شرکت آرافن نائین
ARAFAN NAEIN CO.

The First Manufacturer of Hydraulic Gear Pumps in IRAN

Gear Pump and Accessories

- پمپ هیدرولیک دنده ای
- شیر هیدرولیک برقی و دستی
- پمپ پره ای و پیستونی
- هیدروموتور
- شیر اوربیترول

Arafan Naein Co.

Precision, Speed and Quality
ArafanNaein Company was first established in 1998, aiming at producing various kinds of Hydraulic Gear Pumps and other hydraulic accessories.
In 2000 the productions was started, and the production of various kinds of hydraulic gear pumps, with the range of displacement from 0.33cc/rev to 150cc/rev and in three main series:

PM Type (0.33cc/rev to 1.33cc/rev)
PLO Type (1cc/rev to 6.5cc/rev)
PL Type (4cc/rev to 35cc/rev)
PLA Type (24cc/rev to 56cc/rev)
PNA Type (24cc/rev to 73.3cc/rev)
PNC Type (53.3cc/rev to 150cc/rev)

Having gained 2 years of experience in producing gear pumps for industrial applications (Static Hydraulic), the company entered the new stage of production of dynamic hydraulic gear pumps, which are used for the applications below, mainly as the steering pumps:

Agricultural Machines - Mineral Machines
Road Construction Machines - industrial machines
Transportation Machines - Road & Building Machine

Now, with over 17 years of experience in production, Arafan Naein Company as the first and the only manufacturer of Hydraulic Gear Pumps in Iran, is able to produce any sample of Hydraulic Gear Pump, and is now expanding its products to various kinds of Hydraulic Gear Pumps, a great deal of Arafan Naein Company's products is exported to at least 8 Asian countries, especially the) OEM, and also some European and South American countries, with %10 annual increase of exportation.
ArafanNaein Company tries its best to be at the service of the

TITEL PAGE

HYDRAULIC GEAR PUMPS TYPE PM | CODING SYSTEM 2

HYDRAULIC GEAR PUMPS TYPE PLO | CODING SYSTEM 4

HYDRAULIC GEAR PUMPS TYPE L | CODING SYSTEM 9

HYDRAULIC GEAR PUMPS TYPE PLA | CODING SYSTEM 18

HYDRAULIC GEAR PUMPS TYPE PNA | CODING SYSTEM 27

HYDRAULIC GEAR PUMPS TYPE PNC | CODING SYSTEM 29

HYDRAULIC GEAR PUMPS For Massey Ferguson Tractor 31

HYDRAULIC GEAR PUMPS For Special Using 32

HYDRAULIC GEAR FLOW DIVIDER TYPE L | CODING SYSTEM 34

HYDRAULIC GEAR MOTOR TYPE L | CODING SYSTEM 36

BELLHOUSING AND COUPLING | TECHNICAL INFORMATION 40

SUB PLATE | TECHNICAL INFORMATION 41

VALVES | TECHNICAL INFORMATION 42

LIFT AND CONTROl VALVES | TECHNICAL INFORMATION 44

ORBITROL STEERING UNIT AND HYDRO MOTOR | TECHNICAL INFORMATION 45

HYDRAULIC VAN PUMPS | TECHNICAL INFORMATION 46

PRACTICAL INFORMATION FOR HYDRAULIC ACCESSORIES 49

CODING SYSTEM	1	M	1,5	C	F	09	R - *	CODING SYSTEM

Type

1	Without pulley

Model

M	Single

Pump flow rate at 1500 RPM a 0 bar

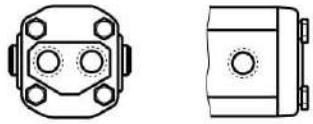
See technical data

Rotation sense

C	Clockwise
CC	Counterclockwise
R	Reversible

Additional data

Port connection form



Fixing flange

22 - 09

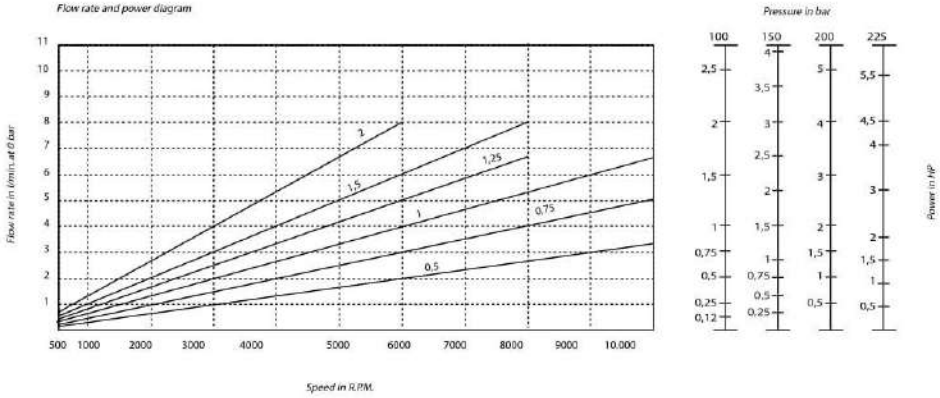
Driving shaft form

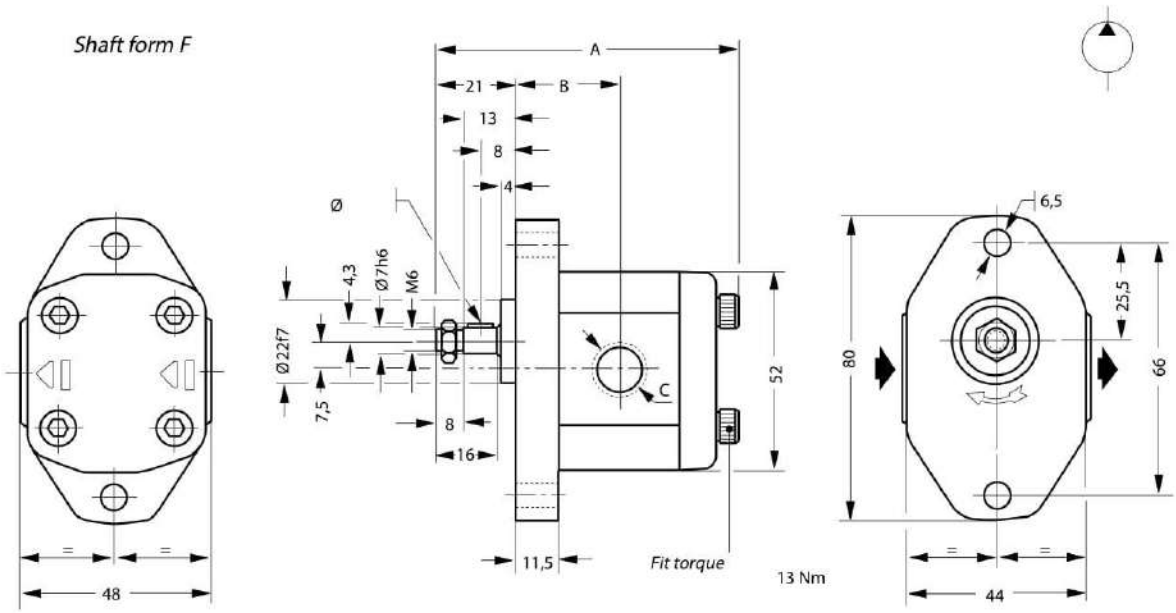
B - F

Hydraulic technical data

Pump Flow rate	(L/min) 1500 R.P.M.	0,5	0,75	1	1,25	1,5	2
Displacement	cm^3/v cc/r	0,33	0,5	0,66	0,83	1	1,33
Cont. max. pressure	bar	225					175
Intermitent max. pressure	bar	250					200
R.P.M. at cont. pressure		5.000			4.000		3.000
Max. R.P.M.		10.000			8.000		6.000
Min. R.P.M. at given pressures	100 bar	1.000					
	175	1.500					
	250	3.000		2.500			—

Flow rate and power diagram





Model	Displacement cc/r	A	B	Pressure	Suction	Weight kg
				C	C	
1M0,5CF09R	0,33	75	26,5	4/1"BSP	4/1"BSP	0,558
1M0,75CF09R	0,5	77	27,5			0,606
1M1CF09R	0,66	79	28			0,624
1M1,25CF09R	0,83	81				0,645
1M1,5CF09R	1	83	30,5			0,666
1M2CF09R	1,33	87				0,688

Coding system model LO

101....299	-	1	Lo	5	C	E	10	F	V	2	B
* * *		*	***	**	**	*	**	*	***	**	*

Code	Type	Model	pump flow rate at 1500 RPM at 0 bar	Rotation sense	Shaft form	Fixinge flange	Port connection form	Alternatives with valves	Relief valve pressure	Additional data
* * *	*	***	**	**	*	**	*	***	**	*

101.....299	Code

1	Without pulley
2	With pulley

Additional data

LO	Single
LMO	Multiple -banked Lo+Lo

Lo	pre-set		
		1	5 to 80bar
		2	80 to 175bar
		3	175 to 250bar

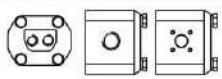
Lo	1.5-3-5-7.5-10

C	Clockwise
CC	Counterclockwise
R	Reversible

Lo	V	Relief valve

Lo	B-C-G-E-J-Z

Lo	T-R-F-Etc.



Lo	Pulley type
	P-R-S-T

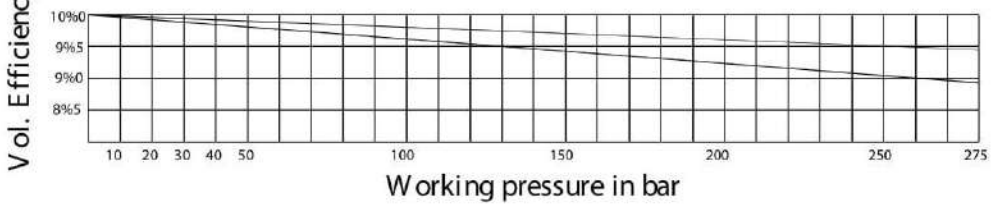
Lo	01-09-10-22-27

General specification model LO

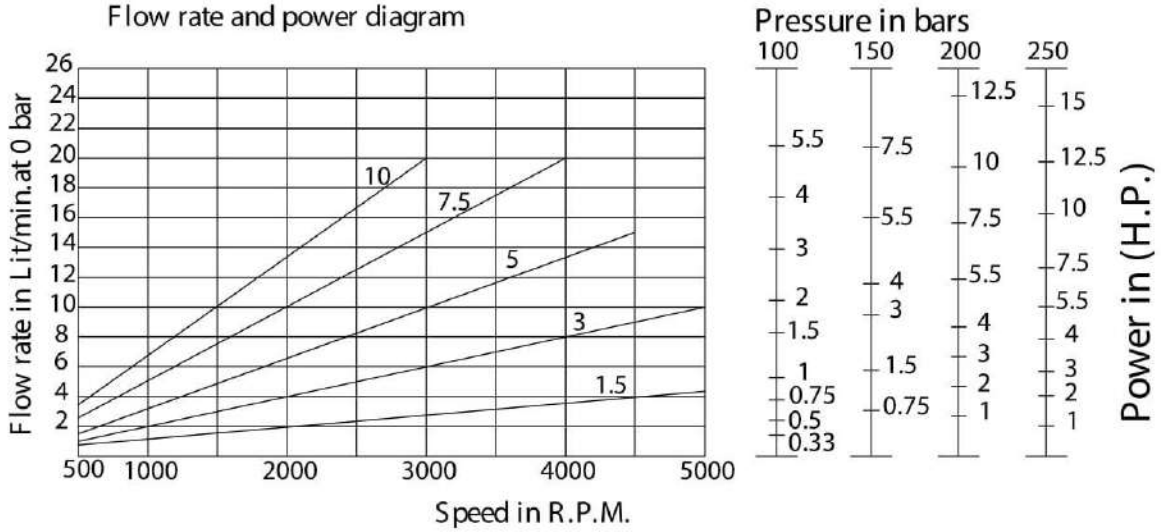
Hydraulic technical data — Gear Pump Model- LO

Pump Flow RATE (Lit/Min) at 1500 R.P.M		1.5	3	5	7.5	10
DISPLACEMENT (CC /rev)		1	2	3.3	5	6.6
Cont. MAX. PRESSURE (bar)		275		250	185	135
INTERMITTENT MAX. PRESSURE (bar)		300		275	200	150
R.P.M AT CONT.PRESSURE		5000		4000	3000	
MAX. R.P.M		6000		5000	4000	3000
MIN. R.P.M AT GIVEN PRESSURES	100bar	1000		750	500	
	175bar	1500	1250		1000	+
	250bar	2000	1750	1500	+	+
	300bar	3000	2000	+	+	+

Volumetric efficiencies diagram at 1500 R.P.M



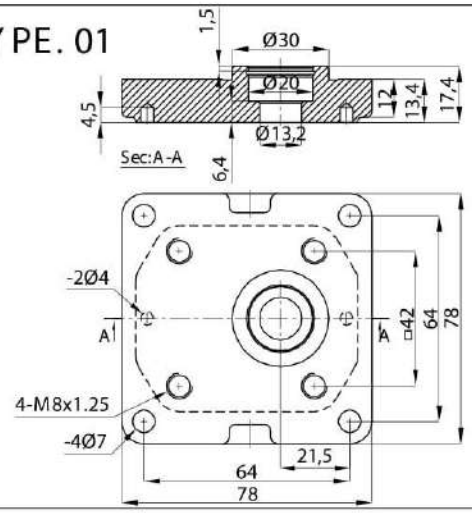
Flow rate and power diagram



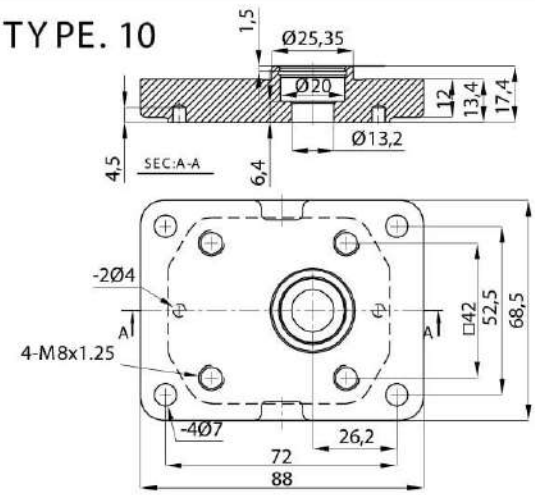
NOTE : The results have been obtained with 5 E(37cSt) viscosity oil and at 50 °C

