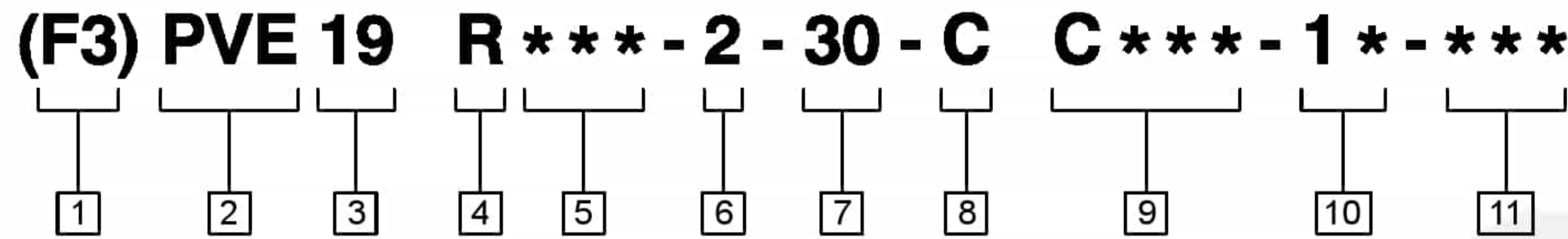


# PVE19 / 21

## Model Code



**1 Seals**

F3 – Viton® (optional)  
Blank – Buna N (standard)

**2 Model series**

PVE – Piston pump, variable, E series

**3 Frame size**

19 – 72 l/min (19 USgpm) @ 1800 rpm  
41 cm<sup>3</sup>/r (2.50 in<sup>3</sup>/r)  
21 – 79 l/min (21 USgpm) @ 1800 rpm  
45cm<sup>3</sup>/r (2.75 in<sup>3</sup>/r)

**4 Rotation (viewed from shaft end)**

R – Right hand  
L – Left hand

**5 Thru-drive version**

Blank – No thru-drive  
TA9 – SAE “A” 9T (J744 82-2)  
TA11 – SAE “A” 11T (J744 82-2)  
TB26 – SAE “B” 26T (J744 101-2)

**6 Input shaft**

1 – SAE “BB” straight keyed (standard)  
2 – SAE “BB” splined (standard)  
9 – SAE “B” splined (optional)  
16 – SAE “B” straight keyed (optional, not available on thru-drives)  
28 – 26 tooth splined (special Vickers, not available on thru-drives). See chart.

**7 Pump design**

30 – Side port design  
40 – End port design (must include 030 special suffix)

Subject to change. Installation dimensions remain the same for design numbers \*0 to \*9 inclusive.

**8 Adjustable maximum volume stop (Not available with thru-drive option)**

Blank – Omit if not required and with CAC control option  
C – With stop option

**9 Control options**

C – Pressure compensator, adjustable from 20–207 bar (300–3000 psi) (standard)  
CA – Pressure compensator, adjustable from 20–103 bar (300–1500 psi) (standard)  
CAC – Adjustable maximum displacement stop with “CA” type pressure compensator  
CG – Remote adjustment pressure compensator (optional)  
CVP – Load sensing with “C” type pressure limiter and 0.015” bleed orifice set at 11 bar (160 psi). Range of 11–17 bar (160–250 psi). (standard)  
CVPC – Load sensing with “C” type pressure limiter and 0.015” bleed orifice set at 24 bar (350 psi). Range of 17–31 bar (250–450 psi). (optional)

**10 Control design**

10 – C, CA, and CG  
11 – CC, CAC, and CCG  
12 – CVP, CVPC, CCVP, and CCVPC

**11 Special suffix**

Blank – Omit if not required  
030 – End ports (40 design)  
047 – Plug, no bleed down orifice in load sense control  
298 – Special CG control for use with electronically modulated relief valve

## PVE19 / 21 Shaft Torque Data

Input Shaft	Designation	Thru-Drive Option	Maximum Input Torque N.m (lb.in.)
1	SAE "BB" straight keyed	Yes	215 (1900)
2	SAE "BB" spline 15T, 16/32 D.P., FRSF	Yes	337 (2987)
9	SAE "B" spline 13T, 16/32 D.P., FRSF	Yes	208 (1850)
16	SAE "B" straight keyed	No	135 (1200)
28	Special Vickers 26T for use in rear pump of tandem PVE**-PVE** unit	No	N/A

**Note:** See page A.20 for more details.

## Typical Rear Pumps for PVE19/21 Thru-Drives

Model	Typical Rear Pump Model	Rear Pump Shaft Code	PVE** Thru-Drive Coupling
TA9	PVQ10/13 PVB5/6 V10 V20	3 Suffix -S214 11 62	864224 (9T / 9T Straight)
TB26	PVE12 PVE19/21 PVQ20/32 PVQ40/45 V2010 or V2020 20V(Q)	2 9 3 3 11 151	864307 (26T / 13T Step)
	PVE19/21 PVQ40/45 2520V(Q)	2 4 166	475134 (26T / 15T Step)
	PVE12 PVE19/21 PVQ20/32 PVQ40/45	28	627168 (26T / 26T Straight)

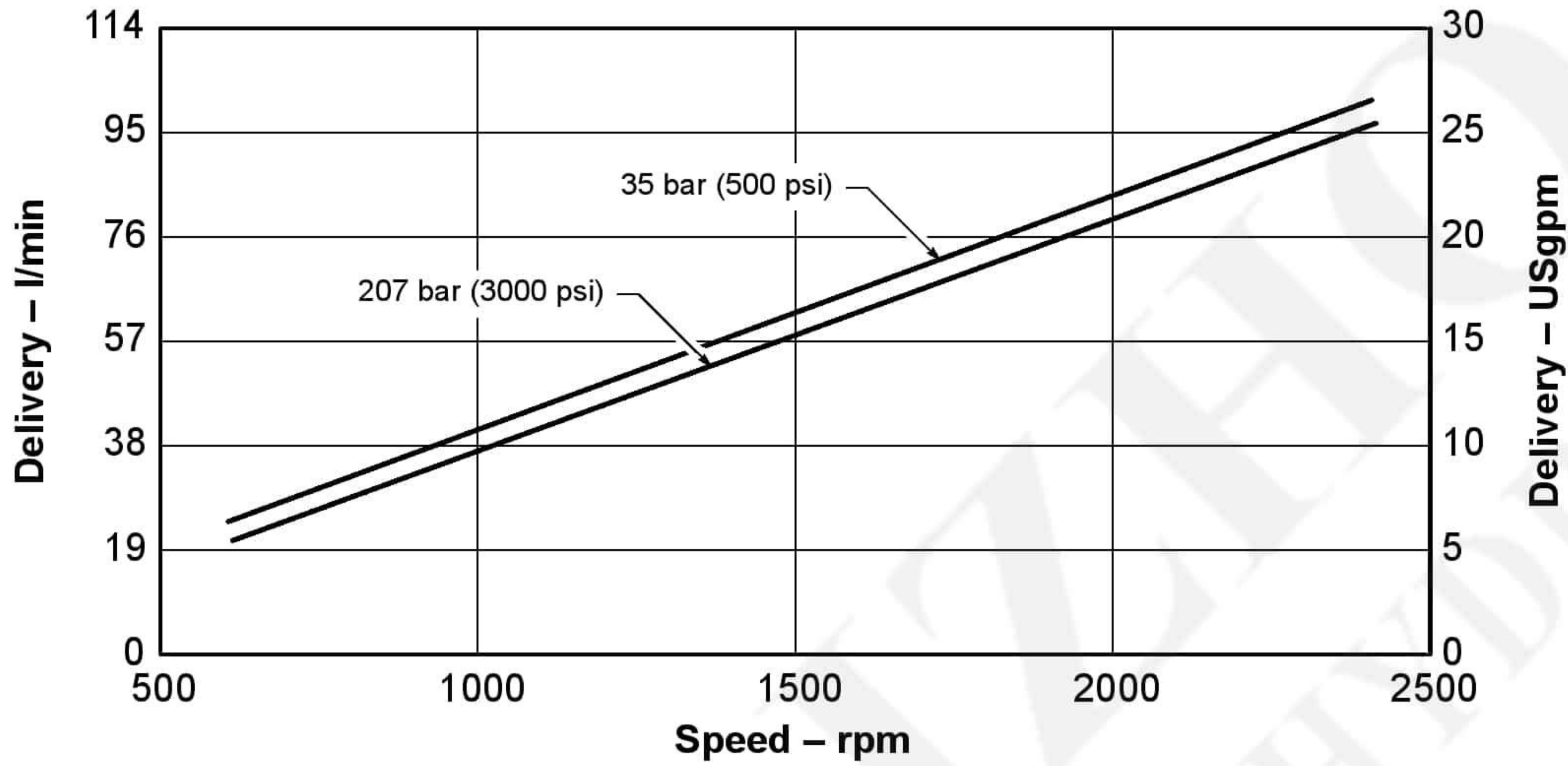
**Note:** "A11" (not listed above) is intended for special applications only.

