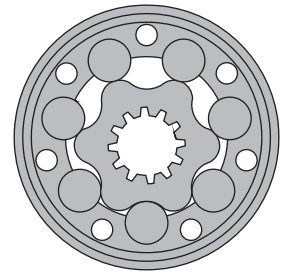


# HYDRAULIC MOTORS HR

## APPLICATION

- » Conveyors
- » Feeding mechanism of robots and manipulators
- » Metal working machines
- » Textile machines
- » Agricultural machines
- » Food industries
- » Grass cutting machinery etc.



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## OPTIONS

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

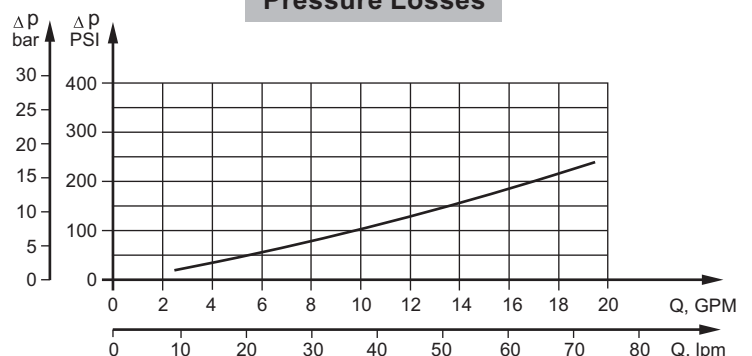
## GENERAL

<b>Max. Displacement,</b> in <sup>3</sup> /rev [cm <sup>3</sup> /rev]	23.56 [386]
<b>Max. Speed,</b> [RPM]	971
<b>Max. Torque,</b> lb-in [daNm]	cont. 3980 [45,0] int. 4560 [51,5]
<b>Max. Output,</b> HP [kW]	16.2 [12,1]
<b>Max. Pressure Drop,</b> PSI [bar]	cont. 2030 [140] int. 2540 [175]
<b>Max. Oil Flow,</b> GPM [lpm]	19.8 [75]
<b>Min. Speed,</b> [RPM]	10
<b>Pressure fluid</b>	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
<b>Temperature range,</b> °F [°C]	-40÷284 [-40÷140]
<b>Optimal Viscosity range, SUS [mm<sup>2</sup>/s]</b>	98÷347 [20÷75]
<b>Filtration</b>	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

