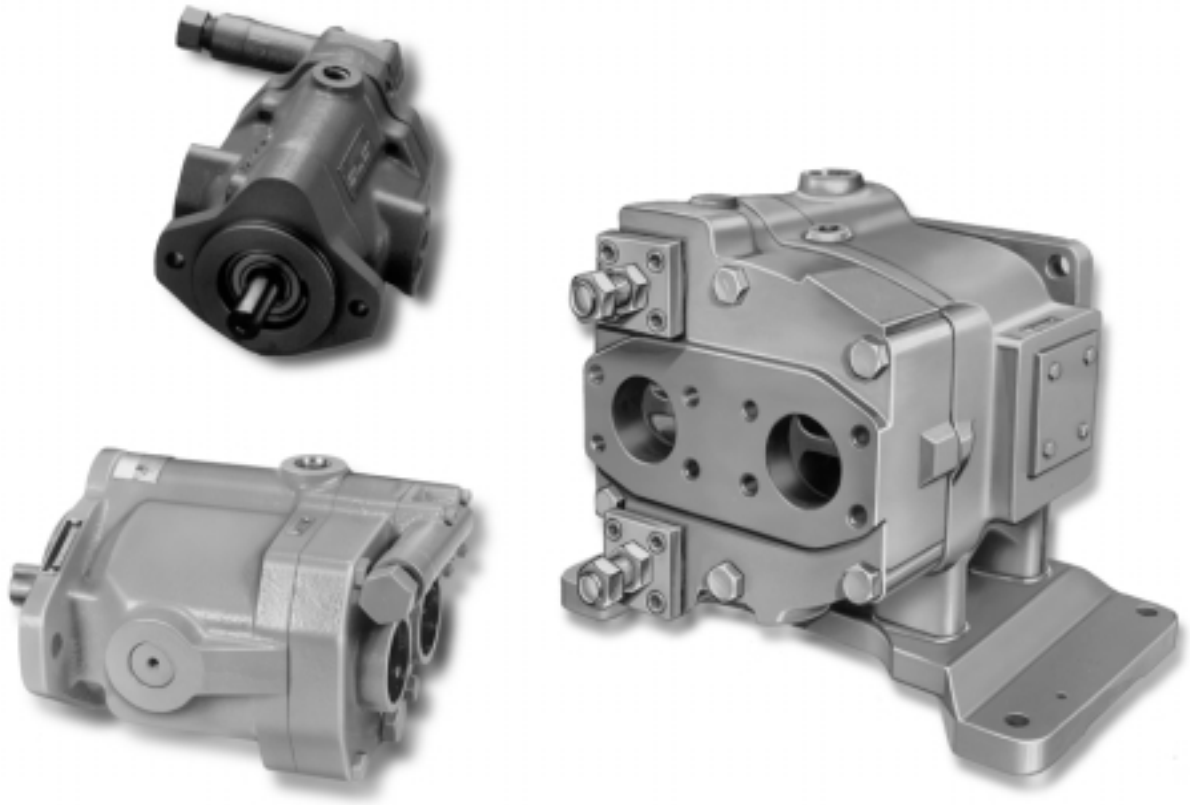
Vickers®

# Piston Pumps

# Axial Piston Pumps

**Fixed and Variable Displacement**
**PFB 5, PFB 10, PFB 20**
**PVB 5/6, PVB 10/15, PVB 20/29, PVB 45 and PVB 90 to SAE**
**PVB 5/6, PVB 10/15, PVB 20/29 to DIN/ISO 3019, Part 2**



VICKERS

GB-2379B

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## Basic Characteristics

Type . . . . . Axial piston pumps
Operating pressure . . . . . up to 210 bar (3000 psi)
Displacement . . . . . 10,5 to 197,5 $cm^3/r$ (0.64 to 12 $in^3/r$)
Drive speed . . . . . up to 3600 r/min

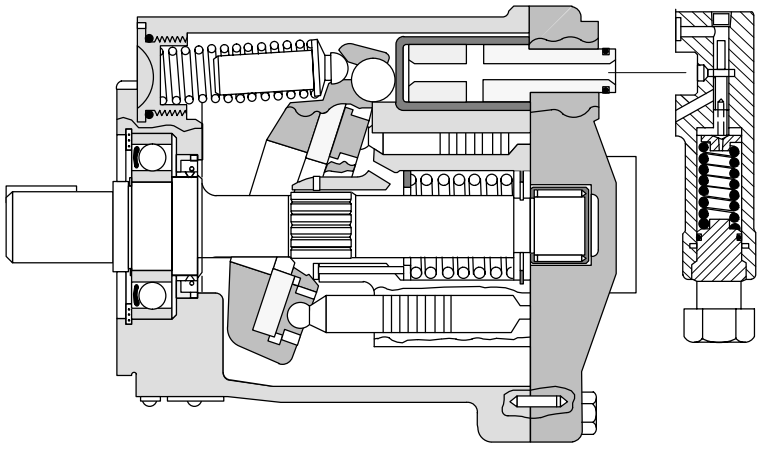
## General Description

Both fixed and variable displacement models make up this range of axial piston pumps. Their high performance ratings and efficiencies are achieved with a variety of hydraulic fluids. Fixed displacement models are noted for their volumetric and mechanical efficiencies. Variable displacement models can closely match pressure and/or flow demand with a control selected from:

- Pressure compensator with or without a remote control facility.
- Pressure compensator with adjustable displacement control.
- Load sensing compensator.
- Mechanical (lever) control.
- Handwheel control

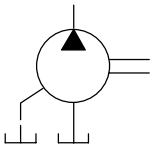
## Typical Section

Variable displacement model with compensator control “C” or “CM”



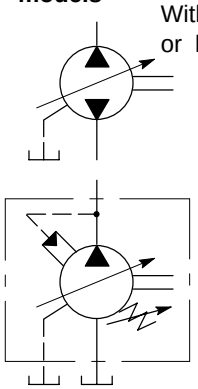
## Functional Symbols

**PFB**
**Fixed displacement models**

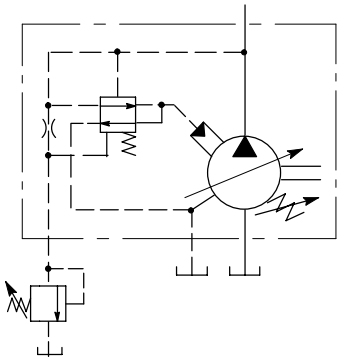


**PVB**
**Variable displacement models**

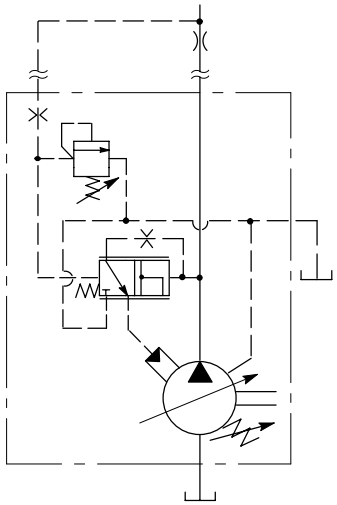
With handwheel, or lever.



With pressure compensator (C or CM) (simplified symbol)



With pressure compensator arranged for remote control C(M)G (detailed symbol)



With CVP load sensing and pressure limiter

# Model Codes

**P * B ** - (F) - (M) * * (F)(X) (*) - ** - ** - (C) - (G) - (L) - ** - ****

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

**1 Basic models**

F = Fixed displacement type
V = Variable displacement type

**2 Displacement**

PFB and PVB models:
5 = 10,55 $cm^3/r$ (0.64 $in^3/r$)
10 = 21,10 $cm^3/r$ (1.29 $in^3/r$)
20 = 42,80 $cm^3/r$ (2.61 $in^3/r$)
PVB models only:
6 = 13,81 $cm^3/r$ (0.84 $in^3/r$)
15 = 33,00 $cm^3/r$ (2.01 $in^3/r$)
29 = 61,60 $cm^3/r$ (3.76 $in^3/r$)
45 = 94,50 $cm^3/r$ (5.76 $in^3/r$)
90 = 197,50 $cm^3/r$ (12.0 $in^3/r$)

**3 Foot mounting option**

F = Foot mounting option for PVB45 and PVB90 models.
Omit for flange mounting.
***Note**. For foot mounting brackets. for other models see bottom of page.*

**4 Mounting flange**

M = Metric, to DIN/ISO 3019, Part 2 and VDMA 24560, Part 1
Omit for SAE mounting flange

**5 Shaft rotation**

Viewed at shaft end
R = Clockwise
L = Anticlockwise (not avalable for PFB10 and PFB20)

**6 Displacement zone**

PVB models only.
S = One side of center (pressure compensated models only)
D = Both sides of center (Handwheel and lever controlled models only)
Omit for PFB models.

**7 Flanged main ports**

F = PVB45 and PVB90 models only.
Omit for P*B5 to 29 inclusive.

**8 Thru shaft option**

PVB5 to 29 only:
X = Thru shaft (with side entry ports)
Omit for PVB45 and PVB 90, or if not required.

**9 Shaft type**

N = Metric, to DIN/ISO 3019, Part 2 and VDMA 24560, Part 1
Y = SAE models P*B5 to 15 only.
*Omit for 20 thru 90 models*

**10 Pump design number**

10 = PFB20
30 = PFB10
31 = PVB10 and PVB15
20 = all other models

**11 Displacement control options**

PVB models only.
C = Pressure compensator. Pressure adjustment range:
PVB90: 19 to 210 bar (275 to 3000 psi)
All other models: 17 to 210 bar (250 to 3000 psi)
Also used as prefix for item 12
***Note**. For PVB6, 15 and 29 models, the user must ensure that the max. pressure setting never exceeds 140 or 100 bar (2000 or 1500 psi) dependent on the type of fluid being used.*

CM = Pressure compensator. Option for all sizes except PVB90. Pressure adjustment range:
PVB45: 10 to 100 bar (150 to 1500 psi)
All other sizes: (17 to 100 bar (250 to 1500 psi)
CVP = Load sensing with pressure limiter.

PVB5 to 15 only:
H = Handwheel control
M = Lever control
V = No control (As for “M” type but without lever.)
Omit for PFB models.

**12 Maximum displacement adjustment**

PVB5 to 29 models only:
C = “C” or “CM”compensator, and with 12
Omit when not required.

**13 Pressure compensator variations**

PVB5 to 29 models only:
G = Remotely adjustable pressure setting.
Omit when not required.

**14 Control location**

PVB5 to 15 models with “H”, “M” or “V” controls only:
L = Left hand, when viewed at shaft end.
Omit for right hand, or when a pressure compensator is fitted.

**15 Control design number**

PVB models only.
10 = “H” and “M”controls; also “C” control for PVB90
11 = “C” and “CM” controls.
12 = “CVP” control.
20 = “CG” control.

**16 Special design options**

For PFB5 and PVB5 to 29 only:.
S.30 = Extra drain port to permit vertical “shaft-up” installation.

*For PVB5 to PVB29 pressure compensated models only:*
GE1 = 10% minimum displacement. when pressure compensated.

For all models:
GEVS= Pressure setting knob with key lock.

Omit when not required.

**Foot bracket mounting kits**

Order separately if required. Kits include pump fixing bolts.

| Model code | Part number | For pump sizes: |
|---|---|---|
| FB-A-10 | 422582 | P*B5/6 |
| FB-B-10 | 422583 | P*B10/15 and PFB20 |
| FB-C-10 | 422584 | PVB20/29 |

# Operating Data

**Pressure and Speed Limits**

| Basic model designation | Geometric dispalcement, $cm^3/r$ ($in^3/r$) | Maximum shaft speed (r/min) | | | Maximum outlet pressure, bar (psi) | | |
|---|---|---|---|---|---|---|---|
| | | Anti-wear hydraulic oil | Water-in–oil emulsion (40%/60%) | Water-glycol | Anti–wear hydraulic oil | Water glycol | Water-in–oil emulsion (40%/60%) |
| PFB5 | 10,55 (0.64) | 3600 | | | 210 (3000) | | |
| PFB10 | 21,10 (1.29) | 3200 | 1800 | 1800 | 210 (3000) | 175 (2500) | 175 (2500) |
| PFB20 | 42,80 (2.61) | 2400 | | | 175(2500) | | |
| PVB5 | 10,55 (0.64) | | | | 210 (3000) | 140 (2000) | 140 (2000) |
| PVB6 | 13,81 (0.84) | | | | 140 (2000) | 100 (1500) | 100 (1500) |
| PVB10 | 21,10 (1.29) | | | | 210 (3000) | 140 (2000) | 140 (2000) |
| PVB15 | 33,00 (2.01) | 1800 | 1800 | 1800 | 140 (2000) | 100 (1500) | 100 (1500) |
| PVB20 | 42,80 (2.61) | | | | 210 (3000) | 140 (2000) | 140 (2000) |
| PVB29 | 61,60 (3.76) | | | | 140 (2000) | 100 (1500) | 100 (1500) |
| PVB45 | 94,50 (5.76) | | | | 210 (3000) | 140 (2000) | 140 (2000) |
| PVB90 | 197,50 (12.0) | 1800 | 1200 | 1200 | 210 (3000) | 140 (2000) | 140 (2000) |

## Maximum Inlet Pressure

All pumps except PVB5/6/10/15 with H, M or V controls . . . . . 1,0 bar (15 psi)
PVB5/6/10/15 with H, M or V controls . . . . . As “Max. outlet pressure” above for appropriate size.

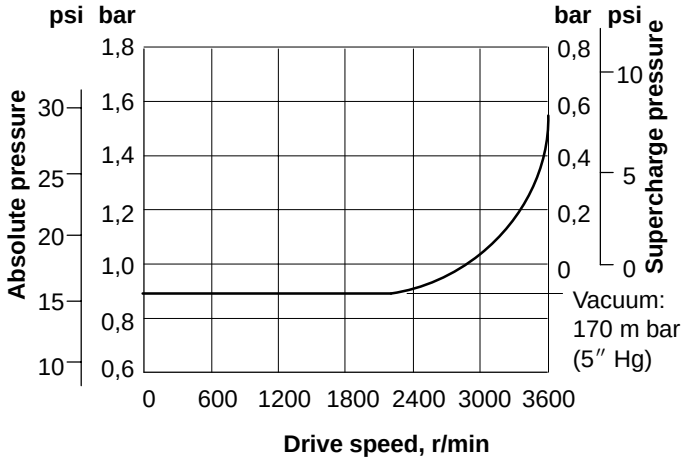
## Case Drain Pressure

See “Installation data” section, on page A.33.

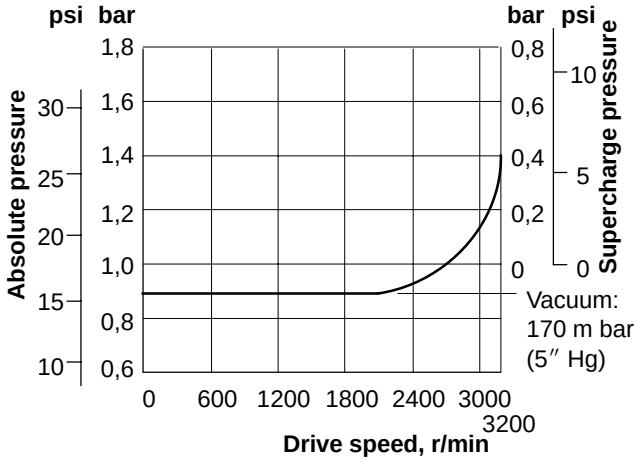
## Minimum Inlet Pressure

See following graphs.
Based on oil viscosity of 21 cSt (102 SUS) and at 50°C (120°F).

