

AVIO
HYDRAULICS



HYDRAULIC GEAR
PUMP & MOTOR
“SP SERIES”

ALUMINUM GEAR PUMP GROUP 1

SP11 SERIES



FEATURE

A Group 1 aluminum gear pump is a compact, lightweight hydraulic pump designed to deliver fixed displacement fluid flow. It uses two meshing gears inside an aluminum housing to generate hydraulic pressure and flow

- Compact and light weight
- Cast-iron front cover with aluminum body
- Small size, light duty-low flow
- Fixed displacement gear pump
- Displacement 1.4 - 13.8 cc/rev
- Continuous pressure up to 240 bar
- Intermittent pressure up to 250 bar
- Good heat dissipation

General Specification

PUMP HOUSING DIMENSION : see page : 6-8

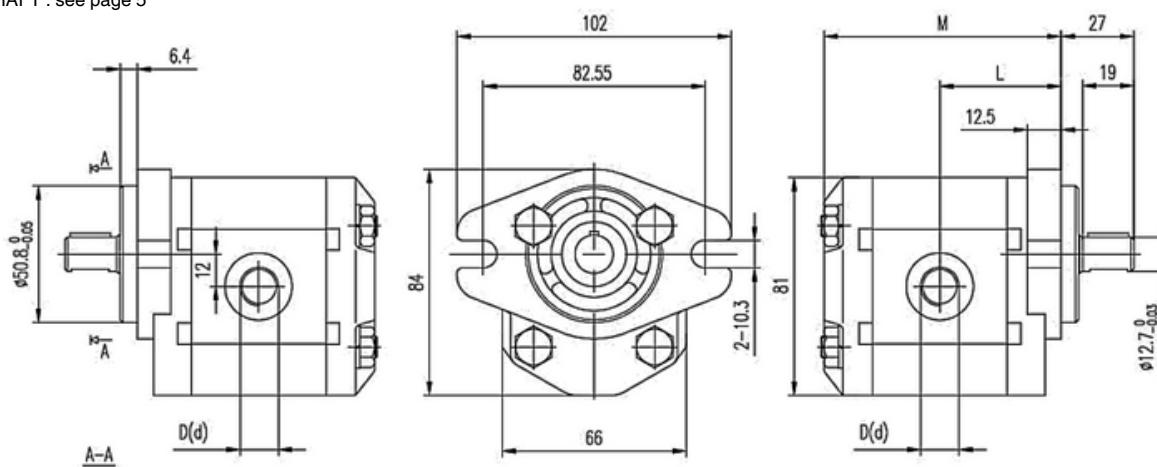
MULTIPLE PUMP COMBINATION : see page 6-8

Displacement	Pressure			N Max	N Min	Inlet	Outlet	Wt (Kg.)
cc/rev	P1	P2	P3	(Rpm)	(Rpm)	(BSPP)	BSPP	Approx.
1.4	240	250	265	3500	800	G1/2"	G3/8"	0.92
2.1	240	250	265	3500	800	G1/2"	G3/8"	1.05
2.8	240	250	265	3500	800	G1/2"	G3/8"	1.22
3.5	240	250	265	3500	800	G1/2"	G3/8"	1.36
4.1	240	250	265	3000	800	G1/2"	G1/2"	1.52
5.2	220	230	245	2800	800	G1/2"	G1/2"	1.72
6.2	220	230	245	2500	800	G1/2"	G1/2"	1.9
7.6	190	200	215	2200	800	G3/4"	G1/2"	2.1
9.3	170	180	195	2000	600	G3/4"	G1/2"	2.2
11	160	170	185	1800	600	G3/4"	G1/2"	2.4
13.8	130	140	155	1500	600	G3/4"	G1/2"	2.5

