

MHP20/MHP27

HYDRAULIC MOTORS



T E C H N I C A L C A T A L O G



MHP MOTORS

The new MHP20 and MHP27 hydraulic motors represent the keystone of the High performance system proposed by Poclair Hydraulics.

Thanks to their innovative design, the MHP20 and MHP27 motors will offer superior performances (higher speed and power, working pressure of 500 bar) compared to conventional cam-lobe motors. These characteristics make these components suitable for any applications requiring highly performing hydraulic drives, such as agricultural machines, drilling rigs or industrial applications.

But besides their performance, the MHP20 and MHP27 motors will also allow improvement of the global efficiency of the transmission resulting in lower fuel consumption for the machine, while ensuring higher robustness and reliability, which are required for the most demanding applications.

From
1 400 cc
to **3 500 cc**

Up to
520 rpm

Up to
24 kN.m

Up to
280 kW

Up to
500 bar

Up to
4 speeds



HIGH PERFORMANCE
HIGH PERFORMANCE



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Model code Modularity
Wheel motor
Wheel motor +C27™
Wheel motor +P20/P27™
Wheel motor +S20™
Shaft motor
Shaft motor +P27™
Brakes
Installation
Options



MHP20

		C				7 7 7				8 8 8				9 9 9			
Max. pressure		bar [PSI]				500 [7 252] *				500 [7 252] *				500 [7 252] *			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1C Distribution	Displacement	cm ³ /rev [in ³ /rev.]	1 416 [86.4]				1 630 [99.5]							1 821 [111.1]			
	Max. speed	rpm	505				420							395			
	Max. power	kW [HP]	200 [268]				185 [248]							178 [239]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	2 254 [1146]				2 594 [1319]							2 898 [1474]			
2C Distribution (8/3) sym.	Displacement	cm ³ /rev [in ³ /rev.]	1 416 [86.4]	531 [32.4]			1 630 [99.5]	611 [37.3]					1 821 [111.1]	683 [41.7]			
	Max. speed	rpm	420	520			350	430					330	410			
	Max. power (preferred direction)	kW [HP]	190 [255]	160 [215]			180 [241]	155 [207]					175 [235]	150 [201]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	2 254 [1 146]	845 [430]			2 594 [1 319]	972 [494]					2 898 [1 474]	1 087 [553]			
3C Distribution (8/5/3)	Displacement	cm ³ /rev [in ³ /rev.]	1 416 [86.4]	885 [54.0]	531 [32.4]		1 630 [99.5]	1 019 [62.2]	611 [37.3]				1 821 [111.1]	1 138 [69.4]	683 [41.7]		
	Max. speed	rpm	380	440	480		320	365	400				300	350	380		
	Max. power (preferred direction)	kW [HP]	175 [235]	165 [221]	155 [208]		165 [221]	155 [208]	145 [194]				160 [215]	150 [201]	140 [188]		
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	2 254 [1 146]	1 409 [717]	845 [430]		2 594 [1 319]	1 622 [825]	972 [494]				2 898 [1 474]	1 811 [921]	1 087 [553]		
3C Distribution (8/5/2)	Displacement	cm ³ /rev [in ³ /rev.]	1 416 [86.4]	885 [54.0]	354 [21.6]		1 630 [99.5]	1 019 [62.2]	408 [24.9]				1 821 [111.1]	1 138 [69.4]	455 [27.8]		
	Max. speed	rpm	380	435	485		320	365	405				300	345	380		
	Max. power (preferred direction)	kW [HP]	175 [235]	165 [221]	135 [181]		165 [221]	155 [208]	130 [174]				160 [215]	150 [201]	125 [168]		
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	2 254 [1 146]	1 409 [717]	563 [286]		2 594 [1 319]	1 622 [825]	649 [330]				2 898 [1 474]	1 811 [921]	724 [368]		
4C Distribution (8/6/4/2)	Displacement	cm ³ /rev [in ³ /rev.]	1 416 [86.4]	1062 [64.8]	708 [43.2]	354 [21.6]	1 630 [99.5]	1 223 [74.6]	815 [49.7]	408 [24.9]			1 821 [111.1]	1 365 [83.3]	910 [55.5]	455 [27.8]	
	Max. speed	rpm	342	374	405	435	302	332	359	386			273	300	326	350	
	Max. power (preferred direction)	kW [HP]	175 [235]	170 [228]	160 [215]	135 [181]	165 [221]	160 [214]	150 [201]	130 [174]			160 [215]	155 [207]	145 [194]	125 [168]	
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	2 254 [1 146]	1 690 [859]	1 127 [573]	563 [286]	2 594 [1 319]	1 946 [990]	1 296 [660]	649 [330]			2 898 [1 474]	2 172 [1 105]	1 448 [736]	724 [368]	

- 1** 1-displacement **2** 2-displacement **3** 3-displacement **4** 4-displacement

* Max. pressure of 4C Distribution is 450 bar [6 526] PSI.



The maximum motor speed can be impacted by the type of bearing support. For a precise calculation, please consult your Poclain Hydraulics application engineer.



The maximum motor power is obtained at maximum speed. In non-preferred rotation direction of 2/3/4-displacement, the maximum power is reduced. For a precise calculation, please consult your Poclain Hydraulics application engineer.



CHARACTERISTICS

		C				0 0 0				1 1 1				2 2 2			
Max. pressure		bar [PSI]				500 [7 252] *				500 [7 252] *				500 [7 252] *			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1C Distribution	Displacement	cm³/rev [in³/rev.]	2 029 [123.8]				2 228 [135.9]							2 427 [148.1]			
	Max. speed	rpm	345				325							290			
	Max. power	kW [HP]	170 [228]				160 [215]							150 [201]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 229 [1 642]				3 546 [1 803]							3 863 [1 964]			
2C Distribution (8/3) sym.	Displacement	cm³/rev [in³/rev.]	2 029 [123.8]	761 [46.4]			2 228 [135.9]	836 [51.0]					2 427 [148.1]	910 [55.5]			
	Max. speed	rpm	285	355			270	340					240	300			
	Max. power (preferred direction)	kW [HP]	160 [215]	140 [188]			155 [208]	135 [181]					140 [188]	125 [168]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 229 [1 642]	1 211 [616]			3 546 [1 803]	1 331 [677]					3 863 [1 964]	1 448 [736]			
3C Distribution (8/5/3)	Displacement	cm³/rev [in³/rev.]	2 029 [123.8]	1 268 [77.4]	761 [46.4]		2 228 [135.9]	1 393 [85.0]	836 [51.0]				2 427 [148.1]	1 517 [92.6]	910 [55.5]		
	Max. speed	rpm	260	300	325		245	285	315				220	255	280		
	Max. power (preferred direction)	kW [HP]	145 [194]	140 [188]	130 [174]		140 [188]	135 [181]	125 [168]				130 [174]	125 [168]	115 [154]		
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 229 [1 642]	2 018 [1 026]	1 211 [616]		3 546 [1 803]	2 217 [1 127]	1 331 [677]				3 863 [1 964]	2 414 [1 228]	1 448 [736]		
3C Distribution (8/5/2)	Displacement	cm³/rev [in³/rev.]	2 029 [123.8]	1 268 [77.4]	507 [30.9]		2 228 [135.9]	1 393 [85.0]	557 [33.9]				2 427 [148.1]	1 517 [92.6]	607 [37.0]		
	Max. speed	rpm	260	300	325		245	285	315				220	255	280		
	Max. power (preferred direction)	kW [HP]	145 [194]	140 [188]	115 [154]		140 [188]	135 [181]	110 [148]				130 [174]	125 [168]	105 [141]		
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 229 [1 642]	2 018 [1 026]	807 [1 211]		3 546 [1 803]	2 217 [1 127]	886 [451]				3 863 [1 964]	2 414 [1 228]	966 [491]		
4C Distribution (8/6/4/2)	Displacement	cm³/rev [in³/rev.]	2 029 [123.8]	1 522 [77.4]	1 014 [30.9]	507 [30.9]	2 228 [135.9]	1 671 [85.0]	1 114 [33.9]	557 [33.9]			2 427 [148.1]	1 821 [92.6]	1 214 [37.0]	607 [37.0]	
	Max. speed	rpm	247	272	295	317	227	249	271	291			209	230	250	269	
	Max. power (preferred direction)	kW [HP]	145 [194]	142 [190]	135 [181]	115 [154]	140 [188]	138 [185]	130 [174]	110 [148]			130 [174]	128 [172]	120 [161]	105 [141]	
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 229 [1 642]	2 422 [1 232]	1 614 [821]	807 [410]	3 546 [1 803]	2 659 [1 352]	1 773 [902]	886 [451]			3 863 [1 964]	2 898 [1 474]	1 932 [982]	966 [491]	

- 1** 1-displacement
- 2** 2-displacement
- 3** 3-displacement
- 4** 4-displacement

* Max. pressure of 4C Distribution is 450 bar [6 526] PSI.



The maximum motor speed can be impacted by the type of bearing support. For a precise calculation, please consult your Poclain Hydraulics application engineer.



The maximum motor power is obtained at maximum speed. In non-preferred rotation direction of 2/3/4-displacement, the maximum power is reduced. For a precise calculation, please consult your Poclain Hydraulics application engineer.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options



MHP27

		7 7 7				8 8 8				9 9 9				0 0 0				
Max. pressure	bar [PSI]	500 [7 252] *				500 [7 252] *				500 [7 252] *				500 [7 252] *				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1C Distribution	Displacement	cm³/rev [in³/rev.]	1 893 [115.5]				2 179 [132.9]				2 434 [148.5]				2 712 [165.5]			
	Max. speed	rpm	340				310				280				245			
	Max. power	kW [HP]	280 [375]				250 [335]				230 [308]				210 [282]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 013 [1 532]				3 468 [1 764]				3 874 [1 970]				4 316 [2 195]			
2C Distribution (8/3) sym.	Displacement	cm³/rev [in³/rev.]	1 893 [115.5]	710 [43.3]			2 179 [132.9]	817 [49.9]			2 434 [148.5]	913 [55.7]			2 712 [165.5]	1 017 [62.1]		
	Max. speed	rpm	290	345			265	320			235	285			205	250		
	Max. power (preferred direction)	kW [HP]	230 [308]	195 [261]			220 [295]	195 [261]			210 [282]	185 [248]			200 [268]	175 [235]		
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 013 [1 532]	1 130 [575]			3 468 [1 764]	1 300 [661]			3 874 [1 970]	1 453 [739]			4 316 [2 195]	1 619 [823]		
3C Distribution (8/5/3)	Displacement	cm³/rev [in³/rev.]	1 893 [115.5]	1 183 [72.2]	710 [43.3]		2 179 [132.9]	1 362 [83.1]	817 [49.9]		2 434 [148.5]	1 521 [92.8]	913 [55.7]		2 712 [165.5]	1 695 [103.4]	1 017 [62.1]	
	Max. speed	rpm	265	300	325		240	275	295		215	250	265		190	215	230	
	Max. power (preferred direction)	kW [HP]	215 [288]	200 [268]	185 [248]		205 [275]	195 [261]	185 [248]		195 [261]	185 [248]	175 [235]		185 [248]	175 [235]	160 [215]	
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 013 [1 532]	1 883 [958]	1 130 [575]		3 468 [1 764]	2 168 [1 102]	1 300 [661]		3 874 [1 970]	2 421 [1 231]	1 453 [739]		4 316 [2 195]	2 698 [1 372]	1 619 [823]	
3C Distribution (8/5/2)	Displacement	cm³/rev [in³/rev.]	1 893 [115.5]	1 183 [72.2]	473 [28.9]		2 179 [132.9]	1 362 [83.1]	545 [33.3]		2 434 [148.5]	1 521 [92.8]	608 [37.1]		2 712 [165.5]	1 695 [103.4]	678 [41.4]	
	Max. speed	rpm	265	300	330		240	270	300		215	245	270		190	215	235	
	Max. power (preferred direction)	kW [HP]	215 [288]	200 [268]	125 [168]		205 [275]	195 [261]	125 [167]		195 [261]	185 [248]	125 [168]		185 [248]	175 [235]	125 [168]	
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 013 [1 532]	1 883 [958]	753 [383]		3 468 [1 764]	2 168 [1 102]	867 [441]		3 874 [1 970]	2 421 [1 231]	968 [492]		4 316 [2 195]	2 698 [1 372]	1 079 [549]	
4C Distribution (8/6/4/2)	Displacement	cm³/rev [in³/rev.]	1 893 [115.5]	1 420 [86.7]	946 [57.7]	473 [28.9]	2 179 [132.9]	1 634 [99.7]	1 090 [66.5]	545 [33.3]	2 434 [148.5]	1 825 [111.4]	1 217 [74.3]	608 [37.1]	2 712 [165.5]	2 034 [124.1]	1 356 [82.7]	678 [41.4]
	Max. speed	rpm	254	277	297	316	223	244	262	279	201	220	237	252	182	199	214	228
	Max. power (preferred direction)	kW [HP]	215 [288]	205 [275]	195 [261]	125 [168]	205 [275]	200 [268]	190 [255]	125 [168]	195 [261]	190 [255]	180 [241]	125 [168]	185 [248]	180 [241]	170 [228]	125 [168]
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	3 013 [1 532]	2 260 [1 149]	1 506 [766]	753 [383]	3 468 [1 764]	2 601 [1 323]	1 735 [882]	867 [441]	3 874 [1 970]	2 905 [1 477]	1 937 [985]	968 [492]	4 316 [2 195]	3 237 [1 646]	2 158 [1 097]	1 079 [549]

1 1-displacement **2** 2-displacement **3** 3-displacement **4** 4-displacement

* Max. pressure of 4C Distribution is 450 bar [6 526] PSI.



The maximum motor speed can be impacted by the type of bearing support. For a precise calculation, please consult your Poclain Hydraulics application engineer.



The maximum motor power is obtained at maximum speed. In non-preferred rotation direction of 2/3/4-displacement, the maximum power is reduced. For a precise calculation, please consult your Poclain Hydraulics application engineer.



CHARACTERISTICS

		C				1 1 1				2 2 2				3 3 3			
Max. pressure		bar [PSI]				500 [7 252] *				500 [7 252] *				500 [7 252] *			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1C Distribution	Displacement	cm ³ /rev [in ³ /rev.]	2 978 [181.7]				3 245 [198]				3 526 [215.2]						
	Max. speed	rpm	230				210				190						
	Max. power	kW [HP]	200 [268]				190 [255]				180 [241]						
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	4 740 [2 410]				5 165 [2 627]				5 612 [2 854]						
2C Distribution (8/3) sym.	Displacement	cm ³ /rev [in ³ /rev.]	2 978 [181.7]	1 117 [68.2]			3 245 [198]	1 217 [74.3]			3 526 [215.2]	1 322 [80.7]					
	Max. speed	rpm	195	235			180	215			165	195					
	Max. power (preferred direction)	kW [HP]	190 [255]	165 [221]			180 [241]	155 [208]			170 [228]	145 [194]					
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	4 740 [2 410]	1 778 [904]			5 165 [2 627]	1 937 [985]			5 612 [2 854]	2 104 [1 070]					
3C Distribution (8/5/3)	Displacement	cm ³ /rev [in ³ /rev.]	2 978 [181.7]	1 861 [113.6]	1 117 [68.2]		3 245 [198]	2 028 [123.8]	1 217 [74.3]		3 526 [215.2]	2 204 [134.5]	1 322 [80.7]				
	Max. speed	rpm	180	205	220		165	185	200		145	165	180				
	Max. power (preferred direction)	kW [HP]	175 [235]	170 [228]	155 [208]		165 [221]	155 [208]	145 [194]		150 [201]	145 [194]	135 [181]				
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	4 740 [2 410]	2 962 [1 506]	1 778 [904]		5 165 [2 627]	3 228 [1 642]	1 937 [985]		5 612 [2 854]	3 508 [1 784]	2 104 [1 070]				
3C Distribution (8/5/2)	Displacement	cm ³ /rev [in ³ /rev.]	2 978 [181.7]	1 861 [113.6]	745 [45.5]		3 245 [198]	2 028 [123.8]	811 [49.5]		3 526 [215.2]	2 204 [134.5]	881 [53.8]				
	Max. speed	rpm	175	200	220		160	185	200		145	165	185				
	Max. power (preferred direction)	kW [HP]	175 [235]	170 [228]	125 [168]		165 [221]	155 [208]	125 [168]		150 [201]	145 [194]	120 [161]				
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	4 740 [2 410]	2 962 [1 506]	1 186 [603]		5 165 [2 627]	3 228 [1 642]	1 291 [656]		5 612 [2 854]	3 508 [1 784]	1 402 [713]				
4C Distribution (8/6/4/2)	Displacement	cm ³ /rev [in ³ /rev.]	2 978 [181.7]	2 234 [136.3]	1 489 [90.9]	745 [45.5]	3 245 [198]	2 434 [148.5]	1 622 [98.9]	811 [49.5]	3 526 [215.2]	2 644 [161.3]	1 763 [107.6]	881 [53.8]			
	Max. speed	rpm	166	182	196	209	153	168	181	192	141	155	167	178			
	Max. power (preferred direction)	kW [HP]	185 [252]	180 [245]	170 [231]	125 [170]	175 [238]	172 [234]	162 [220]	125 [170]	150 [204]	150 [201]	140 [188]	120 [161]			
	Th. torque at 100 bar [1000 PSI]	Nm [lb.ft]	4 740 [2 410]	3 556 [1 808]	2 370 [1 205]	1 186 [603]	5 165 [2 627]	3 874 [1 970]	2 581 [1 313]	1 291 [657]	5 612 [2 854]	4 208 [2 140]	2 806 [1 427]	1 402 [713]			

- 1** 1-displacement
- 2** 2-displacement
- 3** 3-displacement
- 4** 4-displacement

* Max. pressure of 4C Distribution is 450 bar [6 526] PSI.



The maximum motor speed can be impacted by the type of bearing support. For a precise calculation, please consult your Poclain Hydraulics application engineer.



The maximum motor power is obtained at maximum speed. In non-preferred rotation direction of 2/3/4-displacement, the maximum power is reduced. For a precise calculation, please consult your Poclain Hydraulics application engineer.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

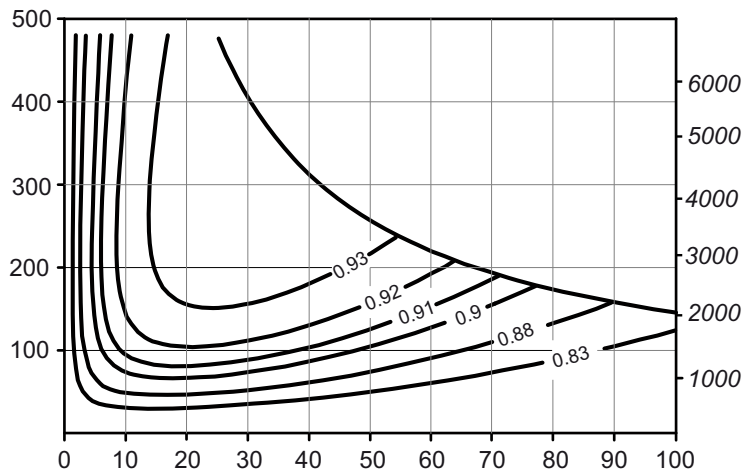
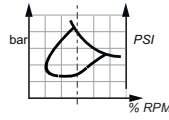
Options



MHP20 efficiency

Overall efficiency

Average values given for guidance for code 0 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C [122°F].



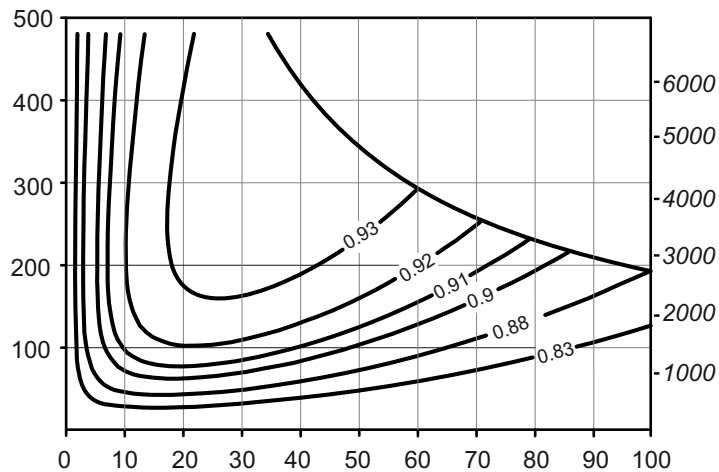
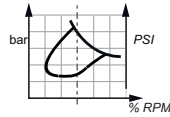
The starting torque is taken to be approximately 85% of the first value for available pressure.
For a precise calculation, consult your Poclain Hydraulics application engineer.



MHP27 efficiency

Overall efficiency

Average values given for guidance for code 0 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C [122°F].