Flange type model LO

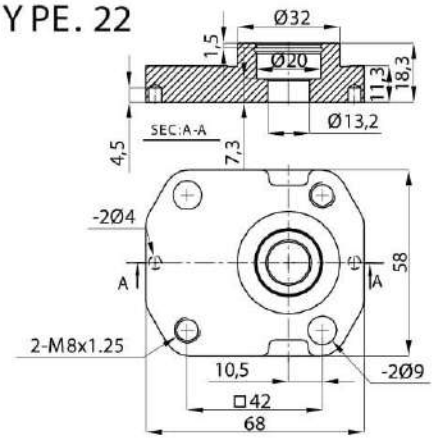
FLANGE TYPE. 01



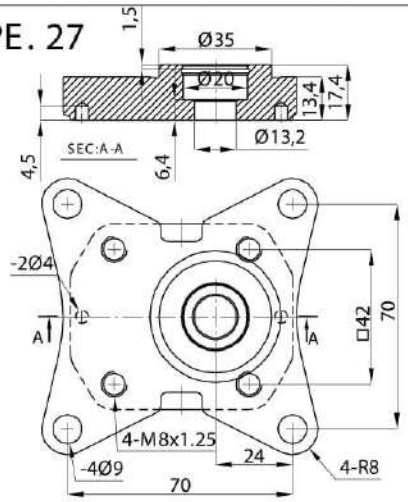
FLANGE TYPE. 10



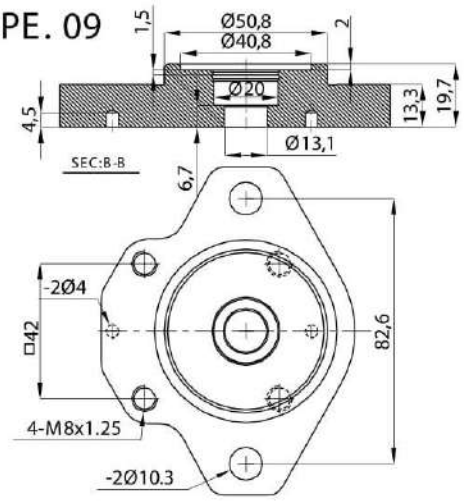
FLANGE TYPE. 22



FLANGE TYPE. 27

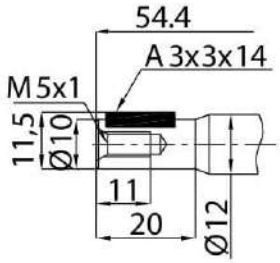


FLANGE TYPE. 09

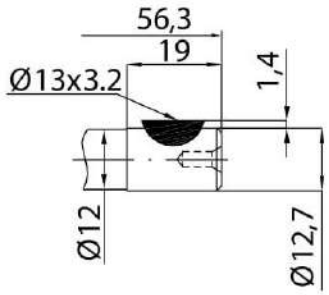


Shaft type model LO

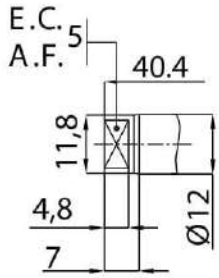
SHAFT C01



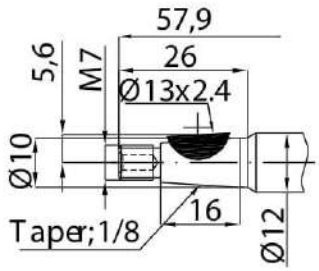
SHAFT C02



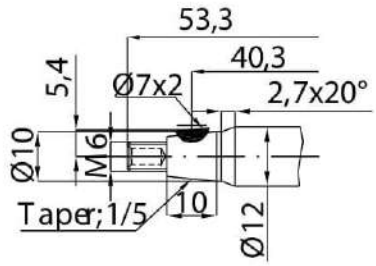
SHAFT B01



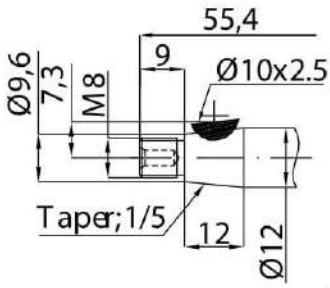
SHAFT E01



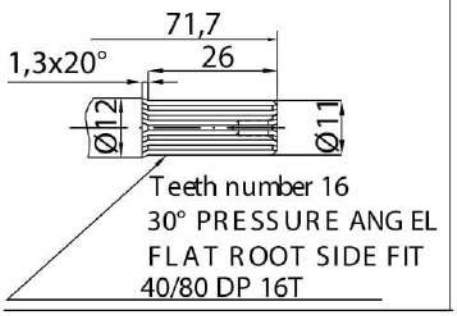
SHAFT J01



SHAFT Z01

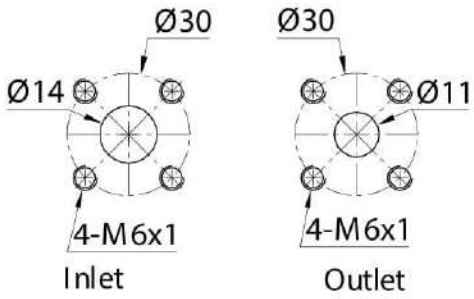


SHAFT G01

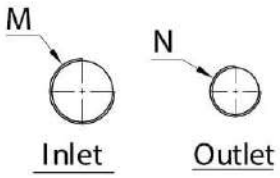


Outlet & inlet type model LO

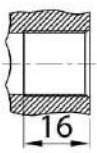
Model:F 101



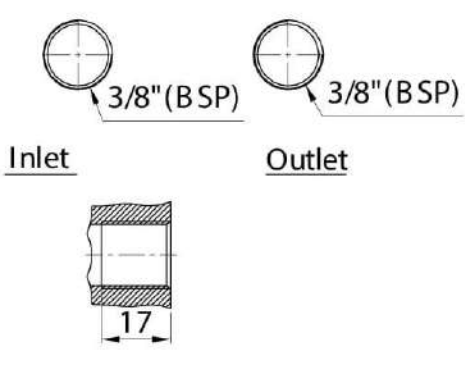
Model:R 101



L ltr	M (BSP)	N (BSP)
1.5	3/8 "	1/4 "
3	3/8 "	1/4 "
5	3/8 "	1/4 "
7.5	1/2 "	3/8 "
10	1/2 "	3/8 "



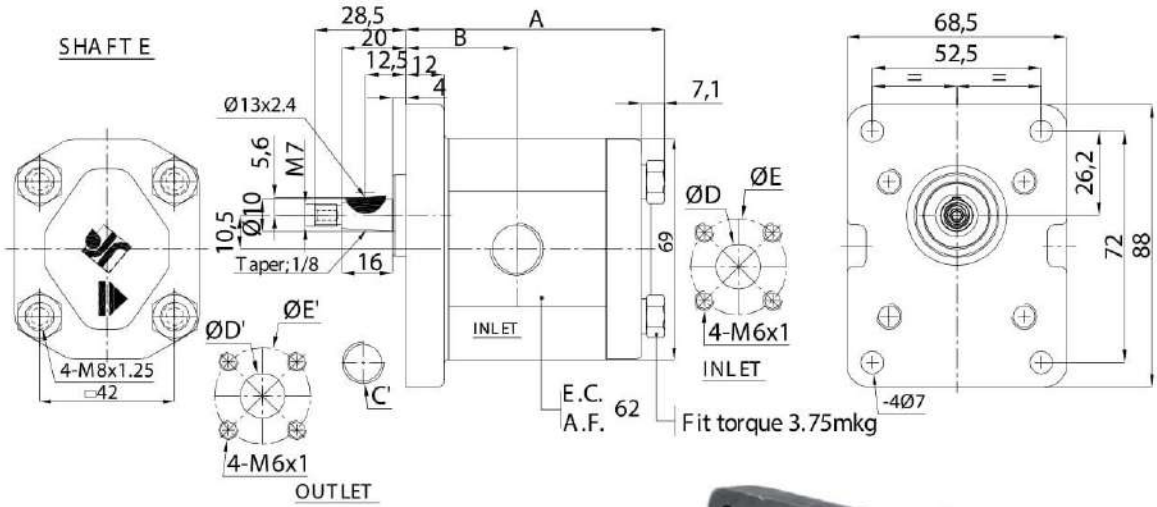
Model:R 102

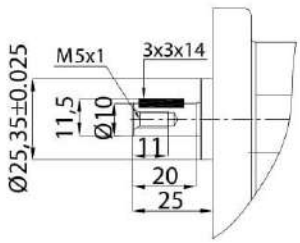


Pump with flange type 10
Model LO

101-1LO....(C/CC)E10R

SHAFT C&E(01)
OUTLET & INLET R&F(01)
FLANGE 10





Model	A	B	Outlet			Inlet			Weight
			C'	D'	E'	C	D	E	
101-1LO1.5C▲10R	68.7	31	1/4"	11	30	3/8"	14	30	
101-1LO3C▲10R	73.8	31							
101-1LO5C▲10R	80.5	34.5							
101-1LO7.5▲10R	89.3	37.5	3/8"			1/2"			
101-1LO10C▲10R	97.5	42.8							

In the reversible pumps , threaded ports available R only .both ports same dimension that corresponds to the suction dimension
The drawing above shows a pump turning clockwise .For anti -clockwise rotation sense ;replace C by CC in which case suction and pressure ports shall be inverted

Coding system model L

301....799	–	1	L	12	C	E	10	F	V	2	B
* * *		*	***	**	**	*	**	*	***	**	*

* * *	—	*	***	**	**	*	**	*	***	**	*
Code		Type	Model	pump flow rate at 1500 RPM at 0 bar	Rotation sense	Shaft form	Fixinge flange	Port connection form	Alternatives with valves	Relief valve pressure	Tank capacity

* * *	—	*	***	**	**	*	**	*	***	**	*

301.....799	Code

1	Without pulley
2	With pulley
5	Pump with back-up bearing and floating shaft

L	Single	
LM	Multiple -banked	L+L
LS	Multiple -banked	L+LO

L	6–7.5–9–10–12–14–16–18 –22–25–27–32–35–40–46–52

C	Clockwise
CC	Counterclockwise
R	Reversible

L	A–B–C–D–E–F–G–H–I–J–K–N–R–S–T V–W–Y–Z

Pulley type	
L	P–R–S–T

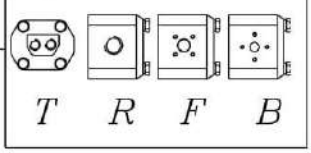
L	01–02–03–04–05–07–08–09–10–11–12 13–14–15–16–17–18–19–21–22–23–24–25 27–28–30–32–33–36–37–38–39–40–41 42–45–46–47–50–51–52–53–55–85–86

L	A	Sin . . . .
	B	1.5
	C	2.5
	D	3.8

L	pre-set	1	5 to 80bar
		2	80 to 175bar
		3	175 to 250bar
	Adjustable	11	5 to 80bar
		12	80 to 175bar
		13	175 to 250bar

L	V	Relief valve
	VD	R.valve and tank
	VC	Flow control valve with rel. valve
	VCD	Flow control valve with rel. valve and tank
	Rc	Priority flow valve

L	T–R–F–B–Etc.

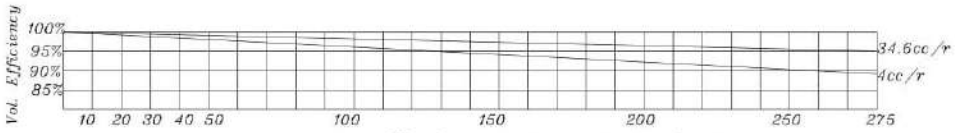


General specification model L

Hydraulic technical data Gear Pump Type–L

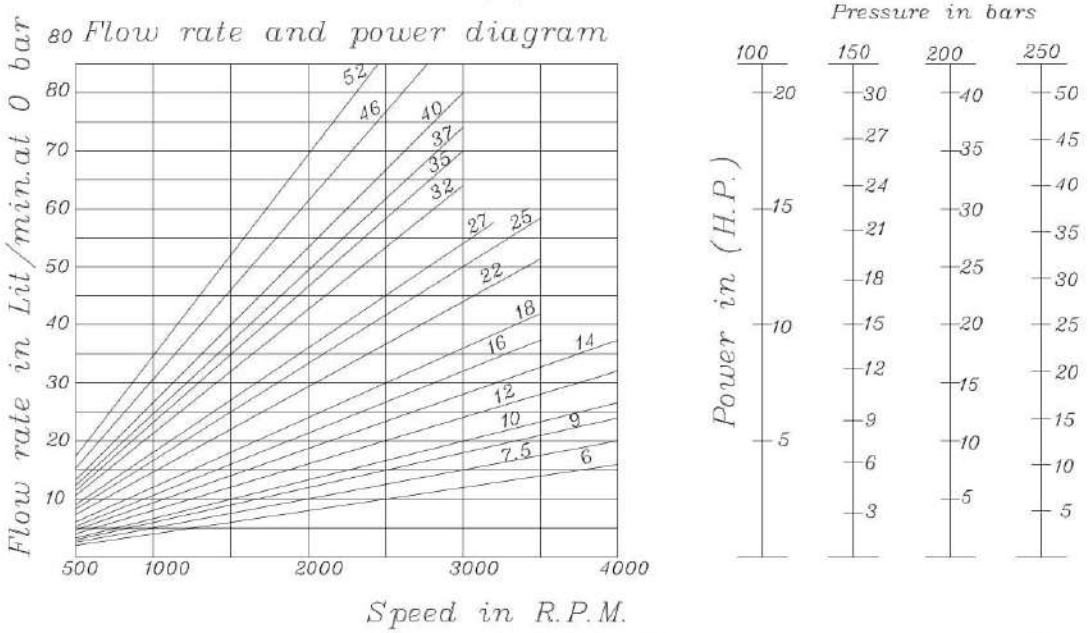
Pump Flow RATE (L/Min) at 1500 R.P.M		6	7.5	9	10	12	14	16	18	22	25	27	32	35	37	40	46	52
DISPLACEMENT (CC/rev)		4	5	6	6.6	8	9.3	10.6	12	14.6	16.6	18	21.3	23.3	24.6	26.6	30.6	34.6
Cont .MAX.PRESSURE (bar)		275								250		225	175			145	135	120
INTERMITENT MAX. PRESSURE (bar)		300								275		250	190			160	150	140
R.P.M AT CONT.PRESSURE		3500						3000		2500		2300	2000			2000		
MAX. R.P.M		4000						3500				3200	3000			3000		
MIN. R.P.M AT GIVEN PRESSURES	100bar	500																
	175bar	1200			1100			1100		850		850	750			750		
	250bar	1400						1300		1200		1100	1100			1000		
	300bar	1750						1500		+	+	+	+	+	+	+	+	+

Volumetric efficiencies diagram at 1500 R.P.M



Working pressure in bar

Flow rate and power diagram

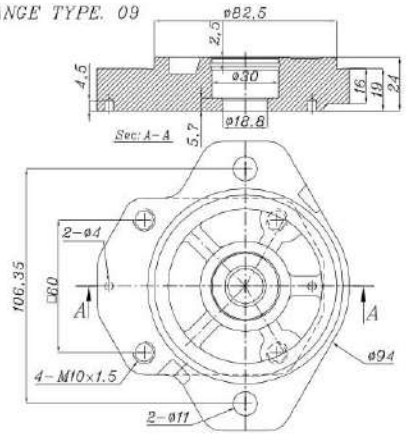


Speed in R.P.M.

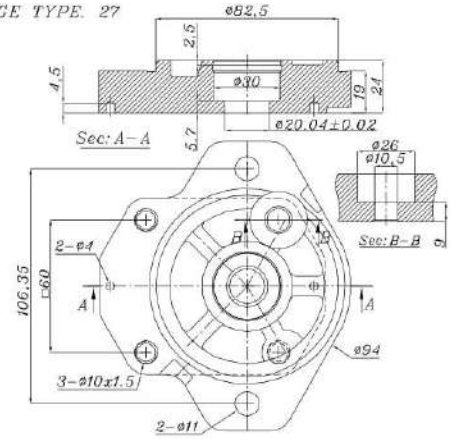
NOTE : The results have been obtained with 4.5° E viscosity oil and at 50° C

