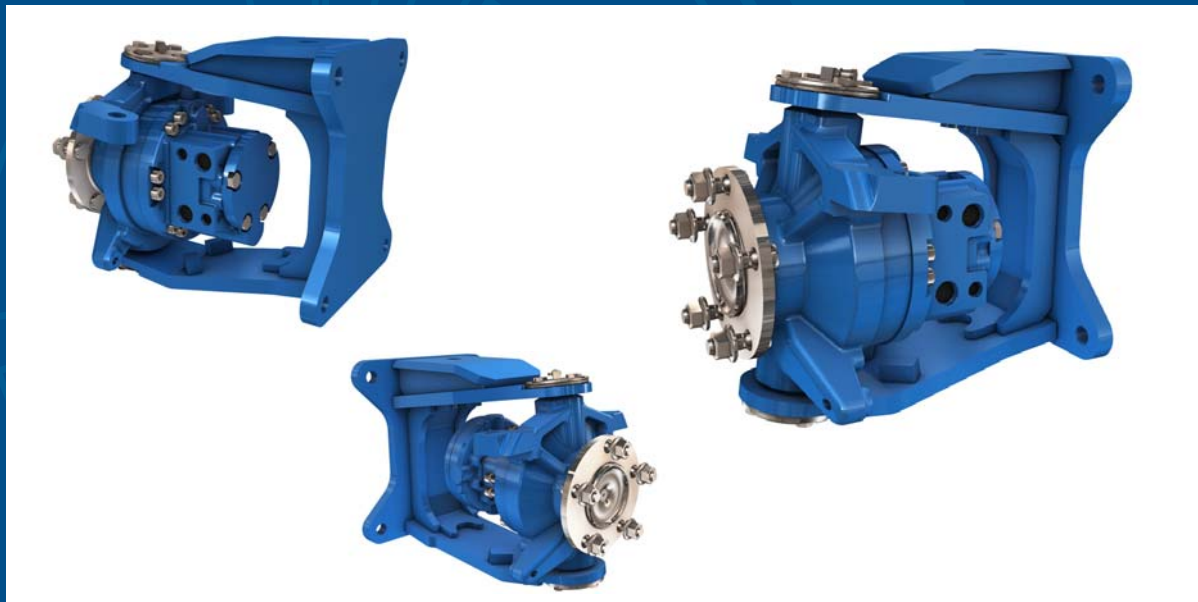
MG02 - MGE02

STEERABLE WHEEL MOTORS



TECHNICAL CATALOG

POCLAIN Hydraulics

Methodology :

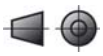
This document is intended for manufacturers of machines that incorporate Poclain Hydraulics products. It describes the technical characteristics of Poclain Hydraulics products and specifies installation conditions that will ensure optimum operation.
This document includes important comments concerning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

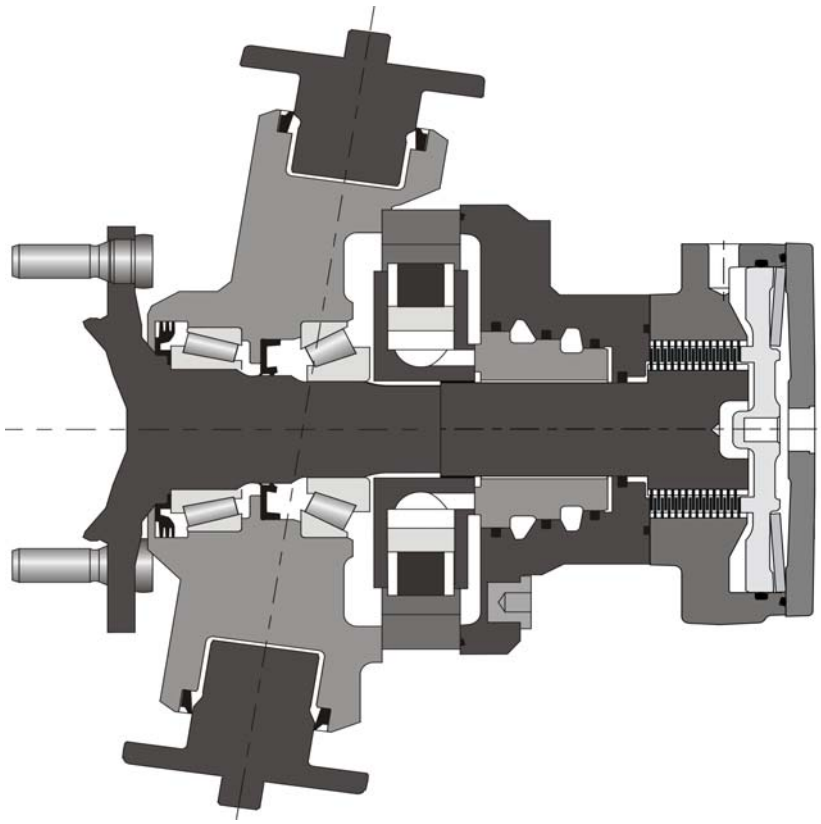
	**Safety comment.**

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 italic)





Motor inertia = 0.01 kg.m²

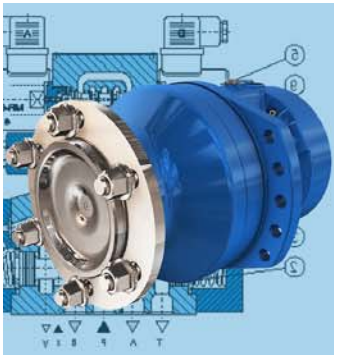
		C	❶	❷	Theoretical torque ❶ at 100 bar	Theoretical torque ❶ at 1000 PSI	Max.power ❶	Max.power ❷ preferred	Max.power ❷ non-preferred	Max.speed	Max.speed ❶	Max.speed ❷	Max. pressure
			cm³/tr *[cu.in/rev.]*	cm³/tr *[cu.in/rev.]*	Nm	*[lb.ft]*	kW *[HP]*	kW *[HP]*	kW *[HP]*	tr/min *[RPM]*	tr/min *[RPM]*		bar *[PSI]*
Cams with equal lobes	MG02	**8**	172 *[10,5]*	86 *[5,2]*	273	*[139]*	18 *[24]*	12 *[16]*	9 *[12]*	390*	409*	510*	450 *[6 527]*
		0	213 *[13,0]*	107 *[6,5]*	339	*[172]*				310*	330*	410	
		1	235 *[14,3]*	118 *[7,2]*	374	*[190]*				285*	299*	372*	
		2	255 *[15,6]*	128 *[7,8]*	405	*[206]*				260*	276*	343*	
	MGE02	**0**	332 *[20,2]*	166 *[10,1]*	528	*[268]*	22 *[30]*	16,5 *[22]*	11 *[15]*	200	250	275	400 *[5 802]*
		1	364 *[22,2]*	182 *[11,1]*	579	*[294]*				182	228	250	
		2	398 *[24,3]*	199 *[12,1]*	633	*[322]*				165	208	230	
Cams with unequal lobes	MG02	**A**	213 *[13,0]*	86 *[5,2]* / 128 *[7,8]*	339	*[172]*	18 *[24]*	12 *[16]*	9 *[12]*	260*	276* / 276*	343*	450 *[6 527]*
		N	192 *[11,7]*	85 *[5,2]* / 107 *[6,5]*	305	*[155]*				310*	330* / 330*	410*	
	MGE02	**A**	332 *[20,2]*	133 *[8,1]* / 199 *[12,1]*	528	*[268]*	22 *[30]*	16,5 *[22]*	11 *[15]*	165	208 / 208	230	400 *[5 802]*