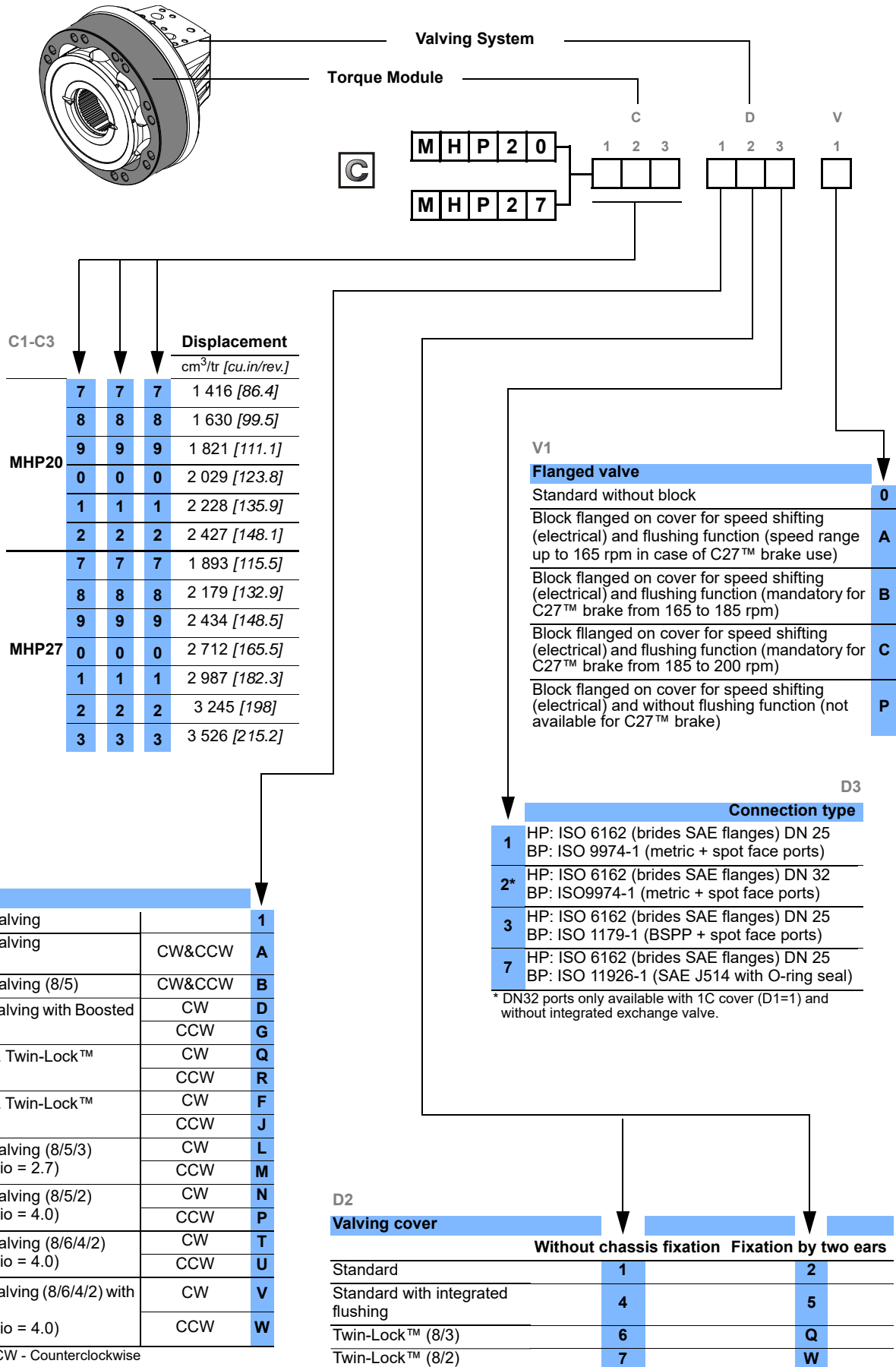


The starting torque is taken to be approximately 85% of the first value for available pressure. For a precise calculation, consult your Poclain Hydraulics application engineer.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options

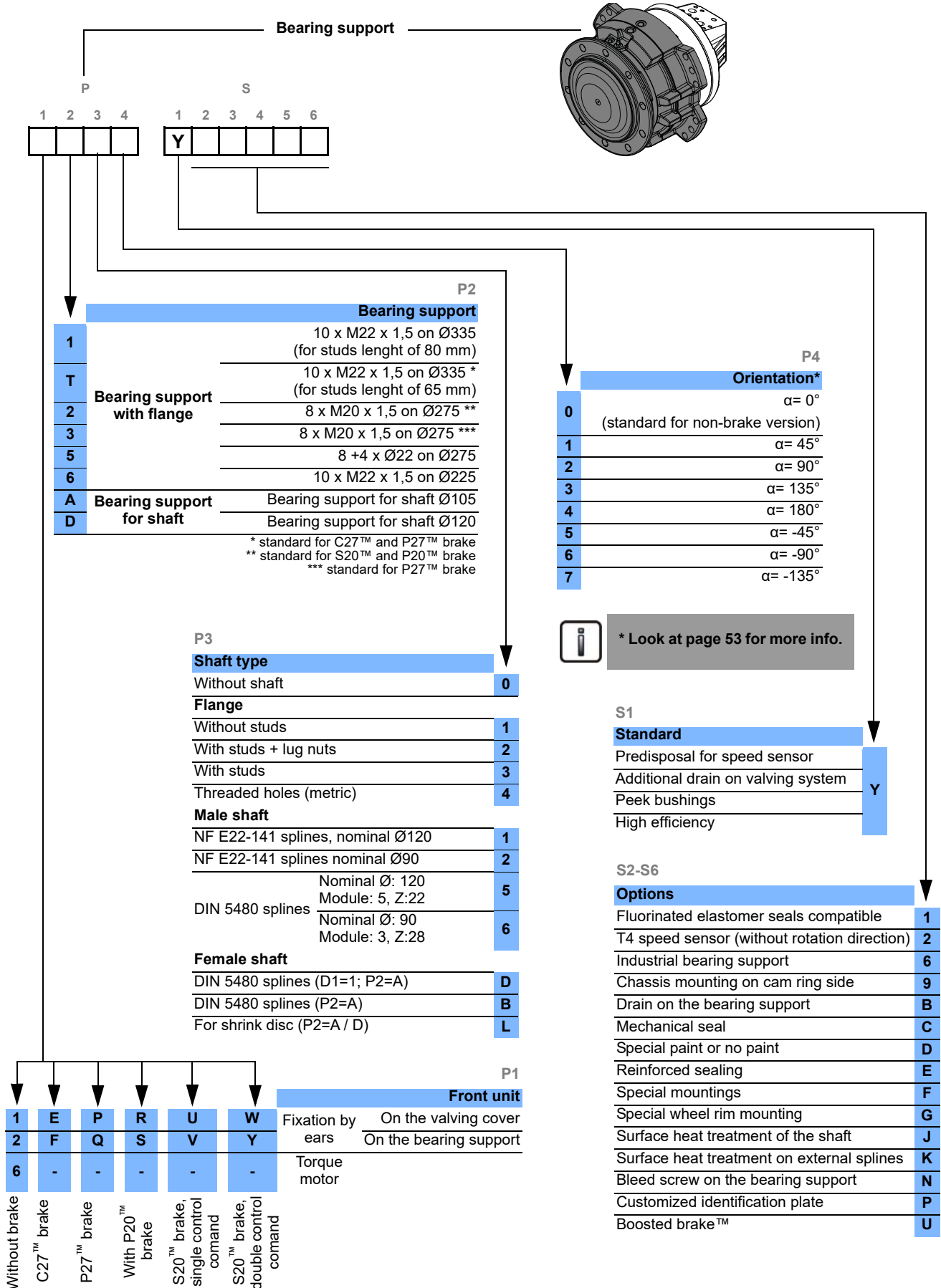


MODEL





CODE



Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

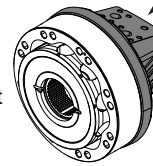
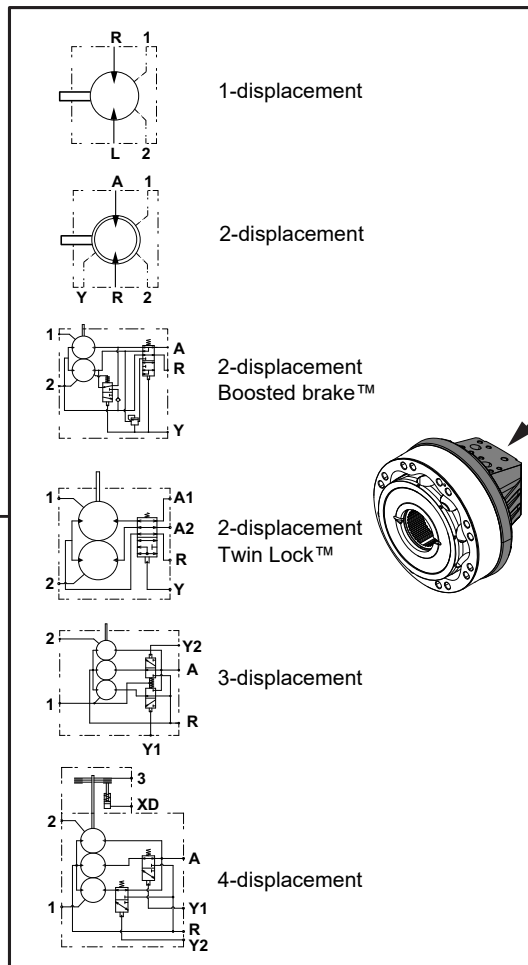
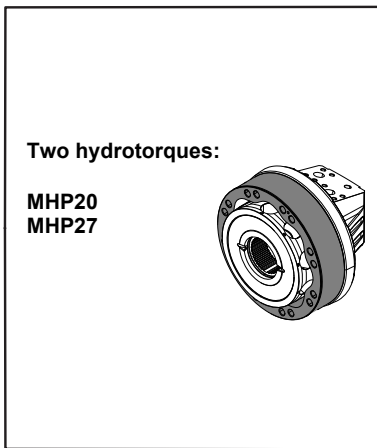
Brakes

Installation

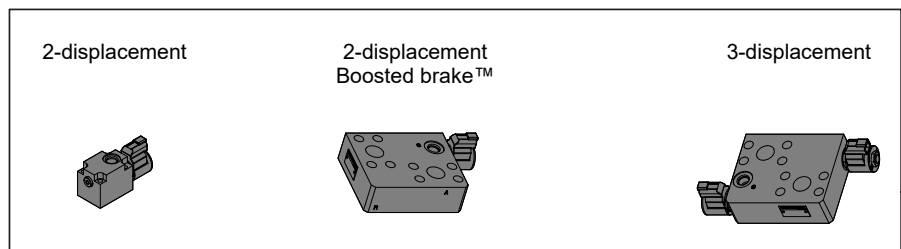
Options



MODUL

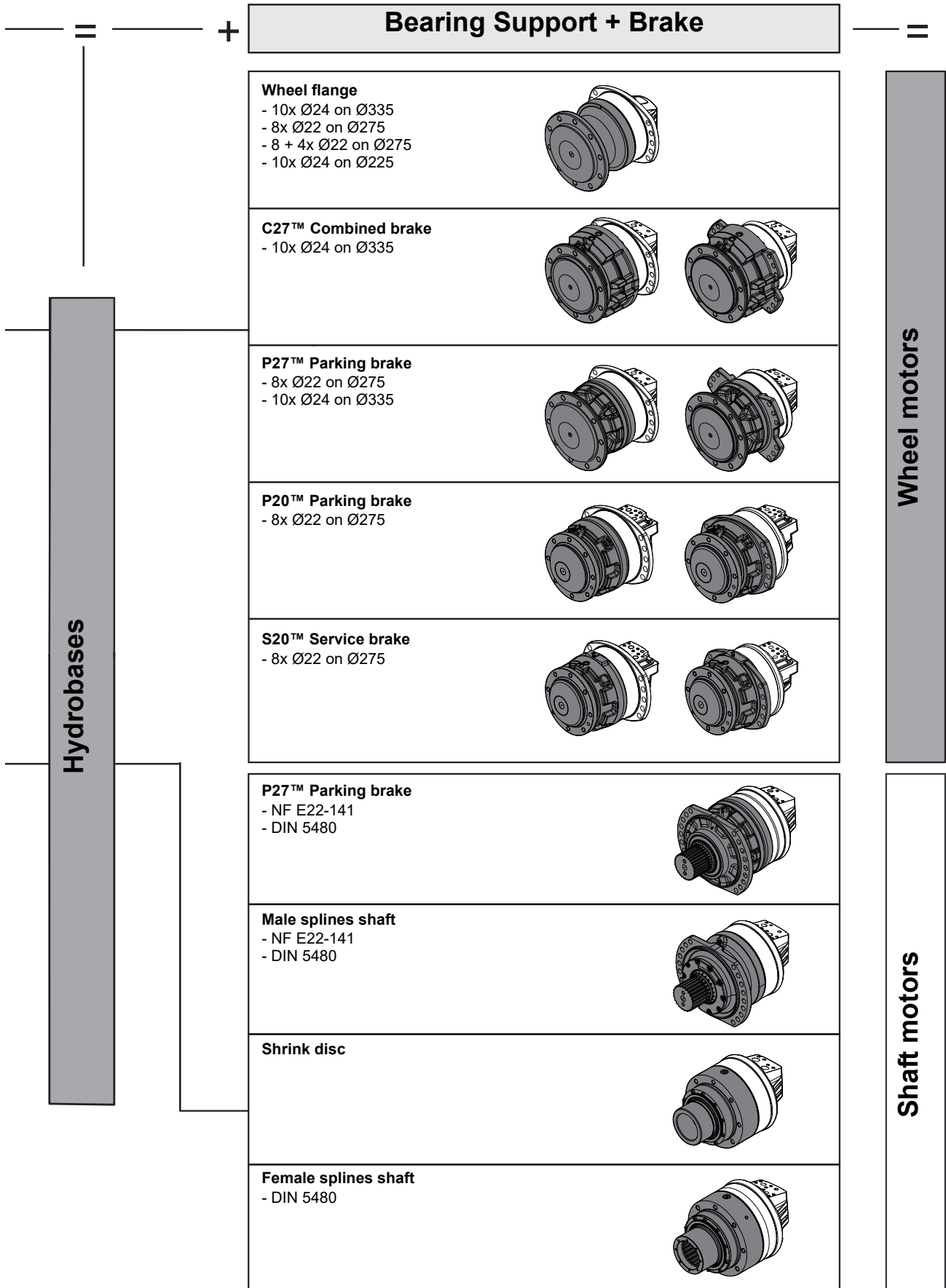


Flanged valve





ARITY

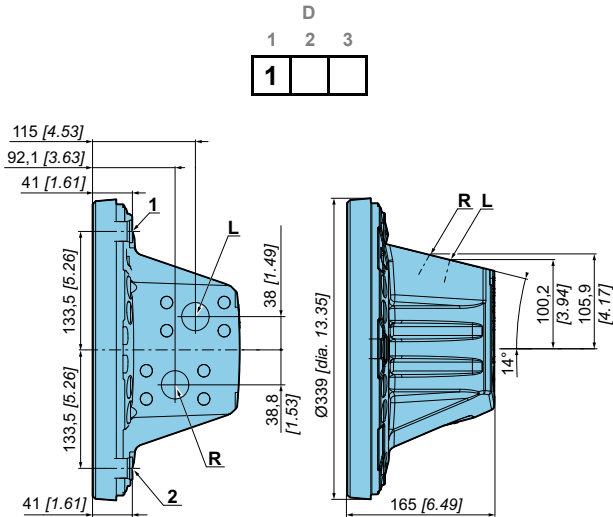


- Model code
- Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options

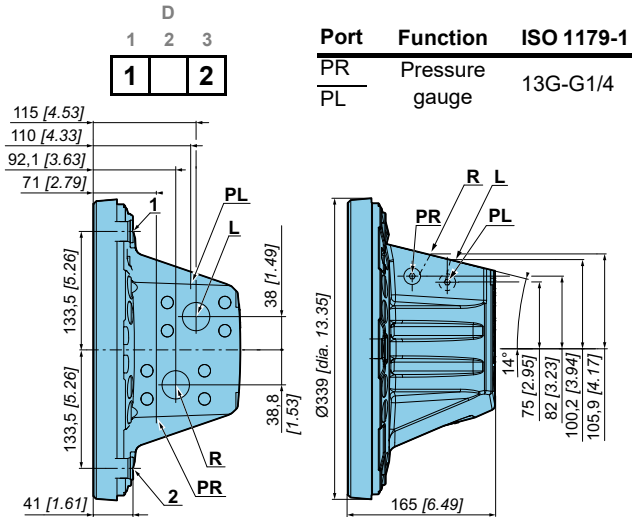


VALVING

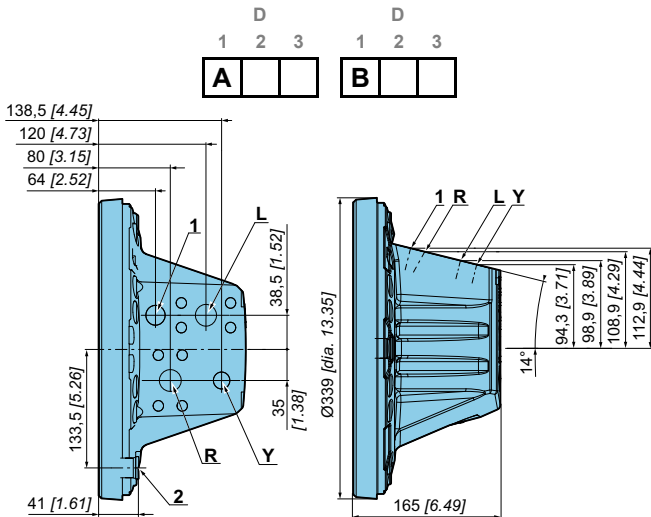
1-displacement valving



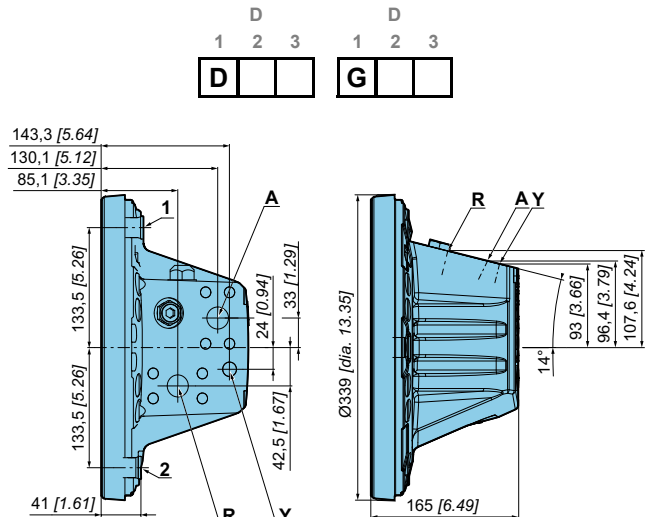
1-displacement industrial valving



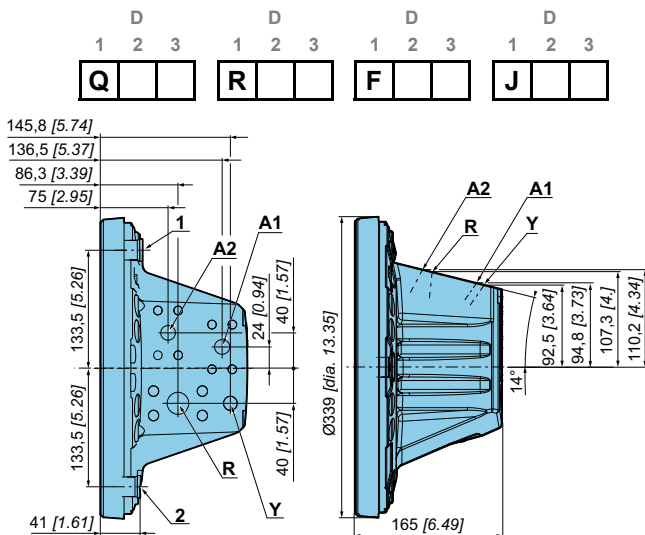
2-displacement valving (8/3 symmetrical), (8/5)



