hydrolina

G1PA

Bent Axis Piston Pump

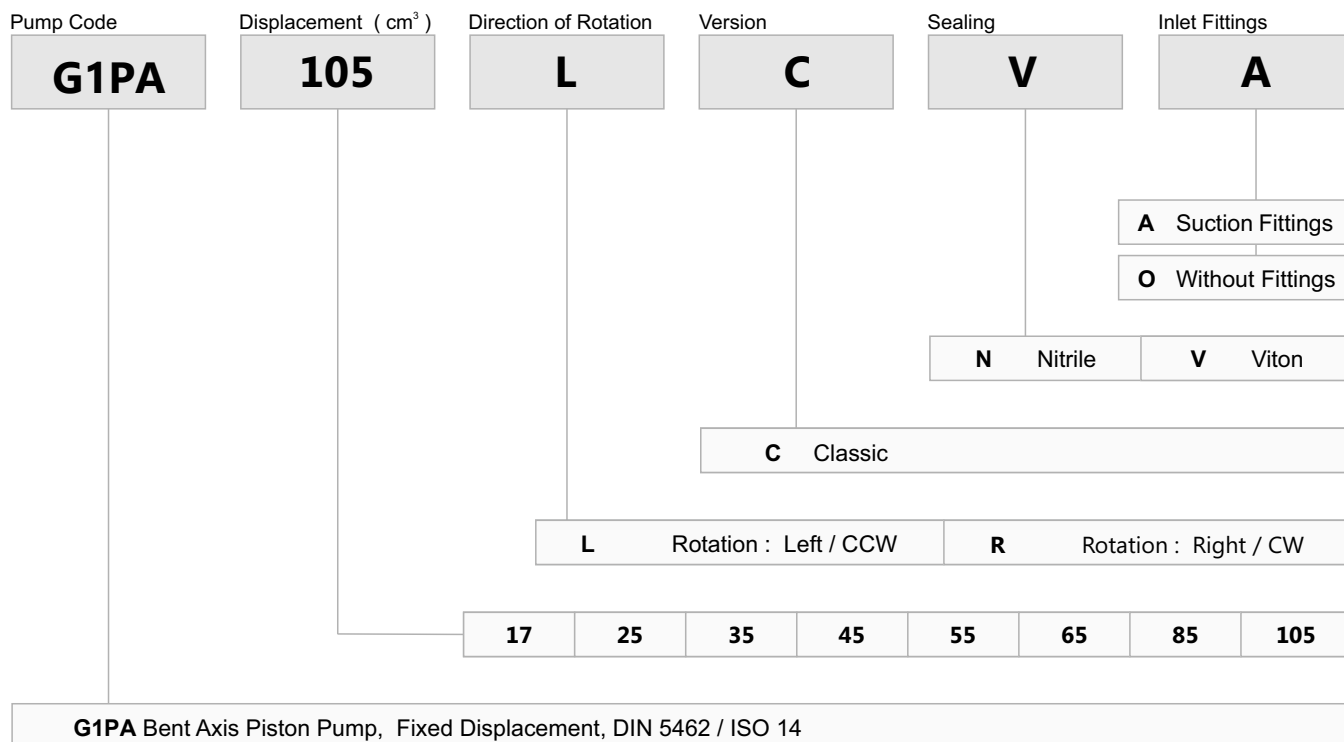**G1PA Pumps have the following advantages ;**

- Default Design,
- Economical Conception,
- High Rotating Speeds,
- High Output Pressure,
- 350 bar Cont. Work. Pressure,
- 400 bar Peak Pressure,
- From 17cc to 105cc,
- Reduced Noise Level,
- Standart Change of Direction of Rotation
- Special Cast Iron with Raw Materials

Contents

Pump Code	Displacement (cm³)	Direction of Rotation	Version	Sealing	Inlet Fittings
G1PA	**105**	**L**	**C**	**V**	**A**

