



**GEAR PUMPS**

**GROUP 2**

**MODEL MGP**

**SERIES K**

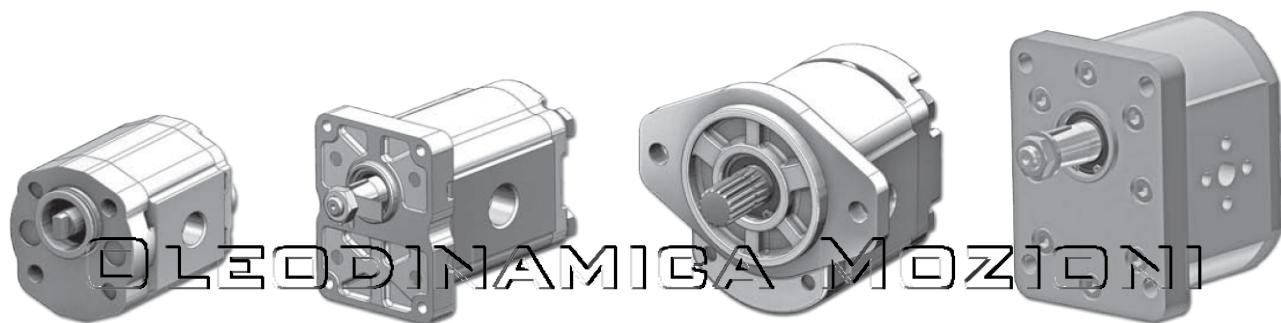


GEAR PUMPS SERIES "K" MANUFACTURED BY OLEODINAMICA MOZIONI ARE THE MOST USED IN HYDRAULIC UNITS IN THE HYDRAULIC SYSTEMS OF MOBILE MACHINES AND CONFORM TO INTERNATIONAL STANDARDS.

WE USE THE ADVANCED WORLD'S CONCEPTS – IMPROVING THE TECHNICAL CHARACTERISTICS OF THE PRODUCT, USE ONLY HIGH QUALITY MATERIALS AND HARDWARE MANUFACTURERS OF THE WORLD AT ALL STAGES OF DESIGN AND PRODUCTION. THE QUALITY MANAGEMENT SYSTEM CONFORMS INTERNATIONAL STANDARD ISO 9001: 2008.

GEAR PUMPS SERIES "K" OF OLEODINAMICA MOZIONI HAVE HIGH VOLUMETRIC AND MECHANICAL EFFICIENCY, LOW NOISE AND OPERATE RELIABLY IN A VARIETY HYDRAULIC SYSTEMS AND MOBILE MACHINERY.

- DIMENSIONS OF THE PUMPS ARE ACCORDING TO INTERNATIONAL STANDARDS SAE, DIN, EUROPEAN.
- GEAR PUMPS ARE SUPPLIED IN NEXT GROUPS: MGP1K, MGP2K, MGP2.5K, MGP3K WITH DISPLACEMENTS FROM 1 TO 90 CM<sup>3</sup>/REV.
- MAXIMUM CONTINUOUS PRESSURE UP TO 250 BAR.
- MOUNTING FLANGES AND REAR COVERS ARE PRODUCED WITH ALUMINIUM OR CAST IRON.
- BUILT-IN VALVES IN REAR COVER.
- MULTIPLE UNITS AVAILABLE WITH SEPARATED OR COMMON INLET FOR STAGES.
- PUMPS WITH BEARING SUPPORT FOR HEAVY DUTY APPLICATIONS.

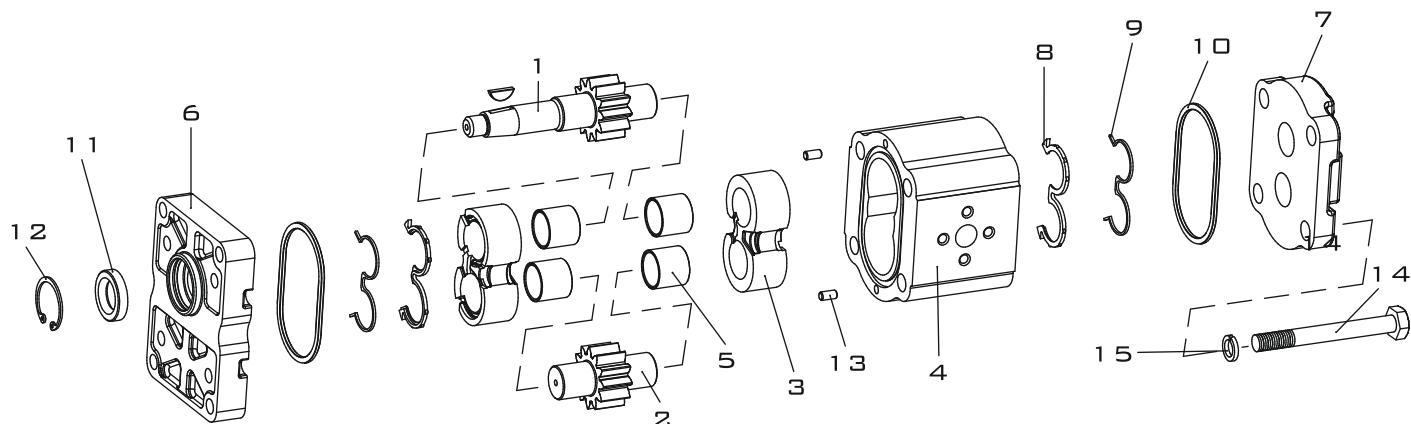


GEAR PUMPS SERIES "K" ARE MANUFACTURED WITH THRU-BOLT OF ROLLED ALUMINIUM, MOUNTING FLANGES AND REAR COVERS EITHER IN ALUMINIUM OR IN CAST IRON FOR MOBILE MACHINES, WHERE THERE ARE INCREASED REQUIREMENTS FOR THE NOISE LEVEL.

GEAR PUMPS SERIES "K" HAVE HIGH ANTI-FRICTION AND STRENGTH CHARACTERISTICS.

THE SEALS REDUCE INTERNAL FLOW OF THE FLUID AND TO ACHIEVE A HIGH VOLUMETRIC EFFICIENCY.

1. DRIVE SHAFT
2. DRIVEN SHAFT
3. BEARING HOUSING
4. BODY
5. SLIDE BEARING
6. MOUNTING FLANGE
7. REAR COVER
8. COMPENSATION SEAL
9. ANTI-EXTRUSION PLATE
10. SEALING RING
11. SHAFT SEAL
12. STOP RING
13. CENTERING PIN
14. SCREW
15. WASHER





POMPE AD INGRANAGGI

MGP2K

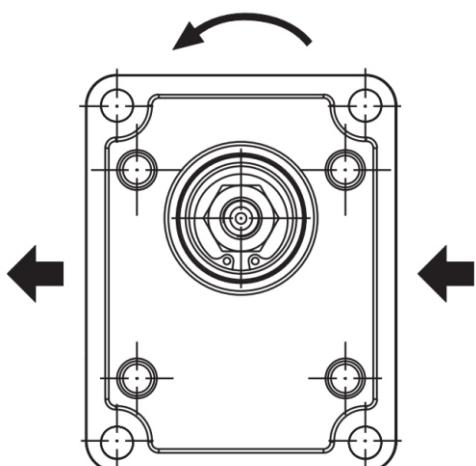
GEAR PUMPS  
GROUP 2

## WORKING CONDITIONS

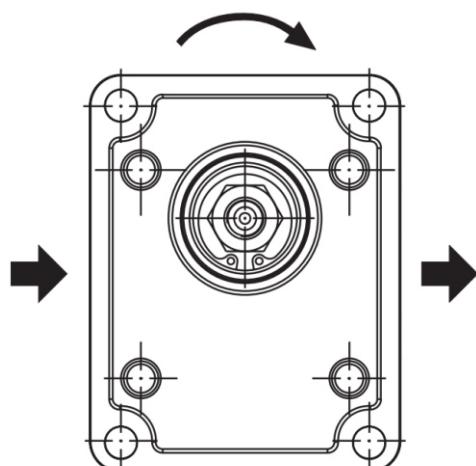
INLET PRESSURE (MAX.)	0.5 – 2.5 BAR
MIN. OPERATING FLUID VISCOSITY	10 MM <sup>2</sup> /SEC
MAX. STARTING VISCOSITY (COLD START)	1000 MM <sup>2</sup> /SEC
FLUID VISCOSITY RECOMMENDED RANGE	17 – 65 MM <sup>2</sup> /SEC
FLUID OPERATING TEMPERATURE RANGE WITH NBR SEALS	-40 +100 °C
FLUID OPERATING TEMPERATURE RANGE WITH FPM SEALS (VITON)	-20 +170 °C
HYDRAULIC FLUID	MINERAL OIL
CONTAMINATION CLASS ISO 4406	18/15 (>200 BAR), 19/16 (<200 BAR)
CONTAMINATION CLASS NAS 1638	9 (>200 BAR), 10 (<200 BAR)
ACHIEVED WITH FILTER $\beta_x=75$	15 $\mu\text{m}$ (>200 BAR), 25 $\mu\text{m}$ (<200 BAR)

DEFINITION OF ROTATION DIRECTION  
LOOKING ON THE DRIVE SHAFT

COUNTERCLOCKWISE ROTATION



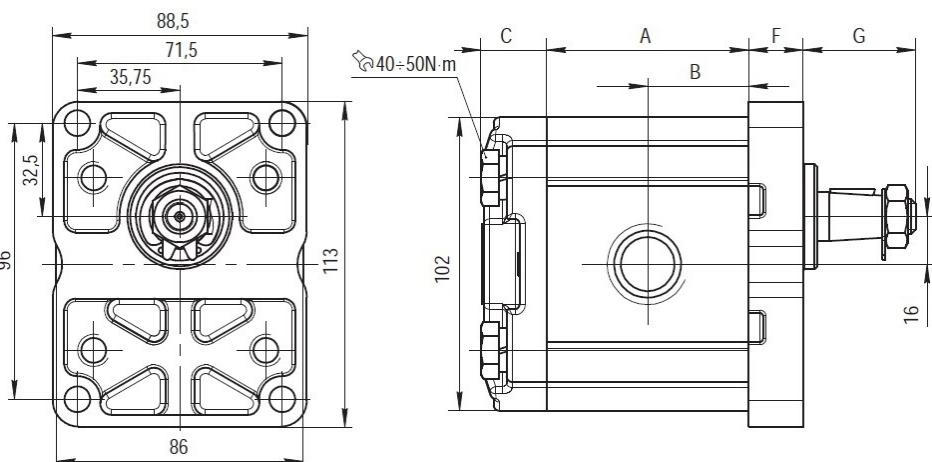
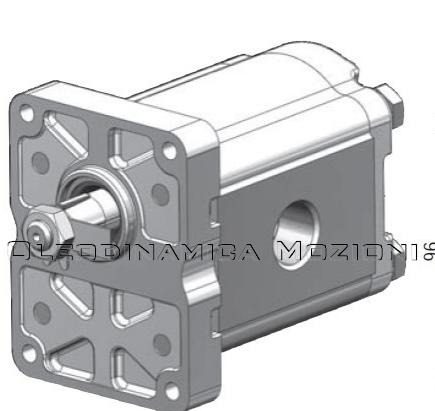
CLOCKWISE ROTATION





## TECHNICAL DATA AND INSTALLATION DIMENSIONS

TYPE	MGP2K4	MGP2K5	MGP2K6	MGP2K8	MGP2K10	MGP2K11	MGP2K12	MGP2K14
DISPLACEMENT, CM <sup>3</sup> /REV	4,5	5,6	6,3	8,2	10,0	11,3	12,5	14,0
DIMENSION A, MM	47,5	49,1	50,2	53,2	56,0	58,0	59,8	62,1
DIMENSION B, MM	23,7	24,6	25,1	26,5	28,0	29,0	29,9	31,1
MAX. CONTINUOUS PRESSURE P <sub>1</sub> , BAR					250			
MAX. INTERMITTENT PRESSURE P <sub>2</sub> , BAR					280			
PEAK PRESSURE P <sub>3</sub> , BAR					300			
MAX. SPEED n <sub>MAX</sub> , MIN <sup>-1</sup>		4000				3500		
MIN. SPEED AT P <sub>1</sub> ≤ 100 BAR, n <sub>MIN</sub> , MIN <sup>-1</sup>			700				600	
WEIGHT*, KG	2,1	2,1	2,2	2,2	2,3	2,4	2,4	2,6



MGP2K10R-G262G

DIMENSION G SEE AT SECTION "DRIVE SHAFTS"

DIMENSION F SEE AT SECTION "MOUNTING FLANGES"

DIMENSION C SEE AT SECTION "REAR COVERS"

\* - WEIGHT SPECIFIED FOR PUMPS WITH ALUMINUM COVERS.  
WEIGHT FOR PUMPS WITH CAST IRON COATINGS MUST BE CLARIFY.