# Performance Curves

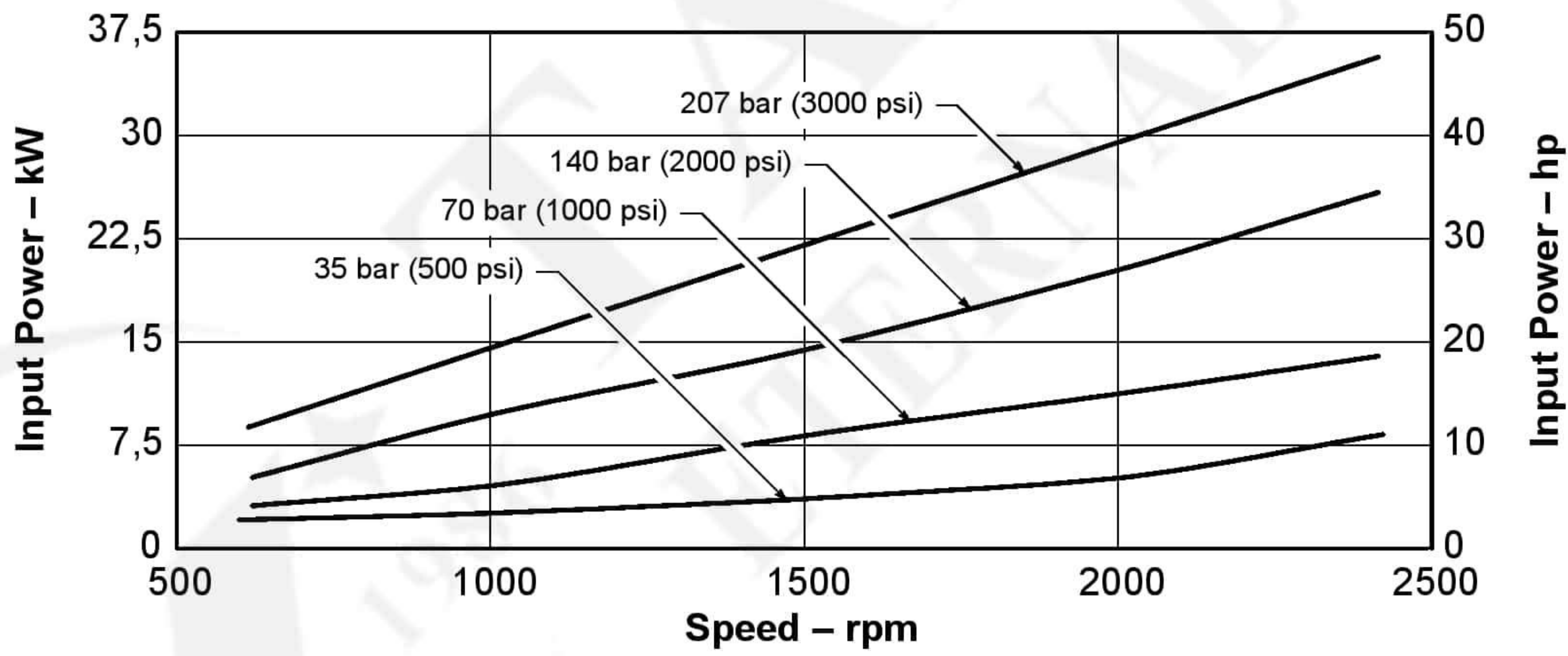
## PVE19

Oil type: SAE 10W  
 Oil temperature: 82°C (180°F)  
 Inlet pressure: 0 psi

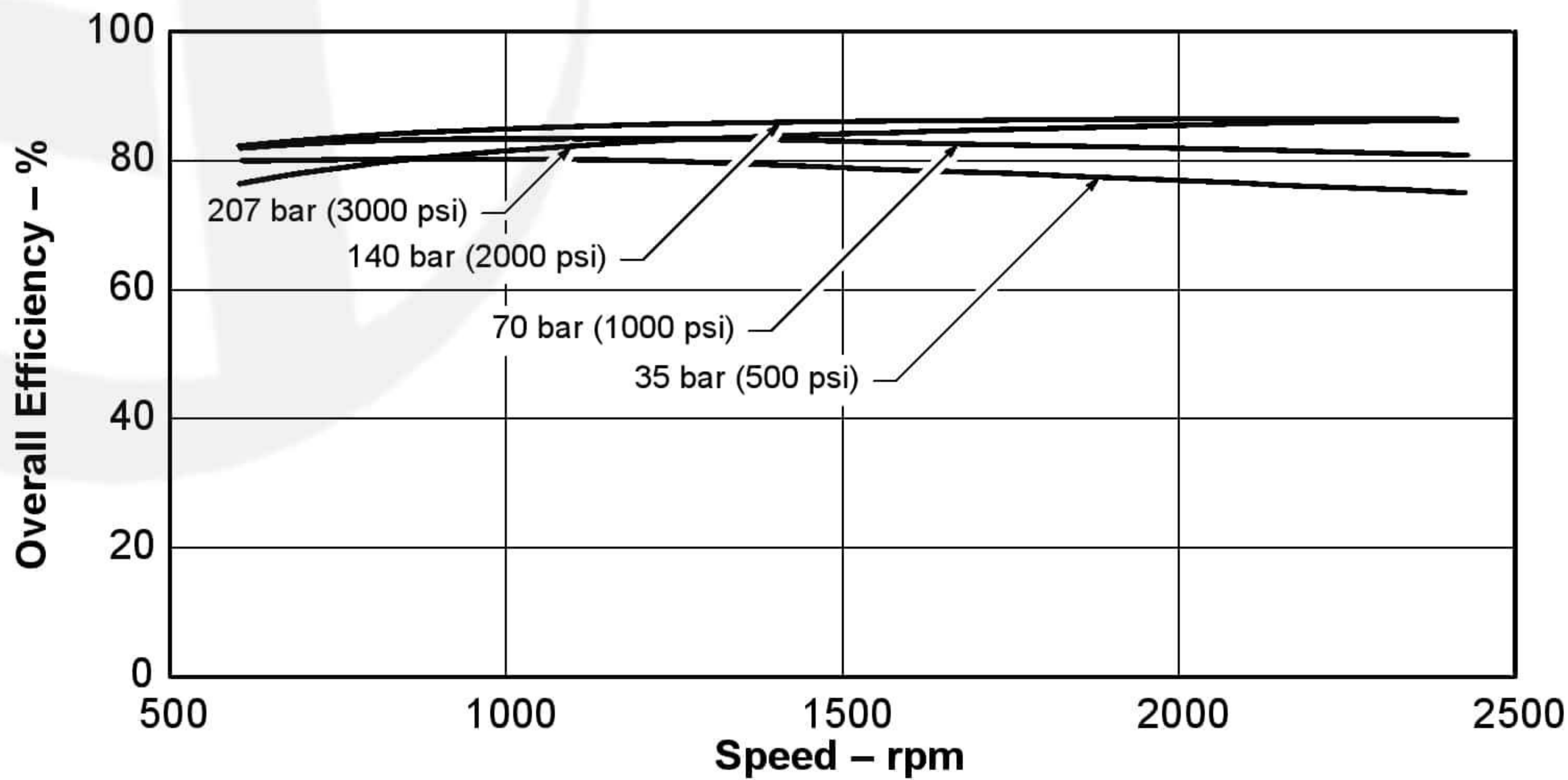
### Effective Flow Versus Speed



### Input Power Versus Speed



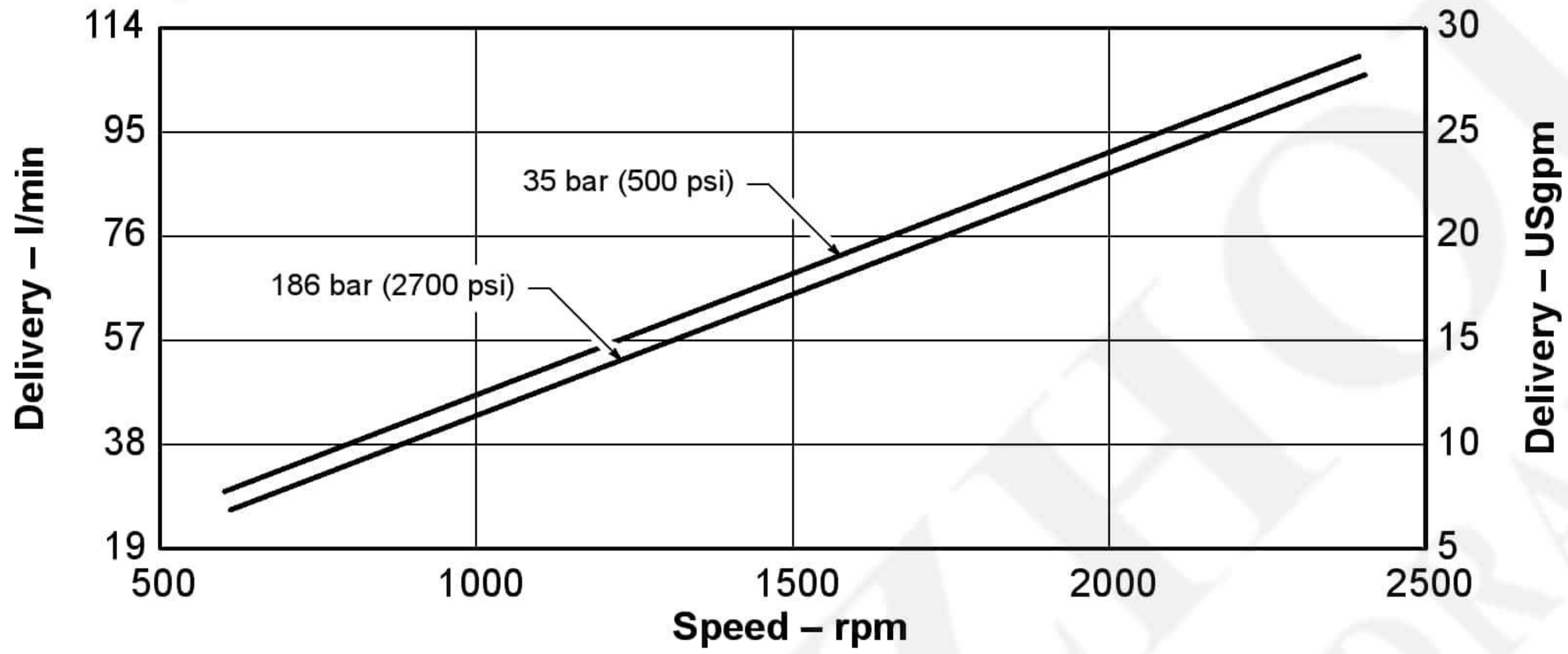
### Overall Efficiency Versus Speed



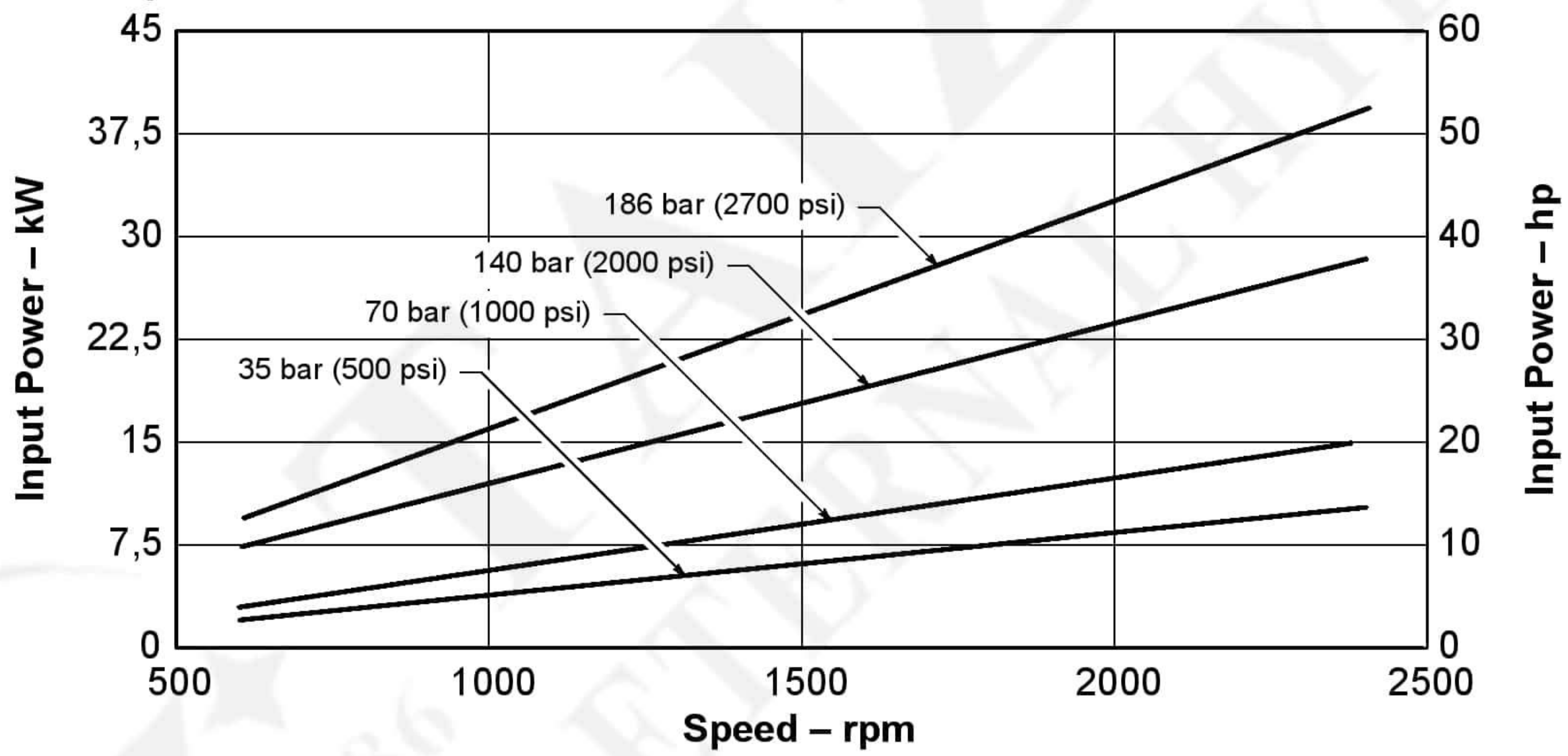
