

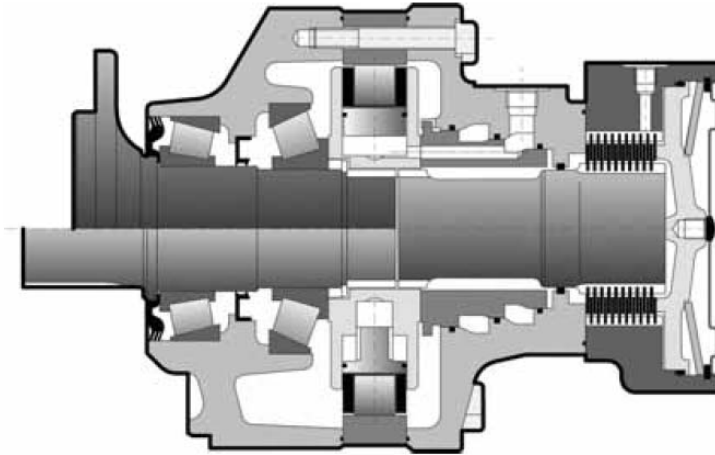


MS MOTORS



MS/MSE05. HYDRAULIC MOTOR.

CHARACTERISTICS



Motor inertia = 0.03 kg.m²
 Noise emissions = 60 dBA

	C	Displacement		Theoretical torque		Max. power			Max. speed		Max. pressure					
		1	2	at 100 bar	at 1000 PSI	1	2 preferred	2 non-preferred	1	2						
		cm ³ /tr [cu.in./rev.]	cm ³ /tr [cu.in./rev.]	Nm	lb.ftg	kW [HP]	kW [HP]	kW [HP]	tr/min	RPM	bar [PSI]					
Cams with equal lobes MS05	6	260 [15,9]	130 [7,9]	413	[210]	29 [39]	19 [25]	15 [20]		265	450 [6 527]					
	8	376 [22,9]	188 [11,5]	598	[304]					250						
	0	468 [28,5]	234 [14,3]	744	[378]					240						
	1	514 [31,3]	257 [15,7]	817	[416]					220						
	2	560 [34,2]	280 [17,1]	890	[453]					200						
	8	530 [32,3]	265 [16,2]	843	[429]					200						
Cams with unequal lobes MSE05	0	625 [38,1]	312,5 [19,1]	994	[505]	29 [39]	19 [25]	15 [20]		190	400 [5 802]					
	1	688 [42,0]	344 [21,0]	1094	[556]					175						
	2	750 [45,7]	375 [22,9]	1193	[606]					160						
	3	820 [50,0]	410 [25,0]	1304	[663]					145						
	D	419 [25,6]	280 [17,1] 138 [8,4]	666	[339]					29 [39]		19 [25]	15 [20]		200	450 [6 527]
	N	422 [25,7]	234 [14,3] 188 [11,5]	671	[341]										240	
H	445 [27,1]	257 [15,7] 188 [11,5]	708	[360]	220											
A	468 [28,5]	280 [17,1] 188 [11,5]	744	[378]	200											
Cams with unequal lobes MSE05	D	560 [34,2]	374 [22,8] 185 [11,3]	890	[453]	29 [39]	19 [25]	15 [20]			160				400 [5 802]	
	N	564 [34,4]	313 [19,1] 251 [15,3]	897	[456]						190					
	H	595 [36,3]	344 [21,0] 251 [15,3]	946	[481]					175						
	A	625 [38,1]	374 [22,8] 251 [15,3]	994	[505]					160						

① First displacement

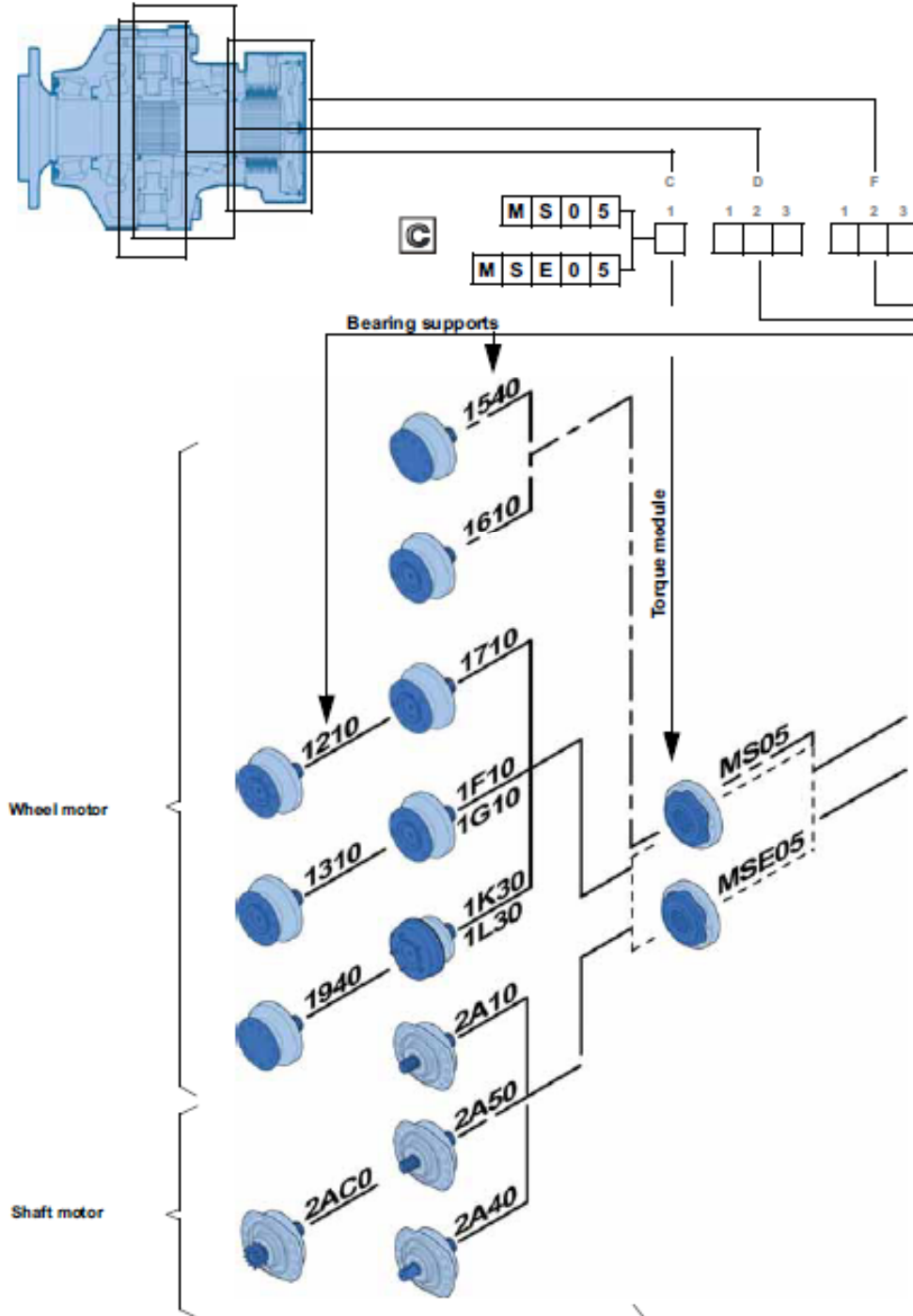
② Second displacement

* See option "M" for higher speed.

