Totally Focused. Totally Independent.

Technical Specification

ECP3 2

DDS
Dynamic Data Support

The world's largest independent producer of alternators 1 – 5,000kVA

Rev. 0

Standards

Alternators are designed and produced within an ISO 9001 environment. The entire series is manufactured according to, and complies with, the most common specifications such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, NF 51.111, NEMA MG 1-2011, ISO 8528-3. They also comply with other specific standards such as UL1446, UL 1004/4 and /B and CAN/CSA-C22.2 No14-95-No100-95.

Windings and Performances

All windings are 2/3rds pitch to eliminate triplen harmonics within the voltage waveform and to avoid excessive neutral currents in certain parallel operating conditions. A fully interconnected aluminium or copper damper cage is supplied on the rotor of all models (excluding the ECP3 series).

- 12 wire reconnectable:
  50Hz – 380V to 440V and 220/110V to 240/120V (de-rates may apply at certain voltages)
  60Hz – 380V to 480V and 220/110V to 240/120V (de-rates may apply at certain voltages)

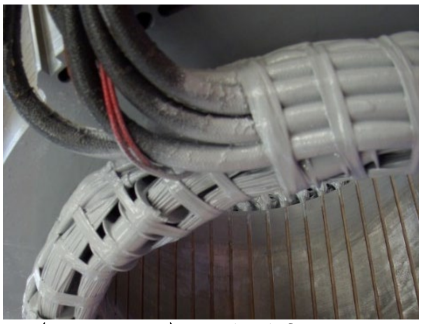
- 6 wire reconnectable:
  50Hz – 380V to 440V and 220V to 240V (de-rates may apply at certain voltages)
  60Hz – 380V to 480V and 220V to 240V (de-rates may apply at certain voltages)

Winding Configurations	Standard		Special (dedicated)			
	12 wire Reconnectable	6 wire Reconnectable	380V and 600V 60Hz	690V 50/60Hz	220-240V 1ph 50Hz	220-240V 1ph 60Hz
ECP3 to ECO38	Std	Option	Option	Option	Option	Option
ECO40 to ECO46	Std	Option	Option	Option	Option (to ECO40)	
ECO47	Std 4 wires		Option	Option		
Insulation materials	Class H	Class H	Class H	Class H	Class H	Class H
High efficiency	Std	Std	Std	Std	Std	Std
High motor starting	>300%	>300%	>300%	>300%	>300%	>300%
THD (Total Harmonic Distortion)	Typically <3.5% full load L-L	Typically <3.0% full load L-L	Typically <3.5% full load L-L	Typically <3.5% full load L-L	Typically <4.5% full load L-N	Typically <4.5% full load L-N
Interference suppression	VDE 0875 G/N/K, EN61000-6-3, EN61000-6-2, others available on request					

Winding Protection

There are various degrees of protection for the windings following the standard impregnation process, as can be seen here. The TOTAL+ butadienic black flexible coating is recommended for arduous applications.

Winding Protection:	STANDARD	STANDARD+	GREY	GREY+	TOTAL+
ECP3	Std	Option	Option	Option	Option
ECP28 and ECP32	-	Std	Option	Option	Option
NPE, ECP34 to ECO47	-	-	Std	Option	Option



Grey treatment (marinization) on the left, TOTAL+ treatment shown on the right. The EG43 grey varnish, is an high temperature insulating enamel that forms a tough and flexible film, with excellent moisture and chemical protection. It is water and oil proof, and also protects windings from abrasion. It is applied spraying an over coating layer over the impregnated winding, or dipping the stator in a varnish barrel for superior treatments.

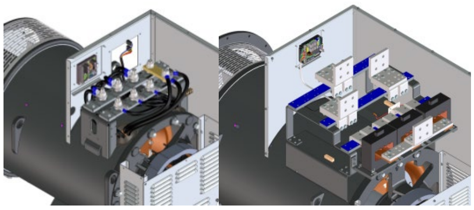
The TOTAL+ is a Mecc Alte protection system. It is the ultimate winding treatment that offers truly superior performances when the environment is really harsh, or the application very demanding. The TOTAL+ is also extremely resistant to the particle abrasion as it adsorbs the impacts.

