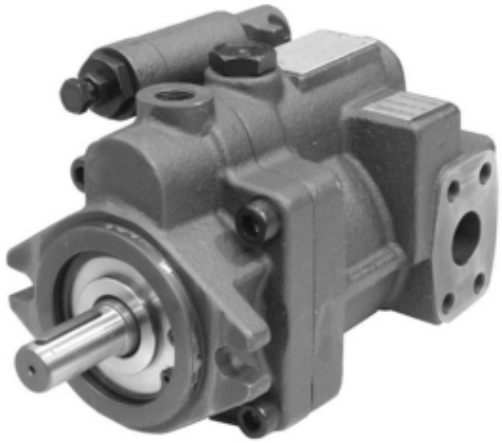
LPV Series

Axial Piston Pumps, Variable Displacement, Pressure Compensated



DESCRIPTION

The LPV are variable displacement axial piston pumps with variable swash block, suitable for applications with open circuits and intermediate pressures. They are available in 5 nominal displacements.
The pump flow rate is proportional to the rotation speed and swash block angle, which can be continuously modulated. The maximum can be limited via maximum volume adjustment screw.
SAE J744 2-Bolt Mounting Flange.
They are available with four different types of Control Compensator options designed to meet your needs.

TYPICAL PERFORMANCE SPECIFICATIONS

PUMP SIZE		LPV-4	LPV-8	LPV-11	LPV-17	LPV-22
MAXIMUM DISPLACEMENT	in^3/rev	0.488	0.976	1.342	2.196	2.807
	(cc^3/rev)	8	16.5	22	36	46
FLOW AT 1800 RPM	GPM	3.8	7.9	10.6	17.1	21.9
	(lpm)	14.4	30	40	64.8	82.8
OPERATING PRESSURE	PSI / bar	3000 PSI / 210 bar				
OPERATING SPEED	RPM	500 min to 2000 max				
ROTATION DIRECTION		Clockwise (as viewed from shaft side)				
PORT SIZE AND TYPE		See dimensional data page				
MOUNTING FLANGE		"A" 2-Bolt	"A" 2-Bolt	"A" 2-Bolt	"B" 2-Bolt	"B" 2-Bolt
WEIGHT	LBS	20	27	27	51	51
	(kg)	9	12	12	23	23
AMBIENT TEMPERATURE RANGE	°F (°C)	15 to 120 (-10 to 50)				
FLUID TEMPERATURE RANGE	°F (°C)	15 to 160 (-10 to 70)				
FLUID CLEANLINESS		ISO 18/16/13 is recommended				
REC. OPERATING VISCOSITIES	SUS (cSt)	60 to 140 (20 to 75)				

LPV Series

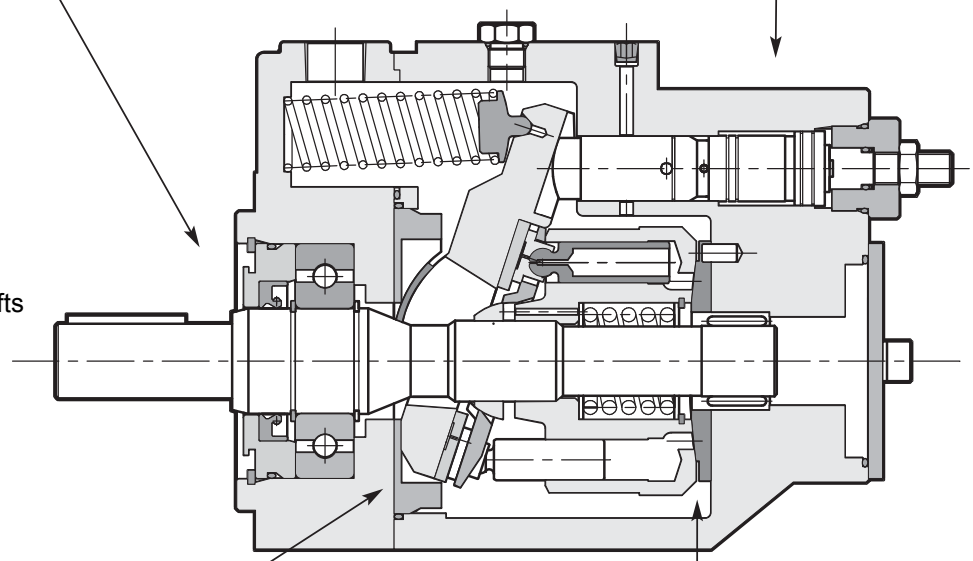
Axial Piston Pumps, Variable Displacement, Pressure Compensated

FEATURES AND BENEFITS

The LPV line of Variable Volume, Pressure Compensated Piston Pumps are the perfect choice when reliable, fast and quiet control is required. All of the Control Compensator options are interchangeable on all pump sizes. This very flexible Control Compensator design allows the LPV pump to be quickly changed as your circuit requirement demands.

External shaft seal and bearing access for ease of servicing

Control Compensator options: Pressure Compensator, Remote Pressure Load Sense and a D03 valve mount Allowing for pressure control circuits from dual pressure to Proportional pressure



Standard SAE mounting and shafts

Swash block and saddle design permit consistent control and provide longlife over Trunnion designs. Saddle bearing can also be easily serviced.

Specially designed spherical port plate makes these extremely quiet operating pumps with optimised filling performance.

LPV Series

Axial Piston Pumps, Variable Displacement, Pressure Compensated

IDENTIFICATION CODE

PRESSURE RANGE
up to 3000 PSI

FLOW RATE	
CODE	DESCRIPTION
4	4 gpm
	8 cm³/rev
8	8 gpm
	16.5 cm³/rev
11	11 gpm
	22 cm³/rev
17	17 gpm
	36 cm³/rev
22	22 gpm
	46 cm³/rev

ROTATION	
CODE	DESCRIPTION
RF	CLOCKWISE ROTATION

SEALS	
CODE	DESCRIPTION
O	BUNA N

PORTS	
CODE	DESCRIPTION
2S	BRITISH (BSP) THREAD SIDE PORTS
5S	SAE 4 BOLT FLANGE SIDE PORTS

SHAFT OPTIONS	
CODE	DESCRIPTION
OMIT	STRAIGHT KEY
12	SPLINED SHAFT

COMPENSATOR OPTIONS	
CODE	DESCRIPTION
OMIT	STANDARD PRESSURE COMPENSATOR
7	REMOTE PRESSURE
19	LOAD SENSE
RC	D03 PAD FOR REMOTE CONTROL

