



MS MOTORS



MS/MSE83. HYDRAULIC MOTOR.

Methodology :

This document is intended for manufacturers of machines that incorporate Poclairn Hydraulics products. It describes the technical characteristics of Poclairn 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. Information on the model code.



Weight of component without oil.



Volume of oil.



Units.



Tightening torque.



Screws.







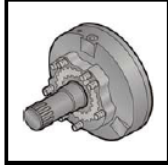
Information intended for Poclairn-Hydraulics personnel.

The views in this document are created using metric standards.

The dimensional data is given in mm and in inches (inches are between brackets and italic)

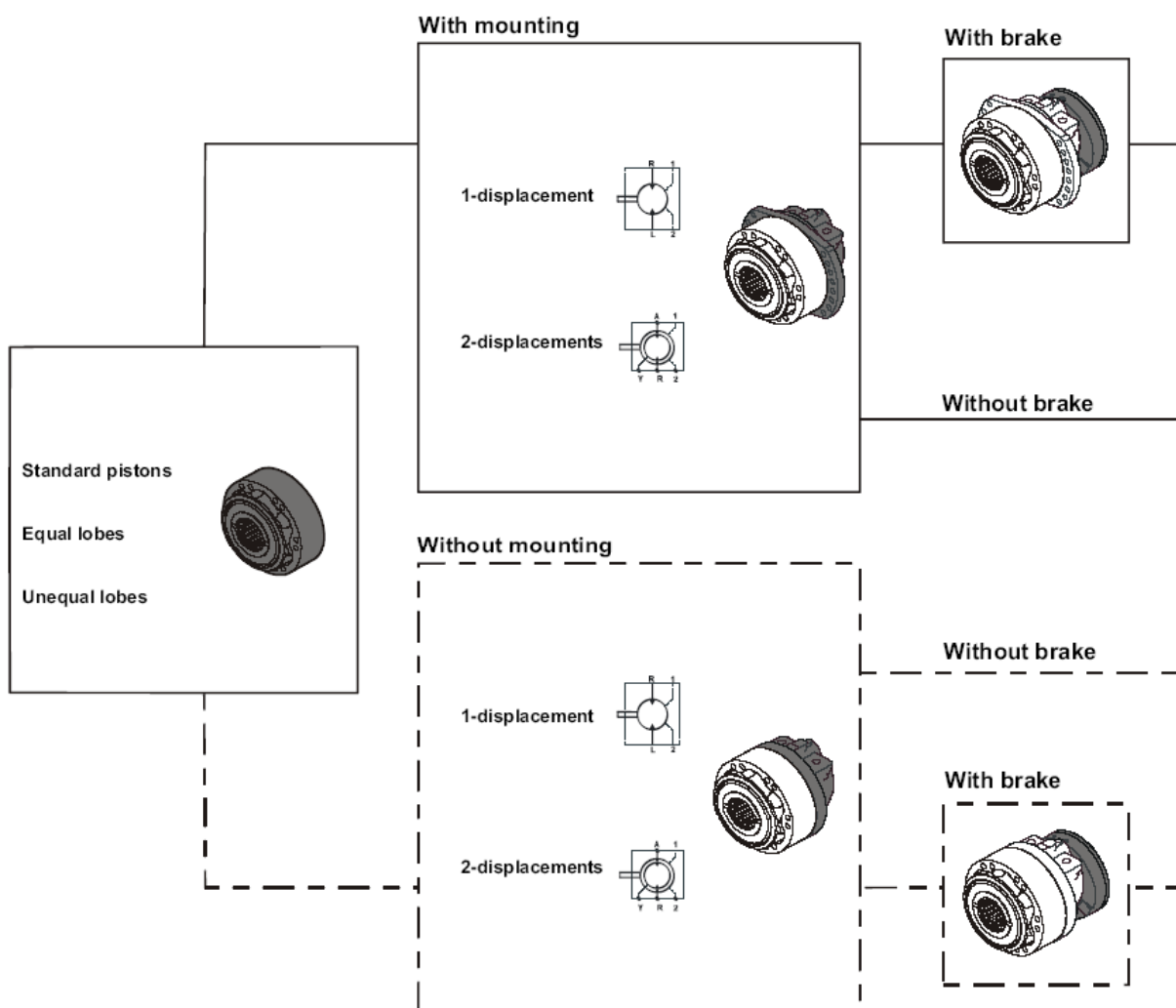


CONTENT

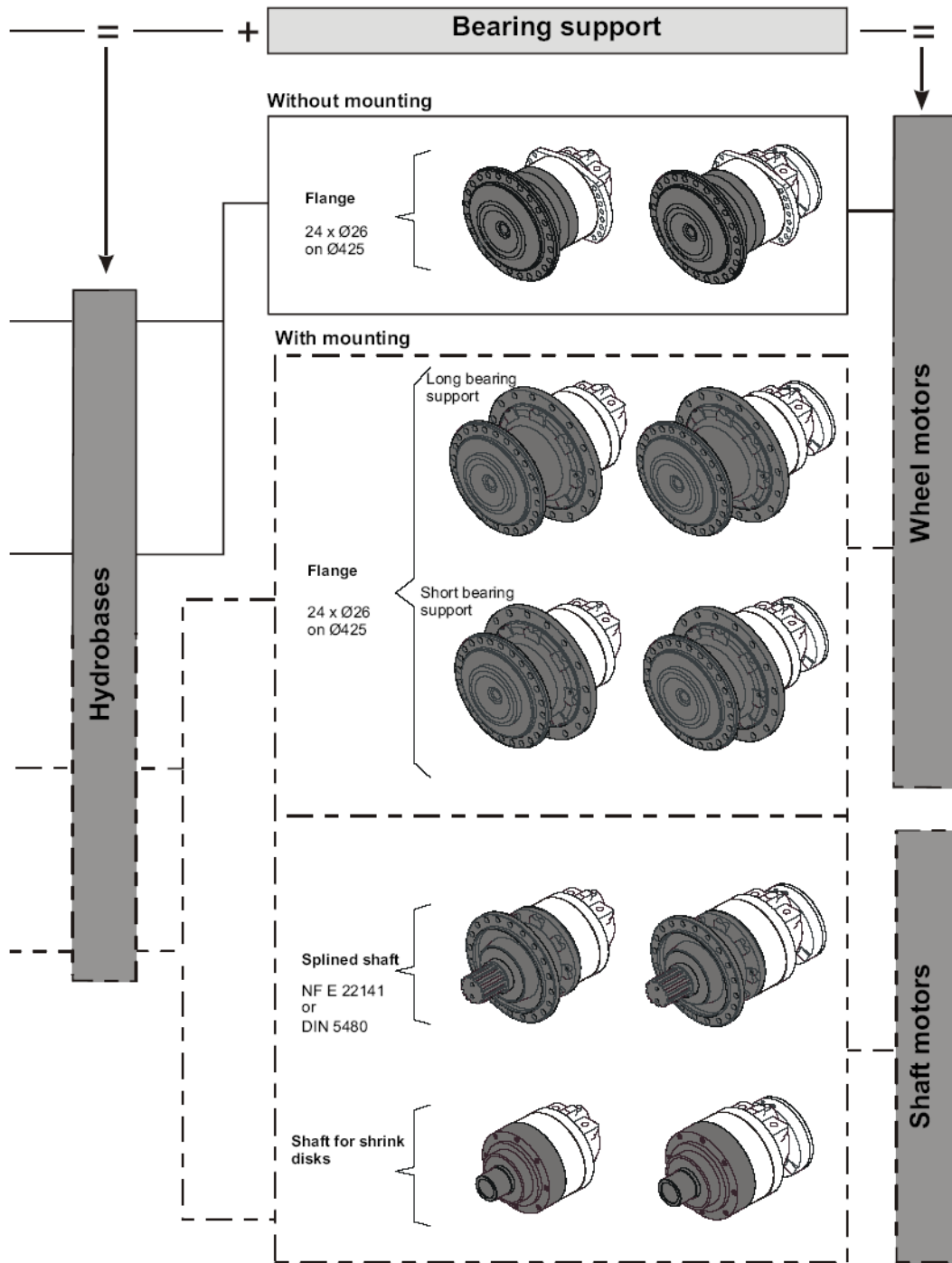
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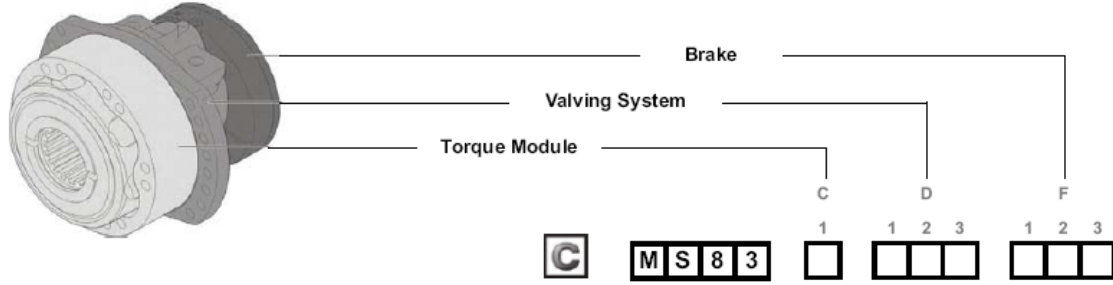
MODULARITY