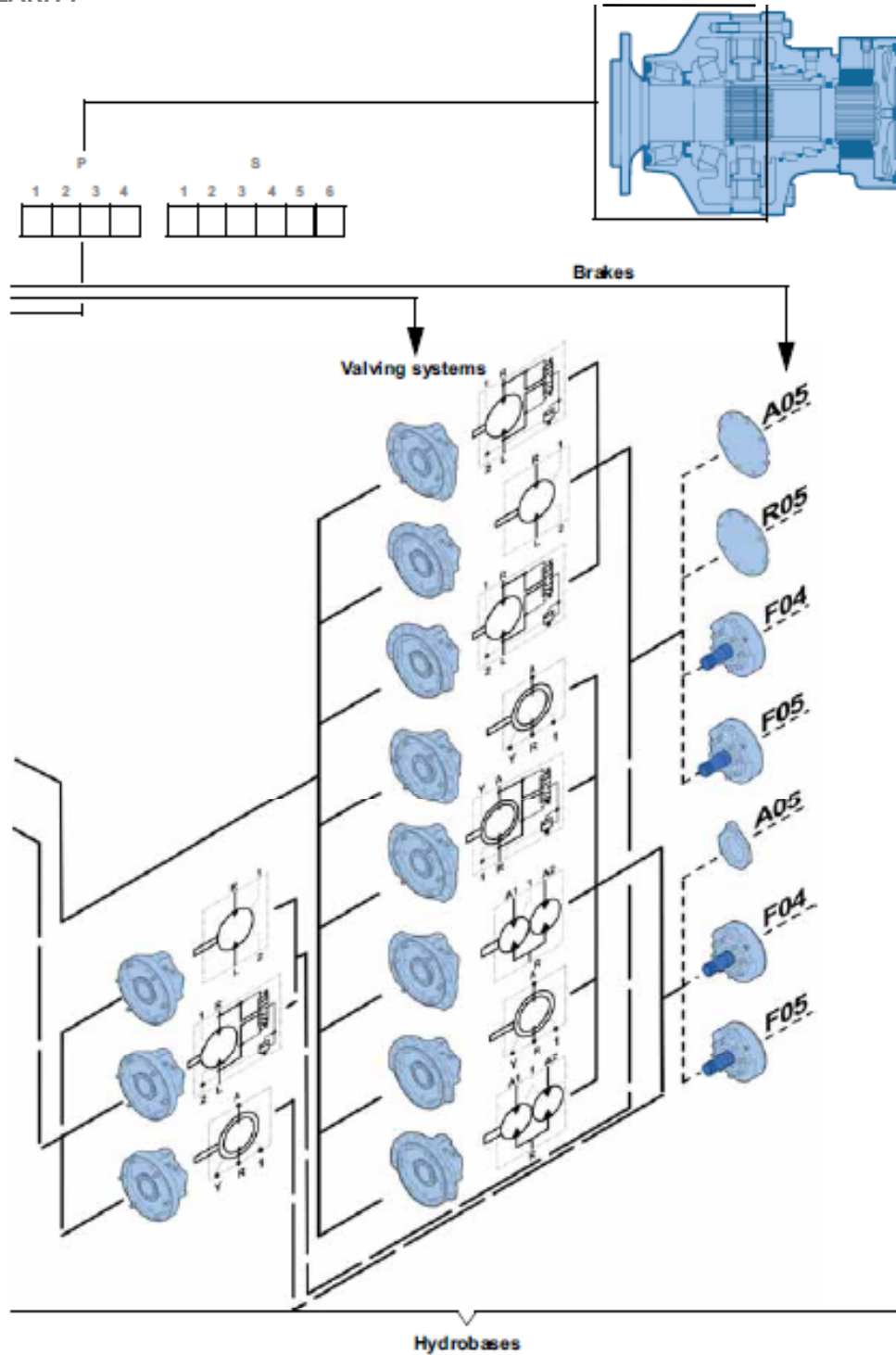
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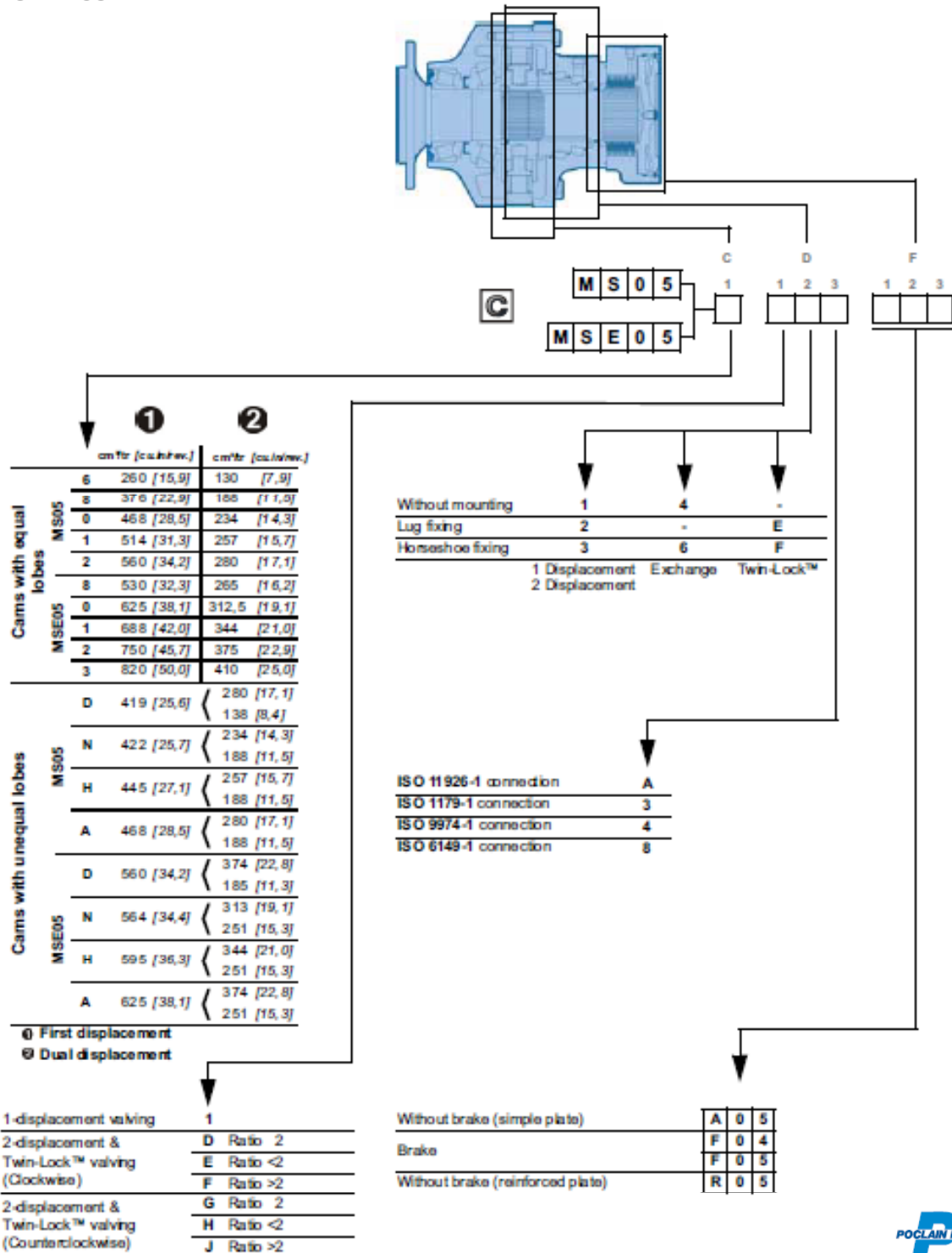
MODULARITY



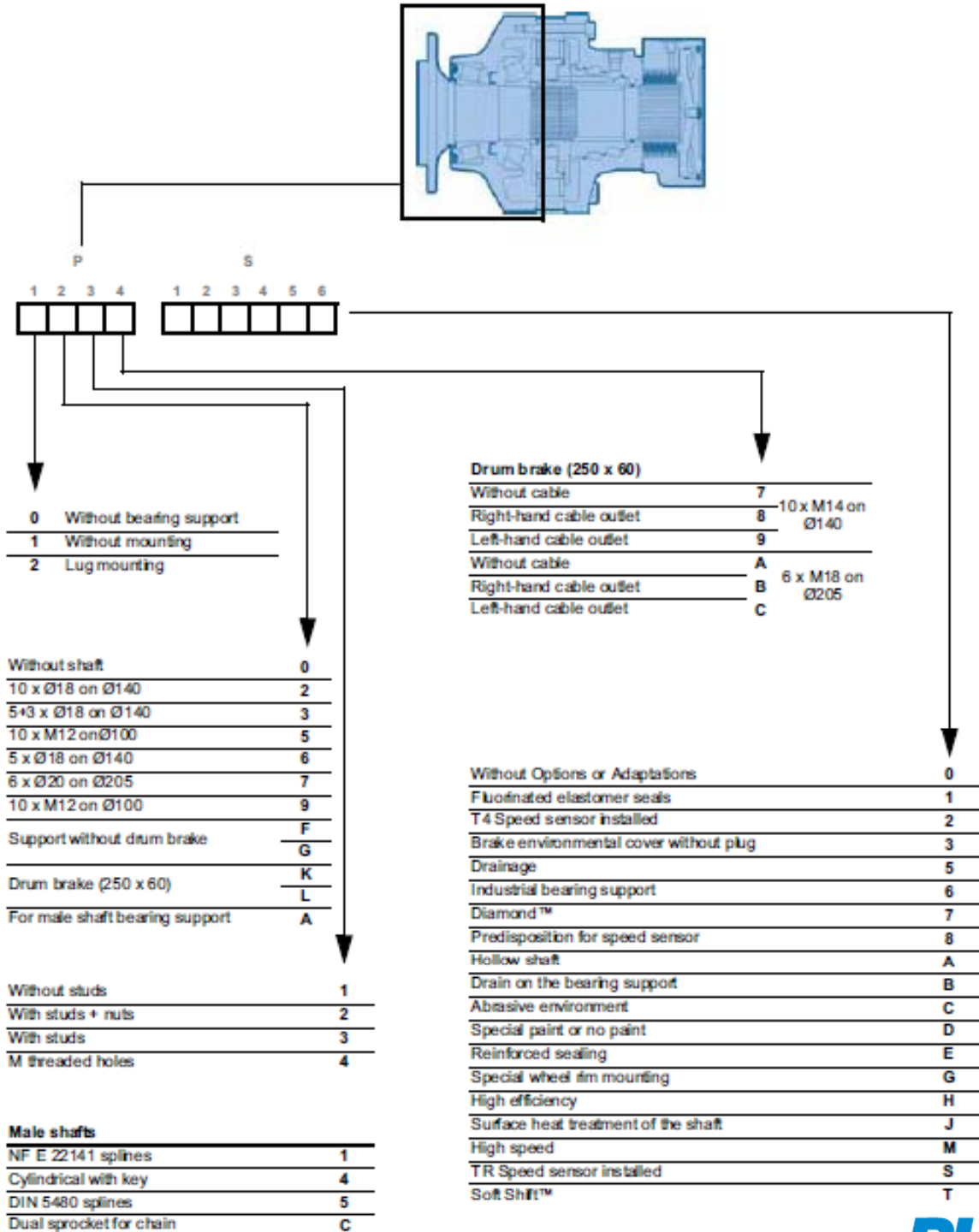
MODULARITY



MODEL CODE



MODEL CODE



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:

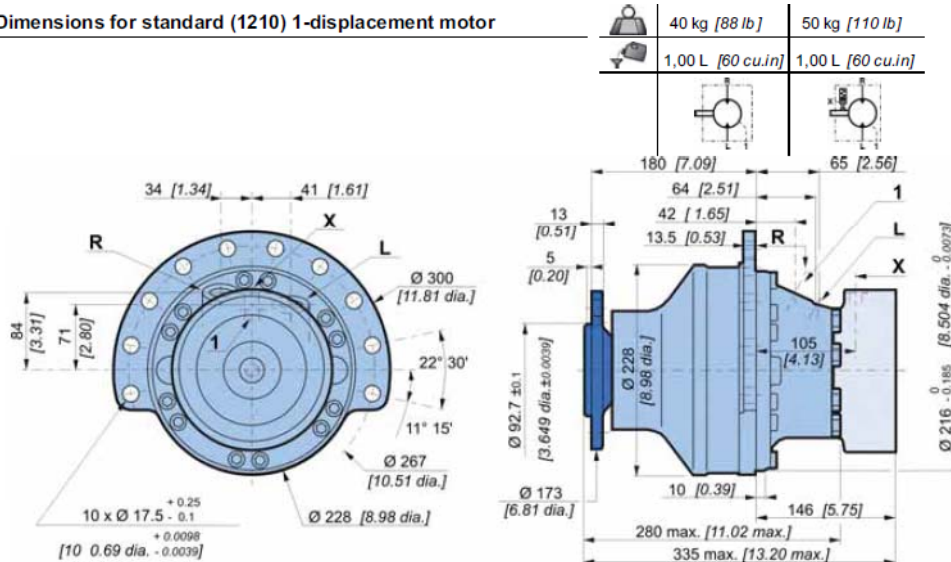
**Safety comment.**

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.**

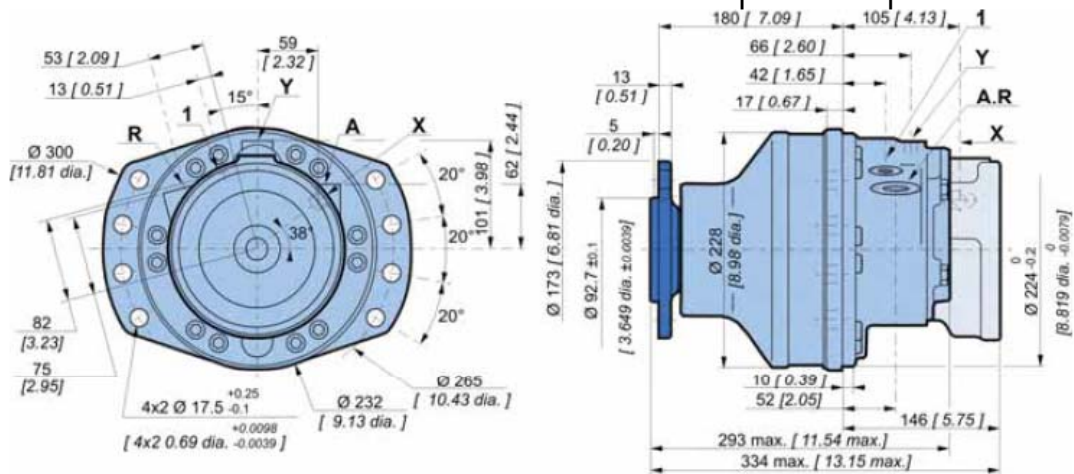
The views in this document are created using metric standards.

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

**Dimensions for standard (1210) 1-displacement motor**

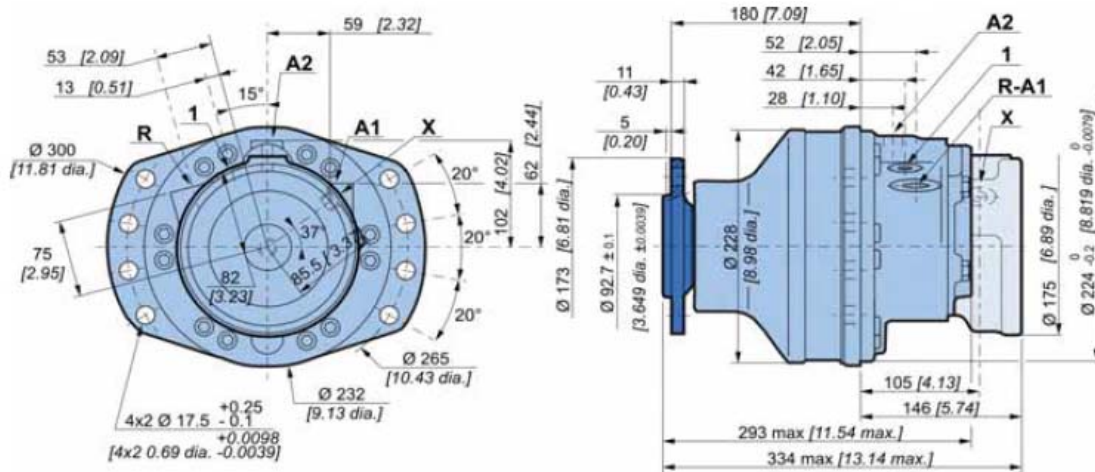

WHEEL MOTOR

Dimensions for standard (1210) 2-displacement motor



	41 kg [90 lb]	52 kg [114 lb]
	0,50 L [30 cu.in]	0,50 L [30 cu.in]

Dimensions for standard (1210) Twin-Lock™



	41 kg [90 lb]	52 kg [114 lb]
	0,50 L [30 cu.in]	0,50 L [30 cu.in]



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



Support types

	C				D			F			P				S					
	M S 0 5				1 2 3			1 2 3			1 2 3 4				1 2 3 4 5 6					
	M S E 0 5				1 2 3			1 2 3			1 2 3 4				1 2 3 4 5 6					
	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 2 1 0 1 2 3 4	Ø 92,7 [3,65 dia.]	Ø 140 [5,51 dia.]	Ø 170 [6,69 dia.]	178,6 [7,03]	Ø 228 [8,98 dia.]	Ø 18 [0,71 dia.]	10 x M14x1.5	11 [0,43]											
	1 7 1 0 1 2 3 4	Ø 160,7 [6,33 dia.]	Ø 205 [8,07 dia.]	Ø 245 [9,65 dia.]	178,5 [7,03]	Ø 228 [8,98 dia.]	Ø 20 [0,79 dia.]	6 x M18x1.5	14 [0,55]											
	1 3 1 0 1 2 3 4	Ø 95,7 [3,77 dia.]	Ø 140 [5,51 dia.]	Ø 180 [7,09 dia.]	145,4 [5,72]	Ø 228 [8,98 dia.]	Ø 18 [0,71 dia.]	5 x M14x1.5	10,5 [0,41]											
	1 6 1 0 1 2 3 4	Ø 92,7 [3,65 dia.]	Ø 140 [5,51 dia.]	Ø 180 [7,09 dia.]	145,4 [5,72]	Ø 228 [8,98 dia.]	Ø 18 [0,71 dia.]	5 x M14x1.5	10,5 [0,41]											
	1 5 4 0 1 2 3 4	-	Ø 100 [3,94 dia.]	Ø 120 h7 [4,72 dia.]	145,4 [5,72]	Ø 228 [8,98 dia.]	10 x M12x1.75	-	11,3 [0,44]											
	1 9 4 0 1 2 3 4	-	Ø 100 [3,94 dia.]	Ø 120 h7 [4,72 dia.]	178,7 [7,04]	Ø 228 [8,98 dia.]	10 x M12x1.75	-	11,25 [0,44]											
	1 K 3 0 1 L 3 0 1 2 3 4	Ø 92,7 [3,65 dia.]	Ø 140 [5,51 dia.]	Ø 276 [10,87 dia.]	209 [8,23]	Ø 228 [8,98 dia.]	M14x1.5 M18x1.5	10 x 6 x	30 35 [1,18] [1,38]											
	Also see 'Brakes' section (thumbnail opposite).																			
	1 G 1 0 1 2 3 4	Ø 92,7 [3,65 dia.]	Ø 140 [5,51 dia.]	Ø 170 [6,69 dia.]	201,2 [7,92]	Ø 228 [8,98 dia.]	Ø 18 [0,71 dia.]	10 x M14x1.5	-											
	1 F 1 0 1 2 3 4	Ø 160,7 [6,33 dia.]	Ø 205 [8,07 dia.]	Ø 245 [9,65 dia.]	201,2 [7,92]	Ø 228 [8,98 dia.]	Ø 20 [0,79 dia.]	6 x M18x1.5	-											



The supports in gray must not be assembled with an MSE hydrobase.



For stronger bearings, consult with your Poclair Hydraulics application engineer.

Studs

		P	C min.	C max.	D	Class	(1)	(2)	
		mm [in]	mm [in]	mm [in]	mm [in]		N.m [lb.ft]	N.m [lb.ft]	
Various studs	M14x1.5	45 [1.77]	5 [0.20]	18 [0.71]	16.5 [0.65]		12.9	200 [147.5]	
	M14x1.5	50 [1.97]		23 [0.91]					250 [184.4]
	M14x1.5	62 [2.44]		33 [1.30]					420 [309.8]
	M18x1.5	65 [2.56]		28 [1.10]					550 [405.7]
Screws	M12x1.75	-	-	-	-	10.9	120 [88.5]		
	1/2"-20 UNF	-	-	-	-	8.8	120 [88.5]		

(*) 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 [$>34\ 800\ \text{PSI}$]).
 (2) Standard : Suggested tightening torque in other cases (Re steel flange 360 > N/mm² [$>52\ 215\ \text{PSI}$]).



See generic installation motors N°801478197L.



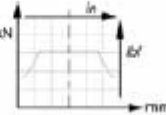
Load curves

Permissible radial loads

Test conditions :