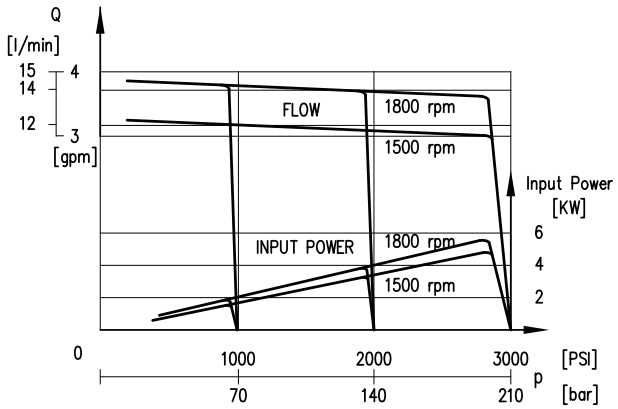
TYPICAL ORDERING CODE

LPV-8B30-RF-O-5S-A

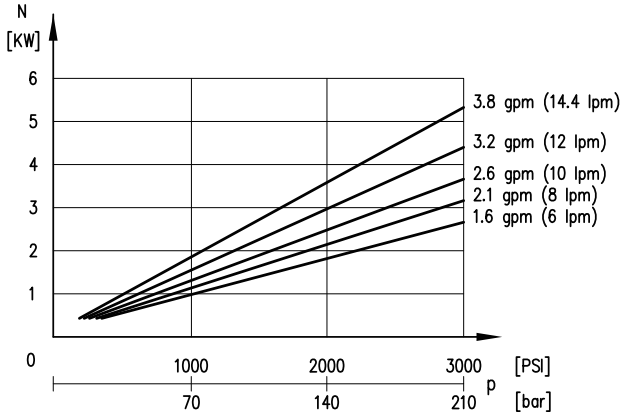
LPV-11B30-RF-O-5S19-A

PERFORMANCE CURVES FOR LPV-4

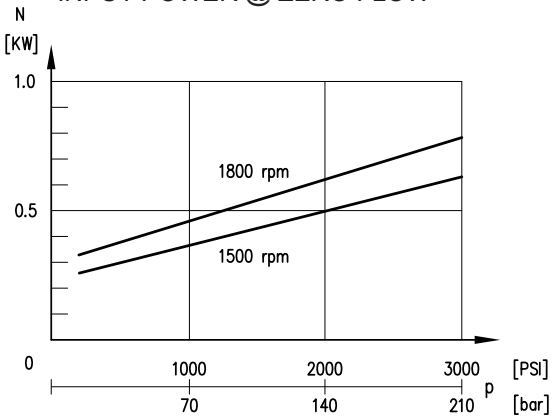
FLOW VS PRESSURE



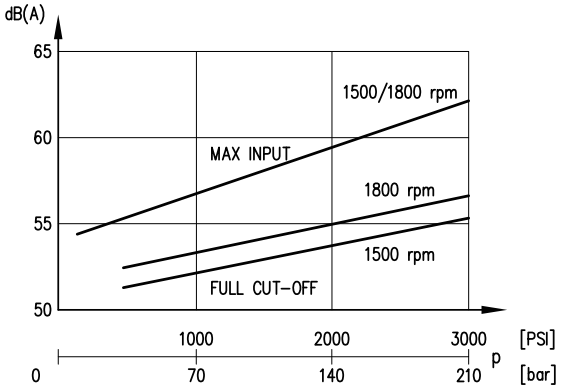
INPUT POWER @ FULL FLOW



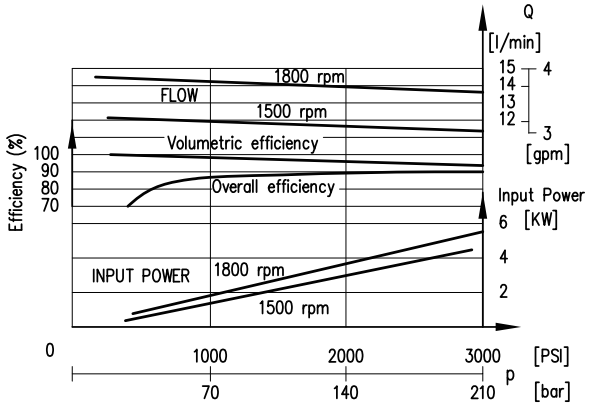
INPUT POWER @ ZERO FLOW



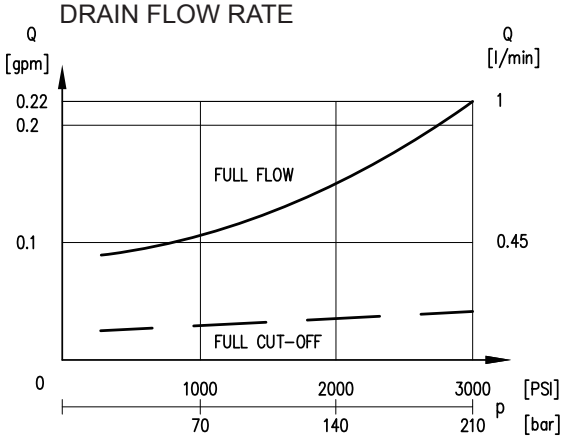
NOISE LEVEL



VOLUMETRIC & TOTAL EFFICIENCY

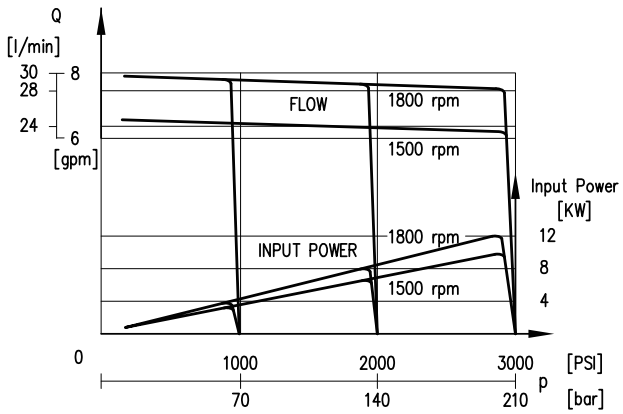


DRAIN FLOW RATE

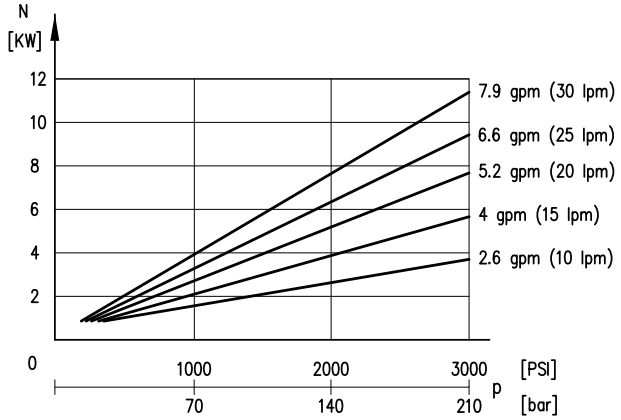


PERFORMANCE CURVES FOR LPV-8

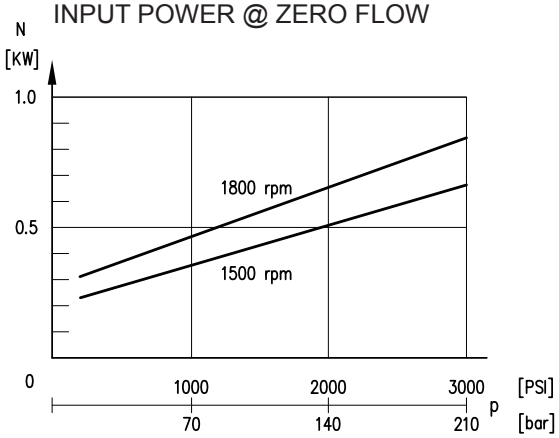
FLOW VS PRESSURE



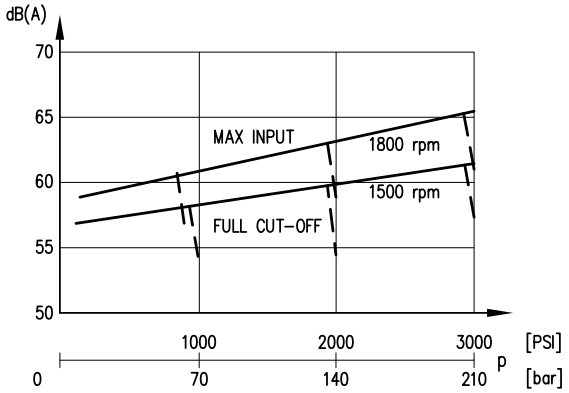
INPUT POWER @ FULL FLOW



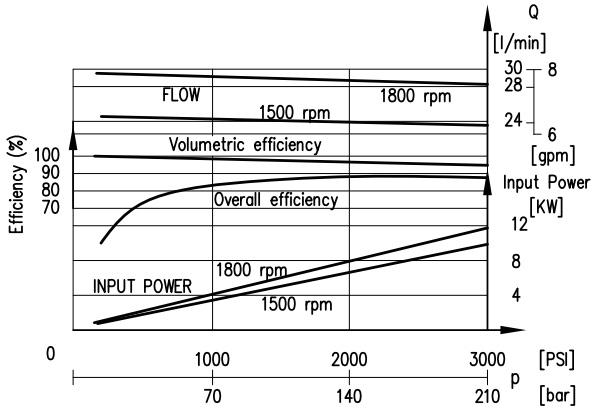
