3.5PC

Aluminium gear pumps

Technical Catalogue



GEAR PUMPS

SALAMI gear pumps are available with displacements from 1.4 cm³/rev to 99 cm³/rev (from 0.09 cu.in/rev to 6.03 cu.in/rev).

Multiple pumps can always be relized combining stages taken from different or same series.

Several options of shafts, flanges and ports as for European, German and American standards are available for all the pumps.

SALAMI gear pumps offer:

•High volumetric efficiency thanks to an innovative design and an accurate control of machining tolerances. •Axial compensation achieved by the use of floating bushes that allow high volumetric efficiency throughout the working pressure range.

•DU bearings to ensure high pressure capability.

•12 teeth integral gear and shaft.

•Aluminium body.

•Cast iron flange and cover.

•Double shaft seals.

•Nitrile seals as standard and Viton seals in high temperature applications.

•All pumps are hydraulically tested after assembly to ensure the highest standard performance.

•Gear pumps are ideal for mobile equipment including: snow plows, light duty equipment, farm vehicles, town trucks, cherry pickers, lift gates, utility vehicles, aerial devices, hoists, spreaders, fan drive.

•Also available Bidirectional rotation.

TECHNICAL DATA

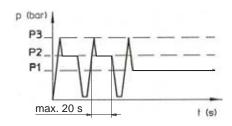
- Pump inlet pressure (absolute pressure)	0.8 to 1.5 bar (11.6 to 21.7 psi)
- Minimum operating fluid viscosity	12 mm ² / sec
- Max starting viscosity	800 mm ² / sec
- Suggested fluid viscosity range	17 - 65 mm ² / sec
- Fluid operating temperature range	-20 to 80 °C
- Fluid operating temperature range with FPM seals (Viton)	-15 to 110°C
- Fluid operating temperature range with HNBR seals*	-30 to 110°C
- Hydraulic fluid	mineral oil

*Available on request.

Important:

in case of assembling of pumps without shaft seals (eg. B4 - B5....), you have to keep the value of min. suction pressure (0.8 bar (abs)) in the vane between pump and coupling too. Lower pressure can lead to suction of oil through the front flange (seat of the shaft without seal); this can damage seriously the pump.

DEFINITION OF PRESSURES



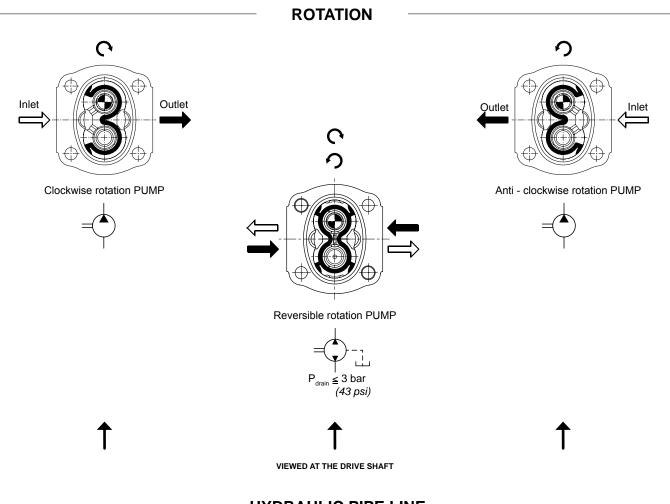
P3 = Peak pressure

P2 = Intermittent operating pressure (1/3 of working time)

P1 = Continuous operating pressure

DRIVE SHAFTS

Radial and axial loads on the shafts must be avoided since they reduce the life of the unit. In order to avoid misalignment during the assembly with the primary engine, a connection with "Oldham" coupling (or coupling having convex toothed hub) is recommended.



HYDRAULIC PIPE LINE

To ensure favorable suction conditions it is important to keep pressure drop in suction pipe line to a minimum value (see TECHNICAL DATA).

To calculate hydraulic pipe line size, the designer can use; as an approximate guide, the following fluid speed figures:

From 1 to 2 m/sec on suction pipe line From 6 to 10 m/sec on pressure pipe line From 3.28 to 6.36 *ft/sec* on suction pipe line From 19.7 to 32.8 *ft/sec* on pressure pipe line

The lowest fluid speed values in pipe lines is recommended when the operating temperature range is high and/or for continuos duty.

The highest value is recommended when the temperature difference is low and/or for intermittent duty. When tandem pumps are supplied by 2 different reservoirs with 2 different fluids it is necessary to specify "AS" version.



