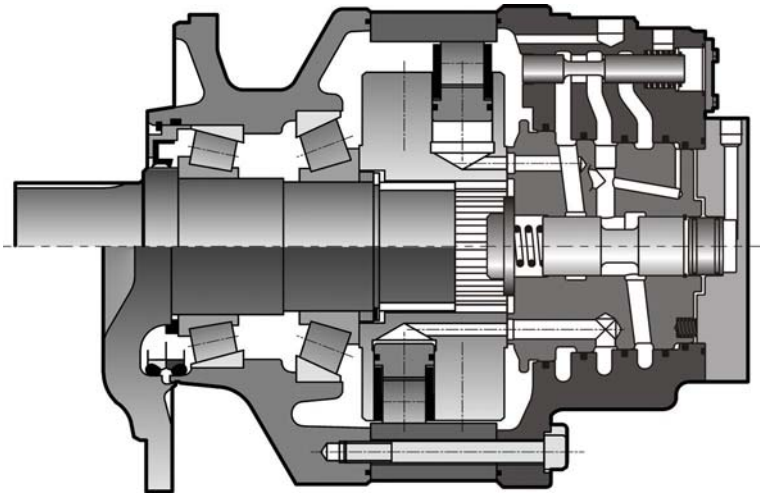
MW50

HYDRAULIC MOTORS

TECHNICAL CATALOG

POCLAIN HYDRAULICS

CHARACTERISTICS



Motor inertia **1 kg.m²**

C	M	W	5	0	H (1 2 3 4)	D (1 2 3 4)	P (1 2 3 4)	S (1 2 3 4 5)
						3		

H2	H3	H4	cm³/tr [cu.in/rev.] ❶	❷	❸	Theoretical torque ❶ at 100 bar Nm	at 1000 PSI [lb.ft]	Max.power kW [HP] ❶	❷ preferred	❷ non-preferred	❸ preferred	❸ non-preferred	Max. speed tr/minRPM ❶	❷	❸	Max. pressure bar [PSI]
9	8	9	4 333 [264,3]	2 833 [172,8]	1 500 [91,5]	6 889	[3 504]						70	120	160	
9	9	8	4 333 [264,3]	3000 [183,0]	1 333 [81,3]	6 889	[3 504]						70	115	155	
2	0	8	5 000 [305,0]	3 667 [223,7]	1 333 [81,3]	7 950	[4 043]						60	90	125	
8	2	0	5 000 [305,0]	3 333 [203,3]	1 667 [101,7]	7 950	[4 043]	140 [188]	109 [146]	70 [94]	77 [103]	56 [75]	60	100	135	450 [6 530]
0	8	2	5 000 [305,0]	3 000 [183,0]	2 000 [122,0]	7 950	[4 043]						60	110	150	
0	1	0	5 167 [315,1]	3 500 [213,5]	1 667 [101,7]	8 216	[4 178]						55	100	130	
0	0	1	5 167 [315,1]	3 333 [203,3]	1 834 [111,9]	8 216	[4 178]						55	105	135	
2	2	2	6 000 [365,9]	4 000 [244,0]	2 000 [122,0]	9 540	6 360									

❶ **First displacement**

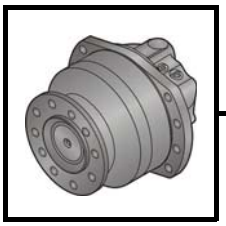
❷ **Second displacement**

❸ **Third displacement**

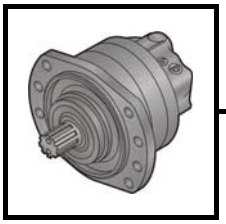
For other cams, consult your Poclain Hydraulics application engineer.

CONTENT

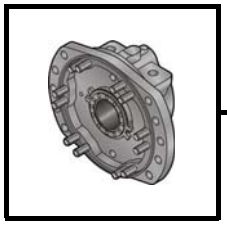
MODULARITY **5**
MODEL CODE **6**



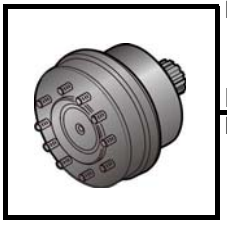
WHEEL MOTOR **9**
Dimensions for standard (1110) 3-displacement motor 9
Support types 10
Studs 10
Load curves 11



SHAFT MOTOR **13**
Dimensions for standard (2A50) 3-displacement motor 13
Support types 14
Splined coupling 14
Load curves 15