* See option ''M'' for higher speed.

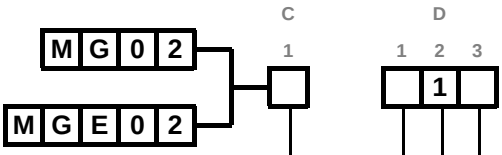
❶ **First displacement**

❷ **Second displacement**

CONTENT



MODEL



		❶ cm³/tr *[cu.in/rev.]*	❷ cm³/tr *[cu.in/rev.]*
Cams with equal lobes	MG02 **8**	172 *[10,5]*	86 *[5,2]*
	MG02 **0**	213 *[13,0]*	107 *[6,5]*
	MG02 **1**	235 *[14,3]*	118 *[7,2]*
	MG02 **2**	255 *[15,6]*	128 *[7,8]*
	MGE02 **0**	332 *[20,2]*	166 *[10,1]*
	MGE02 **1**	364 *[22,2]*	182 *[11,1]*
	MGE02 **2**	398 *[24,3]*	199 *[12,1]*
Cams with unequal lobes	MG02 **A**	213 *[13,0]*	86 *[5,2]* / 128 *[7,8]*
	MG02 **N**	192 *[11,7]*	86 *[5,2]* / 107 *[6,5]*
	MGE02 **A**	332 *[20,2]*	133 *[8,1]* / 199 *[12,1]*

❶ **First displacement**

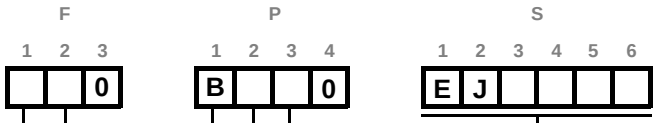
❷ **Second displacement**

Valving type			
1 displacement			**1**
2 displacement	Clockwise	Ratio 2	**D**
		Ratio <2	**E**
		Ratio >2	**F**
	Counterclockwise	Ratio 2	**G**
		Ratio <2	**H**
		Ratio >2	**J**

Integrated flushing valve	
Without	**1**

Connections	
ISO 11926-1	**A**
ISO 1179-1	**3**
ISO 9974-1	**4**

CODE



Kingpin on bearing support

Without C frame	**B**

Bearing support

5 x Ø18 on Ø140	**1**
10 x M12 on Ø100	**2**
5 x Ø18 on Ø120	**7**

Rear brake

Without	Standard end plate	**R**
With	Brake T03	**V**

Shaft

Without studs	**1**
With studs + nuts	**2**
With studs	**3**
Threaded holes metric	**4**

Connection orientation

Orientation -90	**1**
Orientation +90	**2**

Options

Without	**0**
Fluorinated elastomer seals	**1**
T4 speed sensor (without rotation direction)	**2**
Case flushing	**5**
Diamond™	**7**
Predisposition for speed sensor	**8**
Reinforced sealing *	**E**
Special wheel rim mounting	**G**
High efficiency	**H**
Surface heat treatment of the shaft *	**J**
High speed	**M**
TD speed sensor (two phase shifted frequencies)	**Q**
TR speed sensor (digital rotation direction)	**S**

