

VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31



- Industrial & Mobile, Single & Thru Shaft Models, H(S)P-10V
- 18, 28, 45, 71, 100 & 140 Frame Sizes Available
- Same Day Shipment of Units or Parts Orders
- DR, DRG, DFR, DFRI, DFLR Controls
- SAE & Metric Units

VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

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RANGE OF PRODUCTS

25

VARIABLE DISPLACEMENT PUMP H(S)P-10V

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TECHNICAL DATA

1. Input operating pressure range

Absolute pressure at port S (A)

- P_{min}.....0.8bar (12 psi)
- P_{abs} max.....30bar (435 psi)

2. Output operating pressure range

Pressure at port B

- Nominal pressure P_N.....280bar (4000 psi)
- Peak pressure P_{max}.....350bar (5100 psi)
- Pressure data to DIN24312

3. Case drain pressure

Maximum pressure of leakage fluid (at ports L, L1). Maximum 7 psi (0.5 bar) higher than input pressure at port S, but not higher than 30 psi (2 bar) absolute.

4. Direction of flow : (S to B)

5. Table of values (theoretical values, without considering η_{mh} and η_v ; values rounded)

Size cm ³ /rev			18	28	45	71	100	140
Displacement	V _g max	cm ³ /rev (in ³ /rev)	18 (1.10)	28 (1.71)	45 (2.75)	71 (4.33)	100 (6.1)	140 (8.54)
Max. Speed	N _o max	rpm	3300	3000	2600	2200	2000	1800
Max. Flow	O _o max	L / min (gpm)	59.4 (15.7)	84 (22)	117 (31)	156 (41)	200 (53)	252 (67)
Max. Power	P _o max	kW (HP)	28 (36.6)	39 (51)	55 (72)	73 (96)	93 (124)	118 (156)
Max. Torque @ V _g max, N _o max	T _{max}	Nm (ft - lb)	80 (58)	125 (91)	200 (146)	316 (230)w	445 (324)	623 (453)
Weight (without fluid)		Kg (lbs)	12 (27)	15 (33)	21 (46)	33 (73)	45 (99)	60 (132)

Notes: Values shown are valid for an absolute pressure of 1 bar at suction port. If the flow is reduced or if the inlet pressure is increased the speed may be increased.

6. Determination of size

$$\text{Flow } q_v = \frac{V_g \cdot n \cdot \eta_v}{231} \quad [\text{gpm}] \quad \left(q_v = \frac{V_g \cdot n \cdot \eta_v}{1000} \quad [\text{L/min}] \right)$$

$$\text{Torque } T = \frac{V_g \cdot \Delta p}{24 \cdot \pi \cdot \eta_{mh}} \quad [\text{lb-ft}] \quad \left(T = \frac{V_g \cdot \Delta p}{20 \cdot \pi \cdot \eta_{mh}} \quad [\text{Nm}] \right)$$

$$\text{Power } P = \frac{q_v \cdot \Delta p}{1714 \cdot \eta_t} \quad [\text{HP}] \quad \left(P = \frac{q_v \cdot \Delta p}{600 \cdot \eta_t} \quad [\text{kW}] \right)$$

V_g = Displacement per revolution in in³ (cm³)
 Δp = Differential pressure in psi (bar)
 n = Speed in rpm (min⁻¹)
 η_v = Volumetric efficiency
 η_{mh} = Mechanical-hydraulic efficiency
 η_t = Total efficiency

VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

ORDERING CODE

H(S)P-10V	O	71	DR	/	31	R	-	P	S
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Axial Piston Unit

Swash plate variable pump	HP-10V
Swash plate variable pump for industrial	HSP-10V

Mode of Operation

Pump, open circuit	O
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Size

Displacement V_{gmax}	cm^3/rev	18	28	45	71	100	140
	(in^3/rev)	(1.10)	(1.71)	(2.75)	(4.33)	(6.10)	(8.54)

Control Devices

Pressure control	●	●	●	●	●	●	DR
Pressure remote control							DRG
Pressure and flow control	●	●	●	●	●	●	DFR
Pressure & flow (w/ X port blocked)							DFR1
Pressure, Flow & Power control	●	●	●	●	●	●	DFLR

Series

Series	31
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Direction of Rotation

Viewed from shaft end	clockwise	R
	counter-clockwise	L

Seals

Buna-N (NBR per DIN ISO 1629) ;	P
FPM (fluorocarbon)	V

Shaft End

	18	28	45	71	100	140	
SAE-splined shaft	●	●	●	●	●	●	S
SAE-splined shaft, reinforced (higher thru drive torque)	●	●	●	●	-	-	R
SAE splined shaft, smaller size (not for pumps with thru drive)	●	-	●	●	●	-	U
SAE- splined shaft, reinforced (U-type shaft)	●	●	●	●	●	-	W
SAE- keyed shaft	●	●	●	●	●	●	K
Parallel with key DIN 6885	●	●	●	●	●	●	P

VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

ORDERING CODE

C	62	N00
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Through drives				18	28	45	71	100	140	
Without through drive (Non-Thru Drive)				●	●	●	●	●	●	N00
With through drive to accept an axial piston pump or a gear pump										
Mounting flange SAEJ744 hub sealing to mount										
82-2 (A)	3/4" keyed (A-B)	axial	H(S)P-10V18 (K)	○	●	●	●	●	●	K40 ¹⁾
101-2 (B)	7/8" keyed (B)	axial	H(S)P-10V28 (K)	-	●	●	●	●	●	K03 ¹⁾
101-2 (B-B)	1" keyed (B-B)	axial	H(S)P-10V45 (K)	-	-	●	●	●	●	K05 ¹⁾
127-2 (C)	1-1/4" keyed (C)	axial	H(S)P-10V71 (K)	-	-	-	●	●	●	K08 ¹⁾
127-2 (C)	1-1/2" keyed (C)	radial	H(S)P-10V100 (K)	-	-	-	-	●	●	K38 ¹⁾
152-4 (D)	1-3/4" keyed (D)	axial	H(S)P-10V140 (K)	-	-	-	-	-	●	K21 ¹⁾
82-2 (A)	5/8" 9T (A)	axial	H(S)P-10V18(U)	●	●	●	●	●	●	K01
82-2 (A)	3/4" 11T (A-B)	axial	H(S)P-10V18(S,R), 10(S)	●	●	●	●	●	●	K52
101-2 (B)	7/8" 13T (B)	axial	H(S)P-10V28(S,R), 45(U,W)	-	●	●	●	●	●	K68/K02
101-2 (B)	1" 15T (B-B)	axial	H(S)P-10V45(S,R), 60(U,W)	-	-	●	●	●	●	K04
127-2 (C)	1-1/4" 14T (C)	axial	H(S)P-10V71(S,R), 100 (U,W)	-	-	-	●	●	●	K07/K15
127-2 (C)	1-1/2" 17T (C-C)	axial	H(S)P-10V100(S,R), 85(S)	-	-	-	-	●	●	K24
152-4 (D)	1-3/4" 13T (D)	axial	H(S)P-10V140(S,R)	-	-	-	-	-	●	K17

¹⁾ Permitted with reduced thru drive torque

See Thru Drives section for other options

Service Ports

(Pressure port B and Suction port S)

	18	28	45	71	100	140	
Rear ports, UNC mounting screws		●	●	●	●	-	61
Opposite side ports, UNC mounting screws	●	●	●	●	●	●	62
Rear ports, metric mounting screws		●	●	●	-	-	11
Opposite side ports, metric mounting screws		●	●	●	●	●	12
Rear ports, UNC mounting screws		-	-	●	-	-	91
Opposite side ports, UNC mounting screws		-	-	●	-	-	92
Rear ports, metric mounting screws				●		-	41
Opposite side ports, metric mounting screws		-	-	●	-	-	42

Ports 61, 11, 91 & 41 non-through drive only

Mounting Flange

	18	28	45	71	100	140	
SAE 2 hole	●	●	●	●	●	-	C
ISO 2 hole 3019-2	●	●	●	●	●	-	A
SAE 4 hole	-	-	-	-	-	●	D
ISO 4 hole 3019-2	-	-	-	-	-	●	B

● = available
○ = in preparation
- = not available

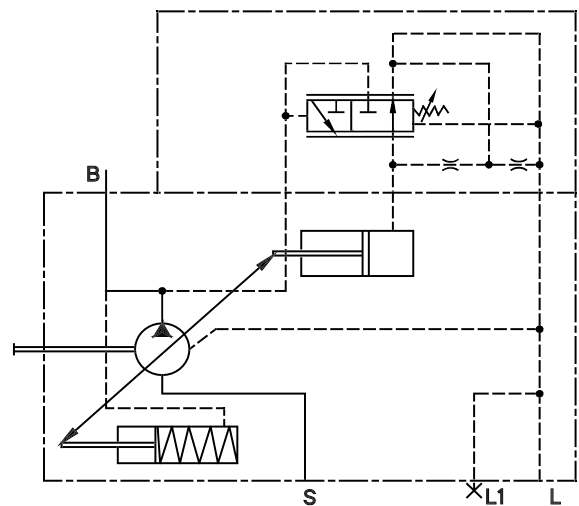
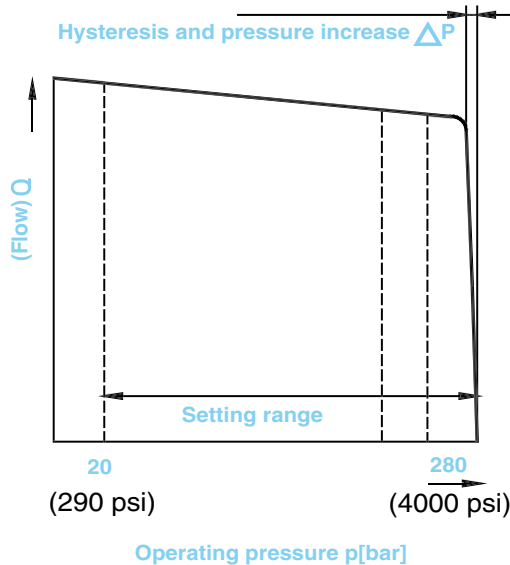
VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

DR PRESSURE CONTROL

The pressure control serves to maintain a constant pressure in the hydraulic system within the control range of the pump. The pump therefore supplies only the amount of hydraulic fluid required by the actuators. Pressure may be smoothly set at the pilot valve.