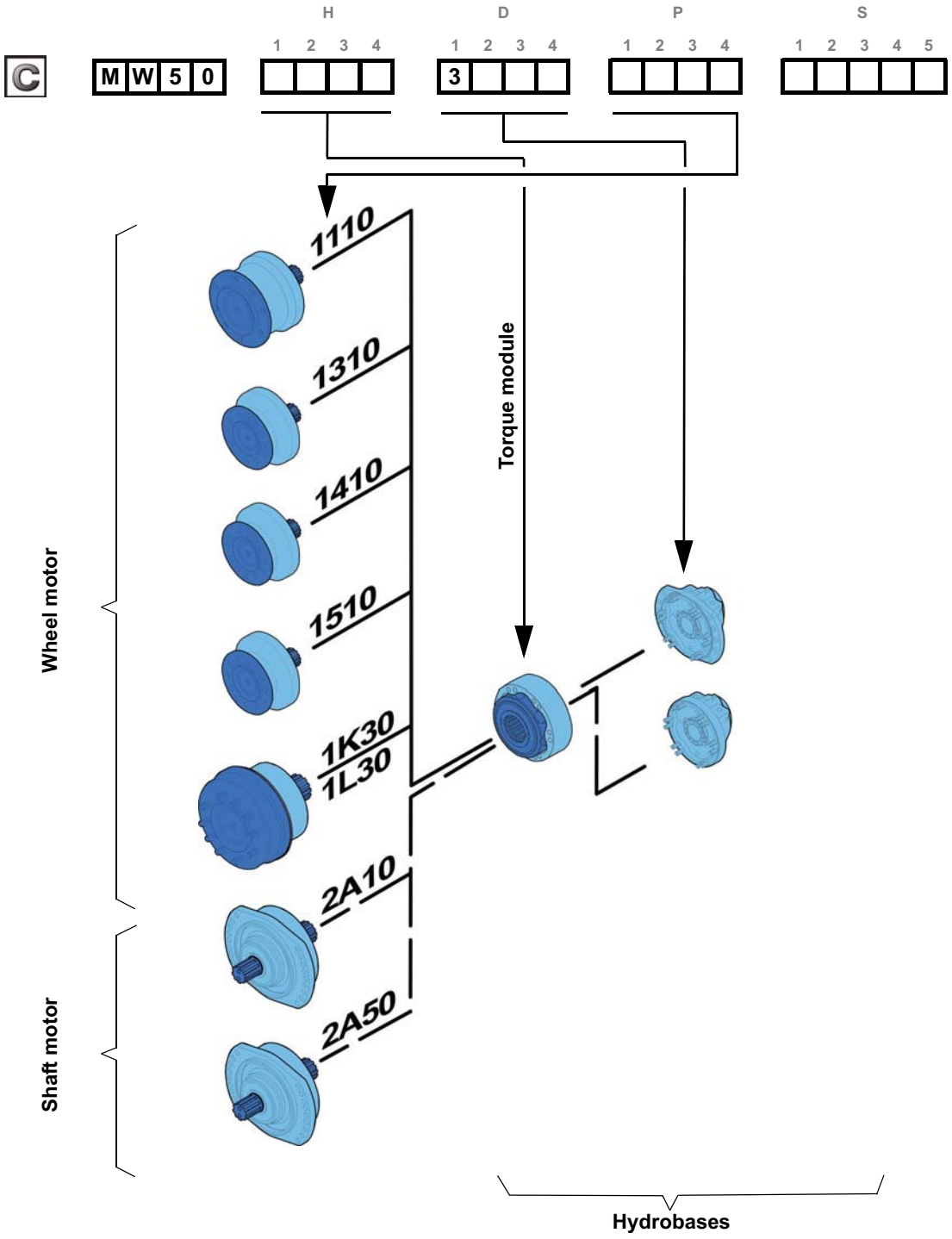
VALVING SYSTEMS AND HYDROBASES **17**
Dimensions for 3-displacement valving 17
Cylinder block splines 17
Chassis mountings 18
Hydraulic connections 19
Pilotage des cylindrées 19
Efficiency 20



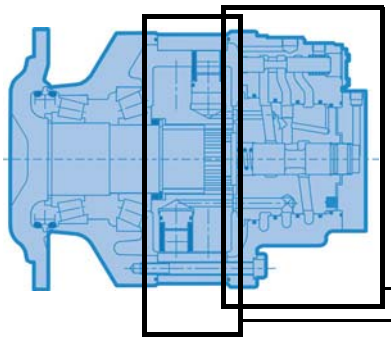
BRAKES **21**
Drum brake (432 x 102) 21

OPTIONS **23**

MODULARITY


H
D
P
S
1 2 3 4
1 2 3 4
1 2 3 4
1 2 3 4 5
M W 5 0
3
1110
1310
1410
1510
1K30
1L30
2A10
2A50
Torque module
Wheel motor
Shaft motor
Hydrobases

MODEL



H D

1 2 3 4 1 2 3 4

C M W 5 0 [ ][ ][ ][ ] 3 [ ][ ][ ]

Standard	Standard rings	3
	High efficiency rings	4
Diamond™	Standard rings	C
	High efficiency rings	D

3-displacement	3

3-displacement valving (Clockwise)	D
3-displacement valving (Counterclockwise)	G

Without chassis fixation	1
Chassis fixation by two ears	2

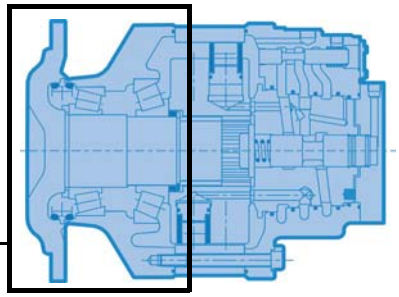
ISO 6162 DN 25 SAE flanges **ISO 9974-1** metric connections	1
ISO 6162 DN 32 SAE flanges **ISO 9974-1** metric connections	6

cm³/tr *[cu.in/rev.]*

H2	H3	H4	❶	❷	❸
9	8	9	4 333 *[264,3]*	2 833 *[172,8]*	1 500 *[91,5]*
9	9	8	4 333 *[264,3]*	3000 *[183,0]*	1 333 *[81,3]*
2	0	8	5 000 *[305,0]*	3 667 *[223,7]*	1 333 *[81,3]*
8	2	0	5 000 *[305,0]*	3 333 *[203,3]*	1 667 *[101,7]*
0	8	2	5 000 *[305,0]*	3 000 *[183,0]*	2 000 *[122,0]*
0	1	0	5 167 *[315,1]*	3 500 *[213,5]*	1 667 *[101,7]*
0	0	1	5 167 *[315,1]*	3 333 *[203,3]*	1 834 *[111,9]*
2	2	2	6 000 *[365,9]*	4 000 *[244,0]*	2 000 *[122,0]*

❶ **First displacement**
❷ **Second displacement**
❸ **Third displacement**

CODE



P S

1 2 3 4 1 2 3 4 5

0	Without bearing support
1	Without mounting
2	Lug mounting

Without drum brake	0
Without cable	4
Right-hand cable outlet	5
Left-hand cable outlet	6

Without shaft		0
12 x Ø26 onØ425		1
10 x Ø24 on Ø335		3
10 x Ø24 on Ø335		4
12 x Ø22 onØ275		5
Drum brake(432 x 102)	Mineral	K
	DOT 3&4	L
Bearing support for shaftt		A

Without Options or Adaptations	0
Fluorinated elastomer seals	1
T4 Speed sensor installed	2
Scavenging	5
Predisposition for speed sensor	8
Double-centering valving cover	9
Drain on the bearing support	B
Hostile environment	C
Special wheel rim mounting	G
Surface heat treatment of the shaft	J
TR Speed sensor installed	S
For vertical mounting (shaft upward)	N

Flange	
Without studs	1
With studs + nuts	2
With studs	3

Male shafts	
NF E 22 141 splines	1
DIN 5480 splines	5

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.Information on the model code.
	Weight of component without oil.
	Volume of oil.
	Units.
	Tightening torque.
	Screws.
	Information intended for Poclain-Hydraulics personnel.

