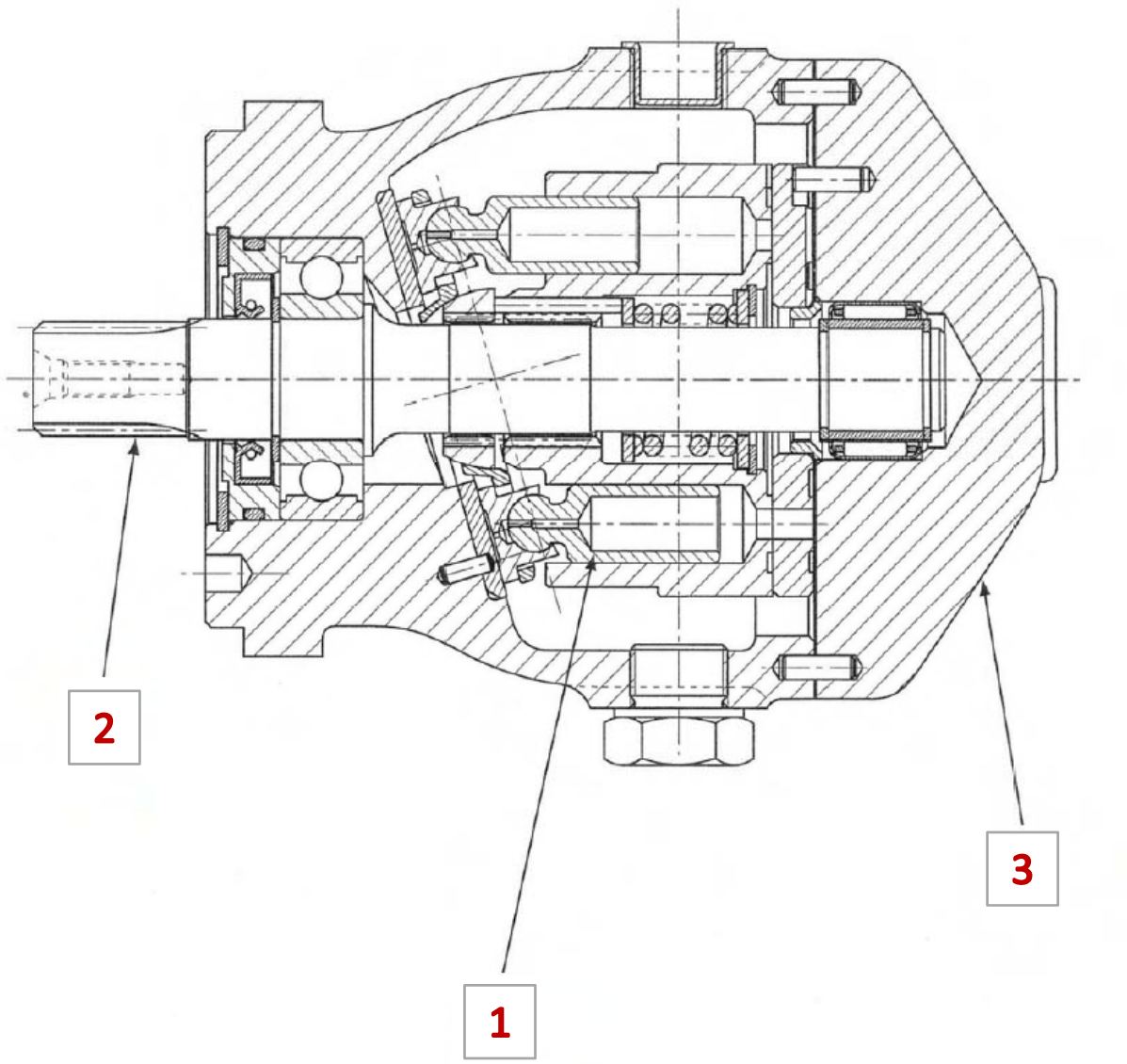
M MOTORS

INTERFLUID Hidráulica S.L.U - Ctra. de Torrelles, 34 - E-08620 - Sant Vicenç dels Horts – Barcelona - España
Telf : +34 93 656.27.97 - Fax : +34 93.676.98.25 - www.interfluid.es

M1 MOTORS.