Design

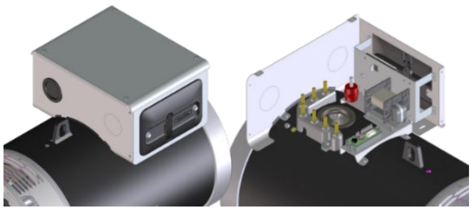
The robust mechanical structure withstands up to 5G in any direction and 9G vertically and its design permits easy access to the connections and components during routine maintenance check-ups. The mechanical design has used the most advanced FEM analisys. The materials used are: DD12 steel for the frame, C45 steel for the shaft and cast iron or aluminum pressure die cast for the end-brackets: fans are either aluminum die casted or nylon fiber glass loaded, UL compliant materials. Rotors are dynamically balanced according grades 6.3 (up to series 32) or 2.5 (from series 34 onwards) of ISO 1940-1.

Terminals and Terminal Box

Easy access to regulators is assured through a pull out drawer or a drop down panel to allow safer adjustment. Large terminal boxes allow easy access of power cables, in the ECO43 and ECO46 higher power ranges the terminal allow the convenient choice of power cable or busbar connection with versatility of entry and connection. Current transformers are available as an option on series ECO 40, 43, 46 and 47 with single or dual output.



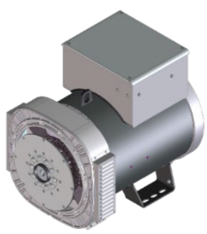
On C type family has been installed a new AVR panel. Terminal boards have been redesigned into a special L configuration, specifically to ease customer wiring; with this kind of terminal board it is posible to place a second terminal board in order to get 12 available terminals. Current transformers are available as an option on series ECO38 with single or dual output.



Ingress Protection

In addition to the protection on the windings themselves, alternators can increase the protection on the inlet side. Standard level is IP23 but the following solutions are also available: IP23 DP with inlet filters, IP23 with only terminal box in IP45, IP43 and IP45. Derates may be applied.

Info: https://www.meccalte.com/downloads/MA0605_Bulletin_IP.pdf



Excitation and Regulation Systems

All ECP/ECO series have MAUX auxiliary winding to power the digital regulator. Both DSR and the DER1 are available to connect to PC through the DxR2 USB interface and DxR TERMINAL software to interrogate/download alarms & settings for analysis or for cloning other regulators. DER2 has got an integrated USB connection and can be connected to the PC without any optional connection boards. More settings such as LAMS, digital RAM based synchronous external control and soft start are obtainable through the DxR connection. Simple analogue potentiometers are available for the more usual adjustments.

Excitation Systems	DSR	DER1	DER2
ECP3 to ECO38	Std	Option	Option
ECO40 to ECO46	-	Std	Option
ECO47	-	-	Std
Parallel Operation	√	√	√
Mains Parallel	√	√	√
3 Phase Sensing (rms)	-	√	√
Accuracy	+/-1%	+/-0.5%	+/-0.5%
Remote Voltage Control	√	√	√
Alarm Log	√	√	√
Analogue and Digital Configurable	√	√	√
LAMS (Load Acceptance V/f)	√	√	√
APO (Active Protection Output)	√	√	√
Soft Start	√	√	√
High dynamic response	-	-	√
USB connection without external boards	-	-	√

For a given motor start duty a smaller generator may be selected – as it has lower subtransient reactance values for non-linear loads. The whole range from 6.5 to 3400kVA is capable of >300% sustained short circuit current for up to 20 seconds.

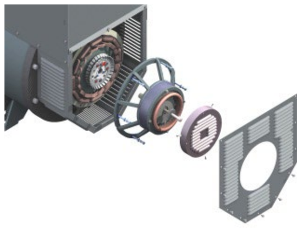
Optional PMG

The Mecc Alte PMG is available on ECP28, ECP30, ECP32, ECP34 and ECO38 as factory-fitted option; alternatively, only the predisposition for the retrofit, for subsequent assembly, is available on option.

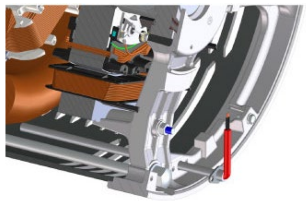
On ECO 40, 43 and 46 series it is available as a factory-fitted or retro-fitted options.

For ECO47 PMG is standard.

The complete AVR range is fully compatible with both MAUX and PMG systems, this minimises spare part management and flexibility of stock as one AVR suits all applications. The PMG is delivering the same amount of kVA available with the MAUX.



