

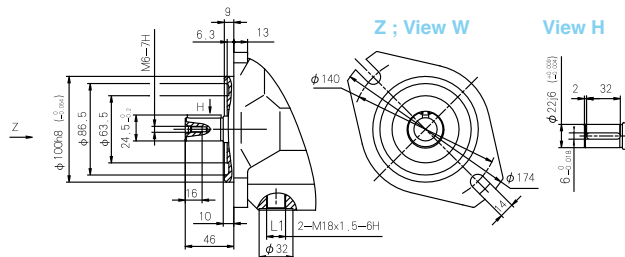
# MOUNTING DIMENSIONS, SIZE 28

## SERIES 31

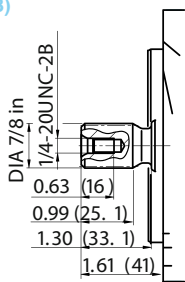
### H(S)P-10V28 SHAFT, METRIC MOUNT, AND PORT DIMENSIONS

Without Considering Adjustment

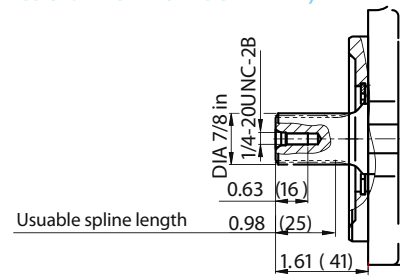
Shaft P, Flange A



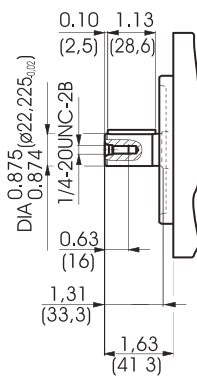
S Splined shaft 7/8 in 13T 16/32 DP 1) SAE J744- 22-4 (B)



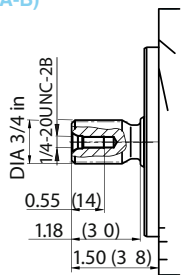
R Splined shaft 7/8 in 13T 16/32 DP 1)



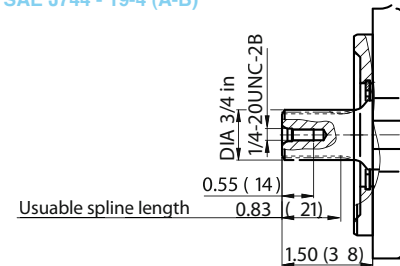
K Parallel with key ISO 3019-1 22-1



U Splined Shaft 3/4 in 11T 16/32 DP 1) SAE J744- 19-4 (A-B)



W Splined Shaft 3/4 in 11T 16/32 DP 1) SAE J744 - 19-4 (A-B)



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

#### Ports H(S)P-10V 28

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	3/4 in 3/8-16 UNC-2B; 0.79 (20) deep	5100 (350)	29 (40)	O
S	Inlet (standard pressure range) Fixing thread	SAE J518 ISO 68	1 1/4 in 7/16-14 UNC-2B; 0.94 (24) deep	75 (5)	48 (85)	O
L, L <sub>1</sub>	Case drain (L <sub>1</sub> plugged)	ISO 11926	3/4-16 UNF-2B; 0.47 (12) deep	30 (2)	118 (160)	O <sup>1)</sup>
X	Pilot pressure	ISO 11926	7/16-20UNC-2B; 0.47 (12) 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 L<sub>1</sub> must be connected