A	Suction Fittings
O	Without Fittings

N	Nitrile	V	Viton

C	Classic

L	Rotation : Left / CCW	R	Rotation : Right / CW

17	25	35	45	55	65	85	105

G1PA Bent Axis Piston Pump, Fixed Displacement, DIN 5462 / ISO 14

Formulas

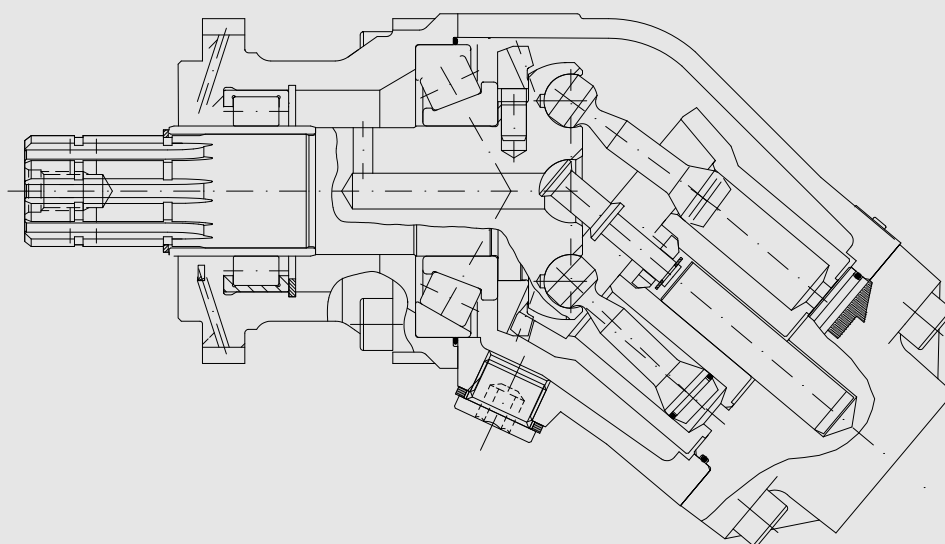| **Pump Output Flow**	GPM	GPM = (Speed (rpm) × disp. (cu. in.)) / 231	GPM = (n ×d) / 231
Pump Input Horsepower	HP	HP = GPM × Pressure (psi) / 1714 × Efficiency	HP = (Q ×P) / 1714 × E
Pump Efficiency	E	Overall Efficiency = Output HP / Input HP	Eoverall = HPOut / HPIn X 100
		Overall Efficiency = Volumetric Eff. × Mechanical Eff.	EOverall = EffVol. × EffMech.
Pump Volumetric Efficiency	E	Volumetric Efficiency = Actual Flow Rate Output (GPM) / Theoretical Flow Rate Output (GPM) × 100	EffVol. = QAct. / QTheo. X 100
Pump Mechanical Efficiency	E	Mechanical Efficiency = Theoretical Torque to Drive / Actual Torque to Drive × 100	EffMech = TTheo. / TAct. × 100
Pump Displacement	CIPR	Dsplcmnt (In.3 / rev.) = Flow Rate (GPM) × 231 / Pump RPM	CIPR = GPM × 231 / RPM
Pump Torque	T	Torque = Horsepower × 63025 / RPM	T = 63025 × HP / RPM
		Torque = Pressure (PSIG) × Pump Displacement (CIPR) / 2π	T = P × CIPR / 6.28

Horsepower for driving a pump : For every 1 hp of drive, the equivalent of 1 gpm @ 1500 psi can be produced.
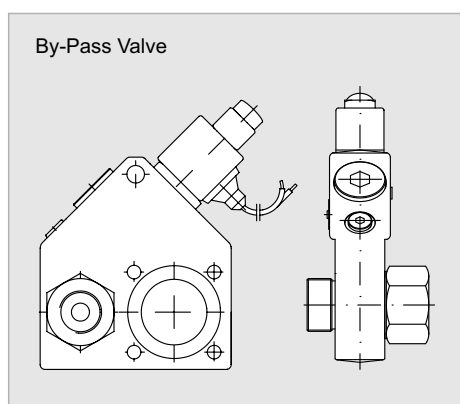
Horsepower for idling a pump : To idle a pump when it is unloaded will require about 5% of it's full rated power

Wattage for heating hydraulic oil : Each watt will raise the temperature of 1 gallon of oil by 1° F. per hour.
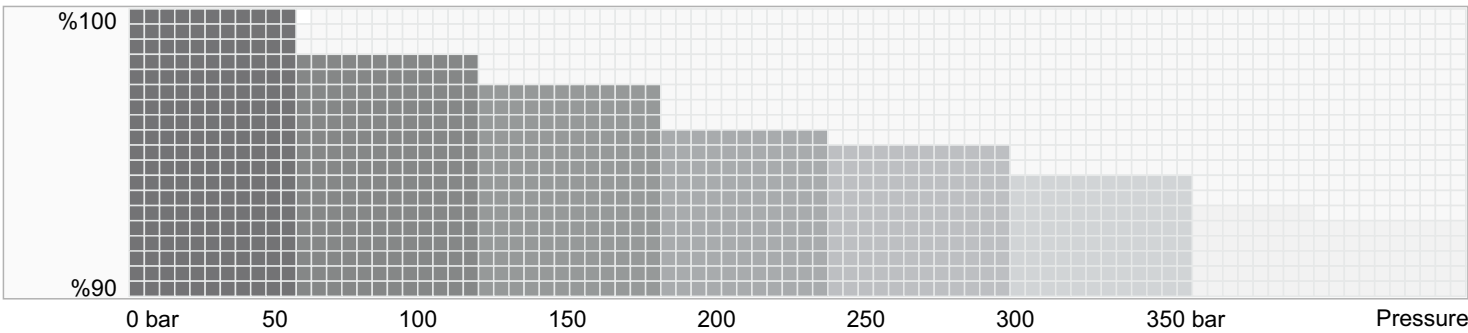
Flow velocity in hydraulic lines : Pump suction lines 2 to 4 feet per second, pressure lines up to 500 psi - 10 to 15 ft./sec., pressure lines 500 to 3000 psi - 15 to 20 ft./sec.; all oil lines in air-over-oil systems; 4 ft./sec.