MODULARITY



MODEL CODE



C1

Cam ring type		1 displacement	2 displacements	
		cm ³ /tr [cu.in/rev.]		
Cams with equal lobes		6 679 [407.4]	3 340 [203.7]	8
		8 328 [507.9]	4 164 [254.0]	0
		10 019 [611.1]	5 010 [305.5]	2
Cams with unequal lobes		6 658 [406.1]	4 164 [254.0]	Q
			2 494 [152.1]	
		8 349 [509.2]	5 009 [305.5]	A
		3 340 [203.7]		

D3

Connection type		
ISO 6162 flanges DN32	ISO 9974-1 metric connections	1
ISO 6162 flanges DN25	ISO 9974-1 metric connections	6

D1

Valving type		
1-displacement valving		1
2-displacement symmetrical valving	Ratio 2	A
	Ratio <2	B
	Ratio >2	C

F123

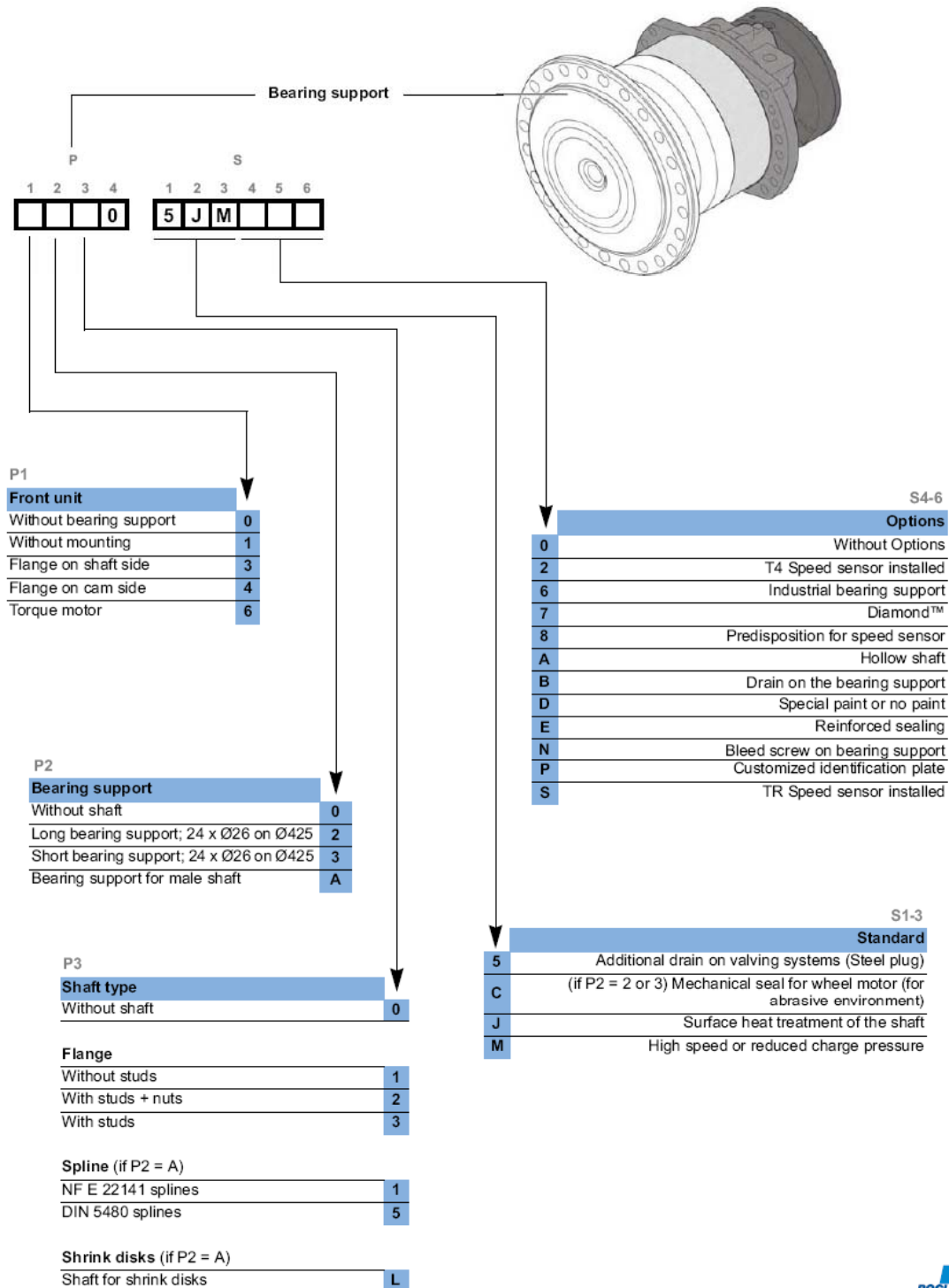
Rear brake				
Without rear brake (simple plate)		A	8	3
Without rear brake (reinforced plate)		R	8	3
With rear brake		F	8	3