Flange type model L

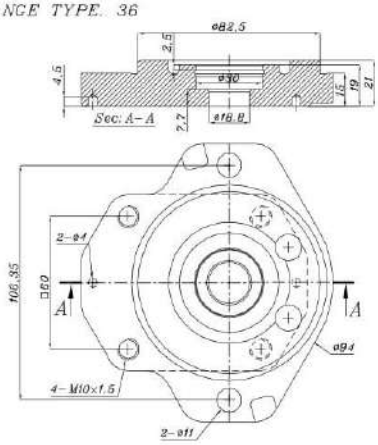
FLANGE TYPE. 09



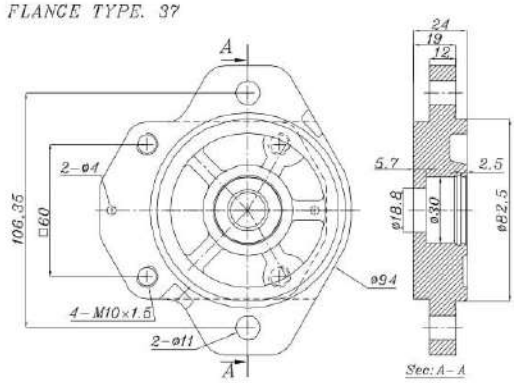
FLANGE TYPE. 27



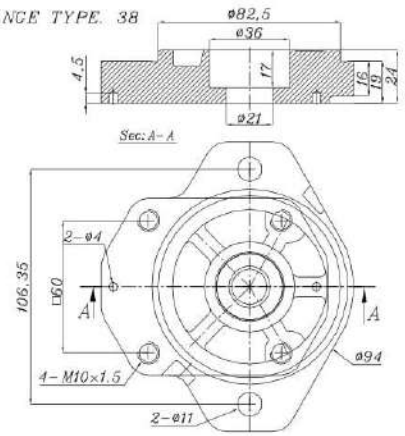
FLANGE TYPE. 36



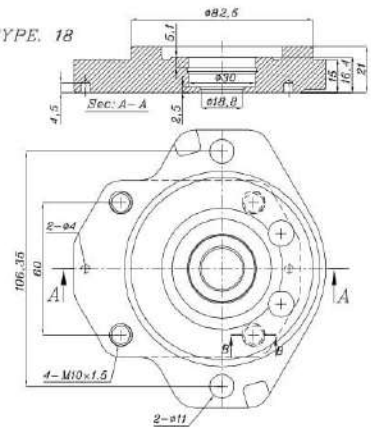
FLANGE TYPE. 37



FLANGE TYPE. 38

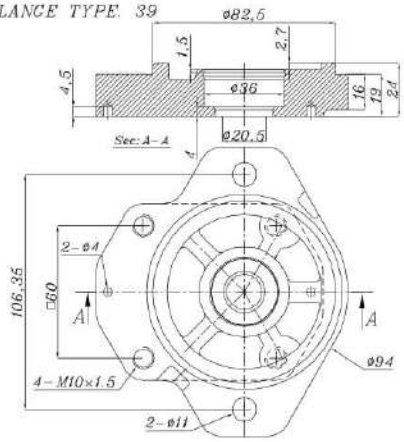


FLANGE TYPE. 18

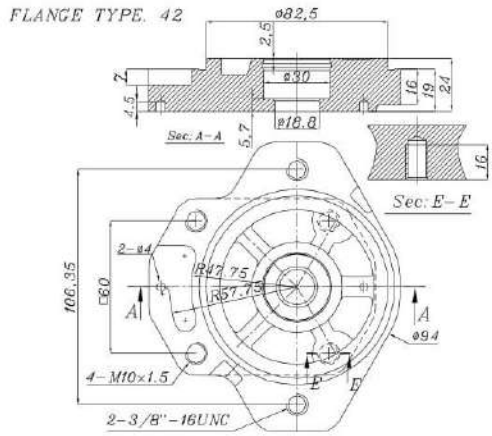


Flange type model L

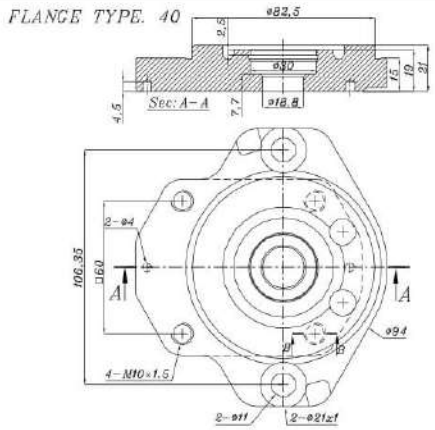
FLANGE TYPE. 39



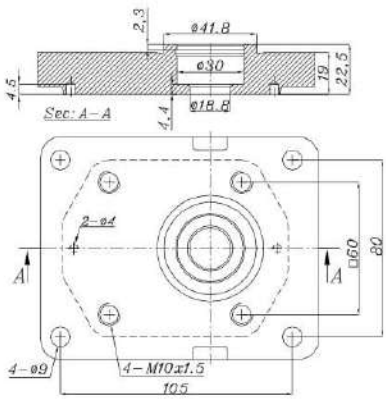
FLANGE TYPE. 42



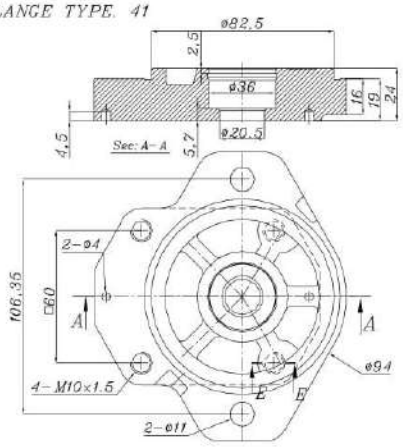
FLANGE TYPE. 40



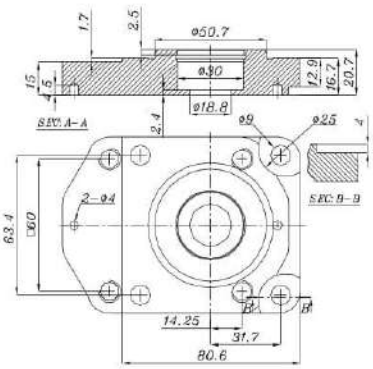
FLANGE TYPE. 24



FLANGE TYPE. 41

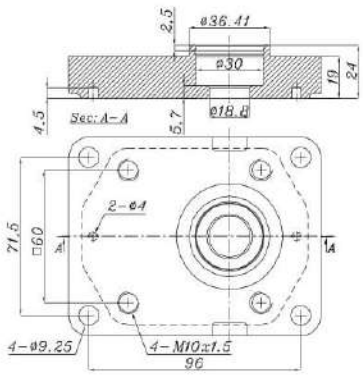


FLANGE TYPE. 02

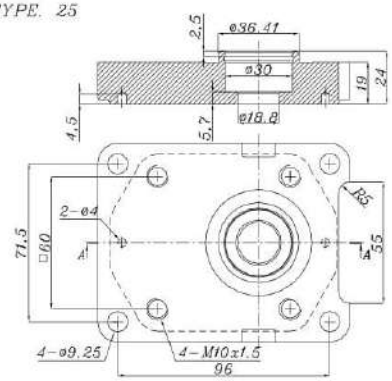


Flange type model L

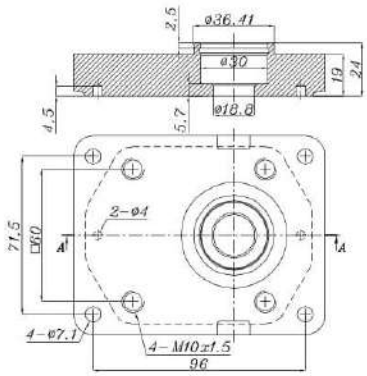
FLANGE TYPE. 10



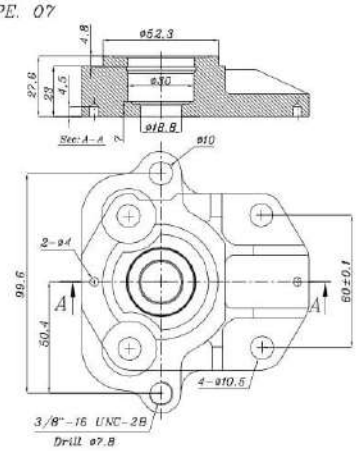
FLANGE TYPE. 25



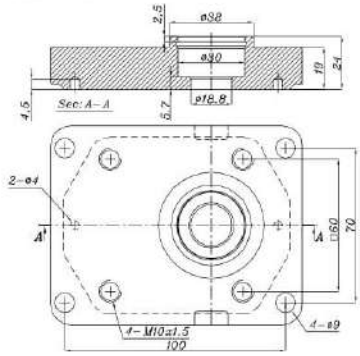
FLANGE TYPE. 01



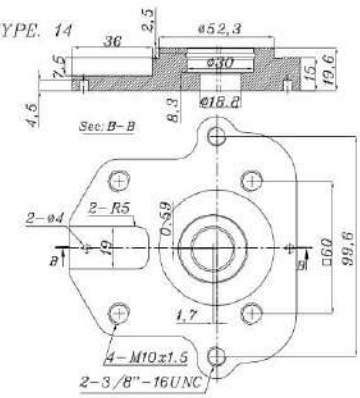
FLANGE TYPE. 07



FLANGE TYPE. 16

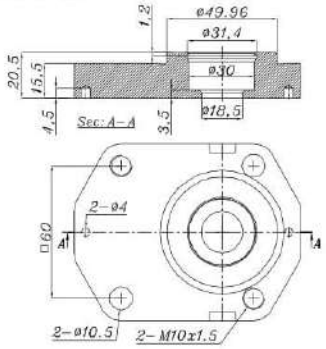


FLANGE TYPE. 14

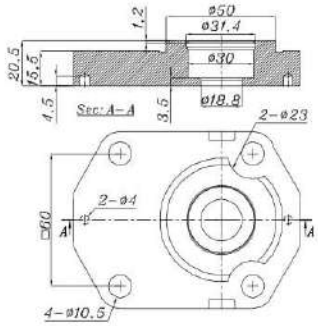


Flange type model L

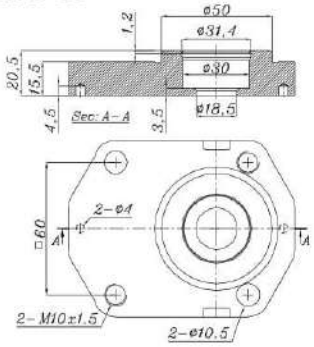
FLANGE TYPE. 22



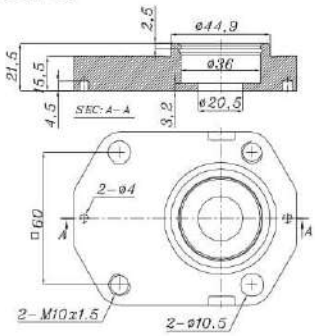
FLANGE TYPE. 51



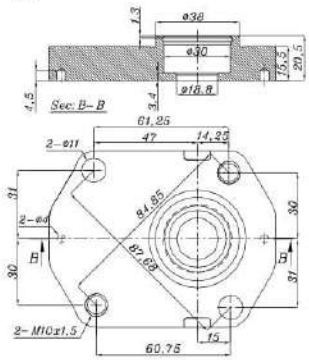
FLANGE TYPE. 55



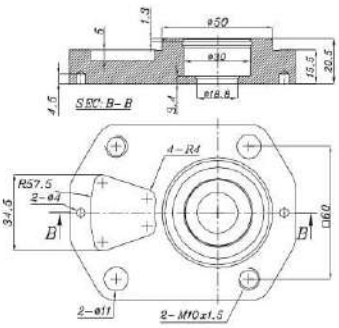
FLANGE TYPE. 53



FLANGE TYPE. 05

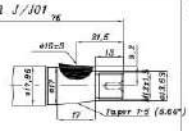


FLANGE TYPE. 50

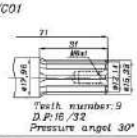


Shaft type model L

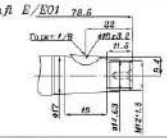
shaft J/J01



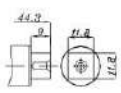
shaft C/C01



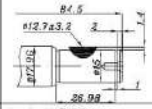
shaft E/E01



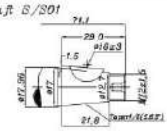
shaft Z/Z01



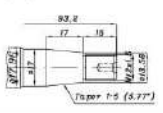
shaft N/N01



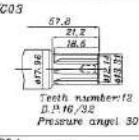
shaft S/S01



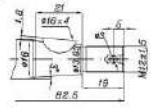
shaft J/J02



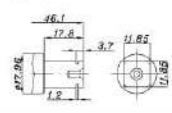
shaft C/C03



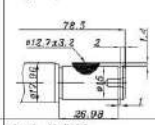
shaft E/E02



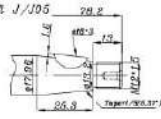
shaft Z/Z02



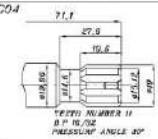
shaft N/N02



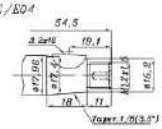
shaft J/J05



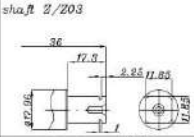
shaft C/C04



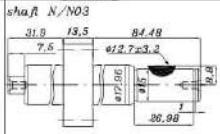
shaft E/E04



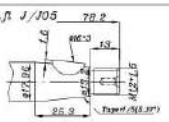
shaft Z/Z03



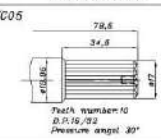
shaft N/N03



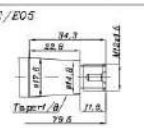
shaft J/J05



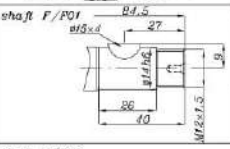
shaft C/C05



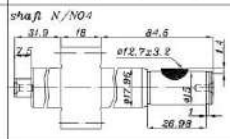
shaft E/E05



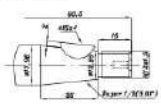
shaft F/F01



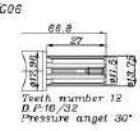
shaft N/N04



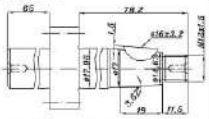
shaft J/J06



shaft C/C06

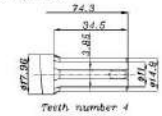


shaft E/E06

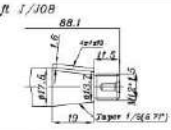


shaft F/F02

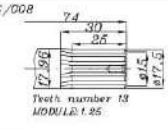
shaft I/I01



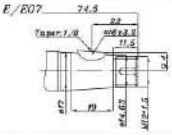
shaft J/J08



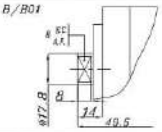
shaft C/C08



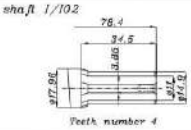
shaft E/E07



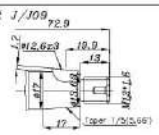
shaft B/B01



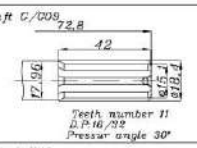
shaft I/I02



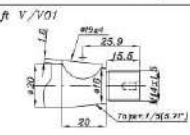
shaft J/J09



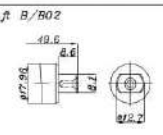
shaft C/C09



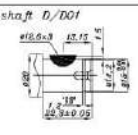
shaft V/V01



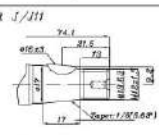
shaft B/B02



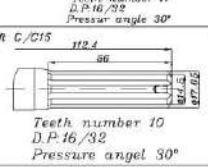
shaft D/D01



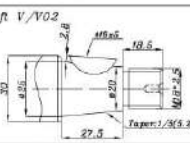
shaft J/J11



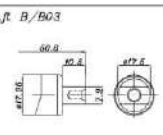
shaft C/C15



shaft V/V02



shaft B/B03



shaft A/A01

shaft J/J13

shaft G/G17

shaft V/V03

shaft H/H01

shaft A/A02

shaft Y/Y01

shaft G/G22

shaft V/V04

shaft H/H02

shaft C/C01

shaft G/G25

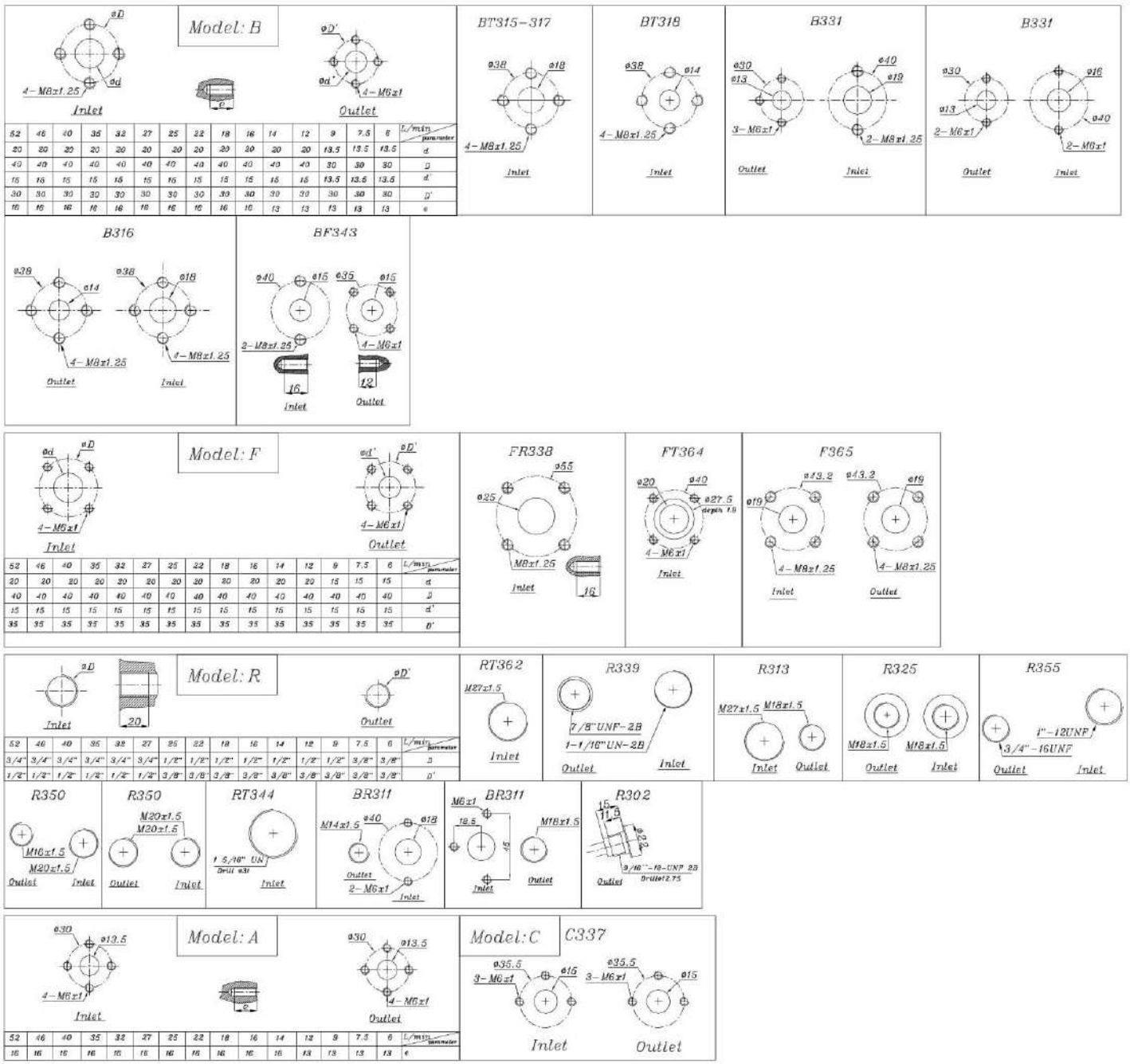
shaft G/G23

shaft V/V05

shaft W/W01

shaft C/C02

Outlet & inlet type model L

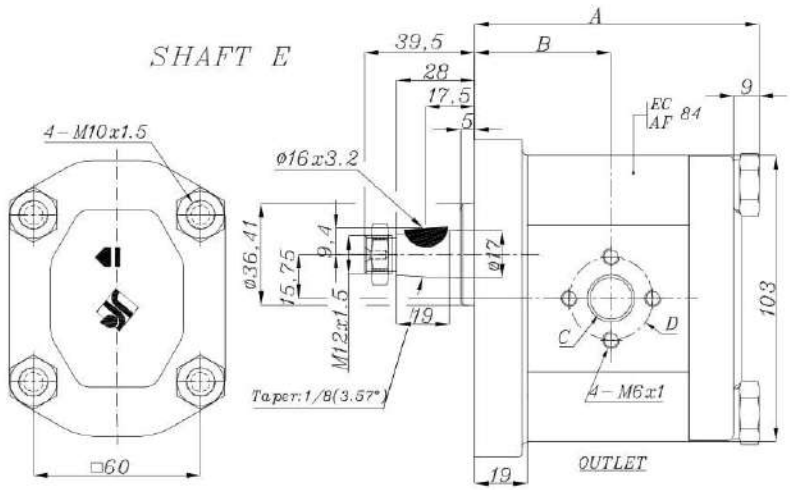


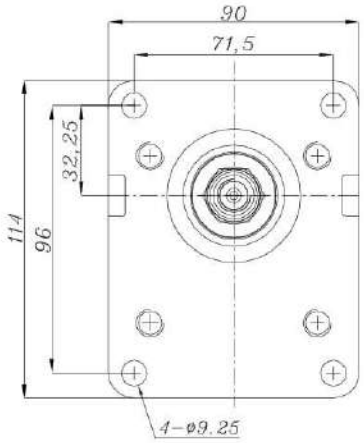
Pump with flange type 10
Model L

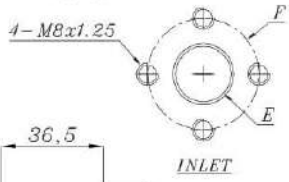
301-1L....(C/CC)E10B

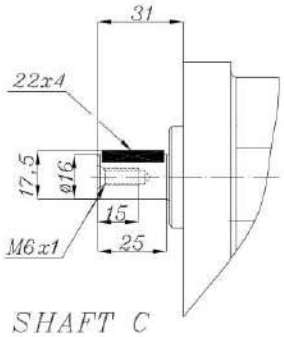
SHAFT E&C&R(01)
OUTLET & INLET B
FLANGE 10