		17	25	35	45	55	65	85	105
Displacement	*cc*	17,00	25,40	35,20	45,40	55,00	65,20	85,00	105,4
Theoretical oil flow l/min at pump speed	*1000 rpm*	17,00	25,40	35,20	45,40	55,00	65,20	85,00	105,4
	1500 rpm	25,50	38,10	52,80	68,10	82,50	97,80	127,5	158,1
Maximum Pump Speed									
- Continuous	*rpm*	2300	2300	2300	2000	1900	1900	1500	1500
- Limited	*rpm*	3000	2900	2900	2500	2500	2500	2000	2000
Max. Continuous Pressure	*bar*	350	350	350	350	350	350	350	350
Max. Intermit. Peak Pressure	*bar*	400	400	400	400	400	400	400	400
Weight									
- Without inlet fitting	*kg*	8,00	9,00	13,00	14,00	15,00	15,00	17,50	18,00
- With inlet fitting	*kg*	8,35	9,35	13,40	14,40	15,40	15,40	17,90	18,50
Rotation		cw,ccw	cw,ccw	cw,ccw	cw,ccw	cw,ccw	cw,ccw	cw,ccw	cw,ccw
Fluid		Mineral Based Hydraulic Oils							
Inlet		R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ½"	R1 ½"
Outlet		R ¾"	R ¾"	R ¾"	R ¾"	R ¾"	R ¾"	R 1"	R 1"

SHAFT 8x32x35
DIN 5462

R 1/2"

Drive Shaft

18.0 ± 0.05

8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

By-Pass Valve

	17	25	35	45	55	65	85	105
cc	17,00	25,40	35,20	45,40	55,00	65,20	85,00	105,4
A	90,0	95,0	110,0	110,0	113,0	113,0	125,0	125,0
B	120,0	120,0	135,0	135,0	150,0	150,0	160,0	160,0
C	220,0	220,0	235,0	235,0	251,0	251,0	295,0	295,0
D	90,0	90,0	105,0	105,0	115,0	115,0	128,0	128,0
E	140,0	140,0	160,0	160,0	160,0	160,0	190,0	190,0
F	80,0	80,0	100,0	100,0	108,0	108,0	115,0	115,0
K	R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ¼"	R1 ½"	R1 ½"
L	R ¾"	R ¾"	R ¾"	R ¾"	R ¾"	R ¾"	R 1"	R 1"

Efficiency Curves (1000 rpm)

%100

%90

0 bar   50   100   150   200   250   300   350 bar   Pressure

Flow

N (rpm)