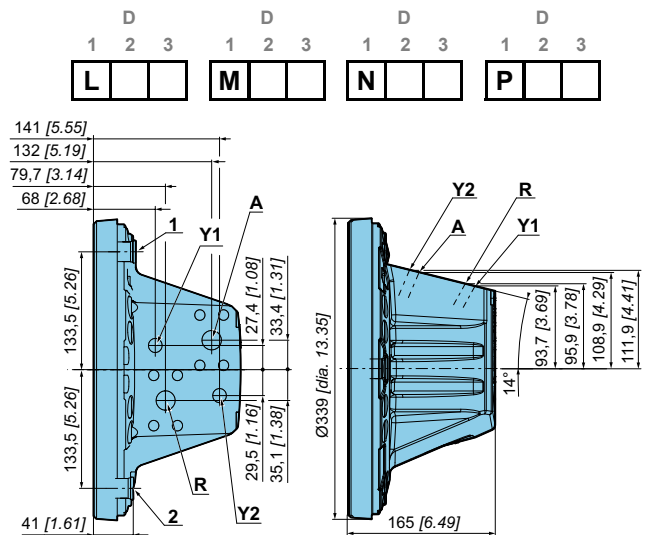
2-displacement valving with Boosted brake™ (8/3)



2-displacement valving with Twin-Lock™ valving (8/2), (8/3)



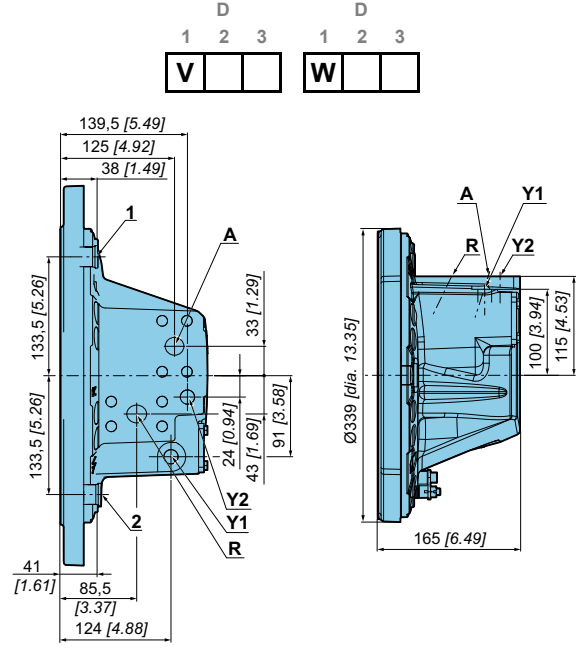
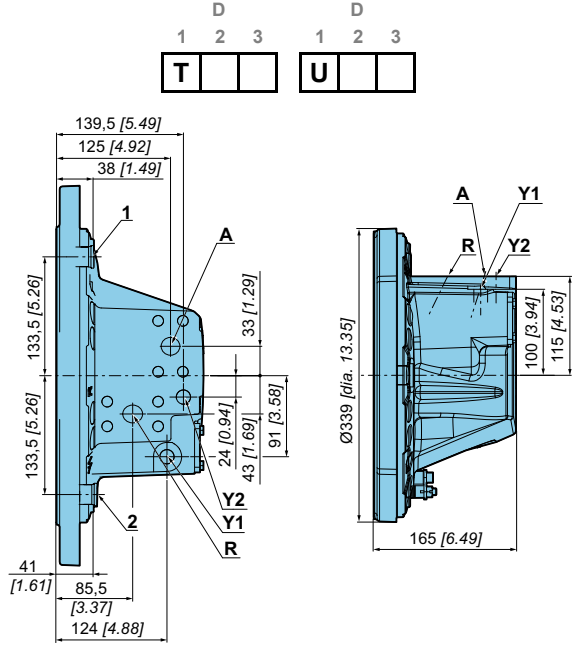
3-displacement valving (8/5/2), (8/5/3)





MODULARITY

4-displacement valving (8/6/4/2) | **4-displacement valving (8/6/4/2) with Boosted brake™**



Dimensions are identical for valving covers with or without fixation.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options



Methodology :

This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation. This document includes important comments concerning safety. They are indicated in the following way:



Safety comment.

This document also includes essential operating instructions for the product and general information. These are indicated in the following way:



Essential instructions.



General information.



Information on the model number.



Weight of component without oil.



Volume of oil.



Units.



Tightening torque.



Screws.



Information intended for Poclain-Hydraulics personnel.

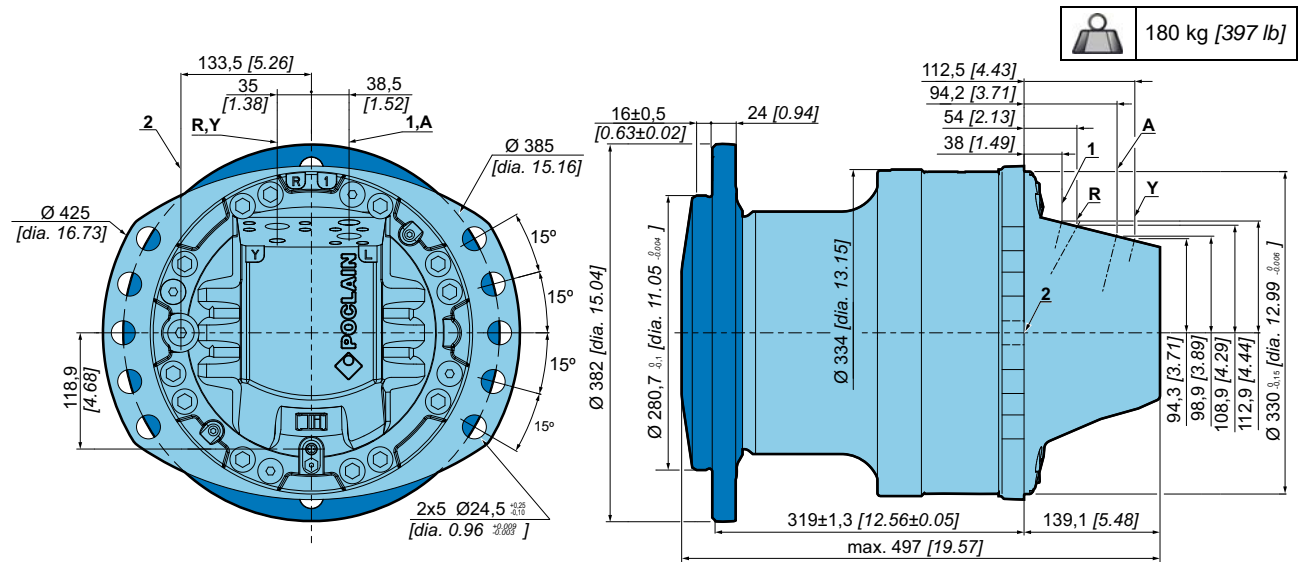
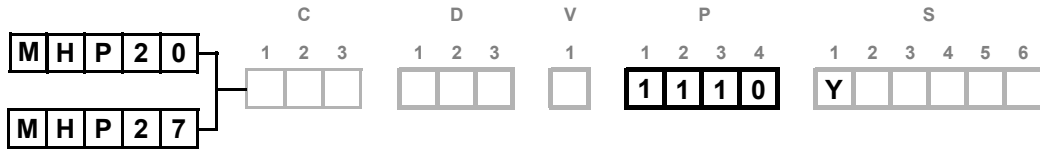
The views in this document are created using metric standards.
The dimensional data is given in mm and in inches (inches are given in brackets in italics).





WHEEL MOTOR

Dimensions for 1110 motor



See page 50 for detailed info about hydraulic connections.

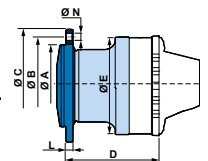


Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.

Support types




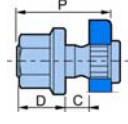
	A	B	C	D	E	N	Wheel rim mountings	L
	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]		mm [in]
1 1 1 1 0	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 382 [15,04 dia.]	319 [12,56]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	24 [0,94]
1 3 1 1 0	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	282,3 [11,11]	Ø 334 [13,15 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	14 [0,55]
1 5 1 1 0	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	282 [11,10]	Ø 334 [13,15 dia.]	Ø 22 [0,87 dia.]	(8+4) x M20x1.5	14 [0,55]
1 6 1 1 0	Ø 175,7 [6,92 dia.]	Ø 225 [8,86 dia.]	Ø 276 [10,87 dia.]	282 [11,10]	Ø 334 [13,15 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	14 [0,55]



- Model code
Modularity
- Wheel motor
- Wheel motor
+C27™
- Wheel motor
+P20/27™
- Wheel motor
+S20™
- Shaft motor
- Shaft motor
+P27™
- Brakes
- Installation
- Options



Studs

		P mm [in]	mm [in]	C max. mm [in]	D mm [in]	Class	
Various studs	M16 x 1.5	50 [1.97]	5 [0.20]		21.0 [0.83]		12.9
	M20 x 1.5	60 [2.36]			25.0 [0.98]		
	M20 x 1.5	70 [2.76]			26.0 [1.02]		
	M22 x 1.5	64 [2.52]					
	M22 x 1.5	80 [3.15]					
Screws	M16 x 1.5	-	-		23.0 [0.91]	10.9	



See generic installation motors N°B59689D.



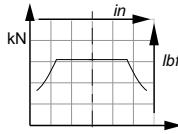
Load curves

Permissible radial loads

Test conditions :

Static : 0 tr/min [0 RPM] 0 bar [0 PSI]

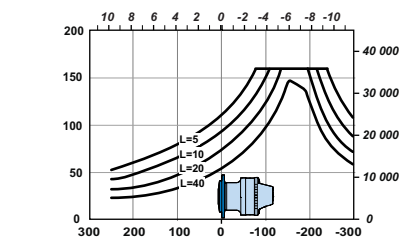
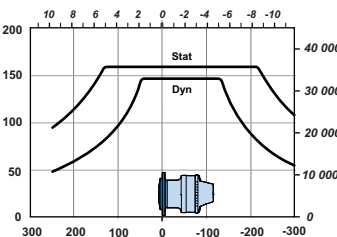
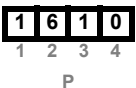
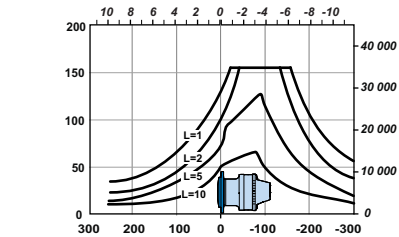
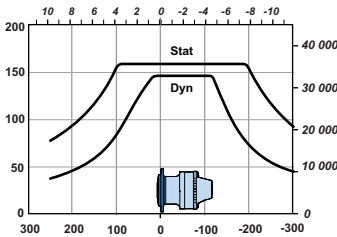
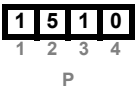
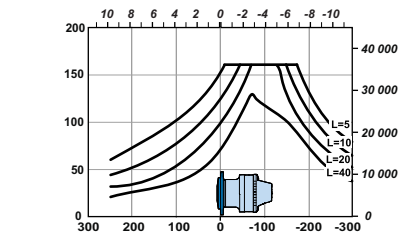
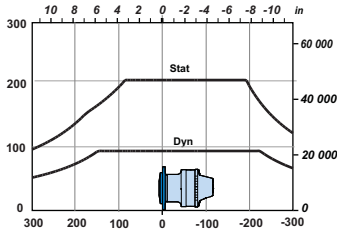
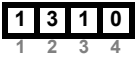
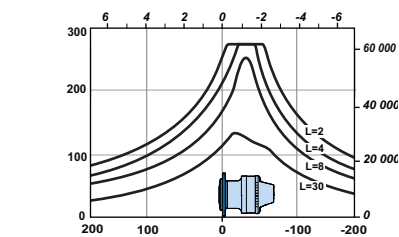
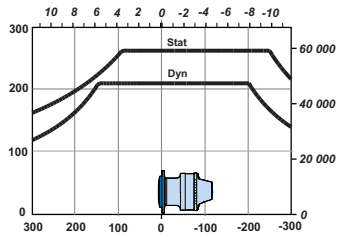
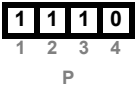
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



Service life of bearings

Test conditions :

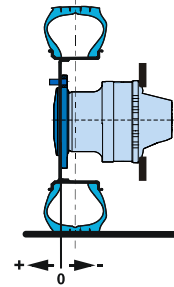
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclain Hydraulics application engineer.



Warn the end user in the user documentation to perform an inspection of the shaft after any abnormal shock at wheel.

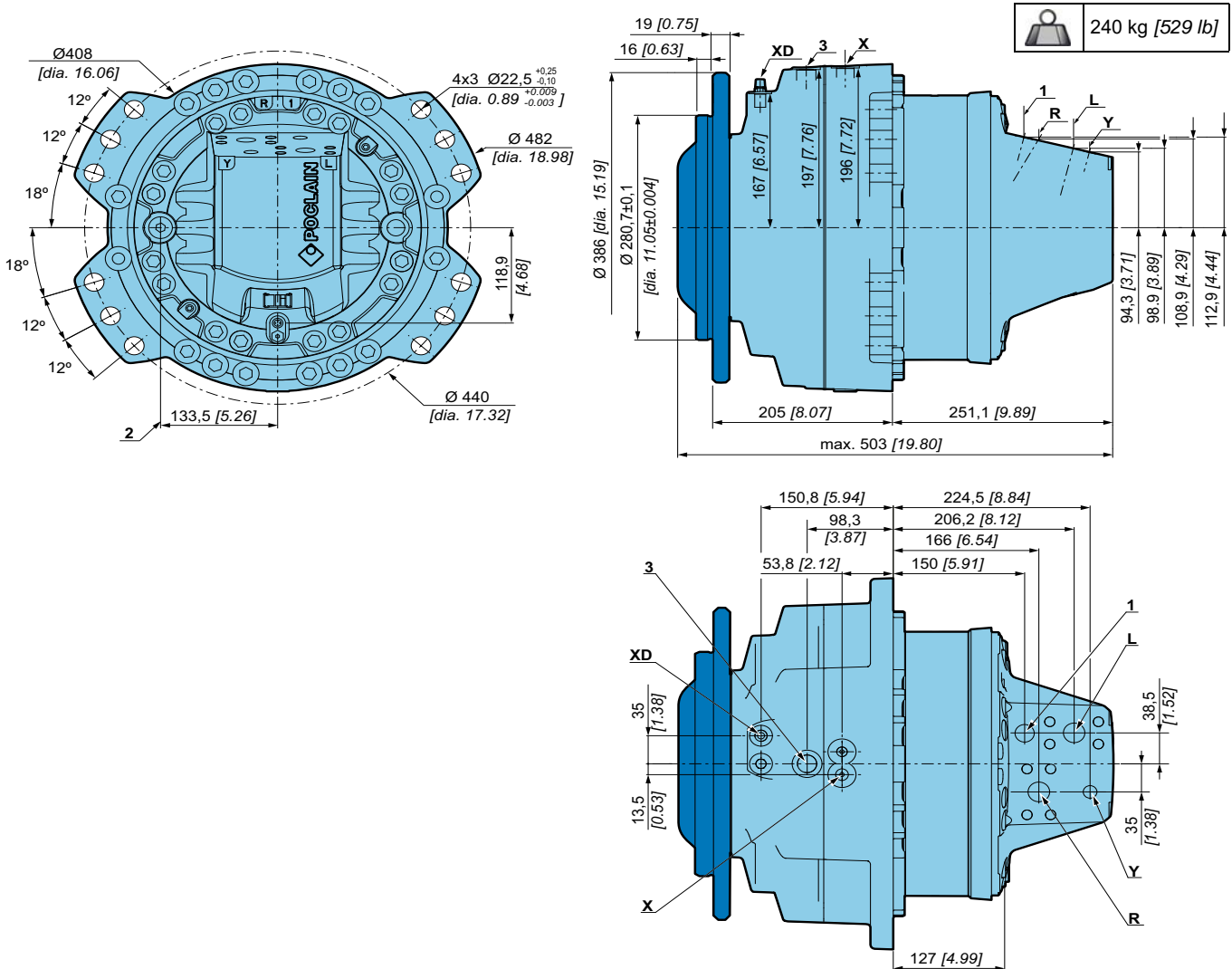
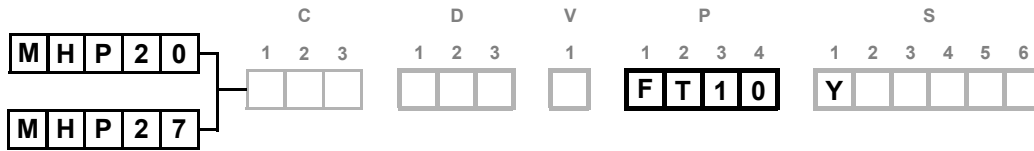


- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



WHEEL MOTOR WITH COMBINED BRAKE

Dimensions for FT10 motor



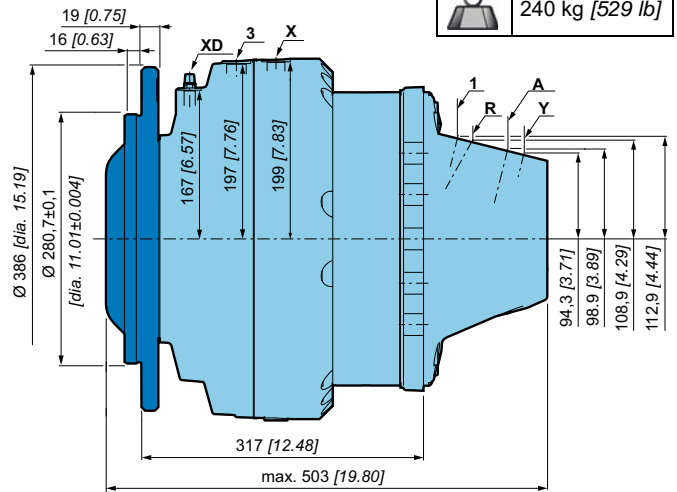
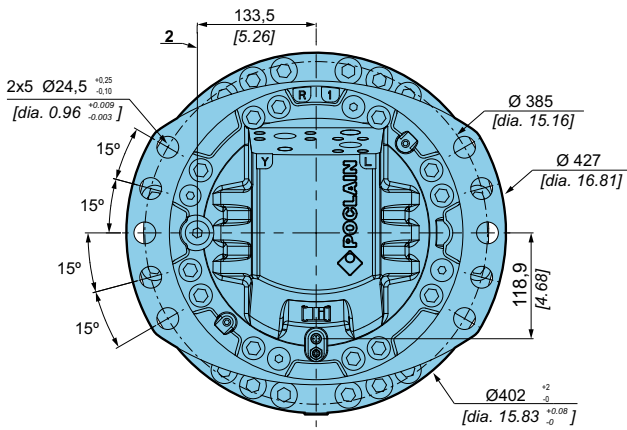
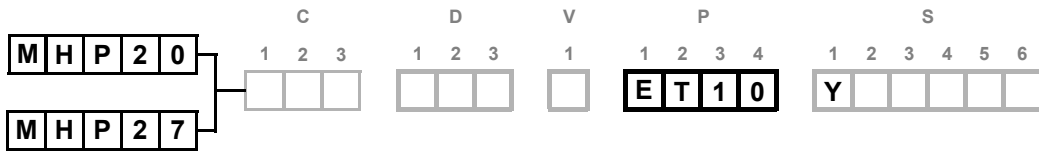
See page 50 for detailed info about hydraulic connections.



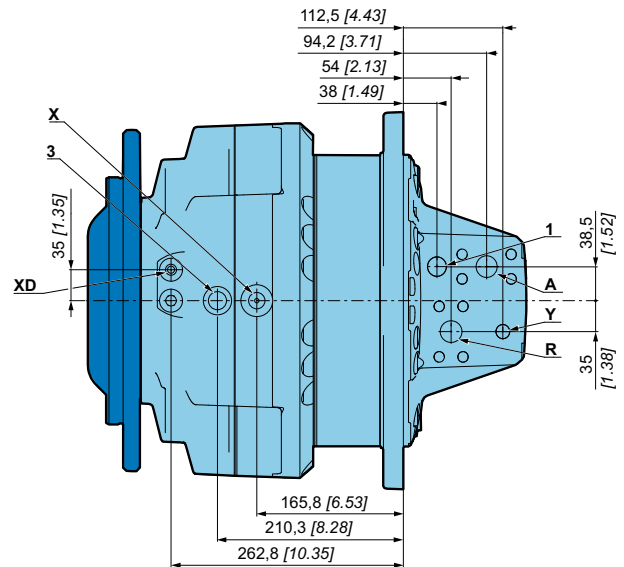
Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.



Dimensions for ET10 motor



240 kg [529 lb]



See page 50 for detailed info about hydraulic connections.



Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

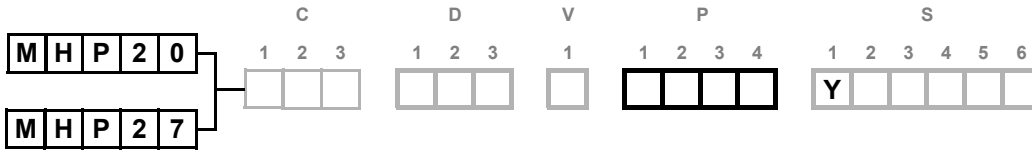
Brakes

Installation

Options



Support types (continued)



	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	N mm [in]	Wheel rim mountings	L mm [in]
 1 2 3 4 P	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 386 [15,20 dia.]	317 [12,48]	Ø 405 [15,94 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	19 [0,75]
		Also see "Brake" section (thumbnail opposite).						
 1 2 3 4 P	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 386 [15,20 dia.]	205 [8,07]	Ø 408 [16,06 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	19 [0,75]
		Also see "Brake" section (thumbnail opposite).						

Studs

Various studs		P mm [in]	C min. mm [in]	C max. mm [in]	D mm [in]		Class
	M22 x 1.5	64 [2,52]	5 [0,20]		26,0 [1,02]		12,9



See generic installation motors N°B59689D.



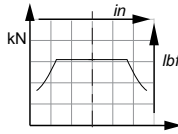
Load curves (continued)

Permissible radial loads

Test conditions :

Static : 0 tr/min [0 RPM] 0 bar [0 PSI]

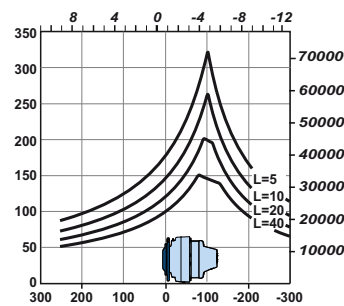
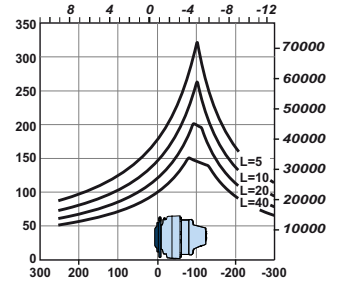
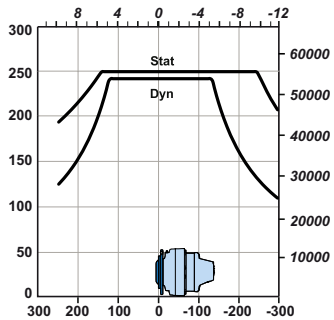
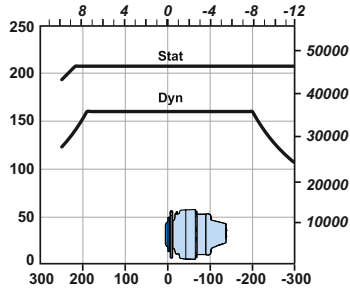
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



Service life of bearings

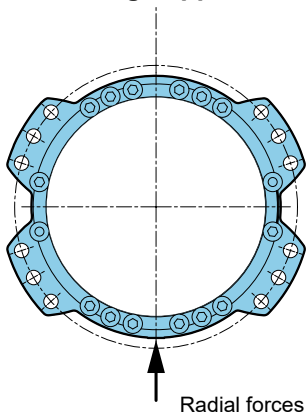
Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclain Hydraulics application engineer.

Brake bearing support orientation



Recommended orientation:
Radial forces to be oriented along the brake bearing support axis.



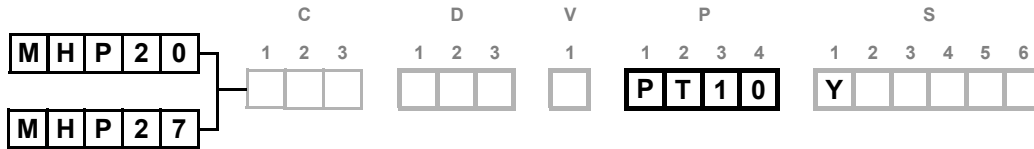
Warn the end user in the user documentation to perform an inspection of the shaft after any abnormal shock at wheel.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options

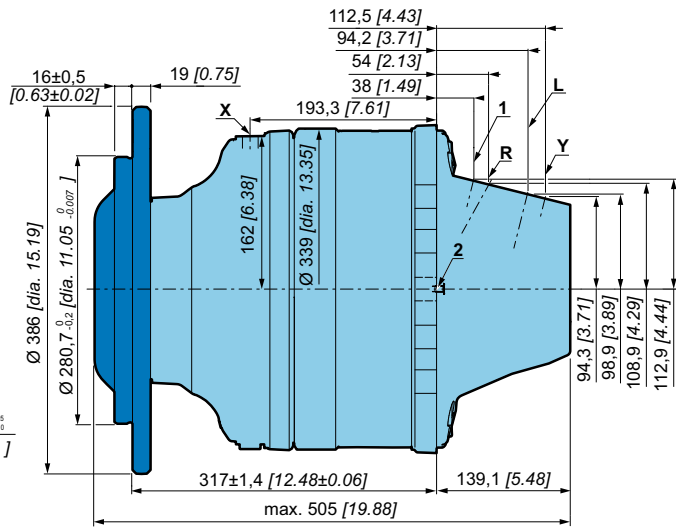
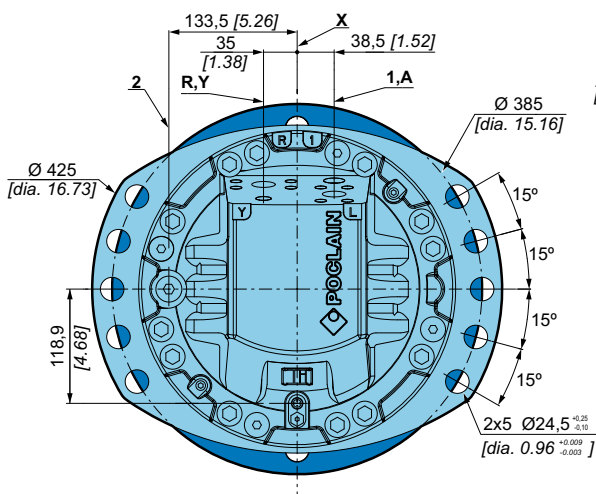


WHEEL MOTOR WITH PARKING BRAKE

Dimensions for PT10 motor



200 kg [441 lb]



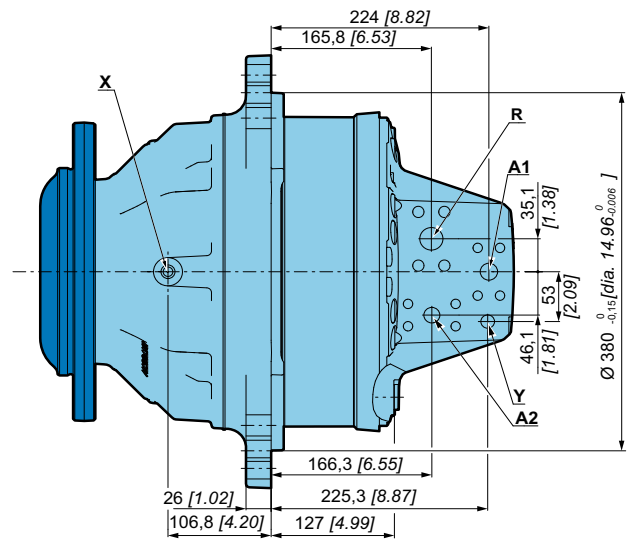
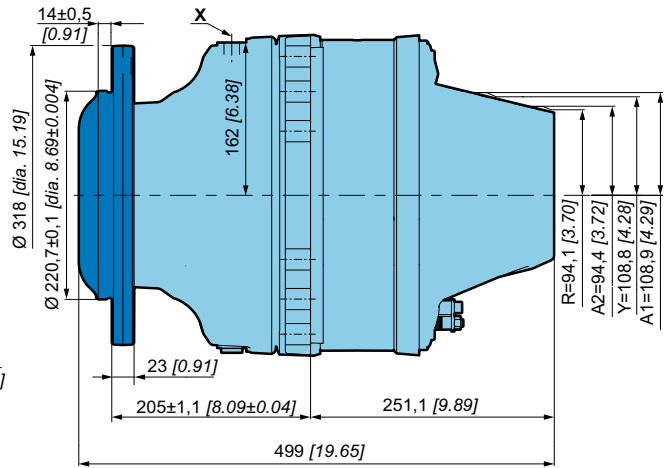
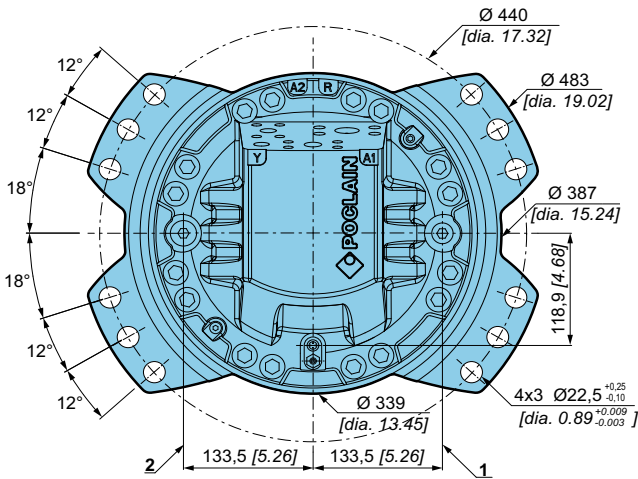
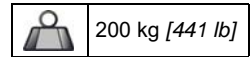
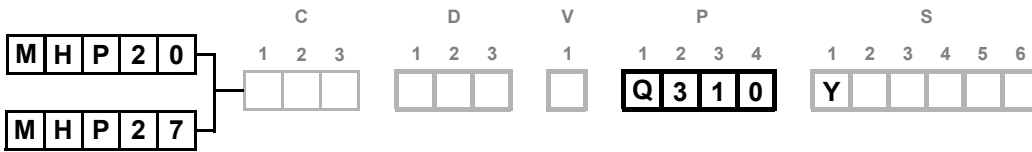
See page 50 for detailed info about hydraulic connections.



Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.



Dimensions for Q310 motor

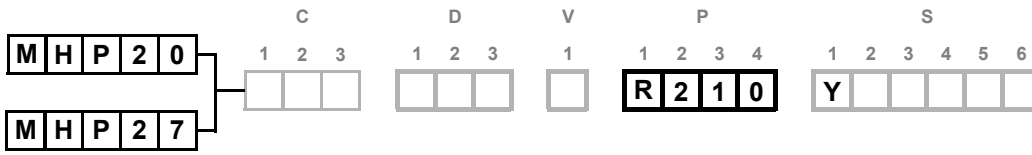


- See page 50 for detailed info about hydraulic connections.
- Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.

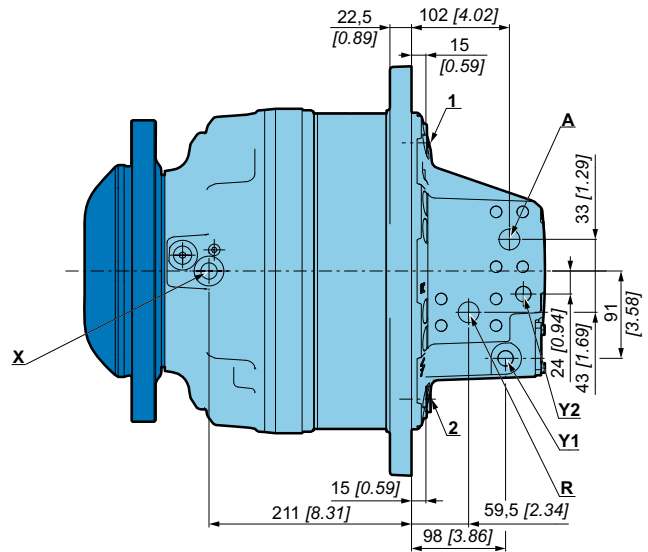
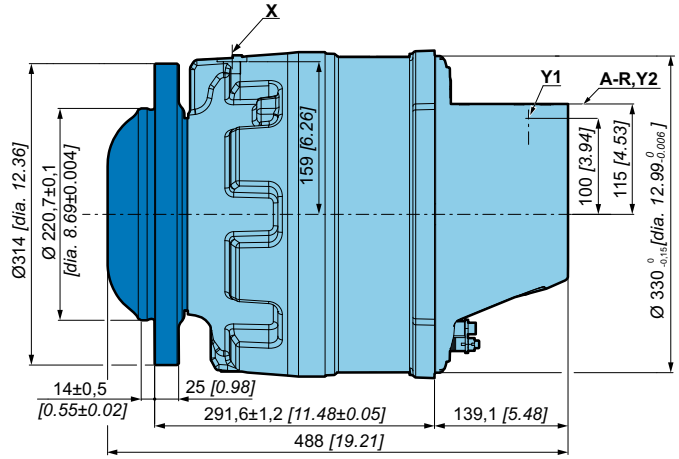
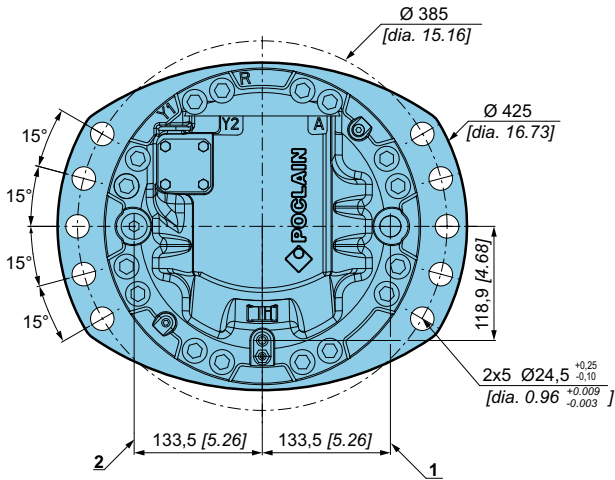
- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



Dimensions for R210 motor



200 kg [441 lb]



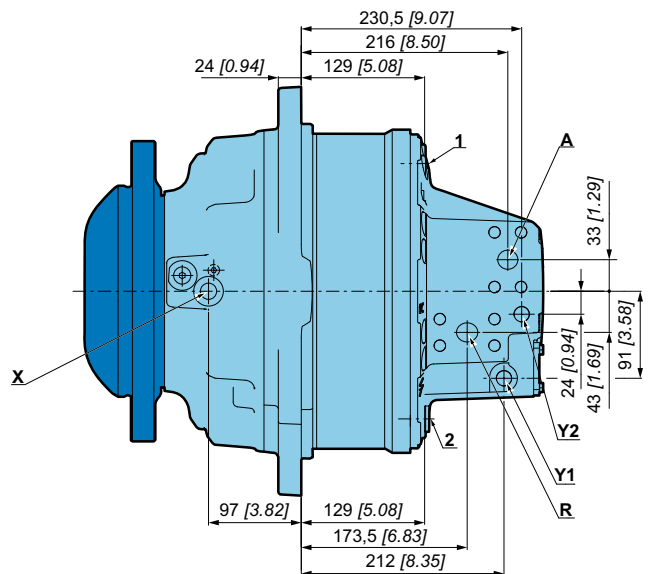
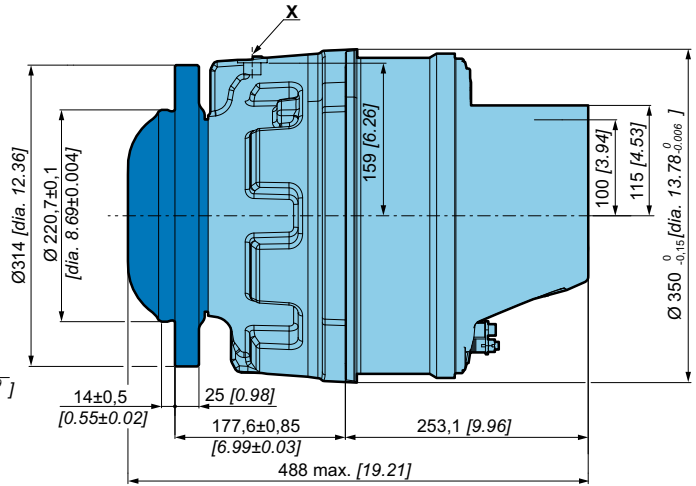
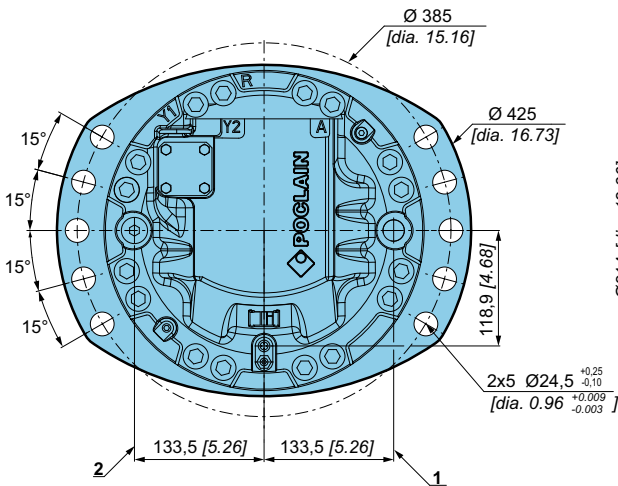
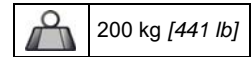
See page 50 for detailed info about hydraulic connections.



Motor configuration in 4-displacement valving, for 1/2/3-displacement valving configuration see page 14.



Dimensions for S210 motor



See page 50 for detailed info about hydraulic connections.



Motor configuration in 4-displacement valving, for 1/2/3-displacement valving configuration see page 14.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

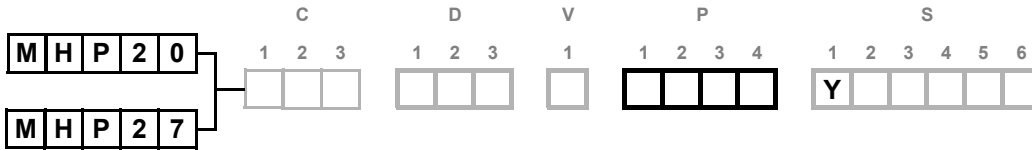
Brakes

Installation

Options



Support types (continued)



C	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	N mm [in]	Wheel rim mountings	L mm [in]
P T 1 0 1 2 3 4 P	Ø 280,7 [11,05 dia.]	Ø 335 [13,19 dia.]	Ø 381 [15,00 dia.]	317 [12,48]	Ø 339 [13,35 dia.]	Ø 24 [0,94 dia.]	10 x M22x1.5	19 [0,75]
Q 3 1 0 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 318 [12,52 dia.]	205 [8,07]	Ø 339 [13,35 dia.]	Ø 24 [0,94 dia.]	8 x M22x1.5	23 [0,91]
R 2 1 0 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	291,6 [11,48]	Ø 338 [13,31 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	25 [0,98]
S 2 1 0 1 2 3 4 P	Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	177,6 [6,99]	Ø 350 [13,78 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	25 [0,98]

Studs

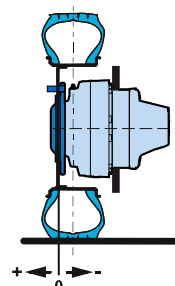
Various studs		P mm [in]	C m in. mm [in]	C max. mm [in]	D mm [in]		Class
	M22 x 1.5	64 [2,52]	5 [0,20]		26,0 [1,02]		12,9
	M20 x 1.5	86 [3,39]					



See generic installation motors N°B59689D.



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclain Hydraulics application engineer.