O = Must be connected

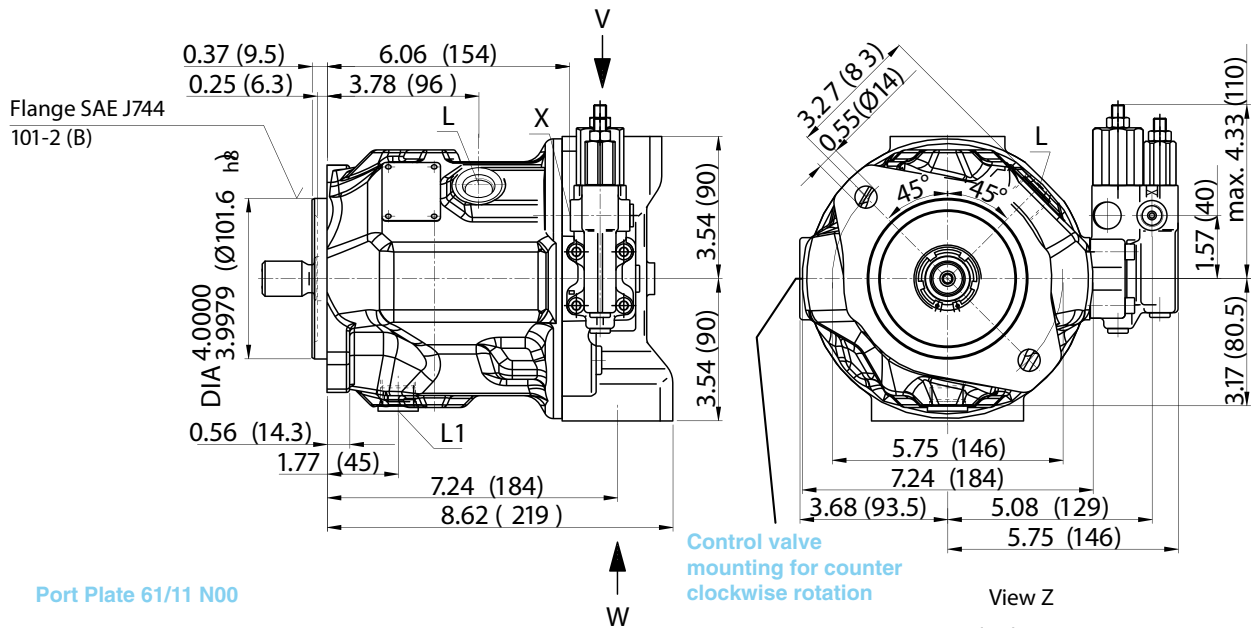
# MOUNTING DIMENSIONS, SIZE 45

## SERIES 31

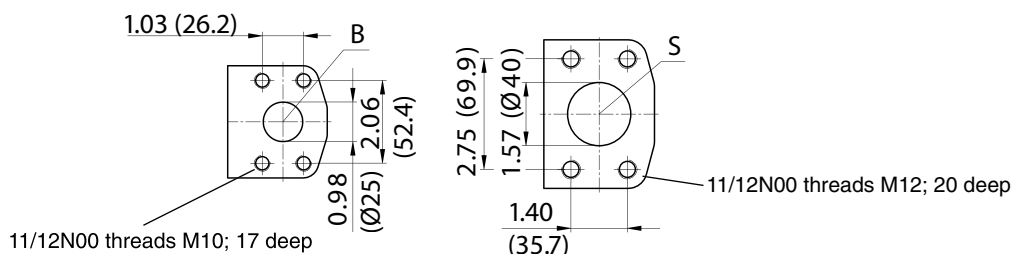
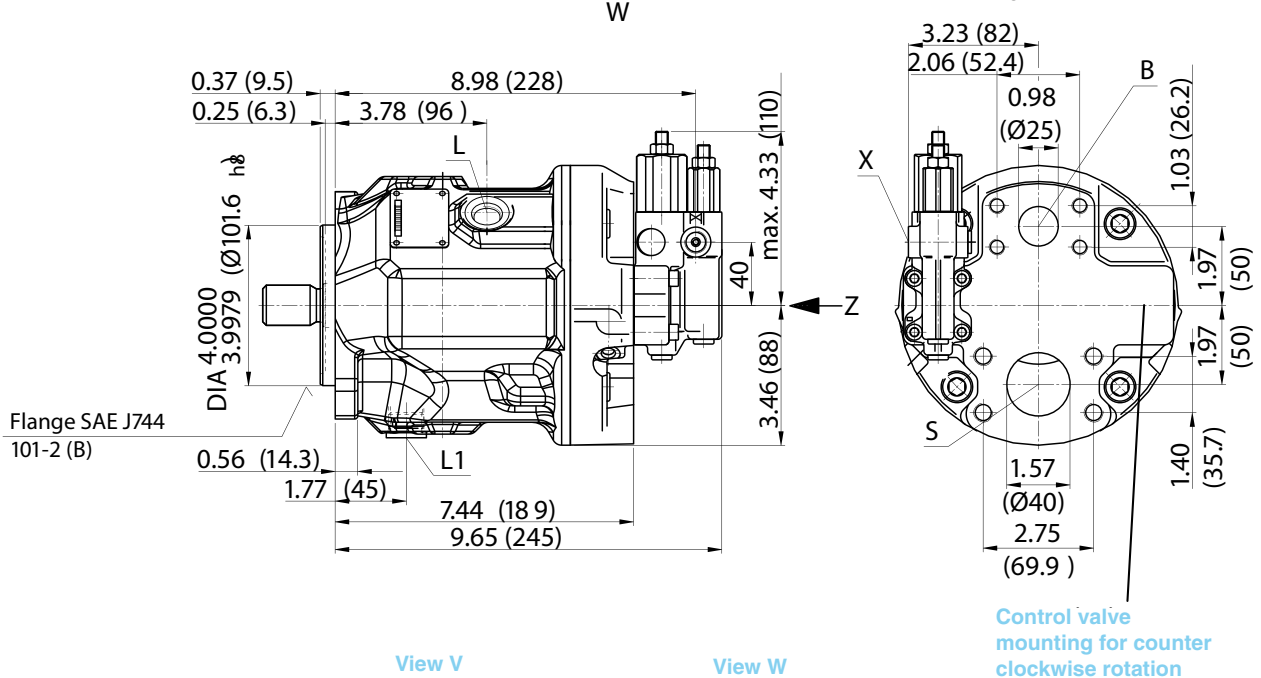
### H(S)P-10V45 SHAFT, SERVICE PORTS AT SIDE AND REAR; NON THROUGH DRIVE

Without Considering Adjustment

#### Port Plate 62/12 N00



#### Port Plate 61/11 N00

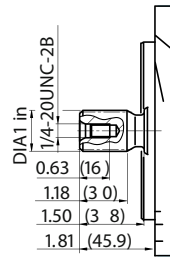


# MOUNTING DIMENSIONS, SIZE 45

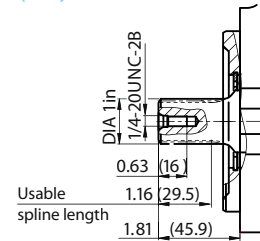
## SERIES 31

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

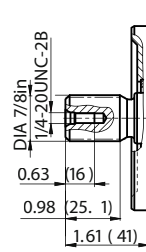
**S** Splined shaft 1 in 15T 16/32 DP  
SAE J744 - 25-4 (B-B)



