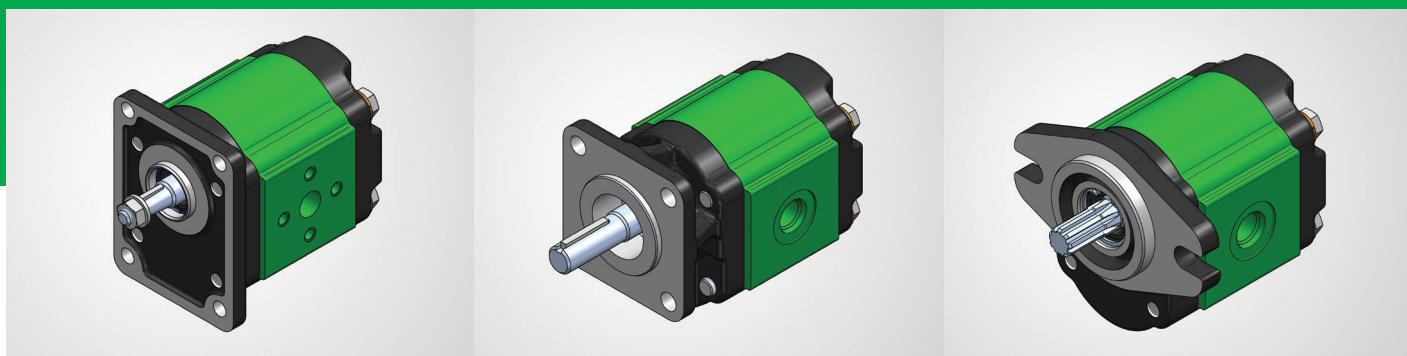
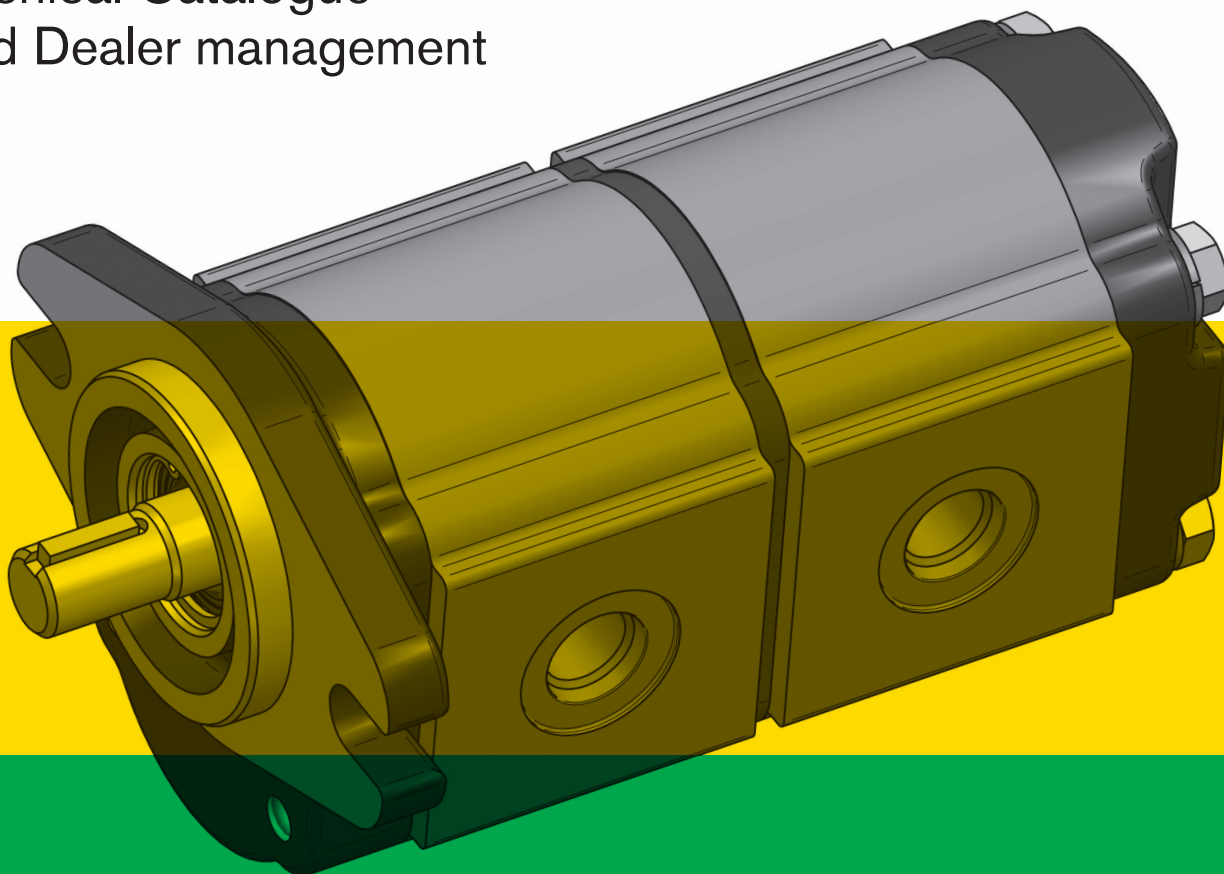


1.5 PE

Aluminium gear pumps

Tecnical Catalogue
and Dealer management

E0.109.0114.14.00-IM00



Company
with quality system
certified by DNV
UNI EN ISO 9001/2008



L'Azienda Salami Spa rappresenta un'eccellenza italiana nel settore della potenza idraulica applicata a macchine mobili e veicoli industriali.

E' stata fondata nel 1956 con precise linee guida che hanno condotto il marchio Salami a identificarsi come simbolo di **Garanzia e Affidabilità** nel proprio settore, in Italia e nel Mondo. Salami Spa è rimasta fedele nel tempo ai tre punti di forza dettati dal suo fondatore che hanno reso riconoscibile e grande il marchio Salami nel mondo: **Qualità, Innovazione, Servizio**. Attraverso le proprie sedi di Spagna, Francia, Stati Uniti d'America, Canada e ai suoi partner commerciali, distribuisce i propri prodotti mettendo al servizio del mondo intero l'eccellenza ingegneristica italiana.

In questo volume vi presentiamo **la nuova gamma di pompe in alluminio del Gruppo 1**, denominate SAE AA secondo la classificazione americana.

Il **progetto 1,5PE** è stato sviluppato basandosi sul concetto di "**modularità**".

Grazie alla nostra esperienza di oltre 50 anni nella produzione di pompe in alluminio, all'utilizzo di **materiali innovativi e tecnologie produttive all'avanguardia**, ai preziosi **suggerimenti dei nostri clienti**, il nostro team di ingegneri è riuscito a realizzare un **prodotto** altamente **performante, affidabile** ed estremamente **personalizzabile**.

La prima parte di questo catalogo è dedicata alla descrizione tecnica delle pompe.

Nella seconda parte, denominata *Dealer management*, sono elencati i codici di ordinazione sia per le pompe singole, sia per i kit di trasformazione che vi permetteranno di realizzare in autonomia le varie combinazioni di pompe doppie e triple.

Benvenuti nel team Salami.

Il Direttore Commerciale
Michele Piazza

*The **Salami Company** is one of the best Italian engineering excellences in the field of fluid power applied to mobile applications.*

*It was founded in 1956 with specific guidelines that have led the brand to identify Salami as a symbol of **Warranty and Reliability** in its sector, in Italy and in the World.*

Salami Hydraulics proudly manufactures in Italy and it has remained loyal in time to its three strengths dictated by its founder.

***Quality, Innovation and Service** have made the brand Salami recognizable and great in the world. Through its offices in North America, Spain, France, together with its business partners, the company distributes its own products by putting the excellence of Italian engineering at the service of the whole world.*

*In this volume we present you the **new range of Group 1 aluminum pumps**, known as SAE AA according to the American classification*

*The **project 1.5PE** has been developed and **based on the concept of “modularity”**.*

*Thanks to our experience of over 50 years in the production of aluminum pumps, the research of innovative materials and advanced production technologies, the valuable advices of our customers, **our engineering team has achieved a highly efficient, reliable and extremely customizable product.***

***The first part** of this catalog is dedicated to the technical description of the pumps.*

***The second part**, called Dealer management , includes the order part numbers for both single pump and conversion kit. These informations will allow you to combine in complete autonomy the different series of double and triple pumps configurations.*

Welcome into Salami Team.

Commercial Director
Michele Piazza

General Index

SECTION A - 1.5PE TECHNICAL CATALOGUE

FEATURES

• DEFINITION OF PRESSURES.....	A1
• GENERAL INFORMATION.....	A1
• WORKING CONDITIONS.....	A1
• DRIVE SHAFTS.....	A2
• DIRECTION VIEWED AT THE DRIVE SHAFT.....	A2
• HYDRAULIC PIPE LINE.....	A2
• DESCRIPTION OF THE PRODUCT IDENTIFICATION LABEL.....	A2
• FILTRATION INDEX RECOMMENDED.....	A3
• FIRE RESISTANT FLUID.....	A3
• COMMON FORMULAS FOR PUMPS.....	A3
• SHAFT SEAL DESIGN, PRESSURE AND MATERIALS AVAILABLE.....	A3
• ROTATION CHANGE INSTRUCTION.....	A4
• SUGGESTED COMBINATIONS OF FLANGES AND SHAFTS AVAILABLE.....	A5

ASSEMBLING DIMENSIONS AND VALUES OF PRESSUR AND SPEED

• RELEASE WITH FLANGE P0 AND SHAFT 18.....	A6
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AVAILABLE PORTS

• THREADED PORTS.....	A7
• FLANGED PORTS.....	A7

MULTIPLE GEAR PUMP - DIMENSIONS AND FEATURES

• RELEASE WITH FLANGE S0 AND SHAFT 80.....	A8
• MULTIPLE PUMP WITH COMMON SUCTION - SUGGESTIONS.....	A9



General Index

- **AVAILABLE FLANGES**
- EUROPEAN STANDARDS.....A10
- AMERICAN STANDARDS.....A11
- AVAILABLE SHAFTS.....A12
- PERFORMANCE DIAGRAMS.....A13 - A17
- HOW TO ORDER **1.5PE** SINGLE PUMP.....A18
- HOW TO ORDER **1.5PE** MULTIPLE PUMP.....A19

SECTION B - 1.5PE

PUMP FOR DEALER MANAGEMENT

- 1.5PE-P18P0 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B1
- 1.5PE-G18P0 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B2
- 1.5PE-B18P0 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B3
- 1.5PE-P19P01 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B4
- 1.5PE-R51S0 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B5
- 1.5PE-R80S0 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B6
- 1.5PE-R83S1 - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B7
- 1.5PE-P59R - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B8
- 1.5PE-B59R - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B9
- 1.5PE-G59R - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B10
- 1.5PE-R59R - CLOCKWISE AND ANTI-CLOCKWISE ROTATION CODES.....B11
- APPENDIX "A".....B12
- APPENDIX "B".....B13

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The data on this catalogue refer to the standard product. The policy of Salami consist of a continuous improvement of its products. It reserves the right to change the specifications of the different products whenever necessary and without giving any information. If any doubts, please get in touch with our sales department.



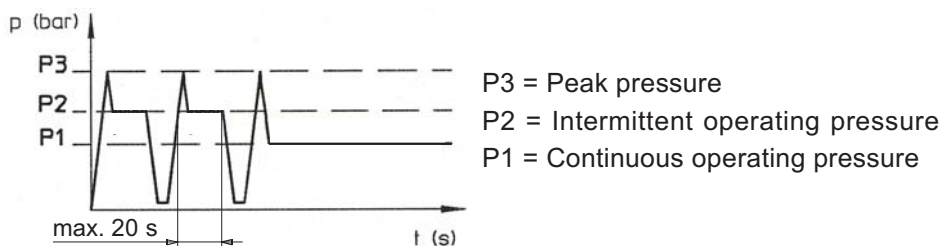
1.5 PE

Aluminium gear pumps

Section A - Technical catalogue

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DEFINITION OF PRESSURES



GENERAL

- Superior performance and reliability in heavy-duty hydraulic application
- Construction with large area, high efficiency and long life in severe operating environments
- The design includes an advanced bushing and seal configuration, which optimizes performance even in high temperature and low viscosity conditions
- Double pump with common suction reduces mounting costs, allow for a small package size

WORKING CONDITIONS

- Pump inlet pressure (absolute pressure)	0,7 to 2,5 bar 10 to 36 psi
- Minimum operating fluid viscosity ¹	12 mm ² / sec
- Max starting viscosity	800 mm ² / sec
- Suggested fluid viscosity range	17 - 65 mm ² / sec
- Fluid operating temperature range	- 15 to 85 °C
- Fluid operating temperature range with FPM seals(Viton) ...	- 20 to 110°C
- Hydraulic fluid	mineral oil

Important:

in case of assembling of pumps without shaft seals, you have to keep the value of min. suction pressure (0.7 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.

1 - With reduction 80% of working pressure and at minimum speed.

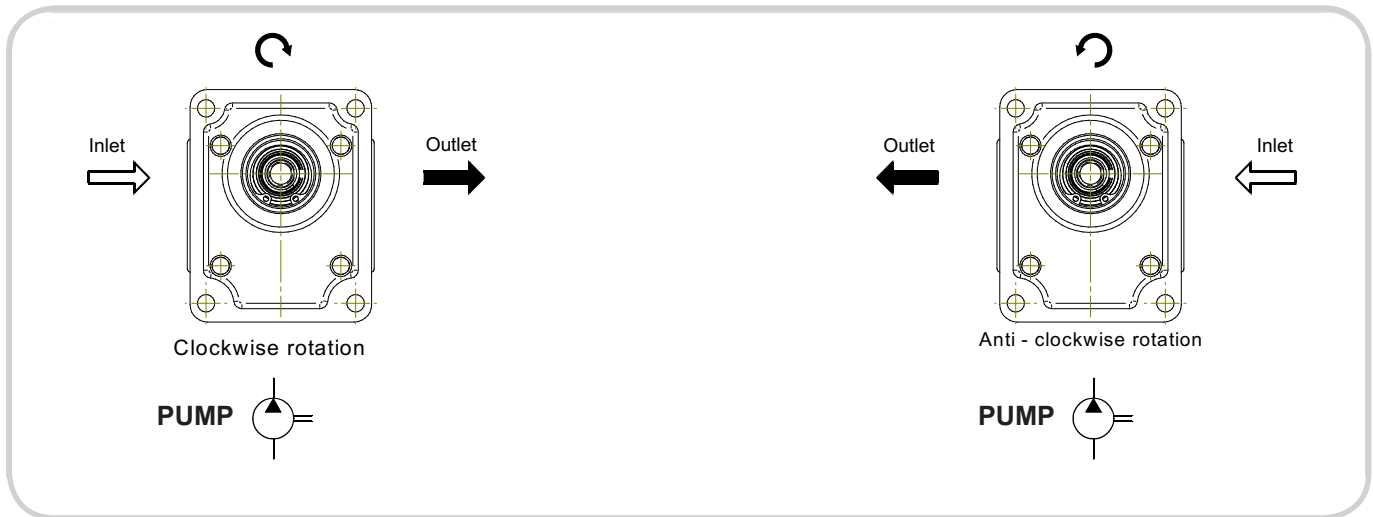
Suggestion:

to have the best behaviour and duty life of the pump/motor, use a cooling system in order to keep the fluid temperature at 60°C and viscosity at 20 cSt. In addition to the recommended filtration index of page 3.

DRIVE SHAFTS

Radial and axial loads on the shafts must be avoided since they reduce the life of the unit.

DIRECTION VIEWED AT THE DRIVE SHAFT



HYDRAULIC PIPE LINE

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

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

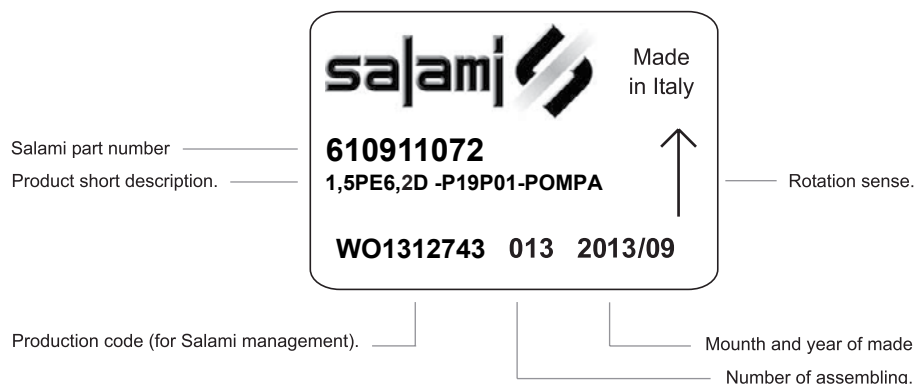
From 1 to 2 m/sec on suction pipe line
From 6 to 10 m/sec on pressure pipe line

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 continuous duty.

The highest value is recommended when the temperature difference is low and/or for intermittent duty.

DESCRIPTION OF THE PRODUCT IDENTIFICATION LABEL



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

FIRE RESISTENT FLUID

Type	Description	Max pressure	Max speed (rpm)	Temperature
HFB	oil emulsion with 40% water	130 bar/1880 psi	2500	3°C +65°C
HFC	Water glycol	180 bar/2600 psi	1500	-20°C +65°C
HFD	Phosphate esters		1750	-10°C +80°C

COMMON FORMULAS FOR PUMPS

C = Input torque = $\frac{q \cdot \Delta p}{62.8 \cdot \eta_m}$ (Nm)

P = Input power = $\frac{q \cdot n \cdot \Delta p \cdot 10^{-3}}{600 \eta_m}$ (kW)

Q = Outlet flow = $\frac{q \cdot n \cdot \eta_v}{1000}$ (l/min)

LEGENDA

Δp = Working pressure (bar)

q = Displacement (cm³/rev)

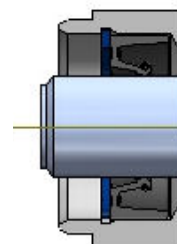
n = Speed (min⁻¹)

η_m = Mechanical eff. (0.92)

η_v = Volumetric eff. (0.95)

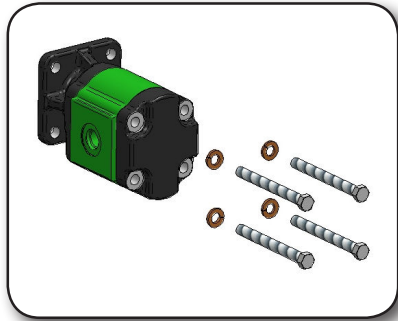
SHAFT SEAL DESIGN, PRESSURE AND MATERIALS AVAILABLE

Max pressure	3 bar (44 psi)
Material BUNA (NBR)	-15° C - 85° C
Material VITON (FPM)	-20° C - 110° C



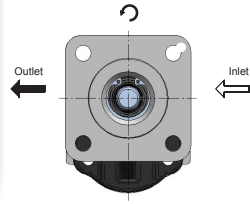
ROTATION CHANGE INSTRUCTION

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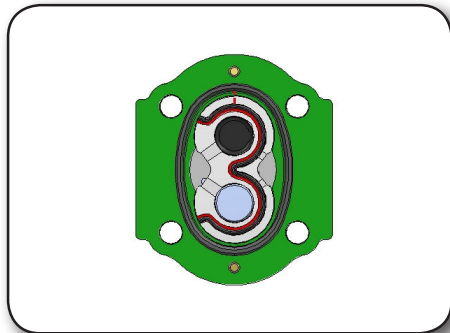
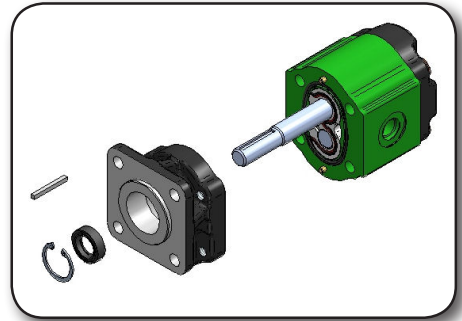


Step 1:
unscrew and take off the 4 assembling bolts.