* Standard

CHARACTERISTICS

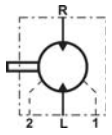
F

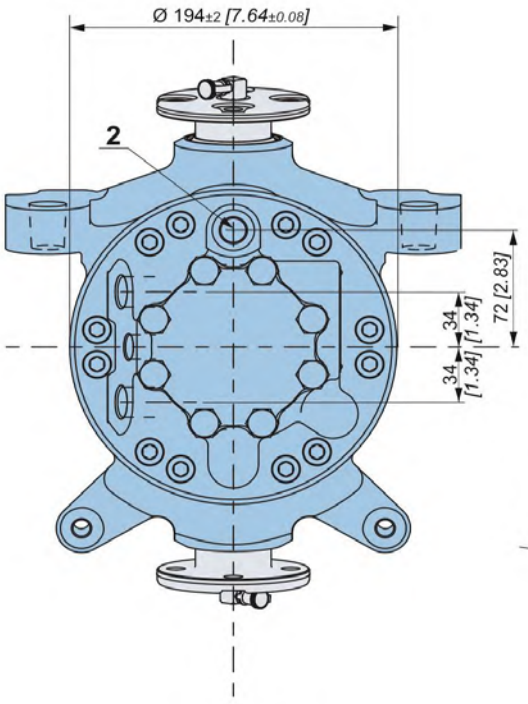
1 2 3
R 0

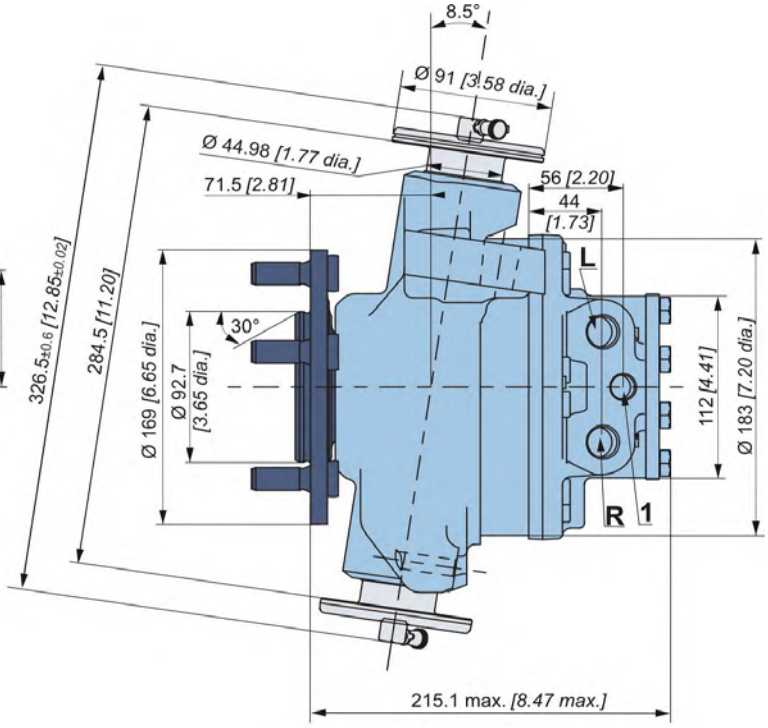
Dimensions for 1-displacement motor without brake

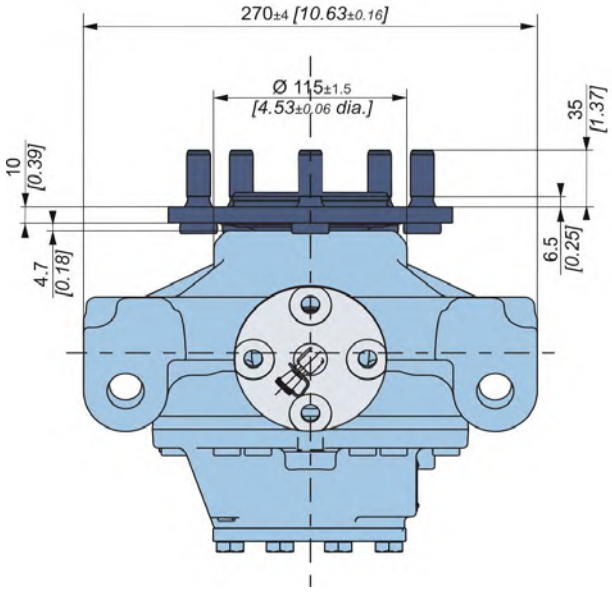
33,0 kg *[72,6 lb]*

1,00 L *[60 cu.in]*



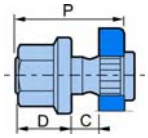






Studs

	P mm *[in]*	C min. mm *[in]*	C max. mm *[in]*	D mm *[in]*	Class
M14 x 1.5	45 *[1.77]*	5 *[0.20]*	18 *[0.71]*	16.5 *[0.65]*	12.9



See option G for non standard studs.

See generic installation motors N°B51352L.

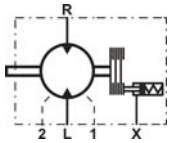
F

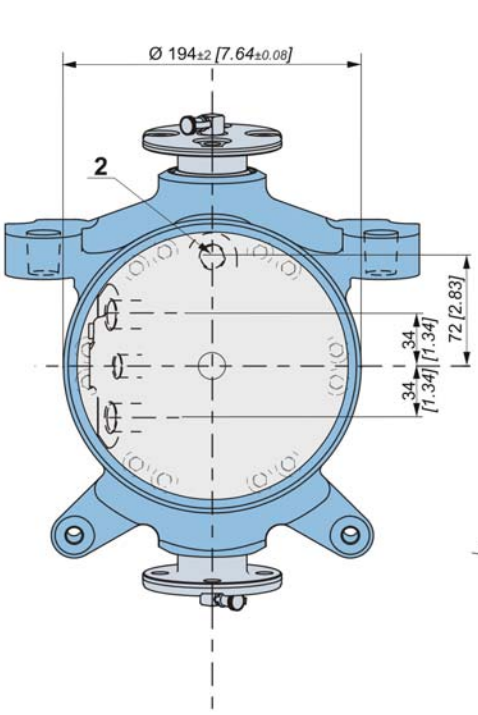
1	2	3
V		0

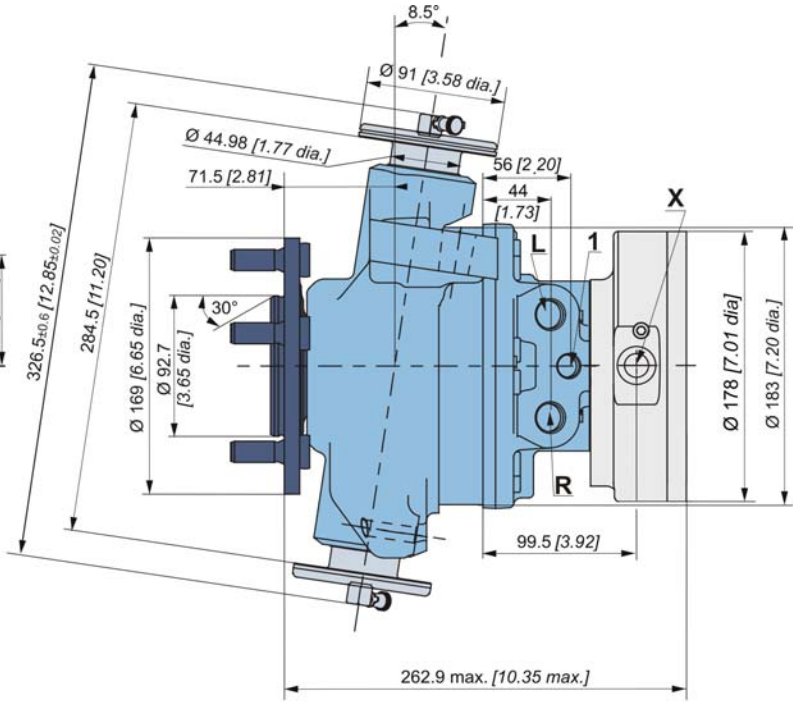
Dimensions for 1-displacement motor with brake