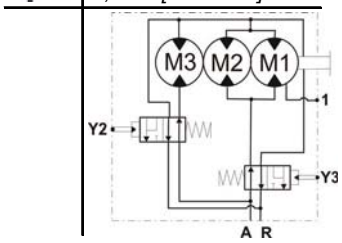
The views in this document are created using metric standards.
The dimensional data is given in mm and in inches (inches are between brackets and italic)

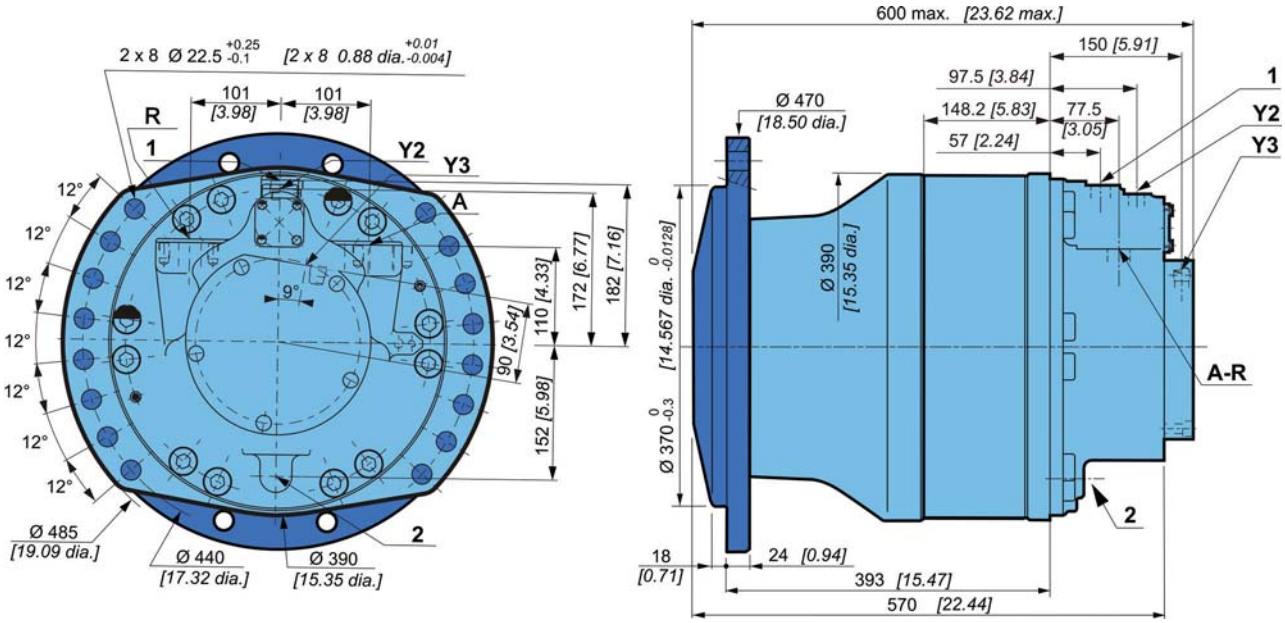
WHEEL MOTOR

Dimensions for standard (1110) 3-displacement motor

315 kg *[693 lb]*

5,00 L *[300 cu.in]*



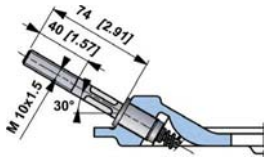


Also see 'Valving systems and hydrobases' section (thumbnail opposite).

Support types

	H	D	P	S
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4 5
M W 5 0		3		

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]*
1 1 1 0 (1 2 3 4 P)	Ø 370 *[14,57 dia.]*	Ø 425 *[16,73 dia.]*	Ø 472 *[18,58 dia.]*	393 *[15,47]*	Ø 390 *[15,35 dia.]*	Ø 26 *[1,02 dia.]*	12 x M 24x2	24 *[0,94]*
1 3 1 0 (1 2 3 4 P)	Ø 280,7 *[11,05 dia.]*	Ø 335 *[13,19 dia.]*	Ø 379 *[14,92 dia.]*	335 *[13,19]*	Ø 390 *[15,35 dia.]*	Ø 24 *[0,94 dia.]*	10 x M 22x1.5	17 *[0,67]*
1 4 1 0 (1 2 3 4 P)	Ø 280,7 *[11,05 dia.]*	Ø 335 *[13,19 dia.]*	Ø 379 *[14,92 dia.]*	296 *[11,65]*	Ø 390 *[15,35 dia.]*	10 x Ø 24 *[10 x 0,94 dia.]*	-	17 *[0,67]*
1 5 1 0 (1 2 3 4 P)	Ø 220,7 *[8,69 dia.]*	Ø 275 *[10,83 dia.]*	Ø 314,5 *[12,38 dia.]*	348 *[13,70]*	Ø 390 *[15,35 dia.]*	(8+4) x Ø 22 *[0,87 dia.]*	-	18 *[0,71]*
1 K 2 0 / 1 L 2 0 (1 2 3 4 P)	Ø 280,7 *[11,05 dia.]*	Ø 335 *[13,19 dia.]*	Ø 482 *[18,98 dia.]*	396 *[15,59]*			10 x M 22x1.5	45 *[1,77]*



Also see 'Brakes' section (thumbnail opposite).