**PVE21**

Oil type: SAE 10W Oil temperature: 82°C (180°F)  
 Inlet pressure: 0 psi

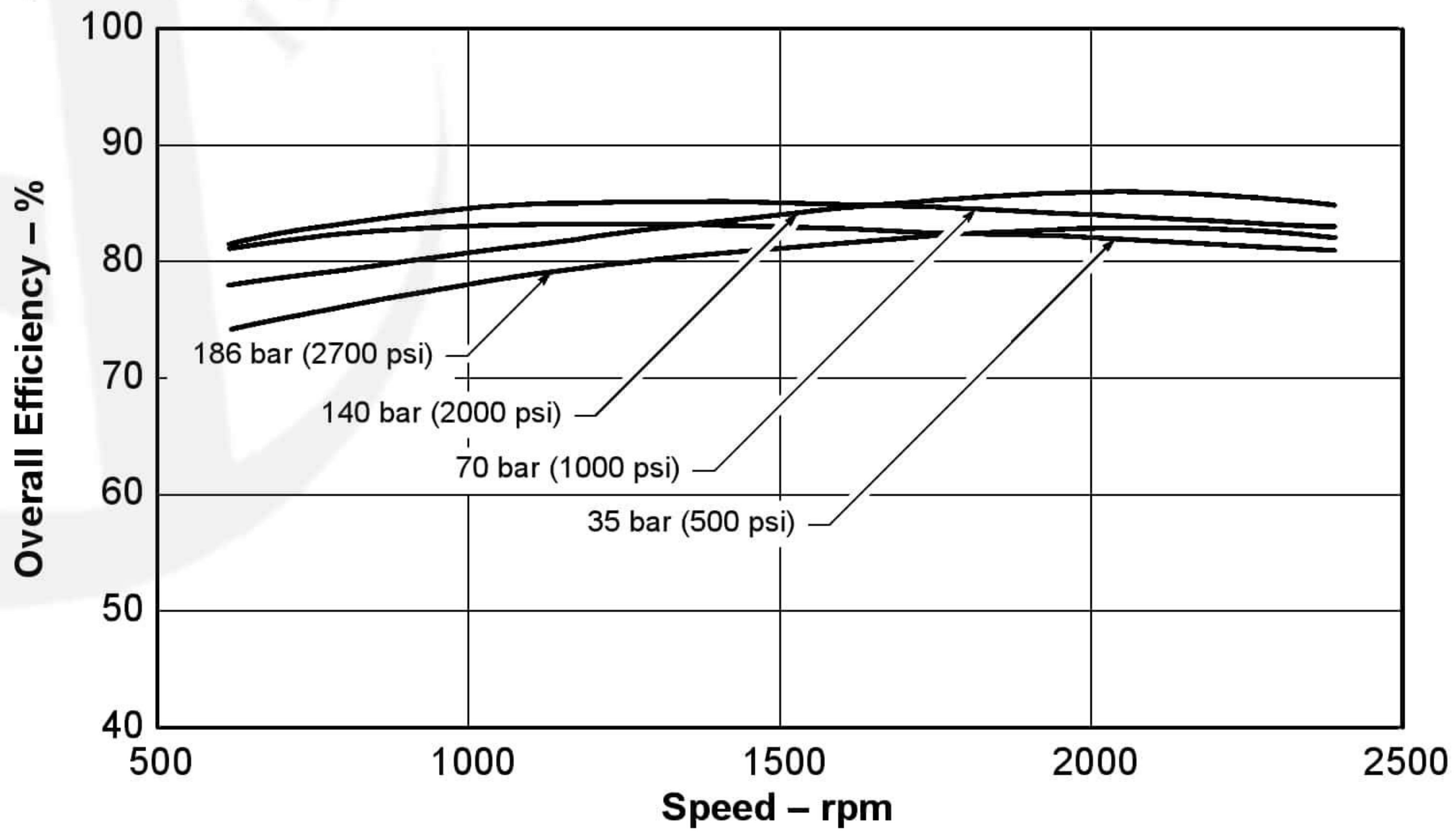
**Effective Flow Versus Speed**



**Input Power Versus Speed**



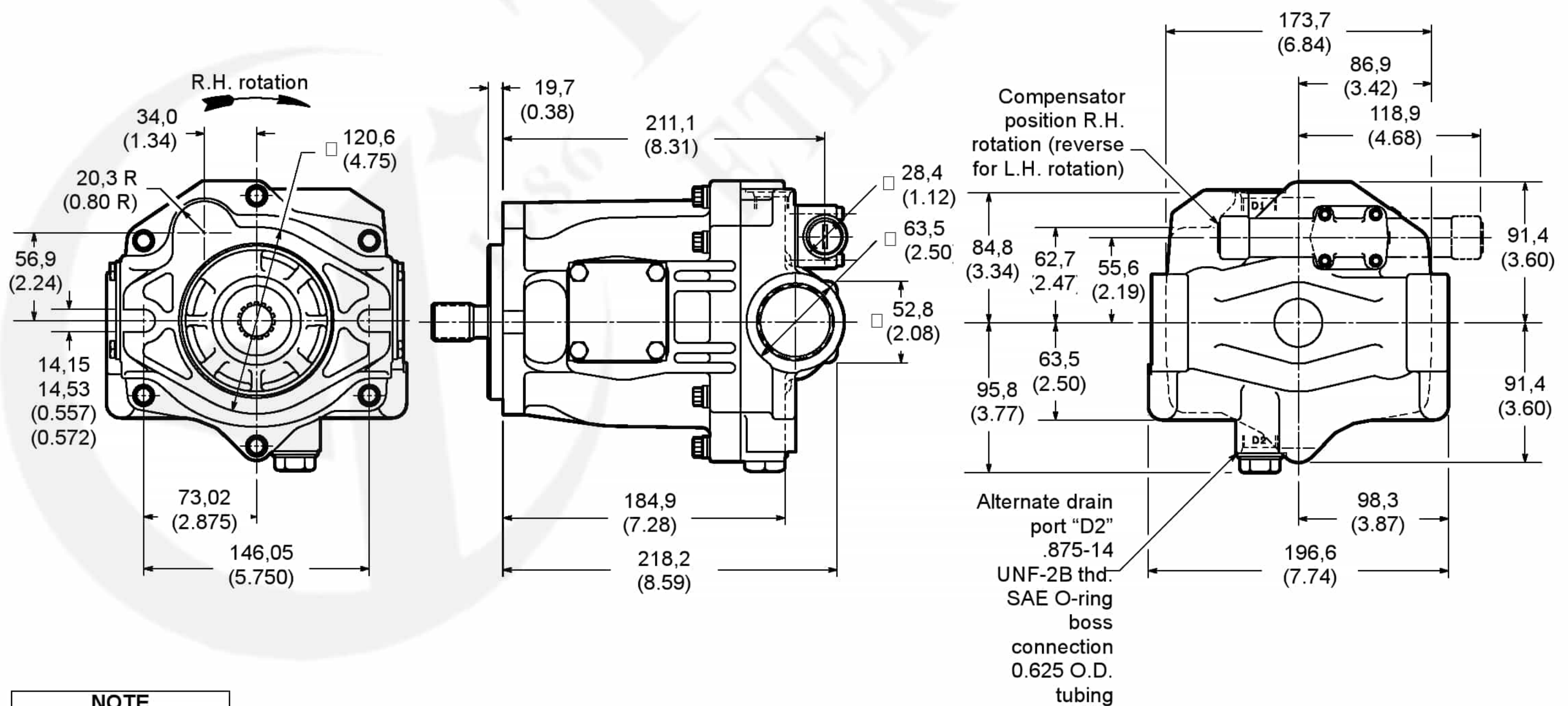
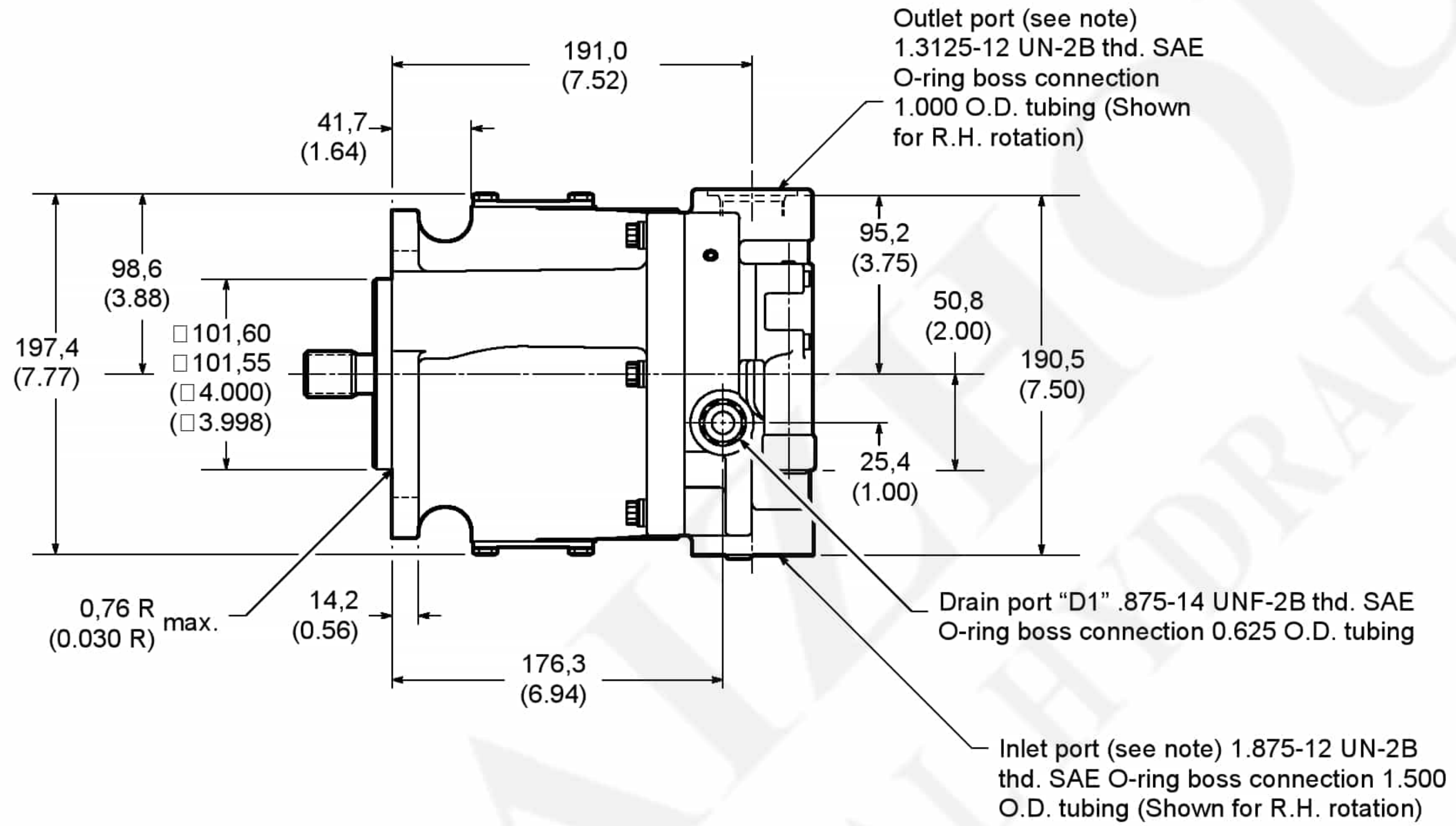
**Overall Efficiency Versus Speed**