D2

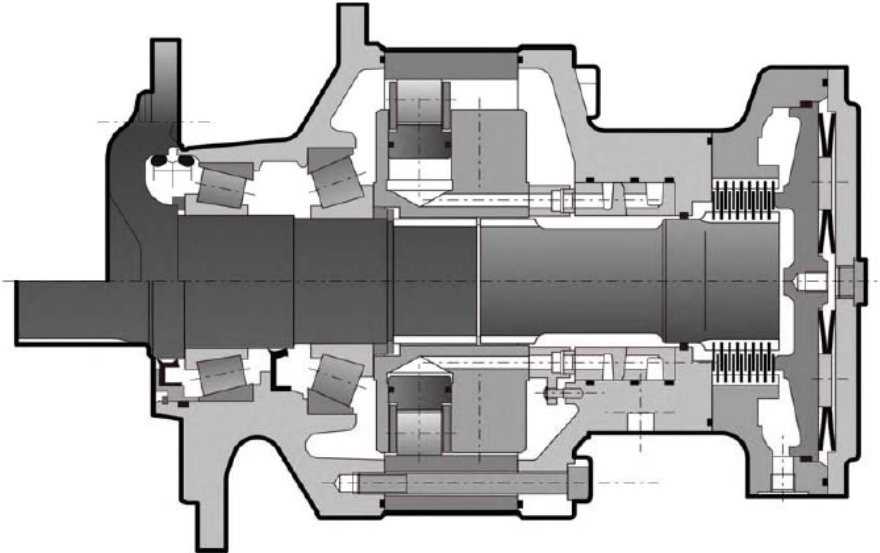
Valving cover		
Without mounting		1
With mounting		2



MODEL CODE



CHARACTERISTICS



Motor inertia 1.5 kg.m²

	C	Displacement		Theoretical torque		Max.power		Max.speed		Pression max. bar [PSI]
		1	2	1		1	2	1	2	
		cm ³ /tr [cu.in./rev.]	cm ³ /tr [cu.in./rev.]	at ΔP 100 bar Nm	at 1000 PSI [lb.ft]	kw [HP]	kw [HP]	tr/min [RPM]	tr/min [RPM]	
Cams with equal lobes	8	6 679 [407,4]	3 340 [203,7]	10 620	[5 400]			65	87	450 [6 527]
	0	8 328 [507,9]	4 164 [254,0]	13 242	[6 734]	200 [268]	135 [181]	52	70	
	2	10 019 [611,1]	5 010 [305,5]	15 930	[8 101]			43	58	
Cams with unequal lobes	Q	6 658 [406,1]	4 164 [254,0] 2 494 [152,1]	10 586	[5 383]	200 [268]	135 [181]	52	70	450 [6 527]
	A	8 349 [509,2]	5 009 [305,5] 3 340 [203,7]	13 275	[6 751]			43	58	

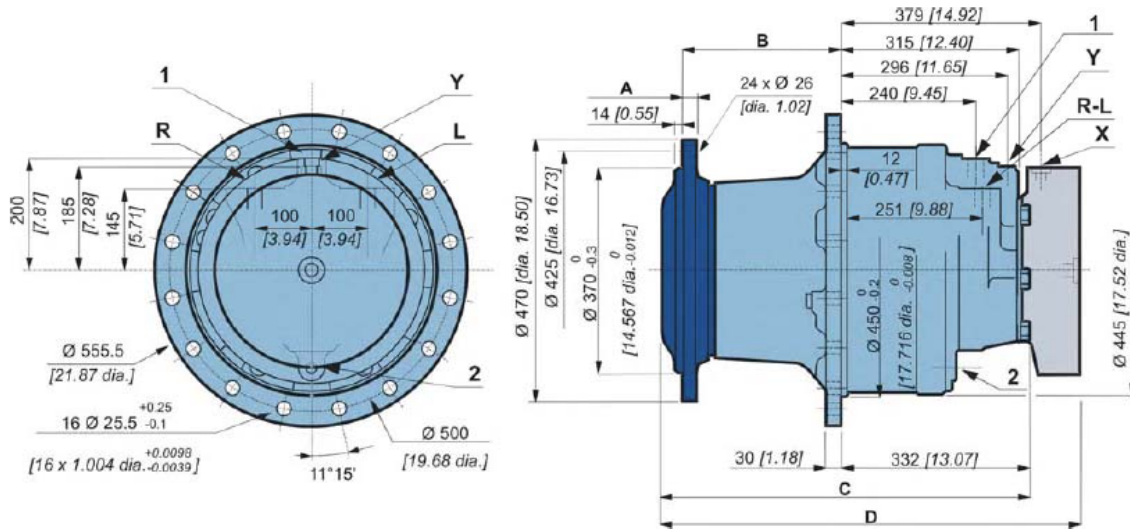
- 1 First displacement
2 Second displacement



The 2-displacements motor is symmetrical. It presents the same characteristics in both rotation directions.

WHEEL MOTOR

Dimensions for standard 1 or 2-displacements motor with mounting on bearing support



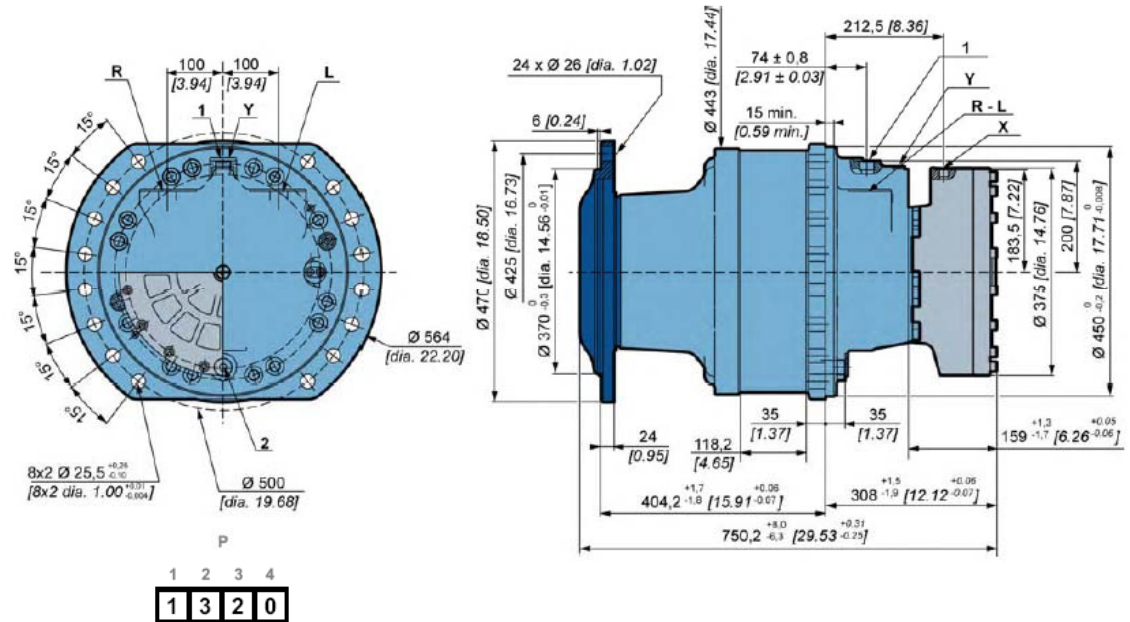
	P				A mm [in]	B mm [in]	C mm [in]	D mm [in]
	1	2	3	4				
Long bearing support	4	2	2	0	24 [0.94]	284 [11.18]	665 [26.18]	797 [31.38]
Short bearing support	4	3	2	0	25 [0.98]	239 [9.41]	620 [24.41]	752 [29.61]