E0.100.0416.02.001M00

FILTRATION INDEX RECOMMENDED

Working pressure	>200 bar/2900 psi	<200 bar/2900 psi		
Contamination class NAS 1638	9	10		
Contamination class ISO 4406	19/18/15	20/19/16		
Achieved with filter β_{x} =75	15 µm	25 µm		

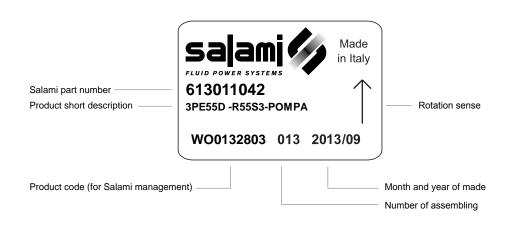
FIRE RESISTENT FLUID

Туре	Description	Max pressure	Max speed (rpm)	Temperature
HFB	Oil emulsion with 40% water	130 bar/ <i>1880 psi</i>	2500	3°C+65°C
HFC	Water glycol	190 hor/2600 noi	1500	-20°C+65°C
HFD	Phosphate esters	180 bar/2 <i>600 psi</i>	1750	-10°C+80°C

COMMON FORMULAS FOR PUMPS

		LEGENDA
C = Input torque	$= \frac{q \cdot \Delta p}{62.8 \cdot \eta_m} (Nm)$	Δp = Working pressure (bar)
	a n An 10 ⁻³	q = Displacement (cm ³ /rev)
P = Input power	$= \frac{q \cdot n \cdot \Delta p \ 10^{-3}}{600 \ \eta_m} (kW)$	n = Speed (min ⁻¹)
Q = Outlet flow	$= \frac{q \cdot n \cdot \eta_v}{1000}$ (l/min)	η_m = Mechanical eff. (0.92)
	1000	η_V = Volumetric eff. (0.95)

IDENTIFICATION LABEL



WORKING CONDITIONS

	Displa	cement	Wor pressu	king re P ^{1**}		nittent ure P ²		eak ure P³	Max. speed	Min. speed
GROUP 1.5 - E SERIES	cm ³ /rev	cu.in/rev	bar	psi	bar	psi	bar	psi	mi	n-1
1.5PE - 1.4	1.4	0.09	250	3625	270	3915	290	4205	5000	700
1.5PE - 2.1	2.1	0.13	250	3625	270	3915	290	4205	5000	700
1.5PE - 2.8	2.8	0.17	250	3625	270	3915	290	4205	4500	700
1.5PE - 3.5	3.5	0.21	250	3625	270	3915	290	4205	4500	700
1.5PE - 4.1	4.1	0.25	250	3625	270	3915	290	4205	4000	700
1.5PE - 5.2	5.2	0.32	230	3335	250	3625	270	3915	4000	700
1.5PE - 6.2	6.2	0.38	230	3335	250	3625	270	3915	3600	600
1.5PE - 7.6	7.6	0.46	200	2900	220	3190	250	3625	3300	600
1.5PE - 9.3	9.3	0.57	180	2610	200	2900	240	3480	3000	600
1.5PE - 11	11	0.67	170	2465	190	2755	220	3190	3000	600

GROUP 2 - E SERIES	cm ³ /rev	cu.in/rev	bar	psi	bar	psi	bar	psi	mi	in-1
2PE - 3.2*	3.2	0.19	250	3625	280	4060	300	4350	4000	600
2PE - 3.9*	3.9	0.24	250	3625	280	4060	300	4350	4000	600
2PE - 4.5	4.6	0.27	250	3625	280	4060	300	4350	4000	600
2PE - 6.5	6.5	0.4	250	3625	280	4060	300	4350	4000	600
2PE - 8.3	8.2	0.5	250	3625	280	4060	300	4350	3500	500
2PE - 10.5	10.6	0.65	250	3625	280	4060	300	4350	3500	500
2PE - 11.3	11.5	0.68	250	3625	280	4060	300	4350	3500	500
2PE - 12.5	12.7	0.77	250	3625	280	4060	300	4350	3500	500
2PE - 13.8	13.8	0.84	250	3625	280	4060	300	4350	3500	500
2PE - 16	16.6	1.01	250	3625	280	4060	300	4350	3000	400
2PE - 19	19.4	1.15	220	3140	240	3480	260	3750	3000	400
2PE - 22.5	22.9	1.37	200	2900	220	3140	240	3480	2750	400
2PE - 26	25.8	1.58	180	2610	200	2900	220	3190	2500	400