SHAFT E

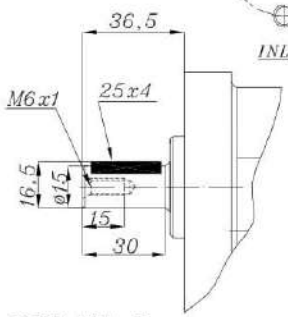








SHAFT C



SHAFT R

Model	A	B	Outlet		Inlet		Weight
			C	D	E	F	
301-1L6C▲10B	91	40	13.5	30	13.5	30	
301-1L7.5C▲10B	92.7	40	13.5	30	13.5	30	
301-1L9C▲10B	94.4	42.5	13.5	30	13.5	30	
301-1L12C▲10B	97.6	44.6	15	30	20	40	
301-1L14C▲10B	99.8	44.6	15	30	20	40	
301-1L16C▲10B	102.1	49	15	30	20	40	
301-1L18C▲10B	104.3	49	15	30	20	40	
301-1L22C▲10B	108.9	49	15	30	20	40	
301-1L25C▲10B	112.3	49	15	30	20	40	
301-1L27C▲10B	114.6	49	15	30	20	40	
301-1L32C▲10B	120.7	54.7	15	30	20	40	
301-1L35C▲10B	123.6	56.5	15	30	20	40	
301-1L40C▲10B	129.8	59.3	15	30	20	40	
301-1L46C▲10B	136.1	62	15	30	20	40	
301-1L52C▲10B	143	66.2	15	30	20	40	

In the reversible pumps , threaded ports available R only .both ports same dimension that corresponds to the suction dimension
The drawing above shows a pump turning clockwise .For anti -clockwise rotation sense ;replace C by CC in which case suction and pressure ports shall be inverted

Coding system model LA

801....999	-	1	LA	36	C	E	10	F	V	2	B
* * *		*	***	**	**	*	**	*	***	**	*

Code	Type	Model	pump flow rate at 1500 RPM at 0 bar	Rotation sense	Shaft form	Fixinge flange	Port connection form	Alternatives with valves	Relief valve pressure
* * *	*	***	**	**	*	**	*	***	**

801....999	Code

1	Without pulley
2	With pulley
6	Shaft section for mounting onto ZF

LA	Single	
LL	Multiple -banked	LA+LA
LD	Multiple -banked	LA+L
LN	Multiple -banked	LA+LO

LA	36-45-54-66-84

C	Clockwise
CC	Counterclockwise
R	Reversible

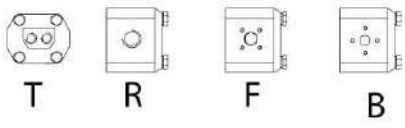
LA	A-B-C-D-E-G-I-J-K-W

Pulley type	
LA	P-S-T

LA	pre-set	1	5 to 80bar
		2	80 to 175bar
		3	175 to 250bar

LA	V	Relief valve
	Rc	Priority flow valve

LA	T-R-F-B-Etc.



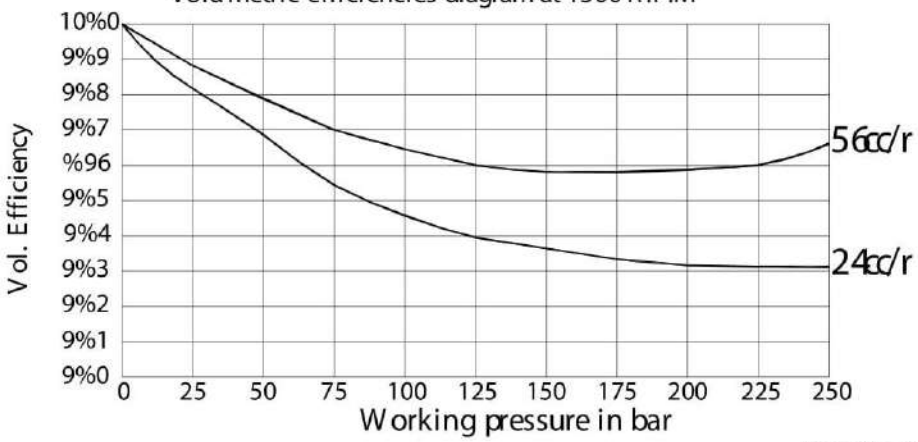
LA	01-05-06-09-10-11-12 18-19-23-27-36

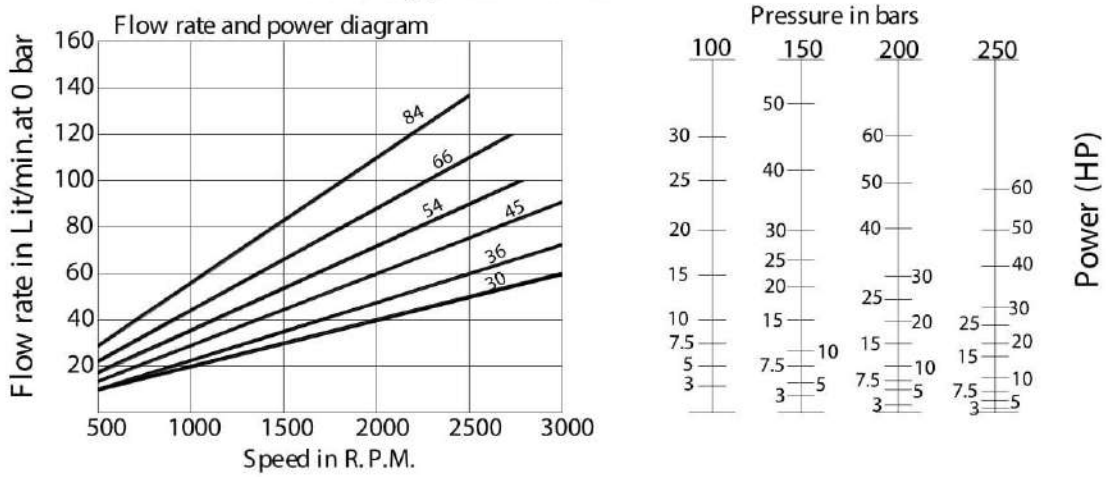
General specification model LA

Hydraulic technical data — Gear Pump Type-LA

Pump Flow RATE (L/Min) at 1500 R.P.M		30	36	40	45	54	66	75	84	95	100	115
DISPLACEMENT (CC/rev)		20	24	26.6	30	36	44	50	56	63.3	66.6	76.6
Cont. MAX . PRESSURE (bar)		250				225	200	185	175	170	170	150
INTERMITENT MAX. PRESSURE (bar)		275				250	225	220	200	180	180	170
R.P.M AT CONT.PRESSURE		2500				2300			2200			2000
MAX . R.P.M		3000				2800			2600			2200
MIN . R.P.M AT GIVEN PRESSURES	100bar	500										
	175bar	800		700		600						
	250bar	1500		900	X	X	X	X	X	X	X	X

Volumetric efficiencies diagram at 1500 R.P.M

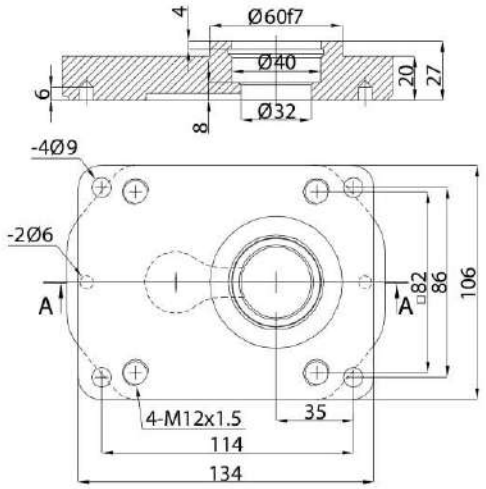




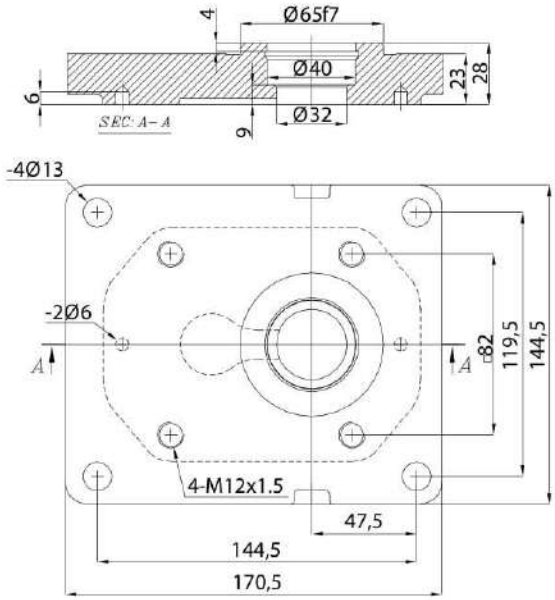
NOTE : The results have been obtained using ISO VG 46 oil at 50°