INPUT POWER @ ZERO FLOW



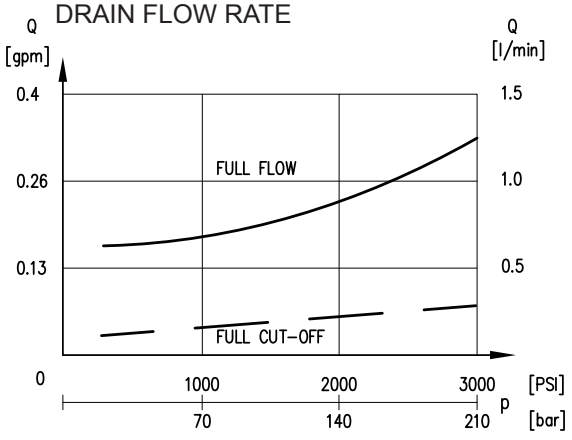
NOISE LEVEL



VOLUMETRIC & TOTAL EFFICIENCY

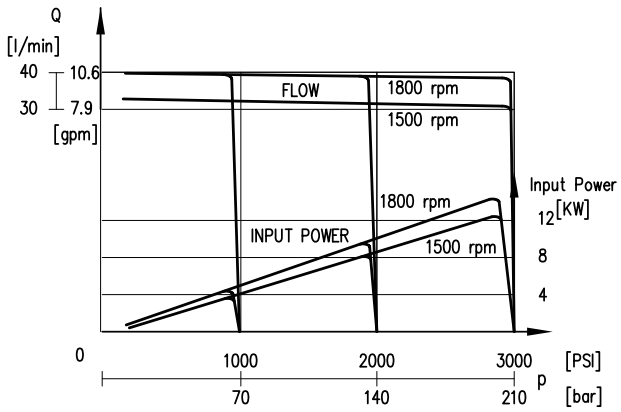


DRAIN FLOW RATE

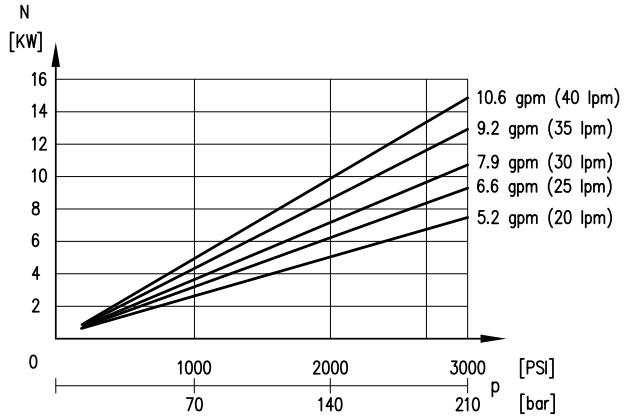


PERFORMANCE CURVES FOR LPV-11

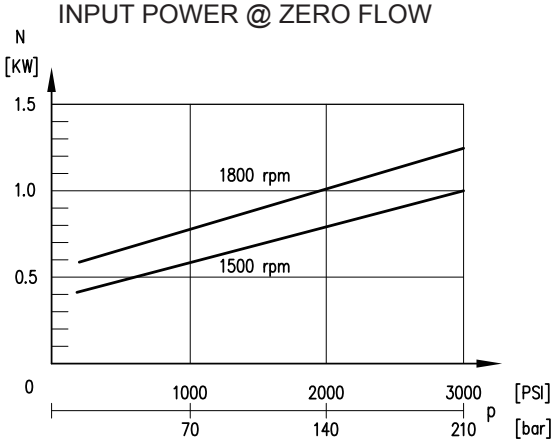
FLOW VS PRESSURE



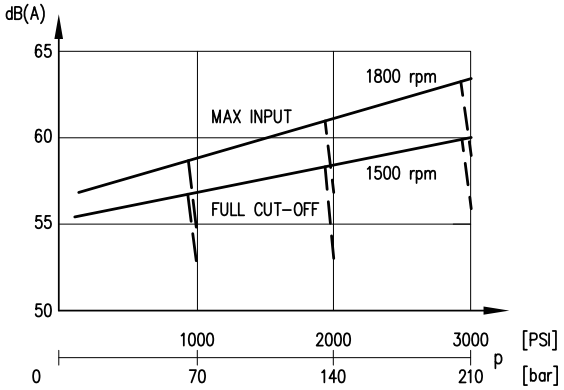
INPUT POWER @ FULL FLOW



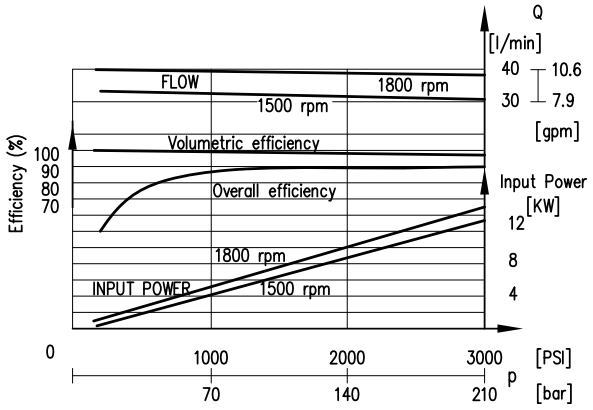
INPUT POWER @ ZERO FLOW



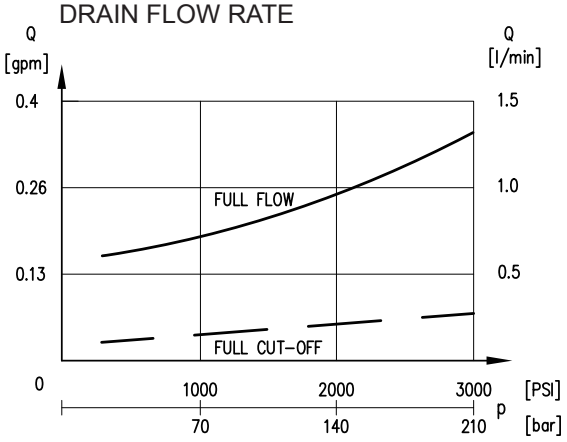
NOISE LEVEL



VOLUMETRIC & TOTAL EFFICIENCY

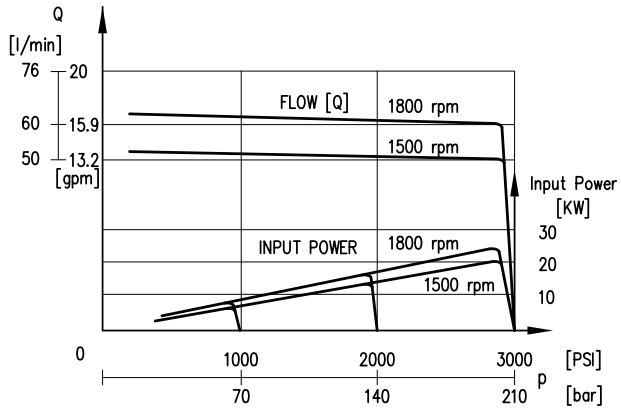


DRAIN FLOW RATE

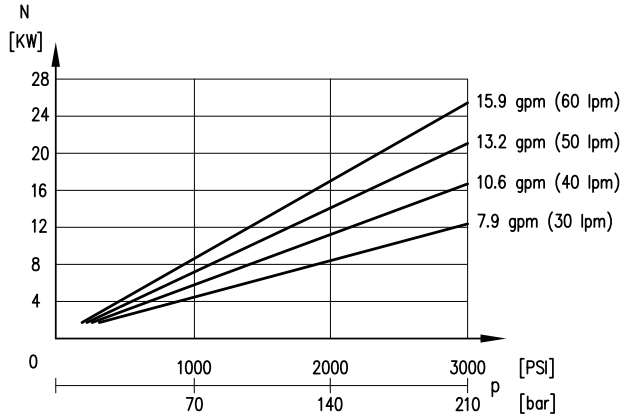


PERFORMANCE CURVES FOR LPV-17

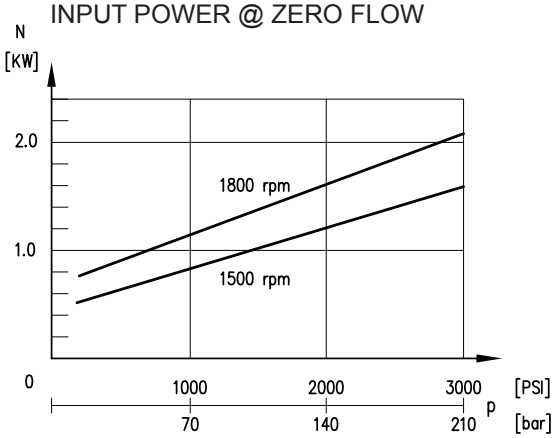
FLOW VS PRESSURE