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

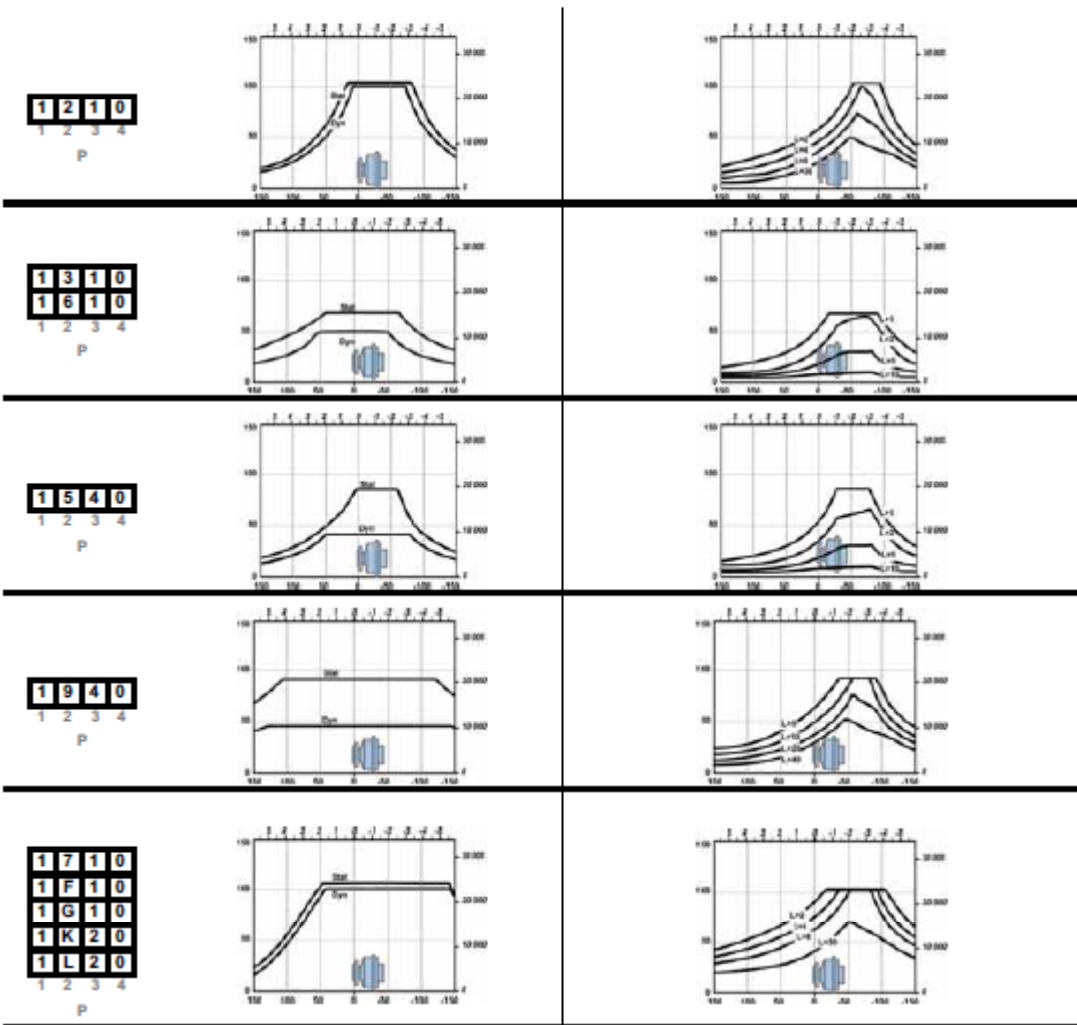
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque




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.

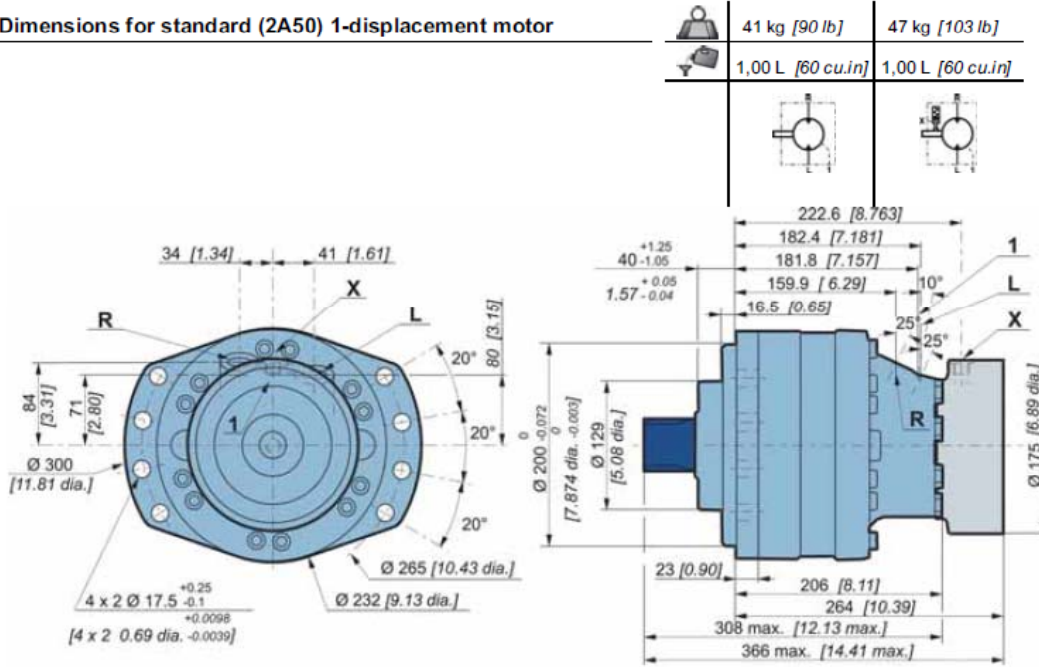


 The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load/ Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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

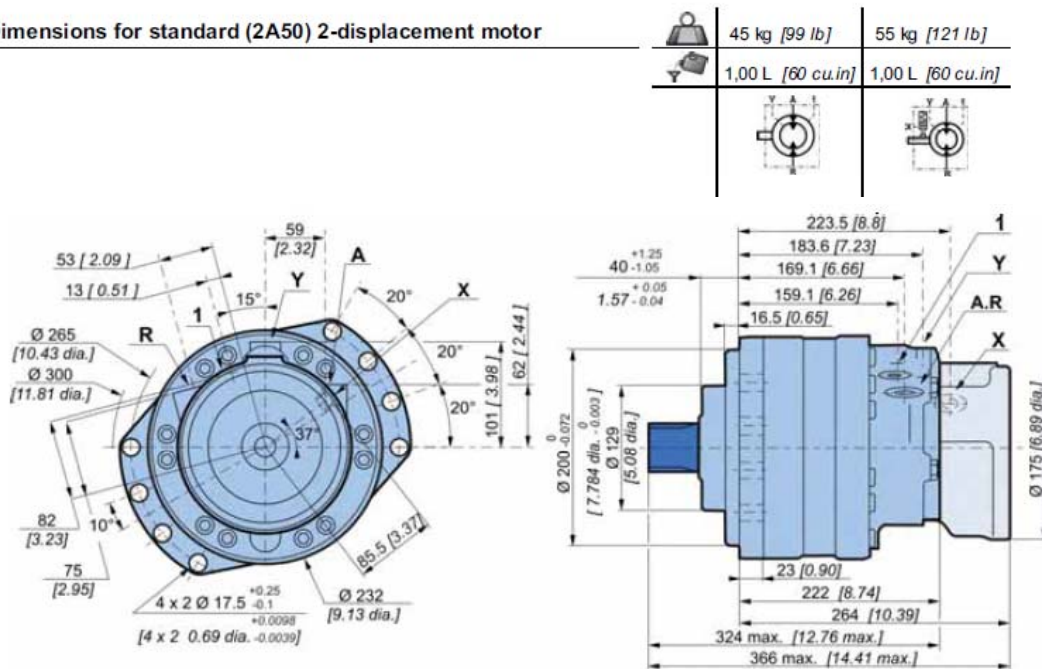


SHAFT MOTOR

Dimensions for standard (2A50) 1-displacement motor



Dimensions for standard (2A50) 2-displacement motor



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



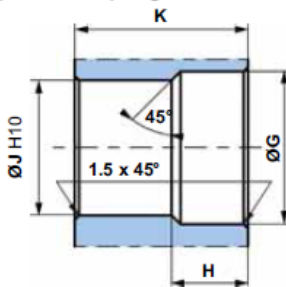
Support types



C			A	B	C	D	E	F	G	
DIN 5480 splines										
2 A 5 0	Nominal Ø	55 [2,17]	15 [0,59]	R 2,3 [R 0,09]	23,8 [0,94]	2 x M10	23 [0,91]	60 [2,36]	-	
P	Module	3								
NF E22-141 splines										
2 A 1 0	Nominal Ø	50 [1,97]	15 [0,59]	R 2,3 [R 0,09]	23,8 [0,94]	2 x M10	20 [0,79]	54 [2,13]	-	
P	Module	1.667								
ANSI B29-1 or ISO 606 pinion										
2 A C 0	Chain no.	100	158,2 [6,23]	106 [1,97]	49 [1,91]	17,6 [0,69]	117 [4,61]	-	-	
P	Z	12								
	Pitch	31,75								
	Pitch Ø	122,7 [4,83]								

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

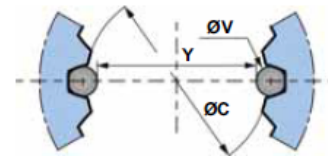
Splined coupling



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 µm [µin]
2 A 1 0	P	51 [2,01]	23 [0,91]	46,7 [1,84]	53 [2,09]	50 [1,97]	1,667	28	+1,333 [+0,052]	46,7 [1,84]	3,333 [0,1312]	43,446 [1,71]	+ 86 / 0 [+3.386 / 0]
2 A 5 0	P	56,5 [2,22]	24 [0,94]	49 [1,93]	59 [2,32]	55 [2,17]	3	17	+0,35 [+0,0138]	49 [1,93]	5,25 [0,21]	43,807 [1,7247]	+ 78 / 0 [+3.071 / 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].