ANTI-CLOCKWISE

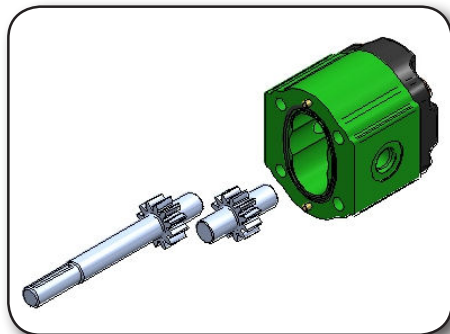
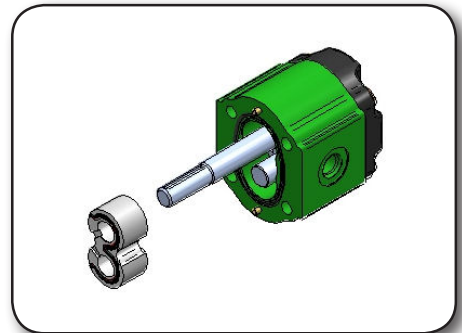


Step 2:
take off the front flange, complete of shaft seal.
In case of key, it has to be taken off before of the flange.
To avoid the damage of the shaft seal.



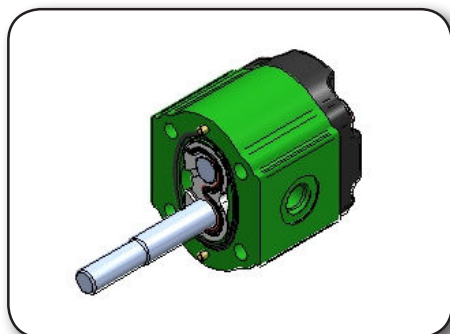
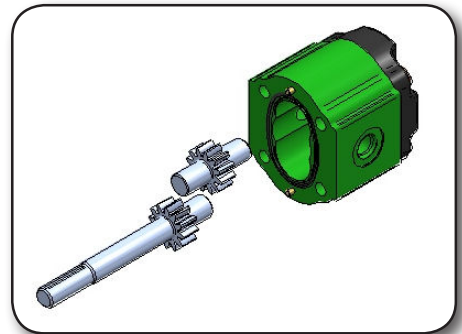
Step 3:
take note of the assembling position of the bronze thrust plate. If necessary, you can put a mark which help you remembering the position of the plate related to the body. This is very important, because at the end you must re-assemble it in this way.

Step 4:
take off the bushing.



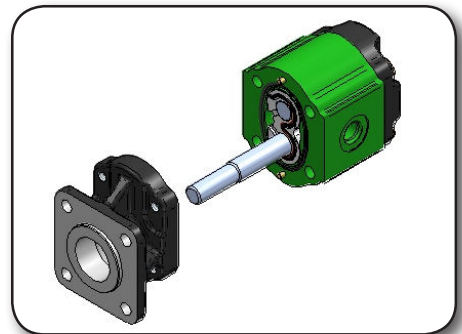
Step 5:
take off both the shafts, drive and driven.

Step 6:
reverse their position and re-assemble them.



Step 7:
re-assemble the thrust plate in the same position it was at the beginning. Reference step 3.

Step 8:
reverse and re-assemble the front flange.

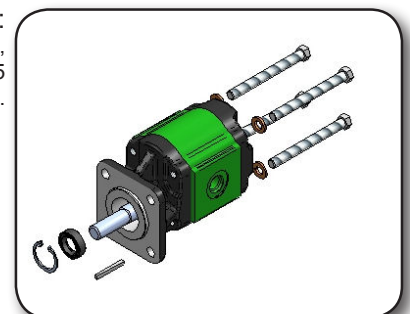
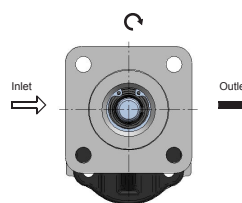


RELEASE SHOWED **R83S1**

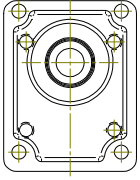
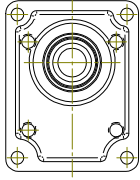
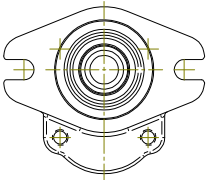
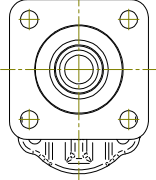
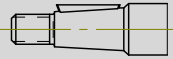
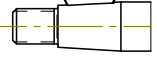
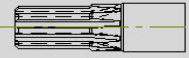


The instruction is valid for all the configurations.

Step 9:
re-place and screw the bolts, taking care of the torque 25 - 30 Nm.

CLOCKWISE



SUGGESTED COMBINATIONS OF FLANGES AND SHAFTS AVAILABLE

<p>1.5 PE</p>	 <p>CODE P0 - (Ø25.4 mm) European stand.</p>	 <p>CODE P01 - (Ø30 mm) European stand.</p>	 <p>CODE S0 - SAE AA 2 bolts</p>	 <p>CODE S1 - SAE AA 4 bolts</p>
 <p>CODE 18 - Tapered 1:8</p>	<p>18P0</p>			
 <p>CODE 19 - Tapered 1:8</p>		<p>19P01</p>		
 <p>CODE 51 - SAE A 9T</p>			<p>51S0</p>	
 <p>CODE 80 - SAE AA PARALLEL</p>			<p>80S0</p>	
 <p>CODE 83 - SAE STRAIGHT</p>				<p>83S1</p>

Showed release with flange P0 and shaft 18

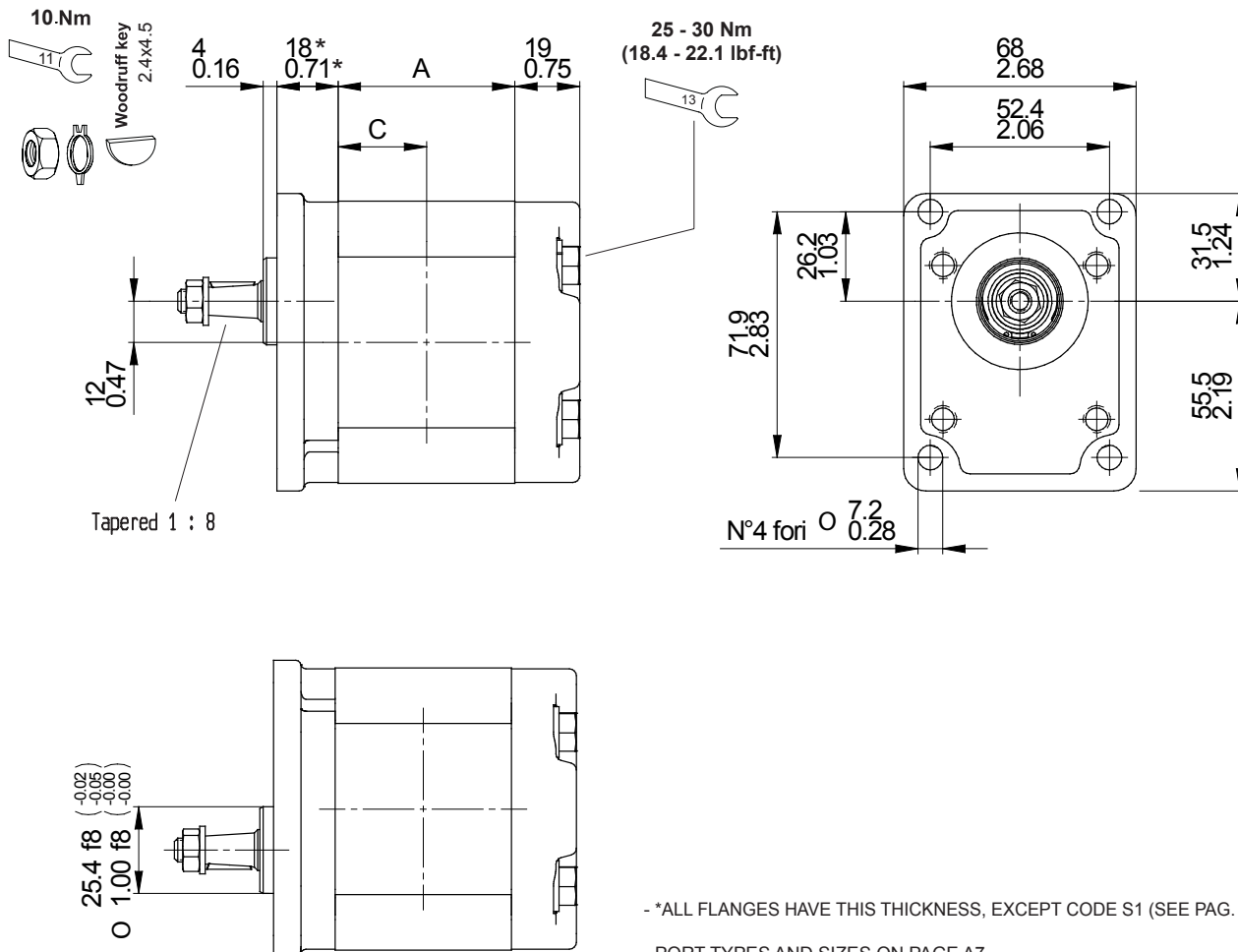


GEAR PUMPS

Performance carried out with oil viscosity at 16 cSt and oil temperature at 60°C.

TYPE		1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11
Displacements	cm ³ /rev	1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11
	cu.in./rev	0,09	0,13	0,17	0,21	0,25	0,32	0,38	0,46	0,57	0,67
Dimension A	mm	44	45,9	47,9	49,9	51,6	54,7	57,5	61,5	66,3	71,1
	in	1,73	1,81	1,89	1,96	2,03	2,15	2,26	2,42	2,61	2,80
Dimension C	mm	22	22,95	23,95	24,95	25,8	27,35	28,75	30,75	33,15	35,55
	in	0,87	0,90	0,94	0,98	1,02	1,08	1,13	1,21	1,31	1,40
Working pressure P1*	bar	250		250			230		200	180	170
	psi	3625		3625			3335		2900	2610	2465
Intermittent pressure P2	bar	270		270			250		220	200	190
	psi	3915		3915			3625		3190	2900	2755
Peak pressure P3	bar	290		290			270		250	240	220
	psi	4205		4205			3915		3625	3480	3190
Max. speed at P2	rpm	5000		4500		4000		3600	3300	3000	
Min. speed at P1	rpm	700				600					

*For working conditions, using exclusively pressure P1, the value of max. speed must be reduced of 15%.



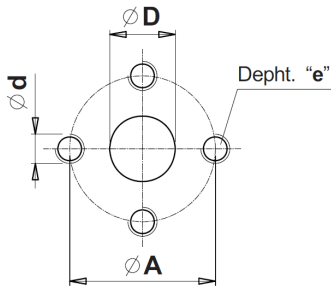
- *ALL FLANGES HAVE THIS THICKNESS, EXCEPT CODE S1 (SEE PAG. A11 - A12)

- PORT TYPES AND SIZES ON PAGE A7

- AVAILABLE SHAFTS ON PAGE A12

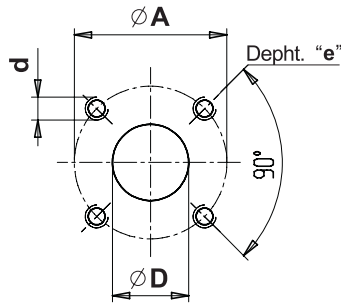


AVAILABLE PORTS



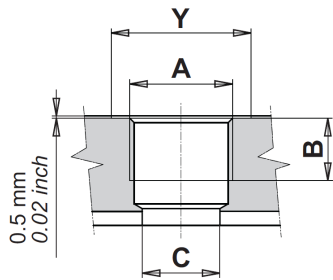
code P

TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51



code B

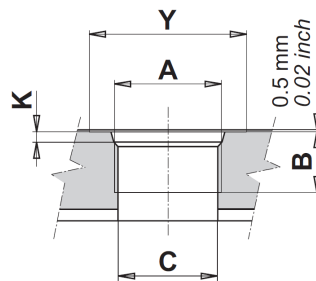
TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51



code G

British standard pipe parallel (BSPP)

TYPE	INLET				OUTLET			
	A	B	C	Y	A	B	C	Y
From 1.4 to 6.2	G1/2"	15	18	30	G3/8"	13	13	25
		0,59	0,71	1,18		0,51	0,51	0,98
From 7.6 to 11	G1/2"	15	18	30	G1/2"	15	13	30
		0,59	0,71	1,18		0,59	0,51	1,18



code R

SAE threaded (ODT)

TYPE	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 1.4 to 6.2	3/4"	14,5	17,3	30	2,5	9/16"	13	13	25	2,5
	16 UNF	0,57	0,68	1,18	0,10	18 UNF	0,51	0,51	0,98	0,10
From 7.6 to 11	7/8"	16,7	20,2	34	2,5	3/4"	14,5	15	30	2,5
	14 UNF	0,66	0,80	1,34	0,10	16 UNF	0,57	0,59	1,18	0,10





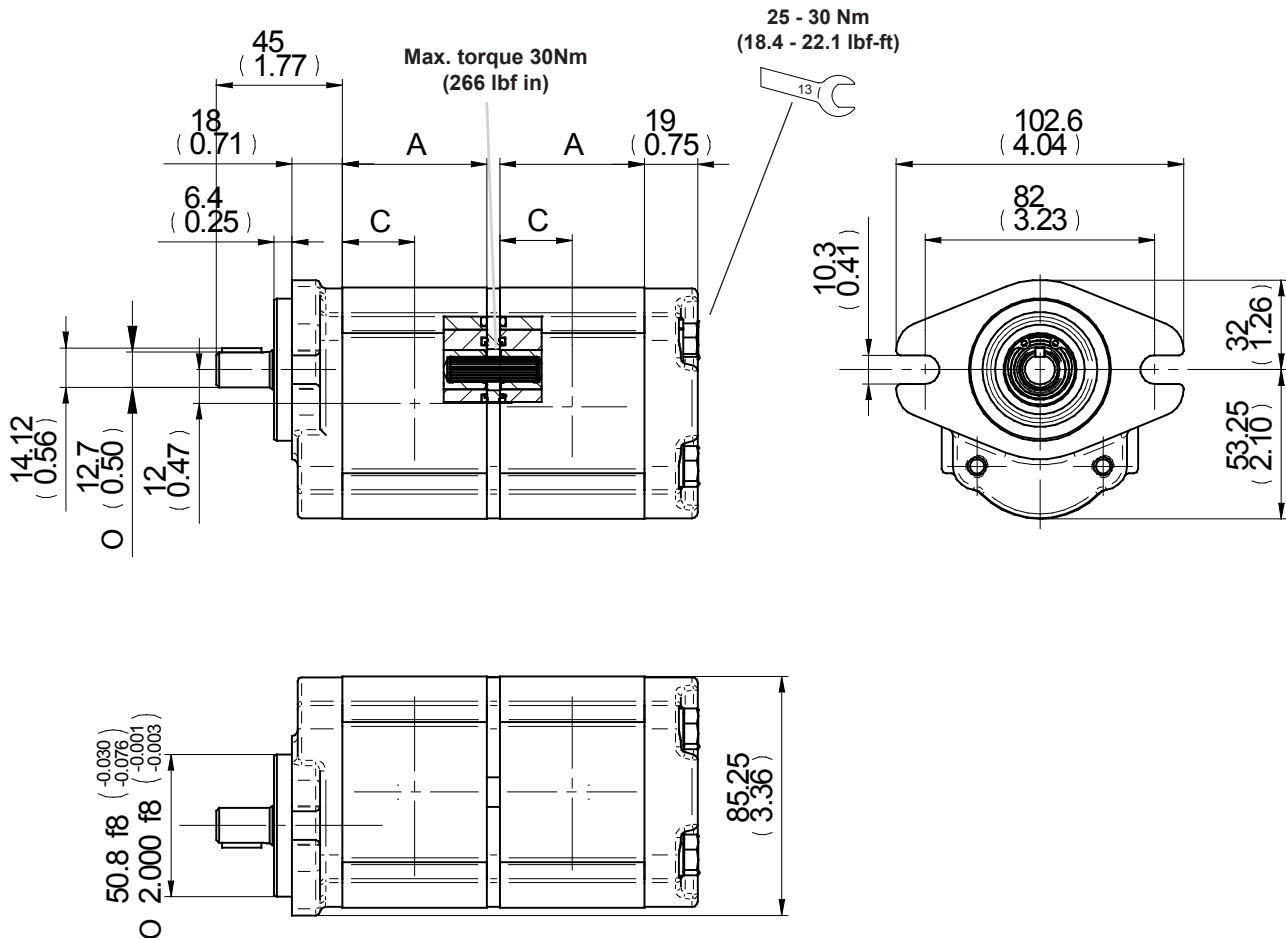
**Showed release with
flange S0 and shaft 80**

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.

Performance carried out with oil viscosity at 16 cSt and oil temperature at 60°C.

TYPE		1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11
Displacements	cm ³ /rev	1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11
	cu.in./rev	0,09	0,13	0,17	0,21	0,25	0,32	0,38	0,46	0,57	0,67
Dimension A	mm	44	45,9	47,9	49,9	51,6	54,7	57,5	61,5	66,3	71,1
	in	1,73	1,81	1,89	1,96	2,03	2,15	2,26	2,42	2,61	2,80
Dimension C	mm	22	22,95	23,95	24,95	25,8	27,35	28,75	30,75	33,15	35,55
	in	0,87	0,90	0,94	0,98	1,02	1,08	1,13	1,21	1,31	1,40
Working pressure P1*	bar	250		250			230		200	180	170
	psi	3625		3625			3335		2900	2610	2465
Intermittent pressure P2	bar	270		270			250		220	200	190
	psi	3915		3915			3625		3190	2900	2755
Peak pressure P3	bar	290		290			270		250	240	220
	psi	4205		4205			3915		3625	3480	3190
Max. speed at P2	rpm	5000		4500		4000		3600	3300	3000	
Min. speed at P1	rpm	700				600					

*For working conditions, using exclusively pressure P1, the value of max. speed must be reduced of 15%.



- *ALL FLANGES HAVE THIS THICKNESS, EXCEPT CODE S1 (SEE PAG. A11 - A12)

- AVAILABLE SHAFTS ON PAGE A12

- PORT TYPES AND SIZES ON PAGE A7

- COMMON SUCTION PORT SIZE ON PAGE A9



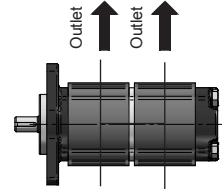
GEAR PUMPS "E" SERIES

1.5PE

FOR REASON OF READABILITY, IN CASE OF INTENSIVE USE, WE CAN PROVIDE THE FOLLOWING TABLE AS A STANDALONE EXCEL FILE, WITH MORE DETAILED DATA (VALUES OF SPEED AND FLOW).

