PG331

Cast Iron Gear Pumps

SECTION B - Dealer management

E0.152.0913.05.00/IM00

Figure 1
Standard configuration of single pump

PG331, prearranged for Distributors.
For Technical Data and Details, please refer to the General Catalogue of PG330 Cast Iron Pump.

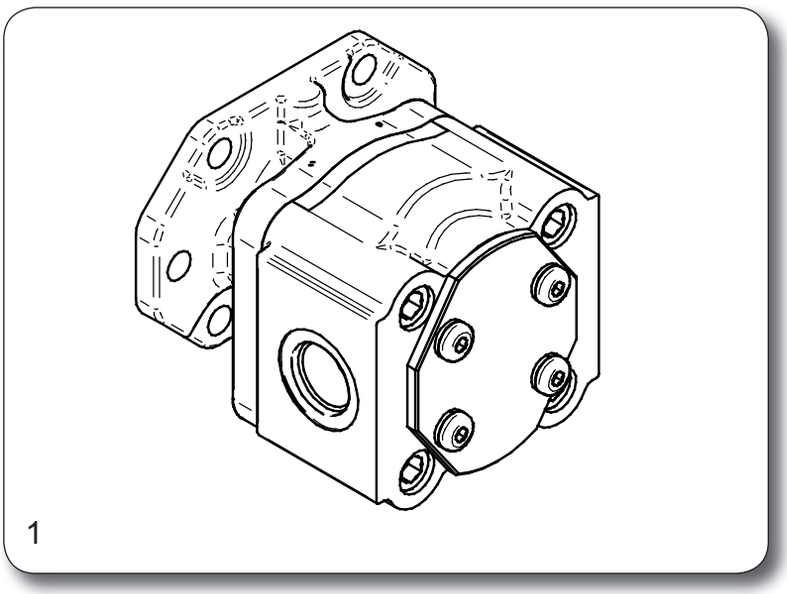


Figure 2
The following parts are always assembled on the rear-side:

1. 3x O-Rings (2x 799102100 – 1x 799102500)
2. 1x Cover Plate (code 315203501)
3. 4x Washers DIN7980 (Code 795245851)
4. 4x Screws M10x25 DIN6912 (Code 790867731)

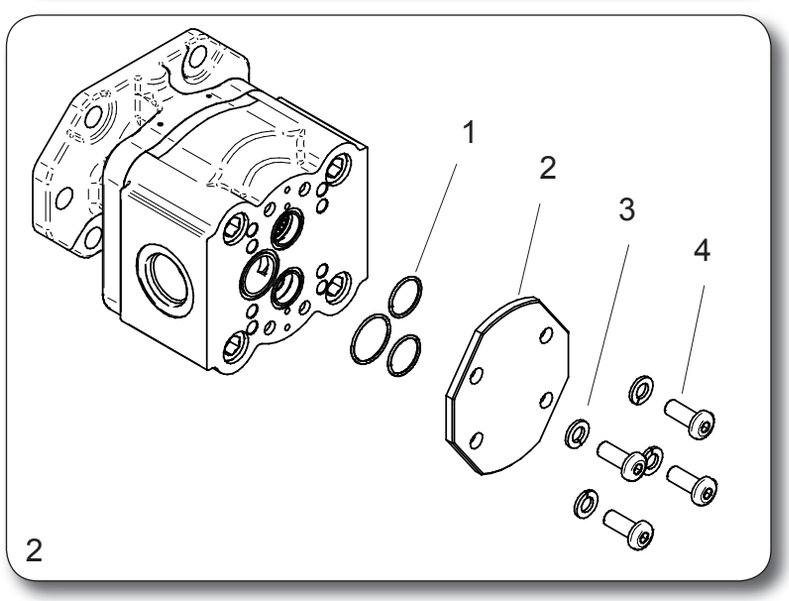
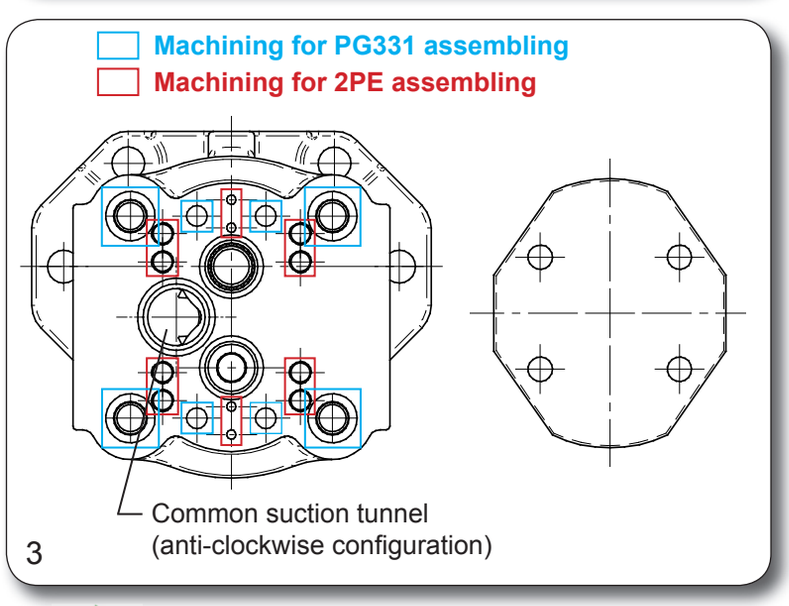
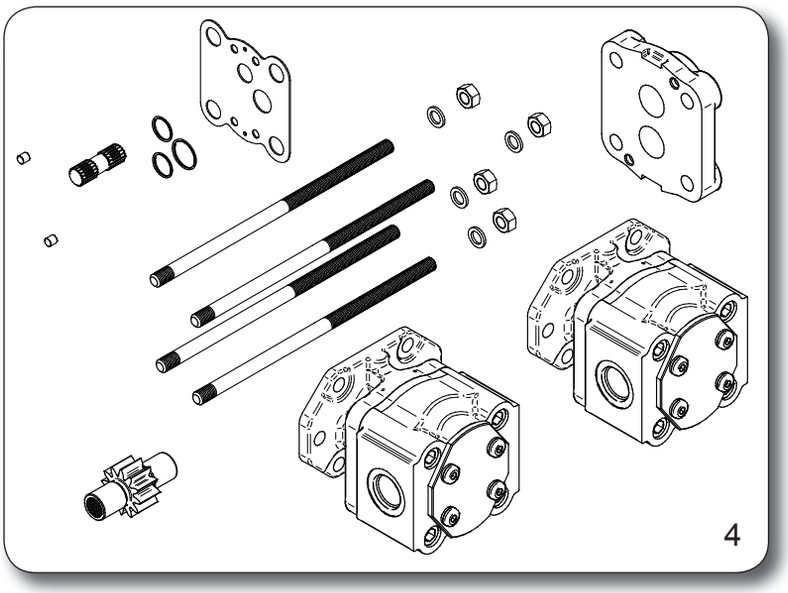


Figure 3
Thanks to the provided machining, the following modifications are always possible:

- Assembling of 2nd PG331 Stage
- Assembling of 2nd 2PE Stage

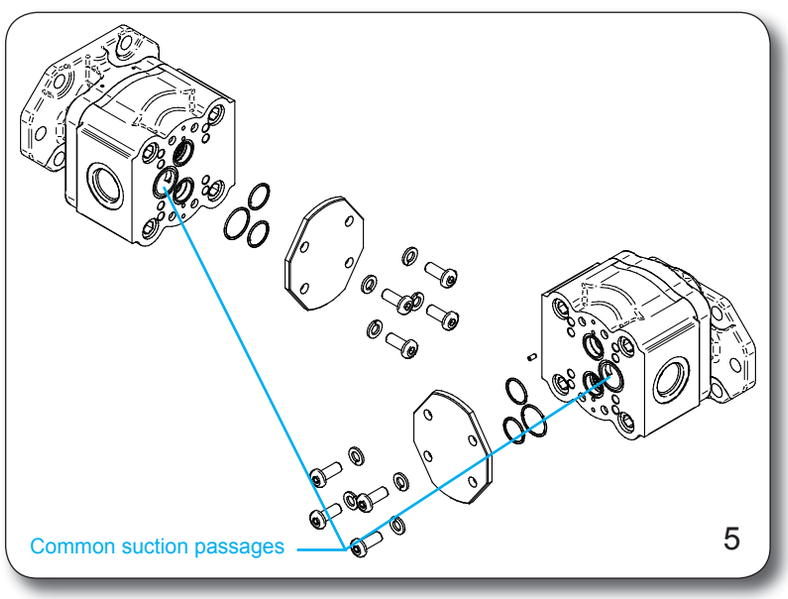
PLEASE NOTE: clockwise or counter-clockwise directions are possible, for both PG331 and 2PE 2nd stages