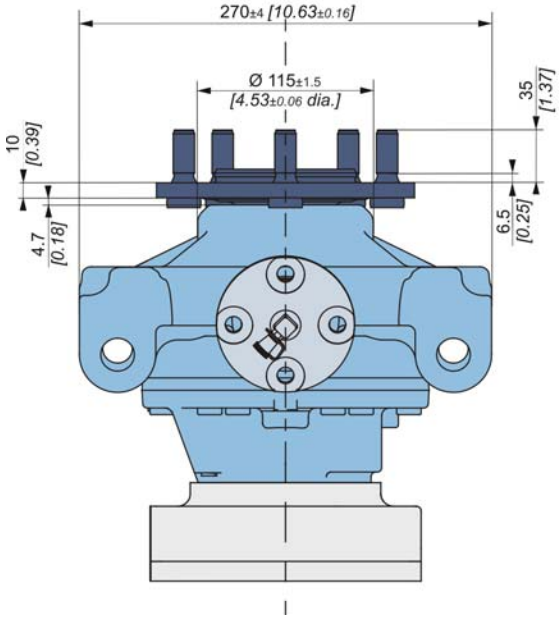
38,3 kg *[84,3 lb]*

1,00 L *[60 cu.in]*



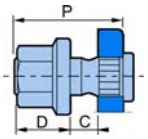






Studs

	P mm *[in]*	C min. mm *[in]*	C max. mm *[in]*	D mm *[in]*	Class
M14 x 1.5	45 *[1.77]*	5 *[0.20]*	18 *[0.71]*	16.5 *[0.65]*	12.9



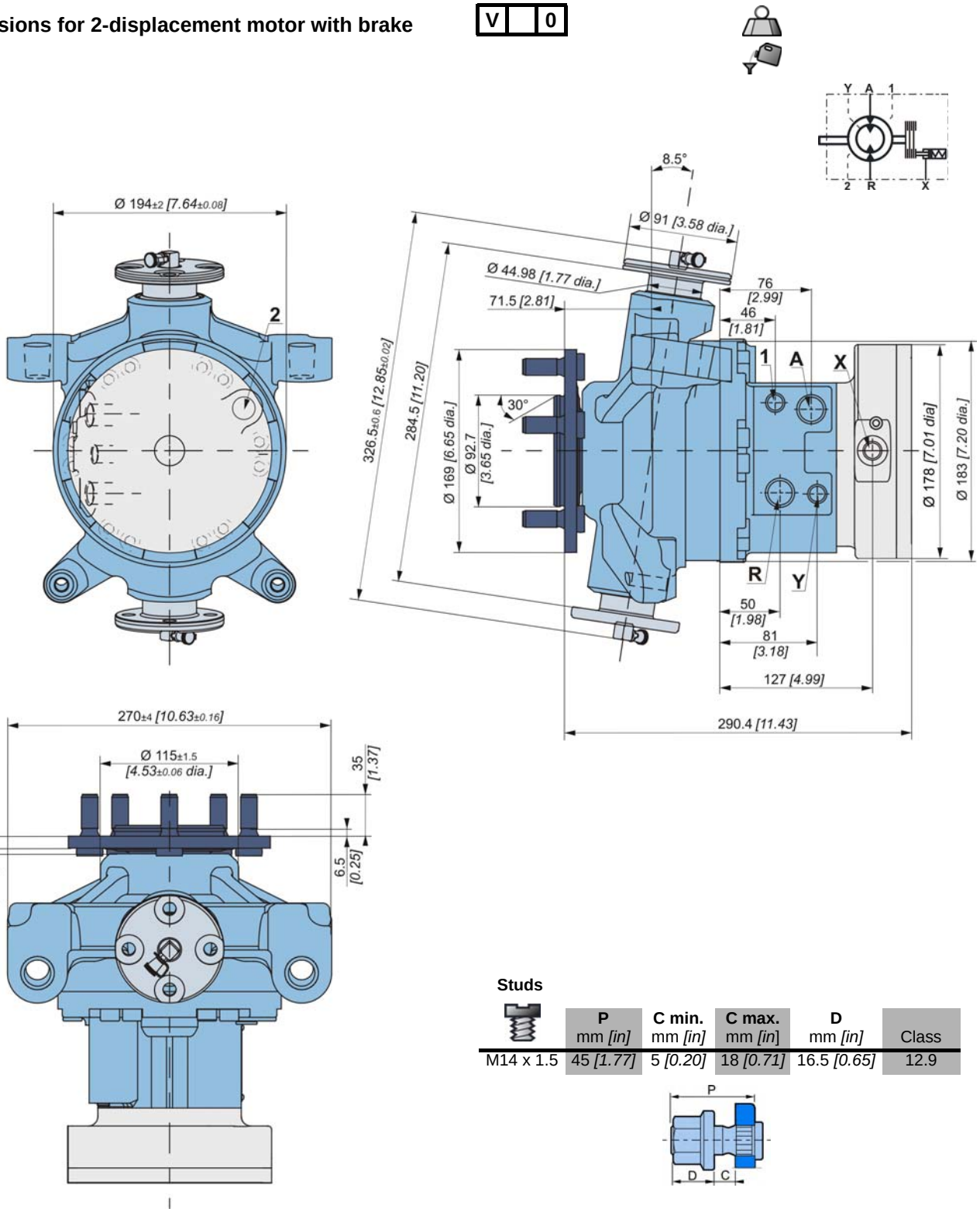
See option G for non standard studs.

See generic installation motors N°B51352L.

F

1	2	3
V		0

Dimensions for 2-displacement motor with brake



Studs

	P mm *[in]*	C min. mm *[in]*	C max. mm *[in]*	D mm *[in]*	Class
M14 x 1.5	45 *[1.77]*	5 *[0.20]*	18 *[0.71]*	16.5 *[0.65]*	12.9

See option G for non standard studs.

See generic installation motors N°B51352L.

Load curves

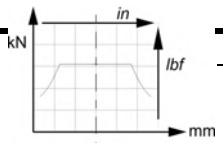
The given load curves correspond to the conditions specified below. For load curves corresponding to your specifications, contact a Poclain Hydraulics engineer.