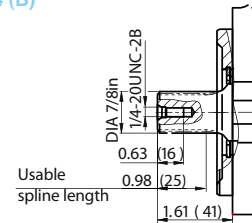
**R** Splined shaft 1 in 15T 16/32 DP  
SAE J744 - 25-4 (B-B)



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

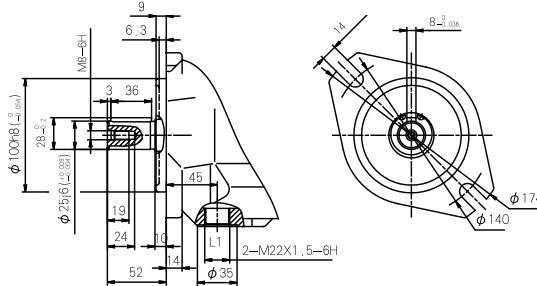


**W** Splined shaft 7/8 in 13T 16/32 DP  
SAE J744 - 22-4 (B)

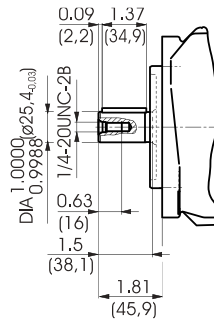


1) ANSI B92.1a-1976, 30° pressure angle, flat root side fit, flank centering, tolerance class 5

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 <sub>1</sub>	Case drain	ISO 11926	7/8-14 UNF-2B	30 (2)	177 (240)	O <sup>1)</sup>
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 L<sub>1</sub> must be connected

O = Must be connected

# MOUNTING DIMENSIONS, SIZE 71

## SERIES 31

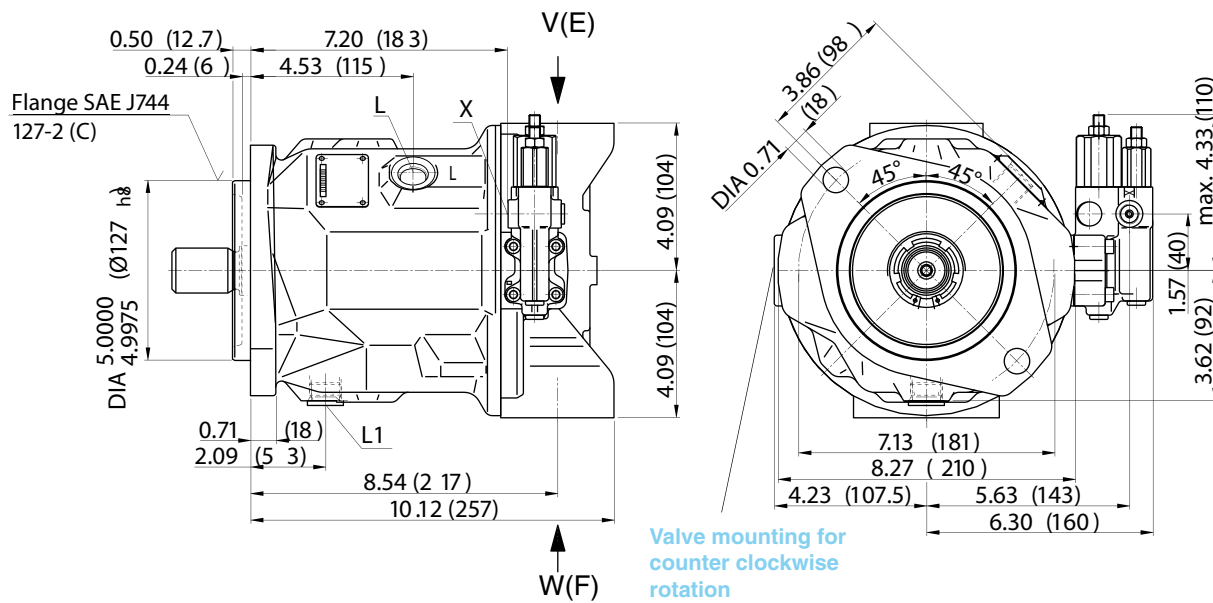
### H(S)P-10V71 SHAFT,

SERVICE PORTS ON SIDE AND REAR; NON THROUGH DRIVE

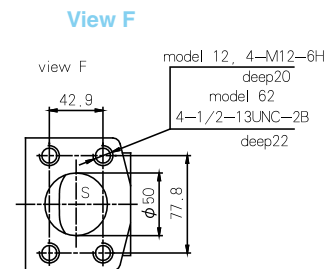
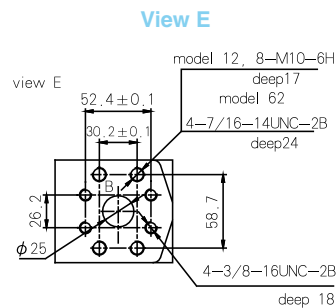
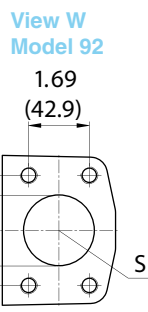
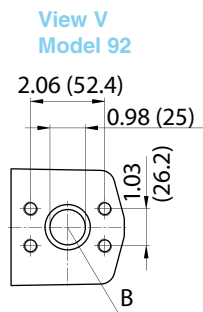
Without Considering Adjustment