### 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	HR 50	HR 80	HR 100	HR 125	HR 160	HR 200	HR 250	HR 315	HR 400	
<b>Displacement, in<sup>3</sup>/rev [cm<sup>3</sup>/rev]</b>	3.14 [51,5]	4.90 [80,3]	6.09 [99,8]	7.48 [122,5]	9.37 [153,6]	11.95 [195,8]	14.95 [245]	18.67 [306]	23.56 [386]	
<b>Max. Speed, [RPM]</b>	Cont.	777	747	601	490	391	306	245	196	155
	Int.*	971	934	752	612	488	383	306	245	194
<b>Max. Torque lb-in [daNm]</b>	Cont.	870 [9,8]	1415 [16,0]	1725 [19,5]	2125 [24,0]	2655 [30,0]	3097 [35,0]	3275 [37,0]	3720 [42,0]	3980 [45,0]
	Int.*	1080 [12,2]	1680 [19,0]	2090 [23,6]	2570 [29,0]	3220 [36,4]	3640 [41,1]	3965 [44,8]	4380 [49,5]	4560 [51,5]
	Peak**	1260 [14,2]	1965 [22,2]	2435 [27,5]	2990 [33,8]	3750 [42,4]	4780 [54,0]	4790 [54,1]	5310 [60,0]	5445 [61,5]
<b>Max. Output HP [kW]</b>	Cont.	8.7 [6,5]	13.1 [9,8]	13.1 [9,8]	13.1 [9,8]	13.1 [9,8]	11.7 [8,7]	9.8 [7,3]	9.4 [7,0]	7.9 [5,9]
	Int.*	10.9 [8,1]	16.2 [12,1]	16.2 [12,1]	16.2 [12,1]	16.2 [12,1]	14.3 [10,7]	12.5 [9,3]	10.6 [7,9]	8.9 [6,6]
<b>Max. Pressure Drop PSI [bar]</b>	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	1885 [130]	1595 [110]	1450 [100]	1235 [85]
	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2250 [155]	1960 [135]	1740 [120]	1450 [100]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	2610 [180]	2320 [160]	1880 [130]
<b>Max. Oil Flow GPM [lpm]</b>	Cont.	10.5 [40]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]	15.9 [60]
	Int.*	13.2 [50]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]	19.8 [75]
<b>Max. Inlet Pressure PSI [bar]</b>	Cont.	2030 [140]	2030 [140]	2030 [140]	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]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
<b>Max. Return Pres- sure with Drain Line PSI [bar]</b>	Cont.	2030 [140]	2030 [140]	2030 [140]	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]	2540 [175]	2540 [175]	2540 [175]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
<b>Max. Starting Pressure with Unloaded Shaft, PSI [bar]</b>	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	145 [10]	102 [7]	102 [7]	102 [7]	
<b>Min. Starting Torque lb-in [daNm]</b>	At max.press.									
	drop Cont.	710 [7,9]	1090 [12,3]	1355 [15,3]	1665 [18,8]	2090 [23,6]	2370 [26,8]	2495 [28,2]	2965 [33,5]	3190 [36,0]
	At max.press. drop Int.*	870 [9,8]	1345 [15,2]	1670 [18,9]	2055 [23,2]	2575 [29,1]	2910 [32,9]	3170 [35,8]	3375 [38,1]	3515 [39,7]
<b>Min. Speed***, [RPM]</b>	10	10	10	10	10	10	10	10	10	
<b>Weight, lb [kg]</b>	HR	13.45 [6,1]	14.11 [6,4]	14.55 [6,6]	14.55 [6,6]	15.21 [6,9]	15.87 [7,2]	16.53 [7,5]	17.64 [8,0]	18.96 [8,6]
	HRQ	12.57 [5,7]	13.23 [6,0]	13.67 [6,2]	13.67 [6,2]	14.33 [6,5]	14.77 [6,7]	15.65 [7,1]	16.76 [7,6]	18.08 [8,2]

\* 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.