Studs

		P mm *[in]*	C min. mm *[in]*	C max. mm *[in]*	D mm *[in]*	Class	(1) * N.m *[lb.ft]*	(2) * N.m *[lb.ft]*
Various studs	M22 x 1.5	80 *[3,15]*	5 *[0,20]*	36 *[1,42]*	26 *[1,02]*	12,9	695 *[512,6]*	1 050 *[774,4]*
	M24 x 2	95 *[3,74]*		38 *[1,50]*	30 *[1,18]*		910 *[671,2]*	1 150 *[848,2]*
Screws	M20	-	-			12,9	600 *[442,5]*	770 *[567,9]*

(*) 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.

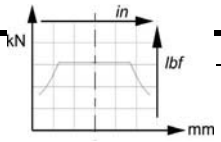
Load curves

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



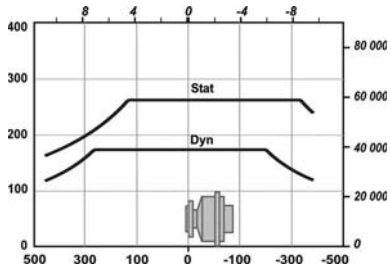
Service life of bearings

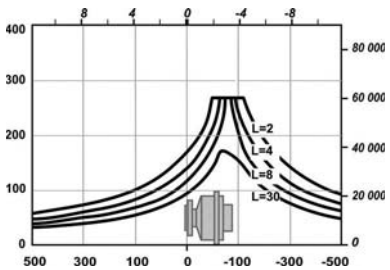
Test conditions :

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

1	1	1	0
1	2	3	4

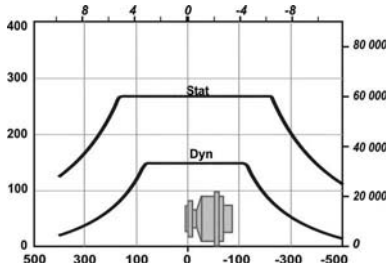
P

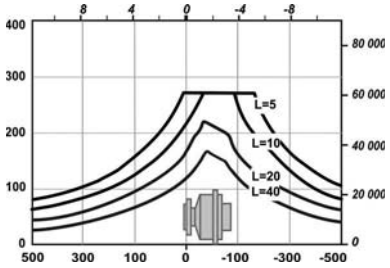




1	3	1	0
1	2	3	4

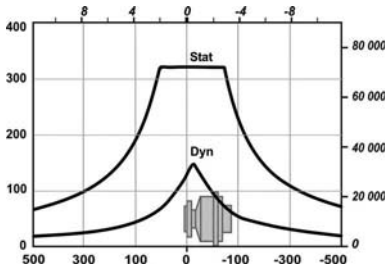
P

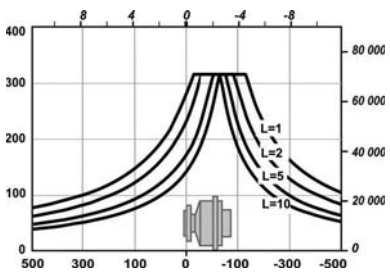




1	4	1	0
1	5	1	0
1	2	3	4

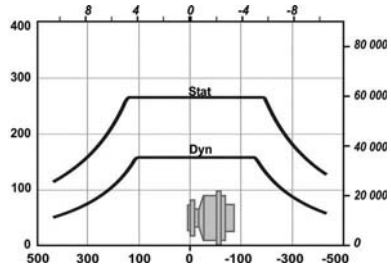
P

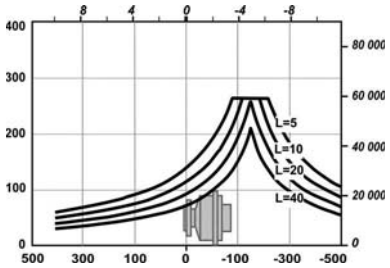




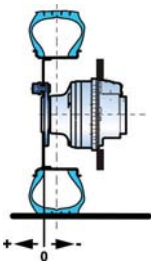
1	K	3	0
1	L	3	0
1	2	3	4

P





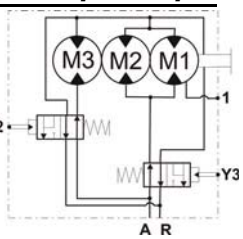
The service life of the components is influenced by the pressure.You must check that the combination of forces applied (Axial load / Radial load) is compatible with the permissible loads for the components, and that the resulting service lives of these components complies with the application's specifications.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

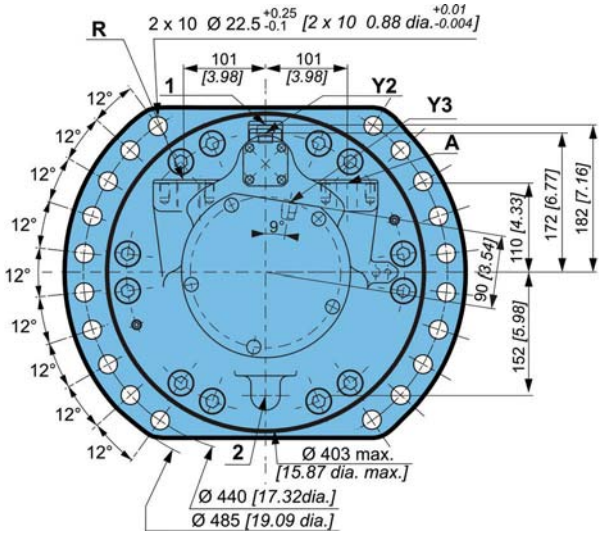


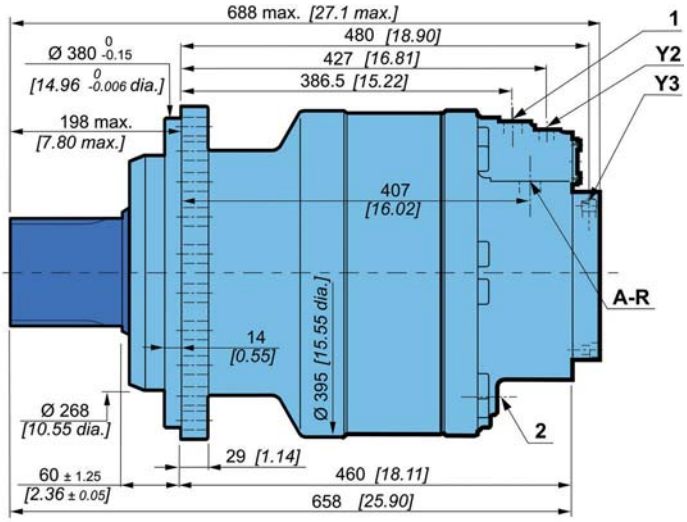
SHAFT MOTOR

Dimensions for standard (2A50) 3-displacement motor

270 kg *[594 lb]*	
5,00 L	*[300 cu.in]*





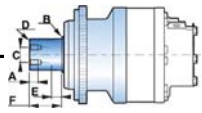


Also see 'Valving systems and hydrobases' section (thumbnail opposite).