Dew Heater



Our entire range can be equipped with anti-condensation resistors of adequate power and sized for the alternator. Voltage for heaters must be specified when ordering. New cylindrical cartridge style heaters are available on request and it can be retrofitted.

Accessories

Additional optionals can be fit on our alternator series, such as PTC thermistors or PT100 both on windings and bearings, dew heaters, high and low profile of terminal boxes (on most series), parallel devices, current and voltage transformers, air filters, IP43 and IP45 protections and many others.
For more info visit: https://www.meccalte.com/en/products/alternators/accessories/c-type-accessories

Deration coefficients

	Ambient temperature (Celsius)							
Altitude (meters)	25	40	45	50	55	60	65	70
≤ 1000	1.07	1	0.96	0.93	0.91	0.89	0.85	0.82
> 1000 ≤ 1500	1.01	0.96	0.92	0.89	0.87	0.84	0.81	0.77
> 1500 ≤ 2000	0.96	0.91	0.87	0.84	0.83	0.79	0.77	0.73
> 2000 ≤ 3000	0.90	0.85	0.81	0.78	0.76	0.73	0.71	0.68
> 3000 ≤ 4000	0.84	0.78	0.75	0.73	0.70	0.68	0.66	0.62
> 4000 ≤ 5000	0.78	0.72	0.69	0.67	0.65	0.62	0.59	0.56
> 5000 ≤ 6000	0.70	0.65	0.63	0.61	0.58	0.55	0.53	0.50

Notes on short circuit curves

The indicated coefficients have to be used to correct the three phase short circuit curves values as a function of the rated voltage.

50 Hz		*60 Hz*	
Voltage	*Factor*	*Voltage*	*Factor*
380	0.93X	415	0.85X
400	1X	440	0.90X
415	1.04X	460	0.95X
440	1.10X	480	1X

The indicated coefficient have to be used to correct the three phase short circuit curves values as a function of the type of short circuit voltage.

	3 phase	*2 phase L-L*	*1 phase L-N*
Istantaneous	1X	0.87X	1.30X
Minimum	1X	1.80X	3.20X
Sustained	1X	1.50X	2.50X
Max Duration	20 sec.	10 sec.	4 sec.

All the curves are shown for series or parallel star connection at 400V 50 Hz or 480V 60 Hz. If the unit is reconnected from series to parallel star, the additional coefficient is 2X. From series star to series delta, it is 1.72X. From series star to parallel delta, it is 3.44X.

ECP3 2

General characteristics

Pole number	2	Insulation class	H
Phase number	3	Protection class	IP23
Number of wires	12	NDE Bearing type	6305-2RS
Execution	Brushless	DE Bearing type	6308-2RS
Regulator type	DSR	Maximum Overspeed	4500
Winding pitch	2/3	Altitude	0-1000
Code voltage reference	T040553	Balancing	ISO1940-1

Ratings 50Hz

kVA / kW @ Temp. Rise / Ambient °C - 0.8 PF																					
		STANDBY-163/27				STANDBY-150/40				H-125/40				F-105/40				B-80/40			
Series Star Y		380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V
Parallel Star YY		190V	200V	208V	220V	190V	200V	208V	220V	190V	200V	208V	220V	190V	200V	208V	220V	190V	200V	208V	220V
Series Delta Δ		220V	230V	240V	254V	220V	230V	240V	254V	220V	230V	240V	254V	220V	230V	240V	254V	220V	230V	240V	254V
Parallel Delta ΔΔ		110V	115V	120V	127V	110V	115V	120V	127V	110V	115V	120V	127V	110V	115V	120V	127V	110V	115V	120V	127V
ECP3 1S2	**kVA**	8,6	**8,6**	8,6	7,3	8,3	**8,3**	8,3	7	8	**8**	8	6,8	7,2	**7,2**	7,2	6	6,4	**6,4**	6,4	5,4
	kW	6,9	**6,9**	6,9	5,8	6,6	**6,6**	6,6	5,6	6,4	**6,4**	6,4	5,4	5,8	**5,8**	5,8	4,8	5,1	**5,1**	5,1	4,3
ECP3 2S2	**kVA**	11,2	**11,2**	11,2	9,4	10,4	**10,4**	10,4	8,8	10	**10**	10	8,5	9	**9**	9	7,5	8	**8**	8	6,8
	kW	8,9	**8,9**	8,9	7,6	8,3	**8,3**	8,3	7,1	8	**8**	8	6,8	7,2	**7,2**	7,2	6	6,4	**6,4**	6,4	5,4
ECP3 3S2	**kVA**	14	**14**	14	11,6	13	**13**	13	10,9	12,5	**12,5**	12,5	10,5	11	**11**	11	9	10	**10**	10	8,4
	kW	11,1	**11,1**	11,1	9,4	10,4	**10,4**	10,4	8,8	10	**10**	10	8,4	8,8	**8,8**	8,8	7,2	8	**8**	8	6,7
ECP3 1L2	**kVA**	17,2	**17,2**	17,2	14	16,6	**16,6**	16,6	13,4	16	**16**	16	13	14,5	**14,5**	14,5	11,5	12,8	**12,8**	12,8	10,4
	kW	13,8	**13,8**	13,8	11,2	13,2	**13,2**	13,2	10,8	12,8	**12,8**	12,8	10,4	11,6	**11,6**	11,6	9,2	10,2	**10,2**	10,2	8,3
ECP3 2L2	**kVA**	21,5	**21,5**	21,5	17,5	20,6	**20,6**	20,6	16,5	20	**20**	20	16	18	**18**	18	14,3	16	**16**	16	12,8
	kW	17,2	**17,2**	17,2	14	16,5	**16,5**	16,5	13,2	16	**16**	16	12,8	14,4	**14,4**	14,4	11,4	12,8	**12,8**	12,8	10,2

