Part number:

HYDROMA HYDRAULICKÉ SYSTÉMY | HIDROMA SISTEMS UKŁADY HYDRAULICZNE | HYDROMA ГИДРАВЛИЧЕСКИЕ СИСТЕМЫ

MOTORI A PISTONI ASSIALI A CILINDRATA FISSA E VARIABILE (per circuiti aperti e chiusi)
FIXED AND VARIABLE DISPLACEMENT AXIAL PISTON MOTORS (for open and closed loop)

	Type **M0**	Type **M1**	Type **M2**	Type **M3**
				
Cilindrata *Displacement (cm3/rev)*	**7-9-11-13 14-17-18**	**15-17-20-21**	**24-28 34-40-50**	**40-45 50-55-60-65**
Pressione max *Max pressure (bar)*	**300**	**320**	**300**	**350**
Giri max *Max revolution (rpm)*	**3.600**	**3.600**	**3.600 3.200**	**3.600 3.200**
Optionals *Options*	**CR-FU**	**CR-FU**	**CR-DP-FS-FU-RR-VS**	**FS-FU-VS**

LEGENDA/LEGEND

OPTIONAL / OPTIONS

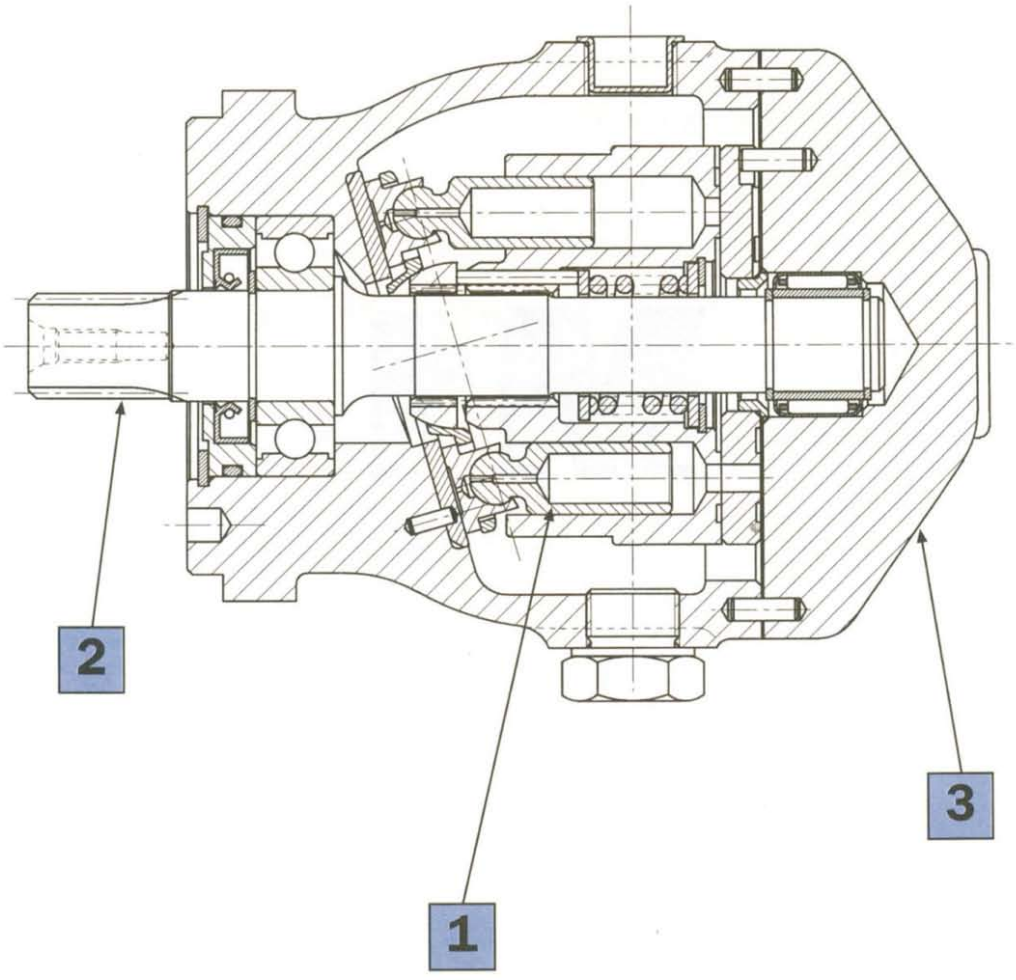
- **CR-** Cuscinetti a rulli
  Roller bearing
- **DP-** Drenaggio posteriore
  Rear drain port
- **FS-** Flange SAE (per quantità)
  SAE flanges (for quantities)
- **FU-** Filetti UNF + 0-ring (per quantità)
  UNF threads (for quantities)
- **RR-** Valvola anticavitazione su "A + B"
  Anticavitation valve on "A + B"
- **VS-** Valvola di scambio
  Purge valve





