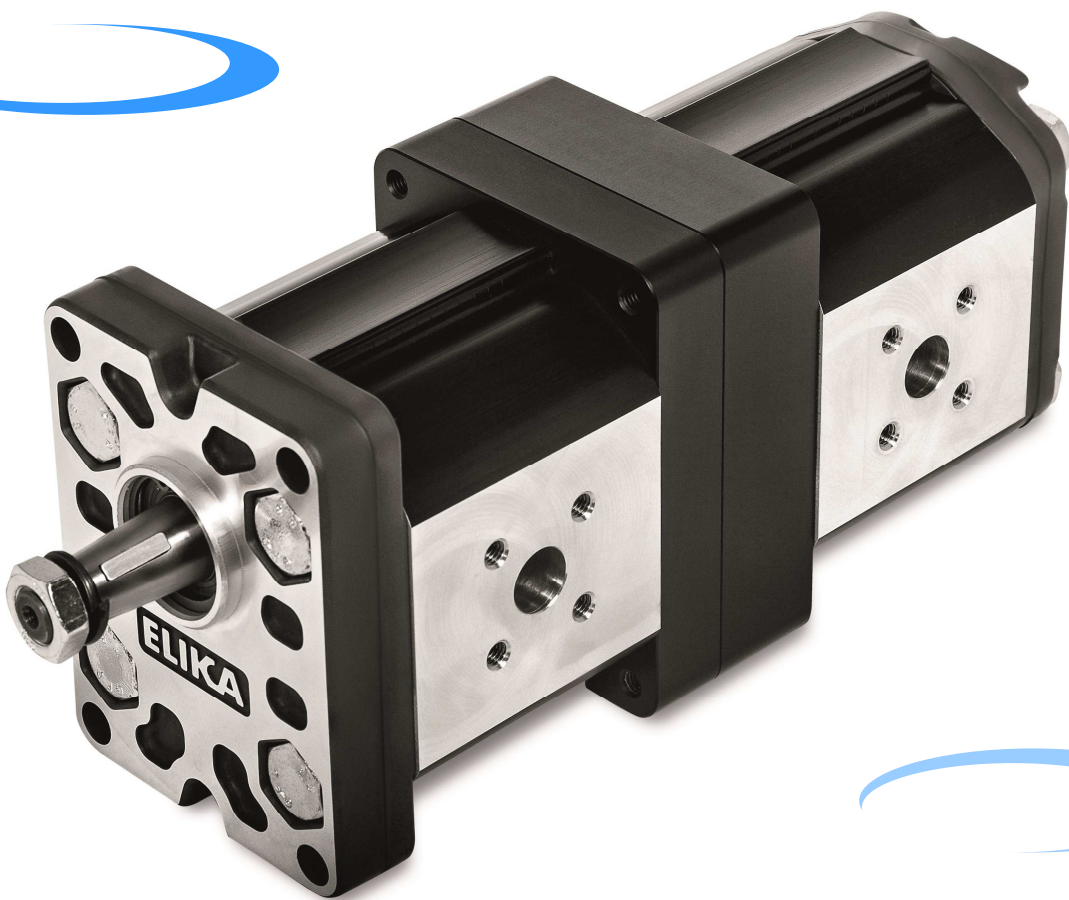




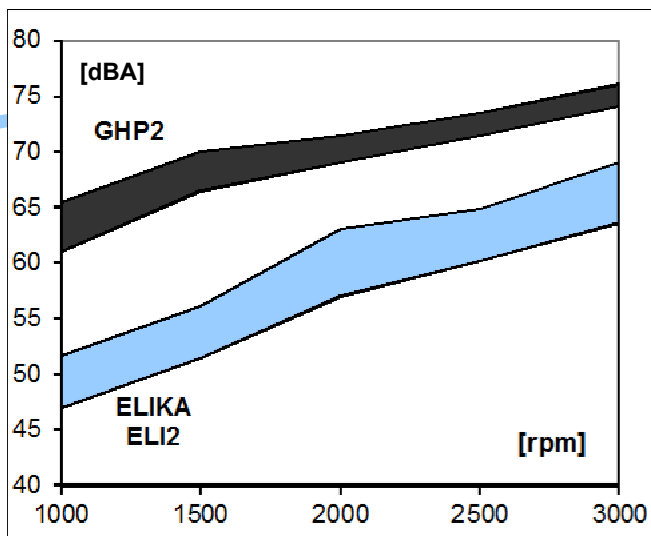
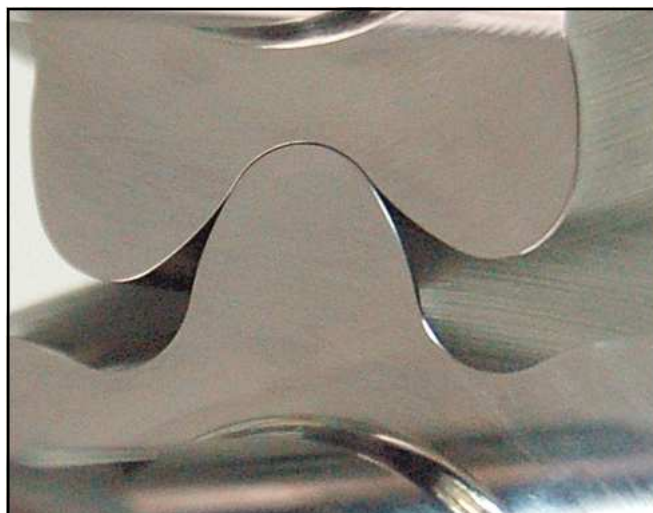
ELIKA[®]
by MARZOCCHI

The new Marzocchi
Low - noise and
Low - ripple
gear pump
ELI2 multiple series

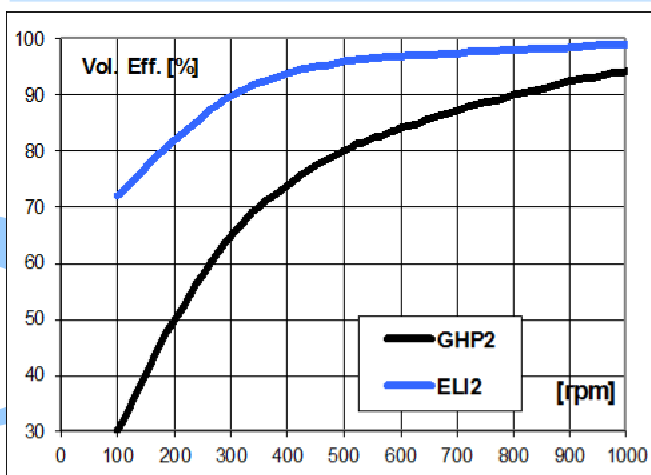


ELIKA, Marzocchi's new proposal for the gear pump market, is a perfect fit for all those applications that require low noise levels. The use of ELIKA gear pump eliminates adverse noise effects on humans and on the surrounding environment. The ELIKA reduces the noise level by an average of 15 dBA compared with a conventional external gear pump. ELIKA is a patented product. Marzocchi extends the ELIKA family introducing multiple versions ELI2. ELI2 series, displacement from 7 to 35 cm³/rev.

Marzocchi extends the family ELIKA introducing ELI2 multiple versions. The particular shape of the Erika profile patented by Marzocchi Pompe, eliminates the phenomenon of encapsulation typical of normal gear pumps, deleting the source of the main cause of noise and vibrations. The structure of the pump minimizes the internal leakage, maximizing the volumetric efficiency under all conditions. The low number of teeth reduces the fundamental frequencies of the pump noise, producing a more pleasant sound. The particular shape of the profile without encapsulation significantly reduces pressure-oscillations and vibrations produced by the pump and transmitted to the other components, reducing the noise of the hydraulic system. Axial forces induced by the helical teeth are optimally balanced in all operating conditions by the axial compensation system integrated in the pump cover. Specific compensation areas in the flange and cover, insulated by special gaskets reinforced with anti extrusion, allow for fully free axial and radial movement of the bushings. In this way, internal leakage is dramatically reduced, ensuring very good volumetric and mechanical pump performances, as well as proper lubrication of pump's moving parts. All single and multiple pumps ELIKA are available in both unidirectional rotating right and left, are available all major commercial versions of Group 2 as flanges, shafts and ports. Multiple pumps ELIKA have dimensions similar to the normal Marzocchi multiple pumps. The robust and compact internal connection system patented by Marzocchi, in addition to transmitting torque to the later stages, provides the right balance of axial helical gears. The very low noise level generated by the ELIKA pumps makes this product particularly suitable for those application where screw pumps, vane pumps or internal gear pumps are generally used.



Noise pump comparison [dBA] Marzocchi GHP2 – ELIKA ELI 2, same displacement 17.8 cm³/rev.



Comparison of volumetric efficiency at low rotation speed: Marzocchi GHP 2 – ELIKA ELI 2, displacement 17.8 cm³/rev; P = 200 bar.

INSTALLATION NOTES

Please strictly follow assembly and use indications given in this catalogue for top performance, longer life and noise of the ELI Marzocchi series. Some general considerations should be made on the hydraulic system, in which the pump must be fitted. Special attention shall be devoted to hydraulic system design and assembly, especially to intake, delivery and return pipes and position of system parts (valves, filters, tanks, heat exchangers and accumulators). Proper safety devices and reliable instruments to avoid fluid turbulence, especially in return pipe to the tank, and prevent air, water and foreign bodies from entering into the system are of major importance. It is also very important to equip the hydraulic system with a proper filtering unit. Before starting the system on a continuous basis, we suggest to adopt some simple precautions: — Check for the direction of rotation of the pump to be consistent with the drive shaft of the prime mover. — Check for the proper alignment of pump shaft and motor shaft: it is necessary that the connection does not induce axial or radial loads. — Protect drive shaft seal during pump painting. Check if contact area between seal ring and shaft is clean: dust could provoke quicker wear and leakage. — Remove all dirt, chips and all foreign bodies from flanges connecting inlet and delivery ports. — Ensure that intake and return pipes are always below fluid level and as far from each other as possible. — Install the pump below head, if possible. — Fill the pump with fluid, and turn it by hand. — At first startup, set pressure limiting valves at min. value possible. — Avoid lower rotation speed than min. allowed with pressure higher than P1. — Do not start the system at low temperatures under load conditions or after long stops (always avoid or limit load starting for pump longer life. Start the system for a few minutes and turn on all components; bleed air off the circuit its proper filling.— Check fluid level in the tank after loading all components.— At last, gradually increase pressure, continuously check fluid and moving parts temperature, check rotation speed until you reach set operating values that shall be within the limits indicated in this catalogue.

CLEANING AND FILTERING THE SYSTEM

It is widely known that most pumps early failures are due to contaminated fluids. The extreme reduction of the tolerances required in the design of the pumps and therefore their operation with minimum clearances, are heavily influenced by a fluid that is not perfectly clean. It is proved that particles circulating in the fluid act as abrasive agents, damaging the surfaces they touch and increasing the quantity of contaminant. For this reason, ensure that system is perfectly clean during startup and keep it clean for the whole operating life. Necessary interventions to check and limit contamination should be performed in a preventive and corrective way. Preventive actions include: proper cleaning of the system during assembly, deburring, eliminating the welding scum and fluid filtering before filling up. Starting contamination level of system fluid should not exceed class 18/15 (ref. ISO 4406). Even fresh fluids might exceed this contamination level; therefore always pre-filter the fluid when filling up or topping up the system. Fit a proper tank; its capacity should be proportional to the volume displaced by the pump in one working minute. Fluid contamination level check and correction during operation can be obtained through filters that retain the particles in the fluid. Two parameters tell which filter is most suitable: absolute filtering power and β filtering ratio. Low absolute filtering power and high β filtering ratio for small particles help ensuring good filtration. It is then very important to limit not only max dimensions, but also the number of smaller particles that pass through the filter. It goes without saying that with an operating pressure increase and according to the system sophistication degree, filtering should become more and more efficient. The filtering system shall always ensure contamination levels not exceeding the values indicates below.

Pressione	Pressure	< 140 bar	140 ÷ 210 bar	> 210 bar
Classe NAS 1638	NAS 1638 Class	10	9	8
Classe ISO 4406	ISO 4406 Class	19/16	18/15	17/14
Rapporto $\beta_x = 75$	Ratio $\beta_x = 75$	25 – 40 μm	12 – 15 μm	6 – 12 μm

HYDRAULIC FLUIDS

Use specific mineral oil based hydraulic fluids having good anti-wear, anti-foaming (rapid de-aeration), antioxidant, anti-corrosion and lubricating proprieties. Fluids should also comply with DIN 51525 and VDMA 24317 standards and get through 11 stage of FZG test. For the standard models, the temperature of the fluid should be between -10°C and $+80^\circ\text{C}$. Fluid kinematic viscosity ranges are the following:

Permessi (previa verifica)	Allowed value (upon verification)	6 ÷ 500 cSt
Raccomandati	Recommended value	10 ÷ 100 cSt
Consentiti all'avviamento	Value allowed at startup	< 2000 cSt

If fluids other than the above mentioned ones are used, please always indicate type of used fluid and operating conditions so that our Sales and Technical Dept. can weigh possible problems on compatibility or useful life of system parts.

INLET PRESSURE

Under standard working conditions, intake pipe pressure is lower than atmospheric pressure. The operating inlet pressure should range between 0.7 and 3 bars (absolute).

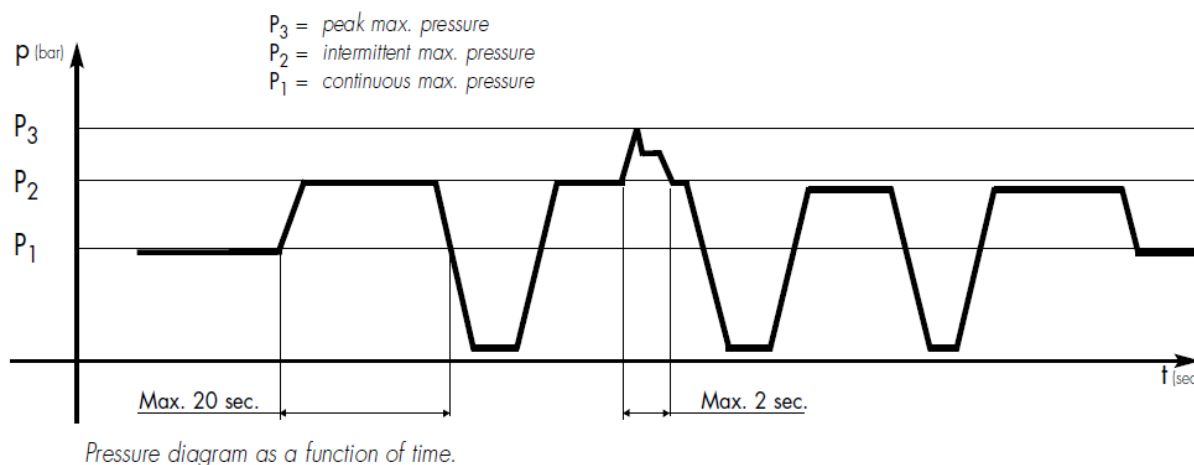
INLET AND DELIVERY LINES

Hydraulic system pipes should show no sudden changes of direction, sharp bends and sudden differences in cross-section. They should not be too long or out of proportion. Pipe cross-section should be sized so that fluid velocity does not exceed recommended values. It is advisable to carefully consider the possible diameter reduction of the inlet or outlet pipes fitted on flange fittings. Reference values are the following:

Condotto di aspirazione	Intake line	0.5 ÷ 1.6 m/s
Condotto di mandata	Delivery line	2.0 ÷ 6.0 m/s
Condotto di ritorno	Return line	1.6 ÷ 3.0 m/s

PRESSURE DEFINITION

Product tables show three max pressure levels [P1, P2, P3] to which each pump can be used.



DIRECTION OF ROTATION

Marzocchi ELI series pumps are available in either clockwise or counter-clockwise rotation. Direction of rotation of single rotation pumps is conventionally defined as follows: when standing before the pump with driving shaft up with its projecting end towards the observer, the pump is rotating clockwise in case of right-hand rotation "D"; therefore, delivery side is on the right, whereas intake side is on the left. The contrary will happen with left-handed pumps "S", keeping the same point of view. The ELI pumps can not be modified in order to reverse the work rotation direction.



DRIVE

Connect the pump to the motor using either a flexible coupling (either box or Oldham coupling) so that no radial and/or axial force is transmitted to the pump shaft during rotation, otherwise pump efficiency will dramatically drop due to early wear of inner moving parts. Therefore, coupling must absorb inevitable—even though reduced—misalignment between pump shaft and motor shaft. Box coupling or Oldham coupling should also move axially freely enough (enough for proper contact surface onto pump driving shaft). Furthermore, to avoid early wear of either splined or Oldham couplings, they should be lubricated at regular intervals using specific grease. For further details please contact our Sales or Technical Depts.

SEPARATE INLETS

Standard modular multiple pumps feature communicating input areas. The AS option is available if the application requires non communicating input areas (at atmospheric pressure), like in two stage pump feeding two different fluids to two different circuits. This option features the use of one seal rings to separate the intake ports.

SEALS

“N” Standard version on NBR the temperature of the fluid should be between -10°C and +80°C.

“V” Fluorocarbon version suitable for fluid at high temperatures. Range between -10°C and +120°C. In the range between -10°C and +80°C pressures P1, P2 e P3 are possible as per product table; beside that P1 should not be exceeded.

FREQUENTLY USED FORMULAS

Fluid velocity

Calculate the velocity [v] of a fluid in a pipe as follows:

$$v = Q / 6 \times A \text{ [m/s]} \quad (1)$$

Q = flow rate [liter/min]

A = inside area of pipe [cm²]

Delivered flow rate

Calculate flow rate [Q] as follows:

$$Q = V \times n \times \eta_{vol} \times 10^{-3} \text{ [liter/min]} \quad (2)$$

V = displacement [cm³/rotation]

n = rotation speed [rpm]

η_{vol} = pump volumetric efficiency (take 0.97 as an indicative value for rotation speeds ranging between 1000 and 2000 rpm)

Absorbed torque

Calculate necessary torque [M] of a pump subject to a pressure differential between inlet and delivery as follows:

$$M = (V \times \Delta P) / (62.8 \times \eta_{hm}) \text{ [Nm]} \quad (3)$$

V = displacement [cm³/rotation]

ΔP = pressure differential [bar]

η_{hm} = hydromechanical efficiency (take 0.80 as indicative value under cold conditions and 0.85 under working conditions)

Absorbed power

Calculate hydraulic power [P] transferred to fluid from a pump subject to pressure differential between inlet and delivery as follows:

$$P = (Q \times \Delta P) / (600 \times \eta_{tot}) \text{ [kW]} \quad (4)$$

Q = flow rate [liter/min]

ΔP = pressure differential [bar]

η_{tot} = total pump efficiency ($\eta_{hm} \times \eta_{vol}$)

Values for η_{vol} and η_{hm} (and consequently η_{tot}) depend on pressure differential between inlet and delivery, rotation speed, fluid features (temperature and viscosity) and filtering degree. Call our Sales and Technical Dept. for further details on efficiency. The proper values for flow rate, torque and power absorbed according to pressure differential, rotation speed and set test conditions, can be found on the pages dedicated to the performance curves.

Pump Type	Displ. [cm ³ /rev]	Flow at 1500 [l/min]	Operating pressures			Rotation speed		Noise at 1500 giri/min*	
			P1 Max continuous [bar]	P2 Max intermittent [bar]	P3 Max peak [bar]	Minimum Speed [rpm]	Maximum speed [rpm]	On recirculation [dBA]	at P1 [dBA]
ELI2-7.0	7.0	10.5	280	295	310	300	4000	47	51
ELI2-8.2	8.2	12.3	280	295	310	300	4000	47	52
ELI2-9.6	9.6	14.5	280	295	310	300	4000	48	54
ELI2-11.4	11.4	17.1	280	295	310	300	4000	48	55
ELI2-14.0	14.0	21.0	260	275	290	300	4000	49	55
ELI2-16.1	16.1	24.1	260	275	290	300	4000	49	56
ELI2-17.8	17.8	26.7	260	275	290	300	4000	49	57
ELI2-21.0	21.0	31.5	230	245	260	200	3500	49	57
ELI2-23.7	23.7	35.5	230	245	260	200	3200	50	57
ELI2-25.7	25.7	38.6	210	225	240	200	3000	50	57
ELI2-28.0	28.0	42.1	200	215	230	200	2600	50	58
ELI2-35.0	35.1	52.6	150	165	180	200	2200	50	58

How to order

PD ELI	TYPE	ROTATION	DISPL. FRONT STAGE	DISPL. REAR STAGE	SHAFT	FRONT STAGE PORTS	REAR STAGE PORTS	SEALS	OPTIONS
	2	D - CW	7.0	7.0	T0	D	D	N	-
	2A	S - CCW	8.2	8.2	T1	FA**	FA**	V	AS
	2BK1		9.6	9.6	T2				
	2BK2		11.4	11.4	C0				
	2BK4		14.0	14.0	C1				
	2BK7		16.1	16.1	C2				
			17.8	17.8	S0				
			21.0	21.0	S1				
			23.7	23.7	S2				
			25.7	25.7	S3				
			28.0	28.0	S4				
			35.0	35.0	G0				

Pump standard types:

2	= european flange + shaft T0 + ports D + standard seals
2A	= flange A + shaft C1 + ports FA ** + standard seals
2BK1	= flange BK1 + shaft T1 + ports D + standard seals
2BK2	= flange BK2 + shaft T1 + ports D + standard seals
2BK4	= flange BK4 + shaft T1 + ports D + standard seals
2BK7	= flange BK7 + shaft G0 + port D + standard seals

Examples:

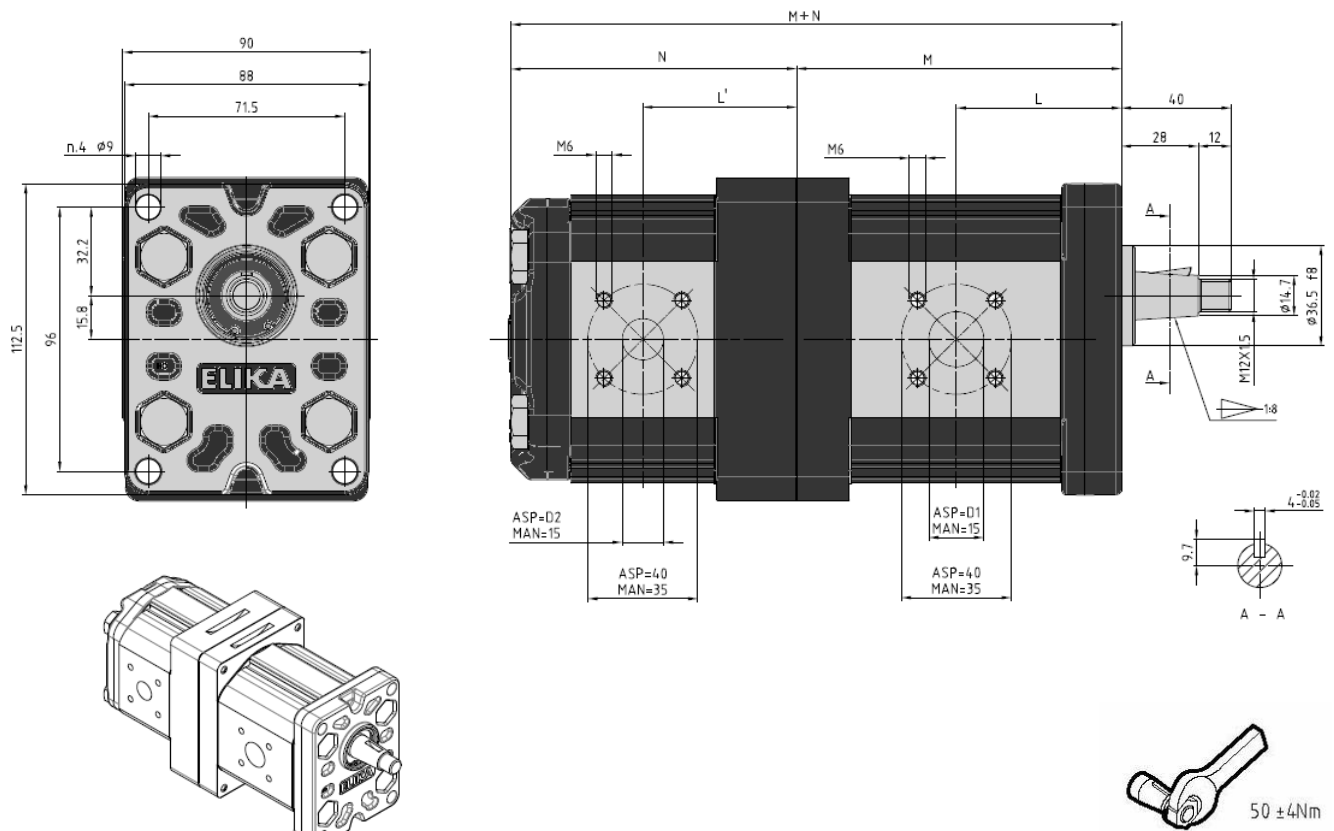
PD ELI2-D-16.1/8.2-T0-D-D-N	= Double pump clockwise rotation, front stage 16.1 cm ³ /rev, rear stage 8.2 cm ³ /rev, European flange, 1:8 tapered shaft, flanged ports D type, standard seals.
PD ELI2A-D-28.0/14.0-S1-FA-FA-N	= Double pump clockwise rotation, front stage 28.0 cm ³ /rev, rear stage 14.0 cm ³ /rev, SAE flange, splined shaft S1, threaded ports FA**, standard seals.
PD ELI2BK1-S-8.2/8.2-T1-D-D-N	= Double pump counterclockwise rotation, front stage 8.2 cm ³ /rev, rear stage 8.2 cm ³ /rev, BK1 flange, 1:5 tapered shaft, flanged ports D type, standard seals.
PD ELI2BK7-D-35.0/7.0-G0-D-D-V-AS	= Double pump clockwise rotation, front stage 35.0 cm ³ /rev, rear stage 7.0 cm ³ /rev, BK7 flange, shaft G0, flanged ports D type, fluorocarbon seals, separate inlets.

The product data sheets show our standard model types. The synoptic tables for flanges, shafts and ports show all the possible configurations. For further details about the availability of each configuration please contact our Sales and Technical Dept.

* Value based on ISO4412 test procedure

** With thread ports on outlet side, a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. For further details please contact our Sales and Technical Dept. we suggest to provide application specification through our PID form.

ELI2

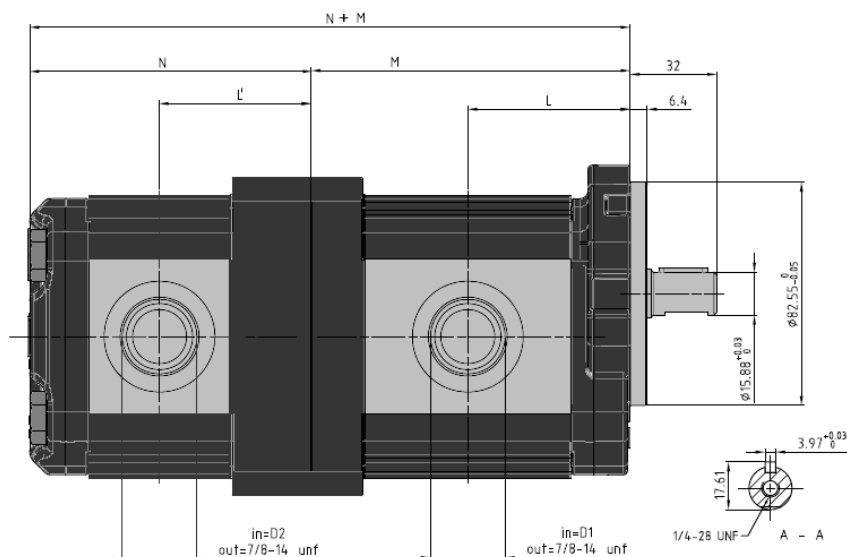
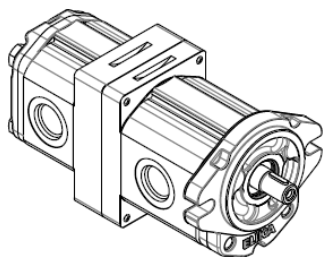
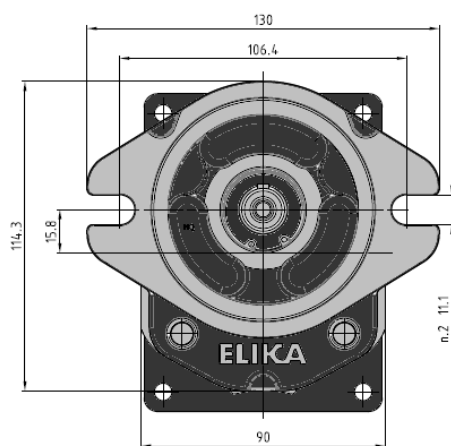


FRONT STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L [mm]	M [mm]
ELI2-7.0	7.0	48.0	94.0
ELI2-8.2	8.2	49.0	96.0
ELI2-9.6	9.6	50.3	98.5
ELI2-11.4	11.4	51.8	101.5
ELI2-14.0	14.0	54.0	106.0
ELI2-16.1	16.1	55.8	109.5
ELI2-17.8	17.8	57.3	112.5
ELI2-21.0	21.0	60.0	118.0
ELI2-23.7	23.7	62.3	122.5
ELI2-25.7	25.7	64.0	126.0
ELI2-28.0	28.0	66.0	130.0
ELI2-35.0	35.1	72.0	142.0

REAR STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L' [mm]	N [mm]
ELI2-7.0	7.0	64.5	112.5
ELI2-8.2	8.2	65.5	114.5
ELI2-9.6	9.6	66.8	117.0
ELI2-11.4	11.4	68.3	120.0
ELI2-14.0	14.0	70.5	124.5
ELI2-16.1	16.1	72.3	128.0
ELI2-17.8	17.8	73.8	131.0
ELI2-21.0	21.0	76.5	136.5
ELI2-23.7	23.7	78.8	141.0
ELI2-25.7	25.7	80.5	144.5
ELI2-28.0	28.0	82.5	148.5
ELI2-35.0	35.1	88.5	160.5

Accessories supplied with the standard pump: woodruff key (code 522057), M12x1.5 hexagonal nut (code 523016), washer (code 523005). Standard ports: M6 threads depth 13 mm. Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit.