The Y port can only be used on 2-displacements motor.

		Without brake	With brake
Long bearing support		469 kg [1 032 lb]	546 kg [1 201 lb]
Short bearing support		462 kg [1 016 lb]	539 kg [1 186 lb]
		9,00 L [540 cu.in]	7,50 L [450 cu.in]

Dimensions for standard 1 or 2-displacements motor without mounting on bearing support



The Y port can only be used on 2-displacements motor.

	Without brake	With brake
	445 kg [979 lb]	522 kg [1 148 lb]
	9,00 L [540 cu.in]	7,50 L [450 cu.in]

Studs

		P mm [in]	C min. mm [in]	C max. mm [in]	D mm [in]	Class	(1) * Nm [lb.ft]	(2) * Nm [lb.ft]
Studs	M24 x 2	95 [3,74]	5 [0,20]	39 [1,54]	30 [1,18]	12,9	910 [671,2]	1 150 [848,2]

(*) The tightening torques are given for the indicated loads.
 (1) Wheel rim : Suggested tightening torque for wheel rim mountings (Re steel disc > 240 N/mm² [>34 800 PSI]).
 (2) Standard : Suggested tightening torque in other cases (Re steel flange 360 > N/mm² [>52 215 PSI])

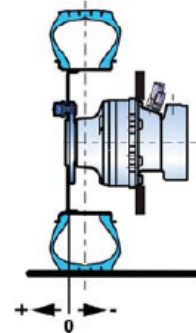
See generic installation motors N°801478197L.



Radial load and service life of bearings curves



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.



Permissible radial loads

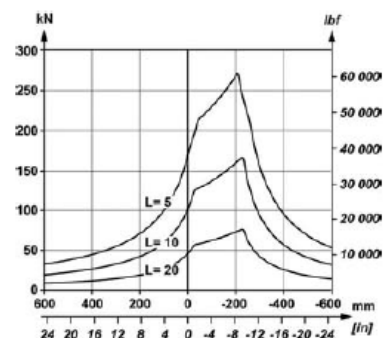
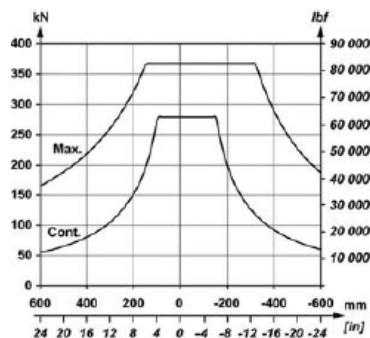
Max. permissible loads: 0 tr/min [0 RPM]; 0 bar [0 PSI].
 Continuous permissible loads: > 0 tr/min [> 0 RPM]; 275 bar [3 988 PSI].

Test conditions: code 0 displacement, without axial load, shaft treated, class 10.9 and 12.9 chassis mountings class 12.9 wheel rim mountings.

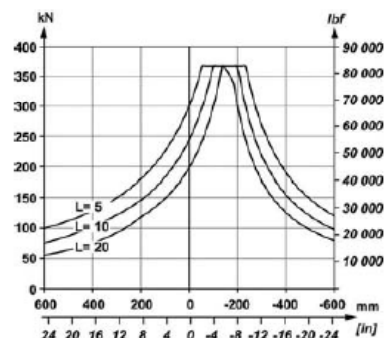
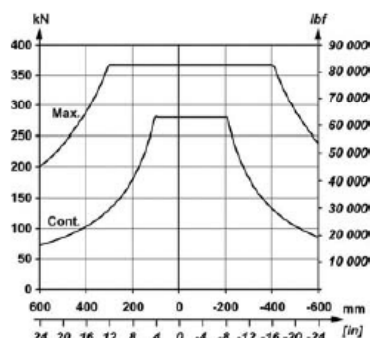
Service life of bearings

L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid.

P			
1	2	3	4
1	3	1	0
4	3	1	0

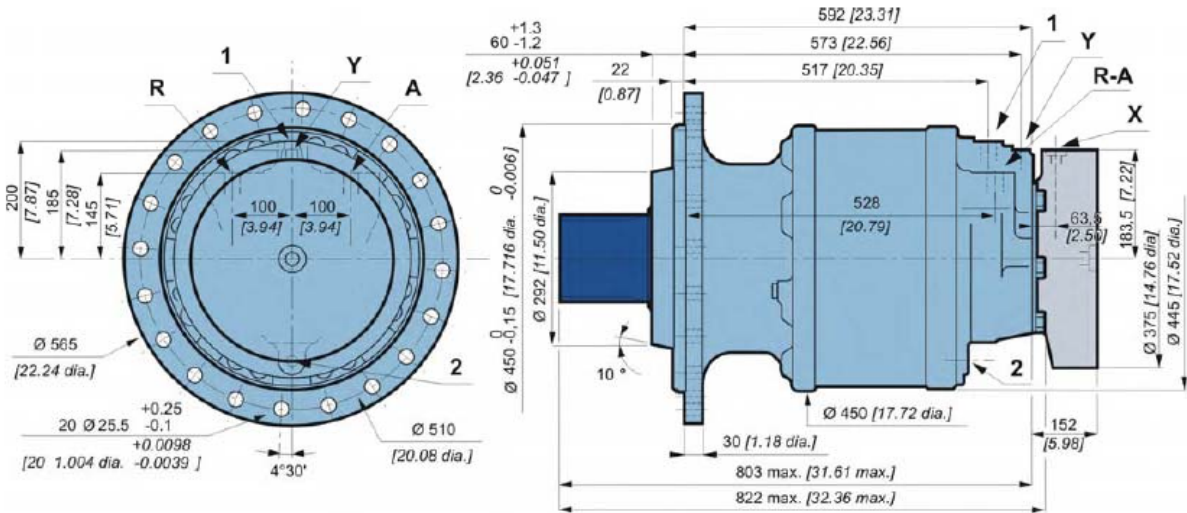


P			
1	2	3	4
4	2	1	0

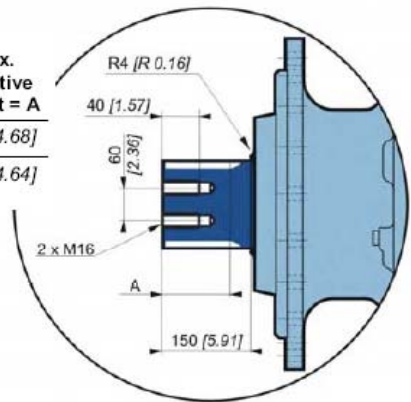


SHAFT MOTOR

Dimensions for standard 1 or 2-displacements motor (Splined shaft)