3000

2500

2000

1500

1000

500

0

17   25   35   45   55   65   85   105   Dsplcmnt

Quick Calculation

Flow rate
$$Q = \frac{V_g \cdot n \cdot \eta_v}{1000} \ (lpm)$$

Torque
$$M = \frac{1,59 \cdot V_g \cdot \Delta p}{100 \cdot \eta_{mh}} \ (Nm)$$

Power
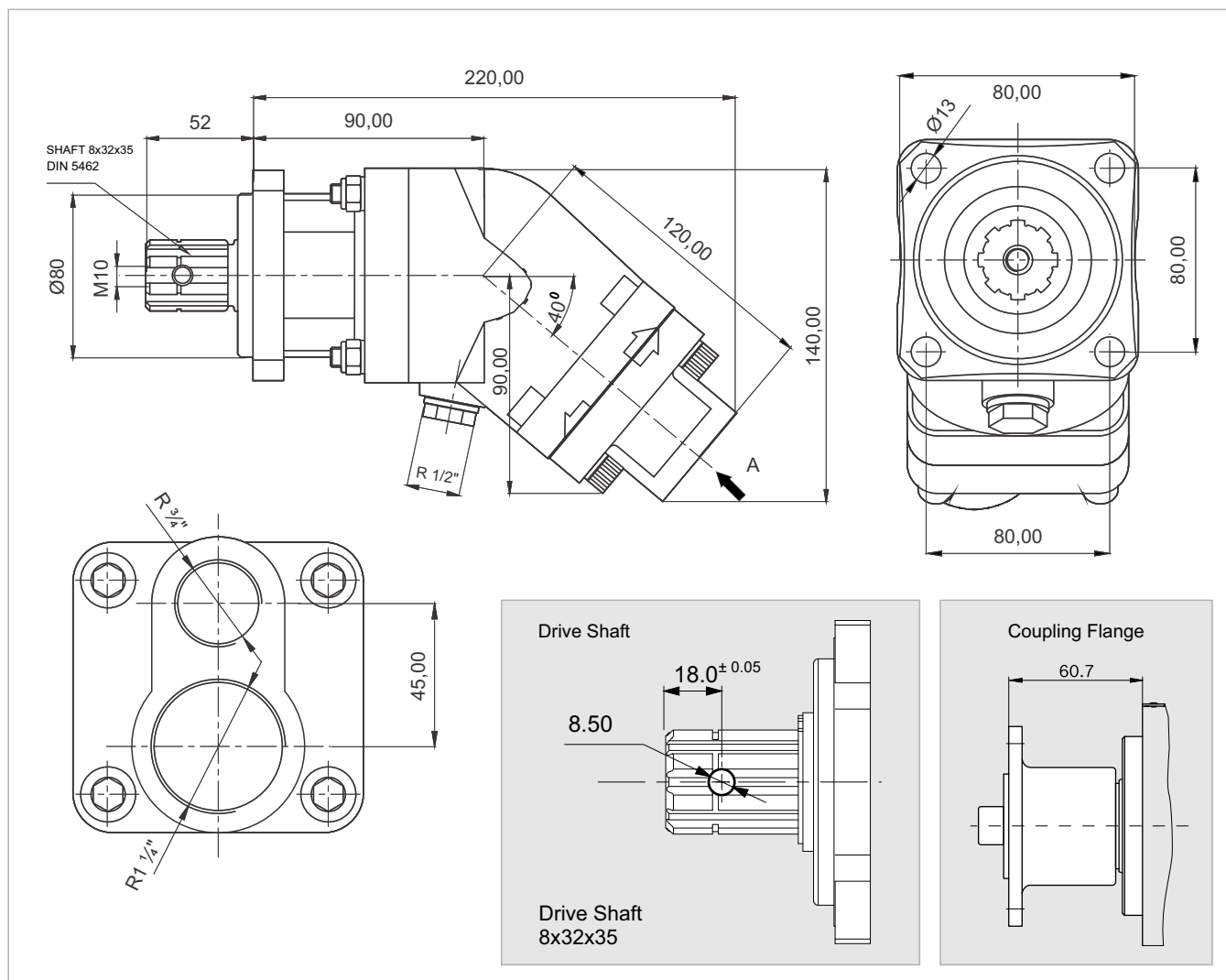$$P = \frac{2\pi \cdot M \cdot n}{60\,000} = \frac{M \cdot n}{9549} = \frac{Q \cdot \Delta p}{600 \cdot \eta_t} \ (kW)$$

V_g = Geom. dicplacement (ccm/rev.) η_v = Volumetric efficiency
Δp = Diff. pressure (bar) η_{mh} = Mechanical-hydraulic efficiency
n = Speed (rpm) η_t = Total efficiency ($\eta_t = \eta_v \cdot \eta_{mh}$)

SHAFT 8x32x35
DIN 5462

220,00
52
90,00
120,00
140,00
90,00
40⁰
Ø80
M10
R 1/2"
A

80,00
Ø13
80,00
80,00

R ¾"
R1 ¼"
45,00

Drive Shaft

18.0 ± 0.05
8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA 17

x 1000 rpm	17,00 cc
x 1500 rpm	25,50 cc
Max. Continuous Pump Speed	2300 rpm
Max. Limited Pump Speed	3000 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	8,00 kg
Weight with inlet fitting	8,35 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

51,00 l/min with 3000 rpm

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

220,00

52   95,00

120,00

40°

90,00

140,00

R 1/2"

A

Ø80

M10

80,00

Ø13

80,00

80,00

R ¾"

R1 ¼"

45,00

Drive Shaft

18.0 ± 0.05

8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA 25

x 1000 rpm	25,40 cc
x 1500 rpm	38,10 cc
Max. Continuous Pump Speed	2300 rpm
Max. Limited Pump Speed	2900 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	9,00 kg
Weight with inlet fitting	9,35 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.