# Installation Dimensions

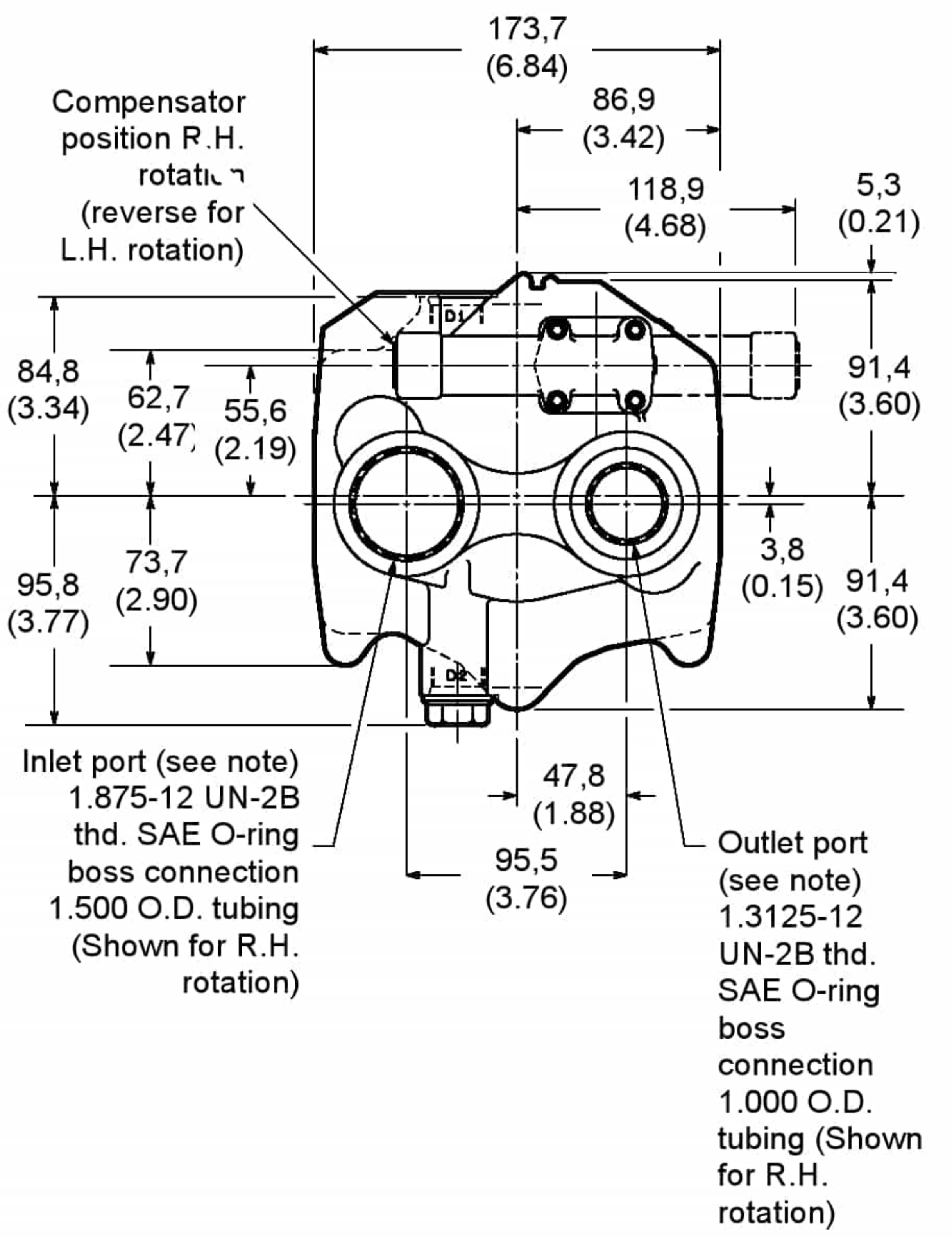
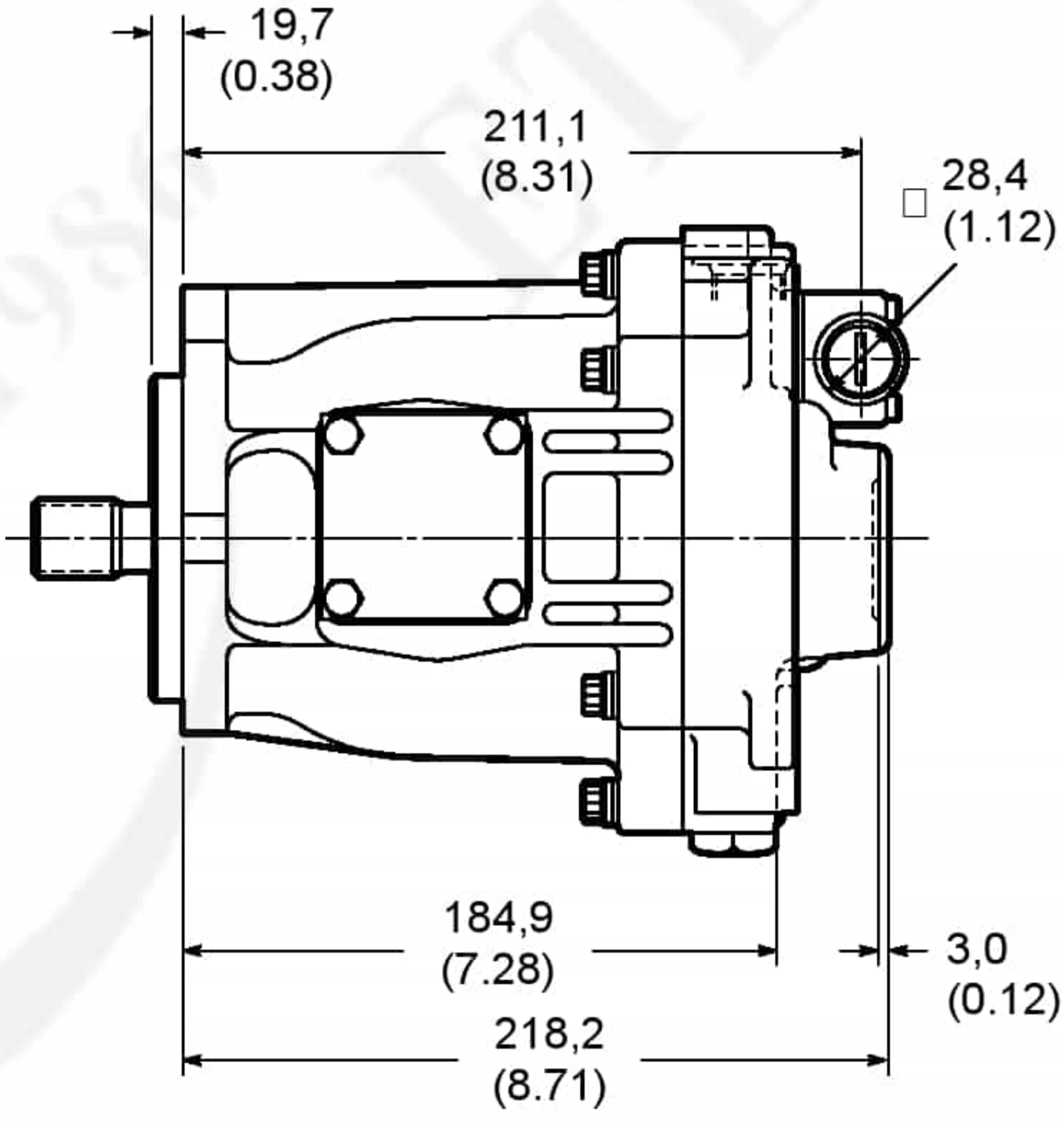
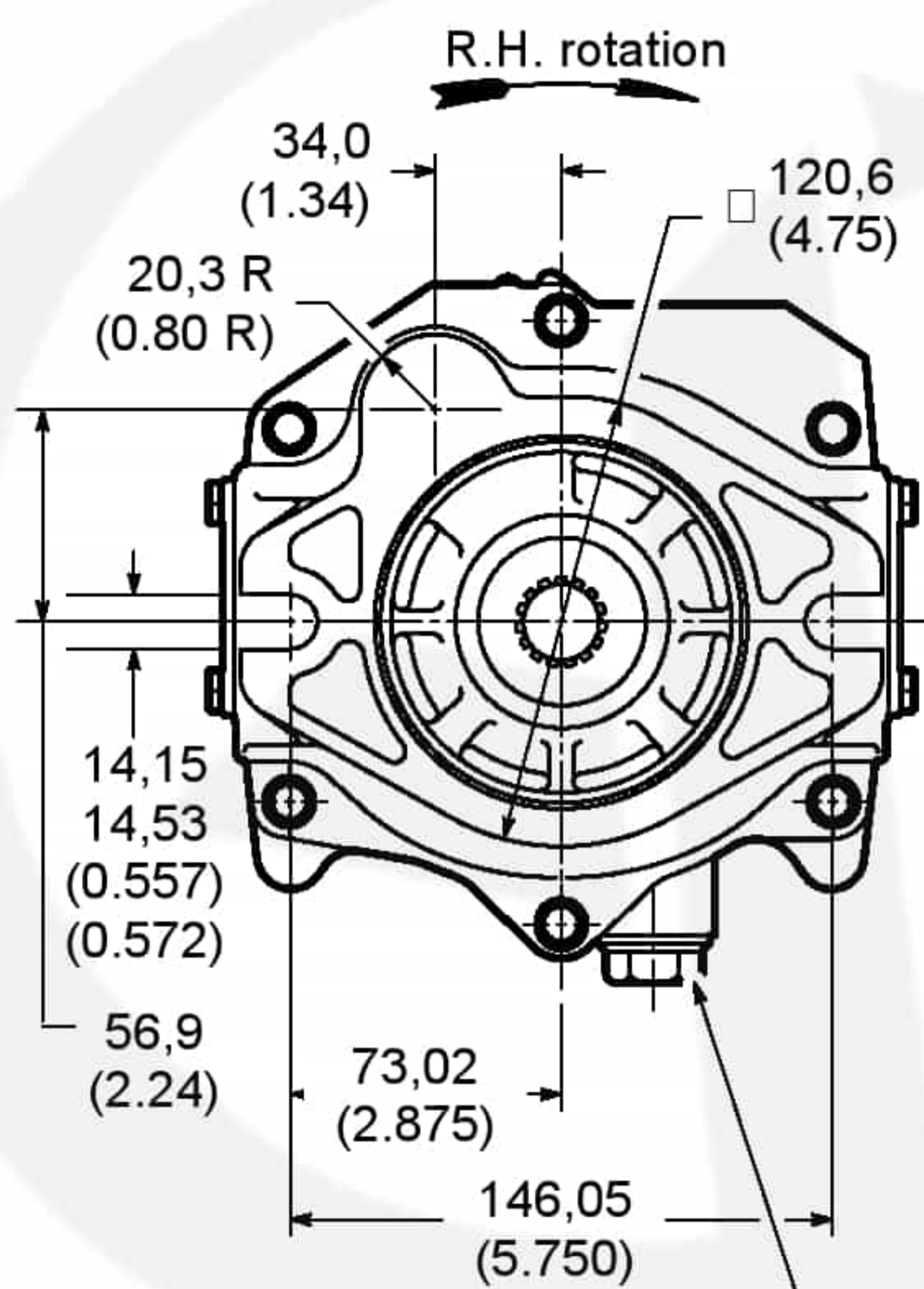
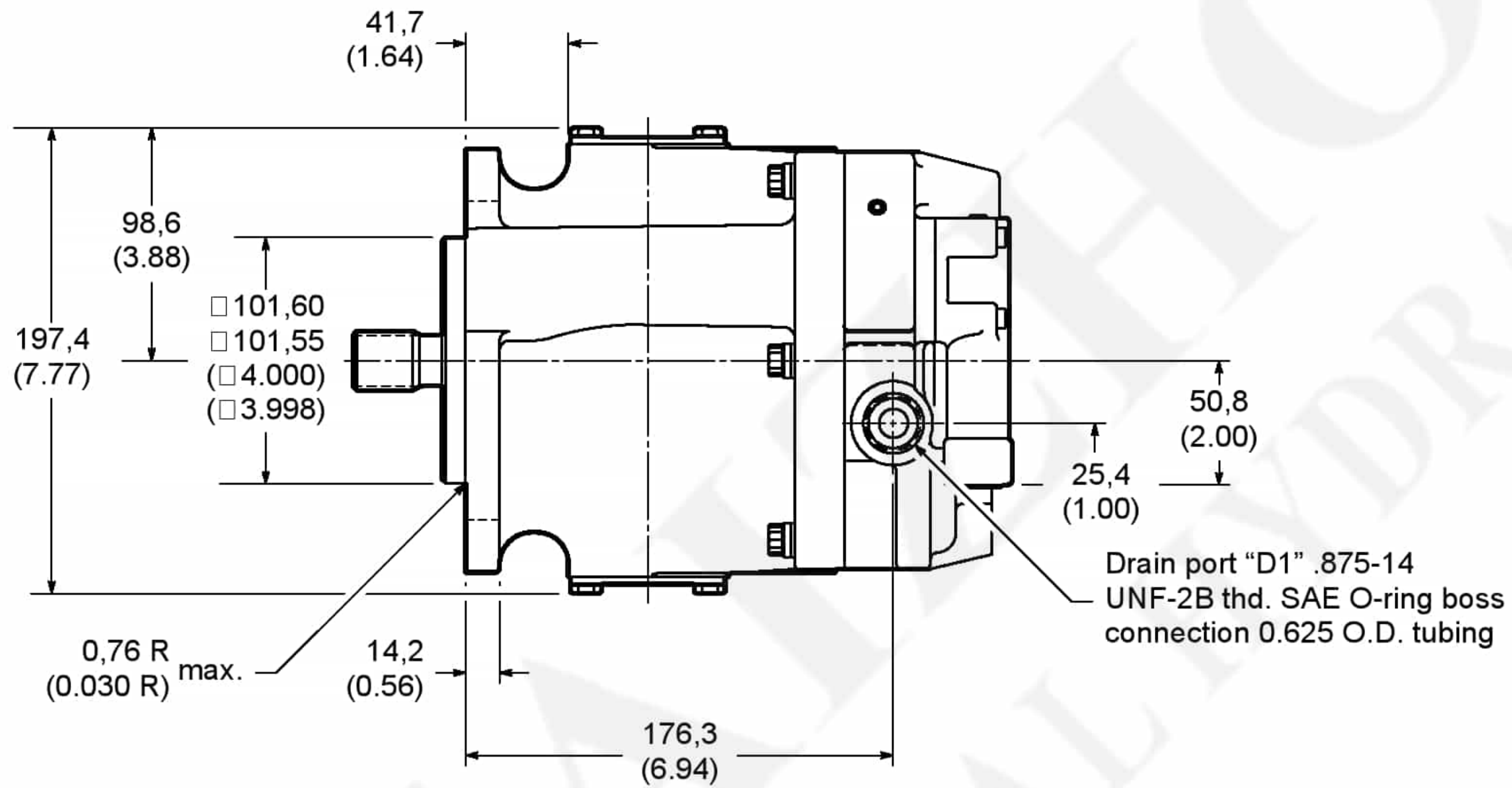
## PVE19/21 with Side Ports (30 Design and C-type Controls)

Millimeters (inches)



**PVE19/21 with End Ports  
(40 Design and C-type Controls)**

Millimeters (inches)



Alternate drain port "D2" .875-14 UNF-2B thd. SAE O-ring boss connection 0.625 O.D. tubing