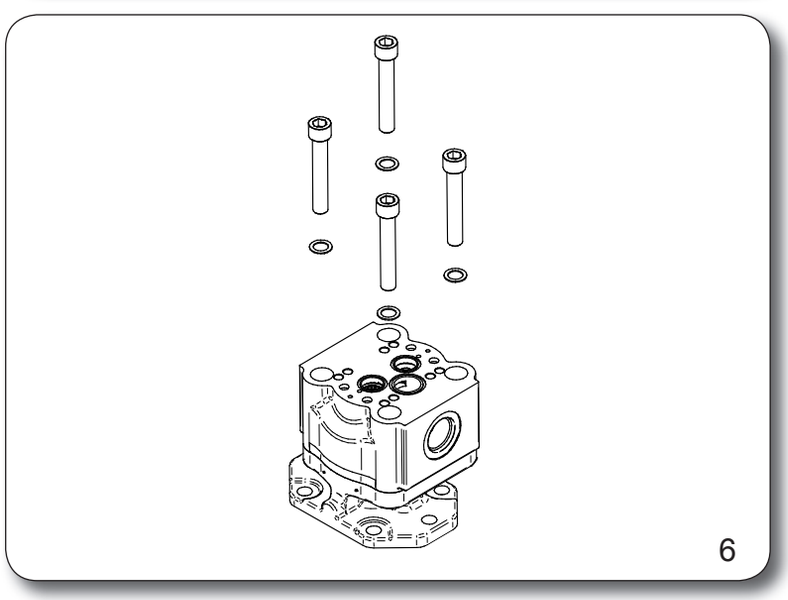
Step 1 (Figure 4)
Parts needed:

- 2x Single Pumps PG331**S with requested cc Volume
- 1x Assembling Kit (code R15200002, Tie Rods included)
- 1x Rear Cover (Code 315003501)
- 1x Drive Shaft for Rear Pump with same cc/rev (if available on stock)



Step 2 (Figure 5)
Pumps preparation

- Disassemble the cover plate from both pumps
  - PLEASE NOTE:
    - during assembling of double pumps, the Common Suction passages must always be aligned
    - In this case, the Rear Pump must be rotated upside down, in order to have the common suction passage aligned with the first stage

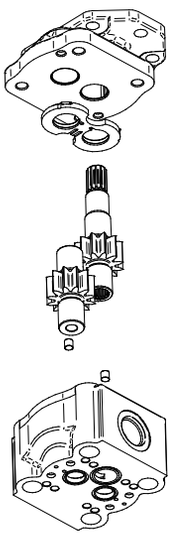


Step 3 (Figure 6)
Front Pump Preparation

- lock the Front Pump in vertical position
- unscrew and remove the four M14 screws and washers, but do not disassemble the pump yet

Step 4 (Figure 7-8)
Rear Pump Preparation

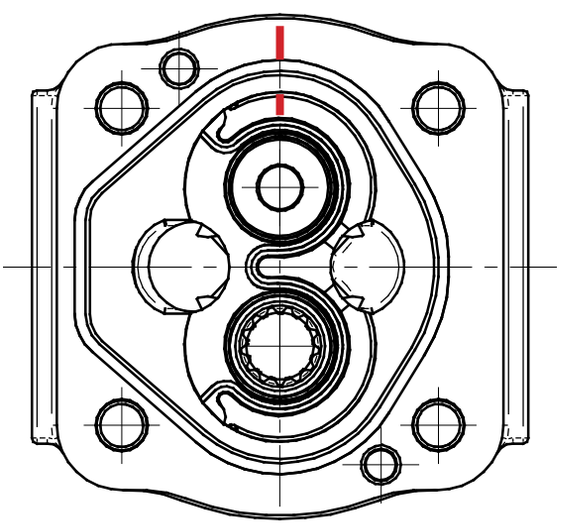
- as just made for Front Pump, unscrew and remove the four M14 screws and washers
- turn the pump and lay it on a flat and clean surface
- Remove the front flange, but do not disassemble shaft seals and snap rings
- Mark the position of the thrust plate, referring to the pump body (Figure 8)
- Remove the thrust plate, together with his Seals
- Remove both Drive and Driven shafts



7

Step 4 (Figure 8)
Rear Pump Preparation

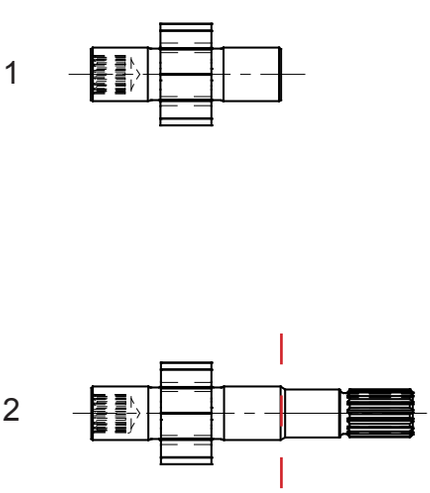
- PLEASE NOTE:
- After assembly is completed, the thrust plate must be relocated exactly in the same position



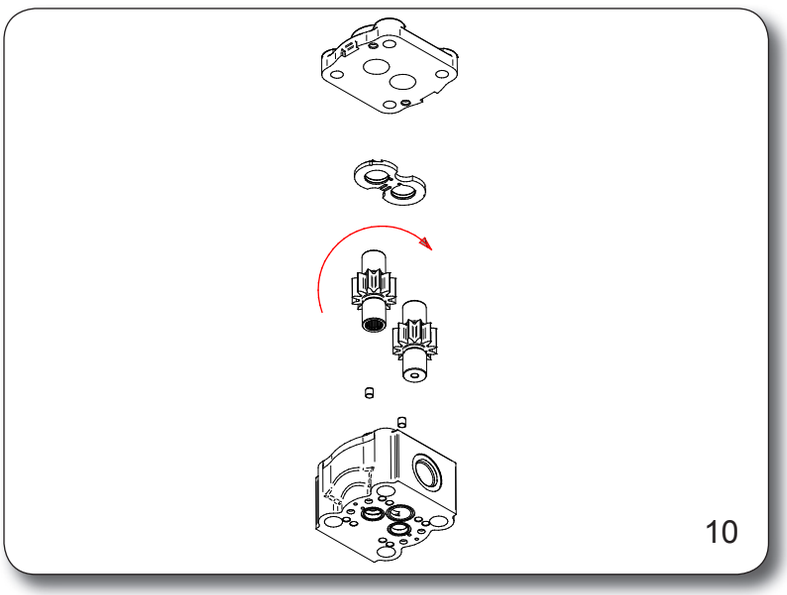
8

Step 5 (Figure 9)
Drive Shaft for Rear Pump

1. Take the right cc/rev Drive Shaft for Rear Pump (1) from Stock (see Appendix “A” for ordering codes)
2. If not available, cut the Drive Shaft (2), just removed from Rear Pump, follow the cutting instructions of Appendix “A”