HOW TO ORDER “M0”



ORDER CODE

M1	20	S2	04	00	00
	1	2	3	4	5

1	CILINDRATA	*DISPLACEMENT*
15	15,35 cm3/giro	*15,36 cm3/rev*
17	17,80 cm3/giro	*17,81 cm3/rev*
20	19,05 cm3/giro	*19,06 cm3/rev*
21	20,31 cm3/giro	*20,33 cm3/rev*

2	ALBERO	*SHAFT*
C2	Cilindrico D = 19,05	*D = 19,05 Parallel shaft*
S2	Scanalato Z = 11 16/32 D.P. (standard)	*Z = 11 16/32 D.P. Splined shaft*

3	ATTACCHI	*CONNECTIONS*
02	Laterali	*Side*
04	Posteriori	*Rear*
05	Laterali e posteriori	*Side and rear*

4	OPTIONALS	*OPTIONS*
00	Senza optionals	*Without options*
CR	Cuscinetto a rulli	*Roller bearing*

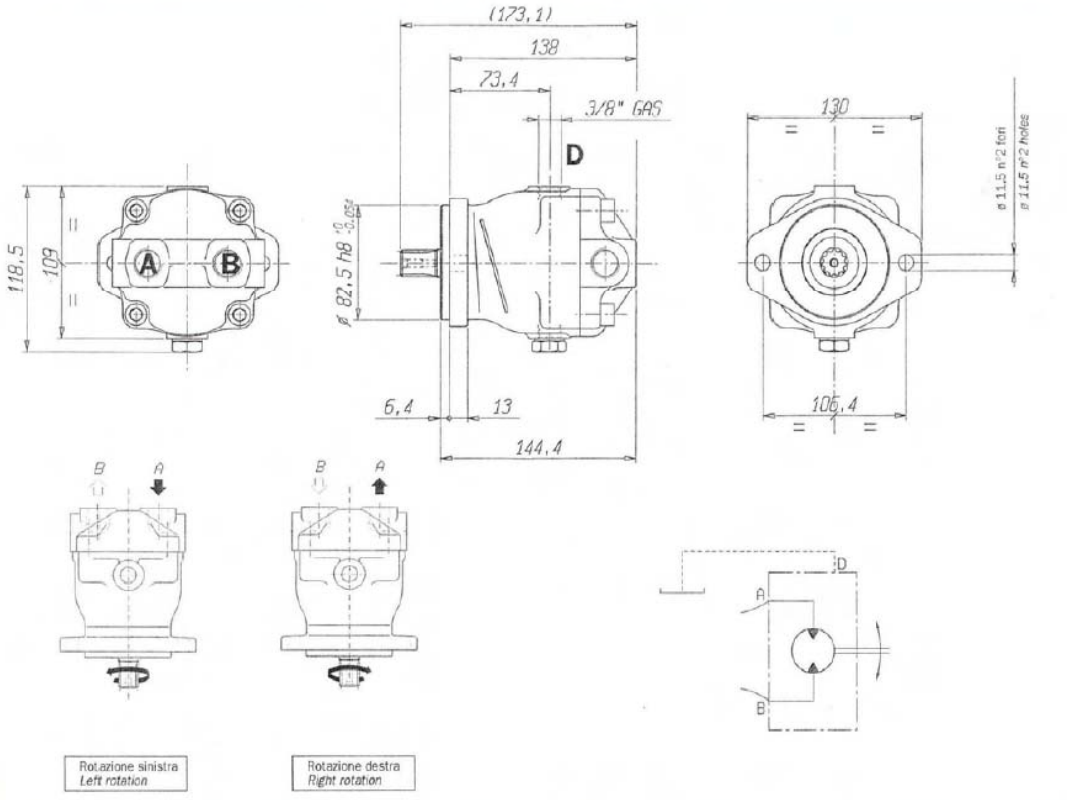
5	ESECUZIONI SPECIALI	*SPECIAL EXECUTIONS*
00	Esecuzione standard (filetti 1/2" gas)	*Standard execution (1/2" gas threads)*
FM	Filettature metriche (per quantità)	*Metric threads (for quantities)*
FU	Filetti UNF + O-ring (per quantità)	*UNF threads (for quantities)*
ES	Esecuzione speciale	*Special version*