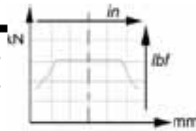
Load curves

Permissible radial loads

Test conditions :

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

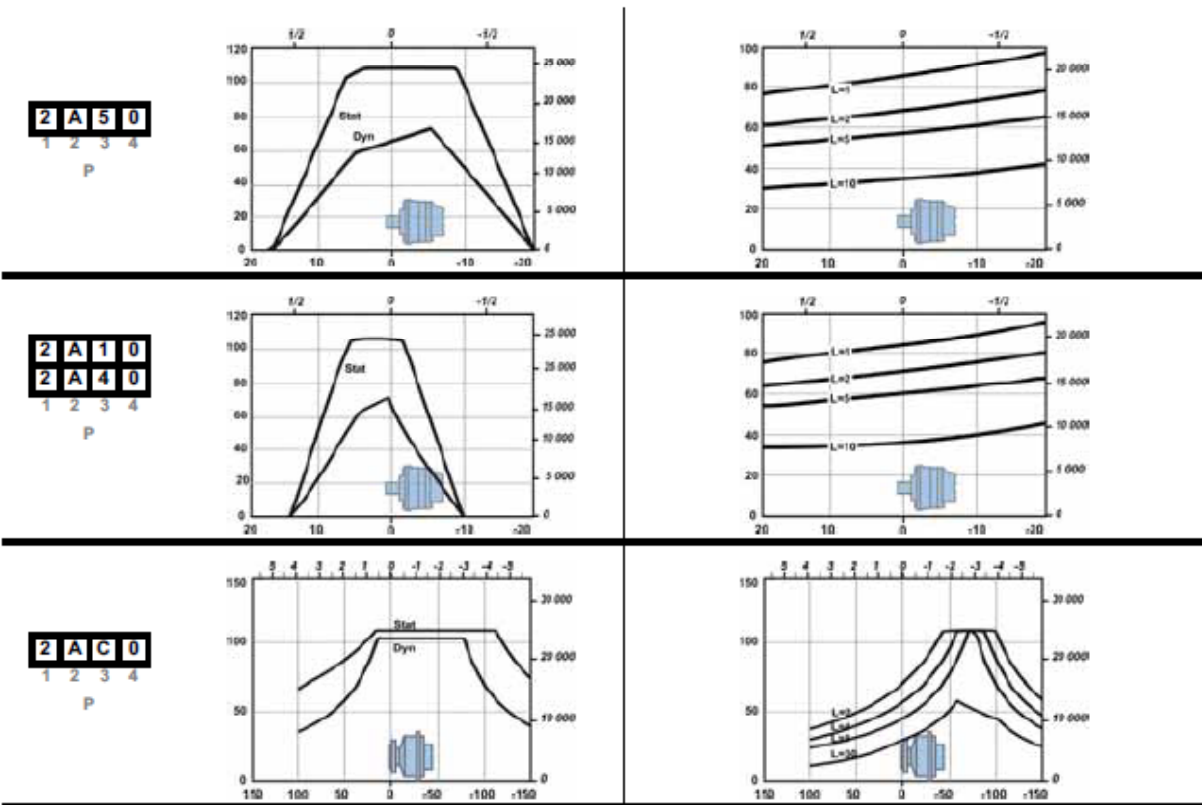
Dynamic : 0 tr/min [0 RPM], code 0 displacement, without axial load at max. torque



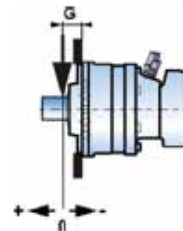
Service life of bearings

Test conditions :

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



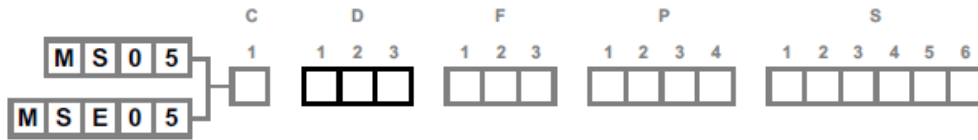
The service life of the components is influenced by the pressure. You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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



C	G
2 A 1 0	77,25 [3,04]
2 A 5 0	81,75 [3,22]
2 A C 0	61,45 [2,42]

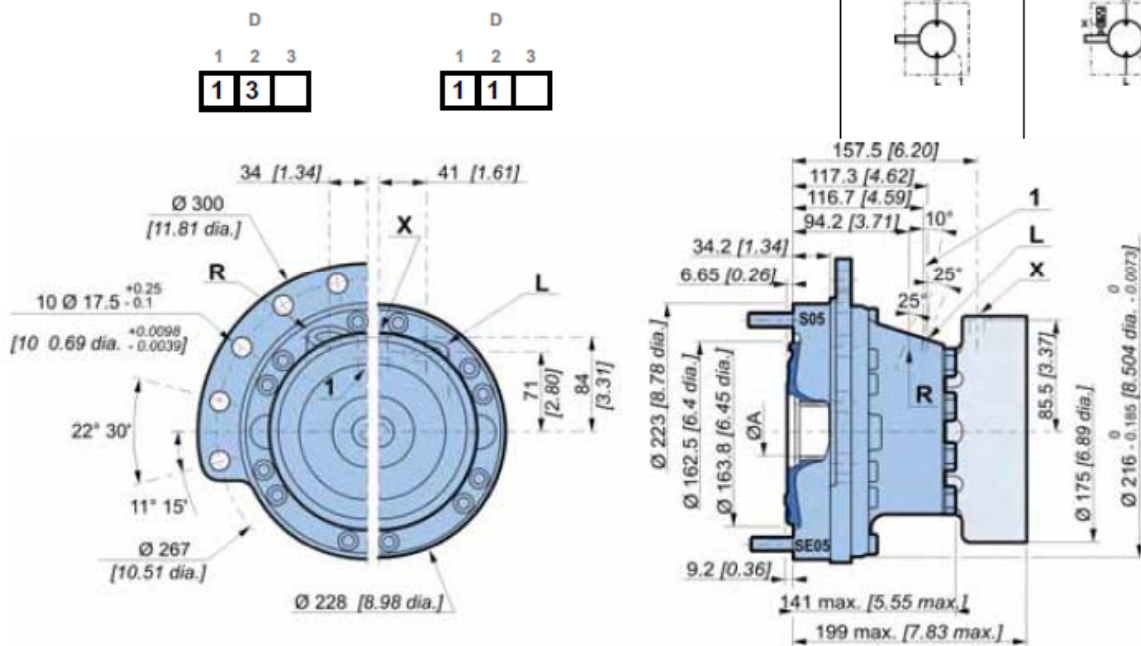


VALVING SYSTEMS AND HYDROBASES



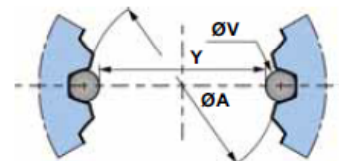
Dimensions for 1-displacement valving

	23,7 kg [52 lb]	31,7 kg [70 lb]
	0,50 L [30 cu.in]	1,00 L [60 cu.in]



Cylinder block splines
(as per standard NF E22-141)

ØA	Module	z	Dimension on 2 pins	
			Y	ØV
50 [1,968]	1,667	28	43,446 [1,710]	3,33 [0,131]



You are advised to have the installation validated by your Poclairn Hydraulics application engineer before using the

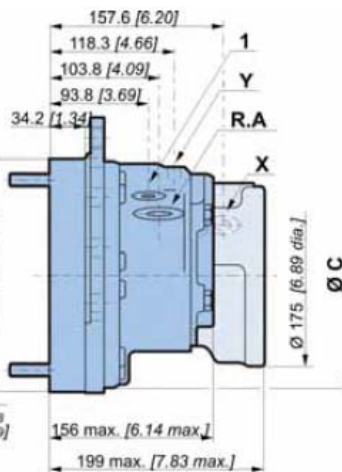
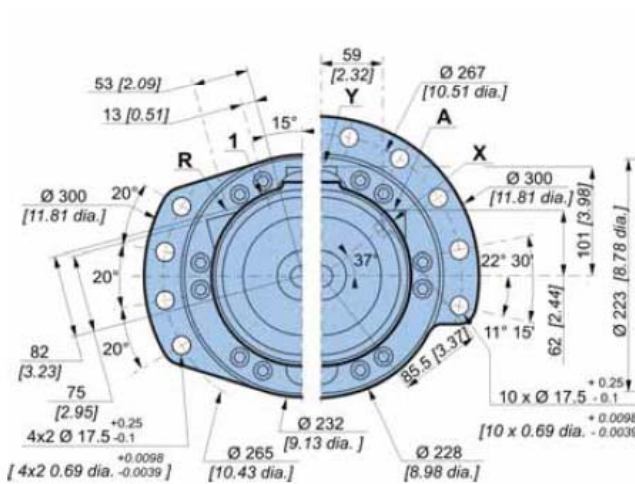
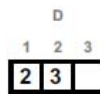
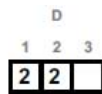
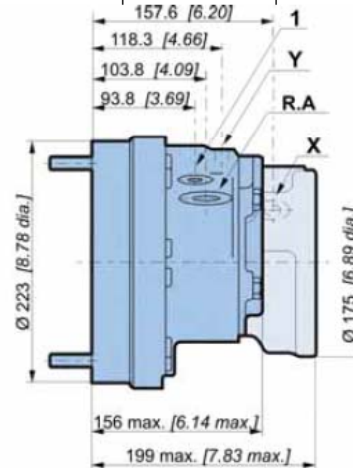
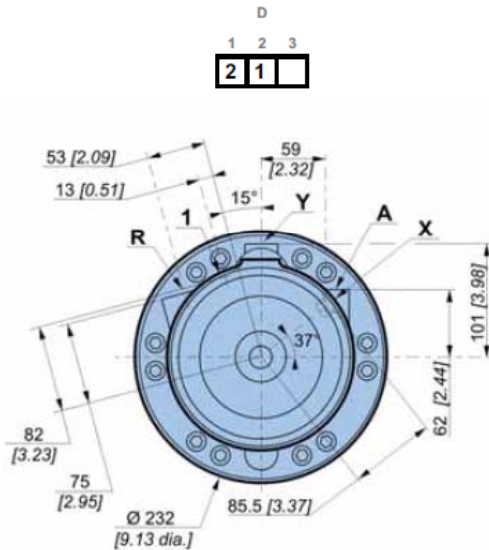


We must provide you with a detailed plan of the interface for any hydraulic unit use, consult your Poclairn Hydraulics sales en-