ELI2A

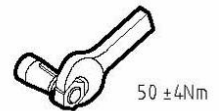
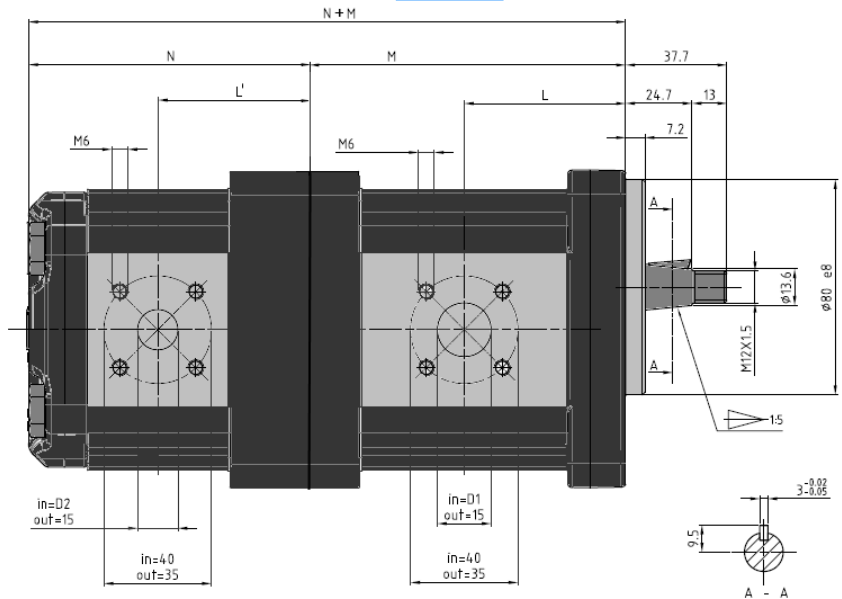
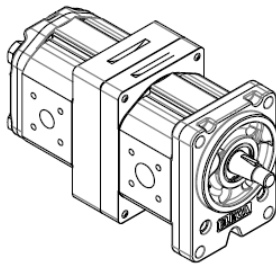
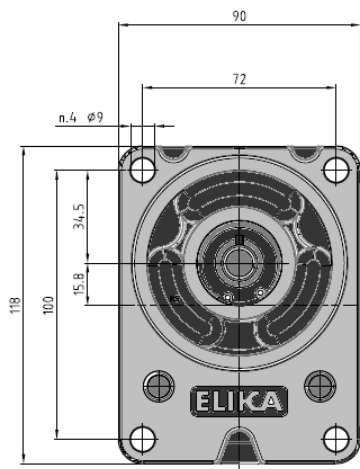


FRONT STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L [mm]	M [mm]
ELI2-7.0	7.0	48.0	94.0
ELI2-8.2	8.2	49.0	96.0
ELI2-9.6	9.6	50.3	98.5
ELI2-11.4	11.4	51.8	101.5
ELI2-14.0	14.0	54.0	106.0
ELI2-16.1	16.1	55.8	109.5
ELI2-17.8	17.8	57.3	112.5
ELI2-21.0	21.0	60.0	118.0
ELI2-23.7	23.7	62.3	122.5
ELI2-25.7	25.7	64.0	126.0
ELI2-28.0	28.0	66.0	130.0
ELI2-35.0	35.1	72.0	142.0

REAR STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L' [mm]	N [mm]
ELI2-7.0	7.0	64.5	112.5
ELI2-8.2	8.2	65.5	114.5
ELI2-9.6	9.6	66.8	117.0
ELI2-11.4	11.4	68.3	120.0
ELI2-14.0	14.0	70.5	124.5
ELI2-16.1	16.1	72.3	128.0
ELI2-17.8	17.8	73.8	131.0
ELI2-21.0	21.0	76.5	136.5
ELI2-23.7	23.7	78.8	141.0
ELI2-25.7	25.7	80.5	144.5
ELI2-28.0	28.0	82.5	148.5
ELI2-35.0	35.1	88.5	160.5

**** With thread ports a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures.** Accessories supplied with the standard pump: key (code 522067). Mounting flange 82-2 (A) in compliance with SAE J744C. "D" and "d" ports are machined in compliance with threaded port with O-ring seal in truncated housing SAE J1926/1 (ISO 11926-1). Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit.

ELI2BK1

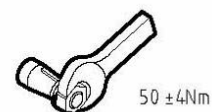
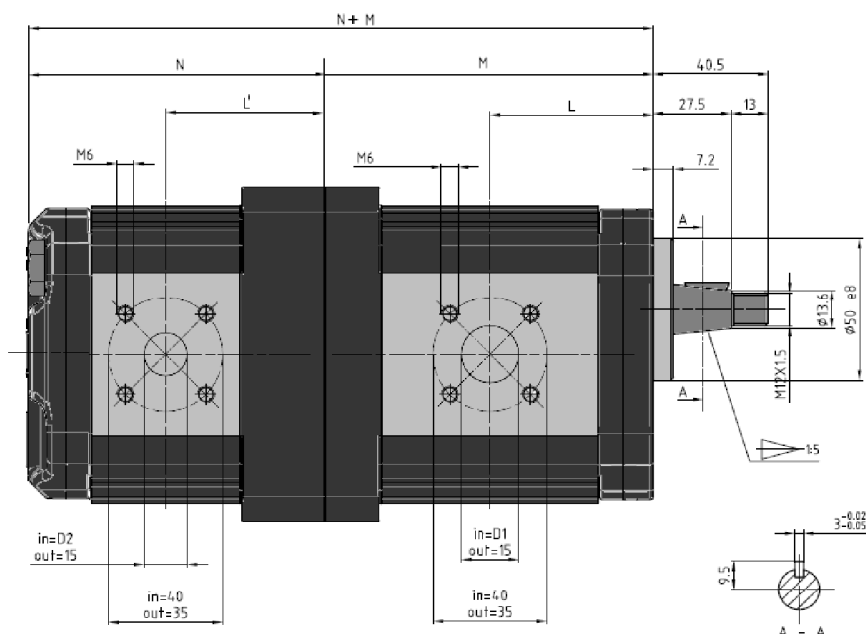
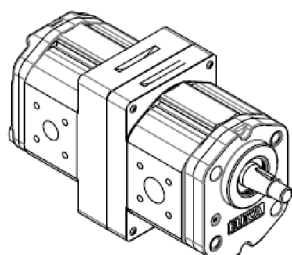
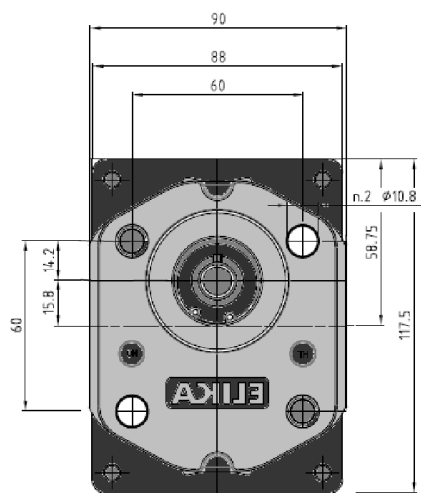


FRONT STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L [mm]	M [mm]
ELI2-7.0	7.0	48.0	94.0
ELI2-8.2	8.2	49.0	96.0
ELI2-9.6	9.6	50.3	98.5
ELI2-11.4	11.4	51.8	101.5
ELI2-14.0	14.0	54.0	106.0
ELI2-16.1	16.1	55.8	109.5
ELI2-17.8	17.8	57.3	112.5
ELI2-21.0	21.0	60.0	118.0
ELI2-23.7	23.7	62.3	122.5
ELI2-25.7	25.7	64.0	126.0
ELI2-28.0	28.0	66.0	130.0
ELI2-35.0	35.1	72.0	142.0

REAR STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L' [mm]	N [mm]
ELI2-7.0	7.0	64.5	112.5
ELI2-8.2	8.2	65.5	114.5
ELI2-9.6	9.6	66.8	117.0
ELI2-11.4	11.4	68.3	120.0
ELI2-14.0	14.0	70.5	124.5
ELI2-16.1	16.1	72.3	128.0
ELI2-17.8	17.8	73.8	131.0
ELI2-21.0	21.0	76.5	136.5
ELI2-23.7	23.7	78.8	141.0
ELI2-25.7	25.7	80.5	144.5
ELI2-28.0	28.0	82.5	148.5
ELI2-35.0	35.1	88.5	160.5

Accessories supplied with the standard pump: woodruff key (code 522055), M12x1.5 hexagonal nut (code 523016), washer (code 523005).
Standard ports: M6 threads depth 13 mm. Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit.

ELI2BK2

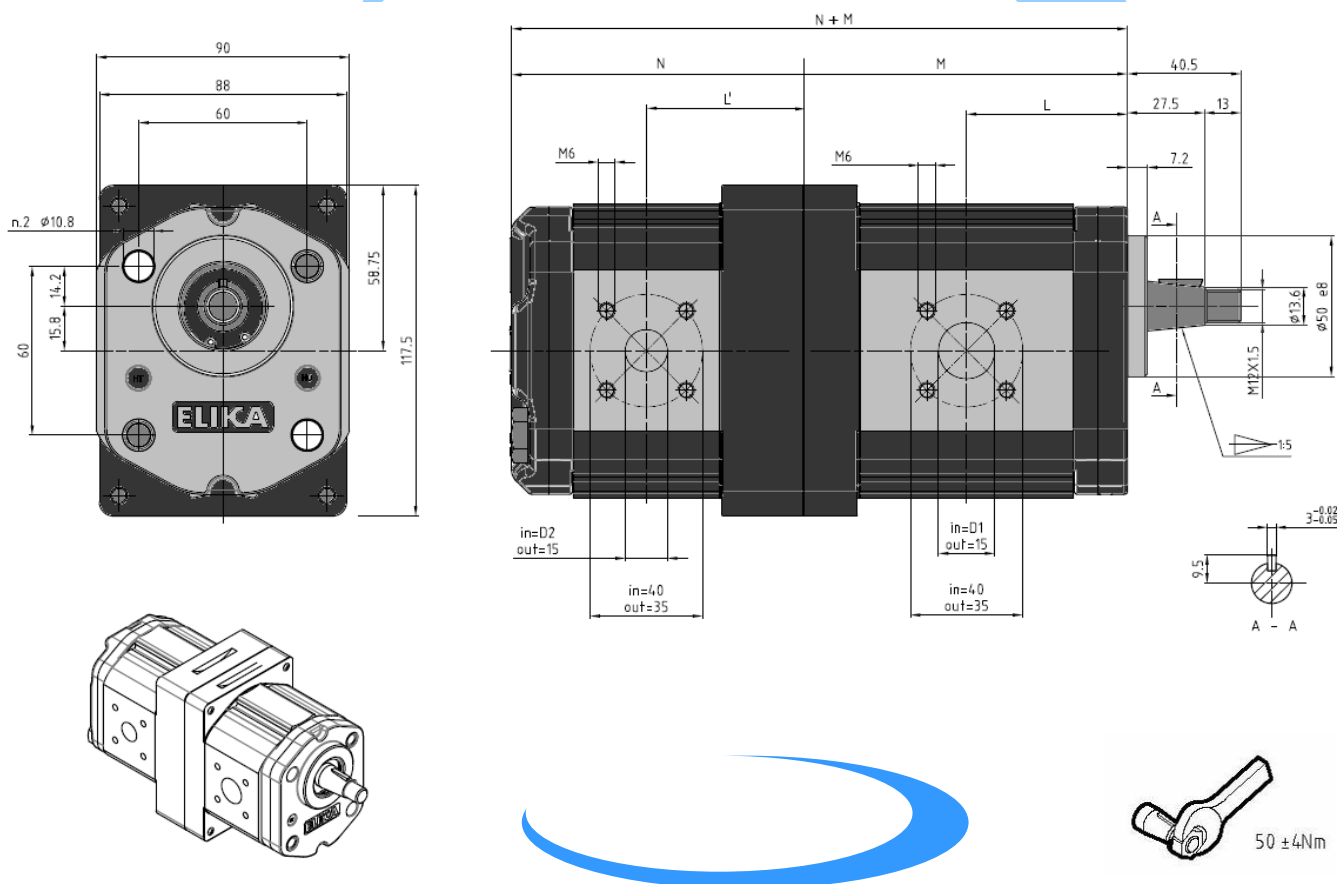


FRONT STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L [mm]	M [mm]
ELI2-7.0	7.0	45.0	91.0
ELI2-8.2	8.2	46.0	93.0
ELI2-9.6	9.6	47.3	95.5
ELI2-11.4	11.4	48.8	98.5
ELI2-14.0	14.0	51.0	103.0
ELI2-16.1	16.1	52.8	106.5
ELI2-17.8	17.8	54.3	109.5
ELI2-21.0	21.0	57.0	115.0
ELI2-23.7	23.7	59.3	119.5
ELI2-25.7	25.7	61.0	123.0
ELI2-28.0	28.0	63.0	127.0
ELI2-35.0	35.1	69.0	139.0

REAR STAGE			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L' [mm]	N [mm]
ELI2-7.0	7.0	61.5	109.5
ELI2-8.2	8.2	62.5	111.5
ELI2-9.6	9.6	63.8	114.0
ELI2-11.4	11.4	65.3	117.0
ELI2-14.0	14.0	67.5	121.5
ELI2-16.1	16.1	69.3	125.0
ELI2-17.8	17.8	70.8	128.0
ELI2-21.0	21.0	73.5	133.5
ELI2-23.7	23.7	75.8	138.0
ELI2-25.7	25.7	77.5	141.5
ELI2-28.0	28.0	79.5	145.5
ELI2-35.0	35.1	85.5	157.5

Accessories supplied with the standard pump: woodruff key (code 522055), M12x1.5 hexagonal nut (code 523016), washer (code 523005). Standard ports: M6 threads depth 13 mm. To mount the pump: n°2 M10 screws with a torque wrench setting fixed at 46±4 Nm. Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit.

ELI2BK4



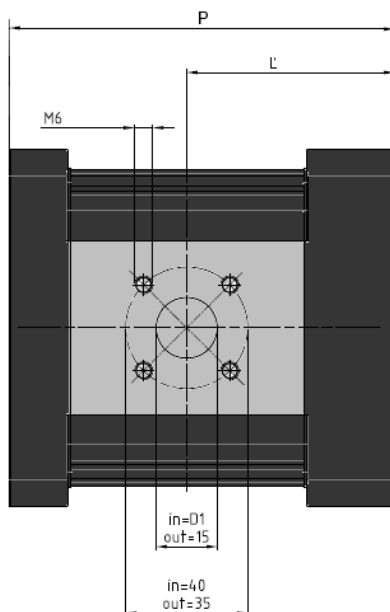
FRONT STAGE			
Pump Type	Displ.	Dimensions	
		L	M
	[cm ³ /rev]	[mm]	[mm]
ELI2-7.0	7.0	45.0	91.0
ELI2-8.2	8.2	46.0	93.0
ELI2-9.6	9.6	47.3	95.5
ELI2-11.4	11.4	48.8	98.5
ELI2-14.0	14.0	51.0	103.0
ELI2-16.1	16.1	52.8	106.5
ELI2-17.8	17.8	54.3	109.5
ELI2-21.0	21.0	57.0	115.0
ELI2-23.7	23.7	59.3	119.5
ELI2-25.7	25.7	61.0	123.0
ELI2-28.0	28.0	63.0	127.0
ELI2-35.0	35.1	69.0	139.0

REAR STAGE			
Pump Type	Displ.	Dimensions	
		L'	N
	[cm ³ /rev]	[mm]	[mm]
ELI2-7.0	7.0	61.5	109.5
ELI2-8.2	8.2	62.5	111.5
ELI2-9.6	9.6	63.8	114.0
ELI2-11.4	11.4	65.3	117.0
ELI2-14.0	14.0	67.5	121.5
ELI2-16.1	16.1	69.3	125.0
ELI2-17.8	17.8	70.8	128.0
ELI2-21.0	21.0	73.5	133.5
ELI2-23.7	23.7	75.8	138.0
ELI2-25.7	25.7	77.5	141.5
ELI2-28.0	28.0	79.5	145.5
ELI2-35.0	35.1	85.5	157.5

Accessories supplied with the standard pump: woodruff key (code 522055), M12x1.5 hexagonal nut (code 523016), washer (code 523005). Standard ports: M6 threads depth 13 mm. To mount the pump: n°2 M10 screws with a torque wrench setting fixed at 46±4 Nm. Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit.

Medium element

Rear stage

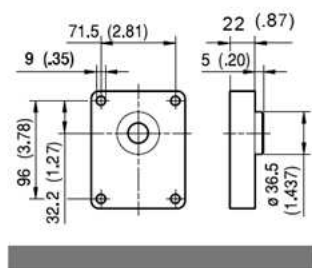
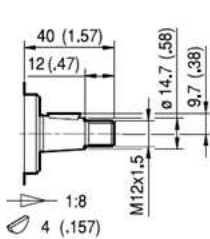


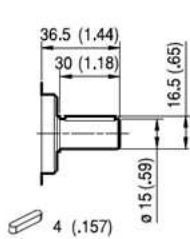
Front stage

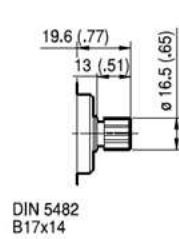
MEDIUM ELEMENT			
Pump Type	Displ. [cm ³ /rev]	Dimensions	
		L' [mm]	P [mm]
ELI2-7.0	7.0	61.5	106.5
ELI2-8.2	8.2	62.5	108.5
ELI2-9.6	9.6	63.8	111.0
ELI2-11.4	11.4	65.3	114.0
ELI2-14.0	14.0	67.5	118.5
ELI2-16.1	16.1	69.3	122.0
ELI2-17.8	17.8	70.8	125.0
ELI2-21.0	21.0	73.5	130.5
ELI2-23.7	23.7	75.8	135.0
ELI2-25.7	25.7	77.5	138.5
ELI2-28.0	28.0	79.5	142.5
ELI2-35.0	35.1	85.5	154.5

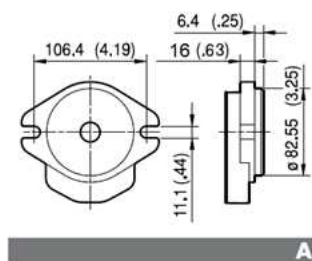
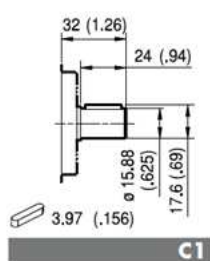
To obtain the total size of a multi-stage pump, add to the size of the double pump (M+N) the size of the intermediate stages (M+N+P+P'...).

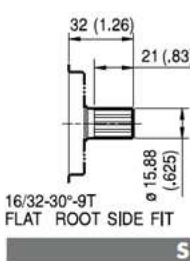
ELI Multiple pumps are provided by Marzocchi completely assembled, the customer or the installer can not modify the original configuration.

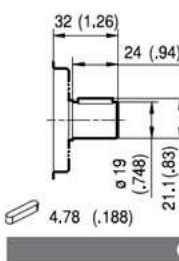
FLANGE / FLANGES
ALBERI / SHAFTS

A

T0

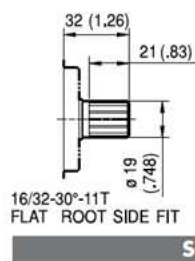
 Coppia Max
 Max Torque 145 Nm

C0

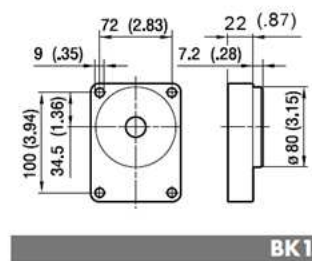
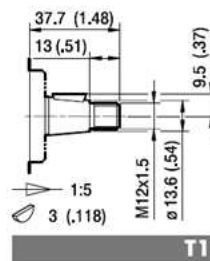
 Coppia Max
 Max Torque 125 Nm

S0

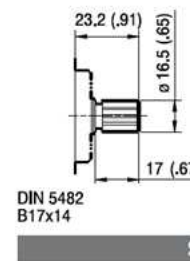
 Coppia Max
 Max Torque 130 Nm

A

C1

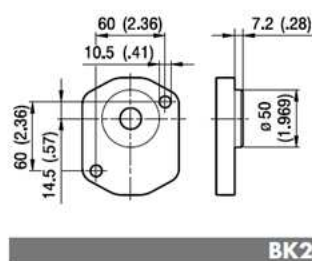
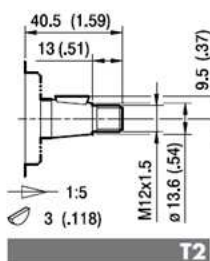
 Coppia Max
 Max Torque 105 Nm

S1

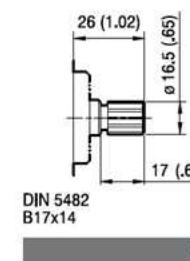
 Coppia Max
 Max Torque 110 Nm

C2

 Coppia Max
 Max Torque 150 Nm

S2

 Coppia Max
 Max Torque 230 Nm

BK1

T1

 Coppia Max
 Max Torque 130 Nm

S3

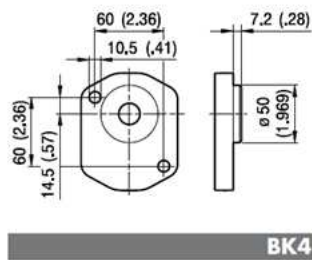
 Coppia Max
 Max Torque 130 Nm

BK2

T2

 Coppia Max
 Max Torque 130 Nm

S4

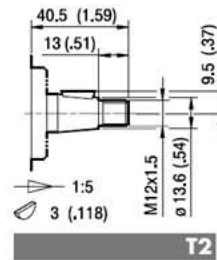
 Coppia Max
 Max Torque 130 Nm

FLANGE / FLANGES

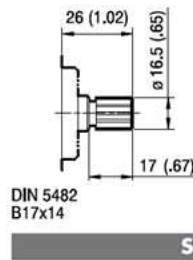
ALBERI / SHAFTS



BK4



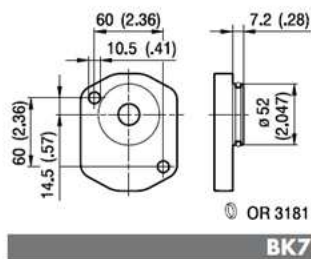
T2



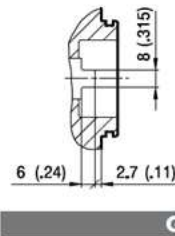
S4

Coppia Max
Max Torque 130 Nm

Coppia Max
Max Torque 130 Nm



BK7

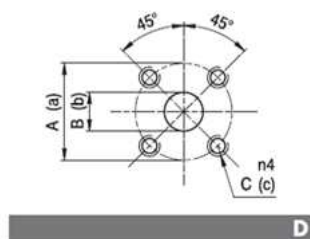


G0

Coppia Max
Max Torque 105 Nm

Maximum torque ratings are referred to ideal working conditions; such values may reduce based on the quality of joints and connections used..

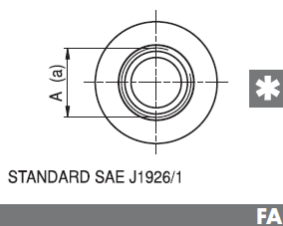
PORTE / PORTS



D

Tipo Type	Aspirazione Inlet			Mandata Outlet		
	A	B	C	a	b	c
ELI 7.0 + 8.2	40	15	M6	35	15	M6
ELI 9.6 + 35.0	40	19	M6	35	15	M6

Tightening torques for M6 screws 10 Nm.



STANDARD SAE J1926/1

FA

Type Tipo	Aspirazione Inlet	Mandata Outlet
	A	a
ELI 7.0 + 28.0	1 1/16-12 UNF	7/8-14 UNF
ELI 35.0	1 5/16-12 UNF	7/8-14 UNF

Tightening torques for 7/8-14 UNF fitting 50 Nm.

Tightening torques for 1 1/16-12 UNF and 1 5/16-12 UNF fitting 60 Nm.



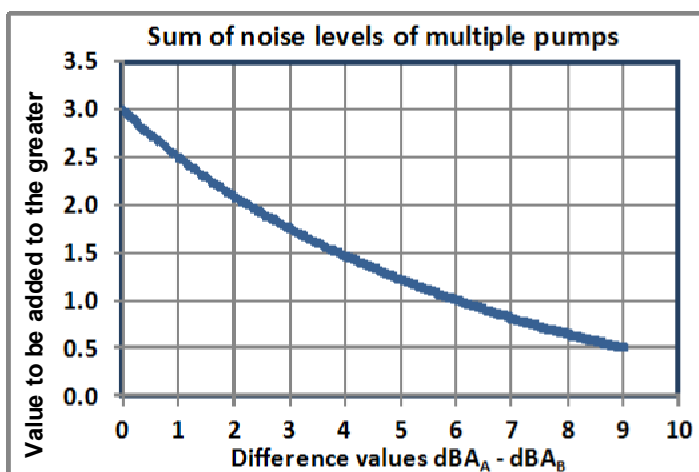
A reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. For further details please contact our Sales and Technical Dept. we suggest to provide application specification through our PID form.

Sum of pump noise level

To add two noise level values in decibel can be used the following formula or the graph shown on side.

$$\text{Sum dBA} = 10 \text{ Log } (10^{\text{dBA}_A/10} + 10^{\text{dBA}_B/10})$$

In the graph the abscissa axis represents the arithmetic difference between the values to be added $\text{dBA}_A - \text{dBA}_B$, the ordinate axis shows the value to be added to the greater of the two values dBA_A to obtain the sum of dBA.



EXAMPLE:

Pump type: ELI2-D-14.0/9.6

Rotation speed = 1500 rpm

Operating pressure front element = 250 bar

Operating pressure rear element = 150 bar

Noise level front element $\text{dBA}_A = 56$ dBA (graphs pag. 19)

Noise level rear element $\text{dBA}_B = 53$ dBA

Difference between the values to be added $\text{dBA}_A - \text{dBA}_B = 3$

Value to be added to $\text{dBA}_A = 1.8$

Noise level multiple pump = $56 + 1.8 = 57.8$ dBA

In the case in which the double pump have two stages of equal displacement, operating at the same pressure, just add to the noise single value 3 dBA.

Verification of the limit of transmitted torque

The maximum transmissible torque between the elements is 100 Nm; therefore in the case of double pumps there are no restrictions on configurations. It is still need to check the resistance of the front shaft. Must verify that the total torque to be transmitted will be less than the upper limit of the shaft (pag. 14, 15). For each stage, calculate the maximum torque with the formula (3) or from the graphs on pag. 17, 18. Add the values obtained and to verify if they are lower than the maximum defined for the shaft chose.