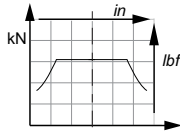
Load curves (continued)

Permissible radial loads

Test conditions :

Static : 0 tr/min [0 RPM] 0 bar [0 PSI]

Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque

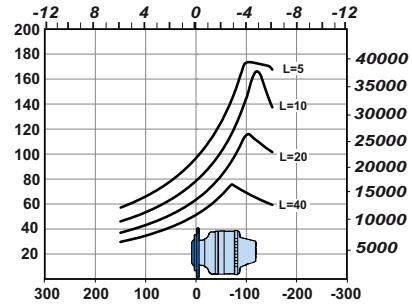
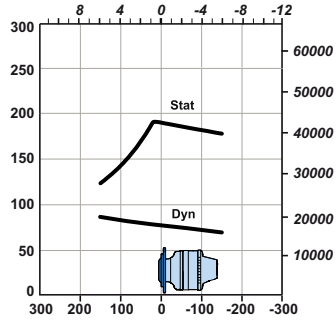


Service life of bearings

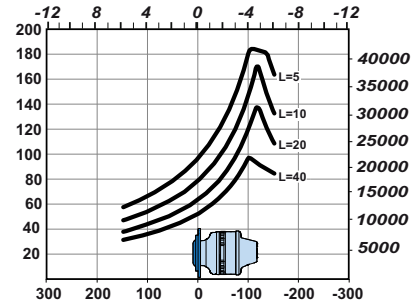
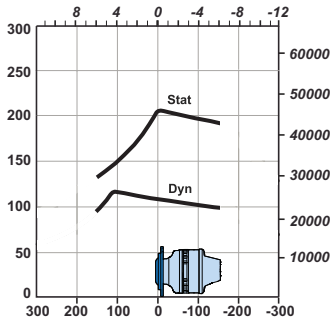
Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

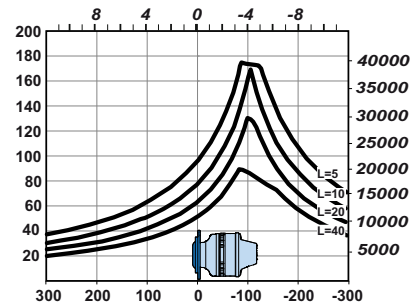
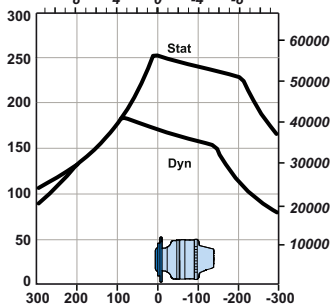
P T 1 0
1 2 3 4
P



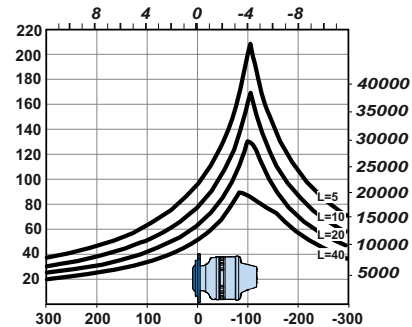
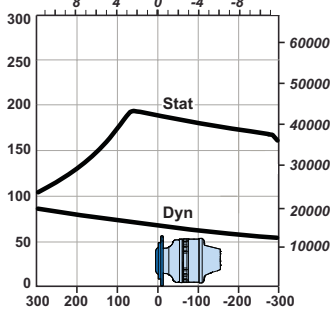
Q 3 1 0
1 2 3 4
P



R 2 1 0
1 2 3 4
P



S 2 1 0
1 2 3 4
P



Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

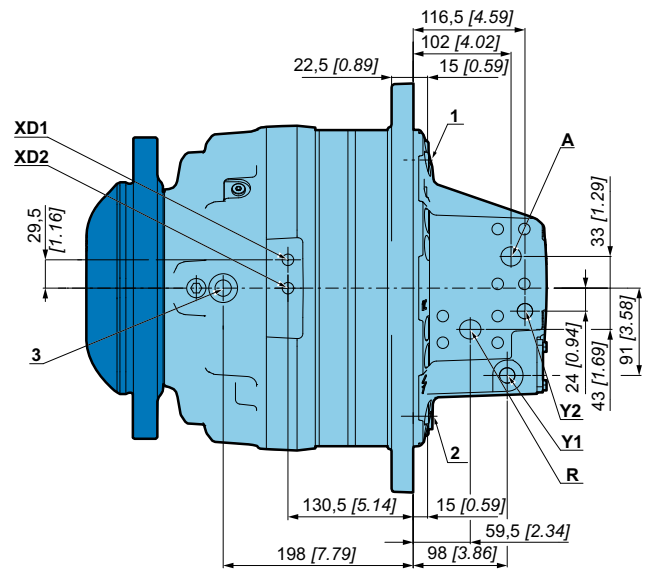
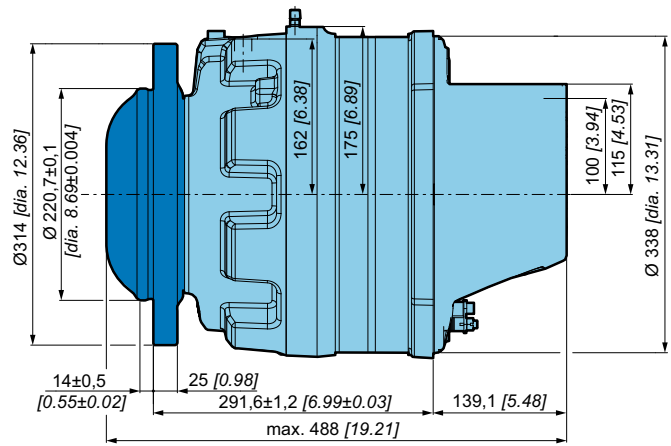
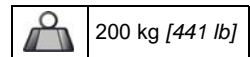
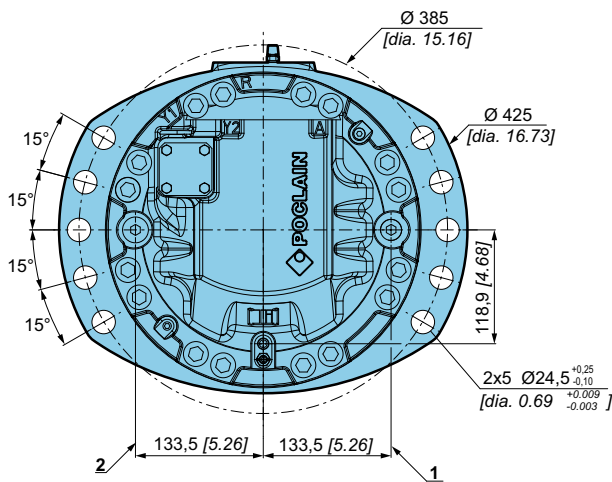
Installation

Options



WHEEL MOTOR WITH SERVICE BRAKE

Dimensions for W210 motor



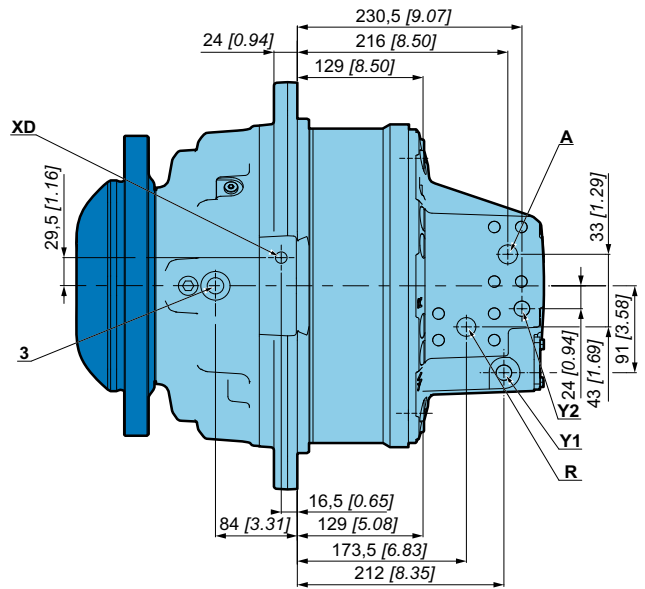
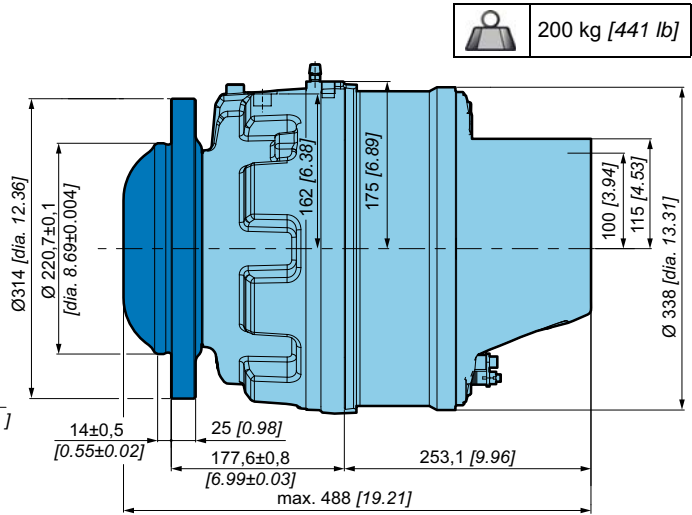
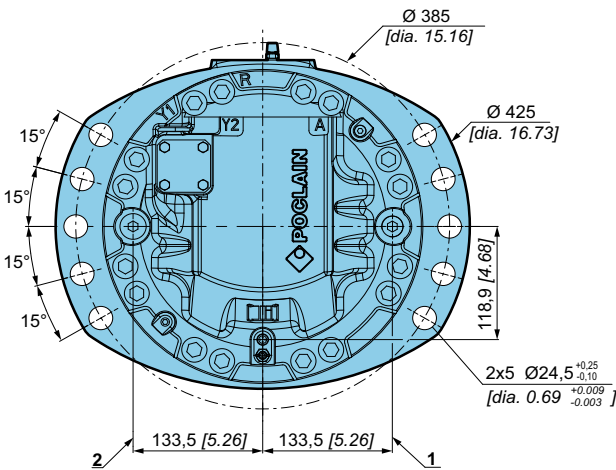
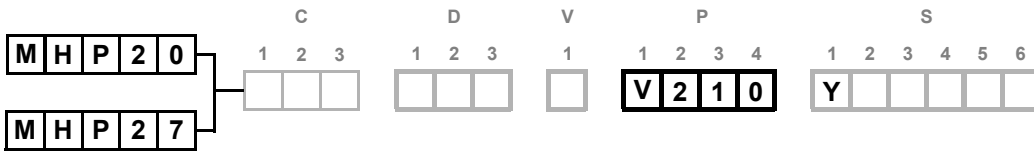
See page 50 for detailed info about hydraulic connections.



Motor configuration in 4-displacement valving, for 1/2/3-displacement valving configuration see page 14.



Dimensions for V210 motor



See page 50 for detailed info about hydraulic connections.



Motor configuration in 4-displacement valving, for 1/2/3-displacement valving configuration see page 14.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



Support types (continued)

		C			D			V	P				S																																		
		1	2	3	1	2	3	1	1	2	3	4	1	2	3	4	5	6																													
<table border="1"> <tr><td>M</td><td>H</td><td>P</td><td>2</td><td>0</td></tr> </table> <table border="1"> <tr><td>M</td><td>H</td><td>P</td><td>2</td><td>7</td></tr> </table>		M	H	P	2	0	M	H	P	2	7	<table border="1"> <tr><td> </td><td> </td><td> </td></tr> </table>						<table border="1"> <tr><td> </td><td> </td><td> </td></tr> </table>						<table border="1"> <tr><td> </td></tr> </table>		<table border="1"> <tr><td> </td><td> </td><td> </td><td> </td></tr> </table>								<table border="1"> <tr><td>Y</td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>						Y							
M	H	P	2	0																																											
M	H	P	2	7																																											
Y																																															
C	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	N mm [in]	Wheel rim mountings	L mm [in]																																							
<table border="1"> <tr><td>U</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>W</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table>	U	2	1	0	W	2	1	0	1	2	3	4	P				Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	291,6 [11,48]	Ø 338 [13,31 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	25 [0,98]																							
U	2	1	0																																												
W	2	1	0																																												
1	2	3	4																																												
P																																															
			Also see "Brake" section (thumbnail opposite).																																												
<table border="1"> <tr><td>V</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>Y</td><td>2</td><td>1</td><td>0</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td colspan="4">P</td></tr> </table>	V	2	1	0	Y	2	1	0	1	2	3	4	P				Ø 220,7 [8,69 dia.]	Ø 275 [10,83 dia.]	Ø 314 [12,36 dia.]	177,6 [6,99]	Ø 338 [13,31 dia.]	Ø 22 [0,87 dia.]	8 x M20x1.5	25 [0,98]																							
V	2	1	0																																												
Y	2	1	0																																												
1	2	3	4																																												
P																																															
			Also see "Brake" section (thumbnail opposite).																																												

Studs

Various studs		P mm [in]	C min. mm [in]	C max. mm [in]	D mm [in]		Class
	M20 x 1.5	86 [3,39]	5 [0,20]		26,0 [1,02]		12,9



See generic installation motors N°B59689D.



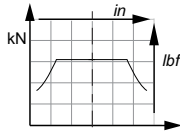
Load curves (continued)

Permissible radial loads

Test conditions :

Static : 0 tr/min [0 RPM] 0 bar [0 PSI]

Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



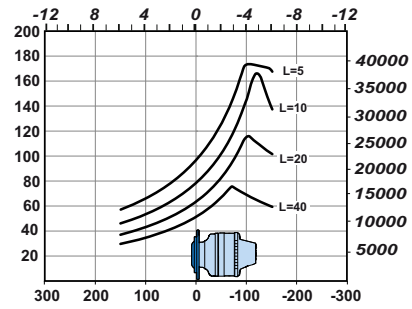
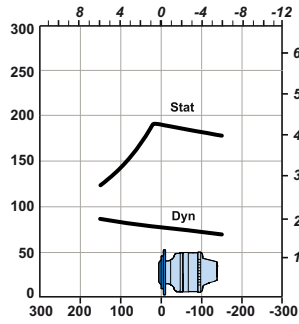
Service life of bearings

Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

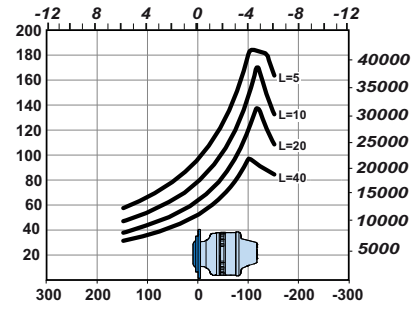
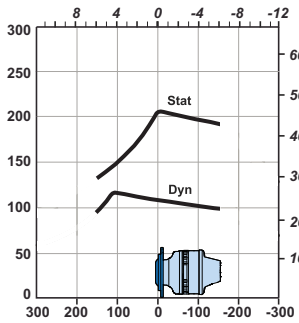
U	2	1	0
W	2	1	0
1	2	3	4

P

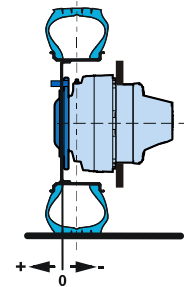


V	2	1	0
Y	2	1	0
1	2	3	4

P



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclain Hydraulics application engineer.



Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

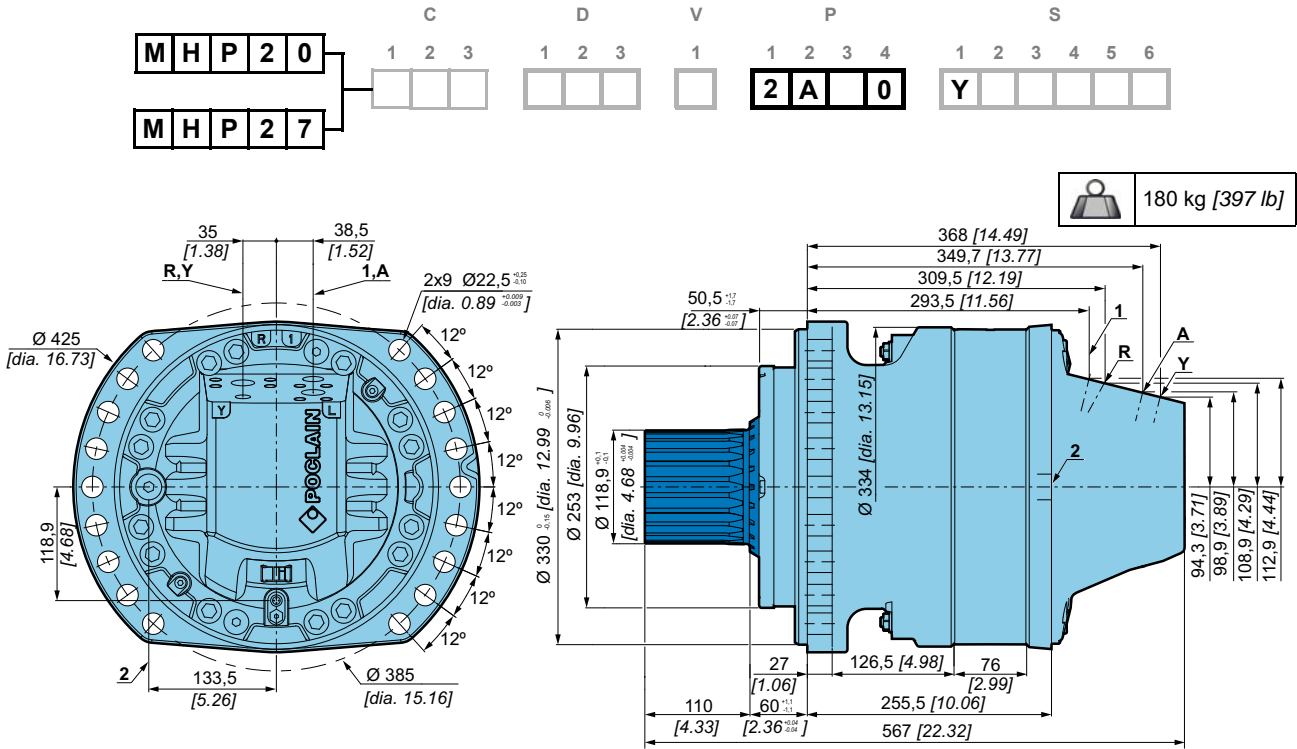
Options



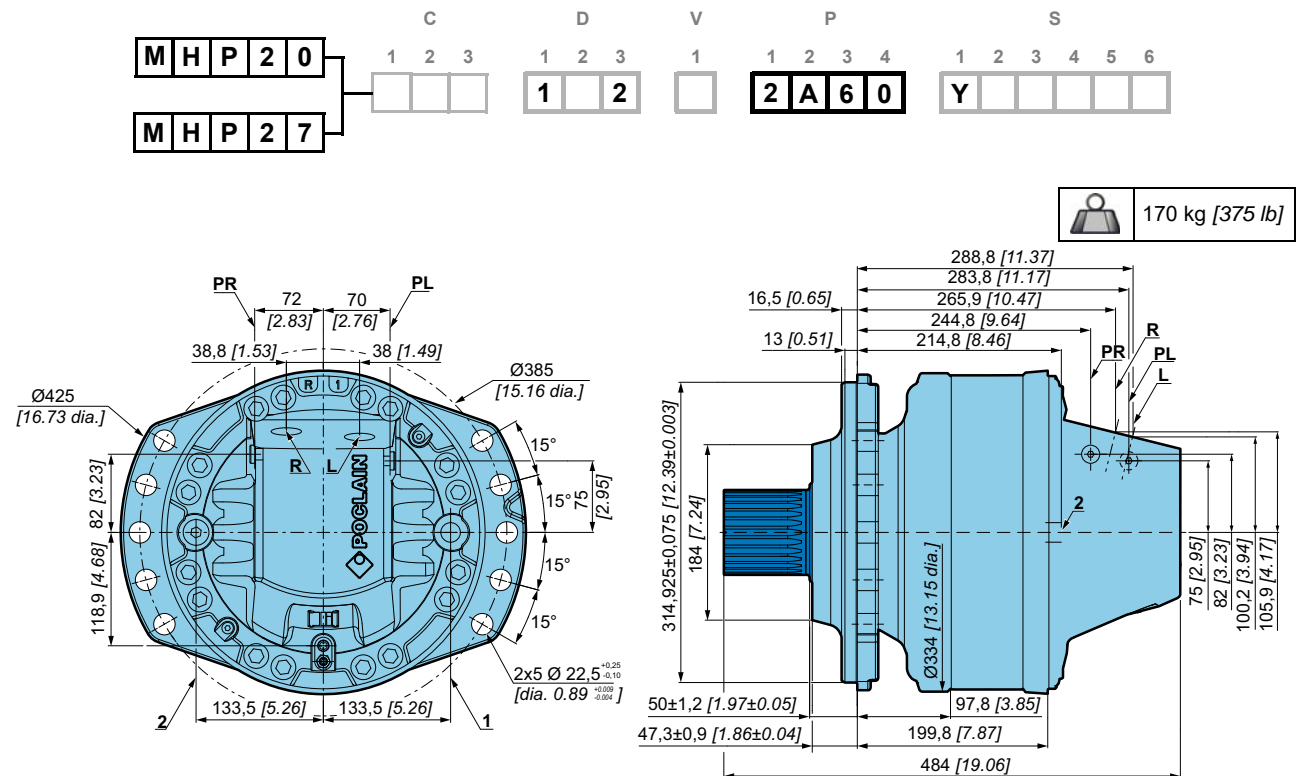


SHAFT MOTOR

Dimensions for 2A10/2A50 motor



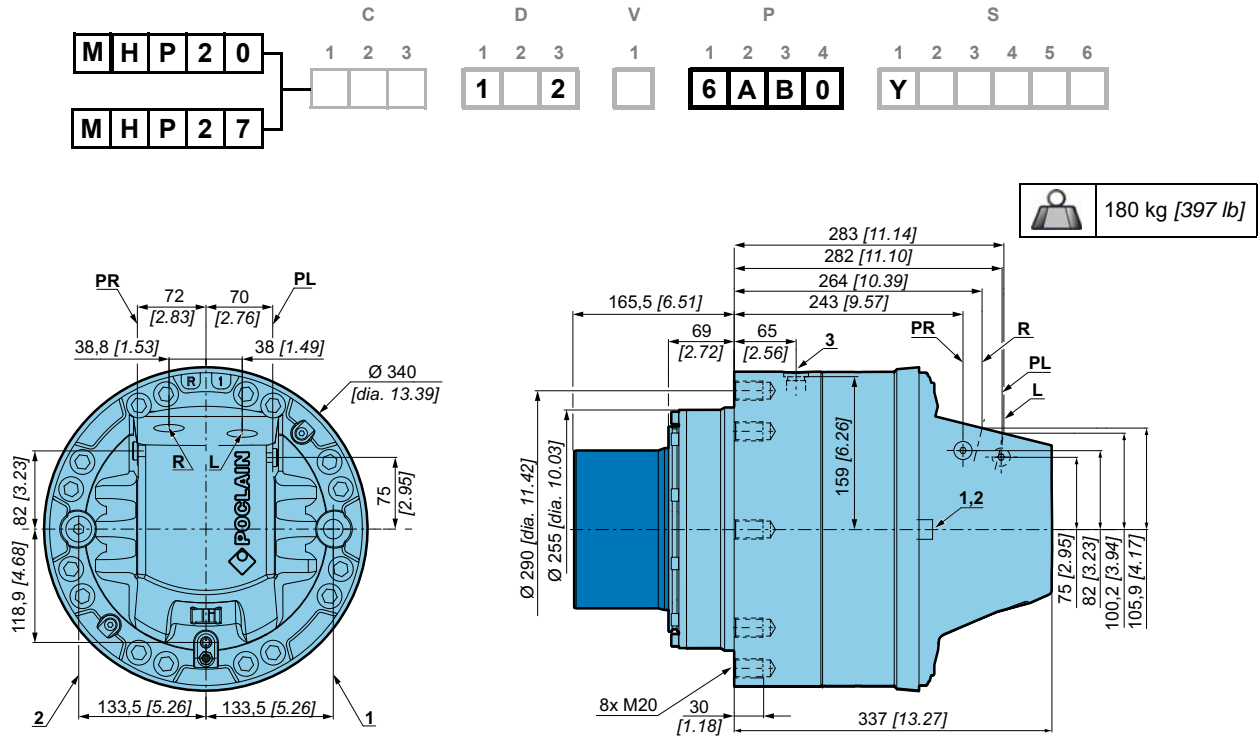
Dimensions for 2A60 motor



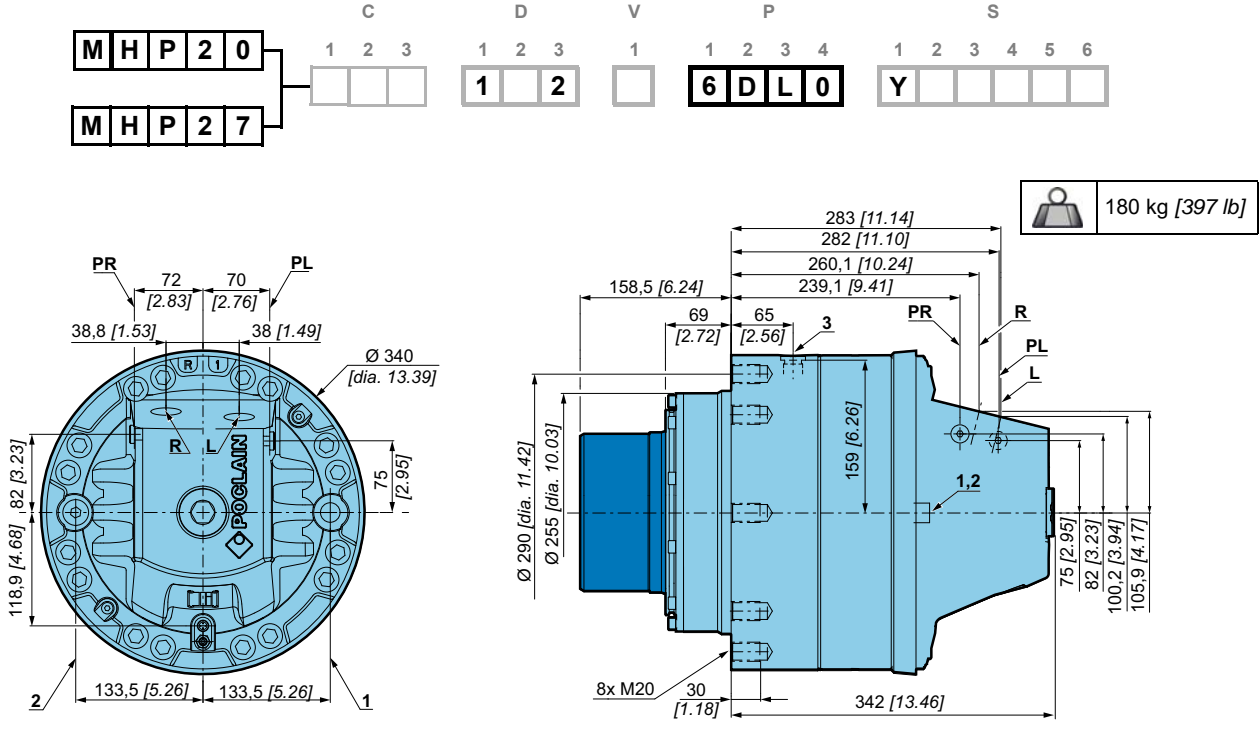
- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



Dimensions for 6AB0 motor



Dimensions for 6DL0 motor

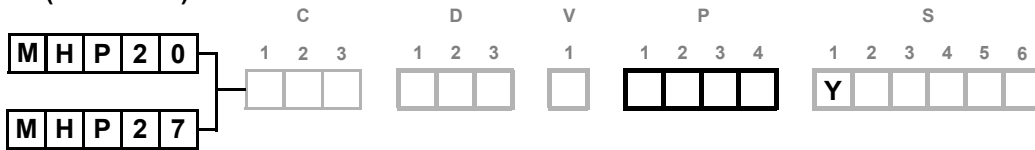


See page 50 for detailed info about hydraulic connections.

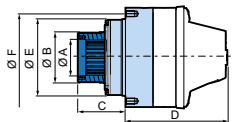
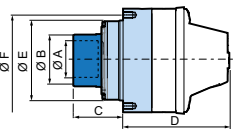
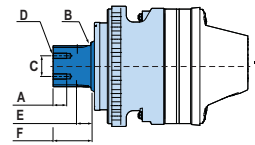
Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.



Support types (continued)



		A	B	C	D	E	F
		mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]
C 2 A 5 0 <small>1 2 3 4</small> P	DIN 5480 splines						
	Nominal Ø 120 [4.72]	40	R4	60	2 x M16	28	110
	Module 5	[1.57]	[R 0.16]	[2.36]		[1.10]	[4.33]
Z	22						
2 A 6 0 <small>1 2 3 4</small> P	DIN 5480 splines						
	Nominal Ø 90 [3.54]	23	R3	35	2 x M14	23	90
	Module 3	[0.91]	[R 0.12]	[1.38]		[0.91]	[3.54]
Z	28						
2 A 1 0 <small>1 2 3 4</small> P	NF E22-141 splines						
	Nominal Ø 120 [4.72]	40	R4	60	2 x M16	28	110
	Module 3.75	[1.57]	[R 0.16]	[2.36]		[1.10]	[4.33]
Z	30						
2 A 2 0 <small>1 2 3 4</small> P	NF E22-141 splines						
	Nominal Ø 90 [3.54]	23	R3	35	2 x M14	23	90
	Module 2.5	[0.91]	[R 0.12]	[1.38]		[0.91]	[3.54]
Z	34						
6 A L 0 <small>1 2 3 4</small> P		Ø 105	Ø 140	160	323	Ø 249	Ø 290
		[4.13 dia.]	[5.51 dia.]	[6.30]	[12.72]	[9.80 dia.]	[11.42 dia.]
6 D L 0 <small>1 2 3 4</small> P		Ø 120	Ø 165	159	342	Ø 255	Ø 290
		[4.72 dia.]	[6.50 dia.]	[6.26]	[13.46]	[10.04 dia.]	[11.42 dia.]
6 A D 0 6 A B 0 <small>1 2 3 4</small> P	DIN 5480 splines						
	Nominal Ø 120 [4.72]	Ø 125	Ø 165	165.5	337	Ø 254.9	Ø 290
	Module 5	[4.92 dia.]	[6.50 dia.]	[6.52]	[13.27]	[10.04 dia.]	[11.42 dia.]
Z	22						



Also see 'Valving systems and hydrobases' section (thumbnail opposite).

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

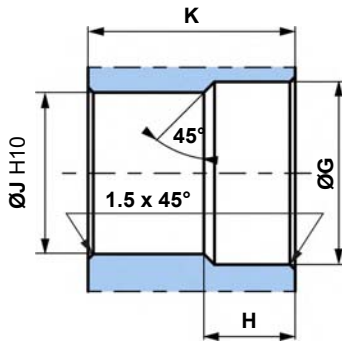
Brakes

Installation

Options



Splined coupling



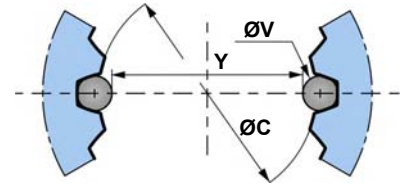
Standard NF E22-141

Pressure angle 20°.
Centering on flanks.
Slide fit (7H quality).

Standard DIN 5480

Pressure angle 30°.
Centering on flanks.
Slide fit (7H quality).

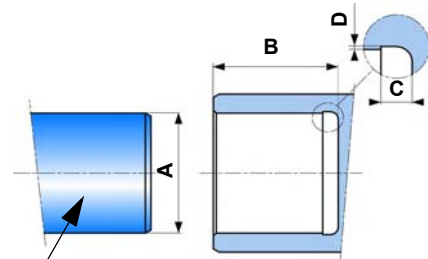
N : Nominal Ø.
Mo : Module.
Z : Number of teeth.



C	Ø G mm [in]	H mm [in]	Ø J mm [in]	K mm [in]	N mm [in]	Mo	Z	Offset mm [in]	Ø C (H10) mm [in]	Ø V mm [in]	Y mm [in]	Tolerance µm [µin]
2 A 5 0 1 2 3 4 P	122 [4,80]	29 [1,14]	110 [4,33]	109 [4,29]	120 [4,72]	5	22	2,25 [0,0886]	110 [4,33]	9 [0,35]	101,104 [3,98]	+ 87 / 0 [+3.425 / 0]
2 A 6 0 1 2 3 4 P	91,5 [3,60]	25 [0,98]	84,0 [3,31]	89 [3,50]	90 [3,54]	3	28	1,35 [0,0531]	84 [3,31]	5,25 [0,21]	79,110 [3,11]	+ 68 / 0 [+2.677 / 0]
2 A 1 0 1 2 3 4 P	121 [4,76]	29 [1,14]	112,5 [4,43]	109 [4,29]	120 [4,72]	3,75	30	3 [0,1181]	113 [4,43]	7,5 [0,30]	105,253 [4,14]	+ 104 / 0 [+4.094 / 0]
2 A 2 0 1 2 3 4 P	91 [3,58]	28 [1,10]	85,0 [3,35]	89 [3,50]	90 [3,54]	2,5	34	2 [0,0787]	85,0 [3,35]	5 [0,20]	80,169 [3,16]	+ 104 / 0 [+4.094 / 0]

Cylindrical bushed coupling

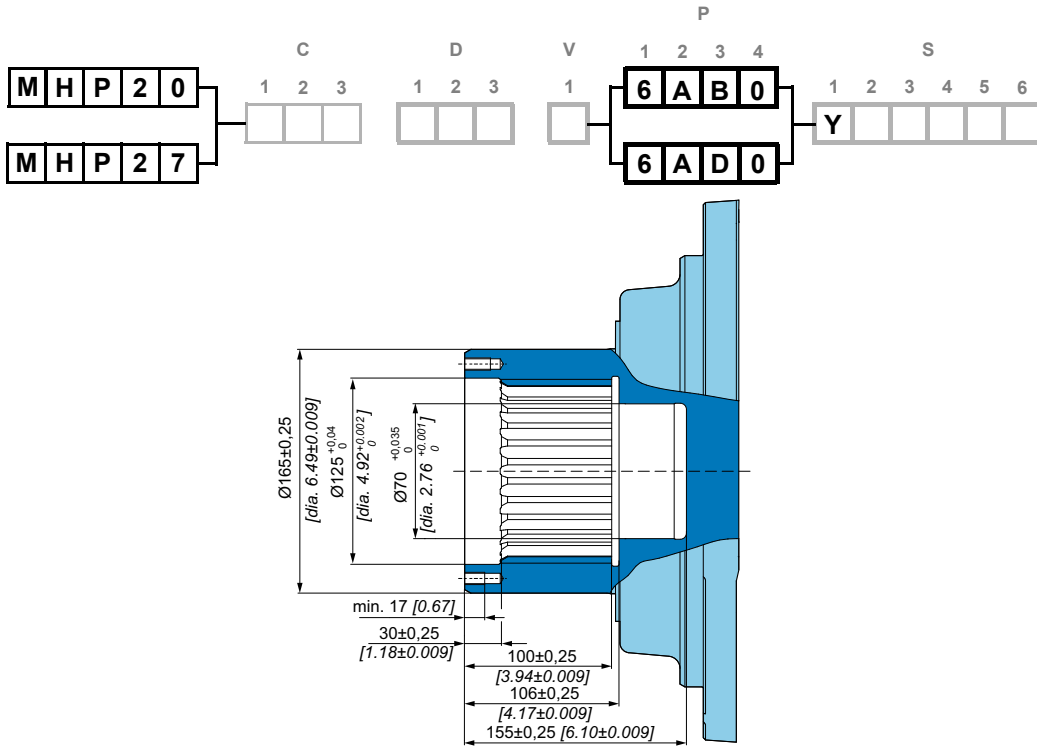
C	A mm [in]	B mm [in]	C mm [in]	D mm [in]
6 A L 0 1 2 3 4 P	Ø 105 [4.13 dia.]	95 [3.74]	10 [0.394]	0.5 [0.0197]
6 D L 0 1 2 3 4 P	Ø 120 [4.72 dia.]	95 [3.74]	10 [0.394]	0.5 [0.0197]



R min. : 640 N/mm² [132 800 PSI]



Coupling for female splines



Recommended customer shaft design to be used with bearing support 6AB0 / 6AD0

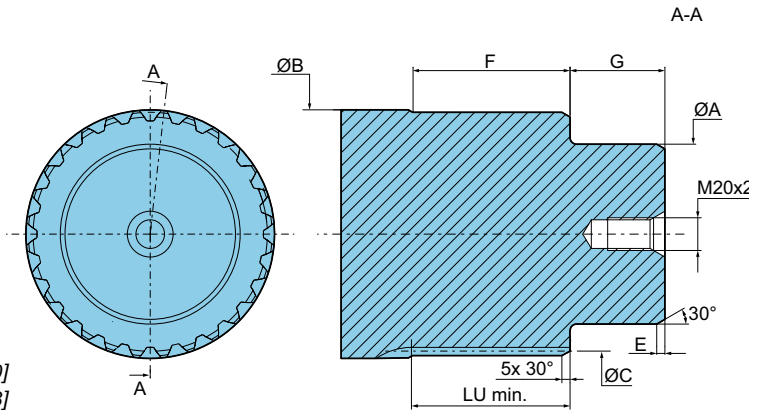
	Torque arm motor	Flange mounted motor
A ⁽¹⁾	Ø70 [2,76 dia.]	Ø70 [2,76 dia.]
B ⁽²⁾	Ø125 [4,92 dia.]	Ø125 [4,92 dia.]
C ⁽³⁾	DIN 5480 W120x5x30x22x8f	
D	Ø119 [4,69 dia.]	Ø119 [4,69 dia.]
E	10,0 [0,39]	5,0 [0,20]
F	78,0 [3,07]	78,0 [3,07]
G	52,0 [2,05]	49,0 [1,93]
LU	79,0 [3,11]	79,0 [3,11]

(1) - 0,01 [-0.0004] (2) - 0,114 [-0.004] (3) - 0 [-0.000]
 - 0,029 [- 0.001] - 0,139 [- 0.005] - 0,220 [- 0.008]

General tolerances: ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

Hardening treatment to obtain R = 800 to 900 N/mm² [R = 116 030 to 130 533 PSI].



For torque arm mounting, use bearing support 6AD0. Both motor and customer shaft must be in axial contact (no axial play) and must have sealing between motor and customer shaft.



For chassis mounting, use bearing support 6AB0. An axial play must be ensured between motor and customer shaft.



Consult your Poclair Hydraulics application engineer.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options

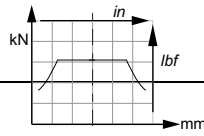


Load curves (continued)

Permissible radial loads

Max. permissible loads: 0 tr/min [0 RPM]; 0 bar [0 PSI]

Continuous permissible loads:
> 0 tr/min [> 0 RPM]; 275 bar [3 988 PSI].



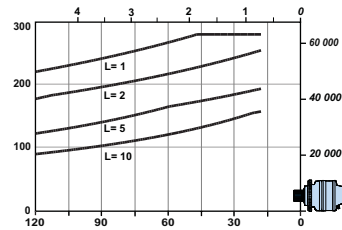
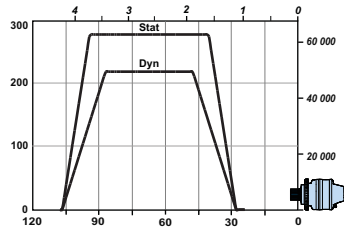
Service life of bearings

Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

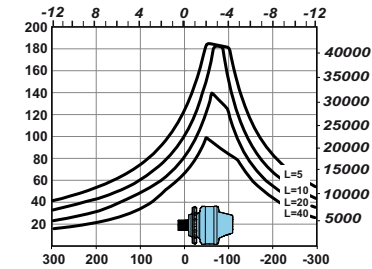
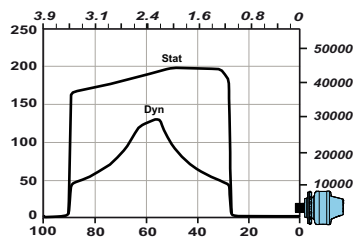
2	A	1	0
2	A	2	0
2	A	5	0
1	2	3	4

P



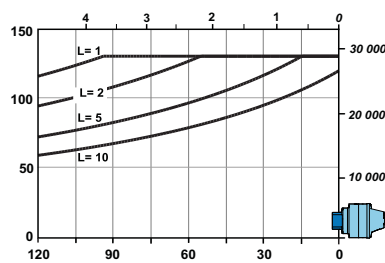
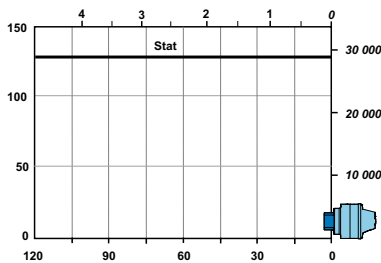
2	A	6	0
1	2	3	4

P



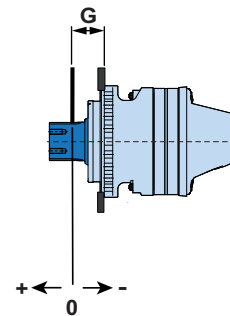
6	A	B	0
6	A	D	0
6	A	L	0
6	D	L	0
1	2	3	4

P



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclain Hydraulics application engineer.