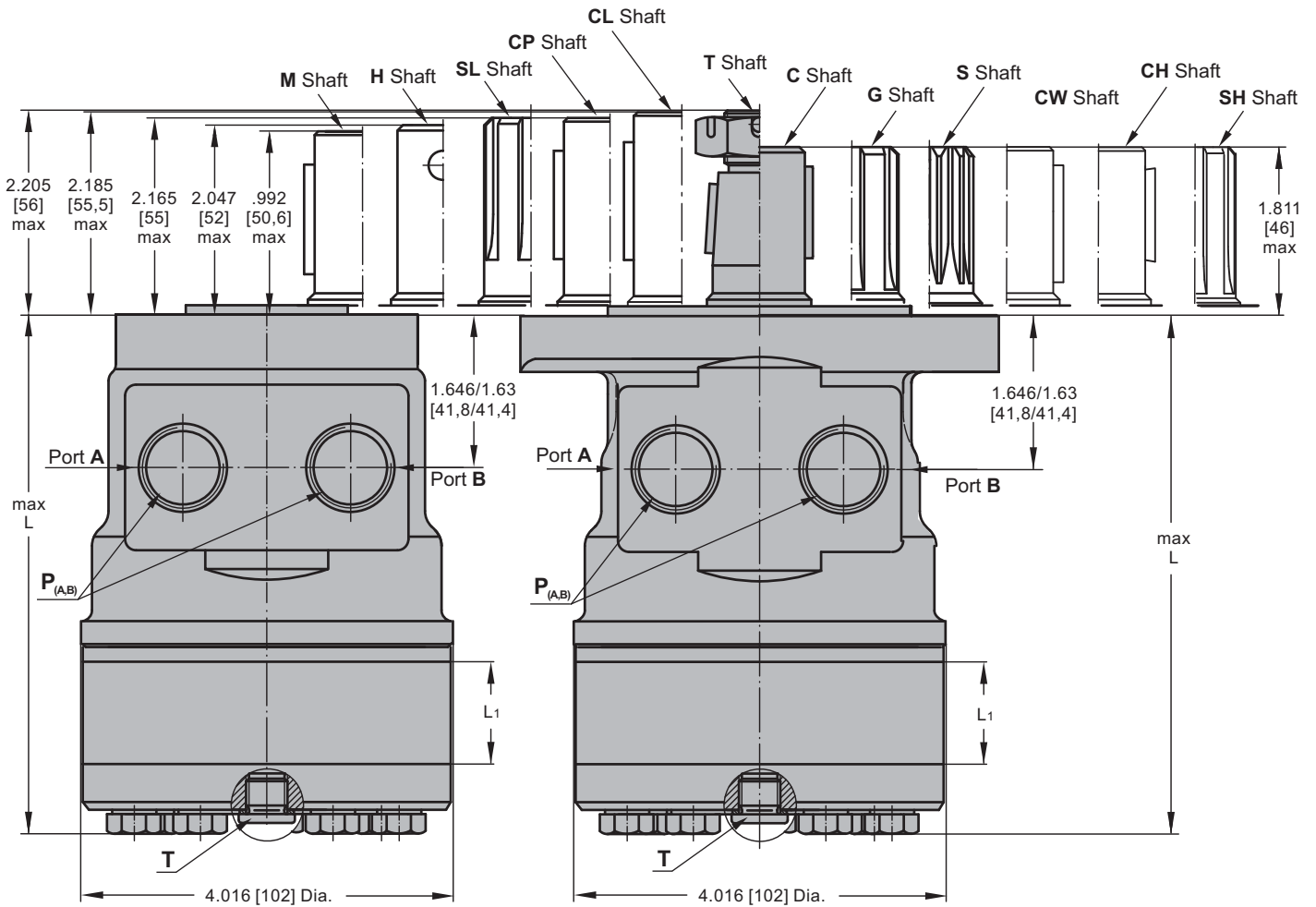
\*\*\* For speeds lower than given, consult factory or your regional manager.

1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. 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.
4. Recommended minimum oil viscosity 70 SUS [13 mm<sup>2</sup>/s] at 122°F [50°C].
5. Recommended maximum system operating temperature is 180°F [82°C].
6. 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 HR**