EXAMPLE:

Poump type: ELI2-D-14.0/9.6—T0

Operating pressure front element = 250 bar

Operating pressure rear element = 150 bar

Torque front element = 60 Nm (graphs pag. 17, 18)

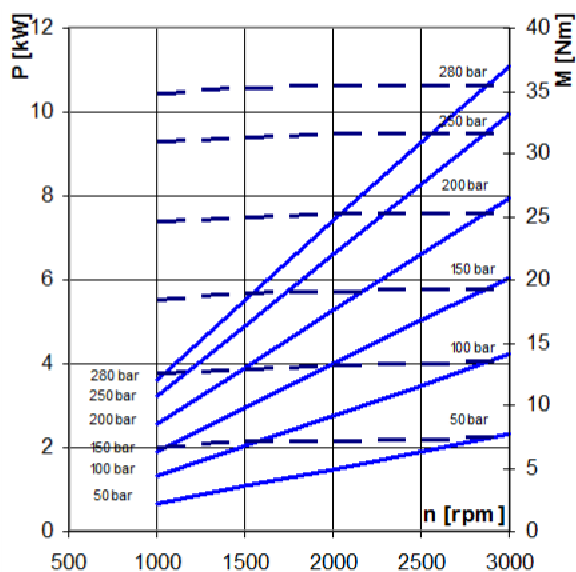
Torque rear element = 26 Nm (<100Nm)

Maximum torque transmitted from front shaft = $60 + 27 = 87$ Nm

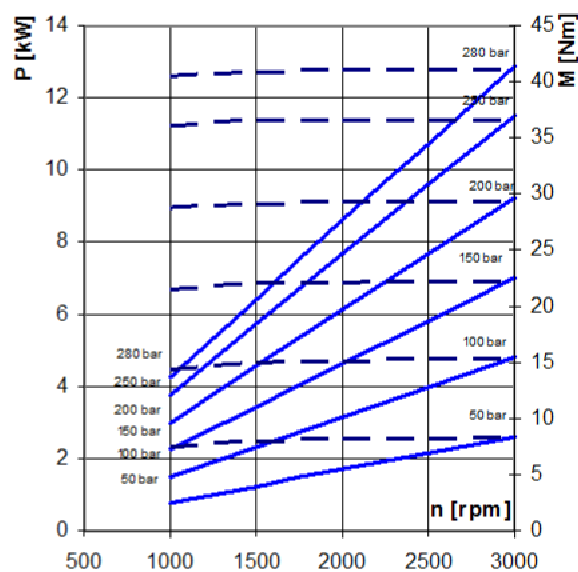
Maximum torque shaft type T0 = 145 Nm > 87 Nm

Shaft checked

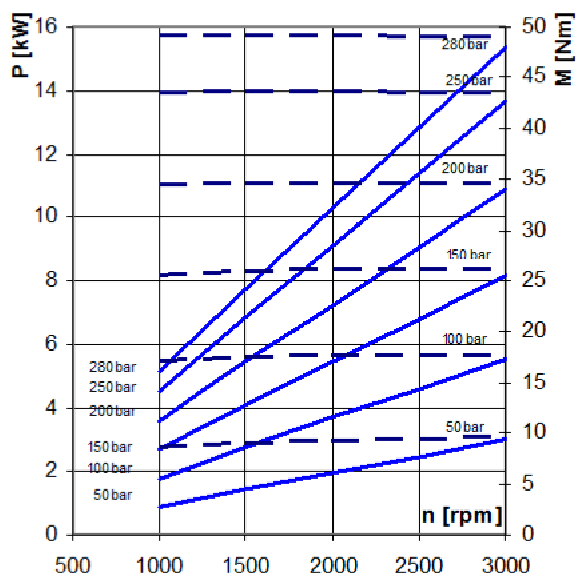
ELI2-7.0



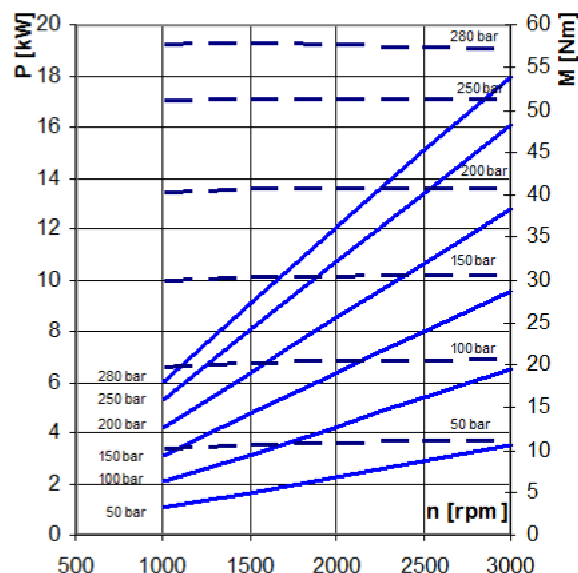
ELI2-8.2



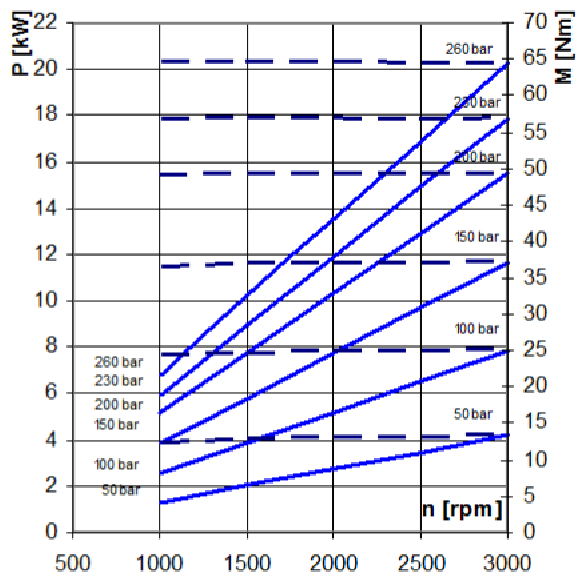
ELI2-9.6



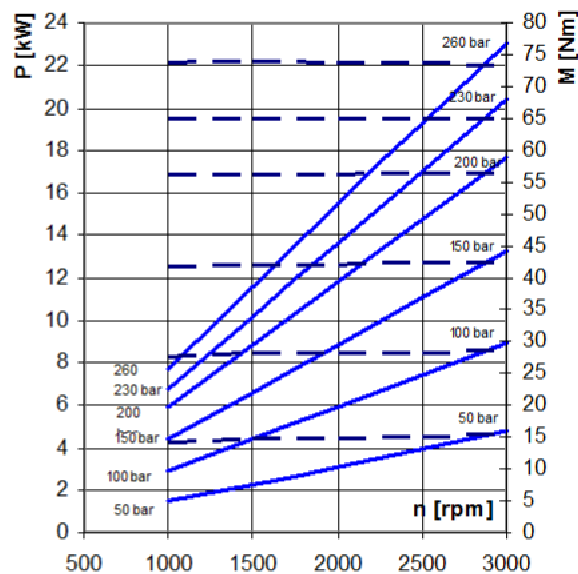
ELI2-11.4



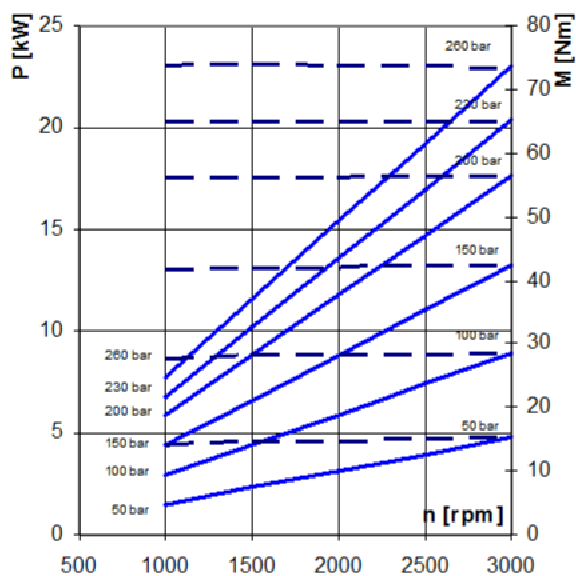
ELI2-14.0



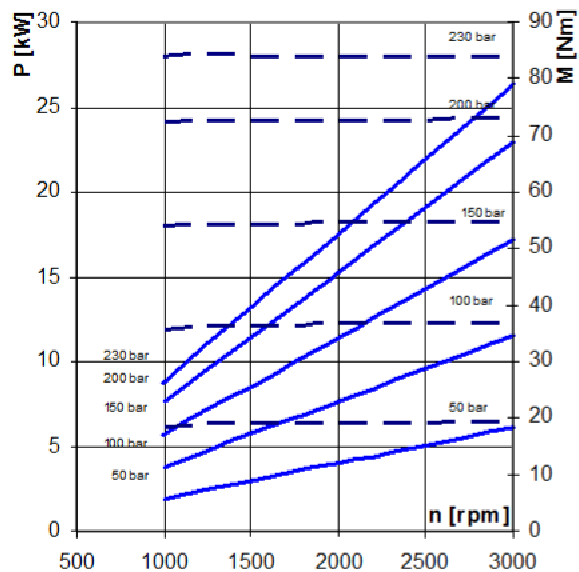
ELI2-16.1



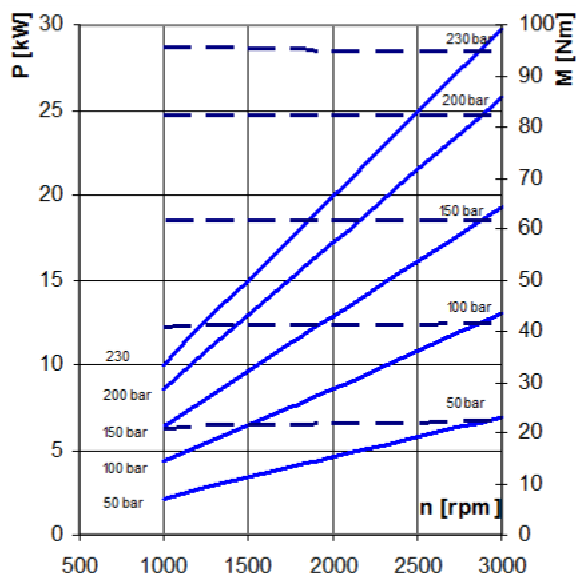
ELI2-17.8



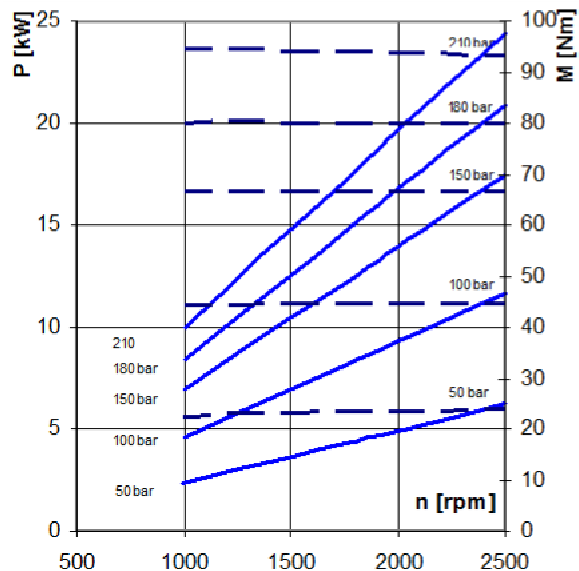
ELI2-21.0



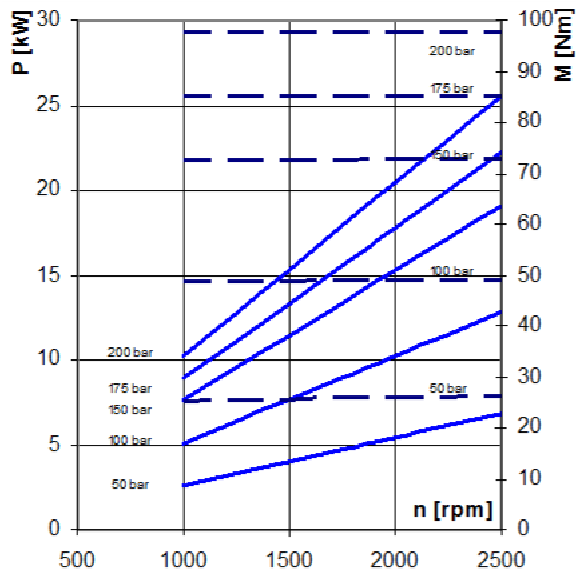
ELI2-23.7



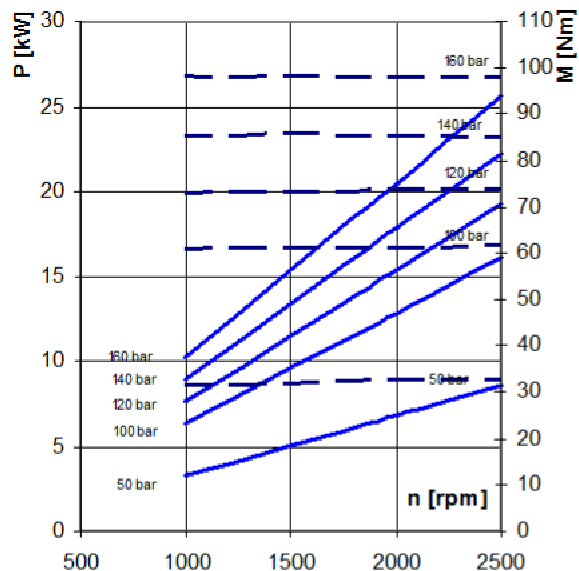
ELI2-25.7



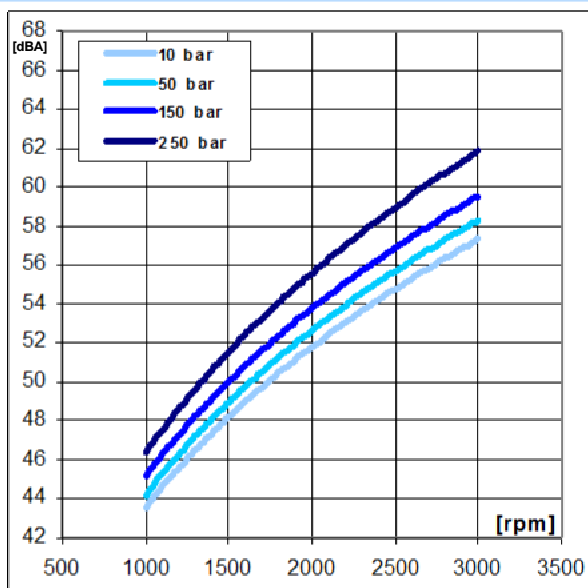
ELI2-28.0



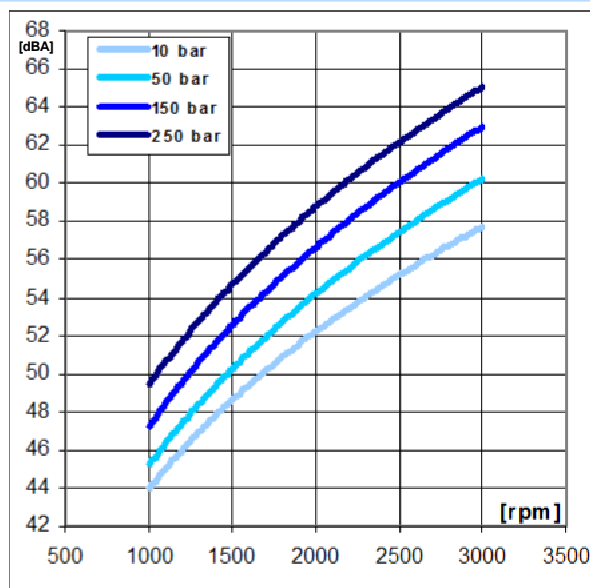
ELI2-35.0



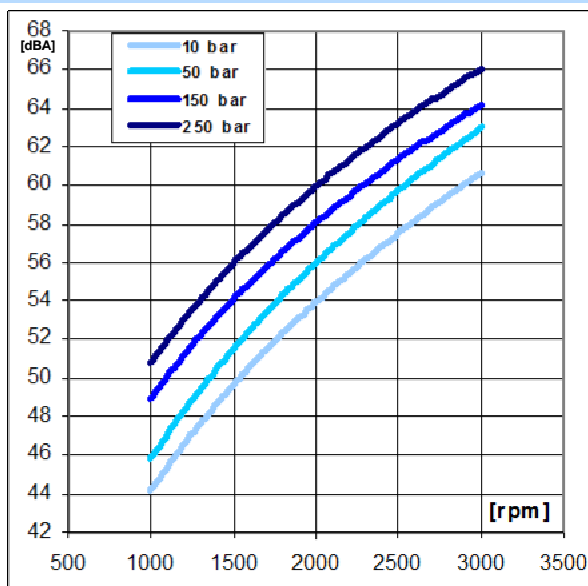
ELI2-7.0 / ELI2-8.2



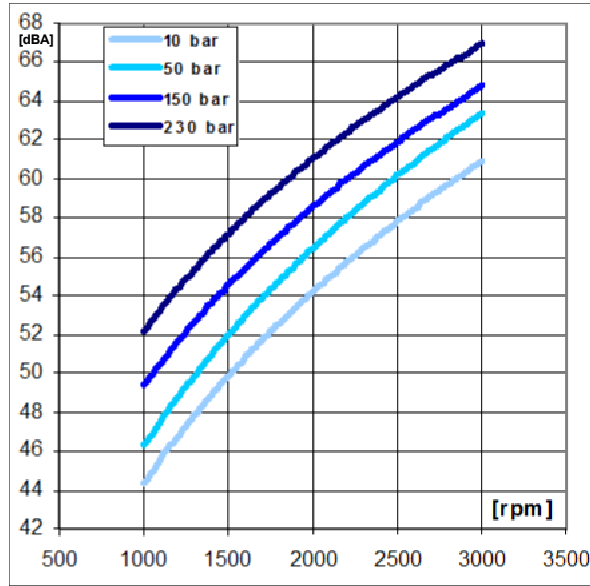
ELI2-9.6 / ELI2-11.4



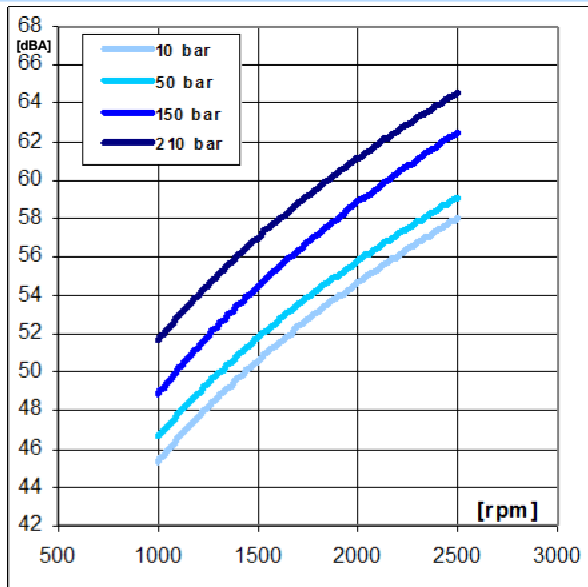
ELI2-14.0 / ELI2-16.1



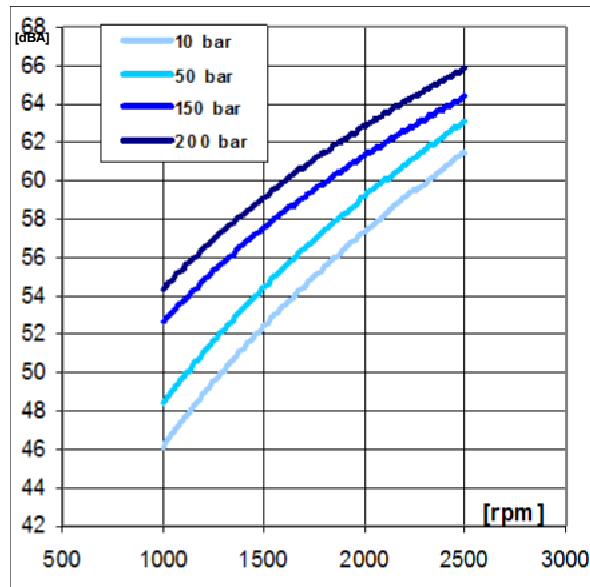
ELI2-17.8 / ELI2-21.0



ELI2-23.7 / ELI2-25.7



ELI2-28.0 / ELI2-35.0





ELIKA®
by **MARZOCCHI**



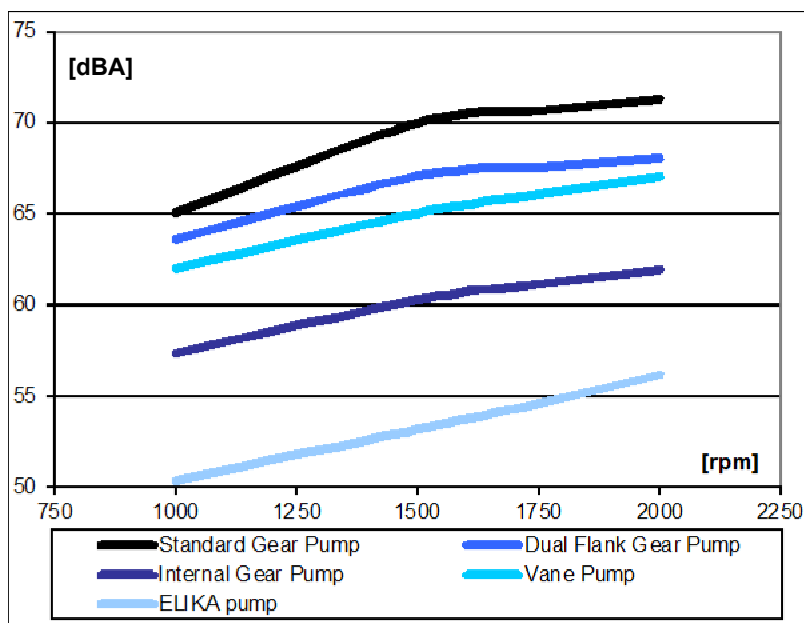
**Standard gear
pump profile**



**ELIKA gear
pump profile**

Noise comparison between:
standard external gear pump,
dual flank gear pump,
internal gear pump,
vane pump,
ELIKA pump.

The low pulsation reduces the induced vibration in the machines. The lower frequency of the ELIKA pump produces a more pleasant sound.



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web site: www.marzocchipompe.com

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ELIKA[®]
by **MARZOCCHI**

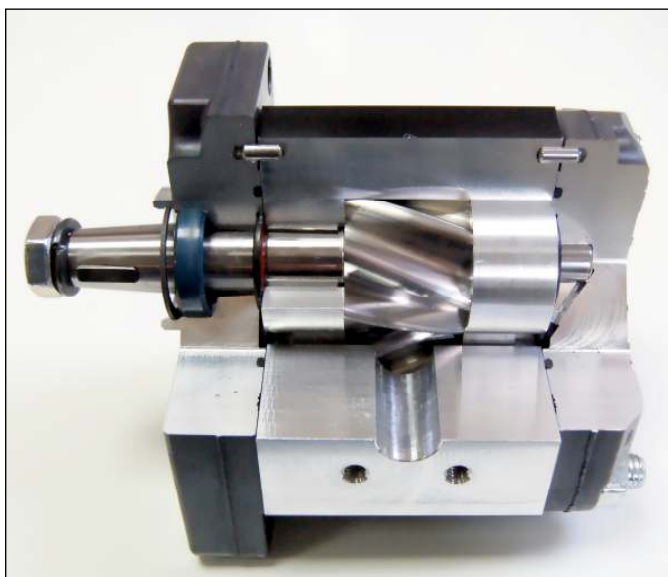
LA POMPA MARZOCCHI A BASSA RUMOROSITA' E BASSE PULSAZIONI
MARZOCCHI LOW-NOISE AND LOW RIPPLES PUMP



| SERIE ELI2, ELI3 E ELI4 SINGOLE | ELI2, ELI3 AND ELI4 SINGLE SERIES |

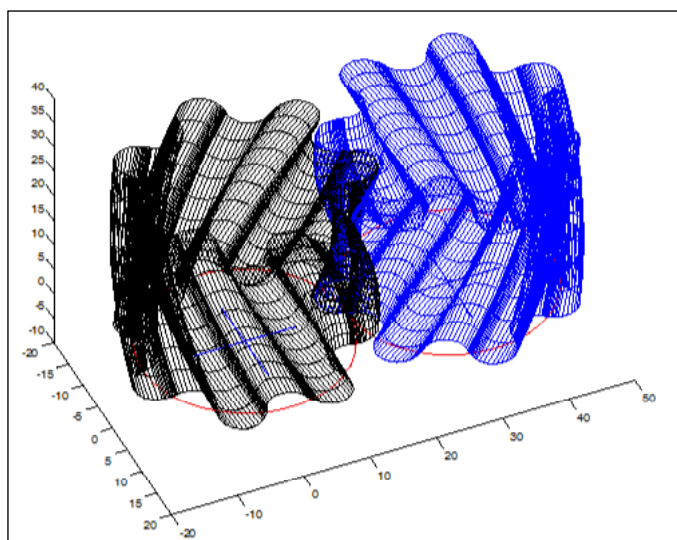


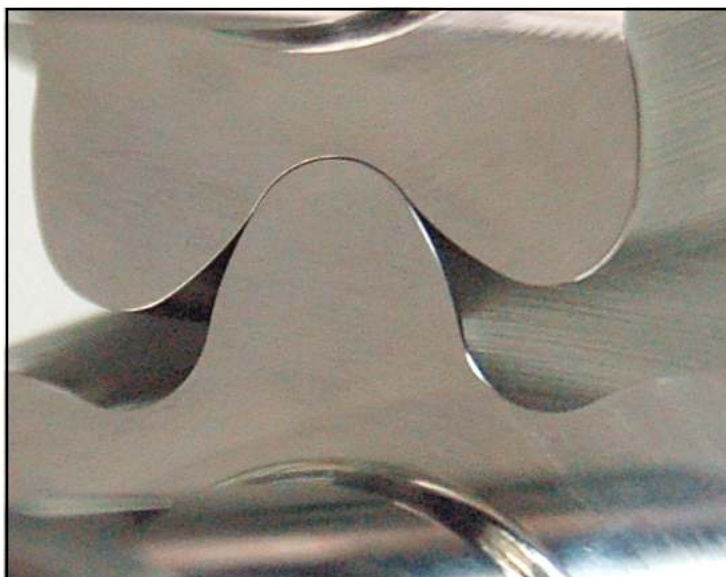
MARZOCCHI POMPE
HIGH PRESSURE GEAR PUMPS



ELIKA Marzocchi's proposal for the gear pump market, is a perfect fit for all those applications that require low noise levels. The use of ELIKA gear pump eliminates adverse noise effects on humans and on the surrounding environment. The ELIKA reduces the noise level by an average of 15 dBA compared with a conventional external gear pump. ELIKA is a patented product. ELIKA series includes pumps with displacements from 7 to 200 cm³/rev; perfectly interchangeable with our standard gear pumps in the ALP and GHP series. The maximum operating pressures are similar to those of the GHP series and extend up to 300 bar. The helical gears ensure the continuity of the motion despite the low number of teeth. The particular shape of the Elik profile patented by Marzocchi Pompe, eliminates the phenomenon of encapsulation typical of normal gear pumps, deleting the source of the main cause of noise and vibrations. The low number of teeth reduces the fundamental frequencies of the pump noise, producing a more pleasant sound. Axial forces induced by the helical teeth are optimally balanced in all operating conditions by the axial compensation system integrated in the pump cover. The pump structure minimizes the internal leakage, maximizing the volumetric efficiency under all conditions. This feature makes the Elik pump suitable for work operations with low speed and high pressure.

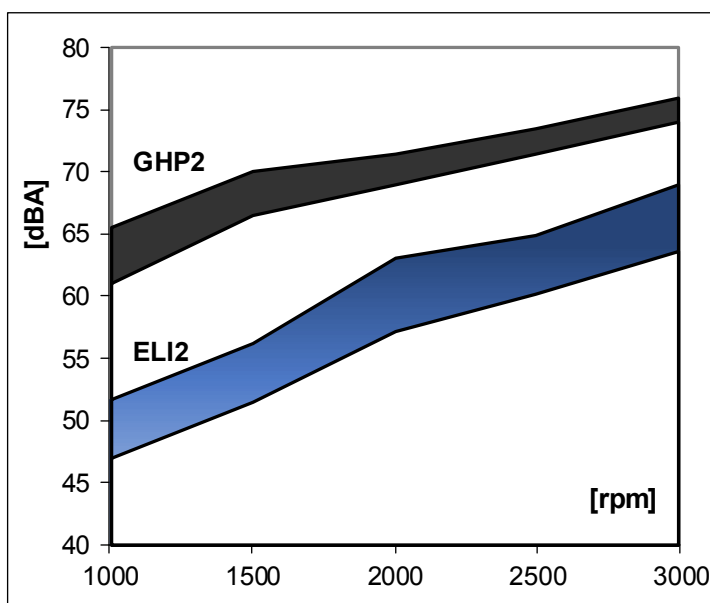
ELIKA la proposta Marzocchi al mercato delle pompe ad ingranaggi, è una efficace risposta per tutte quelle applicazioni che necessitano di bassi livelli di rumorosità. L'impiego delle pompe ELIKA permette di eliminare gli effetti nocivi della rumorosità sull'uomo e sull'ambiente circostante. ELIKA riduce l'emissione acustica mediamente di 15 dBA rispetto ad una convenzionale pompa ad ingranaggi esterni. ELIKA è un prodotto brevettato. La serie ELIKA comprende pompe con cilindrata da 7 a 200 cm³/giro, perfettamente intercambiabili con le pompe ad ingranaggi serie ALP2 e GHP2. Le massime pressioni di funzionamento sono simili a quelle della serie GHP ed arrivano fino ai 300 bar. La dentatura elicoidale garantisce la continuità del moto nonostante il basso numero di denti, riducendo notevolmente le frequenze fondamentali della rumorosità della pompa e rendendo il suono particolarmente gradevole. La particolare forma del profilo ELIKA brevettato da Marzocchi Pompe, elimina il fenomeno dell'incapsulamento tipico delle normali pompe ad ingranaggi, cancellando alla fonte la principale causa di rumorosità e delle vibrazioni. Le spinte assiali indotte dalla dentatura elicoidale sono equilibrate in maniera ottimale in ogni condizione di funzionamento da un sistema di compensazione assiale integrato nel coperchio della pompa. Questa caratteristica rende le pompe ELIKA adeguate al funzionamento con bassissimo numero di giri ed elevate pressioni, senza che i trafilamenti interni, laminando dalla mandata all'aspirazione, surriscaldino eccessivamente i componenti della pompa stessa.





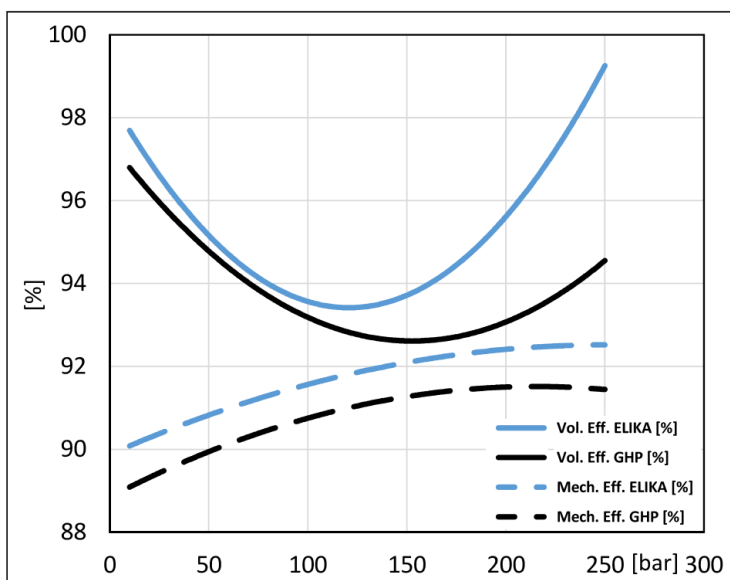
Noise pump comparison [dBA]* Marzocchi GHP2 – ELIKA ELI 2: same displacement 17.8 cm³/rev, pressure from 10 to 250 bar. The low number of teeth reduces the fundamental frequencies of the pump noise, producing a more pleasant sound.

Confronto rumorosità [dBA] pompe Marzocchi GHP 2 – ELIKA ELI 2 di medesima cilindrata 17.8 cm³/giro, pressioni da 10 a 250 bar. Il basso numero di denti, riducendo notevolmente le frequenze fondamentali della rumorosità della pompa e rendendo il suono particolarmente gradevole.*



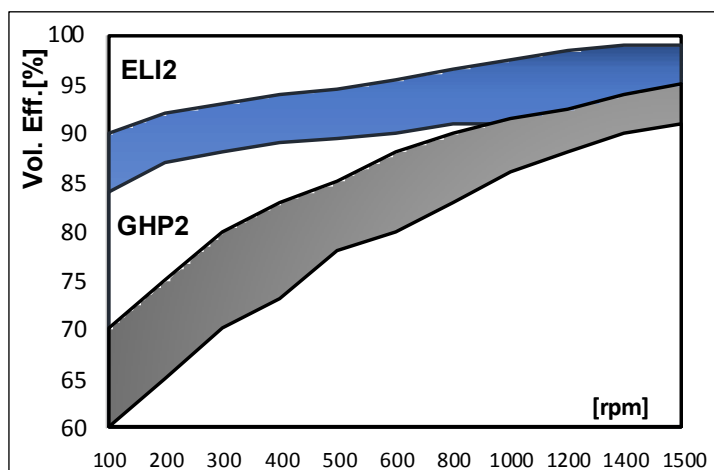
Efficiency pump comparison [%] Marzocchi GHP2 – ELIKA ELI 2: same displacement 17.8 cm³/rev, rotation speed 1500 rpm

Confronto rendimenti [%] pompe Marzocchi GHP 2 – ELIKA ELI 2 di medesima cilindrata 17.8 cm³/giro, velocità 1500 giri/min.



Comparison of volumetric efficiency at low rotation speed*: Marzocchi GHP 2 – ELIKA ELI 2, displacement 17.8 cm³/rev; P = 200 bar.

Confronto rendimenti volumetrici a bassa velocità di rotazione*: pompe Marzocchi GHP 2 – ELIKA ELI 2 di medesima cilindrata 17.8 cm³/giro; P = 200 bar.