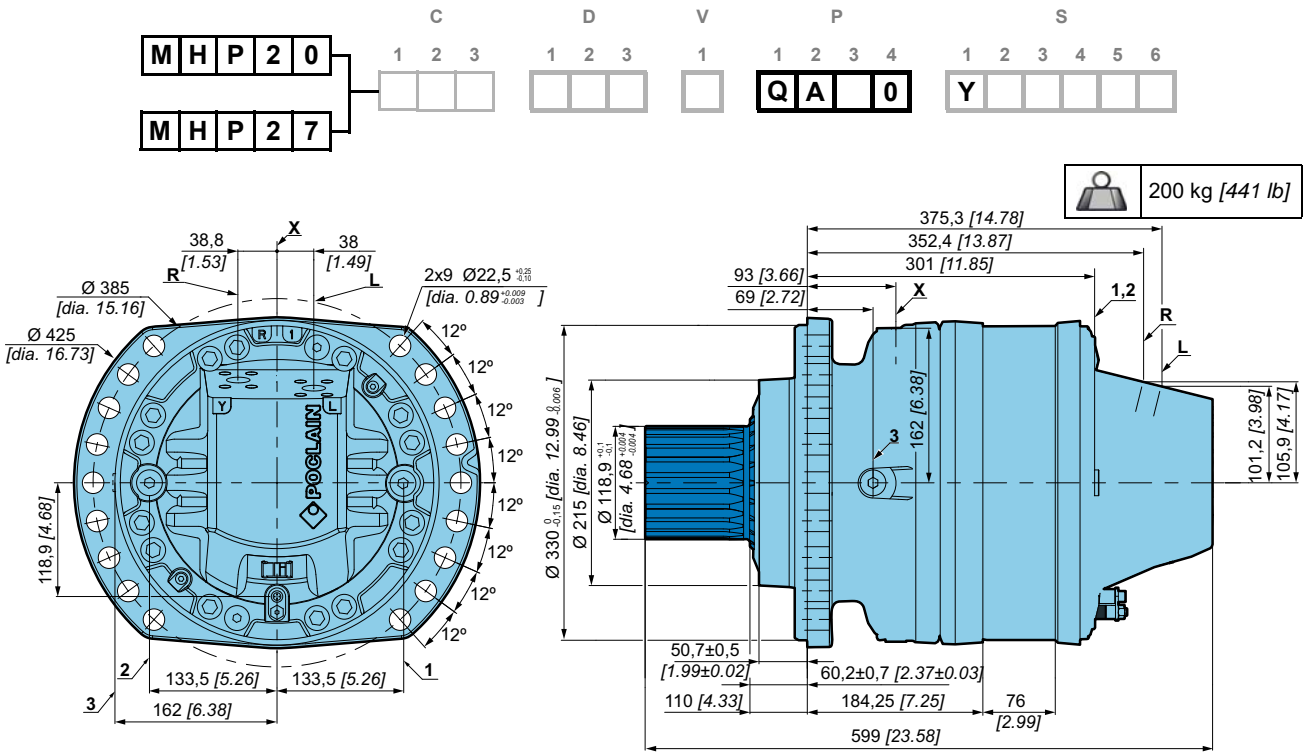
C	G
	mm [in]
2 A 1 0	129 [5.08]
2 A 5 0	129 [5.08]
2 A 6 0	106.5 [4.19]
6 A B 0	38.75 [1.53]
6 A D 0	
6 A L 0	
6 D L 0	





SHAFT MOTOR WITH PARKING BRAKE

Dimensions for QA10/QA50 motor



See page 50 for detailed info about hydraulic connections.

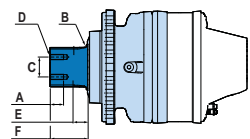


Motor configuration in 1/2/3-displacement valving, for 4-displacement valving configuration see page 15.

Support types (continued)



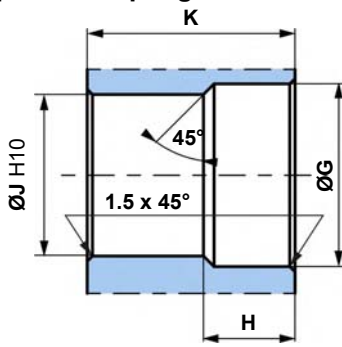
C	Support types					
	A	B	C	D	E	F
	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]
QA50 1 2 3 4 P	DIN E5480 splines Nominal Ø 120 [4,72] Module 5 Z 22					
	40 [1,57]	R4 [R 0,16]	60 [2,36]	2 X M16	28 [1,10]	110 [4,33]
	Also see "Brake" section (thumbnail opposite).					
QA10 1 2 3 4 P	NF E22-141 splines Nominal Ø 120 [4,72] Module 3,75 Z 30					
	40 [1,57]	R4 [R 0,16]	60 [2,36]	2 x M16	28 [1,10]	110 [4,33]
	Also see "Brake" section (thumbnail opposite).					



- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



Splined coupling



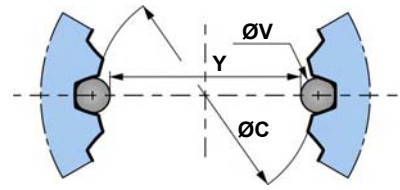
Standard NF E22-141

Pressure angle 20°.
Centering on flanks.
Slide fit (7H quality).

Standard DIN 5480

Pressure angle 30°.
Centering on flanks.
Slide fit (7H quality).

N : Nominal Ø.
Mo : Module.
Z : Number of teeth.



C	Ø G	H	Ø J	K	N		Offset	Ø C (H10)	Ø V	Y	Tolerance
					mm [in]	Mo					
Q A 5 0	122	29	110	109	120	5	2,25	110	9	101,104	+ 87 / 0
	[4,80]	[1,14]	[4,33]	[4,29]	[4,72]		[0,09]	[4,33]	[0,35]	[3,98]	[+3.425 / 0]
Q A 1 0	121	29	112,5	109	120	3,75	3	112,5	7,5	105,253	+ 104 / 0
	[4,76]	[1,14]	[4,43]	[4,29]	[4,72]		[0,1181]	[4,43]	[0,30]	[4,14]	[+4.094 / 0]

General tolerances: ± 0.25 [±0.0098].

Material: Ex: 42CrMo4.

Hardening treatment to obtain R = 800 to 900 N/mm² [R = 116 030 to 130 533 PSI]."

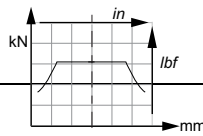
Load curves (continued)

Permissible radial loads

Max. permissible loads: 0 tr/min [0 RPM]; 0 bar [0 PSI]

Continuous permissible loads:

> 0 tr/min [> 0 RPM]; 275 bar [3 988 PSI].

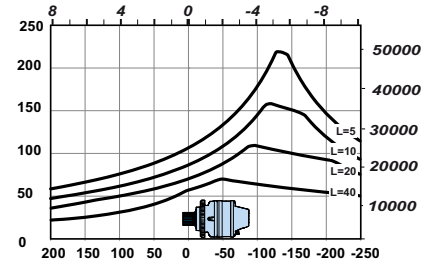
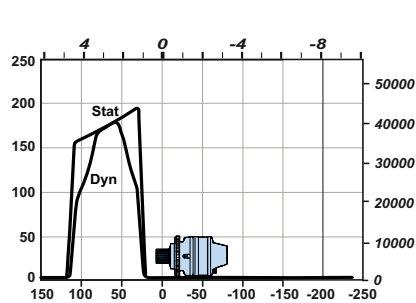


Service life of bearings

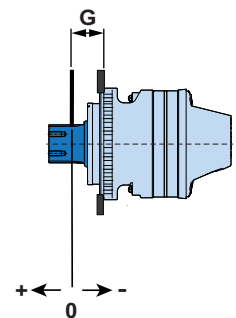
Test conditions :

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

Q	A	1	0
Q	A	5	0



The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications. For an accurate calculation, consult your Poclair Hydraulics application engineer.

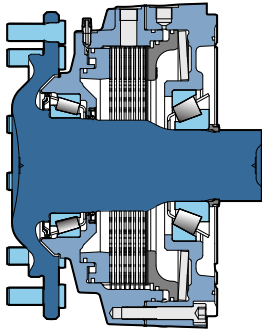
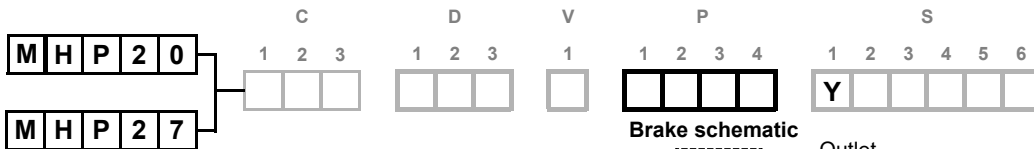


C	G
	mm [in]
Q A 1 0	88,3 [3,48]
Q A 5 0	88,3 [3,48]



BRAKES

C27™ Combined brake



The dynamic brake must be flushed according to the brake schematics (flushing flow always goes of the bearing support).



Correct flushing flow is ensured when using motor with flanged valve (see page 52).



Without flanged valve, restrictor must be used on the hydraulic circuit to ensure correct flushing flow in port 1.

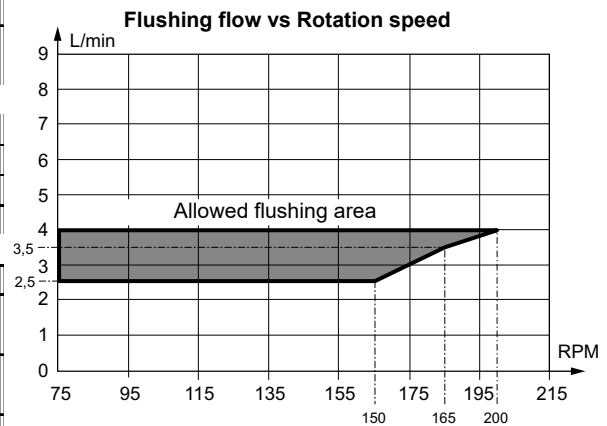
Brake operation

This multi-disc brake operates in two distinct ways:

Either by an absence of pressure (static braking): The spring applies a force to the static piston that is transmitted to the dynamic piston, which damps the fixed and free discs, preventing the shaft from turning.

Or by braking pressure (dynamic braking): The braking command creates a pressure on the dynamic braking piston, which damps the fixed and free discs, preventing the shaft from turning. Braking torque increases linearly as a function of the piloting pressure.

General information	
Max. rotation speed	200 rpm
Max. energy dissipation for 1 braking (maintenance needed)	1000 kJ
Dynamic brake information	
Average torque during dynamic braking	32 000 Nm [23 600 lb.ft]
Pressure to obtain max. permissible braking	70 bar [1 015 PSI]
Piston chamber piloting volume, worn brake	74 cm ³ [4,5 cu.in]
Service brake max. allowed energy	500 kJ
Parking brake information	
Min. parking brake torque	18 000 Nm [13 280 lb.ft]
Min. dynamic brake torque in case of emergency brake with new brake	24 000 Nm [17 700 lb.ft]
Min. dynamic brake torque in case of emergency brake with worn brake	13 000 Nm [9 590 lb.ft]
Release brake pressure (min. / max.)	100 [1 450] / 135 [1 958]
Piston chamber piloting volume (worn brake)	48 cm ³ [2,9 cu.in]
Number of parking brake applications	1 000 000



Brake release pressure vented.



The use of certain oils may not offer the characteristics stated above. Consult your Poclain Hydraulics application engineer.

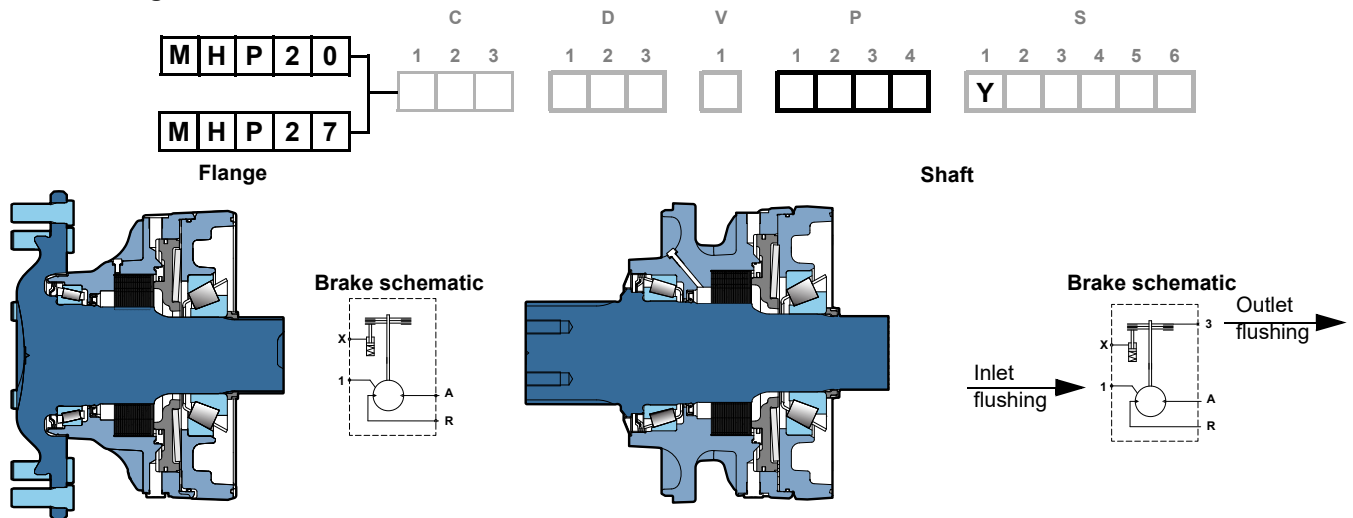


When using the Boosted brake™ option, the C27™ bearing support might not be able to withstand the combination of maximum hydrostatic torque and maximum service brake torque. Please contact your Poclain Hydraulics application engineer for a detailed calculation.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



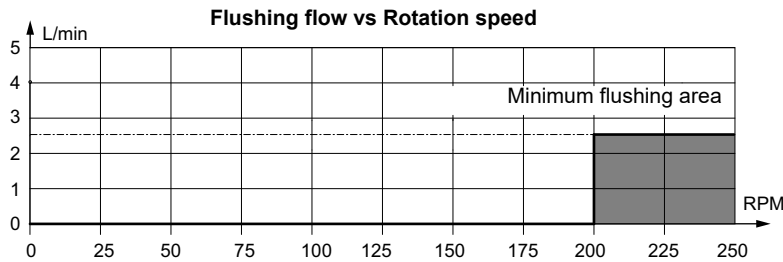
P27™ Parking brake



Brake operation

This is a multidisc brake which is activated by a lack of pressure. The spring exerts a force on the piston, which presses on the fixed and mobile discs, and immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.

	C	P	Q A 1 0	Q A 5 0
		Flange	Shaft	
Max. rotation speed		200 rpm	250 rpm	
Max. energy dissipation		200 kJ		
Number of parking brake applications		1 000 000		
Release brake pressure (min/max)		16 [232] / 30 [435]		
Min. parking brake torque		19 800 Nm [14 600 lb.ft]		
Min. static brake torque (after emergency braking)		16 400 Nm [12 100 lb.ft]		
Min. dynamic brake torque in case of emergency brake with new brake		14 500 Nm [10 690 lb.ft]		



Only P27™ parking brake shaft can be flushed.



Do not run-in the multidisc brakes.



The use of certain oils may not offer the characteristics stated above. Consult your Poclain Hydraulics application engineer.



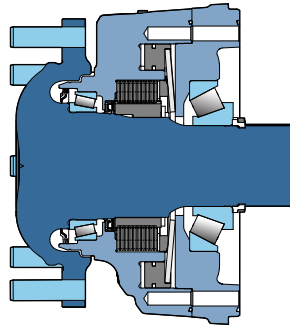
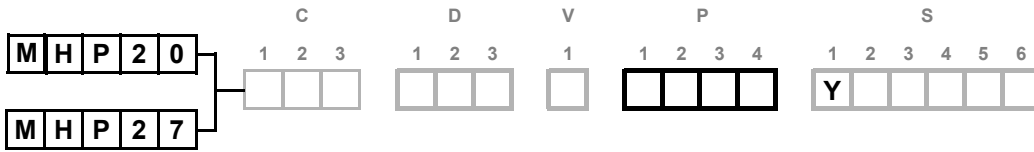
A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/h, please contact your Poclain Hydraulics application engineer.



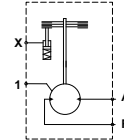
When using the Boosted brake™ option, the P27™ bearing support might not be able to withstand the combination of maximum hydrostatic torque and maximum service brake torque. Please contact your Poclain Hydraulics application engineer for a detailed calculation.



P20™ Parking brake



Brake schematic



Brake operation

This is a multidisc brake which is activated by a lack of pressure. The spring exerts a force on the piston, which presses on the fixed and mobile discs, and immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.



Max. rotation speed	200 rpm
Max. energy dissipation	200 kJ
Number of parking brake applications	1 000 000
Release brake pressure (min/max)	16 [232] / 30 [435]
Min. parking brake torque	20 000 Nm [14 750 lb.ft]
Min. static brake torque (after emergency braking)	15 000 Nm [11 060 lb.ft]
Min. dynamic brake torque in case of emergency brake with new brake	13 000 Nm [9 590 lb.ft]



Do not run-in the multidisc brakes.



A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/h, please contact your Poclain Hydraulics application engineer.



The use of certain oils may not offer the characteristics stated above. Consult your Poclain Hydraulics application engineer.

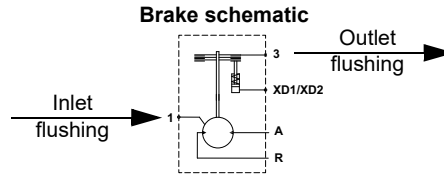
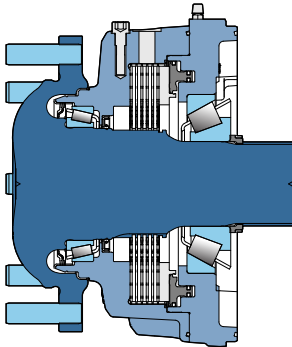
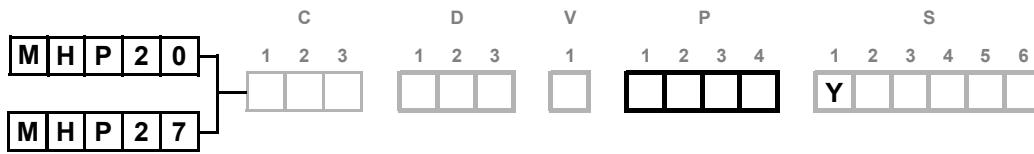


When using the Boosted brake™ option, the P20™ bearing support might not be able to withstand the combination of maximum hydrostatic torque and maximum service brake torque. Please contact your Poclain Hydraulics application engineer for a detailed calculation.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



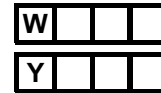
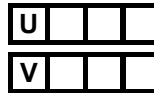
S20™ Service brake



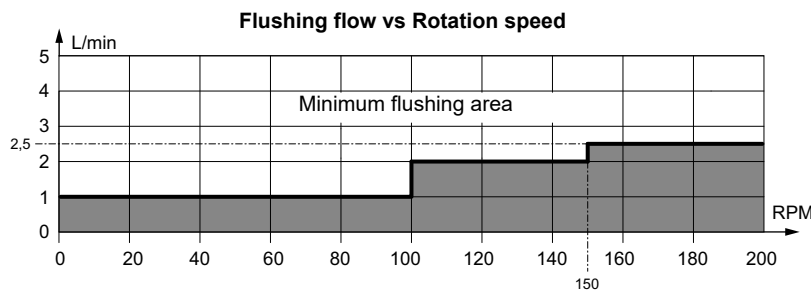
The dynamic brake must be flushed according to the brake schematics (flushing flow always goes of the bearing support).

Brake operation

This multi-disc brake is activated by a braking pressure (dynamic braking). The braking command creates a pressure on the dynamic braking piston, which damps the fixed and free discs, preventing the shaft from turning. Braking torque increases linearly as a function of the piloting pressure.



Max. rotation speed	200 rpm
Max. energy dissipation	1 250 kJ
Average torque during dynamic braking	25 000 Nm [18 440 lb.ft]
Pressure to obtain max. permissible braking	120 bar
Piston chamber piloting volume, worn brake	97 cm ³
Service brake max. allowed energy	850 kJ



Do not run-in the multidisc brakes.



A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/h, please contact your Poclain Hydraulics application engineer.



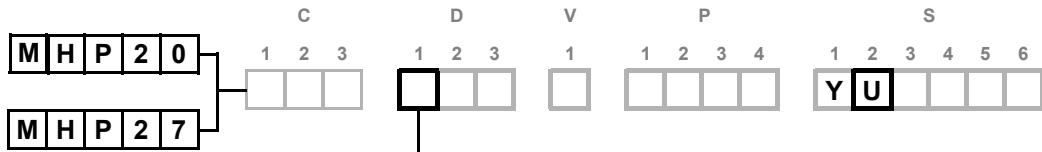
The use of certain oils may not offer the characteristics stated above. Consult your Poclain Hydraulics application engineer.



When using the Boosted brake™ option, the S20™ bearing support might not be able to withstand the combination of maximum hydrostatic torque and maximum service brake torque. Please contact your Poclain Hydraulics application engineer for a detailed calculation.