Static characteristic
(at $n_1 = 1450\text{rpm}$; $t_{oil} = 50^\circ\text{C}$) 122°F



Ports

B	Pressure port
S	Suction port
L, L1	Case drain ports (L1 sealed)

CONTROL DATA

Hysteresis and repetitive accuracy Δp max. 3 bar (45 psi)

Size		18	28	45	71	100	140
Δp	Bar (psi)	4 (58)	4 (58)	6 (87)	8 (116)	10 (145)	12 (174)

Pilot oil consumption.....max. approx. 3 L/min (0.8 gpm)

VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

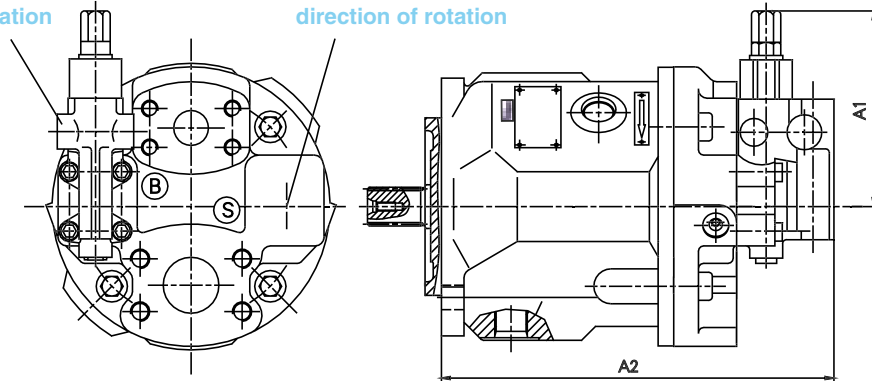
UNIT DIMENSIONS DR

SERVICE PORTS AT REAR; MODELS 61N00 AND 11N00

Sizes 18 to 140

Mounting of pilot valve for clockwise direction of rotation

Mounting of pilot valve for anticlockwise direction of rotation



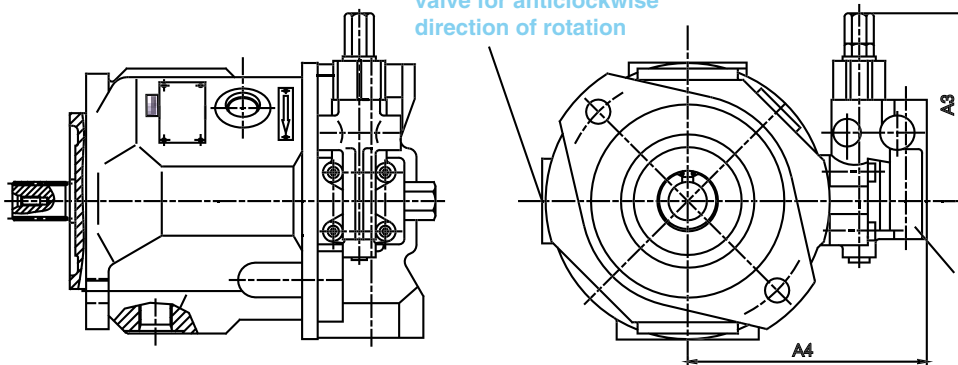
UNIT DIMENSIONS DR

SERVICE PORTS ON SIDE; MODELS 62N00 AND 12N00

Sizes 18 to 140

Mounting of pilot valve for anticlockwise direction of rotation

Mounting of pilot valve for clockwise direction of rotation



Sizes	A1 mm (in)	A2 mm (in)	A3 mm (in)	A4 mm (in)
18	110 (4.33")	-	105 (4.13")	126 (4.96")
28	108.5 (4.27")	226.2 (8.91")	108.5 (4.27")	136 (5.35")
45	108.5 (4.27")	245 (9.65")	108.5 (4.27")	146 (5.75")
71	106 (4.17")	279 (10.98")	108.5 (4.27")	160 (6.3")
100	108.5 (4.27")	344 (13.54")	108.5 (4.27")	158 (6.22")
140	126 (4.964")	-	127 (5.0")	169 (6.65")

VARIABLE DISPLACEMENT PUMP H(S)P-10V

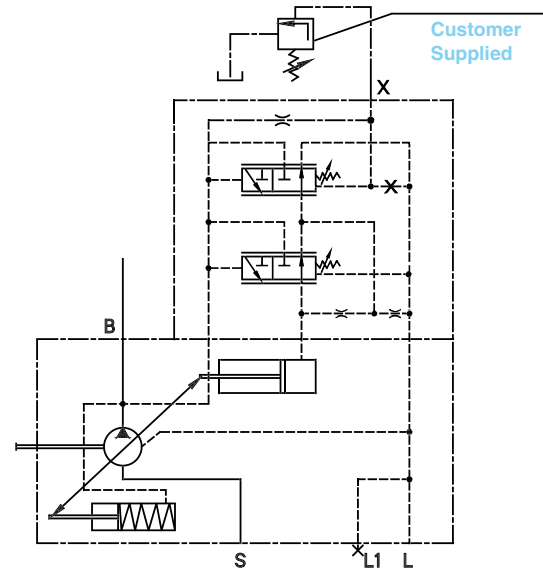
SERIES 31

DRG PRESSURE CONTROL, REMOTE CONTROL

Function and design for DRG.

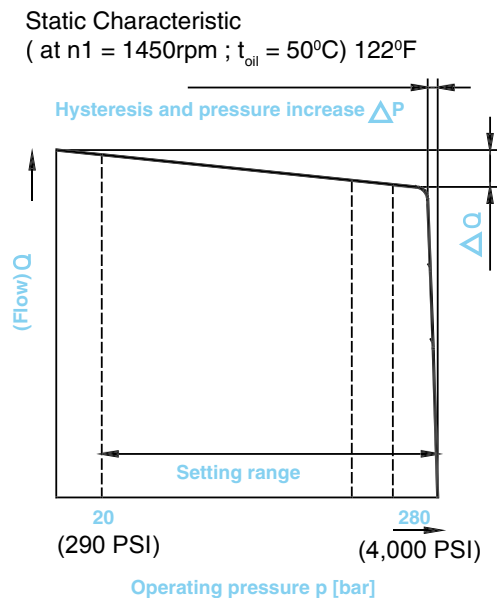
A pressure relief valve may be externally piped to port X for remote control purposes. It is not, however, included with DRG control.

The differential pressure at the pilot valve is set as standard to 20 bar (290 psi) and this results in a pilot flow of (0.4gpm) 1.5 L/min. If another setting is required (in the range 10-22 bar), please state this in clear text.



Ports

B	Pressure port
S	Suction port
L, L1	Case drain ports (L1 sealed)
X	Pilot pressure port



CONTROL DATA

Hysteresis and repetitive accuracy p.....max 3 bar (45 psi)

Max. pressure increases

Size		18	28	45	71	100	140
Δp	Bar (psi)	4 (58)	4 (58)	6 (87)	8 (116)	10 (145)	12 (174)

Pilot oil consumption.....max. approx. 4.5 L/min(1.19gpm)

VARIABLE DISPLACEMENT PUMP H(S)P-10V

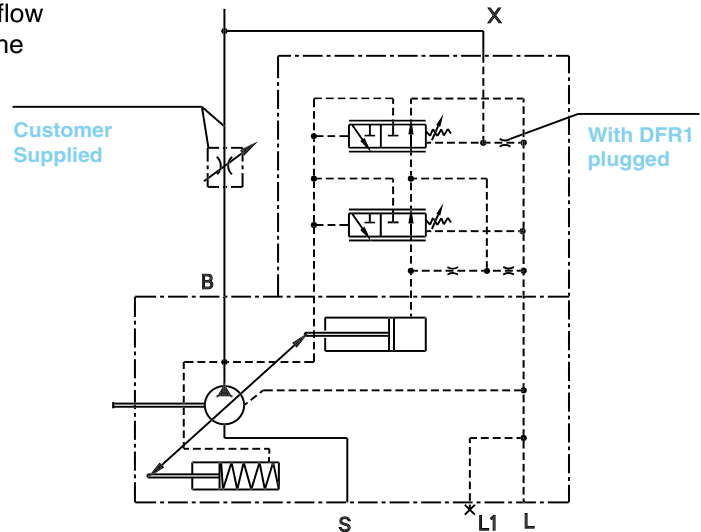
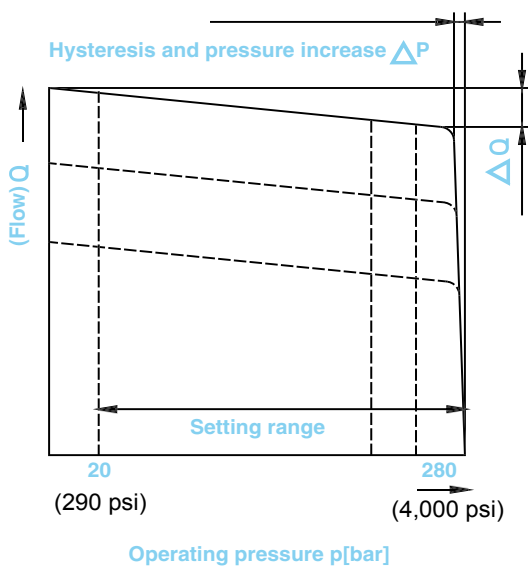
SERIES 31

DFR/DFR1 PRESSURE/FLOW CONTROL

In addition to the pressure control function, the pump flow may be varied by means of a differential pressure at the actuator (e.g. an orifice).

In model DFR1 the X orifice is plugged.

Static Characteristic
(at $n_1 = 1450\text{rpm}$; $t_{oil} = 50^\circ\text{C}$) 122°F



Ports

B	Pressure port
S	Suction port
L, L1	Case drain ports (L1 sealed)
X	Pilot pressure port

FLOW CONTROL/DIFFERENTIAL PRESSURE

Standard setting: 14 bar (203psi). If a different setting is required, please state in clear text.

When port X is unloaded to tank, a zero stroke pressure ("stand by") of $p = 18 \pm 2$ bar (260 \pm 30 psi) results.

CONTROL DATA

For pressure control technical data see DR Pressure control

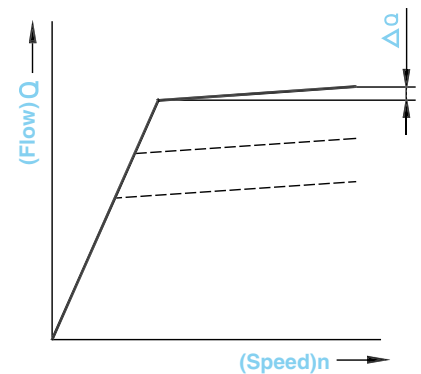
Max. flow deviation (hysteresis and increase) measured at drive speed $n = 1450$ rpm

Size	18	28	45	71	100	140
▲ Q_{max} (gpm) L/min	0.9 (0.24)	1.0 (0.26)	1.8 (0.48)	2.8 (0.74)	4.0 (1.06)	6.0 (1.6)

Pilot oil consumption DFR.....max. approx. 3-4, 5 L/min (0.70-1.19 gpm)

Pilot oil consumption DFR1.....max. approx. 3 L/min (0.70 gpm)

Static characteristic at variable speed



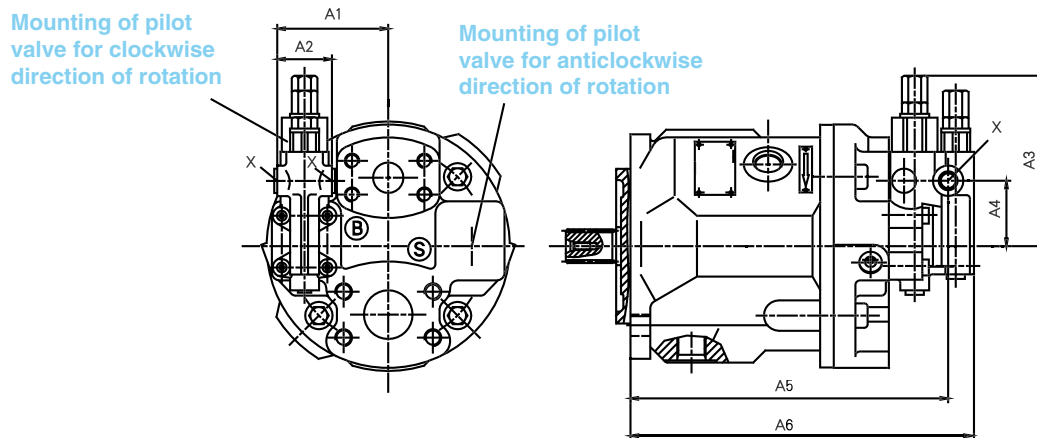
VARIABLE DISPLACEMENT PUMP H(S)P-10V

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UNIT DIMENSIONS DFR / DFRI / DRG

