



ELMO

60Hz
4-pole



SUBMERSIBLE ELECTRIC MOTORS FOR INDUSTRIAL USE

BRINGS THE ARTISAN QUALITY TO INDUSTRIAL PRODUCTION

2018





40-PLUS YEARS OF DISTINGUISHED EXPERIENCE IN THE SPECIFIC FIELD OF SUBMERSIBLE ELECTRIC MOTORS FOR HYDRAULIC POWER PACKS.

OUR CORNERSTONES

QUALITY

The ELMO S.r.l. Quality System meets the requirements of **UNI EN ISO 9001: 2015**. Certification applies to the design, manufacture and sale of three-phase and single-phase electric motors and accessories for hydraulic lifting systems and industrial systems.



Product quality means meeting design specifications and delivering long-term consistent mechanical performance.

Strict controls are in place to monitor the production process constantly.

All motors manufactured undergo end-of-line testing as they come off our assembly line, performed by an advanced automatic finished motor test station. This solution employs a computerized data logging system via which a series of test data for each motor are automatically saved and can also be processed statistically and easily traced afterwards. The test station is part of a wider IT system making final inspection an integral part of the whole IT solution devised to ensure full product traceability.

RELIABILITY

For ELMO, product reliability is being able to maintain design performance in the long term.

Elmo's approach to ensuring reliability consists in continually improving the design and production process based on the statistical assessment of historical data drawn from the market.

The annual Elmo Failure Rate (EFR) has been monitored consistently for many years and, taking this as our basis, we have set certain objectives for our general reliability parameters. We can identify what issues account for the highest percentage (even where they fall within normal levels) and every year we define Quality objectives, thus initiating a campaign to resolve said issues once and for all with precise corrective actions.

STATOR "SMART IMPREGNATION"

The SMART process is a multi-dip system created by ELMO: it consists in a 5-dip process (cycles of dipping in and out of the epoxy resin), which is then completed with a final drying stage (based on the Joule effect). With the Joule effect, the stators are heated electrically so as to eliminate any moisture remaining in the winding. During the process, the switching temperature (or response temperature) of the thermal protectors/detectors (PTC thermistors/bimetal detectors, break type NCC) is verified, after which the 5 dips start. This process results in the crevices in the stator being filled to a high consistent level and better coating of the copper winding. The Joule effect is controlled via a closed loop temperature cycle control, which allows electricity to be converted into controlled thermal energy (or controlled heat).

Motors produced with stators that have undergone the SMART process are suitable to be controlled with a VVVF (Variable Voltage) inverter.

EPOXY RESIN: one-part epoxy resin suitable for use at temperatures over 200 °C. This resin has low viscosity (improved penetration) and, once polymerized, becomes resistant to paraffinic oils. Environmentally friendly, low VOC4 emissions, solvent free.

Note: ~volatile organic compounds.

DELIVERING GUARANTEED QUALITY FOR OVER 40 YEARS



ELMO 40 years of Quality, **a million motors in applications worldwide.**

Elmo motors are the product of **40 years of experience** in the lift field, designed with painstaking attention to the quality of materials used and put through the strictest testing and product traceability processes.

Quality is guaranteed with every Elmo motor around the world.

The new motors for industrial systems of all kinds have been designed drawing on experience and ongoing research, which enable us to make products that offer high performance and, thanks to submersible technology, very quiet operation, too.



A NEW RANGE, THE SAME OLD QUALITY



For years now, Elmo Srl has been committed to research and development applied to motors for use in **hydraulic systems employed in the industrial sector**.

After almost forty years in the hydraulic lift motor business, Elmo has expanded its offering with the **addition of a new range** to cater to demands across the industry.

Elmo offers various motor models for hydraulic power applications, for use in presses, sheet metal processing machinery, hydraulic winches, etc...

In industrial machinery carrying **ELMO motors**, high standards can be achieved in the creation of power units for plastic injection machines and for all machinery demanding reliable hydraulic service and quiet running.

Our technology serving the needs of industry

By leveraging submersible technology, Elmo can provide the industrial sector with a product that, despite working at high pressures, can reduce one of the biggest and seemingly unresolvable issues: noise.

Noise. A distant memory

Unlike the power technologies most widely used in hydraulic power packs incorporating general-purpose air-cooled motors, Elmo uses tailor-made submersible motors, thus drastically reducing noise emissions by as much as **-20dB**.



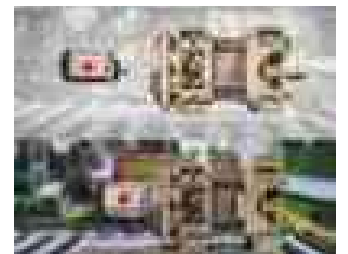
Design-related savings

The pump is connected directly to our motors.

There is no need for the adaptor and coupling to be inserted between the motor and pump.

In addition, a power pack with air-cooled motors takes up more space than a power pack with an ELMO submersible motor.

All this adds up to considerable financial and space savings.



The **ELMO motor** is suitable for rated operation S1 - continuous duty, S2 - 60 minutes and S3- 30 minutes.

Features and advantages:

- Save resources due to small amount of oil required to fill reservoir
- Optimal efficiency due to motor cooling in oil reservoir, direct power transmission and sophisticated heat transfer
- Option of vertical or horizontal installation

Possible applications:

- Machine tools and material **inspection**
- Hydraulic tools
- Handling systems
- Wind energy systems

ONE TECHNOLOGY, MULTIPLE USES

SHIPS AND SHIPYARDS

Elmo motors cater to the requirements of **ships of different kinds and sizes**, even the largest container ships, with products tested to ensure a long life cycle, thanks to the guaranteed quality that comes as standard with each motor.

Elmo maintains a constant stock of products so you are always assured fast delivery.

ELMO motors find application in the **transfer, filtration, cooling, control and circulation of oil in diesel engines and gearboxes.**



ELMO also has motors for the marine industry, especially for large yachts, for use in the creation of lifting systems, gangways, automatic swim ladders and automatic boarding ladders.

We also have pumps for onboard systems, such as rudder actuators, variable-pitch propeller gearboxes, propeller drives and mini power packs.

Given the quality of the materials used, our motors are particularly suitable for container cranes in the ship and container-shipping industry

EARTHMOVING EQUIPMENT

When it comes to Mobile applications, ELMO motors cover the cooling, filtration and low-pressure recirculation needs of earthmoving equipment.



The ELMO motors' submersible technology and their undisputed quality make working at high pressures possible, with very low noise emission and a compact design that make these motors perfect for application in power units, forklift trucks, mobile waste compactors and loaders units.

Applications where reduced sound pollution is a must-have quality, especially given that providing a quality workplace is increasingly synonymous with keeping costs under control and improving workforce performance.

With their long-term reliability and the quiet operation achieved with the new submersible method, Elmo motors are particularly useful in the field of agricultural machinery, combine harvesters, tractors and trailers, for the reliable and quiet control of all their hydraulic components.

ONE TECHNOLOGY, MULTIPLE USES

HANDLING

ELMO motors have been specifically designed for application in situations demanding the utmost reliability and quiet operation, together with high lifting power, such as in forklift masts.

Elmo motors deliver compact design, reliability and quiet operation even for concrete pumps, mobile cranes, telescopic handlers, excavators, wheeled handlers, tippers and loader cranes, on specific low-noise hydraulic systems for snowploughs, waste collection vehicles, lifting platforms, heavy vehicles and fire engines.

ELMO's technical department is on hand to work with you and find the best solution suited to your specific requirements each time



ENERGY

ELMO motors are also used in the renewable energy field, helping providers with the production and distribution of safe, sustainable and efficient electricity. They can be used in various solutions for wind energy system braking control, solar panel tracking systems or hydroelectric plant turbine controls: take a look at our range and let us know your requirements.



WIND ENERGY GENERATORS

Using high-quality materials and passing strict testing, ELMO motors have low-maintenance features, making them suitable for the sort of extended service demanded for use in wind turbine systems.

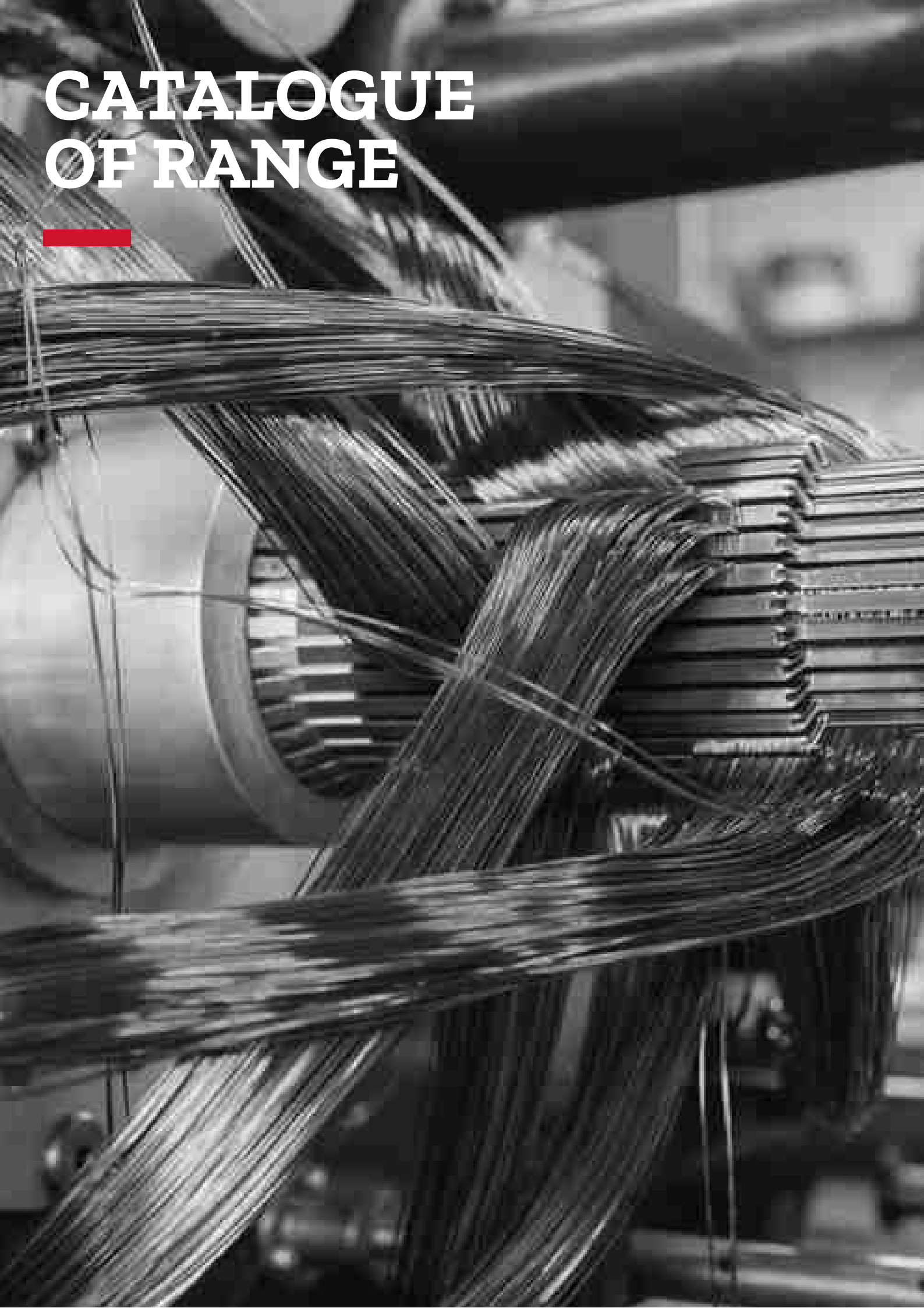
SOLAR ENERGY

Exploiting solar energy is a simple and sustainable way to produce electricity and heat. ELMO motors support new tracking panels with the aid of modern, efficient and reliable hydraulic solutions thanks to the product's considerable longevity.

WATER ENERGY

ELMO motors can be used to support turbines and generators in hydroelectric power stations, which can convert up to 90% of the potential energy of water into electricity

CATALOGUE OF RANGE





SUBMERSIBLE MOTORS

MOTORI IMMERSI

PT-4p 60Hz-S1+S2-60+S2-30-2102-24

PERFORMANCE DATA SHEET 4 POLES THREE PHASE 480 V 60 Hz

Duty Type S1									
NOMINAL OUTPUT		POTENZA NOMINALE RESA		NOMINAL TORQUE		BREAKDOWN TORQUE		■	
HP	kW	Nm	Nm	A	RPM	%	P.F.	POWER FACTOR FATTORE POTENZA	
1,2	0,9	5	12,7	2,7	7,8	1715	66	0,62	
1,75	1,3	7,2	18,5	3,4	11,3	1715	71	0,64	
2,5	1,8	10,1	21,7	4,2	12,7	1700	72	0,72	
3,5	2,6	14,6	32,6	5,8	18,7	1700	74	0,73	
5	3,7	20,9	46	8	25,9	1690	77	0,72	
6,5	4,8	27,3	62	10,6	33	1680	76	0,72	
7	5,2	29,6	67	11,2	35	1680	76	0,73	
7,5	5,5	31,1	79	12	40	1690	75	0,74	
9	6,6	37,4	96	13,4	46	1685	80	0,74	
10	7,5	43	102	14,8	54	1680	78	0,78	
12	9	51	110	19,2	70	1680	76	0,74	

Duty Type S2 60 min									
NOMINAL OUTPUT		POTENZA NOMINALE RESA		NOMINAL TORQUE		BREAKDOWN TORQUE		■	
HP	kW	Nm	Nm	A	RPM	%	P.F.	POWER FACTOR FATTORE POTENZA	
1,2	0,9								
1,75	1,3								
2,5	1,8								
3,5	2,6								
5	3,7								
6,5	4,8								
7,5	5,5	31,2	75	12,3	40	1685	76	0,71	
9	6,6	37,5	84	14,1	45	1680	77	0,73	
10	7,5	43	106	16,1	54	1680	78	0,72	
12	9	51	123	18,3	62	1675	78	0,76	
15	11	63	138	22,9	73	1665	78	0,74	

Duty Type S2 30 min									
NOMINAL OUTPUT		POTENZA NOMINALE RESA		NOMINAL TORQUE		BREAKDOWN TORQUE		■	
HP	kW	Nm	Nm	A	RPM	%	P.F.	POWER FACTOR FATTORE POTENZA	
1,2	0,9								
1,75	1,3								
2,5	1,8								
3,5	2,6								
5	3,7								
6,5	4,8								
7,5	5,5								
9	6,6								
10	7,5								
12	9								
15	11								
18	13,2	76	153	29,5	82	1655	77	0,70	

15	11	61	158	20,6	77	1725	93	0,69	
18	13,2	74	158	23,6	80	1705	92	0,73	
19	14	78	186	29,3	102	1710	82	0,70	
20	15	84	206	30	113	1715	82	0,72	
22	16,2	91	214	31	115	1695	80	0,80	
25	18,5	104	259	34	125	1695	81	0,81	
30	22	124	291	39	150	1700	84	0,81	
35	26	146	389	43	179	1705	90	0,82	
45	33	185	454	56	220	1700	86	0,82	
56	41	230	530	70	280	1700	86	0,82	

18	13,2								
20	15	84	186	31	102	1695	82	0,72	
22	16,2	91	241	33	120	1705	81	0,73	
25	18,5	104	261	36	137	1705	81	0,76	
30	22	123	327	45	170	1710	83	0,71	
35	26	145	427	52	202	1710	84	0,72	
45	33	185	507	65	258	1705	83	0,74	
56	41	233	760	79	295	1680	82	0,77	
65	48	268	783	98	403	1705	84	0,70	

18	13,2								
20	15								
25	18,5	105	241	37	120	1685	80	0,76	
30	22	125	261	43	137	1675	79	0,79	
35	26	147	327	50	170	1685	83	0,75	
50	37	214	427	69	202	1655	82	0,79	
60	45	259	507	83	258	1660	82	0,80	
73	54	313	760	97	295	1650	81	0,83	
90	66	380	783	123	403	1660	83	0,78	

Per potenze superiori in Duty S1, contattaci direttamente a info@elmoitaly.com

For higher output in Duty S1 please contact us directly at info@elmoitaly.com

■ Dato da considerare nel dimensionamento dell'albero della pompa, è consigliabile che la coppia massima del motore sia inferiore alla massima coppia accettabile per la pompa.

Dati con motori immersi in olio idraulico a 45°C e comprensivi delle perdite idrauliche per le rotazioni in olio
La ELMO s.r.l. si riserva il diritto di apportare qualsiasi variazione senza preavviso.

■ Data to be considered in the sizing of the pump. It is recommended the breakdown motor torque it is lower than the maximum acceptable torque for the pump.