P				Norme	Nominal Ø	Module	Z	Max. effective length = A
1	2	3	4					
3	A	1	0	NF E22-141 splines	150 [5.91]	3.75	38	119 [4.68]
3	A	5	0	DIN 5480 splines	150 [5.91]	5	28	118 [4.64]

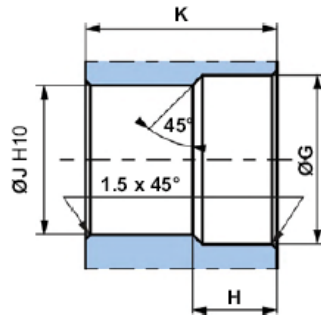


The Y port can only be used on 2-displacements motor.

	Without brake	With brake
	450 kg [990 lb]	527 kg [1 159 lb]
	9,00 L [540 cu.in]	7,50 L [450 cu.in]

See also «hydrobases» section.

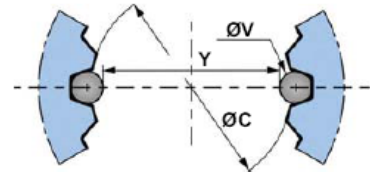
Splined coupling



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

Standard DIN 5480
 Pressure angle 30°.
 Centering on flanks.
 Slide adjustment (7H quality).

Standard NF E 22-141
 Pressure angle 20°.
 Centering on flanks.
 Slide adjustment (7H quality).



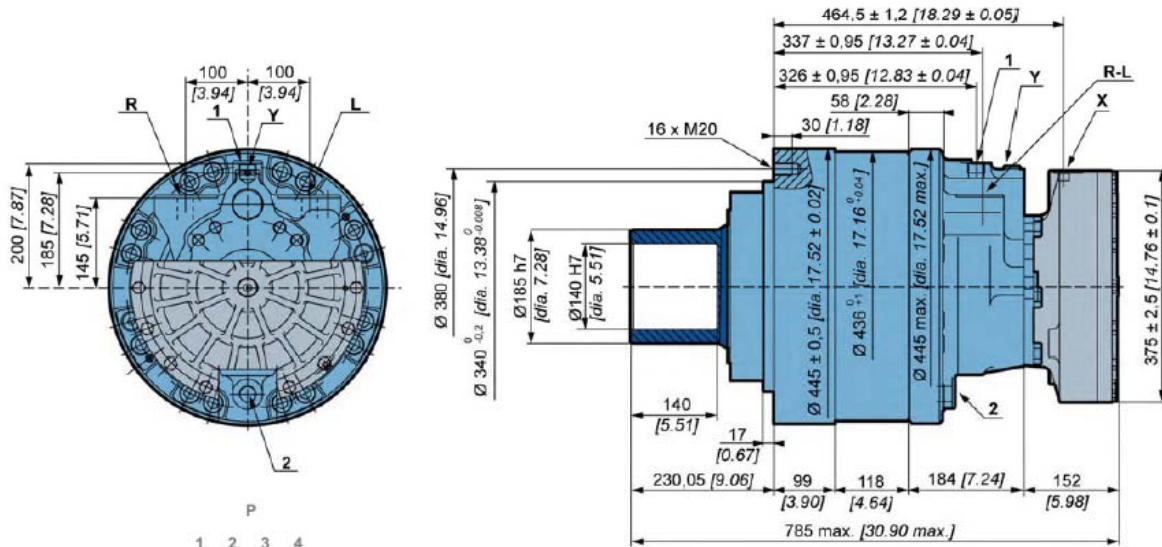
C	Ø G	H	Ø J	K	N	Mo	Z	Offset	Ø C (H10)	Ø V	Y	Tolerance (Y)
	mm [in]	mm [in]	mm [in]	mm [in]	mm [in]			mm [in]	mm [in]	mm [in]	mm [in]	µm [µin]
3 A 1 0 1 2 3 4 P	151 [5,94]	32 [1,26]	142,5 [5,61]	149 [5,87]	150 [5,91]	3,75	38	3 [0,12]	142,5 [5,61]	7,5 [0,30]	135,254 [5,32]	+ 104 / 0 [+4.094 / 0]
3 A 5 0 1 2 3 4 P	152 [5,98]	33 [1,30]	140 [5,51]	149 [5,87]	150 [5,91]	5	28	2,25 [0,0886]	140 [5,51]	9 [0,35]	131,104 [5,16]	+ 87 / 0 [+3.425 / 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 PS].

Dimensions for standard 1 or 2-displacements motor (Shaft for shrink disks)



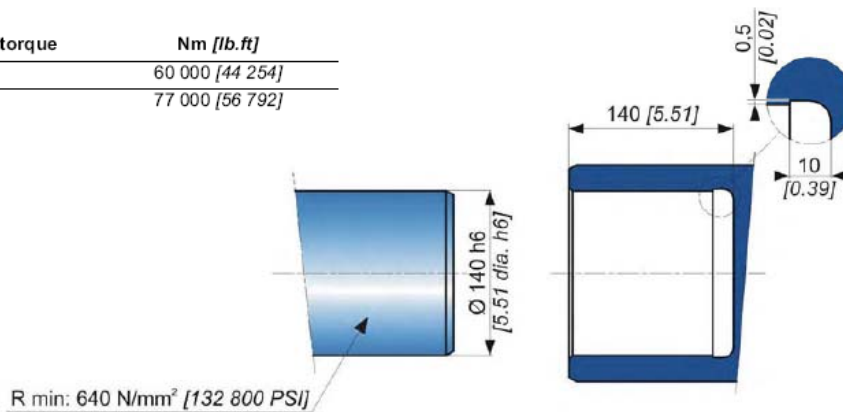
P
1 2 3 4
6 A L 0

i The Y port can only be used on 2-displacements motor.

	Without brake	With brake
	378 kg [832 lb]	455 kg [1 001 lb]
	9,00 L [540 cu.in]	7,50 L [450 cu.in]

Shrink disk

Transmissible torque	Nm [lb.ft]
Standard serie	60 000 [44 254]
Heavy serie	77 000 [56 792]

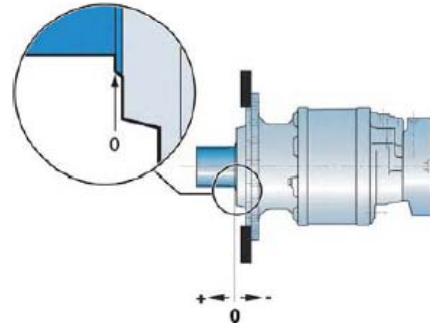


R min: 640 N/mm² [132 800 PSI]

Radial load and service life of bearings curves



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.