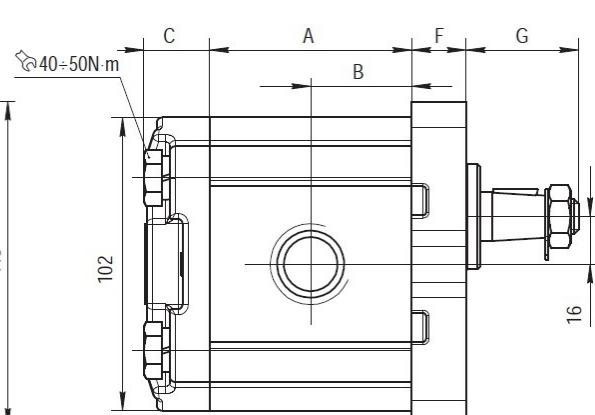
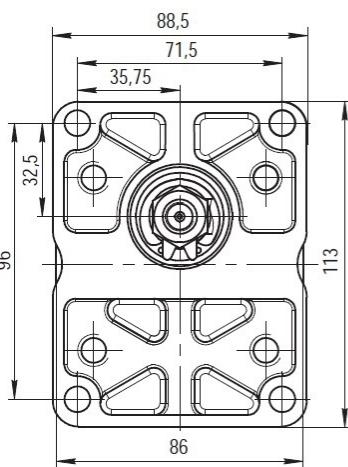
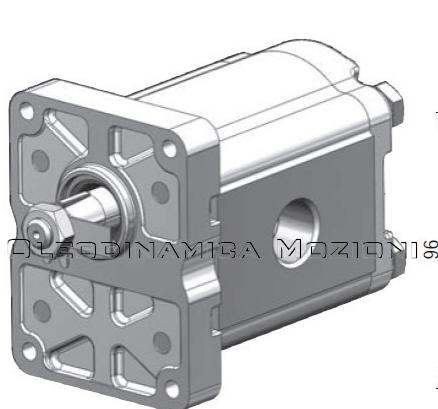
POMPE AD INGRANAGGI

MGP2K

GEAR PUMPS  
GROUP 2

## TECHNICAL DATA AND INSTALLATION DIMENSIONS

TYPE	MGP2K15	MGP2K16	MGP2K17	MGP2K19	MGP2K20	MGP2K23	MGP2K25	MGP2K28
DISPLACEMENT, CM <sup>3</sup> /REV	15,0	16,0	17,0	19,0	20,0	22,5	24,8	28,0
DIMENSION A, MM	63,7	65,2	66,9	69,9	71,4	75,3	78,8	83,7
DIMENSION B, MM	31,9	32,6	33,5	35,0	35,7	37,7	39,4	41,9
MAX. CONTINUOUS PRESSURE P <sub>1</sub> , BAR	250			220	210	190	170	150
MAX. INTERMITTENT PRESSURE P <sub>2</sub> , BAR	280			250	230	210	190	170
PEAK PRESSURE P <sub>3</sub> , BAR	300			270	250	230	210	190
MAX. SPEED n <sub>MAX</sub> , MIN <sup>-1</sup>	3500			3000			2500	
MIN. SPEED AT P <sub>1</sub> ≤ 100 BAR, n <sub>MIN</sub> , MIN <sup>-1</sup>	600					500		
WEIGHT*, KG	2,6	2,7	2,7	2,8	2,8	3,0	3,2	3,4



MGP2K10R-G262G

DIMENSION G SEE AT SECTION "DRIVE SHAFTS"

DIMENSION F SEE AT SECTION "MOUNTING FLANGES"

DIMENSION C SEE AT SECTION "REAR COVERS"

\* - WEIGHT SPECIFIED FOR PUMPS WITH ALUMINUM COVERS.  
WEIGHT FOR PUMPS WITH CAST IRON COATINGS MUST BE CLARIFY.



## COMBINATIONS OF MOUNTING FLANGES &amp; SHAFTS

MGP2K		SAE "A" 2 BOLTS		EUROPEAN		GERMAN Ø80		GERMAN 2 BOLTS Ø50		GERMAN 2 BOLTS Ø52		GERMAN 4 BOLTS Ø52		FOR PERKINS MOTOR
		B2 31 B2 32												
		B3 31 B3 32												
		B4 31 B4 32												
			G2 61 G2 62										G2 21	
				F2 81		F2 91 F2 92								
		H2 31 H2 32	H2 61 H2 62											
		H8 31 H8 32												
		H9 31 H9 32												
									K3 93 K3 94		K3 95			
							K4 91 K4 92							
		I2 61 I2 62	I2 81		I2 91 I2 92									

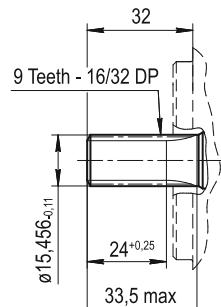
THIS COMBINATIONS OF MOUNTING FLANGES AND SHAFTS  
ARE USED TO SERIAL PRODUCTION. THE OTHER COMBINATIONS  
AND DATE OF PRODUCTION, BEFORE ORDERING CLARIFY WITH  
THE MANUFACTURER.

SEE ALSO: MGP1K  
MGP2.5K, MGP3K



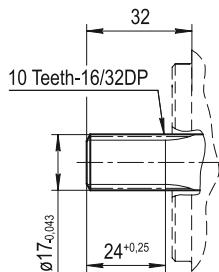
## DRIVE SHAFTS

MAX. TORQUE 100 N·M



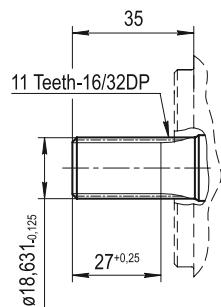
B2 - SAE A SPLINED (9 TEETH)

MAX. TORQUE 130 N·M



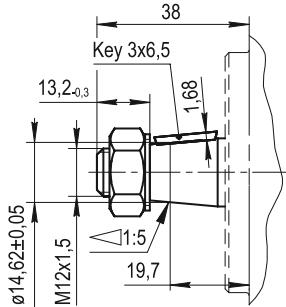
B3 - SAE A SPLINED (10 TEETH)

MAX. TORQUE 170 N·M



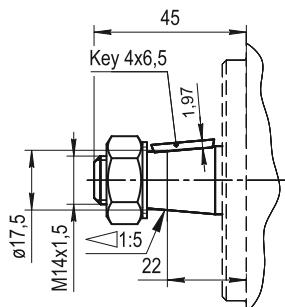
B4 - SAE A SPLINED (11 TEETH)

MAX. TORQUE 140 N·M



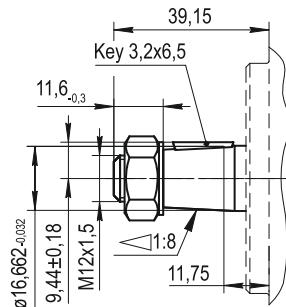
F2 - GERMAN TAPERED 1:5

MAX. TORQUE 140 N·M



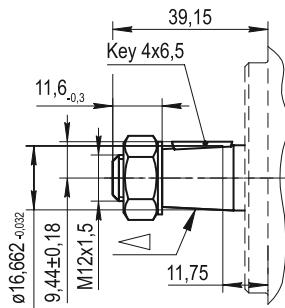
F6 - GERMAN TAPERED 1:5

MAX. TORQUE 140 N·M



G2 - EUROPEAN TAPERED 1:8

MAX. TORQUE 140 N·M

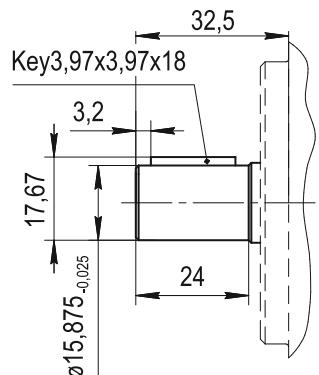


G6 - EUROPEAN TAPERED 1:8



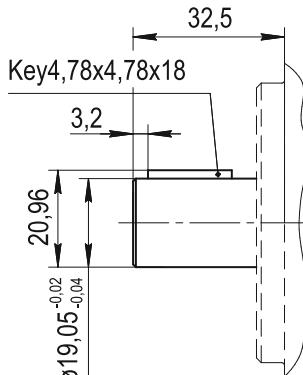
## DRIVE SHAFTS

MAX. TORQUE 70 N·M



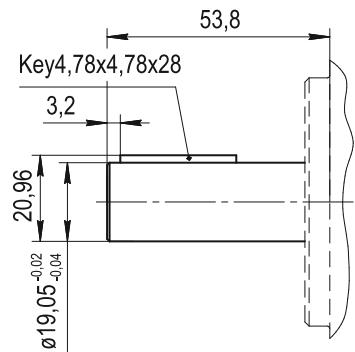
H2 - SAE A STRAIGHT Ø15,87

MAX. TORQUE 100 N·M

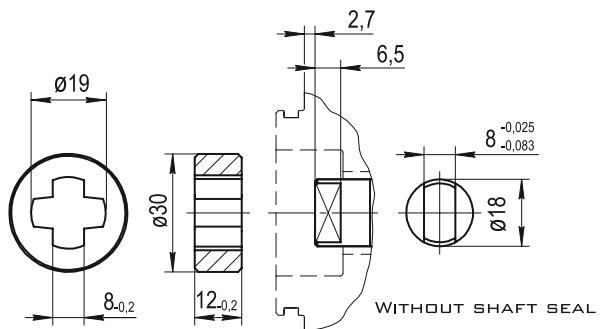


H8 - SAE A STRAIGHT Ø19,05

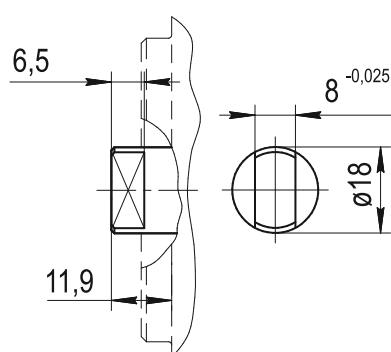
MAX. TORQUE 140 N·M

H9 - SAE A STRAIGHT  
Ø19,05 LENGTH

MAX. TORQUE 70 N·M

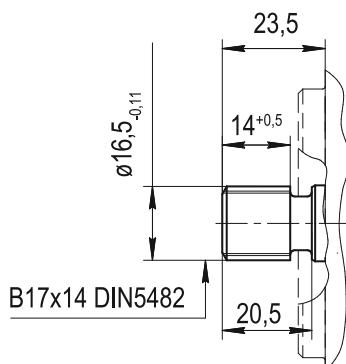
K3 - TANG DRIVE FOR  
ELECTRIC MOTORS

MAX. TORQUE 70 N·M



K4 - TANG DRIVE

MAX. TORQUE 70 N·M



I2 - DIN 5482 SPLINED (9 TEETH)