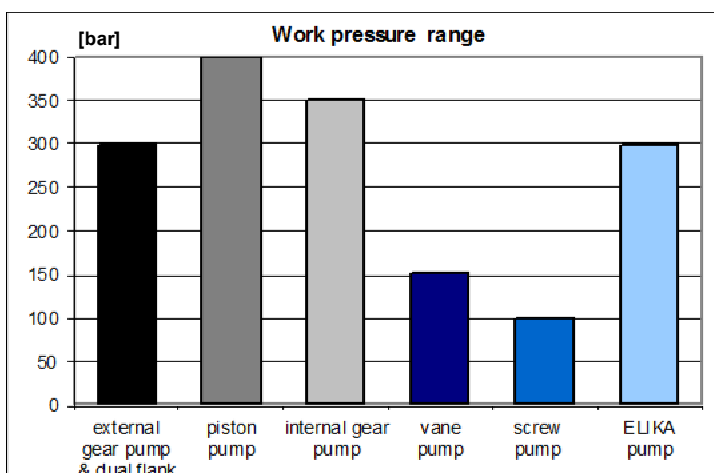
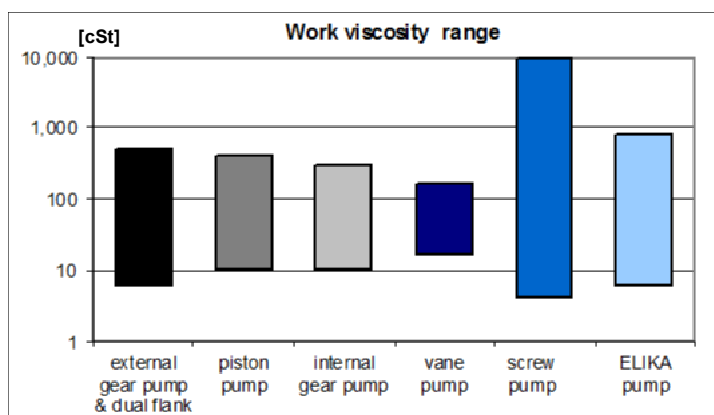
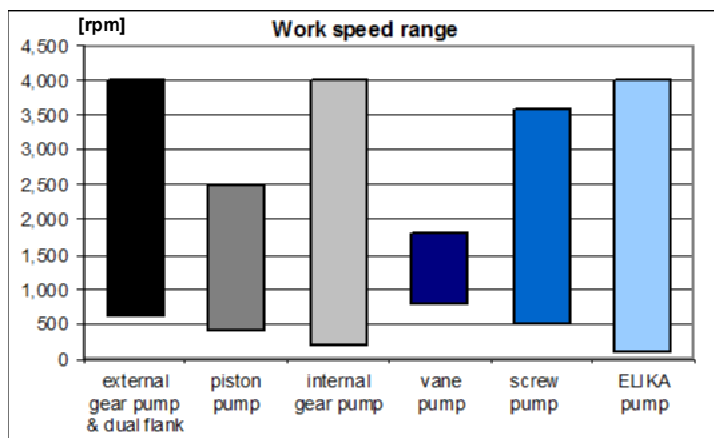
Comparing the characteristics of the Erika pump with other kind of volumetric pumps, it is possible to see that they have a very high range of applications in terms of rotation speed, work pressure and viscosity range.

On the side: comparison between the different fields of use of different kinds of volumetric pumps.

Confrontando le caratteristiche delle pompe ad ingranaggi ELIKA con gli altri tipi di pompe volumetriche presenti in commercio, si può notare come esse abbiano un elevatissimo campo di utilizzo sia come numero di giri, pressioni e viscosità ammissibili di funzionamento.

A lato: confronto tra i diversi campi di utilizzo di pompe volumetriche:

- external gear pump & dual flank
- piston pump
- internal gear pump
- vane pump
- screw pump
- ELIKA pump



*Differences shown in the graphs may depend on oil viscosity.

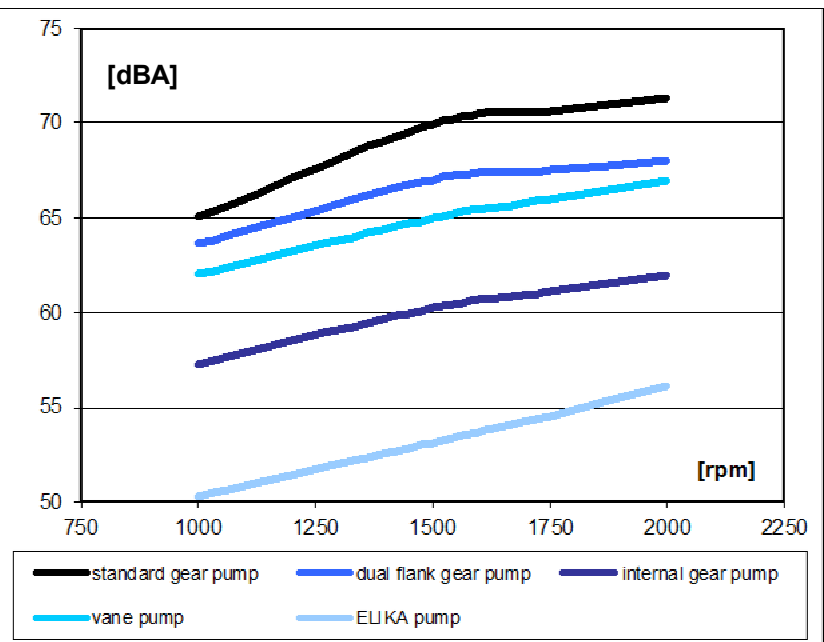
*Le differenze mostrate nei grafici possono dipendere dalla viscosità dell'olio.

The very low noise level generated by the ELIKA pumps makes this product particularly suitable for those application where screw pumps, vane pumps or internal gear pumps are generally used. The simple construction, small size and high performances of ELIKA make this new product very competitive.

Il bassissimo livello di rumorosità generato dalle pompe ELIKA rende questo prodotto particolarmente adatto per quei settori in cui vengono generalmente impiegate pompe a vite, a palette, o ad ingranaggi interni. La semplicità costruttiva, le ridotte dimensioni, le elevate prestazioni delle pompe ELIKA rendono questo nuovo prodotto particolarmente competitivo per le applicazioni di questi settori.

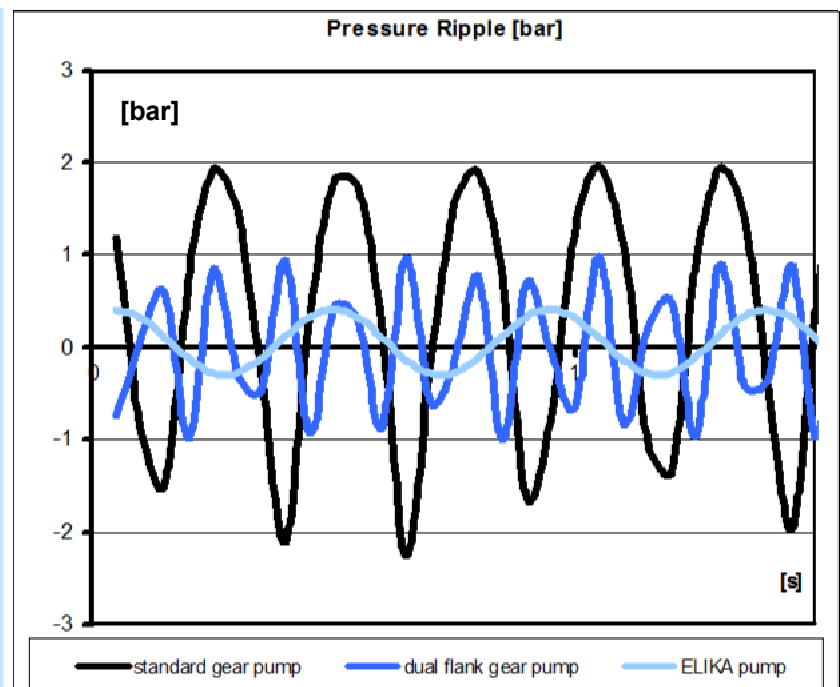
Noise comparison between:
standard external gear pump,
dual flank gear pump,
internal gear pump,
vane pump,
ELIKA pump,
pressure 200 bar.

*Confronto rumorosità tra:
pompa ad ingranaggi esterni,
pompa a doppio contatto,
pompa ad ingranaggi interni,
pompa a palette,
pompa ad ingranaggi ELIKA,
pressione 200 bar.*



The low pulsation reduces the induced vibration in the machines. The lower frequency of the ELIKA pump produces a more pleasant sound. Pressure pulsation comparison between:
standard external gear pump,
dual flank gear pump,
ELIKA pump, pressure 200 bar,
rotation speed 1500 rpm.

La bassa pulsazione di pressione riduce la vibrazione indotta alle macchine. La bassa frequenza della pulsazione generata dalle pompe ELIKA genera un suono più gradevole. Confronto di pulsazione di pressione tra: pompa ad ingranaggi esterni, pompa a doppio contatto, pompa ELIKA. Regime 200 bar, 1500 giri/minuto.





INSTALLATION NOTES

Please strictly follow assembly and use indications given in this catalogue for top performance, longer life and noise of the ELI Marzocchi series. Some general considerations should be made on the hydraulic system, in which the pump must be fitted. Special attention shall be devoted to hydraulic system design and assembly, especially to intake, delivery and return pipes and position of system parts (valves, filters, tanks, heat exchangers and accumulators). Proper safety devices and reliable instruments to avoid fluid turbulence, especially in return pipe to the tank, and prevent air, water and foreign bodies from entering into the system are of major importance. It is also very important to equip the hydraulic system with a proper filtering unit. Before starting the system on a continuous basis, we suggest to adopt some simple precautions: — Check for the direction of rotation of the pump to be consistent with the drive shaft of the prime mover. — Check for the proper alignment of pump shaft and motor shaft: it is necessary that the connection does not induce axial or radial loads. — Protect drive shaft seal during pump painting. Check if contact area between seal ring and shaft is clean: dust could provoke quicker wear and leakage. — Remove all dirt, chips and all foreign bodies from flanges connecting inlet and delivery ports. — Ensure that intake and return pipes are always below fluid level and as far from each other as possible. — Install the pump below head, if possible. — Fill the pump with fluid, and turn it by hand. — At first startup, set pressure limiting valves at min. value possible. — Avoid lower rotation speed than min. allowed with pressure higher than P1. — Do not start the system at low temperatures under load conditions or after long stops (always avoid or limit load starting for pump longer life. Start the system for a few minutes and turn on all components; bleed air off the circuit its proper filling.— Check fluid level in the tank after loading all components.— At last, gradually increase pressure, continuously check fluid and moving parts temperature, check rotation speed until you reach set operating values that shall be within the limits indicated in this catalogue.

NOTE PER L'INSTALLAZIONE

Per ottenere dalle pompe serie ELI Marzocchi le migliori condizioni in termini di durata, rumorosità e prestazioni è consigliato seguire le raccomandazioni e i suggerimenti di installazione ed utilizzo indicate nel presente catalogo. Per quanto riguarda il sistema idraulico nel quale andrà inserita la pompa, valgono alcune considerazioni generali: prestare molta cura nella progettazione e nella realizzazione dell'intero impianto, in special modo per quanto riguarda i condotti di aspirazione, di mandata, di ritorno, e la posizione dei componenti presenti (valvole, filtri, serbatoi, scambiatori di calore, accumulatori, ecc.). E' inoltre importante dotare l'impianto di idonei sistemi di sicurezza, di strumentazione affidabile e di sistemi adeguati atti ad evitare turbolenze nel fluido, in special modo sul condotto di ritorno al serbatoio, e ad evitare l'entrata in circolo nel sistema di aria, acqua, o contaminanti di vario genere. E' fondamentale dotare l'impianto di un idoneo sistema di filtrazione. Prima di avviare l'impianto a regime consigliamo di osservare alcuni semplici accorgimenti: - Verificare che il senso di rotazione sia coerente con quello dell'albero dal quale deriva il moto. — Controllare l'allineamento tra l'albero della pompa e l'albero del motore: è necessario che il collegamento non induca carichi assiali o radiali.— Proteggere l'anello di tenuta dell'albero della pompa in caso di verniciatura; verificare la pulizia nella zona di contatto tra anello di tenuta ed albero: la presenza di contaminante può accelerare le usure e causare delle perdite. — Verificare che nelle flange di connessione alle porte di aspirazione e mandata non siano presenti trucioli, sporco, od altro. — Assicurarsi che i terminali dei condotti d'aspirazione e di ritorno siano sempre al di sotto del livello del fluido e comunque il più possibile lontani tra di loro.— Installare, se possibile, la pompa sotto battente.— Riempire la pompa di fluido facendola ruotare a mano. — Durante il primo avviamento, scollegare lo scarico della pompa per permettere di spurgare l'aria dal circuito. — Durante il primo avviamento, tarare le valvole limitatrici di pressione al minor valore possibile. — Evitare di sottoporre le pompe ad un regime inferiore a quello minimo consentito in corrispondenza di livelli di pressione superiori a P1.— Evitare partenze sotto carico in condizioni di bassa temperatura o comunque dopo lunghi periodi di inattività. — Avviare l'impianto per qualche istante attivando tutta la componentistica; sfiatare successivamente il circuito per verificare l'effettivo corretto riempimento. — Verificare il livello del fluido nel serbatoio dopo il caricamento di tutta la componentistica. — Aumentare infine gradualmente la pressione, tenendo controllate le temperature del fluido e delle altre parti in movimento, controllare la velocità di rotazione fino a raggiungere i valori di esercizio previsti che devono mantenersi entro i limiti indicati nel presente catalogo.

CLEANING AND FILTERING THE SYSTEM

It is widely known that most pumps early failures are due to contaminated fluids. The extreme reduction of the tolerances required in the design of the pumps and therefore their operation with minimum clearances, are heavily influenced by a fluid that is not perfectly clean. It is proved that particles circulating in the fluid act as abrasive agents, damaging the surfaces they touch and increasing the quantity of contaminant. For this reason, ensure that system is perfectly clean during startup and keep it clean for the whole operating life. Necessary interventions to check and limit contamination should be performed in a preventive and corrective way. Preventive actions include: proper cleaning of the system during assembly, deburring, eliminating the welding scum and fluid filtering before filling up. Starting contamination level of system fluid should not exceed class 18/15 (ref. ISO 4406). Even fresh fluids might exceed this contamination level; therefore always pre-filter the fluid when filling up or topping up the system. Fit a proper tank; its capacity should be proportional to the volume displaced by the pump in one working minute. Fluid contamination level check and correction during operation can be obtained through filters that retain the particles in the fluid. Two parameters tell which filter is most suitable: absolute filtering power and β filtering ratio. Low absolute filtering power and high β filtering ratio for small particles help ensuring good filtration. It is then very important to limit not only max dimensions, but also the number of smaller particles that pass through the filter. It goes without saying that with an operating pressure increase and according to the system sophistication degree, filtering should become more and more efficient. The filtering system shall always ensure contamination levels not exceeding the values indicates below.

PULIZIA DELL'IMPIANTO E FILTRAZIONE

E' ormai universalmente riconosciuto che la maggior parte dei prematuri cali di prestazioni delle pompe è dovuta ad un loro funzionamento con fluidi contaminanti; l'estrema riduzione delle tolleranze che contraddistinguono i componenti delle pompe e il loro conseguente funzionamento a giochi ridotti, possono essere irrimediabilmente compromessi se non si pone estrema cura nel mantenere il fluido pulito. E' comunemente accertato che le particelle circolanti continuamente nel fluido agiscono come agente abrasivo danneggiando le superfici con cui vengono a contatto e contribuendo alla formazione di ulteriore contaminante. Per questo raccomandiamo di porre molta attenzione alla pulizia in fase di avviamento e al mantenimento della stessa nell'impianto. Gli interventi necessari per controllare e limitare il grado di contaminazione devono essere effettuati in maniera preventiva e correttiva. Le azioni preventive comprendono l'accurata pulizia dell'impianto durante la fase di montaggio, la conseguente eliminazione delle bave residue, delle scorie di saldatura ecc., ed il trattamento del fluido prima del riempimento. L'iniziale livello di contaminazione del fluido usato per riempire l'impianto non dovrebbe superare la classe 18/15 (rif. ISO 4406). Tale livello potrebbe essere superato anche da fluidi nuovi; prevedere quindi una adeguata filtrazione anche al momento di riempimento dell'impianto e comunque ad ogni rabbocco. Dimensionare adeguatamente il serbatoio facendo in modo che abbia una capacità proporzionata al volume del fluido spostato dalla pompa in un minuto di funzionamento. Il controllo e la correzione dei livelli di contaminazione del fluido durante il funzionamento si ottiene attraverso l'installazione di filtri aventi la funzione di trattenere le particelle trasportate dal fluido. Due sono i parametri che determinano la buona scelta del filtro: il potere assoluto di filtrazione e il rapporto di filtrazione β . Bassi valori di potere assoluto di filtrazione a alti valori del rapporto di filtrazione β per particelle di piccole dimensioni concorrono a garantire buone caratteristiche di filtrazione. È pertanto molto importante limitare, oltre alle dimensioni massime, anche il numero delle particelle di più piccole dimensioni che oltrepassano il filtro. Risulta pertanto evidente che, all'aumentare della pressione di esercizio e al grado di sofisticazione dell'impianto, la filtrazione deve diventare sempre più efficace. Il sistema di filtrazione deve comunque garantire livelli di contaminazione non superiori a quelli sotto riportati:

Pressione	Pressure	< 140 bar	140 ÷ 210 bar	> 210 bar
Classe NAS 1638	NAS 1638 Class	10	9	8
Classe ISO 4406	ISO 4406 Class	21/19/16	20/18/15	19/17/14
Rapporto $\beta_x = 75$	Ratio $\beta_x = 75$	25 – 40 μm	12 – 15 μm	6 -- 12 μm

HYDRAULIC FLUIDS

Use specific mineral oil based hydraulic fluids having good anti-wear, anti-foaming (rapid de-aeration), anti-oxidant, anti-corrosion and lubricating proprieties. Fluids should also comply with DIN 51524 and VDMA 24317 standards and get through 11 stage of FZG test ISO 14635-1. For the standard models, the temperature of the fluid should be between -10°C and $+80^{\circ}\text{C}$. Fluid kinematic viscosity ranges are the following:

FLUIDI IDRAULICI

Si raccomanda l'uso di fluidi specifici per circuiti idraulici a base di olio minerale, con buone caratteristiche antiusura e antischiuma, con proprietà di rapida disaerazione, antiossidanti, anticorrosione, lubrificanti e in grado di soddisfare quanto previsto dalla norma DIN 51524, dalla norma VDMA 24317 e di superare l'11° stadio della prova FZG ISO 14635-1. Per i modelli standard, la temperatura del fluido durante il funzionamento della pompa deve essere compreso tra -10°C e $+80^{\circ}\text{C}$. I valori di viscosità cinematica del fluido sono i seguenti:

Permessi (previa verifica)	Allowed value (upon verification)	$6 \div 500 \text{ cSt}$
Raccomandati	Recommended value	$10 \div 100 \text{ cSt}$
Consentiti all'avviamento	Value allowed at startup	$< 2000 \text{ cSt}$

If fluids other than the above mentioned ones are used, please always indicate type of used fluid and operating conditions so that our Sales and Technical Dept. can weigh possible problems on compatibility or useful life of system parts.

In caso di utilizzo di fluidi diversi da quelli sopra consigliati, specificare il tipo impiegato e le relative condizioni di funzionamento in modo che il nostro Ufficio Tecnico-Commerciale possa valutare eventuali problemi di compatibilità o di durata dei componenti.

INLET PRESSURE

Under standard working conditions, intake pipe pressure is lower than atmospheric pressure. The operating inlet pressure should range between 0.7 and 3 bars (absolute).

PRESSIONE IN ASPIRAZIONE

In normali condizioni di funzionamento, nel condotto di aspirazione si rileva una pressione minore di quella atmosferica; il campo di pressioni di esercizio in alimentazione deve essere compresa tra 0.7 e 3 bar assoluti.

INLET AND DELIVERY LINES

Hydraulic system pipes should show no sudden changes of direction, sharp bends and sudden differences in cross-section. They should not be too long or out of proportion. Pipe cross-section should be sized so that fluid velocity does not exceed recommended values. It is advisable to carefully consider the possible diameter reduction of the inlet or outlet pipes fitted on flange fittings. Reference values are the following:

CONDOTTI DI ASPIRAZIONE E MANDATA

Le tubazioni presenti nell'impianto idraulico, siano esse rigide o flessibili, non devono presentare: bruschi cambiamenti di direzione, piccoli raggi di curvatura, improvvise variazioni di sezione e la loro lunghezza non deve essere eccessiva o sproporzionata; la sezione dei condotti deve essere dimensionata affinché la velocità di fluido non ecceda i valori consigliati. Raccomandiamo di tenere in particolare considerazione l'eventuale riduzione diametro dei condotti di entrata o di uscita presente nei raccordi a flangia. I valori di riferimento sono:

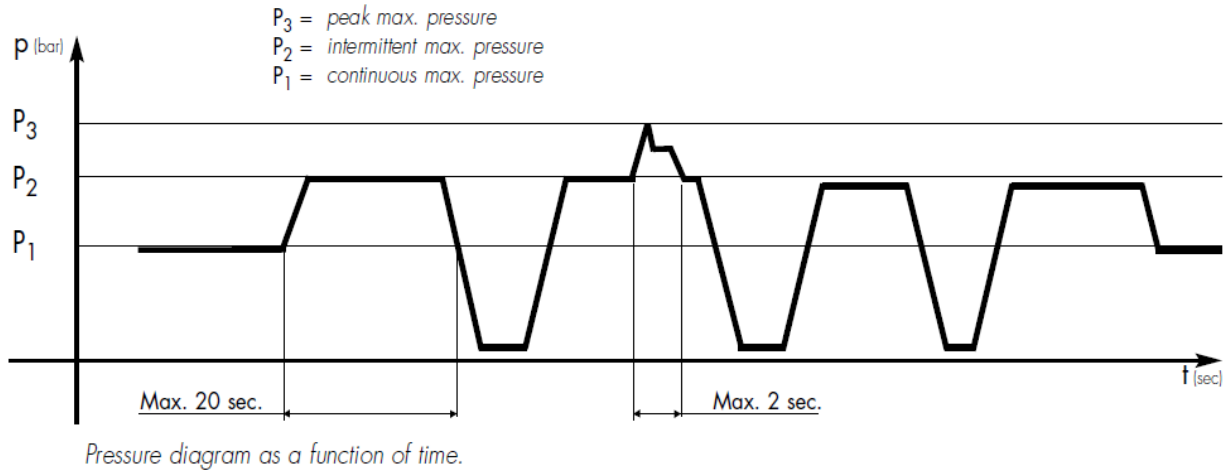
Condotto di aspirazione	Intake line	$0.5 \div 1.6 \text{ m/s}$
Condotto di mandata	Delivery line	$2.0 \div 6.0 \text{ m/s}$
Condotto di ritorno	Return line	$1.6 \div 3.0 \text{ m/s}$

PRESSURE DEFINITION

Product tables show three max pressure levels [P1, P2, P3] to which each pump can be used.

DEFINIZIONE DELLE PRESSIONI

Le tabelle di prodotto presentano tre livelli massimi di pressione [P1, P2, P3] ai quali ogni pompa può essere sottoposta:

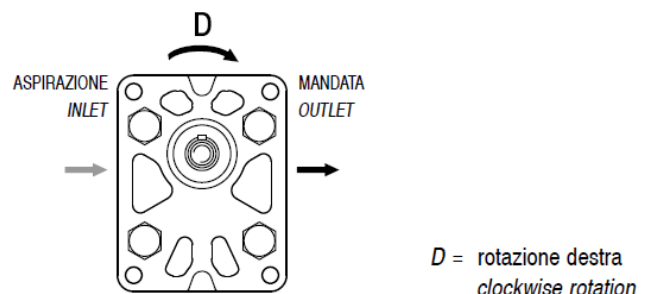
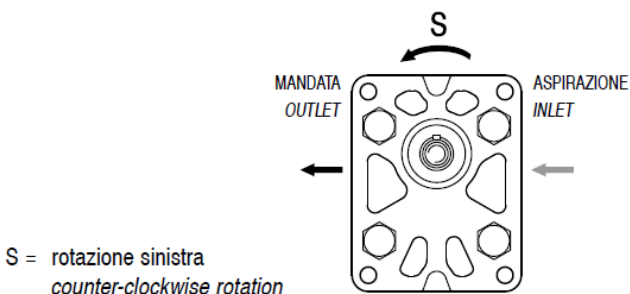


DIRECTION OF ROTATION

Marzocchi ELI series pumps are available in either clockwise or counter-clockwise rotation. Direction of rotation of single rotation pumps is conventionally defined as follows: when standing before the pump with driving shaft up with is projecting end towards the observer, the pump is rotating clockwise in case of right-hand rotation "D"; therefore, delivery side is on the right, whereas intake side is on the left. The contrary will happen with left-handed pumps "S", keeping the same point of view. The ELI pumps can not be modified in order to reverse the work rotation direction.

SENSO DI ROTAZIONE

Le pompe ELI Marzocchi possono essere fornite in configurazione monodirezionale destra o sinistra. Il senso di rotazione di una pompa monodirezionale è definito per convenzione nel seguente modo: guardando la pompa frontalmente con l'albero conduttore posizionato verso l'alto e sporgente verso chi guarda, se si tratta di rotazione destra "D", il suo movimento sarà in senso orario e di conseguenza il lato mandata sarà posto a destra e quella di aspirazione a sinistra. Viceversa per pompe con rotazione sinistra "S" mantenendo naturalmente lo stesso punto di osservazione. Le pompe ELI non possono essere modificate al fine di invertire il senso di rotazione di funzionamento.



SEALS

"N" Standard version on NBR the temperature of the fluid should be between -10°C and +80°C.

"V" Fluorocarbon version suitable for fluid at high temperatures. Range between -10°C and +120°C. In the range between -10°C and +80°C pressures P1, P2 and P3 are possible as per product table; beside that P1 should not be exceeded.

GUARNIZIONI

"N" Versione standard in NBR per impieghi con fluido a temperature comprese tra -10°C e +80°C.

"V" Versione in fluorocarbonato per impieghi con fluido ad alte temperature. Campo di utilizzo da -10°C e +120°C. Tra -10°C e +80°C sono ammesse P1, P2 e P3 come da tabella prodotto; oltre non eccedere P1.

FREQUENTLY USED FORMULAS

Fluid velocity

Calculate the velocity [v] of a fluid in a pipe as follows:

$$v = Q / 6 \times A \text{ [m/s]}$$

Q = flow rate [liter/min]

A = inside area of pipe [cm²]

Delivered flow rate

Calculate flow rate [Q] as follows:

$$Q = V \times n \times \eta_{vol} \times 10^{-3} \text{ [liter/min]}$$

V = displacement [cm³/rotation]

n = rotation speed [rpm]

η_{vol} = pump volumetric efficiency (take 0.97 as an indicative value for rotation speeds ranging between 1000 and 2000 rpm)

Absorbed torque

Calculate necessary torque [M] of a pump subject to a pressure differential between inlet and delivery as follows:

$$M = (V \times \Delta P) / (62.8 \times \eta_{hm}) \text{ [Nm]}$$

V = displacement [cm³/rotation]

ΔP = pressure differential [bar]

η_{hm} = hydromechanical efficiency (take 0.80 as indicative value under cold conditions and 0.85 under working conditions)

Absorbed power

Calculate hydraulic power [P] transferred to fluid from a pump subject to pressure differential between inlet and delivery as follows:

$$P = (Q \times \Delta P) / (600 \times \eta_{tot}) \text{ [kW]}$$

Q = flow rate [liter/min]

ΔP = pressure differential [bar]

η_{tot} = total pump efficiency ($\eta_{hm} \times \eta_{vol}$)

Values for η_{vol} and η_{hm} (and consequently η_{tot}) depend on pressure differential between inlet and delivery, rotation speed, fluid features (temperature and viscosity) and filtering degree. Call our Sales and Technical Dept. for further details on efficiency. The proper values for flow rate, torque and power absorbed according to pressure differential, rotation speed and set test conditions, can be found on the pages dedicated to the performance curves.

FORMULE DI USO CORRENTE

Velocità del fluido

Per calcolare le velocità [v] di un fluido in un condotto:

$$v = Q / 6 \times A \text{ [m/s]}$$

Q = portata [litri/min]

A = sezione del condotto [cm²]

Portata erogata da una pompa

Per calcolare la portata [Q] di una pompa:

$$Q = V \times n \times \eta_{vol} \times 10^{-3} \text{ [litri/min]}$$

V = cilindrata [cm³/giro]

n = velocità di rotazione [giri/min]

η_{vol} = rendimento volumetrico (considerare 0.97 come valore indicativo per regimi di rotazione compresi tra 1000 e 2000 giri/min)

Momento torcente assorbito da una pompa

Per determinare il momento torcente [M] necessario per il funzionamento di una pompa sottoposta ad un differenziale di pressione tra mandata e aspirazione:

$$M = (V \times \Delta P) / (62.8 \times \eta_{hm}) \text{ [Nm]}$$

V = cilindrata [cm³/giro]

ΔP = differenziale di pressione [bar]

η_{hm} = rendimento idromeccanico (considerare come valore indicativo 0.80 per il funzionamento a freddo e 0.85 per il funzionamento a regime)

Potenza assorbita di una pompa

Per determinare la potenza [P] idraulica ceduta al fluido da una pompa sottoposta ad un differenziale di pressione fra mandata e aspirazione:

$$P = (Q \times \Delta P) / (600 \times \eta_{tot}) \text{ [kW]}$$

Q = portata [litri/min]

ΔP = differenziale di pressione [bar]

η_{tot} = rendimento totale ($\eta_{hm} \times \eta_{vol}$)

I valori dei η_{vol} , η_{hm} e di conseguenza η_{tot} dipendono dal differenziale di pressione tra aspirazione e mandata, dalla velocità di rotazione, alle caratteristiche del fluido utilizzato (in relazione ai fattori di temperatura e viscosità) e dal grado di filtrazione. Per dati più precisi si consiglia di contattare il nostro Ufficio Tecnico-Commerciale. Valori indicativi di portata, coppia e potenza assorbita in funzione del differenziale di pressione ed alla velocità di rotazione e a condizioni di prova stabilite, sono riportate nei grafici presenti nelle pagine dedicate alle curve caratteristiche.

DRIVE

Connect the pump to the motor using either a flexible coupling (either box or Oldham coupling) so that no radial and/or axial force is transmitted to the pump shaft during rotation, otherwise pump efficiency will dramatically drop due to early wear of inner moving parts. Therefore, coupling must absorb inevitable even though reduced misalignment between pump shaft and motor shaft. Box coupling or Oldham coupling should also move axially freely enough (enough for proper contact surface onto pump driving shaft). Furthermore, to avoid early wear of either splined or Oldham couplings, they should be lubricated at regular intervals using specific grease. For further details please contact our Sales or Technical Depts.