Permissible radial loads

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

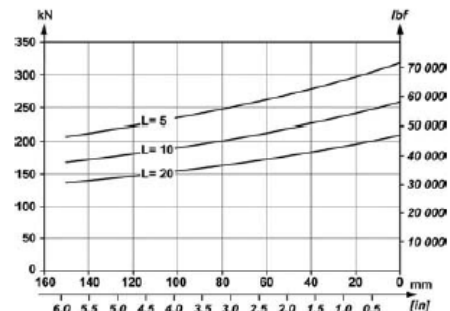
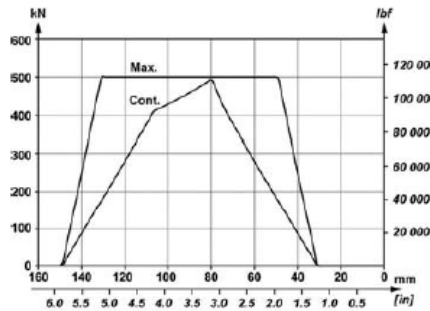
Continuous permissible loads: > 0 tr/min [> 0 RPM]; 275 bar [3 988 PSI].

Service life of bearings

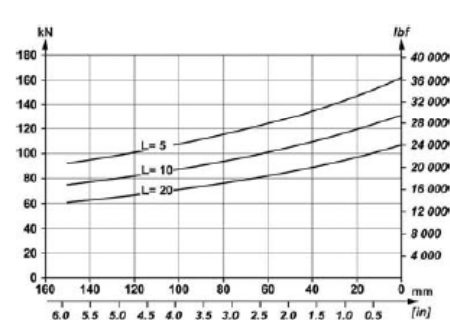
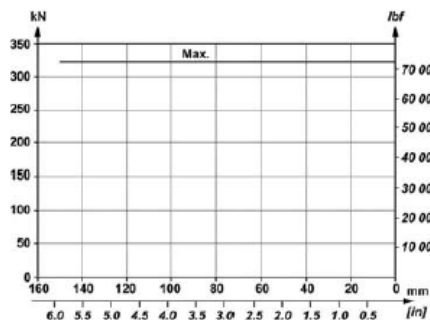
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid.

Test conditions: code 0 displacement, without axial load, shaft treated, class 10.9 and 12.9 chassis mountings.

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



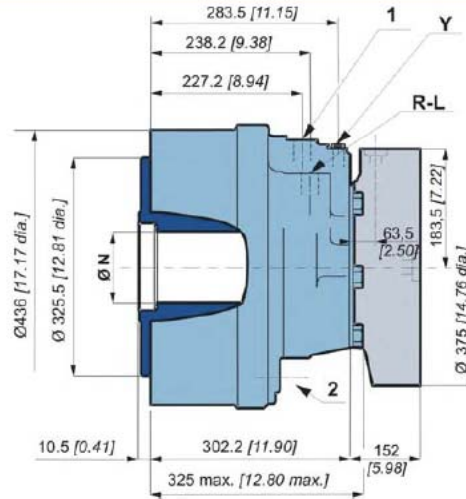
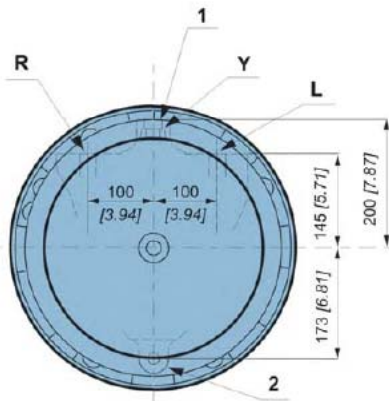
P			
1	2	3	4
6	A	L	0



HYDROBASE



Dimensions for standard 1 or 2-displacements valving



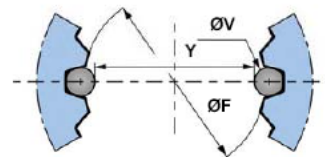
	Without brake	With brake
	245 kg [539 lb]	344 kg [756 lb]
	3,75 L [225 cu.in]	3,30 L [198 cu.in]

The Y port can only be used on 2-displacements motor.

Cylinder block splines

(as per standard NF E22-141)

ØN	Module	Z	Dimension on 2 pins		
			Y	ØV	ØF
120 [4,724]	3,75	30	105,253 [4,144]	7,5 [0,295]	112,525 [4,430]



You are advised to have the installation validated by your Poclair Hydraulics application engineer before using the hydraulic unit in an application.

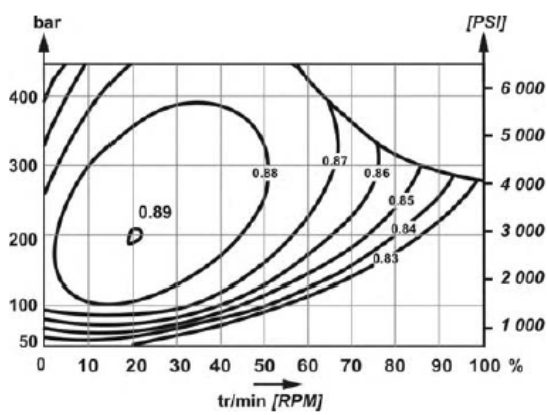
We must provide you with a detailed plan of the interface for any hydraulic unit use, consult your Poclair Hydraulics sales engineer.



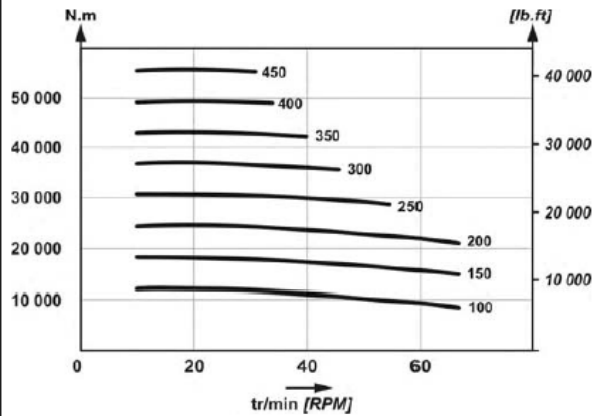
Efficiency

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].



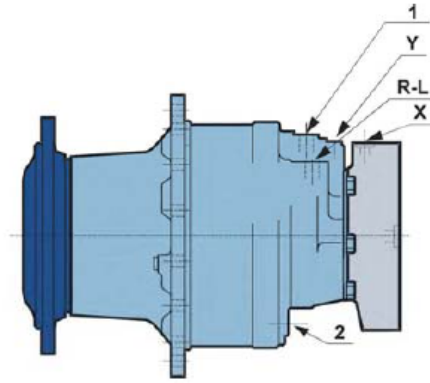
Actual output torque



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.