SPEED m/sec	FLOW - l/min																PIPE INTERNAL DIAMETER - mm	PIPE INTERNAL AREA - cm ²								
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32			34	36	40					
SUCTION	0.5	9.2	13.0	15.9	18.4	20.6	22.6	24.4	26.0	27.6	29.1	30.5	31.9	33.2	34.5	35.7	36.8	38.0	39.1	41.2	36.8	5.994	6.327	6.660		
	1	0.666	0.999	1.332	1.665	1.998	2.331	2.664	2.997	3.330	3.663	3.996	4.329	4.662	4.995	5.328	5.661	5.994	6.327	6.660	18.4	19.5	20.1	20.6		
	1.3	6.5	8.0	9.2	10.3	11.3	12.2	13.0	13.8	14.6	15.3	15.9	16.6	17.2	17.8	18.4	19.0	19.5	20.1	20.6	2.498	2.831	2.997	3.164	3.330	
BACK TO TANK	1.5	0.333	0.500	0.666	0.833	0.999	1.166	1.332	1.499	1.665	1.832	1.998	2.165	2.331	2.498	2.664	2.831	2.997	3.164	3.330	15.6	16.7	17.1	17.6	18.1	
	1.8	0.256	0.384	0.512	0.640	0.768	0.897	1.025	1.153	1.281	1.409	1.537	1.665	1.793	1.921	2.049	2.177	2.305	2.434	2.562	14.6	15.5	15.9	16.4	16.8	
	2	5.3	6.5	7.5	8.4	9.2	9.9	10.6	11.3	11.9	12.5	13.0	13.6	14.1	14.6	15.0	15.5	15.9	16.4	16.8	1.665	1.776	1.887	1.998	2.109	2.220
PRESSURE LINE	2.5	0.222	0.333	0.444	0.555	0.666	0.777	0.888	0.999	1.110	1.221	1.332	1.443	1.554	1.665	1.776	1.887	1.998	2.109	2.220	13.3	14.1	14.6	15.0	15.3	
	3	4.9	5.9	6.9	7.7	8.4	9.1	9.7	10.3	10.9	11.4	11.9	12.4	12.8	13.3	13.7	14.1	14.6	15.0	15.3	1.388	1.480	1.573	1.665	1.758	1.850
	3.5	0.185	0.278	0.370	0.463	0.555	0.648	0.740	0.833	0.925	1.018	1.110	1.203	1.295	1.388	1.480	1.573	1.665	1.758	1.850	12.6	13.0	13.4	13.8	14.2	14.6
SPEED m/sec	4	4.6	5.6	6.5	7.3	8.0	8.6	9.2	9.8	10.3	10.8	11.3	11.7	12.2	12.6	13.0	13.4	13.8	14.2	14.6	1.249	1.332	1.415	1.499	1.582	1.665
	4.5	0.167	0.250	0.333	0.416	0.500	0.583	0.666	0.749	0.833	0.916	0.999	1.082	1.166	1.249	1.332	1.415	1.499	1.582	1.665	11.3	11.6	12.0	12.4	12.7	13.0
	5	0.133	0.200	0.266	0.333	0.400	0.466	0.533	0.599	0.666	0.733	0.799	0.866	0.932	0.999	1.066	1.132	1.199	1.265	1.332	10.6	11.0	11.3	11.6	11.9	12.2
SPEED m/sec	6	3.8	4.6	5.3	5.9	6.5	7.0	7.5	8.0	8.4	8.8	9.2	9.6	9.9	10.3	10.6	11.0	11.3	11.6	11.9	0.888	0.944	0.999	1.055	1.110	
	6.5	0.111	0.167	0.222	0.278	0.333	0.389	0.444	0.500	0.555	0.611	0.666	0.722	0.777	0.833	0.888	0.944	0.999	1.055	1.110	9.8	10.1	10.4	10.7	11.0	
	7	3.5	4.3	4.9	5.5	6.0	6.5	7.0	7.4	7.8	8.2	8.5	8.9	9.2	9.5	9.8	10.1	10.4	10.7	11.0	0.761	0.809	0.856	0.904	0.951	
SPEED m/sec	4	0.095	0.143	0.190	0.238	0.285	0.333	0.381	0.428	0.476	0.523	0.571	0.618	0.666	0.714	0.761	0.809	0.856	0.904	0.951	8.9	9.2	9.5	9.8	10.0	10.3
	4.5	0.083	0.125	0.167	0.208	0.250	0.291	0.333	0.375	0.416	0.458	0.500	0.541	0.583	0.624	0.666	0.708	0.749	0.791	0.833	8.7	8.9	9.2	9.5	9.7	
	5	0.074	0.111	0.148	0.185	0.222	0.259	0.296	0.333	0.370	0.407	0.444	0.481	0.518	0.555	0.592	0.629	0.666	0.703	0.740	8.2	8.5	8.7	9.0	9.2	
SPEED m/sec	6	2.9	3.6	4.1	4.6	5.0	5.4	5.8	6.2	6.5	6.8	7.1	7.4	7.7	8.0	8.2	8.5	8.7	9.0	9.2	0.484	0.515	0.545	0.575	0.605	
	6.5	0.067	0.100	0.133	0.167	0.200	0.233	0.266	0.300	0.333	0.366	0.400	0.433	0.466	0.500	0.533	0.566	0.599	0.633	0.666	7.8	7.8	8.0	8.2	8.4	
	7	2.8	3.4	3.9	4.4	4.8	5.2	5.6	5.9	6.2	6.5	6.8	7.1	7.3	7.6	7.9	8.1	8.3	8.6	8.8	0.444	0.472	0.500	0.527	0.555	
SPEED m/sec	6	2.7	3.3	3.8	4.2	4.6	5.0	5.3	5.6	5.9	6.2	6.5	6.8	7.0	7.3	7.5	7.8	8.0	8.2	8.4	7.4	7.4	7.7	7.9	8.1	
	6.5	0.056	0.083	0.111	0.139	0.167	0.194	0.222	0.250	0.278	0.305	0.333	0.361	0.389	0.416	0.444	0.472	0.500	0.527	0.555	0.435	0.461	0.487	0.512		
	7	2.6	3.1	3.6	4.0	4.4	4.8	5.1	5.4	5.7	6.0	6.3	6.5	6.8	7.0	7.2	7.4	7.7	7.9	8.1	0.404	0.428	0.452	0.476		

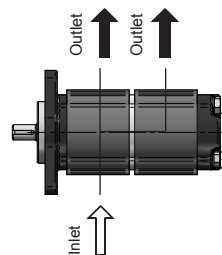
In case of suction on both the stages, the size of the ports are the ones listed on pages 8.



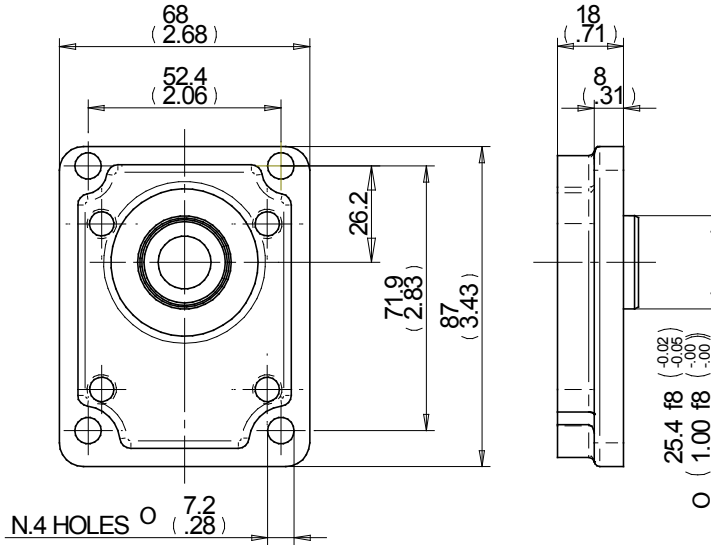
In case of common suction configuration, we have to take care of the area of the common suction port to avoid cavitation.

The suggested speed of the oil at suction line is 1.5 m/sec, using this table and according of which is the total flow which goes into the pump, you can obtain the value of the proper diameter (mm) and proper area (cm²).

When needed, special bodies with an enlarged inlet port are available.



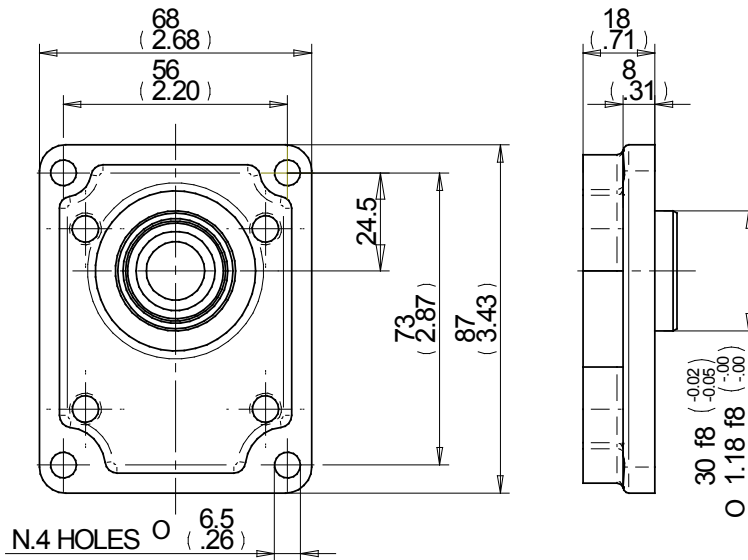
AVAILABLE FLANGES



European standard mounting flange

Material: cast iron

P0	Available assembling shafts			
Tapered	18			



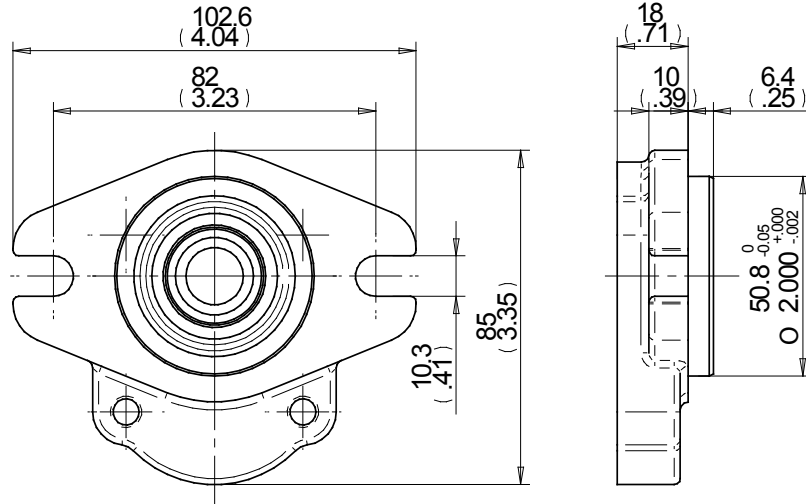
European standard mounting flange

Material: cast iron

P01	Available assembling shafts			
Tapered	19			



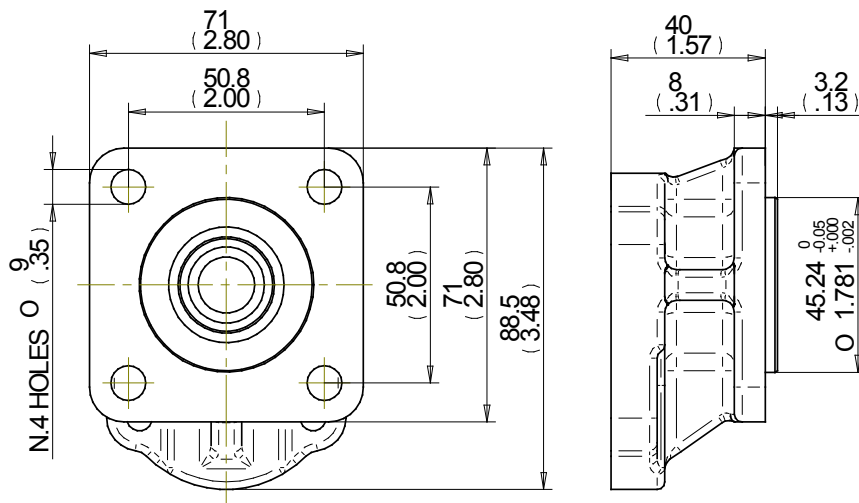
AVAILABLE FLANGES



SAE AA mounting flange (2 bolts)

Material: cast iron

S0	Available assembling shafts			
Splined	51			
Straight	80			



SAE mounting flange (4 bolts)

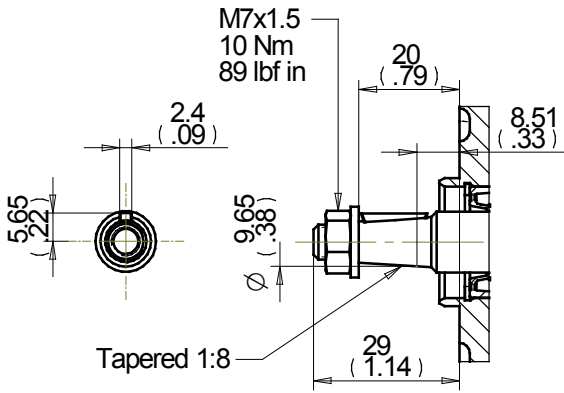
Material: cast iron

S1	Available assembling shafts			
Straight	83			



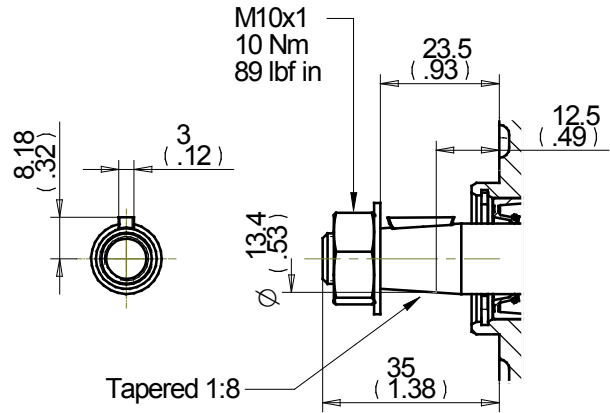
AVAILABLE SHAFTS

EUROPEAN TAPERED 1:8 Code 18



MAX 20 Nm (177 lbf in)

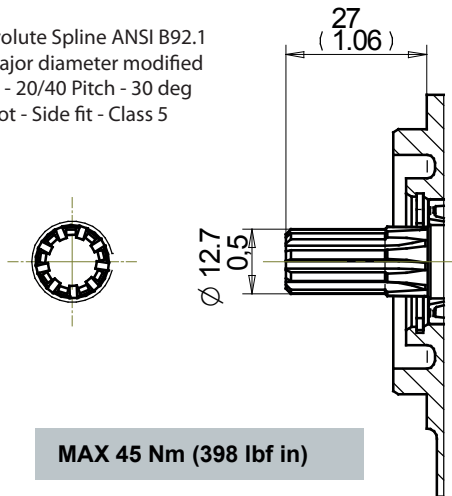
EUROPEAN TAPERED 1:8 Code 19



MAX 60 Nm (531 lbf in)

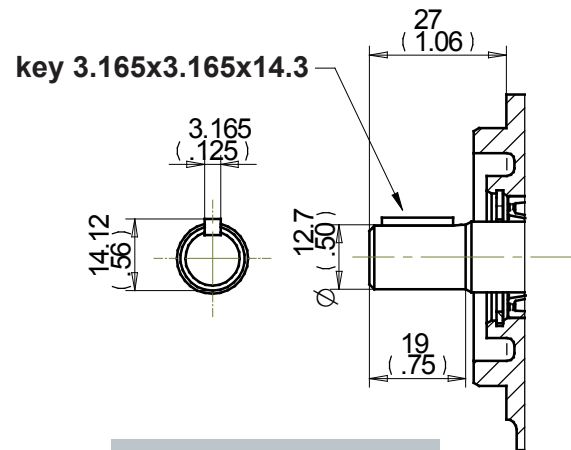
SAE "AA" SPLINE Code 51

Ext. Involute Spline ANSI B92.1 with major diameter modified 9 teeth - 20/40 Pitch - 30 deg Flat Root - Side fit - Class 5



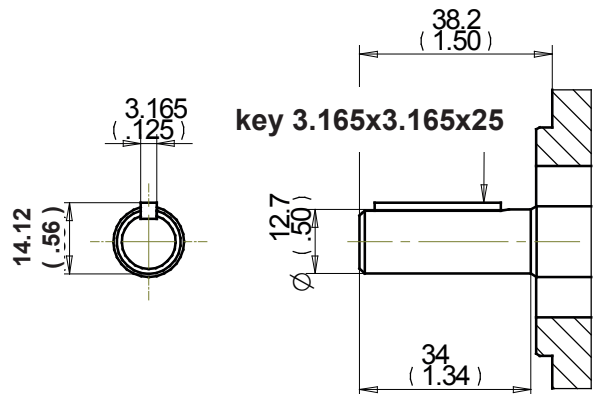
MAX 45 Nm (398 lbf in)

SAE "AA" STRAIGHT Code 80



MAX 30 Nm (266 lbf in)

SAE STRAIGHT Code 83



MAX 40 Nm (354 lbf in)



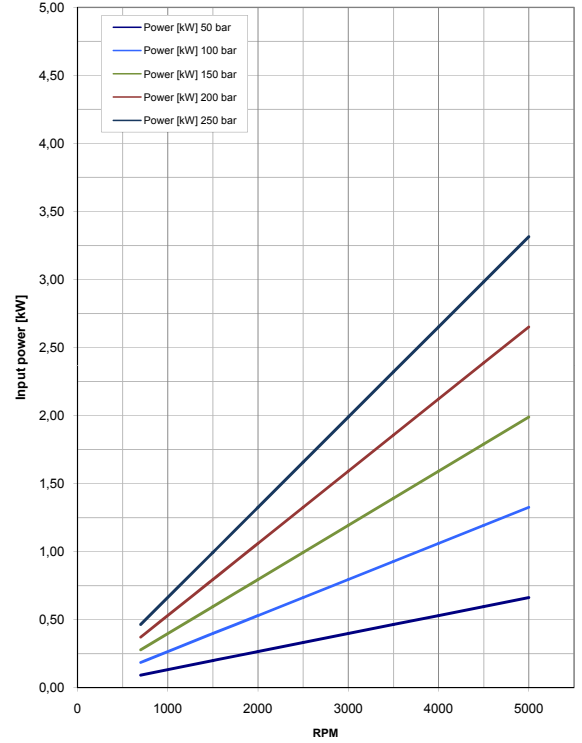
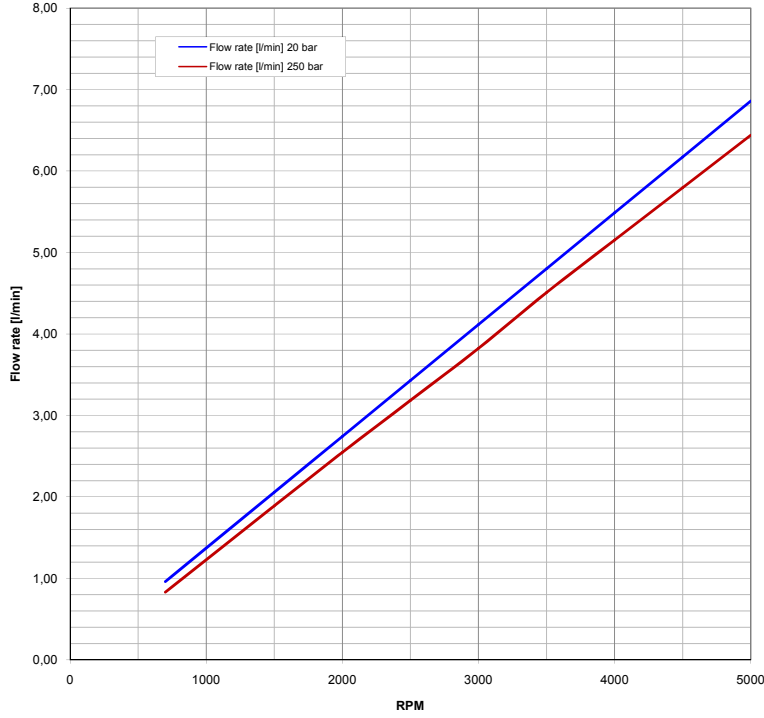
GEAR PUMPS "E" SERIES