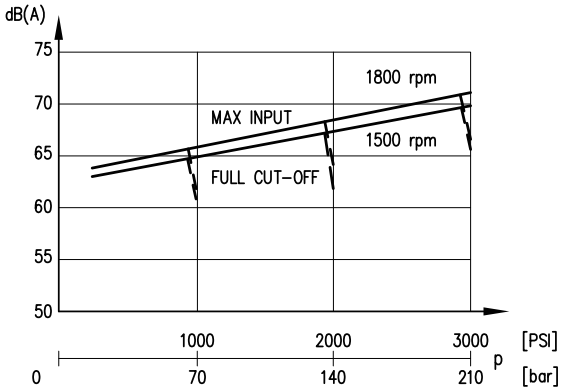
INPUT POWER @ FULL FLOW



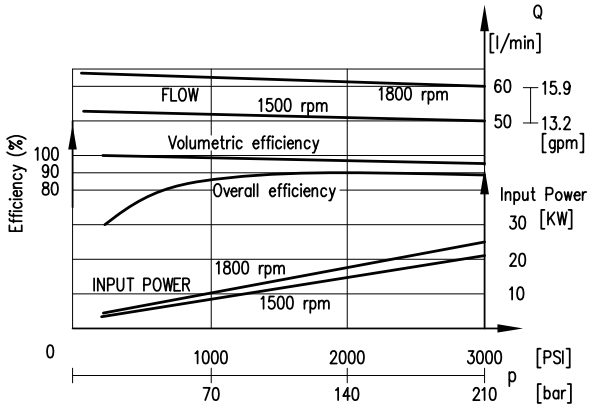
INPUT POWER @ ZERO FLOW



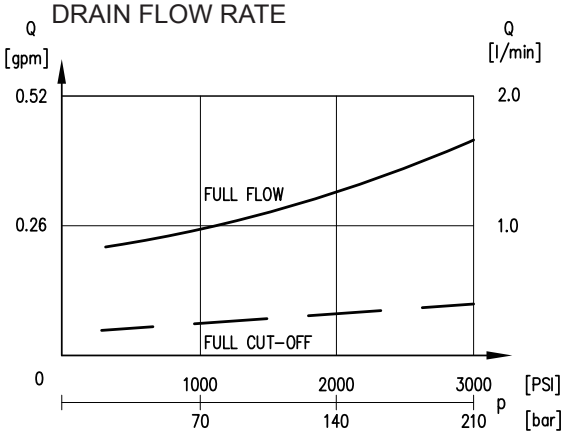
NOISE LEVEL



VOLUMETRIC & TOTAL EFFICIENCY

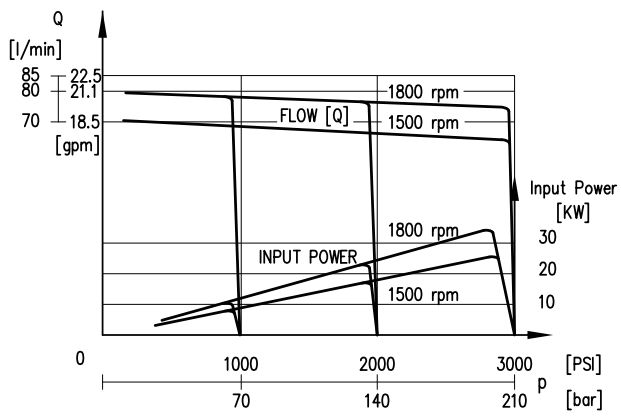


DRAIN FLOW RATE

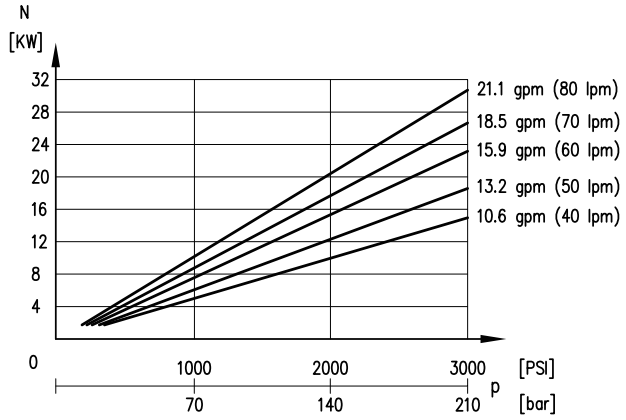


PERFORMANCE CURVES FOR LPV-22

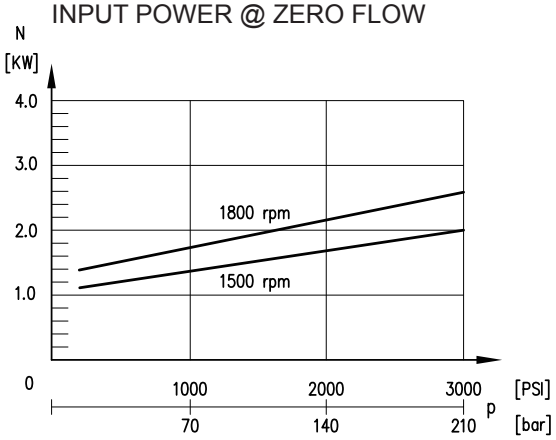
FLOW VS PRESSURE



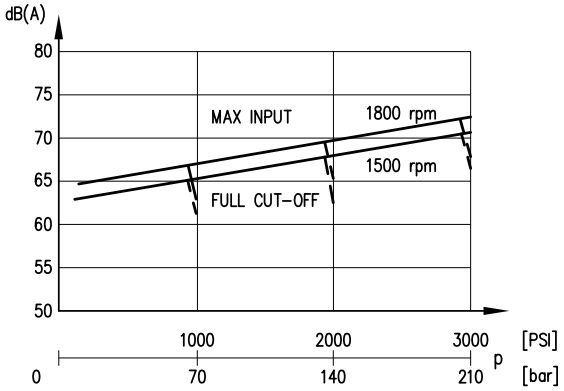
INPUT POWER @ FULL FLOW



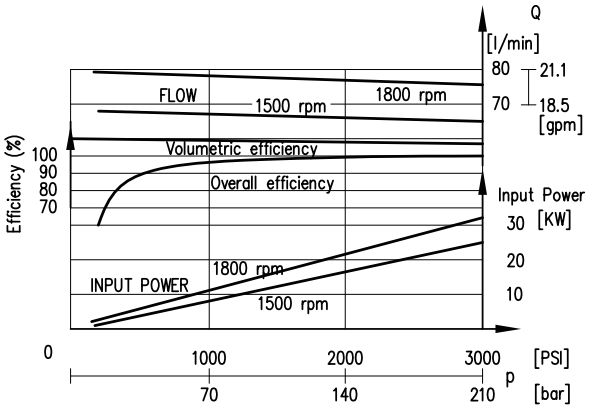
INPUT POWER @ ZERO FLOW



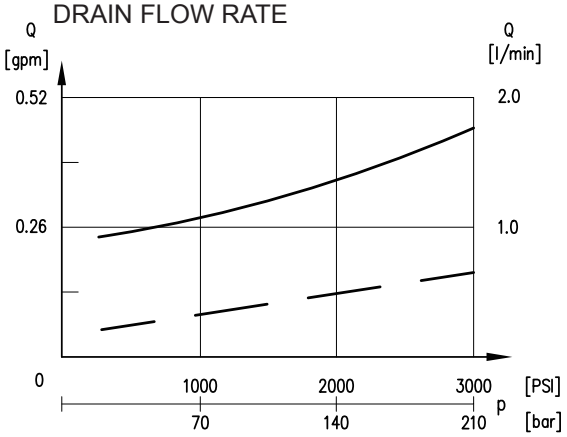
NOISE LEVEL



VOLUMETRIC & TOTAL EFFICIENCY

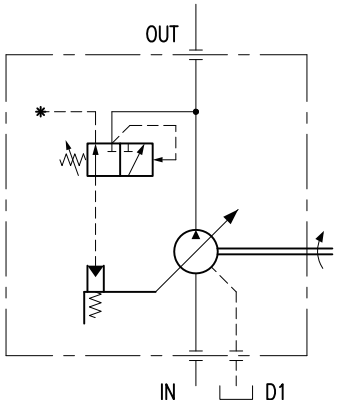


DRAIN FLOW RATE



CONTROL COMPENSATOR OPTIONS

PRESSURE COMPENSATED CONTROL (Standard)