DFR/DFR1 Pressure and flow control; clockwise rotation

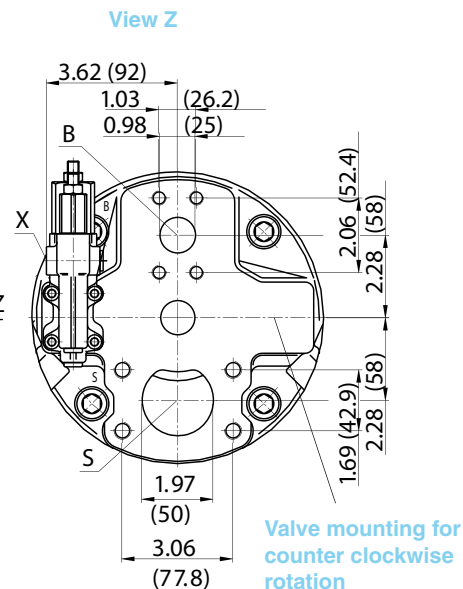
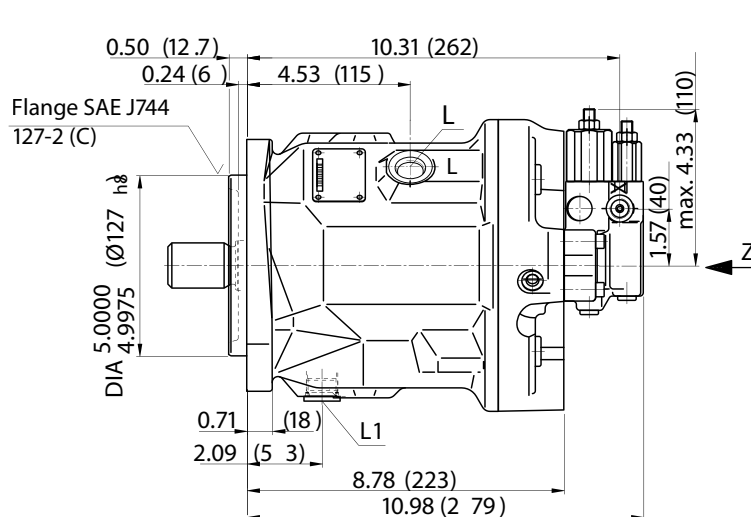
With port plate 92 (others available)



Valve mounting for counter clockwise rotation



With port plate 91



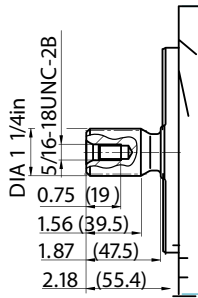
Valve mounting for counter clockwise rotation

# MOUNTING DIMENSIONS, SIZE 71

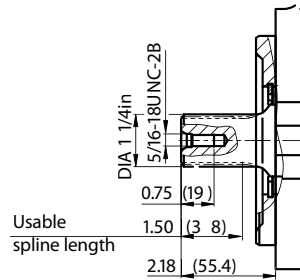
## SERIES 31

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

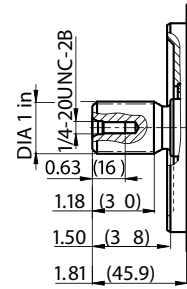
SAE J744- 32-4 (C) 2)



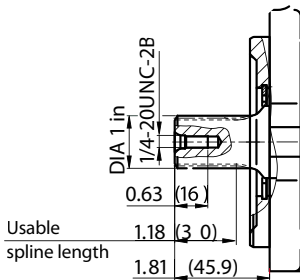
SAE J744- 32-4 (C) 2)



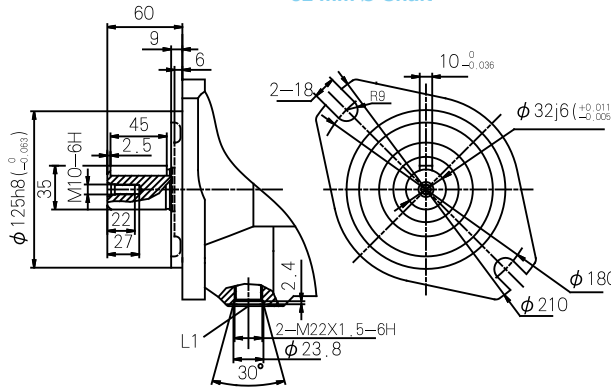
SAE J744- 25-4 (B-B) 2)



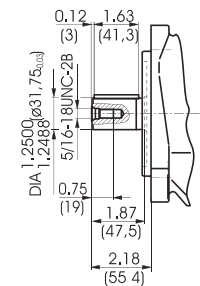
W Splined shaft 1 in 15T 16/32 DP SAE J744- 25-4 (B-B) 2)



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 <sub>1</sub>	Case drain	ISO 11926	7/8-14 UNF-2B	30 (2)	177 (240)	O <sup>1)</sup>
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 L<sub>1</sub> must be connected