Flange type model LA

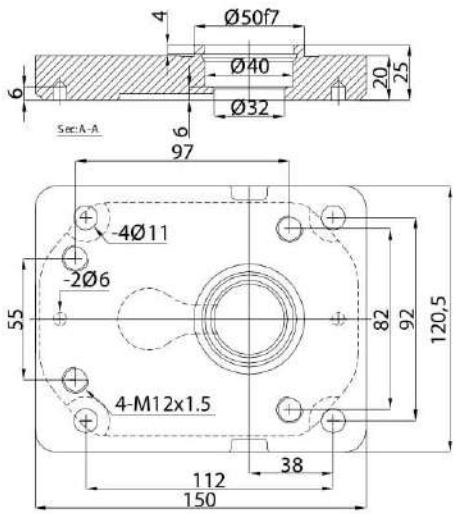
FLANGE TYPE.01



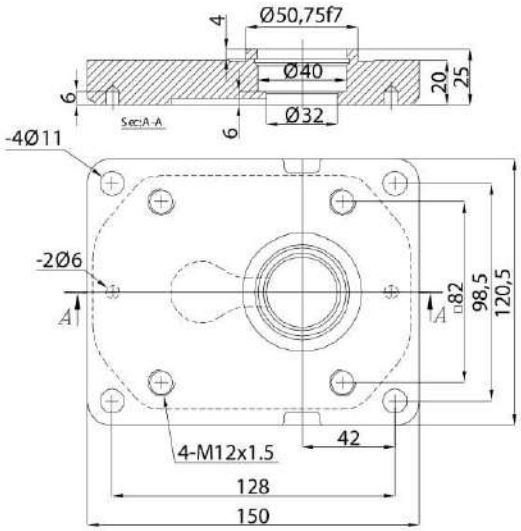
FLANGE TYPE.06



FLANGE TYPE.05

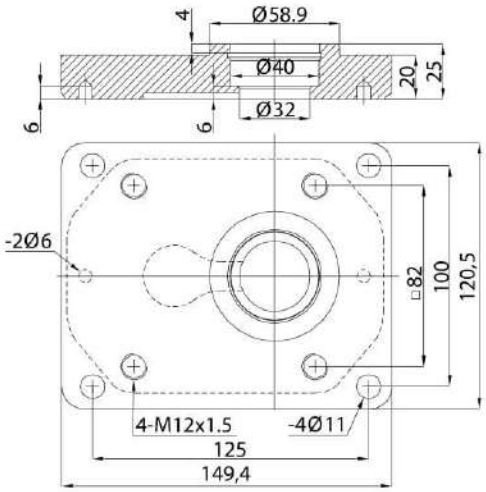


FLANGE TYPE.10

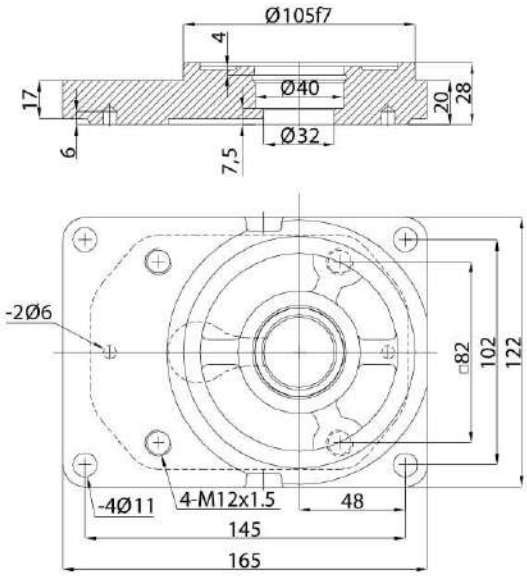


Flange type model LA

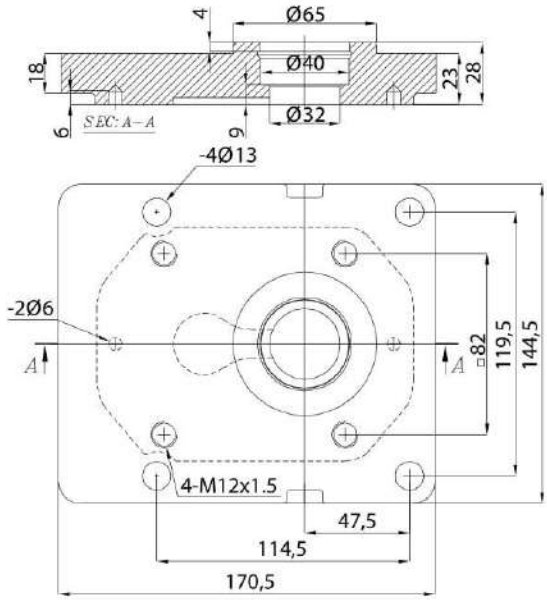
FLANGE TYPE.11



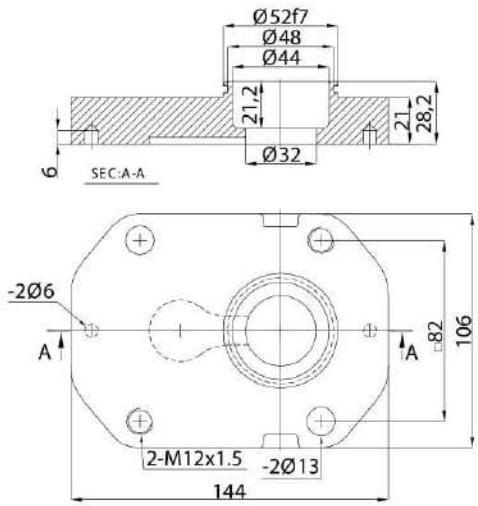
FLANGE TYPE.23



FLANGE TYPE.12

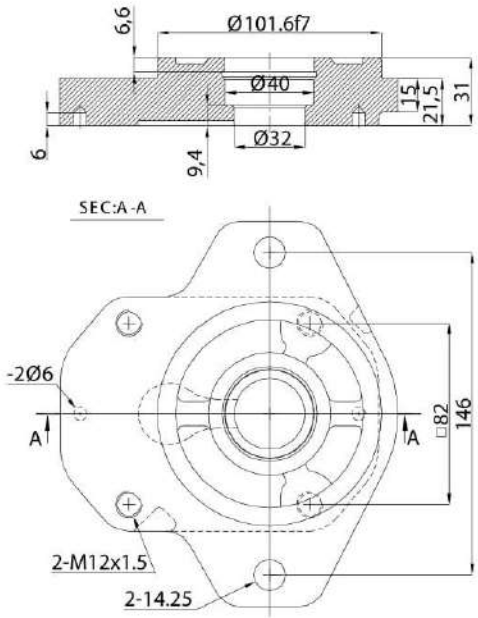


FLANGE TYPE.19

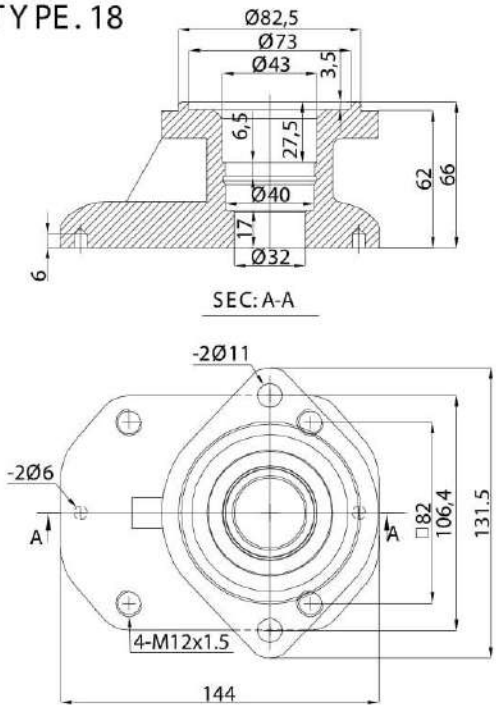


Flange type model LA

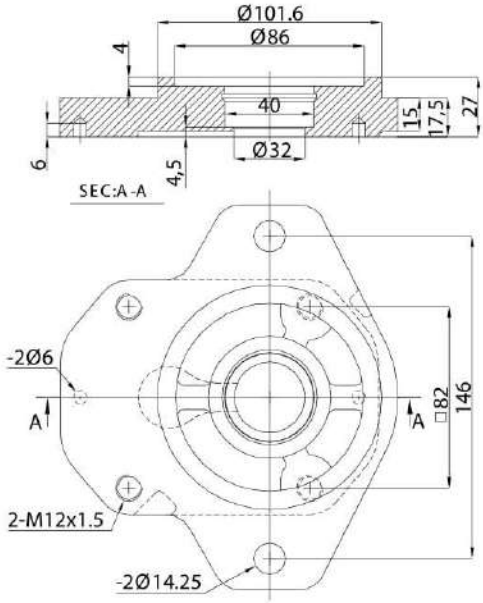
FLANGE TYPE.09



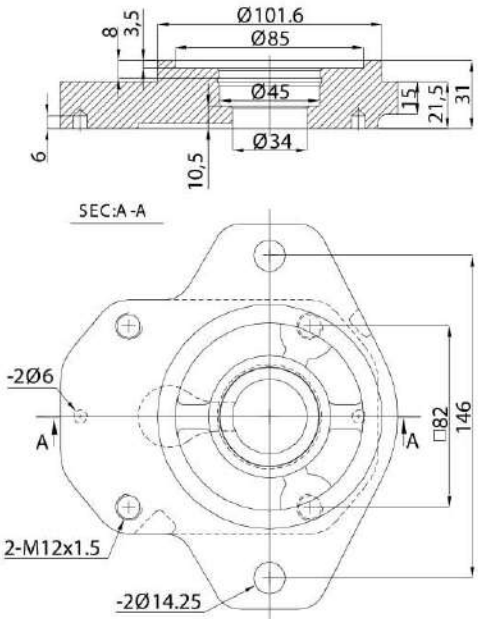
FLANGE TYPE.18



FLANGE TYPE.27

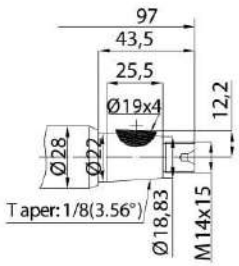


FLANGE TYPE.36

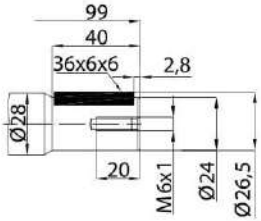


Shaft type model LA

SHAFT E01



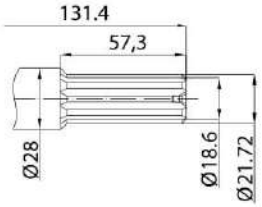
SHAFT C01



SHAFT G01

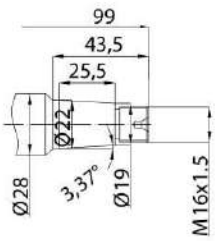
D.P:16/32
Teeth number : 13
Pressure angel : 30°

SHAFT G04

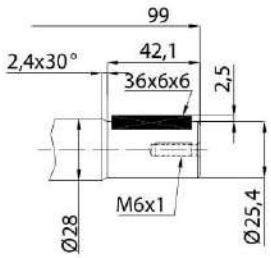


Diametral pitch 16/32
Pressure angle 30°
Teeth number 13

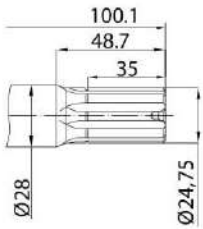
SHAFT E02



SHAFT C02

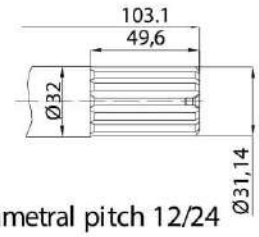


SHAFT G02



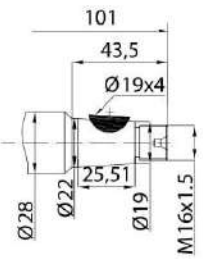
Teeth number:6
Base circle diameter (df)=19.5

SHAFT G05

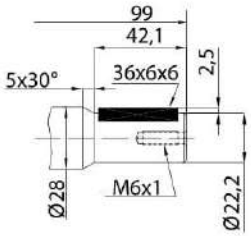


Diametral pitch 12/24
Pressure angle 30°
Teeth number 14

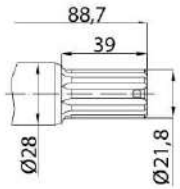
SHAFT E03



SHAFT C03

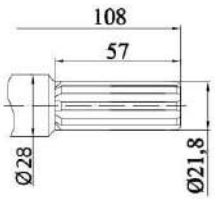


SHAFT G03



Diametral pitch 16/32
Pressure angle 30°
Teeth number 13

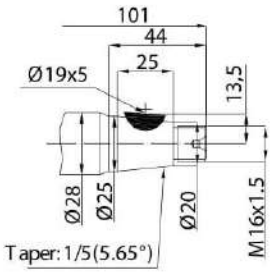
SHAFT G06



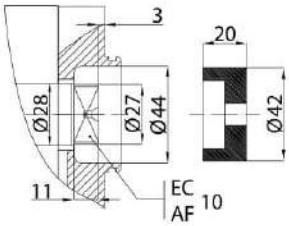
Module:1.45
Teeth number 13

Shaft type model LA

SHAFT J01

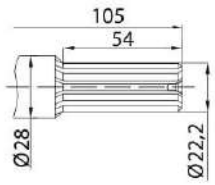


SHAFT W01



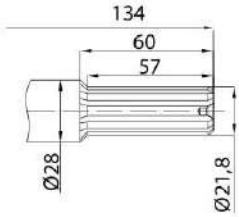
Max.driving torque 120Nm

SHAFT G07



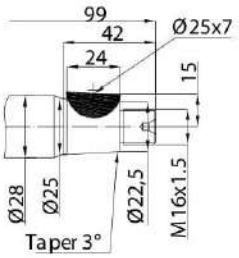
Diametral pitch 132/6
Pressure angle 30°
Teeth number 16

SHAFT G10

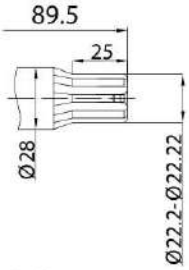


Diametral pitch 132/6
Pressure angle 30°
Teeth number 13

SHAFT A01

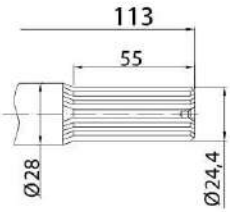


SHAFT K01



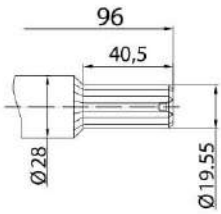
D.P:16/32
Teeth number:13
Pressure angel 30°

SHAFT G08



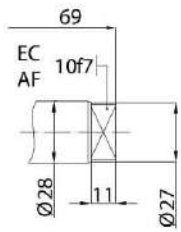
Diametral pitch 16/32
Pressure angle 30°
Teeth number 13

SHAFT G11



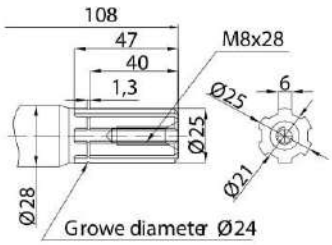
Diametral pitch 16/32
Pressure angle 30°
Teeth number 14

SHAFT B01

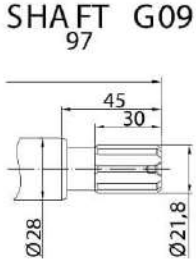


Max.driving torque 120Nm

SHAFT D01

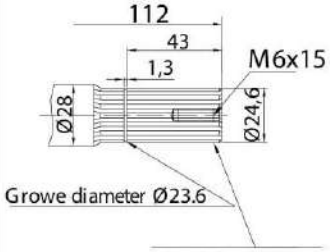


SHAFT G09



Diametral pitch 16/32
Pressure angle 30°
Teeth number 13

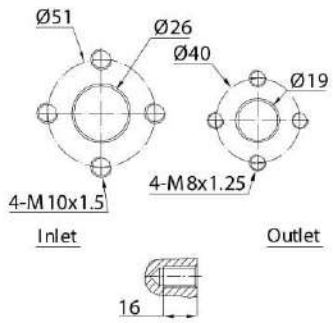
SHAFT I01



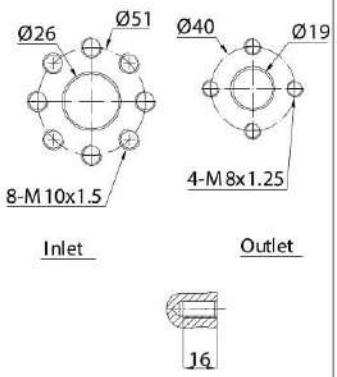
Module:1.667
Teeth number:13

Outlet & inlet type model LA

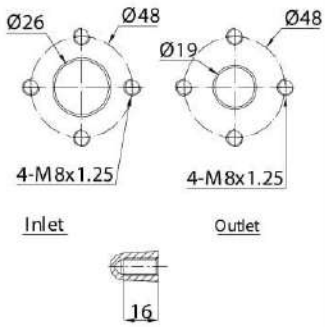
Model:B 801



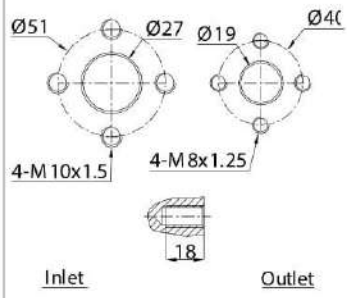
B 809



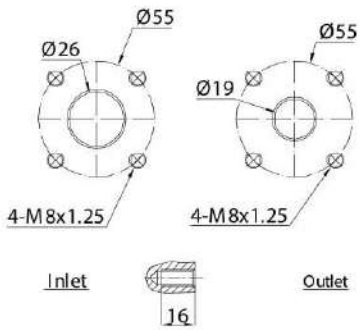
B 804



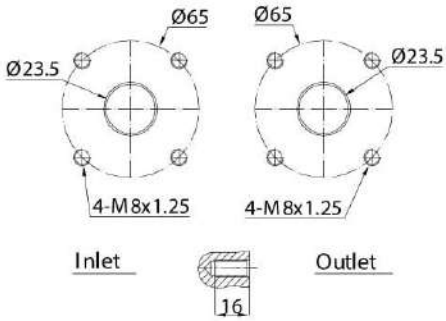
B 805



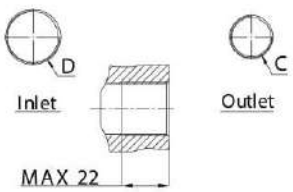
Model:F 801



F 808

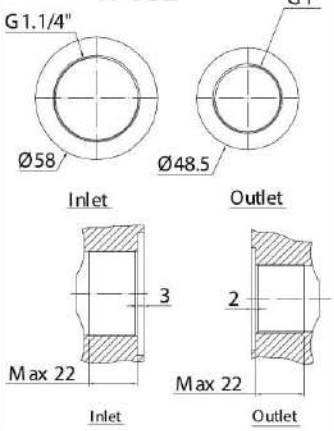


Model:R 801

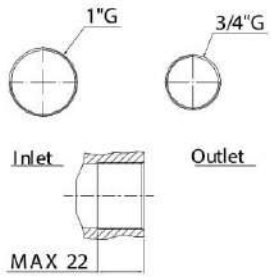


Parameter / L/min	C (BSP)	D (BSP)
36	1/2"	3/4"
45	1/2"	3/4"
54	1/2"	3/4"
66	3/4"	1"
84	3/4"	1"

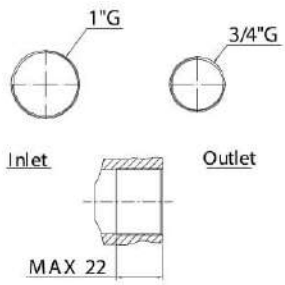
R 802



R 807



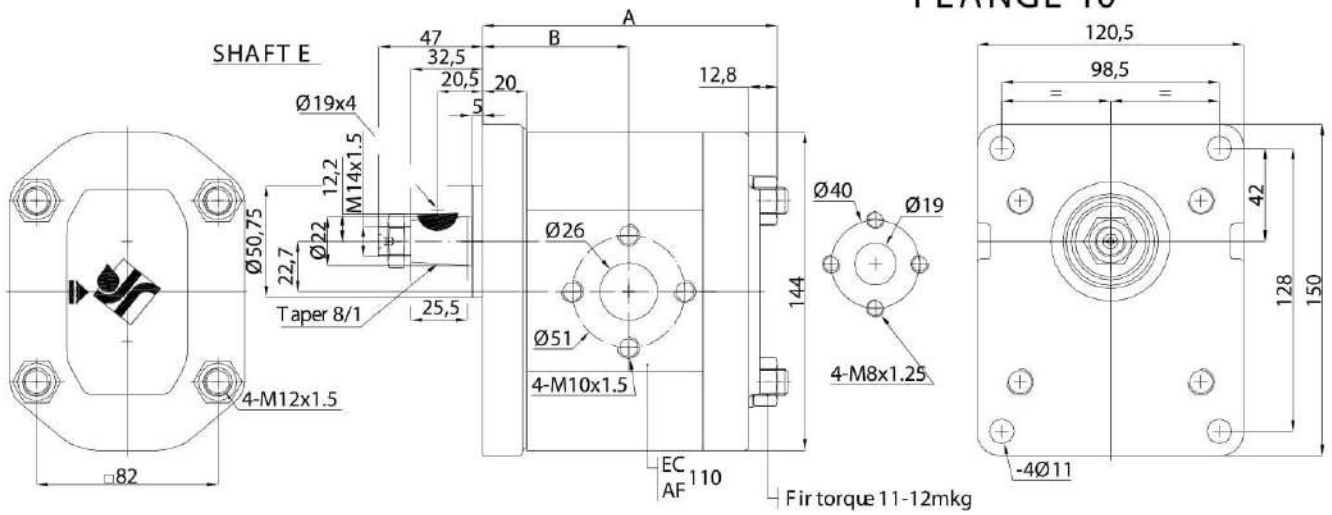
R 806

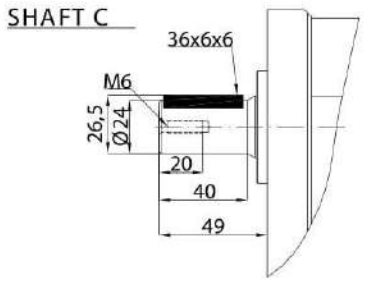


Pump with flange type 10
Model LA

801-1LA....(C/CC)E10B

SHAFT C&E(01)
OUTLET & INLET B 801
FLANGE 10





Model	A	B	Outlet		Inlet		Weight
			C	D	E	F	
801-1LA36C▲10B	133.3	66	19	40	26	51	
801-1LA45C▲10B	138.3	71					
801-1LA54C▲10B	143.3						
801-1LA66C▲10B	149.8						
801-1LA84C▲10B	159.3						