"M1" Come ordinare

How to order "M1"



SIGLA DI ORDINAZIONE *ORDER CODE*	M1	20	S2	04	00	00
		1	2	3	4	5

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

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

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)*
VR	Versione per riduttore (per quantità)	*Version for gearboxes (for quantities)*

Esempio di ordinazione

M1 21 S2 04 CR 00

Ordine per motore da 20,33 cm3/giro,
albero scanalato Z11,
attacchi posteriori,
cuscinetti a rulli,
fiilettature standard 1/2" gas

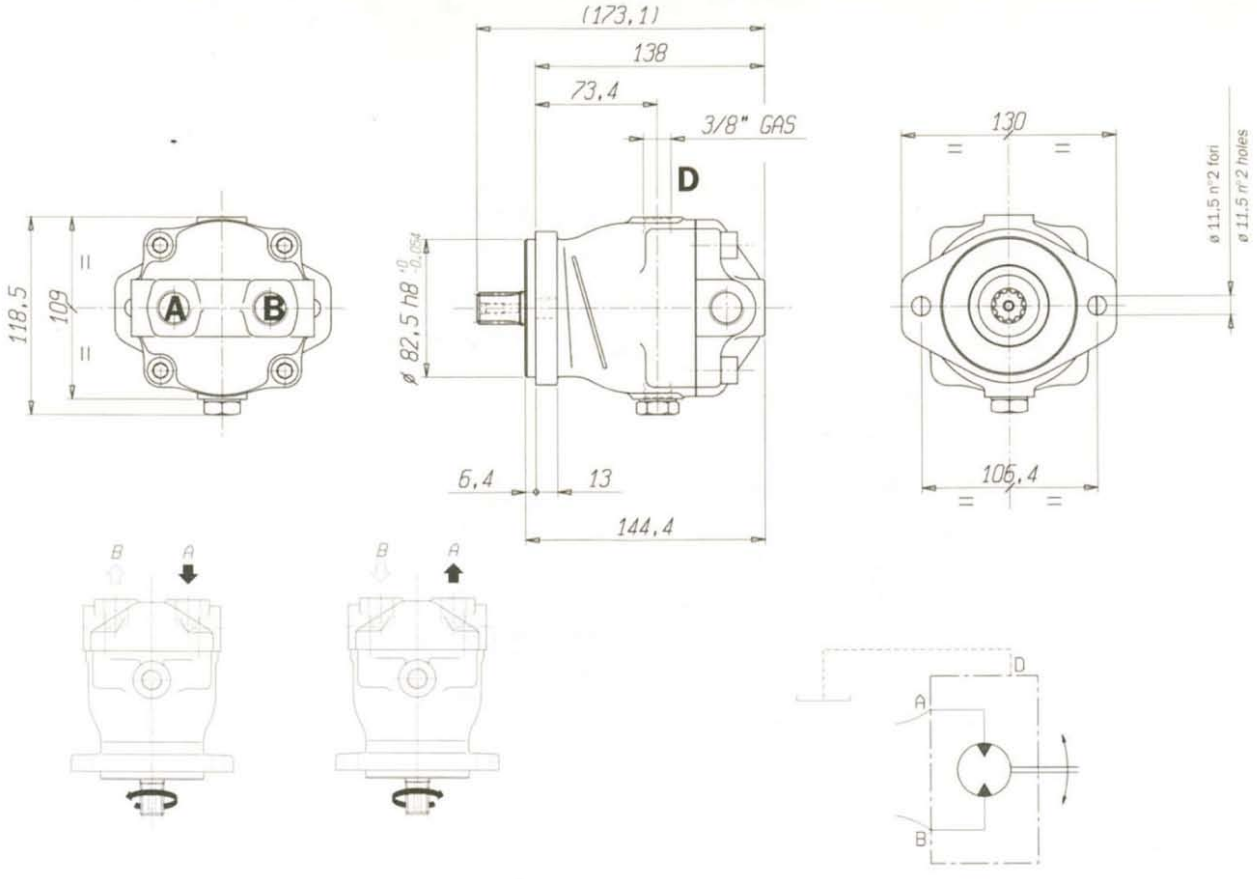
Example of Order code

M1 21 S2 04 CR 00

Order for motor 20,33 cm3/rev.,
Splined shaft Z11,
rear connections,
roller bearings,
standard threads 1/2" gas

Motori "M1"

"M1" Motors



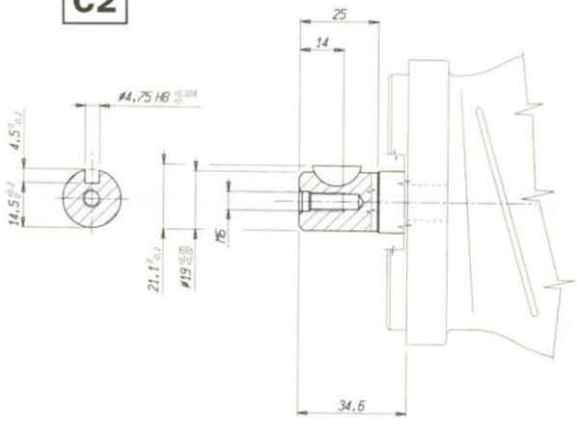
Rotazione sinistra
Left rotation

Rotazione destra
Right rotation

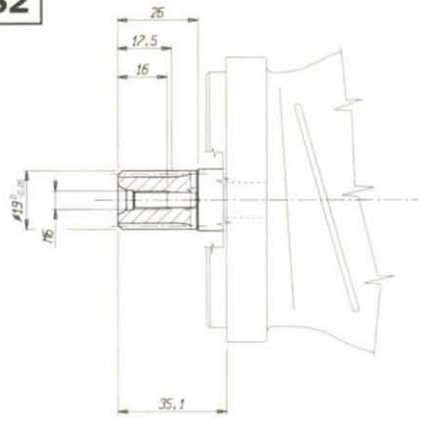
Alberi

Shafts

C2



S2



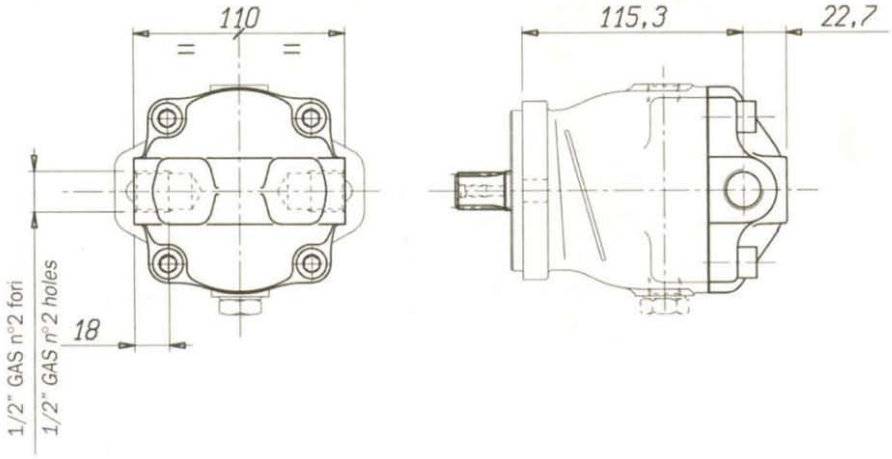
Passo 16/32
Z 11
Angolo di pressione 30°
Classe di tolleranza 5