Data for motors working into hydraulic oil at 45°C inclusive of the hydraulic losses due to the rotation into oil
In any moment and without notice, ELMO s.r.l. can change manufacturing process and performance features

4-POLE 3-PHASE 60Hz PERFORMANCE DATA

			DUTY S1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
NOMINAL OUTPUT POTENZA NOMINALE RESA		HP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
		kW	0,9	1,2	1,3	1,75	1,8	2,5	2,6	3,5	3,7	5	4,8	6,5	5,2	7	5,5	7,5	6,6	9	7,5	10	9	12	11	15	13,2	18	14	19	15	20	16,2	22	18,5	25	22	30	26	35	33	45	41	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
220 VOLT Δ	NOMINAL CURRENT CORRENTE NOMINALE	A	5,8		7,5		9,1	12,6	17,5	23		24,4	26,1	29,1	32	42		45	52	64	66	68	74	84	93	123	153																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	STARTING CURRENT AT DELTA STARTING CORRENTE DI AVV. CON COLLEGAMENTO Δ	A	16,9	24,7	27,8	41	56	71	76	87	99	117	153	168	175	223	247	251	273	327	391	480	611																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

For motors working into Hydraulic oil at 45° C
Con Motore Immerso in olio caldo a 45° C

4-POLE 3-PHASE 60Hz

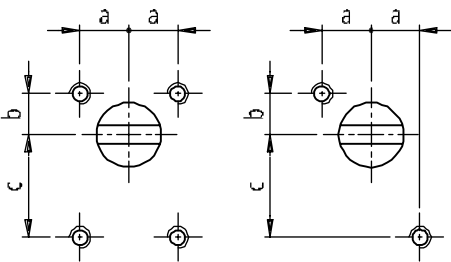
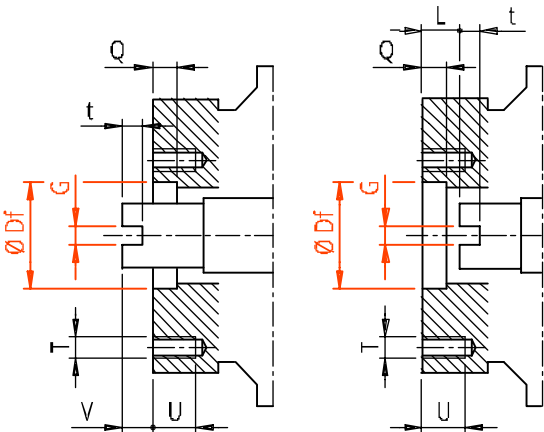
PERFORMANCE DATA

DUTY S2 - 60 min																0,9	1,2
7,8	2,7	8,1	2,8	8,5	2,9	9,3	3,2	9,8	3,3	16,9	5,8						
11,3	3,4	11,8	3,6	12,3	3,8	13,6	4,1	14,3	4,3	24,7	7,5					1,3	1,75
12,7	4,2	13,3	4,4	13,9	4,6	15,3	5	16,1	5,3	27,8	9,1					1,8	2,5
18,7	5,8	19,5	6	20,4	6,3	22,4	6,9	23,6	7,3	41	12,6					2,6	3,5
25,9	8	27	8,4	28,2	8,8	31	9,6	33	10,1	56	17,5					3,7	5
33	10,6	34	11	36	11,5	39	12,7	41	13,3	71	23					4,8	6,5
40	12,3	42	12,8	44	13,4	48	14,7	51	15,5	88	26,7					5,5	7,5
45	14,1	47	14,7	49	15,4	54	16,9	57	17,8	98	31					6,6	9
54	16,1	56	16,8	59	17,5	64	19,3	68	20,3	117	35					7,5	10
62	18,3	65	19,1	68	19,9	75	21,9	79	23,1	136	40					9	12
73	22,9	76	23,9	79	25	87	27,5	92	29	159	50					11	15
80	23,6	83	24,6	87	25,8	96	28,3	101	29,8	175	52					13,2	18
102	31	106	32	111	34	122	37	129	39	223	67					15	20
120	33	125	34	131	36	144	39	152	42	262	72					16,2	22
137	36	143	38	149	40	164	43	173	46	299	79					18,5	25
170	45	177	47	185	49	204	54	215	56	371	97					22	30
202	52	211	54	220	56	242	62	255	65	441	113					26	35
258	65	269	67	281	71	310	78	326	82	563	141					33	45
295	79	308	82	322	86	354	94	373	99	644	171					41	56
404	98	421	103	440	107	484	118	509	124	879	214					48	65

DUTY S2 - 30 min																0,9	1,2
7,8	2,7	8,1	2,8	8,5	2,9	9,3	3,2	9,8	3,3	16,9	5,8						
11,3	3,4	11,8	3,6	12,3	3,8	13,6	4,1	14,3	4,3	24,7	7,5					1,3	1,75
12,7	4,2	13,3	4,4	13,9	4,6	15,3	5	16,1	5,3	27,8	9,1					1,8	2,5
18,7	5,8	19,5	6	20,4	6,3	22,4	6,9	23,6	7,3	41	12,6					2,6	3,5
25,9	8	27	8,4	28,2	8,8	31	9,6	33	10,1	56	17,5					3,7	5
33	10,6	34	11	36	11,5	39	12,7	41	13,3	71	23					4,8	6,5
40	12,3	42	12,8	44	13,4	48	14,7	51	15,5	88	26,7					5,5	7,5
45	14,1	47	14,7	49	15,4	54	16,9	57	17,8	98	31					6,6	9
54	16,1	56	16,8	59	17,5	64	19,3	68	20,3	117	35					7,5	10
62	18,3	65	19,1	68	19,9	75	21,9	79	23,1	136	40					9	12
73	22,9	76	23,9	79	25	87	27,5	92	29	159	50					11	15
82	29,5	86	30,8	89	32	98	35	104	37	179	64					13,2	18
80	23,6	83	24,6	87	25,8	96	28,3	101	29,8	175	52					13,2	18
102	31	106	32	111	34	122	37	129	39	223	67					15	20
120	37	125	38	131	40	144	44	152	46	262	80					18,5	25
137	43	143	44	149	46	164	51	173	54	299	93					22	30
170	50	177	53	185	55	204	60	215	64	371	110					26	35
202	69	211	72	220	75	242	83	255	87	441	150					37	50
258	83	269	87	281	91	310	100	326	105	563	182					45	60
295	97	308	101	322	105	354	116	373	122	644	211					54	73
403	123	421	128	440	134	484	148	509	155	879	269					66	90

WE PRODUCE MOTORS WITH VOLTAGE RATINGS OTHER THAN THOSE GIVEN HERE.
(80 V, 110 V, ETC.)

4-POLE 3-PHASE 60Hz COUPLINGS



FEMALE GROOVE
Only Motors Type
S3D - S3N - S3S - S3M

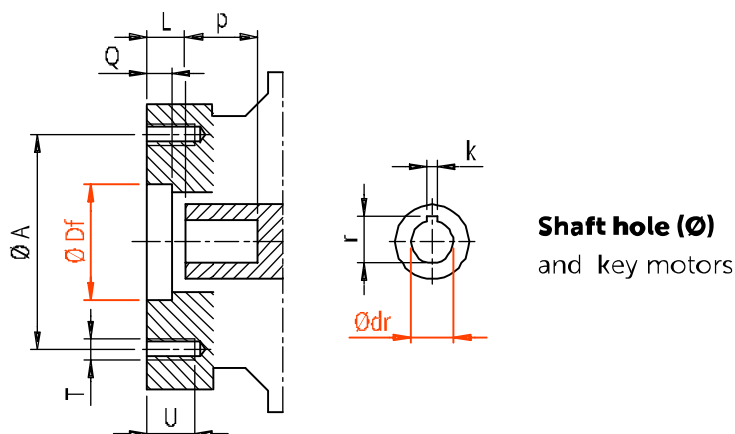
DUTY TYPE		
S1	S2 - 60 Min	S2 - 30 Min
kW	kW	kW
0,9	0,9	0,9
1,3	1,3	1,3
1,8	1,8	1,8
2,6	2,6	2,6
3,7	3,7	3,7
4,8	4,8	4,8
5,2	5,5	5,5
5,5	6,6	6,6
6,6	7,5	7,5
7,5	9	9
9	11	11
-	-	13,2

SMALL MOTORS							
S3D	S3N	S3S	S3M	S3k	S3A	S3B	S3C
//5 Ø30	//5 Ø32	//5 Ø32	//8 Ø52	Ø12.7 Ø50.8	Ø15.87 Ø82.55	Ø22.22 Ø101.6	Ø25.4 Ø101.6
• • •	• • •	• • •	• • •	• • •			
• • •	• • •	• • •	• • •	• • •			
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
•	•	•	•	•	• • •	• • •	• • •
					• • •	• • •	• • •
					• • •	• • •	• • •
					•	•	•
					•	•	•

DUTY TYPE		
S1	S2 - 60 Min	S2 - 30 Min
kW	kW	kW
11	-	-
13,2	13,2	13,2
14	15	15
15	16,2	18,5
16,2	18,5	22
18,5	22	26
22	26	37
26	33	45
33	41	54
41	48	66

BIG MOTORS							
S7A	S7B	S7C	S7E	S7F	S7G	S7L	S7R
Ø15.87 Ø82.55	Ø22.22 Ø101.6	Ø25.4 Ø101.6	Ø32 Ø125	Ø32 Ø125	Ø25.4 Ø101.6	Ø22.22 Ø101.6	Ø32 Ø160
•	•	•	•	•	•	•	•
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
• •	• • •	• • •	• • •	• • •	• • •	• • •	• • •
•	• • •	• • •	• • •	• • •	• • •	• • •	• • •
	• • •	• • •	• • •	• • •	• • •	• • •	• • •
	• • •	• • •	• • •	• • •	• • •	• • •	• • •
	• •	• • •	• • •	• • •	• • •	• •	• • •
	•	• • •	• • •	• • •	• • •	•	• • •

4-POLE 3-PHASE 60Hz COUPLINGS



SMALL MOTORS	Motor code		Flange dimensions				Tapped holes for pump fixing							female groove		
	Type	Last Digit	ØDf	Q	L	V	N°	T	U	Layout	a	b	c	G	t	
	S3D	-U	Ø30	8.5	7	-	4	M6	14.5		28	24.5	48.5	5	7.5	
	S3N		Ø32	8.5	7		2	M8	14.5		20	10.5	29.5	5	7.5	
	S3S		Ø32	8.5			4	2	M8	14.5		20	10.5	29,5	5	5.5
	S3M		Ø52	8.5			7.5	2	M8	14.5		30	14.1	45.9	8	7

SMALL MOTORS	Motor code		Flange dimensions			Tapped holes for pump fixing					Shaft hole (Ø) and key			
	Type	Last Digit	ØDf	Q	L	N°	T	U	Layout	Ø A	Ødr	p	r	k
	S3K	-U	Ø50.8	8.5	11	2	M8	15.5	+	Ø82.55	Ø12.7	29	14.4	3.2
	S3A		Ø82.55	8.5	12	2	M8	15.5	+	Ø106.4	Ø15.87	28	17.9	4
	S3B		Ø101.6	8.5	12	2	M12	15.5	+	Ø146	Ø22.22	32.5	25.2	6.35
	S3C		Ø101.6	8.5	12	2	M12	18	+	Ø146	Ø25.4	37.5	28.5	6.35

BIG MOTORS	Motor code		Flange dimensions			Tapped holes for pump fixing					Shaft hole (Ø) and key			
	Type	Last Digit	ØDf	Q	L	N°	T	U	Layout	Ø A	Ødr	p	r	k
	S7A	-U	Ø82.55	12	11	2	M8	20	+	Ø106.4	Ø15.87	34.5	17.9	4
	S7B		Ø101.6	12	11	2	M12	26	+	Ø146	Ø22.22	38.5	25.2	6.35
	S7C		Ø101.6	12	11	2	M12	26	+	Ø146	Ø25.4	38.5	28.5	6.35
	S7E		Ø125	14	13	2	M16x1.5	30	+	Ø180	Ø32	58	35.3	10
	S7F		Ø125	14	13	4	M12	30	+	Ø160	Ø32	58	35.3	10
	S7G		Ø101.6	12	11	2	M12	26	+	Ø146	Ø25.4	38.5	28.5	6.35
	S7L		Ø101.6	12	23	2	M12	30	+	Ø146	Ø22.22	38.5	25.2	6.35
	S7R		Ø160	12	13	4	M16x1.5	30	+	Ø200	Ø32	58	35.3	10

NOTES

FOR DUTY CYCLES



Duty type S1

Continuous running duty: operation at a constant load (usually at full-load unless specified differently) maintained for sufficient time to allow the machine to reach thermal equilibrium^{*2}. The appropriate abbreviation is **S1**.

Duty type S2

Short-time duty: operation at constant load (usually at full-load unless specified differently) for a given time Δt_P , less than that required to reach thermal equilibrium^{*2}, followed by a time de-energized and at rest of sufficient duration to re-establish machine temperatures within 2 °C (Celsius degrees) of the coolant temperature (hydraulic oil/fluid temperature). The appropriate abbreviation is S2, followed by an indication of the duration of the duty. **Example:** if $\Delta t_P = 30$ minutes then the indication is: **S2 30 min**; if $\Delta t_P = 60$ minutes then the indication is: **S2 60 min**.

Duty type S3

Intermittent periodic^{*1} duty: a sequence of identical duty cycles, each including a time of operation at constant load and a time de-energized and at rest. In this duty, the cycle is such that the **starting current does not significantly affect the temperature rise** (because the starting current, for example, is managed and limited thanks to additional/optional Variable-Voltage and/or Variable-Frequency VVVF converters). The appropriate abbreviation is S3, followed by the cyclic duration factor. **Example: S3 40 %**.

Duty type S4

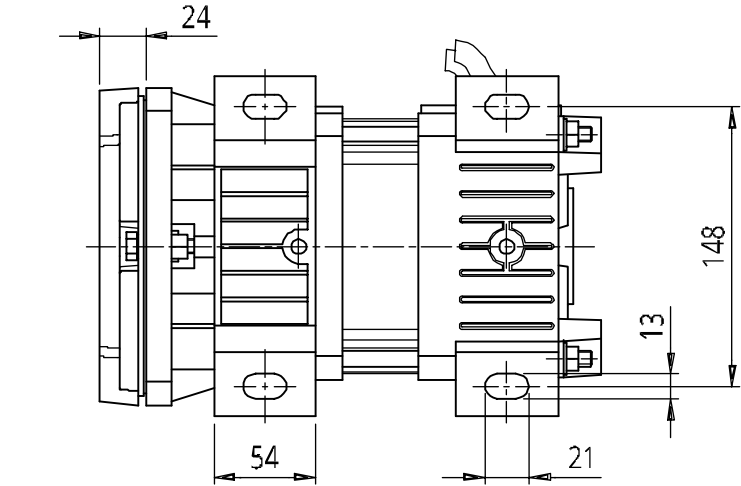
Intermittent periodic ^{*1} duty with starting: a sequence of identical duty cycles, each cycle including a significant starting time (the cycle is such that **the starting current significantly affect the temperature rise**) a time of operation at constant load and a time de-energized and at rest. The appropriate abbreviation is S4, followed by the cyclic duration factor. **Example: S4 40 %**.

Important notes

^{*1} Periodic duty implies that thermal equilibrium^{*2} is not reached during the time on load.

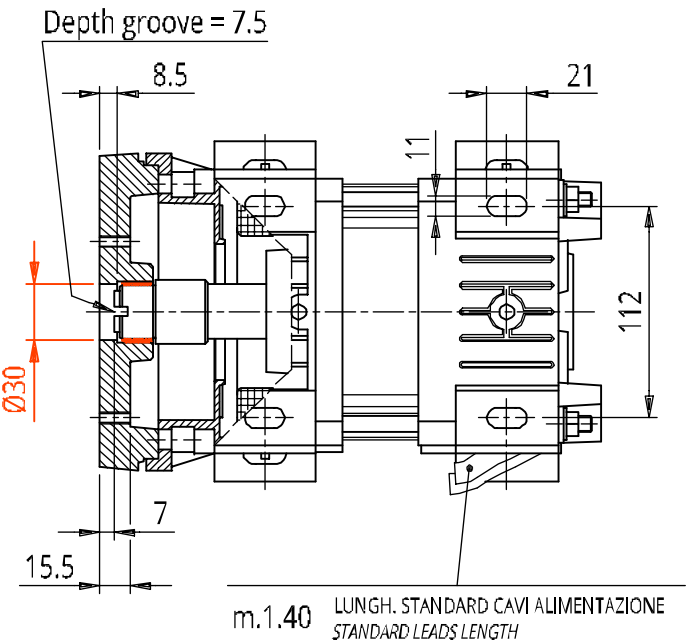
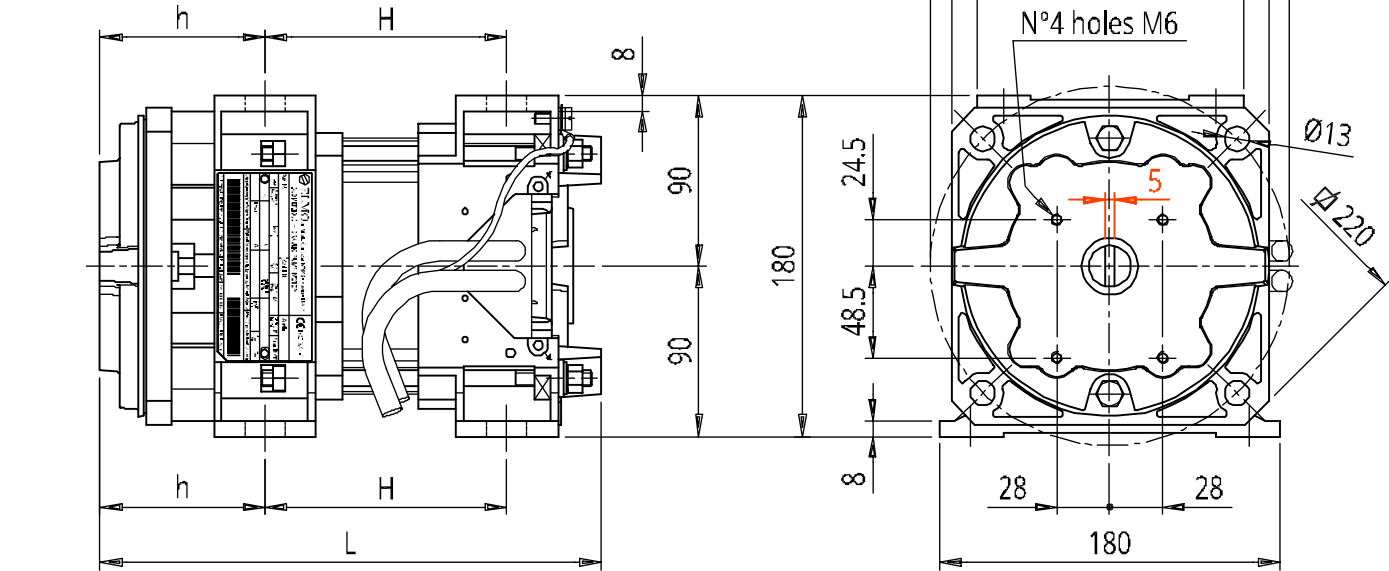
^{*2} Thermal equilibrium: the state reached when the temperature rises of the several parts of the machine do not vary by more than a gradient of 2 °C (Celsius degrees) per hour.