Boosted brake™



Distribution type	
2-displacement valving with Boosted brake™	CW D
	CCW G
4-displacement valving with Boosted brake™	CW V
	CCW W

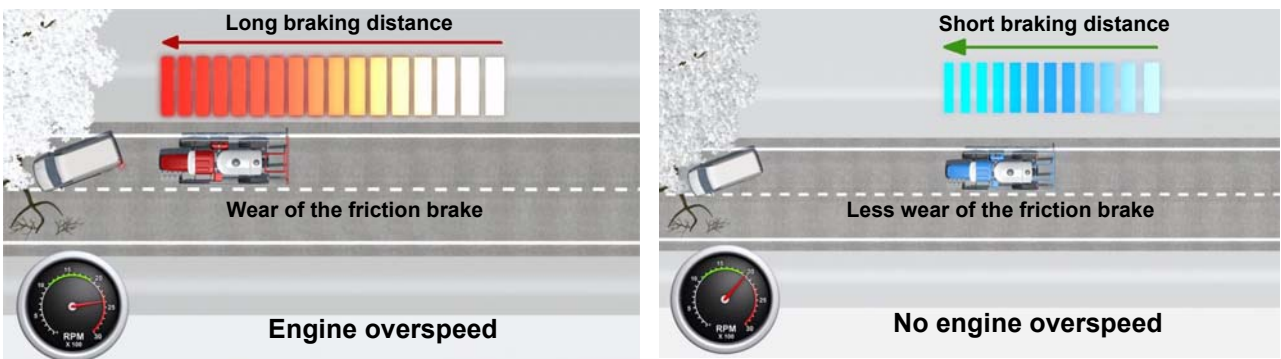
CW - Clockwise, CCW - Counterclockwise

Why Boosted brake™ function?

Boosted brake™ provides increased hydrostatic braking capabilities. It enables regulation requirements to be met in terms of braking distances, whilst reducing the use of the friction brakes. Boosted brake™ complements the diesel engine's retardation capacity. It also avoids engine over-speed when braking. Using the principles of hydrostatic braking through the hydraulic motor's entire displacement capacity and not just the partial displacement that is active when braking occurs, it converts the machine's kinetic energy into heat in the oil in the hydrostatic transmission system. This heat is then evacuated in the cooler. Boosted brake™ is especially interesting for all machines subject to high and/or repeated deceleration, both on the road and in the field. It is recommended for machines with diesel engines with a low retardation capacity.



The braking is more efficient and engine is preserved: that is an essential point to ensure the lifetime of the machine.



Consult your Poclain Hydraulics application engineer.

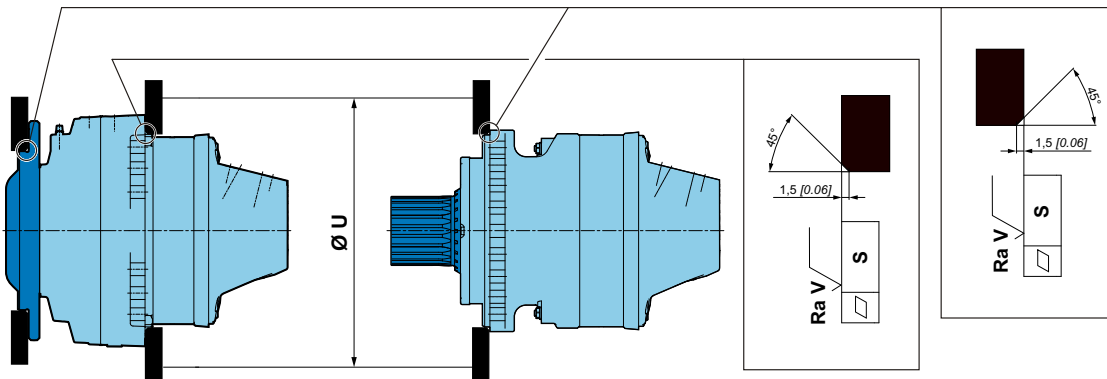
- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options






INSTALLATION

Chassis mountings



Take care over the immediate environment of the connections.

		$\varnothing U$ ⁽¹⁾ mm [in]	S mm [in]	Ra V $\mu\text{m} [\mu\text{in}]$		Class (min)																																																
<table border="1"> <tr><td colspan="4">P</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>E</td><td>T</td><td></td><td></td></tr> <tr><td>P</td><td>T</td><td></td><td></td></tr> <tr><td>R</td><td>2</td><td></td><td></td></tr> </table>	P				1	2	3	4	1				E	T			P	T			R	2			<table border="1"> <tr><td colspan="4">P</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td></tr> <tr><td>U</td><td>2</td><td></td><td></td></tr> <tr><td>V</td><td>2</td><td></td><td></td></tr> <tr><td>W</td><td>2</td><td></td><td></td></tr> <tr><td>Y</td><td>2</td><td></td><td></td></tr> </table>	P				1	2	3	4	U	2			V	2			W	2			Y	2			385 [15,16]			2 x 5 M22 x 2,5	
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(1) +0,3 [+0,000]
+0,2 [+0,000]



You are strongly advised to use the fluids specified in brochure "Installation guide" N° B59689D.



To find the connections' tightening torques, see the brochure "Installation guide" N° B59689D.



For more information, see the brochure "Installation guide" N° B61352L.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

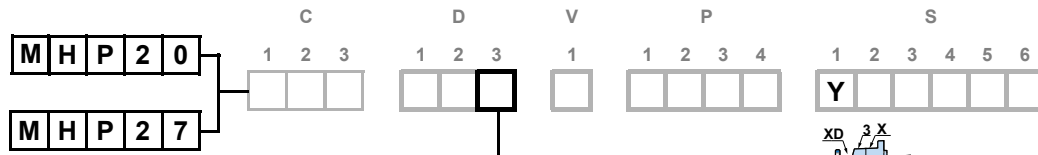
Brakes

Installation

Options



Hydraulic connections



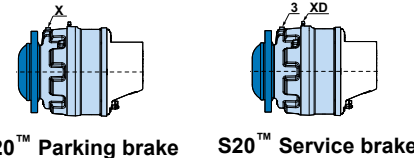
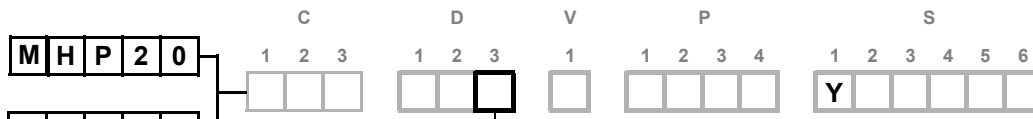
	Standards	Power supply	Standards	Case drain	2/3/4 displ. control	Control of parking brake	Control of service brake	Flushing	Control of parking brake	Flushing for shaft version		
		R-L		1-2		X	XD	3	X	3		
1-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5		M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5	
	2	ISO 6162	SAE 6000PSI 1 1/4"	ISO 9 974-1	M22x1.5		M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5	
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2		BSP 3/8	BSP 1/4	BSP 1/2	BSP 3/8	BSP 1/2	
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF		3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF	9/16"-18 UNF	7/8"-14 UNF	
		R-A		1-2	Y	X	XD	3	X	3		
2-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5	
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4	BSP 1/2	BSP 3/8	BSP 1/2	
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF	9/16"-18 UNF	7/8"-14 UNF	
		R	A1-A2		1-2	Y	X	XD	3	X	3	
Twin-Lock™	1	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5
	3	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4	BSP 1/2	BSP 3/8	BSP 1/2
	7	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF	9/16"-18 UNF	7/8"-14 UNF
		R-A			1-2	Y1-Y2	X	XD	3	X	3	
3-displacement	1	ISO 6162	SAE 6000PSI 1"		ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5
	3	ISO 6162	SAE 6000PSI 1"		ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4	BSP 1/2	BSP 3/8	BSP 1/2
	7	ISO 6162	SAE 6000PSI 1"		ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF	9/16"-18 UNF	7/8"-14 UNF
		R-A			1-2	Y1-Y2	X	XD	3	X	3	
4-displacement	1	ISO 6162	SAE 6000PSI 1"		ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5	M22x1.5	M16x1.5	M22x1.5
	3	ISO 6162	SAE 6000PSI 1"		ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4	BSP 1/2	BSP 3/8	BSP 1/2
	7	ISO 6162	SAE 6000PSI 1"		ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF	9/16"-18 UNF	7/8"-14 UNF
Max pressure	bar [PSI]	500 [7 250] **	(1)									
			(2)	1 [14.5]	30 [435]	130 [1 885]	70 [1 015]	*	-	*		
			(3)						30 [435]			

(1) Non-braked bearing support
 (2) With C27™ bearing support
 (3) With P27™ bearing support

* See case pressure port
 ** Max. pressure of 4C Distribution is 450 bar [6 526 PSI]



Hydraulic connections



	Standards	Power supply	Standards	Case drain	2/3/4 displ. control	Control of parking brake	Control of service brake	Flushing
		R-L		1-2		X	XD	3
1-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5	M16x1.5	M14x1.5	M22x1.5
	2	ISO 6162	SAE 6000PSI 1 1/4"	ISO 9 974-1	M22x1.5	M16x1.5	M14x1.5	M22x1.5
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2	BSP 3/8	BSP 1/4	BSP 1/2
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	9/16"-18 UNF	7/8"-14 UNF
		R-A		1-2	Y	X	XD	3
2-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF
		R	A1-A2	1-2	Y	X	XD	3
Twin-Lock™	1	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5
	3	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8
	7	ISO 6162	SAE 6000PSI 1"	SAE 6000PSI 3/4"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF
		R-A		1-2	Y1-Y2	X	XD	3
3-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF
		R-A		1-2	Y1-Y2	X	XD	3
4-displacement	1	ISO 6162	SAE 6000PSI 1"	ISO 9 974-1	M22x1.5	M16x1.5	M16x1.5	M14x1.5
	3	ISO 6162	SAE 6000PSI 1"	ISO 1179	BSP 1/2	BSP 3/8	BSP 3/8	BSP 1/4
	7	ISO 6162	SAE 6000PSI 1"	ISO 11 926	7/8"-14 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF
Max pressure	bar [PSI]	500 [7 250] *	(4) (5)	1 [14.5]	30 [435]	- 130 [1 885]	- 70 [1 015]	1 [14.5]

(4) With P20™ bearing support
(5) With S20™ bearing support

* Max. pressure of 4C Distribution is 450 bar [6 526 PSI]

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

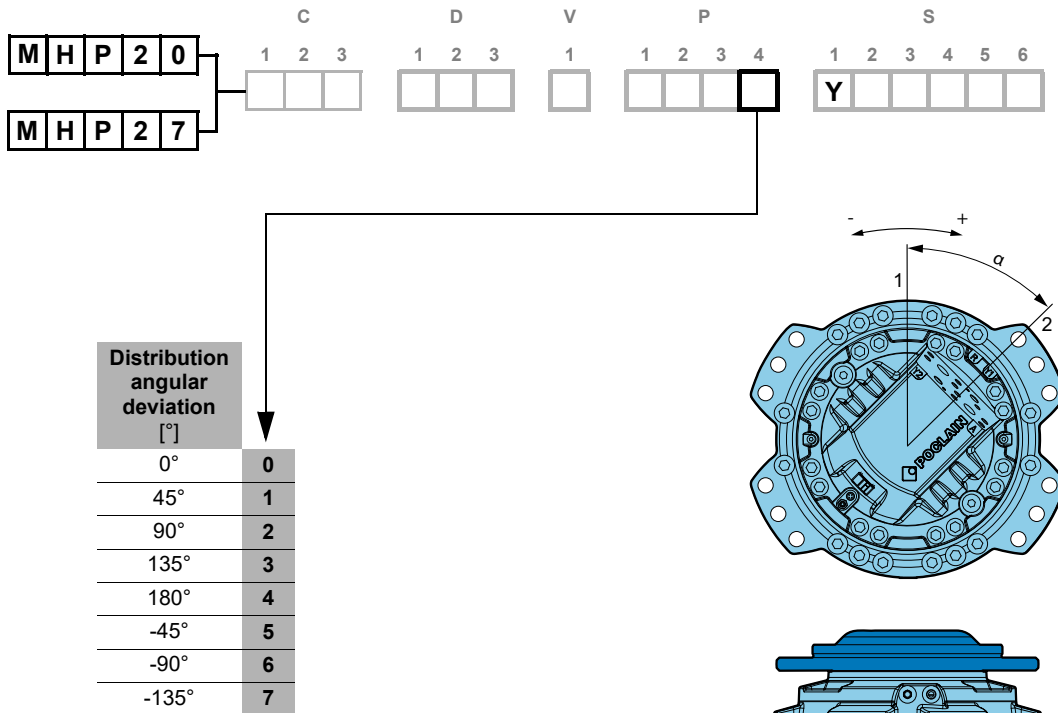
Brakes

Installation

Options

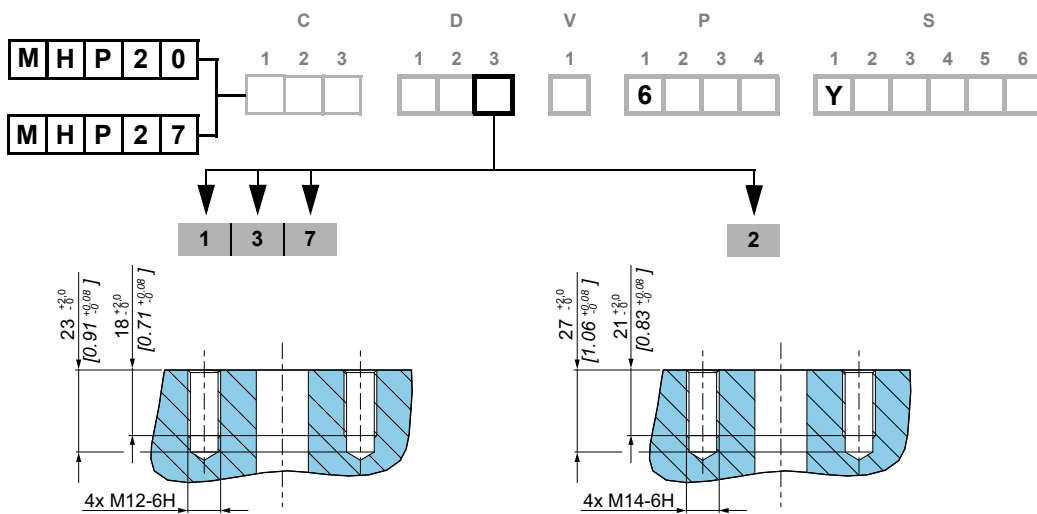


Orientation



- 1: Reference axis: supply orifice of braking bearing support
- 2: Axis on cover: supply orifices axis
- α : Angle between ports on the bearing support (brake) and ports on the cover (power supply)

Motor orientation and balancing during handling



Use R port connections for motor orientation and balancing during handling.

- Model code Modularity
- Wheel motor
- Wheel motor +C27™
- Wheel motor +P20/P27™
- Wheel motor +S20™
- Shaft motor
- Shaft motor +P27™
- Brakes
- Installation
- Options



Speed shifting logic

2-displacement valving

	Y1
1-displacement	0
2-displacement	1

3-displacement valving

	Y1	Y2
1-displacement	1	0
2-displacement	0	0
3-displacement	0	1

4-displacement valving

	Y1	Y2
1-displacement	0	0
2-displacement	1	0
3-displacement	0	1
4-displacement	1	1



It's prohibited to pilot Y1 and Y2 at the same time while using 3-displacement valving.

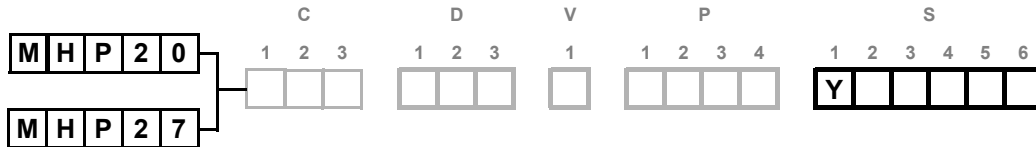


OPTIONS



You can accumulate more than one optional part. Consult your Poclair Hydraulics sales engineer.

Y Standard option



- Predisposal for speed sensor
- Case flushing (additional drain on the valving cover)
- Peek bushings
- High efficiency

1 Fluorinated elastomer seals

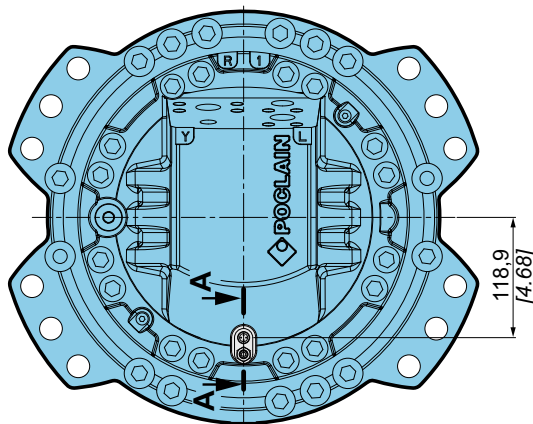
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.



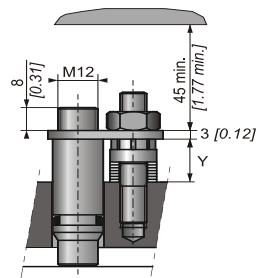
Consult your Poclair Hydraulics sales engineer.

2 Installed speed sensor

Designation C
T4 speed sensor installed (without rotation direction) 2



A-A



Max. length Y = 21,5 [0.85]

Standard number of pulses per revolution = 120



Look at the "Mobile Electronic" N° A01889D technical catalogue for the sensor specifications and its connection.



To install the sensor, see the "Installation guide" brochure No. B61352L.

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options



6 Reduced preload setting of bearing

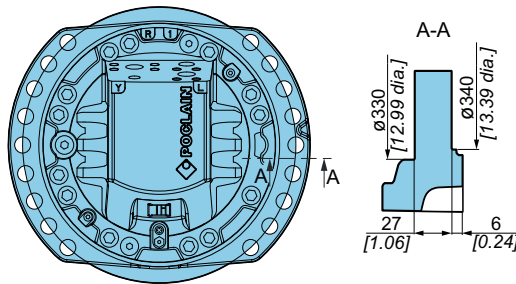
Reduction of around 50% from the rated value in the bearings' preload value. Without external loads, increases the lifetime of the bearing support.



For a precise calculation, consult your Poclain Hydraulics application engineer.

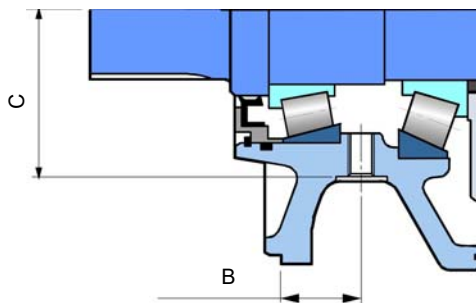
9 Chassis mounting on cam ring side


Only available for shaft motors.



B Drain on the bearing support

Only available for shaft motors.



		B	C
Shaft motor		mm [in]	mm [in]
	M22x1,5	193 [7.60]	56 [2.20]

C Abrasive environments

Some environments can be very harmful. The mirror seal gives reinforced motor sealing.

Mechanical seal



Consult your Poclain Hydraulics sales engineer.



D Special paint or no paint

The motors are delivered with Poclain Hydraulics yellow ochre primer as standard.



Consult your Poclain Hydraulics application engineer for other colors of primer or topcoat.

E Reinforced sealing

For free-wheeling by pressure.

G Special wheel rim mounting

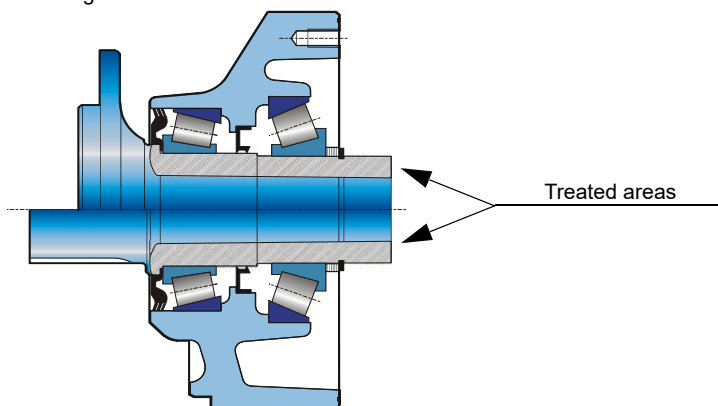
Enables certain combinations different from the standard mountings defined on page 13.



Consult your Poclain Hydraulics application engineer.

J Surface heat treatment of the shaft

Heat treatment on the indicated bearing raius.



K Treatment on external splines

N Bleed screw on the bearing support

P Customized identification plate

Your part number can be engraved on the plate.



Consult your Poclain Hydraulics application engineer for other possibilities.

R Brake cooling

U Boosted brake™



Consult your Poclain Hydraulics application engineer (see page 47).

Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options





Model code
Modularity

Wheel motor

Wheel motor
+C27™

Wheel motor
+P20/P27™

Wheel motor
+S20™

Shaft motor

Shaft motor
+P27™

Brakes

Installation

Options



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