O = Must be connected

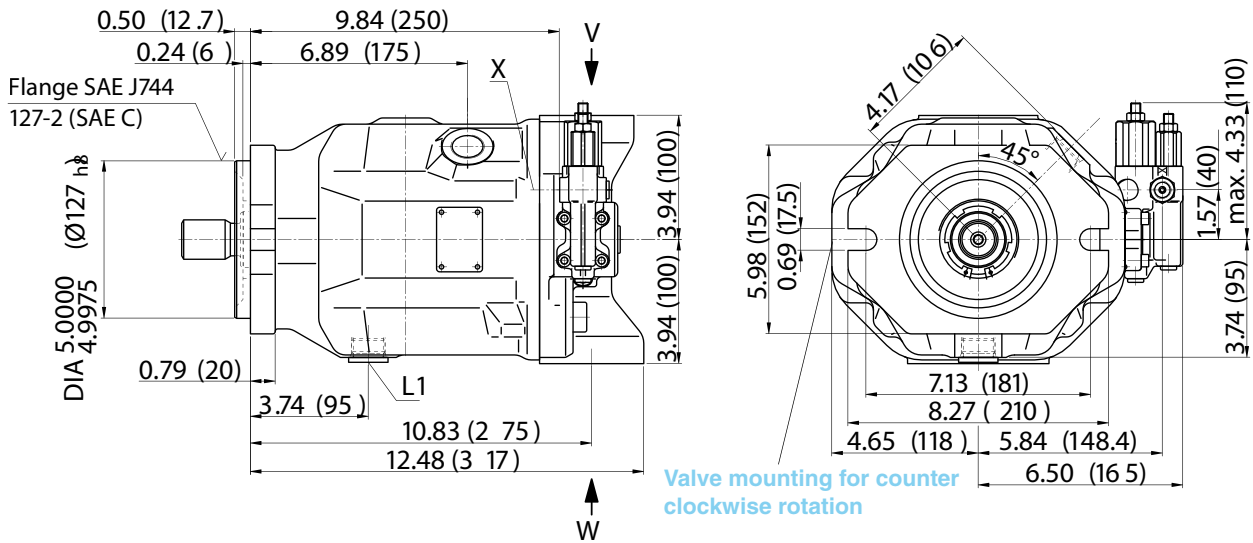
# MOUNTING DIMENSIONS, SIZE 100

## SERIES 31

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

Without Considering Adjustment

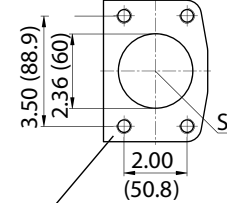
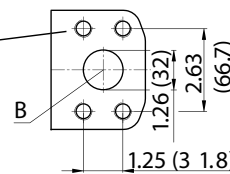
#### Port Plate 62/12 NOO



View V

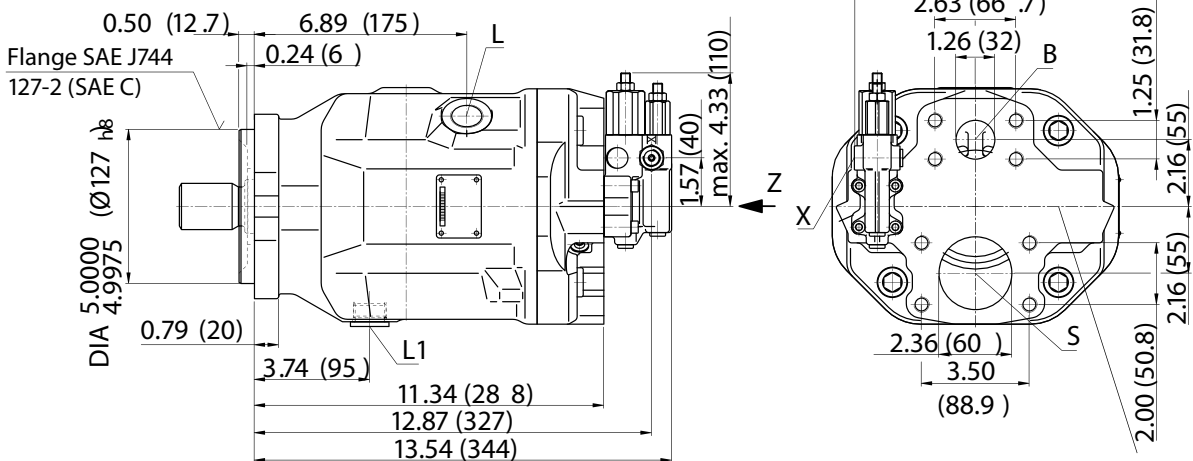
View W

11/12N00 threads M14; 19 deep



11/12N00 threads M14; 19 deep

#### Port Plate 61/11 NOO



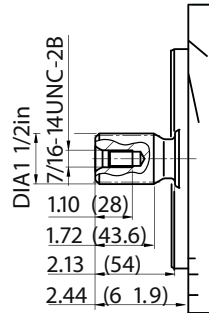
View Z

# MOUNTING DIMENSIONS, SIZE 100

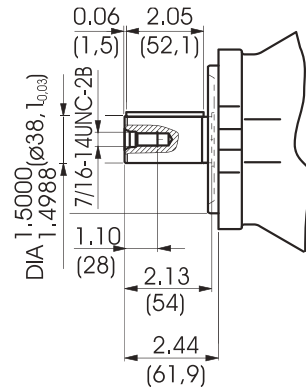
## SERIES 31

### DRIVE SHAFTS

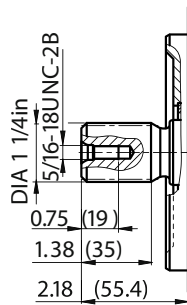
S Splined shaft 1 1/2 in 17T 12/24 DP1)  
SAE J744 - 38-4 (C-C) <sup>1)</sup>