4-POLE 3-PHASE 60 Hz Motors Type S3D4-U



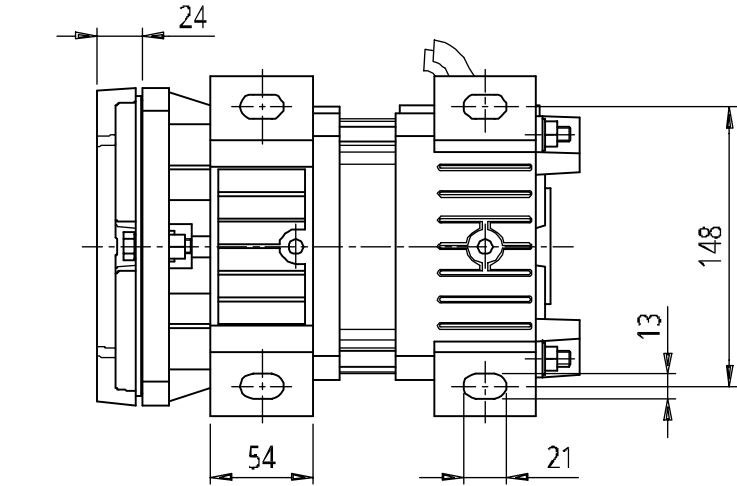
Female Groove 5 mm
Flange Ø 30mm

Suitable for Marzocchi Pump
Type ALM1 European Flange Ø 30mm
Shaft = GO (external tooth, wrench = 5 mm



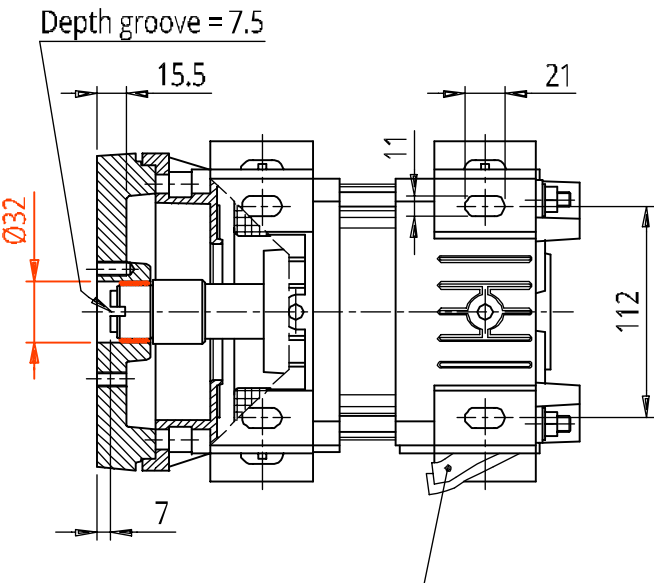
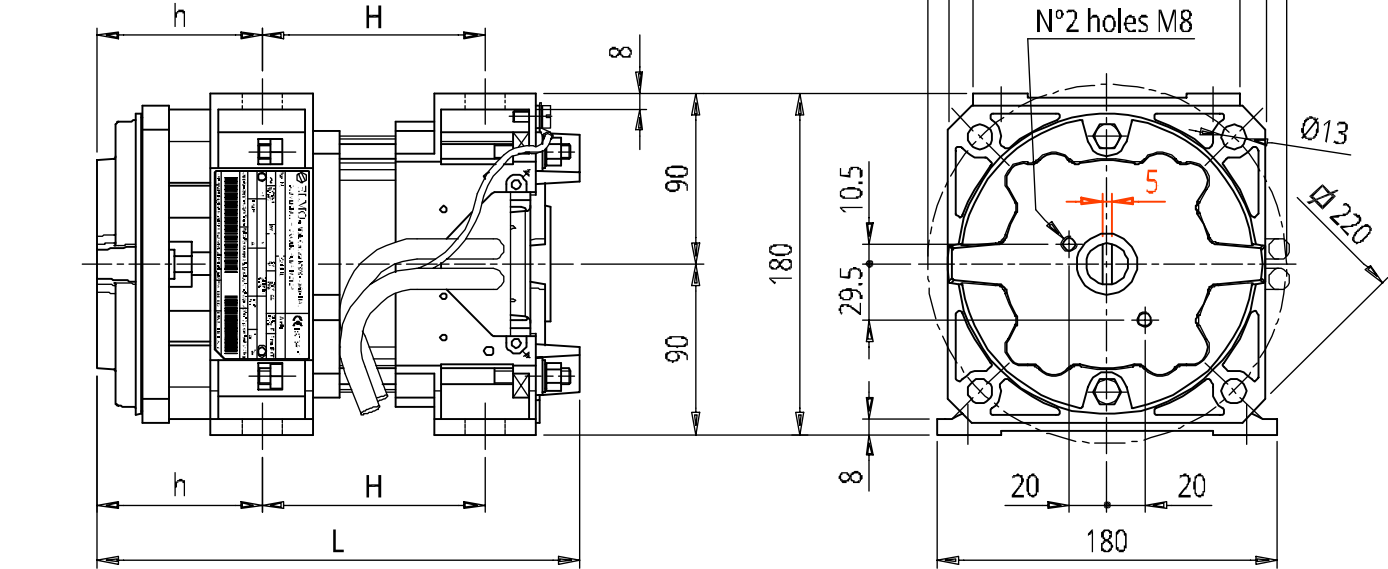
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	-	-	354		218

4-POLE 3-PHASE 60 Hz Motors Type S3N4-U



Female Groove 5 mm
Flange Ø 32 mm

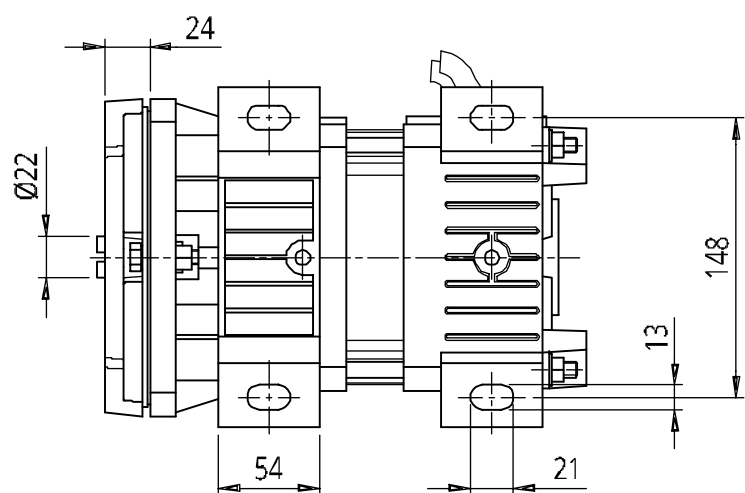
Suitable for Pump
Type F1L AGL54 and F1K AGL54
Group 1



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

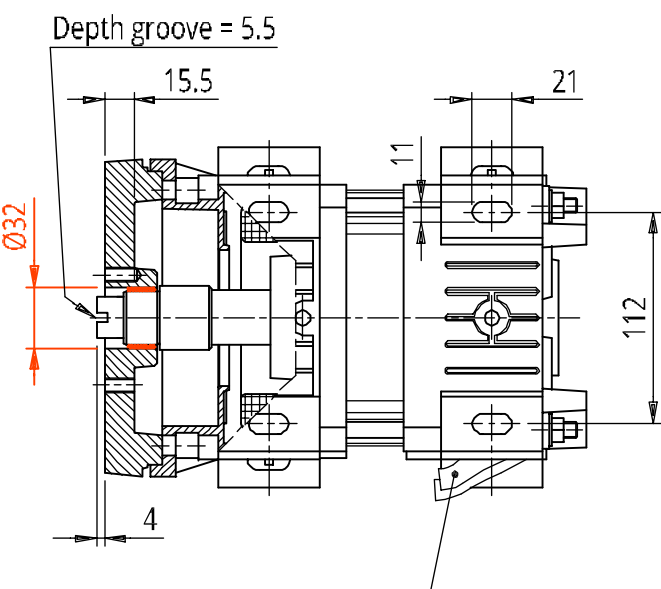
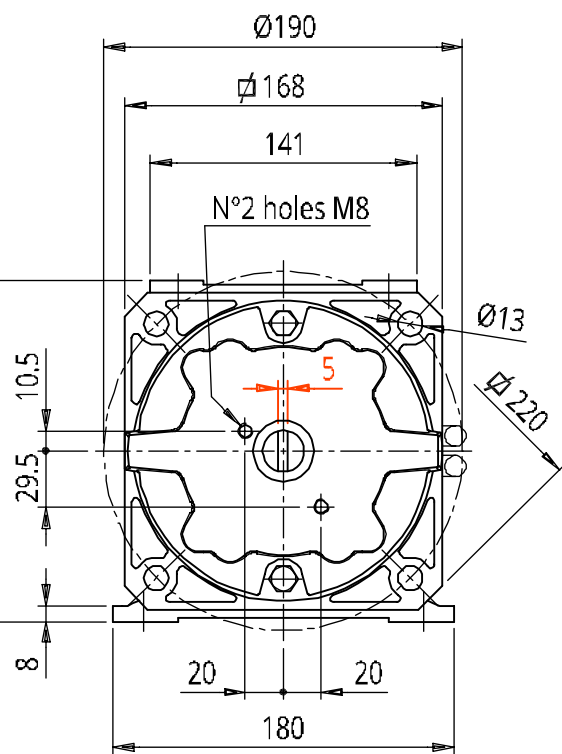
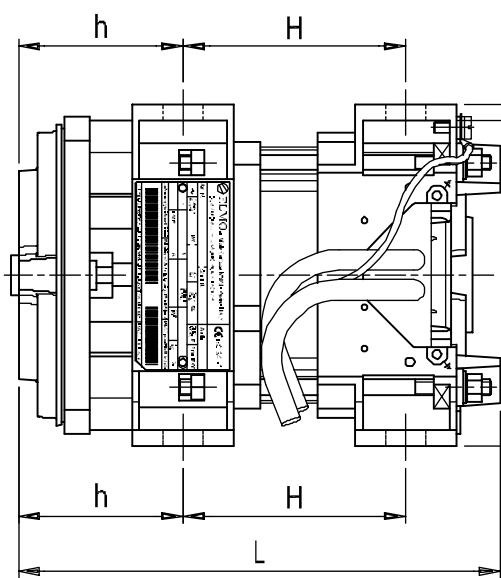
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	-	-	354		218

4-POLE 3-PHASE 60 Hz Motors Type S3S4-U



Female Groove 5 mm
Flange Ø 32 mm

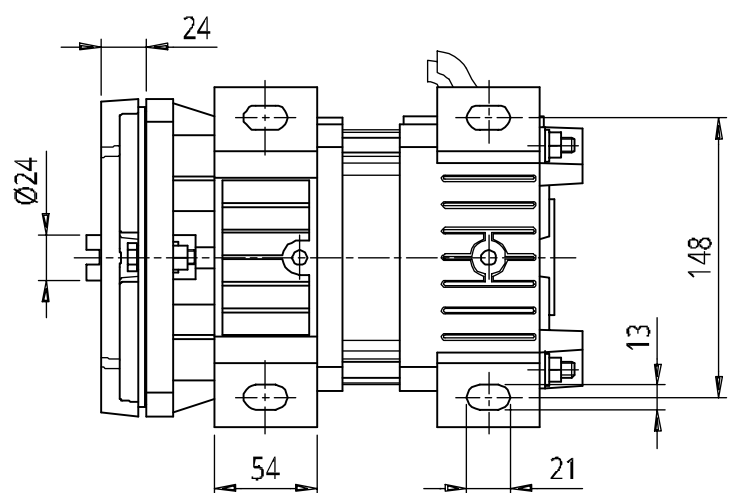
Suitable for Pump
Type F1L AG54 and F1K AG54
Group 1



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

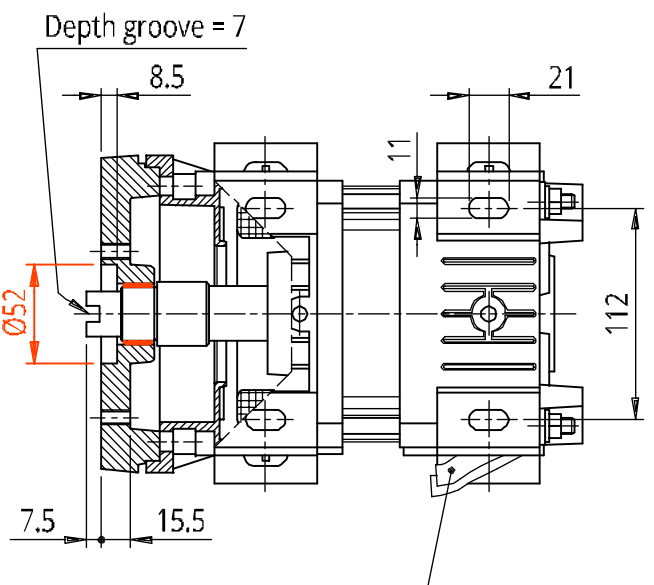
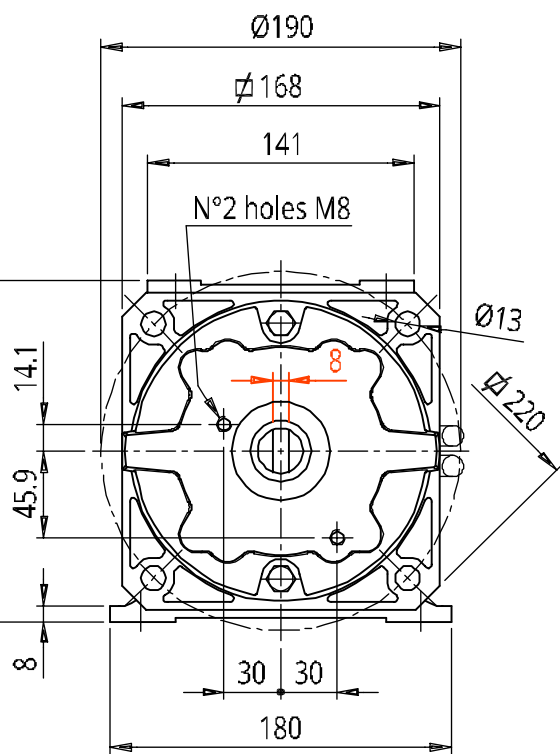
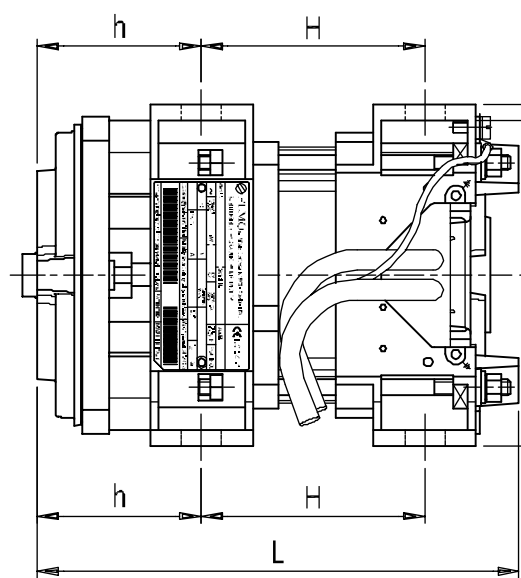
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	-	-	354		218