*Available only as rear pump

GROUP 2.5 - B SERIES	cm ³ /rev	cu.in/rev	bar	psi	bar	psi	bar	psi	mi	n⁻¹
2.5PB - 5.5*	5.97	0.36	250	3625	280	4060	300	4350	3000	600
2.5PB - 8.3*	8.29	0.50	250	3625	280	4060	300	4350	3000	600
2.5PB - 11.5*	11.76	0.72	250	3625	280	4060	300	4350	3000	600
2.5PB - 13.8*	14.07	0.86	250	3625	280	4060	300	4350	3000	600
2.5PB - 16	16	0.97	250	3625	280	4060	300	4350	3000	600
2.5PB - 19	19.3	1.17	250	3625	280	4060	300	4350	3000	600
2.5PB - 22	22.2	1.35	250	3625	280	4060	300	4350	3000	500
2.5PB - 25	25.2	1.53	250	3625	280	4060	300	4350	3000	500
2.5PB - 28	27.6	1.68	250	3625	280	4060	300	4350	3000	500
2.5PB - 32	32.4	1.97	230	3330	250	3625	260	3750	3000	500
2.5PB - 38	38.1	2.32	200	2900	220	3140	240	3480	2750	400
2.5PB - 44	44.2	2.69	170	2465	190	2755	210	3040	2500	400

*Available only as rear pump. Displacements 11.5-13.8 are available as single pump only with drive shaft "55".

	Displa	cement	Wor pressu	king re P ^{1**}		nittent ure P ²		eak ure P³	Max. speed	Min. speed
GROUP 3 - E SERIES	cm ³ /rev	cu.in/rev	bar	psi	bar	psi	bar	psi	mi	n ⁻¹
3PE - 21*	20.6	1.26	250	3625	280	4060	300	4350	3000	600
3PE - 27	27	1.65	250	3625	280	4060	300	4350	3000	600
3PE - 33	33.5	2.04	250	3625	280	4060	300	4350	3000	600
3PE - 38	38.7	2.36	250	3625	280	4060	300	4350	2750	500
3PE - 46	46.9	2.86	250	3625	270	3915	280	4060	2750	500
3PE - 55	54.1	3.3	220	3140	240	3480	250	3625	2500	400
3PE - 65	63.1	3.85	200	2900	220	3140	240	3480	2500	400
3PE - 75*	73.4	4.48	180	2610	200	2900	220	3140	2500	400

*Displacements 21 and 75 are special release, please contact sales department.

GROUP 3.5 - C SERIES	cm ³ /rev	cu.in/rev	bar	psi	bar	psi	bar	psi	mi	n ⁻¹
3.5PC - 55	54.8	3.34	250	3625	280	4060	300	4350	2750	400
3.5PC - 64	63.2	3.85	250	3625	280	4060	300	4350	2750	350
3.5PC - 75	74.7	4.55	230	3330	250	3625	280	4060	2500	300
3.5PC - 87	88	5.36	210	3040	230	3330	260	3750	2250	300
3.5PC - 98*	99	6.03	200	2900	220	3140	250	3625	2000	300

*Displacement 98 are special release, please contact sales department.

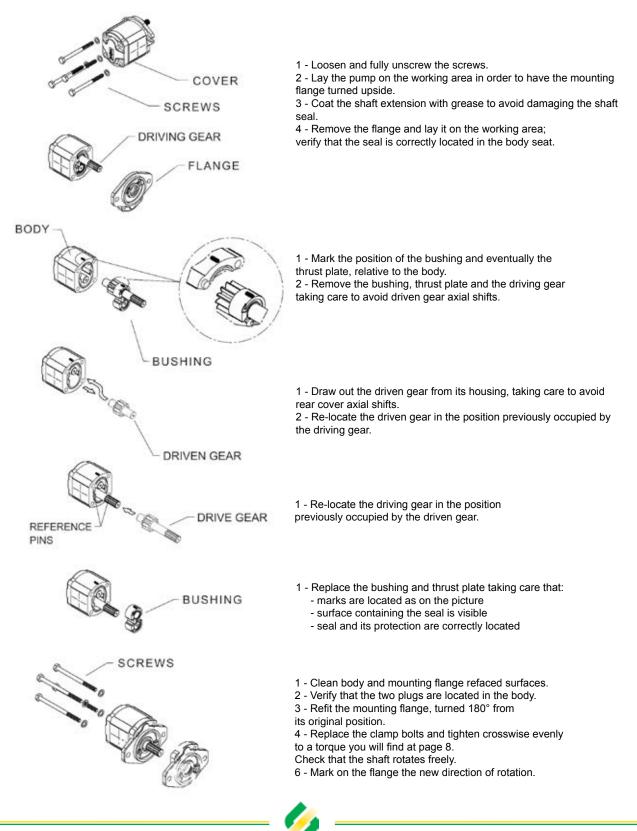
**For working conditions, using exclusively pressure P¹, the value of max. speed must be reduced of 10%.