Standard Dimension

FRONT END : see page 4

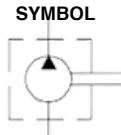
DRIVE SHAFT : see page 5



EXAMPLE OF SP11-SEA AA - KEYED SHAFT 12.7MM

ALUMINUM GEAR PUMP GROUP 2

SP21 SERIES



FEATURE

A Group 2 aluminum gear pump is a compact, lightweight hydraulic pump designed to deliver fixed displacement fluid flow. It uses two meshing gears inside an aluminum housing to generate hydraulic pressure and flow

- *Compact and light weight*
- *Cast-iron front cover with aluminum body*
- *Small size, moderate duty-moderate flow*
- *Fixed displacement gear pump*
- *Displacement 4.0 - 28.0 cc/rev*
- *Continuous pressure up to 260 bar*
- *Intermittent pressure up to 270 bar*
- *Good heat dissipation*

General Specification

PUMP HOUSING DIMENSION : see page : 6-8

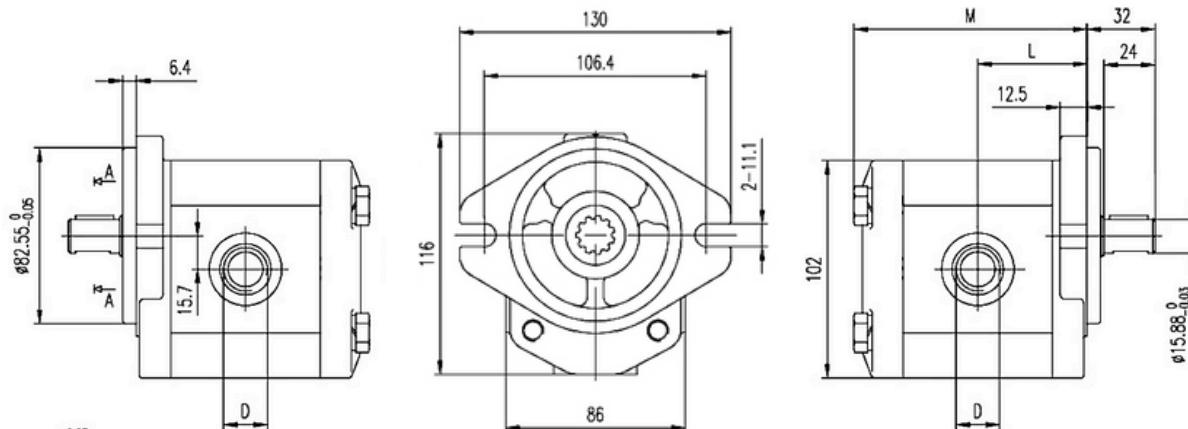
MULTIPLE PUMP COMBINATION : see page 6-8

Displacement cc/rev	Pressure P1	Pressure P2	Pressure P3	N Max (Rpm)	N Min (Rpm)	Inlet (BSPP)	Outlet BSPP	Wt (Kg.) Approx.
4.0	260	270	285	4000	600	G1/2"	G1/2"	3.60
6.0	260	270	285	4000	600	G1/2"	G1/2"	3.70
8.0	260	270	285	3500	500	G1/2"	G1/2"	3.80
10.0	260	270	285	3000	500	G3/4"	G1/2"	3.90
12.0	260	270	285	3000	500	G3/4"	G1/2"	4.00
14.0	240	250	265	3000	500	G3/4"	G1/2"	4.10
16.0	240	250	265	3000	500	G3/4"	G1/2"	4.30
18.0	230	240	255	2500	500	G3/4"	G1/2"	4.40
20.0	210	220	235	2500	500	G3/4"	G1/2"	4.50
22.0	190	200	215	2500	500	G3/4"	G1/2"	4.60
25.0	190	200	215	2000	500	G3/4"	G1/2"	4.70
28.0	160	170	185	2000	500	G1"	G3/4"	4.80