160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

*73,66 l/min
with
2900 rpm*

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

235,00

52 | 110,00

135,00

40°

105,00

160,00

R 1/2"

A

Ø80
M10

100,00
Ø13
100,00
100,00

R ¾"
R1 ¼"
48,00

Drive Shaft

18.0 ± 0.05

8.50

Drive Shaft 8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA *35*

x 1000 rpm	35,20 cc
x 1500 rpm	52,80 cc
Max. Continuous Pump Speed	2300 rpm
Max. Limited Pump Speed	2900 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	13,00 kg
Weight with inlet fitting	13,40 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.

160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

102,08 l/min
with
2900 rpm

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

235,00

110,00

52

Ø80

M10

135,00

40°

105,00

160,00

R 1/2"

A

100,00

Ø13

100,00

100,00

100,00

R ¾"

R1 ¼"

48,00

Drive Shaft

18.0 ± 0.05

8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA *45*

x 1000 rpm	45,40 cc
x 1500 rpm	68,10 cc
Max. Continuous Pump Speed	2000 rpm
Max. Limited Pump Speed	2500 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	14,00 kg
Weight with inlet fitting	14,40 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.

160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

113,50 l/min
with
2500 rpm

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

251,00

52   113,00

150,00

40°

115,00

160,00

Ø80

M10

R 1/2"

A

108,00

Ø13

108,00

108,00

108,00

R ¾"

R1 ¼"

52,50

Drive Shaft

18.0 ± 0.05

8.50

**Drive Shaft
8x32x35**

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA *55*

x 1000 rpm	55,00 cc
x 1500 rpm	82,50 cc
Max. Continuous Pump Speed	1900 rpm
Max. Limited Pump Speed	2500 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	15,00 kg
Weight with inlet fitting	15,40 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.

160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

137,50 l/min
with
2500 rpm

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

251,00
52
113,00
Ø80
M10
150,00
40°
115,00
160,00
R 1/2"
A
108,00
Ø13
108,00
108,00

R ¾"
R1 ¼"
52,50

Drive Shaft

18.0 ± 0.05
8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA 65

x 1000 rpm	65,20 cc
x 1500 rpm	97,80 cc
Max. Continuous Pump Speed	1900 rpm
Max. Limited Pump Speed	2500 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	15,00 kg
Weight with inlet fitting	15,40 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ¼"
Outlet	R ¾"

l/min.
220
200
180
160
140
120
100
80
60
40
20
0

163,00 l/min
with
2500 rpm

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

295,00

52

125,00

160,00

40°

128,00

190,00

Ø80

M10

R 1/2"

A

115,00

Ø13

115,00

115,00

R 1"

R1 ½"

55,00

Drive Shaft

18.0 ± 0.05

8.50

Drive Shaft
8x32x35

Coupling Flange

60.7

Flow, Speed, Pressure List of G1PA *85*

x 1000 rpm	85,00 cc
x 1500 rpm	127,50 cc
Max. Continuous Pump Speed	1500 rpm
Max. Limited Pump Speed	2000 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	17,50 kg
Weight with inlet fitting	17,90 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ½"
Outlet	R 1"

l/min.

170,00 l/min
with
2000 rpm

220
200
180
160
140
120
100
80
60
40
20
0

1000 rpm   2000 rpm   3000 rpm

SHAFT 8x32x35
DIN 5462

295,00
52
125,00
160,00
40°
128,00
190,00
Ø80
M10
R 1/2"
A

115,00
Ø13
115,00
115,00

R 1"
R1 ½"
55,00

Drive Shaft
18.0 ± 0.05
8.50
Drive Shaft
8x32x35

Coupling Flange
60.7

Flow, Speed, Pressure List of G1PA 105

x 1000 rpm	105,40 cc
x 1500 rpm	158,10 cc
Max. Continuous Pump Speed	1500 rpm
Max. Limited Pump Speed	2000 rpm
Max. Continuous Pressure	350 bar
Max. Intermit. Peak Pressure	400 bar
Weight without inlet fitting	18,00 kg
Weight with inlet fitting	18,50 kg
Rotation	CW-CCW
Fluid	Min.B.Hyd.Oil
Inlet	R1 ½"
Outlet	R 1"