In the reversible pumps , threaded ports available R only .both ports same dimension that corresponds to the suction dimension
The drawing above shows a pump turning clockwise .For anti -clockwise rotation sense ;replace C by CC in which case suction and pressure ports shall be inverted

CODING SYSTEM | 1 | PNA | 36 | C | B | 19 | F | – | * | **CODING SYSTEM**

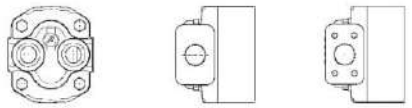
Type	
1	*Without pulley*
13	*With ball bearing and shaft*
14	*With two shafts seals and external drain.*
16	*Shaft section for mounting onto ZF*

Model		
PNA	*Single*	
PNL	*Multiple-banked*	PNA + PNA
PND	*Multiple-banked*	PNA + L
PNT	*Multiple-banked*	PNA + L0

Pump flow rate at 1500 RPM and 0 bar
See technical data

Additional data

Port connection form



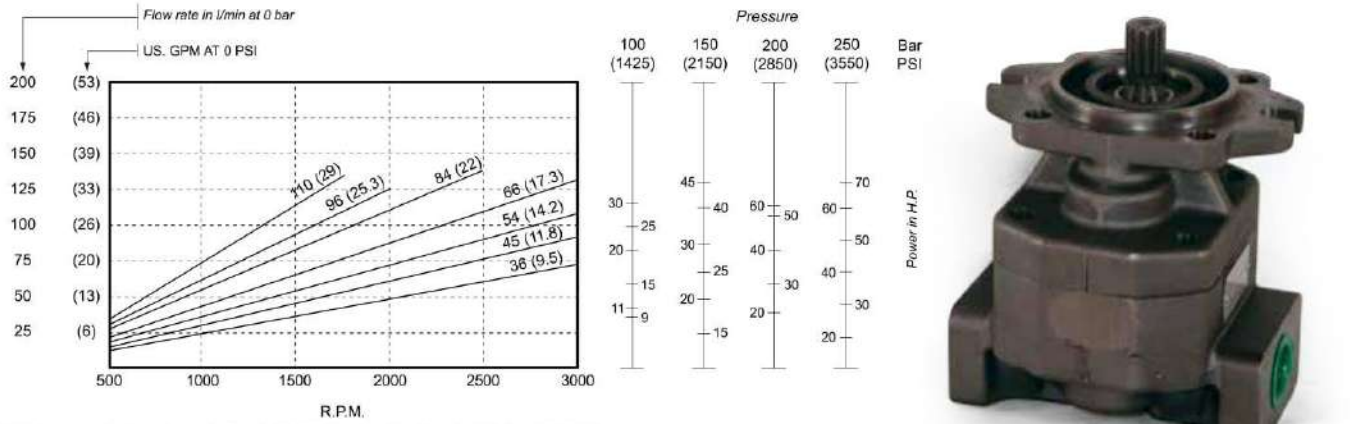
Fixing flange
09 - 10 - 11 - 15 - 50 - 90

Driving shaft form
D - E - G - H - J - M - P - X

Rotation direction	
C	*Clockwise*
CC	*Counterclockwise*
R	*Reversible*

Hydraulic technical data

Pump flow rate	L/min. 1500 R.P.M *(US.GPM 1500 RPM)*	36 (9.5)	45 (11.8)	54 (14.2)	66 (17.3)	84 (22)	96 (25.3)	110 (29)
Displacement	cm^3/v - cc/rev *(in^3/rev)*	24 (1.46)	30 (1.82)	36 (2.19)	44 (2.68)	56 (3.41)	64 (3.90)	73.3 (4.46)
Cont. max. pressure	bar *(PSI)*	270 (3835)		260 (3690)		210 (2980)	180 (2555)	160 (2270)
Intermittent max. pressure	bar *(PSI)*	300 (4260)		285 (4050)		250 (3550)	225 (3200)	200 (2850)
Max. R.P.M.		3000				2500	2000	1750
Min. R.P.M. at given pressures	100 bar (1425 PSI)	400				350		
	175 bar (2500 PSI)	450				350		
	250 bar (3550 PSI)	550				—	—	—



NOTE: These results have been obtained with VG 46 viscosity oil and at 50 deg. C (122°F).

CODING SYSTEM | 1 | PNC | 80 | C | A | 01 | M | –* | CODING SYSTEM

Type	
1	Without pulley
13	With ball bearing and shaft SEAL
14	With two shafts seals and external drain.

Model		
PNC	Gear pump	
PNJ	Double pump	PNC-PNC
PNK	Double pump	PNC-PNA
PNH	Double pump	PNC-L
PNZ	Double pump	PNC-LO

Pump flow rate at 1500 RPM and 0 bar
See technical data

Additional data

Port connection form		PNH		
				
R	M (S.A.E.)	R	F	B

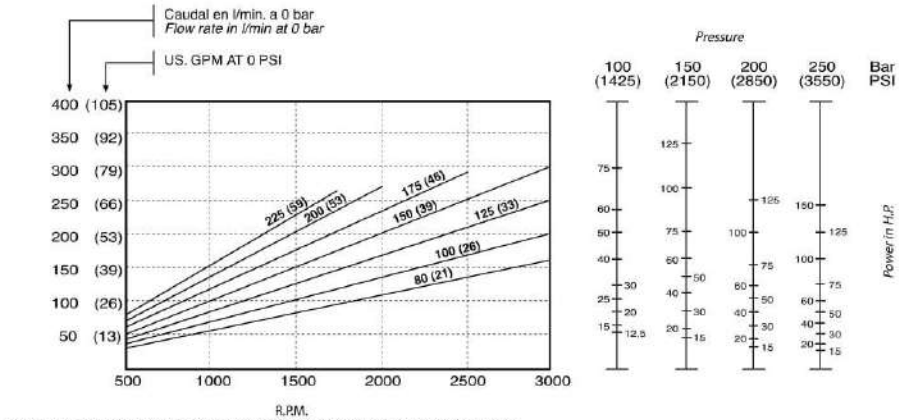
Fixing flange
50 - 11 - 10 - 09 - 01

Driving shaft form
A - E - F - G - H - J - S - X

Rotation direction	
C	Clockwise
CC	Counterclockwise

Hydraulic technical data								
Pump flow rate (US. GPM 1500 RPM)		80 (59)	100 (53)	125 (46)	150 (39)	175 (33)	200 (26)	225 (21)
Displacement (in ³/rev)		53,3 (9,15)	66,6 (8,13)	83,3 (7,11)	100 (6,10)	116,6 (5,08)	133,3 (4,06)	150 (3,27)
Cont. max. pressure (PSI)		260 (2500)		250 (2850)		225 (3200)	200 (3550)	175 (3700)
Intermittent max. pressure (PSI)		290 (4100)		275 (2850)		250 (3200)	225 (3550)	200 (3900)
Max. R.P.M.		3000				2500	2000	1750
Min. R.P.M. at given pressures	100 bar (1425 PSI)	400				350		
	175 bar (2500 PSI)	450				400		
	250 bar (3550 PSI)	-				-	-	550

Flow rate and power diagram



NOTE: These results have been obtained with VG 46 viscosity oil and at 50 deg. C (°122F).

Gear Pumps For MF Tractors		
Pump name	Pump code	Application
FERGUSON 285	302-1L9CCN07R /VD	MF 265 and MF 285 tractor (farm tractor
FERGUSON 240	319-5L7.5CD03R T/VD	MF 240,250,255 tractor (farm tractor)
FERGUSON 399	303-1LM16-12CC E36BR /V	MF 399 tractor (farm tractor)
FERGUSON 440	312-1LM12-18CCJ14F	MF 440 tractor (farm tractor)
FERGUSON 299	402-1L9CC E07R /D	MF 299 tractor (farm tractor)
FERGUSON 800	428-1LM16-12CC E88BR /V	MF 800 tractor (farm tractor)

PHOTO	APPLICATION	TECHNICAL CODE
	FIAT TRACTOR 480-450-540-54/C UNIVERSAL TRACTOR 445-530-550	1L16CE01B
	GARDEN TRACTOR	1L22CCI05BT
	CLAYSON HARVESTING COMBINE 366286	1L27CCJ23F
	JOHN DEER 955 HARVESTING COMBINE	1L27CCJ27T/RC
	RENAULT BUS HYDROFAN PUMP	5L22RV30F/VC
	RENAULT BUS ENGINE PUMP	5L32CV21F

PHOTO	APPLICATION	TECHNICAL CODE
	LIEBHERR-912 EXCAVATOR (NEW)	1LM27-22-9CCJ22F
	LIEBHERR-912 EXCAVATOR (OLD)	1LM27-16CCJ22F
	ROLLER CA 25	1L16CCJ22F
	CLASS 145 HARVESTING COMBINE	1LM9-22CCJ45R
	JAPANESE TADENO CRANE (LIFT PUMP)	1L46CCG09T
	LOADER BACKHOE	1LA84CCG63FR

Coding system Type L Flow divider

300	–	LFD	2	40	R	2	R
***		***	*	**	*	*	*

***	—	***	*	**	*	*	*
Code		Model	Elements number	Pump flow rate at 1500 RPM at 0 bar		Rotation sense	Inlet number	Port connection form

***	—	***	*	**	*	*	*

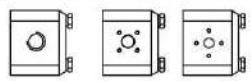
300	Code

LFD	Type L Flow divider

2	2-3-4-5-6-7-89-

L	6-7.5-9-10-12-14-16-18 -22-25-27-32-35-40-46-52

L	R-F-B-Etc.

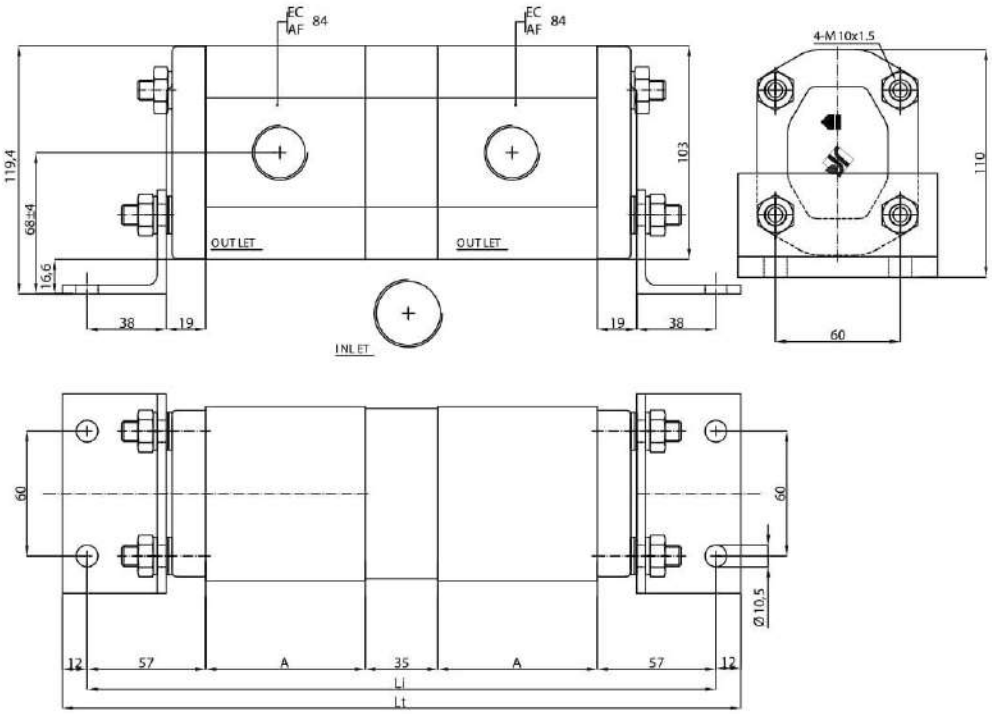


2	2-3-4-5-6-7-89-

R	Reversible

300-L F D2-....R -1R

OUTLET & INLET R



INL ET	OUTL ET
3/8"	3/8"
1/2"	3/8"
1/2"	3/8"
1/2"	3/8"
1/2"	3/8"
3/4"	1/2"
3/4"	1/2"
3/4"	1/2"
3/4"	1/2"
3/4"	1/2"
3/4"	1/2"

Flow RA TE (L /Min)	DISPLACEMENT (CC /rev)	A
6	4	47
9	6	50.4
12	8	53.6
16	10.6	58.1
22	14.6	64.9
27	18	70.6
32	21.3	76.7
35	23.3	79.6
40	26.6	85.8
46	30.6	92.1
52	34.6	99

L i=Distance between fixing hole centres							
Number of elements							
2	3	4	5	6	7	8	9
243	325	407	489	571	653	735	817
249.8	335.2	420.6	506	591.4	676.8	762.2	847.6
256.2	344.8	433.4	522	610.6	699.2	787.8	876.4
265.2	358.3	451.4	544.5	637.6	730.7	823.8	916.9
278.8	378.7	478.6	578.5	678.4	778.3	878.2	978.1
290.2	395.8	501.4	607	712.6	818.2	923.8	1029.4
302.4	414.1	525.8	637.5	749.2	860.9	972.6	1084.3
308.2	422.8	537.4	652	766.6	881.2	995.8	1110.4
320.6	441.4	562.2	683	803.8	924.6	1045.4	1166.2
333.2	460.3	587.4	714.5	841.6	968.7	1095.8	1222.9
347	481	615	749	883	1017	1151	1285

$$L\,i=[(n1-)x\,35]+114+[(n)xA]$$

$$L\,t=Li24+$$

114=57+57

n= Number of elements of flow divider

A=heights of elements of flow divider

24=12+12

Coding system model L

301....799	–	1	L	12	C	E	10	F	V	2	B
***		*	**	**	**	*	**	*	**	**	*

***	—	*	**	**	*	**	*	**	**	*
Code	Type	Model	Pump flow rate at 1500 RPM at 0 bar	Rotation sense	Shaft form	Fixinge flange	Port connection form	Alternatives with valves	Relief valve pressure	Tank capacity

301.....799	Code

1	Without pulley
2	With pulley
5	Pump with back -up bearing and floating shaft
M	Hydro motor

L	Single	
LM	Multiple -banked	L +L
LS	Multiple -banked	L +LO

L	6-7.5-9-10-12-14-16-18 -22-25-27-32-35-40-46-52

C	Clockwise
CC	Counterclockwise
R	Reversible

L	A-B-C-D-E-F-G-H-I-J-K-N-R-S-T V-W-Y-Z

Pulley type	
L	P-R-S-T

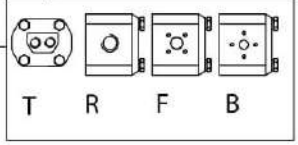
L	01-02-03-04-05-07-08-09-10-11-12 13-14-15-16-17-18-19-21-22-23-24-25 27-28-30-32-33-36-37-38-39-40-41 42-45-46-47-50-51-52-53-55-85-86

L	A	Sin . . . .
	B	1.5
	C	2.5
	D	3.8

L	pre-set	1	5 to 80bar
		2	80 to 175bar
		3	175 to 250bar
	Adjustable	11	5 to 80bar
		12	80 to 175bar
		13	175 to 250bar

L	V	Relief valve
	VD	R.valve and tank
	VC	Flow control valve with rel. valve
	VCD	Flow control valve with rel. valve and tank
	Rc	Priority flow valve

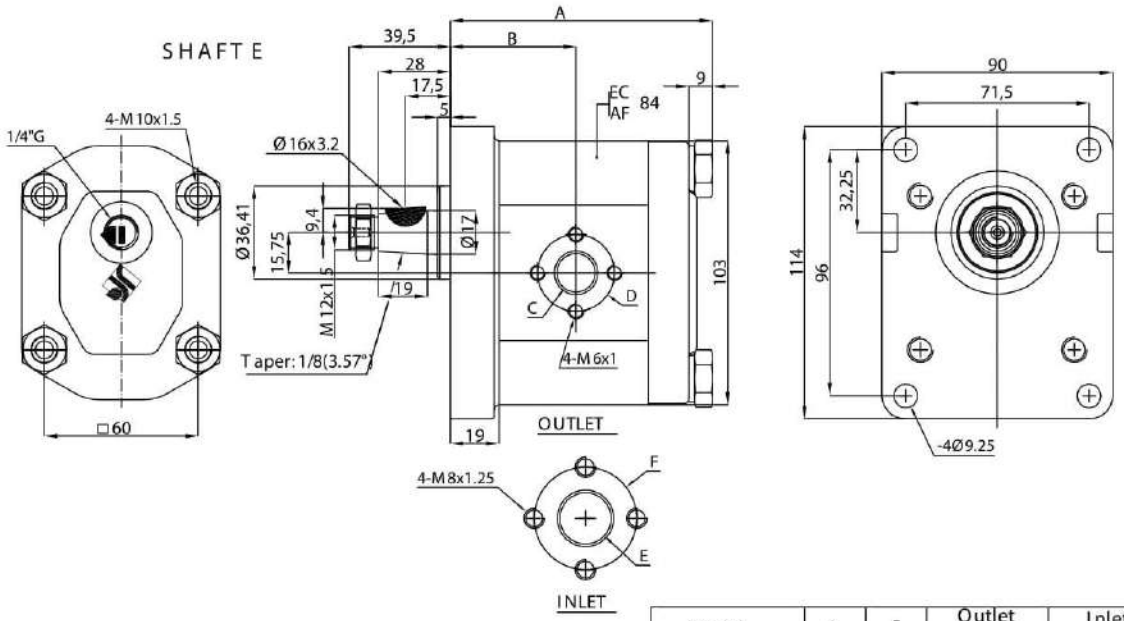
L	T-R-F-B-Etc.

