

# HYDRAULIC MOTORS HP



## APPLICATION

- Conveyors
- Feeding mechanism of robots and manipulators
- Metal working machines
- Textile machines
- Machines for agriculture
- Food industries
- Grass cutting machinery etc.



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## OPTIONS

- Model- Spool valve, gerotor
- Flange mount
- Side ports
- Shafts- straight, splined and tapered
- SAE, Metric and BSPP ports
- Speed sensing
- Other special features

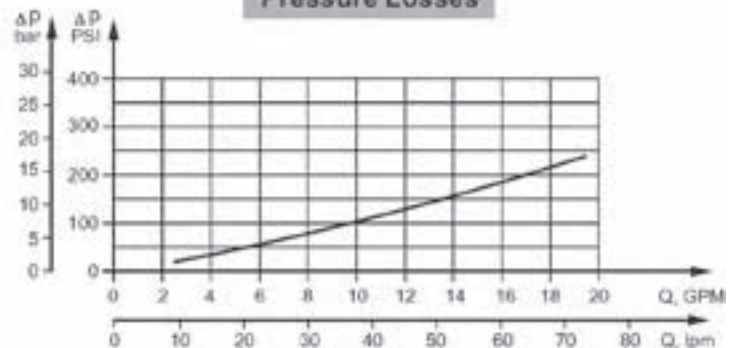
## GENERAL

Displacement,	in <sup>3</sup> /rev [cm <sup>3</sup> /rev.]	1.52+24.16 [25-396]
Max. Speed,	[RPM]	150+1600
Max. Torque,	in-lb [daNm]	290+3060 [3,3+34,6]
Max. Output,	HP [kW]	5+11.5 [3,7+8,5]
Max. Pressure Drop,	PSI [bar]	945+1815 [65+125]
Max. Oil Flow,	GPM [lpm]	10.5+16 [40+60,6]
Min. Speed,	[RPM]	10
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)	
Temperature range,	°F [°C]	-22+194 [-30+90]
Optimal Viscosity range, SUS [mm <sup>2</sup> /s]	98+347 [20+75]	
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 micron)	

**Oil flow in drain line**

Pressure drop PSI [bar]	Viscosity SUS [mm <sup>2</sup> /s]	Oil flow in drain line GPM [lpm]
1450 [100]	98 [20]	.660 [2,5]
	164 [35]	.476 [1,8]
2030 [140]	98 [20]	.925 [3,5]
	164 [35]	.740 [2,8]

**Pressure Losses**



**SPECIFICATION DATA**

Type	HP 25	HP 32	HP 40	HP 50	HP 80	HP 100	
<b>Displacement, in.<sup>2</sup>/rev. [cm.<sup>2</sup>/rev.]</b>	1.52 [25]	1.95 [32]	2.44 [40]	3.02 [49,5]	4.83 [79,2]	6.04 [99,0]	
<b>Max. Speed, [RPM]</b>	Cont.	1600	1560	1515	1210	755	
	Int.*	1815	1720	1760	1515	945	
<b>Max. Torque in-lb [daNm]</b>	Cont.	290 [3,3]	380 [4,3]	550 [6,2]	725 [8,2]	1210 [13,7]	1500 [17,0]
	Int.*	415 [4,7]	540 [6,1]	730 [8,2]	1050 [11,9]	1725 [19,5]	2100 [23,7]
<b>Max. Output HP [kW]</b>	Cont.	6.0 [4,5]	7.8 [5,8]	11.4 [8,5]	11.7 [8,7]	11.7 [8,7]	11.9 [8,9]
	Int.*	8.2 [6,1]	10.5 [7,8]	15.5 [11,6]	18.8 [14]	19.7 [14,7]	19.4 [14,5]
<b>Max. Pressure Drop PSI [bar]</b>	Cont.	1450 [100]	1450 [100]	1750 [120]	1815 [125]	1815 [125]	1815 [125]
	Int.*	2030 [140]	2030 [140]	2250 [155]	2540 [175]	2540 [175]	2540 [175]
<b>Max. Oil Flow GPM [lpm]</b>	Cont.	10.5 [40]	13.2 [50]	16 [60,6]	16 [60,6]	16 [60,6]	16 [60,6]
	Int.*	12 [45,4]	14.5 [55]	18.5 [70]	20 [75,7]	20 [75,7]	20 [75,7]
<b>Max. Inlet Pressure PSI [bar]</b>	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
	Peak**	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
<b>Max. Return Pressure without Drain Line or Max. Pressure in Drain Line, PSI [bar]</b>	Cont. 0-100 RPM	2200 [150]	2200 [150]	2200 [150]	2200 [150]	2200 [150]	2200 [150]
	Cont. 100-300 RPM	1100 [75]	1100 [75]	1100 [75]	1100 [75]	1100 [75]	1100 [75]
	Cont. 300-600 RPM	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]
	Cont. >600 RPM	300 [20]	300 [20]	300 [20]	365 [25]	365 [25]	365 [25]
<b>Max. Return Pressure with Drain Line PSI [bar]</b>	Int.* 0-max. RPM	2200 [150]	2200 [150]	2200 [150]	1800 [124]	1800 [124]	1800 [124]
	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
<b>Max. Starting Pressure with Unloaded Shaft, PSI [bar]</b>	Peak**	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Cont.	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]
<b>Min. Starting Torque in-lb [daNm]</b>	At max.press. drop Cont.	265 [3,0]	355 [4,0]	480 [5,4]	610 [6,9]	1040 [11,7]	1310 [14,8]
	At max.press. drop Int.*	370 [4,2]	500 [5,6]	600 [6,8]	885 [10]	1490 [16,8]	1860 [21]
<b>Min. Speed***, [RPM]</b>		20	15	10	10	10	
<b>Weight, lb [kg]</b>	HP	12.3 [5,6]	12.4 [5,6]	12.6 [5,7]	12.3 [5,6]	12.6 [5,7]	13.0 [5,9]
	HPQ				11.00 [5,0]	11.25 [5,1]	11.69 [5,3]