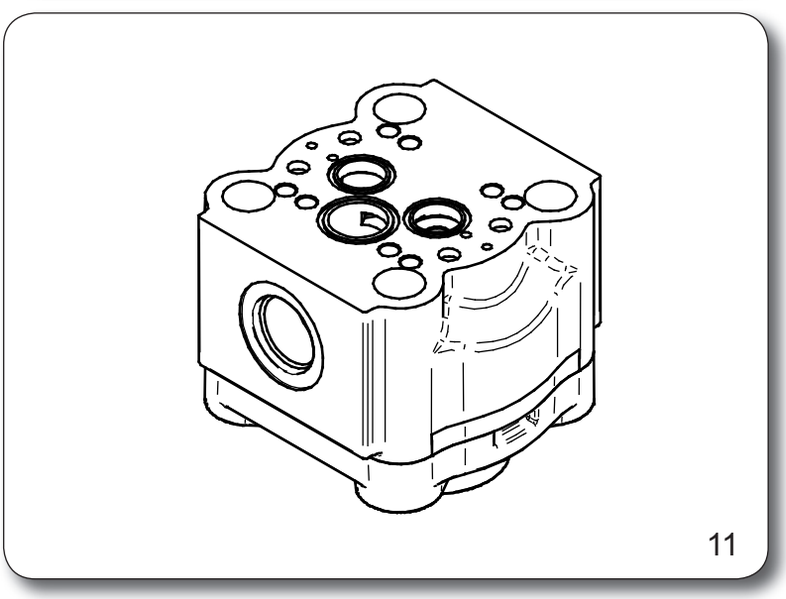
9



10

Step 6 (Figure 10)
Rear Pump Assembly

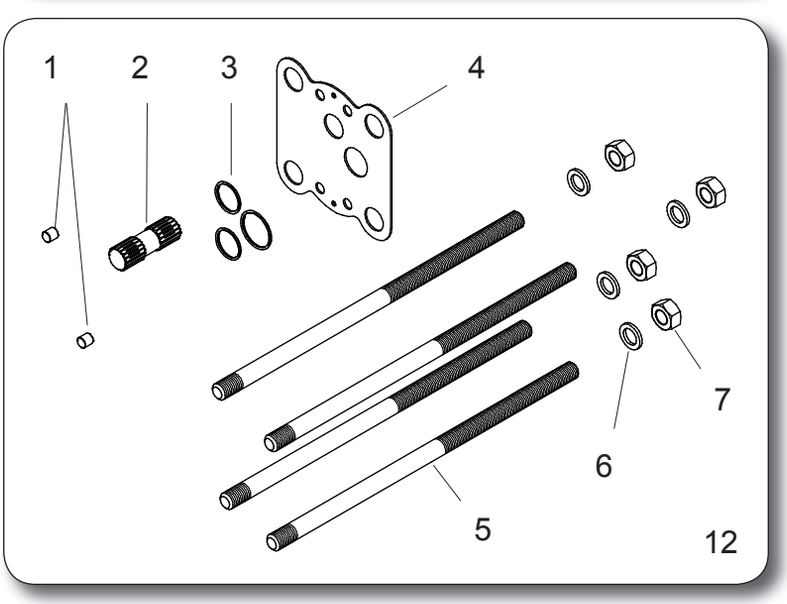
- reverse the shaft positions and mount the drive shaft for Rear Pump
- Insert the reference pins, if not already in place



11

Step 6 (Figure 11)
Rear Pump Assembly

- Place the Rear Cover in the right position on the pump body, with the help of the reference pins
- Turn the pump, with the Rear Cover laying on a flat surface



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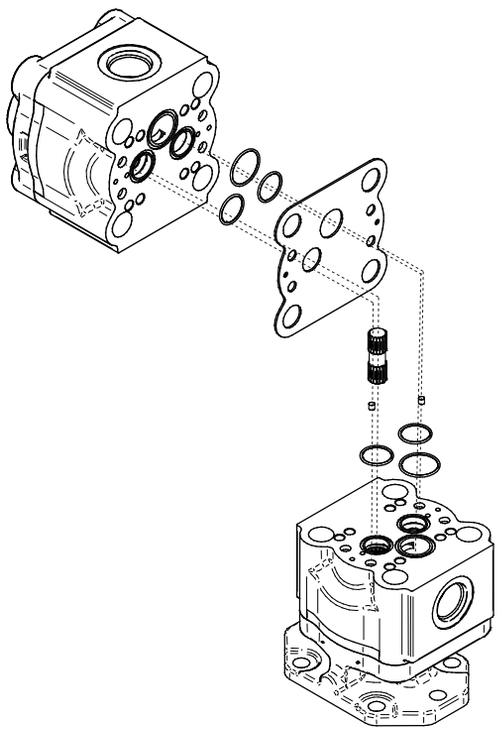
Step 7 (Figure 12)
Assembling Front and Rear Pump together

The Assembling Kit includes (Figure 12)

1. 2x Reference Pins (code 796323200)
2. 1x Coupling Shaft (code 315202501)
3. 3x O-Rings (2x 799102100, 1x 799102500)
4. 1x Middle Plate (code 315203102)
5. 4x Tie Rods (code 315214901)
   - PLEASE NOTE: one of its ends has shorter thread, to be screwed into the Front Flange
   - the other end, with longer Thread, has to be cut to the right length (see Appendix ”B” for cutting instructions)
1. 4x Washers (code 795252851)
2. 4x Nuts (code 795109221)

Step 7 (Figure 13)
Assembling Front and Rear Pump together

Figure 13
- On the previously locked Front Pump (Front Flange down):
  a. place the reference pins
  b. substitute the O-rings if necessary
  c. place the middle plate
  d. Insert the coupling shaft
- Be careful not to damage the pins when installing the rear pump on the front pump



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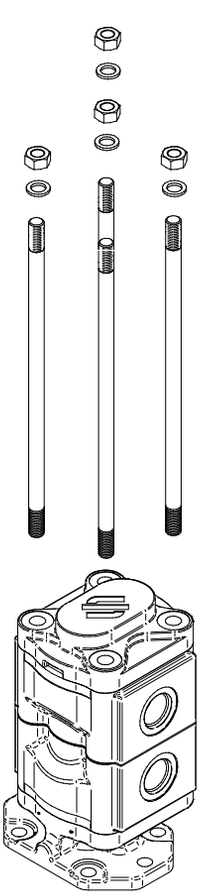
Step 8 (Figure 14)
Tie Rods Insertion

- Put the previously cut tie rods through the pumps
- Screw them into the front flange
- Place Washers and Nuts
- Screw Nuts, on back side of Double Pump, up to 180 Nm Torque.

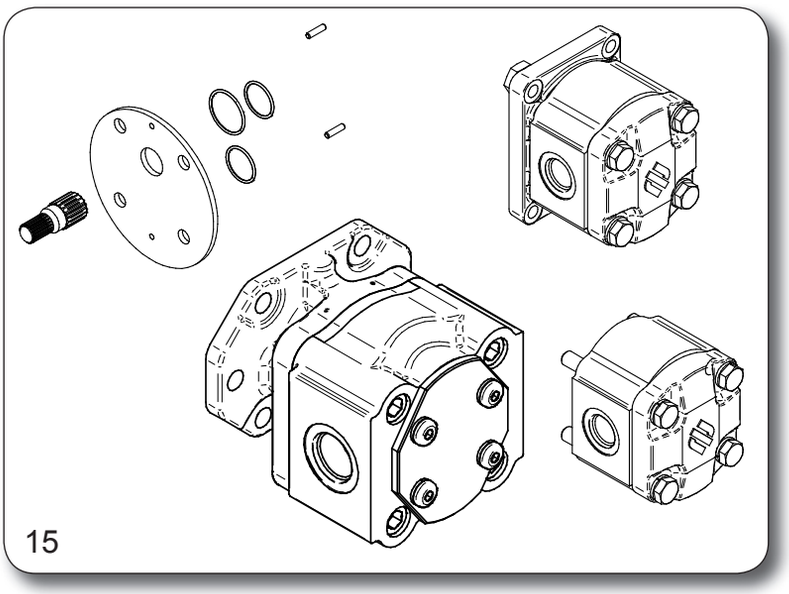


14

HOW TO MOUNT A DOUBLE PUMP PG331/2PE-S COUNTER-CLOCKWISE, STARTING FROM 1 SINGLE PUMP PG331S COUNTER-CLOCKWISE AND 1 SINGLE PUMP 2PE COUNTER-CLOCKWISE

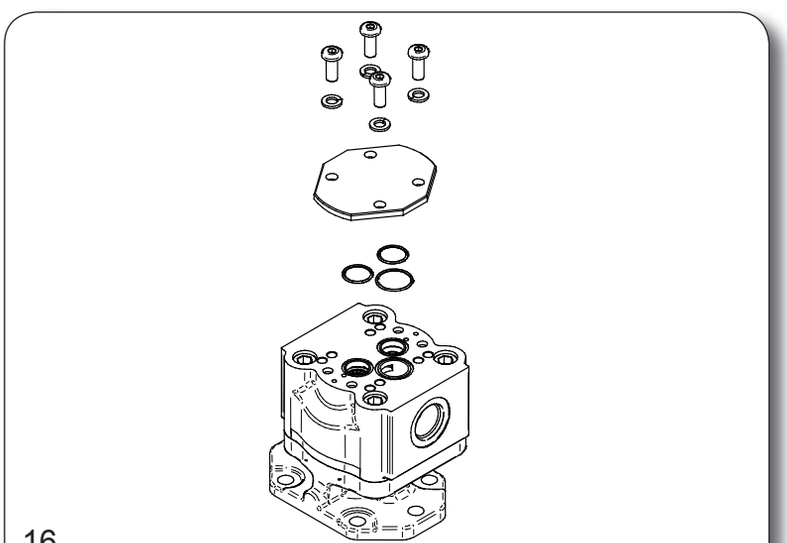
Step 1 (Figure 15)
Parts needed:

- 1x Single Pump PG331**S
- 1x Single Pump 2PE**S, ready for PG331 assembly
  - Or, if not available on stock, 1 standard single Pump 2PE (see Figure 18)
- 1x Assembling Kit PG331/2PE (code R15200001)


15

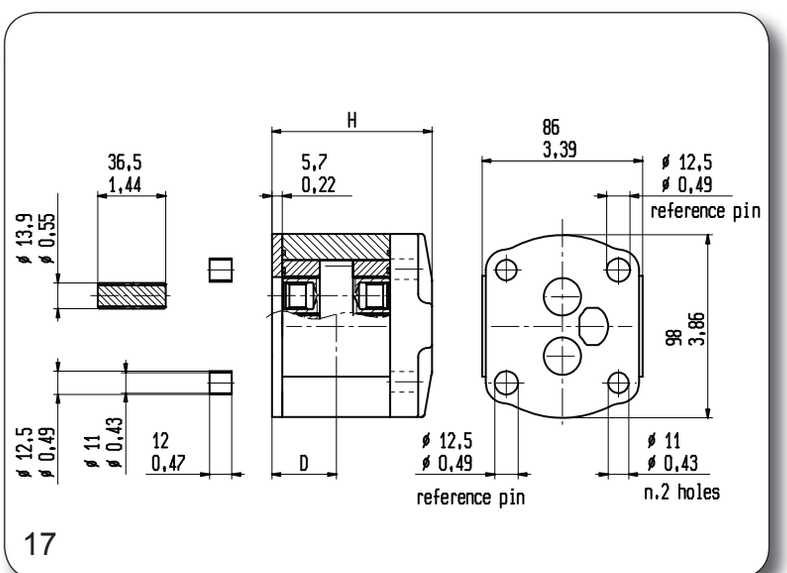
Step 2 (Figure 16)
PG331 Front Pump Preparation

- Lock the PG331 in vertical position (Front Flange Down)
- Disassemble the cover plate from PG331 pump
- PLEASE NOTE:
  - it is not possible to make a common suction between PG and 2PE;
  - the middle Plate PG331/2PE is made to have two different suctions, one for PG331 and one for 2PE (see Figure 21 for details)

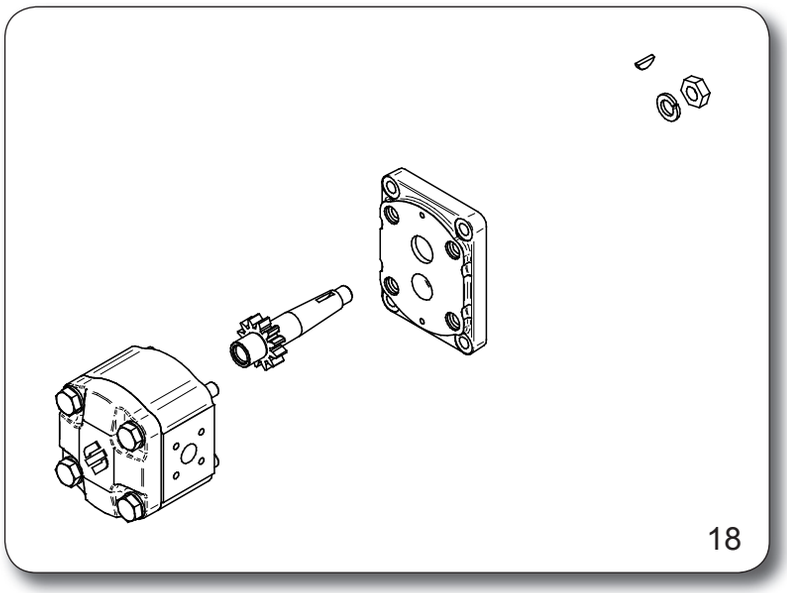

16

Step 3 (Figure 17)
2PE Rear Pump Preparation

- In case the 2PE**S-*60-R (Rear Pump Configuration) is available on stock, no additional actions are needed: the full lists of 2PE Rear Pumps are available on our DEALER - SPARE PARTS CATALOGUE.
- The assembling screws lenghts and codes needed, are on the appendix “C”.

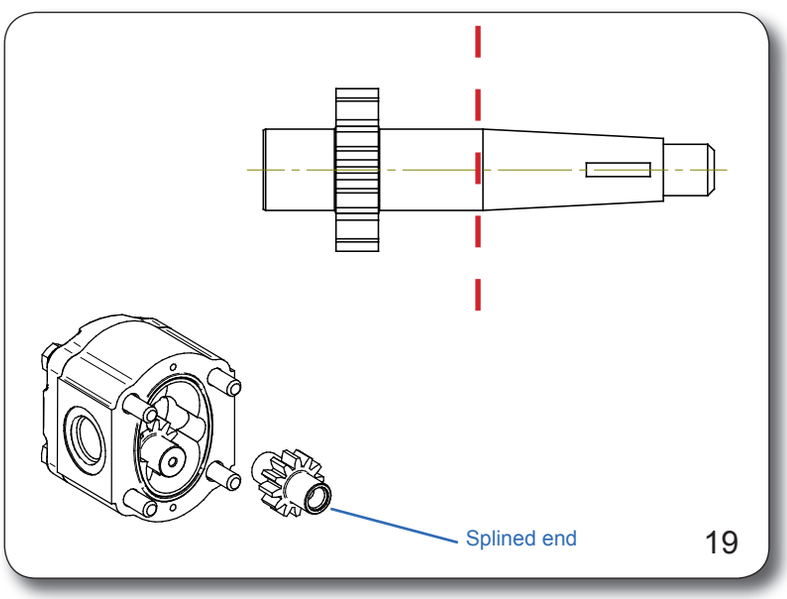


17



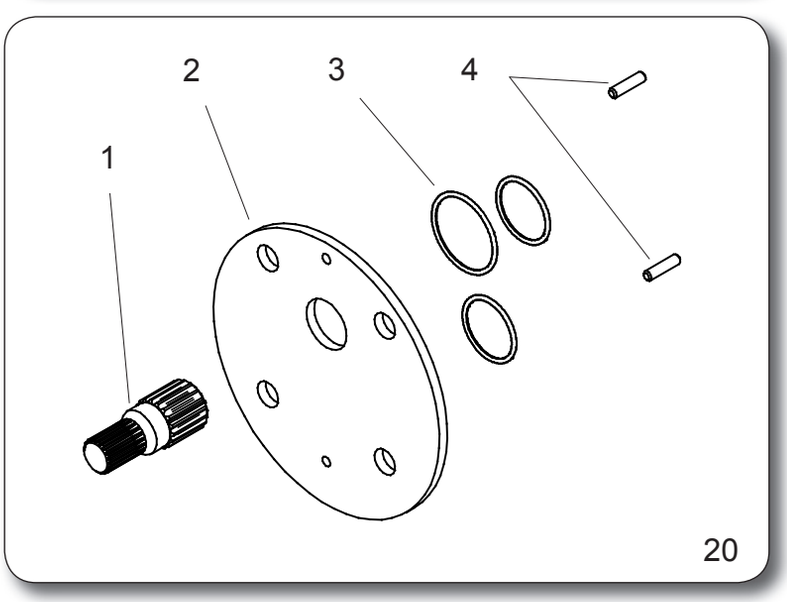
Step 3 (Figure 18)
2PE Rear Pump Preparation

- In case you must use a Standard 2PExxS Pump:
  - unlock the 4x M10 screws
  - Disassemble the front flange
  - Remove the drive shaft



Step 3 (Figure 19)
2PE Rear Pump Preparation

- Cut the drive shaft to the right length (see appendix “D” for Cutting Instructions)
- Rotate the just cut shaft and insert it back into the 2PE: the pre-arranged female splined end must be visible