**HRQ**

**HR**



Shaft Dim.  
See Page 58 and 59

**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**

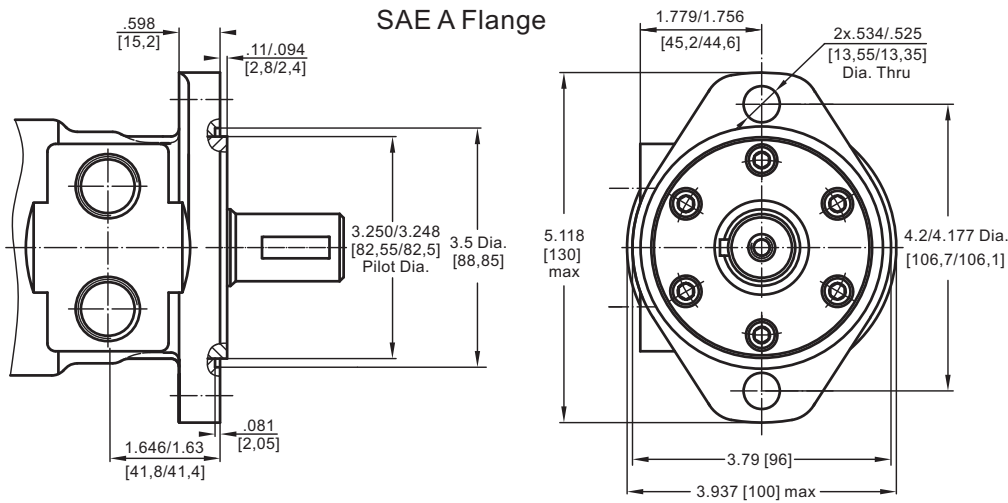
Type	Lmax, in [mm]	L <sub>1</sub> , in [mm]
HR(Q) 50	4.85 [123,3]	.35 [9,0]
HR(Q) 80	5.05 [128,3]	.55 [14,0]
HR(Q) 100	5.19 [131,7]	.69 [17,4]
HR(Q) 125	5.19 [131,7]	.69 [17,4]
HR(Q) 160	5.36 [136,1]	.86 [21,8]
HR(Q) 200	5.59 [142,1]	1.09 [27,8]
HR(Q) 250	5.87 [149,1]	1.37 [34,8]
HR(Q) 315	6.21 [157,8]	1.71 [43,5]
HR(Q) 400	6.66 [169,1]	2.16 [54,8]