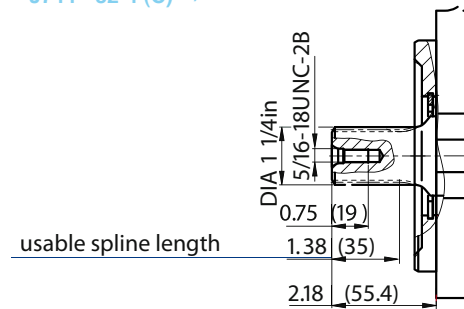
K Parallel with key  
ISO 3019-1 38-1



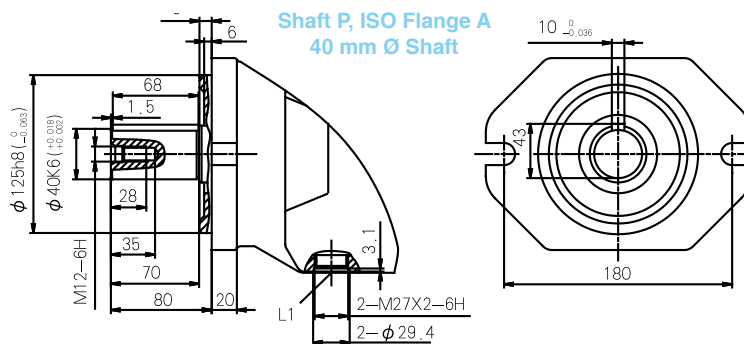
U Splined shaft 1 1/4 in 14T 12/24 DP1) SAE  
J744 - 32-4 (C) <sup>1)</sup>



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



<sup>1)</sup> 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 <sub>1</sub>	Case drain	ISO 11926	1 1/16-12 UNF-2B	30 (2)	265 (360)	O <sup>1)</sup>
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

<sup>1)</sup> Dependent on the installation position, port L or L<sub>1</sub> must be connected

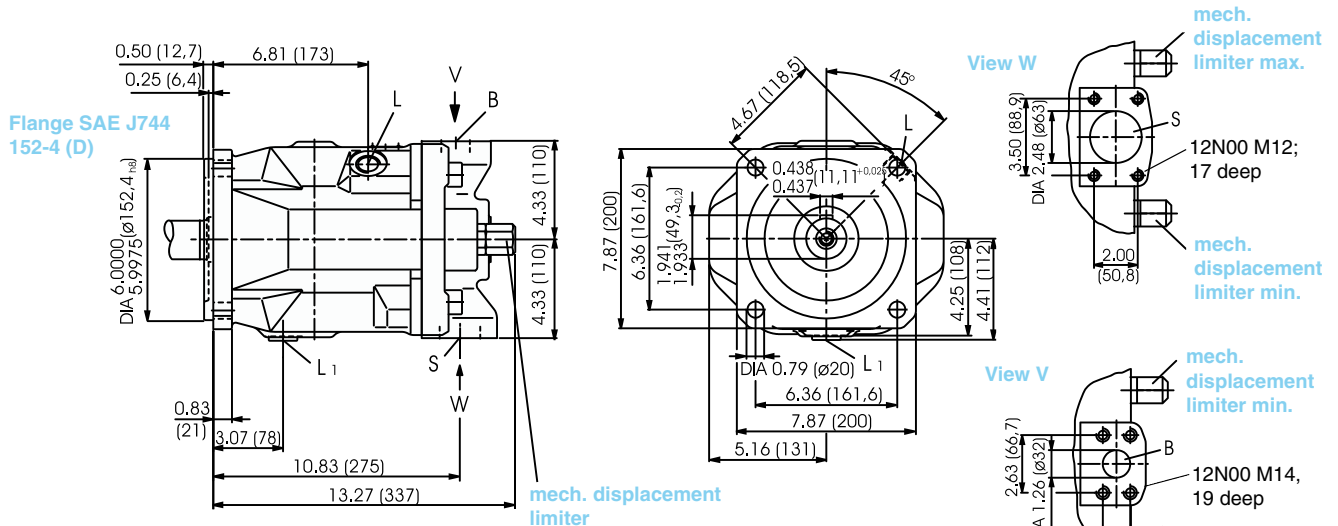
O = Must be connected

# MOUNTING DIMENSIONS, SIZE 140

## SERIES 31

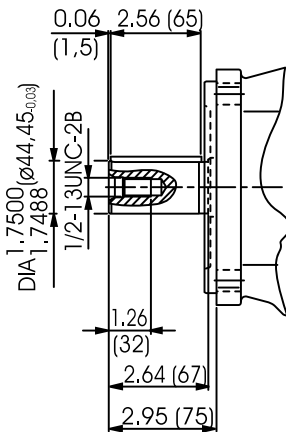
### H(S)P-10VI40

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

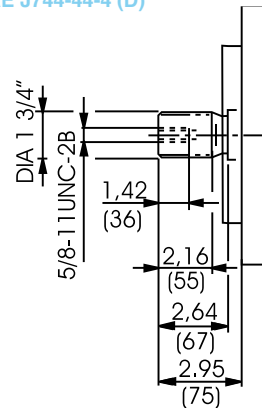


Shaft end

K Parallel with key  
ISO 3019-1 44-1



S Splined shaft 1 3/4 in 13T 8/16 DP  
SAE J744-44-4 (D)