SERVICE PORTS AT REAR; MODELS 61N00 AND 11N00

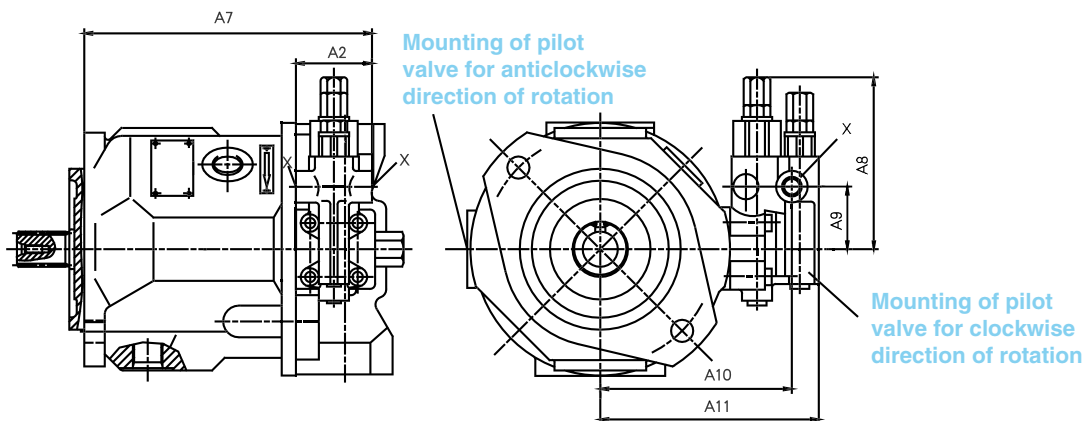
Sizes 18 to 140



UNIT DIMENSIONS DFR / DFRI / DRG

SERVICE PORTS ON SIDE; MODELS 62N00 AND 12N00

Sizes 18 to 140



Sizes mm (in)	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	X
18	-	36(1.42)	-	-	-	-	166(6.54)	105(4.13)	40(1.57)	109(4.29)	126(4.96)	7/16-20UNF-2B
28	73(2.87)	36(1.42)	108.5(4.27)	43(1.69)	209.2(8.23)	226.2(8.9)	176(6.9)	108.5(4.27)	40(1.57)	119(4.69)	136(5.35)	7/16-20UNF-2B
45	82(3.21)	36(1.42)	108.5(4.27)	40(1.57)	229(8.98)	245(9.65)	191(7.5)	108.5(4.27)	40(1.57)	129(5.08)	146(5.75)	7/16-20UNF-2B
71	91(3.60)	36(1.42)	106(4.17)	42(1.65)	262(10.31)	279(10.98)	219(8.6)	108.5(4.27)	40(1.57)	143(5.63)	160(6.30)	7/16-20UNF-2B
100	96.3(3.79)	36(1.42)	108.5(4.27)	40(1.57)	327(12.87)	344(13.54)	287(11.3)	108.5(4.27)	40(1.57)	141(5.55)	158(6.22)	7/16-20UNF-2B
140	140(5.51)	36(1.42)	-	27(1.06)	353(13.9)	379(14.92)	258(10.16)	127(5.0)	27(1.06)	183(7.2)	209(8.23)	9/16-18UNF-2B

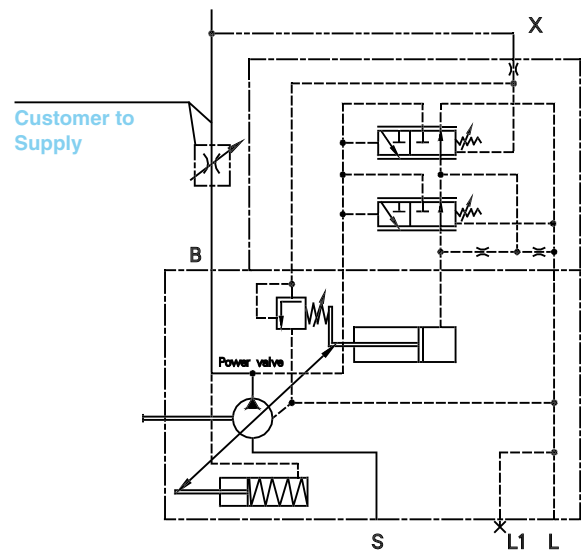
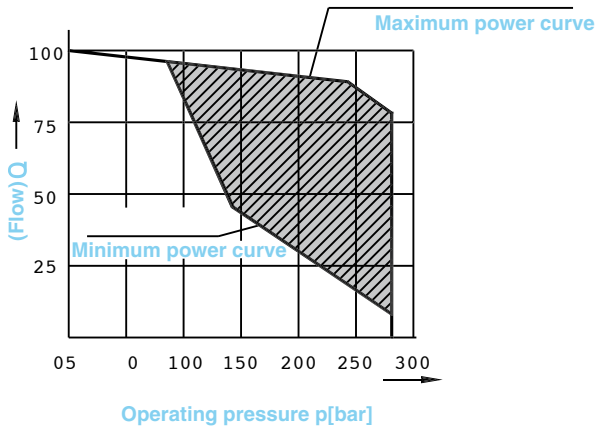
VARIABLE DISPLACEMENT PUMP H(S)P-10V

SERIES 31

DFLR PRESSURE / FLOW / POWER CONTROL

In order to achieve a constant drive torque with a varying operating pressure, the swivel angle and with it the output flow from the axial piston unit is varied so that the product of flow and pressure remain constant.

Flow control is possible below the limit of the power curve.



Ports

B	Pressure port
S	Suction port
L, L1	Case drain ports (L1 sealed)
X	Pilot pressure port

The power characteristic is factory - set, so please enter details in clear text, e.g. 20kW at 1450 rpm (5HP, 1800RPM).

CONTROL DATA

For pressure control technical data see DR Pressure control.
 For flow control technical data see DFR control.

Start of control.....from 80 bar (1,160 psi)
 Pilot oil consumption.....max. approx. 5.5 L/min (1.45 gpm)

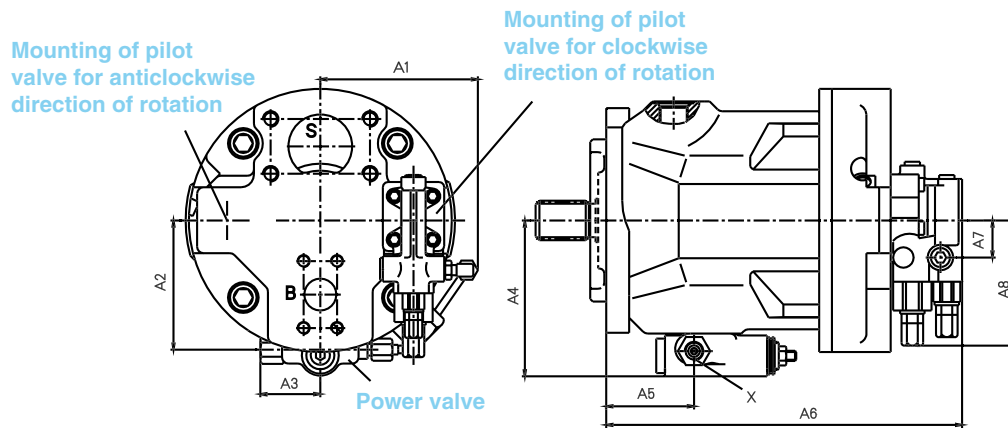
VARIABLE DISPLACEMENT PUMP H(S)P-10V

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UNIT DIMENSIONS DFLR

SERVICE PORTS AT REAR; MODELS 61N00 AND 11N00

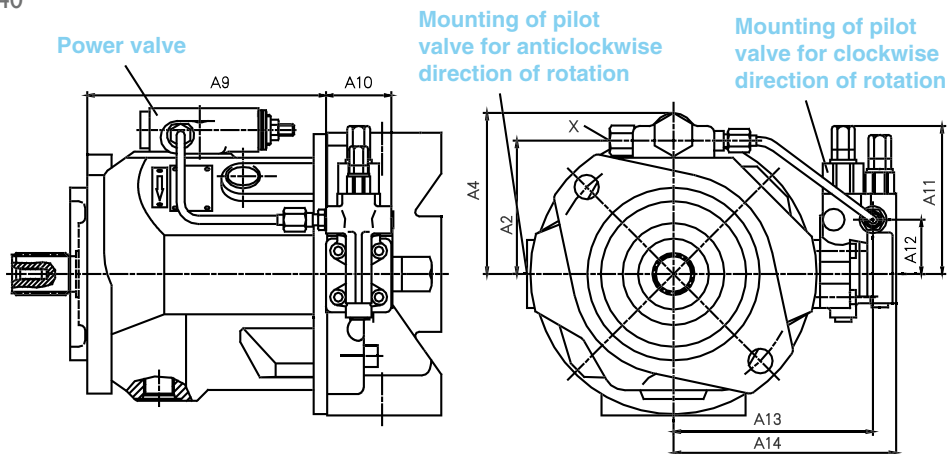
Sizes 18 to 140



UNIT DIMENSIONS DFLR

SERVICE PORTS ON SIDE; MODELS 62N00 AND 12N00

Sizes 18 to 140



Sizes mm(in)	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	X
28	120(4.72)	87.5(3.44)	47(1.9)	108.5(4.27)	48(1.89)	226.2(8.9)	43(1.69)	108.5(4.27)	140(5.51)	36(1.42)	108.5(4.27)	40(1.57)	119(4.69)	136(5.35)	7/16-20UNF-2B x 0.39H
45	129(5.08)	92.8(3.65)	47(1.9)	112.5(4.43)	55(2.17)	245(9.65)	40(1.57)	108.5(4.27)	155(6.10)	36(1.42)	108.5(4.27)	40(1.57)	129(5.08)	146(5.75)	7/16-20UNF-2B x 0.39H
71	139(5.47)	103.5(4.07)	47(1.9)	124(4.88)	69(2.72)	279(10.98)	42(1.65)	106(4.17)	218.8(8.61)	36(1.42)	108.5(4.27)	40(1.57)	143(5.63)	160(6.30)	7/16-20UNF-2B x 0.39H
100	145(5.71)	112.6(4.43)	47(1.9)	132.5(5.22)	110.8(4.36)	344(13.54)	40(1.57)	108.5(4.27)	250(9.84)	36(1.42)	108.5(4.27)	40(1.57)	148(5.83)	165(6.50)	M14 x 1.5-6H
140	148(5.83)	140(5.51)	-	140(5.51)	99(3.90)	379(14.92)	209(8.23)	183(7.2)	-	-	127(5.00)	27(1.06)	183(7.29)	209(8.23)	9/16-18UNF-2B x 0.51H