### PFB5 and PVB5

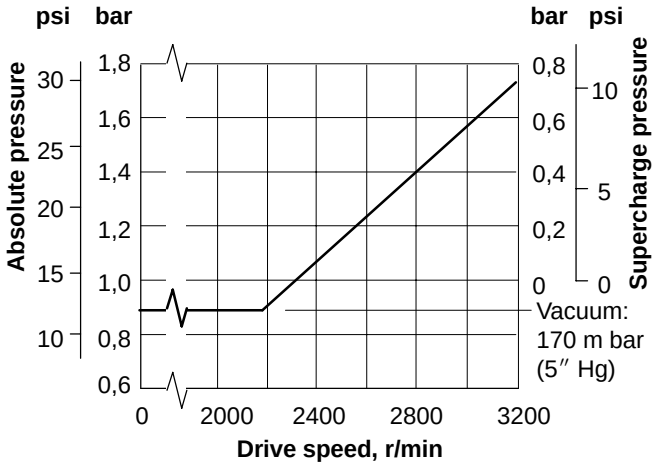



### PVB6

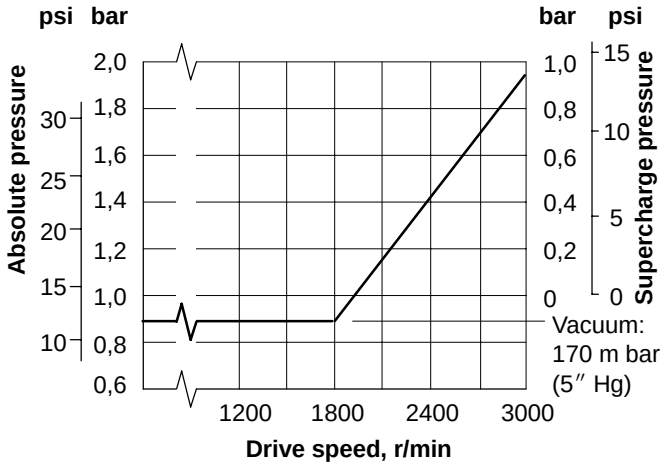


# Operating Data Minimum Inlet Pressure (cont'd)

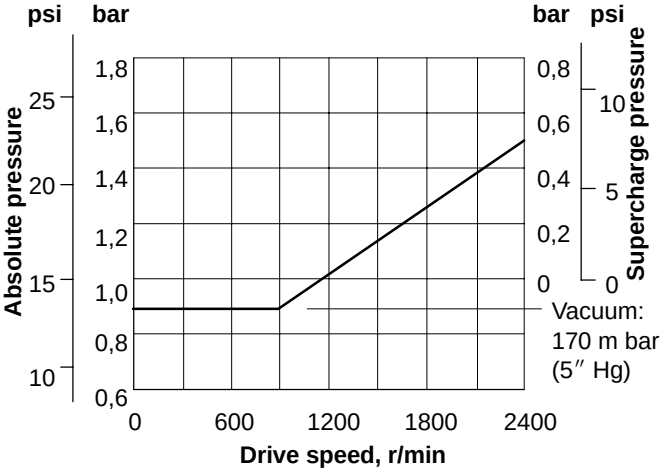
## PFB10 and PVB10



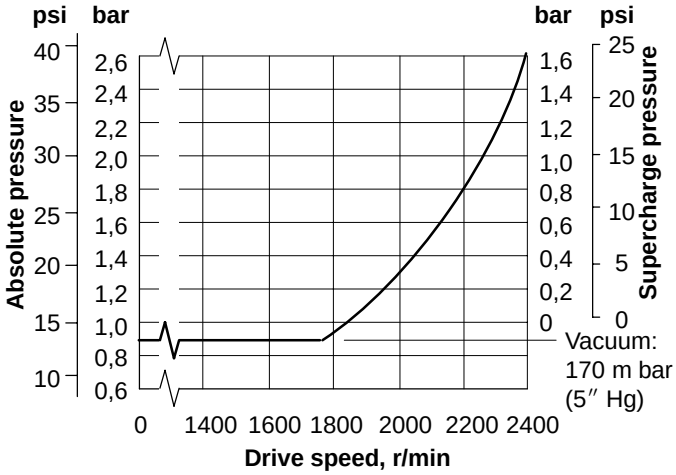

## PVB15



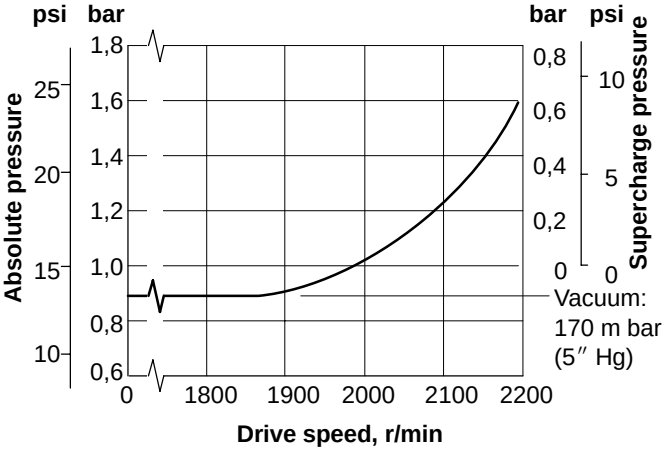

## PFB20



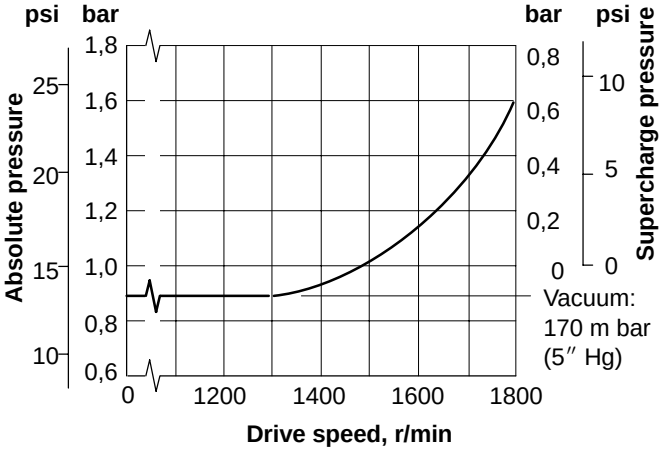

## PVB20 and PVB29




## PVB45



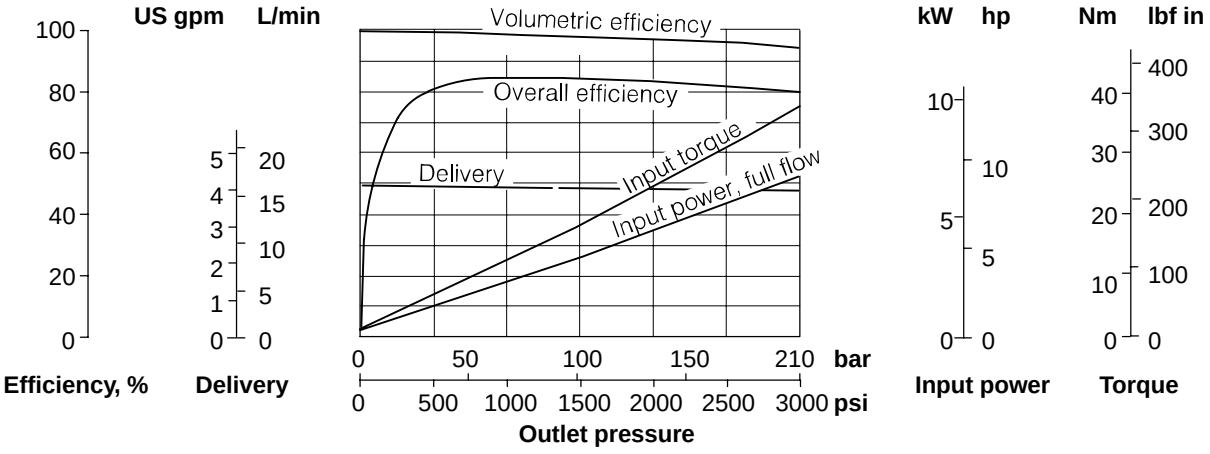

## PVB90



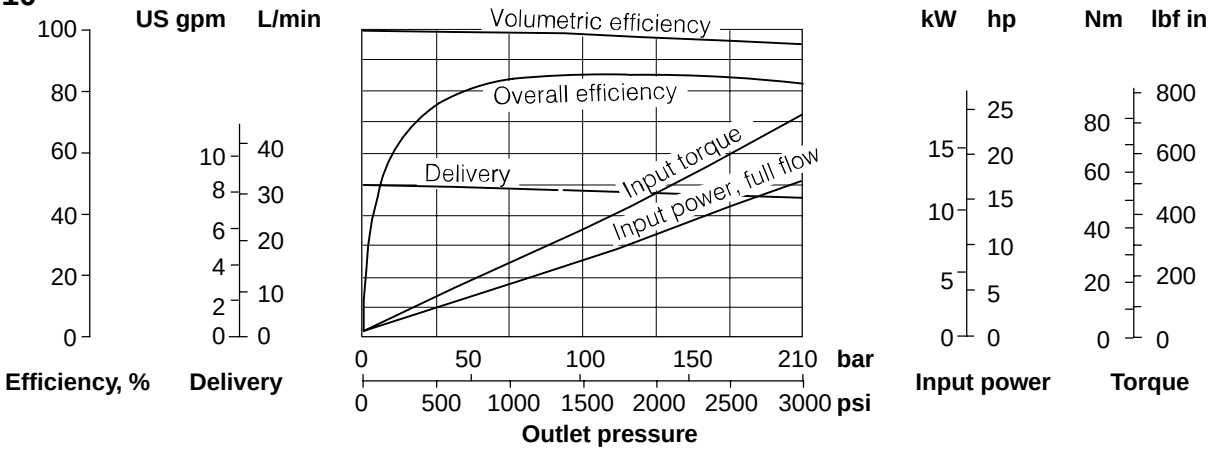
# Performance Data at 1500 r/min Drive Speed

With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1800 r/min, see pages A.11 to A.14

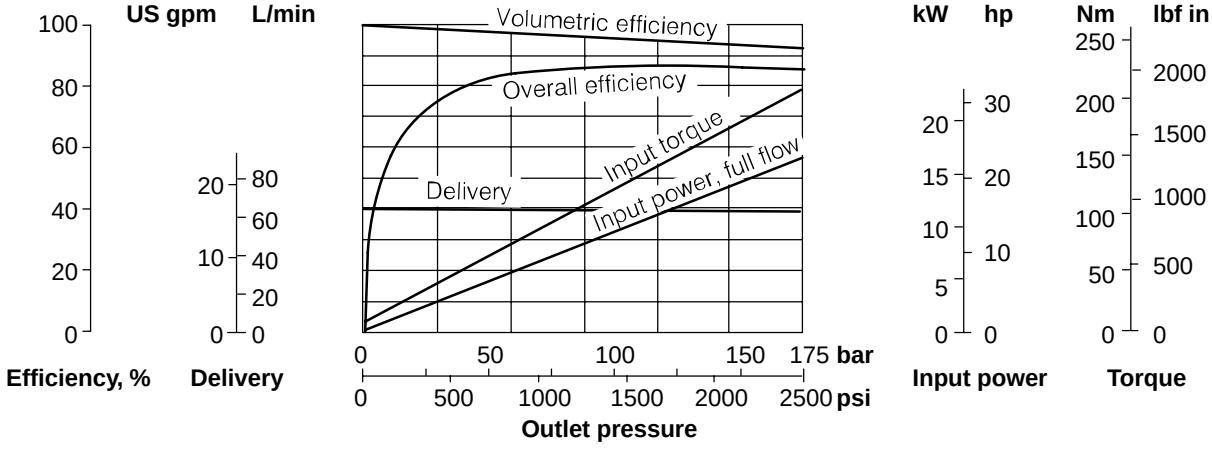
## PFB5




## PFB10



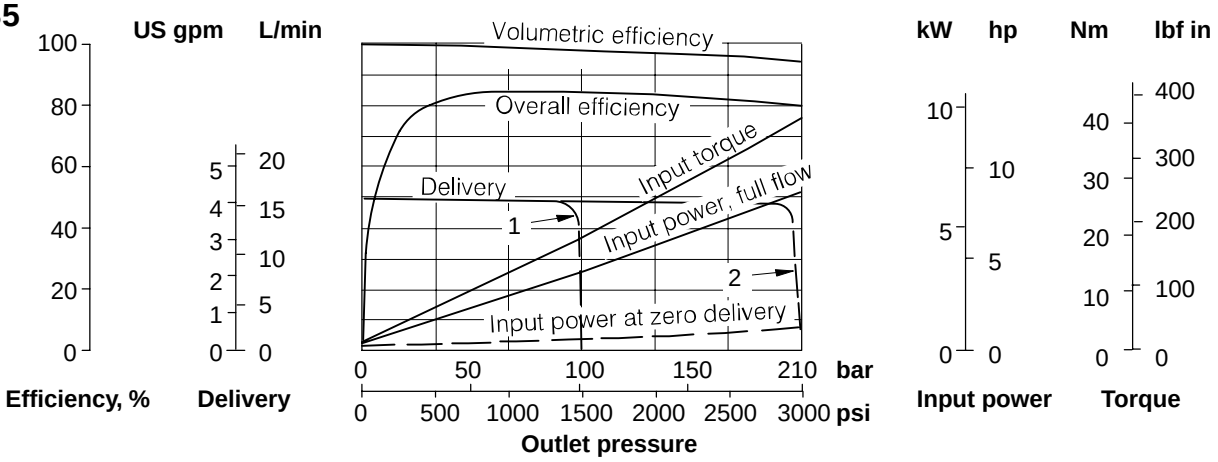

## PFB20



# Performance Data at 1500 r/min Drive Speed (cont'd)

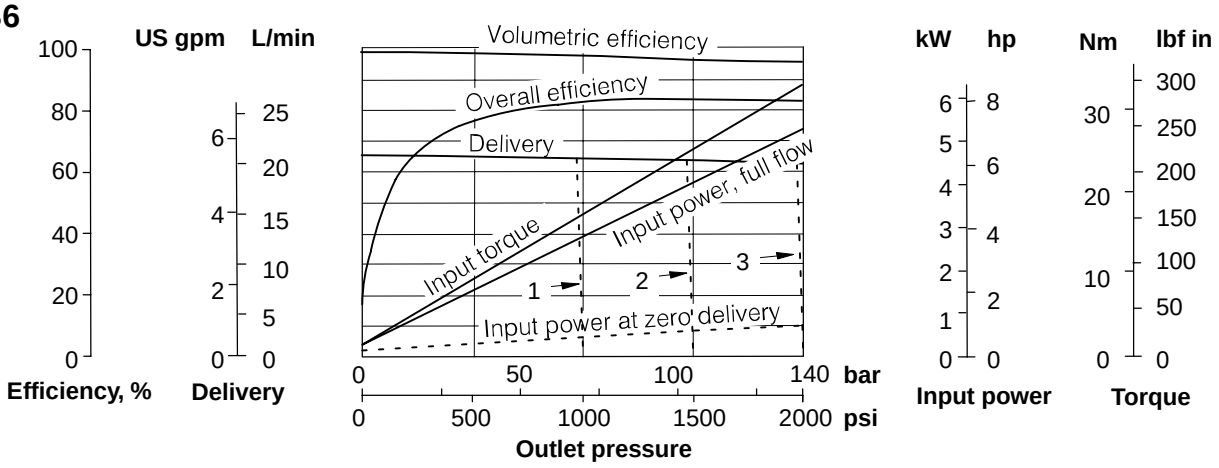
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1800 r/min, see pages A.11 to A.14

## PVB5



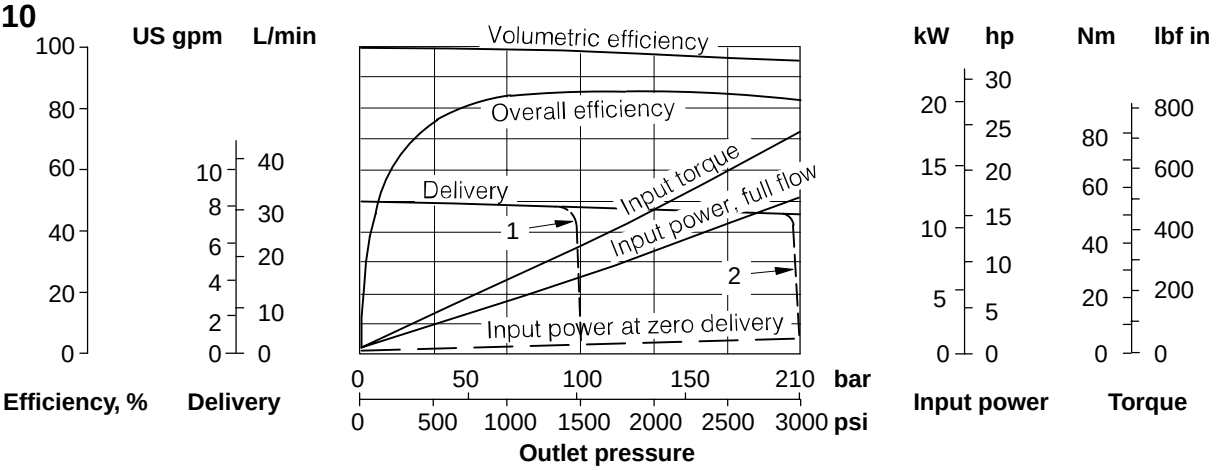

1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB6




1 = Delivery with compensator setting of 70 bar (1000 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 140 bar (2000 psi)

## PVB10

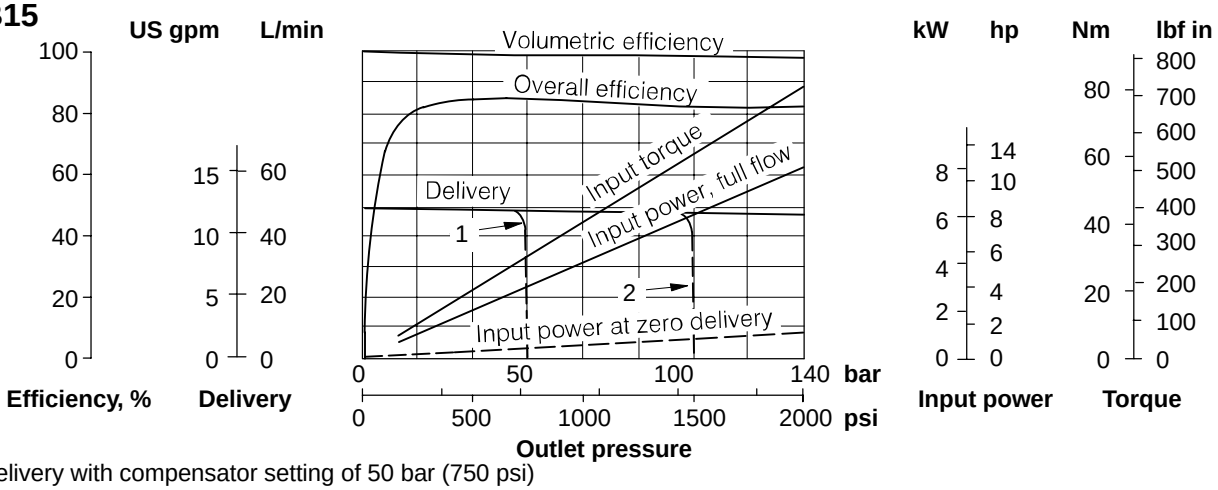



1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

# Performance Data at 1500 r/min Drive Speed (cont'd)

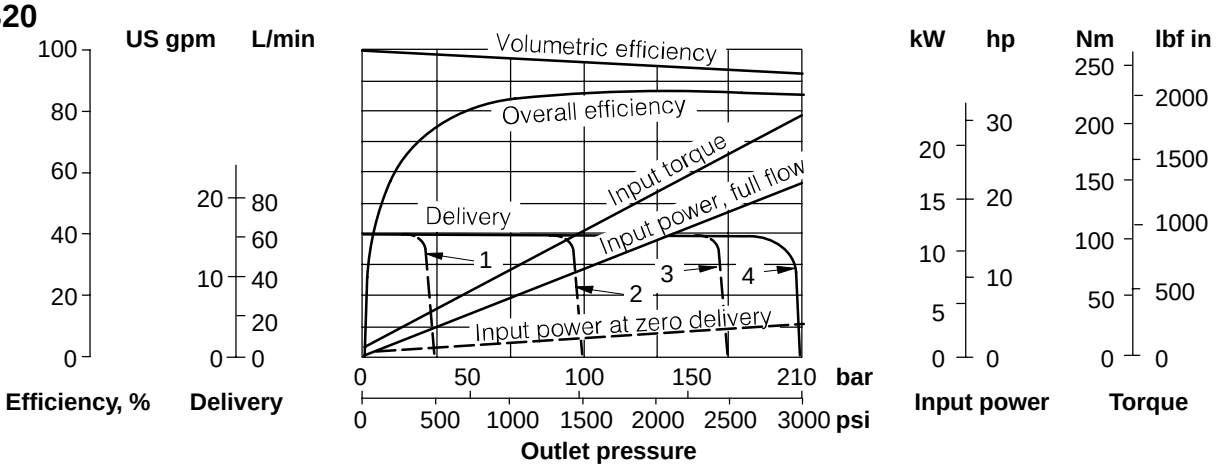
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1800 r/min, see pages A.11 to A.14

## PVB15



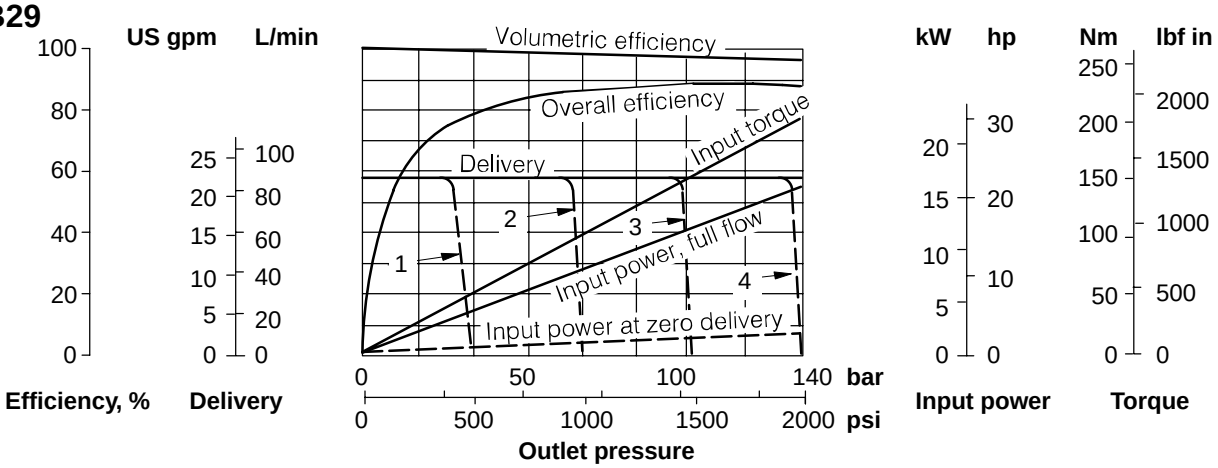

1 = Delivery with compensator setting of 50 bar (750 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)

## PVB20




1 = Delivery with compensator setting of 35 bar (500 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 175 bar (2500 psi)
4 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB29