**NOTE**  
Ports are reversed for L.H. rotation.

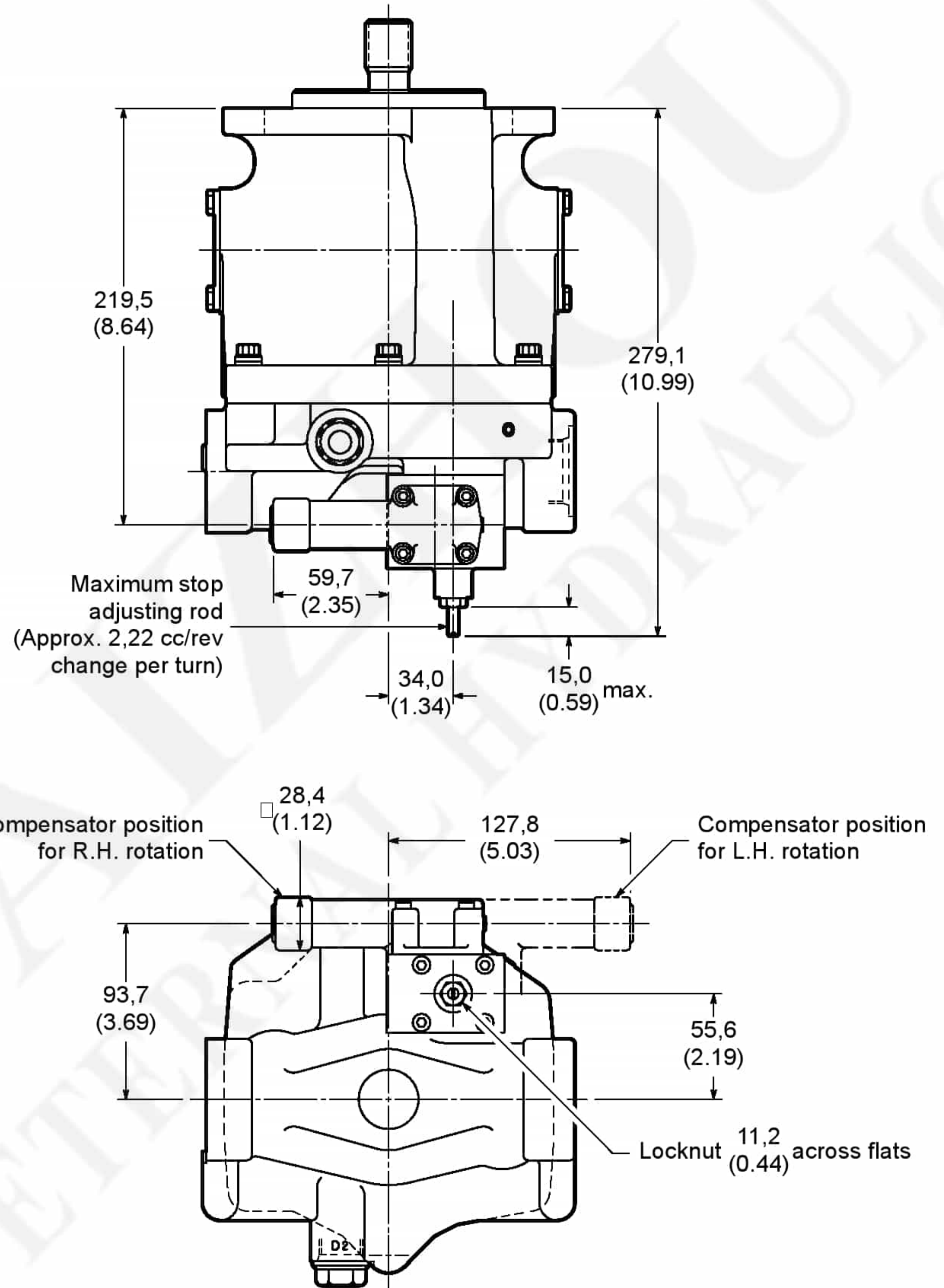
# Controls

## PVE19/21 CC Adjustable Maximum Volume Stop

### Adjustment

Loosen the locknut on the adjusting rod. Turn the adjusting rod clockwise to decrease maximum pump delivery, or counterclockwise to increase maximum pump delivery, until the desired setting is obtained. Secure the setting by tightening the locknut. To assist initial priming, the manual adjustment control setting must be at least 40% of the maximum flow position.

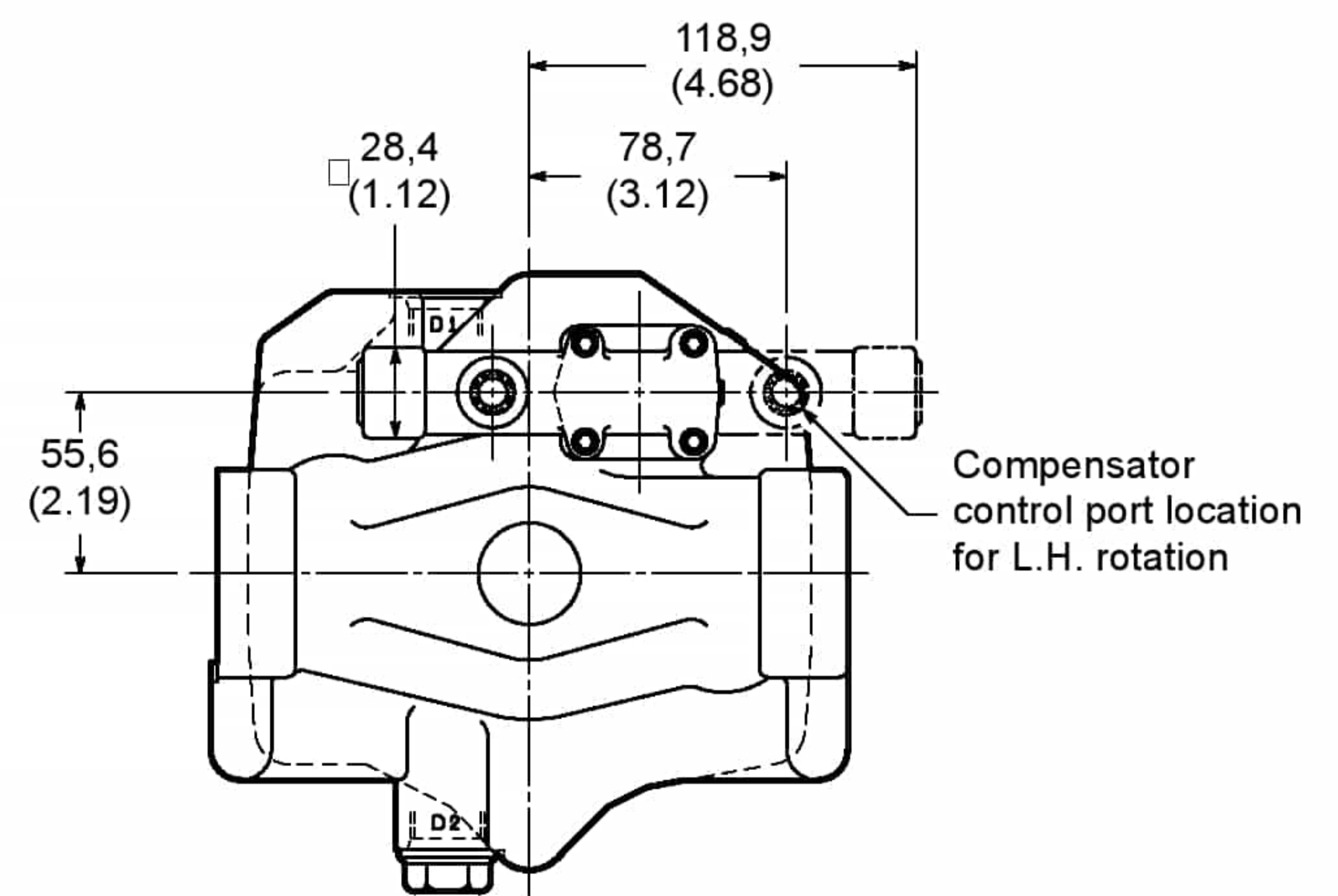
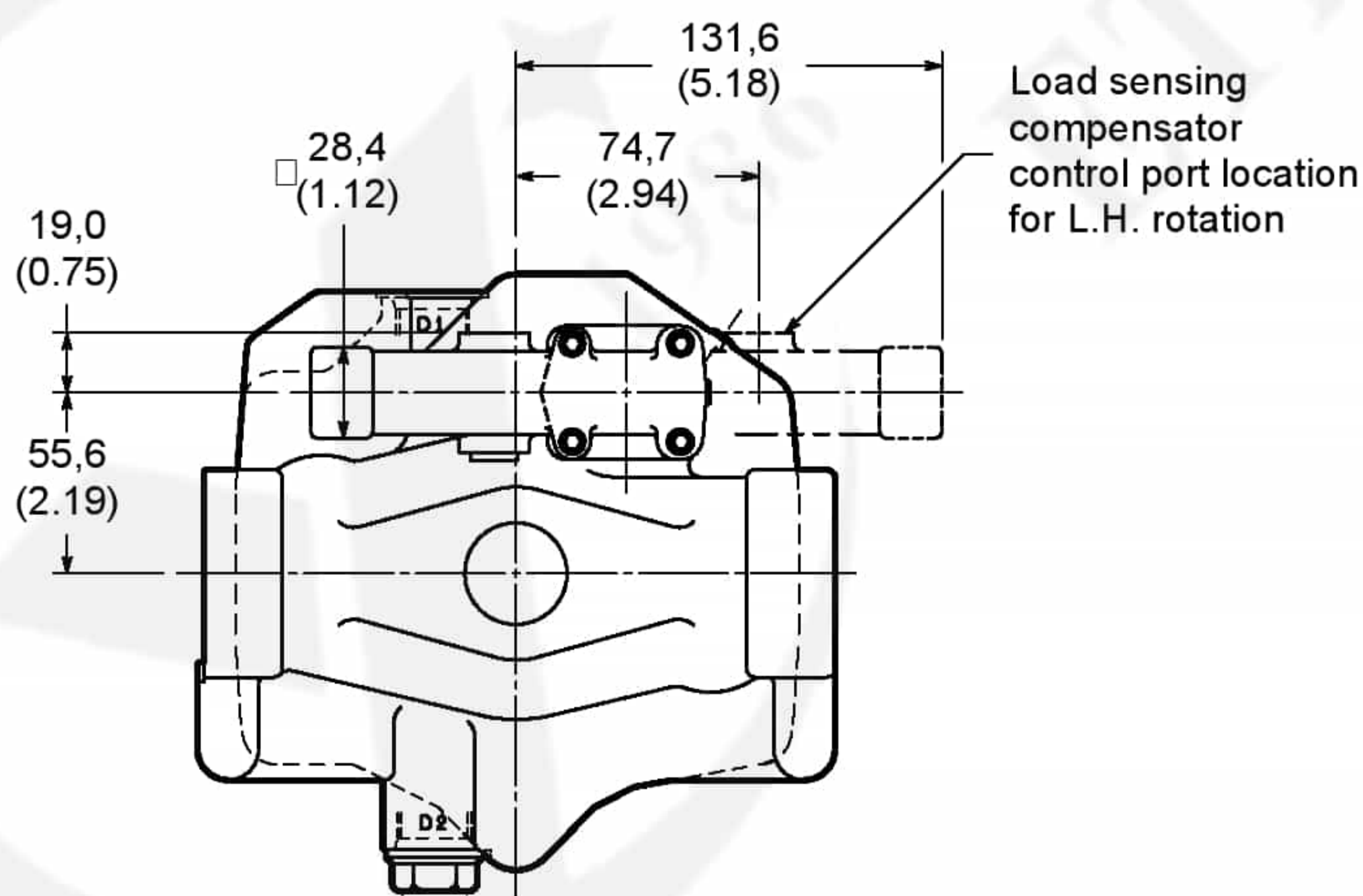
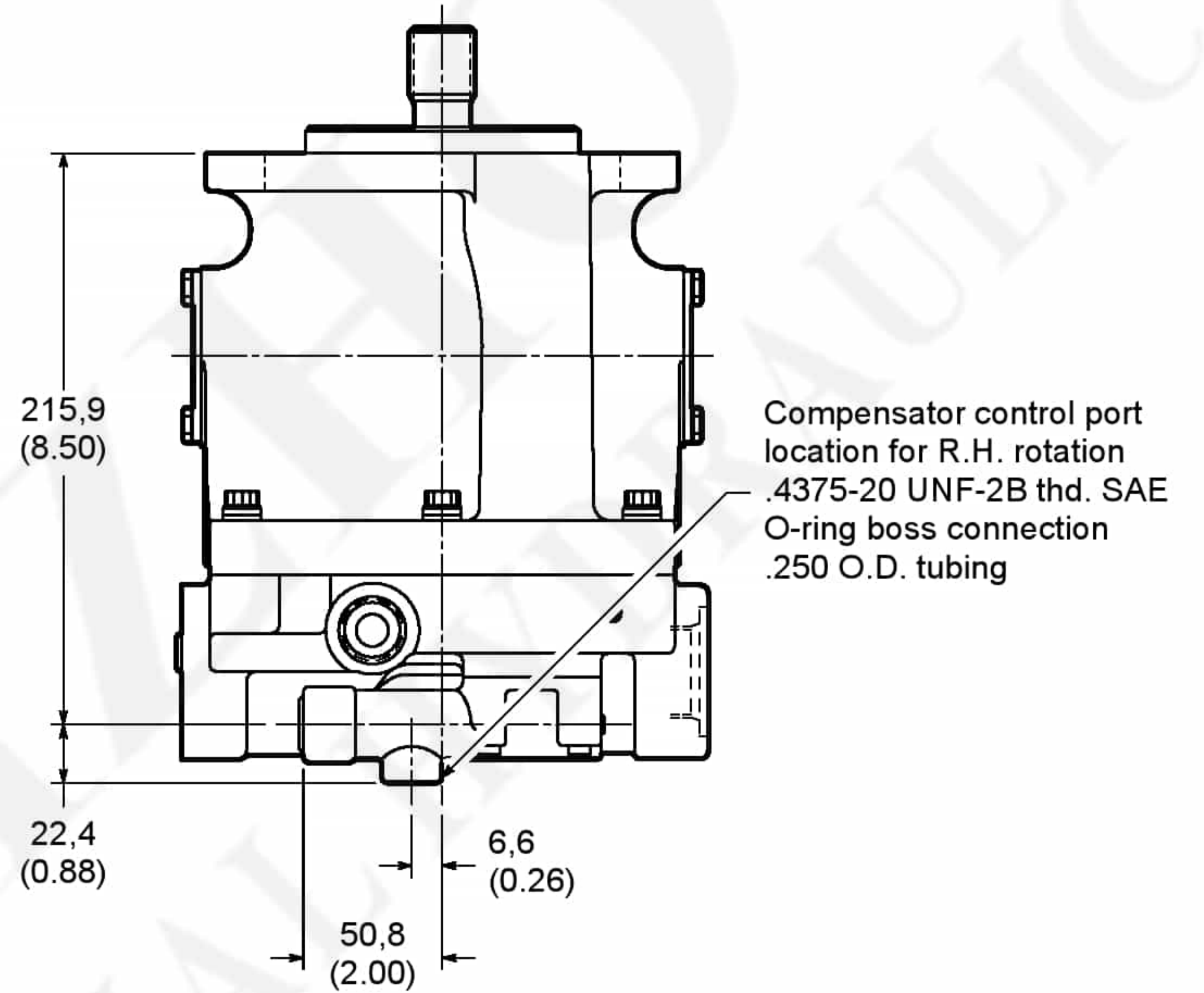
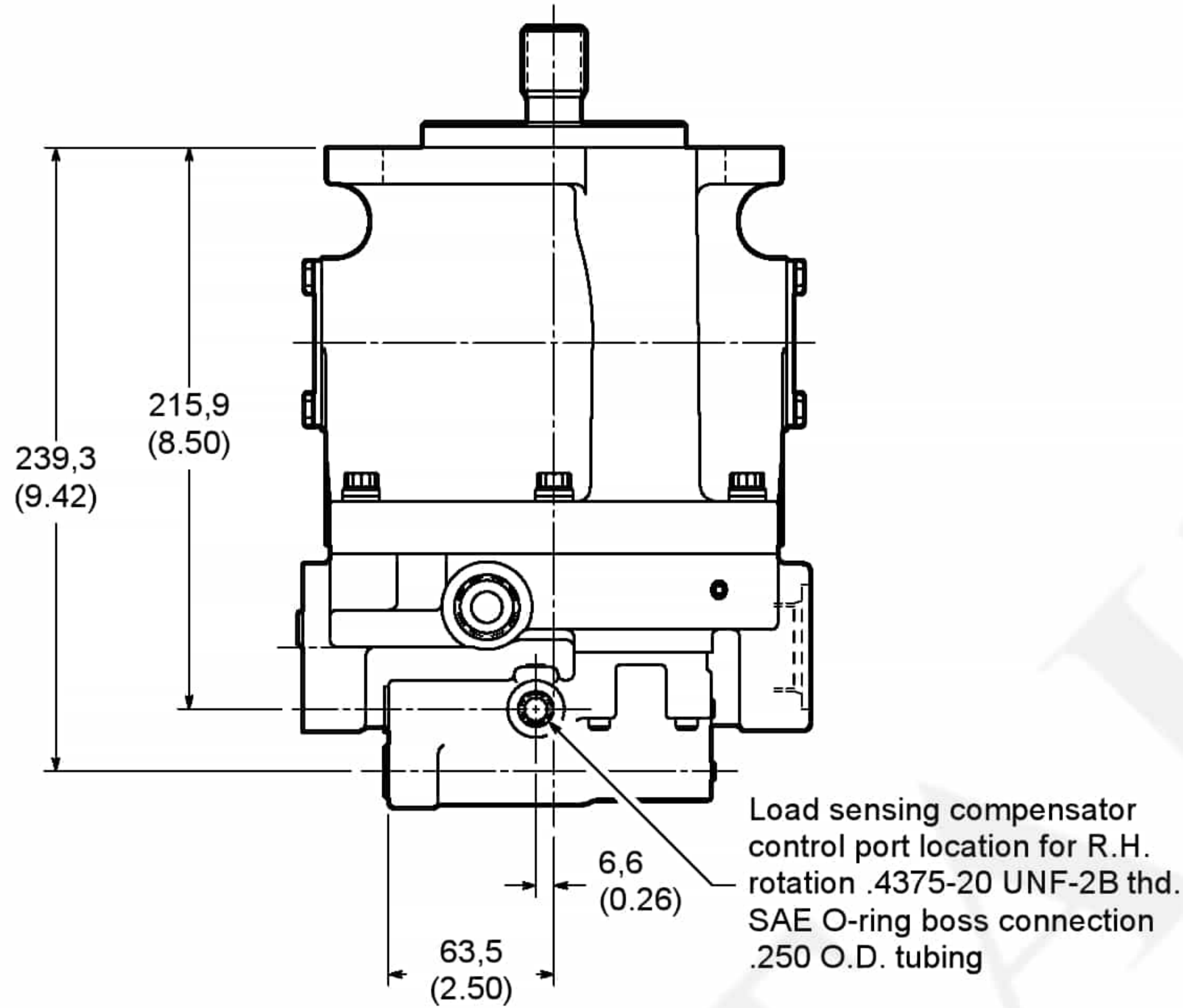
This control enables maximum pump delivery to be externally adjusted from 25% to 100% while maintaining all the standard features of a pressure compensated pump.