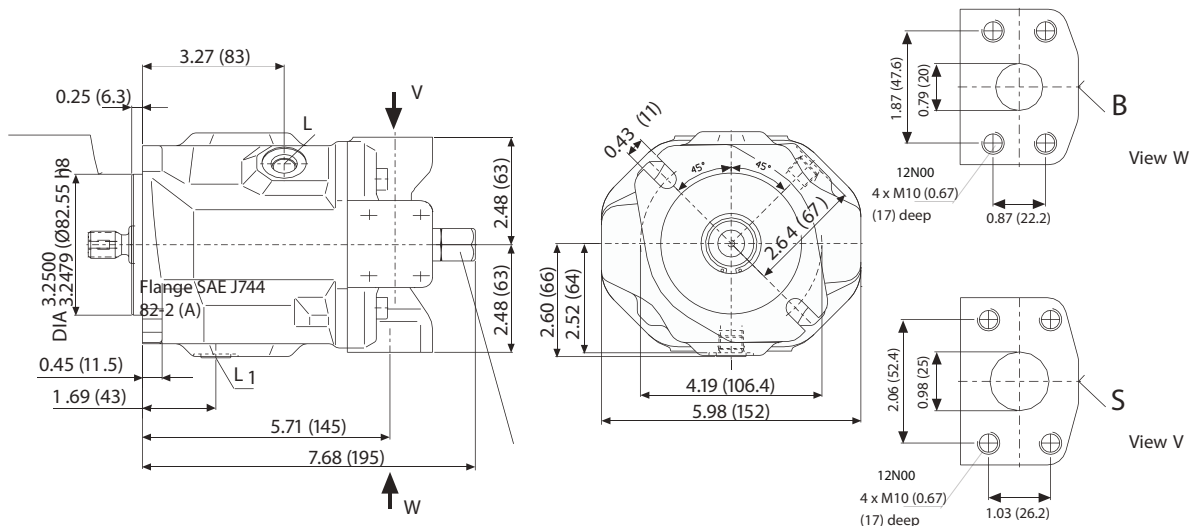
MOUNTING DIMENSIONS, SIZE 18

SERIES 31

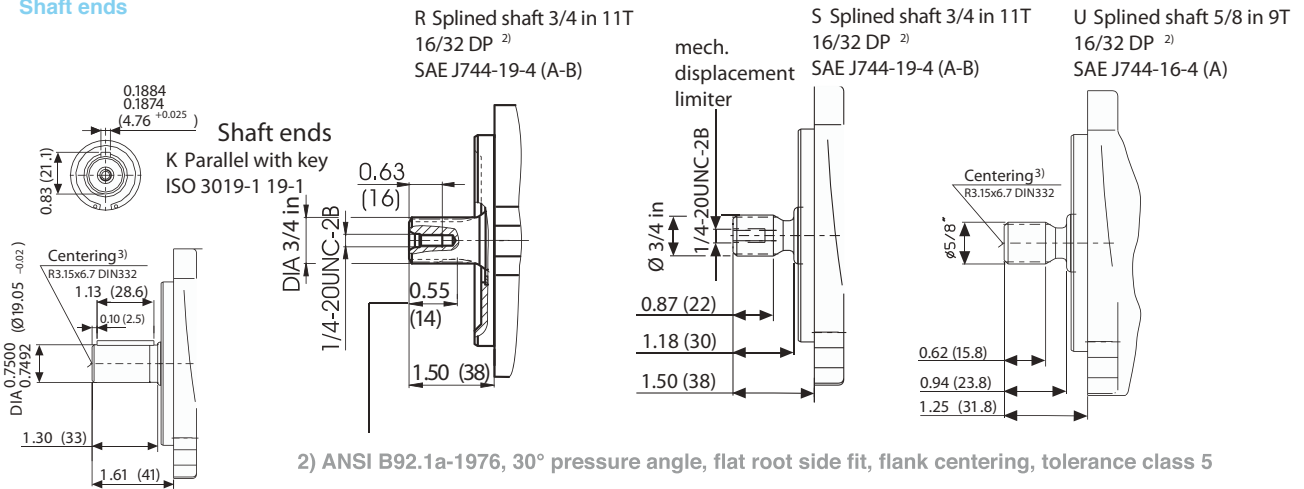
H(S)P-10V18

SERVICE PORTS ON SIDE; NON THROUGH DRIVE, MODELS 62N00 AND 12N00

Without Considering Adjustment



Shaft ends



Ports

Designation	Port for	Standard	Size	Peak Pressure [psi (bar)]	Tightening Torque Max [lb-ft (Nm)]
B	Pressure port (standard pressure range) Threading in bolt holes	SAE J518 ISO 68	3/4 in 3/8-16 UNC-2B; 0.79 (20) deep	5100 (350)	29 (40)
S	Inlet (standard pressure range) Threading in bolt holes	SAE J518 ISO 68	1 in 3/8-15 UNC-2B; 0.79 (20) deep	75 (5)	29 (40)
L, L ₁	Case drain (L ₁ plugged)	ISO 11926	9/16-18 UNF-2B	30 (2)	59 (80)
X	Pilot Pressure	ISO 11926	7/16-20 UNF-2B; 0.39 (10) deep	5100 (350)	29 (40)
X	Control pressure for DG control	DIN 3852	R 1/4 in	1740 (120)	48 (70)

1) Dependent on the installation position, port L or L₁ must be connected

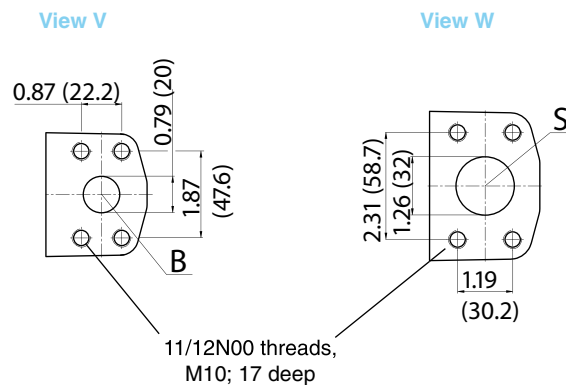
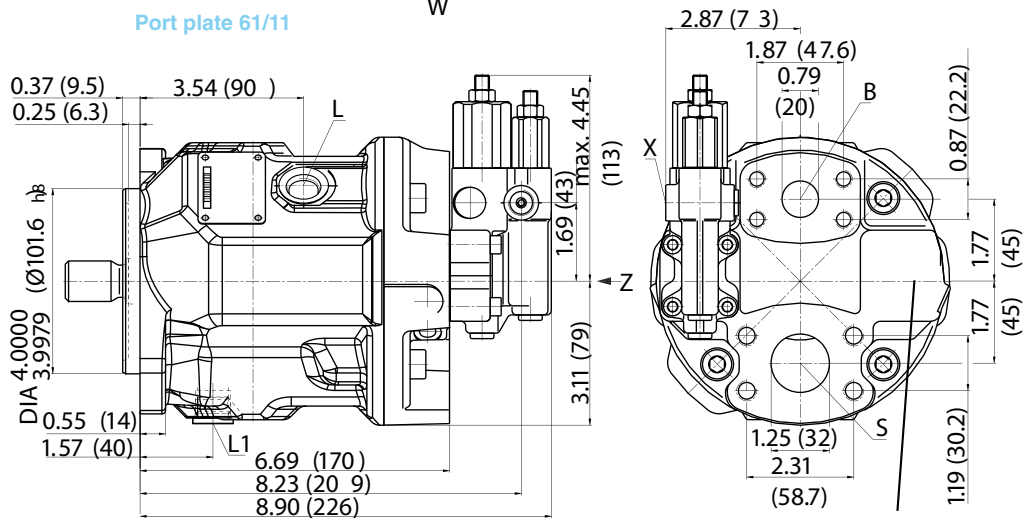
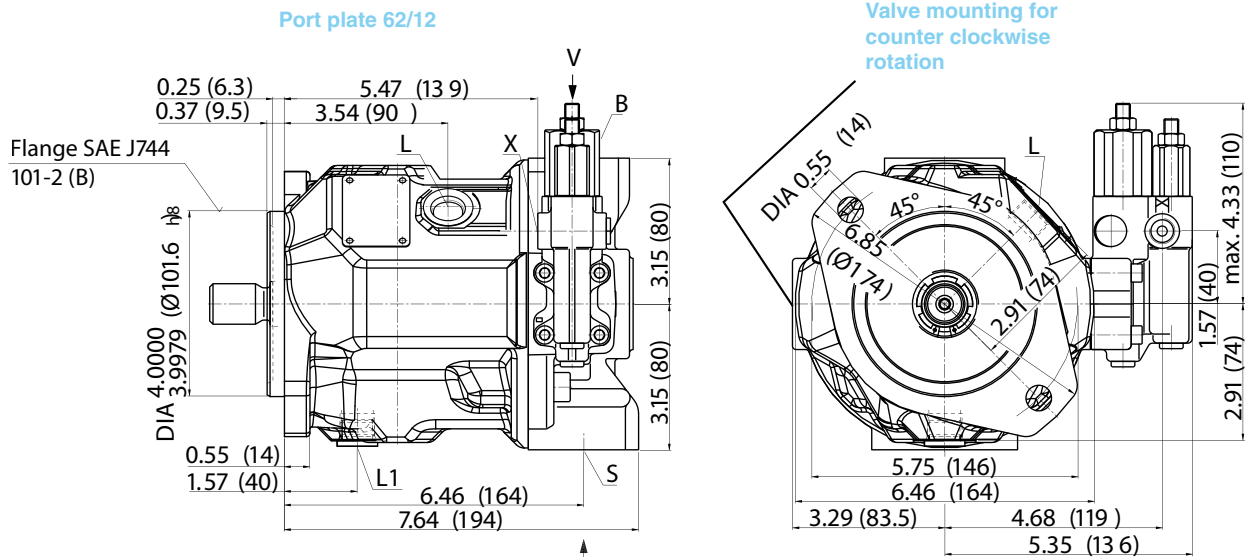
MOUNTING DIMENSIONS, SIZE 28