Permissible radial loads on bearing support

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 (400 bar *[5 802 PSI]*)



Service life of bearings

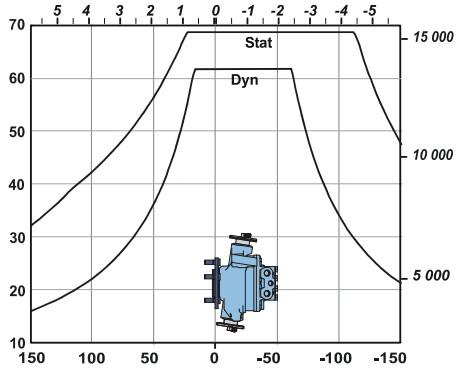
Test conditions :

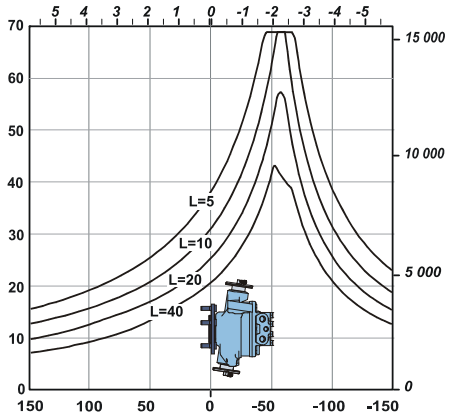
L : Millions B10 revolutions at 150 bars (average pressure), with 25 cSt fluid, code 0 displacement, without axial load.

MGE02

P

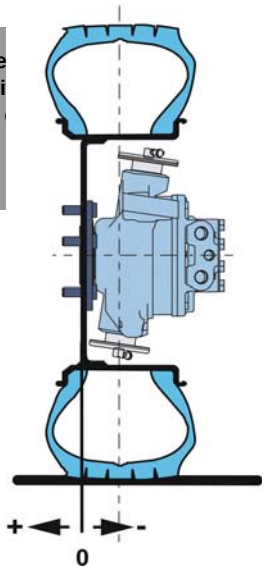
1	2	3	4
B	1	2	0
B	7	2	0





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

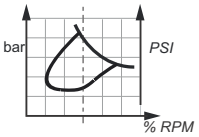
Loads are hold by the bearing support and the pivot. It is mandatory to check the compability of your load cases and the max. permissible loads for the bearing support and the pivot. For an accurate calculation, consult your Poclain Hydraulics application engineer.

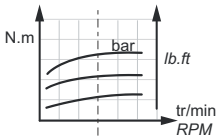


Efficiency

Overall efficiency

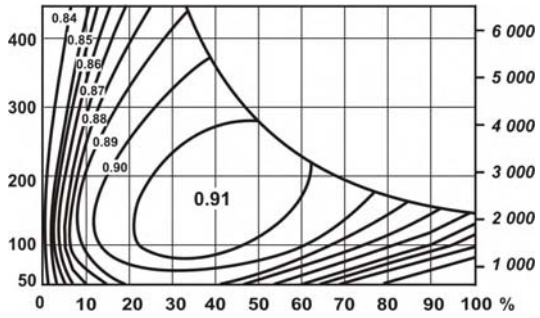
Average values given for guidance for code 0 displacement after 100 hours of operation with HV46 hydraulic fluid at 50°C *[122°F]*.