**PVE19/21 CVP Load Sensing with Pressure Limiter**

See page A.16 for other details and dimensions.

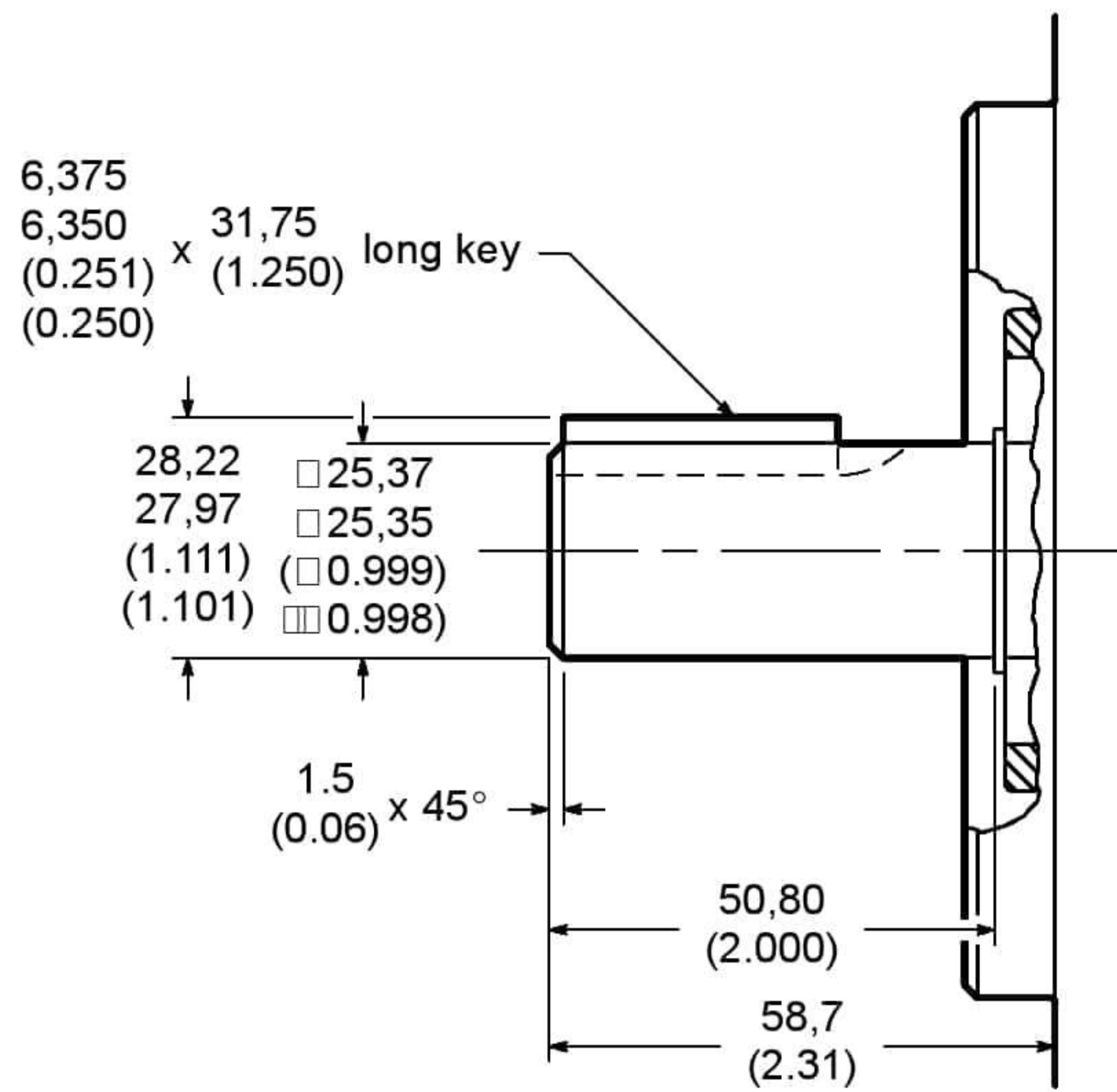
**PVE19/21 CG Remote Adjustment Compensator**