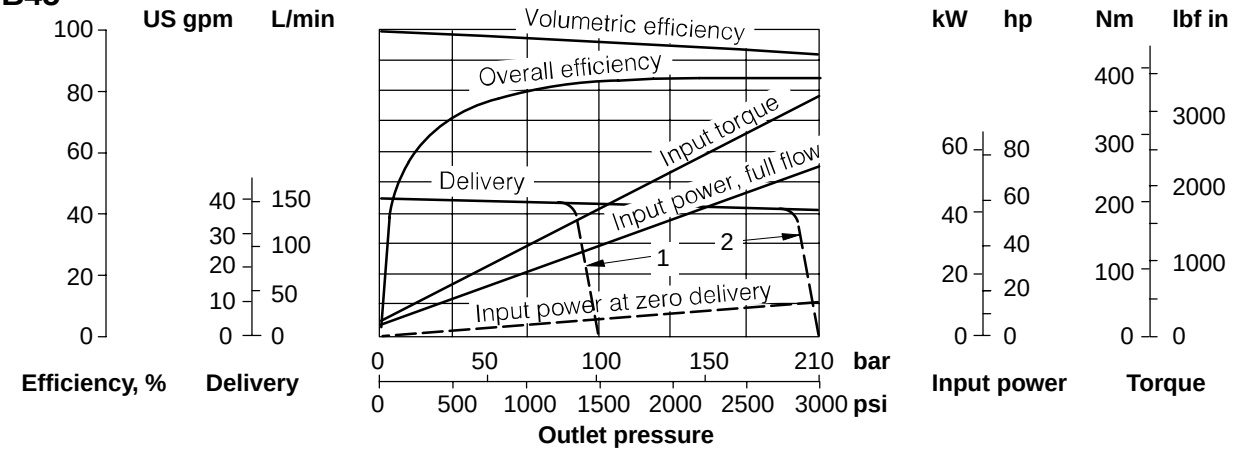



1 = Delivery with compensator setting of 35 bar (500 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 175 bar (2500 psi)
4 = Delivery with compensator setting of 200 bar (3000 psi)

# Performance Data at 1500 r/min Drive Speed (cont'd)

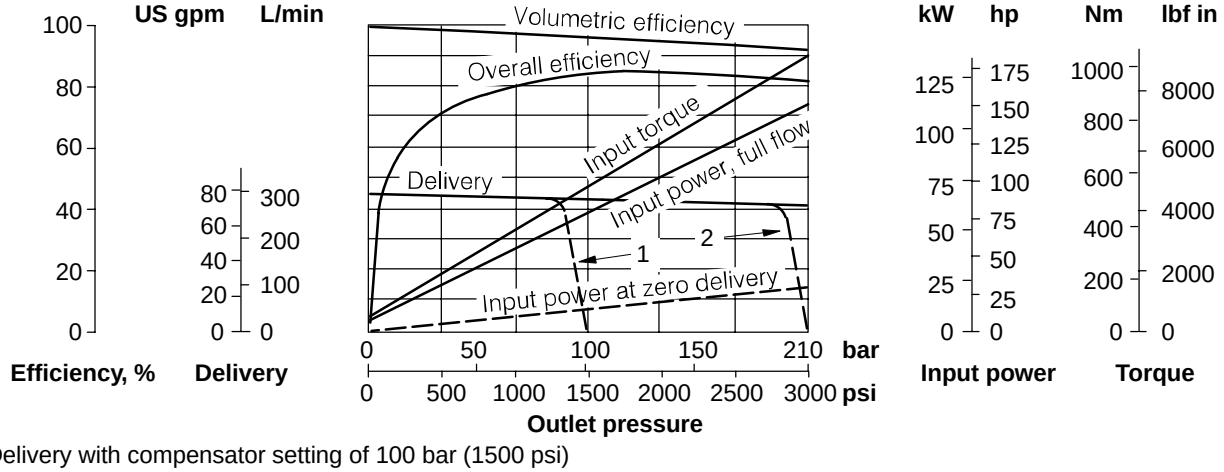
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1800 r/min, see pages A.11 to A.14

## PVB45




1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB90



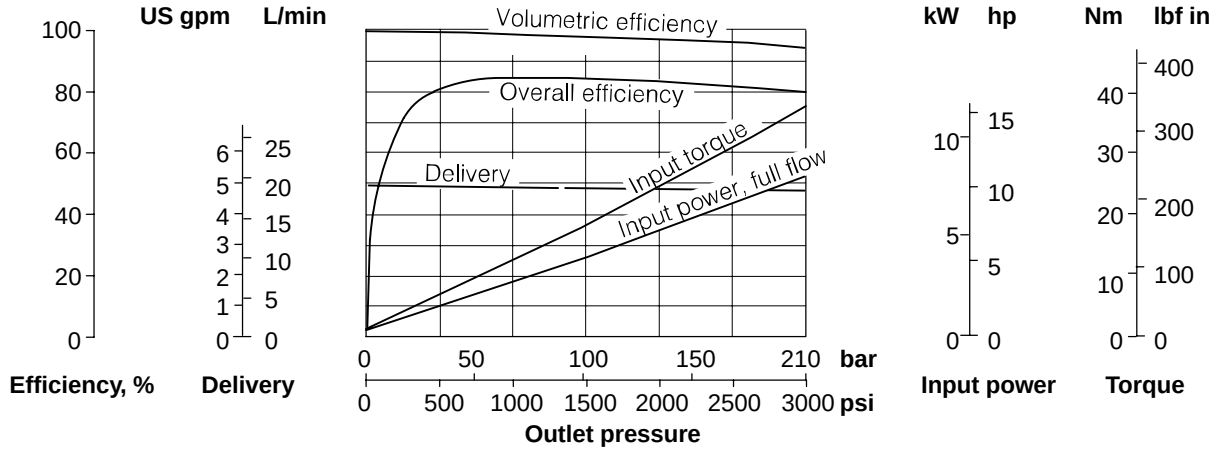

1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

# Performance Data at 1800 r/min Drive Speed

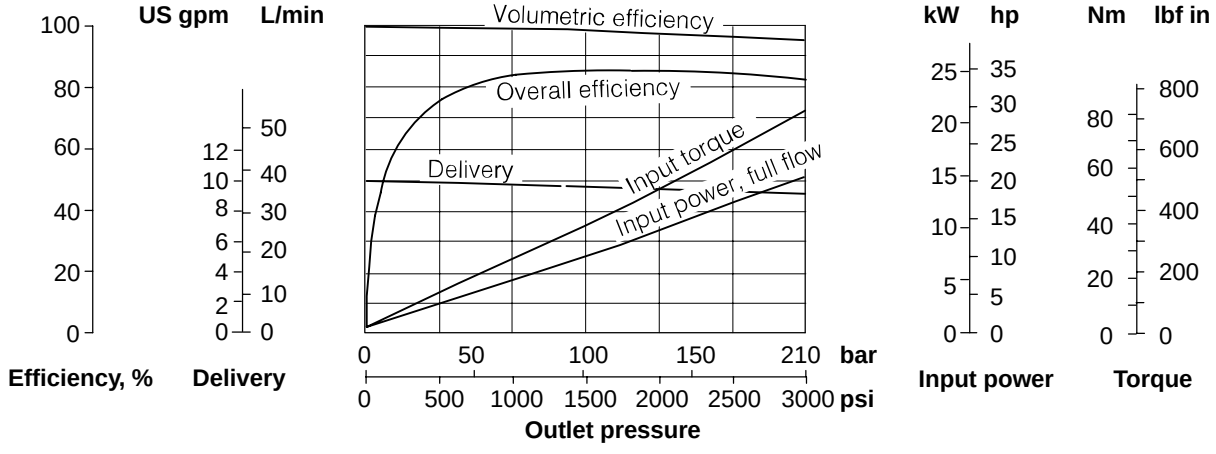
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet

For data at drive speed of 1500 r/min, see pages A.7 to A.10

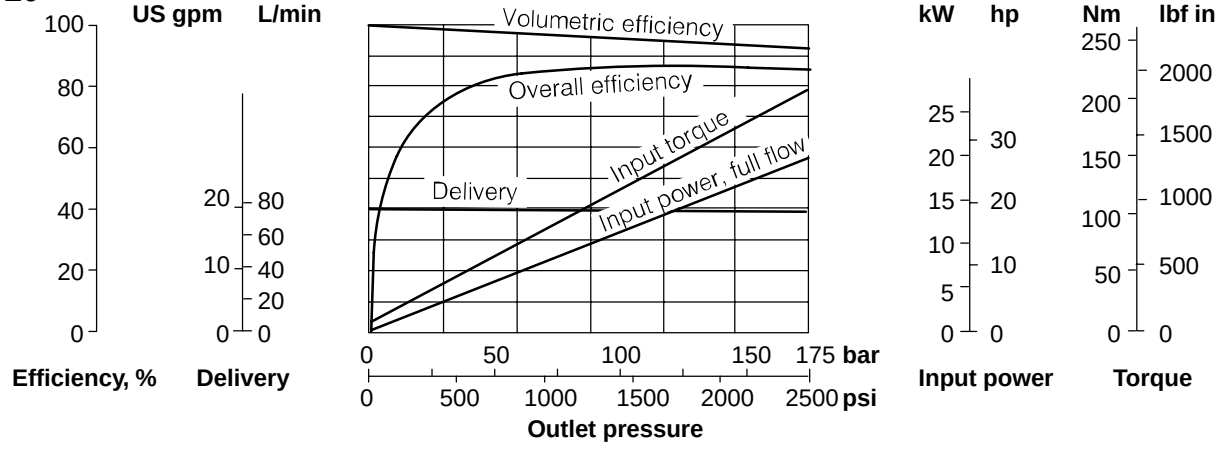
## PFB5




## PFB10



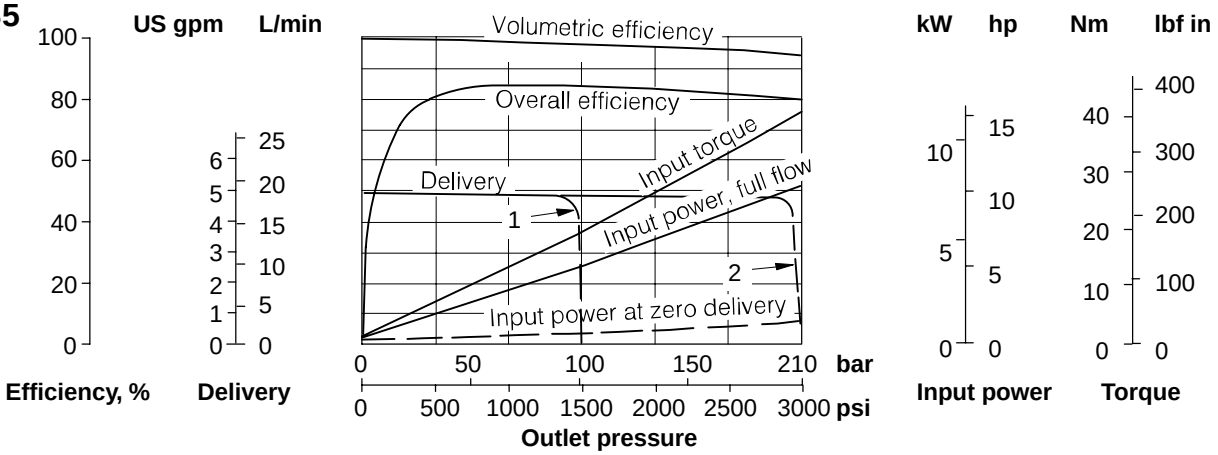

## PFB20



# Performance Data at 1800 r/min Drive Speed (cont'd)

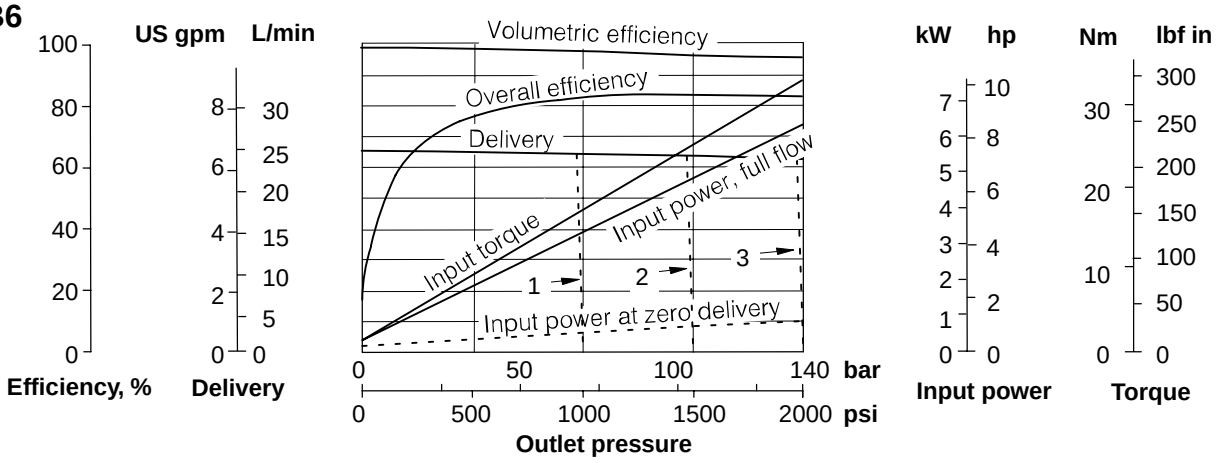
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1500 r/min, see pages A.7 to A.10

## PVB5



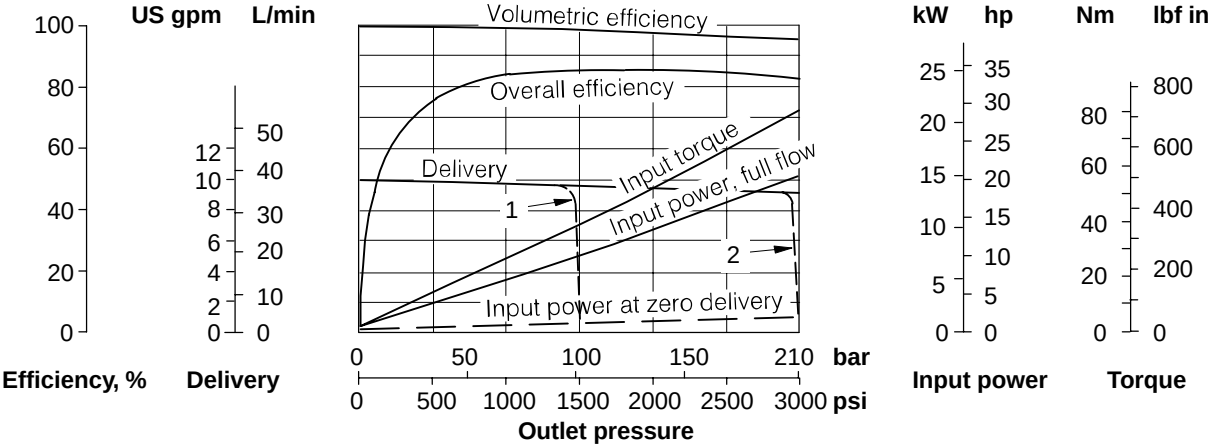

1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB6




1 = Delivery with compensator setting of 70 bar (1000 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 140 bar (2000 psi)

## PVB10

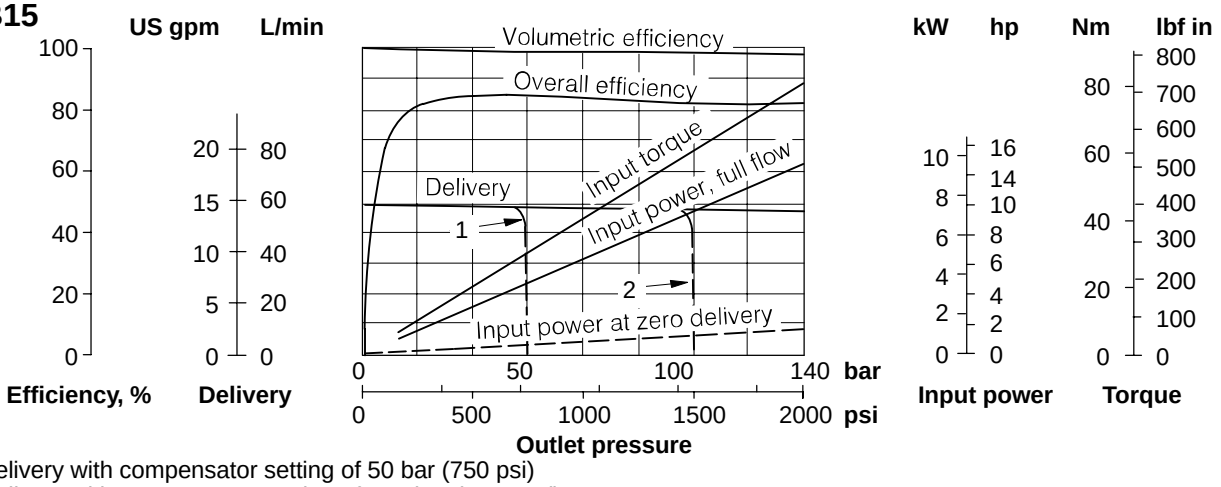



1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

# Performance Data at 1800 r/min Drive Speed (cont'd)

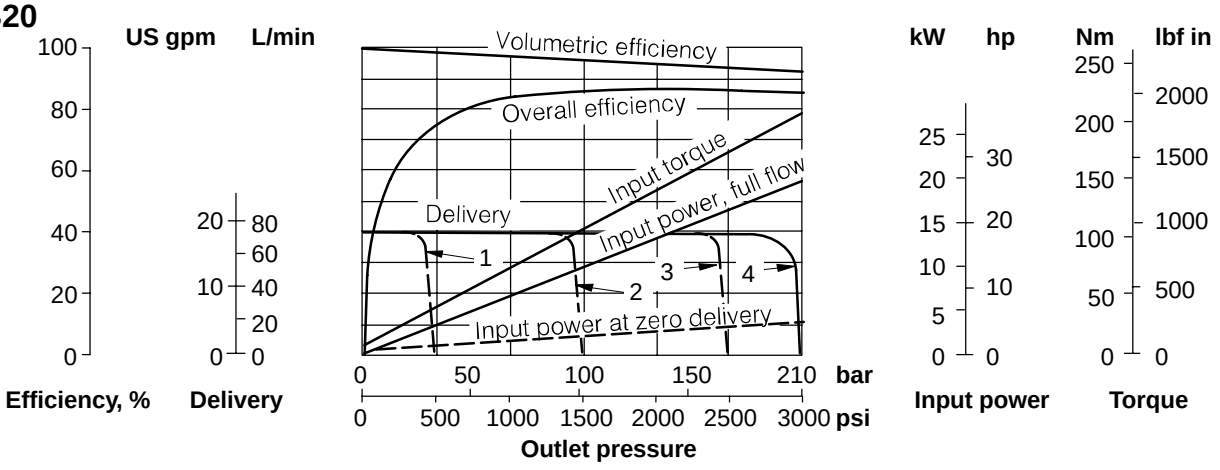
With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet
For data at drive speed of 1500 r/min, see pages A.7 to A.10