SERIES 31

H(S)P-10V28

SERVICE PORTS AT SIDE AND REAR; NON THROUGH DRIVE

Without Considering Adjustment



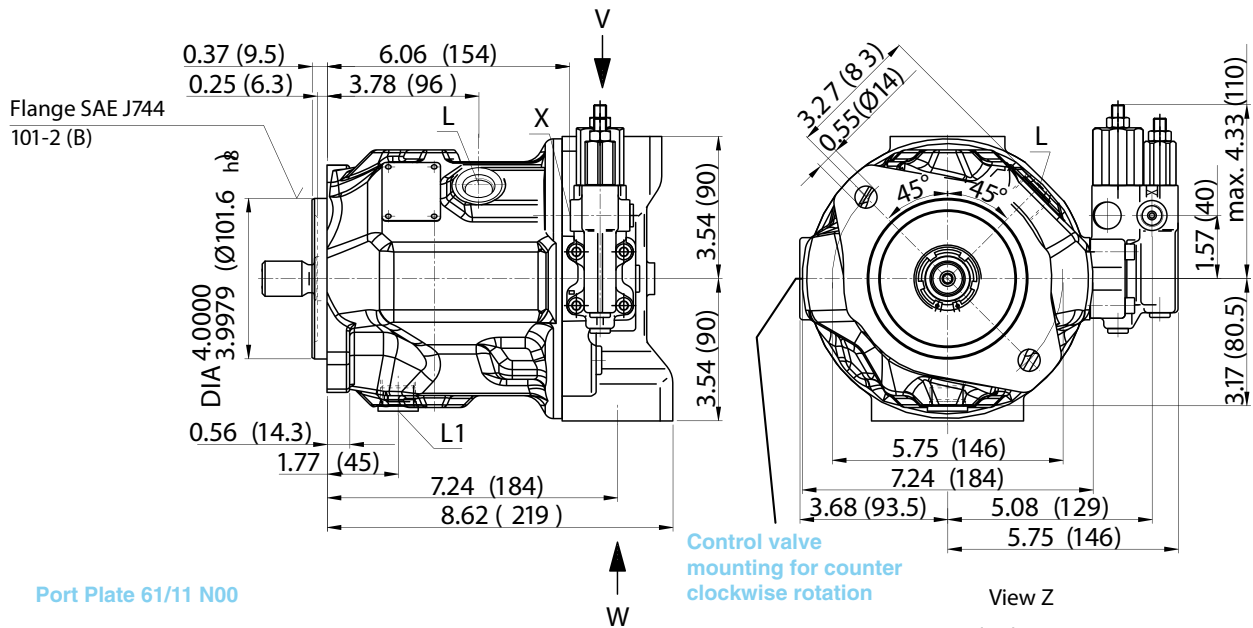
MOUNTING DIMENSIONS, SIZE 45

SERIES 31

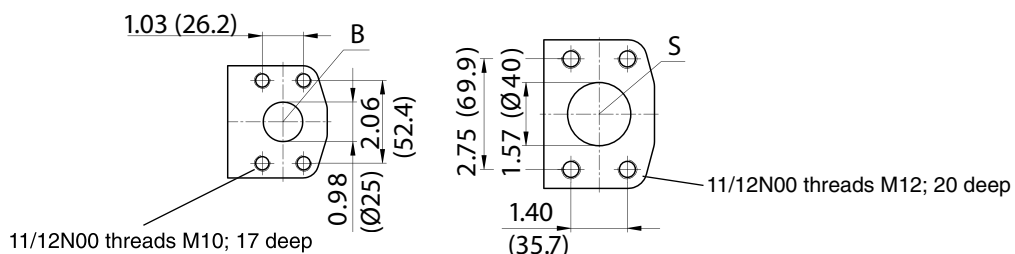
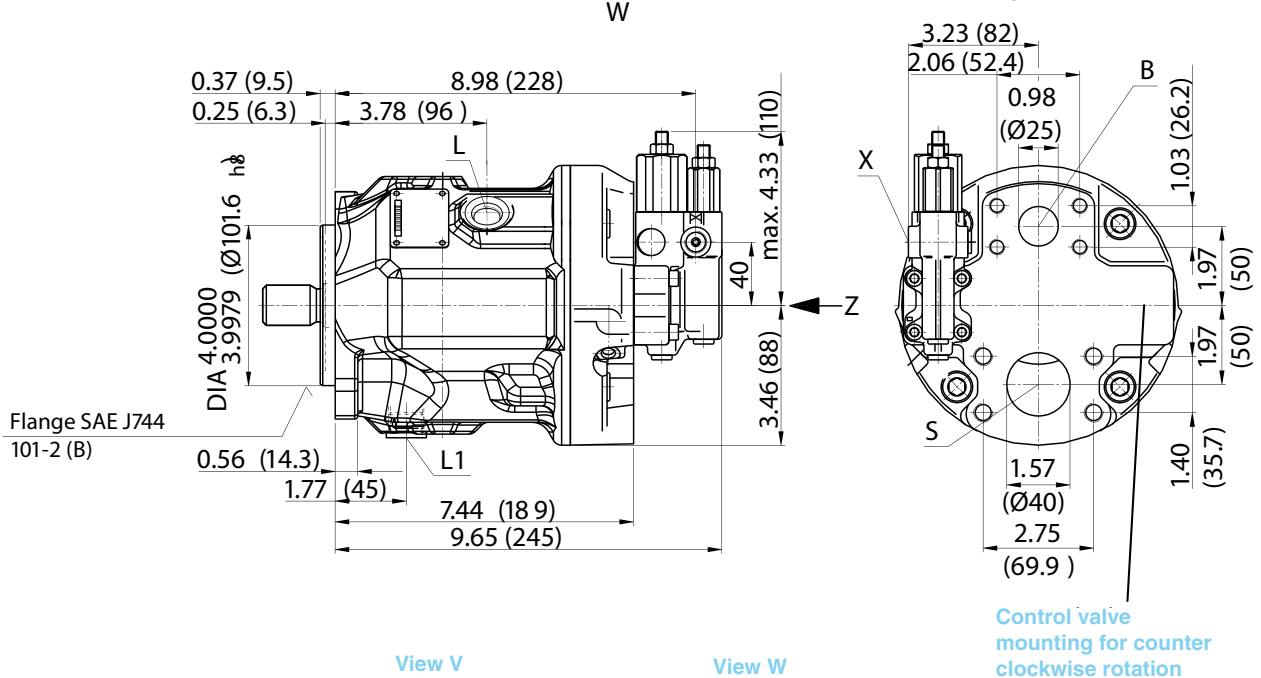
H(S)P-10V45 SHAFT, SERVICE PORTS AT SIDE AND REAR; NON THROUGH DRIVE

Without Considering Adjustment

Port Plate 62/12 N00



Port Plate 61/11 N00

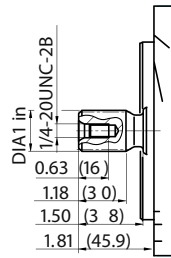


MOUNTING DIMENSIONS, SIZE 45

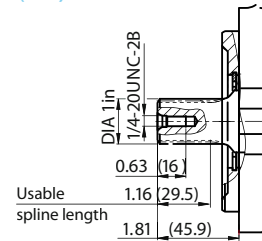
SERIES 31

H(S)P-10V45 SHAFT, METRIC MOUNT, AND PORT DIMENSIONS

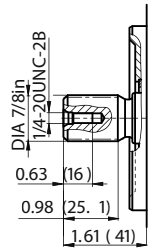
S Splined shaft 1 in 15T 16/32 DP
SAE J744 - 25-4 (B-B)



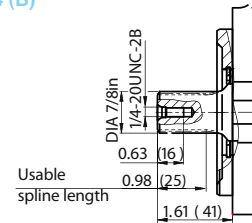
R Splined shaft 1 in 15T 16/32 DP
SAE J744 - 25-4 (B-B)



U Splined shaft 7/8 in 13T 16/32 DP
SAE J744 - 22-4 (B)

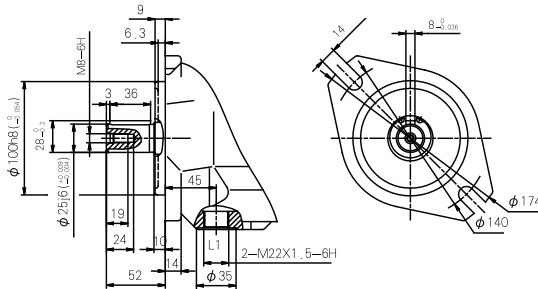


W Splined shaft 7/8 in 13T 16/32 DP
SAE J744 - 22-4 (B)

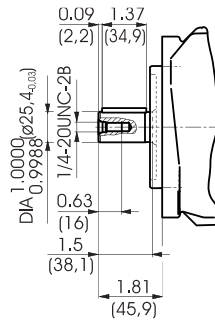


1) ANSI B92.1a-1976, 30° pressure angle, flat root side fit, flank centering, tolerance class 5

Shaft P, ISO Flange A
25 mm Ø Shaft



K Parallel with key
ISO 3019-1 25-1



Ports H(S)P-10V45

Designation	Port for	Standard	Size	Peak press. [psi (bar)]	Tightening Torque, Max [lb-ft (Nm)]	State
B	Service line (standard pressure range) Fixing thread	SAE J518 ISO 68	1 in 3/8-16 UNC-2B; 0.71 (17) deep	5100 (350)	29 (40)	O
S	Inlet (standard pressure range) Fixing thread	SAE J518 ISO 68	1 1/2 in 1/2-13 UNC-2N; 0.87 (22) deep	75 (5)	66 (90)	O
L, L ₁	Case drain	ISO 11926	7/8-14 UNF-2B	30 (2)	177 (240)	O ¹⁾
X	Pilot pressure	ISO 11926	7/16-20 UNF-2B; 0.39 (10) deep	5100 (350)	29 (40)	O
X	Control pressure for DG control	DIN 3852	R 1/4 in	1740 (120)	48 (70)	O

1) Dependent on the installation position, port L or L₁ must be connected

O = Must be connected

MOUNTING DIMENSIONS, SIZE 71

SERIES 31

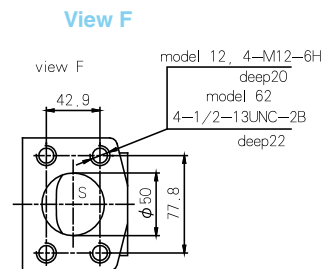
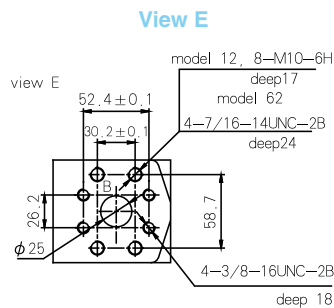
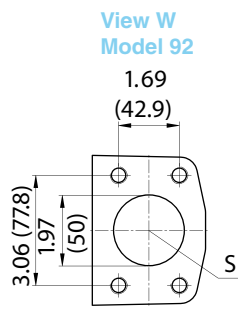
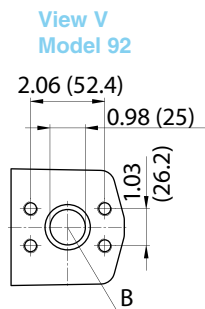
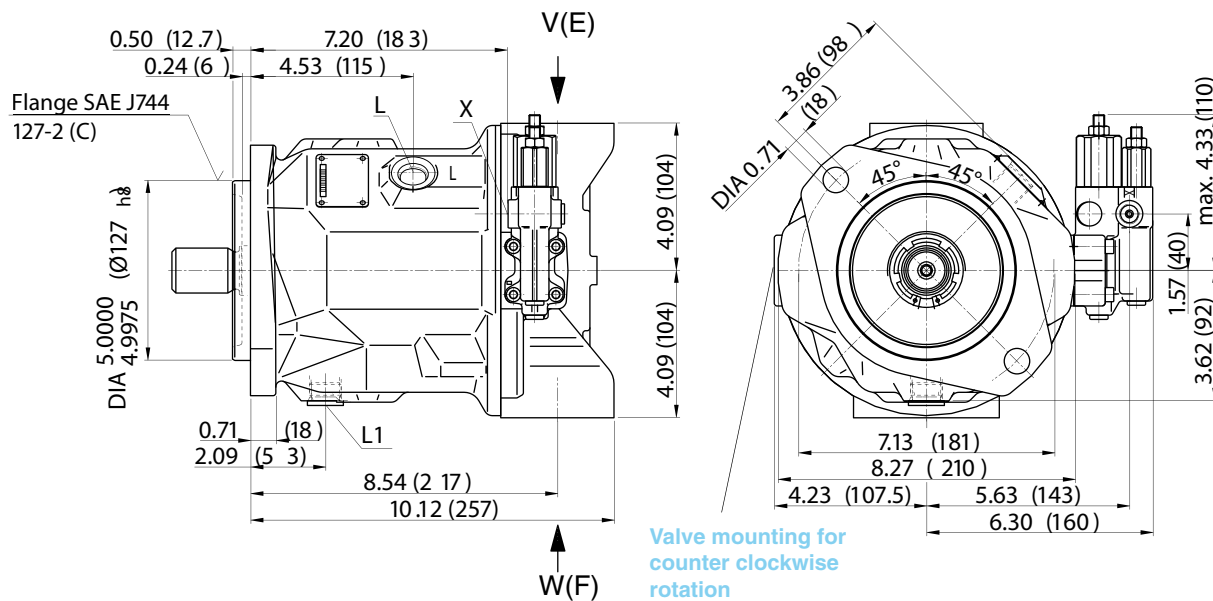
H(S)P-10V71 SHAFT,

SERVICE PORTS ON SIDE AND REAR; NON THROUGH DRIVE

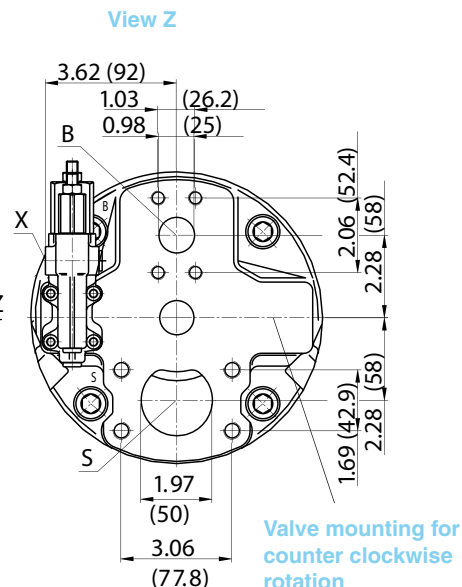
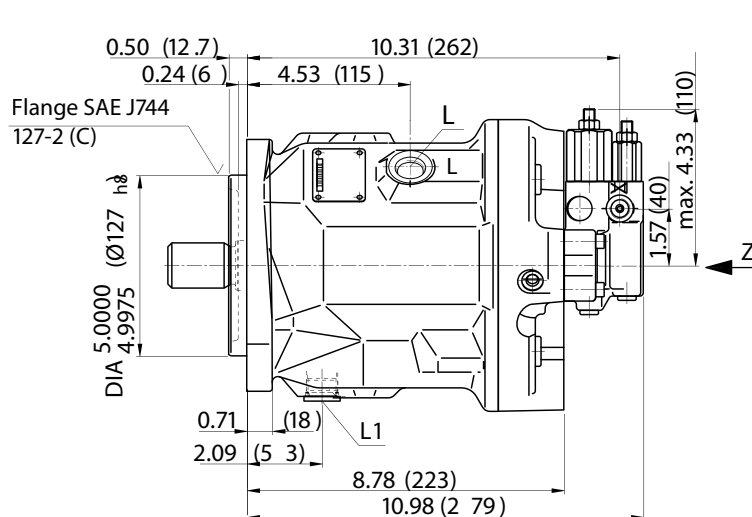
Without Considering Adjustment