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 <sub>1</sub>	Case drain (L <sub>1</sub> 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 L<sub>1</sub> must be connected

O = Must be connected



# THROUGH DRIVES

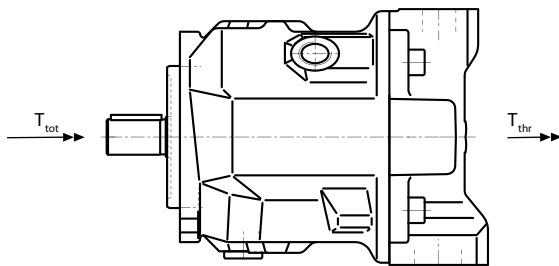
## THROUGH DRIVE MOUNTING OPTIONS

### 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.

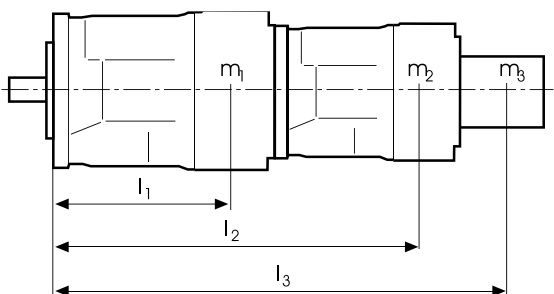
Max. perm. input torque $T_{tot}$	18	28	45	71	100	140
With shaft U $T_{tot}$ lb.ft (Nm)	43 (59)	- (-)	139 (188)	- (-)	439 (595)	- (-)
With shaft K $T_{tot}$ lb.ft (Nm)	77 (104)	107 (145)	156 (212)	319 (433)	553 (750)	875 (1186)
With shaft S $T_{tot}$ lb.ft (Nm)	92 (124)	146 (198)	235 (319)	462 (626)	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 <sup>2</sup>	$T_m$	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 <sup>nd</sup> 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
<b>SAE J744 splined</b>						
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) <sup>1)</sup>	45 (U, W) <sup>1)</sup>		
101-2 (B)	1 in (B-B)	K04	45 (S, R)	45 (S, R) 60 (U, W) <sup>2)</sup>	-	45-140
127-2 (C)	1 1/4 in (C)	K07	71 (S, R) 100 (U) <sup>3)</sup>	85 (U, W) <sup>3)</sup>	-	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

<sup>1)</sup> Not with K68 through drive on main pump size 28

<sup>2)</sup> Not with K04 through drive on main pump size 45

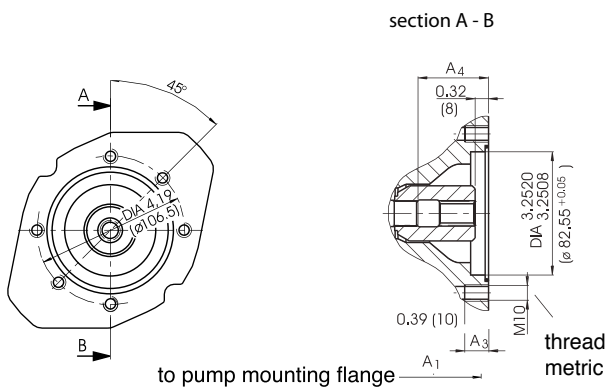
<sup>3)</sup> Not with K07 through drive on main pump size 71

## 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

<sup>1)</sup> (SAE J744 - 16-4 (A))



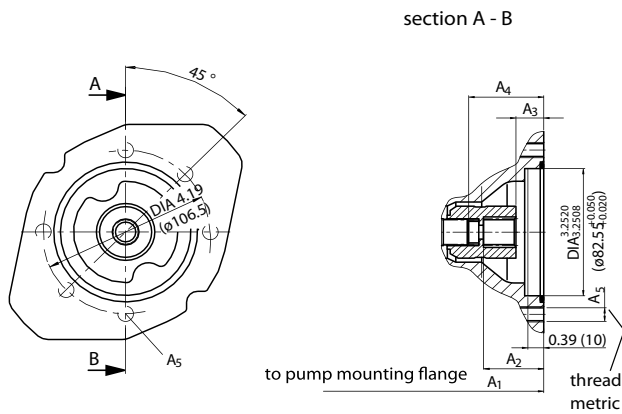
Size	A <sub>1</sub>	A <sub>3</sub>	A <sub>4</sub>
18	7.16 (182)	0.57 (14,5)	1.65 (42)
28	8.03 (204)	0.63 (16)	1.85 (47)
45	9.02 (229)	0.63 (16)	2.09 (53)
71	10.51 (267)	0.79 (20)	2.40 (61)
100	13.31 (338)	0.79 (20)	2.56 (65)
140	13.78 (350)	0.63 (17)	3.03 (77)