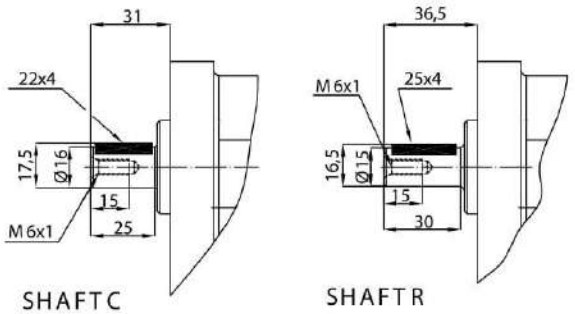


Hydro motor with flange type 10
Model L

301-1ML....(R)E 10B

SHAFT E&C&R(01)
OUTLET & INLET B
FLANGE 10





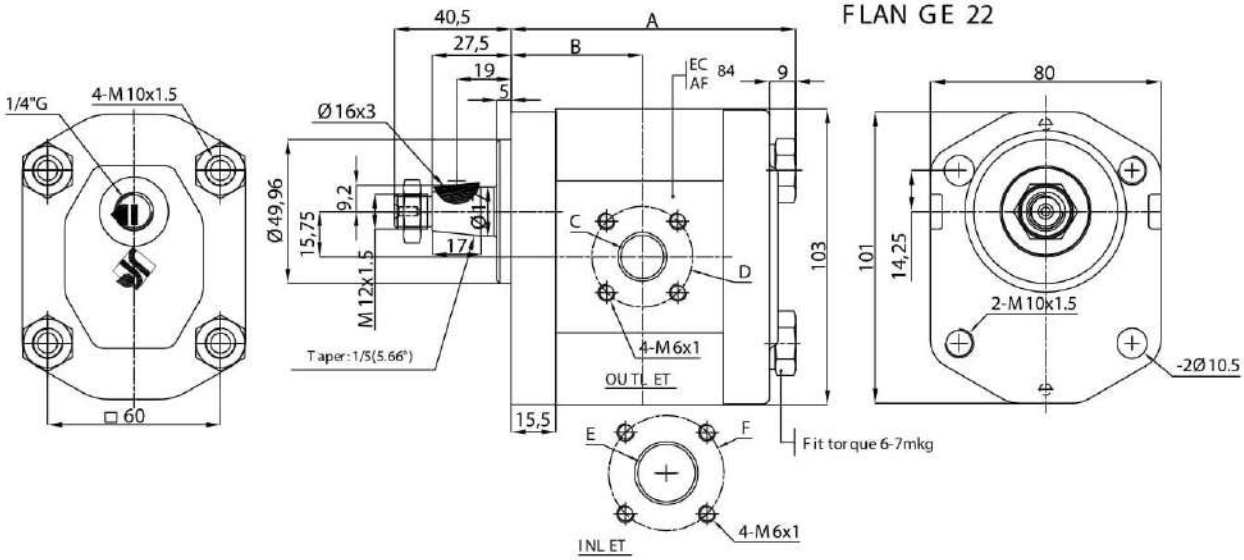
Model	A	B	Outlet		Inlet		Weight
			C	D	E	F	
301-1ML6R▲10B	91	40	13.5	30	13.5	30	
301-1ML7.5R▲10B	92.7	40	13.5	30	13.5	30	
301-1ML9R▲10B	94.4	42.5	13.5	30	13.5	30	
301-1ML12R▲10B	97.6	44.6	15	30	20	40	
301-1ML14R▲10B	99.8	44.6	15	30	20	40	
301-1ML16R▲10B	102.1	49	15	30	20	40	
301-1ML18R▲10B	104.3	49	15	30	20	40	
301-1ML22R▲10B	108.9	49	15	30	20	40	
301-1ML25R▲10B	112.3	49	15	30	20	40	
301-1ML27R▲10B	114.6	49	15	30	20	40	
301-1ML32R▲10B	120.7	54.7	15	30	20	40	
301-1ML35R▲10B	123.6	56.5	15	30	20	40	
301-1ML40R▲10B	129.8	59.3	15	30	20	40	
301-1ML46R▲10B	136.1	62	15	30	20	40	
301-1ML52R▲10B	143	66.2	15	30	20	40	

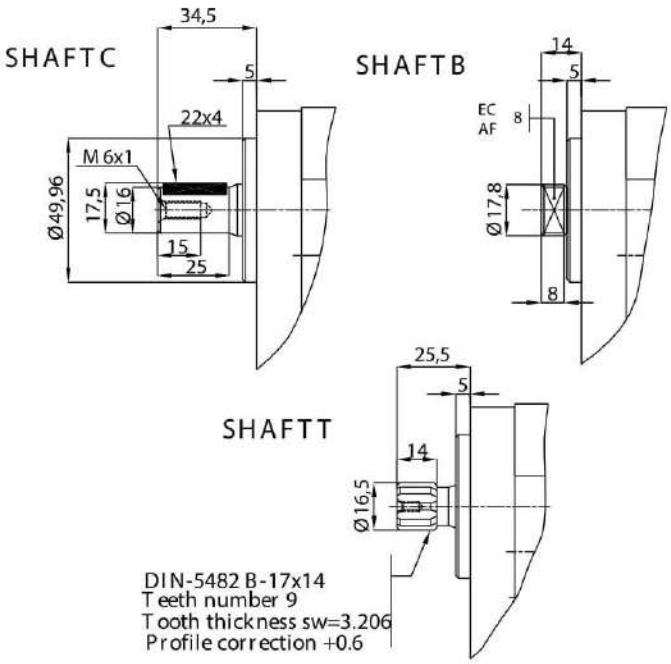
Hydro motor with flange type 22
Model L

301-1ML....(R)J22F

SHAFT J

SHAFT J&C&B&T(01)
OUTLET & INLET F
FLANGE 22





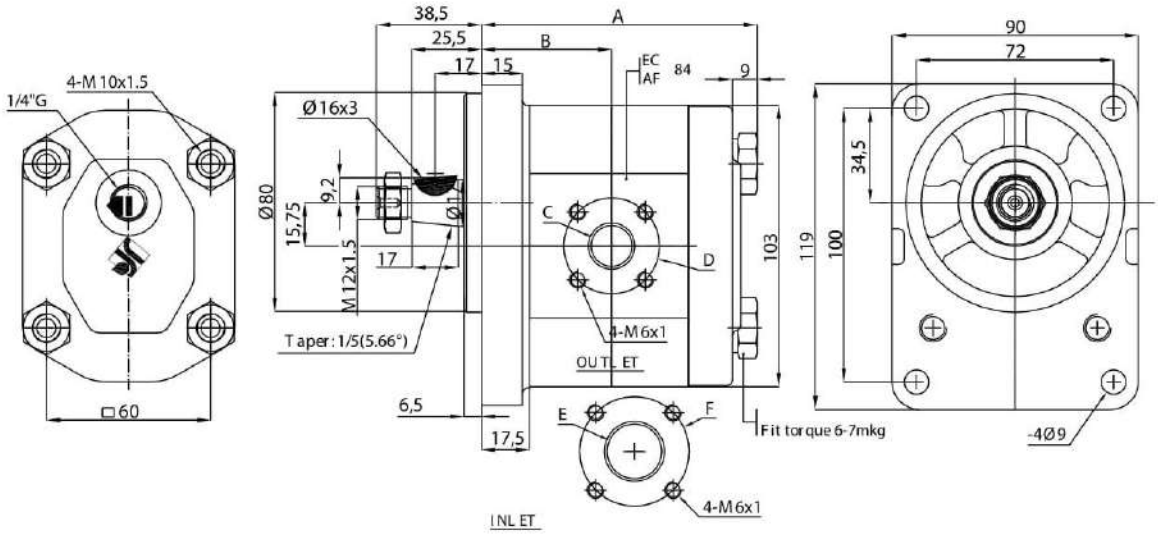
Model	A	B	OUTLET		INLET		Weight
			C	D	E	F	
301-1ML 6R▲22F	87.5	36.5	15	35	15	40	
301-1ML 7.5R▲22F	89.2	36.5	15	35	15	40	
301-1ML 9R▲22F	90.9	39	15	35	15	40	
301-1ML 12R▲22F	94.1	41.1	15	35	20	40	
301-1ML 14R▲22F	96.3	41.1	15	35	20	40	
301-1ML 16R▲22F	98.6	45.5	15	35	20	40	
301-1ML 18R▲22F	100.8	45.5	15	35	20	40	
301-1ML 22R▲22F	105.4	45.5	15	35	20	40	
301-1ML 25R▲22F	108.8	45.5	15	35	20	40	
301-1ML 27R▲22F	111.1	45.5	15	35	20	40	
301-1ML 32R▲22F	117.2	51.2	15	35	20	40	
301-1ML 35R▲22F	120.1	53	15	35	20	40	
301-1ML 40R▲22F	126.3	55.8	15	35	20	40	
301-1ML 46R▲22F	132.6	58.5	15	35	20	40	
301-1ML 52R▲22F	139.5	62.7	15	35	20	40	

Hydro motor with flange type 23
Model L

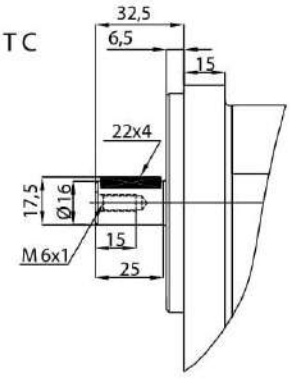
301-1ML ....(R)J 23F

SHAFT J&C&B&T(01)
OUTLET & INLET F
FLANGE 23

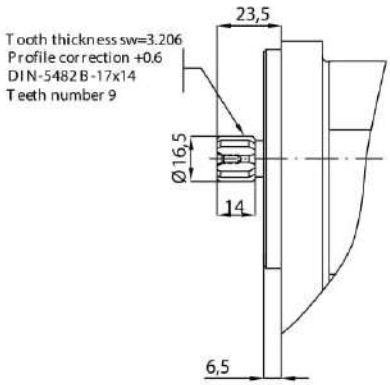
SHAFT J



SHAFTC



SHAFTT



Model	A	B	OUTLET		INLET		Weight
			C	D	E	F	
301-1ML 6R ▲23F	89.5	38.5	15	35	15	40	
301-1ML 7.5R▲23F	91.2	38.5	15	35	15	40	
301-1ML 9R ▲23F	92.9	41	15	35	15	40	
301-1ML 12R▲23F	96.1	43.1	15	35	20	40	
301-1ML 14R▲23F	98.3	43.1	15	35	20	40	
301-1ML 16R▲23F	100.6	47.5	15	35	20	40	
301-1ML 18R ▲23F	102.8	47.5	15	35	20	40	
301-1ML 22R ▲23F	107.4	47.5	15	35	20	40	
301-1ML 25R ▲23F	110.8	47.5	15	35	20	40	
301-1ML 27R▲23F	113.1	47.5	15	35	20	40	
301-1ML 32R▲23F	119.2	53.2	15	35	20	40	
301-1ML 35R▲23F	122.1	55	15	35	20	40	
301-1ML 40R▲23F	128.3	57.8	15	35	20	40	
301-1ML 46R▲23F	134.6	60.5	15	35	20	40	
301-1ML 52R▲23F	141.5	64.7	15	35	20	40	

Hydraulic technical data

Code	KW.	HP	E.Motor	H	P	N	D1	D2	D	Flange Type	B	B1	E	E1	L	K	M
0K160	0.25/0.37	0.33/0.5	71	80	160	110	130	10	25.5	TYPE1	52.5	72	68.5	88	26.2	26.25	M6
1K160	0.25/0.37	0.33/0.5	71	80	160	110	130	10	36.5	TYPE2	71.5	96	90	114	32.25	35.75	M6
0K200	0.55/1.5	0.75/2	80/90	95	200	130	165	13	25.5	TYPE1	52.5	72	68.5	88	26.2	26.25	M6
1K200	0.55/1.5	0.75/2	80/90	95	200	130	165	13	36.5	TYPE2	71.5	96	90	114	32.25	35.75	M6
0K250	2.2/4	3/5.5	110/112	115	250	180	215	13	25.5	TYPE1	52.5	72	68.5	88	26.2	26.25	M6
1K250	2.2/4	3/5.5	110/112	115	250	180	215	13	36.5	TYPE2	71.5	96	90	114	32.25	35.75	M6

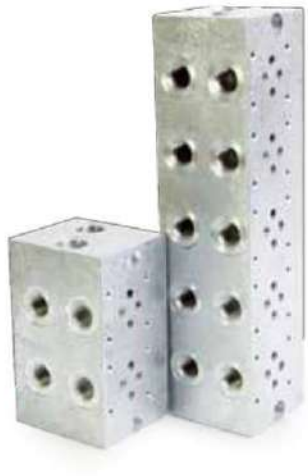
Hydraulic technical data

Code	KW.	HP	E.Motor	H	P	N	D1	D2	D	Flange Type	B	B1	E	E1	L	K	M
1K300	5.5/10	7.5/10	132	135	300	230	265	15	36.5	TYPE2	71.5	96	90	114	32.25	35.75	M6
2K300	5.5/10	7.5/10	132	135	300	230	265	15	50.5	TYPE3	98.5	128	120.5	149.4	42	49.25	M8
KV3003	5.5/10	7.5/10	132	135	300	230	265	15	101.5	TYPE5	146	0	116	174	-	-	M12
2K350	11/22	15/30	160/180	170	350	250	300	19	50.5	TYPE3	98.5	128	120.5	149.4	42	49.25	M8
KV3504	11/22	15/30	160/180	190	350	250	300	19	101.5	TYPE5	146	0	116	174	-	-	M12
KV3505	11/22	15/30	160/180	190	350	250	300	19	127	TYPE5	181	0	147	210	-	-	M16

Hydraulic technical data

Code	Motor Power		Coupling Dimensions								Max. Operation Dia.			Treated Diameter					
														Engine				P	
Type	KW.	HP	L	A1	B	F	E	E1	C	G	D	H	T	D				M	
DK 14	0.25-0.38	0.35-0.5	50	40	32	24	24	24	28	2	14	5	16.5	-	-	-	14	PLO	-
DK 24	1.1-1.5	1.5-2	58	53	44	36	28	28	37	2	24	6	27	-	14	19	24	PLO-PL	-
DK 28	2.2-4	3-5.5	82	67	57	44	40	40	40	2	28	8	32	-	19	24	28	PLO-PL	PLA
DK 42	11-15	15-20	86	88	72	60	42	42	47	2	42	12	47	24	28	38	42	PL	PLA

Hydraulic technical data		
Code	S1M-PS-1/4-C	
Max Flow (l/min / USgpm)	40 (10)	
Max Pressure (bar / PSI)	210 (3000)	
Approx. weight	0.8 (1.76)	
Fluid Viscosity	100-500 mm 2/s	45 to 2000 ssu (6 to 420 cst)
Filtration	ISO Code 16/13	SAE Class 4 or better
Fluid Temperature	-20°C +80°C	-4°C +176°C
Ambient Temperature	-20°C +50°C	-4°C +122°C



Hydraulic technical data		
Code	S2M-PS-3/8-C	
Max Flow (l/min / USgpm)	80 (20)	
Max Pressure (bar / PSI)	210 (3000)	
Approx. weight	0.8 (1.76)	
Fluid Viscosity	100-500 mm 2/s	45 to 2000 ssu (6 to 420 cst)
Filtration	ISO Code 16/13	SAE Class 4 or better
Fluid Temperature	-20°C +80°C	-4°C +176°C
Ambient Temperature	-20°C +50°C	-4°C +122°C

Hydraulic technical data		
Code	S1-M4-1/4-B/V	S2-M4-3/8-B/V
Max Flow (l/min / USgpm)	40 (10)	80 (20)
Max Pressure (bar / PSI)	210 (3000)	
Approx. weight	0.8 (1.76)	
Fluid Viscosity	100-500 mm 2/s	45 to 2000 ssu (6 to 420 cst)
Filtration	ISO Code 16/13	SAE Class 4 or better
Fluid Temperature	-20°C +80°C	-4°C +176°C
Ambient Temperature	-20°C +50°C	-4°C +122°C

Specification		02	03
Working pressure (MPa)	Oil ports P、A、B	31.5	31.5
	Oil ports T	10	10
Max. Flow	(L/min)	80	120
Working fluid		Mineral oil;phosphate-ester	
Fluid temp.	(℃)	-20~70	
Viscosity	(mm^2/s)	2.8~100	
Working voltage (V)	DC	12	24
	AC	110V/50Hz	220V/50Hz
Max.Switch frequency (T/h)		15000 (DC)	7200 (AC)
Insulation grade		IP65	
Weight (kg)	Single solenoid	1.45(DC) 1.4(AC)	5.1(DC) 4.3(AC)
	Double solenoids	1.95(DC) 1.9(AC)	6.7(DC) 5.1(AC)
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638.It is suggested that the minimum filter rating should be β 10≥75.		