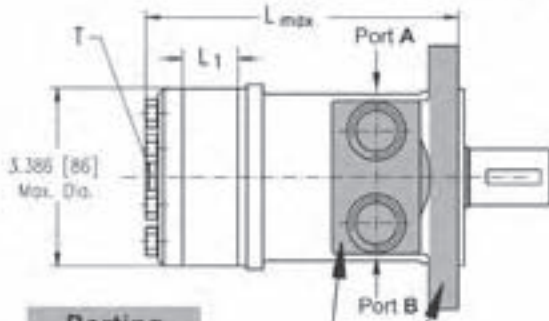
\* Intermittent operation: the permissible values may occur for max. 10% of every minute.

\*\* Peak load: the permissible values may occur for max. 1% of every minute.

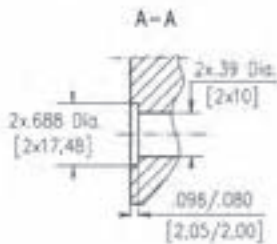
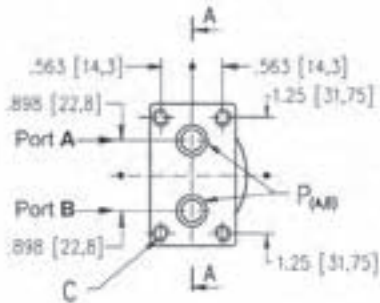
\*\*\* For speeds of 10 RPM or lower, consult factory or your regional manager.

- Intermittent speed and intermittent pressure drop must not occur simultaneously.
- Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
- Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
- Recommended minimum oil viscosity 70 SUS [13 mms/s] at 122°F [50°C].
- Recommended maximum system operating temperature is 180°F [82°C].
- To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