1.5PE

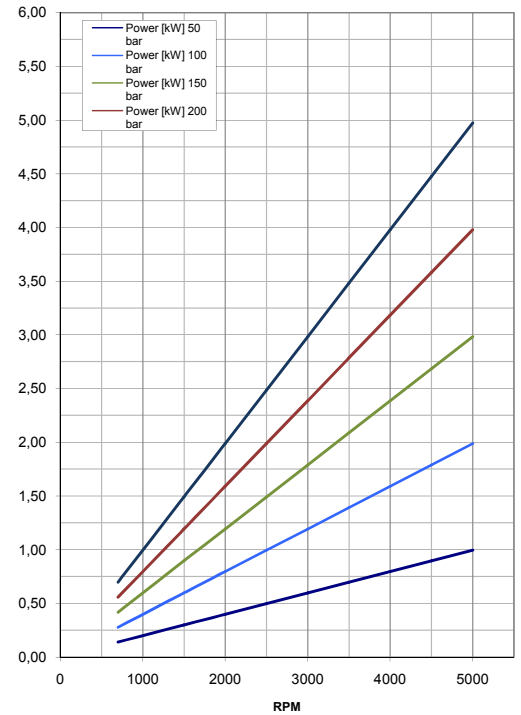
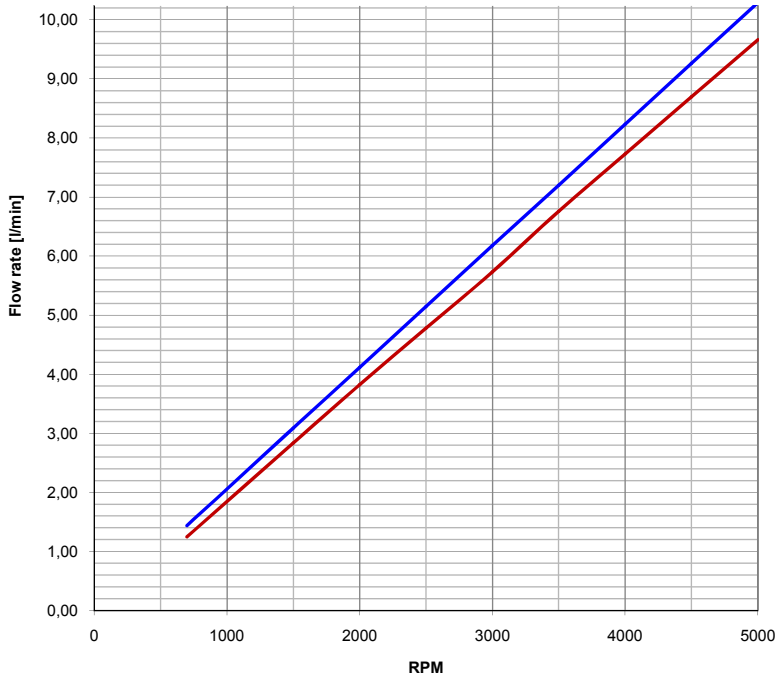
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C

The performance of these diagrams are approximate. In case you need approved values, please get in touch with our technical dept.

1.5PE - 1.4



1.5PE - 2.1



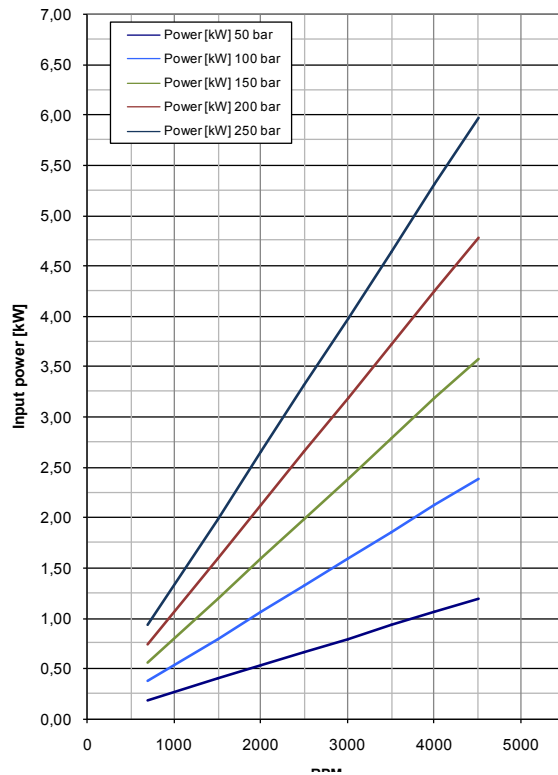
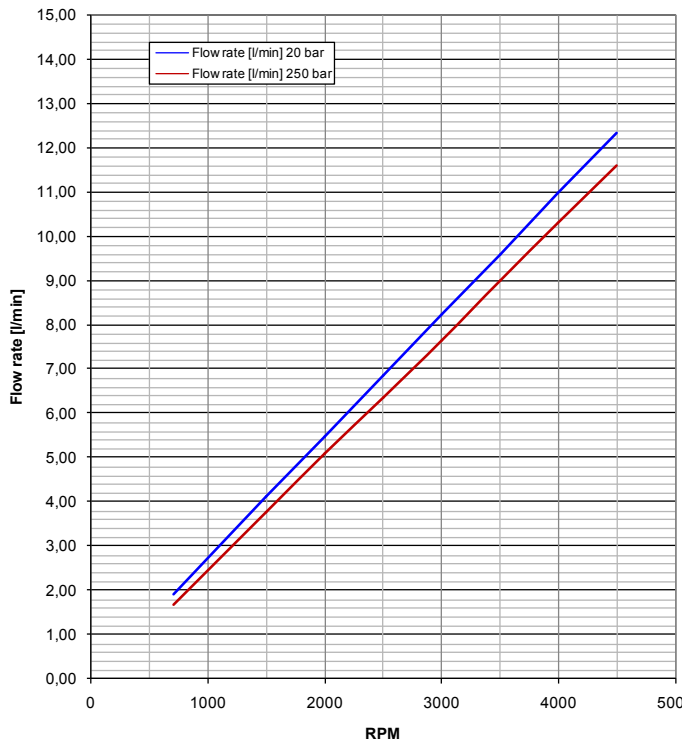
1.5PE

GEAR PUMPS "E" SERIES

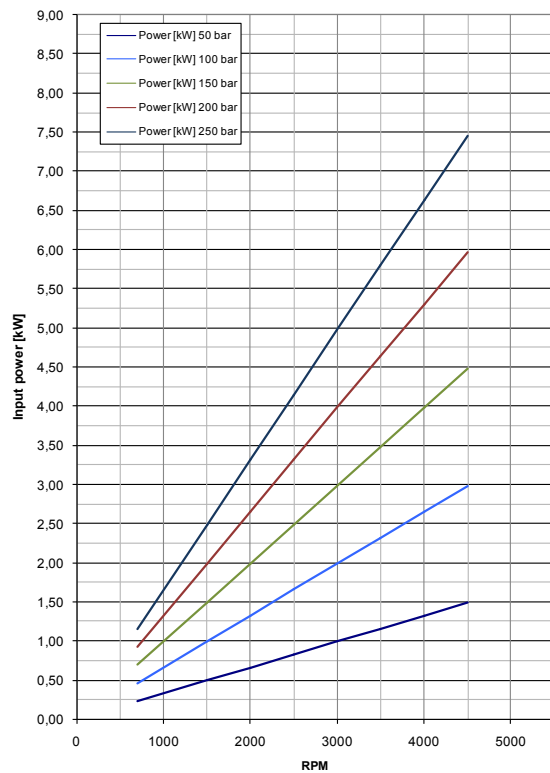
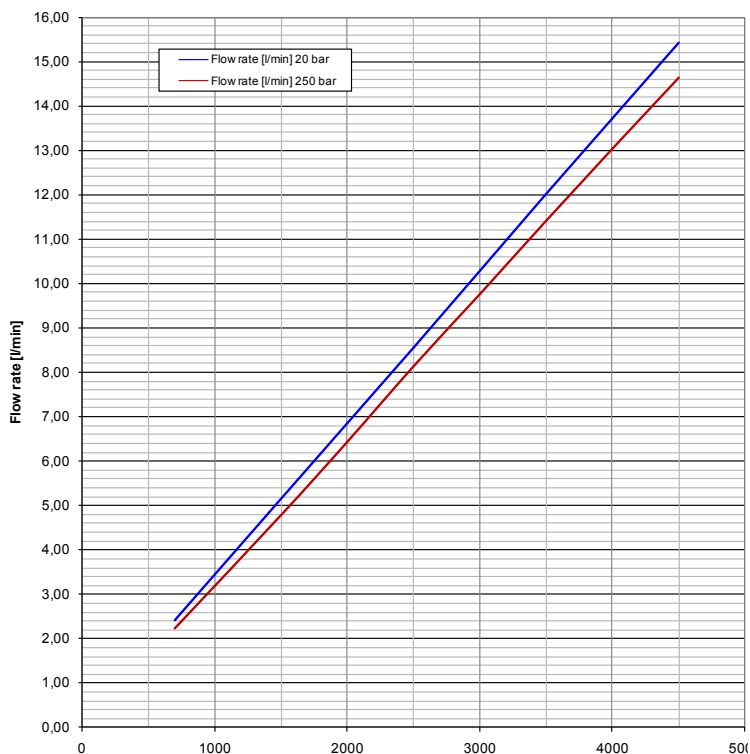
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C.
 The performance of these diagrams are approximate. In case you need approved values, please get in touch with our technical dept.

EO.109.1213.02.00/IM00

1.5PE - 2.8



1.5PE - 3.5



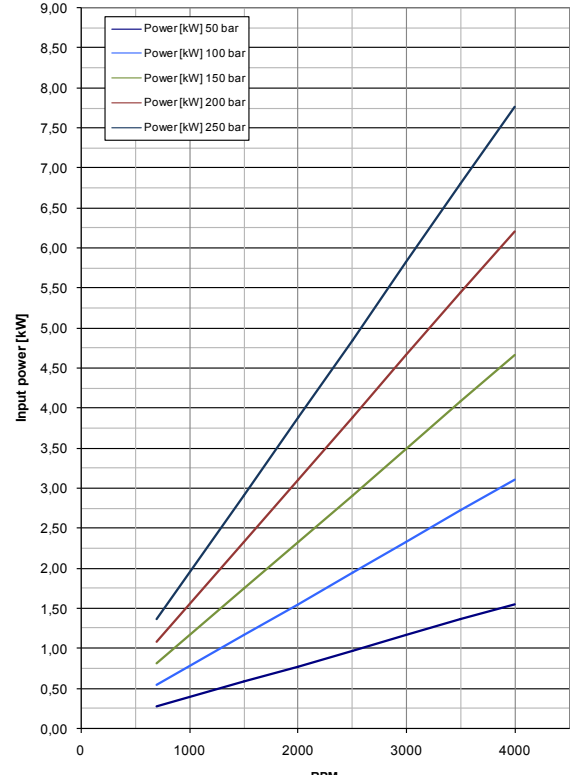
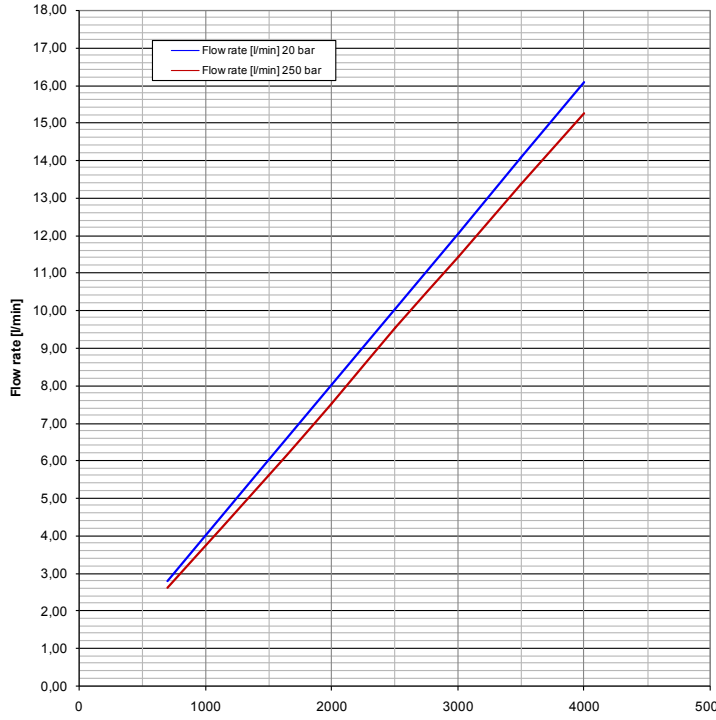
GEAR PUMPS "E" SERIES

1.5PE

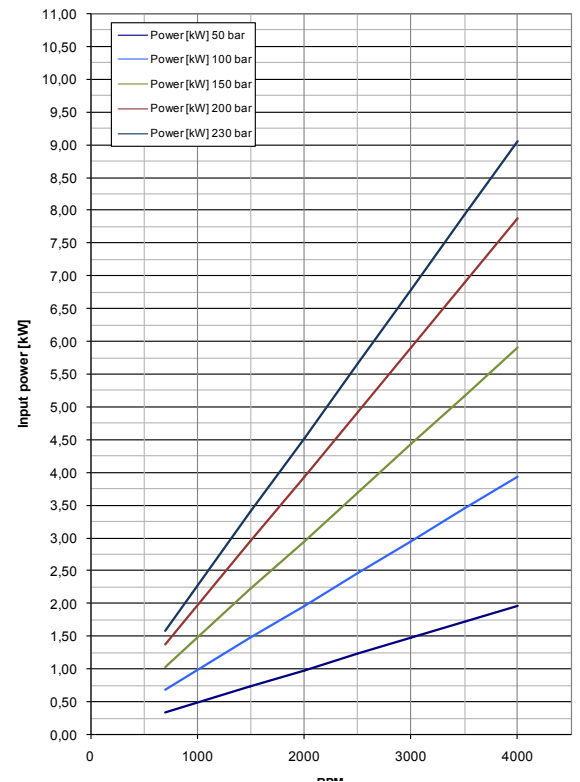
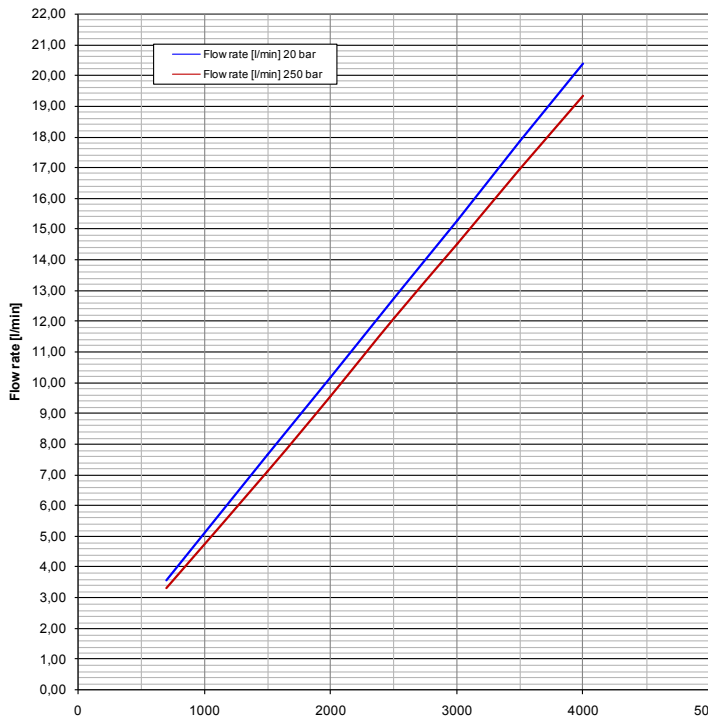
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C

The performance of these diagrams are approximate. In case you need approved values, please get in touch with our technical dept.