4-POLE 3-PHASE 60 Hz Motors Type S3M4-U



Female Groove 8 mm
Flange Ø 52

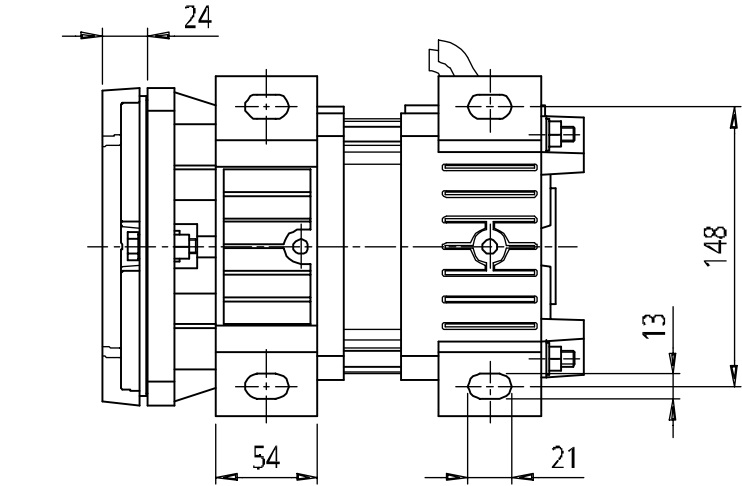
Suitable for Pump
Type F2 BK7 - AG
Group 2



m.1.40 LUNGHI. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	-	-	354		218

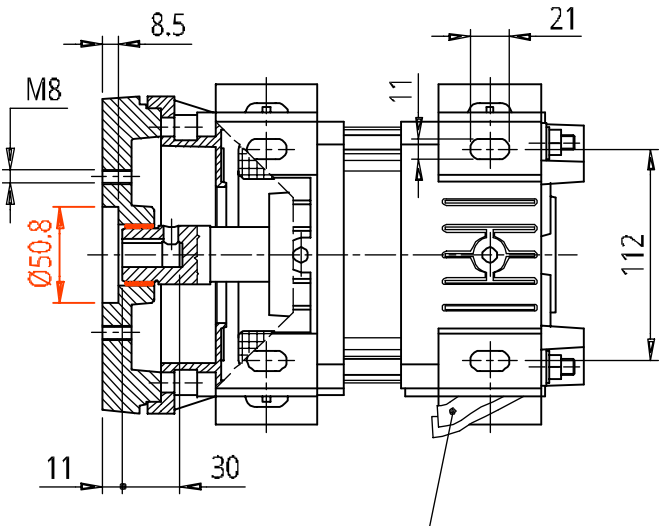
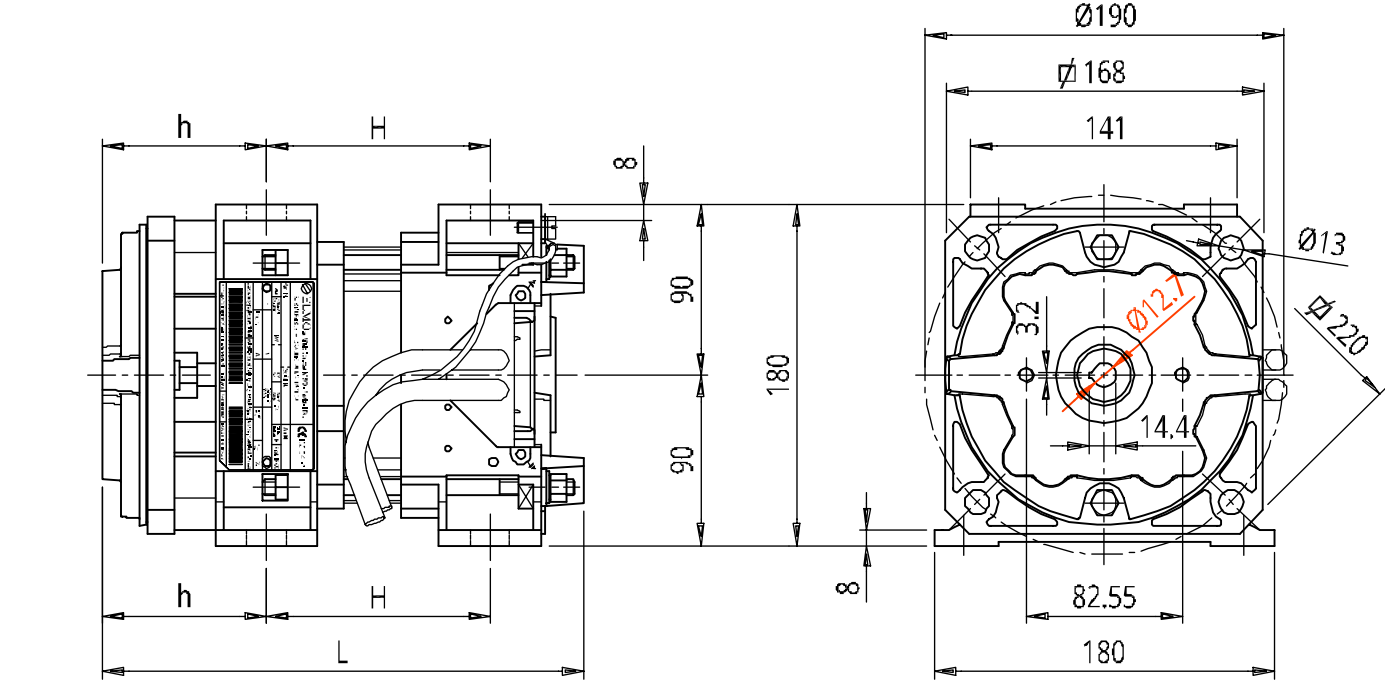
4-POLE 3-PHASE 60 Hz Motors Type S3K4-U



Shaft Ø 12,7 mm
Flange Ø 50,8 mm

Suitable for Pump
Type SAEA - AC

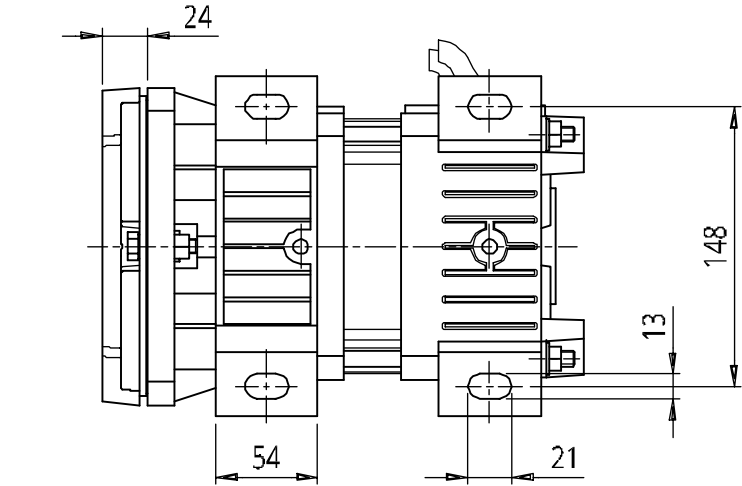
Group 1



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

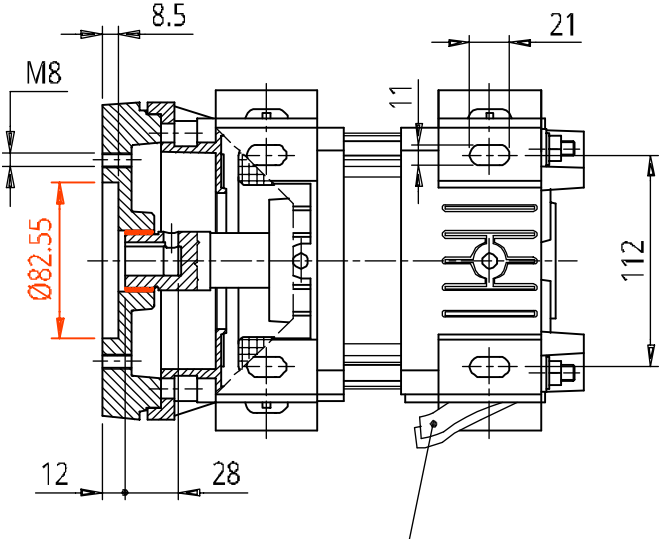
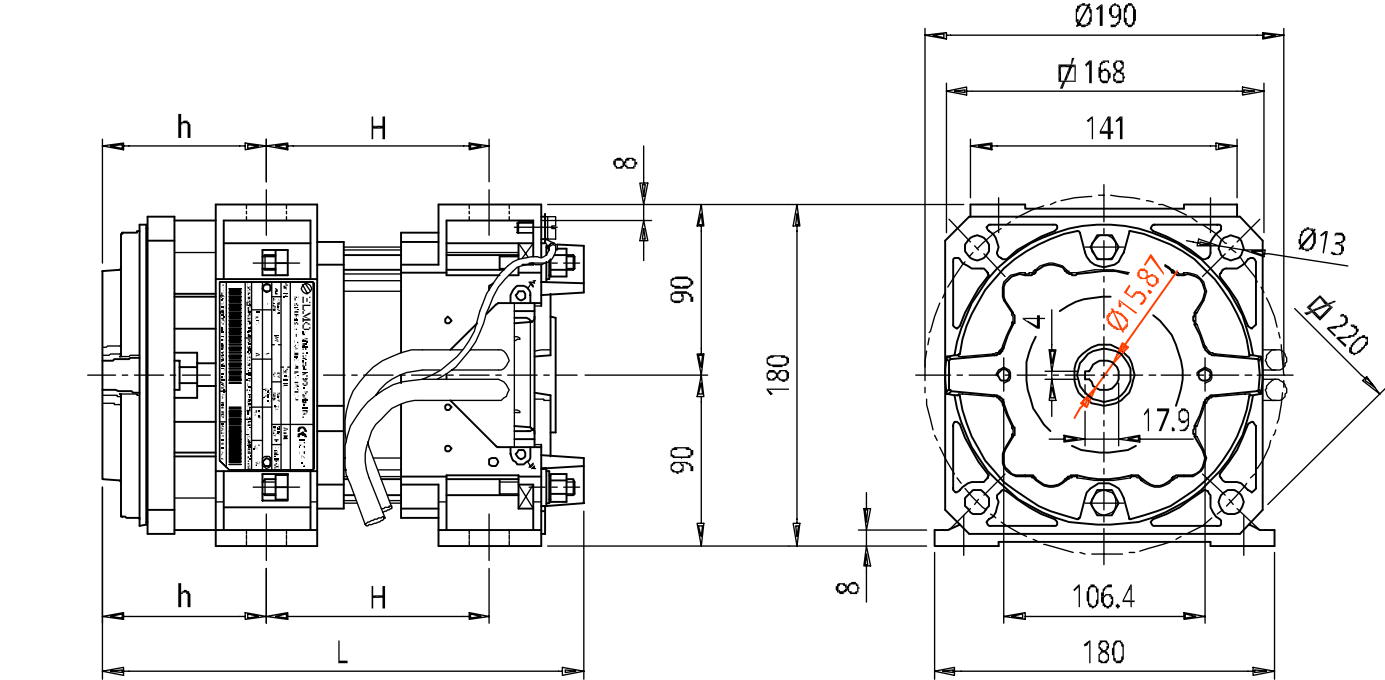
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	-	-	354		218

4-POLE 3-PHASE 60 Hz Motors Type S3A4-U



Shaft Ø 15,87 mm
Flange Ø 82,55 mm

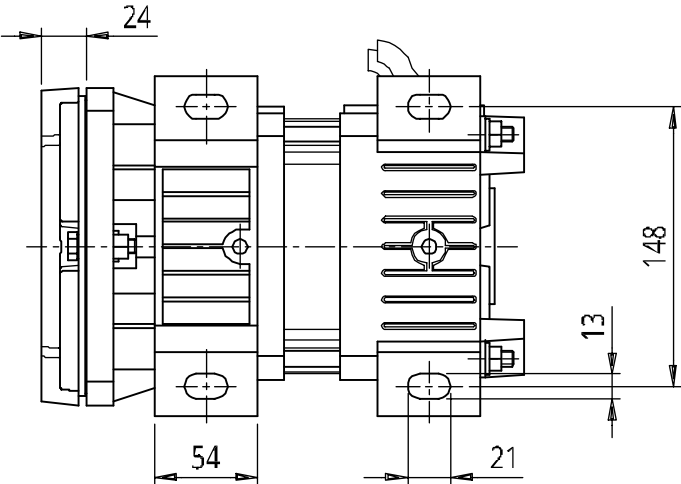
Suitable for Pump
Type SAEA - AC
Group 2



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

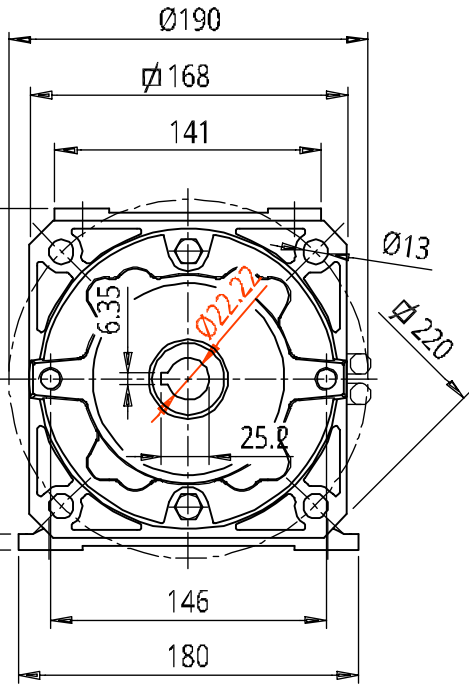
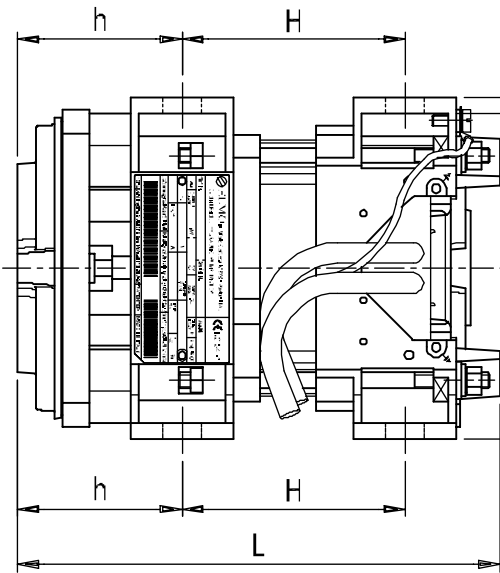
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339		203
5,5	6,6	6,6	354		218
6,6	7,5	7,5	374		238
7,5	9	9	399		263
-	-	11	424		288
-	-	13,2	424		288

4-POLE 3-PHASE 60 Hz Motors Type S3B4-U

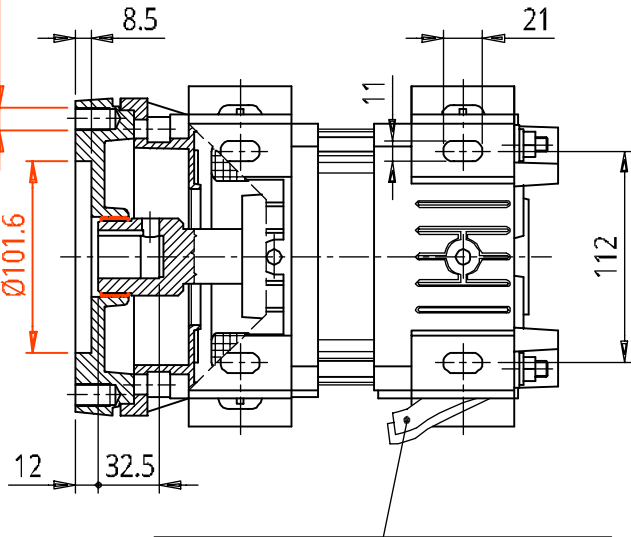


Shaft Ø 22,22 mm
Flange Ø 101,6

Suitable for Pump
Type SAEB - AC
Group 3



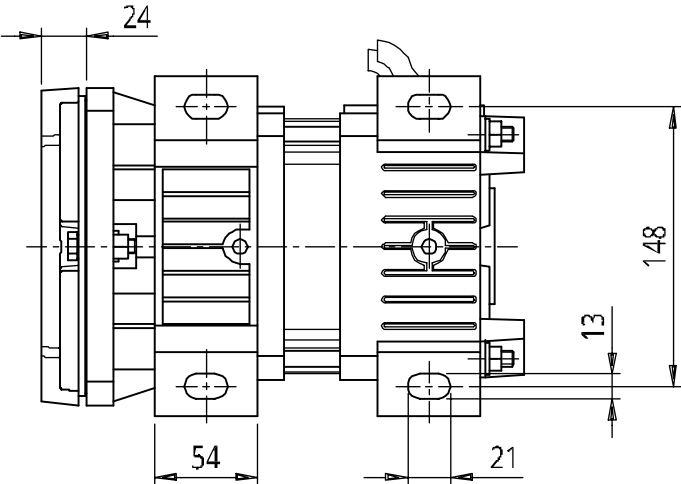
M12 depth 18 useful



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

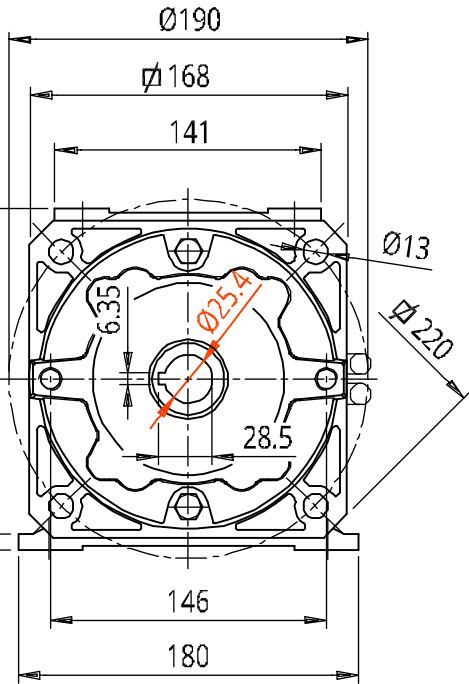
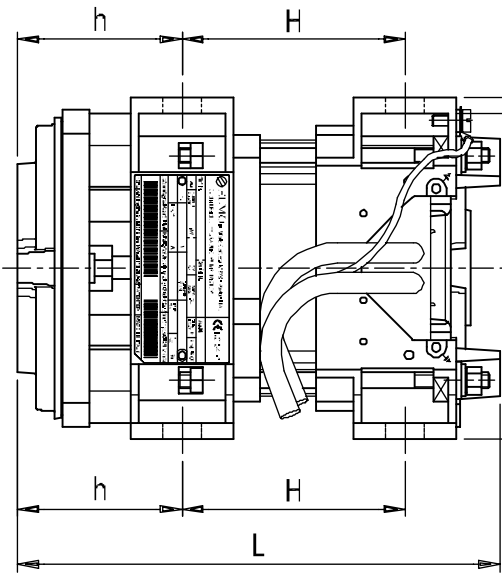
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
0,9	0,9	0,9	254	87	118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339	87	203
5,5	6,6	6,6	354		218
6,6	7,5	7,5	374		238
7,5	9	9	399		263
-	-	11	424		288
-	-	13,2	424		288