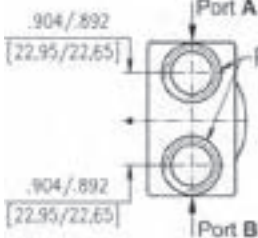
**DIMENSIONS AND MOUNTING DATA FOR HP**



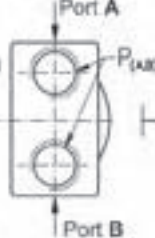
**Porting**  
Side Ports  
Version 1



Version 4

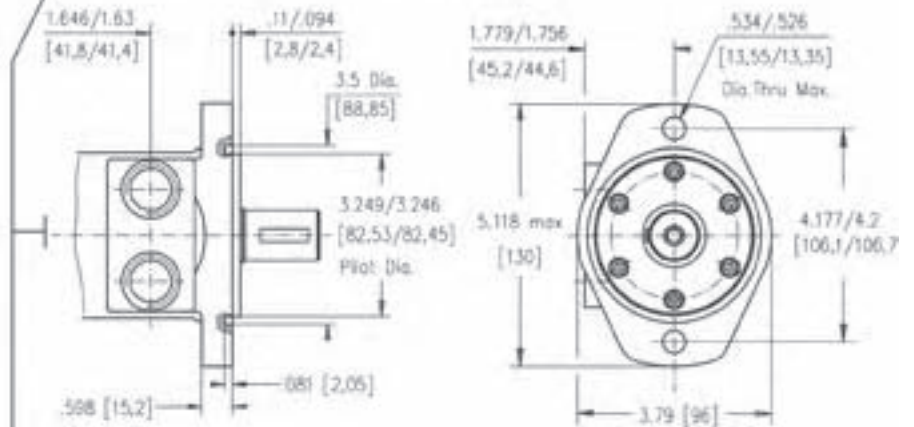


Version 5

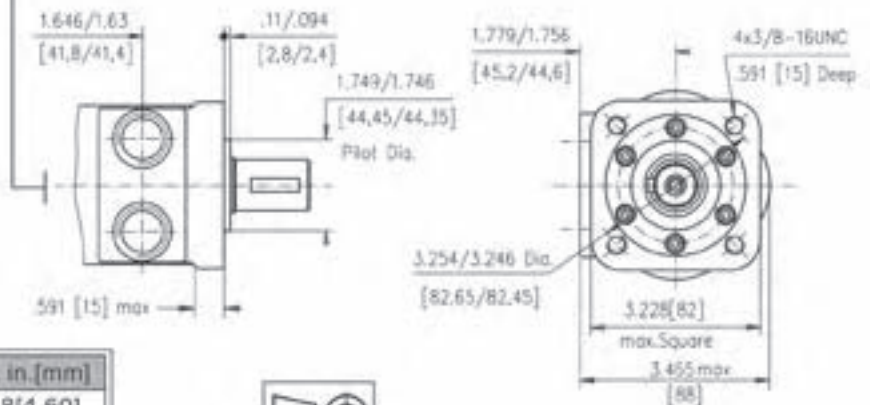


**Mounting**

**SAE A Flange**



**Q Square Flange**



**Standard Rotation**  
Viewed from Shaft End  
Port A Pressurized - CW  
Port B Pressurized - CCW

**Reverse Rotation**  
Viewed from Shaft End  
Port A Pressurized - CCW  
Port B Pressurized - CW

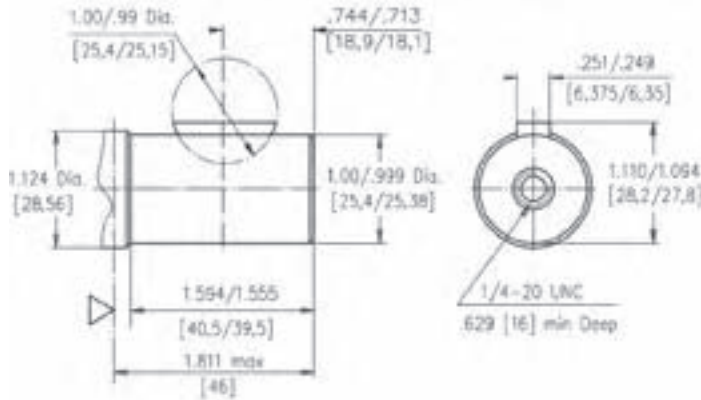
Type	Lmax, in. [mm]	L., in. [mm]
HP(Q) 25	5.24 [133,1]	.18[4,60]
HP(Q) 32	5.29 [134,4]	.23[5,90]
HP(Q) 40	5.35 [135,9]	.29[7,40]
HP(Q) 50	5.32 [135,17]	.26[6,67]
HP(Q) 80	5.48 [139,17]	.42[10,67]
HP(Q) 100	5.58 [141,83]	.52[13,33]
HP(Q) 125	5.72 [145,17]	.66[16,67]
HP(Q) 160	5.90 [149,83]	.84[21,33]
HP(Q) 200	6.11 [155,17]	1.05[26,67]
HP(Q) 250	6.37 [161,83]	1.31[33,33]
HP(Q) 315	6.74 [171,17]	1.68[42,67]
HP(Q) 400	7.18 [181,83]	2.10[53,33]