1.5PE - 4.1

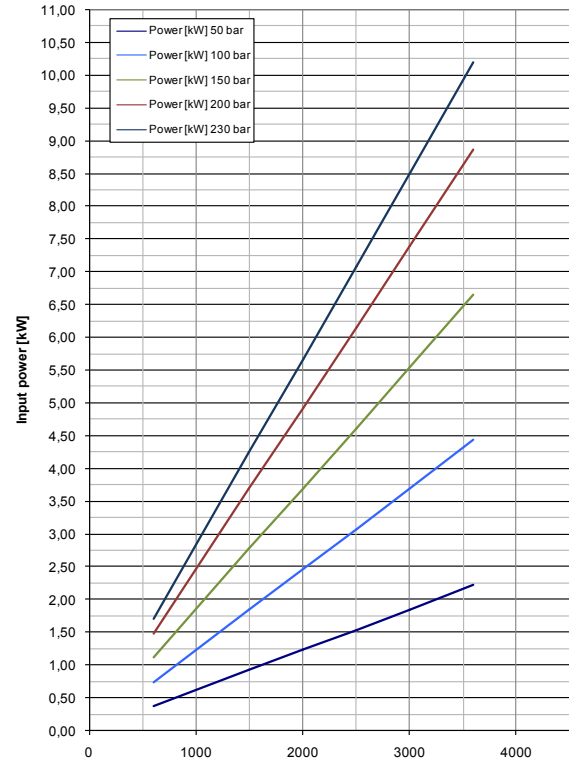
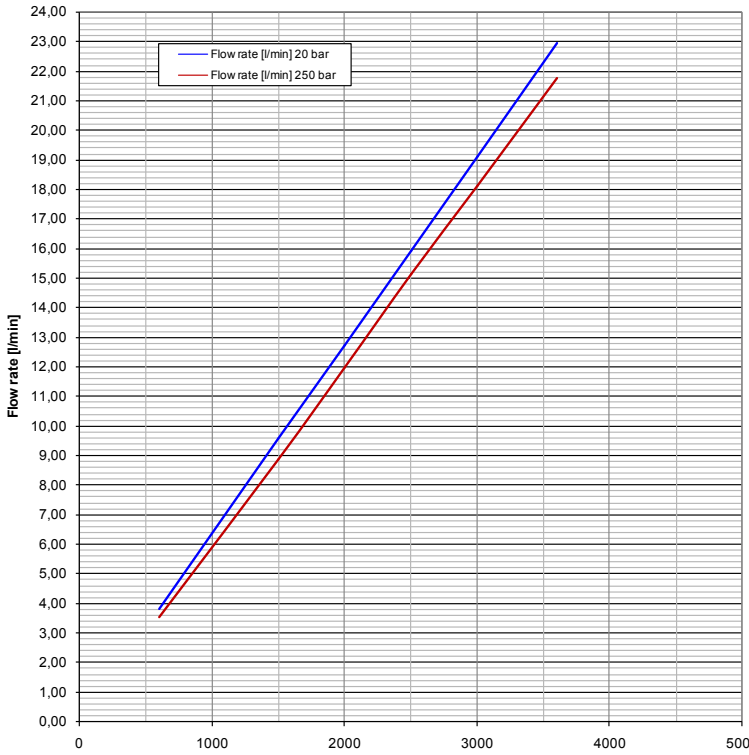


1.5PE - 5.2

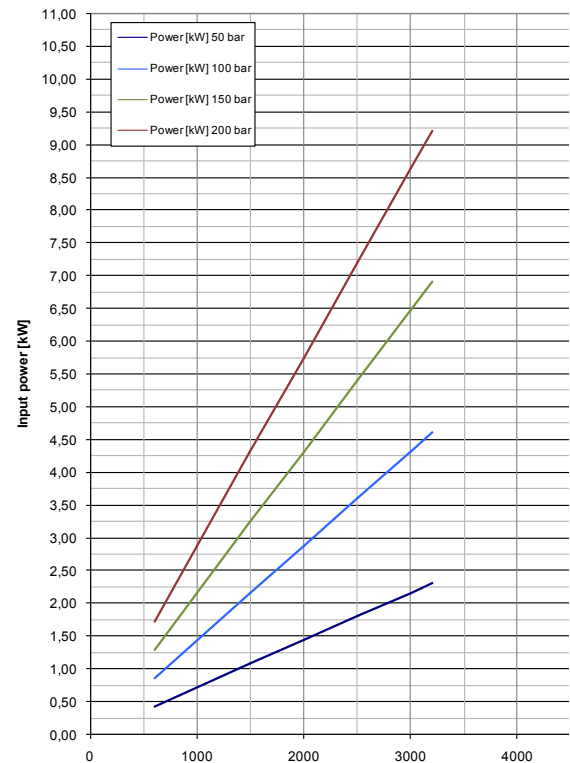
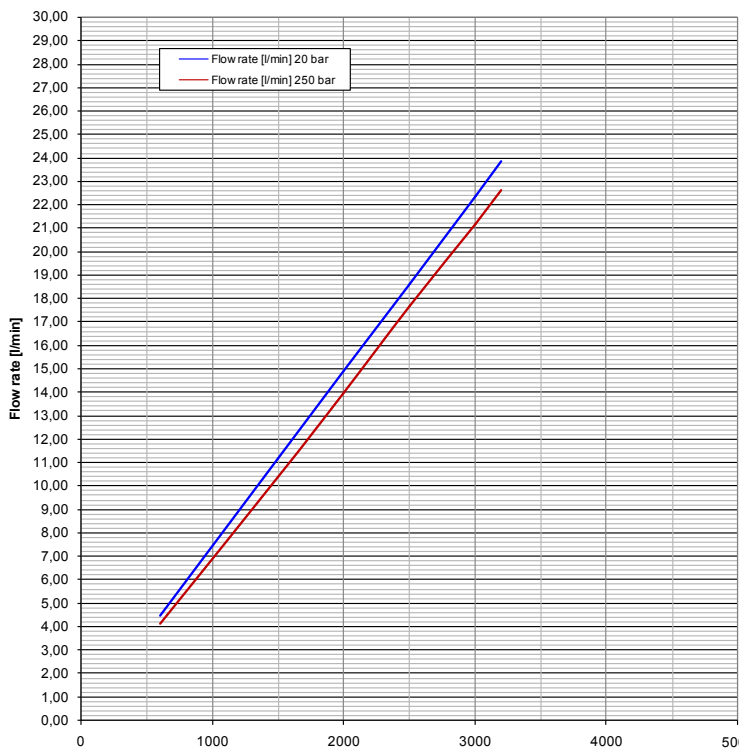


Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C.
 The performance of these diagrams are approximate. In case you need approved values, please get in touch with our technical dept.

1.5PE - 6.2



1.5PE - 7.6



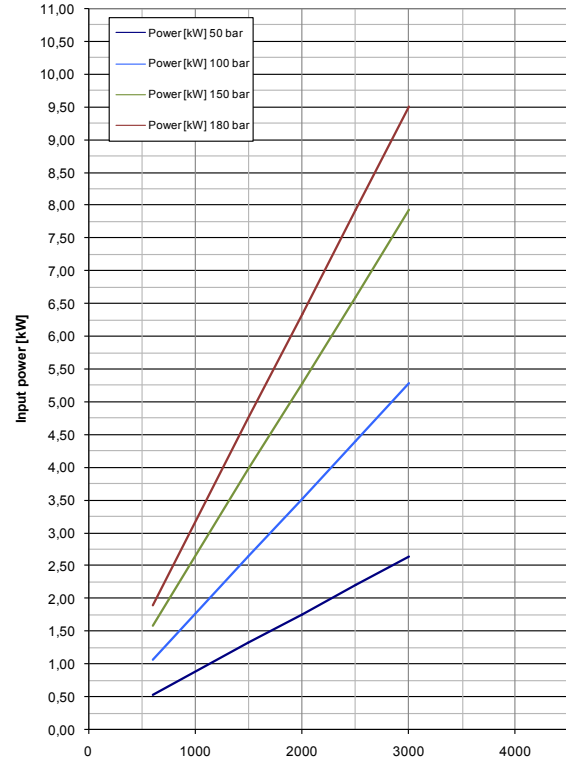
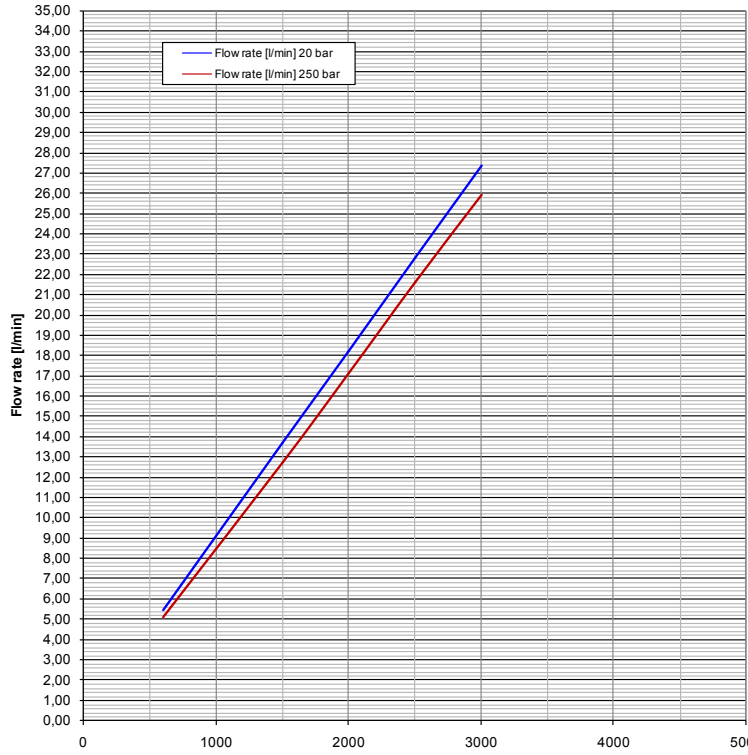
GEAR PUMPS "E" SERIES

1.5PE

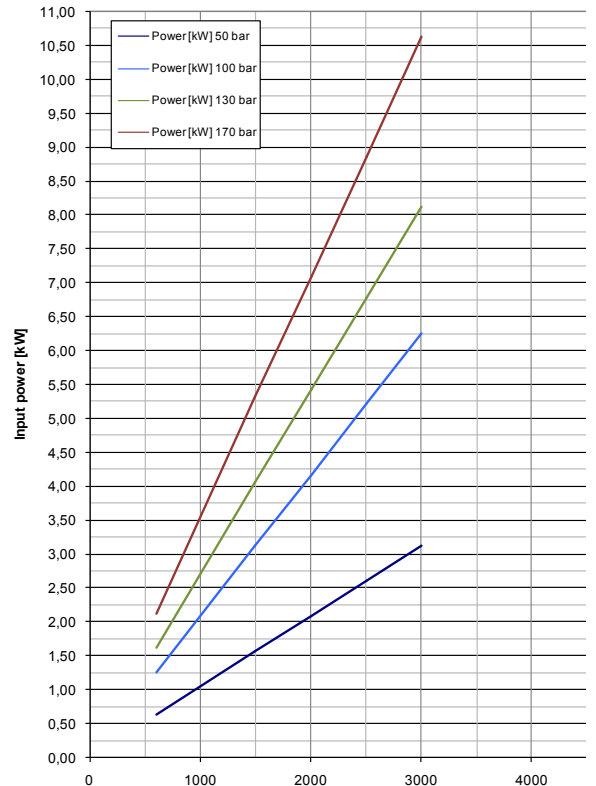
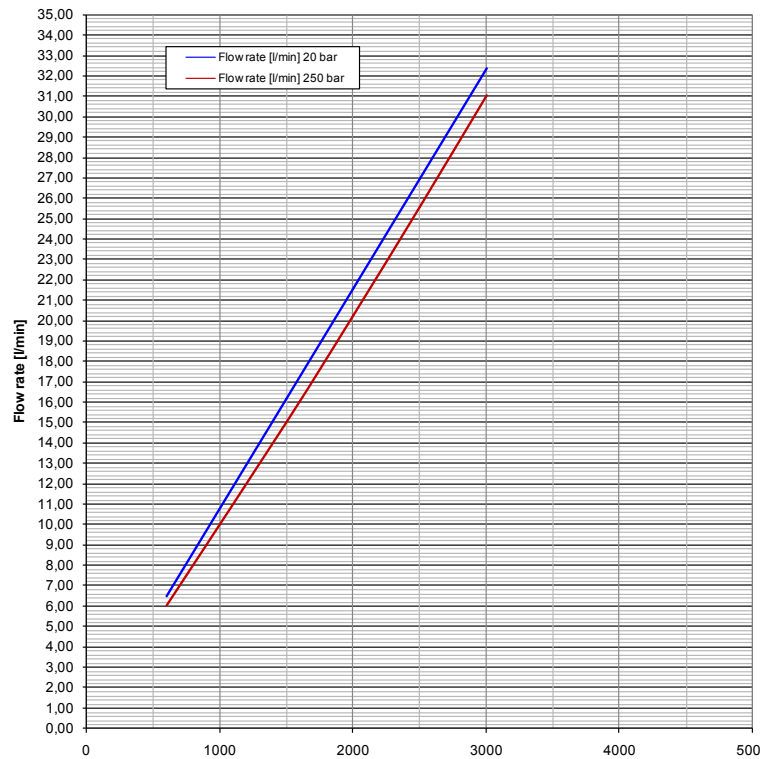
Performance curves carried out with oil viscosity at 21 cSt and oil temperature at 50°C

The performance of these diagrams are approximate. In case you need approved values, please get in touch with our technical dept.

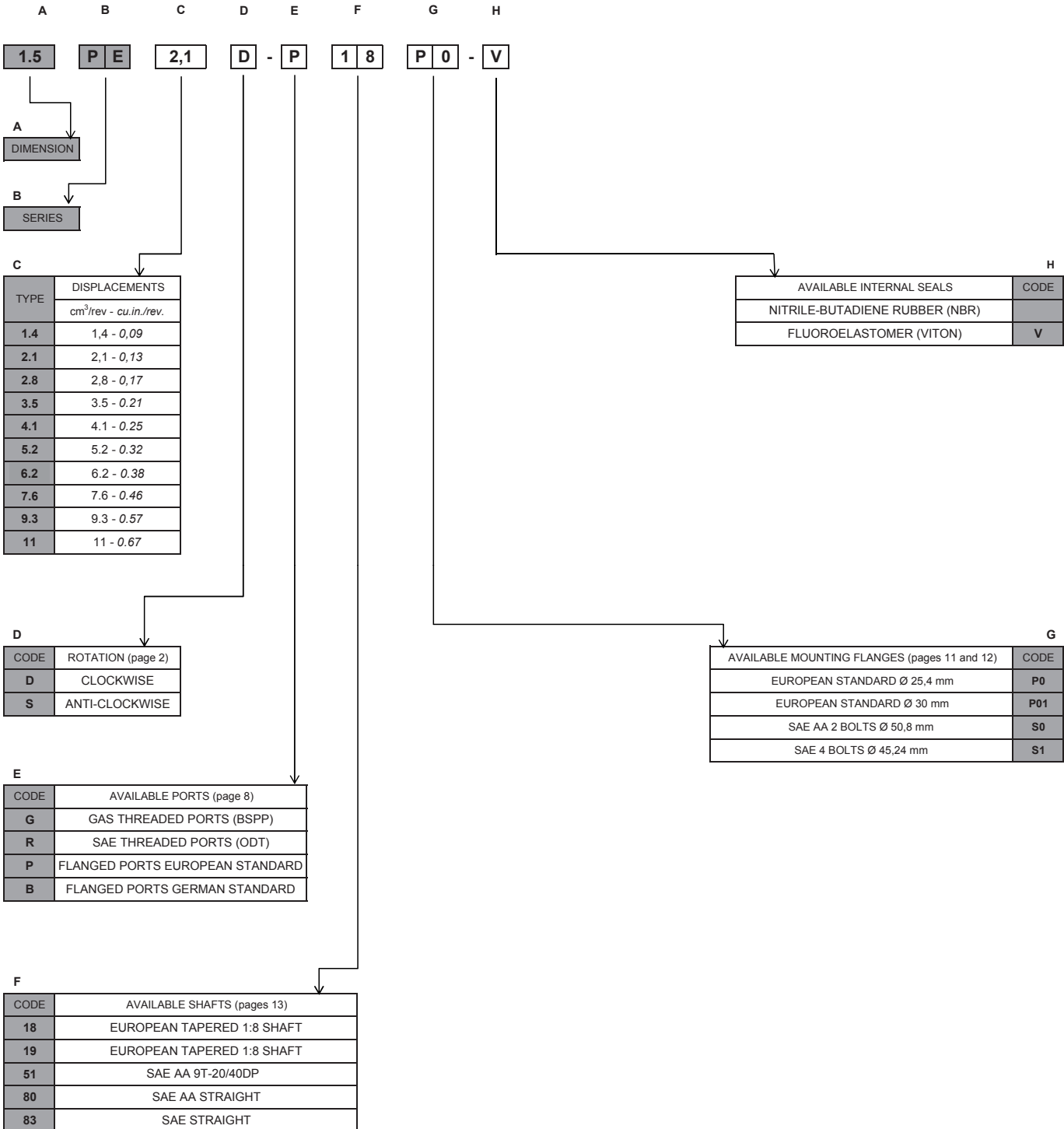
1.5PE - 9.3



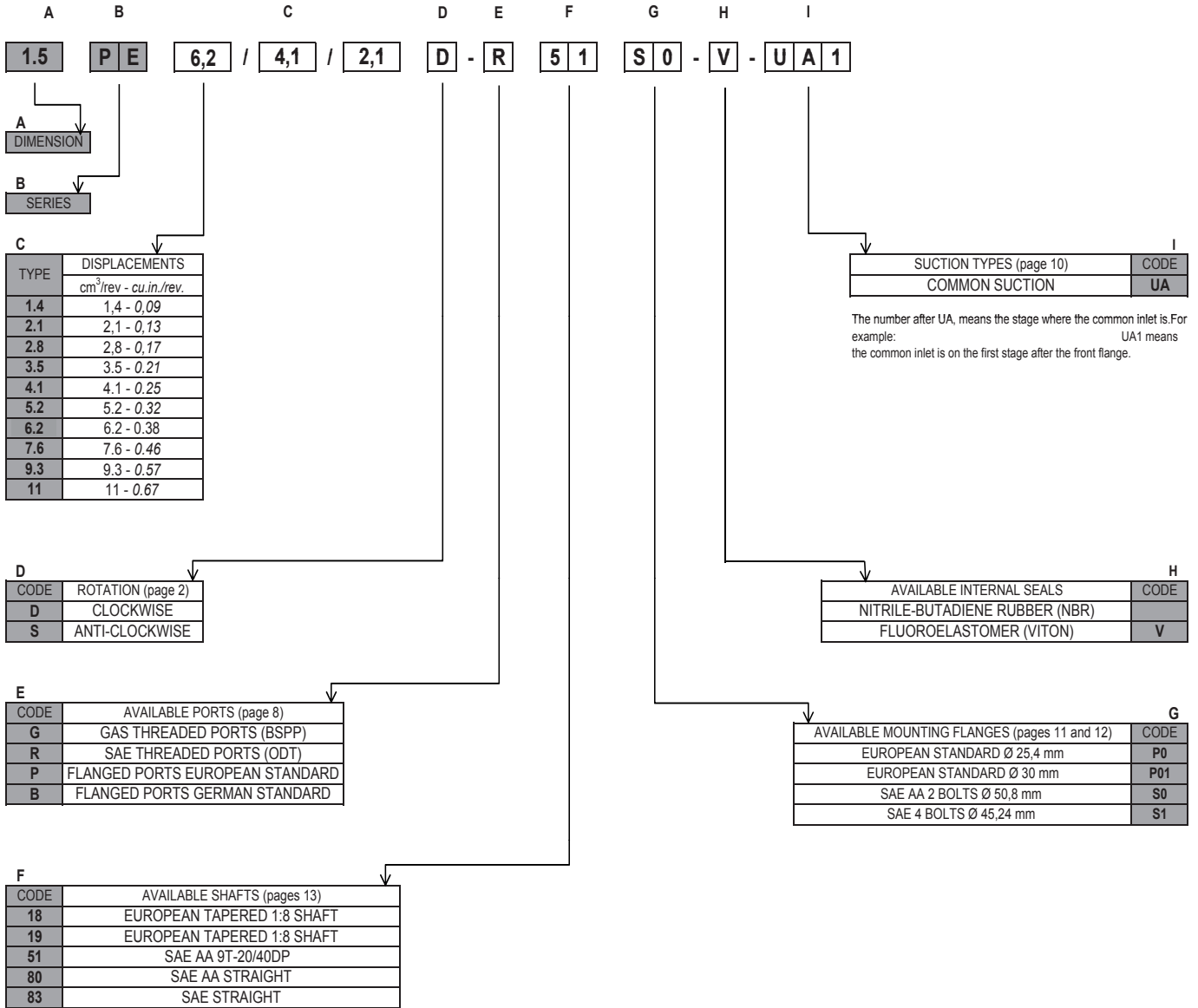
1.5PE - 11



HOW TO ORDER 1.5PE SINGLE PUMP



HOW TO ORDER 1.5PE MULTIPLE PUMP

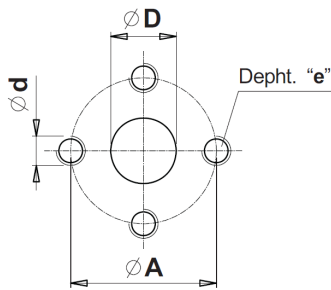
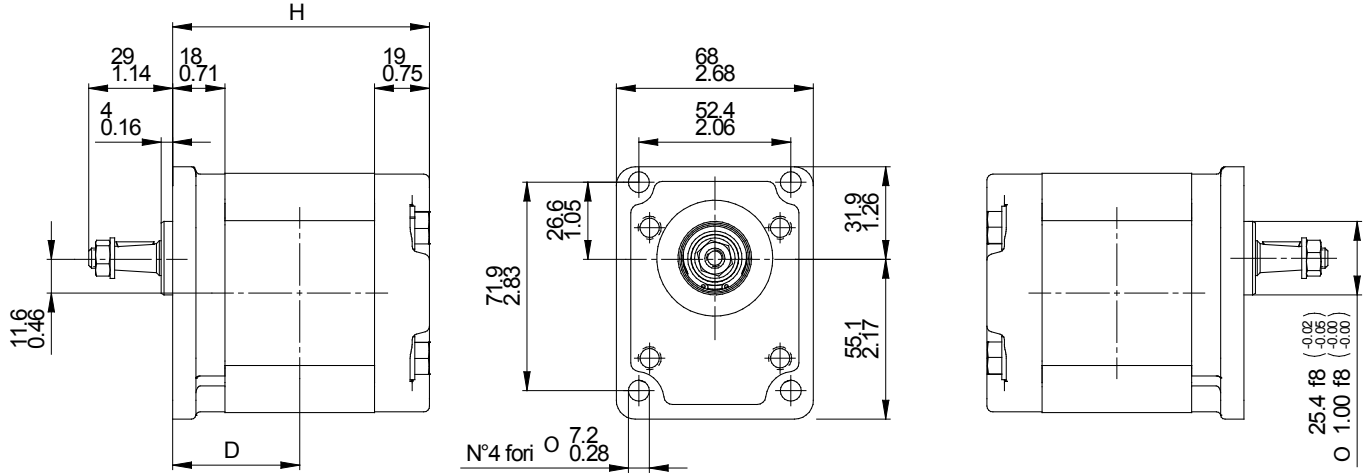