VALVING SYSTEM

Hydraulic connections



		Standards	Power supply	Case drain	2 nd displacement control	Control of parking break
1	1	R-L				
		1, 2				
	ISO 6 162	DN32 FN400	-	-	-	
	ISO 9 974-1	-	M27x2	-	M18x1.5	
6	R-L					
	ISO 6 162	DN25 FN400	-	-	-	
A, B, C	1	R-L				
		1, 2				
	ISO 6 162	DN32 FN400	-	Y	X	
	ISO 9 974-1	-	M27x2	M18x1.5	M18x1.5	
6	R-L					
	ISO 6 162	DN25 FN400	-	-	-	
6	R-L					
	ISO 9 974-1	-	M27x2	M18x1.5	M18x1.5	
Max. pressures		MS bar [PSI]	450 [6 527]	1 [15]	30 [435]	30 [435]

You are strongly advised to use the fluids specified in brochure "Installation guide" N° 801478197L.

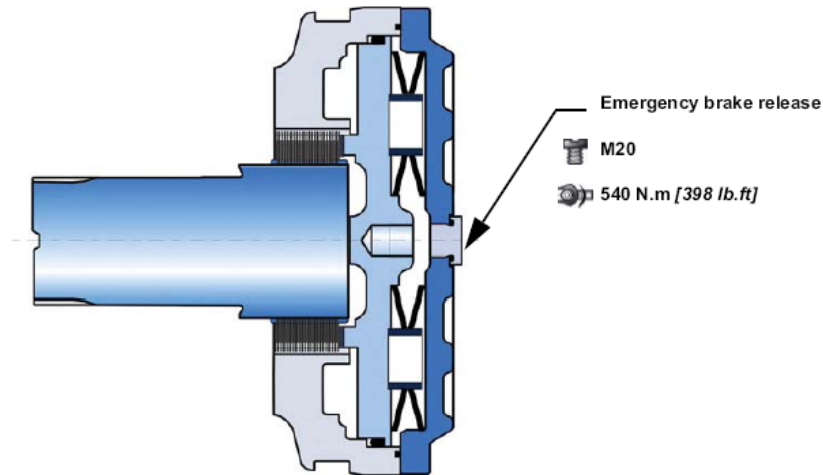
To find the connections' tightening torques, see the brochure "Installation guide" N° 801478197L.



BRAKES

	C	D	F	P	S
	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6
	M S 8 3		F 8 3		5 J M

Rear brake



Brake principle

This is a multidisc brake which functions through the absence of pressure. The spring exerts a force on the piston, which acts on the fixed and mobile discs, and thus immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.


F 8 3

Parking brake torque at 0 bars on housing (new brake)	42 000 Nm [30 980 lb.ft]
Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes)	27 300 Nm [20 140 lb.ft]
Residual parking braking at 0 bars on housing *	31 500 Nm [23 230 lb.ft]
Min. brake release pressure	14 bar [203 PSI]
Max. brake release pressure	30 bar [435 PSI]
Oil capacity	450 cm ³ [27,5 cu.in]
Volume for brake release	135 cm ³ [8,2 cu.in]

* After emergency brake has been used



Do not run-in the multidisc brakes.

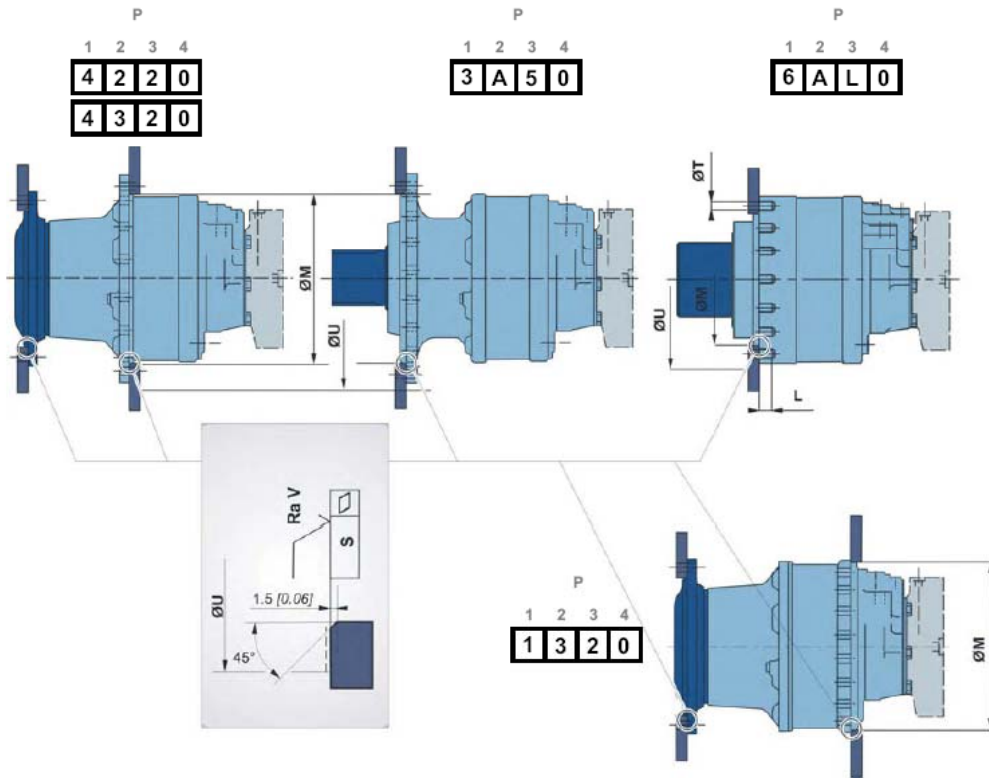


A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For more information, please contact your Poclairn Hydraulics application engineer.



INSTALLATION

Customer's chassis and wheel rim mountings



	ØM ⁽¹⁾ mm [in]	ØU mm [in]	ØT mm [in]	L mm [in]	S mm [in]	Ra V µm [µin]		Class	*
P 1 2 3 4 4 2 2 0 4 3 2 0 3 A 5 0	450 [17,72]	565 [22,24]	-	-	0,2 [0,008]	12,5 [0,49]	16 x M24	12,9	1 200 [885,1]
							20 x M24		
P 1 2 3 4 6 A L 0	340 [13,39]	446 [17,56]	21 [0,827]	30 [1,181]			16 x M20		690 [508,9]
P 1 2 3 4 1 3 2 0	450 [17,72]	565 [22,24]	-	-			16 x M24		1 200 [885,1]

(1) +0,3 [+0,012]
+0,2 [+0,008]

* : Min. values for torque and load to be transmitted.



Take care over the immediate environment of the connections.