Standard Dimension

FRONT END : see page 4

DRIVE SHAFT : see page 5



EXAMPLE OF SP21-SEA A - KEYED SHAFT 15.88MM

ALUMINUM GEAR PUMP GROUP 3

SP31 SERIES



FEATURE

A Group 3 aluminum gear pump is a compact, good heat dissipation hydraulic pump designed to deliver fixed displacement fluid flow. It uses two meshing gears inside an aluminum housing to generate hydraulic pressure and flow

- Compact and durable
- Cast-iron front cover with aluminum body
- large size, heavy duty-high flow
- Fixed displacement gear pump
- Displacement 20 - 71 cc/rev
- Continuous pressure up to 250 bar
- Intermittent pressure up to 265 bar
- Good heat dissipation

General Specification

PUMP HOUSING DIMENSION : see page : 6-8

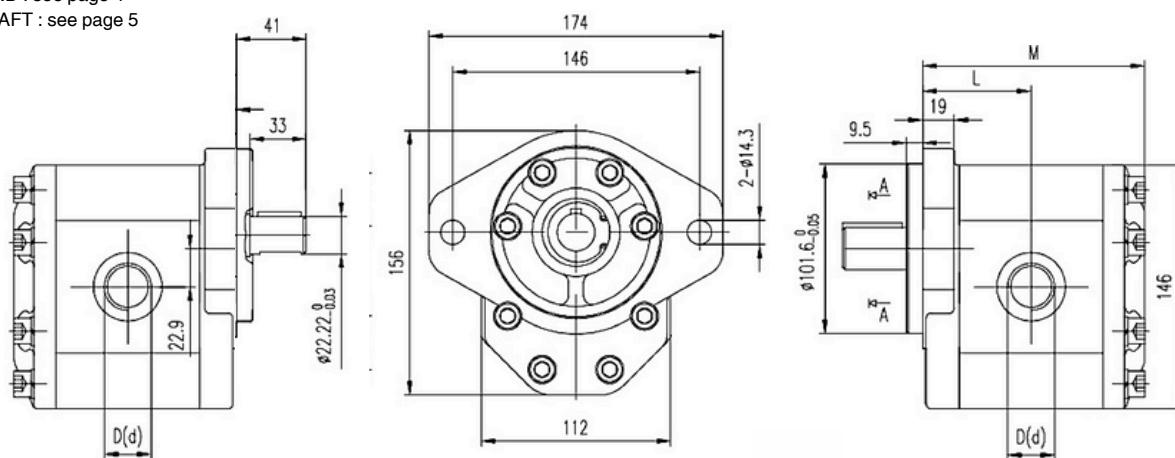
MULTIPLE PUMP COMBINATION : see page 6-8

Displacement	Pressure	N Max	N Min	Inlet	Outlet	Wt (Kg.)		
cc/rev	P1	P2	P3	(Rpm)	(Rpm)	(BSPP)	BSPP	Approx.
20.0	250	265	280	3500	600	G1"	G3/4"	8.70
22.0	250	265	280	3500	600	G1"	G3/4"	8.80
26.0	250	265	280	3000	600	G1"	G3/4"	9.10
33.0	230	250	270	3000	500	G1"	G3/4"	9.40
39.0	230	250	270	3000	500	G1"	G3/4"	9.70
46.0	230	250	270	3000	500	G1-1/4"	G1"	9.80
52.0	220	240	260	3000	500	G1-1/4"	G1"	10.30
55.0	200	230	250	2800	400	G1-1/4"	G1"	10.60
63.0	200	230	250	2800	400	G1-1/4"	G1"	10.90
71.0	180	200	220	2800	400	G1-1/2"	G1-1/4"	11.00