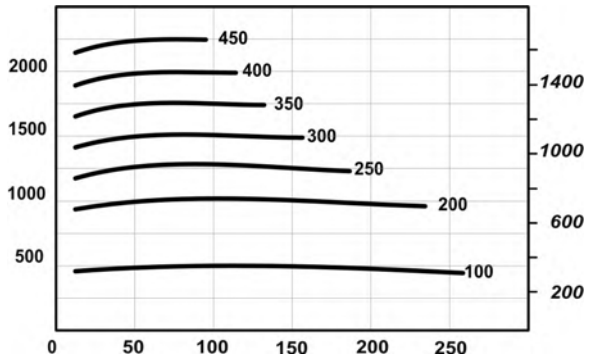




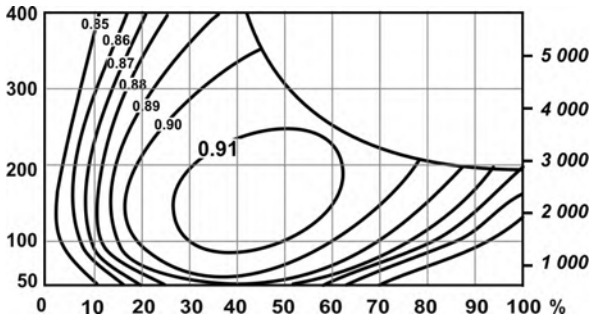
Actual output torque

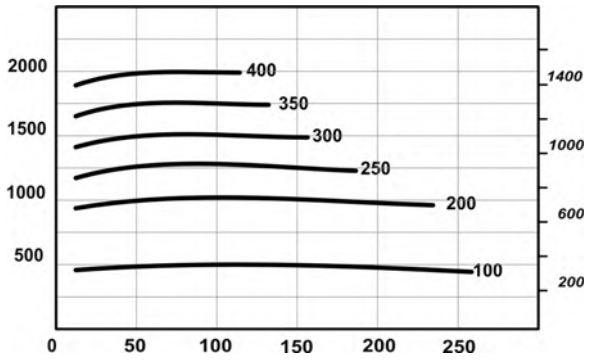
MG02





MGE02

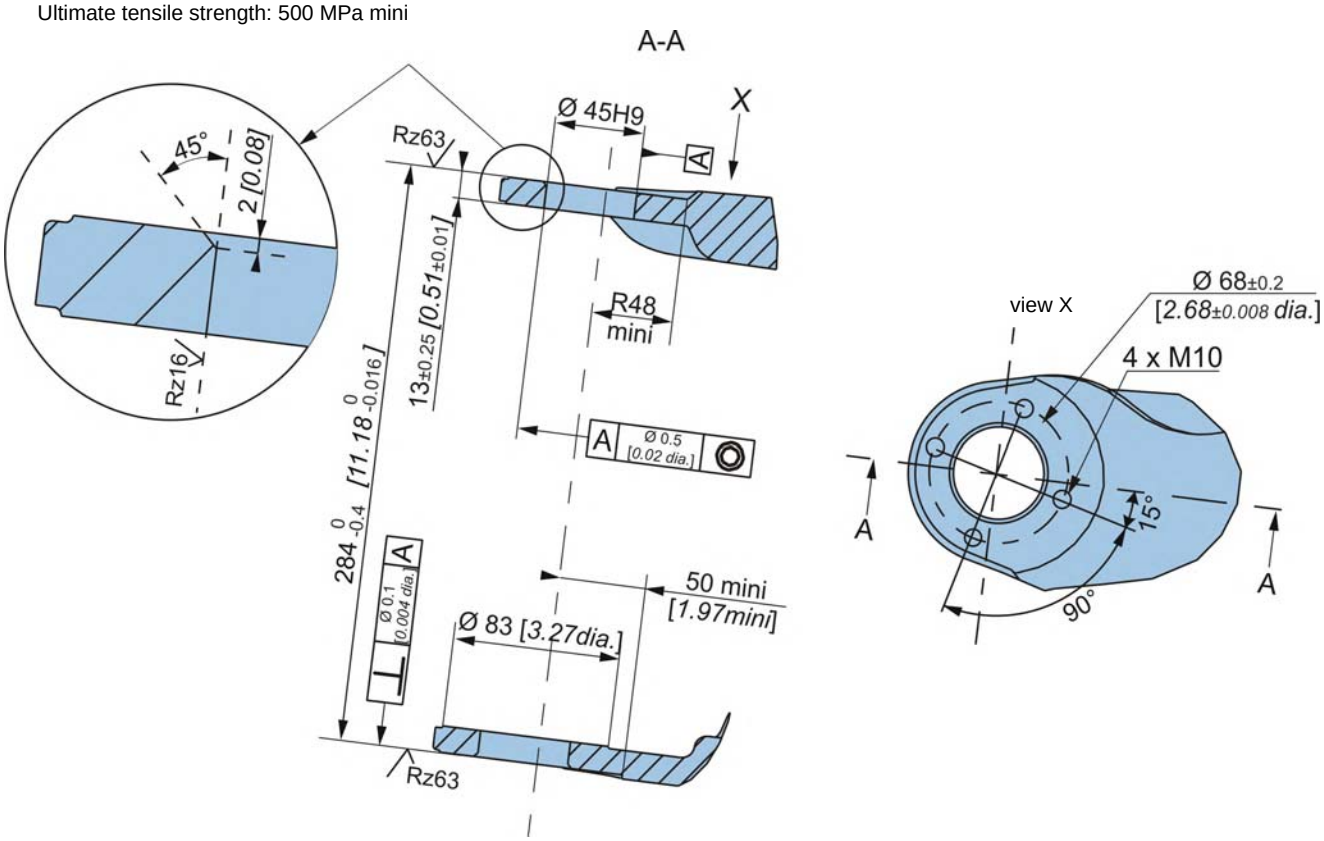




For a precise calculation, consult your Poclain Hydraulics application engineer.

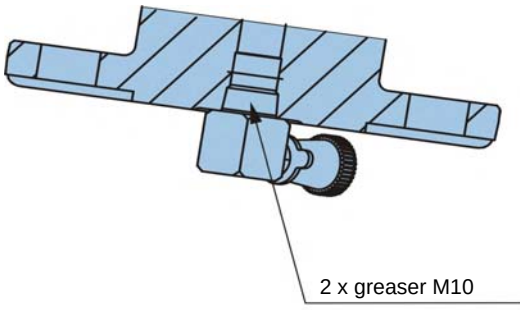
Chassis mounting

Ultimate tensile strength: 500 MPa mini



	Class
4xM10	10.9

Greaser



Greaser specification:

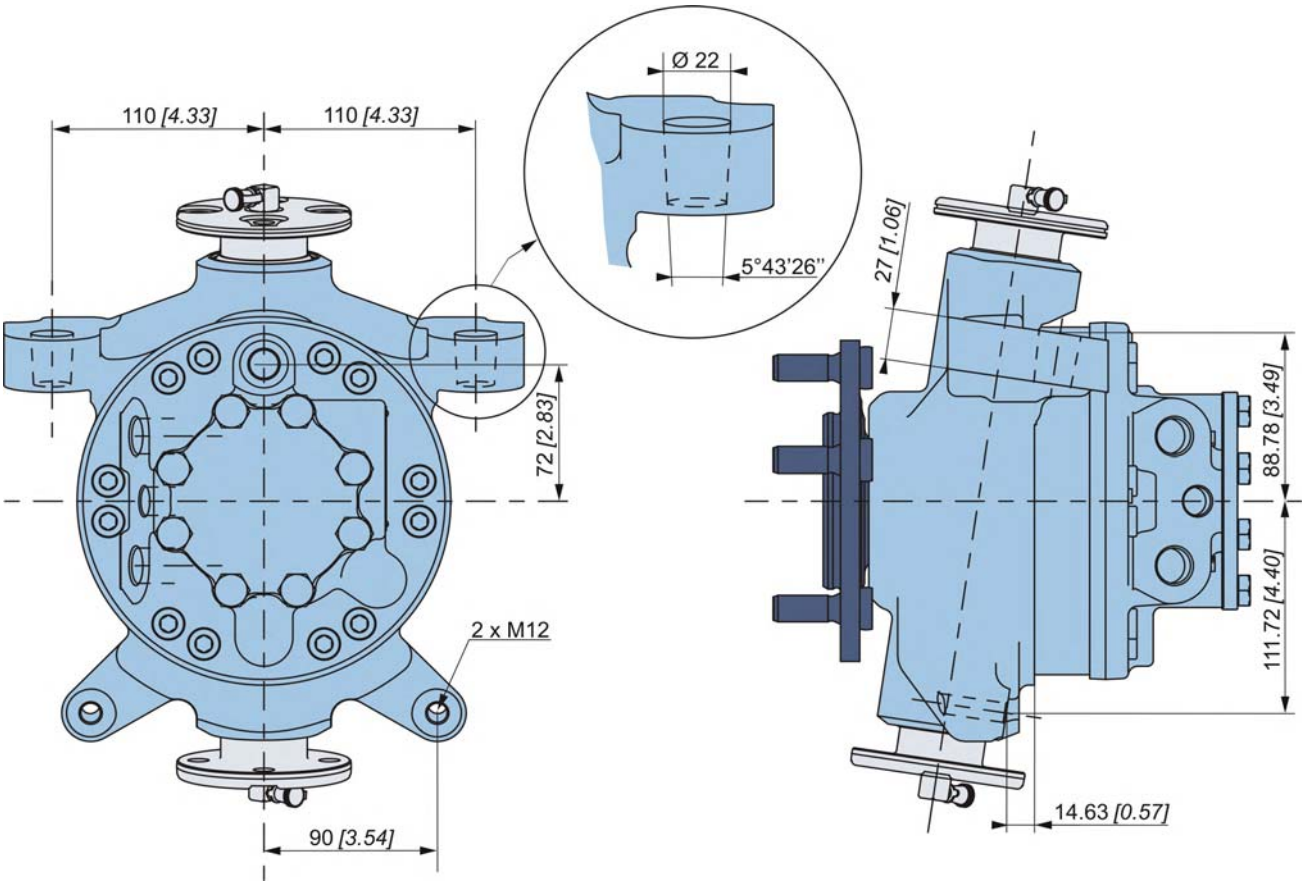
Screw the greaser by hand until the lock, then screw it 1/2 or 1 turn more.