4-POLE 3-PHASE 60 Hz Motors Type S3C4-U

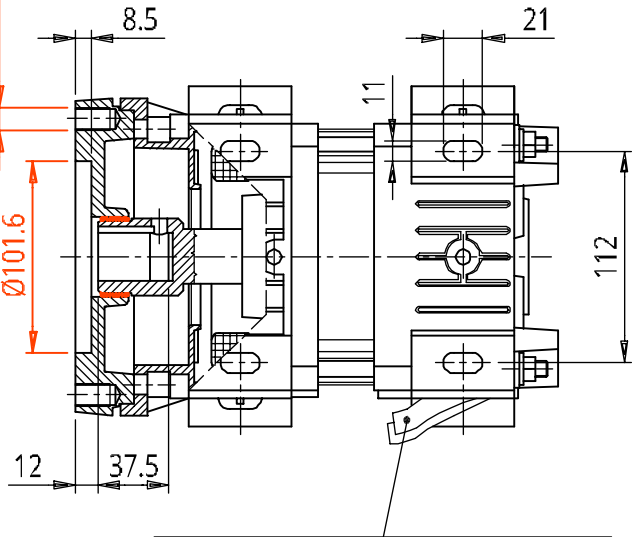


Shaft Ø 25,4 mm
Flange Ø 101,6

Suitable for Pump
Type SAEB - AC
Group 3



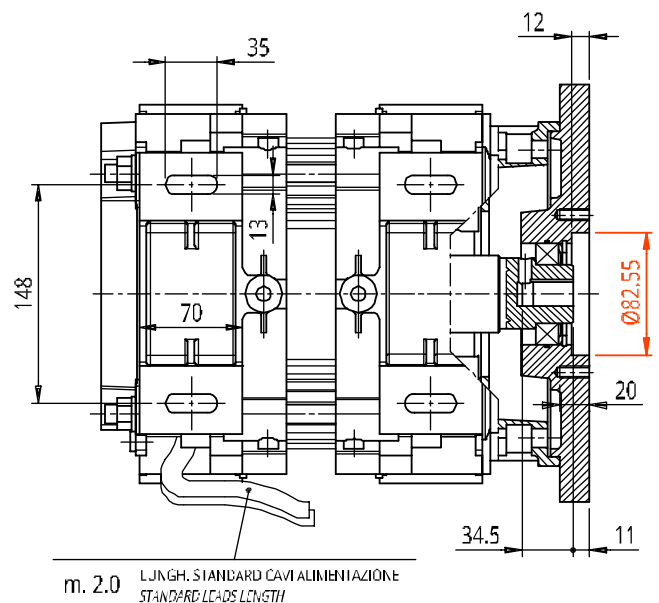
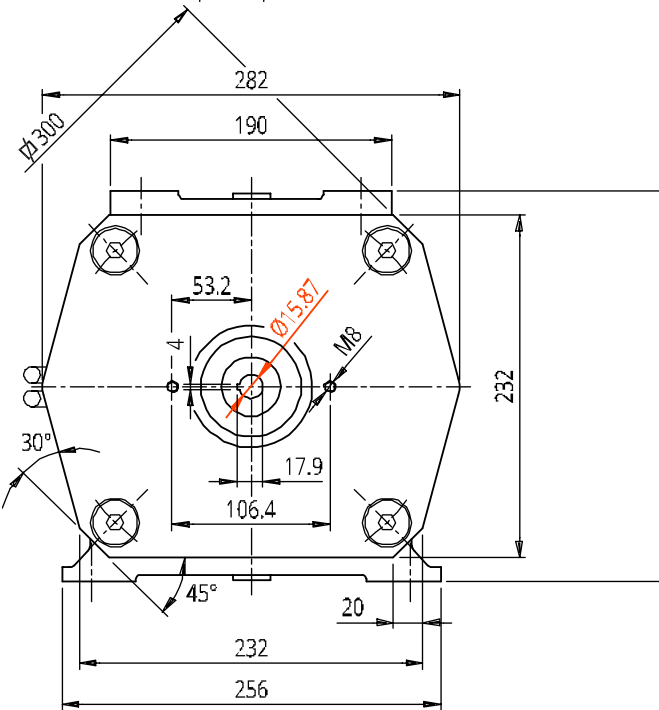
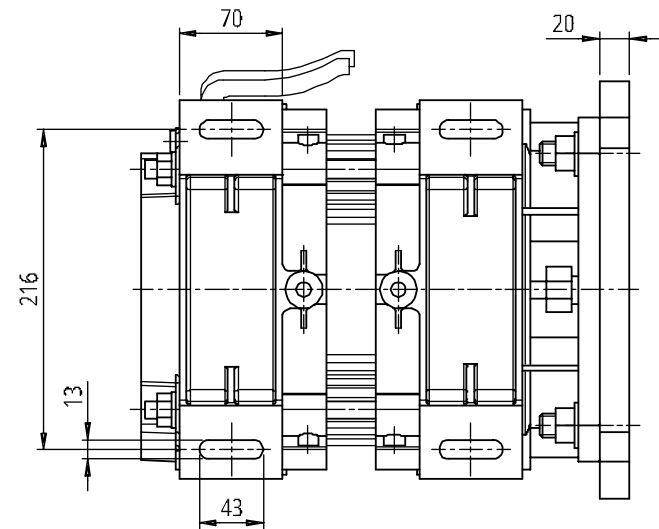
M12 depth 18 useful



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

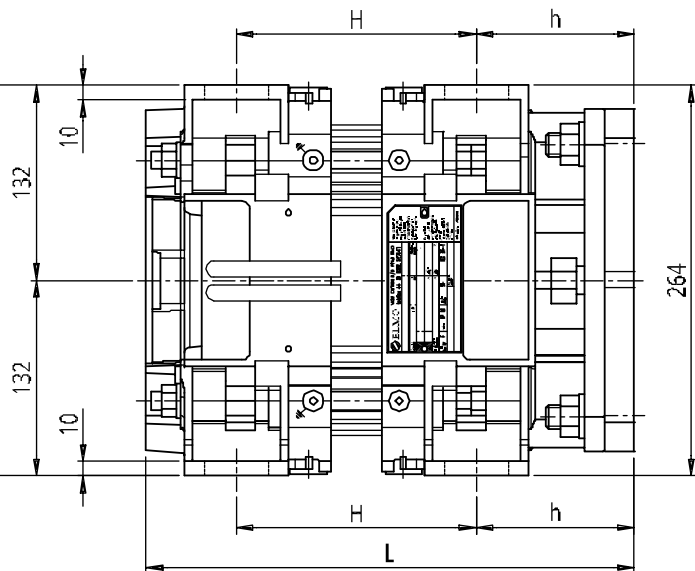
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW		87	
0,9	0,9	0,9	254		118
1,3	1,3	1,3	264		128
1,8	1,8	1,8	279		143
2,6	2,6	2,6	294		158
3,7	3,7	3,7	309		173
4,8	4,8	4,8	324		188
5,2	5,5	5,5	339		203
5,5	6,6	6,6	354		218
6,6	7,5	7,5	374		238
7,5	9	9	399		263
-	-	11	424		288
-	-	13,2	424		288

4-POLE 3-PHASE 60 Hz Motors Type S7A4-U



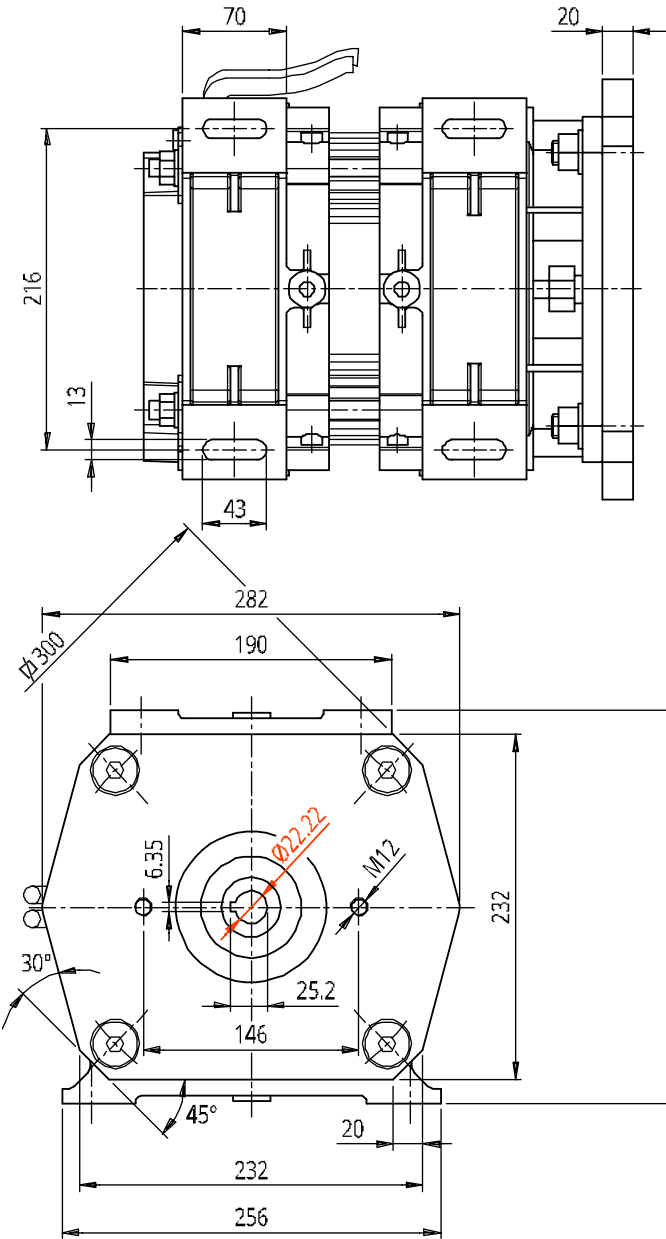
Shaft Ø 15,87 mm
Flange Ø 82,55 mm

Suitable for Pump
Type SAEA - AC
Group 2



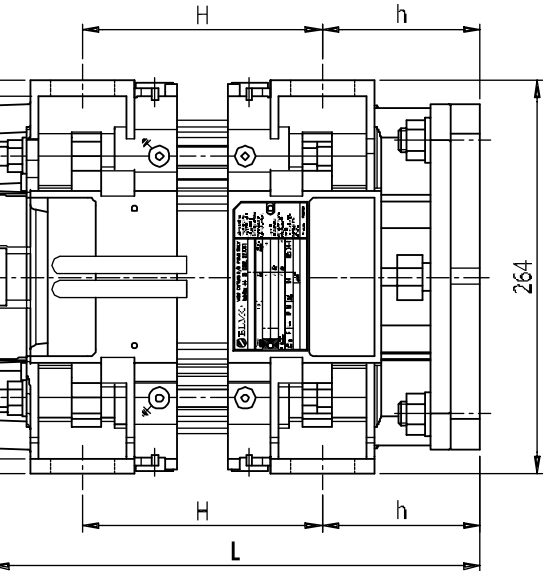
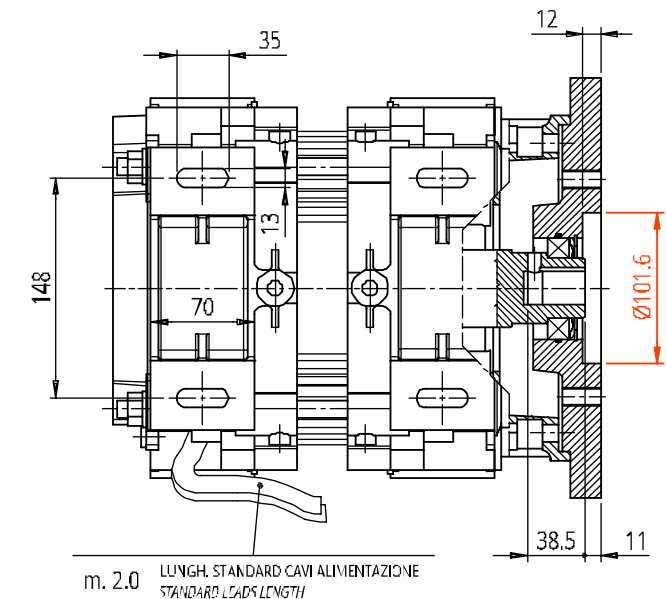
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
11	-	-	365	107	197
13,2	13,2	13,2	365		197
14	15	15	380		212
15	16,2	-	395		227
16,2	-	-	415		247

4-POLE 3-PHASE 60 Hz Motors Type S7B4-U



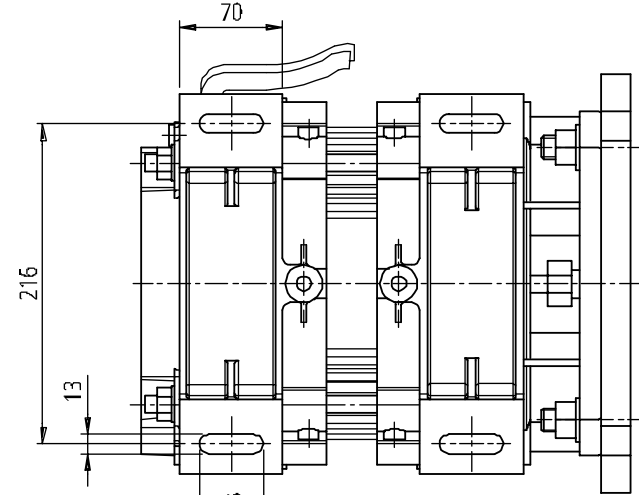
Shaft Ø 22,22 mm
Flange Ø 101,6 mm

Suitable for Pump
Type SAEB - AC
Group 3



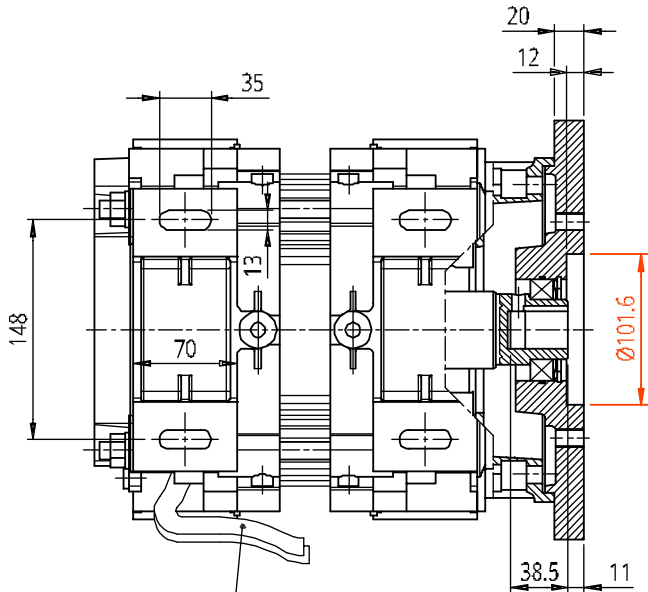
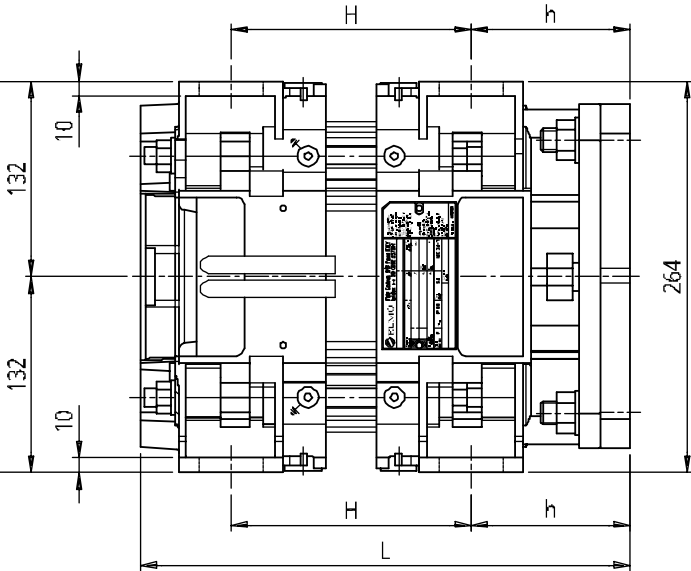
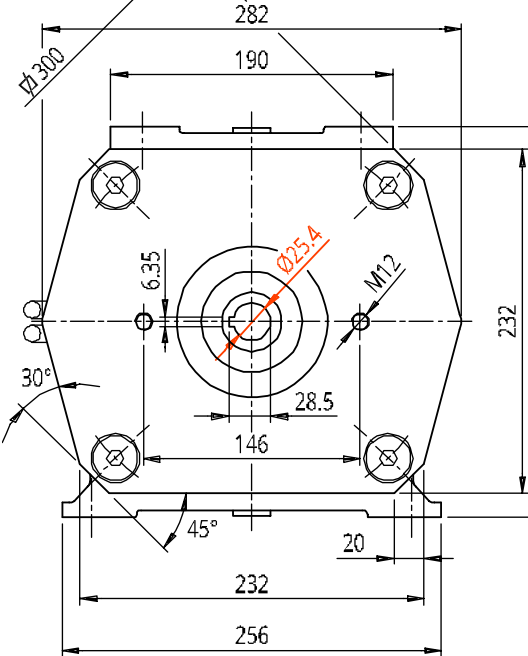
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
11	-	-	365	107	197
13,2	13,2	13,2	365		197
14	15	15	380		212
15	16,2	18,5	395		227
16,2	18,5	22	415		247
18,5	22	26	440		272
22	26	37	480		312
26	33	45	530		362
33	41	-	585		417
41	-	-	635		467