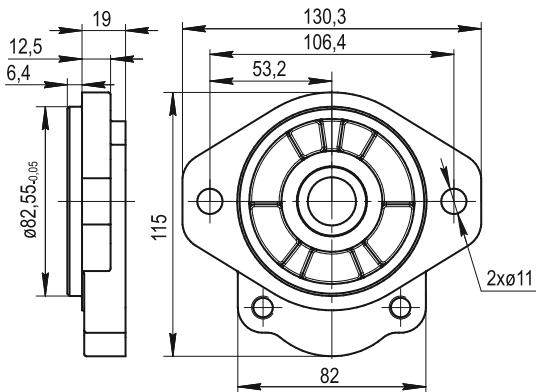


POMPE AD INGRANAGGI

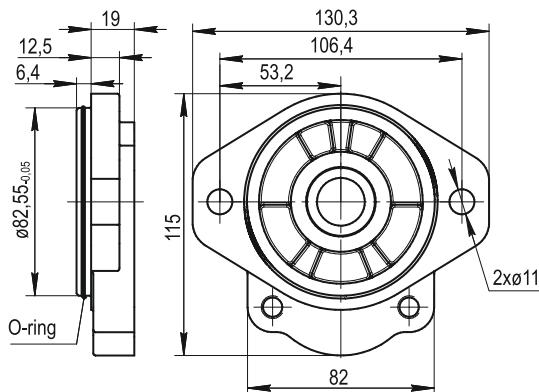
MGP2K

GEAR PUMPS  
GROUP 2

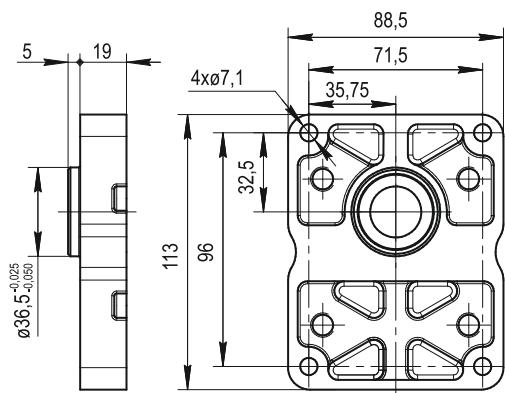
MOUNTING FLANGES



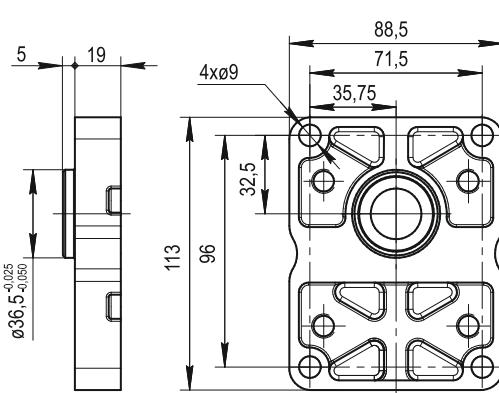
31 - SAE A 2 BOLTS



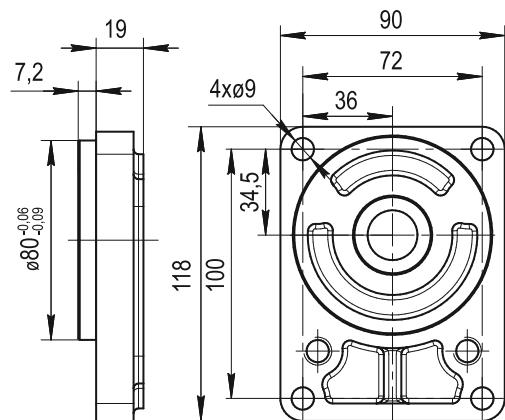
32 - SAE A 2 BOLTS (WITH O-RING)



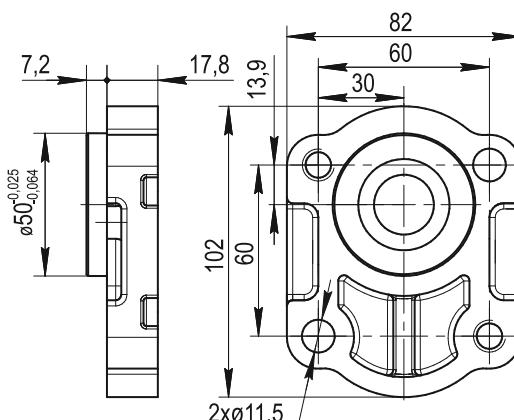
61 - EUROPEAN Ø7,1



62 - EUROPEAN Ø9



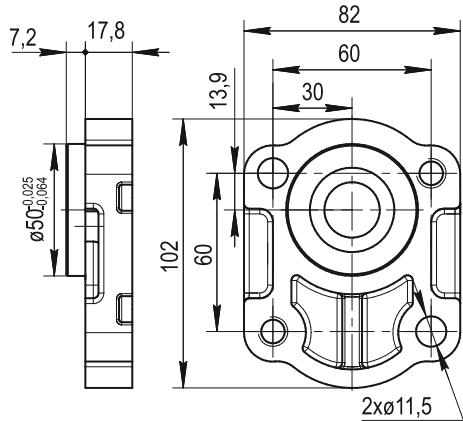
81 - GERMAN Ø80



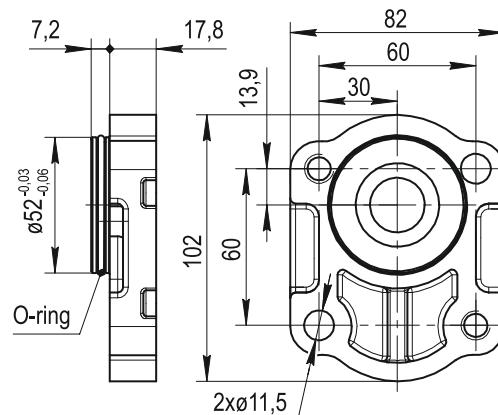
91 - GERMAN 2 BOLTS Ø50



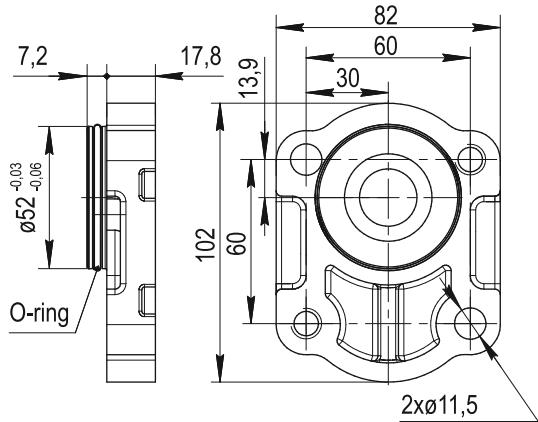
## MOUNTING FLANGES



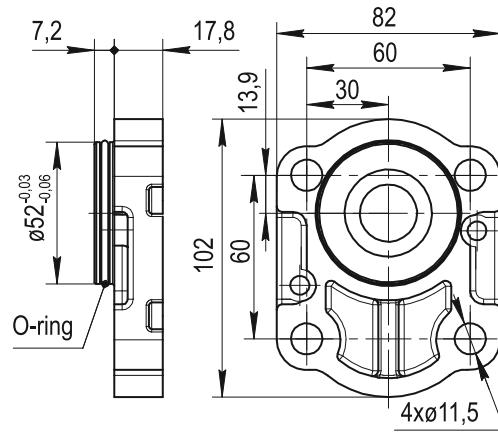
92 - GERMAN 2 BOLTS Ø50



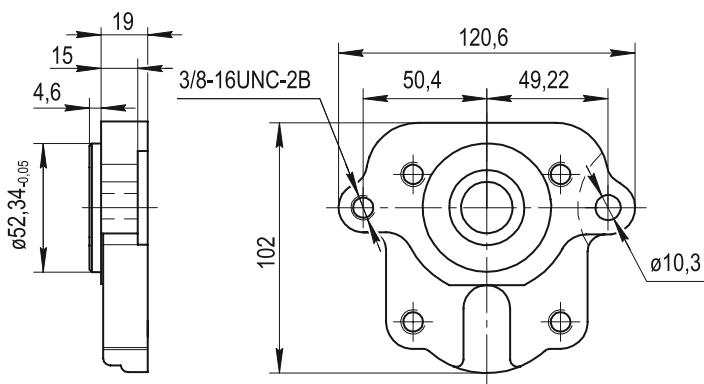
93 - GERMAN 2 BOLTS Ø52



94 - GERMAN 2 BOLTS Ø52



95 - GERMAN 4 BOLTS Ø52

21 - MOUNTING FLANGE  
FOR PERKINS MOTOR

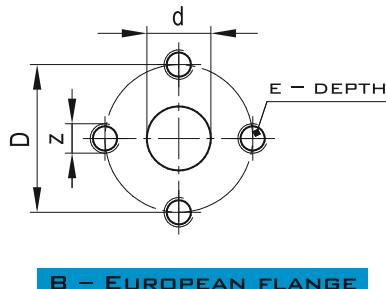


POMPE AD INGRANAGGI

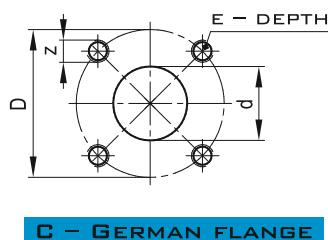
MGP2K

GEAR PUMPS  
GROUP 2

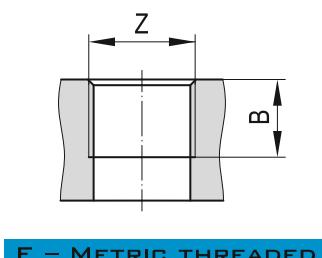
## PORTS



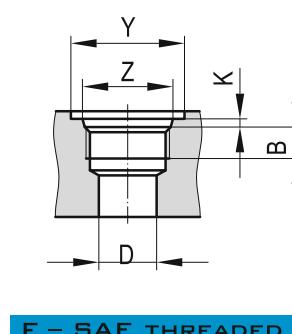
TYPE	INLET				OUTLET			
	D	D	Z	E	D	D	Z	E
MGP2K4÷8	13	30	M6	13	13	30	M6	13
MGP2K10÷28	19	40	M8		14		M6	



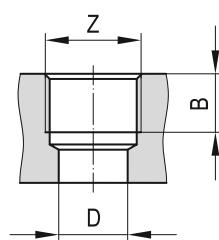
TYPE	INLET				OUTLET			
	D	D	Z	E	D	D	Z	E
MGP2K4÷28	20	40	M6	13	15	35	M6	13



TYPE	INLET			OUTLET	
	Z	B		Z	B
MGP2K4÷8	M18x1,5	16		M14x1,5	16
MGP2K10÷12	M22x1,5			M18x1,5	
MGP2K14÷28	M27x2				



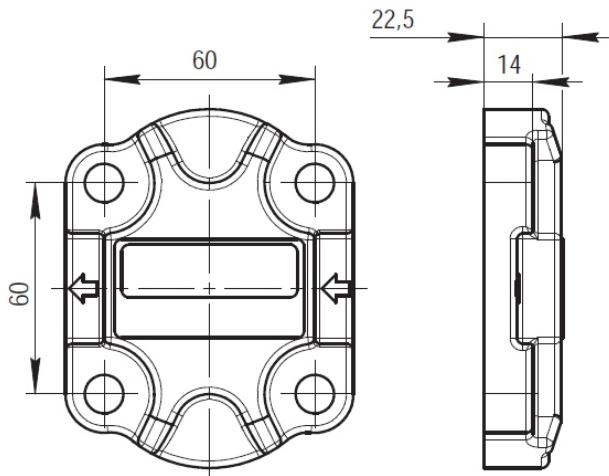
TYPE	INLET					OUTLET				
	Z	B	K	D	Y	Z	B	K	D	Y
MGP2K4÷8	7/8-14 UNF (SAE #10)	14	2,5	13	32	7/8-14 UNF (SAE #10)	14	2,5	13	32
MGP2K10÷28	1 1/16-12 UN (SAE #12)	16	3,3	20	42					



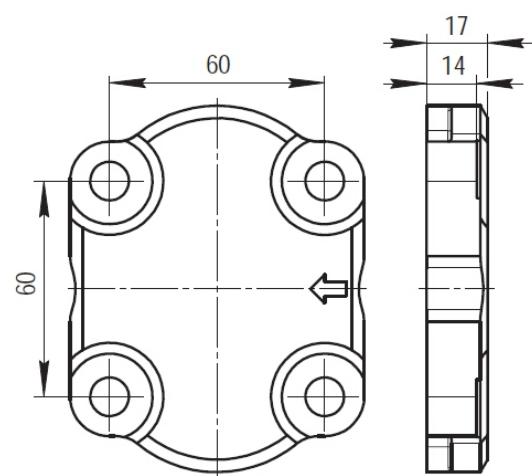
TYPE	INLET			OUTLET		
	Z	B	D	Z	B	D
MGP2K4÷8	1/2" GAS	16	13	1/2" GAS	16	13
MGP2K10÷28	3/4" GAS	19	20			