## PVB15



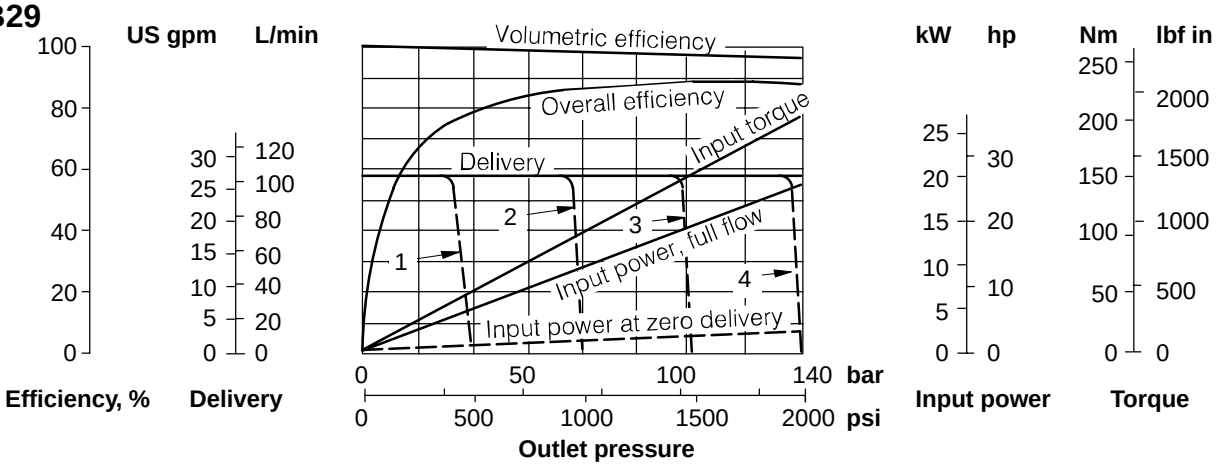

1 = Delivery with compensator setting of 50 bar (750 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)

## PVB20




1 = Delivery with compensator setting of 35 bar (500 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 175 bar (2500 psi)
4 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB29



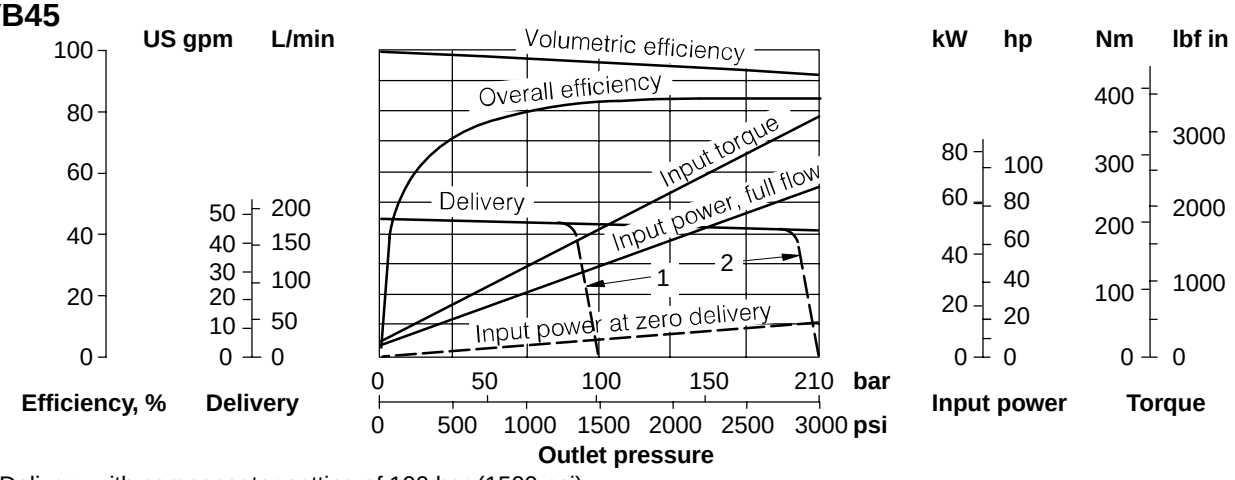

1 = Delivery with compensator setting of 35 bar (500 psi)
2 = Delivery with compensator setting of 100 bar (1500 psi)
3 = Delivery with compensator setting of 175 bar (2500 psi)
4 = Delivery with compensator setting of 200 bar (3000 psi)

# Performance Data at 1800 r/min Drive Speed (cont'd)

With oil at 21cSt (102 SUS) and at 49°C (120°F): Atmospheric inlet

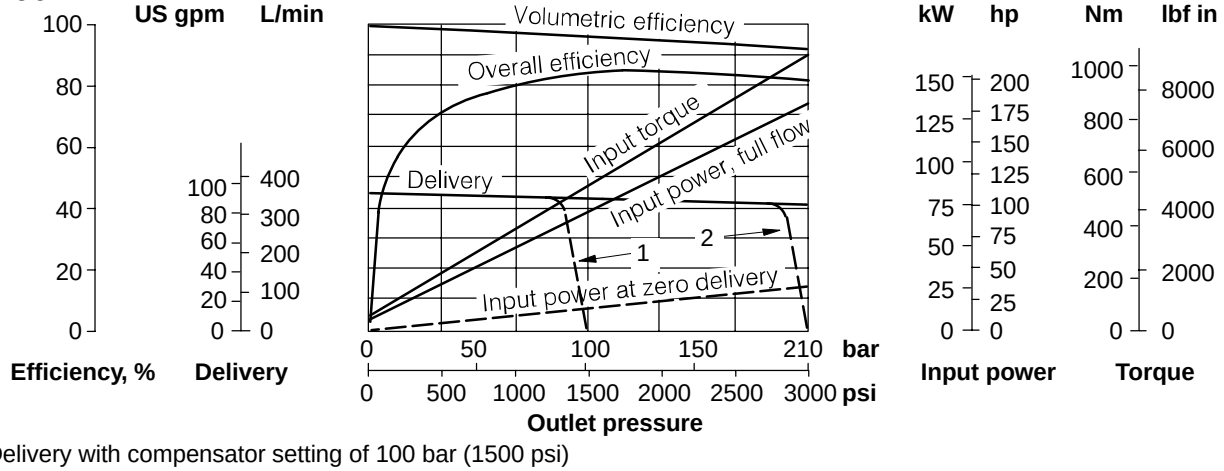
For data at drive speed of 1500 r/min, see pages A.7 to A.10

## PVB45




1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

## PVB90




1 = Delivery with compensator setting of 100 bar (1500 psi)
2 = Delivery with compensator setting of 200 bar (3000 psi)

# Control Data for PVB Pumps

Controls available as indicated in “Model Code” section.

**“C” and “CM” Pressure Compensators**
Automatically adjusts pump delivery at pre-adjusted pressure to match system demand. Delivery can decrease rapidly from maximum to zero through a pressure gradient typically 4 to 6 bar (60 to 90 psi) with normal circuit volumes.

For pressure adjustment ranges see “Model Code”.
**Note:**
1. When using PVB6, 15 or 29 pumps with “C” type compensators ther user must ensure that the maximum pressure setting never exceeds 140 or 100 bar (2000 or 1500 psi) dependent on the type of fluid being used.

   ***Caution**. It is possible to mechanically adjust the compensator up to 210 bar (3000 psi)*.
2. It is recommended that, as for other types of positive pump, a relief valve should be fitted externally as protection against overloads. Where a relatively large amount of fluid is directly subject to compensator pressure, it may be possible to omit the relief valve. Consult your Vickers representative.

**“CC” and “CMC” Pressure Compensators with Adjustable Max. Displacement Stop**
The pressure compensator section performs as described above. The adjustable stop allows the maximum pump delivery to be adjusted between 25 to 100%. To assist priming, adjust the stop setting to provide at least 40% of the maximum displacement.

**“CG” Pressure Compensator, Remotely Controlled**
Same as the “C” compensator, but arranged for remote pressure adjustment by suitable pilot controls. One or more pilot relief valves (e.g. C-175-*) and/or pilot directional valves, in series or in parallel, can provide many varied remote pilot systems.

Your Vickers representative will be pleased to advise on optimum arrangements for individual applications.

**“CV” Load Sensing Comensator, Remotely Controlled**
Automatically matches pump delivery to system demand at a pressure approximately 17 bar (250 psi) above load pressure. This pressure difference can be created by:
– a variable flow restrictor (non-compensated flow control) or the spool opening of a directional control valve.

Both forms can be used with fixed and variable speed pump drives. In the latter case a fixed restrictor can provide pre-set, near-constant pump flow independent of drive speed, provided that the speed exceeds that which gives the required flow at full displacement. An external pressure limiter must be added to prevent overloading the pump; see “Functional Symbols” page A.3.

The matching of pump pressure and delivery to system demands provides power matching and conservation by minimizing system power wastage.

**“H” Handwheel Control**
Provides manual variation or selection of pump delivery. The control can be operated on both sides of center permitting bi-directional flow characteristics.
Approximate change of displacement per one turn of handwheel is:
PVB5 . . . . . 2,6 $cm^3$ (0.16 $in^3$)
PVB6 . . . . . 3,4 $cm^3$ (0.21 $in^3$)
PVB10 . . . . . 5,2 $cm^3$ (0.32 $in^3$)
PVB15 . . . . . 8,2 $cm^3$ (0.5 $in^3$)

**“M” Lever Control**
Provides mechanical or manual variation of pump delivery in approximate proportion to the angular movement from the center position. This control may be operated on both sides of center permitting bi-directional flow characteristics. The pintle-mounted lever control must be secured by suitable linkage to maintain desired settings; both extremes of pintle travel are limited by internal stops to approx. 17.5° from center.

Control torques (approx. at 1500 r/min).
PVB5 . . . . . 3,8 Nm @ 210 bar (33 lbf in at 3000 psi)
PVB6 . . . . . 2,7 Nm @ 138 bar (24 lbf in at 2000 psi)
PVB10 and PVB15 . . 7,5 Nm @ 70 bar (66 lbf in at 1000 psi)

***Note:** Torque varies with pressure and speed.*

**“GE1” Minimum Displacement Control**
Option for C(M)(C) and CG(C) compensators to limit the minimum displacement, in the fully compensated mode, to nominally 10% of full displacement.

**Hydraulic Fluids**
All pumps can be used with anti-wear hydraulic oils, water glycols and water-in-oil (invert) emulsions. It is possible to use these pumps with high water base fluids (e.g. 5%/95% oil-in-water emulsion) at pressures up to 70 bar (1000 psi). However, first consult your Vickers representative.

The extreme operating viscosity range is from 220 to 13 cSt (1020 to70 SUS) for all pumps (except where 5%/95% emulsions are used). The recommended running range is 54 to 13 cSt. (245 to 70 SUS)

The viscosity of 5%/95% emulsions is near-constant at about 1 or 2 cSt (<35 SUS).

**Temperature Limits**
Minimum ambient . . . . . –20°C (–4°F)
Maximum ambient. . . +70°C (+158°F)

**Fluid Temperatures**

| | Mineral oil | Water-containing |
|---|---|---|
| Mininmum | –20°C (–4°F) | +10°C (+50°F) |
| Maximum* | +80°C (+176°F) | +54°C (+129°F) |

** To obtain maximum service life from both fluid and hydraulic system, 65°C (150°F) normally is the maximum temperature except for water-containing fluids. Whatever the actual temperature range, ensure that viscosities stay within the limits specified in "Hydraulic Fluids" section.*

**Drive Requirements:**
**- Direction of Rotation**
Clockwise or anti-clockwise (viewed at shaft end) to order; see also "Model Code", and "Installation Dimensions" sections.

**- Drive Methods**
Direct co-axial drive through a suitable flexible coupling is preferred. If an indirect drive is to be used, first consult your Vickers representative.

**Filtration Requirements**
20/18/14 or ISO 18/14..

**Noise Levels**

* Typical values equivalent to NFPA

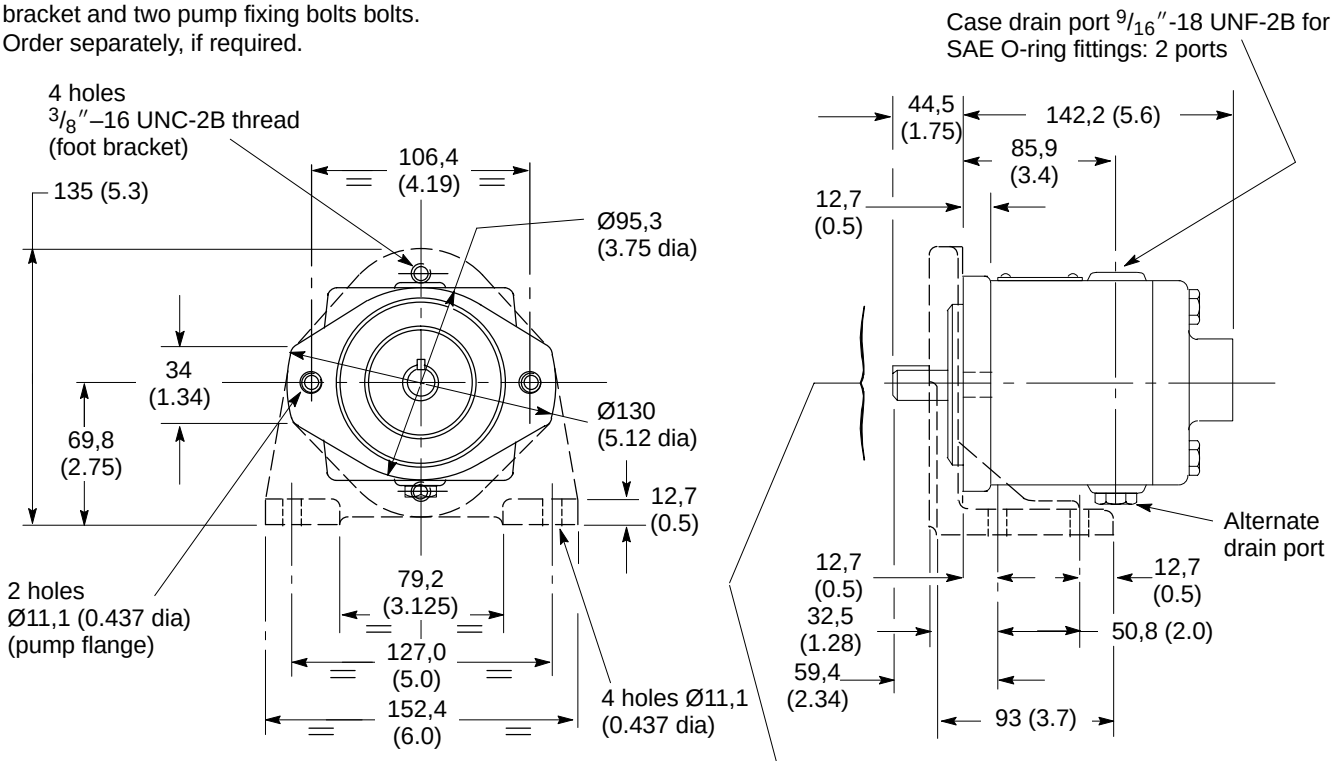
| Speed r/min | Pressure bar (psi) | Stroke | Noise level – dB(A)* | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PVB5 | PVB6 | PVB10 | PVB15 | PVB20 | PVB29 |
| 1000 | 35 (500) | Full flow | 51 | 52 | 54 | 58 | – | – |
| | | Cutoff | 51 | 51 | 44 | 47 | – | – |
| | 70 (1000) | Full flow | 54 | 55 | 56 | 60 | – | – |
| | | Cutoff | 52 | 54 | 49 | 54 | – | – |
| | 140 (2000) | Full flow | 56 | 57 | 60 | 62 | – | – |
| | | Cutoff | 58 | 56 | 55 | 59 | – | – |
| | 210 (3000) | Full flow | 60 | – | 61 | – | – | – |
| | | Cutoff | 59 | – | 59 | – | – | – |
| 1200 | 35 (500) | Full flow | 50 | 51 | 55 | 60 | – | – |
| | | Cutoff | 52 | 51 | 48 | 51 | – | – |
| | 70 (1000) | Full flow | 54 | 55 | 57 | 61 | 74 | 70 |
| | | Cutoff | 56 | 57 | 51 | 54 | – | – |
| | 140 (2000) | Full flow | 59 | 59 | 60 | 63 | 74 | 73 |
| | | Cutoff | 59 | 60 | 54 | 58 | 69 | 76 |
| | 210 (3000) | Full flow | 60 | – | 62 | – | 78 | – |
| | | Cutoff | 61 | – | 56 | – | – | – |
| 1500 | 35 (500) | Full flow | 54 | 54 | 58 | 63 | – | – |
| | | Cutoff | 52 | 52 | 51 | 52 | – | – |
| | 70 (1000) | Full flow | 58 | 58 | 60 | 64 | – | – |
| | | Cutoff | 57 | 57 | 55 | 55 | – | – |
| | 140 (2000) | Full flow | 61 | 62 | 62 | 66 | – | – |
| | | Cutoff | 62 | 59 | 62 | 59 | – | – |
| | 210 (3000) | Full flow | 64 | – | 65 | — | – | – |
| | | Cutoff | 62 | – | 63 | — | – | – |
| 1800 | 35 (500) | Full flow | 57 | 58 | 61 | 64 | – | – |
| | | Cutoff | 55 | 57 | 55 | 56 | – | – |
| | 70 (1000) | Full flow | 60 | 61 | 63 | 67 | 76 | 77 |
| | | Cutoff | 59 | 58 | 59 | 60 | – | – |
| | 140 (2000) | Full flow | 63 | 66 | 65 | 69 | 81 | 81 |
| | | Cutoff | 62 | 63 | 62 | 64 | 75 | 81 |
| | 210 (3000) | Full flow | 64 | – | 67 | – | 81 | – |
| | | Cutoff | 64 | – | 65 | – | – | – |

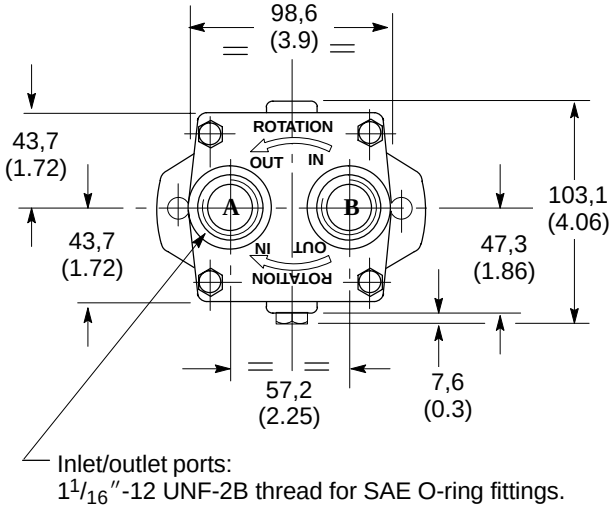
# PFB5 SAE Flange Mounting

3rd angle projection

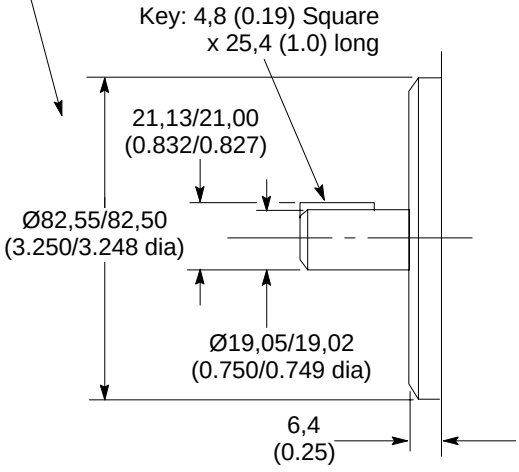
Installation Dimensions in mm (inches)

Optional foot bracket, shown in dashed outline; kit FB-A-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.