Versions			
	1	4	5
C	4x 3/8-18UNC	-	-
P <sub>(A/B)</sub>	2x.39 Dia. [2x10]	2x 1/4-14UNF	2x 1/4-14NPTF
T	1/4 -20UNF	1/4 -20UNF	1/4 -20UNF

**SHAFT EXTENSIONS FOR HP AND HR MOTORS**

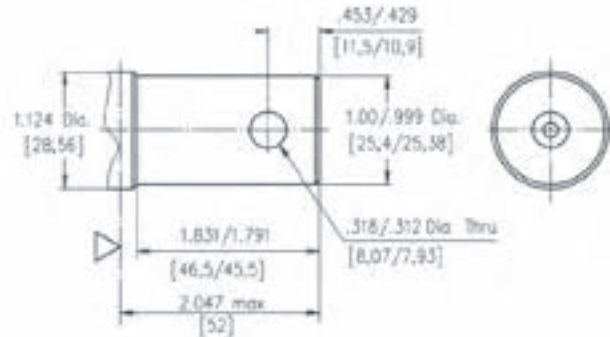
**C**

1" [25,4] straight, Woodruff key <sup>Ø</sup>1"x1" SAE J502  
Max. Torque 3900 in-lb [44 daNm]



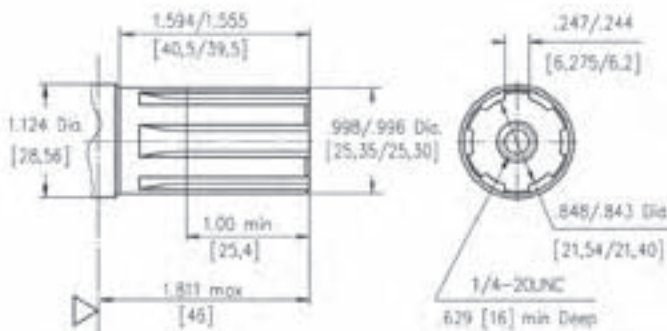
**H**

1" [25,4] straight, w/ .315 [8] Crosshole  
Max. Torque 3900 in-lb [44 daNm]



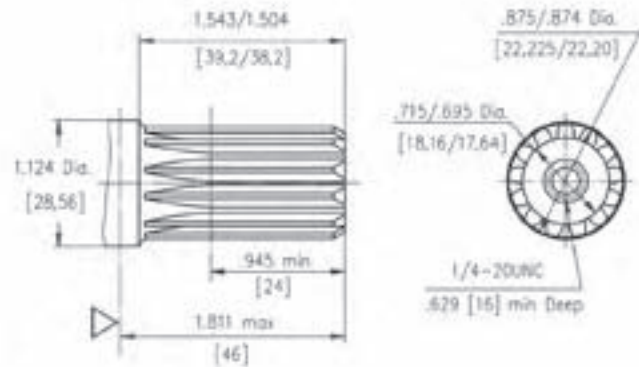
**G**

1" [25,4], SAE 6B Splined  
Max. Torque 3900 in-lb [44 daNm]



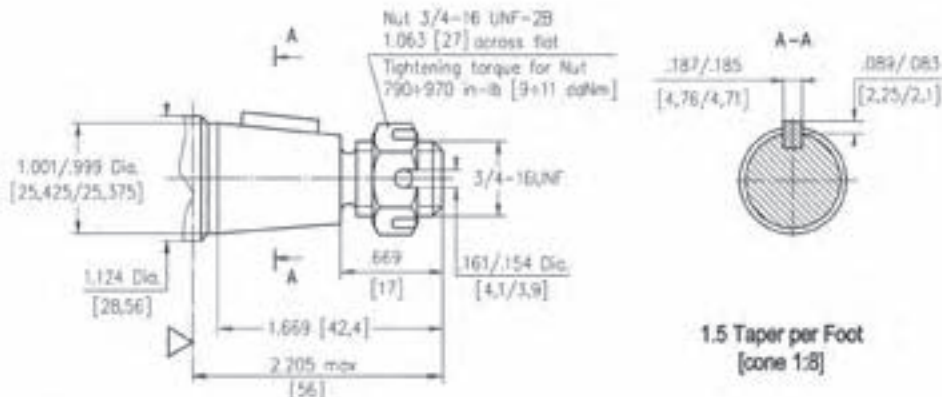
**S**

13T Splined, 7/8" [22,2], ANS B 92.1-1976  
Max. Torque 3200 in-lb [36 daNm]