Standard Dimension

FRONT END : see page 4

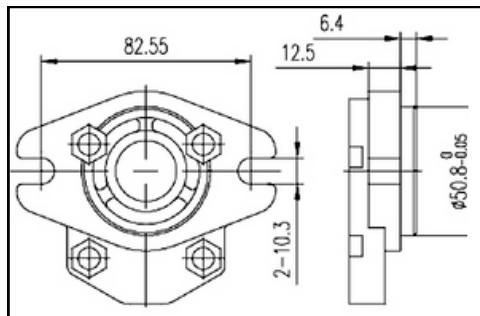
DRIVE SHAFT : see page 5



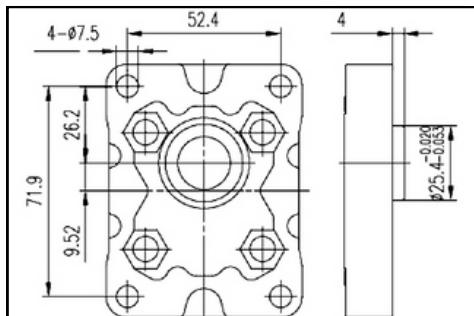
EXAMPLE OF SP31-SEA B - KEYED SHAFT 22.22MM

FRONT END COVER SP SERIES

SP11 SERIES

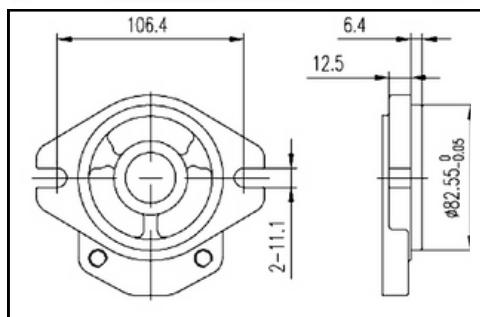


SAE AA Ø50.8MM

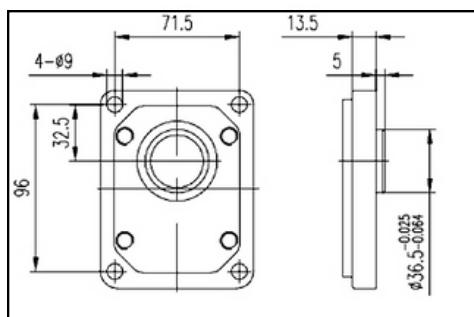


EUROPEAN Ø25.4MM.

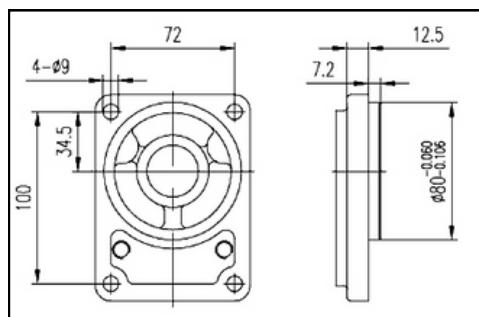
SP21 SERIES



SAE A Ø82.55MM.

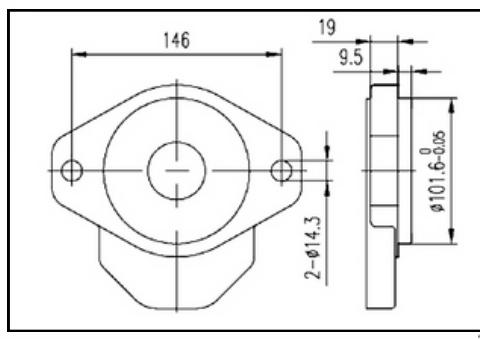


EUROPEAN Ø36.5MM.

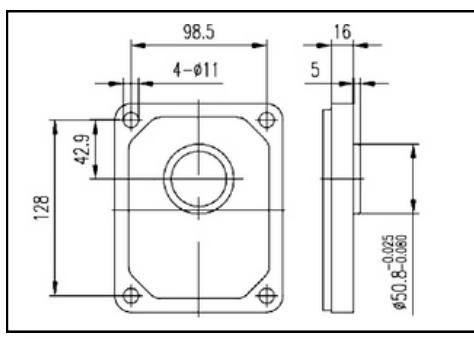


GERMAN BOSCH Ø80MM.