**View on rear end of pump**

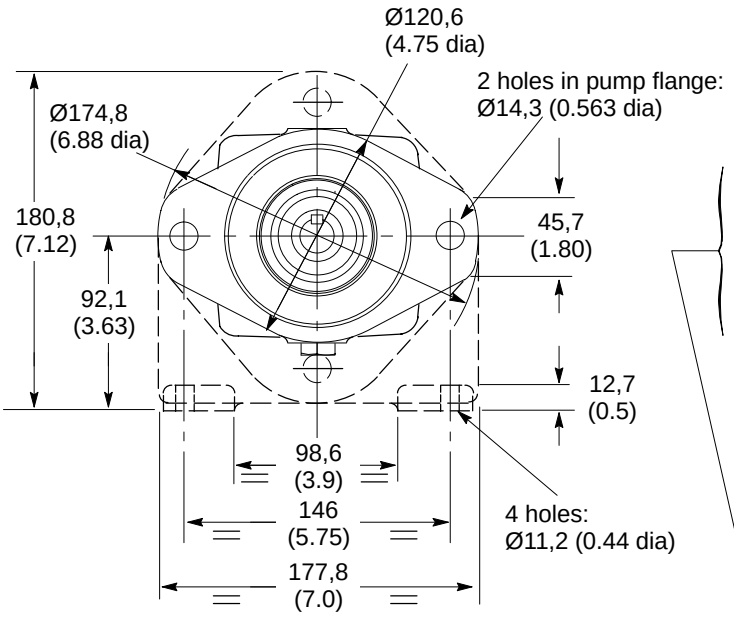


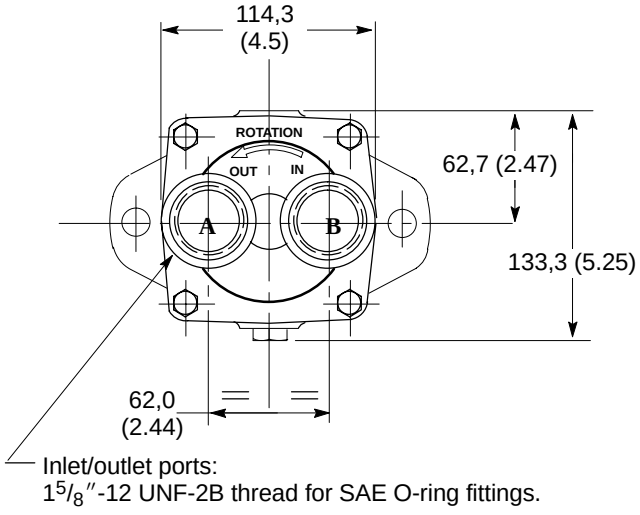

**Detail of shaft, key and locating diameter**

# PFB10 SAE Flange Mounting

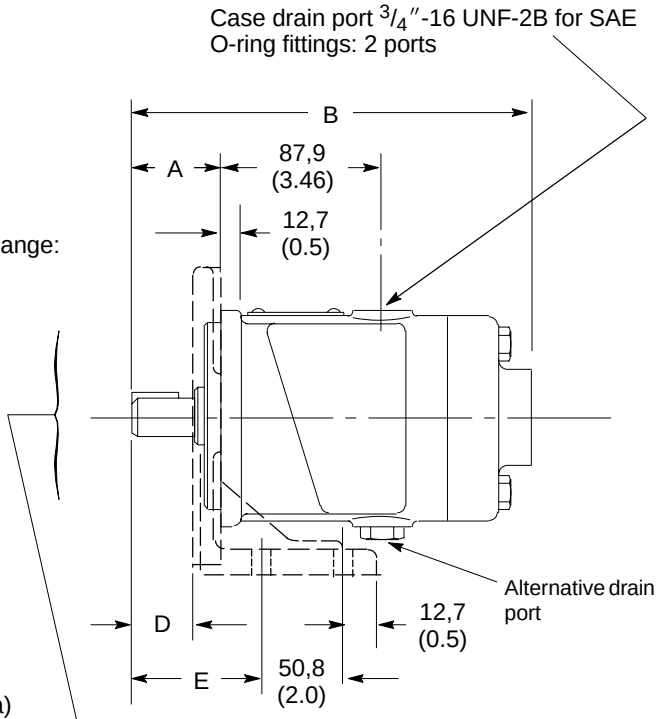
Installation Dimensions in mm (inches)

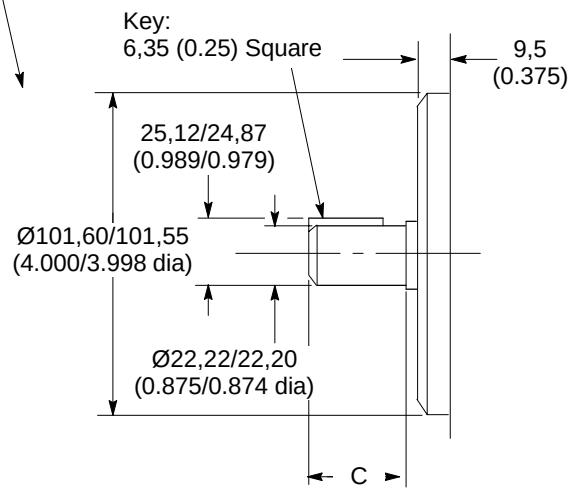
Optional foot bracket, shown in dashed outline; kit FB-B-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.




**View on rear end of pump**




**Detail of shaft, key and locating diameter**

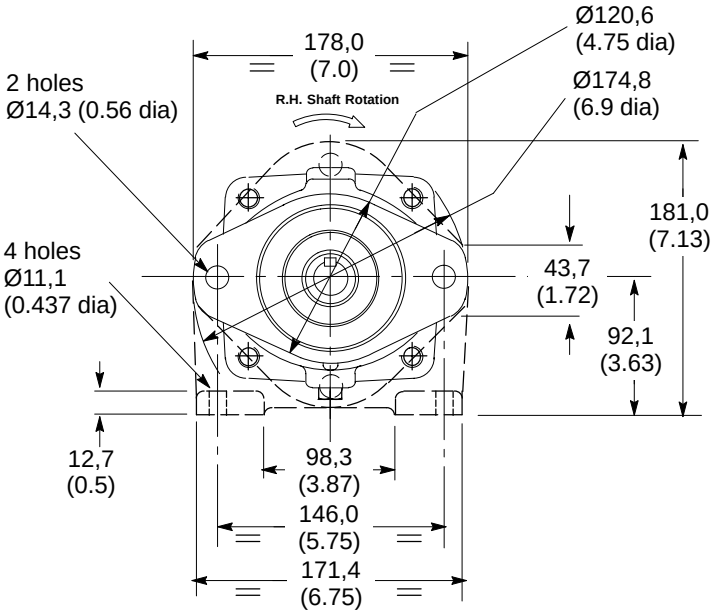
| Pump type | A | B | C | D* | E* |
|---|---|---|---|---|---|
| PFB10-*-30 | 44,4 (1.75) | 213,9 (8.42) | 33,3 (1.31) | 26,9 (1.06) | 59,4 (2.34) |
| PFB10-***Y**-30 | 58,7 (2.31) | 228,1 (8.98) | 47,6 (1.87) | 41,1 (1.62) | 73,7 (2.9) |

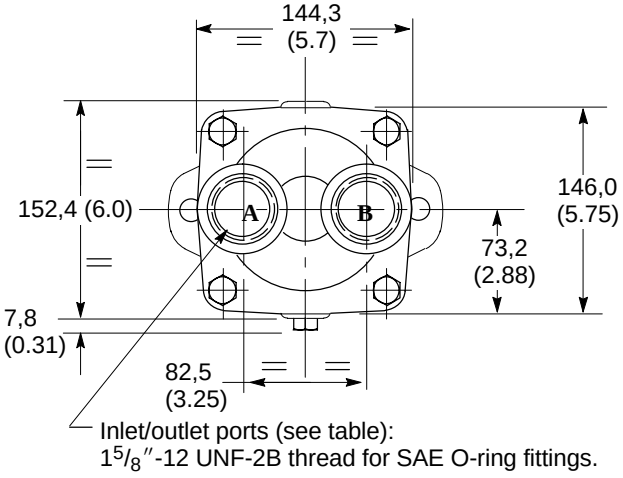
*Omit for foot bracket models)

# PFB20 SAE Flange Mounting

Installation Dimensions in mm (inches)

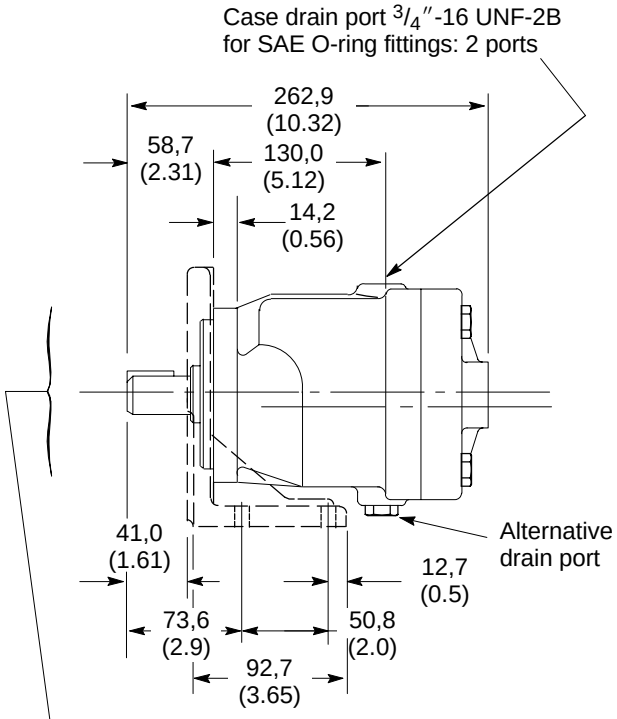
Optional foot bracket, shown in dashed outline; kit FB-B-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.

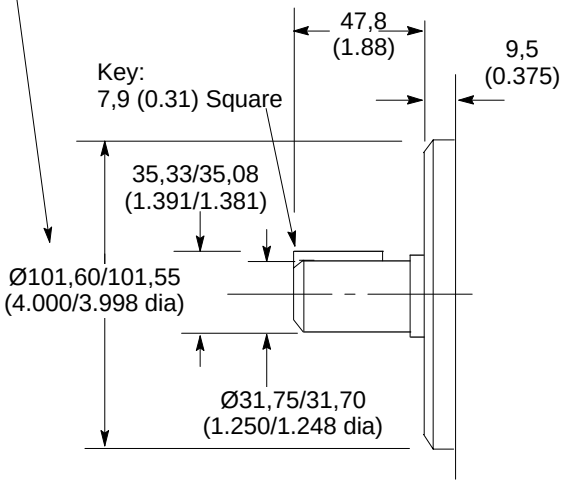



**View on rear end of pump**

| Shaft rotation | Inlet port | Outlet port |
|---|---|---|
| RH | B | A |
| LH | A | B |



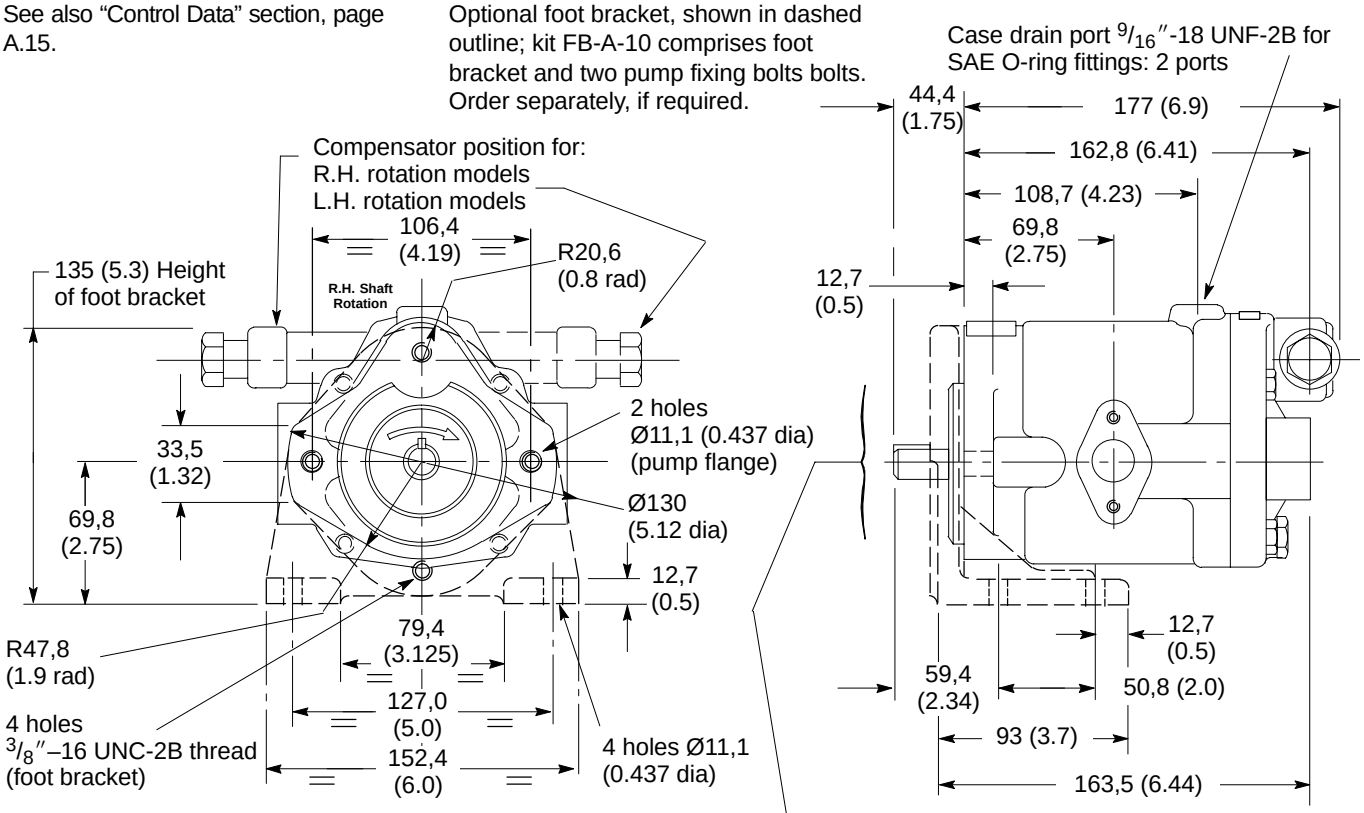

**Detail of shaft, key and locating diameter**

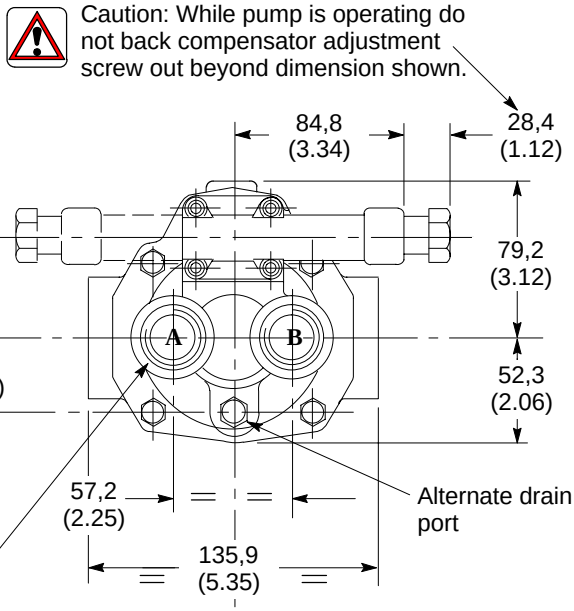
# PVB5/6 SAE Flange Mounting:
# Pressure Compensator Control - “C” and “CM”

Installation Dimensions in mm (inches)

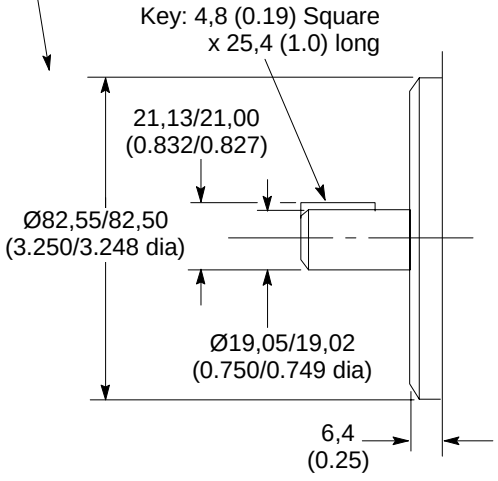
See also “Control Data” section, page A.15.

Optional foot bracket, shown in dashed outline; kit FB-A-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.




**View on rear end of pump**




**Detail of shaft, key and locating diameter**

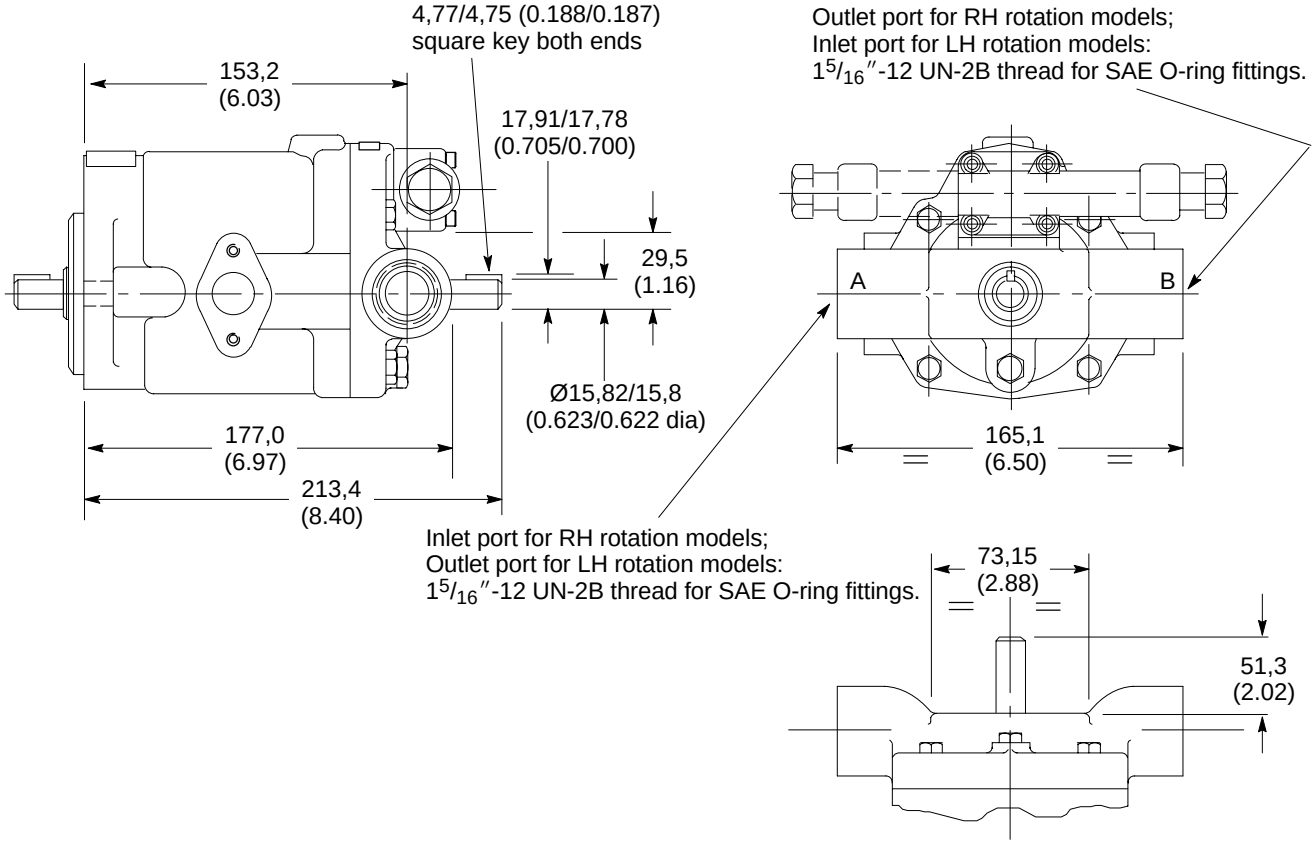
| Shaft rotation | Inlet port | Outlet port |
|---|---|---|
| RH | A | B |
| LH | B | A |

# PVB5/6 Thru-Shaft Models (with Side Ports)

Installation Dimensions in mm (inches)

Maximum output torque is 40 Nm (354 lbf in), less unput torque at system pressure, see performance curves:
At 1500 r/min drive speed, page A.8.
At 1800 r/min drive speed, page A.12.