**T**

1" [25,4], SAE J501 Tapered  
Parallel key 3/8"x 3/8"xæ"  
Max. Torque 3900 in-lb [44 daNm]



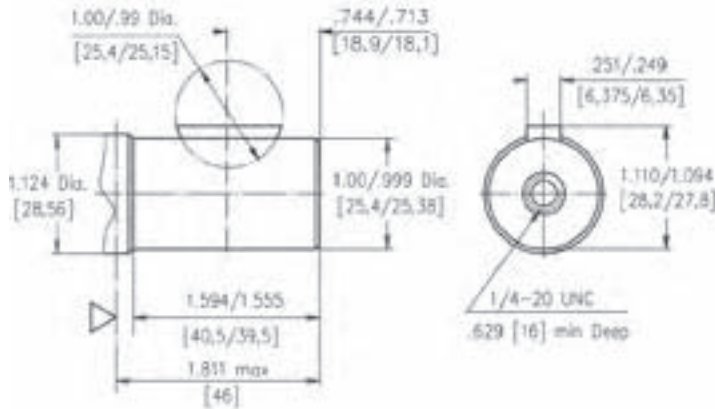
1.5 Taper per Foot  
[cone 1:8]

V- Motor Mounting Surface  
Requirement max. Torque must be not exceeded.

**SHAFT EXTENSIONS FOR HP AND HR MOTORS**

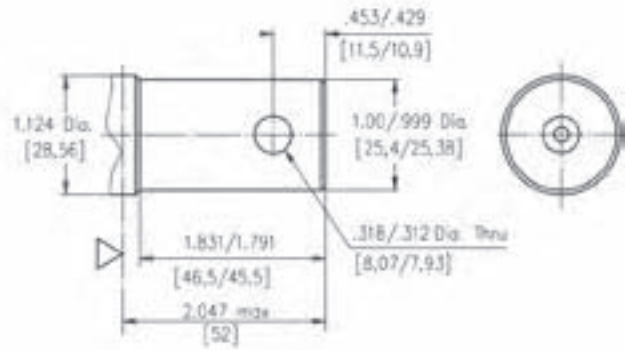
**C**

1" [25.4] straight, Woodruff key  $9^{\circ} \times 1^{\circ}$  SAE J502  
Max. Torque 3900 in-lb [44 daNm]



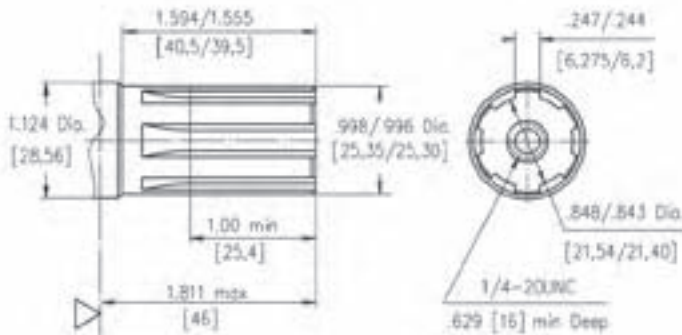
**H**

1" [25.4] straight, w/ .315 [8] Crosshole  
Max. Torque 3900 in-lb [44 daNm]



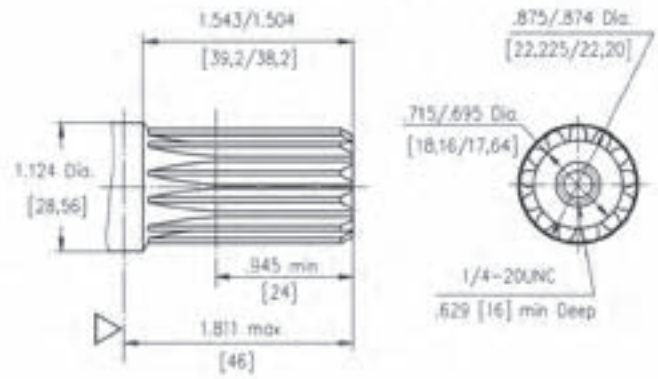
**G**

1" [25.4], SAE 6B Splined  
Max. Torque 3900 in-lb [44 daNm]