## REAR COVERS

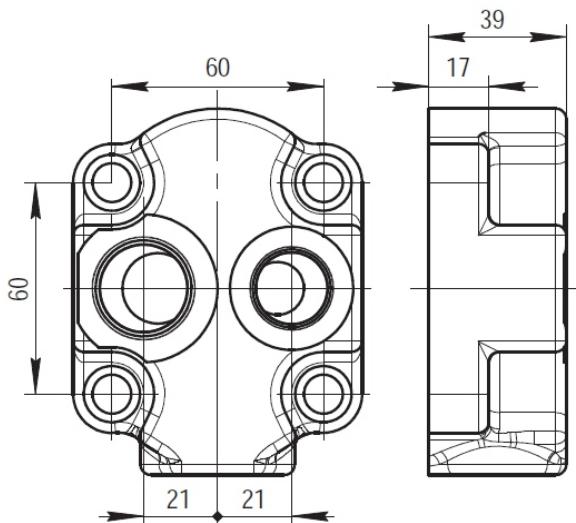


ALUMINIUM

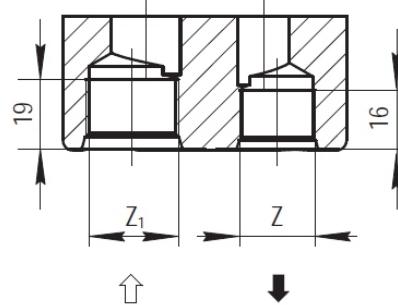


CAST IRON

## STANDARD REAR COVERS



CAST IRON

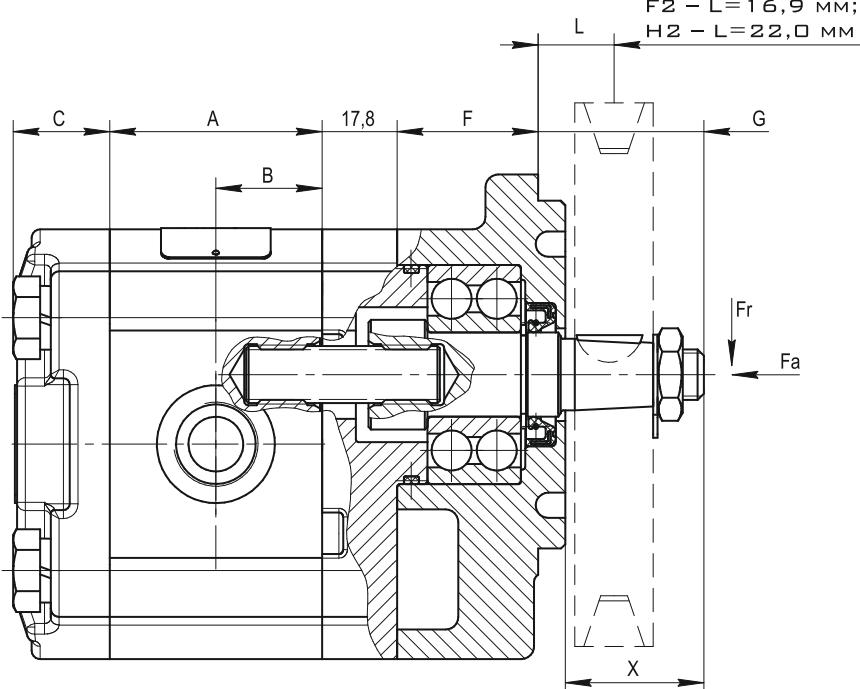


INLET	OUTLET
Z	Z1
M18x1,5	M26x1,5
7/8-14 UNF	1 1/16-12 UN
1/2" GAS	3/4" GAS

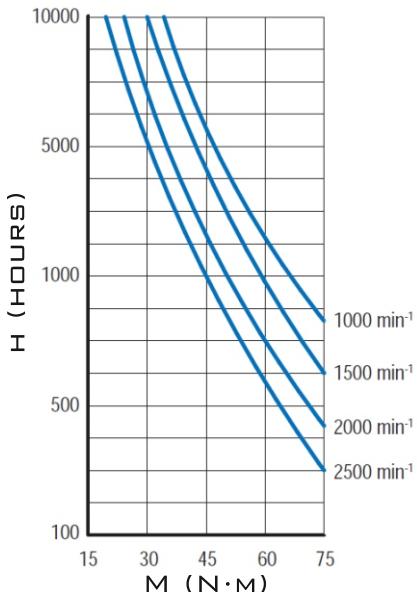
## 1 - REAR COVER WITH THREADED PORTS



## OUTRIGGER BEARING VERSION



**SERVICE LIFE**  
(L=18 MM,  
PULLEY DIAMETER=90 MM):



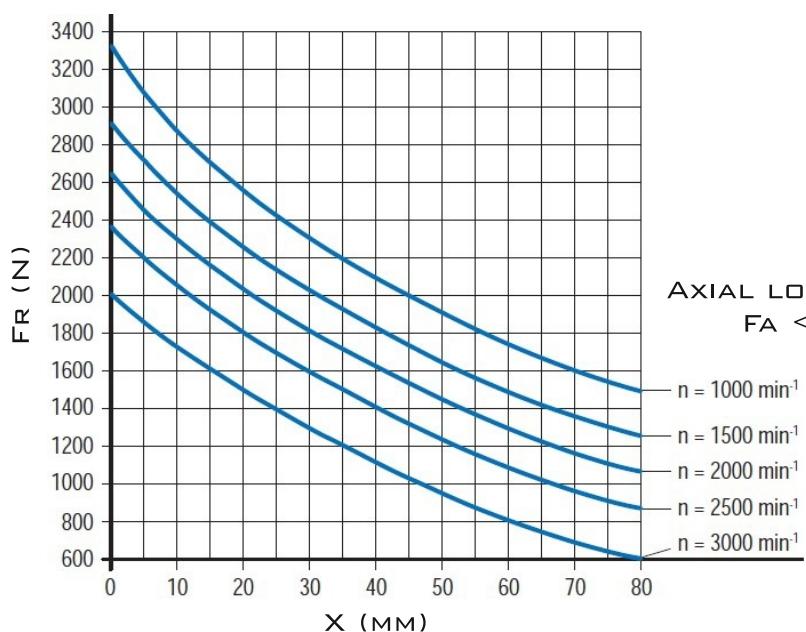
DIMENSION A AND B SEE AT SECTION "TECHNICAL DATA"

DIMENSION G SEE AT SECTION "DRIVE SHAFTS"

DIMENSION F SEE AT SECTION "MOUNTING FLANGES WITH BEARING SUPPORT"

DIMENSION C SEE AT SECTION "REAR COVERS"

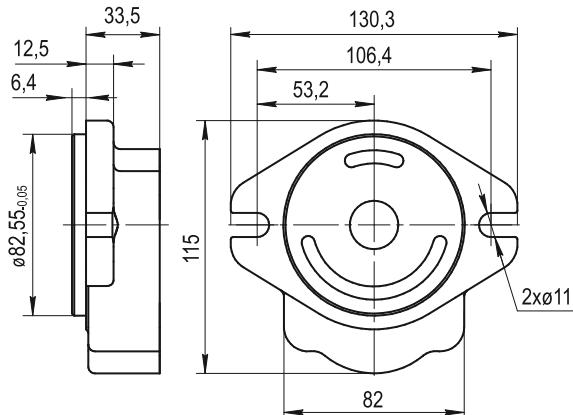
## WORKING CHARACTERISTIC OF OUTRIGGER BEARING



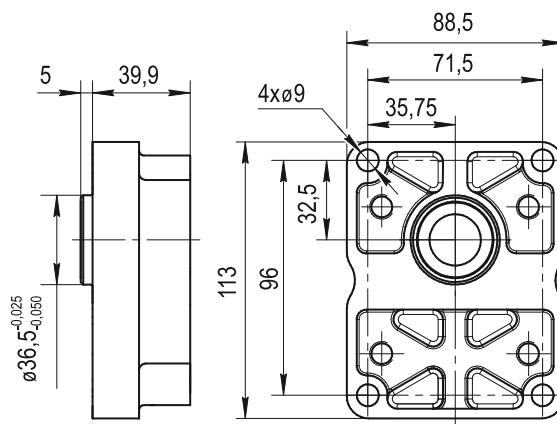
AXIAL LOAD ON SHAFT  
 $F_A < Fr \cdot 0,8$



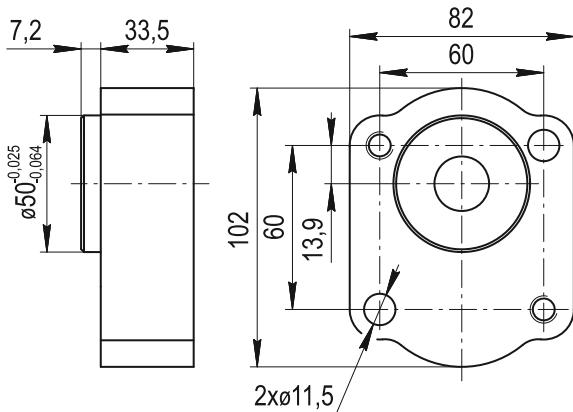
## MOUNTING FLANGES WITH BEARING SUPPORT