# 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

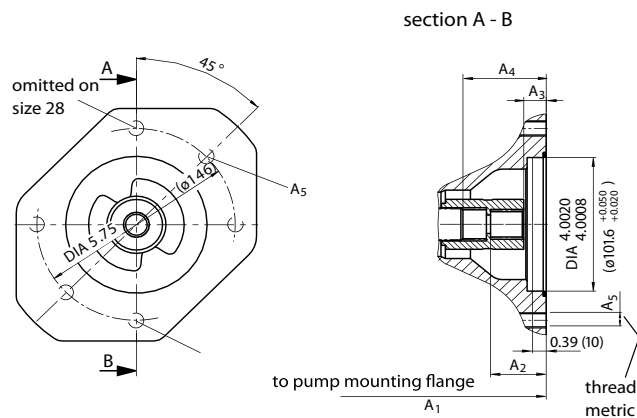


<sup>1)</sup> (SAE J744 - 19-4 (A-B))

Size	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>
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

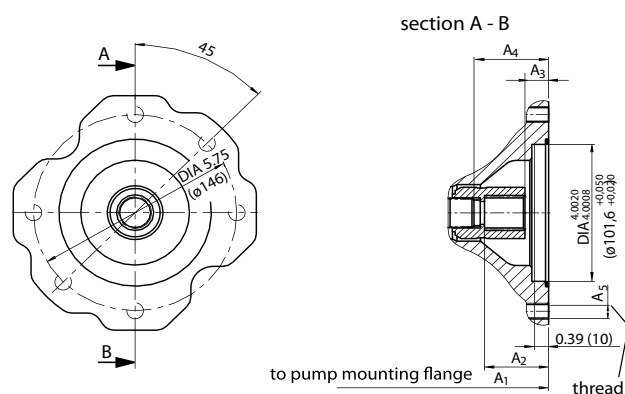


<sup>1)</sup> (SAE J744 - 22-4 (B))

Size	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>
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

<sup>1)</sup> pressure angle 30 °, flat root side fit, tolerance class 5

<sup>1)</sup> (SAE J744 - 25-4 (B-B))



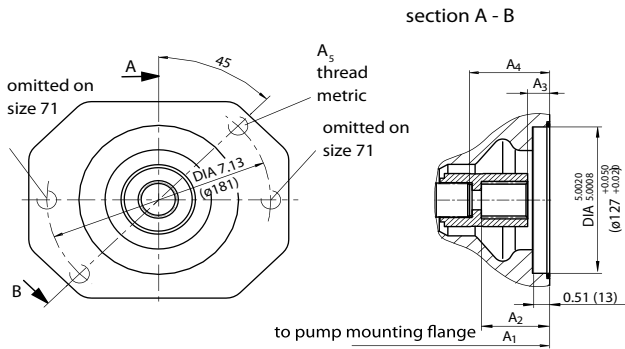
Size	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>
45	9.02 (229)	1.87 (47,5)	0.73 (18,4)	2.09 (53)	M12; 0.71 (18) deep
71	10.51 (267)	1.87 (47,5)	0.82 (20,8)	2.40 (61)	M12; 0.79 (20) deep
100	13.31 (338)	1.87 (47,5)	0.72 (18,2)	2.56 (65)	M12; 0.79 (20) deep
140	13.78 (350)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

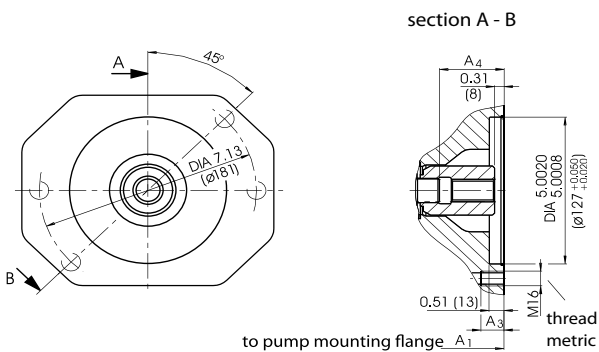


<sup>1)</sup> (SAE J744 - 32-4 (C))

Size	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	A <sub>5</sub>
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



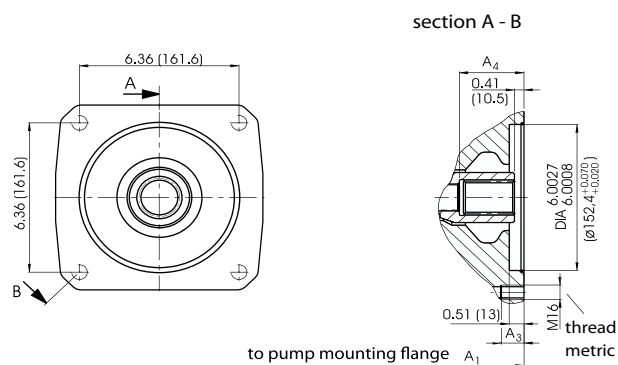
<sup>1)</sup> (SAE J744 - 38-4 (C-C))

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

<sup>1)</sup> 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



<sup>1)</sup> (SAE J744 - 44-4 (D))

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

## RANGE OF PRODUCTS



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