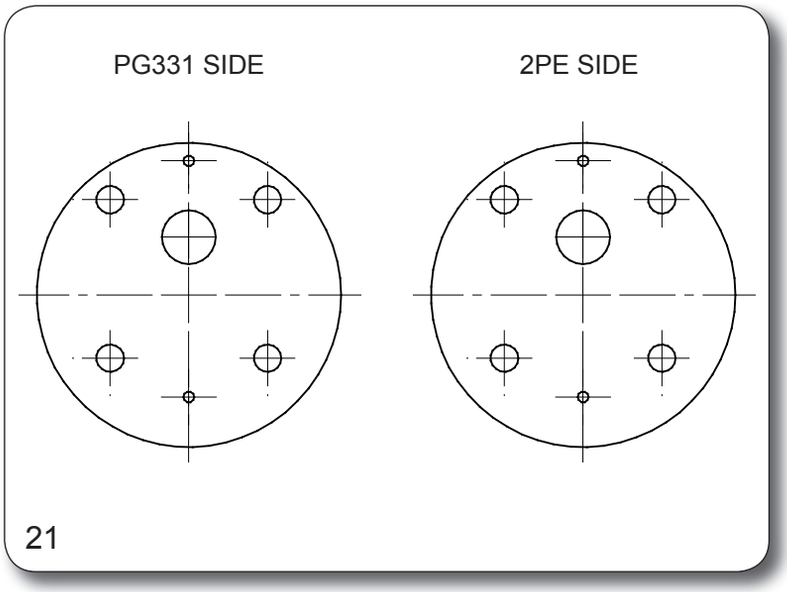


Step 4 (Figure 20)
Assembling Front Pump PG331 and Rear Pump 2PE together

- The Assembling Kit PG331/2PE includes:
  1. 1x Coupling Shaft (code 315202502)
  2. 1x Middle Plate PG331/2PE (code 315203101)
  3. 3x O-Rings for PG-Side (2x 799102100, 1x 799102500)
  4. 2x Reference Pins (code 796321600)

Step 4 (Figure 21)
Assembling Front Pump PG331 and Rear Pump 2PE together

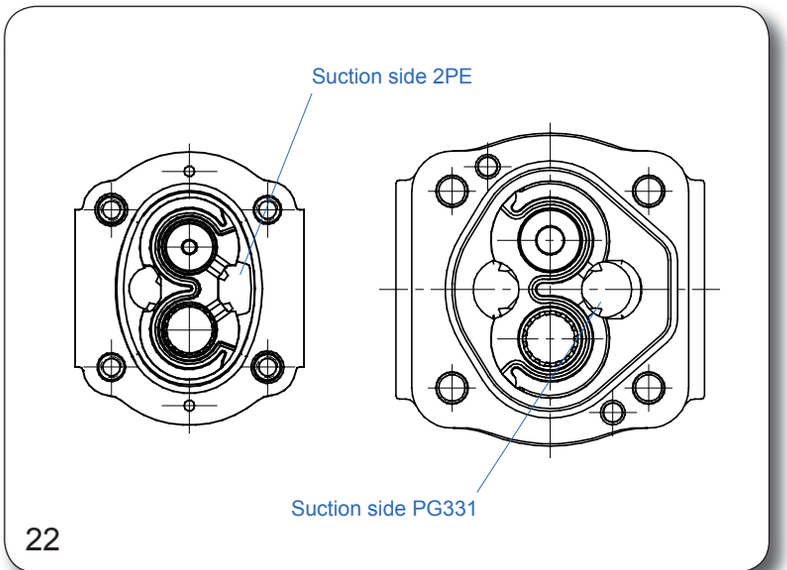
- The Standard Middle Plate PG331/2PE doesn't provide the Common Suction Option
- As shown in the picture, the Standard Middle Plate doesn't have a preferred mounting direction
- Both pumps has to be connected separately to Tank
- PLEASE NOTE:
  - this is not a "AS – Separated Suction", because the two flows can still get mixed through the Shaft connection
  - AS – Separated Suction Option: in case you need to offer a perfect fluids separations, please use a 2PE Rear Pump for AS.



21

Step 4 (Figure 22)
Assembling Front Pump PG331 and Rear Pump 2PE together

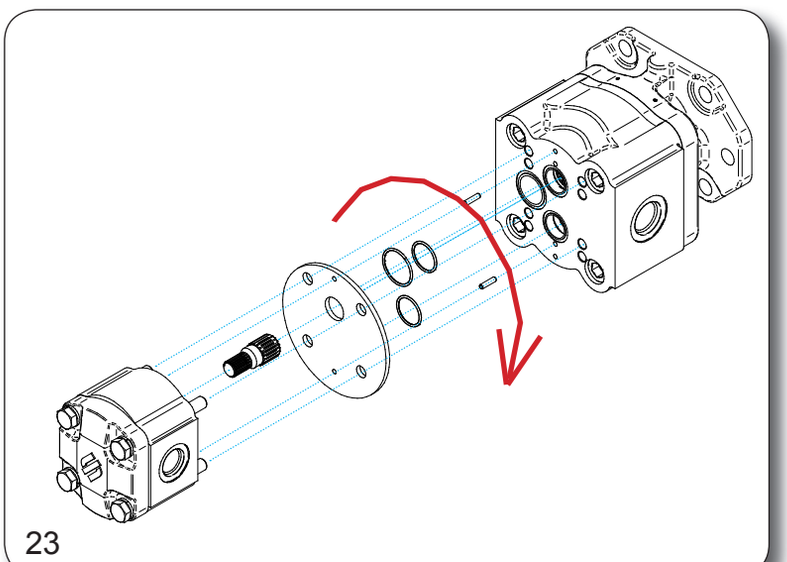
- Before to proceed with assembling, check that the Suction Tunnel of 2PE is aligned with the Suction Tunnel of PG331
- The Suction Tunnels of the pumps are marked here, both in counter-clockwise configuration



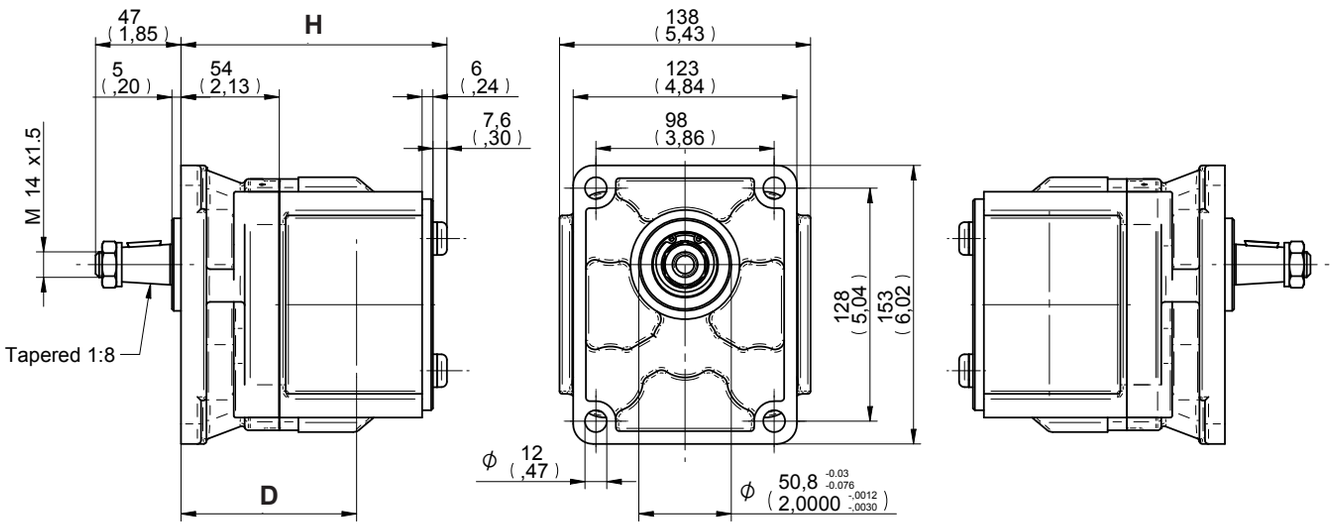
22

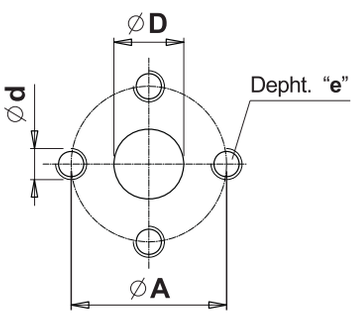
Step 5 (Figure 23)
Completion of Double Pump PG331/2PE

- Check the O-Rings on PG331 side: if damaged, you can use the new one, included in the Assembling Kit PG331/2PE
- Insert the Coupling Shaft
- Insert the two reference pins in the two higher seats
- Place the Middle Plate
- Place the 2PE pump
- Tight the 4 M10 up to 58-62 Nm