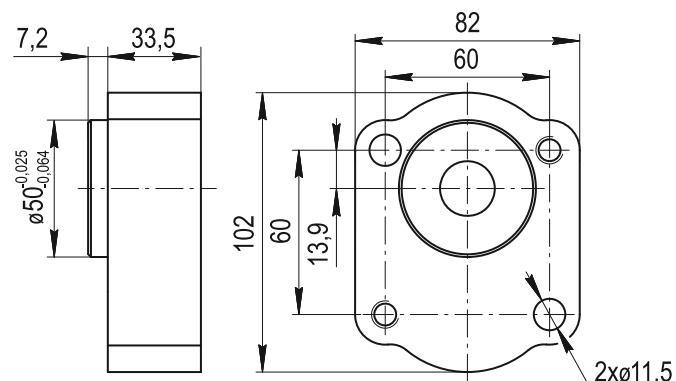
C3 - SAE A



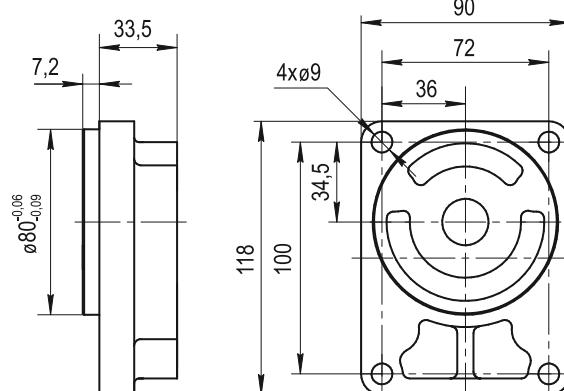
C6 - EUROPEAN



C7 - GERMAN Ø50



C8 - GERMAN Ø50



C9 - GERMAN Ø80

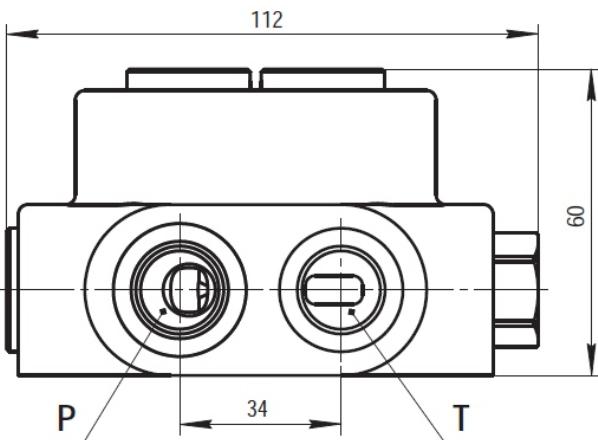


POMPE AD INGRANAGGI

MGP2K

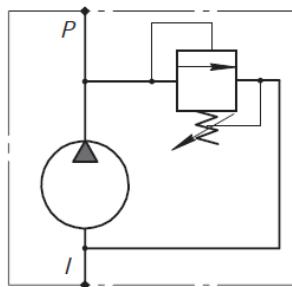
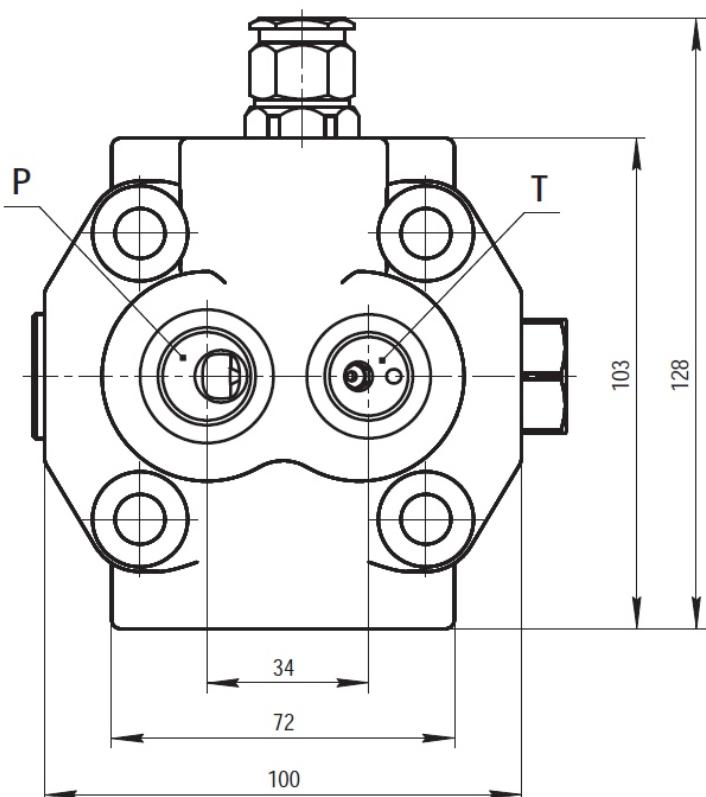
GEAR PUMPS  
GROUP 2