DFR/DFR1 Pressure and flow control; clockwise rotation

With port plate 92 (others available)



With port plate 91

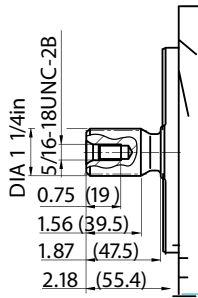


MOUNTING DIMENSIONS, SIZE 71

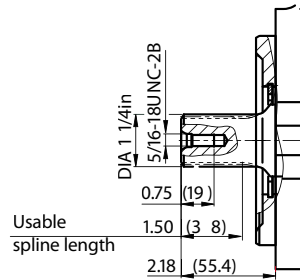
SERIES 31

H(S)P-10V71 SHAFT, METRIC MOUNT, AND PORT DIMENSIONS

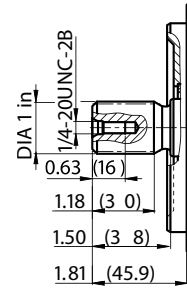
SAE J744- 32-4 (C) 2)



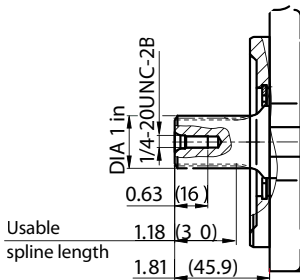
SAE J744- 32-4 (C) 2)



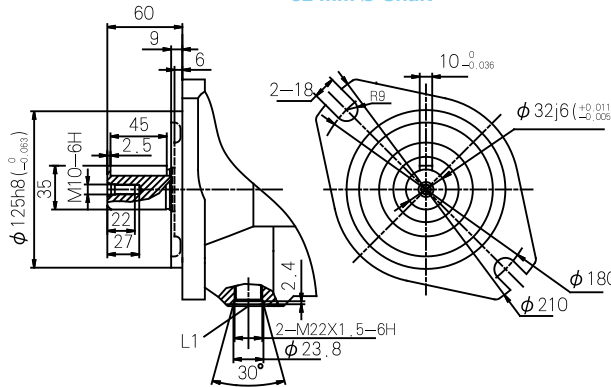
SAE J744- 25-4 (B-B) 2)



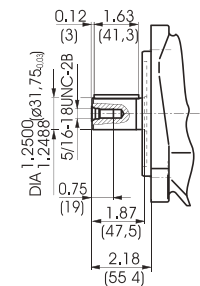
W Splined shaft 1 in 15T 16/32 DP SAE J744- 25-4 (B-B) 2)



Shaft P, ISO Flange A 32 mm Ø Shaft



K Parallel with key ISO 3019-1 32-1



2) ANSI B92.1a-1976, 30° pressure angle, flat root side fit, flank centering, tolerance class 5

Ports H(S)P-10V71

Designation	Port for	Standard	Size	Peak press. [psi (bar)]	Max Tightening Torque [lb-ft (Nm)]	State
B	Service line (standard pressure range) Fixing thread	SAE J518 ISO 68	1 in 3/8-16 UNC-2B; 0.71 (18) deep	5100 (350)	29 (40)	O
S	Inlet (standard pressure range) Fixing thread	SAE J518 ISO 68	2 in 1/2-13 UNC-2B; 0.87 (22) deep	75 (5)	66 (90)	O
L, L ₁	Case drain	ISO 11926	7/8-14 UNF-2B	30 (2)	177 (240)	O ¹⁾
X	Pilot pressure	ISO 11926	7/8-14 UNF-2B; 0.39 (10) deep	5100 (350)	29 (40)	O
X	Control pressure for DG control	DIN 3852	R 1/4 in	1740 (120)	48 (70)	O

1) Dependent on the installation position, port L or L₁ must be connected

O = Must be connected

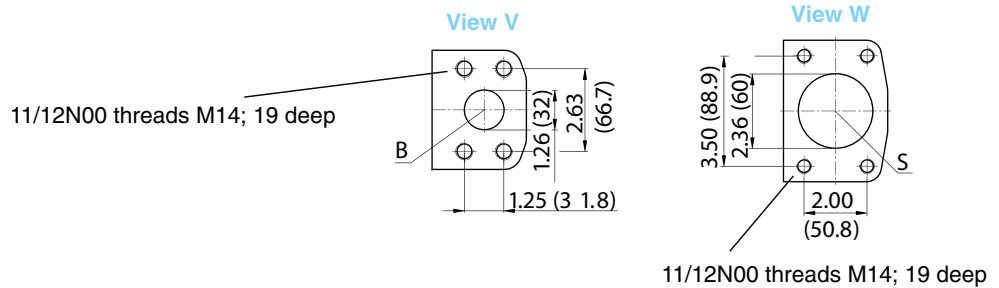
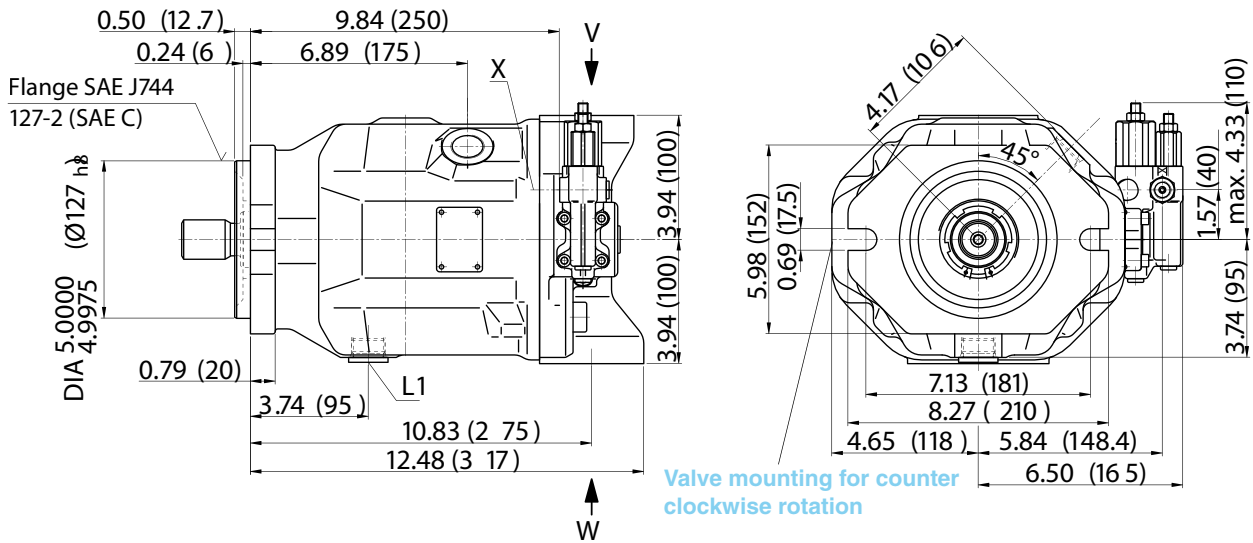
MOUNTING DIMENSIONS, SIZE 100

SERIES 31

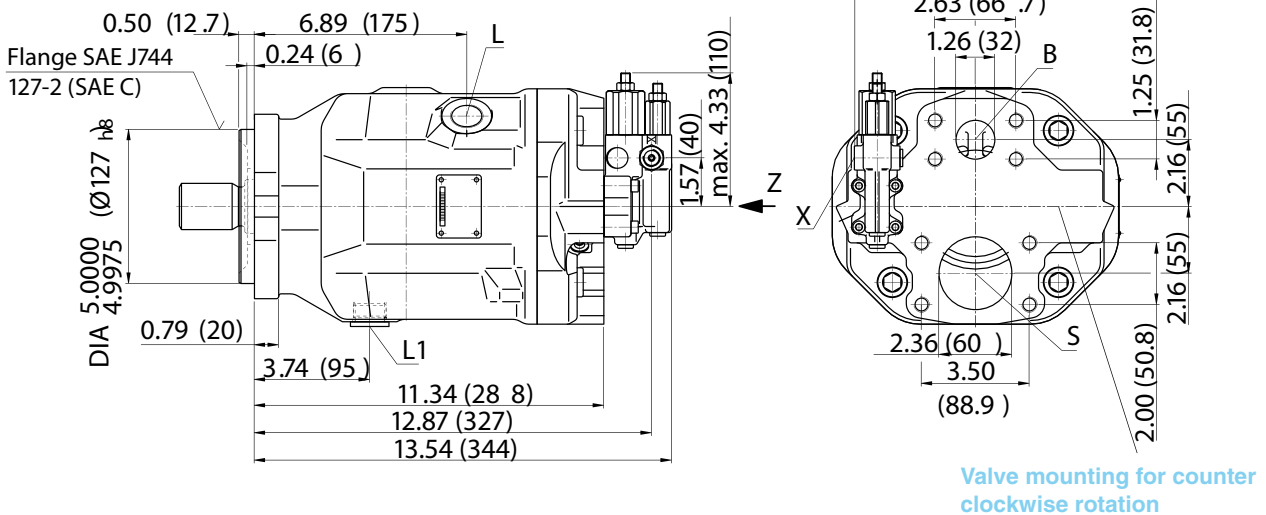
H(S)P-10VI100 SHAFT, SERVICE PORTS ON SIDE & REAR; NON THROUGH DRIVE

Without Considering Adjustment

Port Plate 62/12 NOO



Port Plate 61/11 NOO

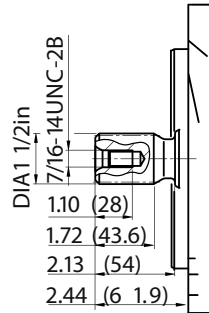


MOUNTING DIMENSIONS, SIZE 100

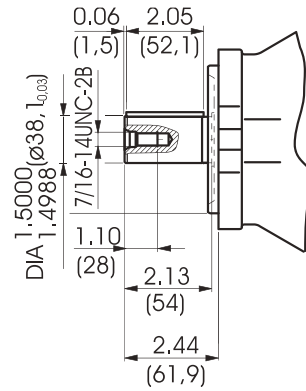
SERIES 31

DRIVE SHAFTS

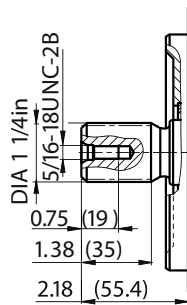
S Splined shaft 1 1/2 in 17T 12/24 DP1)
SAE J744 - 38-4 (C-C) ¹⁾