Pitch 16/32
Z 11
Pressure angle 30°
Tollerance class 5

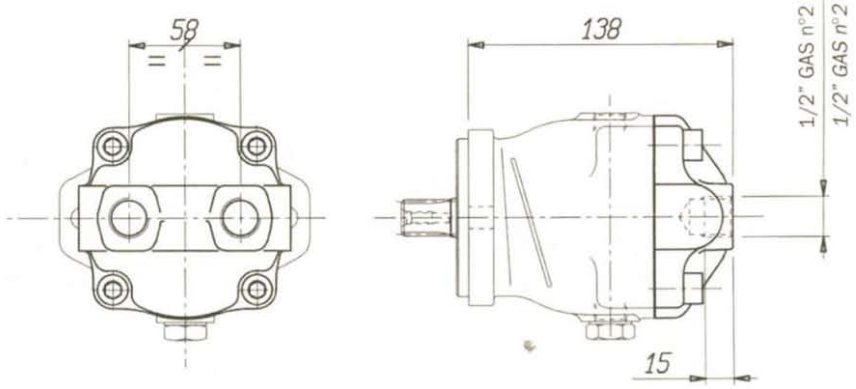
Attacchi

Connections

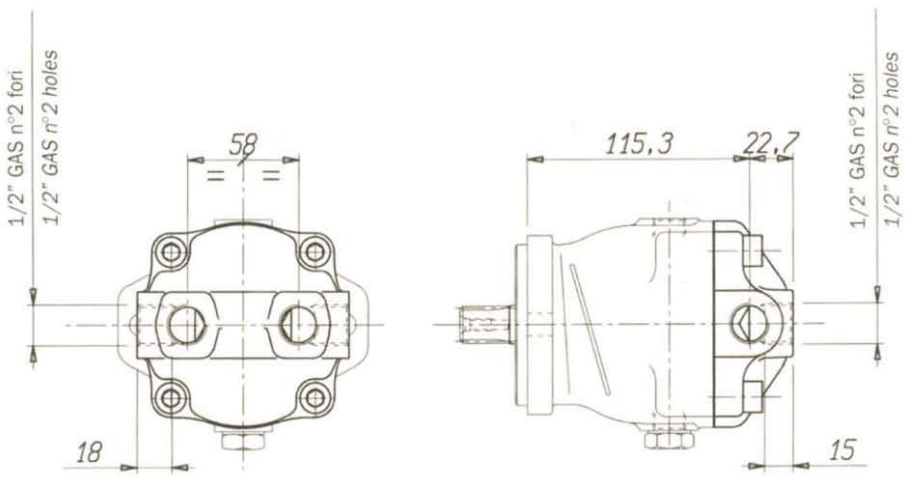
02 Attacchi laterali
Lateral connection



04 Attacchi posteriori
Rear connection

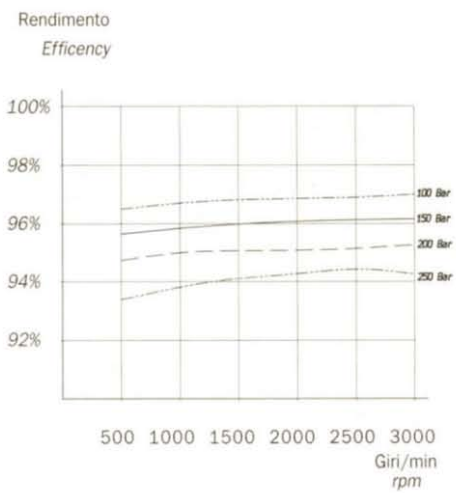


05 Attacchi laterali + posteriori
Lateral + Rear connection



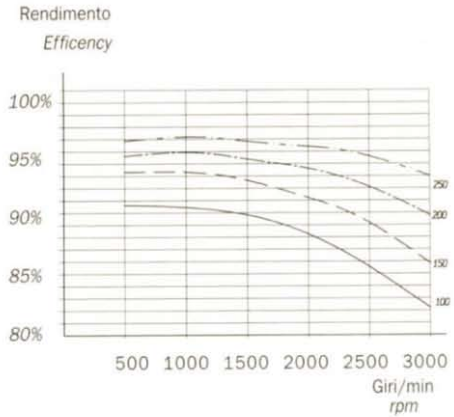
Rendimento volumetrico

Volumetric efficiency



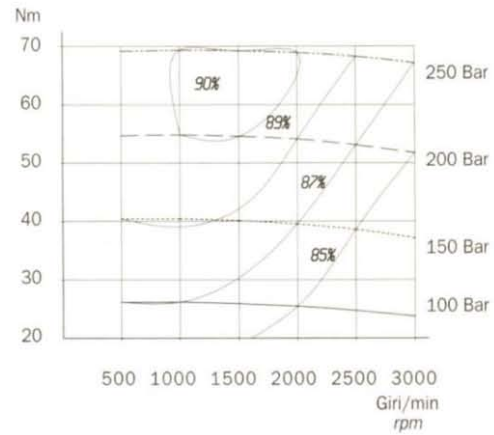
Rendimento meccanico

Mechanical efficiency



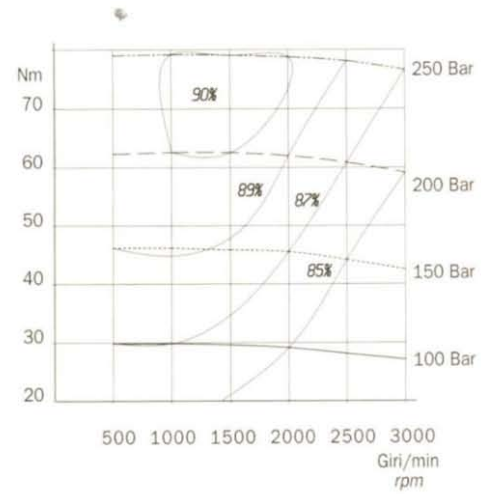
Rendimento totale Motore M1-17

M1-17 Motor Total efficiency



Rendimento totale Motore M1-21

M1-21 Motor Total efficiency



Formule per il calcolo della durata dei cuscinetti per i motori "M1"

Cuscinetto anteriore: *Front bearing:*

$$L_{HA} = \frac{16667}{n} \left[\frac{K_A}{\sqrt{CA}} \right]^p$$

- **p** = 3 cuscinetto a sfere
- **p** = 3,33 cuscinetto a rulli
- $\mathbf{K_A}$ = 9560 cuscinetto a sfere
- $\mathbf{K_A}$ = 17200 cuscinetto a rulli
- **L** = Distanza tra flangia e carico radiale (mm)
- **n** = Velocità di rotazione (rpm)
- $\mathbf{F_p}$ = Carico radiale interno (N)
- **R** = Carico radiale esterno (N)
- α = Angolo del carico radiale esterno (gradi)
- $\mathbf{P_{in}}$ = Pressione in ingresso (bar)
- $\mathbf{P_{out}}$ = Pressione in uscita (bar)

Calculation formula for the "M1" motor bearings life

Cuscinetto posteriore: *Rear bearing:*