Greasing recommendations:

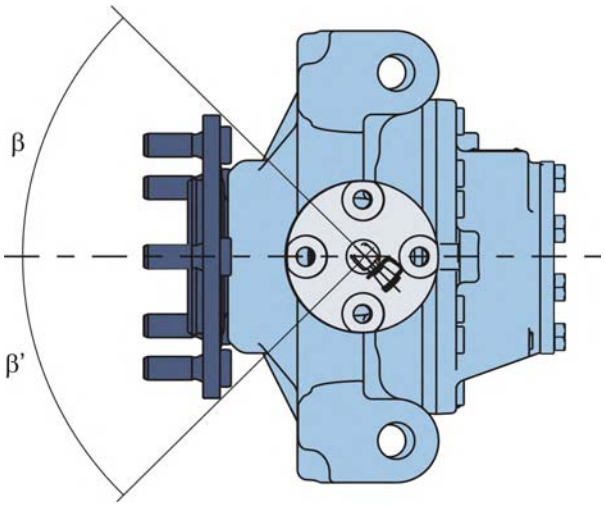
- Replace the grease every 50 hours max.
- Be careful that grease do not contain any solid lubricants.
- The grease must not contain more than 5% MoS_2,ZnS
- Oil mineral-based grease lithium soap are recommended.
- Greasing pressure can exceed 150 bar.

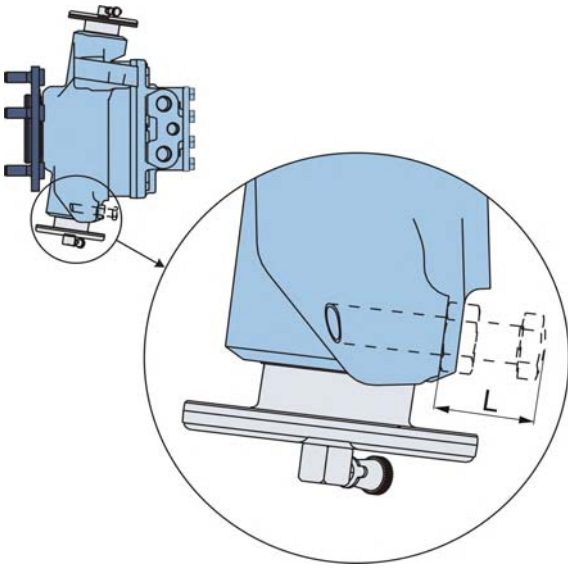
During greasing, in order to respect the environment, we recommend that you recover the excess grease (used grease) from around the kingpin seal.

Steering attachment



Steering angle and steering stop





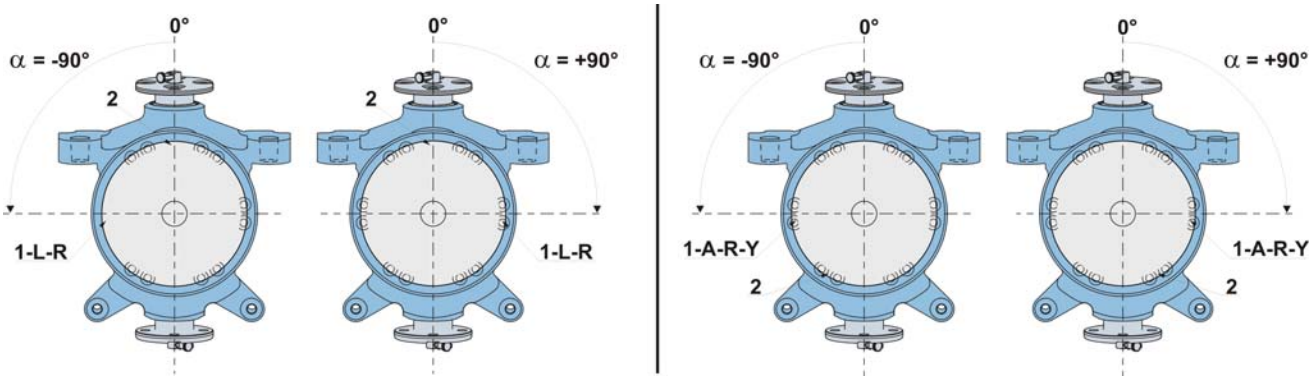
The steering angles (β and β') can be differents within the limits of the customer's chassis conception and the hydraulics connections.

The steering angle is adjusted with the steering stop.

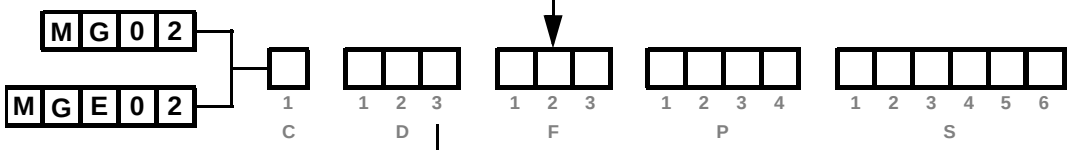
The customer must adjust the stroke of the steering stop (L) according to the chassis conception.