Support types

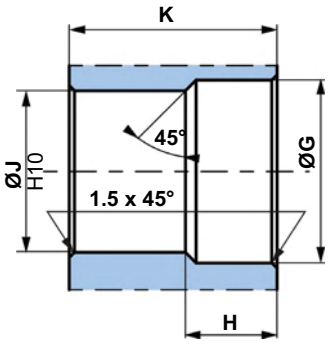
	H	D	P	S
M W 5 0	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4 5
		3		

C		A	B	C	D	E	F
2 A 5 0 (1 2 3 4 / P)	**DIN 5480** splines Nominal Ø 130 *[5,12]* Module 5 Z 24	40 *[1,57]*	R 4 *[R 0,16]*	60 *[2,36]*	2 x M16	32 *[1,26]*	136 *[5,35]*
2 A 1 0 (1 2 3 4 / P)	**NF E22-141** splines Nominal Ø 130 *[5,12]* Module 3,75 Z 33	40 *[1,57]*	R 4 *[R 0,16]*	60 *[2,36]*	2 x M16	32 *[1,26]*	136 *[5,35]*



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

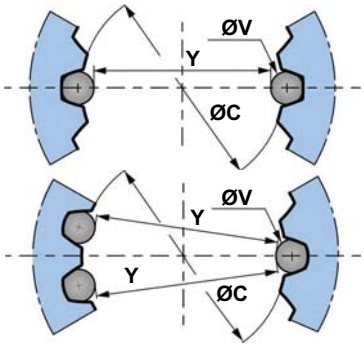
Splined coupling



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 mm *[in]*	H mm *[in]*	Ø J mm *[in]*	K mm *[in]*	N mm *[in]*	Mo	Z	Offset mm *[in]*	ØC (H10) mm *[in]*	Ø V mm *[in]*	Y mm *[in]*	Tolerance µm *[µin]*
2 A 5 0 (1 2 3 4 / P)	132 *[5,20]*	33 *[1,30]*	120 *[4,72]*	135 *[5,31]*	130 *[5,12]*	5	24	2,25 *[0,09]*	120 *[4,72]*	9 *[0,35]*	111,104 *[4,37]*	+ 87 / 0 *[+3.425 / 0]*
2 A 1 0 (1 2 3 4 / P)	131 *[5,16]*	33 *[1,30]*	122,5 *[4,82]*	135 *[5,31]*	130 *[5,12]*	3,75	33	2,373 *[0,0934]*	122,5 *[4,82]*	7,5 *[0,30]*	115,081 *[4,53]*	+ 113 / 0 *[+4.448 / 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]*.

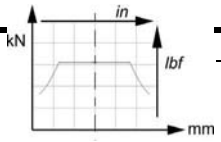
Load curves

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



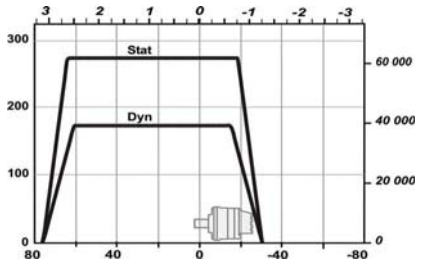
Service life of bearings

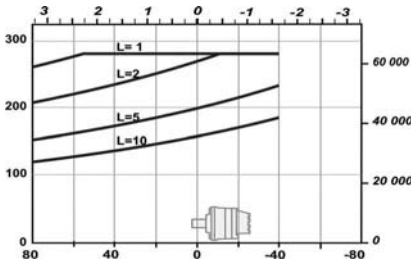
Test conditions :

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

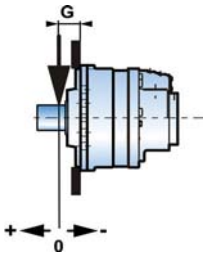
2	A	5	0
2	A	1	0
1	2	3	4

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.