VERSION WITH VALVE IN REAR COVER

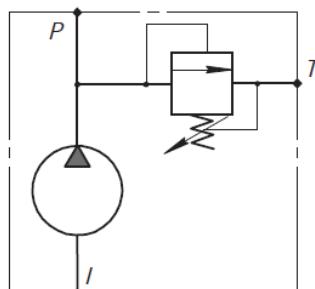


PRESSURE SETTING OF RELIEF VALVE:  
20÷280 BAR

CODE	P	T
E	M20x1,5	M18x1,5
F	7/8-14 UNF	3/4-16 UNF
G	1/2" GAS	3/8" GAS



VR - RETURN TO SUCTION  
RELIEF VALVE

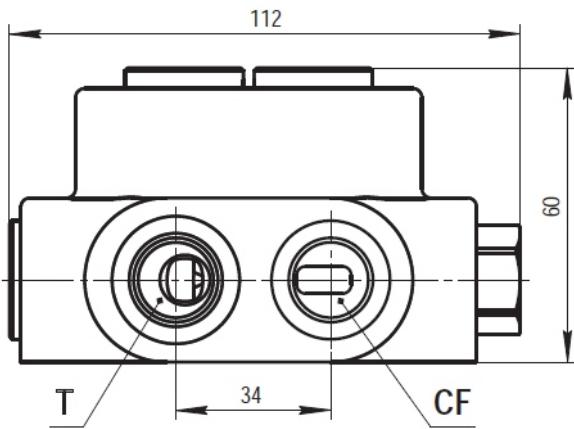


VR1 - RETURN-TO-TANK  
RELIEF VALVE

P - PRESSURE LINE  
T - RETURN LINE

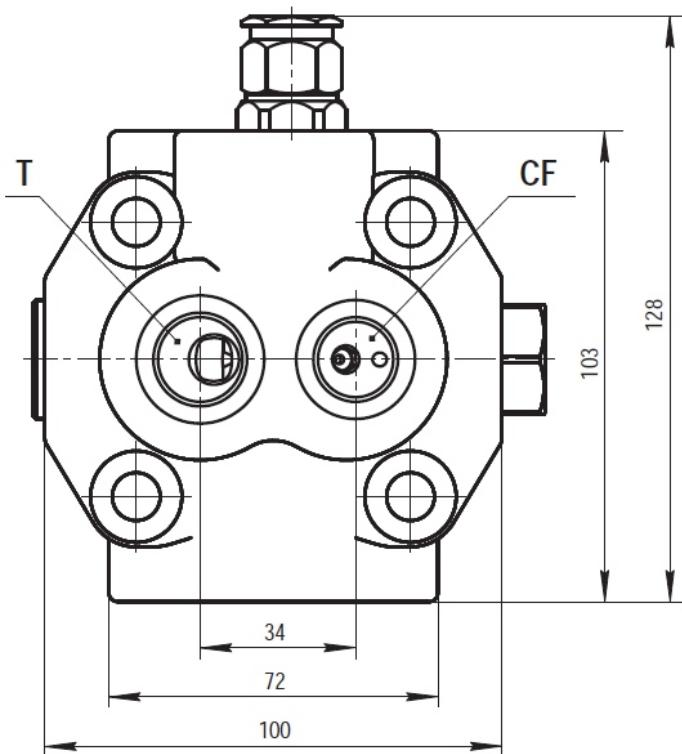


## VERSION WITH VALVE IN REAR COVER

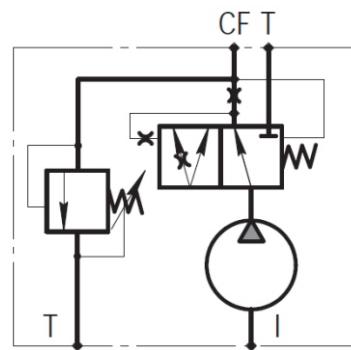


PRESSURE SETTING OF RELIEF VALVE:  
20÷280 BAR

CODE	P	T
E	M18x1,5	M18x1,5
F	3/4-16 UNF	3/4-16 UNF
G	3/8" GAS	3/8" GAS



CONSTANT FLOW, L/MIN (± 10%)	1,2	2	4,5	6	8	10
	12	14,5	18	20	23	25



VQR – CONSTANT FLOW VALVE  
WITH A RELIEF VALVE AND  
RETURN LINE TO TANK

CF – CONSTANT FLOW LINE  
T – RETURN LINE

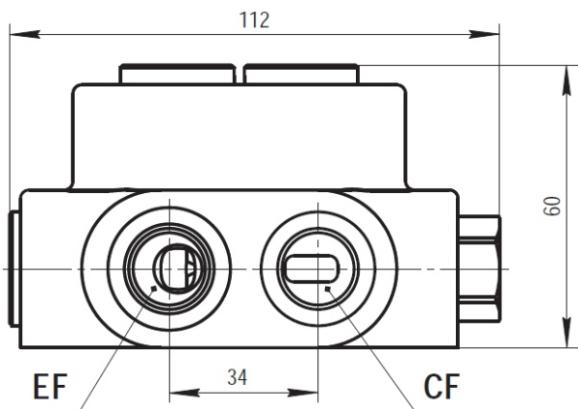


POMPE AD INGRANAGGI

MGP2K

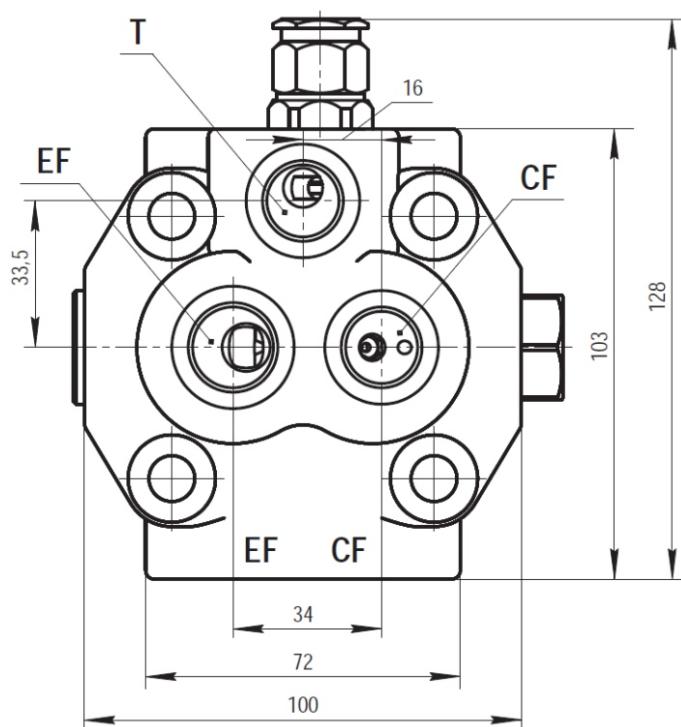
GEAR PUMPS  
GROUP 2

VERSION WITH VALVE IN REAR COVER

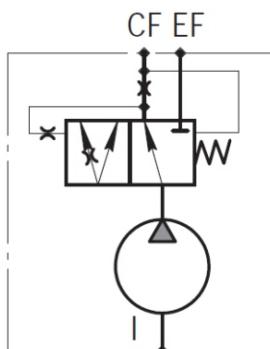


PRESSURE SETTING OF RELIEF VALVE:  
20÷280 BAR

CODE	CF	EF	T
E	M18x1,5	M20x1,5	M18x1,5
F	3/4-16 UNF	7/8-16 UNF	3/4-16 UNF
G	3/8" GAS	1/2" GAS	3/8" GAS



PRIORITY FLOW, L/MIN (± 10%)	1,2	2	4,5	6	8	10
	12	14,5	18	20	23	25



VP - PRIORITY VALVE

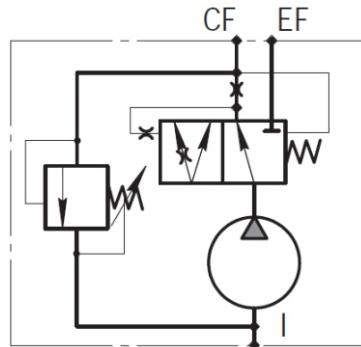
CF - PRIORITY FLOW LINE

EF - SECONDARY LINE

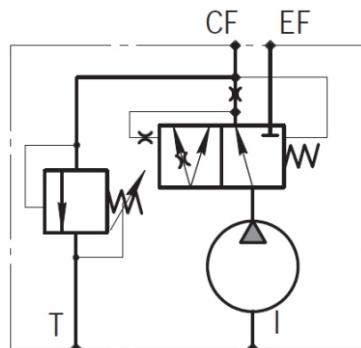
T - RETURN LINE



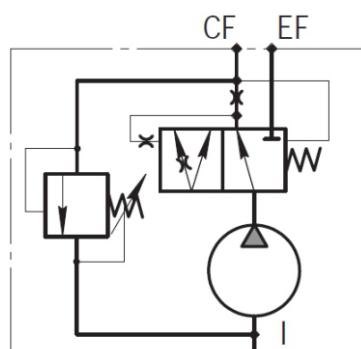
## VERSION WITH VALVE IN REAR COVER



VPR – PRIORITY VALVE WITH A RELIEF VALVE IN THE PRIORITY LINE  
AND WITH OIL DRAINAGE IN THE SUCTION LINE OF THE PUMP



VPRT – PRIORITY VALVE WITH A RELIEF VALVE IN THE PRIORITY LINE  
AND WITH OIL DRAINAGE IN THE TANK



VPRET – PRIORITY VALVE WITH A RELIEF VALVE IN THE SECONDARY LINE  
AND WITH OIL DRAINAGE IN THE TANK

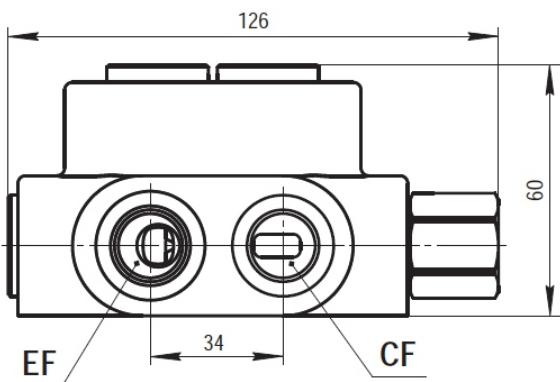


POMPE AD INGRANAGGI

MGP2K

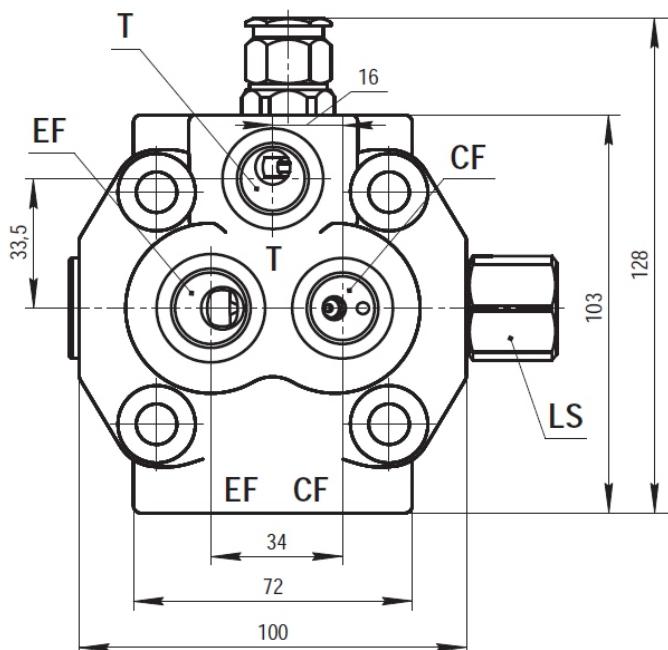
GEAR PUMPS  
GROUP 2

VERSION WITH VALVE IN REAR COVER

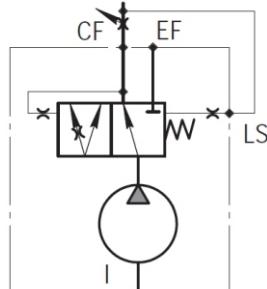


PRESSURE SETTING OF RELIEF VALVE:  
20÷280 BAR

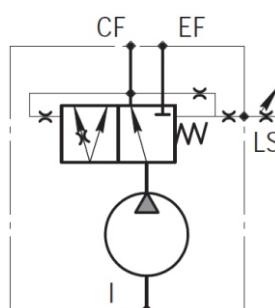
CODE	CF	EF	T	LS
E	M18x1,5	M20x1,5	M18x1,5	M14x1,5
F	3/4-16 UNF	7/8-16 UNF	3/4-16 UNF	7/16-20 UNF
G	3/8" GAS	1/2" GAS	3/8" GAS	1/4" GAS



LS SIGNAL, BAR	4	7	10
-------------------	---	---	----



VPLS – PRIORITY VALVE WITH  
STATIC LS CONTROL

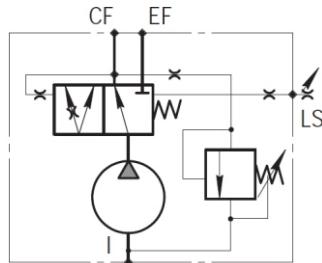


VPLD – PRIORITY VALVE WITH  
DYNAMIC LS CONTROL

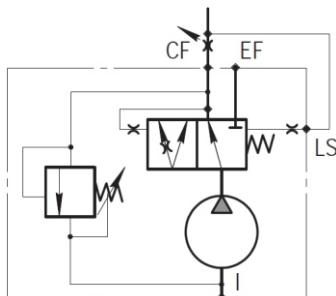
CF – PRIORITY FLOW LINE  
EF – SECONDARY LINE  
LS – SIGNAL LINE  
T – RETURN LINE



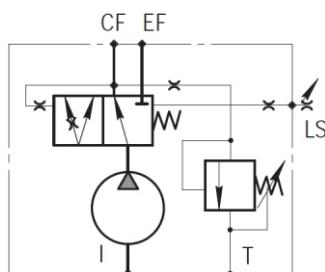
## VERSION WITH VALVE IN REAR COVER



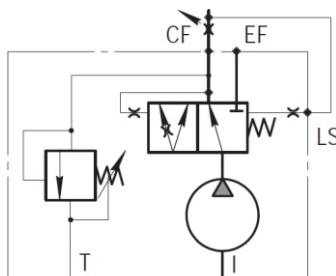
**VPLRS – PRIORITY VALVE WITH A RELIEF VALVE IN THE PRIORITY LINE AND WITH OIL DRAINAGE IN THE SUCTION LINE OF THE PUMP**



**VPLRD – PRIORITY VALVE WITH A RELIEF VALVE IN THE PRIORITY LINE AND WITH OIL DRAINAGE IN THE TANK**



**VPLRST – PRIORITY VALVE WITH A RELIEF VALVE IN THE SECONDARY LINE AND WITH OIL DRAINAGE IN THE TANK**

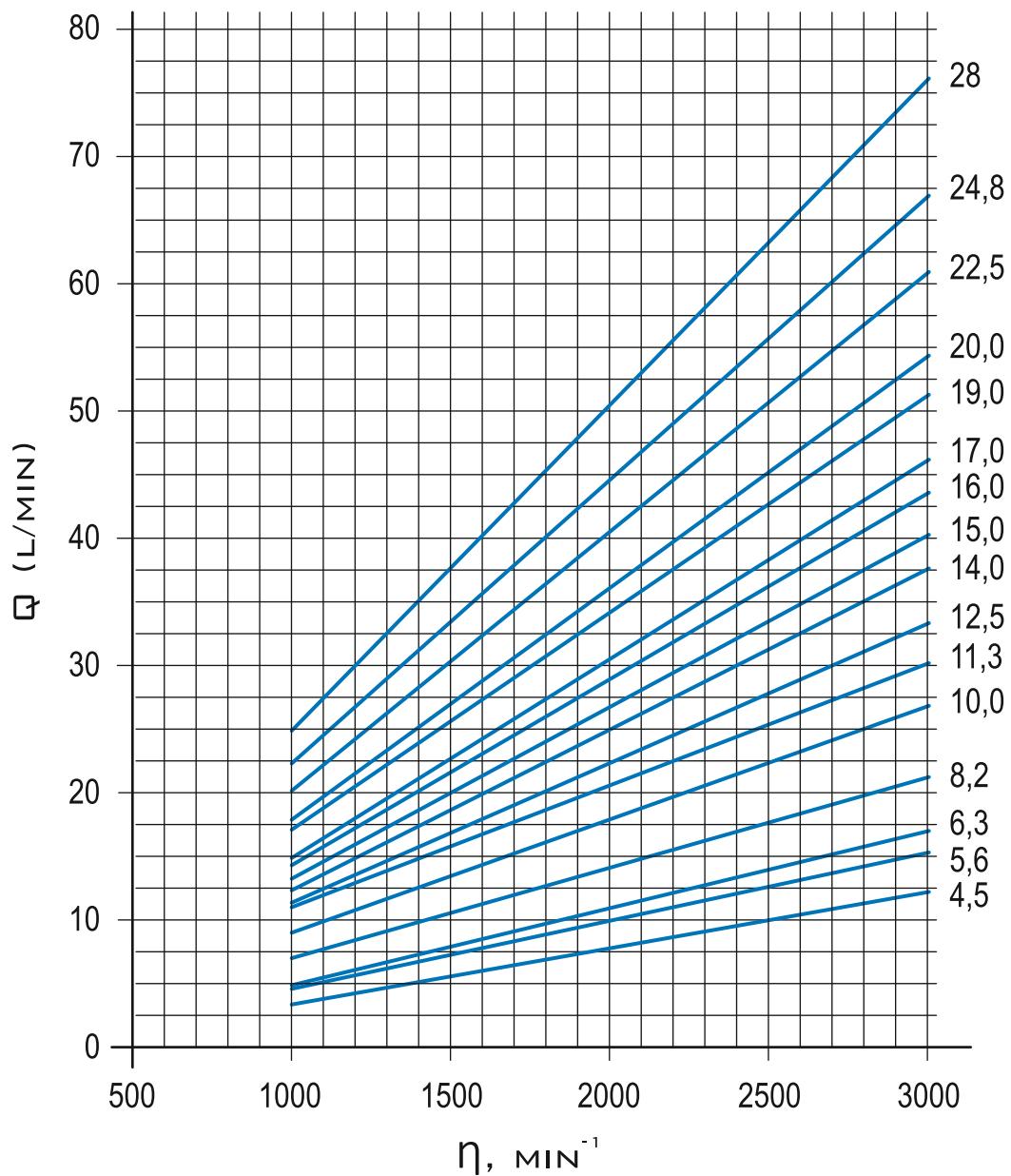


**VPLRDT – PRIORITY VALVE WITH A RELIEF VALVE IN THE SECONDARY LINE AND WITH OIL DRAINAGE IN THE TANK**



## CHARACTERISTIC CURVES

CHARACTERISTIC CURVES CARRIED OUT WITH OIL VISCOSITY AT 16 MM<sup>2</sup>/SEC,  
OIL TEMPERATURE AT 60 °C AND MAX. CONTINUOUS PRESSURES FOR EACH TYPE.

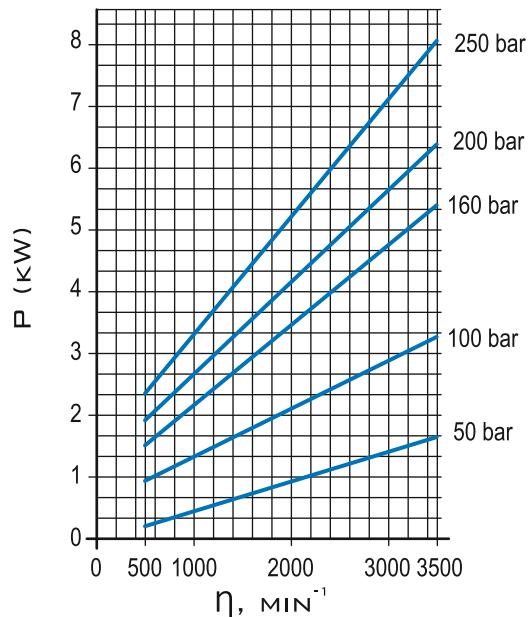




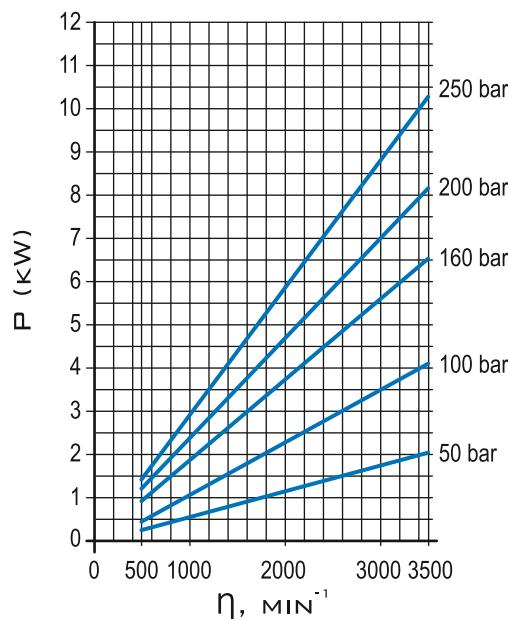
## CHARACTERISTIC CURVES

CHARACTERISTIC CURVES CARRIED OUT WITH OIL VISCOSITY AT 16 MM<sup>2</sup>/SEC AND OIL TEMPERATURE AT 60 °C.