23

P38P2 - Clockwise and anti-clockwise rotation codes

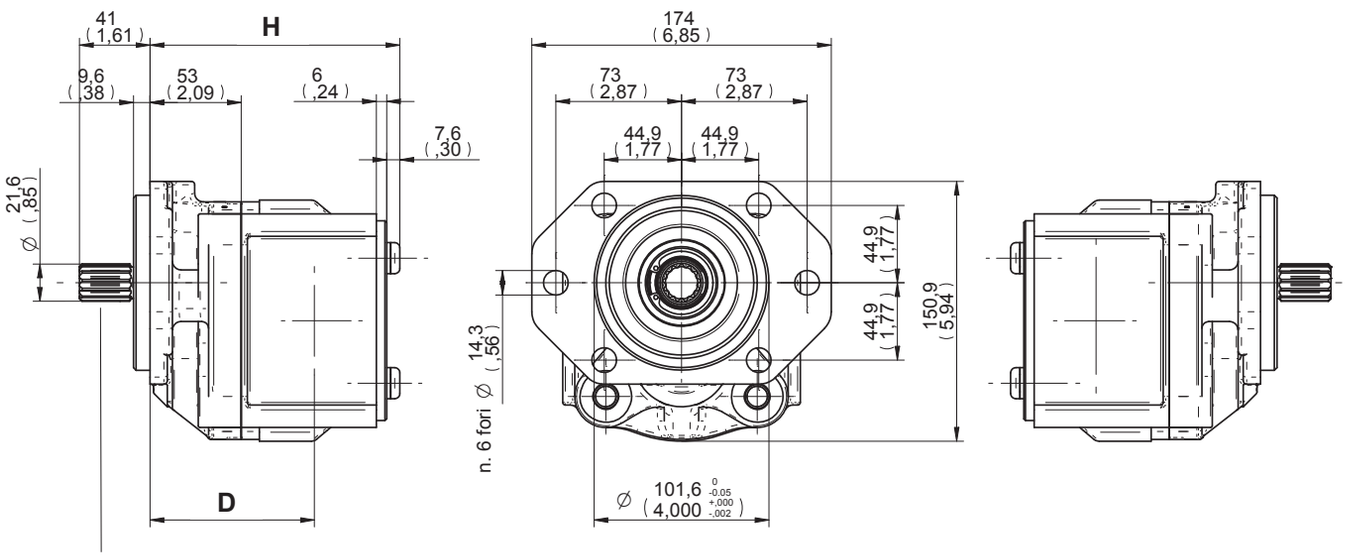




TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 23 to 47	27	51	M10	16	16	40	M8	16
	(1,07")	*(2,01")*		*(0,63")*	*(0,63")*	*(1,57")*		*(0,63")*
From 55 to 80	33	62	M12	16	21	51	M10	16
	(1,3")	*(2,44")*		*(0,63")*	*(0,83")*	*(2,01")*		*(0,63")*

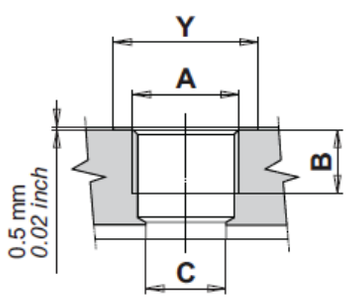
DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm^3/rev	cu.in./rev	mm	*in*	mm	*in*		
23,4	1,43	89	*3,50*	137,7	5,42	6152 0020 1	6152 0020 2
28,6	1,74	92	*3,62*	141,7	5,58	6152 0021 1	6152 0021 2
34,4	2,10	96,5	*3,80*	146,2	5,75	6152 0022 1	6152 0022 2
40,3	2,46	101	*3,98*	150,7	5,93	6152 0023 1	6152 0023 2
47,4	2,89	104	*4,09*	162,2	6,38	6152 0024 1	6152 0024 2
55,2	3,37	110	*4,33*	169,2	6,66	6152 0025 1	6152 0025 2
64,3	3,92	112	*4,41*	175,2	6,90	6152 0026 1	6152 0026 2
73,4	4,48	115	*4,53*	182,2	7,17	6152 0027 1	6152 0027 2
80,6	4,92	119	*4,69*	188,2	7,41	6152 0028 1	6152 0028 2

G55S3 - Clockwise and anti-clockwise rotation codes



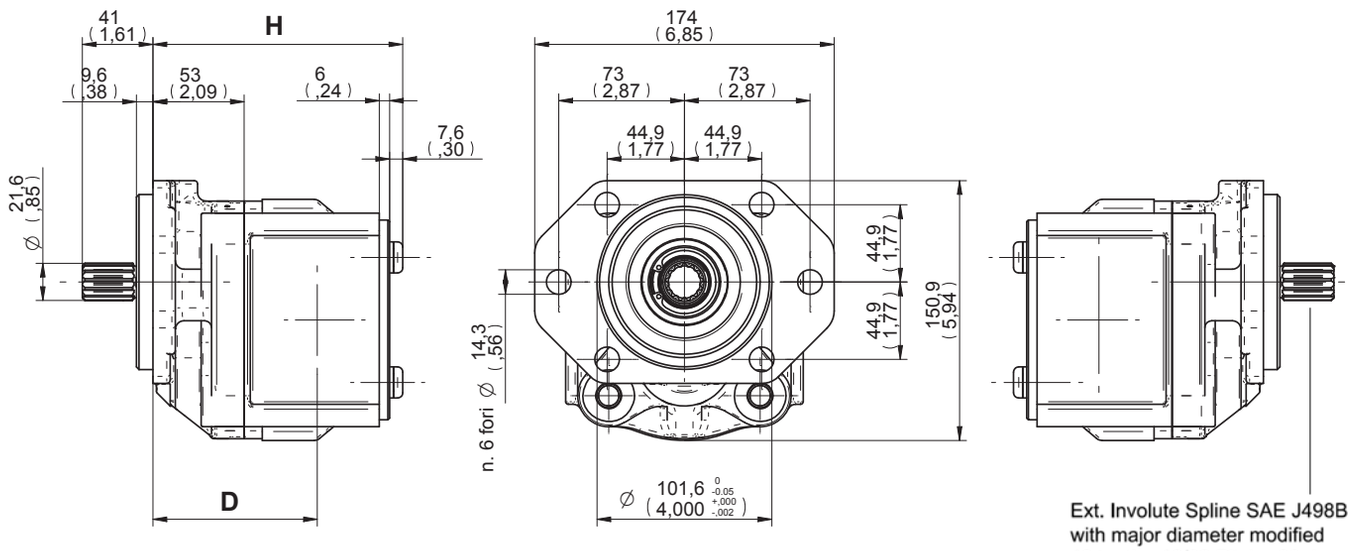
Ext. Involute Spline SAE J498B
with major diameter modified
13 teeth - 16/32 Pitch - 30 deg
Flat Root - Side fit - Class 1

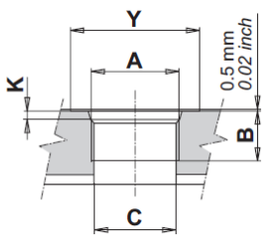
TYPE	INLET				OUTLET			
	A	B	C	Y	A	B	C	Y
From 23 to 47	G1	22	30,5	44	G3/4	16	24,4	36
		(0,87")	*(1,2")*	*(1,73")*		*(0,62")*	*(0,96")*	*(1,42")*
From 55 to 80	G1"1/4	24	37	54	G1	22	30,5	44
		(0,94")	*(1,46")*	*(2,12")*		*(0,87")*	*(1,2")*	*(1,73")*



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm^3/rev	cu.in./rev	mm	*in*	mm	*in*		
23,4	1,43	88	*3,46*	136,7	5,38	6152 0010 1	6152 0010 2
28,6	1,74	91	*3,58*	140,7	5,54	6152 0011 1	6152 0011 2
34,4	2,10	95,5	*3,76*	145,2	5,71	6152 0012 1	6152 0012 2
40,3	2,46	100	*3,94*	149,7	5,89	6152 0013 1	6152 0013 2
47,4	2,89	114	*4,49*	172,2	6,78	6152 0014 1	6152 0014 2
55,2	3,37	120	*4,72*	179,2	7,05	6152 0015 1	6152 0015 2
64,3	3,92	122	*4,80*	185,2	7,29	6152 0016 1	6152 0016 2
73,4	4,48	125	*4,92*	192,2	7,56	6152 0017 1	6152 0017 2
80,6	4,92	129	*5,08*	198,2	7,80	6152 0018 1	6152 0018 2