TRAINO

Il collegamento della pompa al motore deve essere realizzato attraverso un giunto (elastico, a manicotto, Oldham) che durante la rotazione, non trasferisca nessuna forza radiale e/o assiale all'albero della pompa stessa. In caso contrario sarebbe inevitabile un rapidissimo decadimento delle prestazioni a causa di rapide usure delle parti interne in movimento. Per questo il giunto deve essere in grado di assorbire gli inevitabili (sebbene minimi) errori di coassialità tra l'albero della pompa e quello del motore e, nel caso di giunti a manicotto od Oldham, anche di avere sufficiente movimento assiale (tale comunque da garantire sempre un corretto e sufficiente ricoprimento dell'albero conduttore della pompa). Inoltre, sempre nel caso di utilizzo di manicotti scanalati o giunti Oldham, per evitare il rapido deterioramento degli stessi, occorre assicurare una costante lubrificazione mediante grasso o prodotti specifici. Per maggiori dettagli, consigliamo di interpellare il nostro Ufficio Tecnico-Commerciale.

ELI pumps — displacement and flow range

Available displacements:

ELI2 from 7.0 to 35.1 cm³/rev
ELI3 from 20.4 to 87.1 cm³/rev
ELI4 from 86.5 to 199.8 cm³/rev

Cilindrate dispoenbill:

ELI2 da 7.0 a 35.1 cm³/rev
ELI3 da 20.4 a 87.1 cm³/rev
ELI4 da 86.5 a 199.8 cm³/rev

Rotation speed:

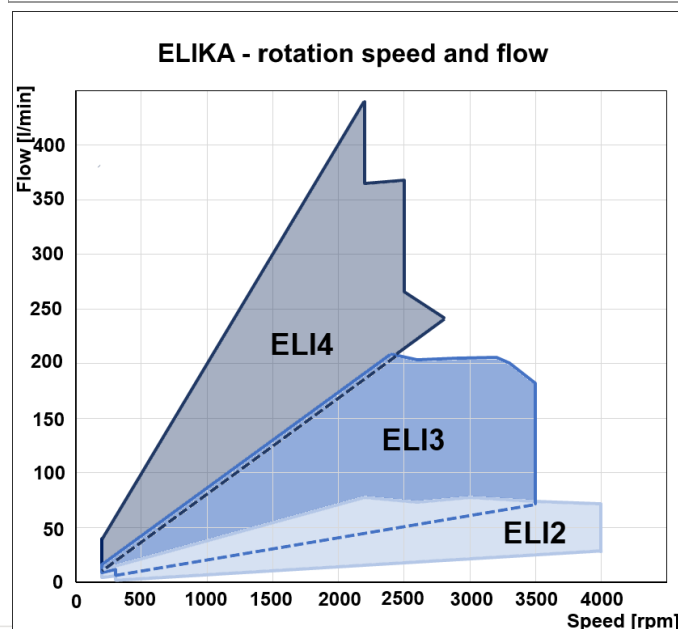
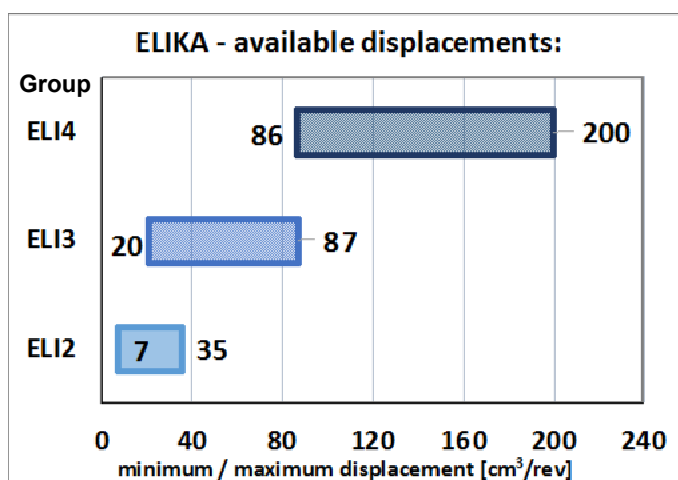
ELI2 from 200 to 4000 rpm
ELI3 from 200 to 3500 rpm
ELI4 from 200 to 2800 rpm

To operate outside of these regimes please contact our Sales and Technical Dept.

Velocità di rotazione:

ELI2 da 200 a 4000 rpm
ELI3 da 200 a 3500 rpm
ELI4 da 200 a 2800 rpm

Per funzionamento al di fuori di questi regimi consigliamo di interpellare il nostro Ufficio Tecnico — Commerciale.



ELI2 series how to order / come ordinare

ELI	TYPE	ROTATION	DISPL.	SHAFT	PORTS	SEALS
	2	D - CW	7.0	T0	D	N
	2A	S - CCW	8.2	T1	FA**	V
	2BK1		9.6	T2		
	2BK2		11.4	C0		
	2BK4		14.0	C1		
	2BK7		16.1	C2		
			17.8	S0		
			21.0	S1		
			23.7	S2		
			25.7	S3		
			28.0	S4		
			35.0	G0		

Pump standard types:		
2	= european flange + shaft T0 + ports D + standard seals	= flangia europea + albero T0 + porte D + guarnizioni standard
2A	= flange A + shaft C1 + ports FA*** + standard seals	= flangia A + albero C1 + porte FA*** + guarnizioni standard
2BK1	= flange BK1 + shaft T1 + ports D + standard seals	= flangia BK1 + albero T1 + porte D + guarnizioni standard
2BK2	= flange BK2 + shaft T1 + ports D + standard seals	= flangia BK2 + albero T1 + porte D + guarnizioni standard
2BK4	= flange BK4 + shaft T1 + ports D + standard seals	= flangia BK4 + albero T1 + porte D + guarnizioni standard
2BK7	= flange BK7 + shaft G0 + port D + standard seals	= flangia BK7 + albero G0 + porte D + guarnizioni standard
Examples:		
ELI2-D-8.2-T0-D-N	= clockwise rotation, 8.2 cm ³ /rev, european flange, 1:8 tapered shaft, flanged ports D type, standard seals.	= pompa destra, 8.2 cm ³ /giro, flangia europea, albero conico 1:8, porte flangiate tipo D, guarnizioni standard.
ELI2-D-9.6-S1-D-N	= clockwise rotation, 9.6 cm ³ /rev, european flange, splined shaft S1, flanged ports D type, standard seals.	= pompa destra, 9.6 cm ³ /giro, flangia europea, albero scanalato S1, porte flangiate tipo D, guarnizioni standard.
ELI2A-D-11.4-S3-FA-N	= clockwise rotation, 11.4 cm ³ /rev, SAE flange, splined shaft S3, threaded ports FA**, standard seals.	= pompa destra, 11.4 cm ³ /giro, flangia SAE, albero scanalato S3, porte filettate tipo FA**, guarnizioni standard.
ELI2BK1-S-14.0-T1-D-V	= counterclockwise rotation, 14.0 cm ³ /rev, BK1 flange, 1:5 tapered shaft, flanged ports D type, fluorocarbon seals.	= pompa sinistra, 14.0 cm ³ /giro, flangia BK1, albero conico 1:5, porte flangiate tipo D, guarnizioni fluorocarbonato.
ELI2BK7-D-16.1-G0-D-V	= clockwise rotation, 16.1 cm ³ /rev, BK7 flange, shaft G0, flanged ports D type, fluorocarbon seals.	= pompa destra, 16.1 cm ³ /giro, flangia BK7, albero G0, porte flangiate tipo D, guarnizioni fluorocarbonato.

The product data sheets show our standard model types. The synoptic tables for flanges, shafts and ports show all the possible configurations. For further details about the availability of each configuration please contact our Sales and Technical Dept. * Value based on ISO4412 test procedure ** With thread ports on outlet side, a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. For further details please contact our Sales and Technical Dept. we suggest to provide application specification through our PID form.

Le tavole di prodotto rappresentano i tipi di pompa standard per Marzocchi Pompe. Le tavole sinottiche di flange, alberi e porte hanno lo scopo di rappresentare tutte le possibili configurazioni di prodotto. Per maggiori dettagli sulle disponibilità e condizioni di fornitura, consigliamo di interpellare il nostro ufficio tecnico – commerciale. *Valore rilevato con procedura ISO 4412. ** Con porte filettate nel lato di mandata, nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo. Per maggiori dettagli consigliamo di interpellare il nostro Ufficio Tecnico – Commerciale. Consigliamo di comunicare le specifiche dell'applicazione attraverso il nostro modulo PID.



ELI2

Torque wrenches:
Coppie di serraggio:



50 ± 4 Nm

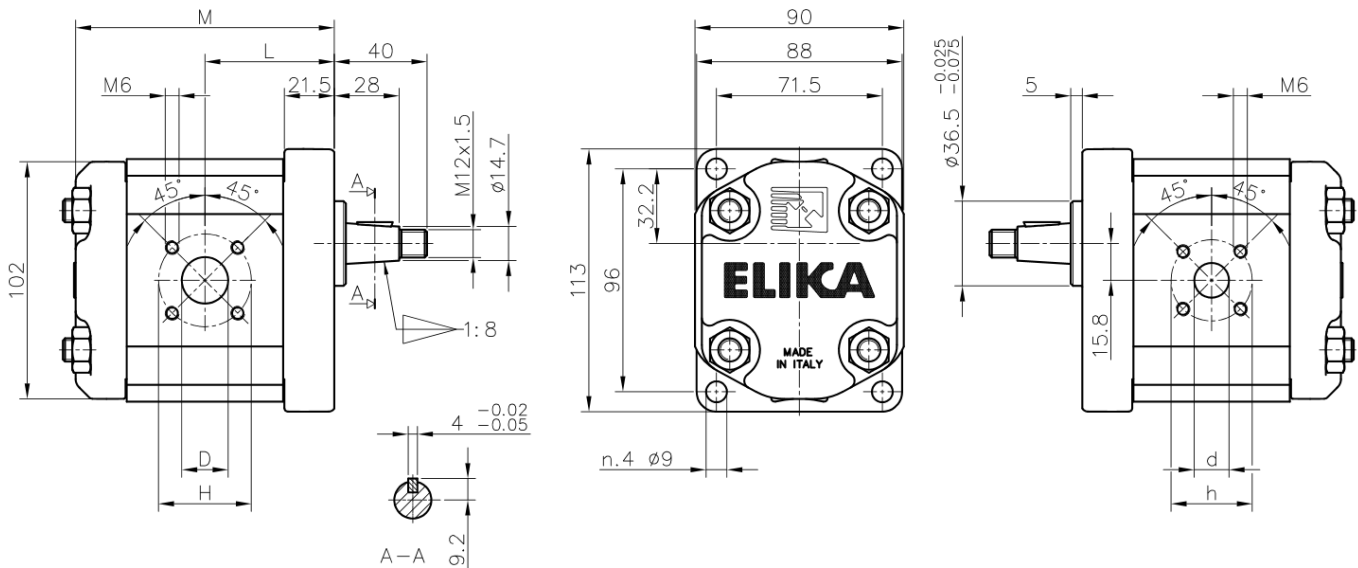
M6 screws 10 Nm
Viti M6 10 Nm

Accessories supplied with the standard pump:
woodruff key (code 522057), M12x1.5 hexagonal
nut (code 523016), washer (code 523005). Stand-
ard ports: M6 threads depth 13 mm.

Parti accessorie a corredo della pompa standard:
linguetta a disco (codice 522057), dado M12x1.5
(codice 523016), rosetta elastica spaccata (codice
523005). Porte standard: filetti M6 profondità utile
13 mm.

ASPIRAZIONE
INLET

MANDATA
OUTLET



Pump Type <i>Pompa tipo</i>	Displ. <i>Cilindr.</i>	Flow at 1500 rpm <i>Portata a 1500 rpm</i>	Operating pressures Pressioni operative			Rotation speed <i>Velocità di rotazione</i>		Noise at 1500 rpm * <i>Rumorosità a 1500 rpm</i>		Dimensions <i>Dimensioni</i>					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	H	d	h
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dB(A)]	[dB(A)]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI2-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	48.0	96.0	15	40	15	35
ELI2-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	49.0	98.0	15	40	15	35
ELI2-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	50.3	100.5	15	40	15	35
ELI2-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	51.8	103.5	20	40	15	35
ELI2-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	54.0	108.0	20	40	15	35
ELI2-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	55.8	111.5	20	40	15	35
ELI2-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	57.3	114.5	20	40	15	35
ELI2-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	60.0	120.0	20	40	15	35
ELI2-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	62.3	124.5	20	40	15	35
ELI2-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	64.0	128.0	20	40	15	35
ELI2-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	66.0	132.0	20	40	15	35
ELI2-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	72.0	144.0	20	40	15	35

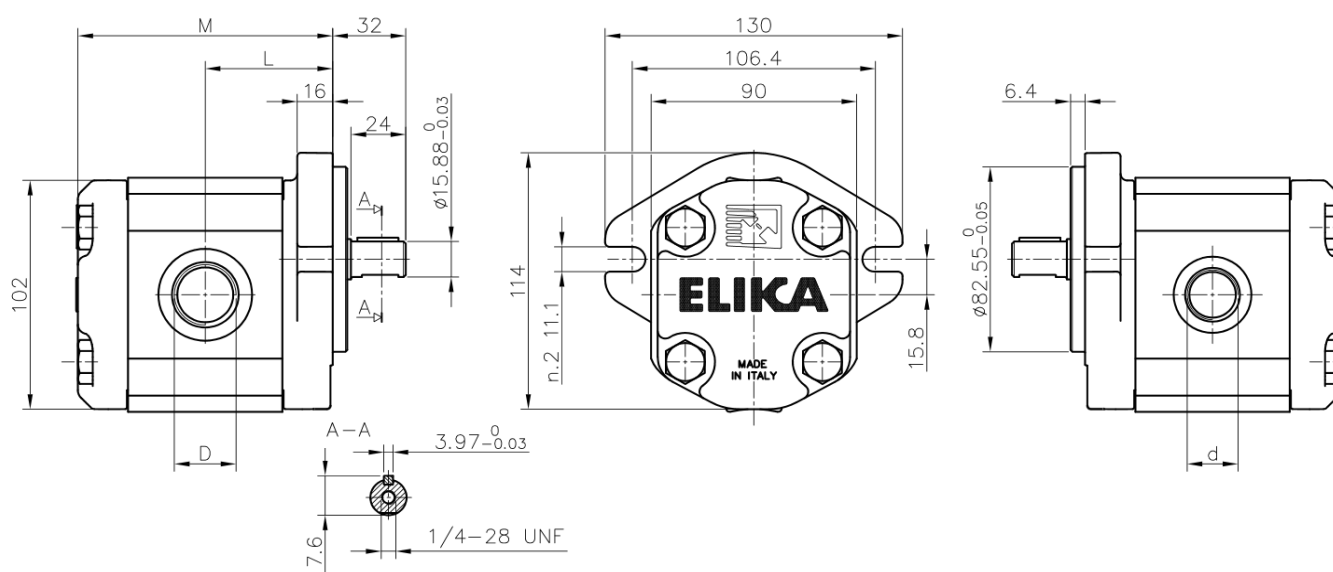
ELI2A

Accessories supplied with the standard pump: key (code 522067). Mounting flange 82-2 (A) in compliance with SAE J744C. "D" and "d" ports are machined in compliance with threaded port with O-ring seal in truncated housing SAE J1926/1 (ISO 11926-1).

Parti accessorie a corredo della pompa standard:
linguetta (codice 522067). Monta flangia 82-2 (A)
secondo norma SAE J744c. Le porte standard "D" e
"d" sono lavorate secondo la specifica SAE J1926/1
(ISO 11926-1) relativa a porte filettate con tenuta O-
ring.

Torque wrenchs:
Coppie di serraggio:

7/8 -14 UNF	50 Nm
1 1/16 -12 UNF	60 Nm
1 5/16 -12 UNF	60 Nm

ASPIRAZIONE
INLETMANDATA
OUTLET

**With thread ports a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures.

** Con porte filettate, nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo.

Pump Type	Displ.	Flow at 1500 rpm	Operating pressures Pressioni operative			Rotation speed Velocità di rotazione		Noise at 1500 rpm *		Dimensions			
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	d
Pompa tipo	Cilindr.	Portata a 1500 rpm											
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]
ELI2A-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	48.0	96.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	49.0	98.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	50.3	100.5	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	51.8	103.5	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	54.0	108.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	55.8	111.5	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	57.3	114.5	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	60.0	120.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	62.3	124.5	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	64.0	128.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	66.0	132.0	1 1/16-12 UNF	7/8-14 UNF
ELI2A-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	72.0	144.0	1 5/16-12 UNF	7/8-14 UNF



ELI2BK1

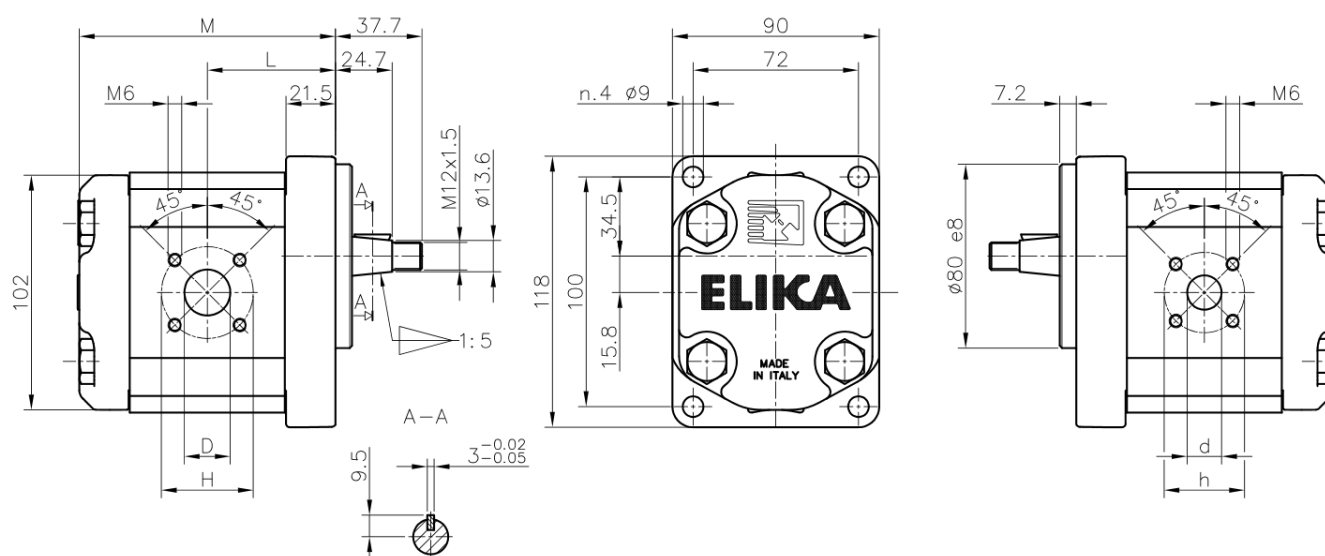
Torque wrenchs:
Coppie di serraggio:

 $50 \pm 4 \text{ Nm}$

M6 screws 10 Nm
Viti M6 10 Nm

Accessories supplied with the standard pump: woodruff key (code 522055), M12x1.5 hexagonal nut (code 523016), washer (code 523005). Standard ports: M6 threads depth 13 mm.

Parti accessorie a corredo della pompa standard:
linguetta a disco (codice 522055), dado M12x1.5
(codice 523016), rosetta elastica spaccata (codice
523005). Porte standard: filetti M6 profondità utile
13 mm.

ASPIRAZIONE
INLETMANDATA
OUTLET

Pump Type <i>Pompa tipo</i>	Displ.	Flow at 1500 rpm	Operating pressures Pressioni operative			Rotation speed <i>Velocità di rotazione</i>		Noise at 1500 rpm *		Dimensions					
	<i>Cilindr.</i>	<i>Portata a 1500 rpm</i>	P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	H	d	h
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI2BK1-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	48.0	96.0	15	40	15	35
ELI2BK1-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	49.0	98.0	15	40	15	35
ELI2BK1-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	50.3	100.5	15	40	15	35
ELI2BK1-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	51.8	103.5	20	40	15	35
ELI2BK1-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	54.0	108.0	20	40	15	35
ELI2BK1-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	55.8	111.5	20	40	15	35
ELI2BK1-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	57.3	114.5	20	40	15	35
ELI2BK1-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	60.0	120.0	20	40	15	35
ELI2BK1-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	62.3	124.5	20	40	15	35
ELI2BK1-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	64.0	128.0	20	40	15	35
ELI2BK1-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	66.0	132.0	20	40	15	35
ELI2BK1-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	72.0	144.0	20	40	15	35

ELI2BK2

Accessories supplied with the standard pump: wood-ruff key (code 522055), M12x1.5 hexagonal nut (code 523016), washer (code 523005). Standard ports: M6 threads depth 13 mm..

Parti accessorie a corredo della pompa: linguetta a disco (codice 522055), dado M12 x 1.5 (codice 523016), rosetta elastica spaccata (codice 523005). Porte standard: filetti M6 profondità utile 13 mm.

Torque wrenches:
Coppie di serraggio:

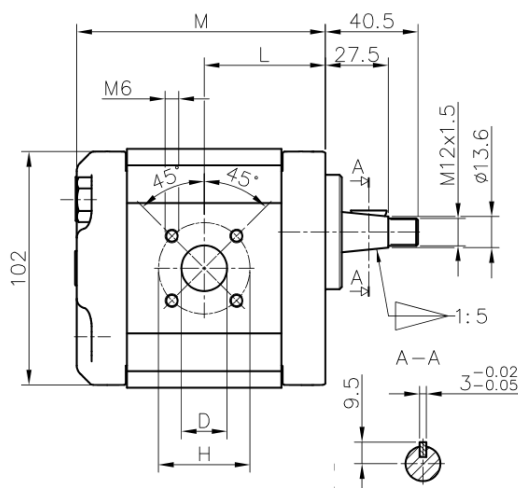


50 ± 4 Nm

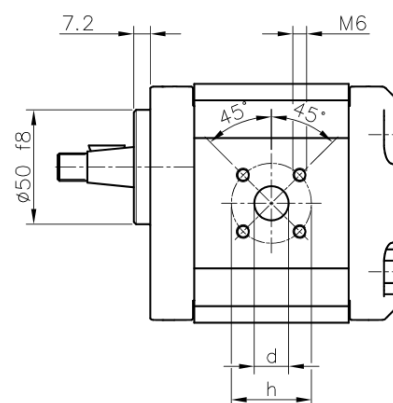
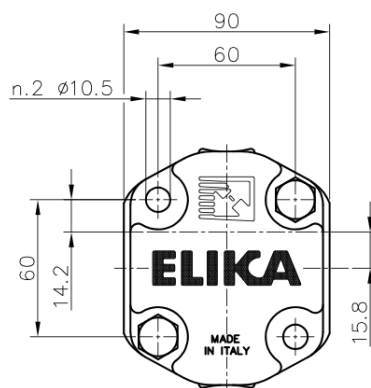
M6 screws 10 Nm
n°2 pump fixing screws
M10 46 ± 4 Nm
Viti M6 10 Nm
n°2 Viti di fissaggio pompa
M10 46 ± 4 Nm



ASPIRAZIONE
INLET



MANDATA
OUTLET



Pump Type Pompa tipo	Displ.	Flow at 1500 rpm	Operating pressures Pressioni operative			Rotation speed		Noise at 1500 rpm*		Dimensions					
	Cilindr.	Portata a 1500 rpm	P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	H	d	h
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI2BK2-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	45.2	93.2	15	40	15	35
ELI2BK2-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	46.2	95.2	15	40	15	35
ELI2BK2-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	47.5	97.7	15	40	15	35
ELI2BK2-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	49.0	100.7	20	40	15	35
ELI2BK2-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	51.2	105.2	20	40	15	35
ELI2BK2-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	53.0	108.7	20	40	15	35
ELI2BK2-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	54.5	111.7	20	40	15	35
ELI2BK2-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	57.2	117.2	20	40	15	35
ELI2BK2-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	59.5	121.7	20	40	15	35
ELI2BK2-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	61.2	125.2	20	40	15	35
ELI2BK2-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	63.2	129.2	20	40	15	35
ELI2BK2-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	69.2	141.2	20	40	15	35



ELI2BK4

Torque wrenches:
Coppie di serraggio:



50 ± 4 Nm

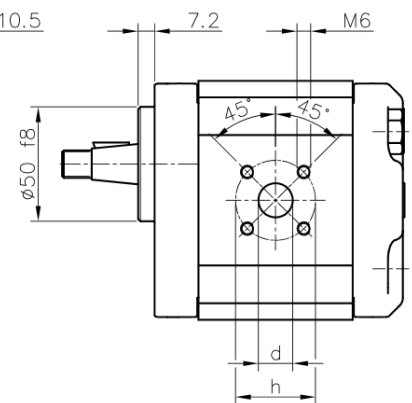
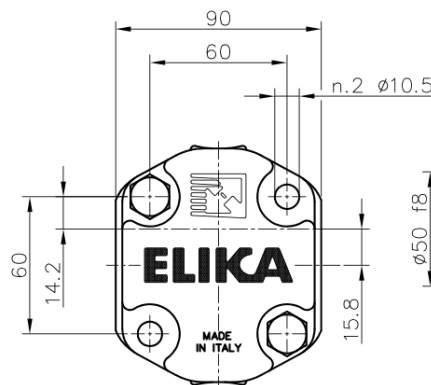
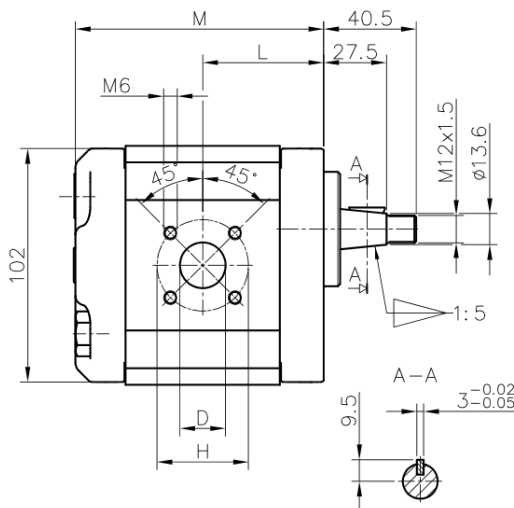
M6 screws 10 Nm
n°2 pump fixing screws
M10 46 ± 4 Nm
Viti M6 10 Nm
n°2 Viti di fissaggio pompa
M10 46 ± 4 Nm

Accessories supplied with the standard pump:
woodruff key (code 522055), M12x1.5 hexagonal
nut (code 523016), washer (code 523005). Stand-
ard ports: M6 threads depth 13 mm.

Parti accessorie a corredo della pompa: linguetta a
disco (codice 522055), dado M12 x 1.5 (codice
523016), rosetta elastica spaccata (codice
523005). Porte standard: filetti M6 profondità utile
13 mm.

ASPIRAZIONE
INLET

MANDATA
OUTLET



Pump Type Pompa tipo	Displ. Cilindr.	Flow at 1500 rpm Portata a 1500 rpm	Operating pressures Pressioni operative			Rotation speed Velocità di rotazione		Noise at 1500 rpm *		Dimensions Dimensioni					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	H	d	h
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI2BK4-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	45.2	93.2	15	40	15	35
ELI2BK4-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	46.2	95.2	15	40	15	35
ELI2BK4-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	47.5	97.7	15	40	15	35
ELI2BK4-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	49.0	100.7	20	40	15	35
ELI2BK4-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	51.2	105.2	20	40	15	35
ELI2BK4-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	53.0	108.7	20	40	15	35
ELI2BK4-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	54.5	111.7	20	40	15	35
ELI2BK4-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	57.2	117.2	20	40	15	35
ELI2BK4-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	59.5	121.7	20	40	15	35
ELI2BK4-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	61.2	125.2	20	40	15	35
ELI2BK4-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	63.2	129.2	20	40	15	35
ELI2BK4-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	69.2	141.2	20	40	15	35

ELI2BK7

Standard ports: M6 threads depth 13 mm.

Torque wrenches:
Coppie di serraggio:

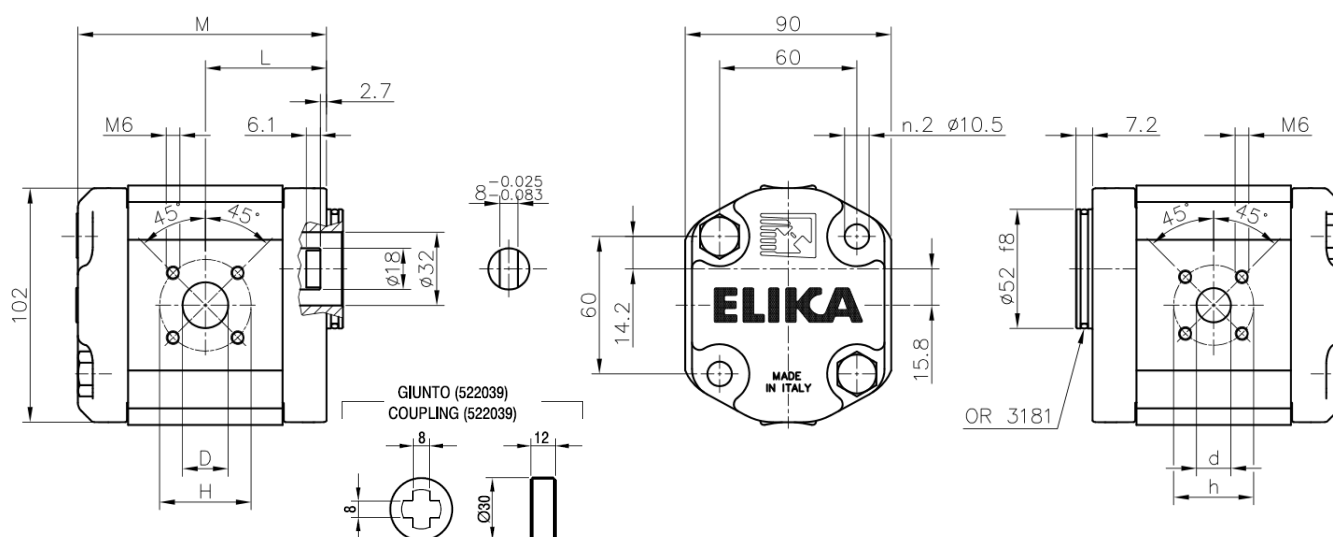
M6 screws 10 Nm
n°2 pump fixing screws
M10 46 ± 4 Nm
Viti M6 10 Nm
n°2 Viti di fissaggio pompa
M10 46 ± 4 Nm

Porte standard: filetti M6 profondità utile 13 mm.