1.5 PE

Aluminium gear pumps

Section B - Dealer management

P18P0 - Clockwise and anti-clockwise rotation codes

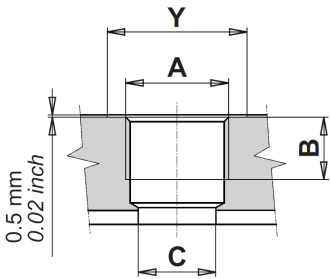
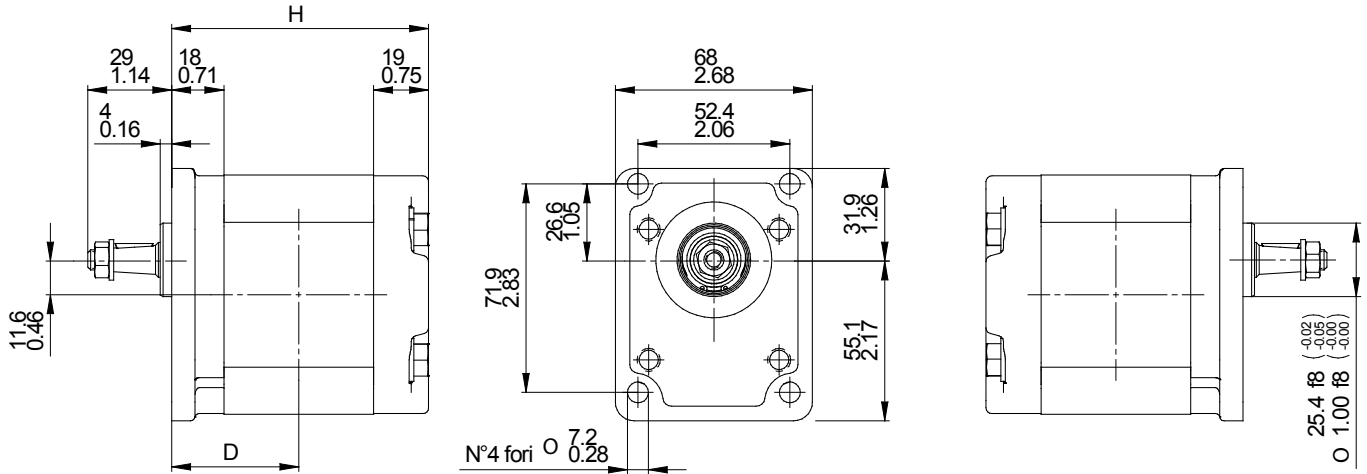


TYPE	INLET				OUTLET			
	$\varnothing D$	$\varnothing A$	d	e	$\varnothing D$	$\varnothing A$	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 111 11	6109 111 12
2,1	0,13	40,95	1,61	82,9	3,26	6109 111 21	6109 111 22
2,8	0,17	41,95	1,65	84,9	3,34	6109 111 31	6109 111 32
3,5	0,21	42,95	1,69	86,9	3,42	6109 111 41	6109 111 42
4,1	0,25	43,8	1,72	88,6	3,49	6109 111 51	6109 111 52
5,2	0,32	45,35	1,79	91,7	3,61	6109 111 61	6109 111 62
6,2	0,38	46,75	1,84	94,5	3,72	6109 111 71	6109 111 72
7,6	0,46	48,75	1,92	98,5	3,88	6109 111 81	6109 111 82
9,3	0,57	51,15	2,01	103,3	4,07	6109 111 91	6109 111 92
11	0,67	53,55	2,11	108,1	4,26	6109 112 01	6109 112 02



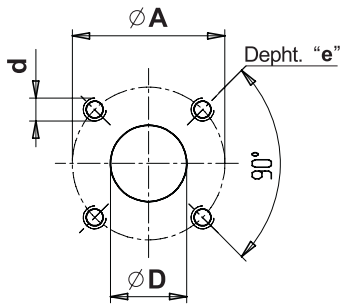
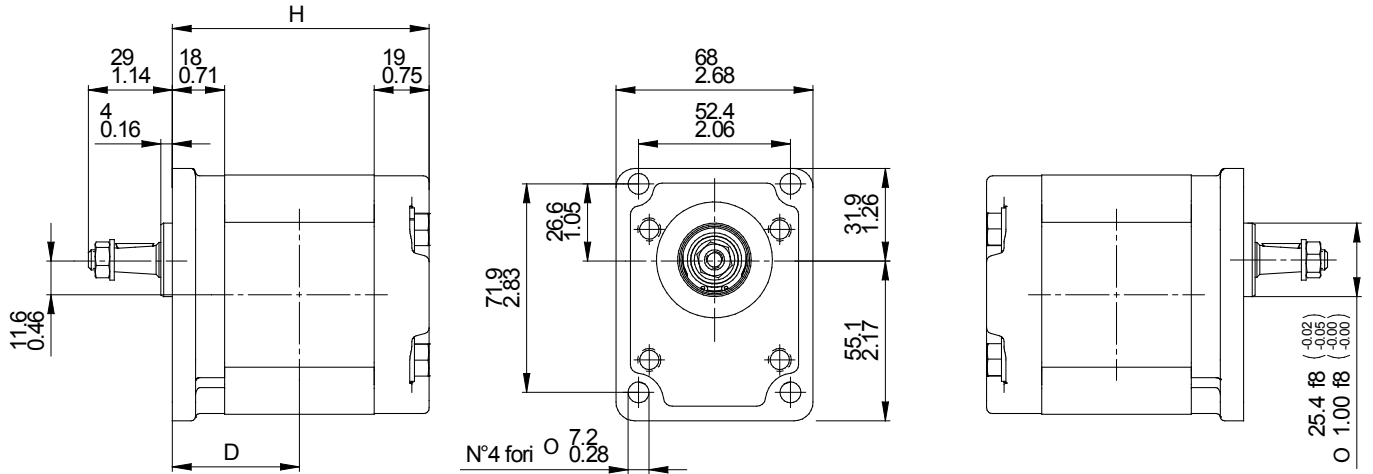
G18P0 - Clockwise and anti-clockwise rotation codes



TYPE	INLET				OUTLET			
	A	B	C	Y	A	B	C	Y
From 1.4 to 6.2	G1/2"	15	19	30	G3/8"	13	13	25
		0,59	0,75	1,18		0,51	0,51	0,98
From 7.6 to 11	G1/2"	15	19	30	G1/2"	15	13	30
		0,59	0,75	1,18		0,59	0,51	1,18

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 101 01	6109 101 02
2,1	0,13	40,95	1,61	82,9	3,26	6109 101 11	6109 101 12
2,8	0,17	41,95	1,65	84,9	3,34	6109 101 21	6109 101 22
3,5	0,21	42,95	1,69	86,9	3,42	6109 101 31	6109 101 32
4,1	0,25	43,8	1,72	88,6	3,49	6109 101 41	6109 101 42
5,2	0,32	45,35	1,79	91,7	3,61	6109 101 51	6109 101 52
6,2	0,38	46,75	1,84	94,5	3,72	6109 101 61	6109 101 62
7,6	0,46	48,75	1,92	98,5	3,88	6109 101 71	6109 101 72
9,3	0,57	51,15	2,01	103,3	4,07	6109 101 81	6109 101 82
11	0,67	53,55	2,11	108,1	4,26	6109 101 91	6109 101 92

B18P0 - Clockwise and anti-clockwise rotation codes

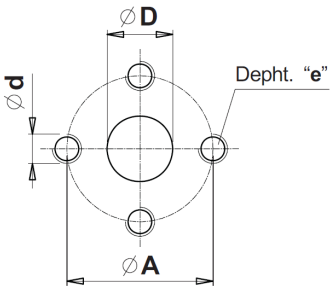
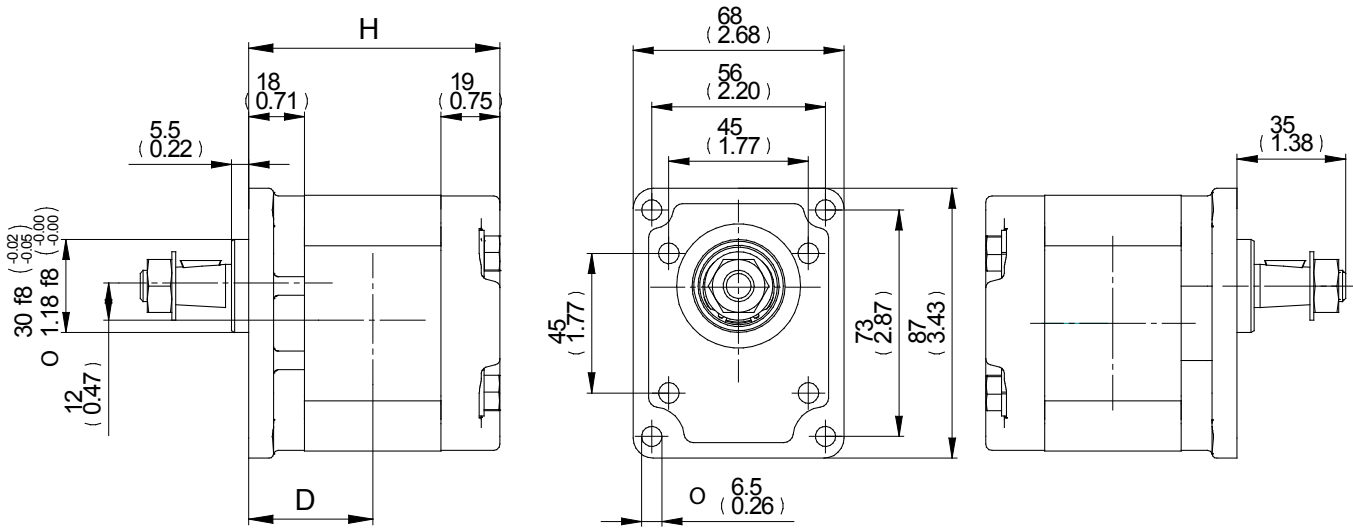


TYPE	INLET				OUTLET			
	$\varnothing D$	$\varnothing A$	d	e	$\varnothing D$	$\varnothing A$	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 102 01	6109 102 02
2,1	0,13	40,95	1,61	82,9	3,26	6109 102 11	6109 102 12
2,8	0,17	41,95	1,65	84,9	3,34	6109 102 21	6109 102 22
3,5	0,21	42,95	1,69	86,9	3,42	6109 102 31	6109 102 32
4,1	0,25	43,8	1,72	88,6	3,49	6109 102 41	6109 102 42
5,2	0,32	45,35	1,79	91,7	3,61	6109 102 51	6109 102 52
6,2	0,38	46,75	1,84	94,5	3,72	6109 102 61	6109 102 62
7,6	0,46	48,75	1,92	98,5	3,88	6109 102 71	6109 102 72
9,3	0,57	51,15	2,01	103,3	4,07	6109 102 81	6109 102 82
11	0,67	53,55	2,11	108,1	4,26	6109 102 91	6109 102 92



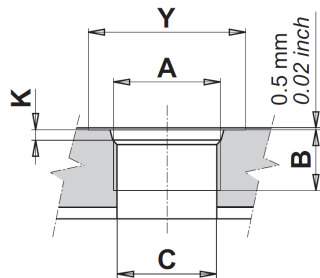
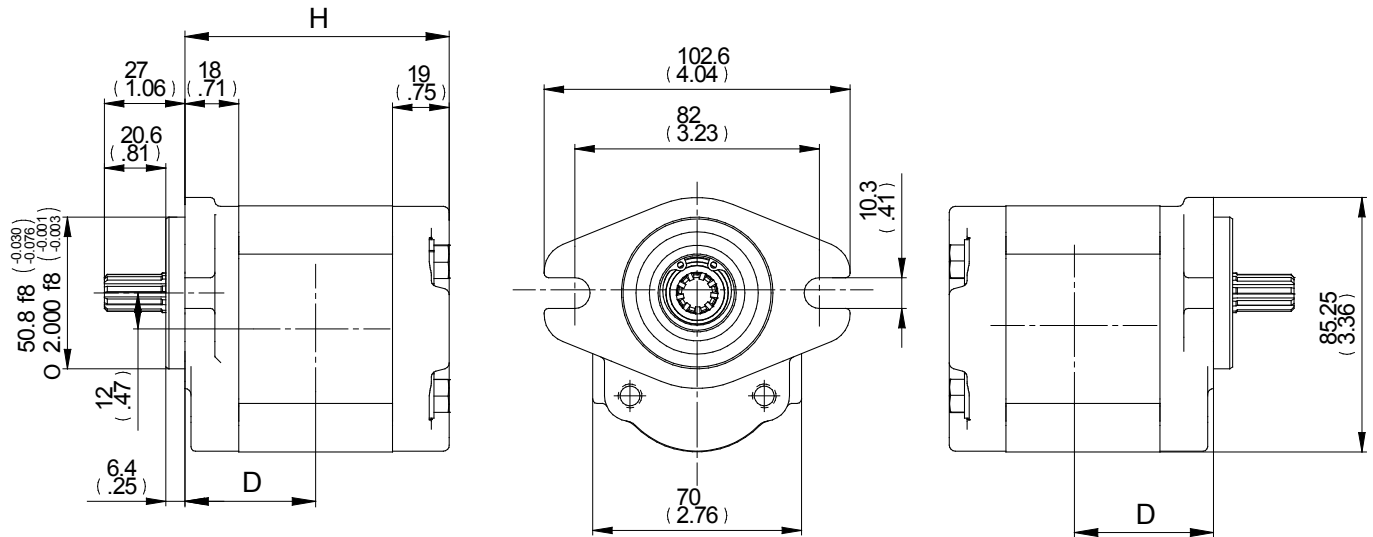
P19P01 - Clockwise and anti-clockwise rotation codes





TYPE	INLET				OUTLET			
	$\varnothing D$	$\varnothing A$	d	e	$\varnothing D$	$\varnothing A$	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 110 11	6109 110 12
2,1	0,13	40,95	1,61	82,9	3,26	6109 110 21	6109 110 22
2,8	0,17	41,95	1,65	84,9	3,34	6109 110 31	6109 110 32
3,5	0,21	42,95	1,69	86,9	3,42	6109 110 41	6109 110 42
4,1	0,25	43,8	1,72	88,6	3,49	6109 110 51	6109 110 52
5,2	0,32	45,35	1,79	91,7	3,61	6109 110 61	6109 110 62
6,2	0,38	46,75	1,84	94,5	3,72	6109 110 71	6109 110 72
7,6	0,46	48,75	1,92	98,5	3,88	6109 103 31	6109 103 32
9,3	0,57	51,15	2,01	103,3	4,07	6109 103 51	6109 103 52
11	0,67	53,55	2,11	108,1	4,26	6109 103 71	6109 103 72

R51S0 - Clockwise and anti-clockwise rotation codes

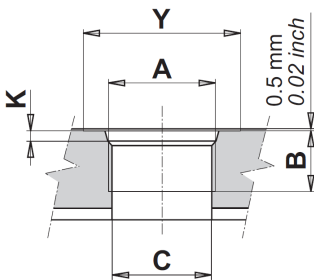
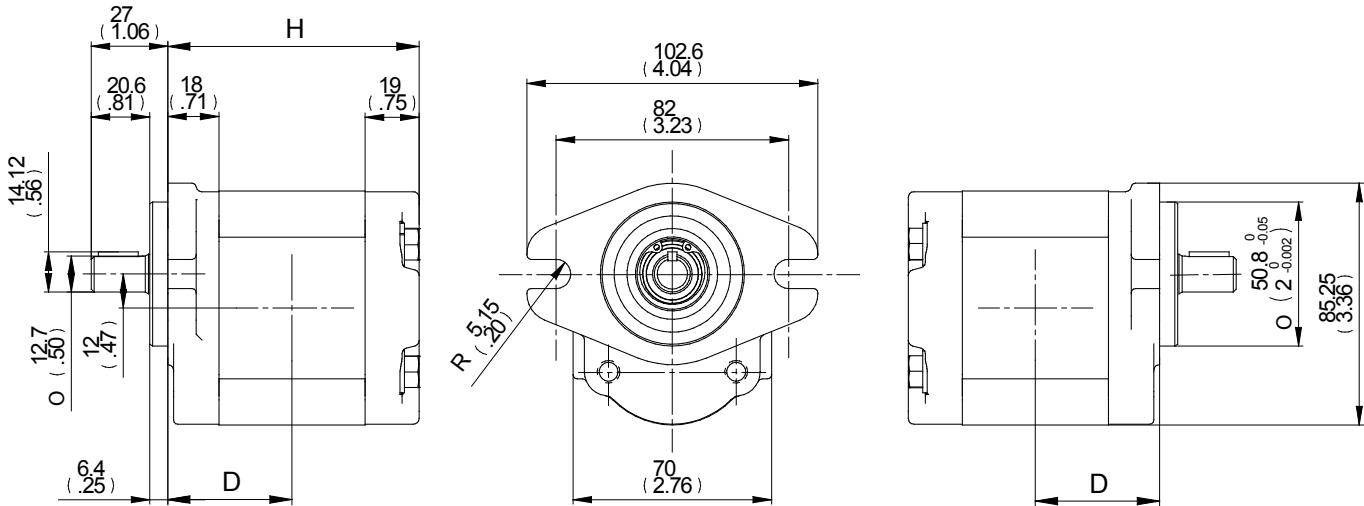