Dimensions for 2-displacement valving

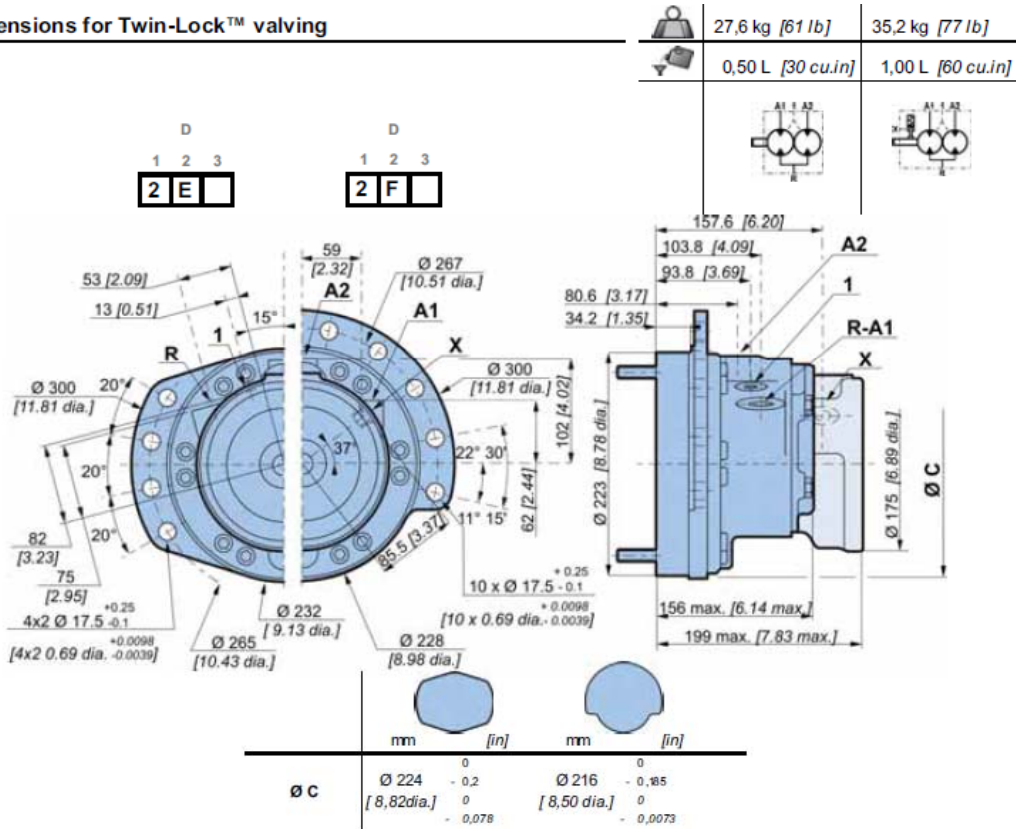
	27,6 kg [61 lb]	35,2 kg [77 lb]
	0,50 L [30 cu.in]	1,00 L [60 cu.in]



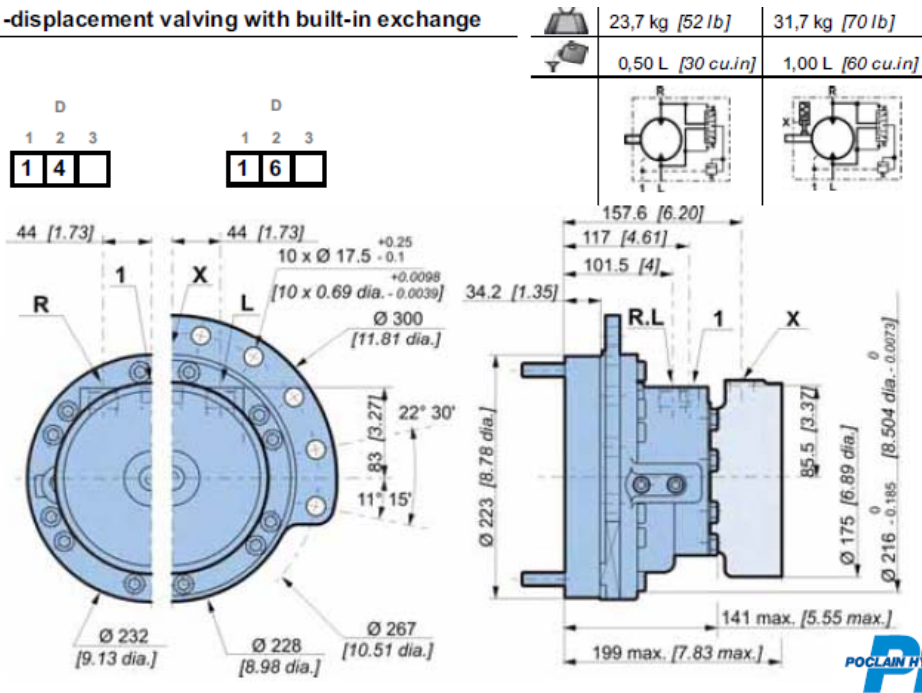
Ø C	mm [in]		mm [in]	
	Ø 224 [8,82dia.]	0 - 0,2	Ø 216 [8,50 dia.]	0 - 0,85
	0 - 0,078		0 - 0,0073	



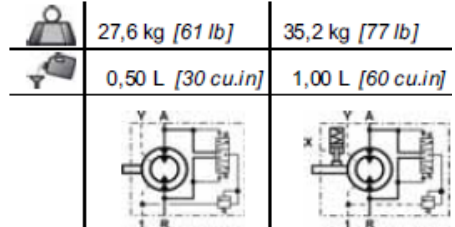
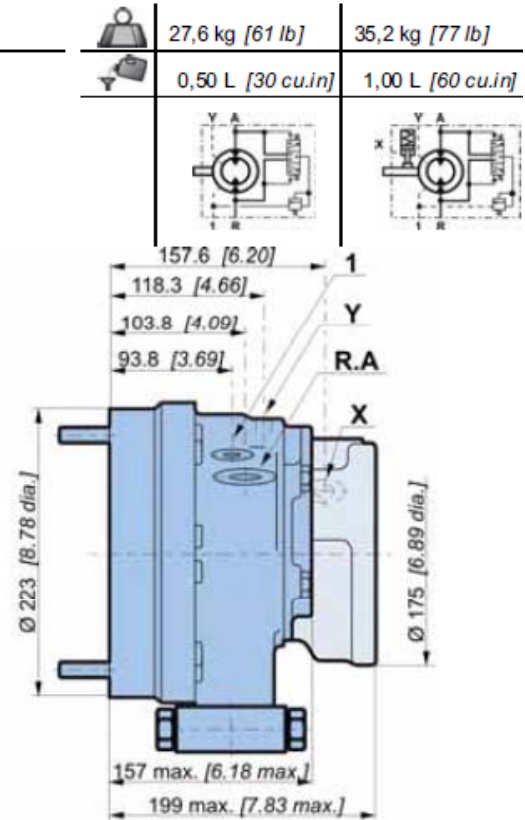
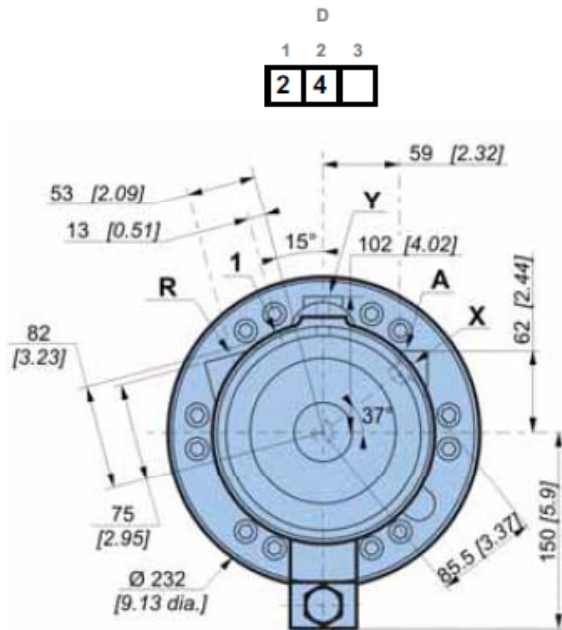
Dimensions for Twin-Lock™ valving



Dimensions for 1-displacement valving with built-in exchange



Dimensions for 2-displacement valving with add-on exchange



Exchange

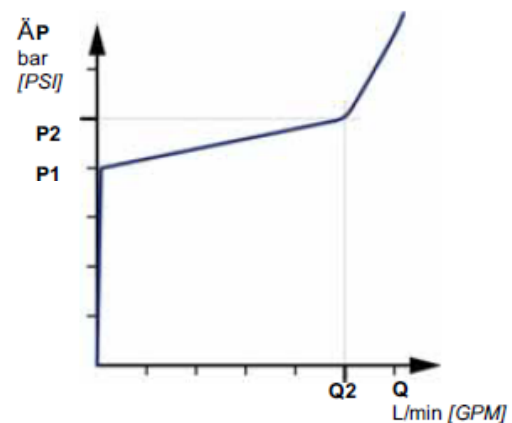
When a coding request is made, you must specify information on the threshold of the selector and the valve.

Selector spool

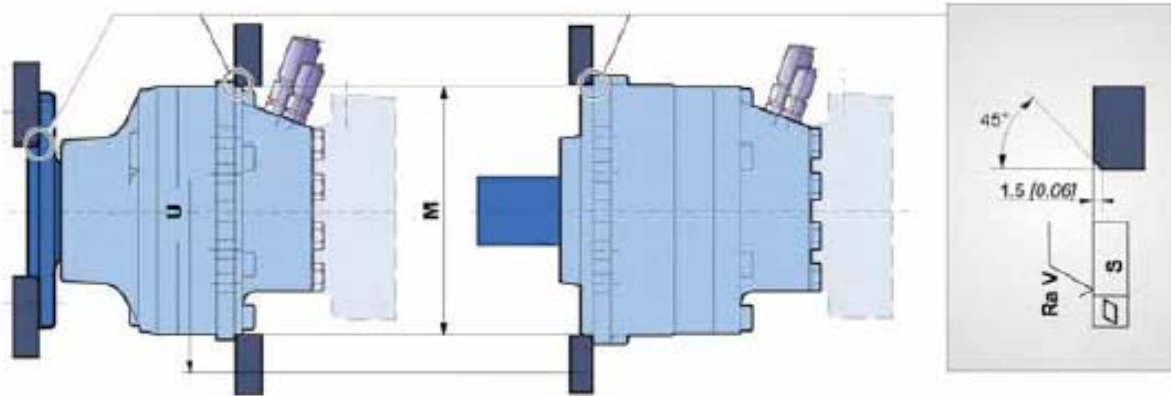
Selector threshold bar [PSI]	Opening pressure of selector bar [PSI]
8 [116]	9.9 ± 1.2 [144 ± 17]

Fitted valve







P1 bar [PSI]	Q2 L/min [GPM]	P2 bar [PSI]
13.5 [195]	14 [3.7]	16 [232]
18 [261]	15 [3.9]	21 [305]
22 [319]	16 [4.2]	25 [363]



Chassis mountings



Take care over the immediate environment of the connections.