For other dimensions and installation data see page A.20.

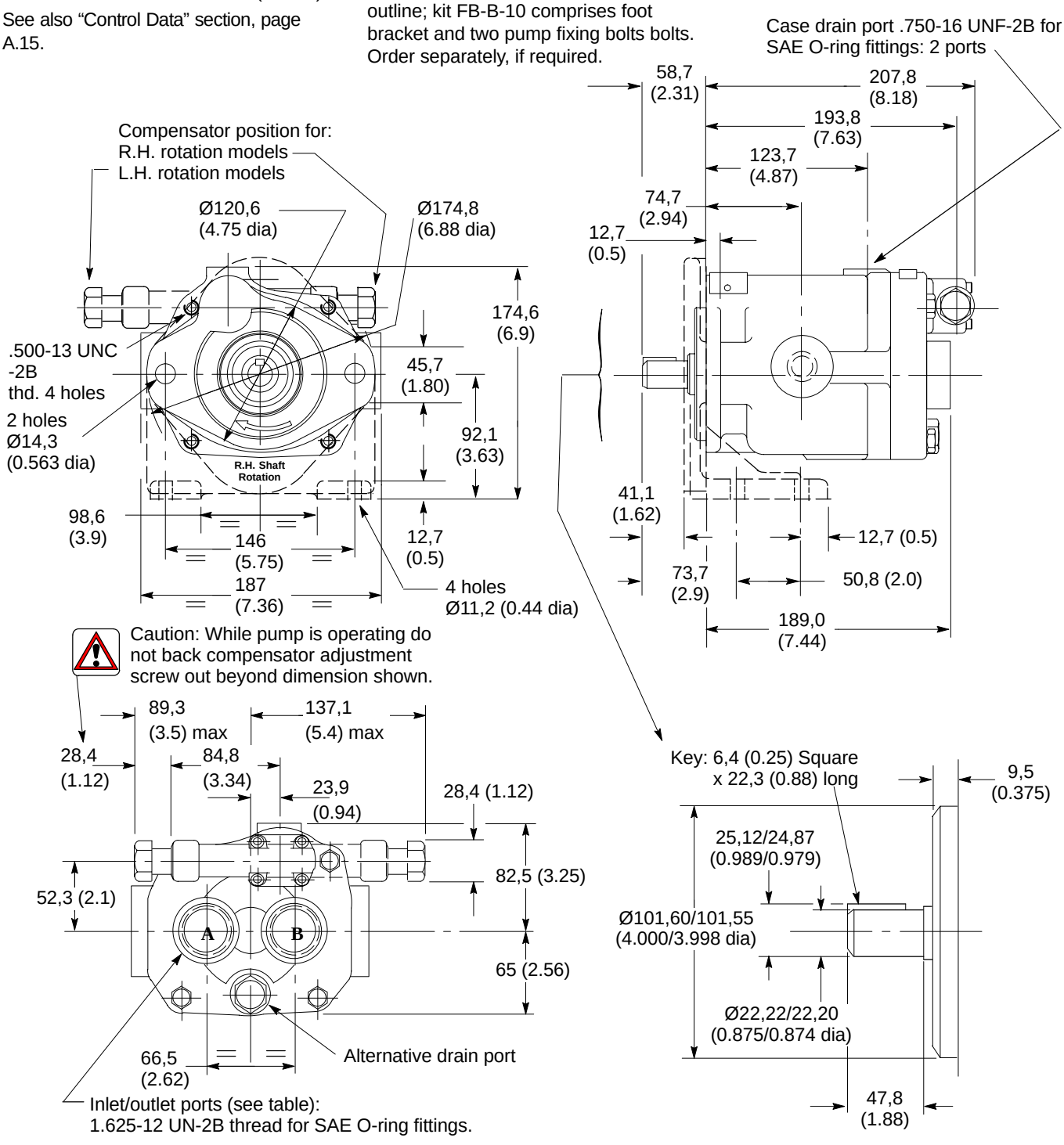


# PVB10/15 SAE Flange Mounting
# Pressure Compensator Control - “C” and “CM”

Installation Dimensions in mm (inches)

See also “Control Data” section, page A.15.

Optional foot bracket, shown in dashed outline; kit FB-B-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.




**View on rear end of pump**

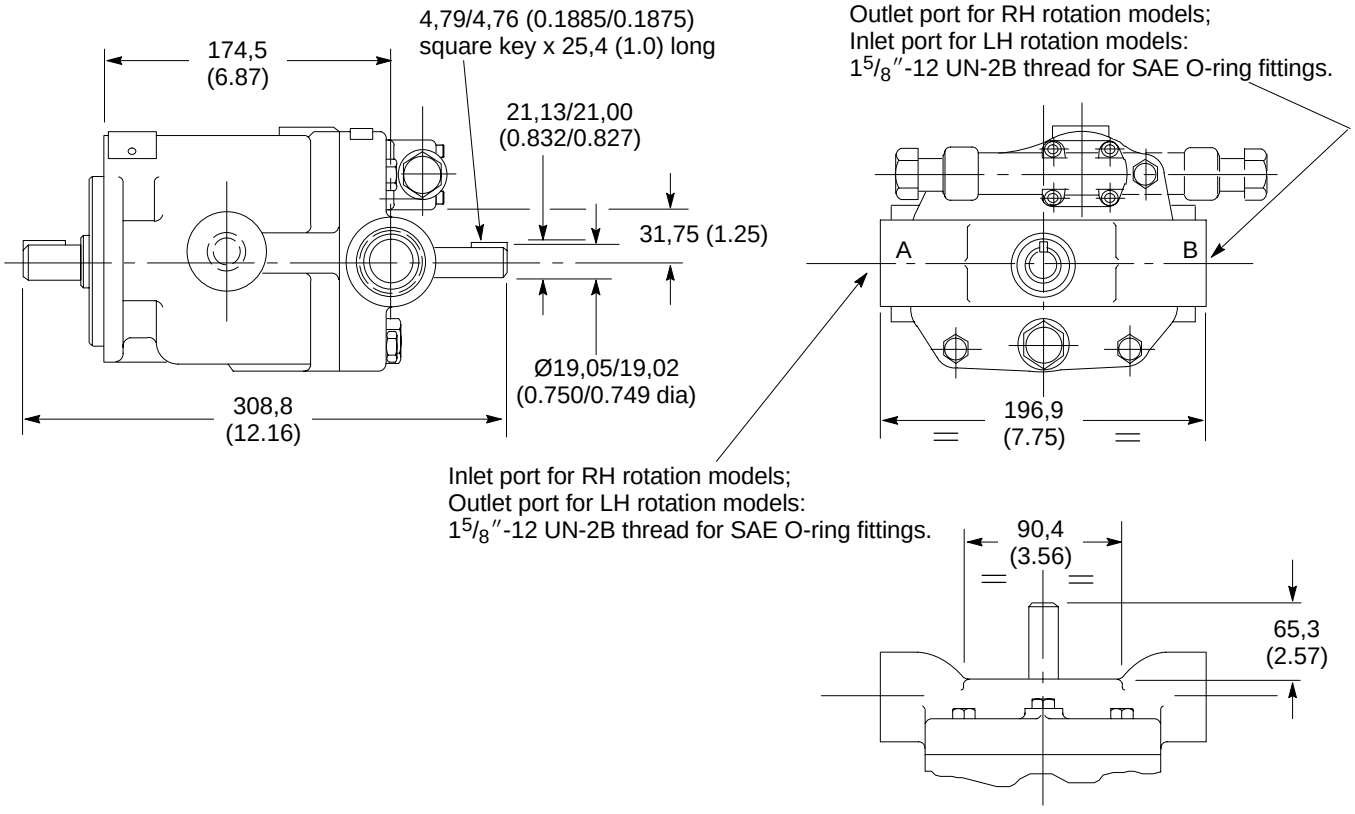
**Detail of shaft, key and locating diameter**

| Shaft rotation | Inlet port | Outlet port |
|---|---|---|
| RH | A | B |
| LH | B | A |

# PVB10/15 Thru-Shaft Models (with Side Ports)

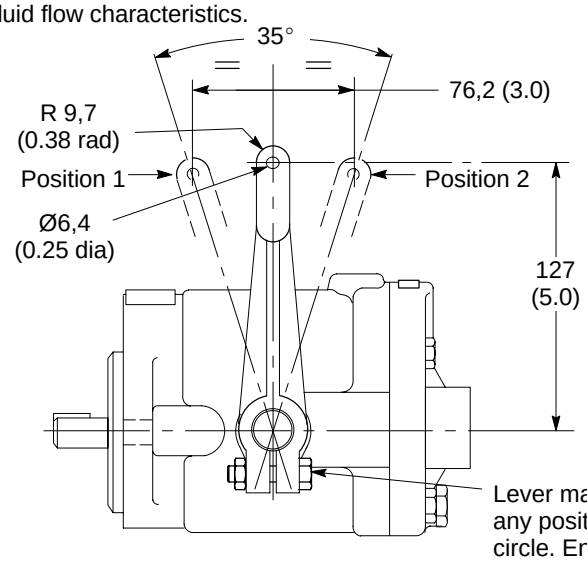
Maximum output torque is 83 Nm (735 lbf in), less unput torque at system pressure, see performance curves:
At 1500 r/min drive speed, pages A.8 & A.9.
At 1800 r/min drive speed, page A.12 & A.13.

For other dimensions and installation data see page A.22.



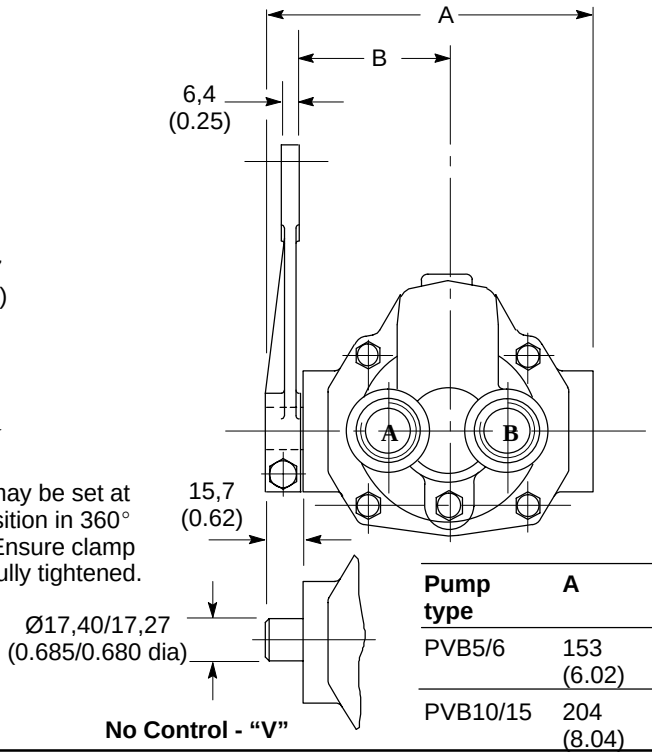
## Lever Control - “M” and No Control - “V”

Units with this control may be operated on both sides of center permitting bi-directional fluid flow characteristics.




Lever may be set at any position in 360° circle. Ensure clamp bolt is fully tightened.

| Shaft rotation | Lever position | Outlet port |
|---|---|---|
| RH | 1 | A |
| | 2 | B |
| LH | 1 | B |
| | 2 | A |



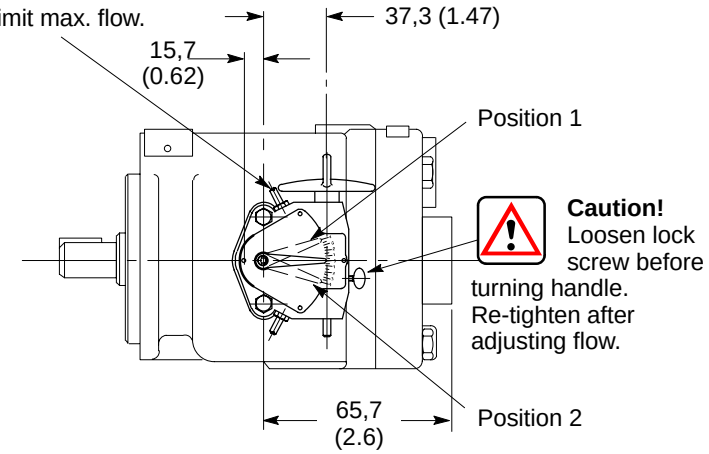

**No Control - “V”**

| Pump type | A | B |
|---|---|---|
| PVB5/6 | 153 (6.02) | 68,9 (2.7) |
| PVB10/15 | 204 (8.04) | 99,9 (3.93) |

## Handwheel Control - “H”

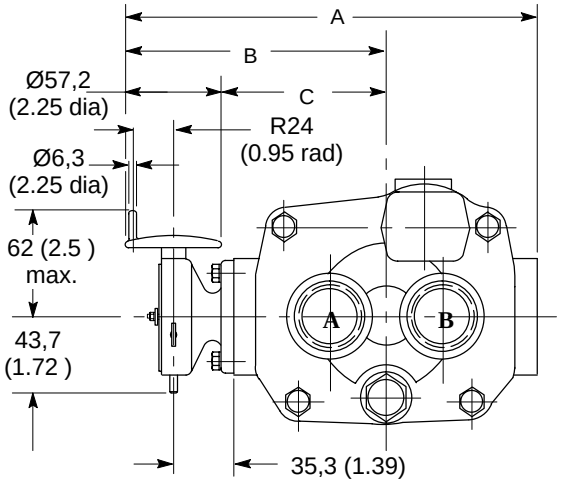
Units with this control may be operated on both sides of center permitting bi-directional fluid flow characteristics.

Max. flow adjustment. Adjust and lock to limit max. flow.




**Caution!** Loosen lock screw before turning handle. Re-tighten after adjusting flow.

| Shaft rotation | Pointer position | Handwheel rotation from zero | Outlet port |
|---|---|---|---|
| RH | 1 | Clockwise | A |
| | 2 | Counter-clockwise | B |
| LH | 1 | Clockwise | B |
| | 2 | Counter-clockwise | A |



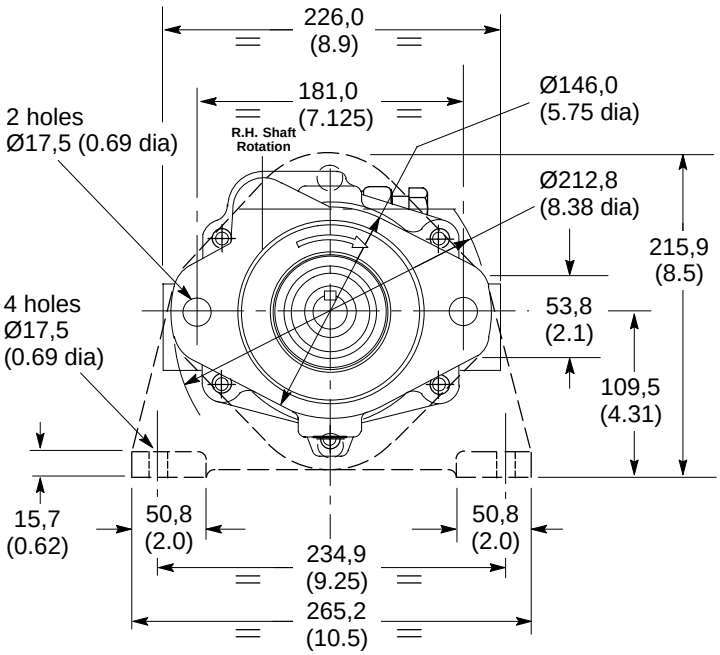

| Pump type | A | B | C |
|---|---|---|---|
| PVB5/6 | 200 (7.87) | 129 (5.08) | 70,6 (2.78) |
| PVB10/15 | 250 (9.84) | 140 (5.51) | 93,5 (3.68) |

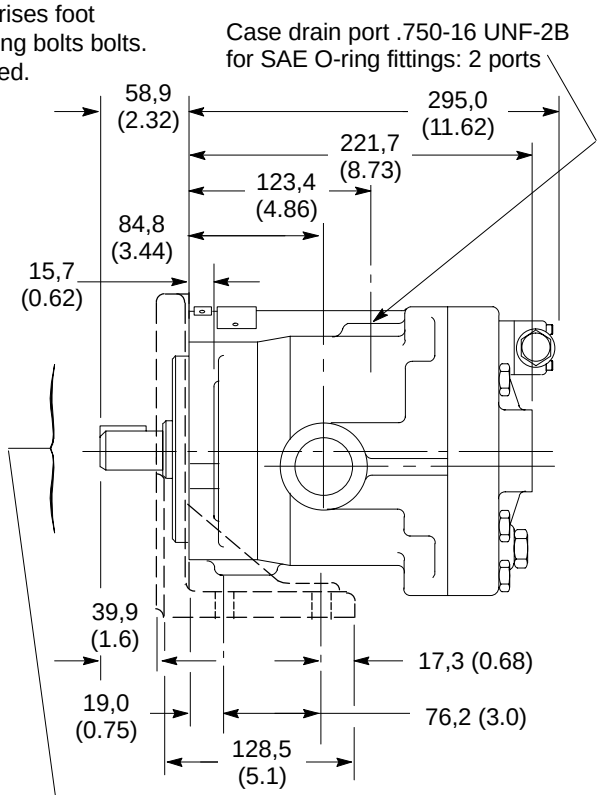
# PVB20/29 SAE Flange Mounting
# Pressure Compensator Control - “C” and “CM”

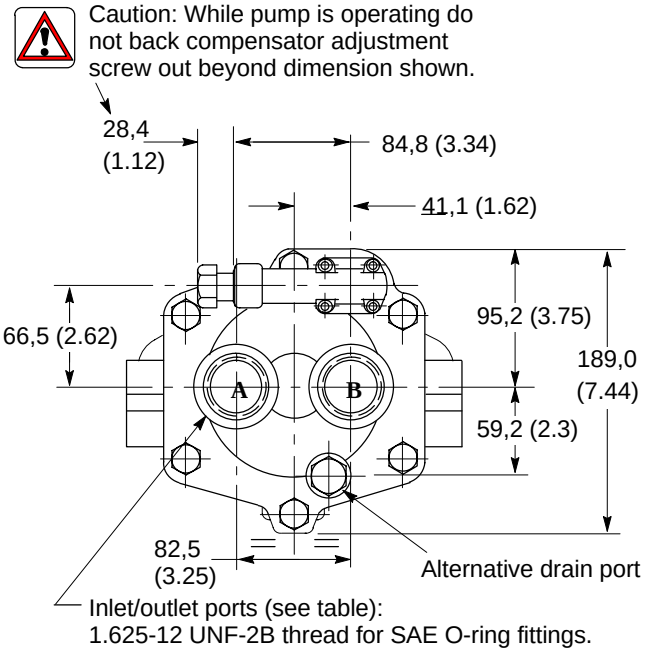
Installation Dimensions in mm (inches)

See also “Control Data” section, page A.15.