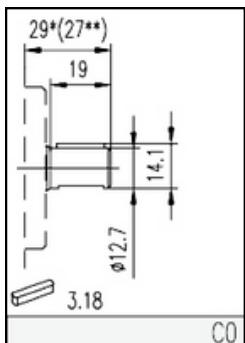
SP31 SERIES



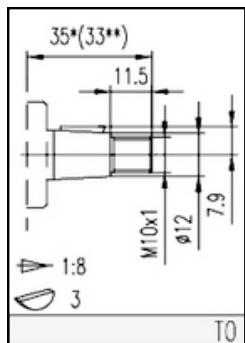
SAE B Ø101.6MM.



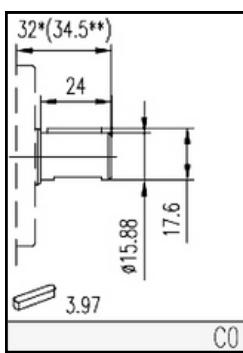
EUROPEAN Ø50.8MM.

SP11 SERIES


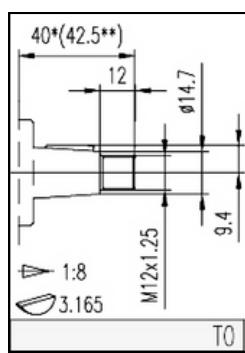
KEYED 12.7MM.



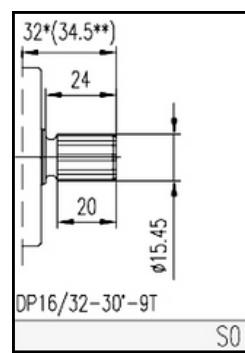
TAPER 1: 8

SP21 SERIES


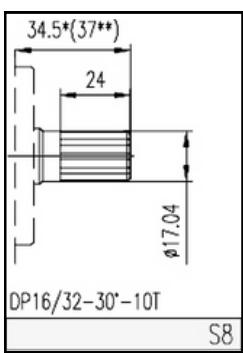
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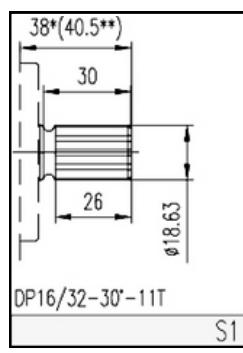
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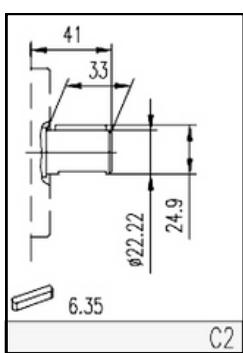
SPLINE 9 T



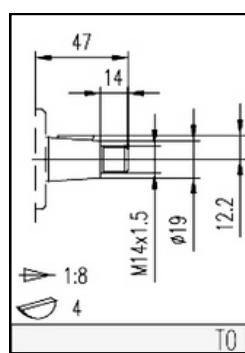
SPLINE 10 T



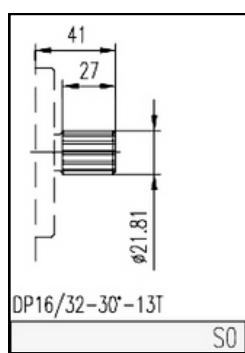
SPLINE 11 T

SP31 SERIES


KEYED 22.22MM.