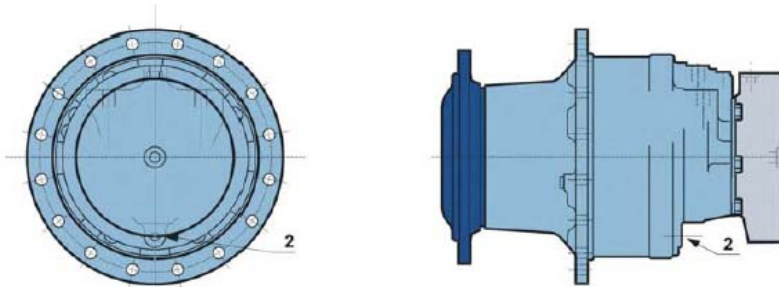


OPTIONS

	C	D	F	P	S
	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6
M S 8 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	5 J M <input type="checkbox"/>

5 Additional drain on valving system (Steel plug)

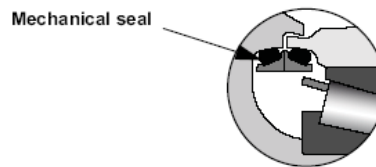
Additional drain on valving system.



This additional drain is standard on all motors.

C Abrasive environments (mechanical seal)

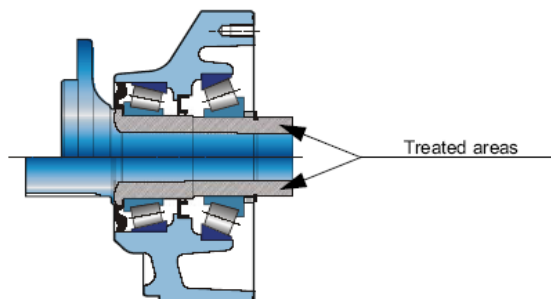
Some environments can be very harmful. The mechanical seal gives reinforced motor sealing.



These seals are standard on wheel motors.

J Treated shaft

Heat treatment on the indicated bearing radius and splines.



This treatment is standard on all motors.

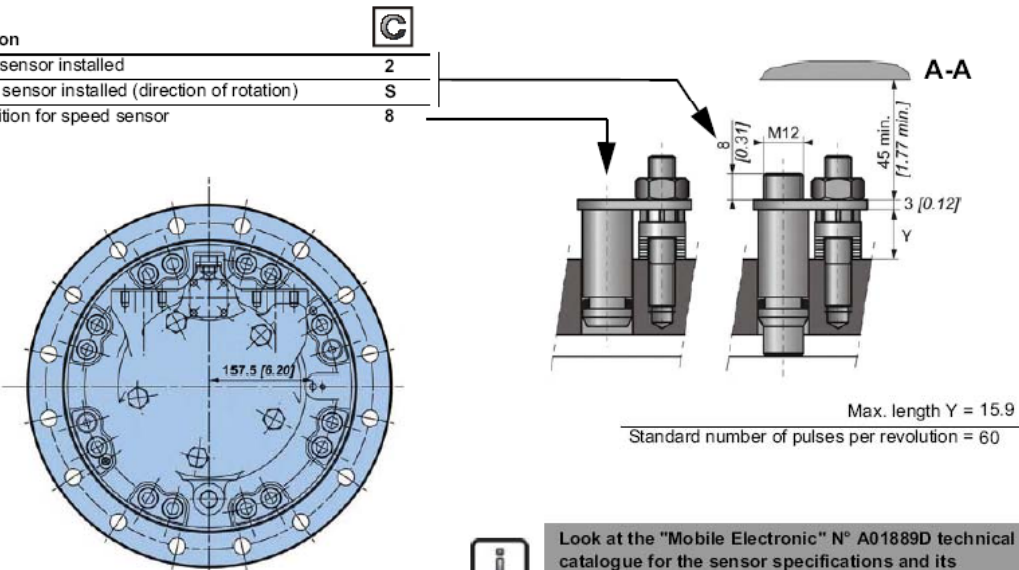
M High speed or reduced charge pressure

Option M leads to reduction in charge pressure or increase in motor speed.

Standard for all motors.

2 S 8 Installed speed sensor or predisposition

Designation	C
T4 Speed sensor installed	2
TR Speed sensor installed (direction of rotation)	S
Predisposition for speed sensor	8



Max. length Y = 15.9
Standard number of pulses per revolution = 60

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

i To install the sensor, see the "Installation guide" brochure No. 801478197L.

6 Industrial support

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



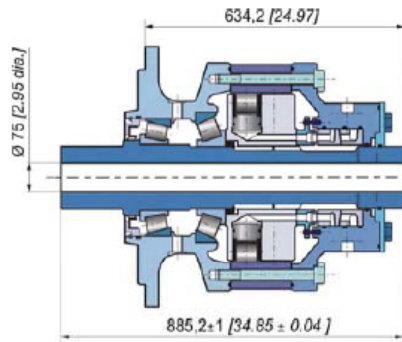
For a precise calculation, consult your Poclain Hydraulics application engineer.

7 Diamond™

Special treatment of the motor core which considerably increases its strength, making the motor much more tolerant to temporary instances of the operating conditions being exceeded.

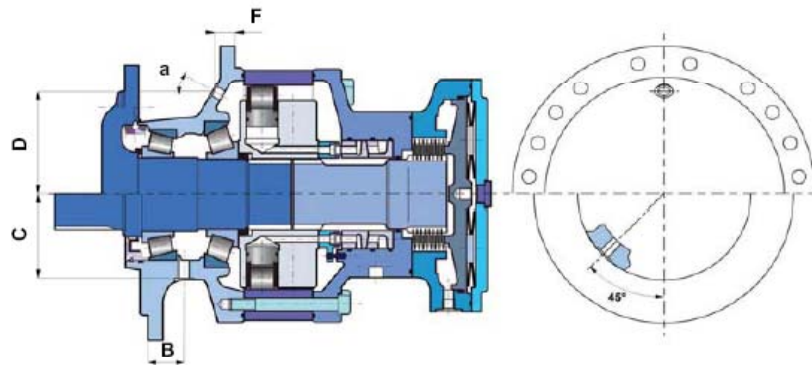


A Hollow shaft



Radial load x 0.75
No torque transmittable to the rear

B Drain on the bearing support



		B	C	D	F	a
		mm [in]	mm [in]	mm [in]	mm [in]	
Wheel motor	M27 x 2	-	-	173 [6,81]	40 [1,57]	36°
Shaft motor		70 [2,76]	185 [7,28]	-	-	

D Special paint or no paint

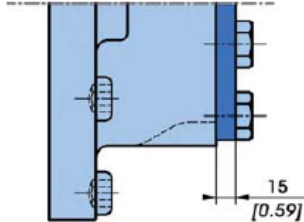
The motors are delivered with Poclairn Hydraulics yellow ochre primer as standard.



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

E Reinforced sealing

In case of motor without brake, this option requires a rear reinforced plate **R83** (15 [0.594] thick) instead of plate **A83** (6 [0.237] thick).

**N Bleed screw on bearing support**

A purge screw enables the motor to be mounted vertically, the shaft oriented upward.

P Customized identification plate

Your part number can be engraved on the plate.



Consult your Poclair Hydraulics application engineer for other possibilities.