R55S3 - Clockwise and anti-clockwise rotation codes





TYPE	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 23 to 47	1-5/16	19	31	49	3,3	1-1/16	19	24,7	41	3,3
	12 UN	*(0,74")*	*(1,22")*	*(1,93")*	*(0,12")*	12 UN	*(0,74")*	*(0,74")*	*(1,16")*	*(0,12")*
From 55 to 80	1-5/8	19	38,9	58	3,3	1-5/16	19	31	49	3,3
	12 UN	*(0,74")*	*(1,53")*	*(2,28")*	*(0,12")*	12 UN	*(0,74")*	*(1,22")*	*(1,93")*	*(0,12")*

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm^3/rev	cu.in./rev	mm	*in*	mm	*in*		
23,4	1,43	88	*3,46*	136,7	5,38	6152 0000 1	6152 0000 2
28,6	1,74	91	*3,58*	140,7	5,54	6152 0001 1	6152 0001 2
34,4	2,10	95,5	*3,76*	145,2	5,71	6152 0002 1	6152 0002 2
40,3	2,46	100	*3,94*	149,7	5,89	6152 0003 1	6152 0003 2
47,4	2,89	114	*4,49*	172,2	6,78	6152 0004 1	6152 0004 2
55,2	3,37	120	*4,72*	179,2	7,05	6152 0005 1	6152 0005 2
64,3	3,92	122	*4,80*	185,2	7,29	6152 0006 1	6152 0006 2
73,4	4,48	125	*4,92*	192,2	7,56	6152 0007 1	6152 0007 2
80,6	4,92	129	*5,08*	198,2	7,80	6152 0008 1	6152 0008 2

HOW TO ORDER PG331

A	B	C	D	E	F	G	H
P G	3 3 1	2 8	D	- P	3 8	P 2	- V

A

PUMP SERIES

B

DIMENSIONS

C

TYPE	DISPLACEMENTS cm³/rev - *cu.in./rev.*
23	23.4 - *1.43*
28	28.6 - *1.74*
34	34.4 - *2.1*
40	40.3 - *2.46*
47	47,4 - *2,89*
55	55,2 - *3,37*
64	64,3 - *3,92*
72	73,4 - *4,48*
80	80,6 - *4,91*

D

CODE	ROTATION (page 2)
D	CLOCKWISE
S	ANTI-CLOCKWISE

E

CODE	AVAILABLE PORTS (pages 9,10 and 12)
G	GAS THREADED PORTS (BSPP)
R	SAE THREADED PORTS (ODT)
P	FLANGED PORTS EUROPEAN STANDARD
S	FLANGED PORTS SAE (UNC)
W	FLANGED PORTS SAE (METRIC)

F

CODE	AVAILABLE SHAFTS (pages 9,10 and 12)
38	EUROPEAN TAPERED 1:8 SHAFT
55	SAE B 13T-16/32DP
56	SAE BB 15T-16/32DP
57	SAE C 14T-12/24DP (COUNTERSHAFT FOR BEARING)
58	SAE C 14T-12/24DP (COUNTERSHAFT WITHOUT BEARING)
66	B8x32x36 DIN 5462-6g7 (COUNTERSHAFT FOR BEARING)
67	B8x32x36 DIN 5462-6g7 (COUNTERS. WITHOUT BEARING)
87	SAE B PARALLEL
88	SAE BB PARALLEL
89	SAE C PARALLEL (COUNTERSHAFT FOR BEARING)

G

AVAILABLE MOUNTING FLANGES (pages 16,17,18,19)	CODE
EUROPEAN STANDARD Ø 50,8 mm	**P2**
SAE B 2 - 4 BOLTS	**S3**
SAE C 2 - 4 BOLTS	**S4**
SAE B 2 - 4 BOLTS WITH G1/8 EXTERNAL DRAIN	**S7**
SAE B 2 - 4 BOLTS WITH SAE 4 EXTERNAL DRAIN	**S8**
SAE B 2 - 4 BOLTS WITH BEARING (MEDIUM LOADS)	**R3**
SAE C 2 - 4 BOLTS WITH BEARING (HEAVY LOADS)	**R8**
4 BOLTS FOR ZF GEAR BOX Ø 80 mm WITH BEARING	**Z1**
4 BOLTS FOR ZF GEAR BOX Ø 80 mm WITHOUT B.	**Z2**

H

AVAILABLE INTERNAL SEALS	CODE
NITRILE-BUTADIENE RUBBER (NBR)	
FLUOROELASTOMER (VITON)	**V**

3152 1490 1 - Tie-rod code and cutting length instructions

(an automated excel file is available for these calculations)

Tabella dati per calcolo lunghezze tiranti PG331 doppia

Table for the double PG331 tie-rod calculation

	TYPE		23	28	34	40	47	55	64	72	80
(H)	Dimension H	mm	70	74	78,5	83	95	101	108	115	121
		in	*2,76*	*2,91*	*3,09*	*3,27*	*3,74*	*3,98*	*4,25*	*4,53*	*4,76*
(1)	Spessore filettato sulle flange	mm	19								
	Thickness of the flange threaded	*in*	*0,75*								
(2)	Spessore coperchio std.	mm	24,5								
	Thickness of the std. cover	*in*	*0,96*								
(3)	Spessore dado M14 UNI5588	mm	11								
	Thickness of the nut M14 UNI5588	*in*	*0,43*								
(4)	Spessore rondella UNI6592	mm	2,5								
	Thickness of the washer UNI6592	*in*	*0,10*								
(5)	Spessore piastra PG331/PG331	mm	1,5								
	Thickness of the plate PG331/PG331	*in*	*0,06*								
(6)	Smussi sulle estremità del tirante	mm	4								
	End chamfer on the tie-rods	*in*	*0,16*								

		H stadio	H stadio	Sp. (1)	Sp. (2)	Sp. (3)	Sp. (4)	Sp. (5)	Sp. (6)	L
Calcolo lunghezza tirante PG331/PG331	mm	101	70	19	24,5	11	2,5	1,5	4	233,5
Tie rod length calculation PG331/PG331	*in*	*3,98*	*2,76*	*0,75*	*0,96*	*0,43*	*0,10*	*0,06*	*0,16*	*9,19*

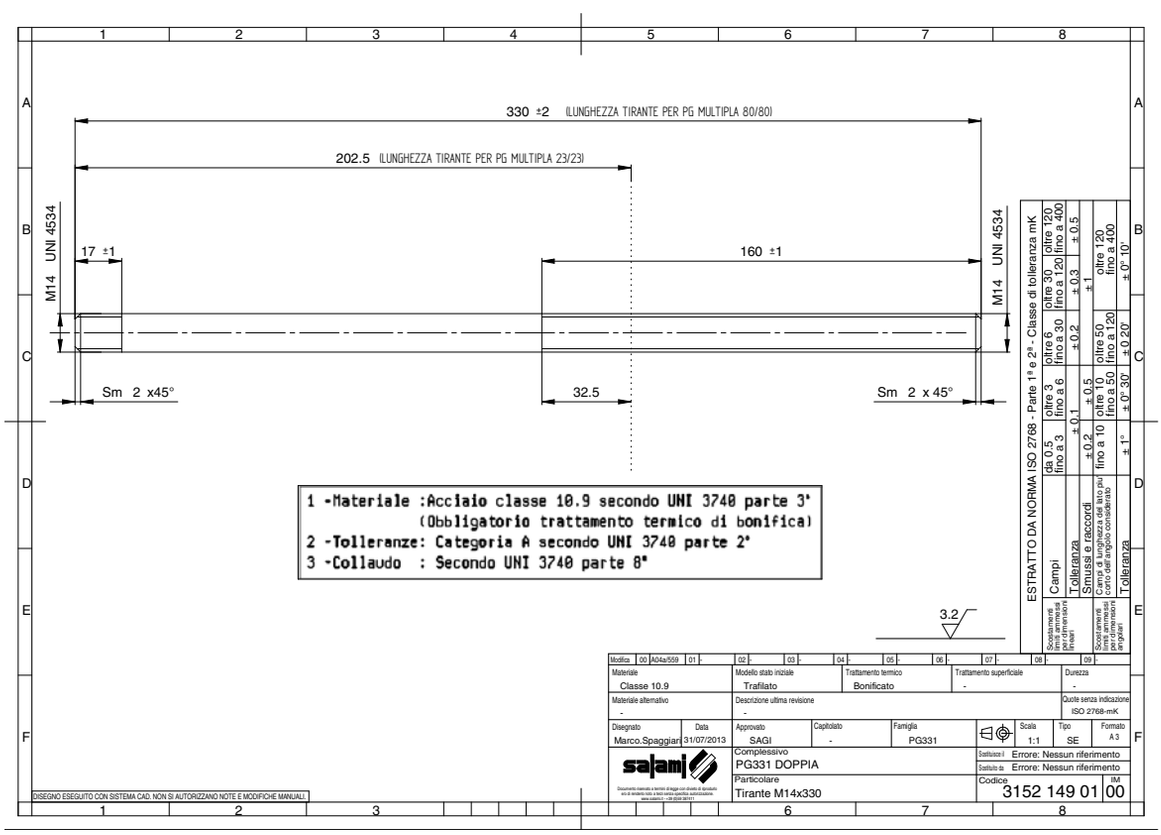
Esempi di lunghezze tiranti/*Examples of tie-rod lenghts*