Ratings 60Hz

kVA / kW @ Temp. Rise / Ambient °C - 0.8 PF																					
		STANDBY-163/27				STANDBY-150/40				H-125/40				F-105/40				B-80/40			
Series Star Y		415V	440V	460V	480V	415V	440V	460V	480V	415V	440V	460V	480V	415V	440V	460V	480V	415V	440V	460V	480V
Parallel Star YY		208V	220V	230V	240V	208V	220V	230V	240V	208V	220V	230V	240V	208V	220V	230V	240V	208V	220V	230V	240V
Series Delta Δ		240V	254V	265V	277V	240V	254V	265V	277V	240V	254V	265V	277V	240V	254V	265V	277V	240V	254V	265V	277V
Parallel Delta ΔΔ		120V	127V	133V	138V	120V	127V	133V	138V	120V	127V	133V	138V	120V	127V	133V	138V	120V	127V	133V	138V
ECP3 1S2	**kVA**	9,2	10,4	10,4	**10,4**	8,8	10	10	**10**	8,5	9,6	9,6	**9,6**	7	8,6	8,6	**8,6**	6,8	7,7	7,7	**7,7**
	kW	7,4	8,3	8,3	**8,3**	7	8	8	**8**	6,8	7,7	7,7	**7,7**	5,6	6,9	6,9	**6,9**	5,4	6,2	6,2	**6,2**
ECP3 2S2	**kVA**	11,8	13,5	13,5	**13,5**	10,9	12,5	12,5	**12,5**	10,5	12	12	**12**	9	10,8	10,8	**10,8**	8,4	9,6	9,6	**9,6**
	kW	9,4	10,8	10,8	**10,8**	8,6	10	10	**10**	8,4	9,6	9,6	**9,6**	7,2	8,6	8,6	**8,6**	6,7	7,7	7,7	**7,7**
ECP3 3S2	**kVA**	14,6	16,9	16,9	**16,9**	13,5	15,6	15,6	**15,6**	13	15	15	**15**	10,5	13	13	**13**	10,4	12	12	**12**
	kW	11,6	13,5	13,5	**13,5**	10,6	12,5	12,5	**12,5**	10,4	12	12	**12**	8,4	10,4	10,4	**10,4**	8,3	9,6	9,6	**9,6**
ECP3 1L2	**kVA**	18,4	20,8	20,8	**20,8**	17,6	20	20	**20**	17	19,2	19,2	**19,2**	14	17	17	**17**	13,6	15,4	15,4	**15,4**
	kW	14,8	16,6	16,6	**16,6**	14	16	16	**16**	13,6	15,4	15,4	**15,4**	11,2	13,6	13,6	**13,6**	10,9	12,3	12,3	**12,3**
ECP3 2L2	**kVA**	23	26	26	**26**	21,6	24,7	24,7	**24,7**	21	24	24	**24**	18	21,5	21,5	**21,5**	16,8	19,2	19,2	**19,2**
	kW	18,4	20,8	20,8	**20,8**	17,3	19,8	19,8	**19,8**	16,8	19,2	19,2	**19,2**	14,4	17,2	17,2	**17,2**	13,4	15,4	15,4	**15,4**