For bidirectional pump the max pressure has to be reduced of 10%.

The max pressure is refered to pumps with flanged ports, using the threaded ports the pump life could be reduced.

ROTATION CHANGING INSTRUCTIONS FOR UNITS

Before starting, be sure that the pump is cleaned externally as well as the working area to avoid that particles dangerous for pump working can find their way into the pump. Pump represented is a clockwise rotation pump. To obtain an anti_clockwise rotation read carefully the following instructions.



GEAR PUMPS "C" SERIES Aluminium Body

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Final revised edition-April 2016 The data in this catalogue refers to the standard product. The policy of Salami S.p.A. consists of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving prior information. If any doubts, please get in touch with our sales department.



SHAFTS AND FLANGES COMBINATION

3.5PC			
	CODE P3 European standard Ø60.3	CODE P4 European standard Ø63.5	CODE S3 SAE B 2 Bolts Ø101.6
CODE 48 - Tapered 1:8 Ø24.64	48P3		
		49P4	
CODE 49 - Tapered 1:8 Ø31.75			
			55S3
CODE 55 - SAE B Splined 13T			
			56S3
CODE 56 - SAE BB Splined 15T			

Note: other versions available, see shafts and flanges information.



Displacements up to 6.03 cu.in./rev Pressure up to 4350 psi

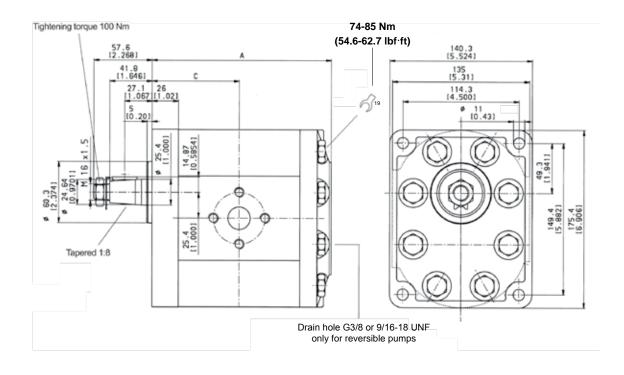


Displacements up to 99 cm³/rev Pressure up to 300 bar

ASSEMBLING DIMENSIONS

Туре	e	55	64	75	87	98*
Displacement	cm³/rev	54.8	63.2	74.7	88	99
	cu.in./rev	3.34	3.85	4.55	5.36	6.03
Dimension A	mm	165	177	184	192	197
	in	6.49	6.96	7.24	7.55	7.75
Dimension C	mm	80	86	89.5	93.5	96
	in	3.14	3.38	3.52	3.68	3.77
Weight	kg	10.7	11.4	11.9	12.5	12.8
	Ibs	23.54	25.08	26.18	27.55	28.21

*Available for quantity.



Displacements up to 6.03 cu.in./rev Pressure up to 4350 psi



GEAR PUMPS

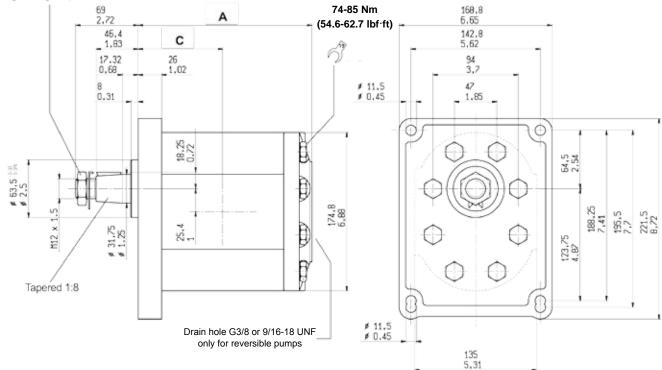
Displacements up to 99 cm³/rev Pressure up to 300 bar

CONFIGURATION 49P4 (4PB)

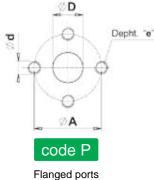
Туре		75	87	98*		
Displacement	cm³/rev	74.7	88	99		
	cu.in./rev	4.55	5.36	6.03		
Dimension A	mm	184	192	197		
	in	7.24	7.55	7.75		
Dimension C	mm	89.5	93.5	96		
	in	3.52	3.68	3.77		
Weight	kg	12.5	13	14		
	Ibs	27.5	28.6	30.8		

*Available for quantity.