C	G mm *[in]*
2 A 1 0	144 *[5,67]*
2 A 5 0	144 *[5,67]*

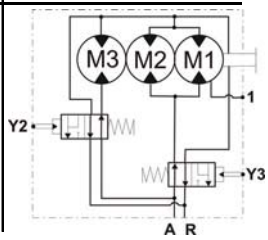
VALVING SYSTEMS AND HYDROBASES

	H	D	P	S
M W 5 0	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4 5
		3		

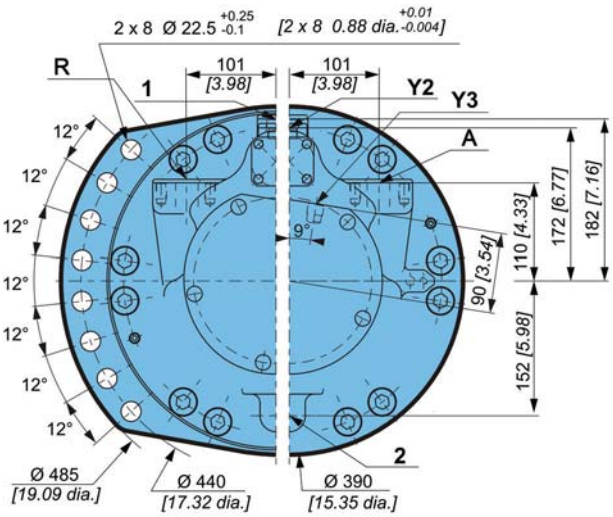
Dimensions for 3-displacement valving

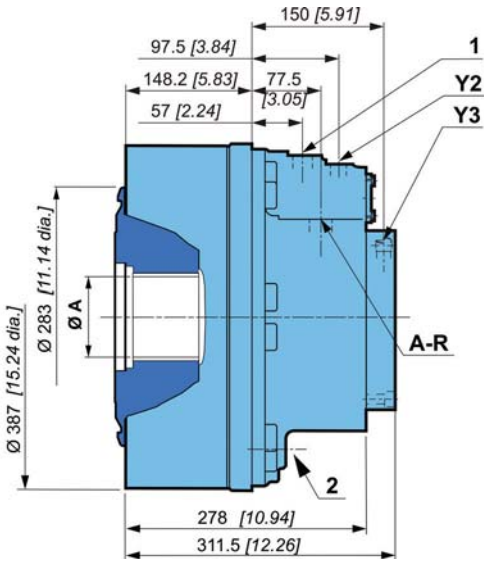
160 kg *[352 lb]*

2,00 L *[120 cu.in]*



D	D
1 2 3 4	1 2 3 4
3 2	3 1

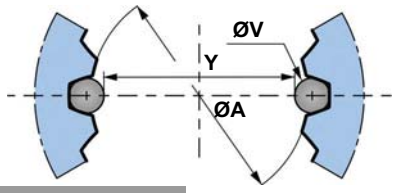




Cylinder block splines

(as per standard NF E22-141)

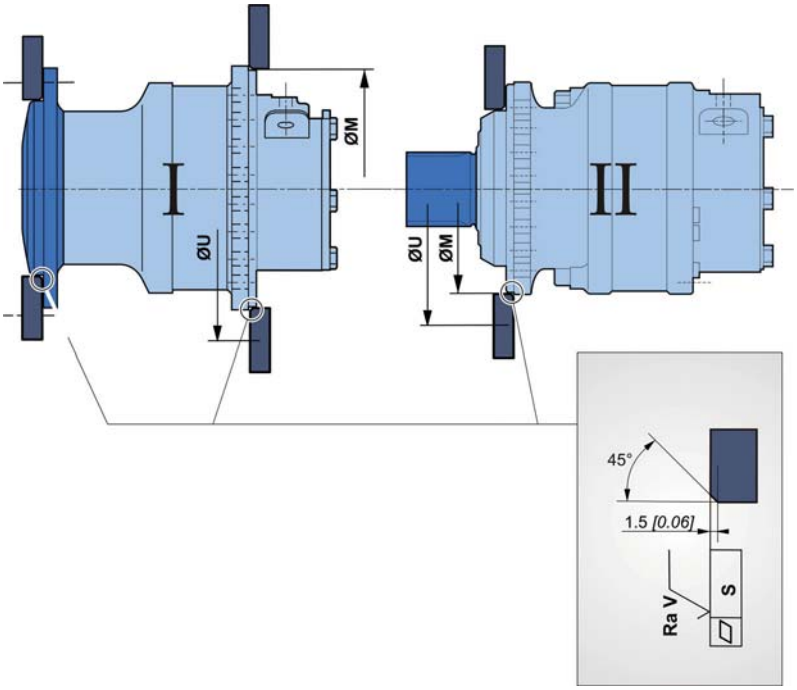
ØA	Module	Z	Dimension on 2 pins Y	ØV
100 *[3,937]*	2,5	38	90,169 *[3,550]*	5 *[0,197]*



You are advised to have the installation validated by your Poclain 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 Poclain Hydraulics sales engineer.

Chassis mountings



Take care over the immediate environment of the connections.

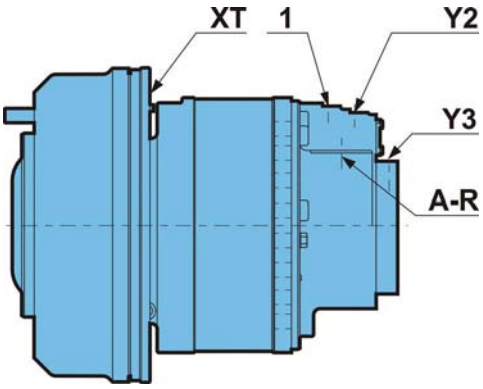
	ØM (1) mm [in]	ØU mm [in]	ØT mm [in]	L mm [in]	S mm [in]	Ra V µm [µin]		Class	* N.m [lb.ft]
I	380 [14,96]	440 [17,32]	-	-	0,2 [0,008]	12,5 [0,49]	2 x 8 M20 x 2	8,8	410 [302,4]
II		485 [19,09]	-	-					

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

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

Hydraulic connections

connections



	H	D	P	S
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4 5
M W 5 0		3		

	Old standards	Standards	Power supply A-R	2nd displacement control Y2, Y3	Case drain 1, 2	Control of drum break XT
1	ISO 6 162 DIN 3852	ISO 6 162 ISO 9 974-1	DN25 PN400	M18 x 1.5	M22 x 1.5	
6	ISO 6 162 DIN 3852	ISO 6 162 ISO 9 974-1	DN32 PN400	M18 x 1.5	M22 x 1.5	
		ISO 9 974-1				M14 x 1.5
Max. pressures		bar *[PSI]*	450 *[6 530]*	30 *[440]*	1 *[10]*	120 *[1 740]*

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.