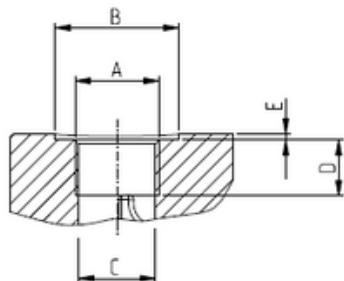


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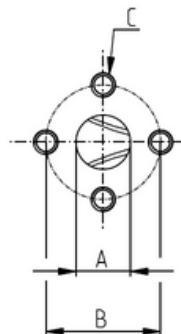
SPLINE 13T

PORTING (BSPP)



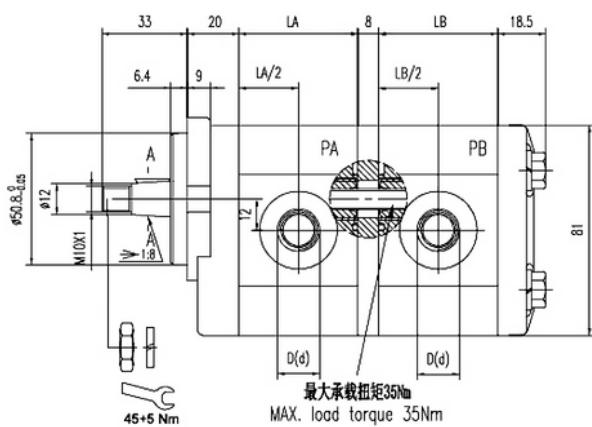
Norminal size (BSPP)	ØA Inch	ØC (mm.)	ØD (mm.)
3/8"	G 3/8	15.0	14.0
1/2"	G 1/2	19.0	17.0
3/4"	G 3/4	24.5	18.0
1"	G 1	30.5	18.0
1-1/4"	G 1-1/4	39.0	22.0
1-1/2"	G 1-1/2	45.0	24.0

PORTING EUROPEAN FLANGE



Norminal size (EUROPEAN)	A (mm.)	B (mm.)	C (mm.)
EA	13	30.0	M6
EB	19	40.0	M8
ED	27	51.0	M10
EF	33	62.0	M12

SP11/SP11 SERIES



SP11 series

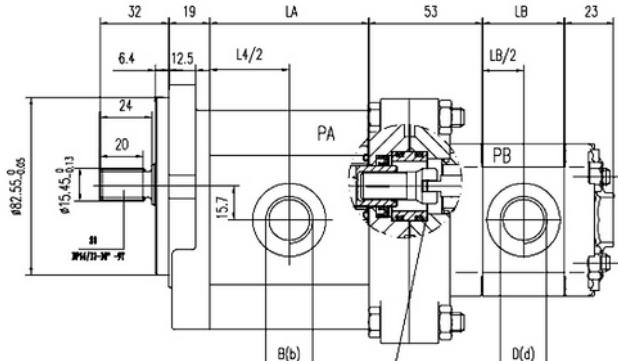
Displacement (cc/rev)	LA-LB (mm.)	LA/2, LB/2 (mm.)
1.4	44	22
2.1	46	23
2.8	48	24
3.5	50	25
4.1	52	26
5.2	56	28
6.2	58	29
7.6	62	31
9.3	64	32
11	66	33
13.8	70	35

FRONT END : see page 4

DRIVE SHAFT : see page 5

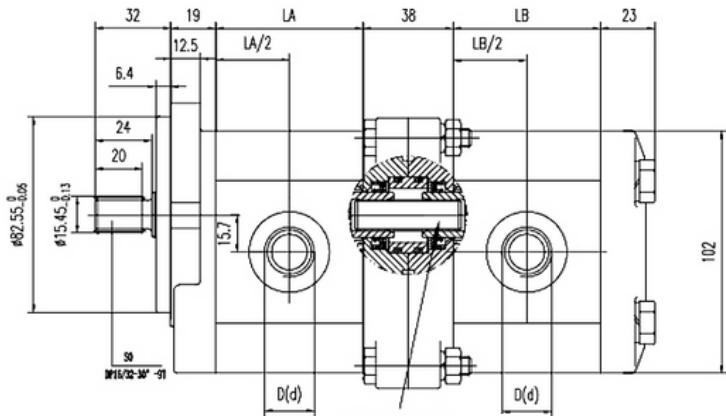
PORT SIZE : see page 6

SP21/SP11 SERIES



MAX. load torque 20Nm

SP21/SP21 SERIES



MAX. load torque 65Nm

SP11 series

<i>Displacement</i> (cc/rev)	<i>LA-LB</i> (mm.)	<i>LA/2, LB/2</i> (mm.)
1.4	44	22
2.1	46	23
2.8	48	24
3.5	50	25
4.1	52	26
5.2	56	28
6.2	58	29
7.6	62	31
9.3	64	32
11	66	33
13.8	70	35