Hydraulic connections

1-displacement **2-displacement**



α = -90°	Orientation -90	1
α = +90°	Orientation +90	2



	C	Old standards	Standards	Power supply	Case drain	2nd displacement control	Control of parking break
				R-L	1, 2		X
1-displacement	A	SAE J514	ISO 11 926-1	7/8"-14 UNF	3/4"-16 UNF		9/16"-18 UNF
	3	BSPP	ISO 1 179-1	Ø21 *[1/2" dia.]*	Ø17 *[3/8" dia.]*		Ø13 *[1/4" dia.]*
	4	NF E48 050	ISO 9 974-1	M22x1.5	M18x1.5		M18x1.5
				R-A	1, 2	Y	X
2-displacement	A	SAE J514	ISO 11 926-1	7/8"-14 UNF	9/16"-18 UNF	9/16"-18 UNF	9/16"-18 UNF
	3	BSPP	ISO 1 179-1	Ø21 *[1/2" dia.]*	Ø13 *[1/4" dia.]*	Ø13 *[1/4" dia.]*	Ø13 *[1/4" dia.]*
	4	NF E48 050	ISO 9 974-1	M22x1.5	M14x1.5	M14x1.5	M18x1.5

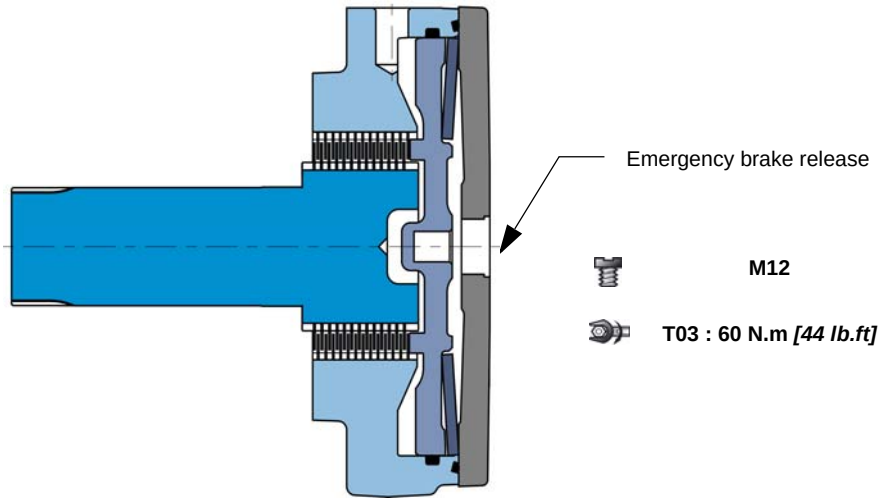
You are strongly advised to use the fluids specified in brochure "Installation guide" N° B61352L.

To find the connections' tightening torques, see the brochure "Installation guide" N° B61352L.

BRAKES

	C	D	F	P	S
	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6
MG02			V 0		
MGE02			V 0		

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 resses on the fixed and mobile discs, and immobilizes the shaft. The braking torque decreases in linear proportion to the brake release pressure.

C	V 0 3
Parking brake torque at 0 bars on housing (new brake)	2 500 Nm *[1 840 lb.ft]*
Dynamic emergency braking torque at 0 bars on housing (max. 10 uses of emergency brakes)	1 625 Nm *[1 200 lb.ft]*
Residual parking braking at 0 bars on housing *	1 875 Nm *[1 380 lb.ft]*
Min. brake release pressure	12 bar *[174 PSI]*
Max. brake release pressure	30 bar *[435 PSI]*
Oil capacity	100 cm³ *[6,1 cu.in]*
Volume for brake release	16 cm³ *[1,0 cu.in]*
Max. energy dissipation	38 179 J

* 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 all vehicles capable of speeds over 25 km/h, please contact your Poclain Hydraulics application engineer.

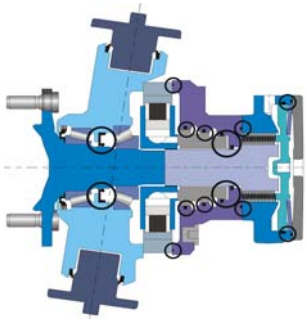
OPTIONS

	C	D	F	P	S
MG02	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6
MGE02	1	1 2 3	1 2 3	1 2 3 4	1 2 3 4 5 6

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

1 - Fluorinated elastomer seals

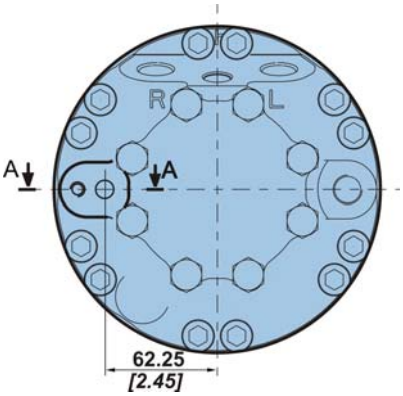
Nitrile seals marked in the figure below replaced by fluorinated elastomer seals.

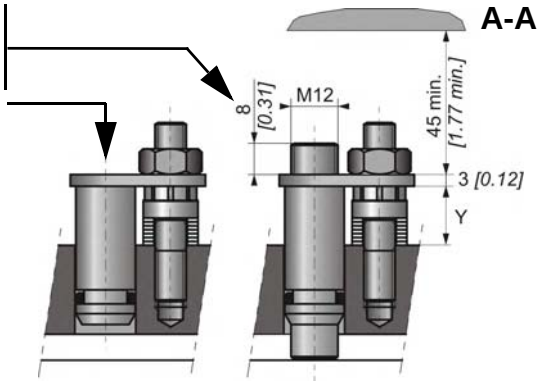


Consult your Poclain Hydraulics sales engineer.

2 - S - Q - 8 - Installed speed sensor or predisposition

Designation	C
T4 Speed sensor (without rotation direction)	2
TR Speed sensor (digital rotation direction)	S
TD Speed sensor (two phase shifted frequencies)	Q
Predisposition for Speed sensor	8





Max. length Y= 19

Standard number of pulses per revolution= 40

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.

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.

E - Reinforced sealing (standard)

Reinforced seals.

G - Special wheel rim mounting

Enables certain combinations different from the standard mountings defined on page 8 are possible.

Consult your Poclain Hydraulics sales engineer.

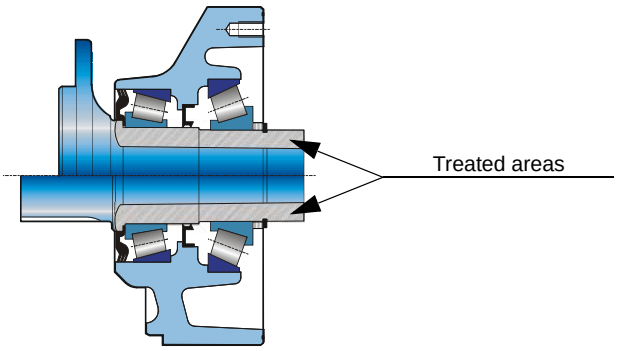
H - High efficiency

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.

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