MS05 / M SE05	ØM ⁽¹⁾	ØU	S	Ra V		Class	 *
P	200 [7,87]	265 [10,43]	0,2 [0,008]	12,5µm [0,49µin]	2 x 4 M16 x 2	8,8	210 N.m [155 lb.ft]
R 	216 [8,50]	267 [10,51]			10 M16 x 2		
R 	224 [8,82]	265 [10,43]			2 x 4 M16 x 2		
P	200 [7,87]	265 [10,43]			2 x 4 M16 x 2		
R 	216 [8,50]	267 [10,51]			10 M16 x 2		
R 	224 [8,82]	265 [10,43]			2 x 4 M16 x 2		

(1) ± 0.3 [$\pm 0,012$]
 ± 0.2 [$\pm 0,008$]

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



See generic installation motors N°801478197L.

Hydraulic connections

connections

M

S

0

5

M

S

E

0

5

1

1

2

3

1

2

3

1

2

3

4

1

2

3

4

5

6

	Old standards	Standards	Power supply	Case drain	2 nd displacement control	Control of parking break	Control of drum break	
			R-L	1, 2		X	XT	
	A	SAE J514	ISO 11 926-1	1" 1/16-12 UNF	3/4"-16 UNF	9/16"-18 UNF		
	3	BSPP	ISO 1 179-1	Ø27 [3/4" dia.]	Ø17 [3/8" dia.]	Ø13 [1/4" dia.]		
	8	NFE48 050	ISO 6 149-1	M18x1.5	M16x1.5	M14x1.5		
			R-A	1, 2	Y	X		
	A	SAE J514	ISO 11 926-1	1" 1/16-12 UNF	3/4"-16 UNF	9/16"-18 UNF	9/16"-18 UNF	
	3	BSPP	ISO 1 179-1	Ø27 [3/4" dia.]	Ø17 [3/8" dia.]	Ø13 [1/4" dia.]	Ø13 [1/4" dia.]	
	4	NFE48 050	ISO 9 974-1	M27x2	M16x1.5	M14x1.5	M14x1.5	
			R-A1	A2	1, 2	X		
	A	SAE J514	ISO 11 926-1	1" 1/16-12 UNF	3/4"-16 UNF	3/4"-16 UNF	9/16"-18 UNF	
	3	BSPP	ISO 1 179-1	Ø27 [3/4" dia.]	Ø21 [1/2" dia.]	Ø17 [3/8" dia.]	Ø13 [1/4" dia.]	
	4	NFE48 050	ISO 9 974-1	M27x2	M22x1.5	M16x1.5	M14x1.5	
			ISO 9 974-1				M10x1	
Max. pressures	MS	bar [PSI]	450 [6 527]	450 [6 527]	1 [15]	30 [435]	30 [435]	120 [1 740]
	MSE		400 [5 802]	400 [5 802]				

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

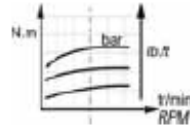
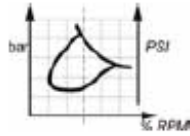
To find the connections' tightening torques, see the brochure "Installation guide" N° 801478197L.



Efficiency

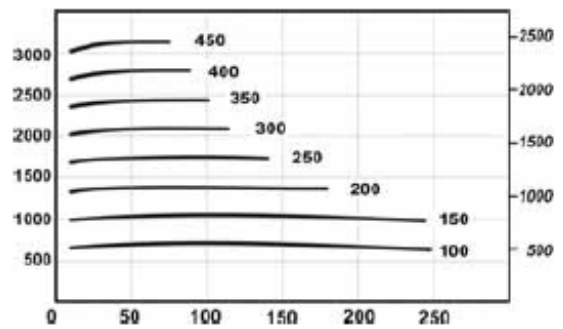
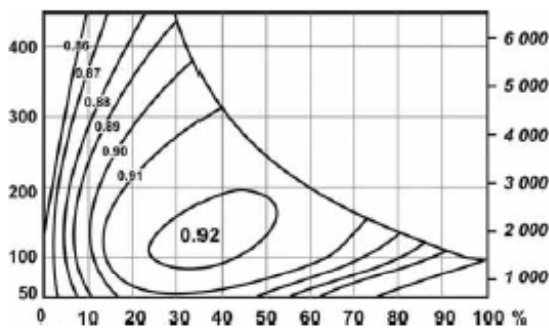
Overall efficiency

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

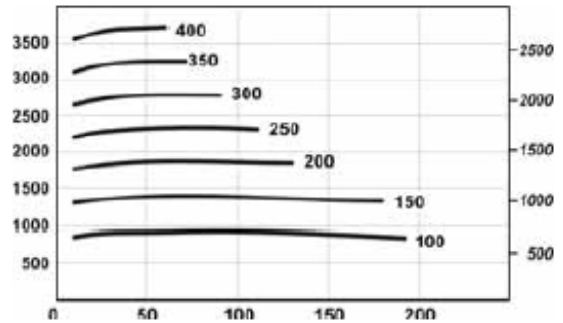
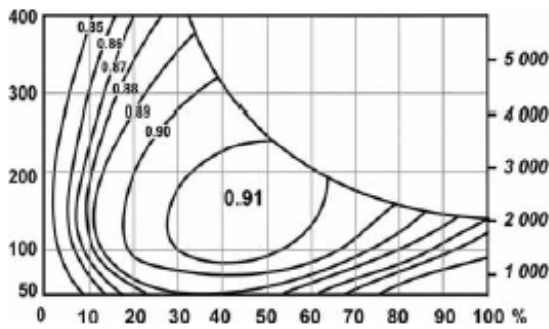


Actual output torque

MS05

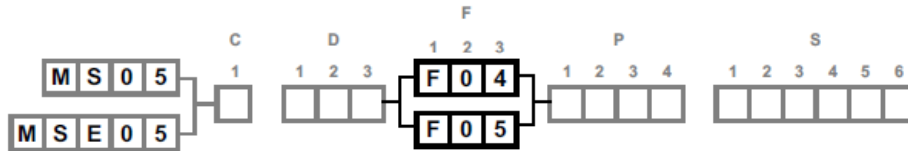


MSE05

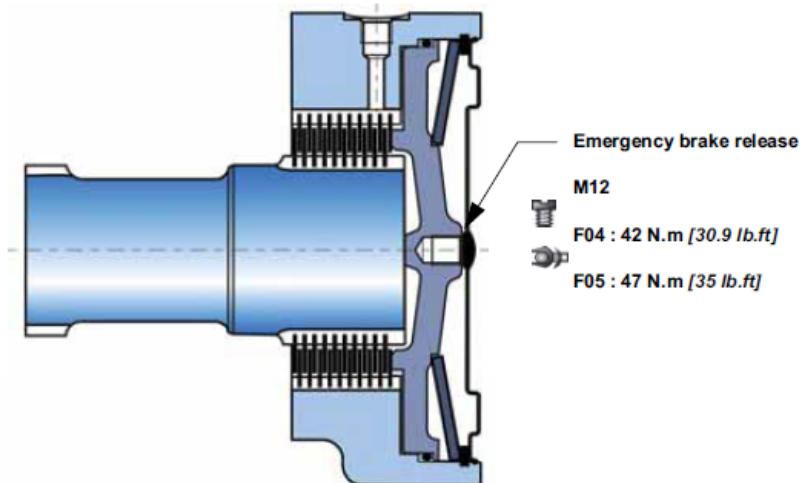


The starting torque is taken to be approximately 85% of the first value for available pressure. For a precise calculation, consult your Poclair Hydraulics application engineer.

BRAKES



Rear brake



Brake principle

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	F 0 4	F 0 5
Parking brake torque at 0 bars on housing (new brake)	4 220 Nm [3 110 lb.ft]	3 060 Nm [2 260 lb.ft]
Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes)	2 740 Nm [2 020 lb.ft]	1 990 Nm [1 470 lb.ft]
Residual parking braking at 0 bars on housing *	3 165 Nm [2 330 lb.ft]	2 295 Nm [1 690 lb.ft]
Min. brake release pressure	12 bar [174 PSI]	12 bar [174 PSI]
Max. brake release pressure	30 bar [435 PSI]	30 bar [435 PSI]
Oil capacity	70 cm ³ [4,3 cu.in]	70 cm ³ [4,3 cu.in]
Volume for brake release	32 cm ³ [2,0 cu.in]	32 cm ³ [2,0 cu.in]
Max. energy dissipation	85 902 J	

* After emergency brake has been used



Do not run in multidisc brakes.

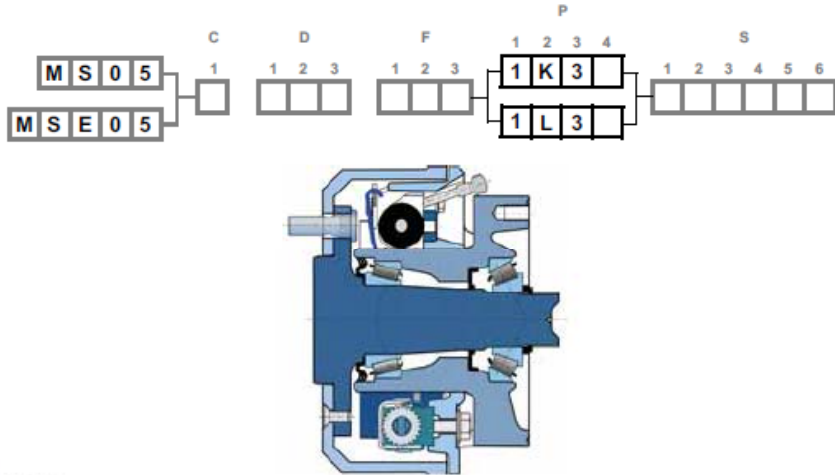


A functional check of the parking brake must be carried out each time it is used as an auxiliary brake (or emergency brake). For all vehicles capable of speeds over 25 km/hour, please contact your Poclain Hydraulics application engineer.