FRONT END : see page 4

DRIVE SHAFT : see page 5

PORT SIZE : see page 6

SP21 series

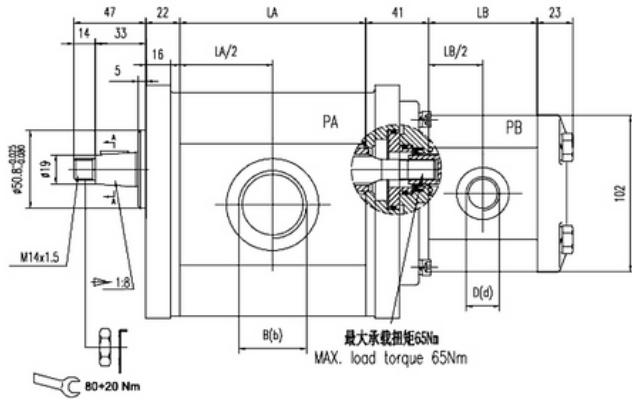
<i>Displacement</i> (cc/rev)	<i>LA-LB</i> (mm.)	<i>LA/2, LB/2</i> (mm.)
4.0	50.8	25.4
6.0	54.2	27.1
8.0	57.4	28.7
10.0	60.8	30.4
12.0	64.2	32.1
14.0	67.8	33.9
16.0	70.8	35.4
18.0	74.2	37.1
20.0	77.6	38.8
22.0	80.8	40.4
25.0	86	43.0
28.0	90.8	45.4

FRONT END : see page 4

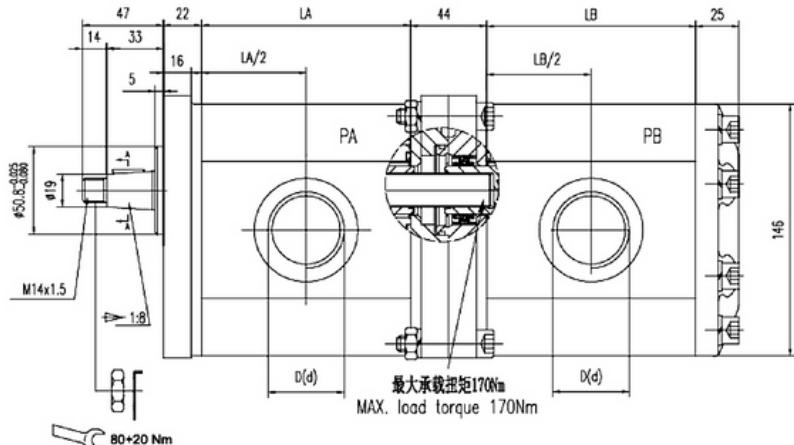
DRIVE SHAFT : see page 5

PORT SIZE : see page 6

SP31/SP21 SERIES



SP31/SP31 SERIES



SP21 series

<i>Displacement</i> (cc/rev)	<i>LA-LB</i> (mm.)	<i>LA/2 , LB/2</i> (mm.)
4.0	50.8	25.4
6.0	54.2	27.1
8.0	57.4	28.7
10.0	60.8	30.4
12.0	64.2	32.1
14.0	67.8	33.9
16.0	70.8	35.4
18.0	74.2	37.1
20.0	77.6	38.8
22.0	80.8	40.4
25.0	86	43.0
28.0	90.8	45.4