4-POLE 3-PHASE 60 Hz Motors Type S7C4-U



Shaft Ø 25,4 mm
Flange Ø 101,6 mm

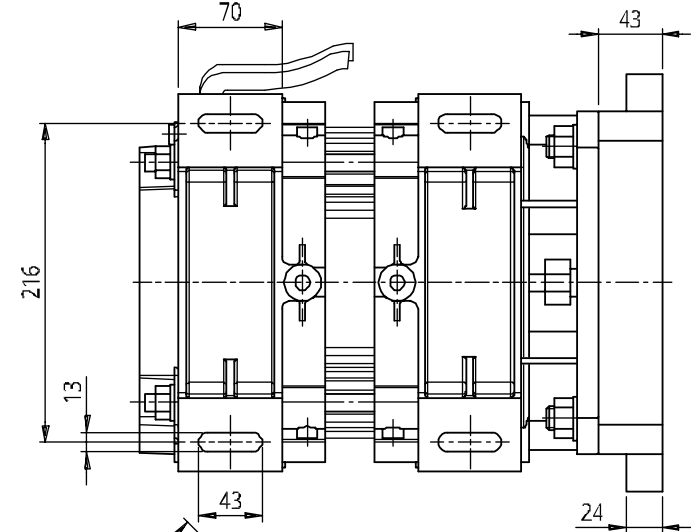
Suitable for Pump
Type SAEB - AC
Group 3



m. 2.0 LUNGH. STANDARD CAVIALI MONTAZIONE
STANDARD LEADS LENGTH

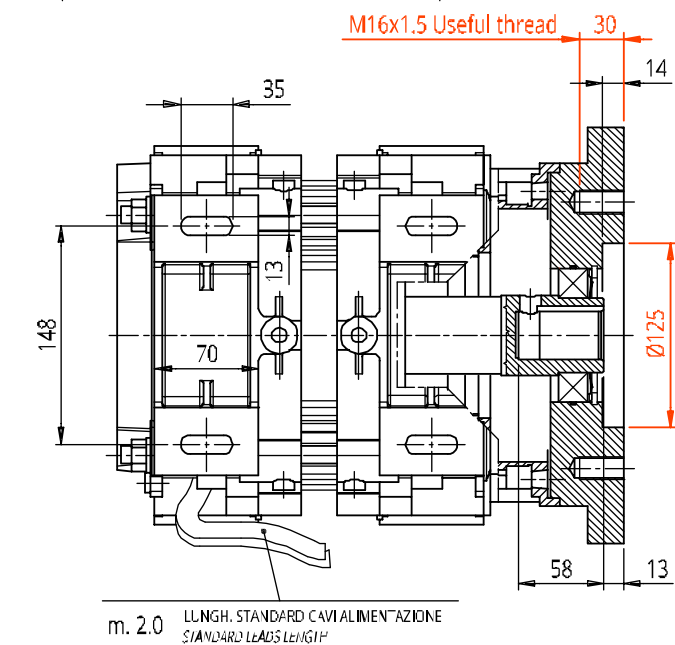
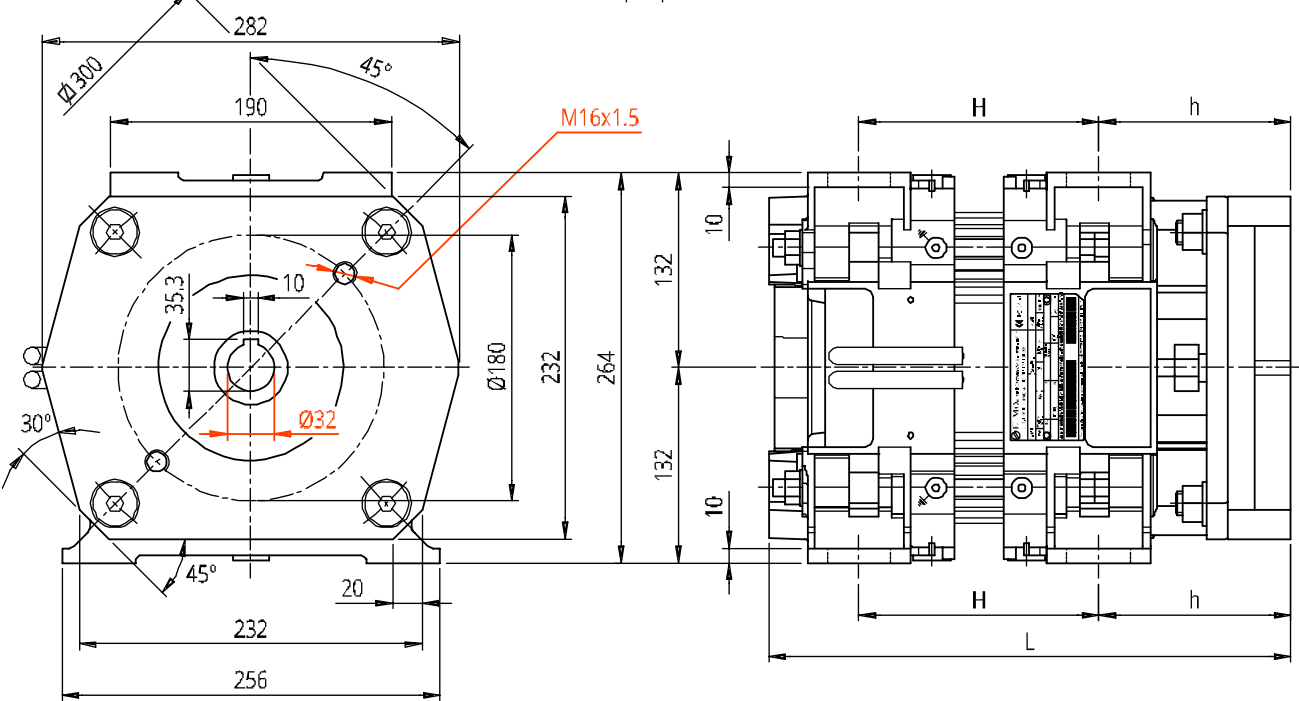
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
11	-	-	365	107	197
13,2	13,2	13,2	365		197
14	15	15	380		212
15	16,2	18,5	395		227
16,2	18,5	22	415		247
18,5	22	26	440		272
22	26	37	480		312
26	33	45	530		362
33	41	54	585		417
41	48	66	635		467

4-POLE 3-PHASE 60 Hz Motors Type S7E4-U



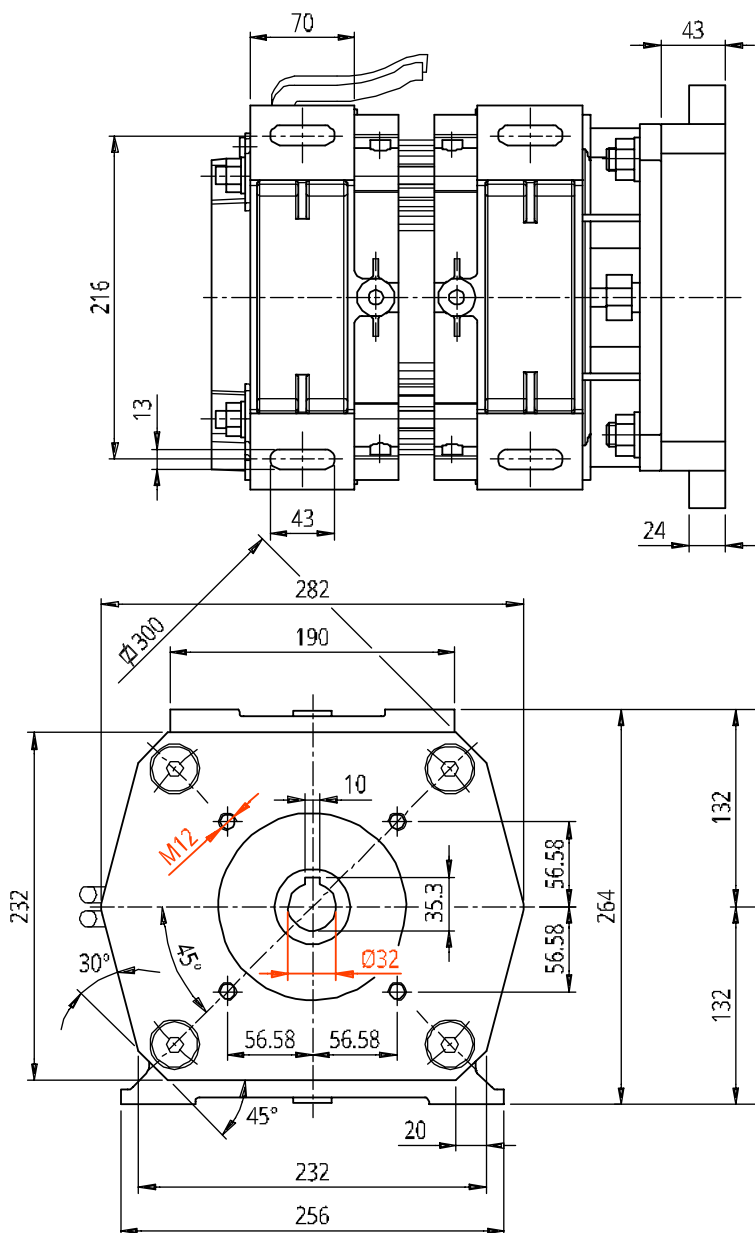
Shaft Ø 32 mm
Flange Ø 125 mm

Suitable for Bosch Rexroth Pump
Type A10VSO Size 71 Series 31



DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
11	-	-	388	130	197
13,2	13,2	13,2	388		197
14	15	15	403		212
15	16,2	18,5	418		227
16,2	18,5	22	438		247
18,5	22	26	463		272
22	26	37	503		312
26	33	45	553		362
33	41	54	608		417
41	48	66	658		467

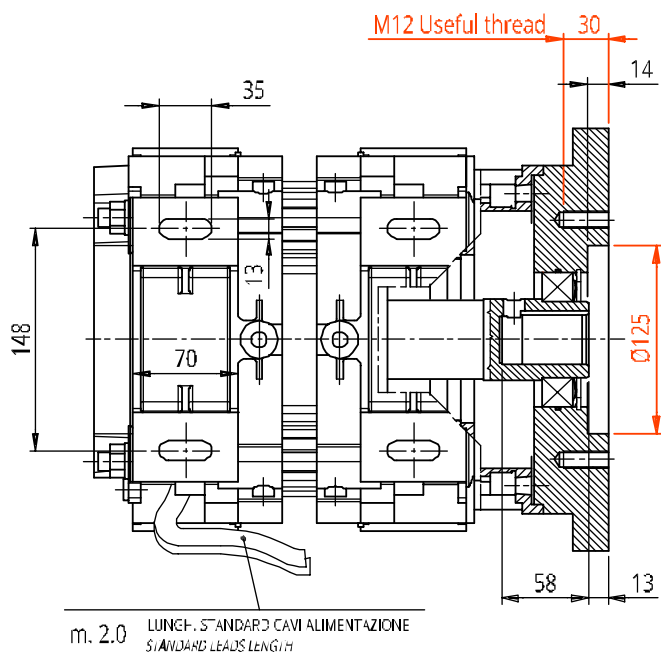
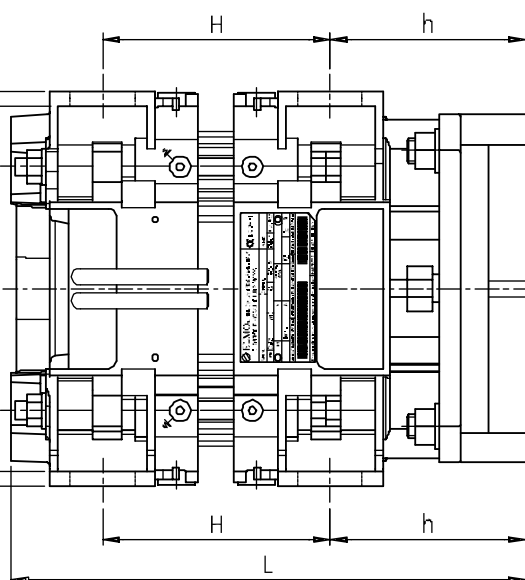
4-POLE 3-PHASE 60 Hz Motors Type S7F4-U



Shaft Ø 32 mm
Flange Ø 125 mm

Suitable for:
Moog Pump Type RKP-II Size 32/45
Parker Pump Series PV046 Metric Version

Eaton Pump Series PVM131/141
ISO 3019/2 metric Version
Flange (4 bolt) Code = H
Shaft Code =18



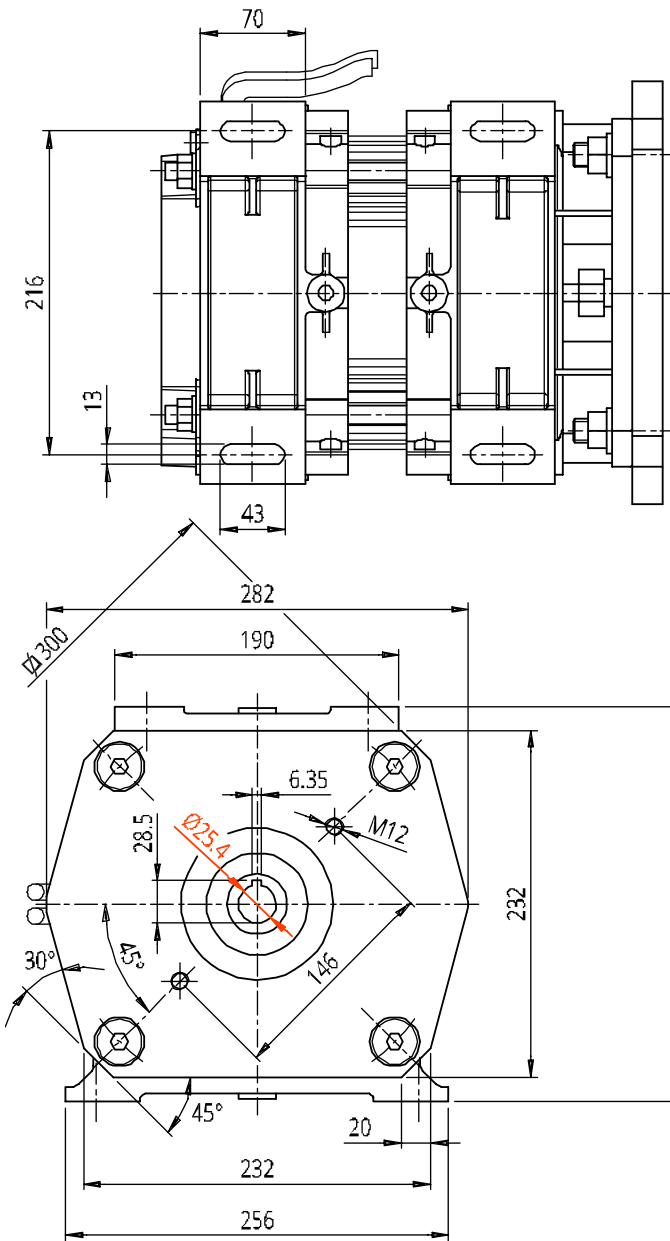
M12 Useful thread 30

DUTY TYPE

S1	S2 60min	S2 30min	DIMENSIONI DIMENSIONS		
kW	kW	kW	L	h	H
11	-	-	388	130	197
13,2	13,2	13,2	388		197
14	15	15	403		212
15	16,2	18,5	418		227
16,2	18,5	22	438		247
18,5	22	26	463		272
22	26	37	503		312
26	33	45	553		362
33	41	54	608		417
41	48	66	658		467