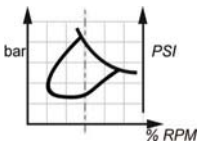
Pilotage des cylindrées

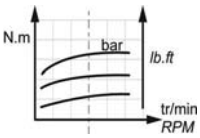
	Y2	Y3
❶ **First displacement**	0	0
❷ **Second displacement**	1	0
❸ **Third displacement**	0	1

Efficiency

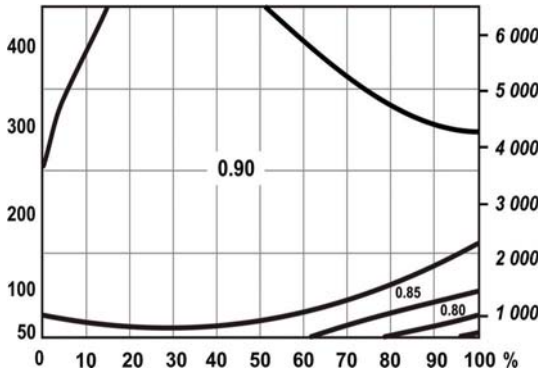
Overall efficiency

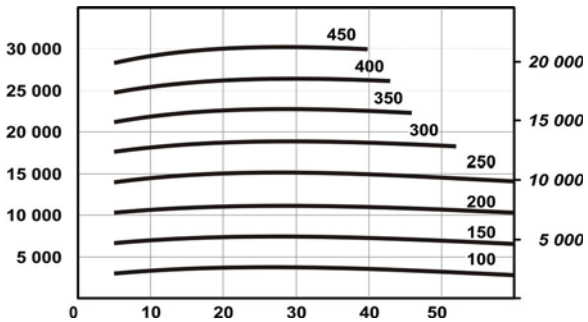
Average values given for guidance for code 208 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C *[122°F]*.





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.

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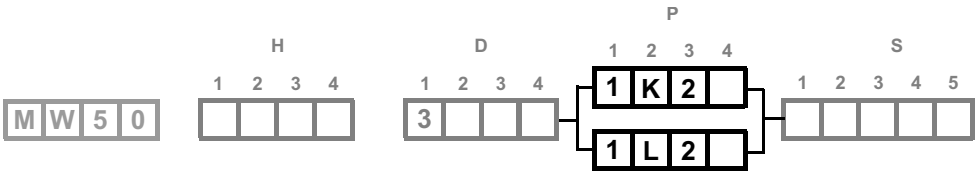
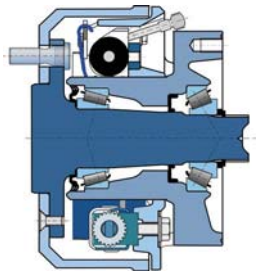
BRAKES

Drum brake (432 x 102)

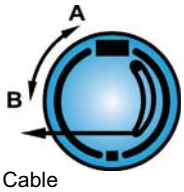
Diameter of brake pads : Ø 432 *[17 dia.]*
Width of friction surface : 102 *[4,01]*





Brake pads			C
Asbestos free material		BERAL 1109	
Compensation for wear		Automatic	
Hydraulically controlled dynamic braking			
Max. permissible continuous brake torque		16 200 N.m *[11 948 lb.ft]*	
Pressure to obtain max. permissible continuous brake torque		71 bar *[1 028 PSI]*	
Max. permissible brake torque		27 000 N.m *[19 914 lb.ft]*	
Pressure to obtain max. permissible brake torque		120 bar *[1 740 PSI]*	
Fluid			
Mineral		Yes	**K**
DOT 3 / DOT 4 / SAE J1703		Yes	**L**
Max. volume required to bring pads into contact		10.15 cm^3 *[0.62 cu.in]*	
Mechanically controlled parking brake			
Max. braking torque		16 200 N.m *[11 948 lb.ft]*	
Max permissible force on the cable		3 000 N *[674 lbf]*	
Force required to bring pads into contact		37.2 N *[8 lbf]*	
Stroke required to bring pads into contact (new brake)	**A**	19 mm *[0.73 ”]*	
	B	16 mm *[0.63 ”]*	

End view of shaft



Cable

The max. braking torque can only be obtained when the brake has been run in. Consult your Poclain 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.

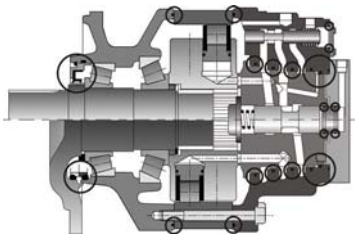
OPTIONS

	H	D	P	S
	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4 5
M W 5 0		3		

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

1 - Fluorinated elastomer seals

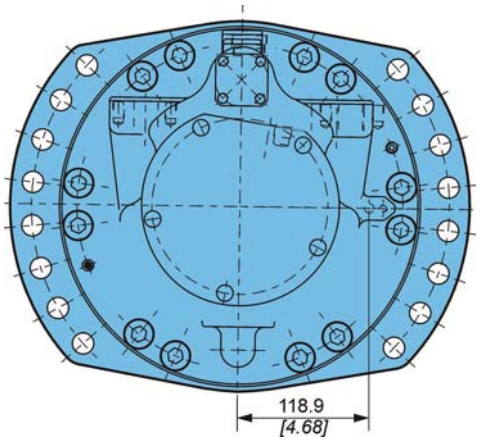
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.

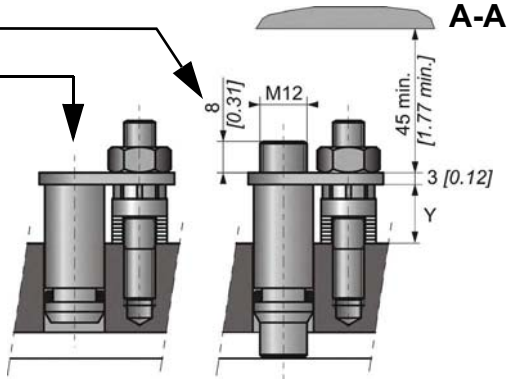


Consult your Poclain Hydraulics sales engineer.