l/min.
220
200
180
160
140
120
100
80
60
40
20
0

210,80 l/min
with
2000 rpm

1000 rpm   2000 rpm   3000 rpm

!! CHECK THE ROTATION FROM THE POWER TAKE OFF

!! THE ROTATION DIRECTION OF THE PUMP

| Left | Right |
| Default delivered. | Change rotation. |

MONTAGE :
Before make montage, firstly you should control
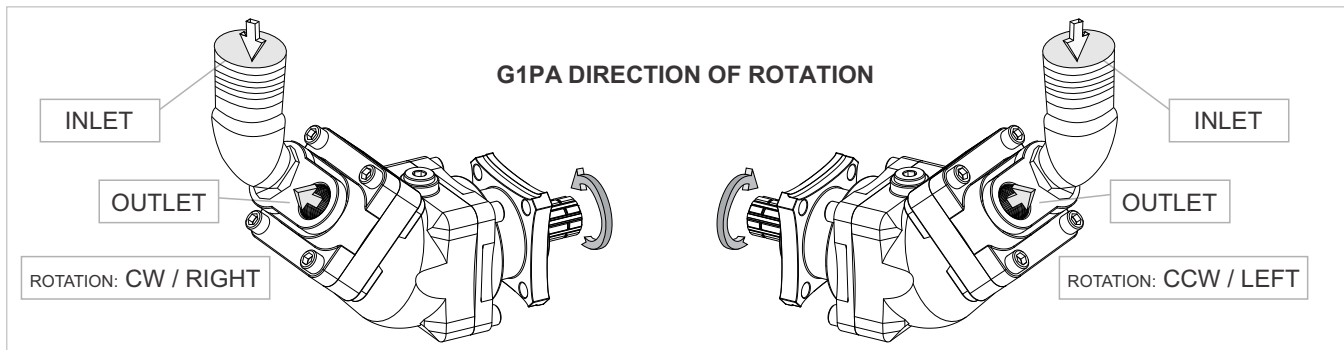to pump's direction of rotation.

The pump's direction of rotation, easily understood
on the entry and exit holes.

Always the hole (which is the big one) should be
connected to suction line.

L Anti-Clockwise   R Clockwise

SOME TYPES OF OIL WHICH CAN USE AS BELOW

	WINTER	SUMMER
BRAND	ISO 32	ISO 46
BP	ENERGOL HLP 32	ENERGOL HLP 46
MOBIL	D.T.E. 24	D.T.E. 25
PETROL OF.	RANDO OIL HD 32	RANDO OIL HD 32
SHELL	TELLUS 32	TELLUS 46

For detailed information about G1PA Bent Axis Pumps, please contact with Technical Department !!!

G1PA DIRECTION OF ROTATION

INLET

OUTLET

ROTATION: CW / RIGHT

INLET

OUTLET

ROTATION: CCW / LEFT

During the assembly, you should attend that the axis in same direction without swaggering. Do not make blow on the pump shaft with a hammer. The importance of oil : The oils which you used are very important for pump's existence. Therefore the pump without filter shouldn't be make montage. Always keep open the oil valve which you outgoing to pump.Before first motion, should be stuff to inside of suction line and pump with oil. In this way, you prevent to work oilless in first rotation.
The il operating temperature should be around 50 º C ~ 60 ° C and should not exceed to 85 º C. In winter SAE 10 W and in summer SAE 20 W type oils should be used.

Pump's Operation : For first motion process, pressure setting of safety valve should be initialized and the pump should operated in idle for a few minutes. During this process you must be sure that all control valves in neutral. In first motion, when the circuit starts to fill up, the oil level shouldn't fall below to the normal. If it is necessary,you should add oil and brougth to normal level. The pressure setting of system should make when the pump was working in normal speed. For this work pressure must promoted slowly.