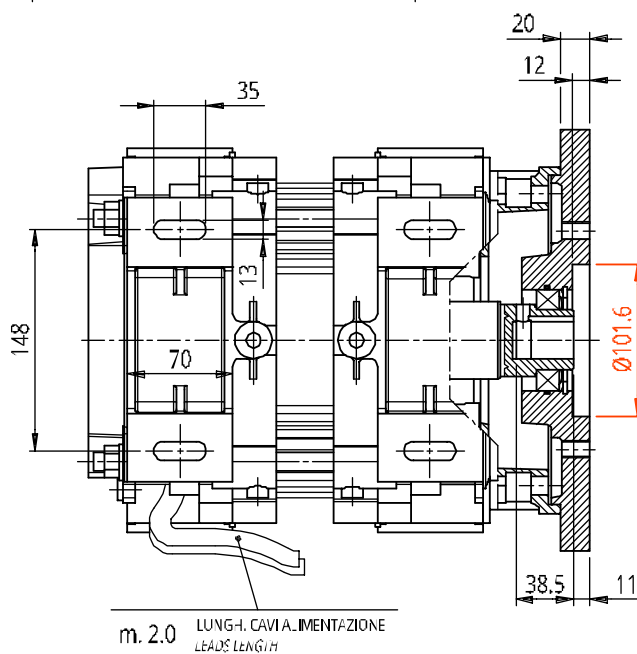
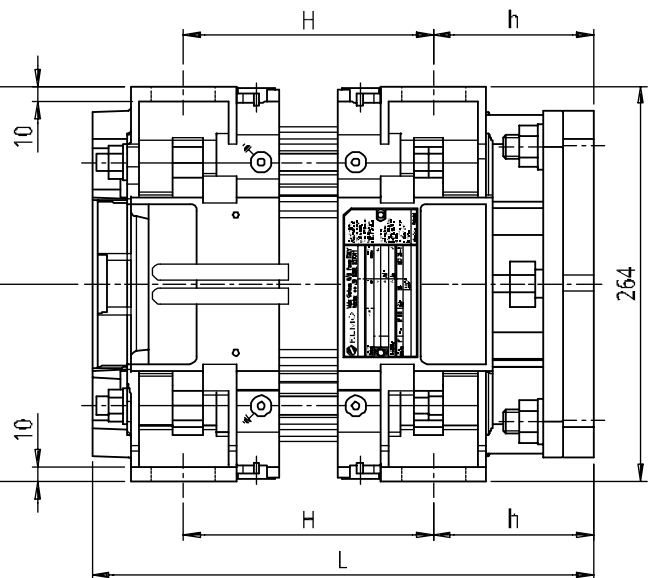
m. 2.0 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

4-POLE 3-PHASE 60 Hz Motors Type S7G4-U



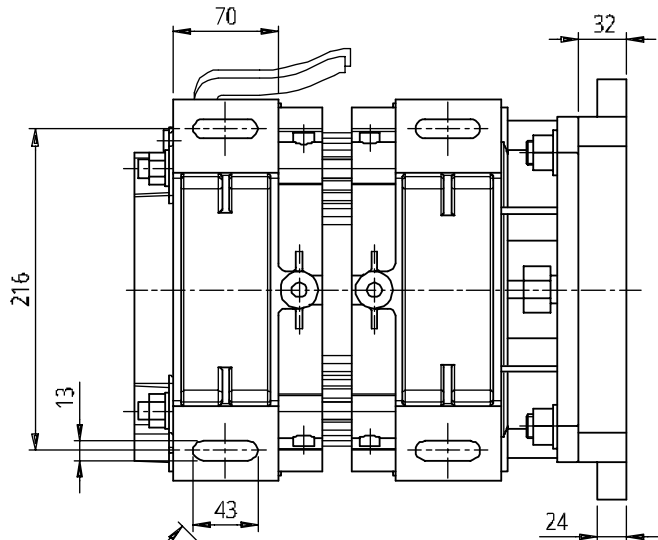
Shaft Ø 25,4 mm
Flange Ø 101,6 mm

Suitable for Bosch Rexroth Pump
Type A10SO Size 45 Series 31



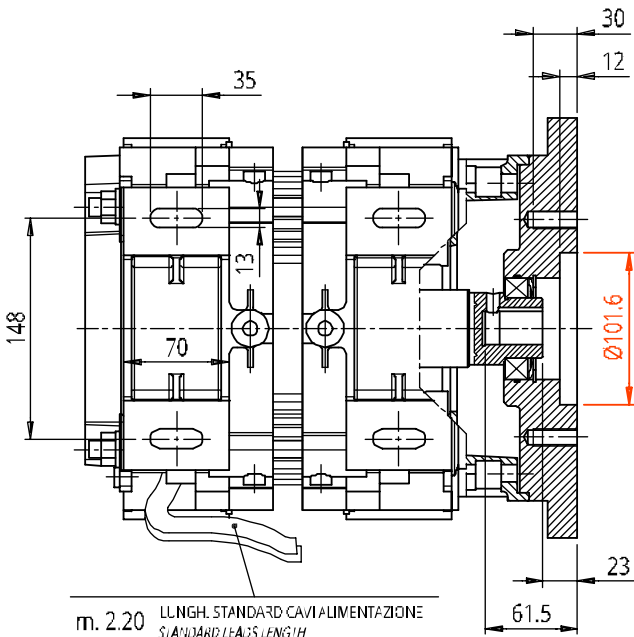
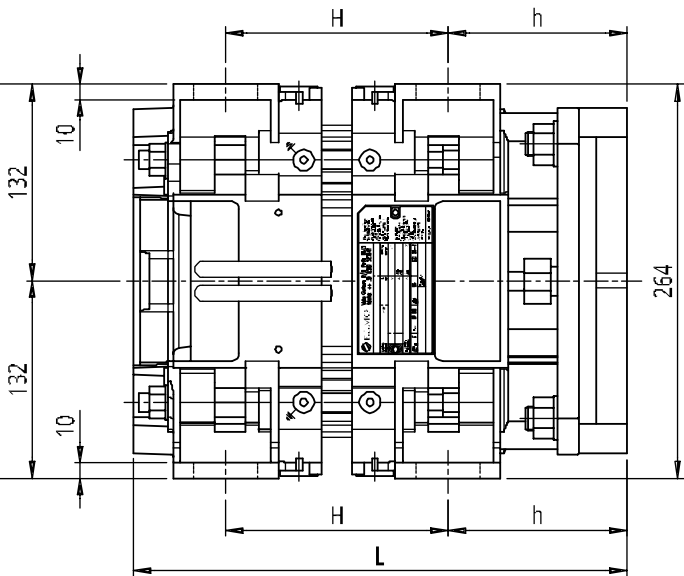
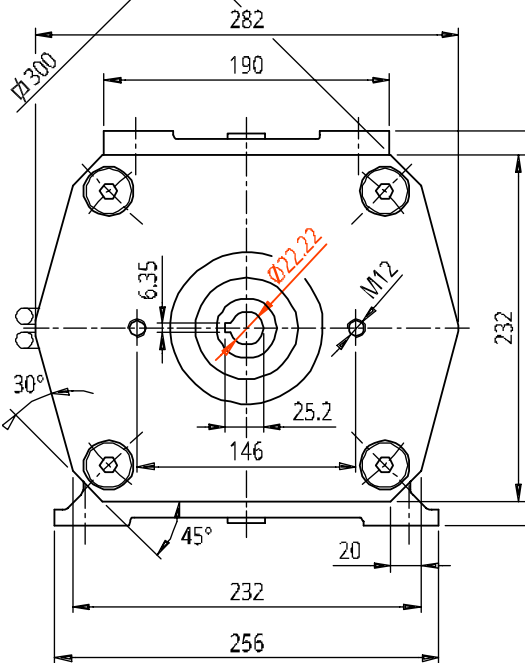
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
11	-	-	365	107	197
13,2	13,2	13,2	365		197
14	15	15	380		212
15	16,2	18,5	395		227
16,2	18,5	22	415		247
18,5	22	26	440		272
22	26	37	480		312
26	33	45	530		362
33	41	54	585		417
41	48	66	635		467

4-POLE 3-PHASE 60 Hz Motors Type S7L4-U



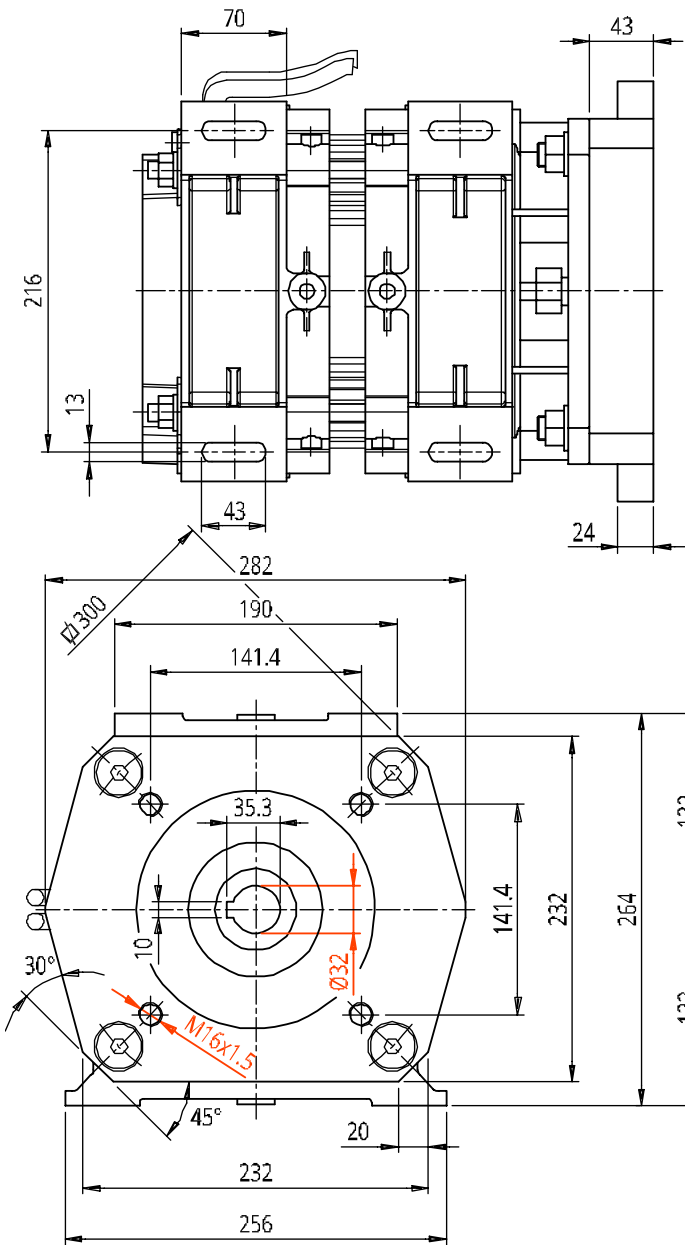
Shaft Ø 22,22 mm
Flange Ø 101,6 mm

Suitable for Daikin Pump
Model V38A3RX-95



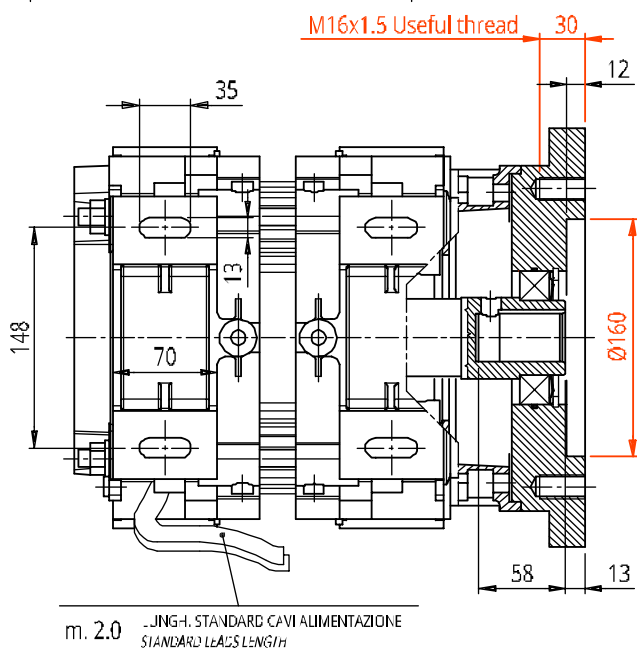
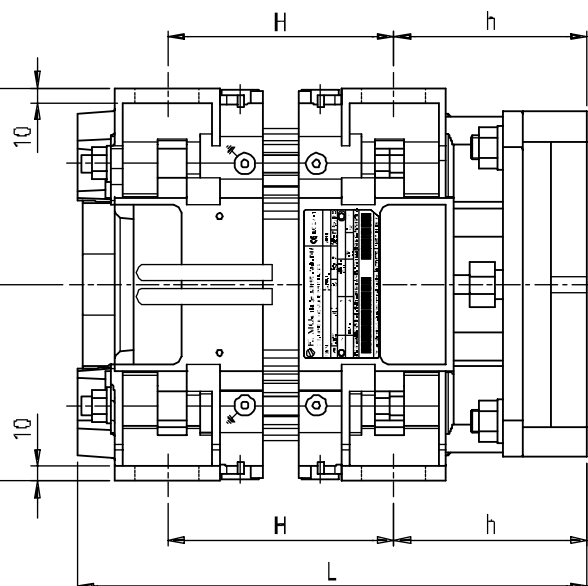
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
11	-	-	377	119	197
13,2	13,2	13,2	377		197
14	15	15	392		212
15	16,2	18,5	407		227
16,2	18,5	22	427		247
18,5	22	26	452		272
22	26	37	492		312
26	33	45	542		362
33	41	-	597		417
41	-	-	617		467