ASPIRAZIONE
INLET

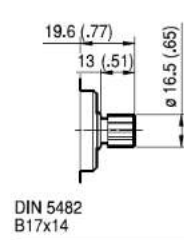
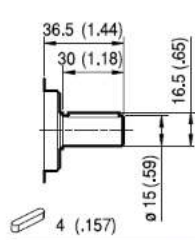
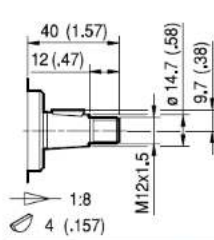
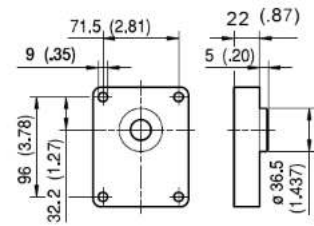
MANDATA
OUTLET



Pump Type <i>Pompa tipo</i>	Displ. <i>Cilindr.</i>	Flow at 1500 rpm <i>Portata a 1500 rpm</i>	Operating pressures Pressioni operative			Rotation speed <i>Velocità di rotazione</i>		Noise at 1500 rpm* <i>Rumorosità a 1500 rpm</i>		Dimensions <i>Dimensioni</i>					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	H	d	h
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI2BK7-D-7.0	7.0	10.5	280	295	310	300	4000	47	51	45.2	93.2	15	40	15	35
ELI2BK7-D-8.2	8.2	12.3	280	295	310	300	4000	47	52	46.2	95.2	15	40	15	35
ELI2-BK7-D-9.6	9.6	14.5	280	295	310	300	4000	48	54	47.5	97.7	15	40	15	35
ELI2BK7-D-11.4	11.4	17.1	280	295	310	300	4000	48	55	49.0	100.7	20	40	15	35
ELI2BK7-D-14.0	14.0	21.0	260	275	290	300	4000	49	55	51.2	105.2	20	40	15	35
ELI2BK7-D-16.1	16.1	24.1	260	275	290	300	4000	49	56	53.0	108.7	20	40	15	35
ELI2BK7-D-17.8	17.8	26.7	260	275	290	300	4000	49	57	54.5	111.7	20	40	15	35
ELI2BK7-D-21.0	21.0	31.5	230	245	260	200	3500	49	57	57.2	117.2	20	40	15	35
ELI2BK7-D-23.7	23.7	35.5	230	245	260	200	3200	50	57	59.5	121.7	20	40	15	35
ELI2BK7-D-25.7	25.7	38.6	210	225	240	200	3000	50	57	61.2	125.2	20	40	15	35
ELI2BK7-D-28.0	28.0	42.1	200	215	230	200	2600	50	58	63.2	129.2	20	40	15	35
ELI2BK7-D-35.0	35.1	52.6	150	165	180	200	2200	50	58	69.2	141.2	20	40	15	35

FLANGE / FLANGES

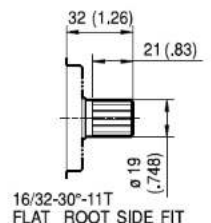
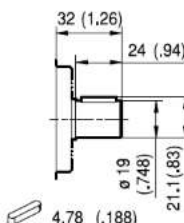
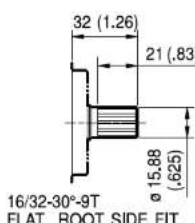
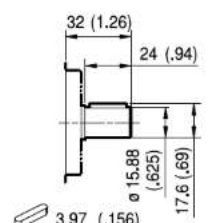
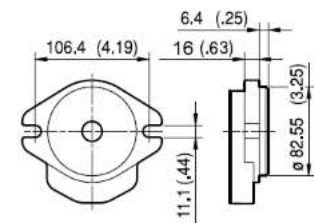
ALBERI / SHAFTS



T0
Coppia Max
Max Torque 145 Nm

C0
Coppia Max
Max Torque 125 Nm

S0
Coppia Max
Max Torque 130 Nm

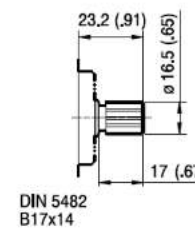
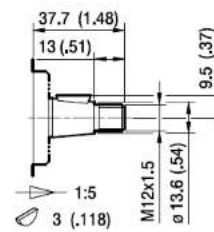
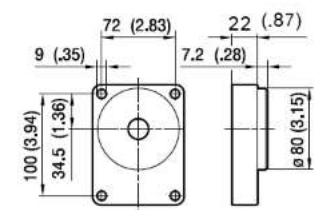


C1
Coppia Max
Max Torque 105 Nm

S1
Coppia Max
Max Torque 110 Nm

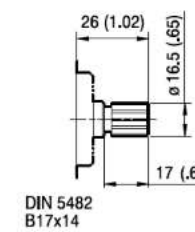
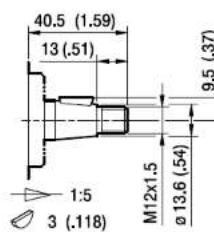
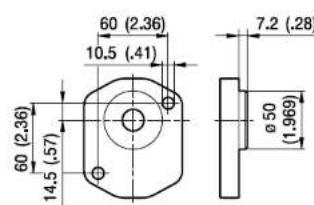
C2
Coppia Max
Max Torque 150 Nm

S2
Coppia Max
Max Torque 230 Nm



T1
Coppia Max
Max Torque 130 Nm

S3
Coppia Max
Max Torque 130 Nm

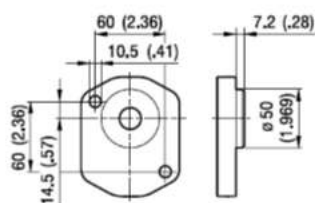


T2
Coppia Max
Max Torque 130 Nm

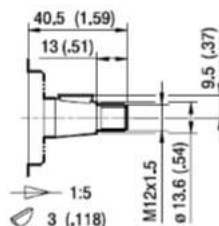
S4
Coppia Max
Max Torque 130 Nm

FLANGE / FLANGES

ALBERI / SHAFTS

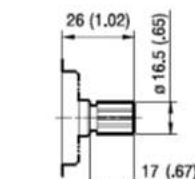


BK4



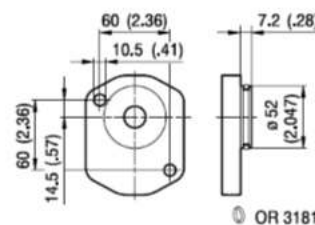
T2

Coppia Max
Max Torque 130 Nm

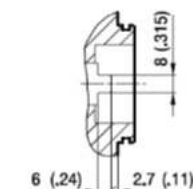


S4

Coppia Max
Max Torque 130 Nm



BK7



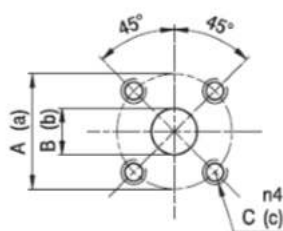
G0

Coppia Max
Max Torque 105 Nm

Maximum torque ratings are referred to ideal working conditions; such values may reduce based on the quality of joints and connections used.

Le coppie massime si riferiscono a condizioni di funzionamento ideali; i valori possono ridursi a causa della qualità dei giunti e delle connessioni impiegate.

PORTE / PORTS

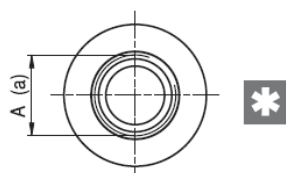


D

Tipo Type	Aspirazione Inlet			Mandata Outlet		
	A	B	C	a	b	c
ELI 7.0 + 9.6	40	15	M6	35	15	M6
ELI 11.4 ÷ 35.0	40	20	M6	35	15	M6

Tightening torques for M6 screws 10 Nm.

Viti M6 coppia di serraggio massima 10 Nm.



STANDARD SAE J1926/1

FA

Type Tipo	Aspirazione Inlet	Mandata Outlet
	A	a
ELI 7.0 ÷ 28.0	1 1/16-12 UNF	7/8-14 UNF
ELI 35.0	1 5/16-12 UNF	7/8-14 UNF

Tightening torques for 7/8-14 UNF fitting 50 Nm. Tightening torques for 1 1/16-12 UNF and 1 5/16-12 UNF fitting 60 Nm.

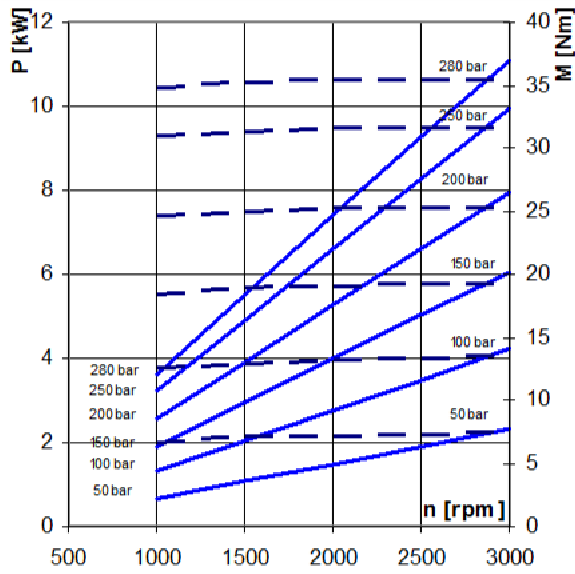
Raccordo 7/8-14 UNF coppia di serraggio massima 50 Nm. Raccordo 1 1/16-12 UNF e 1 5/16-12 UNF coppia di serraggio massima 60 Nm.



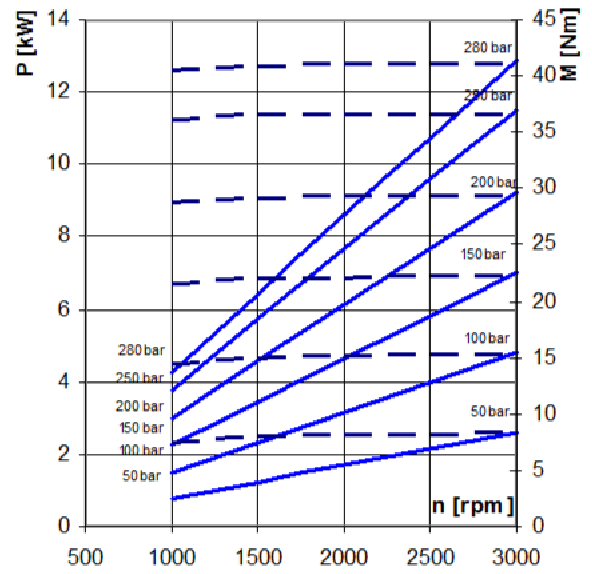
A reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures.

Nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo.

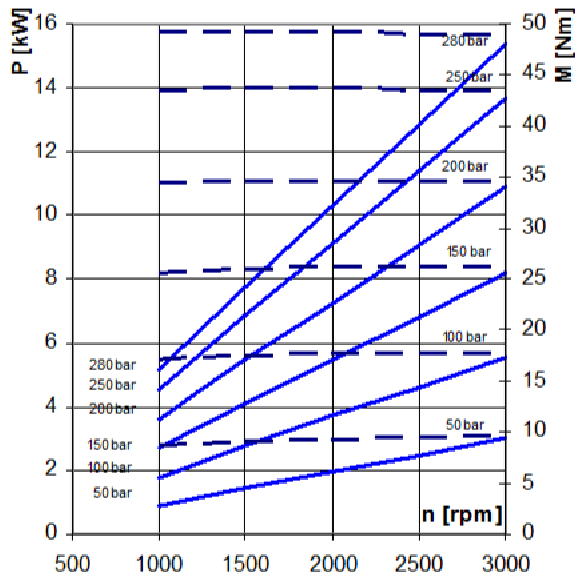
ELI2-7.0



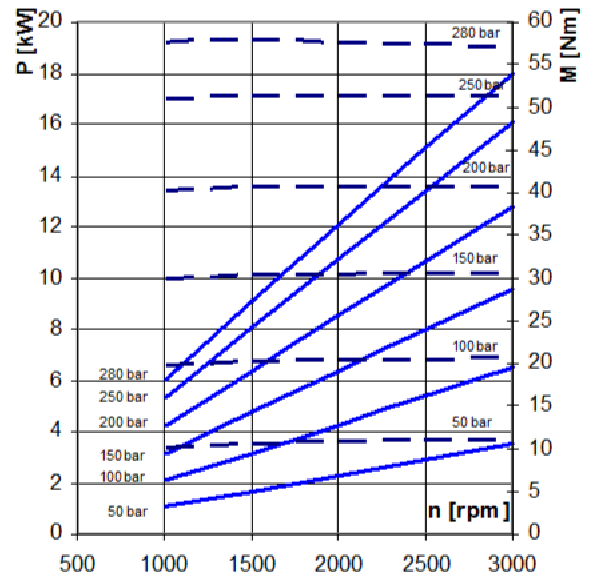
ELI2-8.2



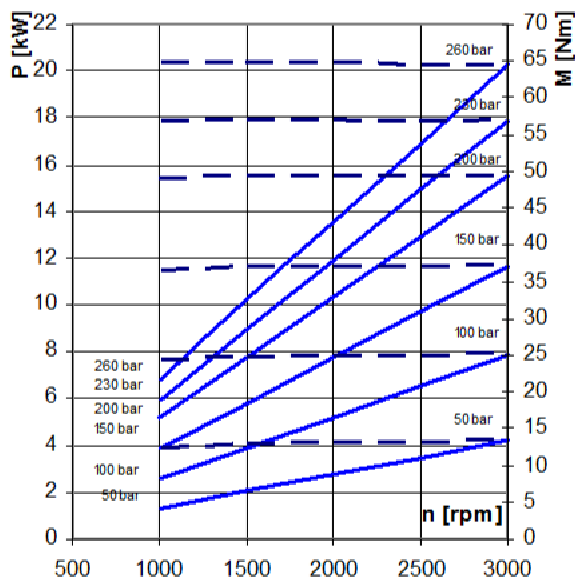
ELI2-9.6



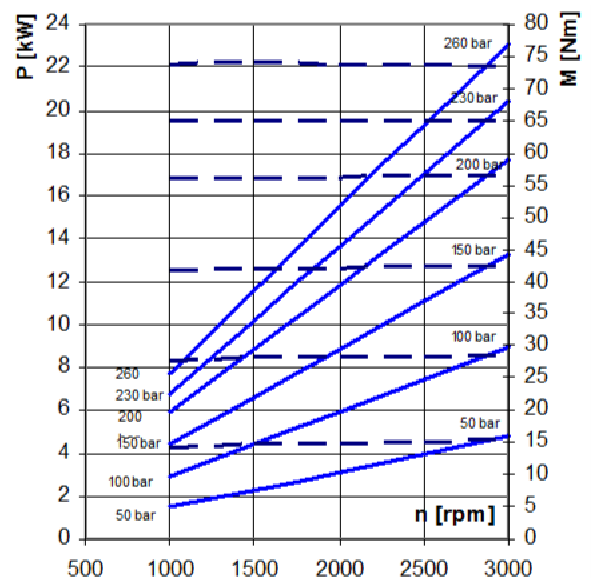
ELI2-11.4



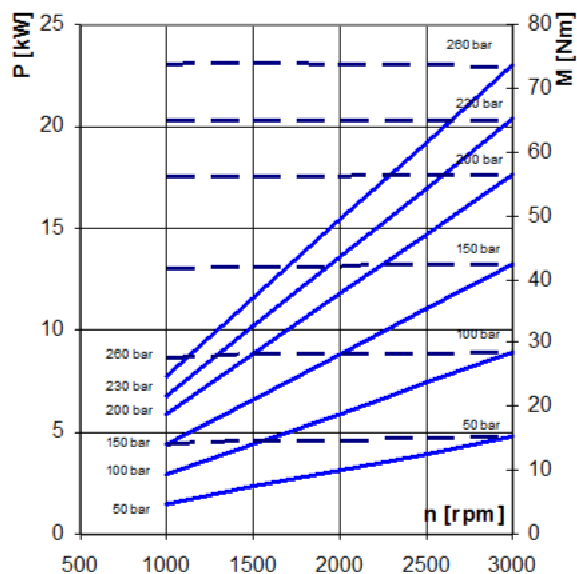
ELI2-14.0



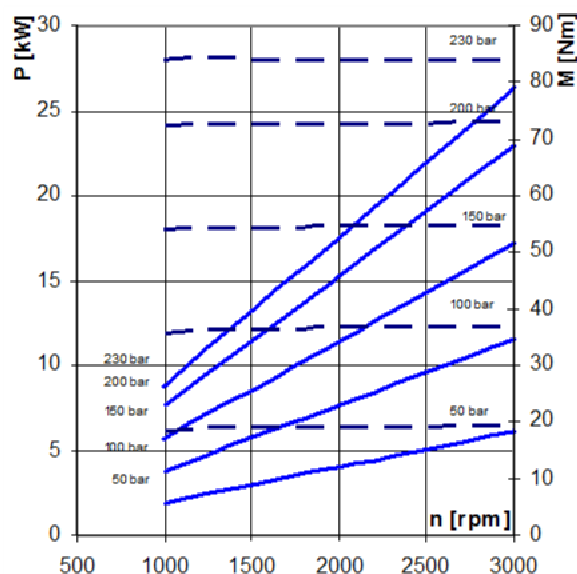
ELI2-16.1



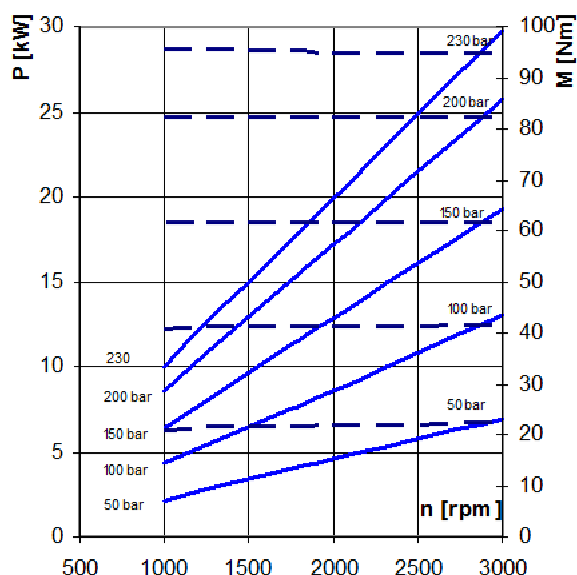
ELI2-17.8



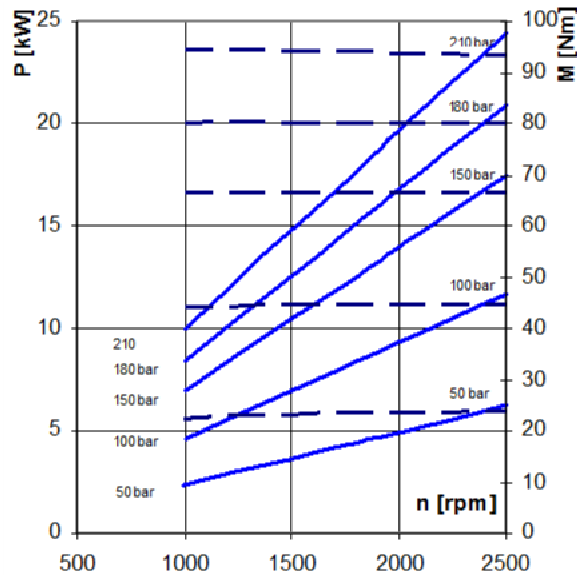
ELI2-21.0



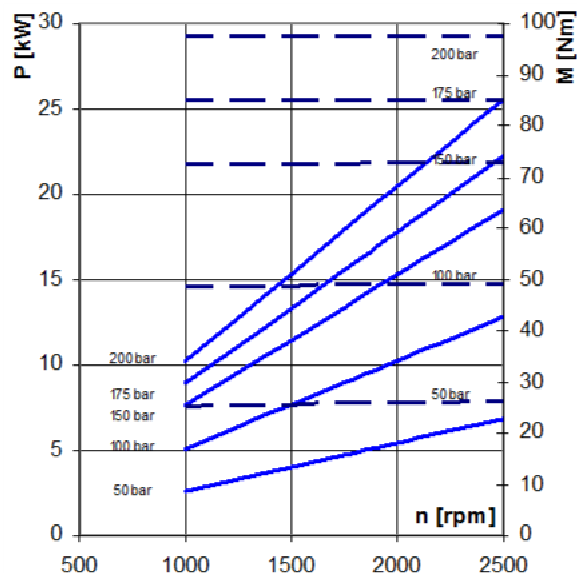
ELI2-23.7



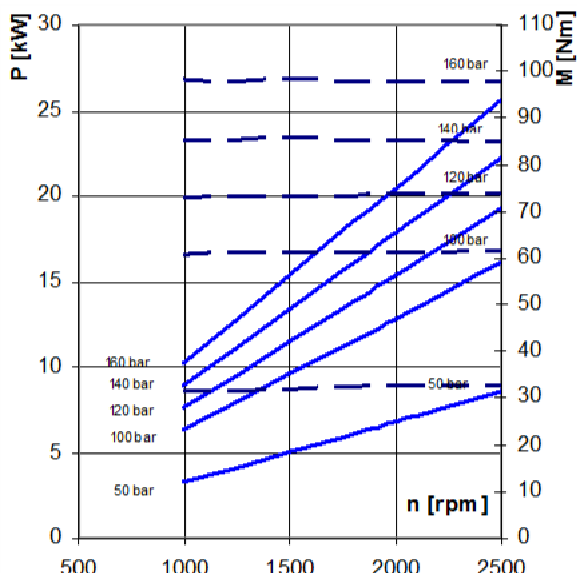
ELI2-25.7



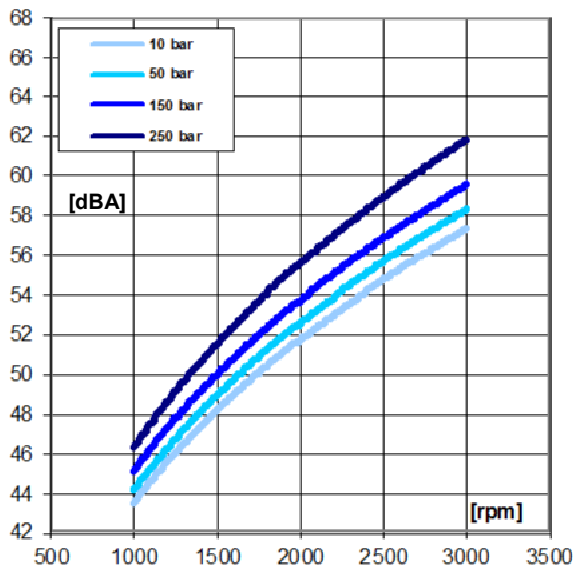
ELI2-28.0



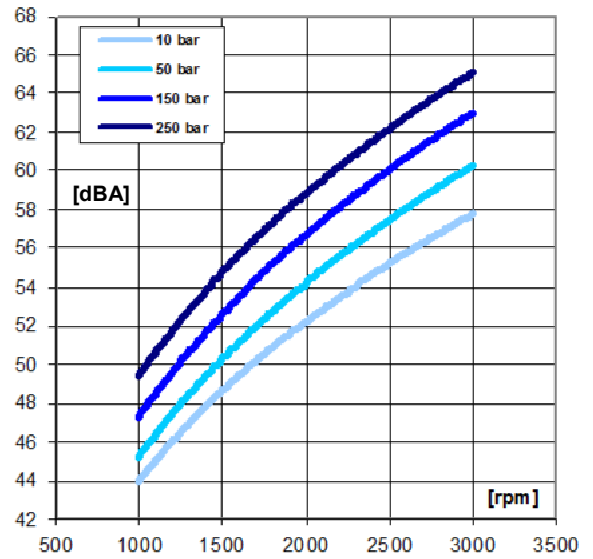
ELI2-35.0



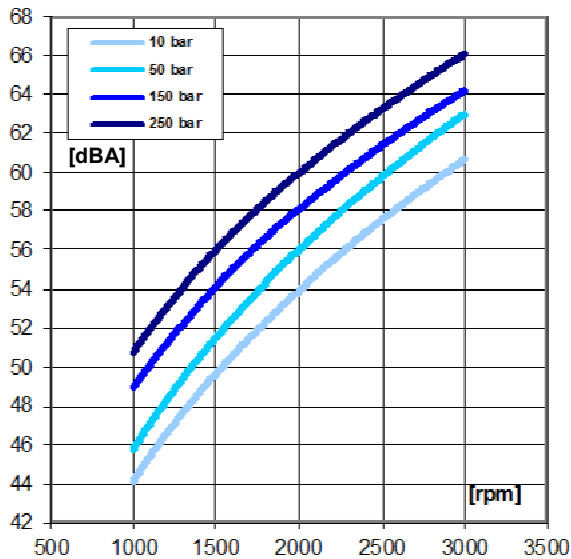
ELI2-7.0 / ELI2-8.2



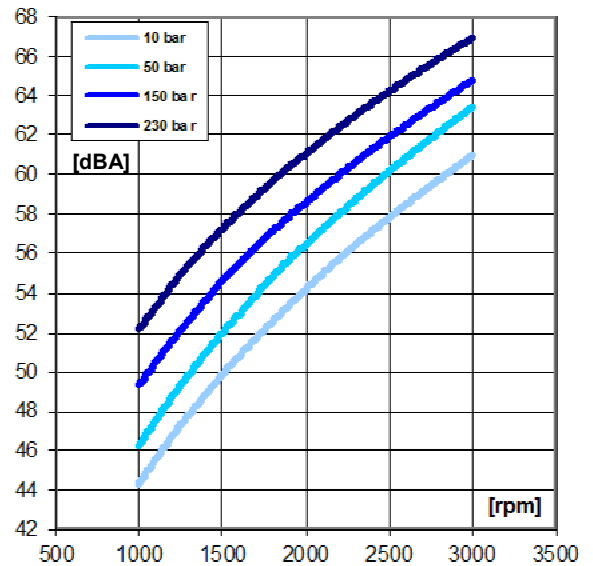
ELI2-9.6 / ELI2-11.4



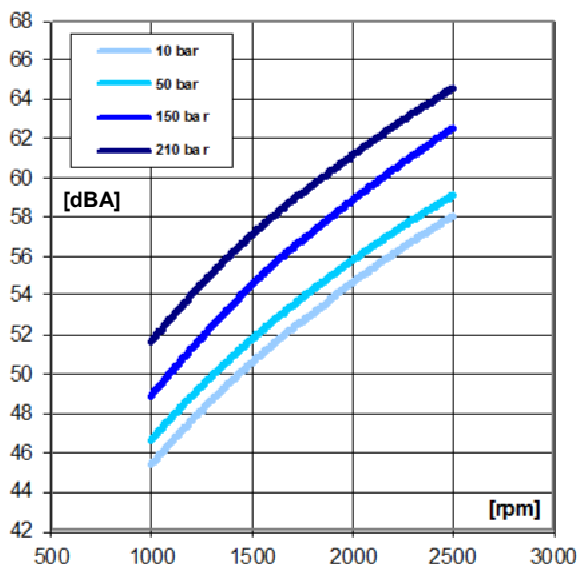
ELI2-14.0 / ELI2-16.1



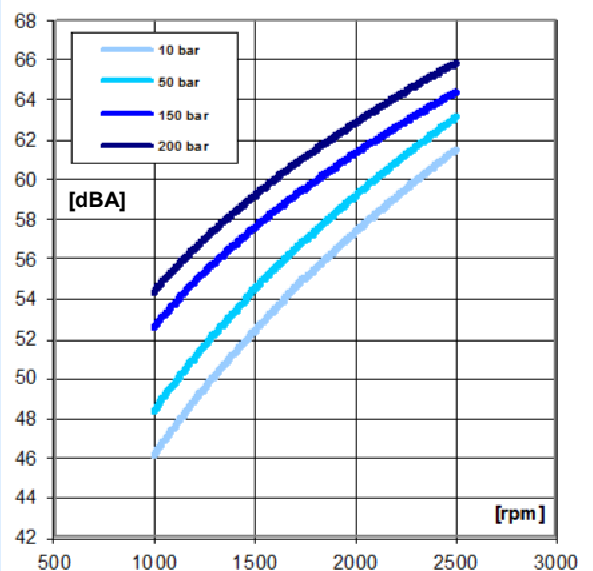
ELI2-17.8 / ELI2-21.0



ELI2-23.7 / ELI2-25.7



ELI2-28.0 / ELI2-35.0



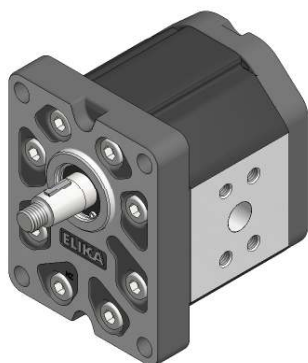
ELI3 series how to order / come ordinare

ELI	TYPE	ROTATION	DISPL.	SHAFT	PORTS	SEALS
	3	D - CW	20.4	T0	A	N
	3A	S - CCW	21.6	C0	FA**	V
			26.3	C1		
			33.3	C3		
			39.1	S1		
			43.2	S2		
			52.0			
			60.8			
			64.3			
			70.7			
			78.3			
			87.1			

Pump standard types:		
3	= european flange + shaft T0 + ports A + standard seals	= flangia europea + albero T0 + porte A + guarnizioni standard
3A	= flange A + shaft C1 + ports A + standard seals	= flangia A + albero C1 + porte A + guarnizioni standard
Examples:		
ELI3-D-33.3-T0-A-N	= clockwise rotation, 33.3 cm ³ /rev, european flange, 1:8 tapered shaft, flanged ports A type, standard seals.	= pompa destra, 33.3 cm ³ /giro, flangia europea, albero conico 1:8, porte flangiate tipo A, guarnizioni standard.
ELI3A-D-43.2-S1-A-N	= clockwise rotation, 43.2 cm ³ /rev, SAE flange, splined shaft S1, flanged ports A type, standard seals.	= pompa destra, 43.2 cm ³ /giro, flangia SAE, albero scanalato S1, porte flangiate tipo A, guarnizioni standard.
ELI3A-D-64.3-C1-FA-V	= clockwise rotation, 64.3 cm ³ /rev, SAE flange, cylindrical shaft C1, threaded ports FA**, fluorocarbon seals.	= pompa destra, 64.3 cm ³ /giro, flangia SAE, albero cilindrico C1, porte filettate tipo FA**, guarnizioni in fluorocarbonato.

The product data sheets show our standard model types. The synoptic tables for flanges, shafts and ports show all the possible configurations. For further details about the availability of each configuration please contact our Sales and Technical Dept. * Value based on ISO4412 test procedure ** With thread ports on outlet side, a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. For further details please contact our Sales and Technical Dept. we suggest to provide application specification through our PID form.