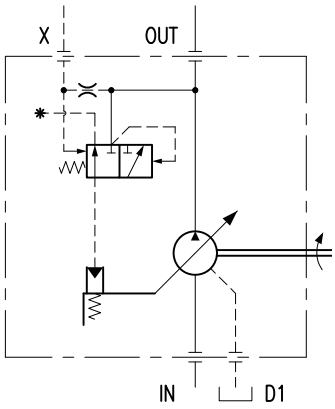


By controlling the system pressure, the standard pressure compensated control changes pump displacement to match the systems' flow requirement. Simply stated: a pressure compensated pump will provide variable flow at a constant pressure setting.

Pump displacement is mechanically controlled by the angle of the swash plate. The swash plate angle is controlled by the extension of the compensator plunger working against the swash plate bias spring. The compensator senses downstream pressure and adjusts displacement to maintain the set pressure.

The control would be used on systems requiring variable flow but unchanging pressure.

REMOTE PRESSURE CONTROL (Code 7)



The remote pressure control works similar to the standard pressure compensated control, but with some added features. This is a two stage compensator with two pressure adjustments: one for the lower pressure limit and one for the upper pressure limit.
A vent line* is required to run back to the reservoir. When this line is vented, the pump will go to the lower pressure setting. When this line is blocked, the pump will go to the upper pressure limit. Pressure in this line may be controlled by one or more relief valves. These valves should be direct acting and capable of pressures up to 3500 psi (241 bar). The setting of these relief valves will control the pumps' pressure setting.

The control would be used on systems where flow requirements are variable and multiple pressures are desirable.

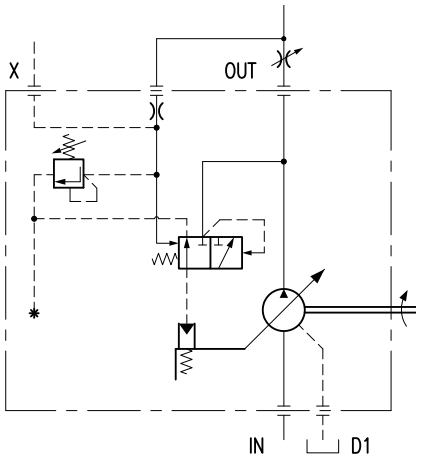
CONTROL COMPENSATOR OPTIONS

LOAD SENSING CONTROL (Code 19)

The load sensing control is designed to deliver constant flow across an orifice, and to adjust pressure to meet the systems' demands. This is accomplished by using a flow control valve between the pump outlet and the actuator. This type of control is often called 'flow compensating'.

A sense line* must be connected between the downstream side of the flow control valve and the pump compensator. Through this line, the compensator senses fluctuations in system pressure requirements. There are two adjustments on this compensator:
(a) Back side adjustment sets the upper pressure limit.
(b) Front adjustment sets the pressure differential of the flow control valve. This setting comes preset to 250 psi (17.2 bar).

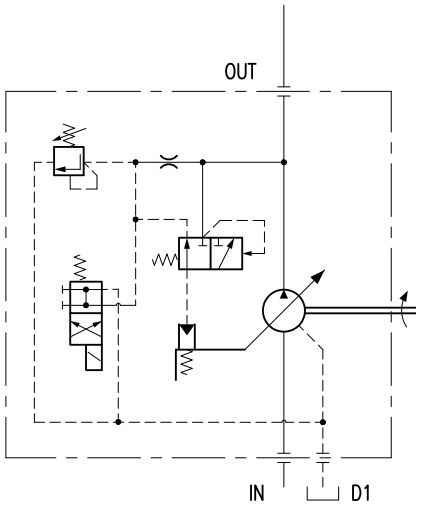
When this control is combined with a variable flow control (like a proportional valve), it will deliver both variable flow and variable pressure.



D03 PATTERN REMOTE CONTROL (Code RC)

The RC Control offers the adaptability for a variety of controlling pressure compensation valves, based on the valve selections of commonly used valves.

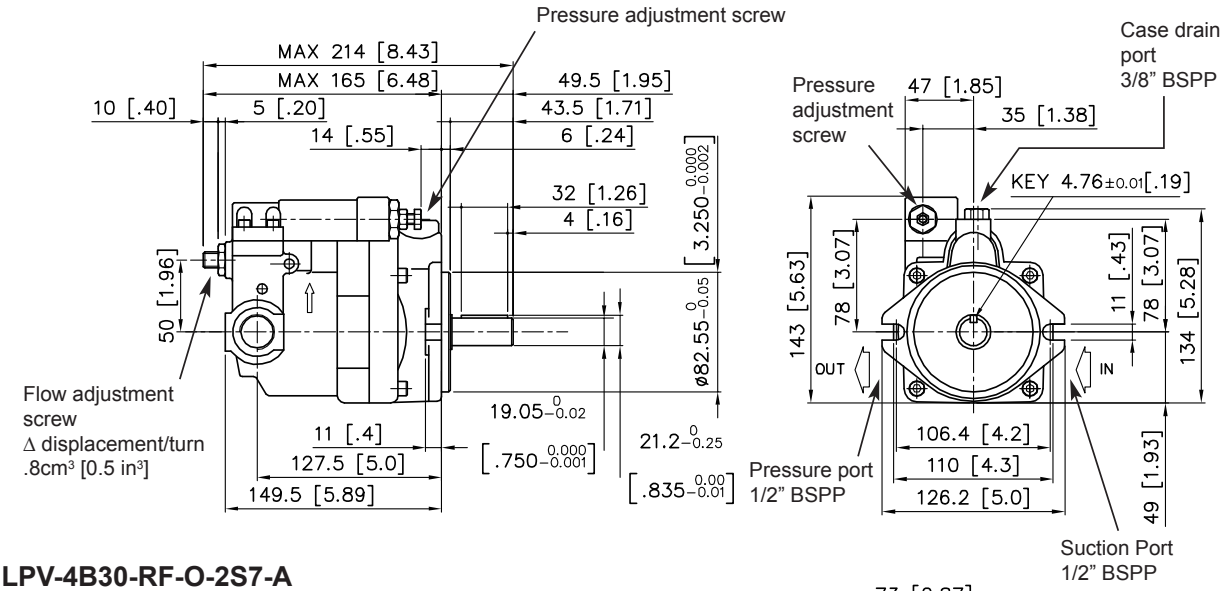
- Two Pressure - energize to High Pressure
- Two Pressure - energize to Low Pressure
- Three Pressure - Low / Medium / High
- Proportional Pressure Control



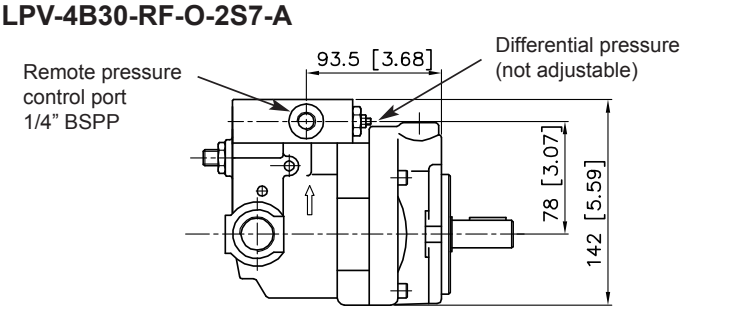
OVERALL AND MOUNTING DIMENSIONS FOR LPV-4