Tightening torque 140 Nm



FLANGED AND THREADED PORTS

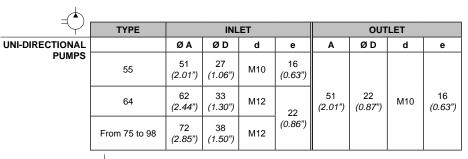


european standard

ш

d

Depht. "e"



BI-DIRECTIONAL PUMPS Special version available on request.

For version 49P4: Tightening torque for different threads M10=50Nm M12=90Nm

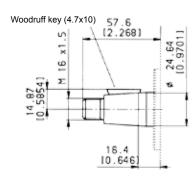
\sim	TYPE		11	NLET		OUTLET				
UNI-DIRECTIONAL		ØD	В	Α	d	ØD	В	Α	d	
PUMPS	From 55 to 64	32 (1.26")	58.7 (2.31")	30.2 (1.26")	7/16-14	19 <i>(0.75")</i>	47.6 (1.87")	22.22 (0.87")	3/8-16	
	From 75 to 98	38 (1.50")	69.8 (2.75")	35.7 (1.41")	UNC	26 (1.02")	52.4 (2.06")	26.2 (1.03")	UNC	

BI-DIRECTIONAL PUMPS Special version available on request.

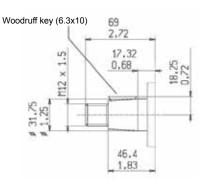
Flanged ports SAE J518 AMERICAN STANDARD THREAD

code S





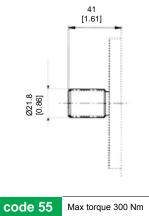
code 48	Max torque 420 Nm
Tapered 1:8	



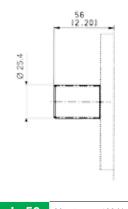
 code 49
 Max torque 460 Nm

 Tapered 1:8 (only for P4)

GEAR PUMPS "C" SERIES Aluminium Body

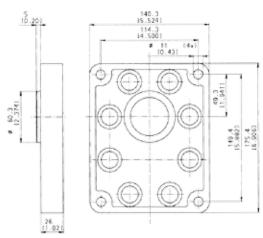


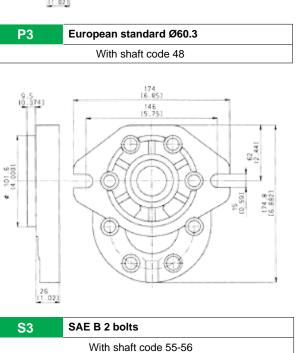


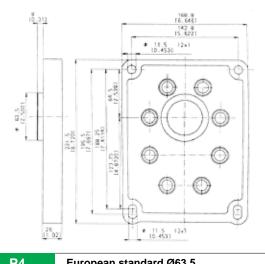


code 56Max torque 460 NmSAE BB Splined 15T-16/32DP AnsiB92 1a 1976

MOUNTING FLANGES

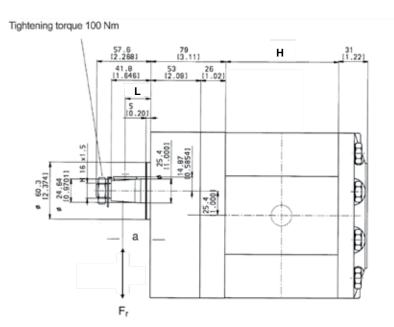


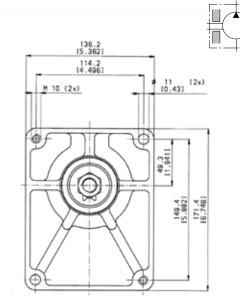




P4	European standard Ø63.5
	With shaft code 49

OUTRIGGER BEARING





The following diagrams show radial load capability of the bearing.