Le tavole di prodotto rappresentano i tipi di pompa standard per Marzocchi Pompe. Le tavole sinottiche di flange, alberi e porte hanno lo scopo di rappresentare tutte le possibili configurazioni di prodotto. Per maggiori dettagli sulle disponibilità e condizioni di fornitura, consigliamo di interpellare il nostro ufficio tecnico – commerciale. * Valore rilevato con procedura ISO 4412. ** Con porte filettate nel lato di mandata, nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo. Per maggiori dettagli consigliamo di interpellare il nostro Ufficio Tecnico – Commerciale. Consigliamo di comunicare le specifiche dell'applicazione attraverso il nostro modulo PID.



ELI3

Torque wrenches:
Coppie di serraggio:



80 ± 4 Nm

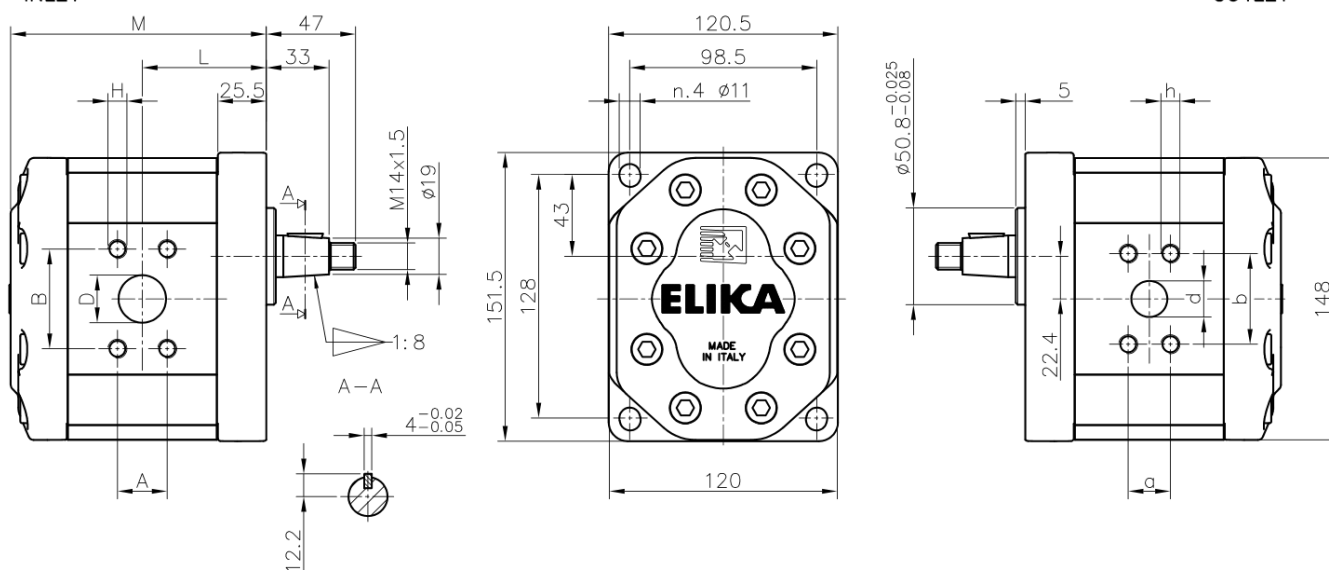
M10 screws 30 Nm
M12 screws 40 Nm
Viti M10 30 Nm
Viti M12 40 Nm

Accessories supplied with the standard pump:
woodruff key (code 522058), M14 x 1.5 hexagonal
nut (code 523017), washer (code 523006). Stand-
ard ports: M10, M12 threads depth 20 mm.

Parti accessorie a corredo della pompa standard:
linguetta a disco (codice 522058), dado M14x1.5
(codice 523017), rosetta elastica spaccata (codice
523006). Porte standard: filetti M10, M12 profondi-
tà utile = 20 mm.

ASPIRAZIONE
INLET

MANDATA
OUTLET



Pump Type <i>Pompa tipo</i>	Displ. <i>Cilindr.</i>	Flow at 1500 rpm <i>Portata a 1500 rpm</i>	Operating pressures <i>Pressioni operative</i>			Rotation speed <i>Velocità di rotazione</i>		Noise at 1500 rpm* <i>Rumorosità a 1500 rpm</i>		Dimensions <i>Dimensioni</i>					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	A / B	d	a / b
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dB(A)]	[dB(A)]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI3-D-20.4	20.4	30.7	280	295	310	300	3500	49	59	64.3	129.5	25	26.2 / 52.4	19	22.2 / 47.6
ELI3-D-21.6	21.6	32.4	280	295	310	300	3500	49	59	64.3	130.5	25	26.2 / 52.4	19	22.2 / 47.6
ELI3-D-26.3	26.3	39.4	280	295	310	300	3500	49	59	65.3	134.5	25	26.2 / 52.4	19	22.2 / 47.6
ELI3-D-33.3	33.3	50.0	270	285	300	300	3500	50	60	71.3	140.5	31	30.2 / 58.7	25	26.2 / 52.4
ELI3-D-39.1	39.1	58.7	260	275	290	300	3500	50	60	72.8	145.5	31	30.2 / 58.7	25	26.2 / 52.4
ELI3-D-43.2	43.2	64.8	250	265	280	200	3500	51	61	74.0	149.0	31	30.2 / 58.7	25	26.2 / 52.4
ELI3-D-52.0	52.0	78.0	230	245	260	200	3500	51	61	80.8	156.5	34	35.7 / 69.9	25	26.2 / 52.4
ELI3-D-60.8	60.8	91.1	210	225	240	200	3300	51	62	84.5	164.0	34	35.7 / 69.9	25	26.2 / 52.4
ELI3-D-64.3	64.3	96.4	210	225	240	200	3200	51	62	86.0	167.0	34	35.7 / 69.9	25	26.2 / 52.4
ELI3-D-70.7	70.7	106.0	200	215	230	200	2900	52	63	94.8	172.5	38	35.7 / 69.9	25	26.2 / 52.4
ELI3-D-78.3	78.3	117.4	180	195	210	200	2600	52	63	99.0	179.0	38	35.7 / 69.9	25	26.2 / 52.4
ELI3-D-87.1	87.1	130.6	160	175	190	200	2400	52	63	103.8	186.5	38	35.7 / 69.9	25	26.2 / 52.4

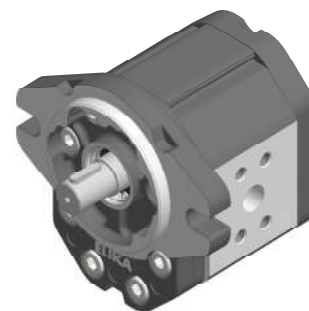
ELI3A

Accessories supplied with the standard pump: wood-ruff key (code 522058). Mounting Flange 101-2 (B) in compliance with SAEJ744c. Standard ports: M10, M12 threads depth 20 mm.

Parti accessorie a corredo della pompa standard: linguetta (codice 522068). Monta flangia 101-2 (B) secondo norma SAEJ744c. Porte standard: filetti M10, M12 profondità utile = 20 mm.

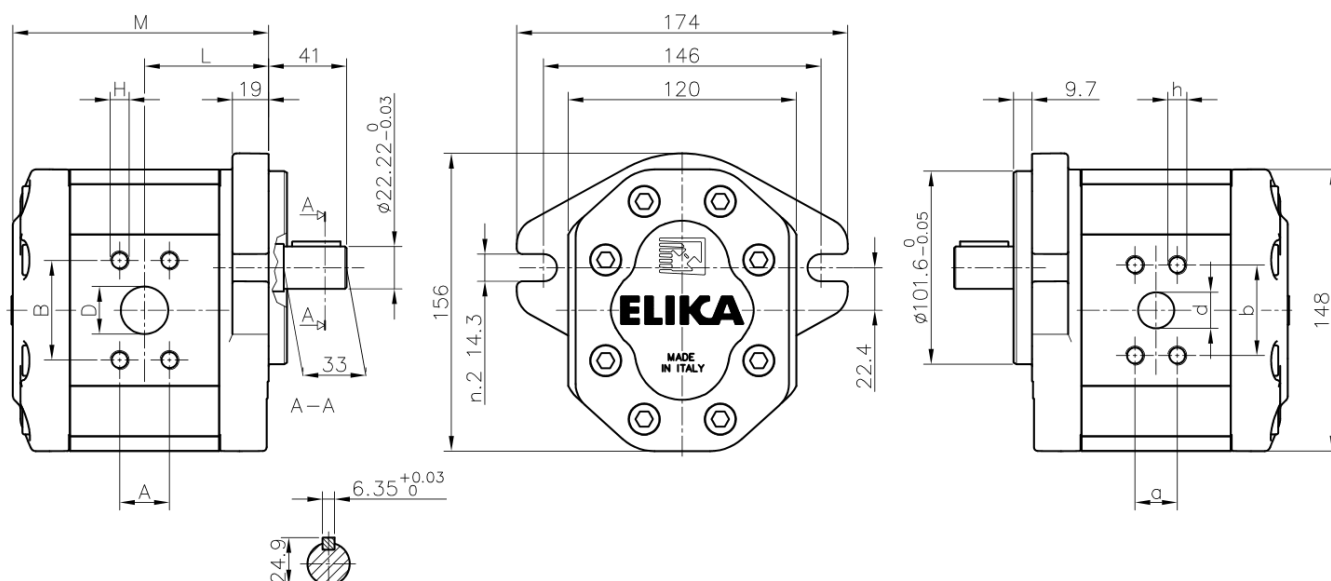
Torque wrenches:
Coppie di serraggio:

M10 screws 30 Nm
M12 screws 40 Nm
Viti M10 30 Nm
Viti M12 40 Nm



ASPIRAZIONE
INLET

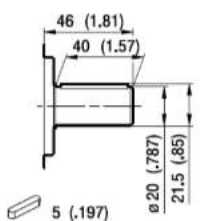
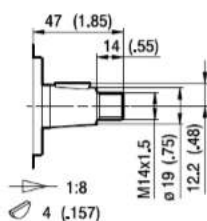
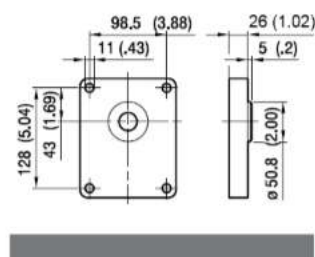
MANDATA
OUTLET



Pump Type Pompa tipo	Displ. Cilindr.	Flow at 1500 rpm Portata a 1500 rpm	Operating pressures Pressioni operative			Rotation speed Velocità di rotazione		Noise at 1500 rpm * Rumorosità a 1500 rpm		Dimensions Dimensioni					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	A / B	d	a / b
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dB(A)]	[dB(A)]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI3A-D-20.4	20.4	30.7	280	295	310	300	3500	49	59	64.3	129.5	25	26.2 / 52.4	19.0	22.2 / 47.6
ELI3A-D-21.6	21.6	32.4	280	295	310	300	3500	49	59	64.3	130.5	25	26.2 / 52.4	19.0	22.2 / 47.6
ELI3A-D-26.3	26.3	39.4	280	295	310	300	3500	49	59	65.3	134.5	25	26.2 / 52.4	19.0	22.2 / 47.6
ELI3A-D-33.3	33.3	50.0	270	285	300	300	3500	50	60	71.3	140.5	31	30.2 / 58.7	25.0	26.2 / 52.4
ELI3A-D-39.1	39.1	58.7	260	275	290	300	3500	50	60	72.8	145.5	31	30.2 / 58.7	25.0	26.2 / 52.4
ELI3A-D-43.2	43.2	64.8	250	265	280	200	3500	51	61	74.0	149.0	31	30.2 / 58.7	25.0	26.2 / 52.4
ELI3A-D-52.0	52.0	78.0	230	245	260	200	3500	51	61	80.8	156.5	34	35.7 / 69.9	25.0	26.2 / 52.4
ELI3A-D-60.8	60.8	91.1	210	225	240	200	3300	51	62	84.5	164.0	34	35.7 / 69.9	25.0	26.2 / 52.4
ELI3A-D-64.3	64.3	96.4	210	225	240	200	3200	51	62	86.0	167.0	34	35.7 / 69.9	25.0	26.2 / 52.4
ELI3A-D-70.7	70.7	106.0	200	215	230	200	2900	52	63	94.8	172.5	38	35.7 / 69.9	25.0	26.2 / 52.4
ELI3A-D-78.3	78.3	117.4	180	195	210	200	2600	52	63	99.0	179.0	38	35.7 / 69.9	25.0	26.2 / 52.4
ELI3A-D-87.1	87.1	130.6	160	175	190	200	2400	52	63	103.8	186.5	38	35.7 / 69.9	25.0	26.2 / 52.4

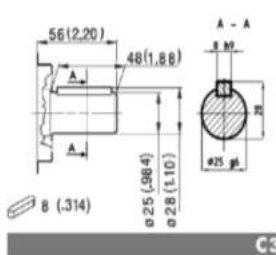
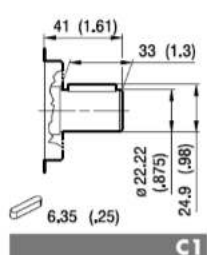
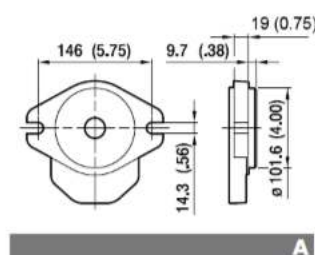
FLANGE / FLANGES

ALBERI / SHAFTS



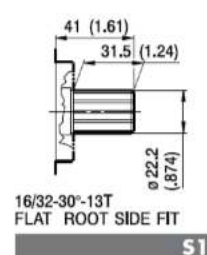
TO
Coppia Max
Max Torque 280 Nm

C0
Coppia Max
Max Torque 265 Nm

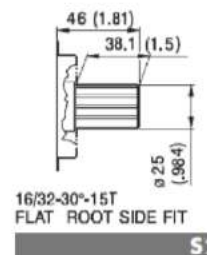


C1
Coppia Max
Max Torque 295 Nm

C3
Coppia Max
Max Torque 380 Nm

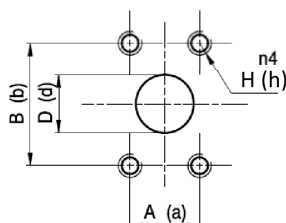


S1
Coppia Max
Max Torque 405 Nm

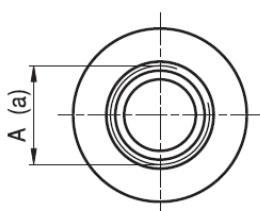


S2
Coppia Max
Max Torque 660 Nm

PORTE / PORTS



TYPE	INLET			OUTLET		
	D	A / B	H	d	a / b	h
ELI3..20.4 / 26.3	25.0	26.2 / 52.4	M10	19.0	22.2 / 47.6	M10
ELI3..33.3 / 43.2	31.0	30.2 / 58.7	M10	25.0	26.2 / 52.4	M10
ELI3..52.0 / 64.3	34.0	35.7 / 69.9	M12	25.0	26.2 / 52.4	M10
ELI3..70.7 / 87.1	38.0	35.7 / 69.9	M12	25.0	26.2 / 52.4	M10

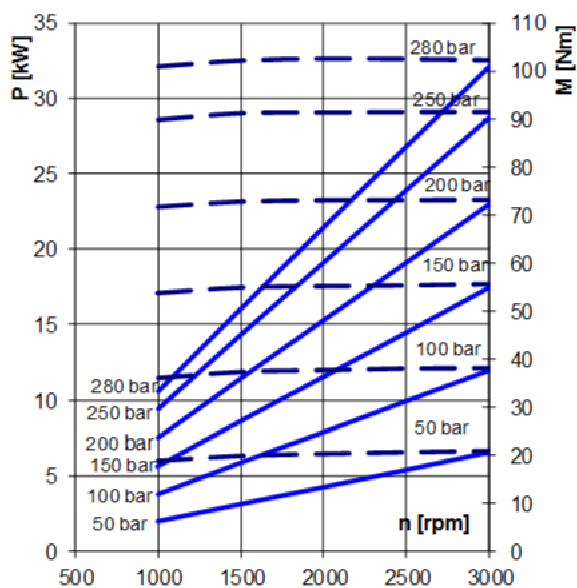


TYPE	INLET	OUTLET*
	A	a
ELI3..20.4 / 26.3	1 5/16 - 12 UN - 2B	1 1/16 - UN - 2B
ELI3..33.3 / 43.2	1 5/8 - 12 UN - 2B	1 1/16 - UN - 2B
ELI3..52.0 / 87.1	1 7/8 - 12 UN - 2B	1 5/16 - UN - 2B

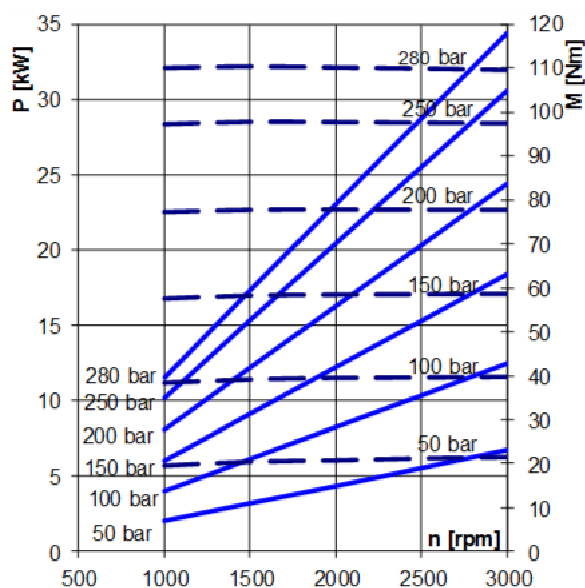
FA

* With thread ports a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. Con porte filettate, nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo.