LPV-4B30-RF-O-2S-A

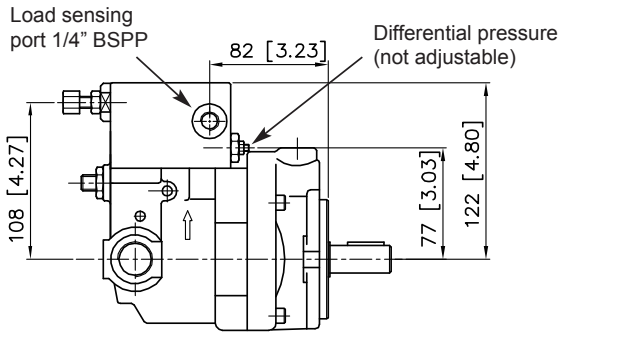
Dimensions in mm [IN]



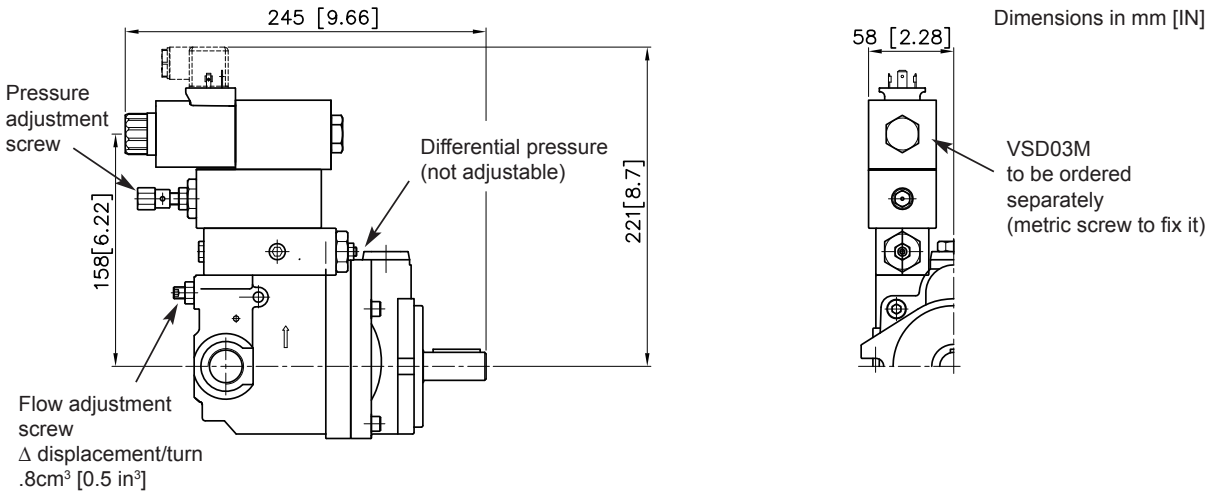
LPV-4B30-RF-O-2S7-A



LPV-4B30-RF-O-2S19-A

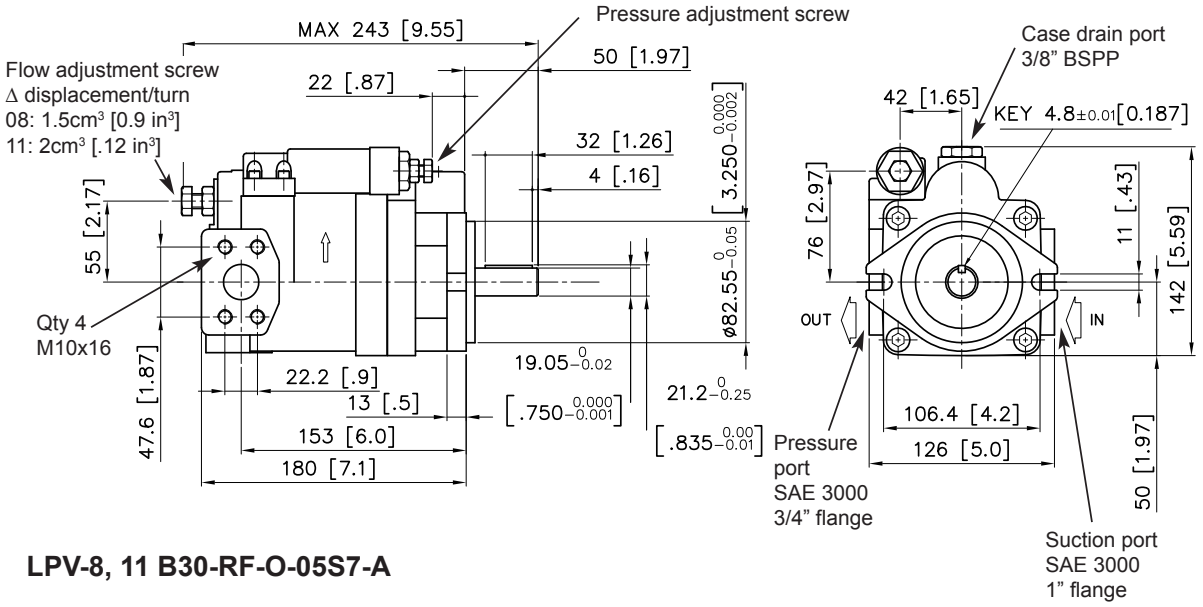


LPV-4B30-RF-O-2SRC-A

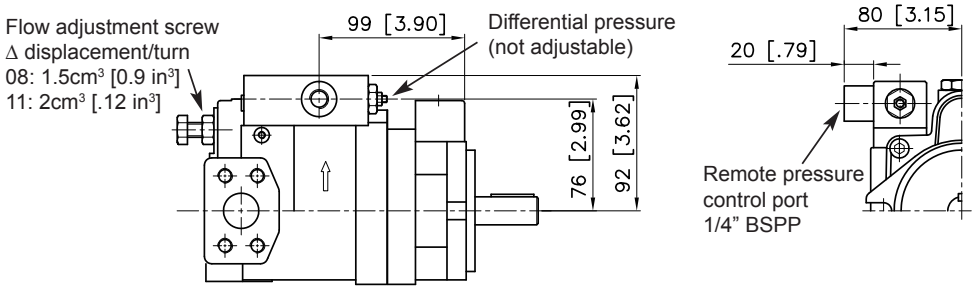


OVERALL AND MOUNTING DIMENSIONS FOR LPV-8 & 11

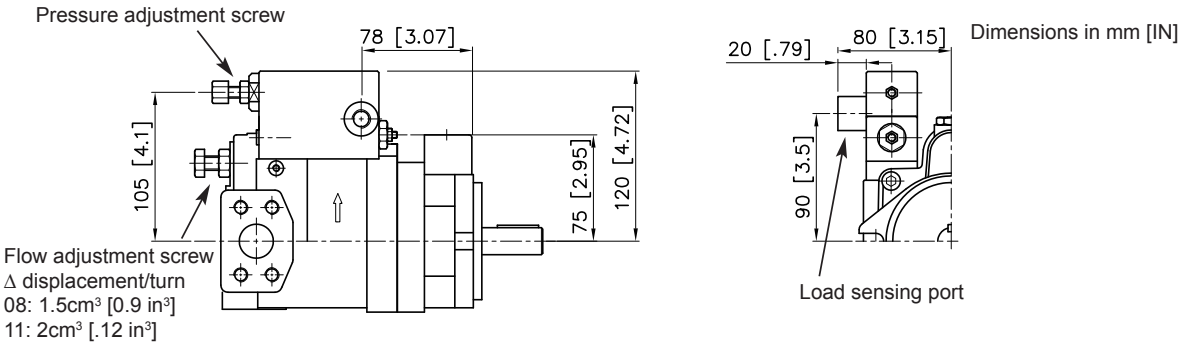
LPV-8, 11 B30-RF-O-05S-A