Reactance & Time constants- Class H / 400V

Unsaturated (ref. EN60034-4)			ECP3 1S2	ECP3 2S2	ECP3 3S2	ECP3 1L2	ECP3 2L2
Xd	Direct-axis synchronous reactance	%	381,1	347,8	250	222,9	215,7
X'd	Direct-axis transient reactance	%	36,7	35,9	33,9	30,8	29,7
X''d	Direct-axis subtransient reactance	%	20,7	18,6	16,9	16,7	16,2
Xq	Quadrature-axis synchronous reactance	%	106,7	108,3	111,4	109,7	112,9
X'q	Quadrature-axis transient reactance	%	106,7	108,3	111,4	109,7	112,9
X''q	Quadrature-axis subtransient reactance	%	46,8	41,8	38,3	42,2	40,8
X_2	Negative-sequence reactance	%	21,1	20,8	18,2	19,3	19,9
X_0	Zero sequence reactance	%	8,1	7,6	7,3	6,6	6,1
Saturated							
Xd	Direct-axis synchronous reactance	%	323,9	295,6	212,5	189,5	183,3
X'd	Direct-axis transient reactance	%	31,2	30,5	28,8	26,2	25,2
X''d	Direct-axis subtransient reactance	%	17,6	15,8	14,4	14,2	13,8
Xq	Quadrature-axis synchronous reactance	%	90,7	92,1	94,7	93,2	96
X'q	Quadrature-axis transient reactance	%	90,7	92,1	94,7	93,2	96
X''q	Quadrature-axis subtransient reactance	%	39,8	35,5	32,6	35,9	34,7
X_2	Negative-sequence reactance	%	17,9	17,7	15,5	16,4	16,9
X_0	Zero sequence reactance	%	8,1	7,6	7,3	6,6	6,1

Kcc	Short circuit ratio		0,33	0,34	0,47	0,53	0,55
T'd	Transient time constant	sec	0,068	0,072	0,043	0,062	0,055
T''d	Subtransient time constant	sec	0,014	0,012	0,01	0,014	0,011
T'do	Open circuit time constant	sec	0,55	0,63	0,65	0,67	0,7
Tα	Armature time constant	sec	0,005	0,006	0,009	0,012	0,01

Additional information - Class H / 400V

Io	Excitation current at no load	A	0,25	0,25	0,32	0,32	0,35
Ic	Excitation current at full load	A	1,1	1,1	1,2	1,2	1,3
Overload					-		
Overload per 20 sec. PRP or 10 sec. COP		%			300		
Heat dissipation		W	1753	1938	2048	2348	2713
Telephone Harmonic Factor - THF		%	<2	<2	<2	<2	<2
Waveform Distors.(THD) full load LL/LN		%	4,2 / 4,1	4,1 / 3,9	4 / 4	3,8 / 3,7	4,7 / 4,4
Waveform Distors.(THD) no load LL/LN		%	4,9 / 4,8	4,8 / 4,6	4,7 / 4,5	4,6 / 4,4	3,6 / 3,4

Reactance & Time constants- Class H / 480V

Unsaturated (ref. EN60034-4)			ECP3 1S2	ECP3 2S2	ECP3 3S2	ECP3 1L2	ECP3 2L2
Xd	Direct-axis synchronous reactance	%	381,1	347,8	250	222,9	215,7
X'd	Direct-axis transient reactance	%	36,7	35,9	33,9	30,8	29,7
X''d	Direct-axis subtransient reactance	%	20,7	18,6	16,9	16,7	16,2
Xq	Quadrature-axis synchronous reactance	%	106,7	108,3	111,4	109,7	112,9
X'q	Quadrature-axis transient reactance	%	106,7	108,3	111,4	109,7	112,9
X''q	Quadrature-axis subtransient reactance	%	46,8	41,8	38,3	42,2	40,8
X_2	Negative-sequence reactance	%	21,1	20,8	18,2	19,3	19,9
X_0	Zero sequence reactance	%	8,1	7,6	7,3	6,6	6,1
Saturated							
Xd	Direct-axis synchronous reactance	%	323,9	295,6	212,5	189,5	183,3
X'd	Direct-axis transient reactance	%	31,2	30,5	28,8	26,2	25,2
X''d	Direct-axis subtransient reactance	%	17,6	15,8	14,4	14,2	13,8
Xq	Quadrature-axis synchronous reactance	%	90,7	92,1	94,7	93,2	96
X'q	Quadrature-axis transient reactance	%	90,7	92,1	94,7	93,2	96
X''q	Quadrature-axis subtransient reactance	%	39,8	35,5	32,6	35,9	34,7
X_2	Negative-sequence reactance	%	17,9	17,7	15,5	16,4	16,9
X_0	Zero sequence reactance	%	8,1	7,6	7,3	6,6	6,1