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





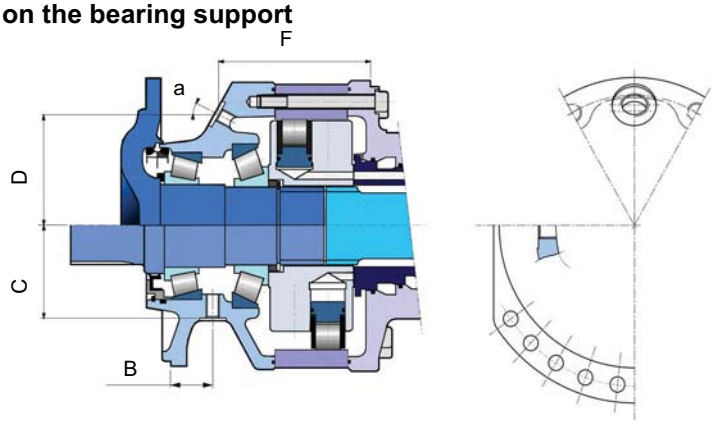
Max. length Y= 15.1

Standard number of pulses per revolution= 56

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. 801478197L.

B - Drain on the bearing support



		B	C	D	F	a
		mm *[in]*	mm *[in]*	mm *[in]*	mm *[in]*	
Shaft motor	**M22 x 1.5**	56 *[2,20]*	133 *[5,24]*			
Wheel motor				159 *[6,26]*	221 *[8,70]*	45°

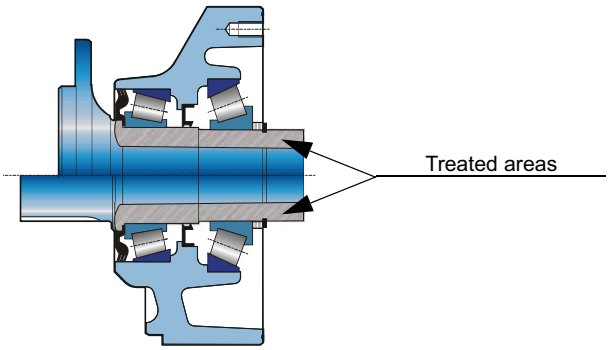
G - Special wheel rim mounting

Enables certain combinations different from the standard mountings.

Consult your Poclain Hydraulics sales engineer.

J - Treated shaft

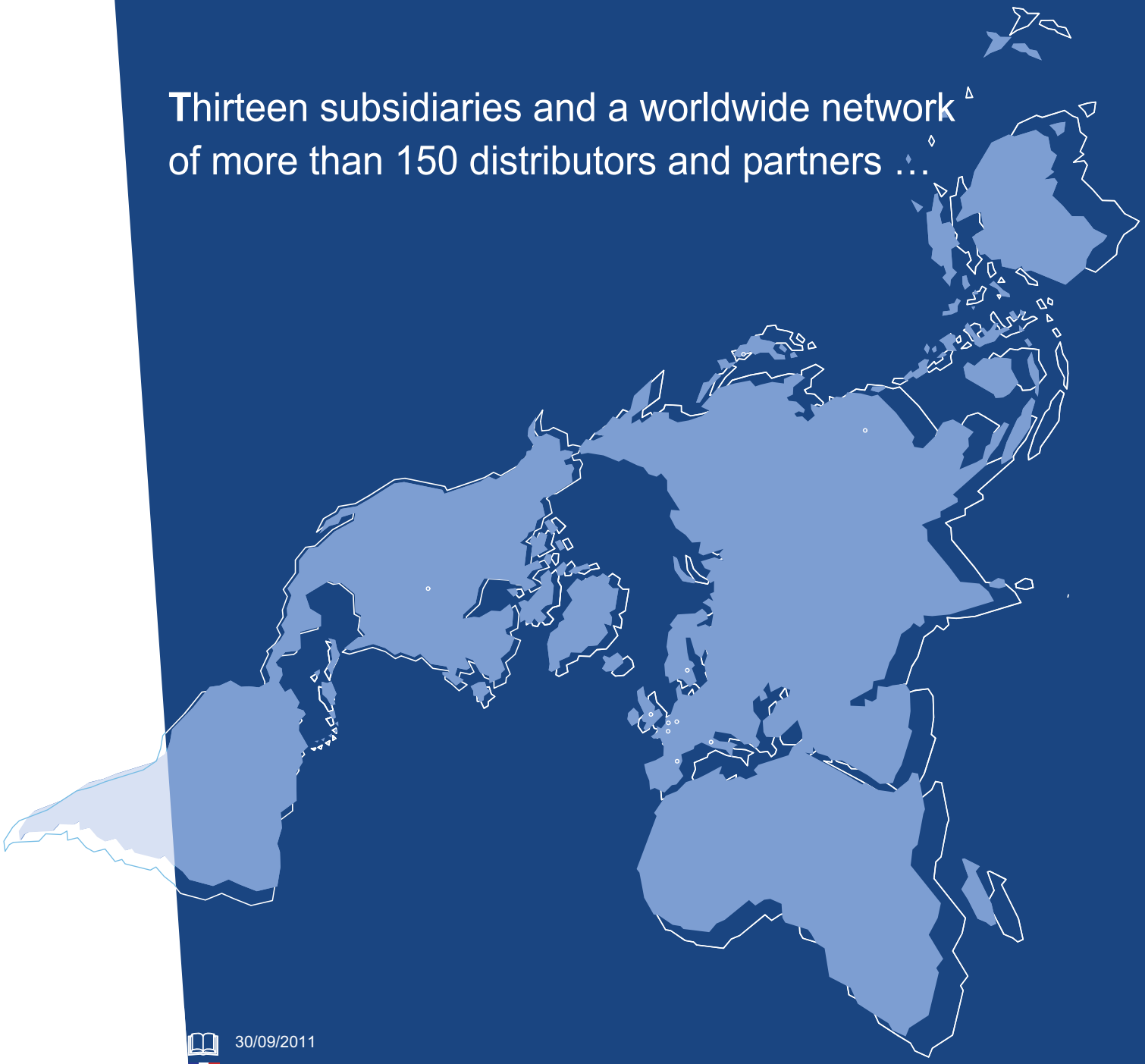
Heat treatment on the indicated bearing radius and splines.



N - Drain on the bearing

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

Thirteen subsidiaries and a worldwide network of more than 150 distributors and partners ...



30/09/2011
A13885S
A13886T
A13887U
A13888V
A13889W

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