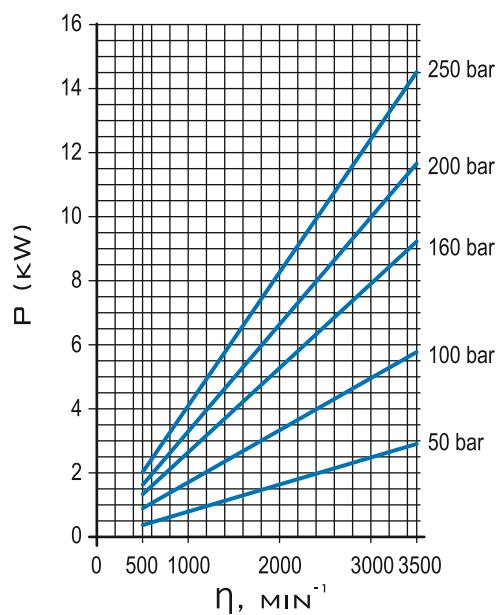
MGP2K4



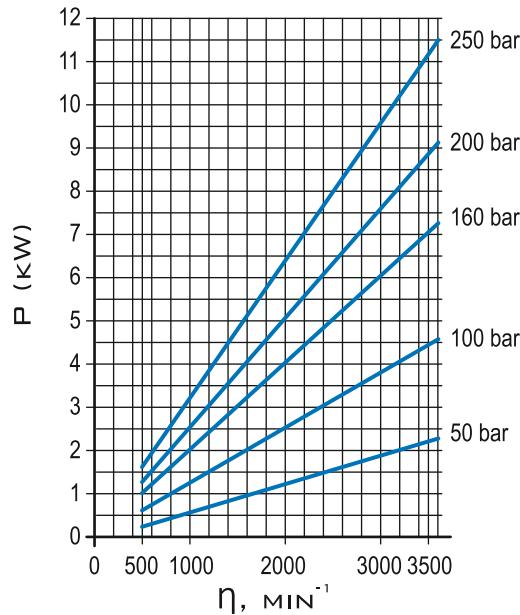
MGP2K5



MGP2K6



MGP2K8

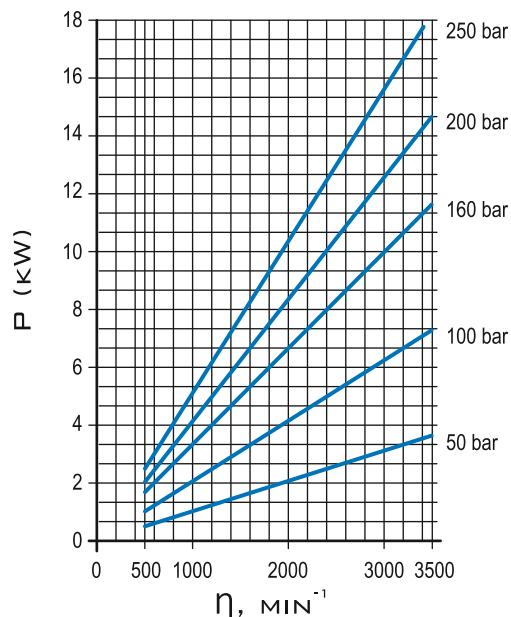




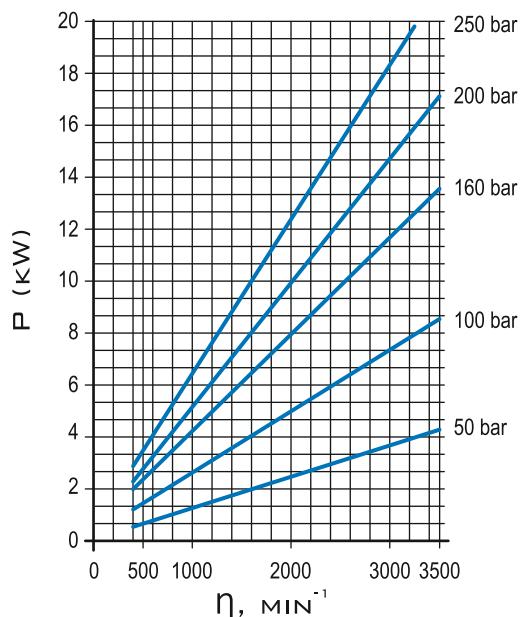
## CHARACTERISTIC CURVES

CHARACTERISTIC CURVES CARRIED OUT WITH OIL VISCOSITY AT 16 MM<sup>2</sup>/SEC AND OIL TEMPERATURE AT 60 °C.

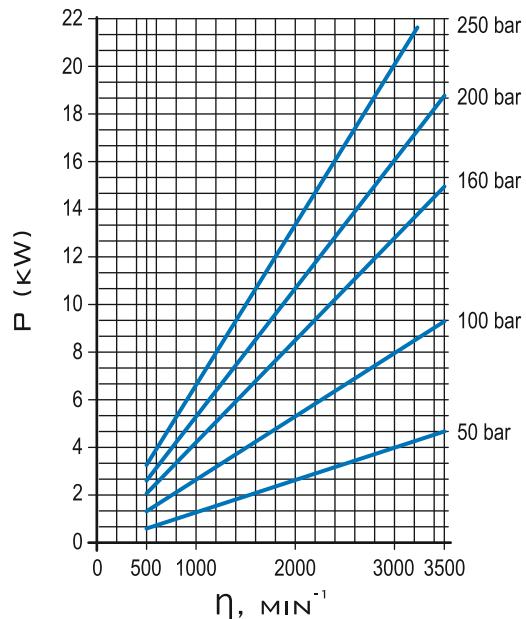
MGP2K 10



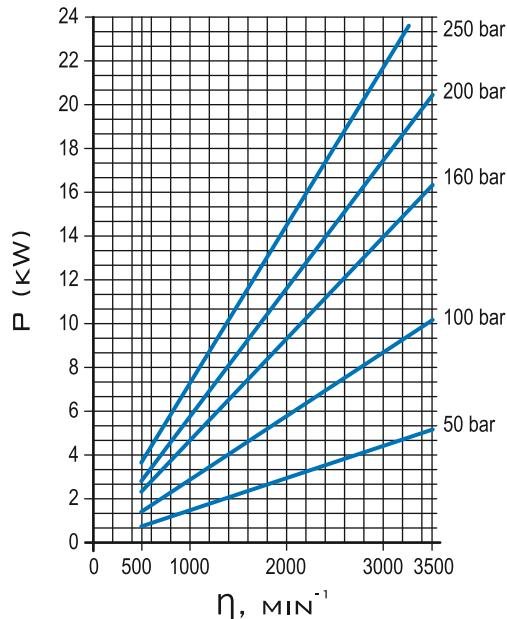
MGP2K 11



MGP2K 12



MGP2K 14

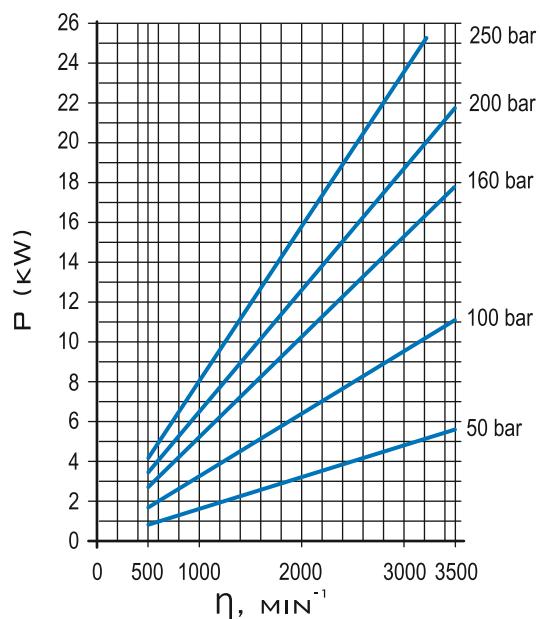




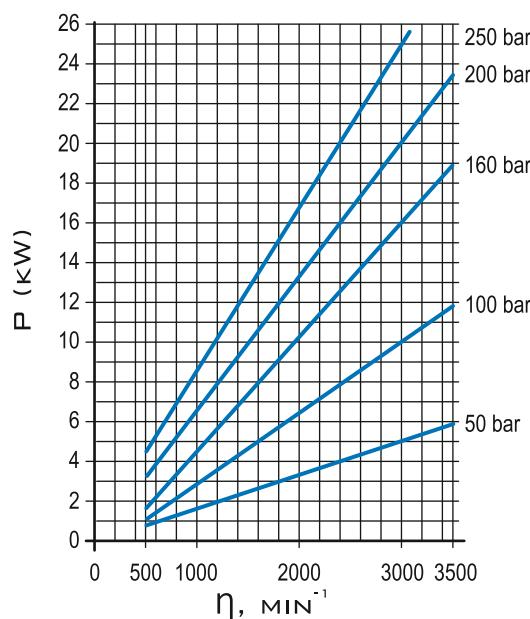
## CHARACTERISTIC CURVES

CHARACTERISTIC CURVES CARRIED OUT WITH OIL VISCOSITY AT 16 MM<sup>2</sup>/SEC AND OIL TEMPERATURE AT 60 °C.

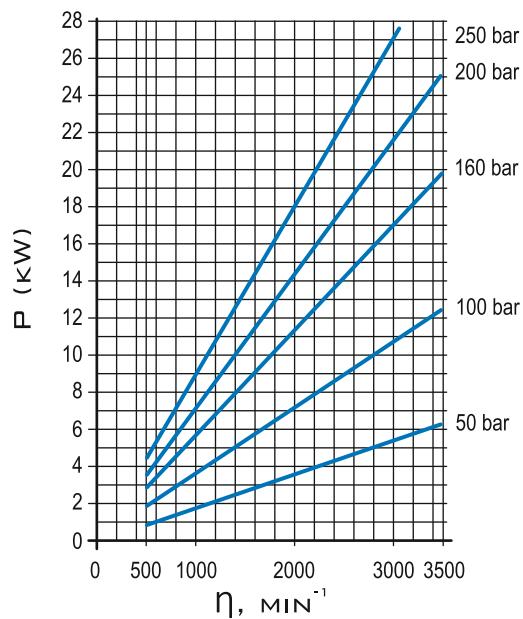
MGP2K 15



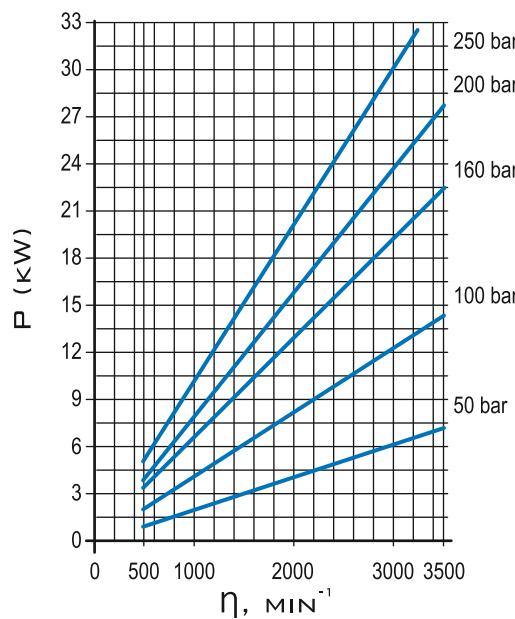
MGP2K 16



MGP2K 17



MGP2K 19

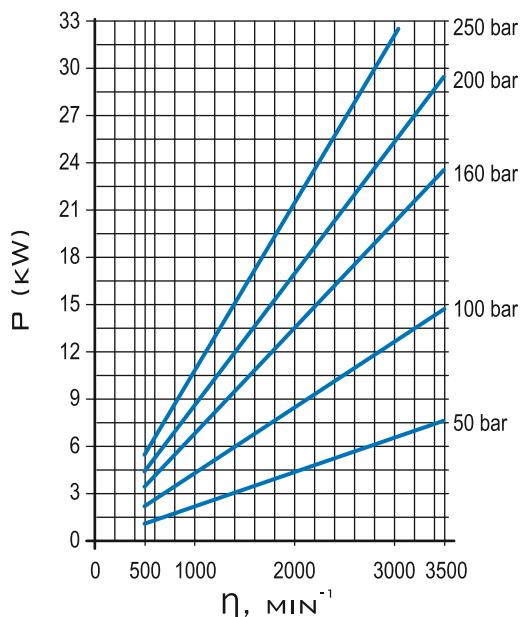




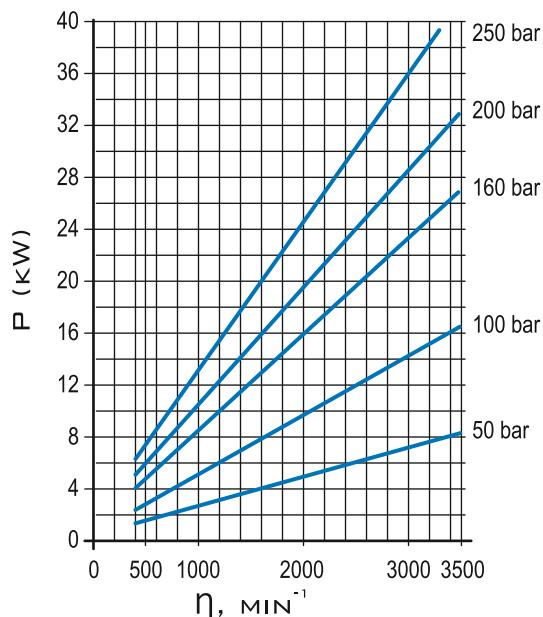
## CHARACTERISTIC CURVES

CHARACTERISTIC CURVES CARRIED OUT WITH OIL VISCOSITY AT 16 MM<sup>2</sup>/SEC AND OIL TEMPERATURE AT 60 °C.