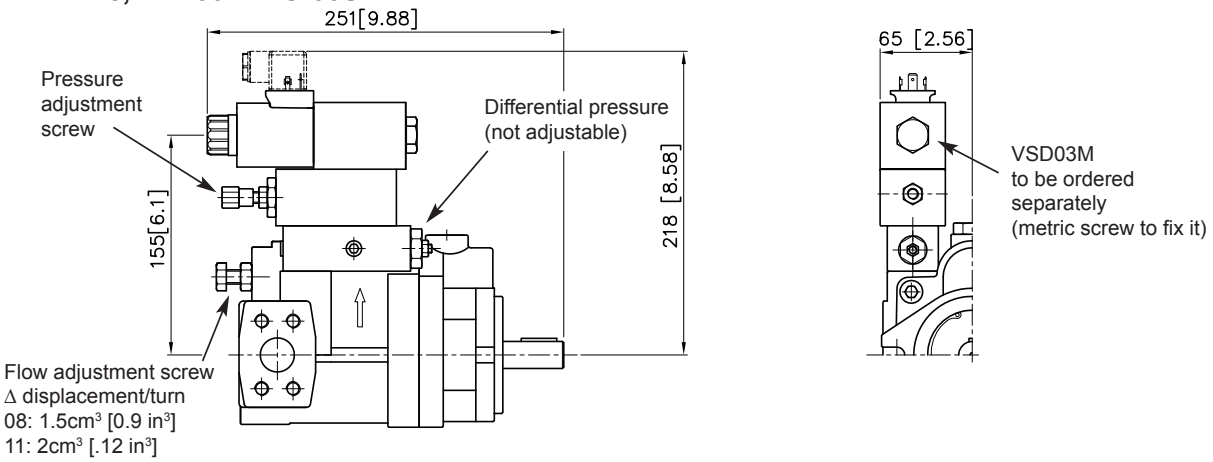
LPV-8, 11 B30-RF-O-05S7-A



LPV-8, 11 B30-RF-O-05S19-A

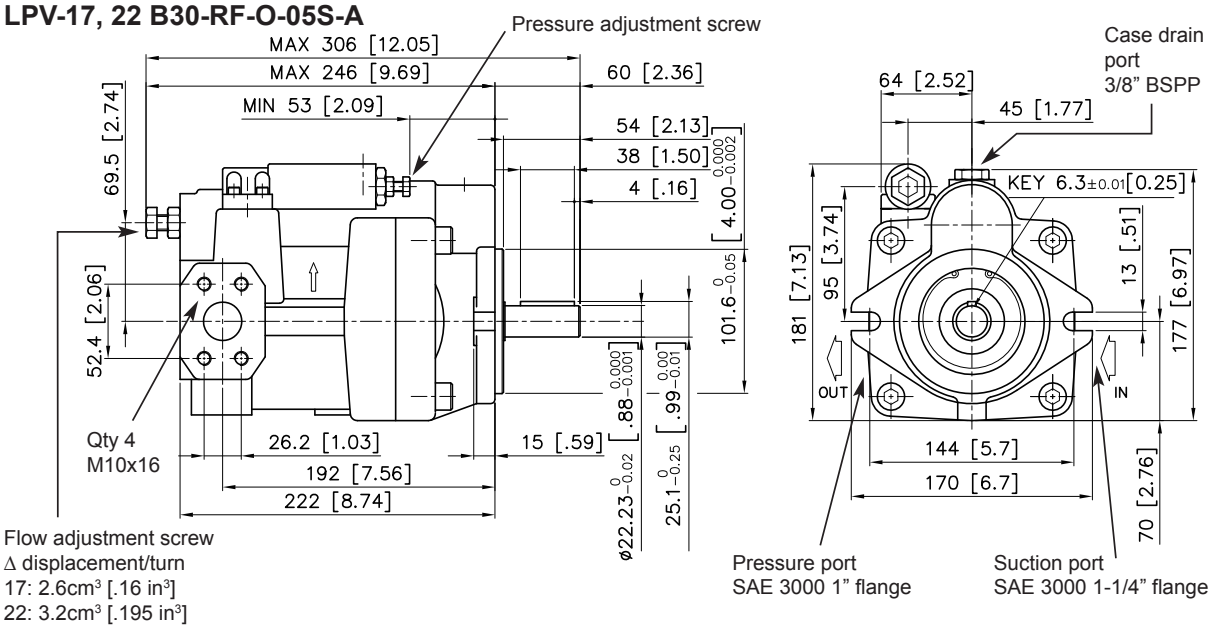


LPV-8, 11 B30-RF-O-05SRC-A



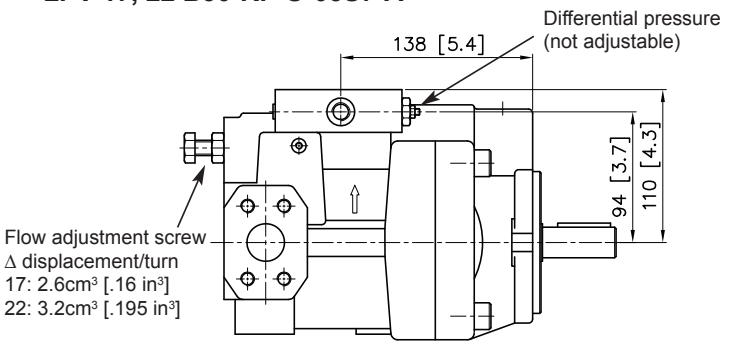
OVERALL AND MOUNTING DIMENSIONS FOR LPV-17 & 22

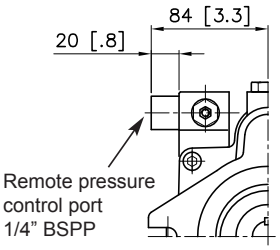
LPV-17, 22 B30-RF-O-05S-A



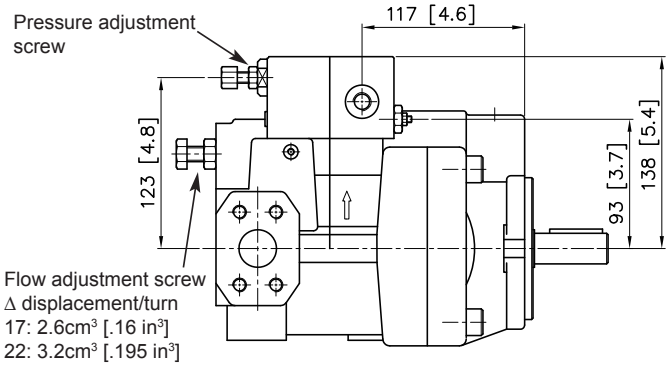
Dimensions in mm [IN]