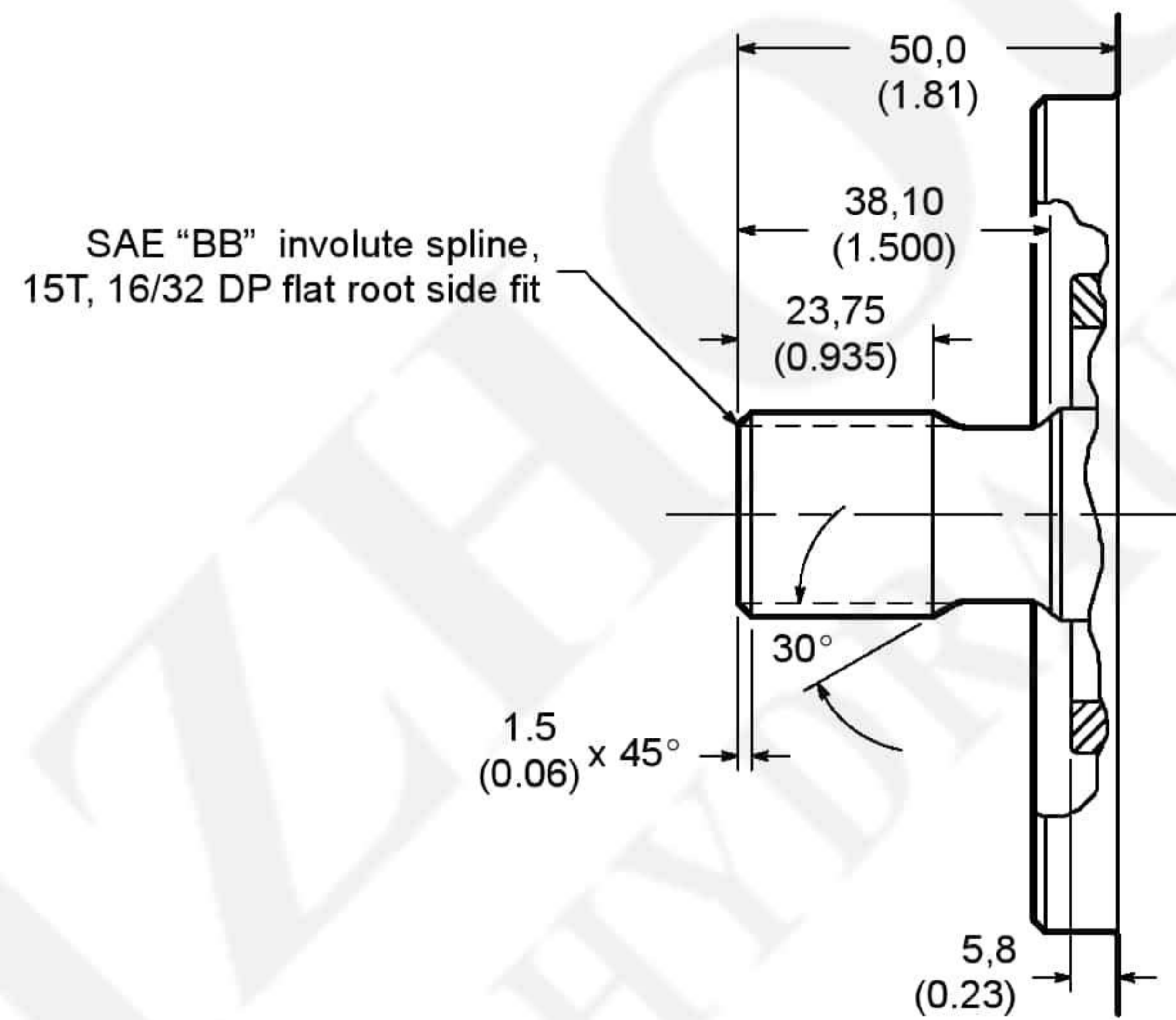
# Shaft Options

PVE19/21

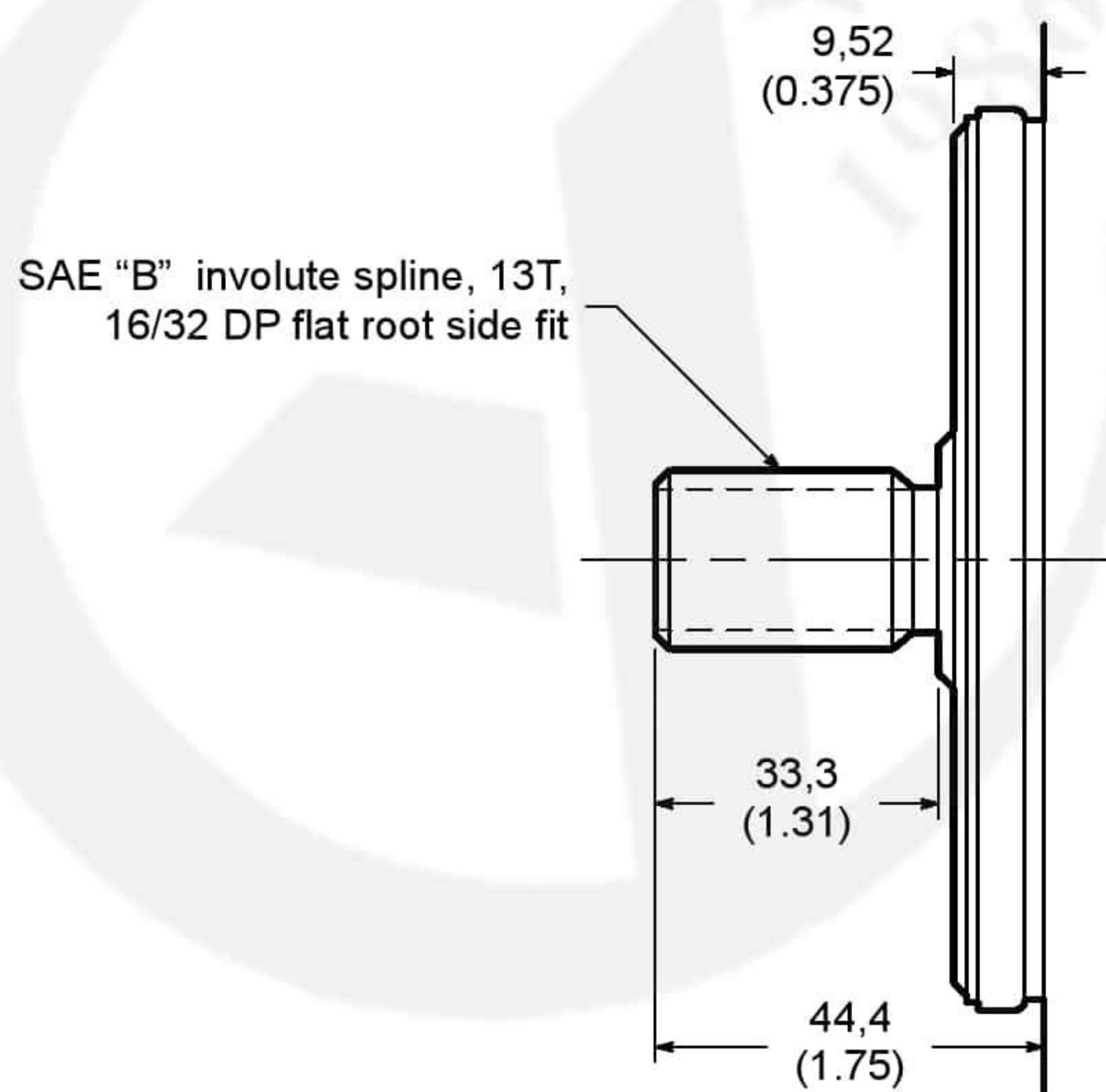
**No. 1 Shaft: SAE "BB" Straight Keyed**



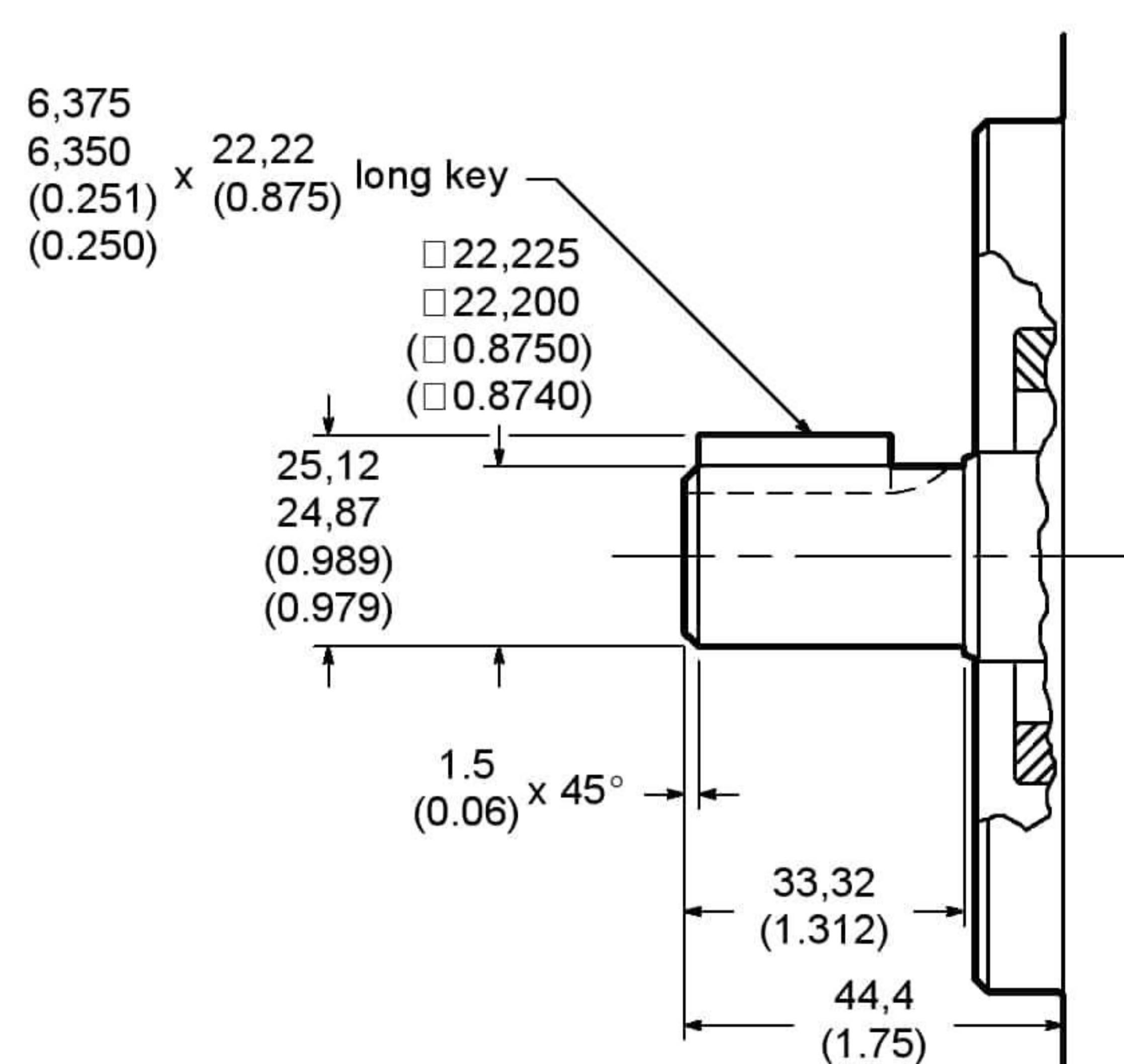
**No. 2 Shaft: SAE "BB" Splined**



**No. 9 Shaft: SAE "B" Splined**



**No. 16 Shaft: SAE "B" Straight Keyed**



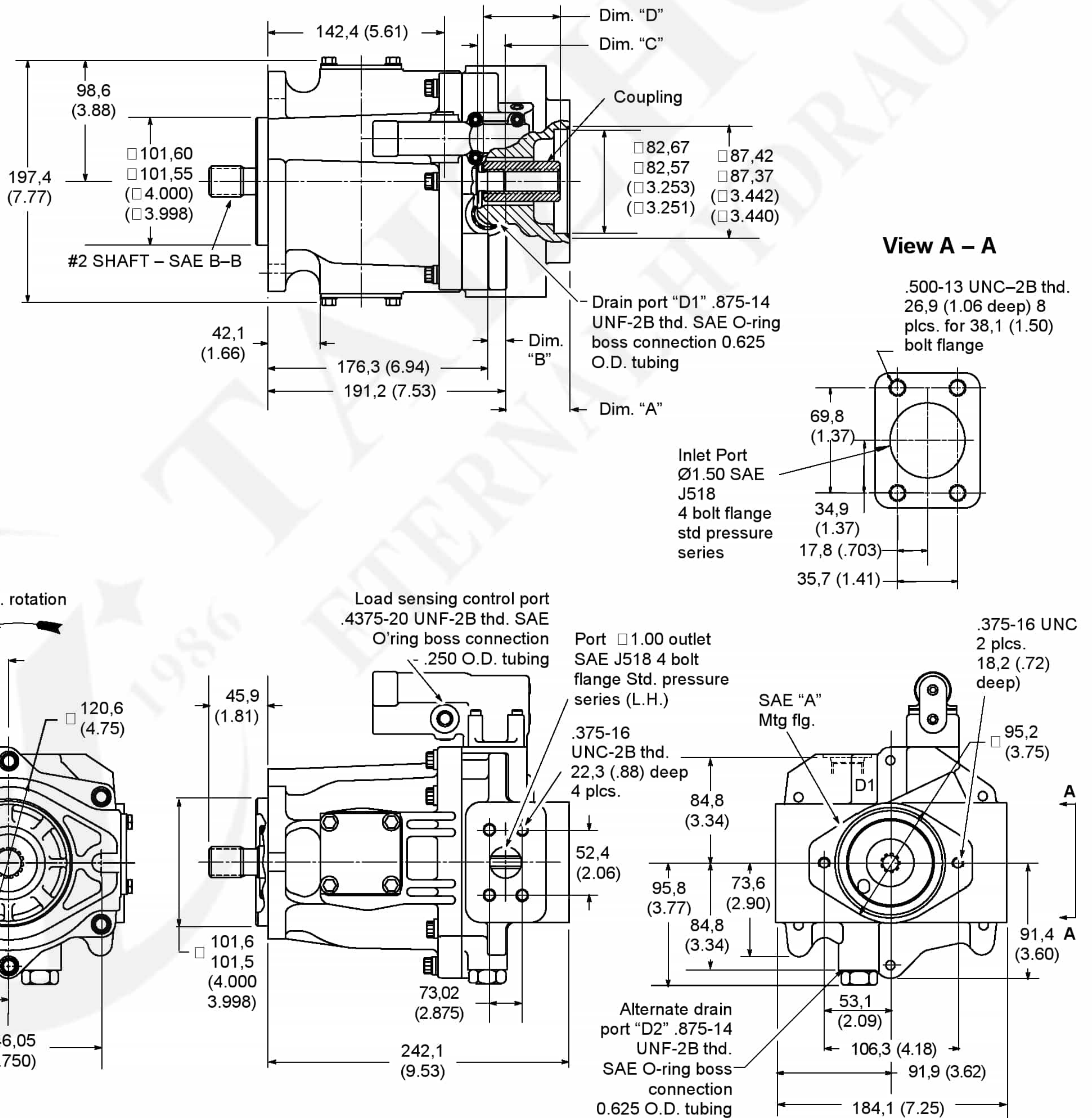
# Thru-Drive

## PVE19/21-\*-TA9/11 SAE "A" Thru-drives

Millimeters (inches)

SHAFT	SPLINE DATA	DIM."A" mm (in.)	DIM."B" mm (in.)	DIM."C" mm (in.)	MAX. TORQUE RATING N.m (In. lbs.)	COUPLING Length Dim "D" mm (in.)
TA9	ASA B5.15-1960 9 teeth 16 / 32 D.P. Flat Root Side Fit	50,8 (2.00)	12,7 (0.50)	22,6 (0.89)	58 (517)	<b>864224</b> 62,7 (2.47) 62,2 (2.45)
TA11	ANS B92.1-1970 11 teeth 16 / 32 D.P. Flat Root Side Fit	50,8 (2.00)	14,5 (0.57)	22,6 (0.89)	123 (1100)	<b>864325</b> 60,9 (2.40) 60,7 (2.39)

NOTE: Couplings, screws and washers must be ordered separately to mount rear pump.  
"A" O-ring (AS568-042) is included with each thru-drive pump.