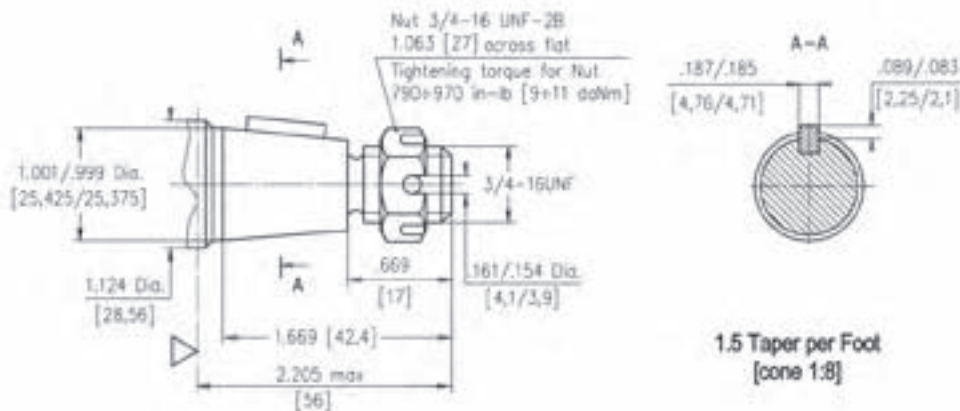
**S**

13T Splined,  $7/8^{\circ}$  [22.2], ANS B 92.1-1976  
Max. Torque 3200 in-lb [36 daNm]



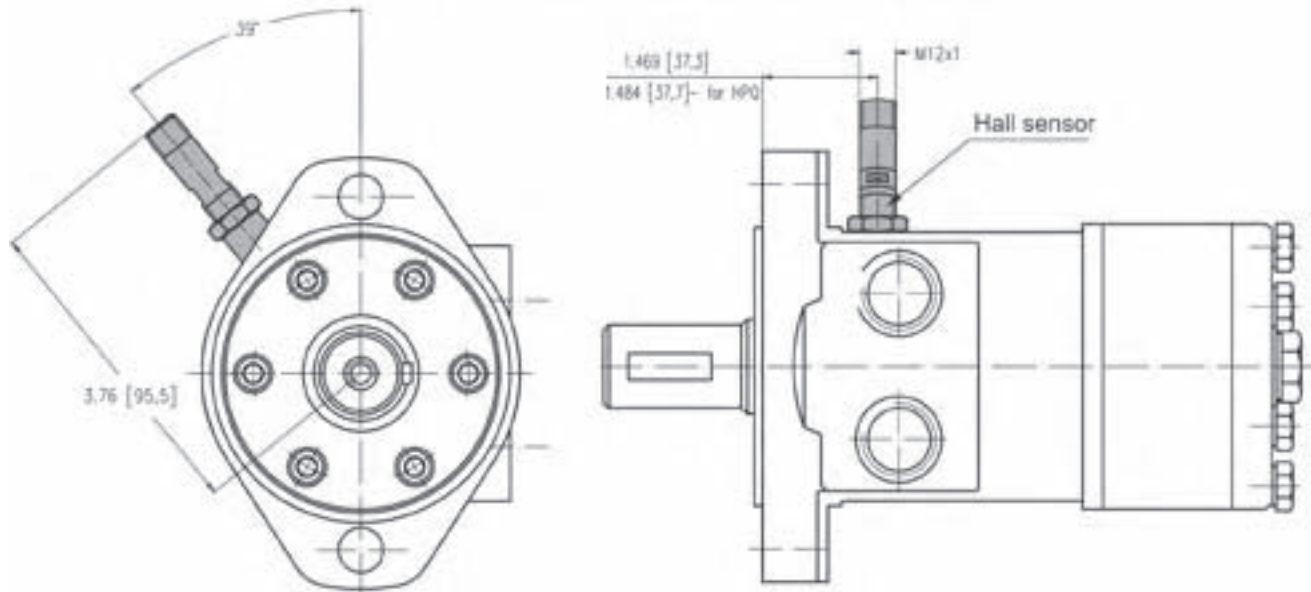
**T**

1" [25.4], SAE J501 Tapered  
Parallel key  $3/16^{\circ} \times 3/16^{\circ} \times .6^{\circ}$   
Max. Torque 3900 in-lb [44 daNm]



V- Motor Mounting Surface  
Requirement max. Torque must be not exceeded.