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

- **p** = 3 *ball bearing*
- **p** = 3,33 *roller bearing*
- $\mathbf{K_A}$ = 9560 *ball bearing*
- $\mathbf{K_A}$ = 17200 *roller bearing*
- **L** = *distance between flange and radial load (mm)*
- **n** = *rotation speed (rpm)*
- $\mathbf{F_p}$ = *internal radial load (N)*
- **R** = *external radial load (N)*
- α = *angle of external radial load (degrees)*
- $\mathbf{P_{in}}$ = *input pressure (bar)*
- $\mathbf{P_{out}}$ = *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
$R \cos \alpha$	$R \sin \alpha$	$1,042V_c(P_{in}+P_{out})$	0,13+0,01L	1,13+0,01L

Se il motore funziona per intervalli di tempo $q_1, q_2, \ldots, q_n$ a differenti valori di velocità di rotazione, pressione di esercizio e carico radiale, con le formule di cui sopra è possibile calcolare, per ogni intervallo, la durata a fatica di ciascun cuscinetto (anteriore e posteriore). La durata complessiva di ciascun cuscinetto per l'intero ciclo di lavoro si calcola con la formula seguente:

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.

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

Dove:

$q_1, q_2, \ldots, q_n$ (%) = percentuale di ciclo considerato in cui il motorefunziona in condizioni costanti.

$L_{H1}, L_{H2}, \ldots, L_{Hn}$ (ore) = durate di ciascun cuscinetto relative agli intervalli $q_1, q_2, \ldots, q_n$

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 $q_1, q_2, \ldots, q_n$