4-POLE 3-PHASE 60 Hz Motors Type S7R4-U



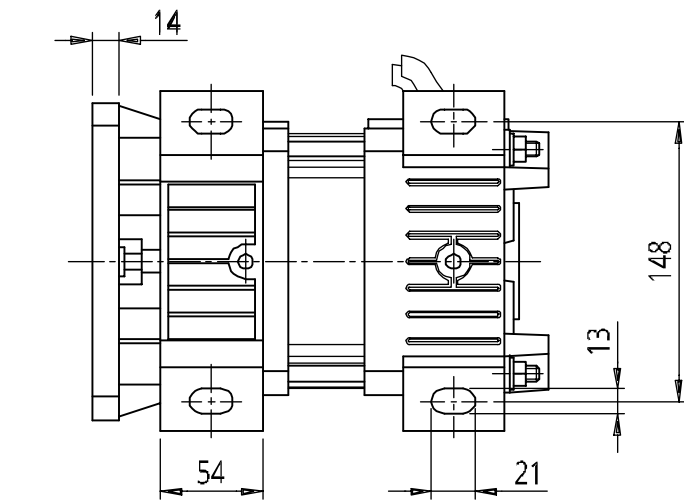
Shaft Ø 32 mm
Flange Ø 160 mm

Suitable for Bosch Rexroth Pump
Type A10VSO Size 71 Series 32



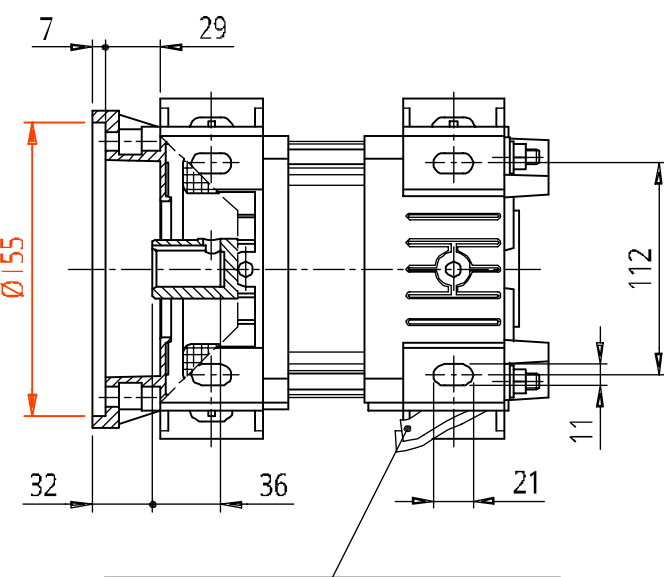
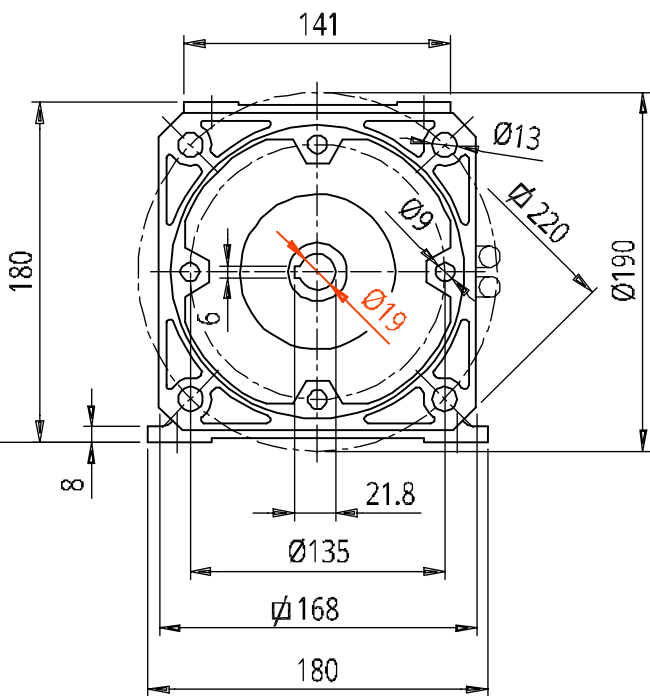
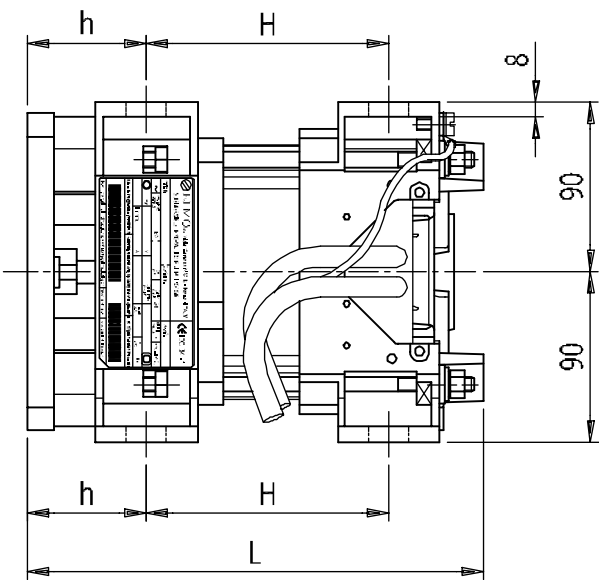
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
11	-	-	388	130	197
13,2	13,2	13,2	388		197
14	15	15	403		212
15	16,2	18,5	418		227
16,2	18,5	22	438		247
18,5	22	26	463		272
22	26	37	503		312
26	33	45	553		362
33	41	54	608		417
41	48	66	658		467

4-POLE 3-PHASE 60 Hz Motors Type S34



Shaft Ø 19 mm
Flange Ø 155 mm

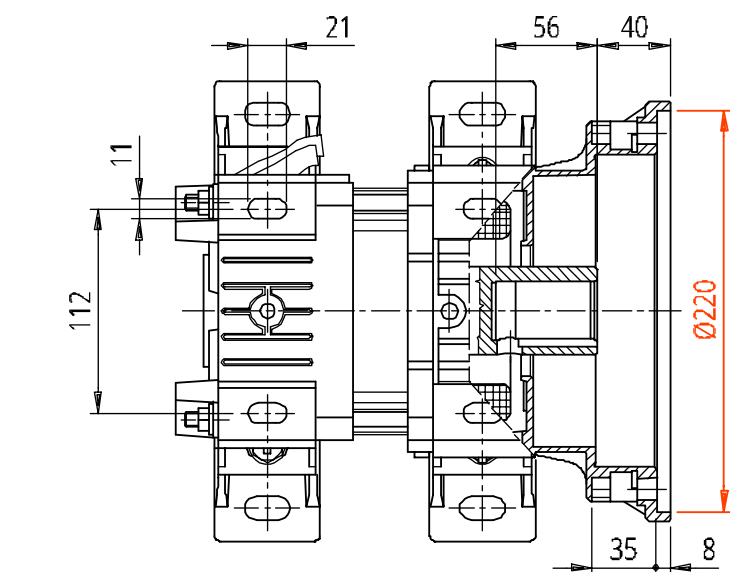
Suitable for
Screw Pump



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

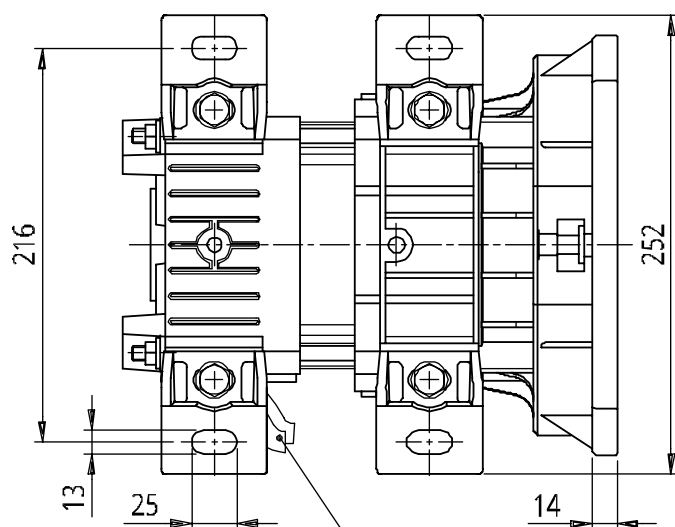
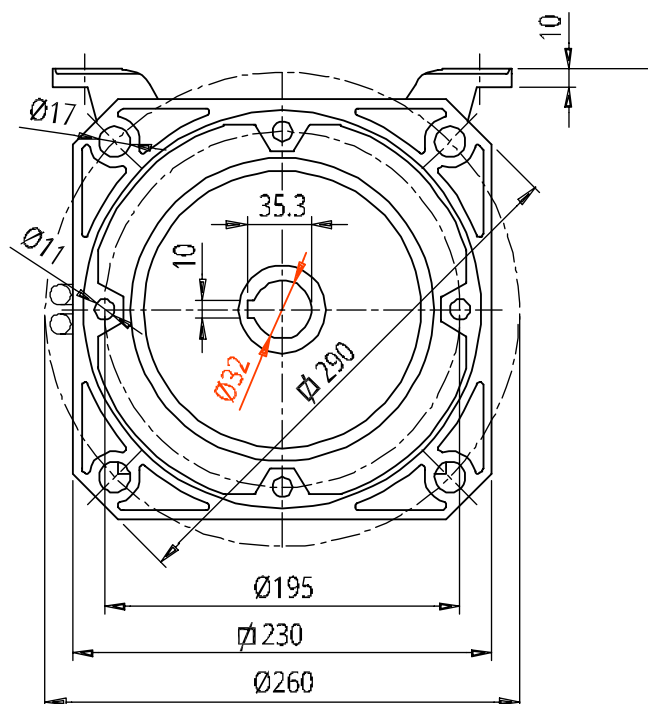
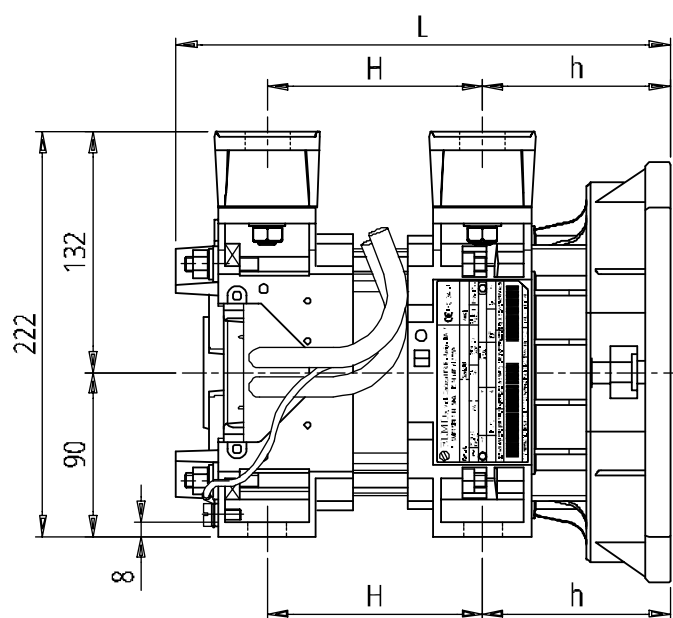
DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
0,9	0,9	0,9	230	63	118
1,3	1,3	1,3	240		128
1,8	1,8	1,8	255		143
2,6	2,6	2,6	270		158
3,7	3,7	3,7	285		173
4,8	4,8	4,8	300		188
5,2	5,5	5,5	315		203
5,5	6,6	6,6	330		218
6,6	7,5	7,5	350		238
7,5	9	9	375		263
9	11	11	400		288
-	-	13,2	400		288

4-POLE 3-PHASE 60 Hz Motors Type S36 with feet added



Shaft $\varnothing 32$ mm
Flange $\varnothing 220$ mm

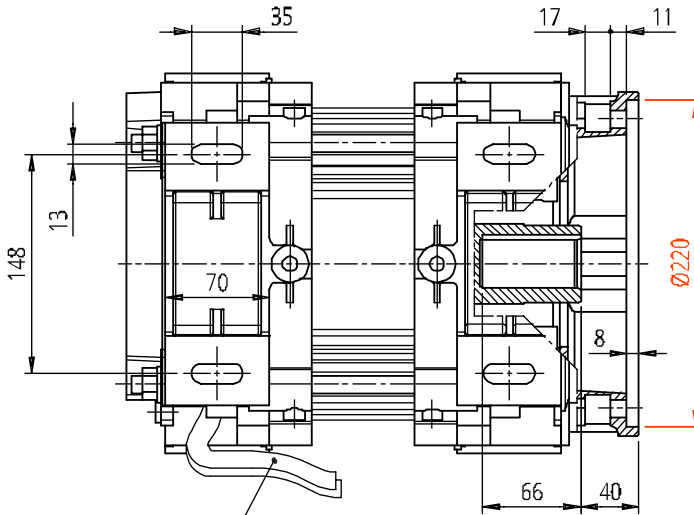
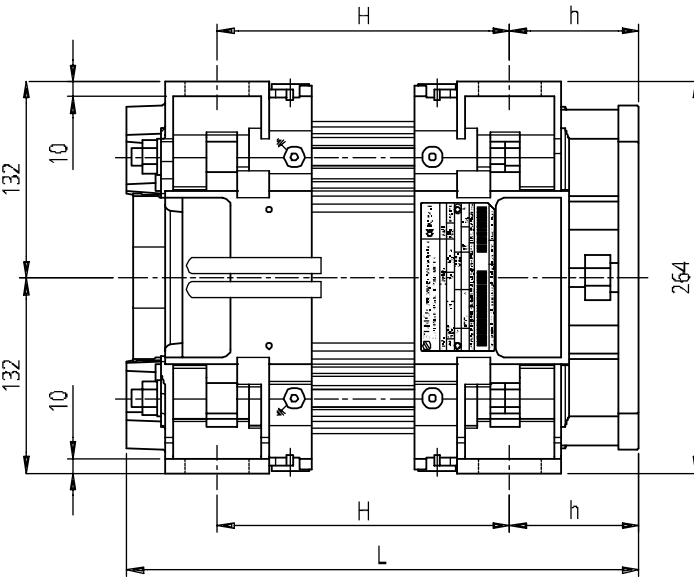
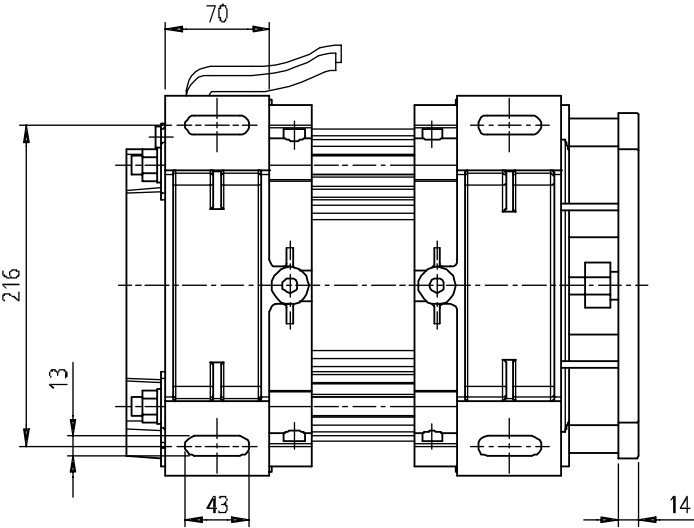
Suitable for
Screw Pump



m.1.40 LUNGH. STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min			
kW	kW	kW	L	h	H
4,4	4,8	4,8	340	105	188
5,2	5,5	5,5	355		203
5,5	6,6	6,6	370		218
6,6	7,5	7,5	390		238
7,5	9	9	415		263
9	11	11	440		288
-	-	13,2	440		288

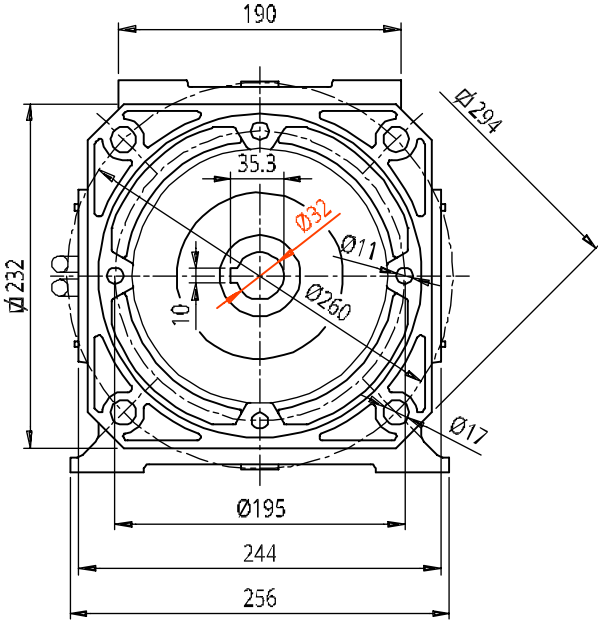
4-POLE 3-PHASE 60 Hz Motors Type S76



m. 1.40
LUNGHEZZA STANDARD CAVI ALIMENTAZIONE
STANDARD LEADS LENGTH

Shaft Ø 32 mm
Flange Ø 220 mm

Suitable for
Screw Pump



DUTY TYPE			DIMENSIONI DIMENSIONS		
S1	S2 60min	S2 30min	L	h	H
kW	kW	kW			
11	-	-	345	87	197
13,2	13,2	13,2	345		197
14	15	15	360		212
15	16,2	18,5	375		227
16,2	18,5	22	395		247
18,5	22	26	420		272
22	26	37	460		312
26	33	45	510		362
33	41	54	565		417
41	48	66	615		467



Italia

CERTIFICATO

Nr. 50 100 6620 - Rev.004

Si attesta che / This is to certify that

IL SISTEMA QUALITÀ DI
THE QUALITY SYSTEM OF



ELMO S.R.L.

SEDE LEGALE E OPERATIVA:
REGISTERED OFFICE AND OPERATIONAL SITE:

**VIALE CERTOSA 8/B
IT - 27100 PAVIA (PV)**

È CONFORME AI REQUISITI DELLA NORMA
HAS BEEN FOUND TO COMPLY WITH THE REQUIREMENTS OF

UNI EN ISO 9001:2015

QUESTO CERTIFICATO È VALIDO PER IL SEGUENTE CAMPO DI APPLICAZIONE
THIS CERTIFICATE IS VALID FOR THE FOLLOWING SCOPE

Progettazione, produzione, commercializzazione di motori elettrici monofase, trifase ed a frequenza variabile, accessori per impianti di sollevamento idraulici e per impianti industriali (IAF 18, 19)

Design, production, sale of single, three phases and variable frequency electrical motors and accessories for hydraulic lifting systems and for industrial applications (IAF 18, 19)



SGQ N° 049A

Membro degli Accordi di Riconoscimento
EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual
Recognition Agreements

Per l'Organismo di Certificazione
For the Certification Body
TÜV Italia S.r.l.

Validità / Validity

Dal / From: **2018-03-09**

Al / To: **2019-03-11**

Andrea Coscia
Andrea Coscia
Direttore Divisione Business Assurance

Data emissione / Printing Date

2018-03-09

PRIMA CERTIFICAZIONE / FIRST CERTIFICATION: 2007-03-27

"LA VALIDITÀ DEL PRESENTE CERTIFICATO È SUBORDINATA A SORVEGLIANZA PERIODICA A 12 MESI E AL RIEAME COMPLETO DEL SISTEMA DI GESTIONE AZIENDALE CON PERIODICITÀ TRIENNALE"

"THE VALIDITY OF THE PRESENT CERTIFICATE DEPENDS ON THE ANNUAL SURVEILLANCE EVERY 12 MONTHS AND ON THE COMPLETE REVIEW OF COMPANY MANAGEMENT SYSTEM AFTER THREE YEARS"



Viale Certosa 8/b
27100 Pavia (PV) – ITALY

(+39) 0382.422372
(+39) 0382.529564

info@elmoitaly.com

www.elmoitaly.com