Kcc	Short circuit ratio		0,31	0,34	0,47	0,53	0,55
T'd	Transient time constant	sec	0,068	0,072	0,043	0,062	0,055
T''d	Subtransient time constant	sec	0,014	0,012	0,01	0,014	0,011
T'do	Open circuit time constant	sec	0,55	0,63	0,65	0,67	0,7
Tα	Armature time constant	sec	0,005	0,006	0,009	0,012	0,01

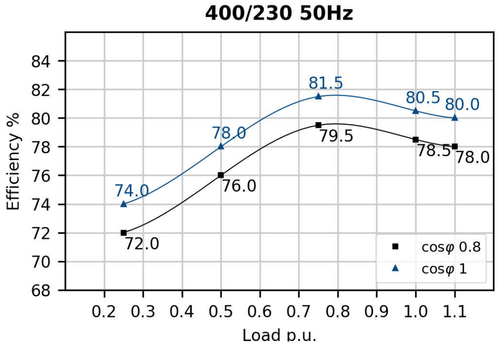
Additional information - Class H / 480V

Io	Excitation current at no load	A	0,22	0,23	0,3	0,3	0,33
Ic	Excitation current at full load	A	1,1	1,0	1,2	1,2	1,2
Overload					-		
Overload per 20 sec. PRP or 10 sec. COP		%			300		
Heat dissipation		W	1932	1994	2201	2480	2818
Telephone Interferance Factor - TIF			<45	<45	<45	<45	<45
Waveform Distors.(THD) full load LL/LN		%	4,2 / 4,1	4,1 / 3,9	4 / 4	3,8 / 3,7	4,7 / 4,4
Waveform Distors.(THD) no load LL/LN		%	4,9 / 4,8	4,8 / 4,6	4,7 / 4,5	4,6 / 4,4	3,6 / 3,4

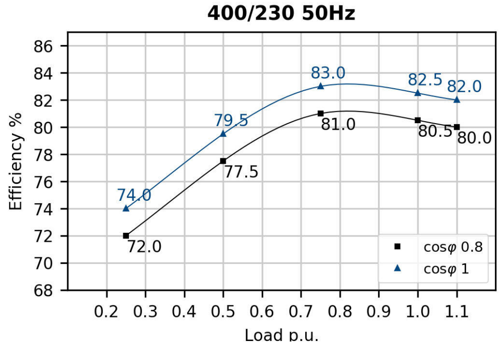
Efficiencies @ 50Hz

Models		380V 50Hz					400V 50Hz					415V 50Hz					440V 50Hz				
		0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1
ECP3 1S2	%	72,1	75,9	79,2	78,4	78,0	72,0	76,0	79,5	78,5	78,0	71,8	76,0	79,4	78,2	77,6	71,3	75,7	79,1	78,0	77,4
ECP3 2S2	%	72,1	77,4	80,7	80,4	80,0	72,0	77,5	81,0	80,5	80,0	71,8	77,5	80,9	80,2	79,6	71,3	77,2	80,6	80,0	79,4
ECP3 3S2	%	75,1	79,9	83,2	82,9	82,5	75,0	80,0	83,5	83,0	82,5	74,8	80,0	83,4	82,7	82,1	74,3	79,7	83,1	82,5	81,9
ECP3 1L2	%	77,1	81,4	84,7	84,4	84,0	77,0	81,5	85,0	84,5	84,0	76,8	81,5	84,9	84,2	83,6	76,3	81,2	84,6	84,0	83,4
ECP3 2L2	%	78,1	82,4	85,7	85,4	85,1	78,0	82,5	86,0	85,5	85,0	77,8	82,5	85,9	85,2	84,5	77,3	82,2	85,6	85,0	84,4