TYPE	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 1.4 to 6.2	3/4"	14,5	17,3	30	2,5	9/16"	13	12,7	25	2,5
	16 UNF	0,57	0,68	1,18	0,10	18 UNF	0,51	0,50	0,98	0,10
From 7.6 to 11	7/8"	16,7	20,2	34	2,5	3/4"	14,5	15	30	2,5
	14 UNF	0,66	0,80	1,34	0,10	16 UNF	0,57	0,59	1,18	0,10



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 104 01	6109 104 02
2,1	0,13	40,95	1,61	82,9	3,26	6109 104 11	6109 104 12
2,8	0,17	41,95	1,65	84,9	3,34	6109 104 21	6109 104 22
3,5	0,21	42,95	1,69	86,9	3,42	6109 104 31	6109 104 32
4,1	0,25	43,8	1,72	88,6	3,49	6109 104 41	6109 104 42
5,2	0,32	45,35	1,79	91,7	3,61	6109 104 51	6109 104 52
6,2	0,38	46,75	1,84	94,5	3,72	6109 104 61	6109 104 62
7,6	0,46	48,75	1,92	98,5	3,88	6109 104 71	6109 104 72
9,3	0,57	51,15	2,01	103,3	4,07	6109 104 81	6109 104 82
11	0,67	53,55	2,11	108,1	4,26	6109 104 91	6109 104 92



R80S0 - Clockwise and anti-clockwise rotation codes

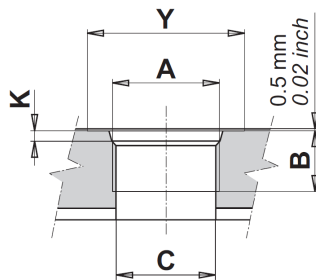
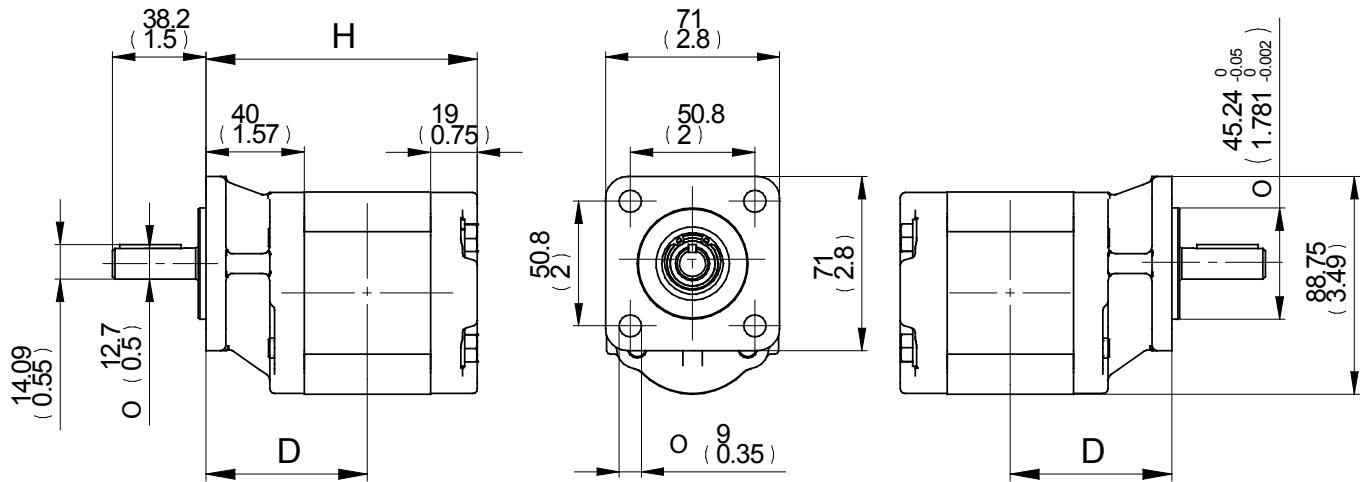


TYPE	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 1.4 to 6.2	3/4"	14,5	17,3	30	2,5	9/16"	13	12,7	25	2,5
	16 UNF	0,57	0,68	1,18	0,10	18 UNF	0,51	0,50	0,98	0,10
From 7.6 to 11	7/8"	16,7	20,2	34	2,5	3/4"	14,5	15	30	2,5
	14 UNF	0,66	0,80	1,34	0,10	16 UNF	0,57	0,59	1,18	0,10



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	40	1,57	81,0	3,19	6109 103 01	6109 103 02
2,1	0,13	40,95	1,61	82,9	3,26	6109 103 11	6109 103 12
2,8	0,17	41,95	1,65	84,9	3,34	6109 103 21	6109 103 22
3,5	0,21	42,95	1,69	86,9	3,42	6109 110 81	6109 110 82
4,1	0,25	43,8	1,72	88,6	3,49	6109 103 41	6109 103 42
5,2	0,32	45,35	1,79	91,7	3,61	6109 110 91	6109 110 92
6,2	0,38	46,75	1,84	94,5	3,72	6109 103 61	6109 103 62
7,6	0,46	48,75	1,92	98,5	3,88	6109 111 01	6109 111 02
9,3	0,57	51,15	2,01	103,3	4,07	6109 103 81	6109 103 82
11	0,67	53,55	2,11	108,1	4,26	6109 103 91	6109 103 92



R83S1 - Clockwise and anti-clockwise rotation codes

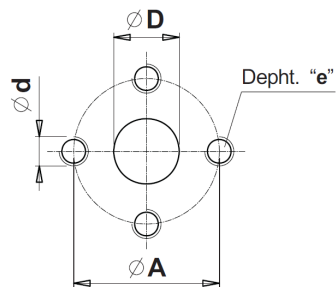
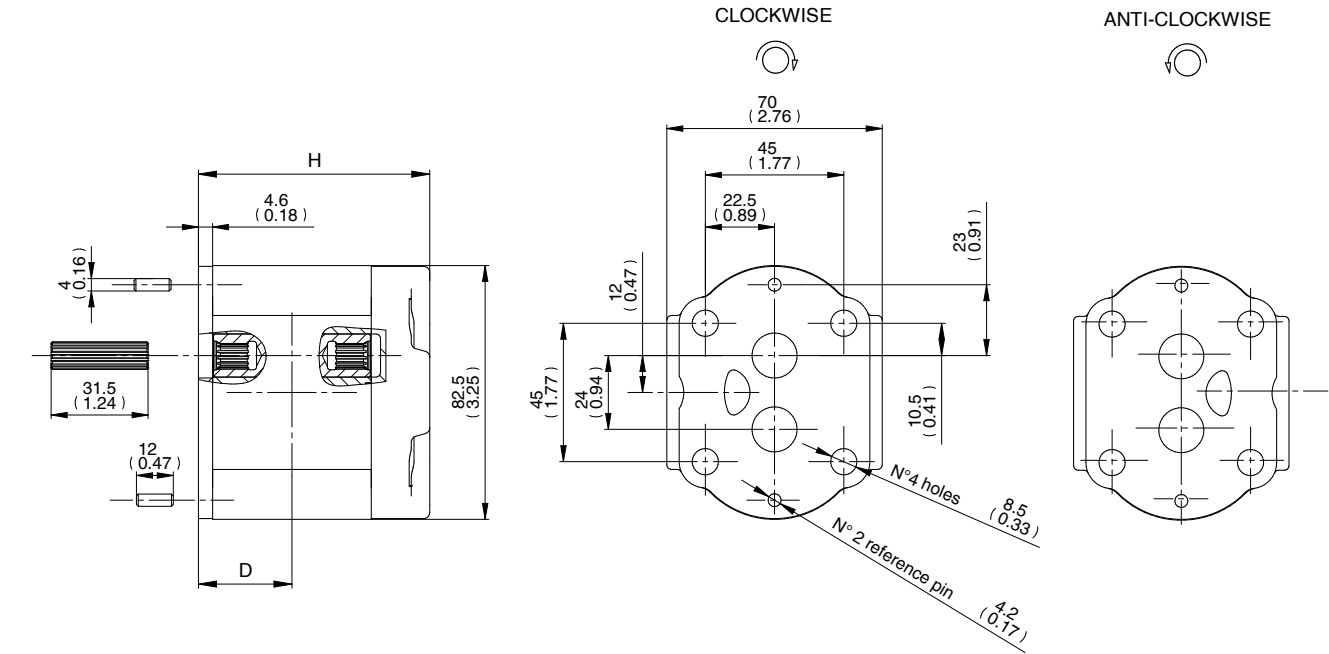


TYPE	INLET					OUTLET				
	A	B	C	Y	K	A	B	C	Y	K
From 1.4 to 6.2	3/4"	14,5	17,3	30	2,5	9/16"	13	12,7	25	2,5
	16 UNF	0,57	0,68	1,18	0,10	18 UNF	0,51	0,50	0,98	0,10
From 7.6 to 11	7/8"	16,7	20,2	34	2,5	3/4"	14,5	15	30	2,5
	14 UNF	0,66	0,80	1,34	0,10	16 UNF	0,57	0,59	1,18	0,10

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	62	2,44	103,0	4,06	6109 105 01	6109 105 02
2,1	0,13	62,95	2,48	104,9	4,13	6109 105 11	6109 105 12
2,8	0,17	63,95	2,52	106,9	4,21	6109 105 21	6109 105 22
3,5	0,21	64,95	2,56	108,9	4,29	6109 105 31	6109 105 32
4,1	0,25	65,8	2,59	110,6	4,35	6109 105 41	6109 105 42
5,2	0,32	67,35	2,65	113,7	4,48	6109 105 51	6109 105 52
6,2	0,38	68,75	2,71	116,5	4,59	6109 105 61	6109 105 62
7,6	0,46	70,75	2,79	120,5	4,74	6109 105 71	6109 105 72
9,3	0,57	73,15	2,88	125,3	4,93	6109 105 81	6109 105 82
11	0,67	75,55	2,97	130,1	5,12	6109 105 91	6109 105 92



P59R - Clockwise and anti-clockwise rotation codes

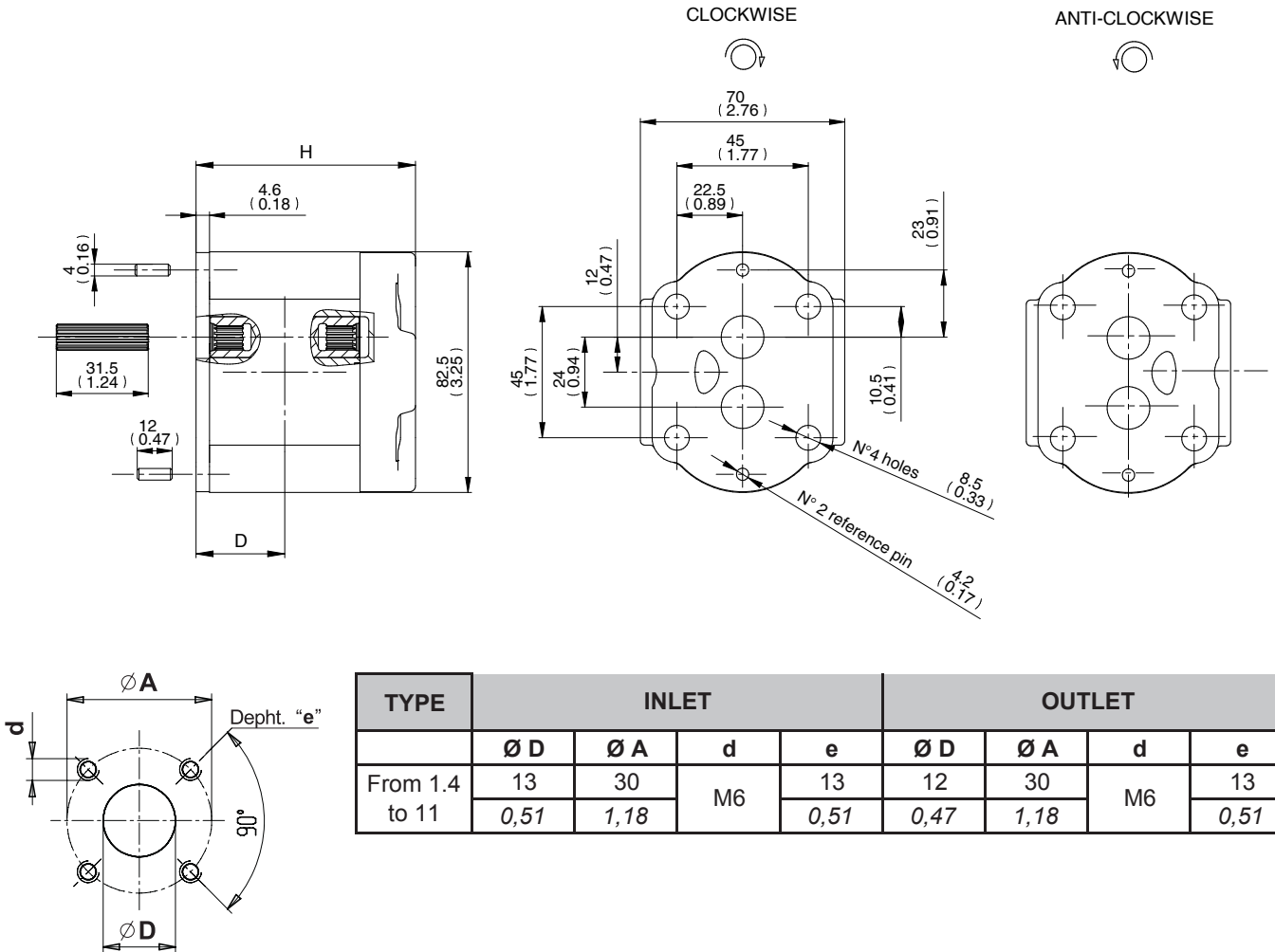


TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51

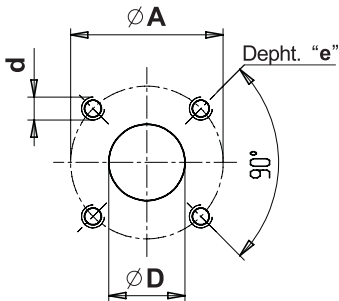
DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	26,6	1,05	67,6	2,66	6109 311 11	6109 311 12
2,1	0,13	27,55	1,08	69,5	2,74	6109 311 21	6109 311 22
2,8	0,17	28,55	1,12	71,5	2,81	6109 311 31	6109 311 32
3,5	0,21	29,55	1,16	73,5	2,89	6109 311 41	6109 311 42
4,1	0,25	30,4	1,20	75,2	2,96	6109 311 51	6109 311 52
5,2	0,32	31,95	1,26	78,3	3,08	6109 311 61	6109 311 62
6,2	0,38	33,35	1,31	81,1	3,19	6109 311 71	6109 311 72
7,6	0,46	35,35	1,39	85,1	3,35	6109 311 81	6109 311 82
9,3	0,57	37,75	1,49	89,9	3,54	6109 311 91	6109 311 92
11	0,67	40,15	1,58	94,7	3,73	6109 312 01	6109 312 02



B59R - Clockwise and anti-clockwise rotation codes



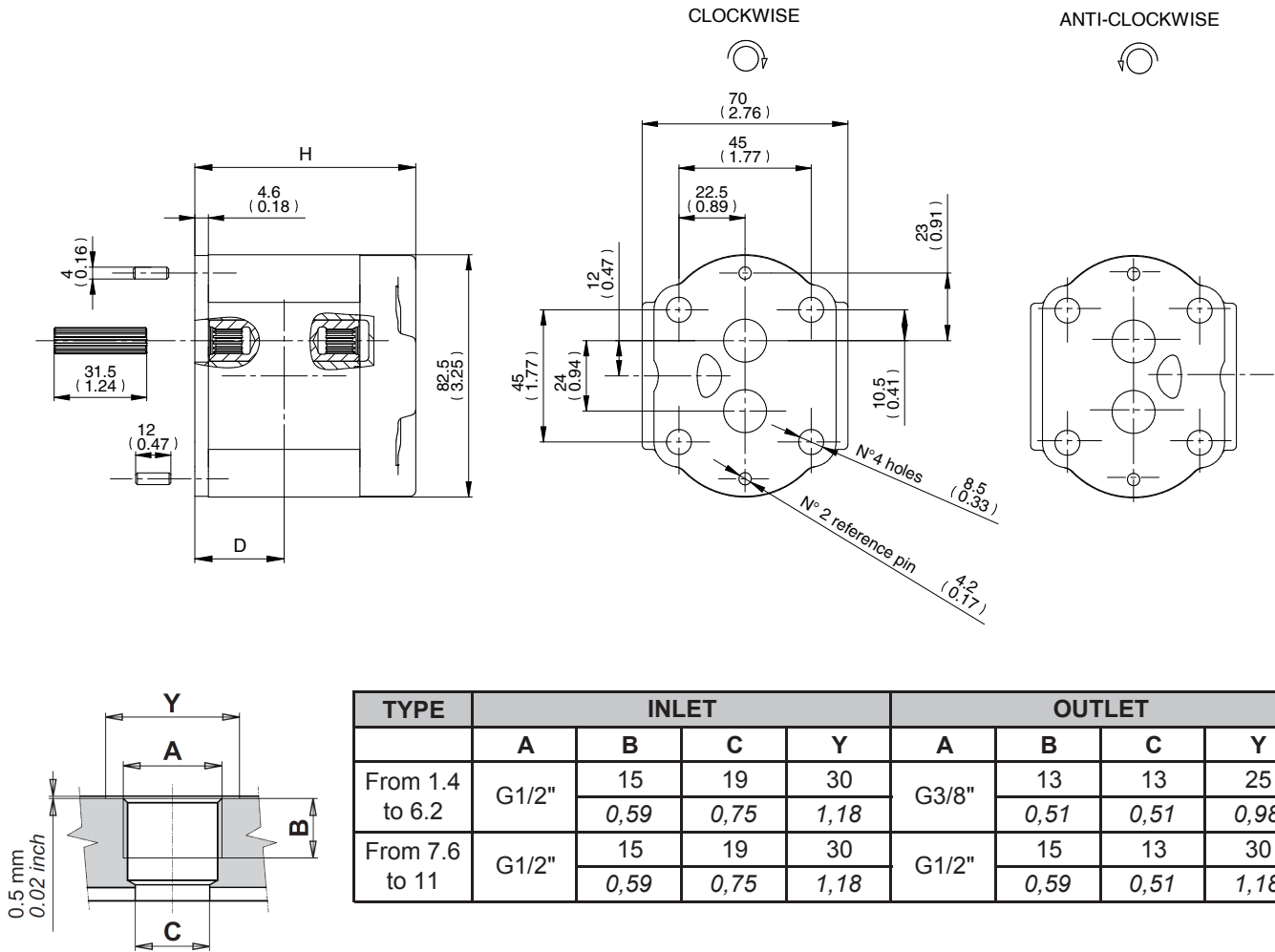
TYPE	INLET				OUTLET			
	Ø D	Ø A	d	e	Ø D	Ø A	d	e
From 1.4 to 11	13	30	M6	13	12	30	M6	13
	0,51	1,18		0,51	0,47	1,18		0,51