Flange Dim.  
See Page 65

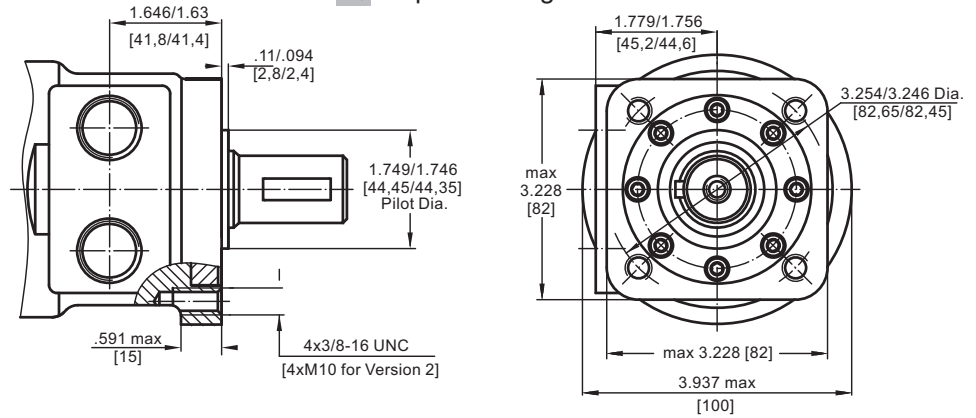


Port Dim.  
See Page 65

**MOUNTING**



**Q - Square Flange**



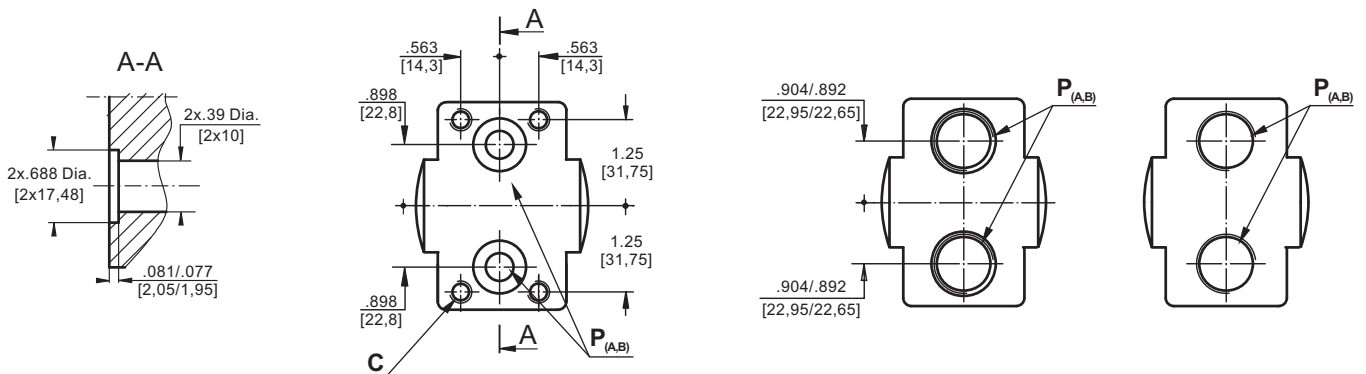
**PORTS**

**Side Ports**

Version **1**, **3**

Version **4**

Version **2**, **5**



Versions					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>C</b>	4x 5/16-18UNC	-	4x M8	-	-
<b>P<sub>(A,B)</sub></b>	2x.39 Dia. [2x10]	2xG1/2	2x.39 Dia. [2x10]	2x 7/8-14UNF	2x 1/2-14NPTF
<b>T</b>	7/16 -20UNF	G1/4	7/16 -20UNF	7/16 -20UNF	7/16 -20UNF

**ORDER CODE**

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

**Pos.1 - Mounting Flange**

- omit - SAE A, two holes
- Q** - Square, four bolts

**Pos.2 - Displacement code\***

- 50** - 3.14 in<sup>3</sup>/rev [ 51,5 cm<sup>3</sup>/rev]
- 80** - 4.90 in<sup>3</sup>/rev [ 80,3 cm<sup>3</sup>/rev]
- 100** - 6.09 in<sup>3</sup>/rev [ 99,8 cm<sup>3</sup>/rev]
- 125** - 7.67 in<sup>3</sup>/rev [125,7 cm<sup>3</sup>/rev]
- 160** - 9.74 in<sup>3</sup>/rev [159,6 cm<sup>3</sup>/rev]
- 200** - 12.19 in<sup>3</sup>/rev [199,8 cm<sup>3</sup>/rev]
- 250** - 15.26 in<sup>3</sup>/rev [250,1 cm<sup>3</sup>/rev]
- 315** - 19.26 in<sup>3</sup>/rev [315,7 cm<sup>3</sup>/rev]
- 400** - 24.23 in<sup>3</sup>/rev [397,0 cm<sup>3</sup>/rev]

**Pos.3 - Shaft Extensions\*\* [see pages 58 and 59]**

- C** - 1" [25,4] straight, Woodruff key
- G** - 1" [25,4] SAE 6B Splined
- H** - 1" [25,4] straight, w/.315 [8] Cross-hole
- S** - 7/8" [22,2] 13T Splined
- T** - 1" [25,4] SAE J501 Tapered
- M** - ø25 straight, Parallel key A8x7x32 DIN 6885
- CP** - ø25 straight, Parallel key A8x7x32 DIN 6885
- CL** - 1" [25,4] straight, Parallel key 1/4"x1/4"x1 1/4" BS46
- CW** - ø25 straight, Parallel key A8x7x32 DIN 6885
- CH** - ø25 straight, Woodruff key 1/4"x1" SAE J502
- SH** - 1" [25,4], SAE 6B Splined
- SL** - 1" [25,4], SAE 6B Splined

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

- 1** - side ports, Manifold [5/16-18 UNC Mounting Threads], 7/16-20 UNF
- 2** - side ports, 2xG1/2, G1/4
- 3** - side ports, Manifold [M8 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 - Shaft Seal Version [see page 60]**

- U** - High pressure shaft seal

**Pos.6 - Check Valves**

- omit - Without check valves
- K** - With check valves

**Pos.7 - Drain Port**

- omit - with drain port
- 1** - without drain port

**Pos.8 - Special Features [see page 102]**

**Pos.9 - Design Series**

- omit - Factory specified

**Notes:**

\* For the Function Diagrams please look at "M+S Hydraulic" Catalogue for MLHR motors, pages 36÷40.

\*\* The permissible output torque for shafts must not be exceeded!

The hydraulic motors are manganophosphatized as standard.