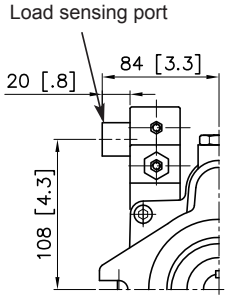
LPV-17, 22 B30-RF-O-05S7-A



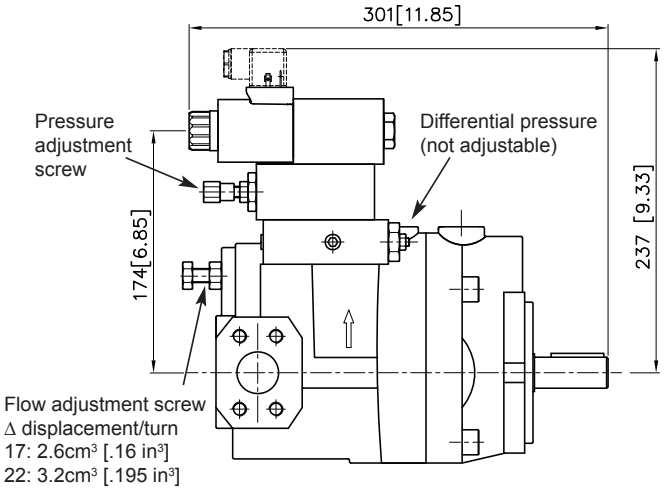


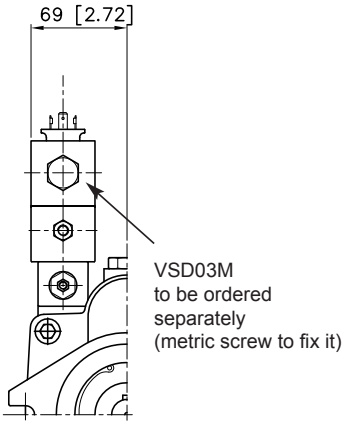
LPV-17, 22 B30-RF-O-05S19-A





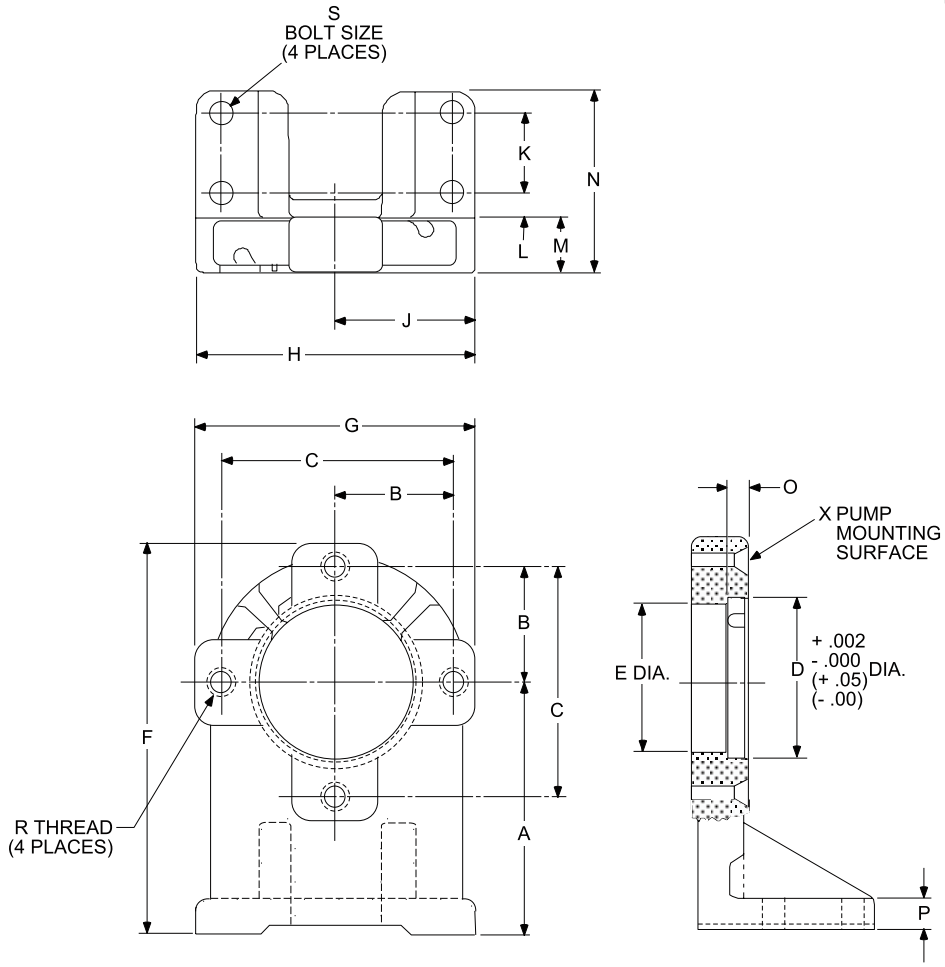
LPV-17, 22 B30-RF-O-05SRC-A





FOOT MOUNTING BRACKET DIMENSIONS

Dimensions in mm [IN]



FOOT BRACKET SERIES	SAE FLANGE	DIMENSIONS inches (millimeters)																
		A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	R THREAD	S BOLT SIZE
FPVR6	A	5.25 (133.4)	2.09 (53.1)	4.19 (106.4)	3.252 (82.6)	3.00 (76.2)	7.81 (198.4)	5.12 (130.0)	3.50 (88.9)	1.75 (44.4)	2.00 (50.8)	.48 (12.2)	1.00 (25.4)	3.98 (101.1)	.31 (7.9)	.81 (20.6)	3/8-16 UNC	3/8 In
FPVR15	B	6.25 (158.8)	2.87 (73.0)	5.75 (146.1)	4.00 (101.6)	4.25 (108.0)	9.69 (246.1)	6.85 (174.0)	5.75 (146.1)	2.87 (73.0)	2.01 (51.1)	.59 (15.0)	1.26 (32.0)	4.45 (113.0)	.47 (11.9)	.79 (20.1)	1/2-13 UNC	1/2 In

FOOT MOUNTING BRACKET ORDERING INFORMATION

FPVR- [SELECT ONE] - [DESIGN LETTER] - [DESIGN LETTER]

SIZE	
CODE	USED WITH MODEL
6	LPV-4 LPV-8 LPV-11
15	LPV-17 LPV-22

MOTOR SIZE		KIT INCLUDES	
CODE	NEMA FRAME SIZE	MOTOR SPACERS [in.]	BRACKET* SPACERS [in.]
143	143/145	1.74	-
182	182/183	0.75	-
213	213/215	-	-
254	254/256	-	1.00
254	254/256	-	-
284	284/286	-	0.75
324	324/326	-	1.75

*NOTE: Foot bracket spacers mount pump to 25 H.P. motor, 1800 rpm, 284 T frame.

TYPICAL ORDERING CODE
FPVR-15-284-B

FOOT MOUNTING BOLTS ORDERING INFORMATION

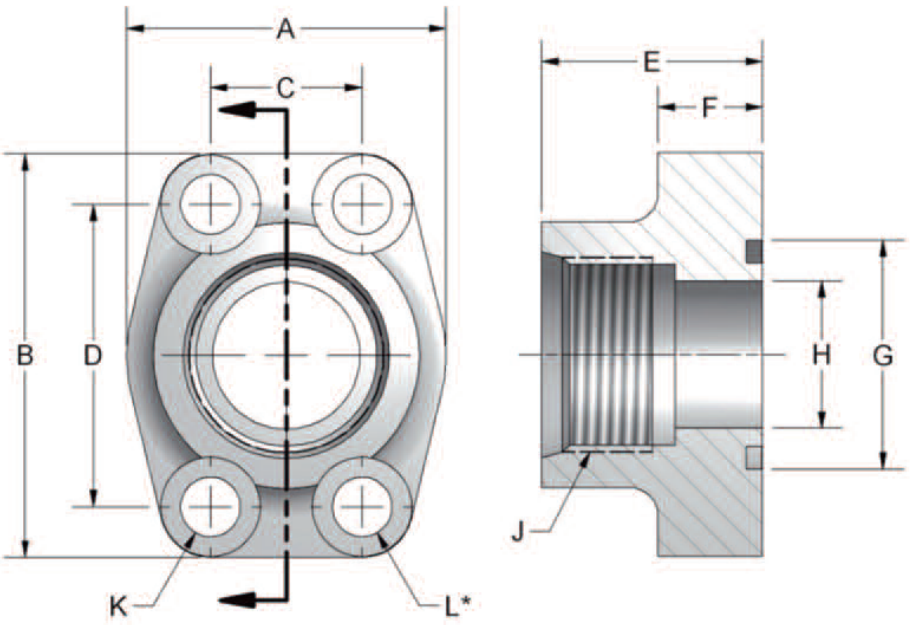
BPVR- [SELECT ONE] - 2 - U- [DESIGN LETTER]

PUMP TO FOOT BRACKET

SIZE		BOLTS	
CODE	USED WITH MODEL	BOLT SIZE	QUANTITY BOLTS/ WASHERS
6	LPV-4 LPV-8 LPV-11	3/8 - 16 UNC X 0.88	2
15	LPV-17 LPV-22	1/2 - 13 UNC X 1.25	2

TYPICAL ORDERING CODE
BPVR-15-2-U-A

STRAIGHT FLANGE DIMENSIONS



PORT SIZE		DIMENSIONS inches										MOUNTING HARDWARE	
	PAD SIZE	A	B	C	D	E	F	G	H	J	K	SHC BOLTS ISO4762	O-RING AS568
0.75	0.75	1.97	2.56	0.88	1.88	1.42	0.71	1.25	0.75	1 1/ 16-12	0.41	qty 4-M10x35	214
1	1	2.17	2.75	1.03	2.06	1.50	0.71	1.56	1.00	1 5/ 16-12	0.41	qty 4-M10x35	219
1.25	1.25	2.68	3.12	1.19	2.31	1.61	0.83	1.75	1.25	1 5/ 8-12	0.47	qty 4-M10x35	222