EXAMPLE OF ORDER CODE

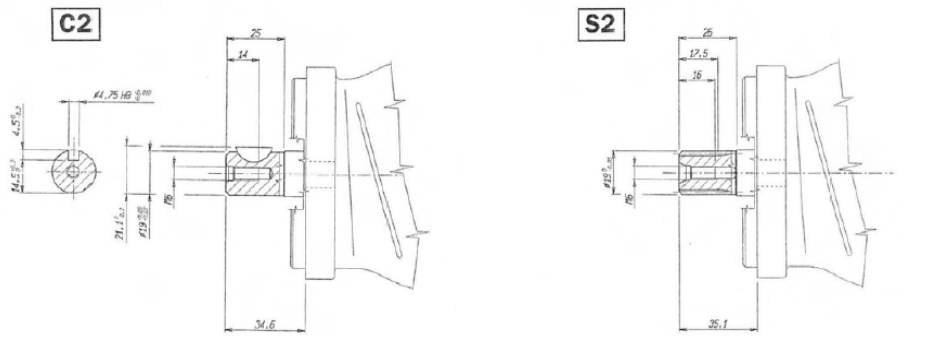
M1 21 S2 04 CR 00

Order for motor 20,31 cm3/rev.,
Splined shaft Z11,
rear connections,
roller bearings,
standard threads 1/2" gas

"M0" MOTORS



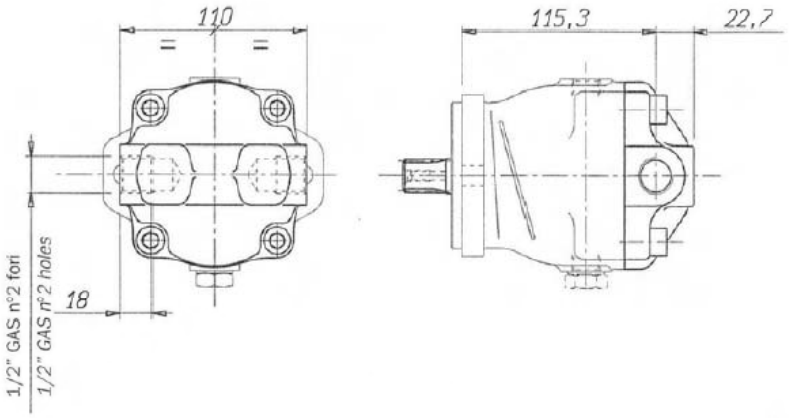
SHAFT



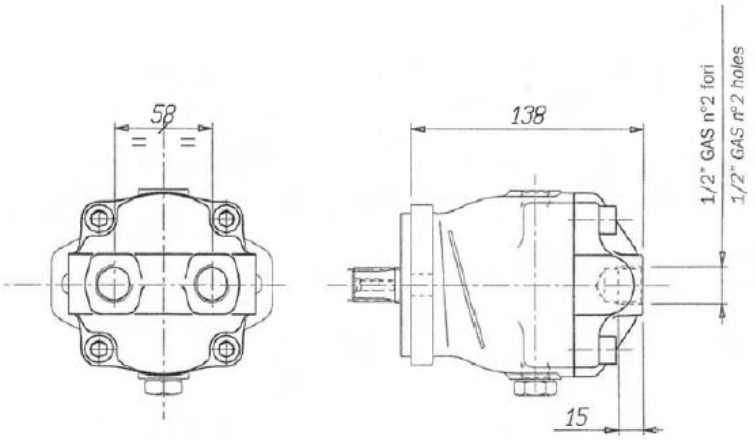
Passo 16/32 Z 11 Angolo di pressione 30° Classe di tolleranza 5	*Pitch 16/32* *Z 11* *Pressure angle 30°* *Tollerance class 5*