Specification		03		04		06	
Model		FWH-03	HFWH-03	FWH-04	HFWH-04	FWH-06	HFWH-06
Max. Working pressure (MPa)	P、A、B Port	28	35	28	35	28	35
	T port (internal leakage of control oil)	10		10		10	
	Y port (external leakage of control oil)	10		10		10	
Minimum control pressure (MPa)		1.0 Spring-Return three-way valve two-way valve		1.2 Spring-Return three-way valve two-way valve		1.3 Spring-Return three-way valve two-way valve	
Maximum control pressure (MPa)		to25					
Max. Flow	(L/min)	160		300		650	
Working fluid		Mineral oil;phosphate-ester					
Fluid temp.	(℃)	-20~70					
Viscosity	(mm^2/s)	2.8~380					
Weight (kg)	Single-head solenoid	6.4		8.5		17.6	
	Double-head solenoids	6.8		8.9		18	
	FH Valve	4		7.3		16.5	
	Adjustor of reversing time	0.8		0.8		0.8	
	Pressure reducing valve	0.5		0.5		0.5	
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638.It is suggested that the minimum filter rating should be β 10≥75.						

Specification		02	03	04	06
Working pressure (MPa)	Port P、A、B	31.5			
	Port T	10			
Max. Flow	(L/min)	60	100	300	450
Working fluid		Mineral oil;phosphate-ester			
Fluid temp.	(℃)	-20~70			
Viscosity	(mm^2/s)	2.8~380			
Weight	(kg)	About 1.4	About 3.3	About 8	About 17
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638.It is suggested that the minimum filter rating should be β 10≥75.				

Specification		02	03
Max. working pressure (MPa)		31.5	
Max. Flow	(L/min)	35	70
Working fluid		Mineral oil;phosphate-ester	
Fluid temp.	(℃)	-20~70	
Viscosity	(mm^2/s)	12~380	
Working press	(MPa)	7 14	21 31.5
Weight	(kg)	1.49 (Single) 2.19 (Double)	3.35 (Single) 4.66 (Double)
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be β 10≥75.		

Model		BYLZ-02-*-*	BYLZ-03-*-*	BYLZ-06-250-*
Maximum pressure (MPa)		31.5		
Maximum flow	(l/min)	63	160	250
Flow range	(l/min)	1-63	1-160	2.5-250
Pressure control	Rated current (mA)	800		
	Coil resistance (Ω)	19.5	43.5	43.5
	P Differential(MPa)	0.6	0.6	0.7
	Hysteresis (%)	<5	<7	<7
	Repeatability (%)	<1		
Flow control	Pressure Range (Mpa)	16:1.2-16 25:1.2-25 31.5:1.2-31.5	16:1.4-16 25:1.4-25	16:1.5-16 25:1.5-25
	Rated current (mA)	800		
	Coil resistance (Ω)	10	10	10
	Hysteresis (%)	<3		
	Repeatability (%)	<1		
	Weight (Kg)	7	16	30
Cleanliness	Filter is recommended for the highest fluid pollution degree;the lowest specific filtration resistance according to ISO 4406 (C) 20/18/15.			

This proportional valve adopts two electrical loops to control pressure and flow of hydraulic system respectively. Using very small pressure drop to track load pressure and control the pump pressure, it is an energy-saving valve.

Specification		03	06
Max. working pressure (MPa)		31.5	
Max. Flow	(L/min)	150	300
Working fluid		Mineral oil;phosphate-ester	
Fluid temp.	(℃)	-20~70	
Viscosity	(mm^2/s)	12~380	
Working press	(MPa)	5 10	20 31.5
Weight	(Kg)	3.4	5.3
Cleanliness	The maximum allowable cleanliness of the oil should be according to 9th degree of Standard NAS1638. It is suggested that the minimum filter rating should be β 10≥75.		

Lift Valve Hydraulic technical data

Normally closea-NC		Max. flow	Rated flow	Max. pressure kgf/cm²	Operating temperathure range	Weight (kg)
NC	NO	20 L/min (5.3 G.P.M)	15L/min (4 G.P.M)	250	-20°C~120°C	1.05 (2.3) including
20						

Hydraulic technical data

Model	Operated pressure kg/cm²	Max. pressure kg/cm²	Weight (kg)
JCS - 02 - H	60 - 350	400	1.1
JCS - 02 - N	30 - 210	250	1.0
JCS - 02 - NL	15 - 60	250	1.0
JCS - 02 - NLL	5 - 60	70	1.0

Hydraulic technical data

Nominal Pressure (MPA)	Max. Pressure (MPA)	Nominal Flow (L/min)	Allowable Back Pressure (MPA)	Hydraulic Oil		
				Temperature range (°C)	Viscosity range (mm²/s)	Filter Precision (μm)
20	25	80	≤ 2.8	-20 ~ +80	10 ~ 400	≤ 10

Hydraulic technical data

TYPE	Displacement ml/r	Rated Flow (l/min)	Max.Input Pressure(Mpa)	Max.cont.Back Pressure(Mpa)	Normal Input Torque (N.m)	Length (mm)	Weight (kg)
BHR 1 / 2 / 3 50	50	5	17.5	2.5	<2.5	140	4.7
BHR 1 / 2 / 3 63	63	6	17.5	2.5	<2.5	141	4.8
BHR 1 / 2 / 3 80	80	8	17.5	2.5	<2.5	142	5.0
BHR 1 / 2 / 3 100	100	10	17.5	2.5	<2.5	145	5.2
BHR 1 / 2 / 3 125	125	13	17.5	2.5	<2.5	148	5.4
BHR 1 / 2 / 3 160	160	16	17.5	2.5	<2.5	153	5.7
BHR 1 / 2 / 3 200	200	20	17.5	2.5	<3	158	6
BHR 1 / 3 250	250	25	17.5	2.5	<3	164	6.5
BHR 1 / 3 280	280	28	17.5	2.5	<3	169	6.8
BHR 1 / 3 315	315	32	17.5	2.5	<3	174	7.1
BHR 1 / 3 400	400	40	17.5	2.5	<3	184	7.8
BHR 1 / 3 500	500	50	17.5	2.5	<5	197	

Hydraulic technical data

TYPE		BRM - 50 BMRW - 50 BMRS - 50	BRM - 80 BMRW - 80 BMRS - 80	BRM - 100 BMRW - 100 BMRS - 100	BRM - 125 BMRW - 125 BMRS - 125	BRM - 160 BMRW - 160 BMRS - 160	BRM - 200 BMRW - 200 BMRS - 200	BRM - 250 BMRW - 250 BMRS - 250	BRM - 315 BMRW - 315 BMRS - 315	BRM - 400 BMRW - 400 BMRS - 400
Displacement		51.7	80.5	100.5	126.3	160.8	200.9	252.6	321.5	401.9
Max.Pressure. Drop(Mpa)	cont.	14	14	14	14	14	14	11	9	7
	int.	17.5	17.5	17.5	17.5	17.5	17.5	14	11	9
	peak.	20	20	20	20	20	20	16	13	11
Max.Torque (N.m)	cont.	93	152	194	237	310	369	380	380	380
	int.	118	189	236	296	378	450	470	470	470
	peak.	135	216	270	338	433	509	540	540	540
Speed.Range(cont.)(r/min)		10 - 775	10 - 750	10 - 600	10 - 475	10 - 375	10 - 300	10 - 240	10 - 190	10 - 160
Max.Flow(cont.)(L/min)		40	60	60	60	60	60	60	60	60
Max.Output.Power(cont.)(Kw)		7	10	10	10	10	8	6	5	4
Weight(kg)		6.5	6.9	7.0	7.3	7.5	8.0	8.5	9.0	11

Hydraulic technical data

TYPE		BM3 - 80 BM3W - 80 BM3S - 80	BM3 - 100 BM3W - 100 BM3S - 100	BM3 - 125 BM3W - 125 BM3S - 125	BM3 - 160 BM3W - 160 BM3S - 160	BM3 - 200 BM3W - 200 BM3S - 200	BM3 - 250 BM3W - 250 BM3S - 250	BM3 - 315 BM3W - 315 BM3S - 315	BM3 - 400 BM3W - 400 BM3S - 400	BM3 - 500
Displacement		80.5	100.5	126.3	160.8	200.9	252.6	321.5	401.9	471.1
Max.Pressure. Drop(Mpa)	cont.	17.5	17.5	17.5	16	16	12.5	12.5	10	10
	int.	20	20	20	20	20	16	16	14	14
	peak.	22.5	22.5	22.5	22.5	22.5	20	20	17.5	17.5
Max.Torque (N.m)	cont.	194	242	303	358	438	440	551	560	636
	int.	218	283	345	429	540	580	625	687	890
	peak.	271	318	373	459	576	700	831	865	1113
Speed.Range(cont.)(r/min)		10 - 810	10 - 750	9 - 600	7 - 470	6 - 375	6 - 300	5 - 240	5 - 180	155
Max.Flow(cont.)(L/min)		65	75	75	75	75	75	75	75	75
Max.Output.Power(cont.)(Kw)		14	16	16	14	14	11	10	8	8
Weight(kg)		9.8	10.0	10.3	10.7	11.1	11.6	12.3	13.1	14

Hydraulic technical data				
Model	*Displacement (cc/r)*	*Max. pressure (bar)*	*Max. Speed (rpm)*	*Max. Flow (Lit/min)*
5	18	210	2700	27
8	27			40.5
11	36			54
12	40	160		60
14	45	140		67.5
17	55	210	2500	82.5
21	67			100.5

Hydraulic technical data				
Model	*Displacement (cc/r)*	*Max. pressure (bar)*	*Max. Speed (rpm)*	*Max. Flow (Lit/min)*
25	81	210	2500	121.5
30	97			145.5
35	112		2400	168
38	121			181.5

Hydraulic technical data				
Model	*Displacement (cc/r)*	*Max. pressure (bar)*	*Max. Speed (rpm)*	*Max. Flow (Lit/min)*
42	138	175	2200	207
50	162			243
60	193			289.5

Hydraulic technical data

Model	Displacement (cc/r)	Max. pressure (bar)	Max. Speed (rpm)	Max. Flow (Lit/min)
PV2R1-6	5.8	210	1800	8.5
PV2R1-8	8			12
PV2R1-10	9.4			14.1
PV2R1-12	12.2			36.8
PV2R 1-14	13.7			20.5
PV2R1-17	16.6			25
PV2R1-19	18.6			28
PV2R1-23	22.7			34
PV2R1-25	25.3			38
PV2R1-28	28.1			42
PV2R1-31	32.0	160		46.5

Hydraulic technical data

Model	Displacement (cc/r)	Max. pressure (bar)	Max. Speed (rpm)	Max. Flow (Lit/min)
PV2R2-26	26.6	210	1800	40
PV2R2-33	33.3			50
PV2R2-41	41.3			62
PV2R2-47	47.2			71
PV2R 2-53	52.5			78.5
PV2R2-59	58.2			87
PV2R2-65	64.7			97
PV2R2-75	74.6			112

Hydraulic technical data

Model	Displacement (cc/r)	Max. pressure (bar)	Max. Speed (rpm)	Max. Flow (Lit/min)
PV2R3-52	52.2	210	1800	78.5
PV2R3-60	59.6			89.5
PV2R3-66	66.3			99.5
PV2R3-76	76.4			114.5
PV2R 3-85	85			127.5
PV2R3-94	93.6			140.5
PV2R3-116	115.6			173.5
PV2R3-125	122.2	160		183.3
PV2R3-136	136			204
PV2R3-153	153			229.5
PV2R4-136	136	175	1800	204
PV2R4-153	153			229.5
PV2R4-184	184			276
PV2R4-200	201			301.5
PV2R4-237	237			355

Hydraulic technical data

Size	Displacement cm^3/r (in^3/r)	Max. Speed (rpm)	Min. Speed (rpm)	Max. Intermittent Pressure bar (psi)	Max. Continuous Pressure bar (psi)	Weight kg (lb)
003	10.8 (0.66)	2800	600	280 (4000)	240 (3500)	15 (34)
005	17.2 (1.05)					
006	21.3 (1.30)					
008	26.4 (1.61)					
010	34.1 (2.08)					
012	37.1 (2.26)					
014	46.0 (2.81)					
017	58.3 (3.56)					
020	63.8 (3.89)					
022	70.3 (4.29)					
025	79.3 (4.84)	2500	600			
028	88.8 (5.42)			210 (3000)	160 (2300)	
031	100.0 (6.10)					

Hydraulic technical data

Size	Displacement cm^3/r (in^3/r)	Max. Speed (rpm)	Min. Speed (rpm)	Max. Intermittent Pressure bar (psi)	Max. Continuous Pressure bar (psi)	Weight kg (lb)
014	47.6 (2.90)	2500	600	240 (3500)	210 (3000)	24 (53)
020	66.0 (4.03)					
024	79.5 (4.85)					
028	89.7 (5.47)					
031	98.3 (6.00)					
035	111.0 (6.77)					
038	120.3 (7.34)					
042	136.0 (8.30)	2200				
045	145.7 (8.89)					
050	158.0 (9.64)			210 (3000)	160 (2320)	
061	190.5 (11.63)	1800		120 (1700)	80 (1160)	

Hydraulic technical data

Size	Displacement cm^3/r (in^3/r)	Max. Speed (rpm)	Min. Speed (rpm)	Max. Intermittent Pressure bar (psi)	Max. Continuous Pressure bar (psi)	Weight kg (lb)
042	132.3 (8.06)	2200	600	240	210	43.3 (95.26)
045	142.4 (8.68)					
050	158.5 (9.66)					
052	164.8 (10.04)					
054	171.0 (10.42)					
057	183.3 (11.17)					
062	196.7 (11.99)					
066	213.3 (13.00)					
072	227.1 (13.84)					
085	268.8 (16.4)	2000	600	90	75	43.3 (95.26)

① General Description

Gear pumps are designed for transforming the mechanical energy to energy of the working liquid in the form of pressure and flow rate. They have simple structure and their costs are relatively low. They have a very wide application in the hydraulic systems due to their benefits in terms of cost, simplicity and availability.

② Pumps Drives:

The pump drive is either direct or indirect (by gear, chains, or toothed belt and V-belt transmissions). Both drives should not impose axial or radial forces on the pump shaft; or else the overload on the pump's parts will lead to primary failure of the pump. Direct drives are preferred if practicable, using a coupling set between the prime mover and the pump; this way there will be no undue side loads. Since indirect drives impose extra side loads on the pump bearing, they should be carefully calculated. Our technical staff is pleased to advise in this regard.

③ Pump Rotation

The rotation of the pump is shown on the back cover of the pump by an arrow from inlet to outlet. This arrow indicates the direction that the pump shaft must be turned so the pump operates. The rotation (clockwise (C), counterclockwise (CC) or reversible (R)) is always mentioned among the characters of the technical code. Please refer to the coding system guide of the catalog.

④ Mounting the Pump

The pumps are mounted on flange with spigot location, using 2 or 4 bolts for fixing. The flanges are various based on the location and application of the pump. The proper seating of the pump should be ensured.

⑤ Suction and Pressure lines

Suitable inlet piping and fittings should be chosen to avoid suction depression. The suction line should be as large as needed and without any sharp bends to minimize the depression at the inlet.

The outlet of pump should normally be protected by a relief valve to control the working pressure. The setting of this valve should be as low as possible so that the pump is relieved once the excess pressure is produced. This minimizes the heating effect on the fluid and reduces the amount of work of pump, thereby saving energy. Outlet pipe size should be chosen to minimize flow velocity to avoid system noise, excess pressure and overheating.

⑥ Oil Reservoir

It is recommended that the reservoir capacity is at least twice as much as the pump output per minute at maximum pump speed. Too small a reservoir will fail to accommodate volume changes leading to the formation of vortex which will introduce air into the system. Oil suction ports also should be well immersed to eliminate vortex formation and as far as possible they should be located well away from the oil-return pipe to avoid recirculation of air bubbles.

⑦ Filtration

Contamination is the enemy of any hydraulic system. Adequate filtration must be provided to ensure that harmful dirt particles are trapped. At least the system should have a suction line strainer and a return line filter.

⑧ Oil

Only good quality, mineral based oil must be used with a viscosity characteristic that will conform to the requirements of the system. For normal temperature operation, SAE20W oils, and for cold climates SAE10W oils are recommended.

⑨ Operating temperature

The pumps are designed to operatebetween 0˚C to 80˚C forcontinuous work, and -20˚C to 100˚C tor intermittent operation.

⑩ Working conditions summary:

- Working liquid: hydraulic oils with viscosity 16-200 mm2/s
- Degree of filtration: 15-25 μ in return line
- Fluid temperature range: -20 to 100°C
- Inlet pressure, absolute: 0.8 to 2.2 bar;
- Fluid velocity (suction line): 0.5 to 1 m/s
- Outlet pressure up to 250 BAR