**HP and HR MOTORS WITH SPEED SENSOR**

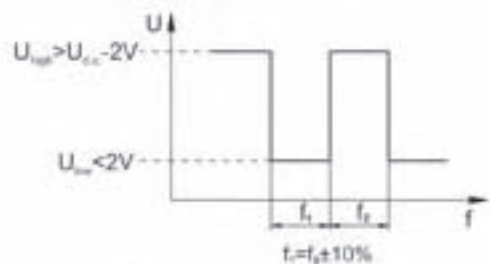


Differential Hall Sensor

**Technical data**

Frequency range	3...20 000 Hz
Output	PNP, NPN
Power supply	10...36 VDC
Current input	20 mA (@24 VDC)
Current load	500 mA (@24 VDC;24°C)
Ambient Temperature	minus 40... plus 125°C
Protection	IP 67
Plug connector	M12-Series
Mounting principle	ISO 6149
Pulses per revolution	36

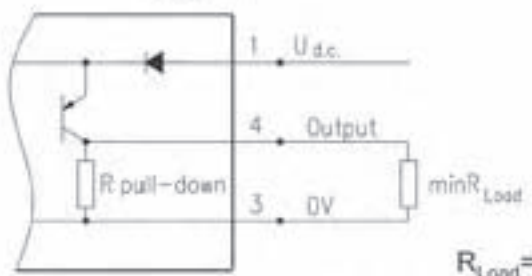
**Output signal**



Load max.:  $i_{load} = i_{max} < 50mA$   
 No load current, max: 20 mA

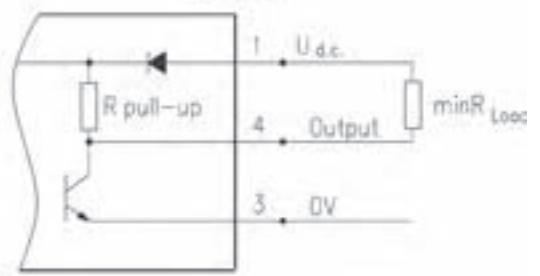
**Wiring diagrams**

**PNP**



$R_{Load} = U_{dc} / I_{max} (=50mA)$

**NPN**



**Stik type**



Terminal No.	Connection
1	$U_{dc}$
2	No connection
3	0V
4	Output signal

**ORDER CODE**

	1	2	3	4	5	6	7	8	9
<b>HP</b>									

**Pos.1 - Mounting Flange**

omit - SAE A, two holes

**Q** - Square, four bolts

**Pos.2 - Displacement code** [performance data see pages 19-25]

- 25** - 1.52 [ 25,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 32** - 1.95 [ 32,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 40** - 2.44 [ 40,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 50** - 3.02 [ 49,5] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 80** - 4.83 [ 79,2] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 100** - 6.04 [ 99,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 125** - 9.66 [123,8] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 160** - 9.74 [158,4] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 200** - 12.10 [198,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 250** - 15.10 [247,5] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 315** - 19.30 [316,8] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]
- 400** - 24.16 [396,0] in.<sup>3</sup>/rev. [cm.<sup>3</sup>/rev.]

**Pos.3 - Shaft Extensions\*** [see page 38]

- C** - 1" [25,4] straight, Woodruff key
- G** - 1" [25,4] SAE 6B Splined
- H** - 1" [25,4] straight, w/.315 [8] Crosshole
- S** - 7/8" [22,2] 13T Splined
- T** - 1" [25,4] SAE J501 Tapered

**Pos. 4 - Port Size/Type** [standard manifold to each]

- 1** - side ports, Manifold [5/16-18 UNC Mounting Threads], 7/16-20 UNF
- 4** - side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF
- 5** - side ports, 2x1/2-14 NPTF, 7/16-20 UNF

**Pos. 5 - Speed Monitoring**

- omit - none
- RS-P** - with speed sensor (PNP pull-down resistor)
- RS-N** - with speed sensor (NPN pull-up resistor)

**Pos. 6 - Special Features** [see Specification data-page 18]

- omit - none
- LL** - Low Leakage
- LSV** - Low Speed Valve
- FR** - Free Running

**Pos. 7 - Rotation**

- omit - Standard Rotation
- R** - Reverse Rotation

**Pos. 8 - Option [Paint]\*\***

- omit - no Paint
- P** - Painted
- PC** - Corrosion Protected Paint

**Pos. 9 - Design Series**

- omit - Factory specified

Notes : \* The permissible output torque for shafts must be not exceeded!  
 \*\* Color at customer's request.

The hydraulic motors are mangano phosphatized as standard.