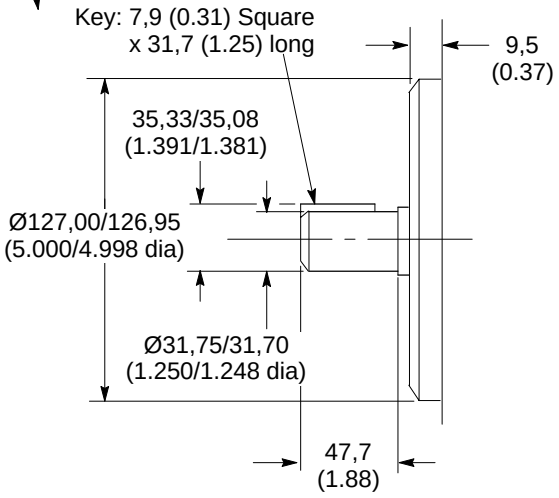
Optional foot bracket, shown in dashed outline; kit FB-C-10 comprises foot bracket and two pump fixing bolts bolts. Order separately, if required.




**View on rear end of pump**



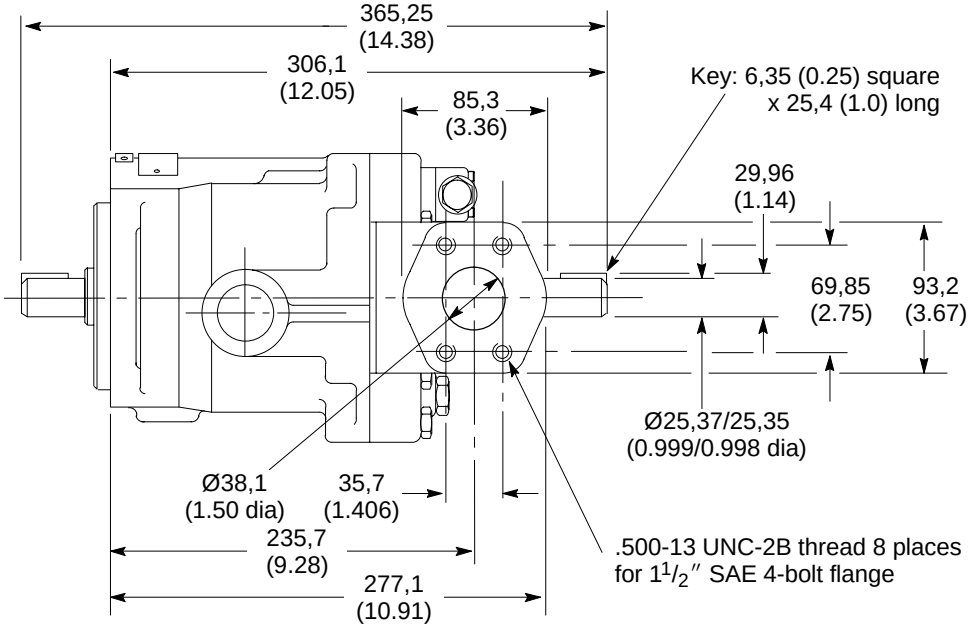

**Detail of shaft, key and locating diameter**

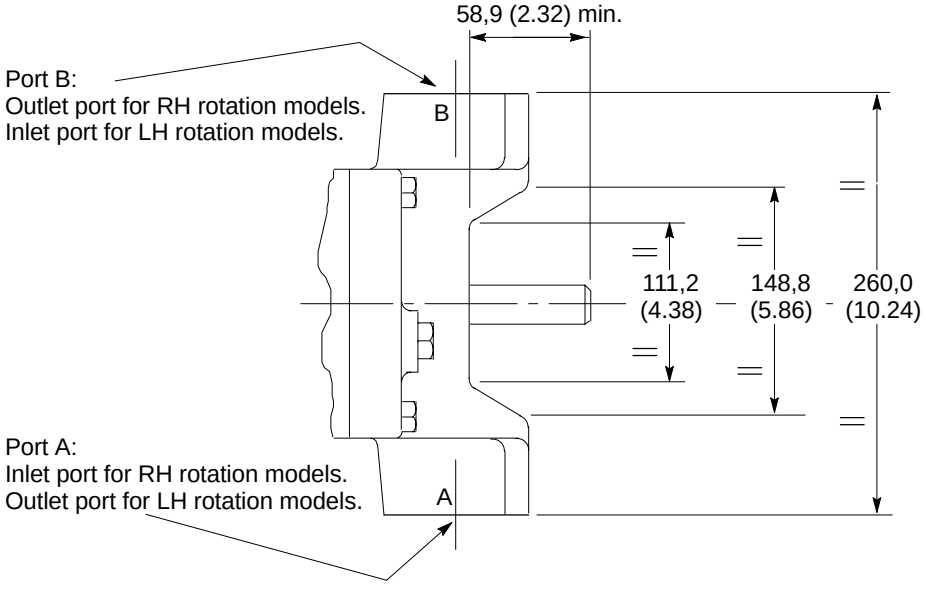
| Shaft rotation | Inlet port | Outlet port |
|---|---|---|
| RH | A | B |
| LH | B | A |

# PVB20/29 Thru-Shaft Models (with Side Ports)

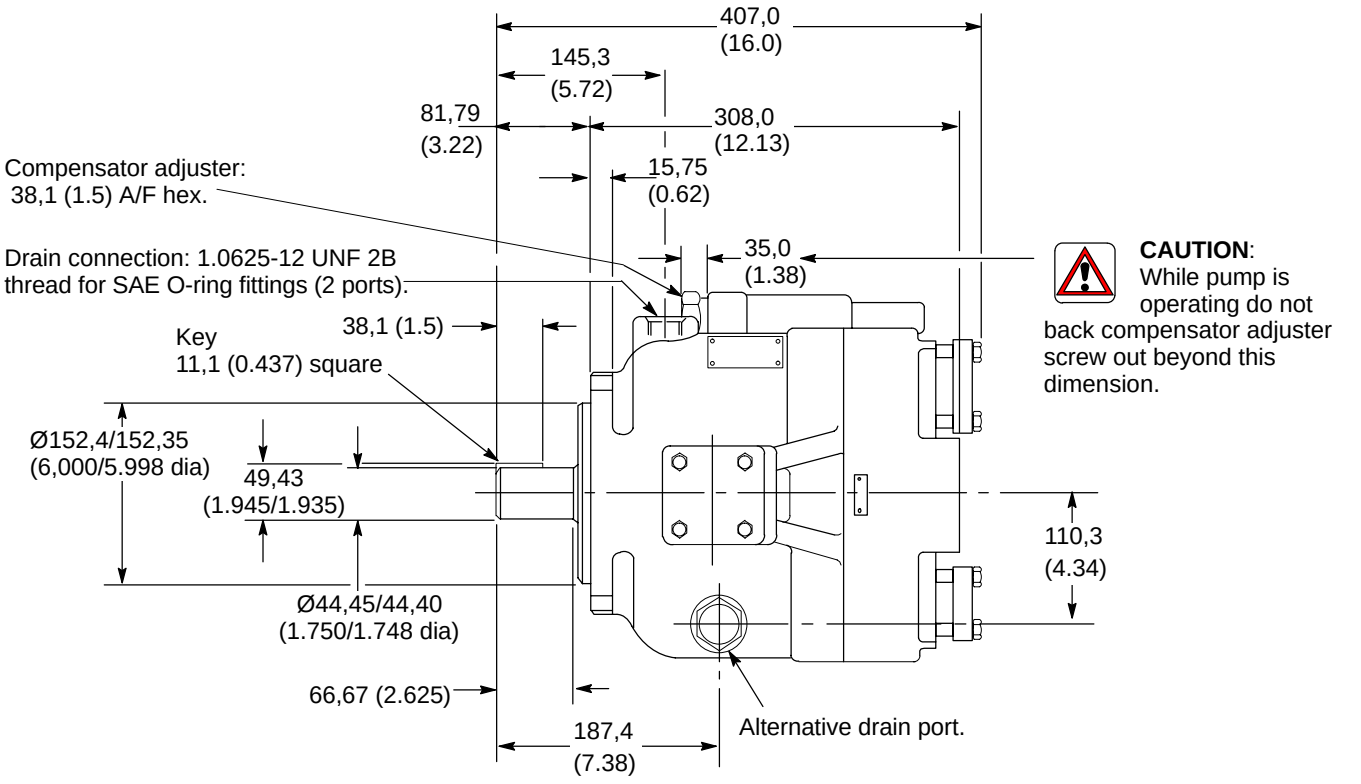
Maximum output torque is 159 Nm (1408 lbf in), less unput torque at system pressure, see performance curves:
At 1500 r/min drive speed, page A.9
At 1800 r/min drive speed, page A.13

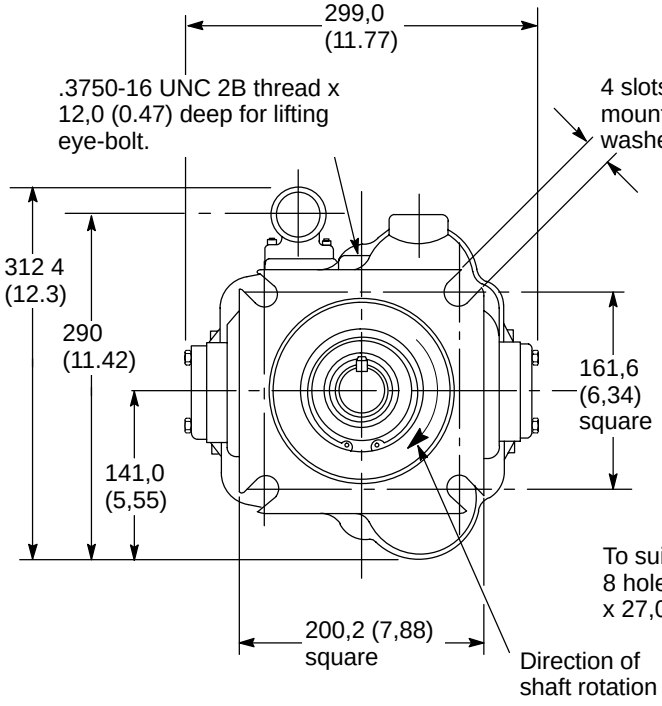
For other dimensions and installation data see page A.25.



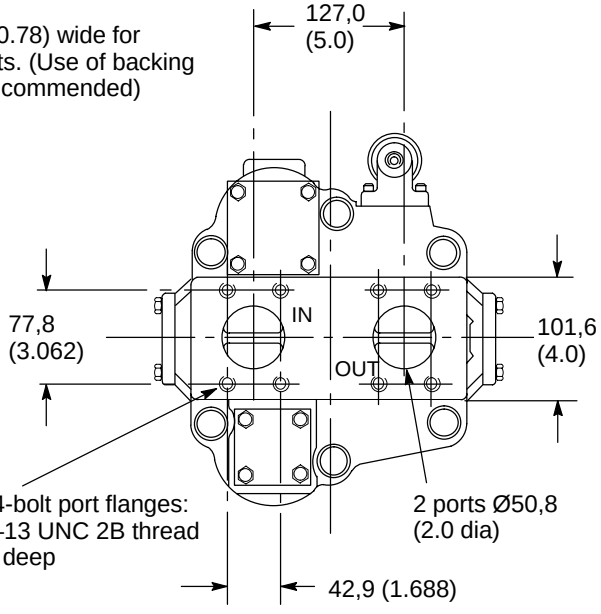



# PVB45 Flange-Mounted Model



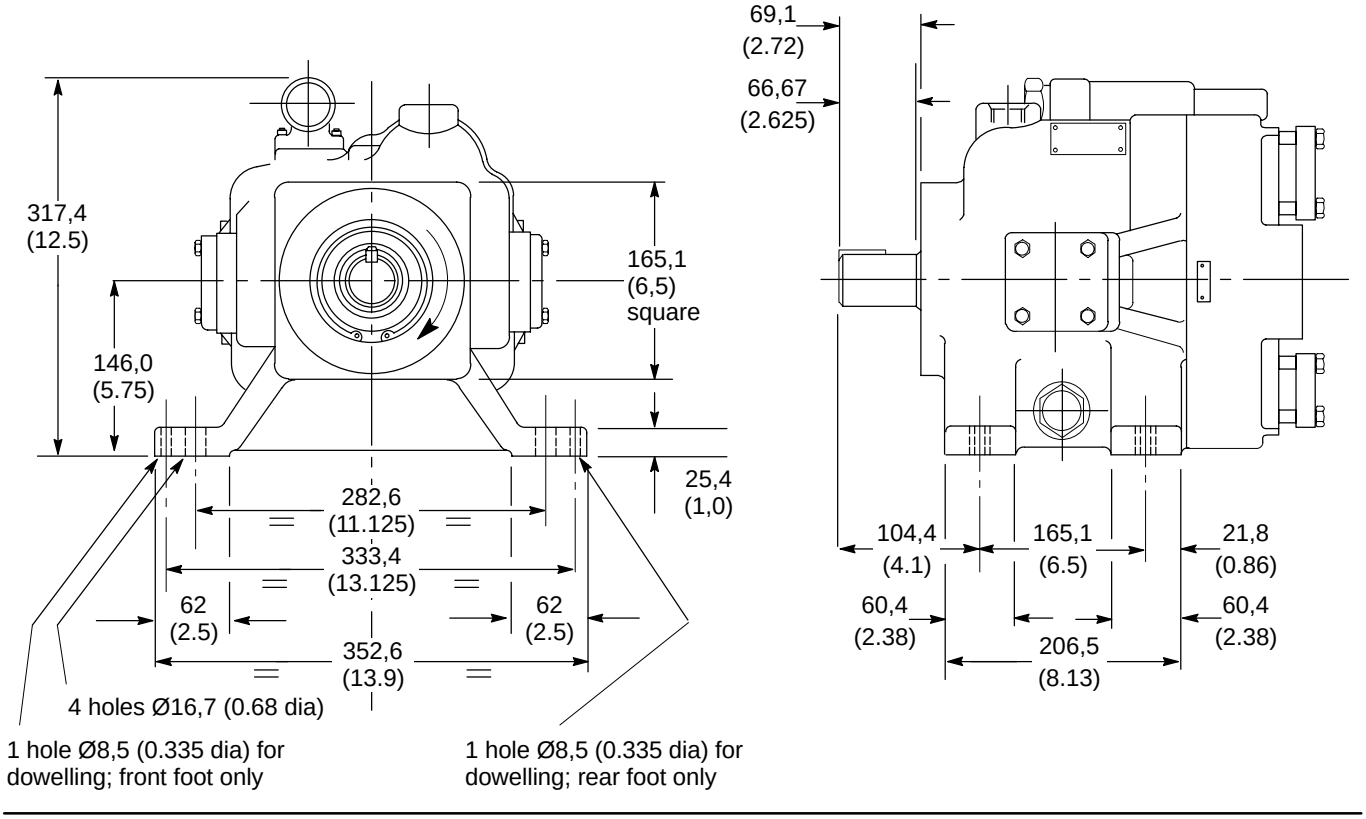

**View on shaft end of pump**



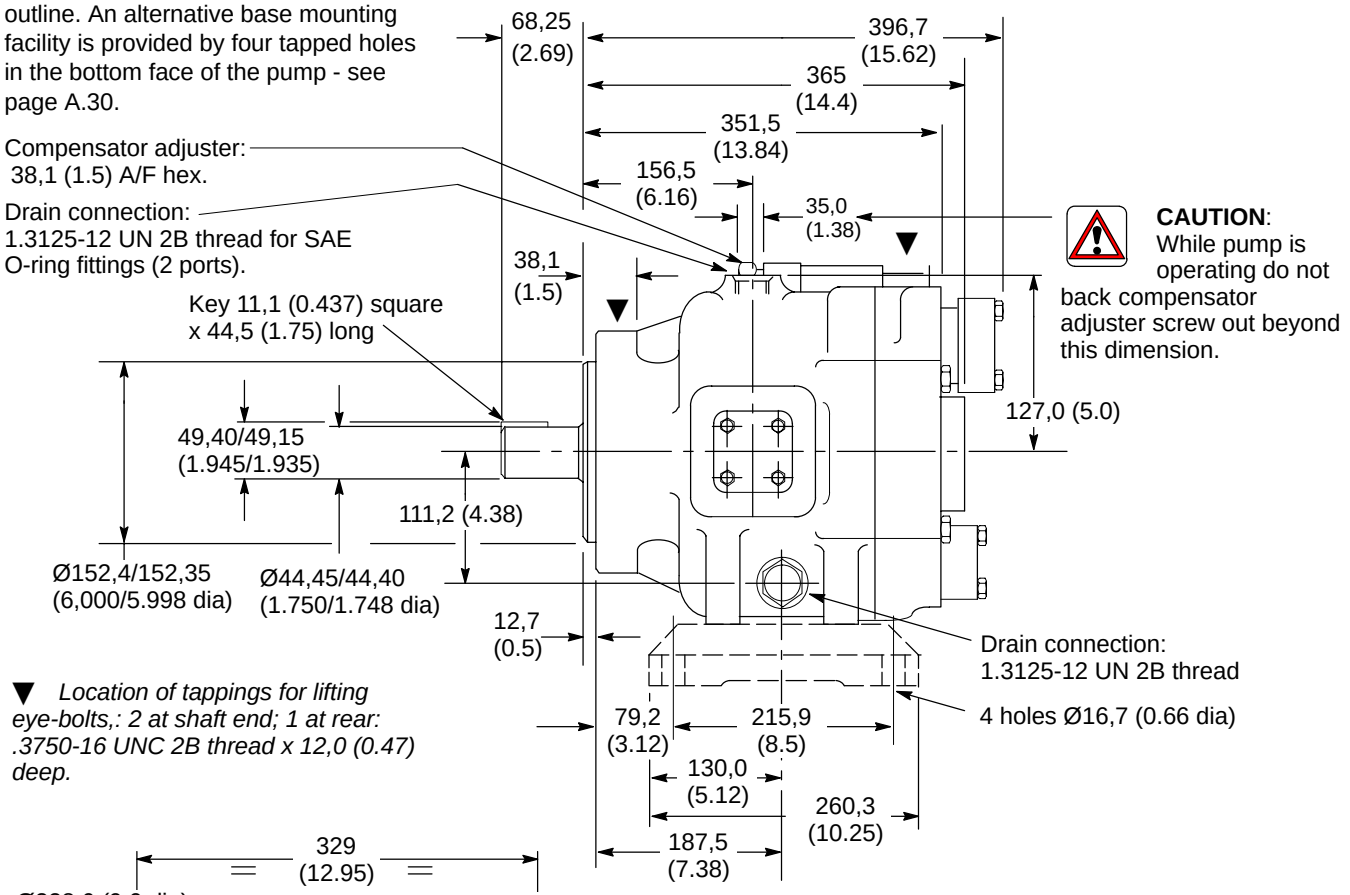

**View on rear end of pump**

# PVB45 Foot-Mounted Model

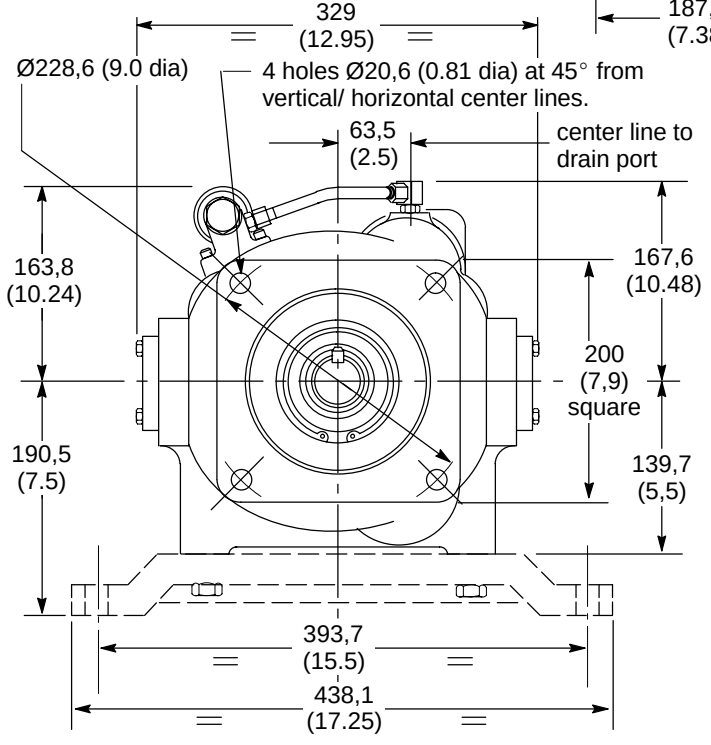
For other dimensions and installation data see page A.27 .