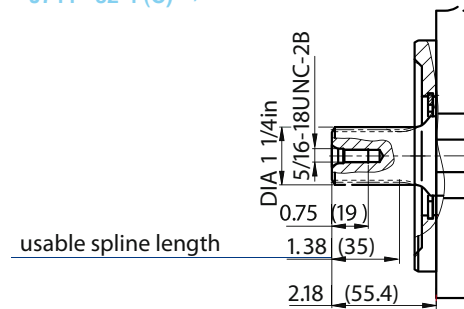
K Parallel with key
ISO 3019-1 38-1



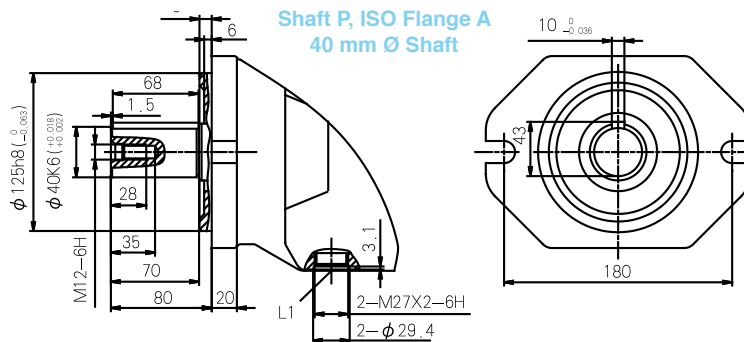
U Splined shaft 1 1/4 in 14T 12/24 DP1) SAE
J744 - 32-4 (C) ¹⁾



W Splined shaft 1 1/4 in 14T 12/24 DP1) SAE
J744 - 32-4 (C) ¹⁾



¹⁾ ANSI B92.1a-1976, 30° pressure angle, flat root side fit, flank centering, tolerance class 5



Ports H(S)P-10V 100

Designation	Port for	Standard	Size	Peak press. [psi (bar)]	Max Tightening Torque [lb-ft (Nm)]	State
B	Service line (high pressure range) Fixing thread	SAE J518 ISO 68	1 1/4 in 1/2-13 UNC-2B; 0.75 (19) deep	5100 (350)	66 (90)	O
S	Intlet (standard pressure range) Fixing thread	SAE J518 ISO 68	2 1/2 in 1/2-13 UNC-2B; 1.06 (17) deep	75 (5)	66 (90)	O
L, L ₁	Case drain	ISO 11926	1 1/16-12 UNF-2B	30 (2)	265 (360)	O ¹⁾
X	Pilot pressure	ISO 11926	7/16-20 UNF-2B; 0.39 (10) deep	5100 (350)	59 (80)	O
X	Control pressure for DG control	DIN 3852	R 1/4 in	1740 (120)	59 (80)	O

¹⁾ Dependent on the installation position, port L or L₁ must be connected

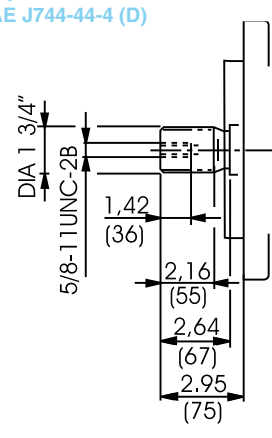
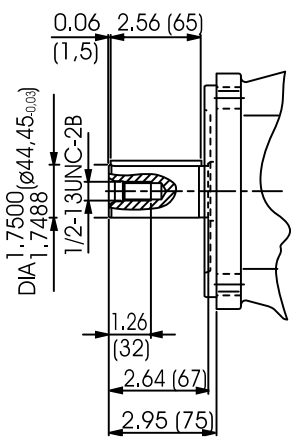
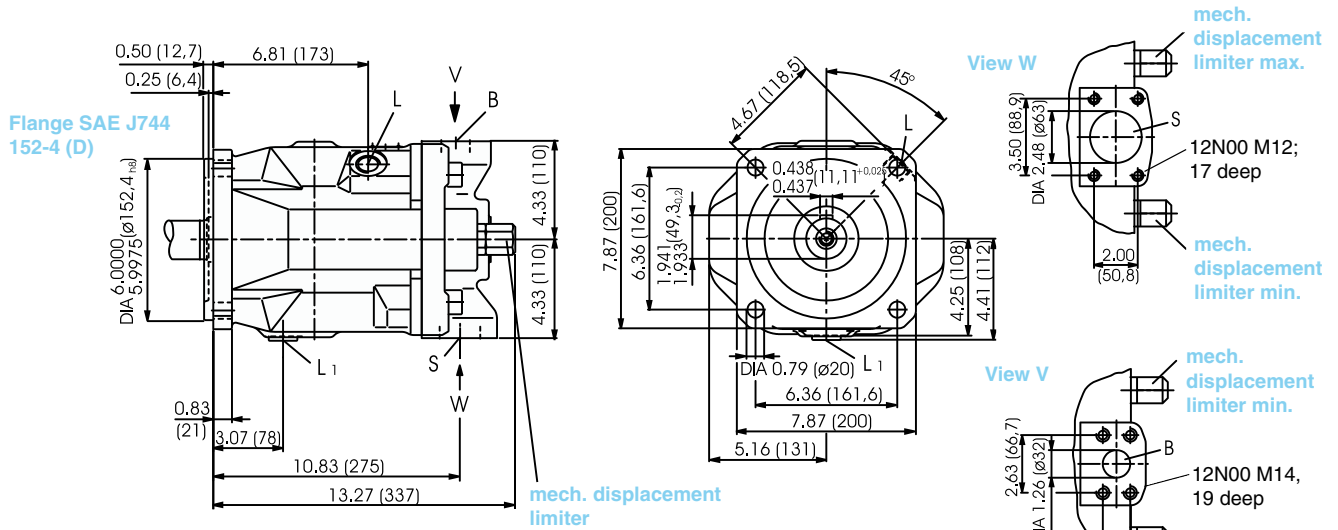
O = Must be connected

MOUNTING DIMENSIONS, SIZE 140

SERIES 31

H(S)P-10VI40

SERVICE PORTS ON SIDE; NON THROUGH DRIVE, MODELS 62N00 AND 12N00



Designation	Port for	Standard	Size	Peak Pressure [psi (bar)]	Max Tightening Torque [lb-ft (Nm)]
B	Pressure port (standard pressure range) Threading in bolt holes	SAE J518 ISO 68	1 1/4 in 1/2-13 UNC-2B; 0.75 (24) deep	5100 (350)	66 (90)
S	Inlet (standard pressure range) Threading in bolt holes	SAE J518 ISO 68	2 1/2 in 1/2-13 UNC-2B; 0.94 (24) deep	75 (5)	66 (90)
L, L ₁	Case drain (L ₁ plugged)	ISO 11926	1 1/16-12 UNF-2B	30 (2)	265 (360)
X	Pilot pressure	ISO 11926	9/16-18 UNF-2B; 0.51 (13) deep	5100 (350)	59 (80)
X	Control pressure for DG control	DIN 3852	M14 x 1.5; 0.47 (12) deep	1740 (120)	59 (80)

1) Dependent on the installation position, port L or L₁ must be connected

O = Must be connected

THROUGH DRIVES

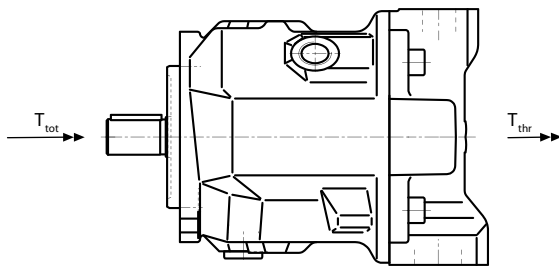
THROUGH DRIVE MOUNTING OPTIONS

Shaft Torque Data

Axial piston units H(S)P-10V can be supplied with a through drive as shown in the ordering code on page 3. The type of through drive is determined by codes (K40-K...). If the combination pump is not mounted in the factory, the simple type code is sufficient.

Included in this case are: shaft coupler, seals, and if necessary an adapter flange.

Maximum permissible input and through drive torque.



The drive torques for pump 1 and pump 2 can be split up as required. However the max. permissible input torque T_{tot} as well as the max. permissible through drive torque T_{thr} may not be exceeded.

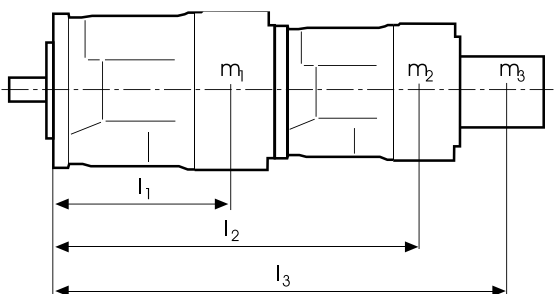
Max. perm. input torque T_{tot}	18	28	45	71	100	140
With shaft U T_{tot} lb.ft (Nm)	43 (59)	- (-)	139 (188)	- (-)	439 (595)	- (-)
With shaft K T_{tot} lb.ft (Nm)	77 (104)	107 (145)	156 (212)	319 (433)	553 (750)	875 (1186)
With shaft S T_{tot} lb.ft (Nm)	92 (124)	146 (198)	235 (319)	462 (626)	814 (1104)	1195 (1620)
With shaft R T_{tot} lb.ft (Nm)	111 (150)	166 (225)	295 (400)	475 (644)	- (-)	- (-)
Max. perm. through drive torque T_{thr}						
With shaft K T_{thr} lb.ft (Nm)	77 (104)	107 (145)	156 (212)	319 (433)	553 (750)	875 (1186)
With shaft S T_{thr} lb.ft (Nm)	80 (108)	118 (160)	235 (319)	363 (492)	574 (778)	934 (1266)
With shaft R T_{thr} lb.ft (Nm)	88 (120)	130 (176)	269 (365)	404 (548)	- (-)	- (-)
Keyed shaft $T_{thr\text{keyed}}$ lb.ft (Nm)	53 (72)	83 (112)	132 (179)	209 (283)	293 (398)	411 (557)

T_{tot} = max. permissible input torque pump 1

T_{thr} = max. permissible through drive torque

$T_{thr\text{keyed}}$ = max. permissible through drive torque at through drive to keyed shaft

Permissible overhang moment



m_1, m_2, m_3 weight of pump [lbs (kg)]
 l_1, l_2, l_3 distance to center of gravity [in (mm)]

$$T_m = (m_1 \cdot l_1 + m_2 \cdot l_2 + m_3 \cdot l_3) \cdot \frac{1}{12} \text{ [lb.ft]}$$

$$\dots \cdot \frac{1}{102} \text{ [Nm]}$$

Size		18	28	45	71	100	140
Permissible overhang moment T_m	lb.ft (Nm)	369 (500)	649 (880)	1010 (1370)	1593 (2160)	2213 (3000)	3319 (4500)
at dyn. acceleration 10g = 98.1 m/s ²	T_m	37 (50)	65 (88)	101 (137)	159 (216)	221 (300)	332 (450)
Weight	m	26,5 (12)	33 (15)	46 (21)	73 (33)	99 (45)	132 (60)
Distance to center of gravity	l_1	3.54 (90)	4.33 (110)	5.12 (130)	5.91 (150)	6.30 (160)	6.30 (160)