Pumps of High Pressure Unit's assembly Watchpoints;
Pump input lines should be short, avoided to sharp curves. The air of pump circuit should be emptied well. Pump's seal must be contact with oil. (Therefore if the oil level is low, it's level must increased, if FLANGE was contacted,it is drilled and after that the oil must come to seal.
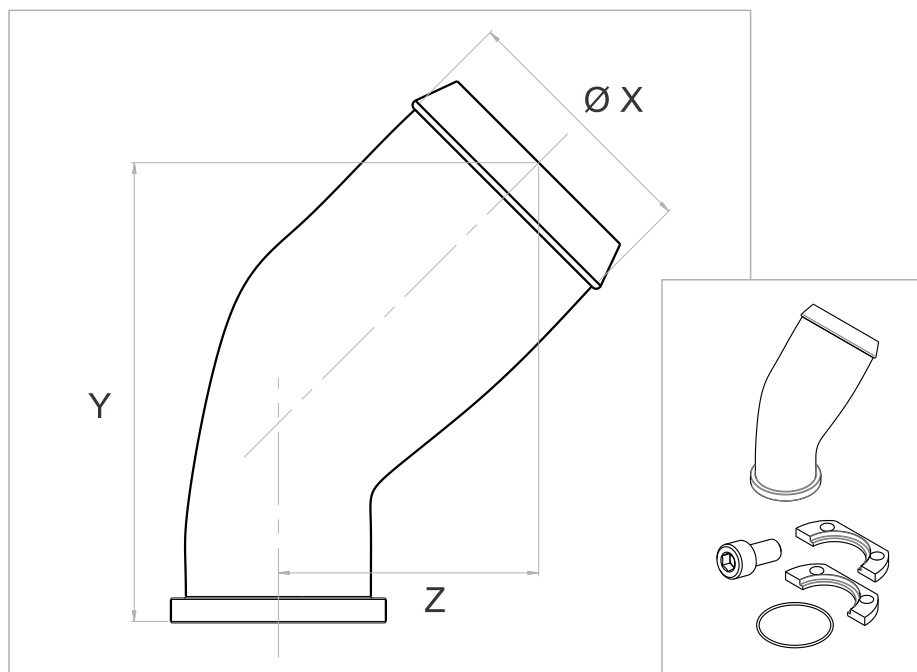
Service :
When you are using to pump,if have any problem or require to repair and maintenance,if we have our dealer in your location or directly you can apply to our company. If you attend to these issues, you benefit in long term from our products and also you will save to work and time. Besides If these issues are respected, when there is a possible error from ourselves, our firm gives you the 1-year warranty.

Important Note :
When you require to repair,dont open to pump please directly send us.If you open to pump,you annul to the warranty.In addition, unlabelled products are not covered by warranty
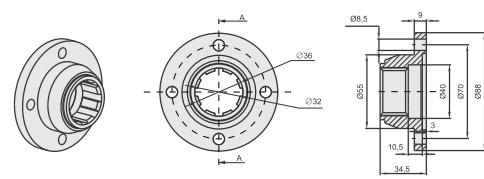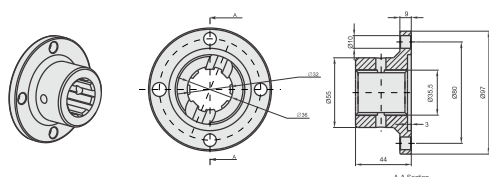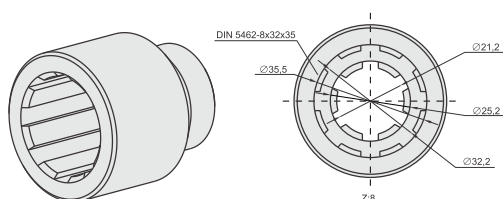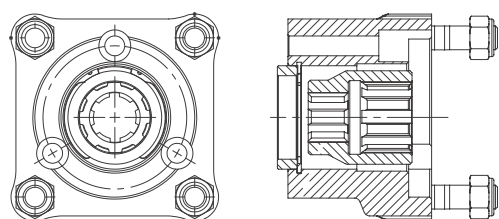
*** Wish you success in your business and thank you for your trust to our company.

For detailed information about G1PA Bent Axis Pumps, please contact with Technical Department !!!

	45° elbow fittings		
Ø hose	1 ½"	1 ¾"	2 ½"
Ø X	39	46	64
Y	91	91	125
Z	46	46	62

	90° elbow fittings		
Ø hose	1 ½"	2"	2 ½"
Ø X	39	51	64
Y	58	64	71
Z	80	80	87

DIN 5462-8x32x35

Ø21,2
Ø35,5
Ø25,2
Ø32,2

Z:8

Inlet Fittings & Installation Parts
- Split Flange
- Seal
- Screw

By-Pass Valves
- 12 V
- 24 V

Hydraulic Adapters
- PTO Piston Pump Adapter
- PTO Gear Pump Adapter
- Long / Short Adapter

Flanges
- 1120 (6 Spline)
- 1120 (8 Spline)
- 1300 (6 Spline)
- 1300 (8 Spline)

Couplars
- 6 x 8 Couplar
- 6 x 8 Couplar (Long)
- 8 x 8 Couplar
- 8 x 8 Couplar (Long)

The G1PA pumps fitted with a rubber front seal.

INSTALLATION

G1PA pumps are direct mounting on the PTO.
Grease the splined shaft before installation. Do not tap the gear wheel/driver into position.