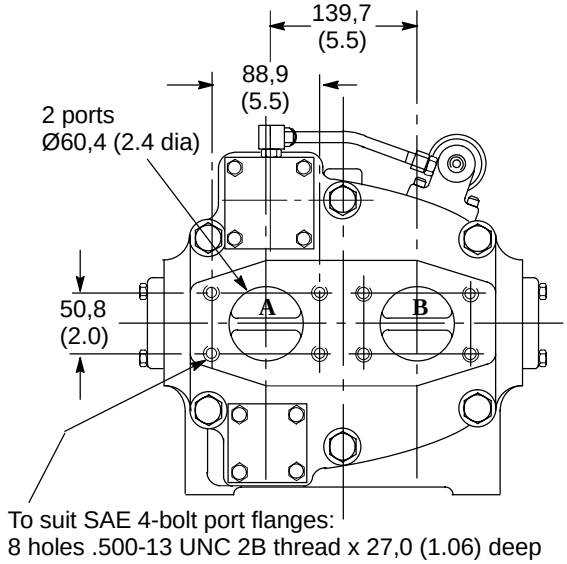
Foot mounting option (designated by Model Code [3] = “F”) is shown in dotted outline. An alternative base mounting facility is provided by four tapped holes in the bottom face of the pump - see page A.30.




▼ *Location of tappings for lifting eye-bolts,: 2 at shaft end; 1 at rear: .3750-16 UNC 2B thread x 12,0 (0.47) deep.*



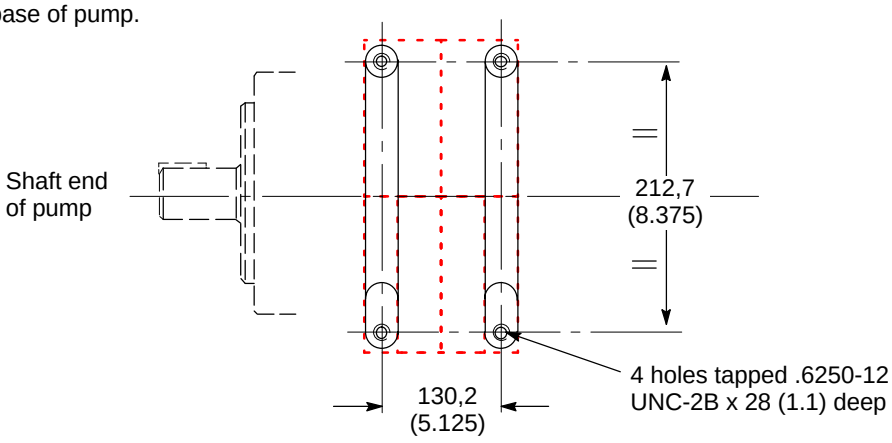

**View on shaft end of pump**




**View on rear end of pump**

| Shaft rotation | Inlet port | Outlet port |
|---|---|---|
| RH | A | B |
| LH | B | A |

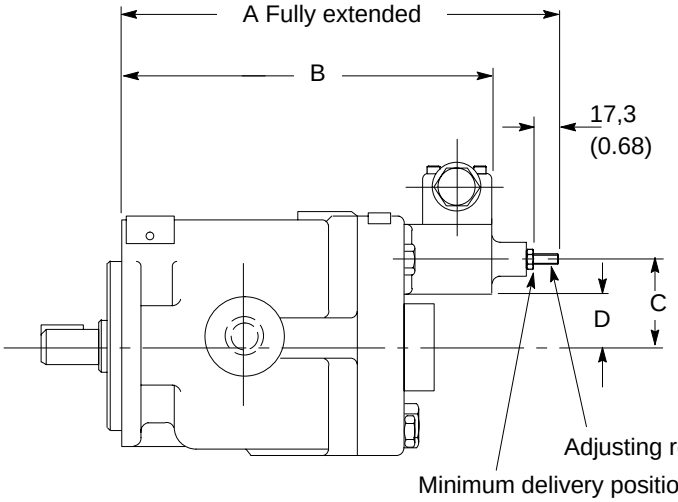
Detail of tappings in base of pump.



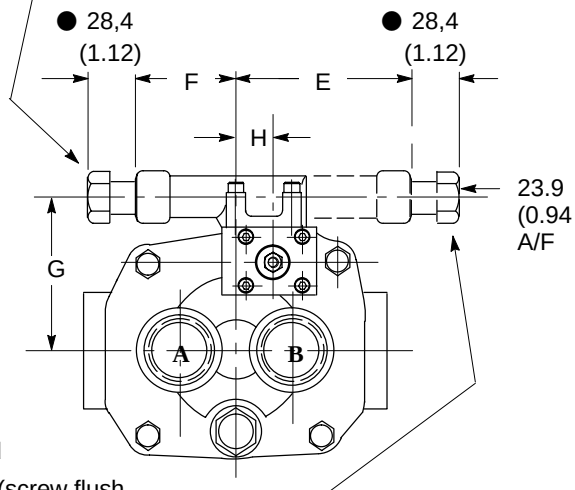

## PVB5/6, PVB 10/15 and PVB20/29 with Pressure Compensator and Adjustable Maximum Displacement Stop: Control Types "CC" and "CMC"

For general dimensions and installation data of these pumps, see pages A.20, A.22 and A.25

Caution: While pump is operating do not back compensator adjustment screw out beyond dimension ● shown.




**Note.**
Compensator position for:
PVB5/6-*LSY (LH rotation models) and
PVB10/15 -*RSY (RH rotation models)
PVB20/29 -**SY (RH and LH rotation models)

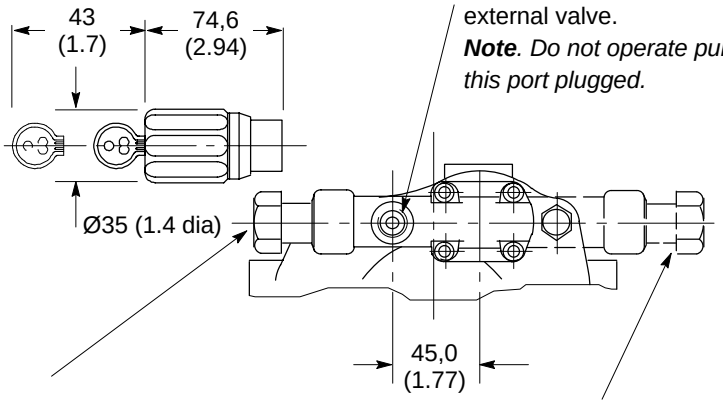



**Note.**
Compensator position for:
PVB5/6-*RSY (RH rotation models) and
PVB10/15 -*LSY (LH rotation models)

| Pump type | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| PVB5/6 | 233 (9.17) | 195 (7.68) | 50 (1.97) | 22,9 (0.9) | 76,2 (3.0) | 94,4 (3.72) | 94,4 (3.72) | _ |
| PVB10/15 | 266 (10.47) | 226 (8.9) | 52,3 (2.06) | 25,1 (0.99) | 118 (4.65) | 70,8 (2.79) | 90,2 (3.55) | 23,8 (0.94) |
| PVB20/29 | 294 (11.56) | 254 (10.0) | 66,5 (2.62) | 41,9 (1.65) | _ | 53,3 (2.1) | 104,4 (4.11) | 41,1 (1.62) |

## PVB5 to 29 with “CG” Remote Control of Compensator

### Type “GEVS”




.4375-20UNF-2B thread for SAE “CG” control models, connect to external valve.
***Note**. Do not operate pump with this port plugged.*

Location as shown for:
PVB5/6 LH rotation models,
PVB10/15 RH rotation models and
PVB20/29 LH and RH rotation models.

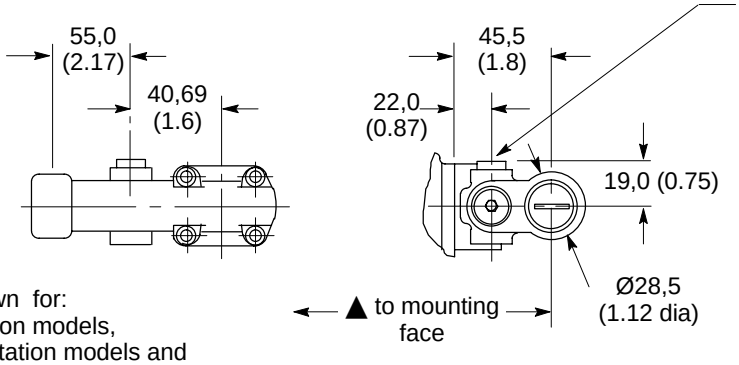
Location as shown in dotted outline for:
PVB5/6 RH rotation models and
PVB10/15 LH rotation models.

**Caution:** Effective compensator setting will be compensator control setting **plus** remote relief valve setting.

**Adjustment procedure**

1. Turn remote pressure control (such as C-175) anti-clockwise to minimum setting.
2. Turn compensator adjustment plug to desired minimum pressure - 17 bar (250 psi) or higher.
3. Full pressure range can now be obtained with remote pressure control.

## “CVP” Load Sensing with Pressure Limiter

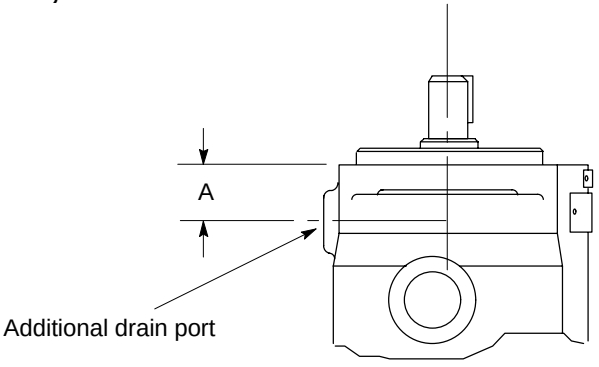



Load sensing control port:
.4375-20 UNF-2B thread
for SAE O-ring fittings.

Location as shown for:
PVB5/6 LH rotation models,
PVB10/15 RH rotation models and
PVB20/29 LH and RH rotation models.

▲ PVB5/6 . . . . . 191 (7.51)
PVB10/15 . . . . . 222 (8.75)
PVB20/29 . . . . . 250 (9.84)

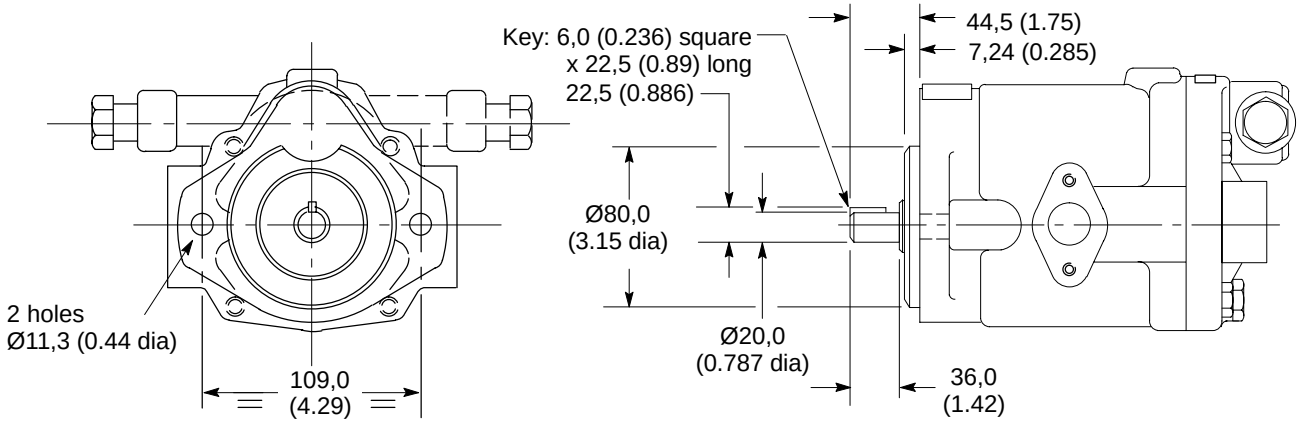
## Vertical “Shaft-up” Installation - “S30” Drain Port Option, for PVB5 to 29



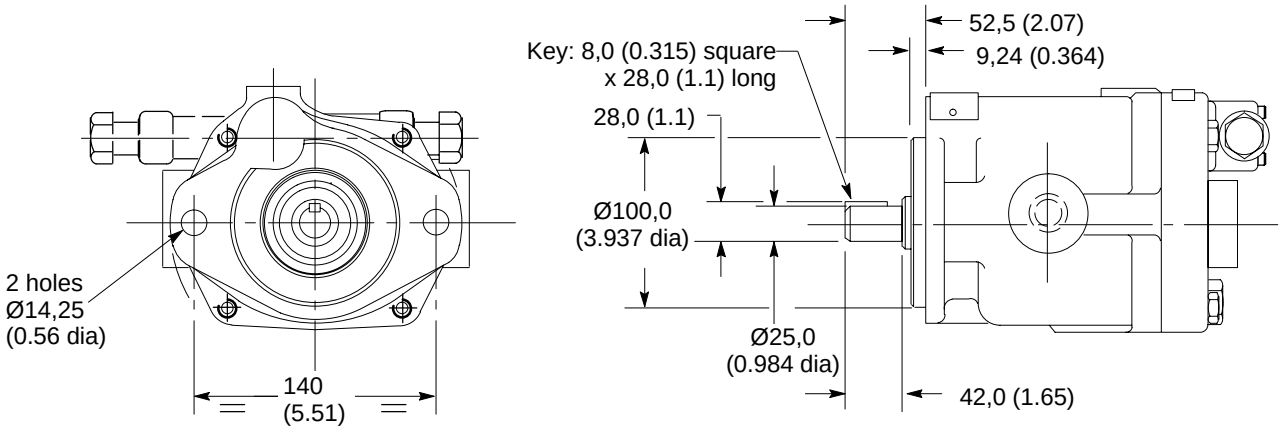

| Pump type | Port tapping | A |
|---|---|---|
| PFB5 | .562518UNF-2B | 28,7 (3.85) |
| PVB5/6 | .5625 18UNF-2B | 19 (0.75) |
| PVB10/15 | .7500 16UNF-2B | 29,3 (1.15) |
| PVB20/29 | .7500 16UNF-2B | 38,9 (1.53) |

For dimensions/data not shown refer to corresponding SAE models.

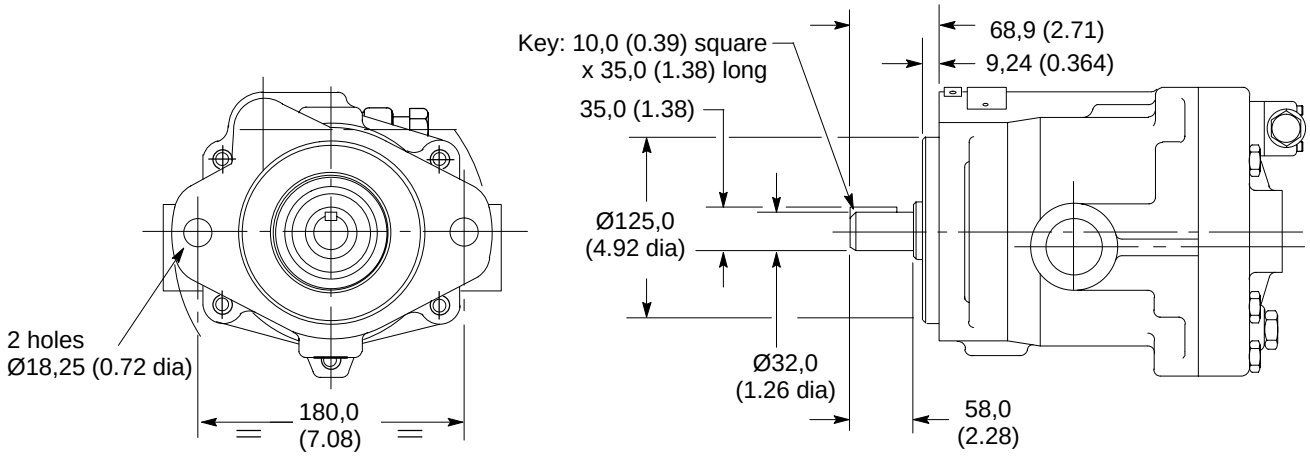
## PVB5/6 – Pressure Compensated Control – “C” and “CM”




## PVB10/15 – Pressure Compensated Control – “C” and “CM”




## PVB20/29 – Pressure Compensated Control – “C” and “CM”



## Mass, approx.

**Flange Mounting Models**

PFB5 . . . . . 5 kg (11 lb)
PFB10 . . . . . 10 kg (22 lb)
PFB20 . . . . . 19 kg (42 lb)
PVB5/6 . . . . . 8 kg (18 lb)
PVB10/15 . . . . . 15 kg (33 lb)
PVB20/29 . . . . . 26 kg (57 lb)
PVB45 . . . . . 96 kg* (211 lb)
PVB90s . . . . . 104 kg (230 lb)

** Also foot mounting models.*

▲ *Combined foot/flange mounting models.*

**Foot Bracket Kits**

FB-A-10 . . . . . 1,8 kg (4 lb)
FB-B-10 . . . . . 2,3 kg (5 lb)
FB-C-10 . . . . . 5,5 kg (12 lb)

## Installation Data

Horizontal mounting is resommended to maintain necessary case fluid level. Vertical “shaft-up” installation is possible with pumps ordered to include the extra drain port denoted by the “S30” feature; see “Model Code”. In all cases the drain line must be full size, unrestricted and connected from the uppermost drain port directly to the reservoir in such a manner that the housing remains filled with fluid.

Piping of drain line must prevent siphoning. Pipe drain line so that it terminates below fluid level. No other lines are to be connected to this drain line.



Caution must be exercised to never exceed the following unit case pressures:

0,7 bar (10 psi) for PFB10 only.
0,35 bar (5psi) for all other models.

## Starting

Before starting, fill case with system fluid through the uppermost drain port. Housing must be kept full at all times to provide internal lubrication.When first starting it may be necessary to bleed air from pump outlet to permit priming and to reduce noise. Bleed by loosening an outlet connection until a clear stream of fluid appears. An air bleed valve, ABS-03, is available for this purpose.

## Ordering Procedure

Before ordering, check availability with your Vickers reprecentative.