THROUGH DRIVES

THROUGH DRIVE MOUNTING OPTIONS

Through drives - H(S)P-10V		Code	Mounting option - 2 nd pump			available on size
Flange SAE J744	Hub Keyed		H(S)P-10VSO.../31... size (shaft)	H(S)P-10V(S)O.../52 size (shaft)	gear pump	
82-2(A)	keyed (A-B)	K40	18 (K)	10 (K)	-	18-100
101-2 (B)	keyed (B)	K03	28 (K)	28 (K)	-	28-140
101-2 (B-B)	keyed (B-B)	K05	45 (K)	60, 45 (K)	-	45-140
127-2 (C)	keyed (C)	K08	71 (K)	-	-	71-140
127-2 (C)	keyed (C)	K38	100 (K)	85 (K)	-	100-140
152-4 (D)	keyed (D)	K21	140 (K)	-	-	140
SAE J744 splined						
82-2 (A)	5/8 in (A)	K01	18 (U)	-	size F	18-140
82-2 (A)	3/4 in (A-B)	K52	18 (S, R)	10 (S)	-	18-140
101-2 (B)	7/8 in (B)	K68	28 (S, R)	28 (S, R)	size N, G	28-140
		K02	45 (U) ¹⁾	45 (U, W) ¹⁾		
101-2 (B)	1 in (B-B)	K04	45 (S, R)	45 (S, R) 60 (U, W) ²⁾	-	45-140
127-2 (C)	1 1/4 in (C)	K07	71 (S, R) 100 (U) ³⁾	85 (U, W) ³⁾	-	71-140
127-2 (C)	1 1/2 in (C-C)	K24	100 (S)	85 (S)	-	100-140
152-4 (D)	1 3/4 in (D)	K17	140 (S)	-	-	140

¹⁾ Not with K68 through drive on main pump size 28

²⁾ Not with K04 through drive on main pump size 45

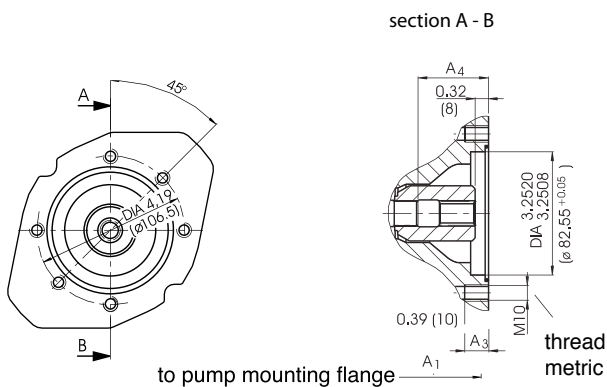
³⁾ Not with K07 through drive on main pump size 71

DIMENSIONS OF THROUGH DRIVES

K01 FLANGE SAE J744 - 82-2 (A)

Hub for splined shaft to ANSI B.92.1a-1976 5/8 in 9T 16/32 DP

¹⁾ (SAE J744 - 16-4 (A))



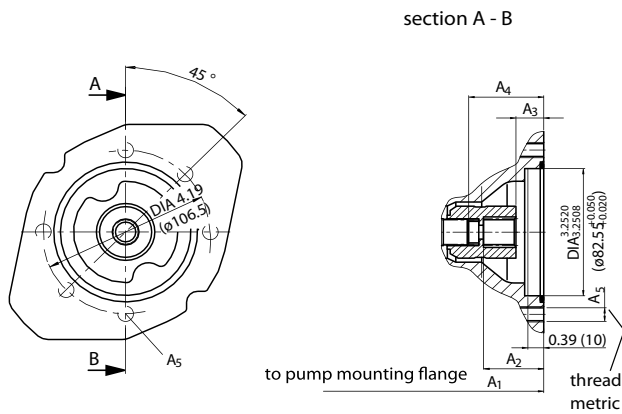
Size	A ₁	A ₃	A ₄
18	7.16 (182)	0.57 (14,5)	1.65 (42)
28	8.03 (204)	0.63 (16)	1.85 (47)
45	9.02 (229)	0.63 (16)	2.09 (53)
71	10.51 (267)	0.79 (20)	2.40 (61)
100	13.31 (338)	0.79 (20)	2.56 (65)
140	13.78 (350)	0.63 (17)	3.03 (77)

THROUGH DRIVES

DIMENSIONS OF THROUGH DRIVES

K52 FLANGE SAE J744 - 82-2 (A)

Hub for splined shaft to ANSI B.92.1a-1976 3/4 in 11T 16/32 DP

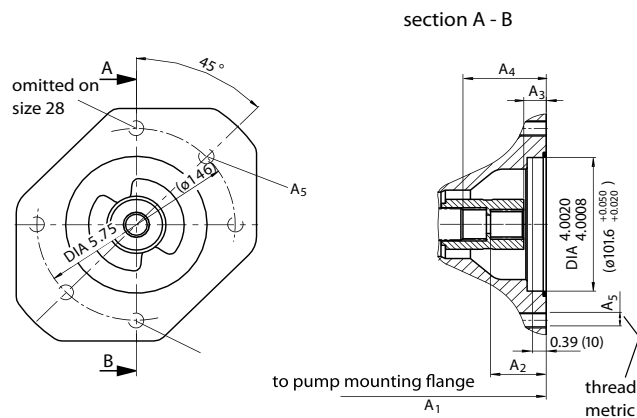


¹⁾ (SAE J744 - 19-4 (A-B))

Size	A ₁	A ₂	A ₃	A ₄	A ₅
18	7.16 (182)	1.57 (40)	0.74 (18,8)	1.69 (43)	M10; 0.57 (14,5) deep
28	8.03 (204)	1.53 (39)	0.74 (18,8)	1.85 (47)	M10; 0.63 (16) deep
45	9.02 (229)	1.59 (40,5)	0.75 (18,9)	2.09 (53)	M10; 0.63 (16) deep
71	10.51 (267)	1.57 (40)	0.84 (21,3)	2.40 (61)	M10; 0.79 (20) deep
100	13.31 (338)	1.57 (40)	0.75 (19)	2.56 (65)	M10; 0.79 (20) deep
140	13.78 (350)	1.61 (41)	0.75 (18,9)	3.03 (77)	M10; 0.67 (17) deep

K02/K68 FLANGE SAE J744 - 101-2 (B)

Hub for splined shaft to ANSI B.92.1a-1976 7/8 in 13T 16/32 DP

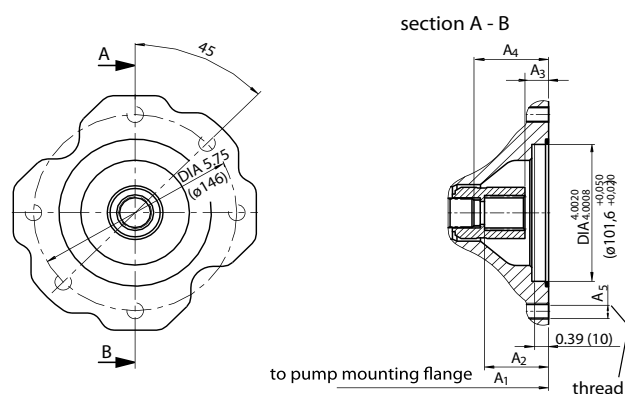


¹⁾ (SAE J744 - 22-4 (B))

Size	A ₁	A ₂	A ₃	A ₄	A ₅
28	8.03 (204)	1.69 (43)	0.70 (17,8)	1.85 (47)	M12; 0.71 (18) deep
45	9.02 (229)	1.65 (42)	0.70 (17,9)	2.09 (53)	M12; 0.71 (18) deep
71	10.51 (267)	1.69 (43)	0.80 (20,3)	2.40 (61)	M12; 0.79 (20) deep
100	13.31 (338)	1.61 (41)	0.71 (18)	2.56 (65)	M12; 0.79 (20) deep
140	13.78 (350)	1.73 (44)	0.70 (17,9)	3.03 (77)	M12; 0.79 (20) deep

¹⁾ pressure angle 30 °, flat root side fit, tolerance class 5

¹⁾ (SAE J744 - 25-4 (B-B))



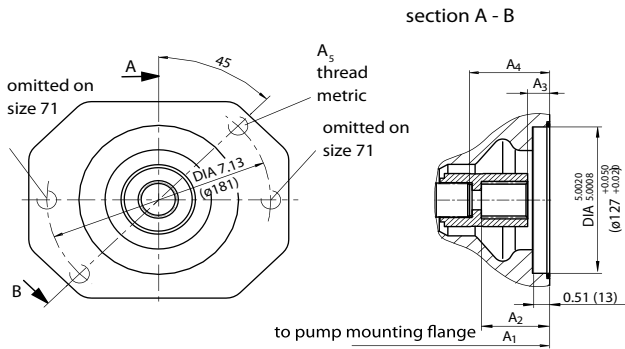
Size	A ₁	A ₂	A ₃	A ₄	A ₅
45	9.02 (229)	1.87 (47,5)	0.73 (18,4)	2.09 (53)	M12; 0.71 (18) deep
71	10.51 (267)	1.87 (47,5)	0.82 (20,8)	2.40 (61)	M12; 0.79 (20) deep
100	13.31 (338)	1.87 (47,5)	0.72 (18,2)	2.56 (65)	M12; 0.79 (20) deep
140	13.78 (350)	1.87 (47,5)	0.73 (18,4)	3.03 (77)	M12; 0.79 (20) deep

THROUGH DRIVES

DIMENSIONS OF THROUGH DRIVES

K07 FLANGE SAE J744 - 127-2 (C)

Hub for splined shaft to ANSI B.92.1a-1976 1 1/4 in 14T 12/24 DP

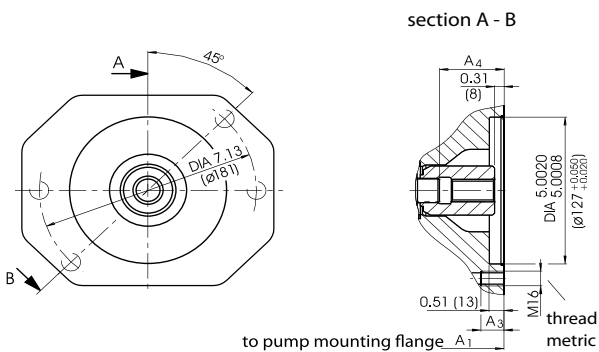


¹⁾ (SAE J744 - 32-4 (C))

Size	A ₁	A ₂	A ₃	A ₄	A ₅
71	10.51 (267)	2.18 (55,5)	0.87 (22)	2.40 (61)	M16; 0.70 (18) deep
100	13.31 (338)	2.24 (57)	0.77 (19,5)	2.56 (65)	M16; 0.95 (24) deep
140	13.78 (350)	2.36 (60)	0.77 (19,4)	3.03 (77)	M16; 0.95 (24) deep

K24 FLANGE SAE J744 - 127-2 (C)

Hub for splined shaft to ANSI B.92.1a-1976 1 1/2 in 17T 12/24 DP



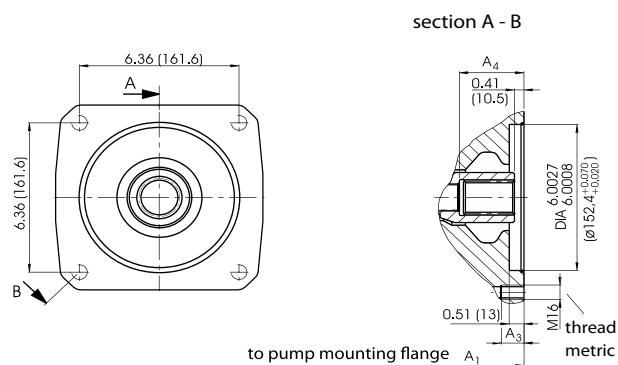
¹⁾ (SAE J744 - 38-4 (C-C))

Size	A ₁	A ₃	A ₄
100	13.31 (338)	0.95 (24)	2.56 (65)
140	13.78 (350)	0.95 (34)	3.03 (77)

¹⁾ pressure angle 30 °, flat root side fit, tolerance class 5

K17 FLANGE SAE J744 - 152-4 (D)

Hub for splined shaft to ANSI B.92.1a-1976 1 3/4 in 13T 8/16 DP



¹⁾ (SAE J744 - 44-4 (D))

Size	A ₁	A ₃	A ₄
140	13.78 (350)	approx. 0.83 (ca. 21)	3.03 (77)

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