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	26,6	1,05	67,6	2,66	6109 302 01	6109 302 02
2,1	0,13	27,55	1,08	69,5	2,74	6109 302 11	6109 302 12
2,8	0,17	28,55	1,12	71,5	2,81	6109 302 21	6109 302 22
3,5	0,21	29,55	1,16	73,5	2,89	6109 302 31	6109 302 32
4,1	0,25	30,4	1,20	75,2	2,96	6109 302 41	6109 302 42
5,2	0,32	31,95	1,26	78,3	3,08	6109 302 51	6109 302 52
6,2	0,38	33,35	1,31	81,1	3,19	6109 302 61	6109 302 62
7,6	0,46	35,35	1,39	85,1	3,35	6109 302 71	6109 302 72
9,3	0,57	37,75	1,49	89,9	3,54	6109 302 81	6109 302 82
11	0,67	40,15	1,58	94,7	3,73	6109 302 91	6109 302 92



G59R - Clockwise and anti-clockwise rotation codes

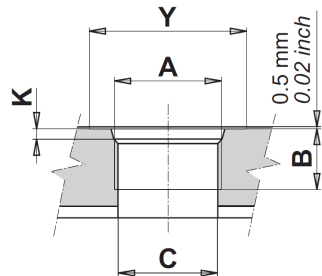
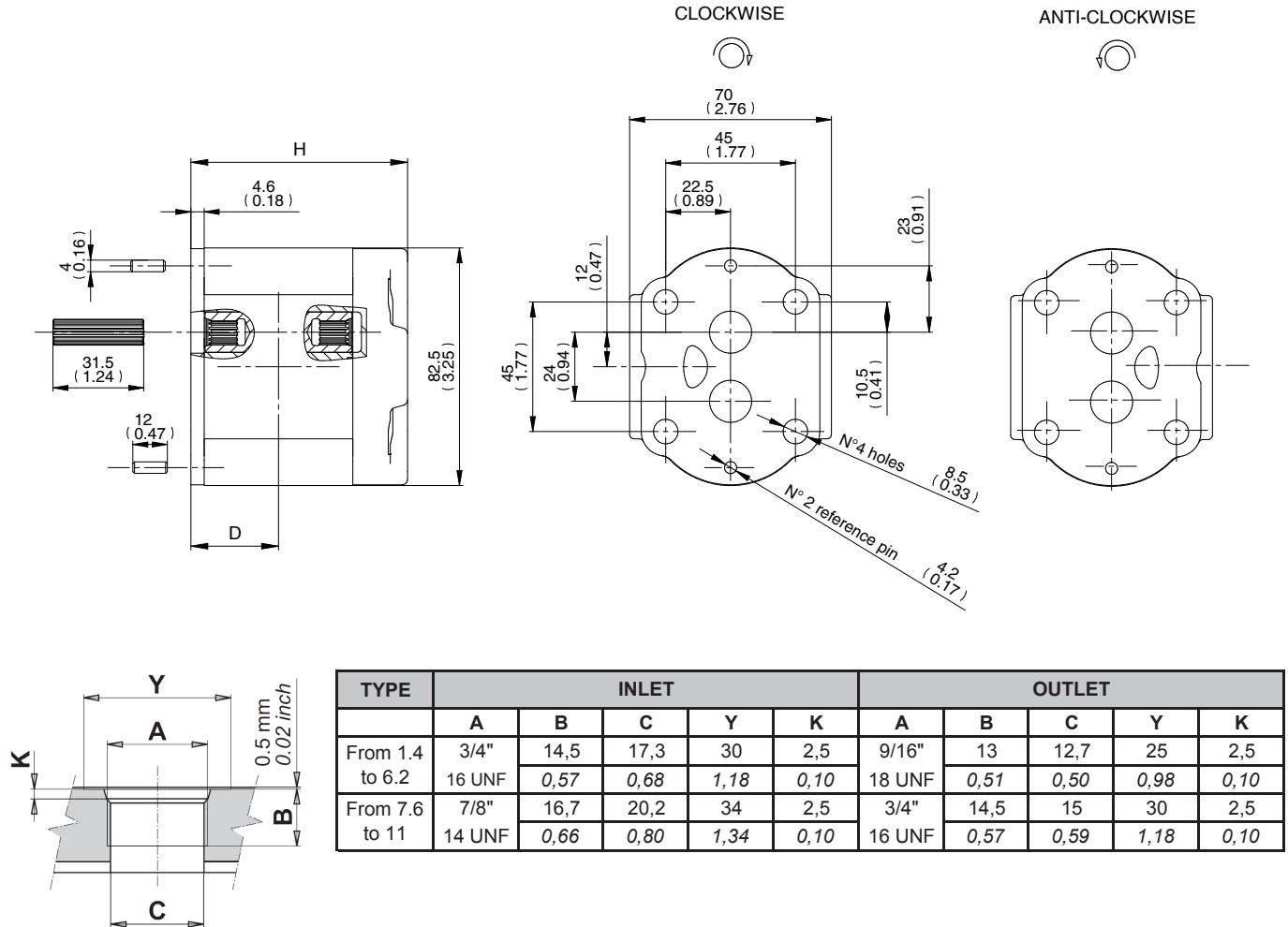


TYPE	INLET				OUTLET			
	A	B	C	Y	A	B	C	Y
From 1.4 to 6.2	G1/2"	15	19	30	G3/8"	13	13	25
		0,59	0,75	1,18		0,51	0,51	0,98
From 7.6 to 11	G1/2"	15	19	30	G1/2"	15	13	30
		0,59	0,75	1,18		0,59	0,51	1,18

DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	26,6	1,05	67,6	2,66	6109 301 01	6109 301 02
2,1	0,13	27,55	1,08	69,5	2,74	6109 301 11	6109 301 12
2,8	0,17	28,55	1,12	71,5	2,81	6109 301 21	6109 301 22
3,5	0,21	29,55	1,16	73,5	2,89	6109 301 31	6109 301 32
4,1	0,25	30,4	1,20	75,2	2,96	6109 301 41	6109 301 42
5,2	0,32	31,95	1,26	78,3	3,08	6109 301 51	6109 301 52
6,2	0,38	33,35	1,31	81,1	3,19	6109 301 61	6109 301 62
7,6	0,46	35,35	1,39	85,1	3,35	6109 301 71	6109 301 72
9,3	0,57	37,75	1,49	89,9	3,54	6109 301 81	6109 301 82
11	0,67	40,15	1,58	94,7	3,73	6109 301 91	6109 301 92



R59R - Clockwise and anti-clockwise rotation codes



DISPLACEMENT		DIMENSIONS				ANTI-CLOCKWISE	CLOCKWISE
		D		H			
cm ³ /rev	cu.in./rev	mm	in	mm	in		
1,4	0,09	26,6	1,05	67,6	2,66	6109 303 01	6109 303 02
2,1	0,13	27,55	1,08	69,5	2,74	6109 303 11	6109 303 12
2,8	0,17	28,55	1,12	71,5	2,81	6109 303 21	6109 303 22
3,5	0,21	29,55	1,16	73,5	2,89	6109 303 31	6109 303 32
4,1	0,25	30,4	1,20	75,2	2,96	6109 303 41	6109 303 42
5,2	0,32	31,95	1,26	78,3	3,08	6109 303 51	6109 303 52
6,2	0,38	33,35	1,31	81,1	3,19	6109 303 61	6109 303 62
7,6	0,46	35,35	1,39	85,1	3,35	6109 303 71	6109 303 72
9,3	0,57	37,75	1,49	89,9	3,54	6109 303 81	6109 303 82
11	0,67	40,15	1,58	94,7	3,73	6109 303 91	6109 303 92



3109 1490 1 - Tie-rod code and cutting length instructions (1.5PE DOUBLE)

(an automated excel file is available for these calculations)

Tabella dati per calcolo lunghezze tiranti 1,5PE doppia

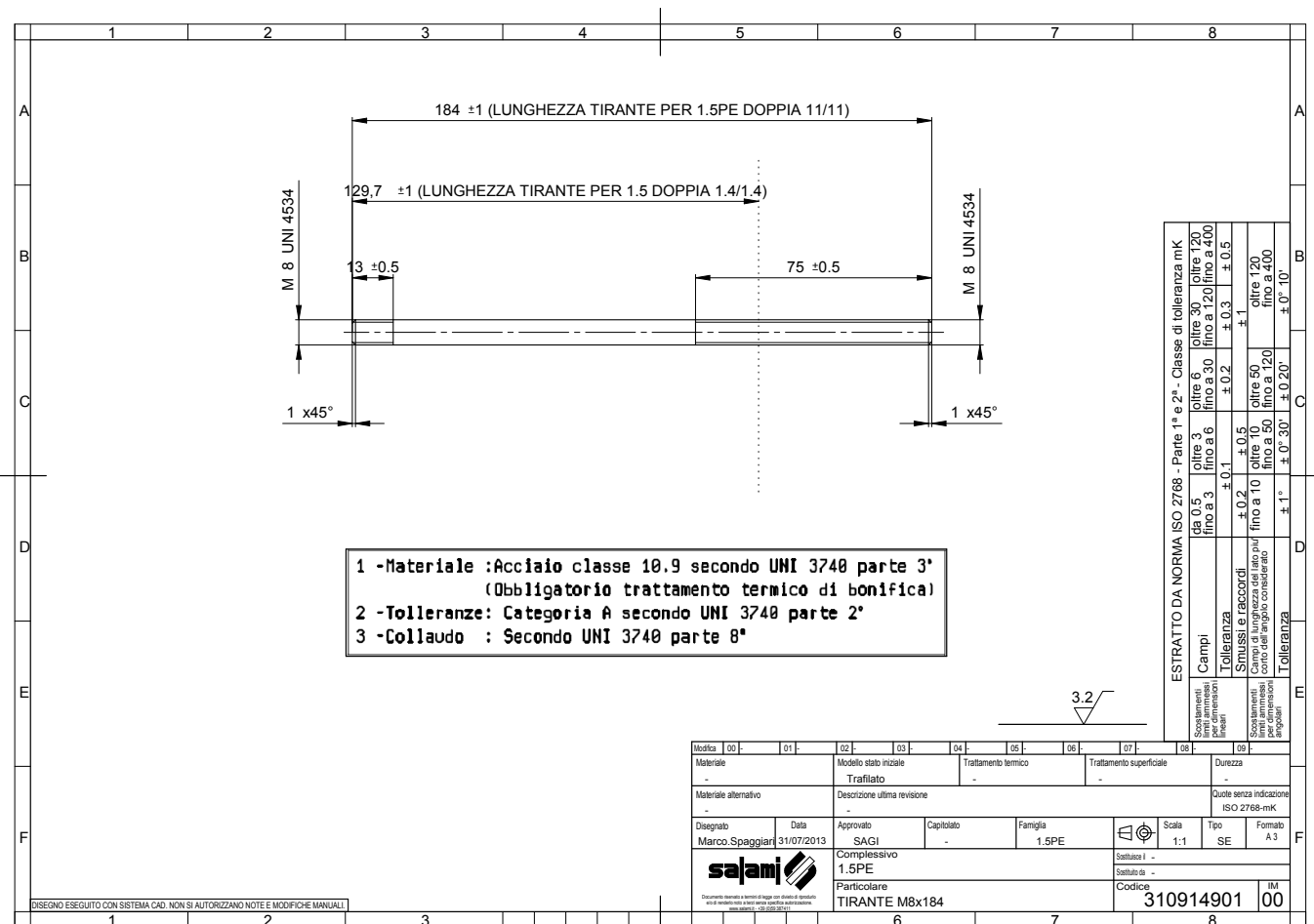
Table for the double 1,5PE tie-rod calculation

TYPE			1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11
(H)	Dimension H	mm in	44 1,73	45,9 1,81	47,9 1,89	49,9 1,96	51,6 2,03	54,7 2,15	57,5 2,26	61,5 2,42	66,3 2,61	71,1 2,80
(1)	Spessore filettato sulle flange <i>Thickness of the flange threaded</i>	mm in	16 0,63									
(2)	Spessore coperchio std. <i>Thickness of the std. cover</i>	mm in	12 0,47									
(3)	Spessore dado M8 UNI5588 <i>Thickness of the nut M8 UNI5588</i>	mm in	6,5 0,26									
(4)	Spessore rondella UNI6592 <i>Thickness of the washer UNI6592</i>	mm in	1,6 0,06									
(5)	Spessore piastra 1,5PE <i>Thickness of the plate 1,5PE</i>	mm in	4,6 0,18									
(6)	Lunghezza radice del tirante(fissa) <i>Root thread end of tie-rod(fixed)</i>	mm in	12 0,47									
(7)	Lunghezza fissa da aggiungere <i>Fixed adding lenght on tie-rod</i>	mm in	5 0,20									
			A 1 ST	A 2 ND	(2)	(3)	(4)	(5)	(6)	(7)	Tot.	
Calcolo lunghezza tirante 1,5PE			44	44	12	6,5	1,6	4,6	12	5	129,7	
Tie rod length calculation 1,5PE			1,73	1,73	0,47	0,26	0,06	0,18	0,47	0,20	5,11	

Esempi di lunghezze tiranti/Examples of tie-rod lengths

Doppia 1,5PE entrambe le cilindrate 11 cc/Double 1,5PE both displ. 11 cc - L tiranti = 183,9

Doppia 1,5PE entrambe le cilindrate 1,4 cc/Double 1,5PE both displ. 1,4 cc - L tiranti = 129,7 mm



3109 1490 2 - Tie-rod code and cutting length instructions (1.5PE TRIPLE)

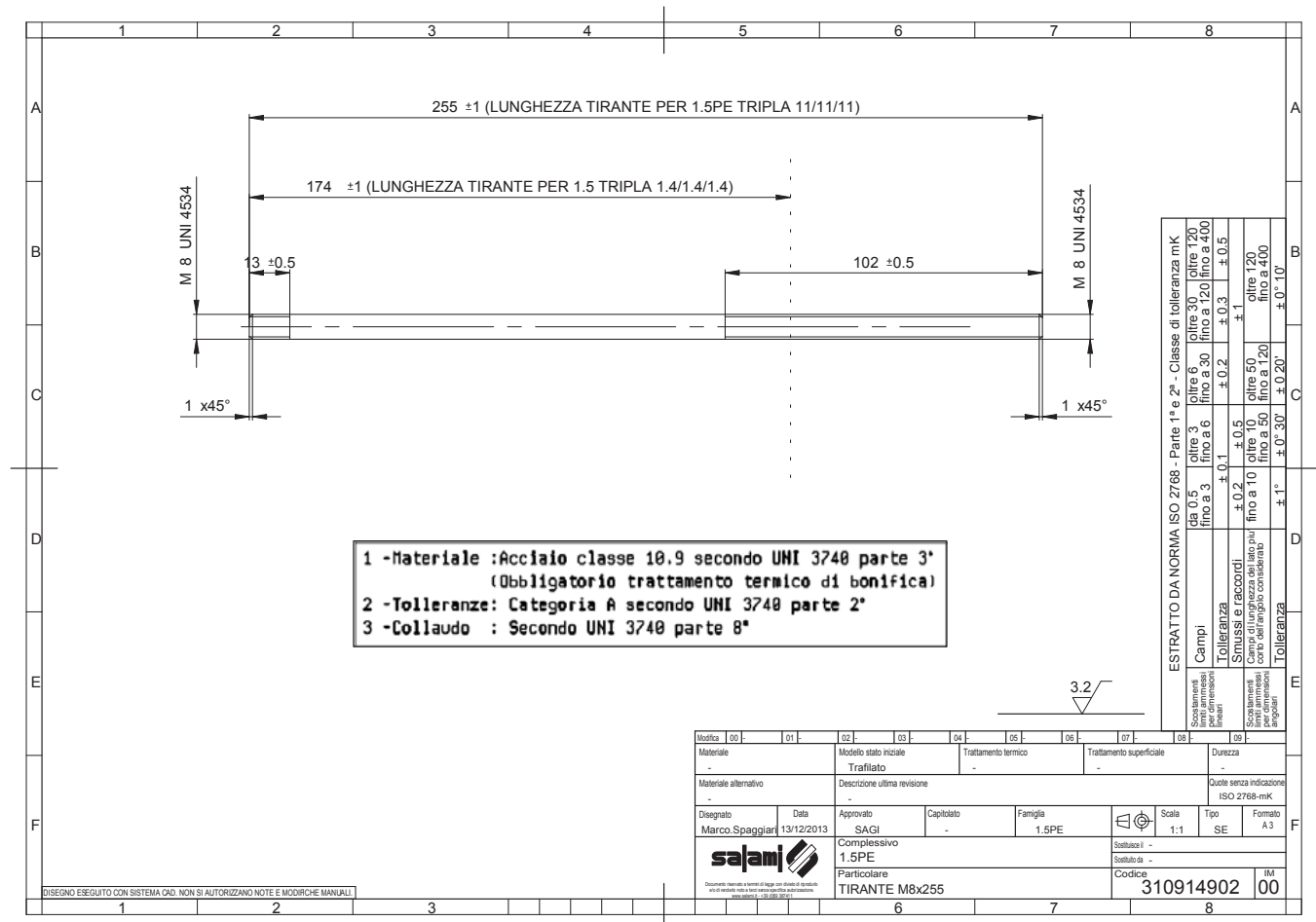
(an automated excel file is available for these calculations)

Tabella dati per calcolo lunghezze tiranti 1,5PE doppia
Table for the double 1,5PE tie-rod calculation

TYPE			1,4	2,1	2,8	3,5	4,1	5,2	6,2	7,6	9,3	11	
(H)	Dimension H	mm in	44 1,73	45,9 1,81	47,9 1,89	49,9 1,96	51,6 2,03	54,7 2,15	57,5 2,26	61,5 2,42	66,3 2,61	71,1 2,80	
(1)	Spessore filettato sulle flange Thickness of the flange threaded	mm in							16 0,63				
(2)	Spessore coperchio std. Thickness of the std. cover	mm in							12 0,47				
(3)	Spessore dado M8 UNI5588 Thickness of the nut M8 UNI5588	mm in							6,5 0,26				
(4)	Spessore rondella UNI6592 Thickness of the washer UNI6592	mm in							1,6 0,06				
(5)	Spessore piastra 1,5PE Thickness of the plate 1,5PE	mm in							4,6 0,18				
(6)	Lunghezza radice del tirante(fissa) Root thread end of tie-rod(fixed)	mm in							12 0,47				
(7)	Lunghezza fissa da aggiungere Fixed adding lenght on tie-rod	mm in							5 0,20				
			A 1 ST	A 2 ND	A 3 RD	(2)	(3)	(4)	(5)	(6)	(7)	Tot.	
Calcolo lunghezza tirante 1,5PE Tie rod length calculation 1,5PE			mm in	71,1 2,80	71,1 2,80	71,1 2,80	12 0,47	6,5 0,26	1,6 0,06	4,6 0,18	12 0,47	5 0,20	255 10,04

Esempi di lunghezze tiranti/Examples of tie-rod lengths

Tripla 1,5PE tutte le cilindratae 11 cc/ Triple 1,5PE all displ. 11 cc - L tiranti = 255 mm
Tripla 1,5PE tutte le cilindratae 1,4 cc/ Triple 1,5PE all displ. 1,4 cc - L tiranti = 173,7 mm



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