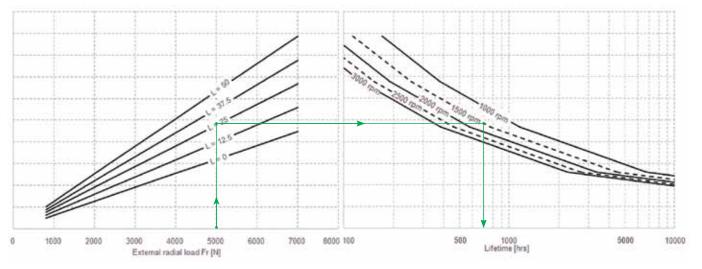
Calculation according to ISO 281 at 10 cSt.

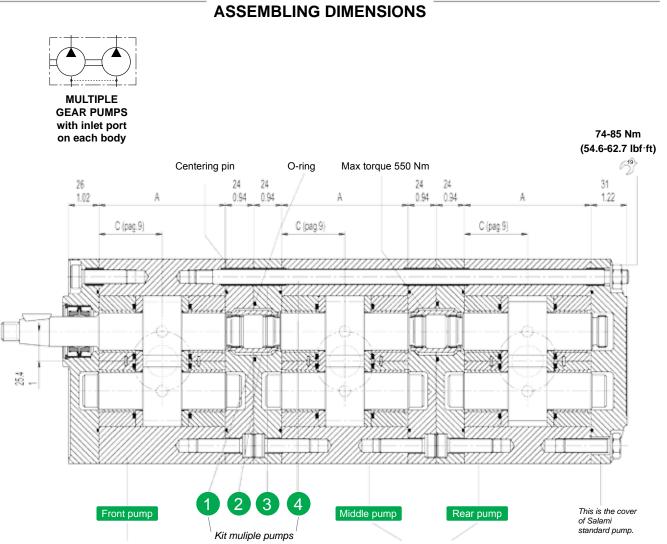
TYPE	н
75	184 (7.24")
87	192 (7.55")
98	197 (7.75")

L=Distance between mounting flange and radial force point of application.



СР	European standard Ø60.3						
With shaft code 48							





MULTIPLE GEAR PUMPS

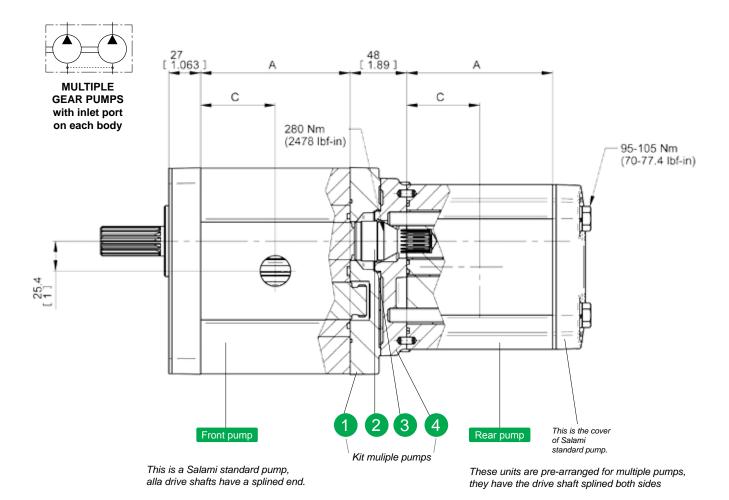
This is a Salami standard pump, alla drive shafts have a splined end.

These units are pre-arranged for multiple pumps, they have the drive shaft splined both sides

The 3.5PC pumps can be easily transformed into front pump in the multiple units. All drive shafts are pre-arranged and have a splined end according DIN 5482. The first unit must always be the same size or bigger than following units. The features and performances are the same of the corresponding single units: only in the case of simultaneous operating you have to verify that the inlet torque is lower than the max. transmissible by the drive shaft. In case of common inlet port, to avoid too high value of oil speed, 40l/min is the max. sucked flow for the downstream pump. Finally to assembly the multiple pump you need to order bolts of the right length. *Commercial code UA.