Doppia PG331 entrambe le cilindrate 23 cc/*Double PG331 both displ. 23 cc* - L tiranti = 202,5 mm

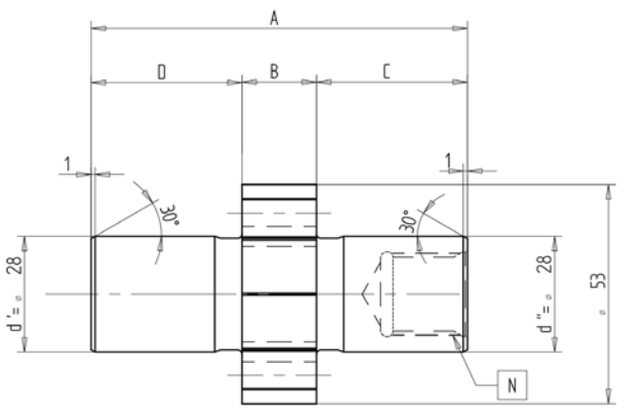
Doppia PG331 entrambe le cilindrate 80 cc/*Double PG331 both displ. 80 cc* - L tiranti = 304,5 mm

Doppia PG331 cilindrate 80 cc e 40 cc/*Double PG331 displ. 80 cc and 40 cc* - L tiranti = 266,5 mm

Doppia PG331 cilindrate 55 cc e 23 cc/*Double PG331 displ. 55 cc and 23 cc* - L tiranti = 233,5 mm



From page 3 - figure 9 case 1, list of codes

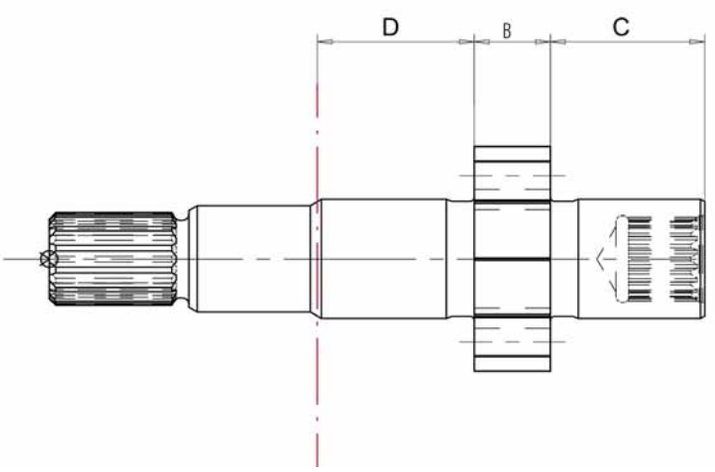


N PROFILO SCANALATO N20x1x9H DIN 5480. tab.8150003F00

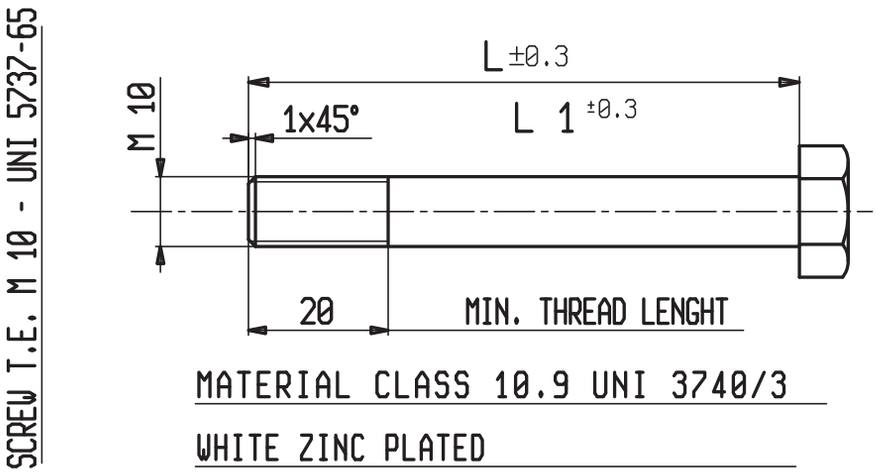
MODELLO	A	B	C	D	CODICE	IM
23	91	18	36.5	36.5	3150 003 11	01
28	95	22	36.5	36.5	3150 003 12	01
34	99.5	26.5	36.5	36.5	3150 003 13	01
40	104	31	36.5	36.5	3150 003 14	01
47	121.5	36.5	42.5	42.5	3150 003 15	01
55	127.5	42.5	42.5	42.5	3150 003 16	01
64	134.5	49.5	42.5	42.5	3150 003 17	01
72	141.5	56.5	42.5	42.5	3150 003 18	01
80	147	62	42.5	42.5	3150 503 19	00

From page 3 - figure 9 case 2, cutting lenght

First measure the dimension “C” and then cut the drive end “D” at the same dimension

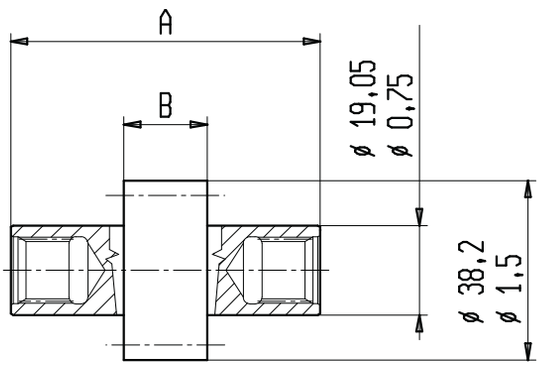


Screw lenghts and codes for 2PE rear pump



DISPLACEMENT	BODY H	FLANGE (H=19) SCREW LENGHT M 10 L1	CODE	"SR" WASHER THICKN. "SR"	CODE
3.2-3.9-4.5-6.2	47.1	80	7901 170 31	1	7952 524 51
5.5	48.6	80	7901 170 31	1	7952 524 51
8.3	52.8	85	7901 171 31	1	7952 524 51
10.5	56.3	90	7901 172 31	2.2	7952 396 51
11.3-12.5	59.7	90	7901 172 31	1	7952 524 51
13.8	63.5	95	7901 173 31	1	7952 524 51
16	67.5	100	7901 174 31	1	7952 524 51
19	75.6	110	7901 176 31	2.2	7952 396 51
22.5	81	115	7901 177 31	2.2	7952 396 51
26	86.8	120	7901 178 31	1	7952 524 51

From page 2 - figure 19
case 1, internal shaft commercial code 60
list of codes



Displacement cm³/rev - cu.in./rev	Dimensions A mm. [inch]	Dimensions B mm. [inch]	Code
3.2/0.19	46.7 [1.84]	5.1 [0.20]	3120 003 10
4.5/0.27	46.7 [1.84]	7.1 [0.28]	3120 003 14
6.5/0.40	49.55 [1.95]	9.95 [0.39]	3120 603 02
8.3/0.50	52.4 [2.06]	12.8 [0.50]	3120 503 09
11.3/0.68	59.3 [2.33]	17.7 [0.69]	3120 503 12
13.8/0.84	63.1 [2.48]	21.5 [0.85]	3120 003 15
16/1.01	67.1 [2.64]	25.5 [1.00]	3120 003 16
19/1.15	75.2 [2.96]	29.8 [1.17]	3120 003 17
22.5/1.37	80.6 [3.17]	35.2 [1.38]	3120 003 18
26/1.58	86.4 [3.40]	41.0 [1.61]	3120 003 19

From page 2 - figure 19
case 2, cutting lenght

First measure the dimension “C” and then cut the drive end “D” at the same dimension