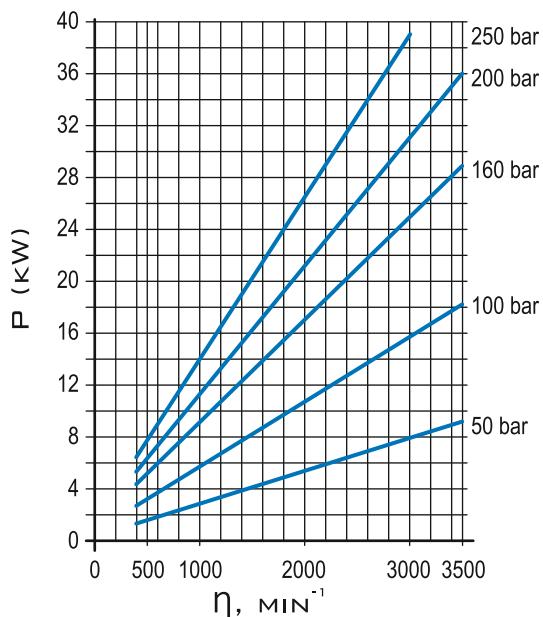
MGP2K20



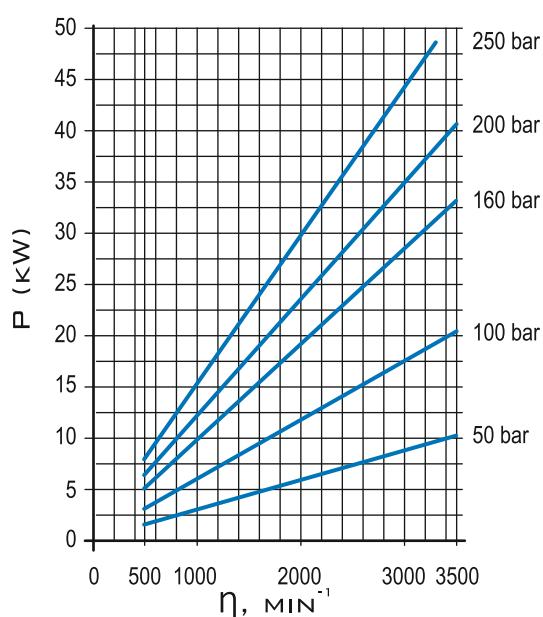
MGP2K23



MGP2K25



MGP2K28



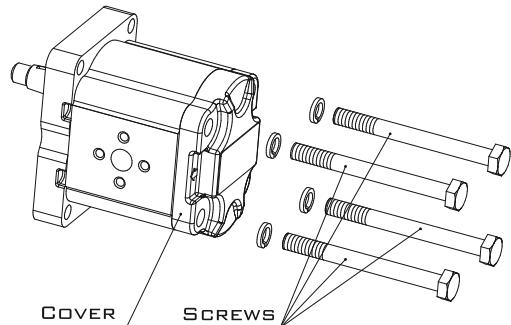


## INSTRUCTIONS OF ROTATION CHANGING

PROCESS OF CHANGE DIRECTION SHOWN AT THE EXAMPLE FOR PUMP WITH CLOCKWISE ROTATION.

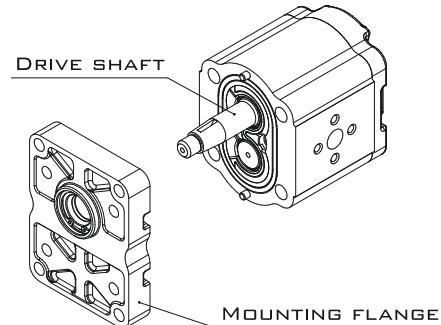
## STEP 1

- UNSCREW AND REMOVE THE SCREWS COMPLETELY.
- PUT THE PUMP MOUNTING FLANGE UP.
- LUBRICATE THE DRIVE SHAFT WITH GREASE TO PREVENT DAMAGE TO THE SHAFT SEAL.



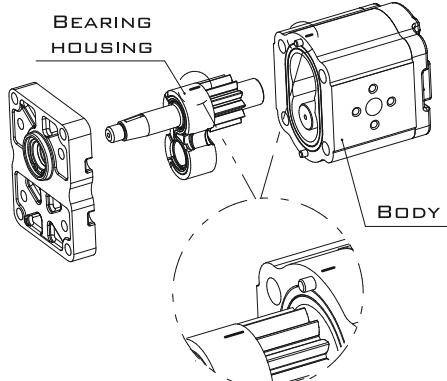
## STEP 2

- REMOVE THE MOUNTING FLANGE.
- VERIFY THAT THE COMPENSATION SEAL IS CORRECTLY LOCATED IN THE BODY SEAT.



## STEP 3

- MARK THE POSITION OF THE BEARING HOUSING (WITH MARKER) RELATIVE TO THE BODY.
- REMOVE THE BEARING HOUSING AND THE DRIVE SHAFT TAKING CARE TO AVOID DRIVEN SHAFT AXIAL SHIFTS.



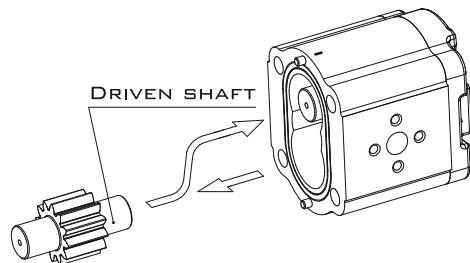


## INSTRUCTIONS OF ROTATION CHANGING

PROCESS OF CHANGE DIRECTION SHOWN AT THE EXAMPLE FOR PUMP WITH CLOCKWISE ROTATION.

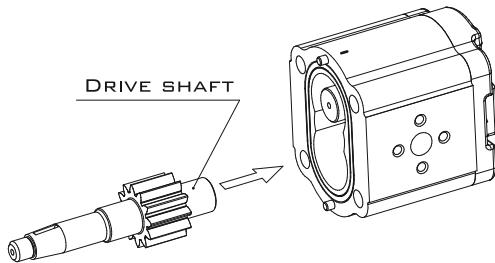
## STEP 4

- DRAW OUT THE DRIVEN SHAFT FROM ITS HOUSING.
- RE-LOCATE THE DRIVEN SHAFT IN THE POSITION PREVIOUSLY OCCUPIED BY THE DRIVE SHAFT.



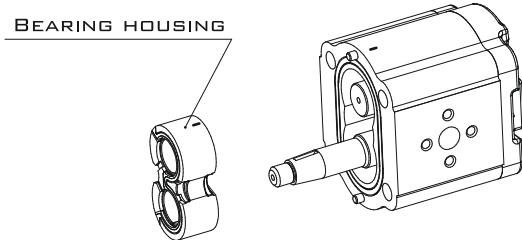
## STEP 5

- RE-LOCATE THE DRIVE SHAFT IN THE POSITION PREVIOUSLY OCCUPIED BY THE DRIVEN SHAFT.



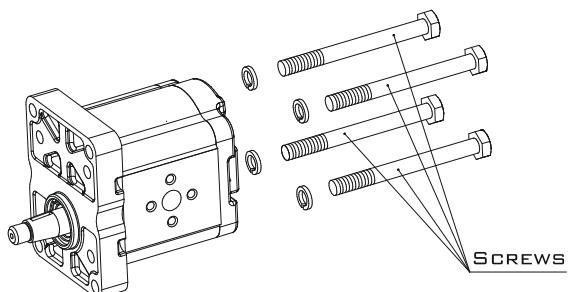
## STEP 6

- REPLACE THE BEARING HOUSING TAKING CARE THAT:
- MARKS SHALL BE LOCATED AS IN THE PICTURE.
- COMPENSATION SEAL AND ANTI-EXTRUSION PLATE ARE CORRECTLY LOCATED.



## STEP 7

- CLEAN BODY AND MOUNTING FLANGE.
- REFIT THE MOUNTING FLANGE, TURNED 180° FROM ITS ORIGINAL POSITION.
- REPLACE THE CLAMP SCREWS AND TIGHTEN (TORQUE - SEE SECTION "TECHNICAL DATA").
- CHECK THAT THE SHAFT ROTATES FREELY.





## ORDER CODE

MGP 2 K

GROUP 2

SERIES K

4=4,5 CM<sup>3</sup>/REV  
 5=5,6 CM<sup>3</sup>/REV  
 6=6,3 CM<sup>3</sup>/REV  
 8=8,2 CM<sup>3</sup>/REV  
 10=10 CM<sup>3</sup>/REV  
 11=11,3 CM<sup>3</sup>/REV  
 12=12,5 CM<sup>3</sup>/REV  
 14=14 CM<sup>3</sup>/REV  
 15=15 CM<sup>3</sup>/REV  
 16=16 CM<sup>3</sup>/REV  
 17=17 CM<sup>3</sup>/REV  
 19=19 CM<sup>3</sup>/REV  
 20=20 CM<sup>3</sup>/REV  
 23=22,5 CM<sup>3</sup>/REV  
 25=24,8 CM<sup>3</sup>/REV  
 28=28 CM<sup>3</sup>/REV

R=CLOCKWISE ROTATION

L=COUNTERCLOCKWISE ROTATION

DRIVE SHAFTS:

B2=SAE A SPLINED (9 TEETH)  
 B3=SAE A SPLINED (10 TEETH)  
 B4=SAE A SPLINED (11 TEETH)  
 F2=GERMAN TAPERED 1:5  
 F6=GERMAN TAPERED 1:5  
 G2=EUROPEAN TAPERED 1:8  
 G6=EUROPEAN TAPERED 1:8  
 H2=SAE A STRAIGHT Ø15,87  
 H8=SAE A STRAIGHT Ø19,05  
 H9=SAE A STRAIGHT Ø19,05 LENGTH  
 K3=TANG DRIVE FOR ELECTRIC MOTORS  
 K4=TANG DRIVE  
 I2=DIN 5482 SPLINED (9 TEETH)

MOUNTING FLANGES WITH BEARING SUPPORT:

C3=SAE A  
 C6=EUROPEAN  
 C7=GERMAN Ø50  
 C8=GERMAN Ø50  
 C9=GERMAN Ø80

PORTS CF, EF, T, LS:  
 E=METRIC THREADED  
 F=SAE THREADED  
 G=GAS THREADED

PRESSURE OF RELIEF  
 VALVE:  
 20÷280 BAR

PRESSURE OF LS SIGNAL:  
 4=4 BAR  
 7=7 BAR  
 10=10 BAR

TYPE OF VALVE=  
 SEE PAGES 15-20

NO CODE=ALUMINIUM COVER  
 F=CAST IRON COVER

NO CODE=NBR SEALS  
 V=FKM SEALS

PORTS POSITION:  
 NO CODE=SIDE INLET - SIDE OUTLET  
 1=BACK INLET - BACK OUTLET

PORTS:  
 B=EUROPEAN FLANGE  
 C=GERMAN FLANGE  
 E=METRIC THREADED  
 F=SAE THREADED  
 G=GAS THREADED (BSPP)

MOUNTING FLANGES:  
 31=SAE A 2 BOLTS  
 32=SAE A 2 BOLTS (WITH O-RING)  
 61=EUROPEAN Ø7,1  
 62=EUROPEAN Ø9  
 81=GERMAN Ø80  
 91-92=GERMAN 2 BOLTS Ø50  
 93-94=GERMAN 2 BOLTS Ø52  
 95=GERMAN 4 BOLTS Ø52  
 21=MOUNTING FLANGE FOR  
 PERKINS MOTOR