Remove any mounted screws on the pump.
The G1PA was delivered with protective covers and plastic/threaded plugs.
It should be removed before of install.Please check seals and surfaces.If sealing or other surfaces damaged please contact your responsible Service Partner.

Start up and run the pump at medium speed (800 to 1000 rpm at the PTO) until the oil flowing out of the pump. (There are no more air bubbles.)

OIL SUPPLY

Oil and supply line should be clean, and the supply line is airtight.

SUCTION LINE

Connect the suction line, tighten the suction connection bolts in diametric pairs.
Connect the pressure line.

REPAIR

We offers a comprehensive range of services for the repair of our Bent Axis Pumps.
Repairs to the G1PA Bent Axis Pump may only be performed by authorized, skilled and instructed personnel.
Only use original and pre-installed our G1PA spare parts from supplied to Manufacturer..

Tested and pre-installed G1PA pumps successful repair requiring only little time.

SPARE PARTS

The spare parts list and the G1PA pump order specific.
When ordering spare parts, quote the material and complete Ordering code number of the G1PA Bent Axis Pump as well as the right numbers of the spare parts.

RISK OF DAMAGE!

Do not touch the drive shaft of the G1PA Bent Axis Pump
Do not touch sensor, valves and fittings
Do not touch sealing surfaces.

DIMENSIONS & WEIGHTS

		17	25	35	45	55	65	85	105
- Without inlet fitting	kg	8,00	9,00	13,00	14,00	15,00	15,00	17,50	18,00
- With inlet fitting	kg	8,35	9,35	13,40	14,40	15,40	15,40	17,90	18,50

Address all questions regarding spare parts to your responsible
Our Service Partner or the technical service department of the
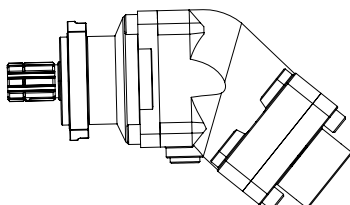manufacture's plant / factory for the G1PA Bent Axis Pumps.

HYDROLINA HYDRAULICS, LTD.

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		Piston **Pumps**		Piston **Motors**

DIN

DIN 5462 / ISO 14
8x32x35
8x32x36
DIN 6885

G2PA **G1PA** **G2PM**

ISO

ISO 3019-2 (4 BOLTS)
DIN 5480 -W25,30,35,40,45
DIN 6885 -Ø20,25,30,35,40,45

G2P **G2M**

SAE

SAE B2 C4 - SAE D
SAE J498b
SAE J 744

G2SE **G2EM**

M2
Fixed Plug-in

DIN 5480 / ISO 3019-2
W30 - W35 - W40
M21 - M22 - M23

G2MS

DIN ISO 14
8x32x36

GPA

P2 Connection M8x125
Woodruff key 3x6,5 NF E
27-653   NF R 124-04
(2 BOLTS)

GPH

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G1PA
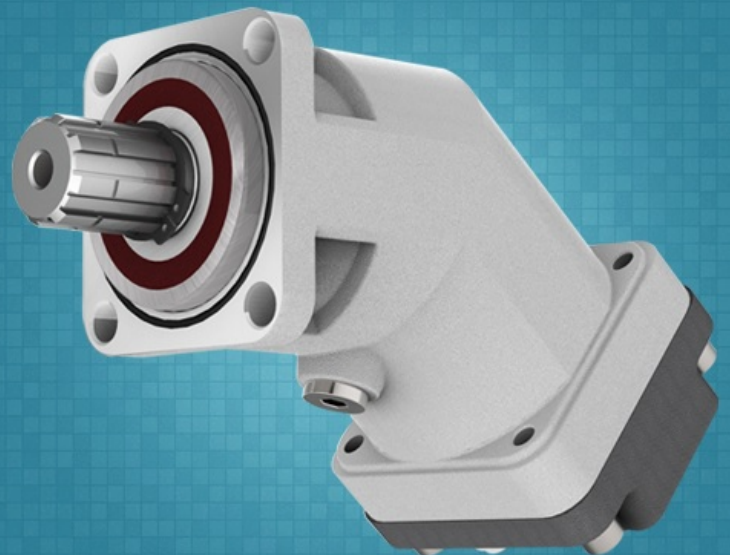

hydrolina *Pumps, Motors, Hydraulic Components...*

| HOME | CORPORATE | PRODUCT LINE | PUMPS | MOTORS | INDUSTRIAL & MOBILE HYDRAULIC | LOCATIONS | ENVIRONMENT | CATALOGS | WorldWide |

G2PA
Bent Axis Piston Pumps

• Compact Design,
• Economical Conception,
• High Rotating Speeds,
• High Output Pressure.

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