**NOTE**  
Ports are reversed for R.H. rotation.

### PVE19/21-\*-TB26 SAE "B" Thru-drives

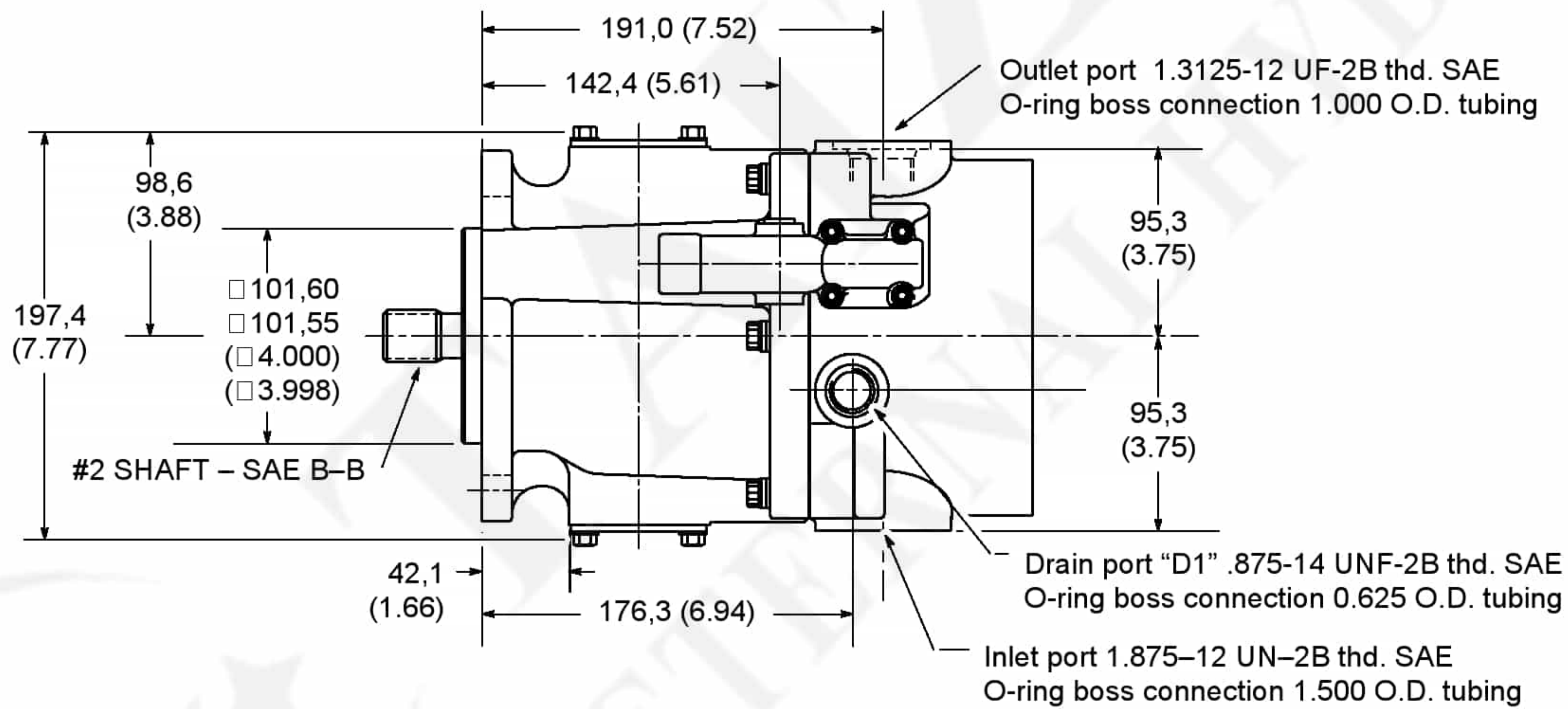
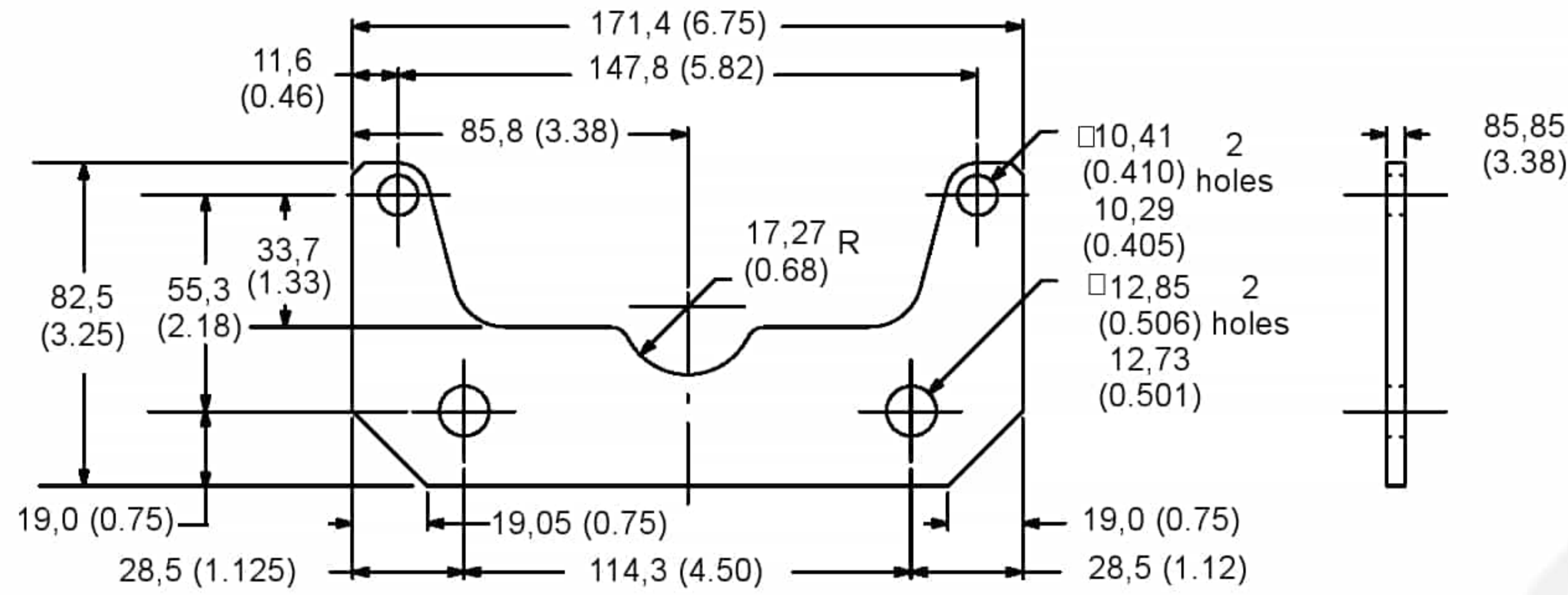
Millimeters (inches)

#### Thru-Drive Pump Support Bracket

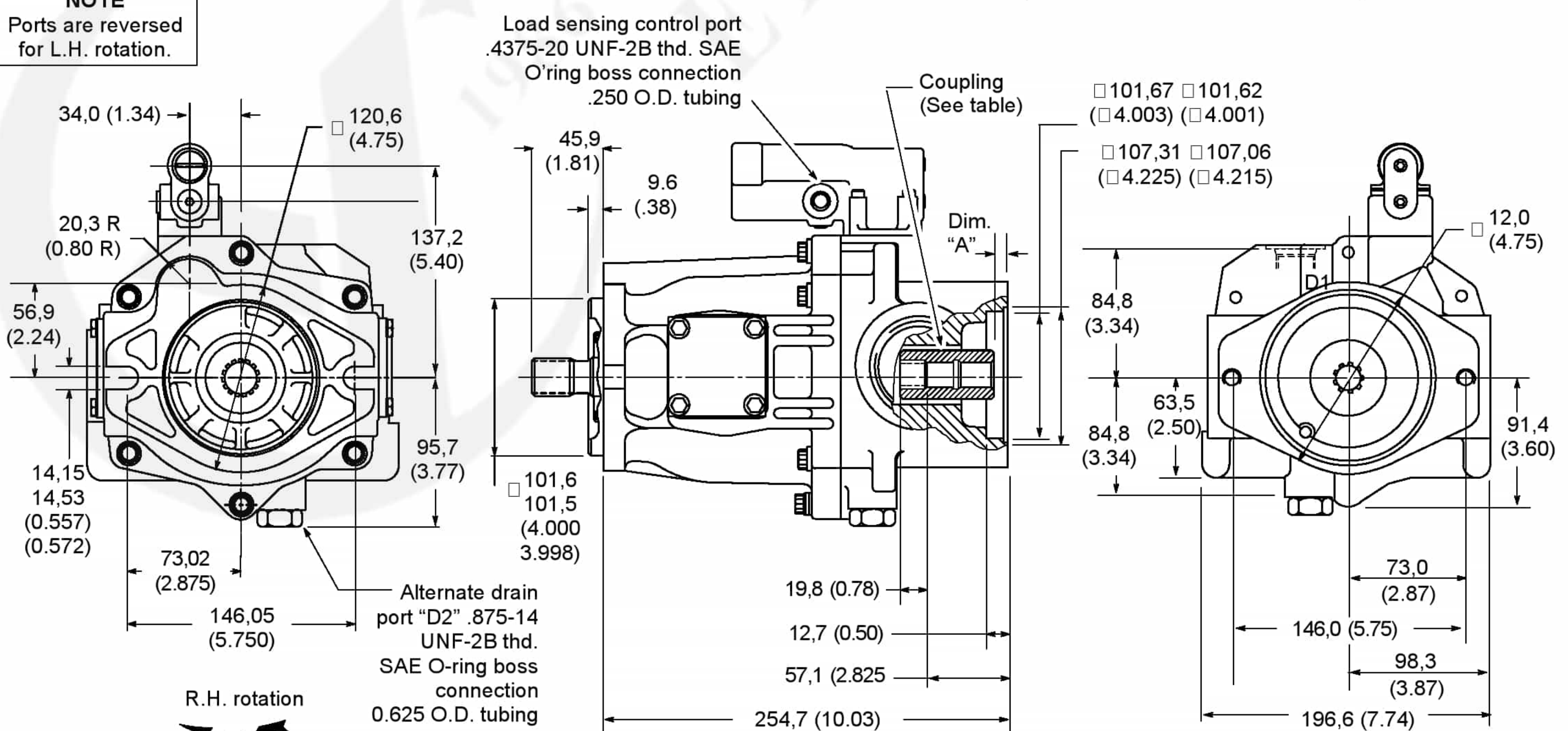
An optional support bracket should be used when a heavy second pump is mounted to a thru-drive PVE19/21. The support bracket (627179), two screws (199740), and two washers (427700) must be ordered separately.

SHAFT	SPLINE DATA	MAX. TORQUE RATING N.m (In. lbs.)	DIM. "A" mm (in.)	COUPLING
TB26	Special Vickers 26 teeth 32 / 64 D.P. Flat Root Side Fit	179 (1587)	10,9 (0.43)	<b>864307</b> 26T / 13T
			20,6 (0.81)	<b>475134</b> 26T / 15T
			24,9 (0.98)	<b>627168</b> 26T / 26T

NOTE: Couplings, screws and washers must be ordered separately to mount rear pump.  
"A" O-ring (AS568-155) is included with each thru-drive pump.



**NOTE**  
Ports are reversed for L.H. rotation.



# Application Data

## Fluid Cleanliness

Proper fluid condition is essential for long and satisfactory life of hydraulic components and systems. Hydraulic fluid must have the correct balance of cleanliness, materials, and additives for protection against wear of components, elevated viscosity, and inclusion of air.

Essential information on the correct methods for treating hydraulic fluid is included in Vickers publication 561 "Vickers Guide to Systemic Contamination Control" available from your local Vickers distributor or by

contacting Vickers, Incorporated. Recommendations on filtration and the selection of products to control fluid condition are included in 561.

Recommended cleanliness levels, using petroleum oil under common conditions, are based on the highest fluid pressure levels in the system and are coded in the chart below. Fluids other than petroleum, severe service cycles, or temperature extremes are cause for adjustment of these cleanliness codes. See Vickers publication 561 for exact details.

Vickers products, as any components, will operate with apparent satisfaction in fluids with higher cleanliness codes than those described. Other manufacturers will often recommend levels above those specified. Experience has shown, however, that life of any hydraulic component is shortened in fluids with higher cleanliness codes than those listed below. These codes have been proven to provide a long, trouble-free service life for the products shown, regardless of the manufacturer.

Product	System Pressure Level bar (psi)		
	<70 (<1000)	70-210 (1000-3000)	210+ (3000+)
Piston Pumps – Variable	18/16/14	17/15/13	16/14/12

## Fire resistant fluids

Water glycol, phosphate ester and polyol ester fluids may be used with PVE pumps. With the PVE12 and 19, system pressure and input speed should not exceed 140 bar (2000 psi) and 1800 r/min.

With the PVE41-25V, system pressure and input speed should not exceed 140 bar (2000 psi) and 1200 r/min (1800 r/min for water glycol). System temperature should not exceed 54°C. (130°F). Inlet vacuum should not exceed 101,6 millibar (3 in. Hg.)

## Hydraulic fluids and temperature ranges

Use antiwear hydraulic oil, or automotive type crankcase oil designations SC, SD, SE or SF per SAE J183FEB80.

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.

For further information, see Vickers Hydraulic Hints and Trouble Shooting Guide

## Ordering procedure

Order PVE 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 are all specified in the full model code.