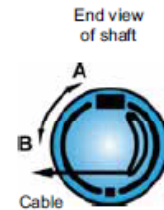


Drum brake (250 x 60)

Diameter of brake pads : Ø 250 [9.84 dia.]
 Width of friction surface : 60 [2.36]



Brake pads	
Asbestos free material	BERAL 1117
Compensation for wear	Automatic
Hydraulically controlled dynamic braking	
Max. permissible continuous brake torque	3 000 Nm [2 213 lb.ft]
Pressure to obtain max. permissible continuous brake torque	76 bar [1 102 PSI]
Max. permissible brake torque	5 000 Nm [3 688 lb.ft]
Pressure to obtain max. permissible brake torque	120 bar [1 740 PSI]
Fluid	
Mineral	Yes
DOT 3/DOT4/SAE J1703	Yes
Max. volume required to bring pads into contact	2,8 cm ³ [0,17 cu.in]
Mechanically controlled parking brake	
Max. braking torque	5 000 Nm [3 688 lb.ft]
Max permissible force on the cable	1 370 N [308 lbf]
Force required to bring pads into contact	33 N [7 lbf]
Stroke required to bring pads into contact	A 10,6 mm [0,42"] B 11,0 mm [0,43"]
Max. stroke before automatic brake adjustment	A 14,0 mm [0,55"] B 14,5 mm [0,57"]



The max. braking torque can only be obtained when the brake has been run in. Consult your Poclair Hydraulics application engineer.

Control

The drum brakes can be controlled hydraulically (service brake) and by a cable (mechanical control for parking brake).



Do not use hydraulic and mechanical brake controls simultaneously.



See also 'Wheel motor' section (thumbnail opposite)

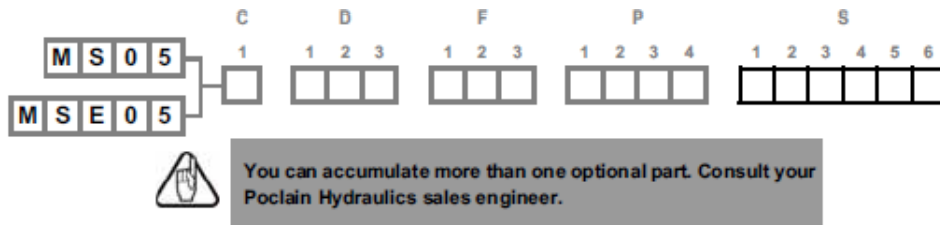


When making an encoding request, you must indicate the following information:

- The material of the brake linings,
- The type of connection at the end of the parking brake control cable,
- Fill out the technical questionnaire for validation of the brake.

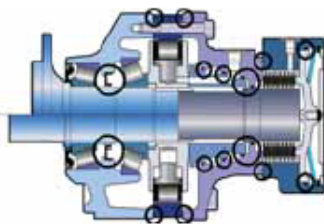


OPTIONS



1 - Fluorinated elastomer seals

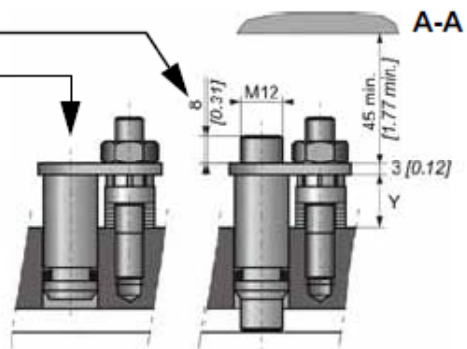
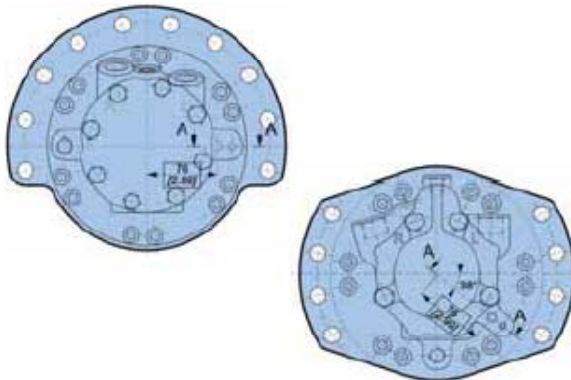
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.



Consult your Poclain Hydraulics sales engineer.

2 - S - 8 - Installed speed sensor or predisposition

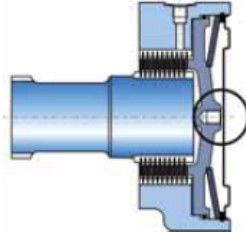
Designation	C
T4 Speed sensor installed	2
TR Speed sensor installed (direction of rotation)	S
Predisposition for speed sensor	8



Max. length Y= 20.7
Standard number of pulses per revolution= 53

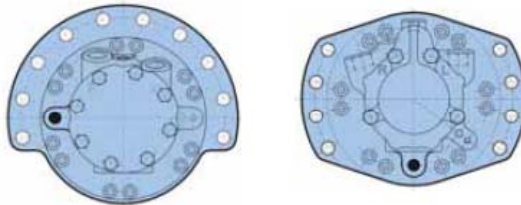
3 - Brake environmental cover without plug

No plug or hole in the cover.
(see figure opposite)



5 - Drainage

Additional drain in the cover.



6 - Industrial support

Reduction of around 50% from the rated value in the bearings' preload value.

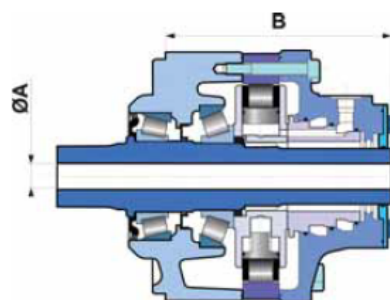


For a precise calculation, consult your Poclain Hydraulics application engineer.

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.

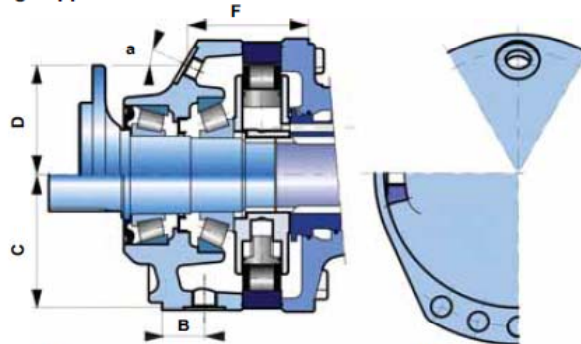
A - Hollow shaft



A	B
mm [in]	mm [in]
Ø 25 [0,98 dia.]	214,2 [8,43]

Radial load x 0.75
No torque allowed towards the rear

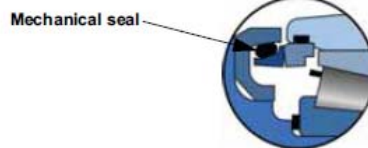
B - Drain on the bearing support



	BSPP	B	C	D	E	F	a
		mm [in]	mm [in]	mm [in]		mm [in]	
Shaft motor	Ø17	25 [1,0]	111 [4,37]		25°		
Wheel motor	Ø17			87,5 [3,44]		84,0 [3,31]	36°

C - Abrasive environments (mechanical seal)

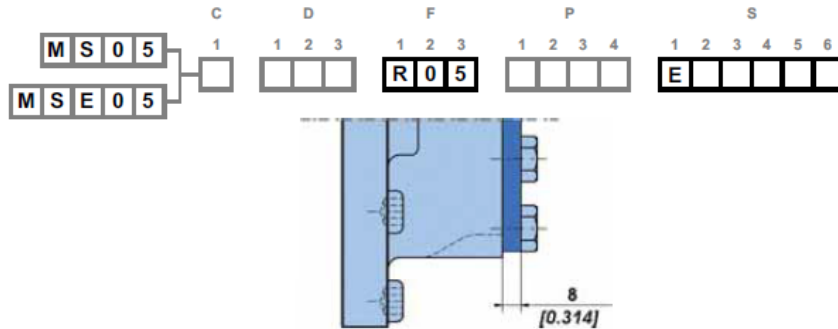
Some environments can be very harmful. The mirror seal gives reinforced motor sealing.



Consult your Poclain Hydraulics sales engineer.

E - Reinforced sealing

Reinforced seals and, for an unbraked motor, a rear reinforced plate (R02 - 8 mm thick, instead of 2 mm).



G - Special wheel rim mounting

Enables certain combinations different from the standard mountings defined on page 11 are possible.



Consult your Poclain Hydraulics sales engineer.

H - High efficiency

Reinforced piston sealing to improve volumetric efficiency.

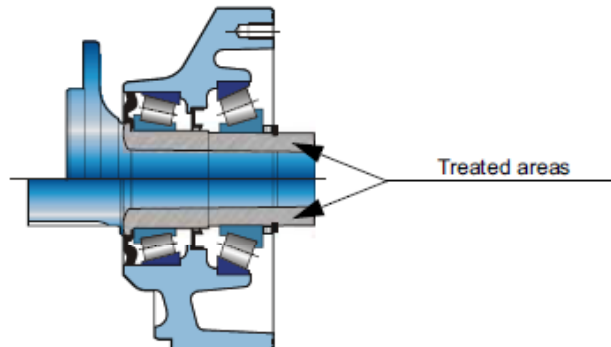


For a precise calculation, consult your Poclain Hydraulics application engineer.



J - Treated shaft

Heat treatment on the indicated bearing radius and splines.



M - High speed

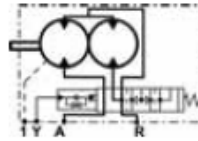
Under certain conditions, an increase in the maximum speed of 30% above the values indicated in the table on page 2 is possible.



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

T - Soft Shift™

Progressive displacement change (cushioned slide-valve)



Consult your Poclain Hydraulics sales engineer.