Туре		55	64	75	87	98
Dimension A	mm	108	120	127	135	140
	in	4.25	4.72	5.00	5.31	5.51
Dimension C	mm	80	86	89.5	93.5	96
	in	3.14	3.38	3. <i>5</i> 2	3.68	3.77

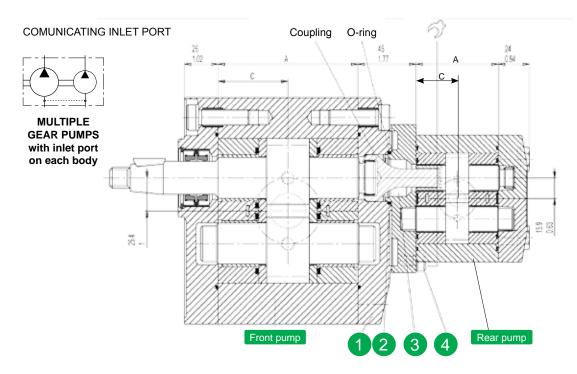
3.5PC COMBINATION WITH 3PE



3.5PC dimensions A and C are available at the previous page.

3PE-Ty	уре	21*	27	33	38	46	55	65	75*
Dimension A	mm	74	79	84	88	104	110	117	124
	in	2.91	3.11	3.31	3.46	<i>4.09</i>	<i>4</i> .33	<i>4.61</i>	<i>4.8</i> 8
Dimension C	mm	37	39.5	42	44	52	55	58.5	62
	in	1.46	<i>1.5</i> 6	1.65	1.73	2.05	2.17	2.30	2.44

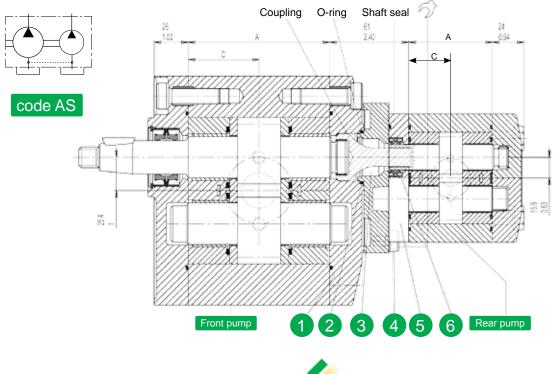
3.5PC COMBINATION WITH 2PE



2PE-Ty	уре	3.2*	3.9*	4.5	6.5	8.3	10.5	11.3	12.5	13.8	16	19	22.5	26
Dimension A	mm in		47.1 <i>1.</i> 83		49.95 1.97	52.8 2.07	56.3 2.22	59 2.).7 35	63.5 2.5	67.5 2.65	75.6 2.97	81 3. <i>19</i>	86.8 3.42
Dimension C	mm in		23.55 <i>0.</i> 93		25 0.98	26.4 1.04	28.15 <i>1.11</i>	29 1.	.75 17	31.75 <i>1.25</i>	33.75 1.33	37.80 1.49	40.5 1.59	43.4 1.71