SP31 series

<i>Displacement</i> (cc/rev)	<i>LA-LB</i> (mm.)	<i>LA/2 , LB/2</i> (mm.)
20.0	81.2	40.6
22.0	83.2	41.6
26.0	86.2	43.1
33.0	92.2	46.1
39.0	99.2	49.6
46.0	105.2	52.6
52.0	111.4	55.7
55.0	113.2	56.6
63.0	121	60.5
71.0	128	64.0

FRONT END : see page 4

DRIVE SHAFT : see page 5

PORT SIZE : see page 6

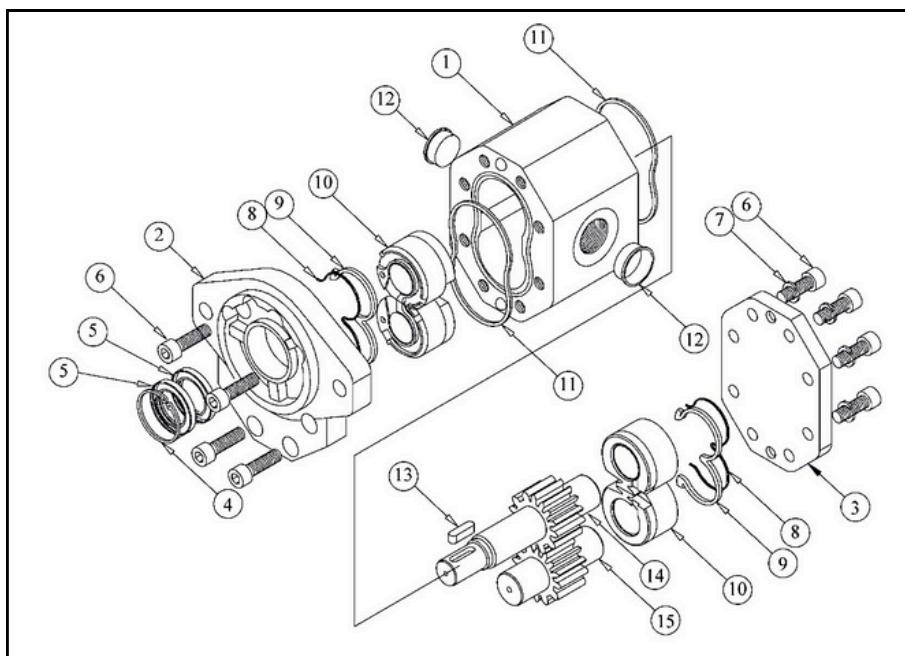
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DRIVE SHAFT : see page 5

PORT SIZE : see page 6

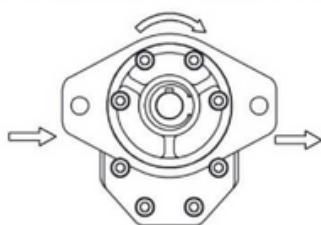
EXPLODE VIEW

SP SERIES

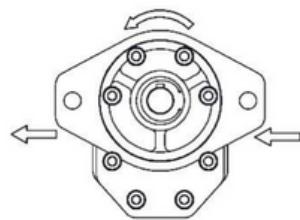
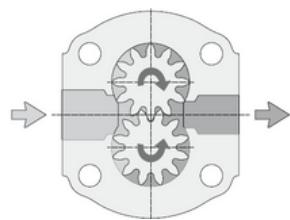


ITEM	DESCRIPTION
1	Gear housing
2	Front end cover
3	Rear end cover
4	Snap ring
5	Shaft seal
6	bolt
7	Spring washer
8	Back up seal
9	Pump seal
10	Trust plate
11	Gasket
12	Cap
13	key
14	Drive shaft
15	Driven shaft

Rotation Direction of Gear pump



Clockwise



Anti-clockwise

Definition of rotation direction looking at the drive shaft view

AIVIO

HYDRAULICS

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