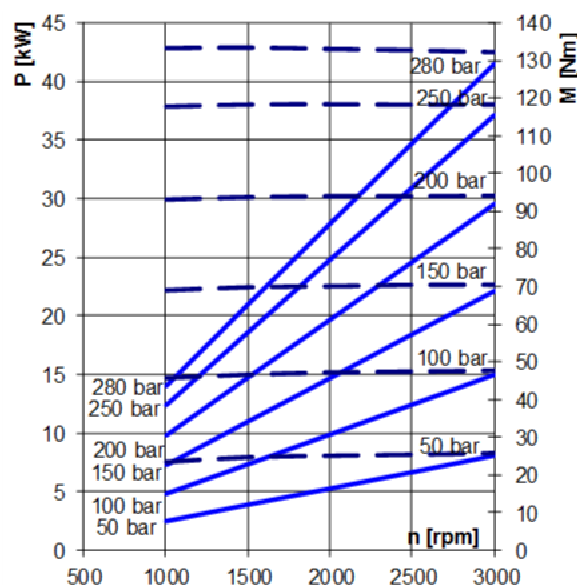
ELI3-20.4



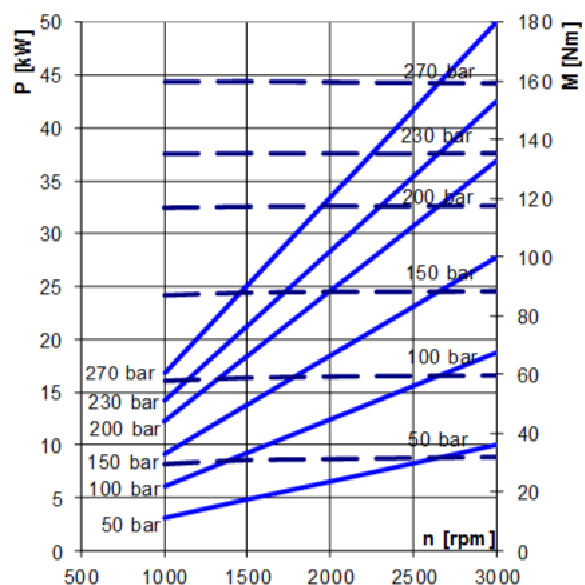
ELI3-21.6



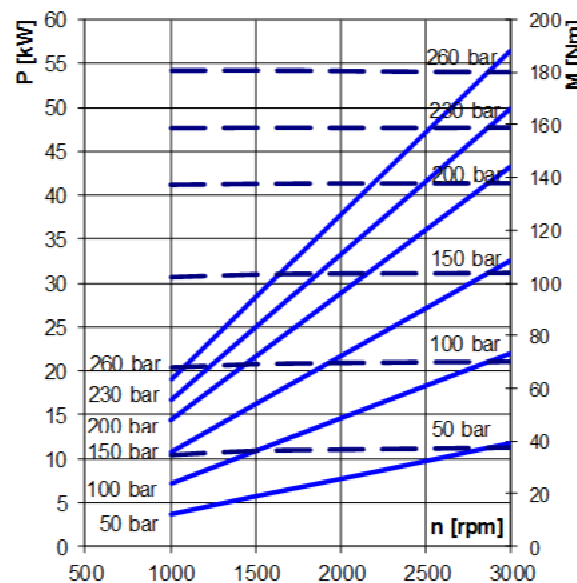
ELI3-26.3



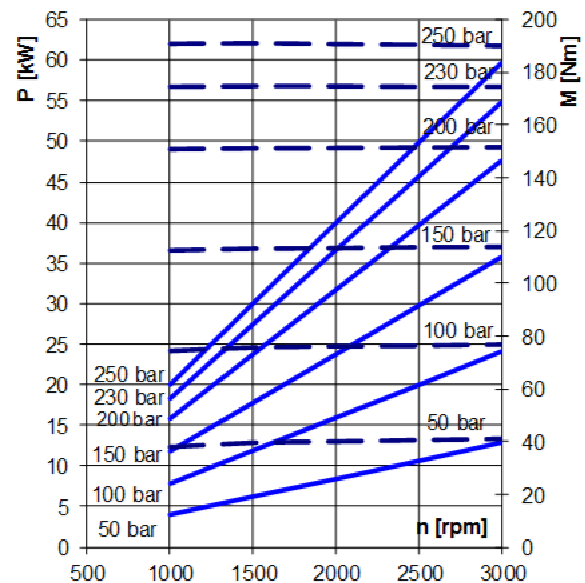
ELI3-33.3



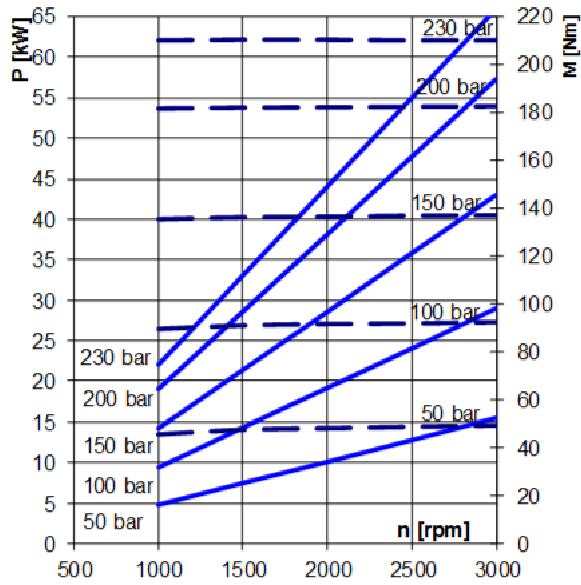
ELI3-39.1



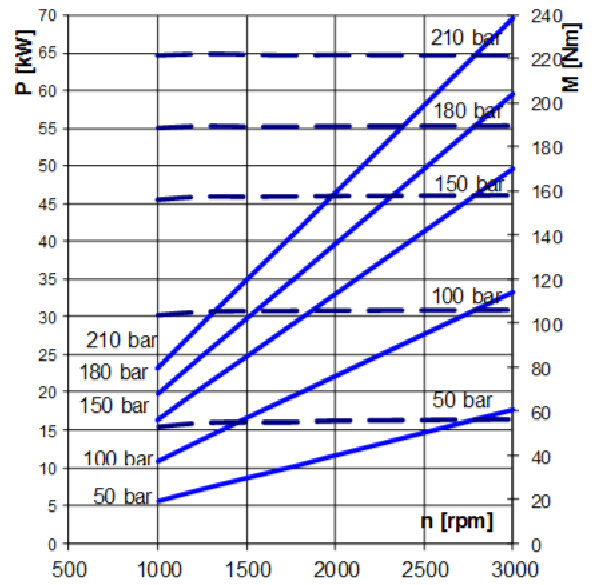
ELI3-43.2



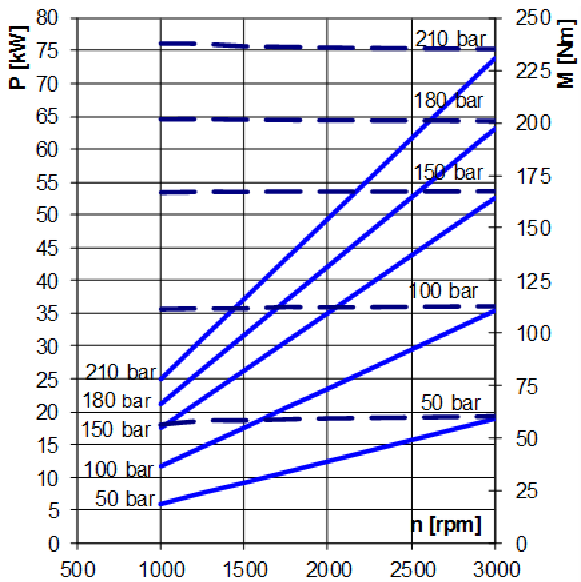
ELI3-52.0



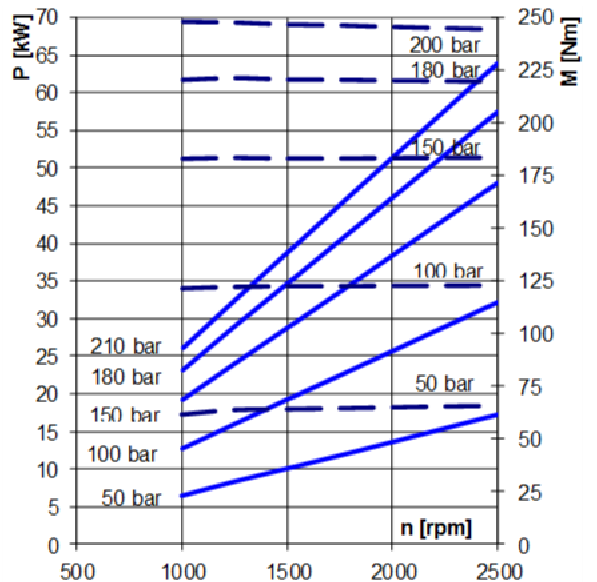
ELI3-60.8



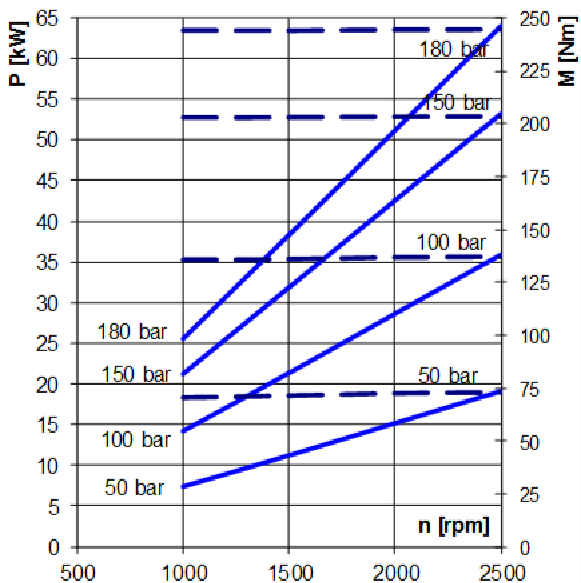
ELI3-64.3



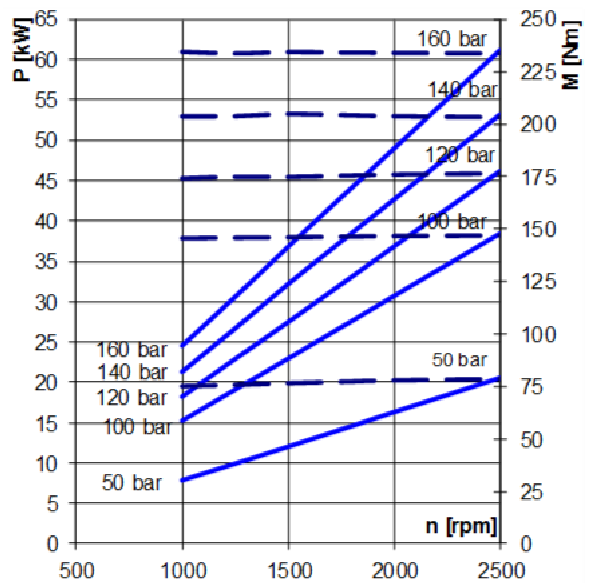
ELI3-70.7



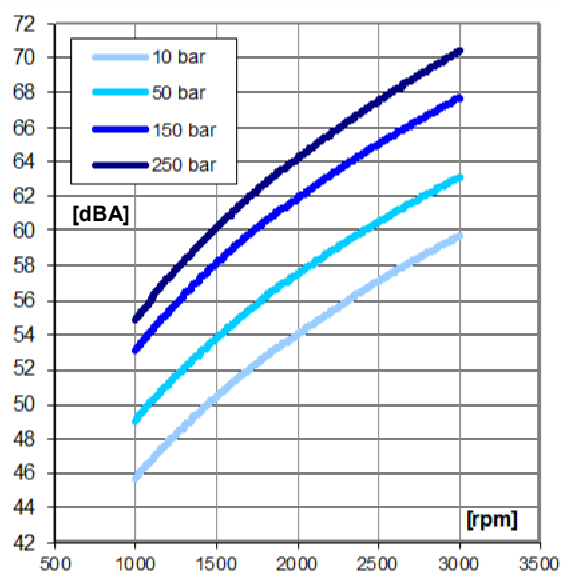
ELI3-78.3



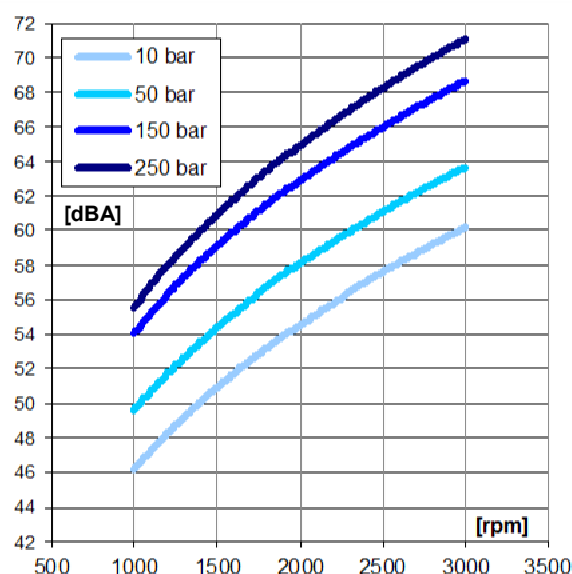
ELI3-87.1



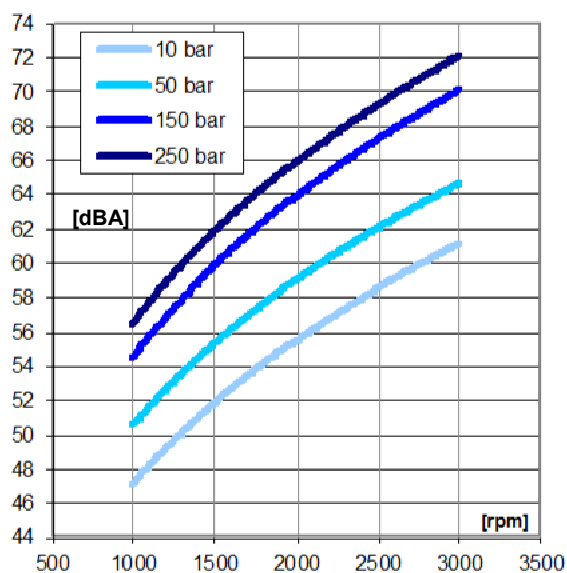
ELI3-20.4 / ELI3-21.6



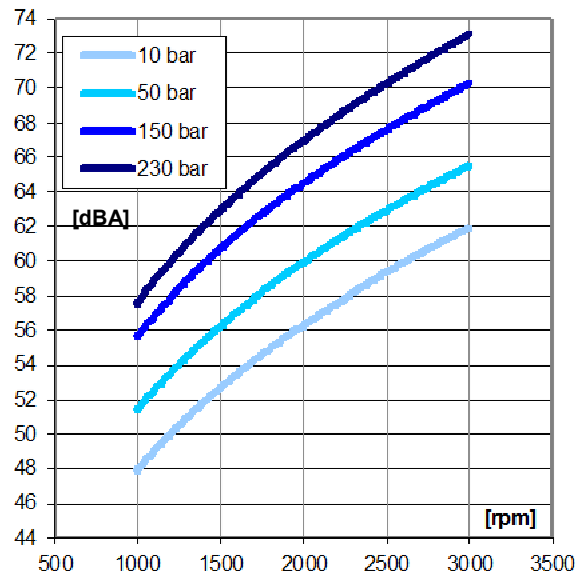
ELI3-26.3 / ELI3-33.3



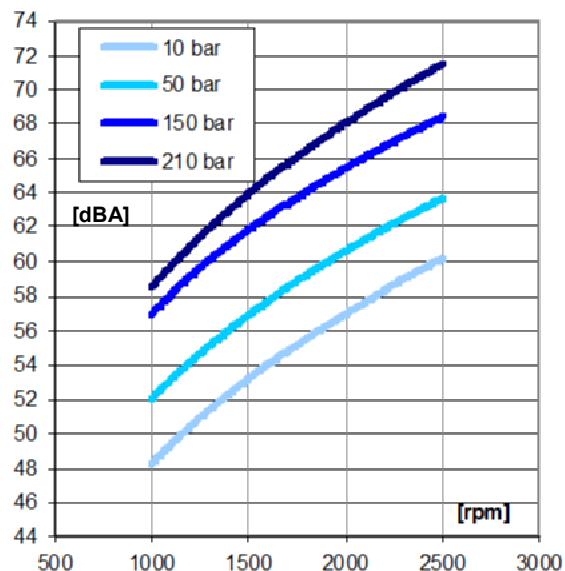
ELI3-39.1 / ELI3-43.2



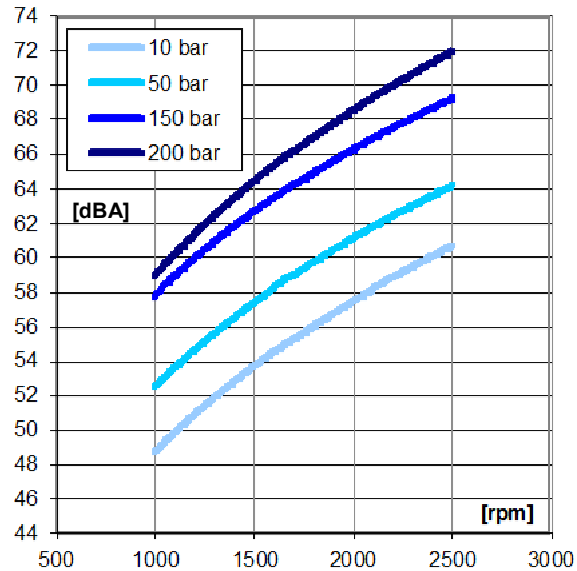
ELI3-52.0 / ELI3-60.8



ELI3-64.3 / ELI3-70.7



ELI3-78.3 / ELI3-87.1



ELI4 series how to order / come ordinare

ELI	TYPE	ROTATION	DISPL.	SHAFT	PORTS	SEALS
	4AC	D - CW	86.5	C0	A	N
		S - CCW	106.3	S1		V
			127.4			
			147.2			
			165.9			
			181.1			
			199.8			

Pump standard types:		
4AC	= flange SAE C + shaft C0 + ports A + standard seals	= flangia SAE C + albero C0 + porte A + guarnizioni standard
Examples:		
ELI4AC-D-106.3-C0-A-N	= clockwise rotation, 106.3 cm ³ /rev, SAE flange, cylindrical shaft C0, flanged ports A type, standard seals.	= pompa destra, 106.3 cm ³ /giro, flangia SAE, albero cilindrico C0, porte flangiate tipo A, guarnizioni standard.
ELI4AC-S-199.8-S1-A-V	= counter-clockwise rotation, 199.8 cm ³ /rev, SAE flange, splined shaft S1, flanged ports A type, fluoro-carbon seals.	= pompa sinistra, 199.8 cm ³ /giro, flangia SAE, albero scanalato S1, porte flangiate tipo A, guarnizioni in fluorocarbonato.

The product data sheets show our standard model types. The synoptic tables for flanges, shafts and ports show all the possible configurations. For further details about the availability of each configuration please contact our Sales and Technical Dept. * Value based on ISO4412 test procedure ** With thread ports on outlet side, a reduction of body fatigue strength may occur if the pump is working at elevated and intermittent pressures. For further details please contact our Sales and Technical Dept. we suggest to provide application specification through our PID form.

Le tavole di prodotto rappresentano i tipi di pompa standard per Marzocchi Pompe. Le tavole sinottiche di flange, alberi e porte hanno lo scopo di rappresentare tutte le possibili configurazioni di prodotto. Per maggiori dettagli sulle disponibilità e condizioni di fornitura, consigliamo di interpellare il nostro ufficio tecnico – commerciale. *Valore rilevato con procedura ISO 4412. ** Con porte filettate nel lato di mandata, nel caso di funzionamento a pressioni elevate e intermittenti è possibile una riduzione della resistenza a fatica del corpo. Per maggiori dettagli consigliamo di interpellare il nostro Ufficio Tecnico – Commerciale. Consigliamo di comunicare le specifiche dell'applicazione attraverso il nostro modulo PID.

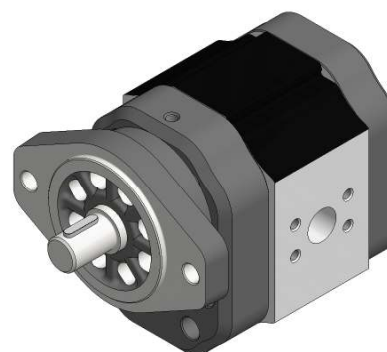
ELI4AC

Accessories supplied with the standard pump: key (code 522262). Mounting flange 127-2 C in compliance with SAE J744C. Standard ports: M10, M12 threads depth 20 mm.

Parti accessorie a corredo della pompa standard: linguetta (codice 522262). Monta flangia 127-2 C secondo Norma SAE J744C. Porte standard: filetti M10, M12 profondità utile 20 mm.

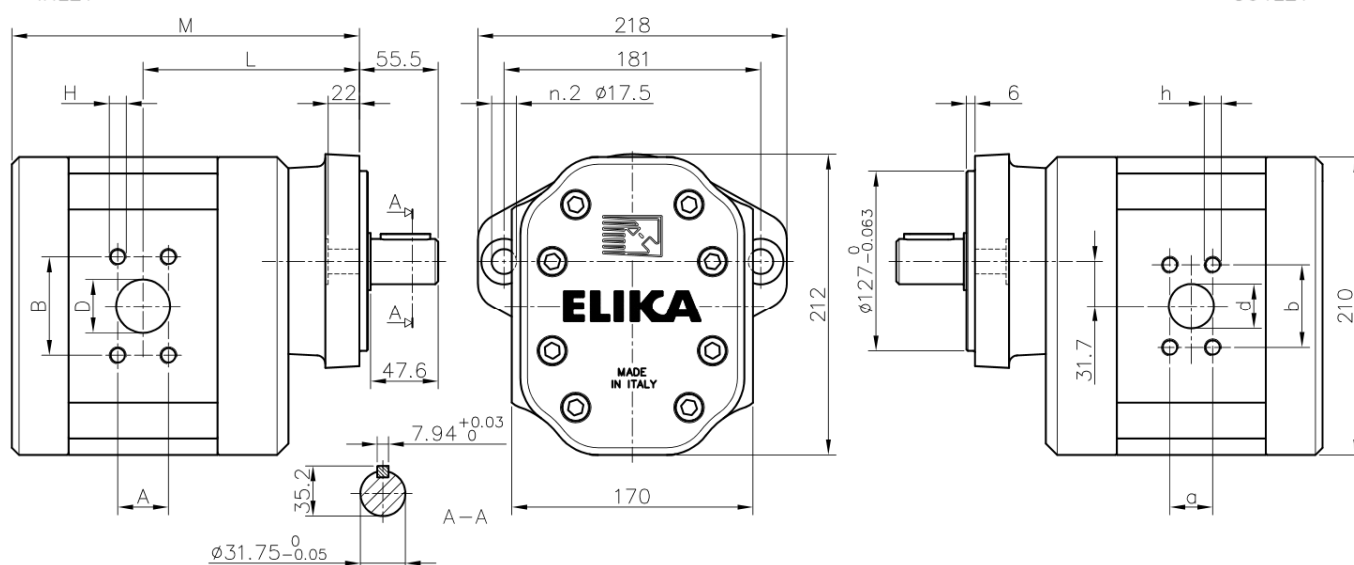
Torque wrenches:
Coppie di serraggio:

M10 screws 30 Nm
M12 screws 40 Nm
Viti M10 30 Nm
Viti M12 40 Nm



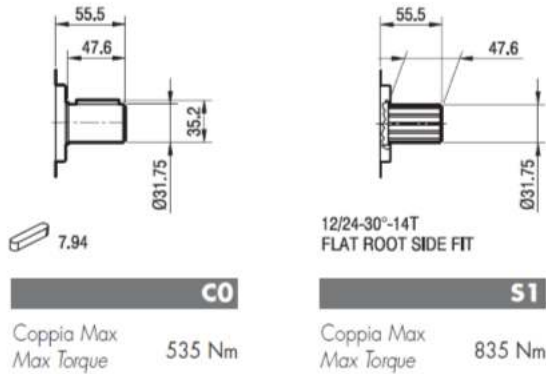
ASPIRAZIONE
INLET

MANDATA
OUTLET

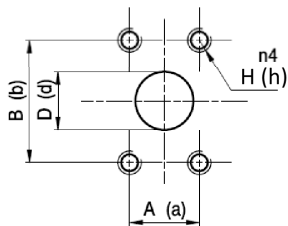


Pump Type Pompa tipo	Displ. Cilindr.	Flow at 1500 rpm Portata a 1500 rpm	Operating pressures Pressioni operative			Rotation speed Velocità di rotazione		Noise at 1500 rpm* Rumorosità a 1500 rpm		Dimensions Dimensioni					
			P1 Max cont.	P2 Max intermitt.	P3 Max peak	Minimum speed	Maximum speed	On recirc.	at P1	L	M	D	A/B	d	a/b
	[cm³/rev]	[l/min]	[bar]	[bar]	[bar]	[rpm]	[rpm]	[dBA]	[dBA]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ELI4AC-D-86.5	86.5	129.8	240	255	270	200	2800	58	66	152.5	245.0	50.8	42.9 / 77.8	31.5	58.7 / 30.2
ELI4AC-D-106.3	106.3	159.5	200	215	230	200	2500	58	66	159.3	253.5	50.8	42.9 / 77.8	38.0	69.9 / 35.7
ELI4AC-D-127.4	127.4	191.1	180	195	210	200	2500	59	67	170.8	262.5	63.5	50.8 / 88.9	38.0	69.9 / 35.7
ELI4AC-D-147.2	147.2	220.8	170	185	200	200	2500	59	67	175.0	271.0	63.5	50.8 / 88.9	38.0	69.9 / 35.7
ELI4AC-D-165.9	165.9	248.9	160	175	190	200	2500	60	68	184.0	279.0	63.5	50.8 / 88.9	38.0	69.9 / 35.7
ELI4AC-D-181.1	181.1	271.7	140	155	170	200	2200	60	68	187.3	285.5	63.5	50.8 / 88.9	38.0	69.9 / 35.7
ELI4AC-D-199.8	199.8	299.8	130	145	160	200	2200	60	69	191.3	293.5	63.5	50.8 / 88.9	38.0	69.9 / 35.7

ALBERI / SHAFTS

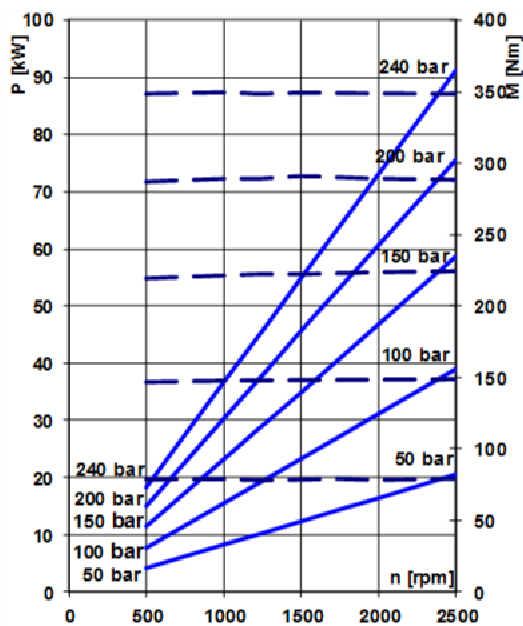


PORTE / PORTS

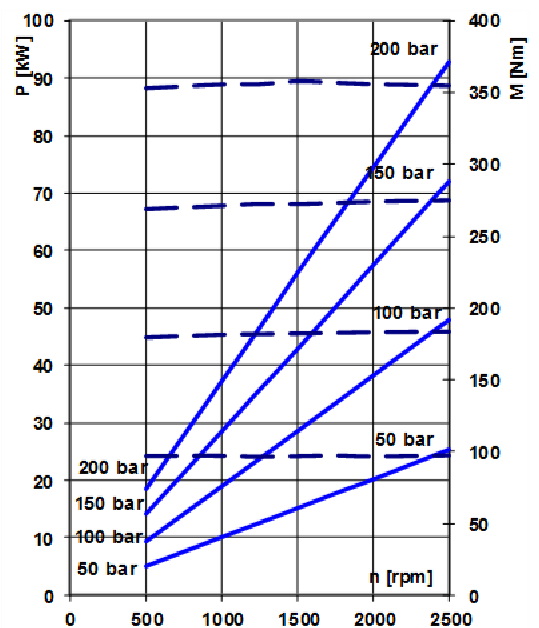


TYPE	INLET			OUTLET		
	D	A / B	H	d	a / b	h
ELI4..86.5	50.8	42.9 / 77.8	M12	31.5	58.7 / 30.2	M10
ELI4..106.3	50.8	42.9 / 77.8	M12	38.0	69.9 / 35.7	M12
ELI4..127.4 / 199.8	63.5	50.8 / 88.9	M12	38.0	69.9 / 35.7	M12

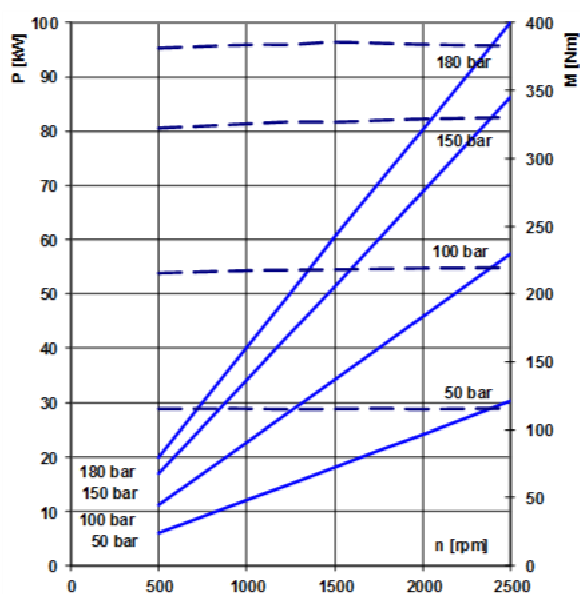
ELI4-86.5



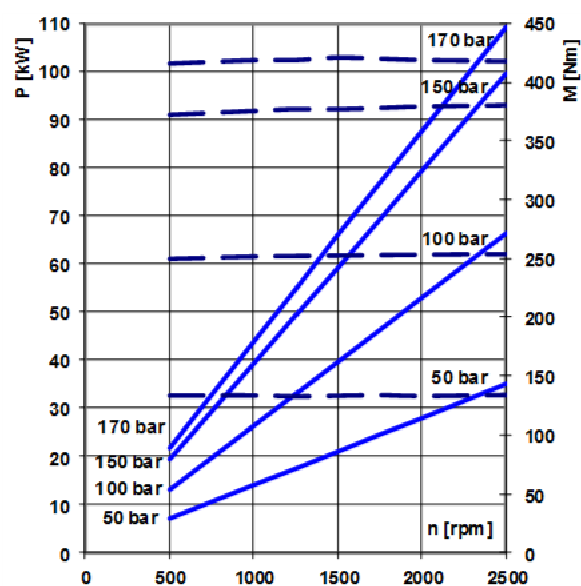
ELI4-106.3



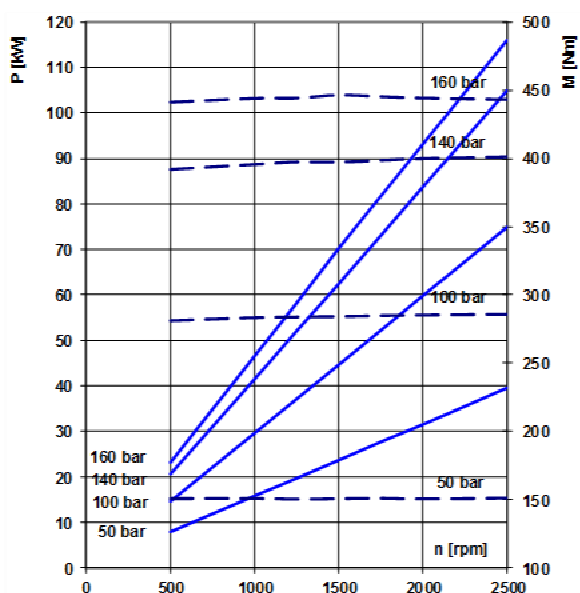
ELI4-127.4



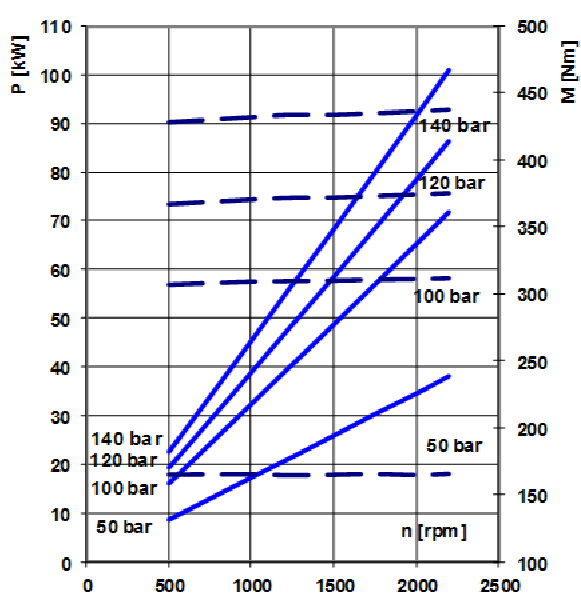
ELI4-147.2



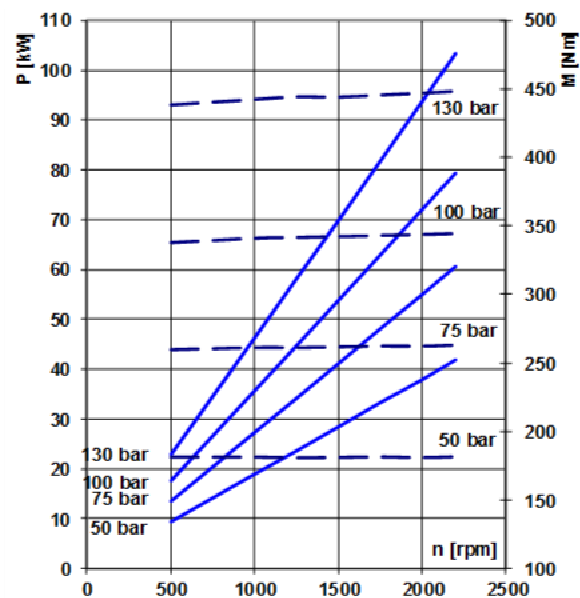
ELI4-165.9



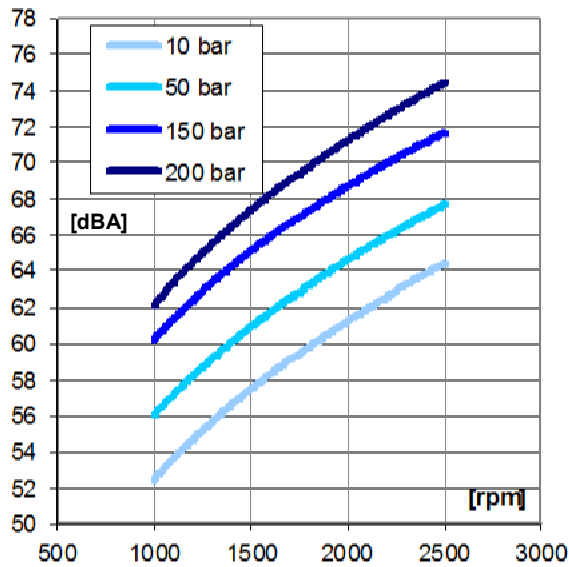
ELI4-181.1



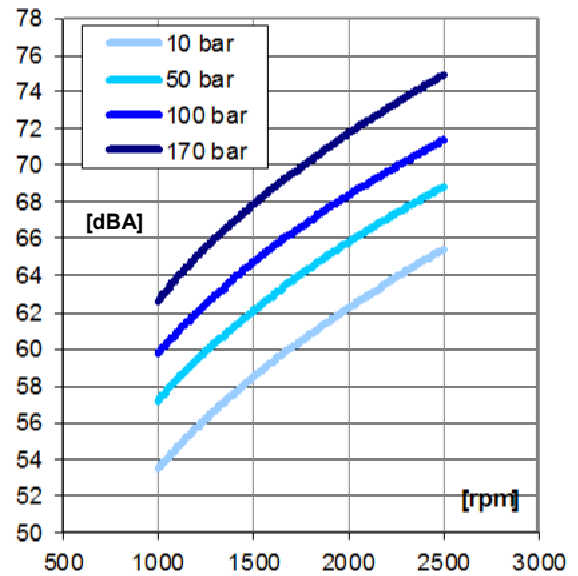
ELI4-199.8



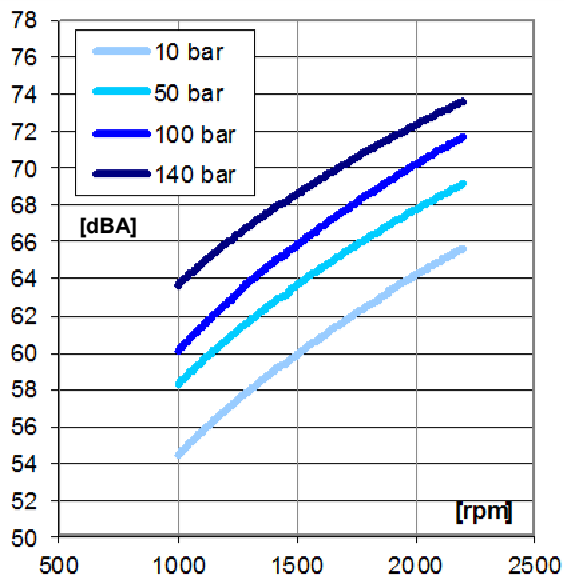
ELI4-86.5 / ELI4-106.3



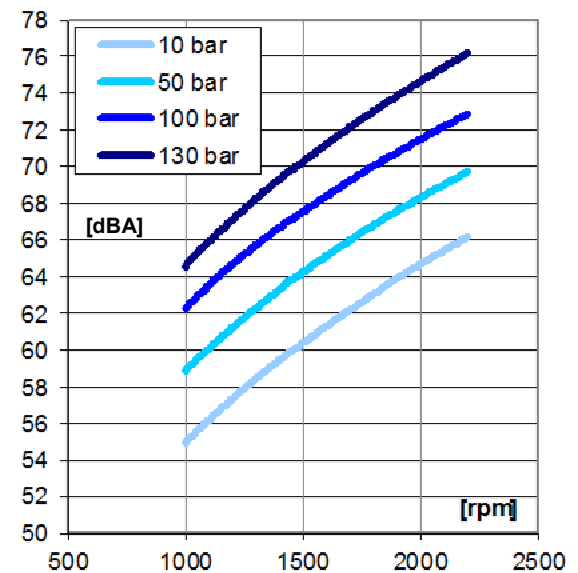
ELI4-127.4 / ELI4-147.2



ELI4-165.9 / ELI4-181.1



ELI4-199.8



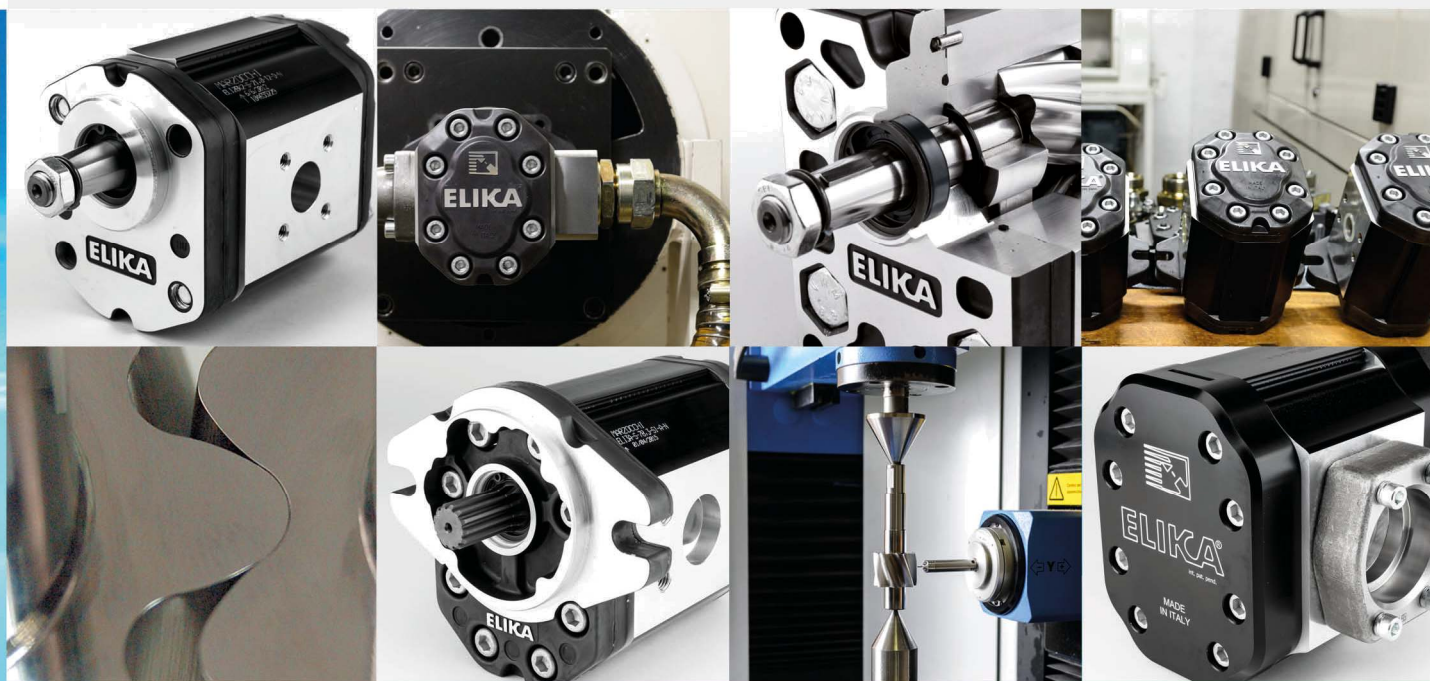
Please strictly follow assembly and use indications given in this catalogue for top performance and longer life of the ELI Marzocchi series. It is also very important to equip the hydraulic system with a proper filtering unit. Marzocchi Pompe declines all responsibility for any errors this catalogue may contain. Apart from general specifications and recommendations concerning installation and conditions of use, the content of this catalogue is provided for information purposes and Marzocchi Pompe SpA reserves all rights to make any changes to the technical features of its products at any time and without prior warning.

Per ottenere dalle pompe ELIKA le migliori prestazioni di funzionamento e di affidabilità anche in termini di durata nel tempo, consigliamo di seguire le indicazioni di installazione ed utilizzo indicate nella documentazione tecnica. Raccomandiamo particolare attenzione al sistema di trascinamento ed alla qualità dell'olio (contaminazione). La Marzocchi Pompe declina ogni responsabilità legata ad eventuali errori generati nella redazione del presente catalogo. Fermo restando le caratteristiche generali e le condizioni di impiego indicate, i dati contenuti in questa pubblicazione sono forniti a titolo indicativo e ci riserviamo il diritto di variare le caratteristiche tecniche della produzione senza preavviso.



ELIKA®

by **MARZOCCHI**



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