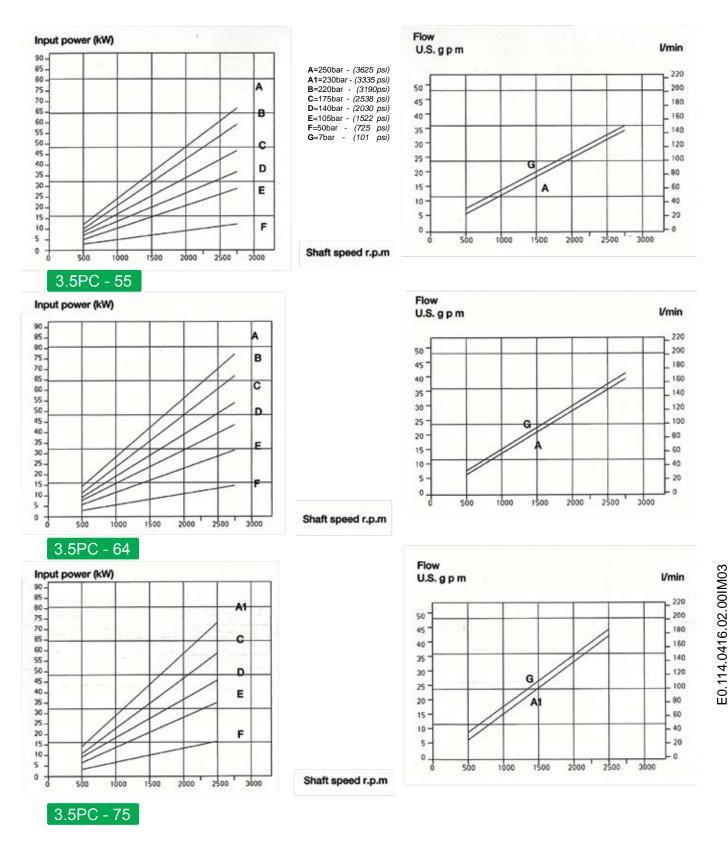
*Available only as rear pump

SEPARATED STAGES

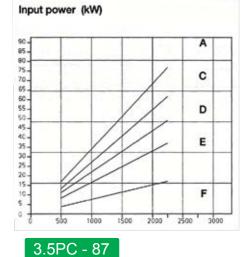


PERFORMANCE CURVES

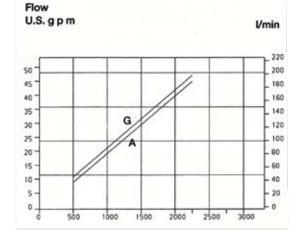
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C



GEAR PUMPS "C" SERIES Aluminium Body

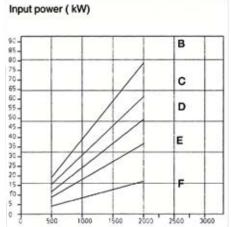


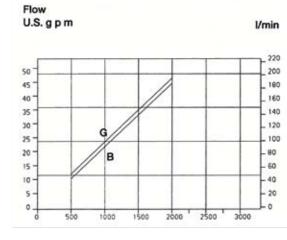
A=250bar - (3625 psi) A1=230bar - (3335 psi) B=220bar - (3190psi) C=175bar - (2538 psi) D=140bar - (2030 psi) E=105bar - (1522 psi) F=50bar - (725 psi) G=7bar - (101 psi)



Shaft speed r.p.m

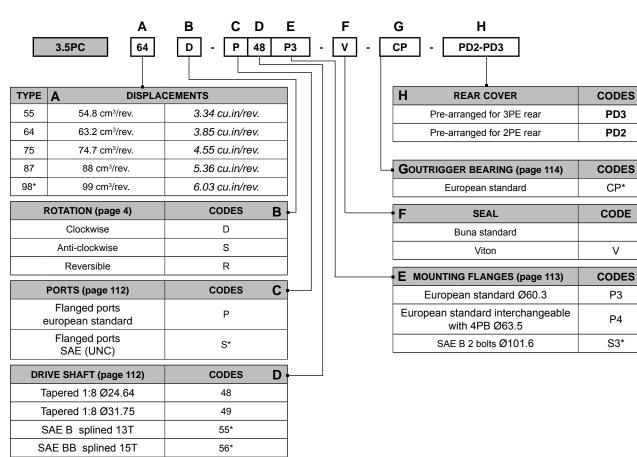
Shaft speed r.p.m





3.5PC - 98





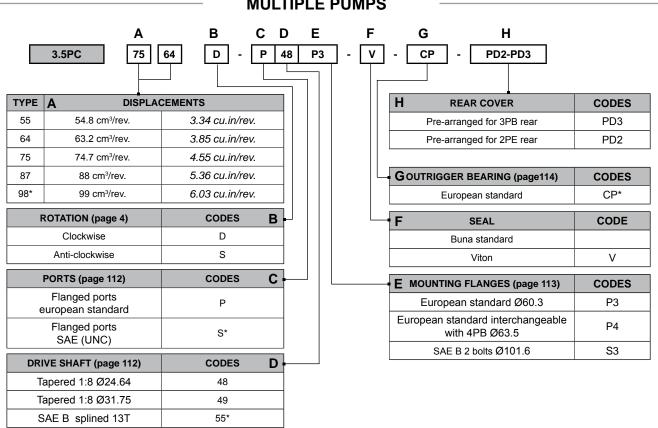
SINGLE PUMPS

*Available for quantity, please contact our sales department.

Order example 3.5PC 64D, ports european standard (P), drive shaft (48), mounting flange (P3) 3.5PC64D-P48P3



GEAR PUMPS "C" SERIES Aluminium Body



MULTIPLE PUMPS

*Available for quantity, please contact our sales department.

56*

SAE BB splined 15T

E0.114.0416.02.00IM03

Order example 3.5PC 75/64D, ports SAE (S), drive shaft (56), mounting flange (S3): 3.5PC75/64D-S56S3

Order example 3.5PC 75, 3PB 38S ports european standard (P), drive shaft (48), mounting flange (P3):

3.5PC75/3PB38S-P48P3

Order example 3.5PC 64/2PE 16D, ports european standard (P), drive shaft (49), mounting flange (P4) - separated stages (AS): 3.5PC64/2PE16D-P49P4-AS

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