CONNECTIONS

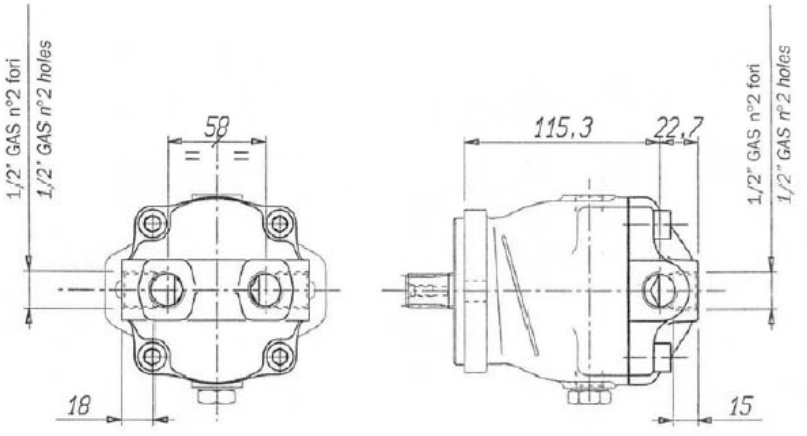
02 Attacchi laterali
Lateral connection



04 Attacchi posteriori
Rear connection

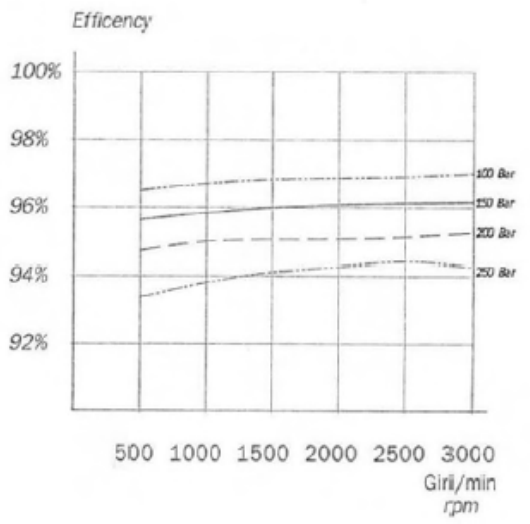


05 Attacchi laterali + posteriori
Lateral + Rear connection

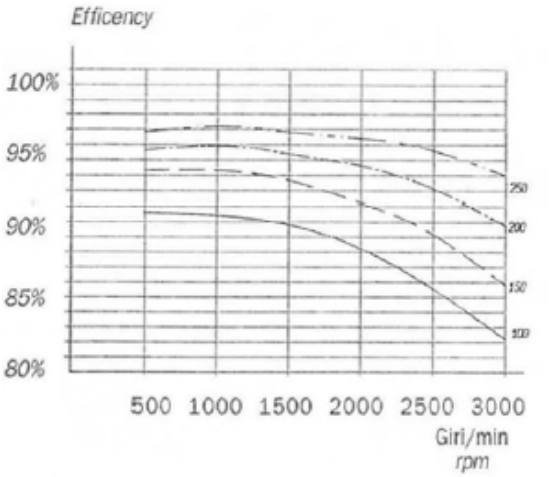


MOTOR PERFORMANCE CURVES

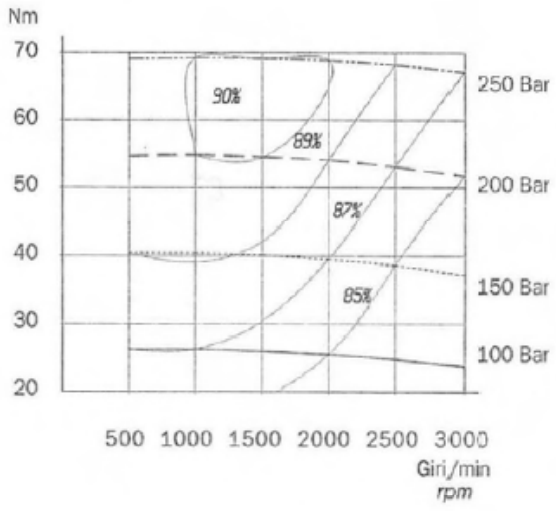
VOLUMETRIC EFFICIENCY



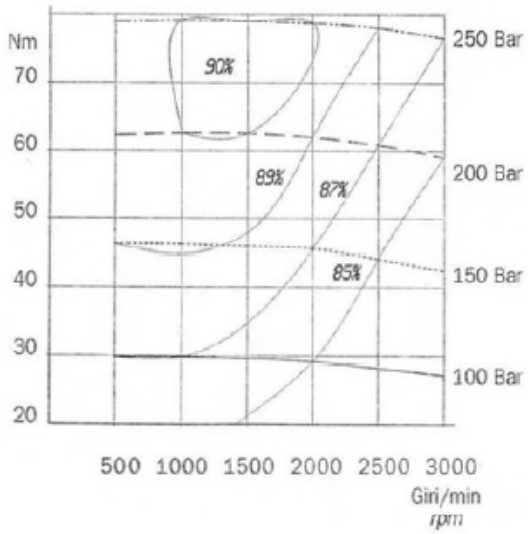
MECHANICAL EFFICIENCY



M1-17 MOTOR TOTAL EFFICIENCY



M1-21 MOTOR EFFICIENCY



CALCULATION FORMULA FOR THE "M1" MOTOR BEARINGS LIFE

Rear bearing:

$$L_{HP} = \frac{16667}{n}\left[\frac{12300}{\sqrt{CP}}\right]^{3,33}$$

- **p** = 3 *ball bearing*
- **p** = 3,33 *roller bearing*
- K_A = 9560 *ball bearing*
- K_A = 17200 *roller bearing*
- **L** = *distance between flange and radial load (mm)*
- **n** = *rotation speed (rpm)*
- F_p = *internal radial load (N)*
- **R** = *external radial load (N)*
- α = *angle of external radial load (degrees)*
- P_{in} = *input pressure (bar)*
- P_{out} = *output pressure (bar)*

CA	CP
$(0,69F_p - R_xL_2)^2 + (R_yL_2)^2$	$(0,31F_p - R_xL_1)^2 + (R_yL_1)^2$

R_x	R_y	F_p	L_1	L_2
R cos α	R sin α	$1,042V_c(P_{in}+P_{out})$	0,13+0,01L	1,13+0,01L

If the motor works at time intervals $q_1, q_2, \ldots, q_n$ with different values of rotation speed, working pressure and radial load, the above mentioned formulas calculate, for each interval, the fatigue life of each bearing (rear and front one). The following formula calculates each bearing's total life for the whole motor's working cycle.

$$L_H = \frac{100}{\frac{q_1}{L_{H1}} + \frac{q_2}{L_{H2}} + \ldots\ldots + \frac{q_n}{L_{Hn}}}$$

When:
$q_1, q_2, \ldots, q_n$ (%) = *percentages of the considered cycle when the motor works in constant conditions.*
$L_{H1}, L_{H2}, \ldots, L_{Hn}$ (hours) = *life of each bearing referring to intervals* $q_1, q_2, \ldots, q_n$