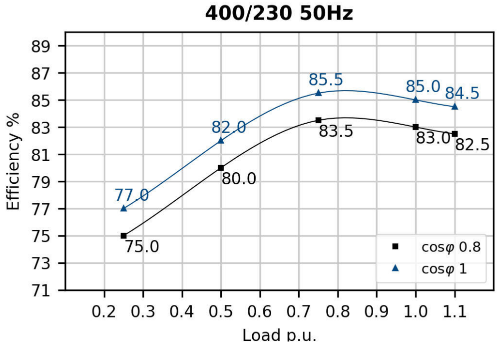
ECP3 1S2



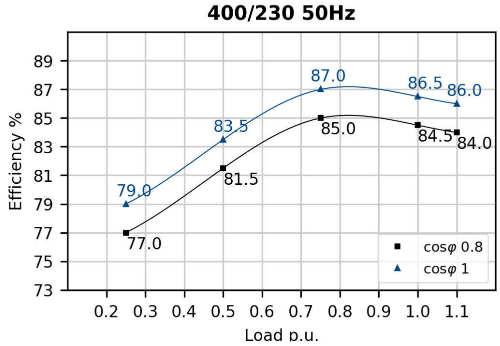
ECP3 2S2



ECP3 3S2



ECP3 1L2



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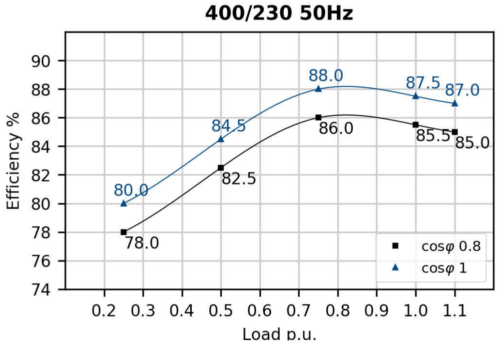
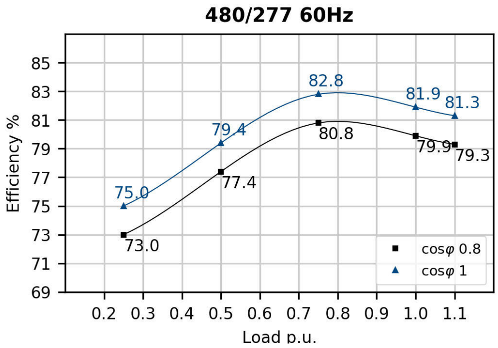


ECP3 2

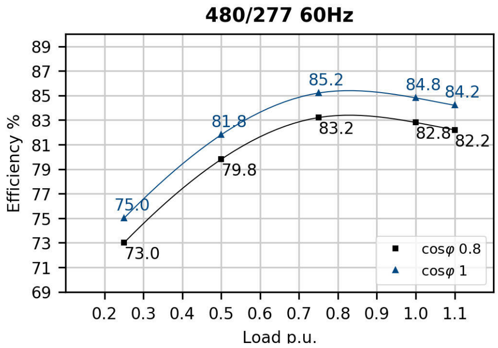
Efficiencies @ 60Hz

Models		415V 60Hz					440V 60Hz					460V 60Hz					480V 60Hz				
		0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1
ECP3 1S2	%	72,8	77,1	80,2	79,2	78,7	72,6	77,2	80,4	79,7	79,3	72,7	77,3	80,6	79,8	79,3	73,0	77,4	80,8	79,9	79,3
ECP3 2S2	%	72,8	79,5	82,6	82,1	81,6	72,6	79,6	82,8	82,6	82,2	72,7	79,7	83,0	82,7	82,2	73,0	79,8	83,2	82,8	82,2
ECP3 3S2	%	75,8	81,2	84,4	83,8	83,3	75,6	81,3	84,6	84,3	83,9	75,7	81,4	84,8	84,4	83,9	76,0	81,5	85,0	84,5	83,9
ECP3 1L2	%	77,8	83,2	86,0	85,4	84,9	77,6	83,3	86,2	85,9	85,5	77,7	83,4	86,4	86,0	85,5	78,0	83,5	86,6	86,1	85,5
ECP3 2L2	%	79,3	84,2	87,2	86,5	85,9	79,1	84,3	87,4	87,0	86,4	79,2	84,4	87,6	87,1	86,6	79,5	84,5	87,8	87,2	86,6

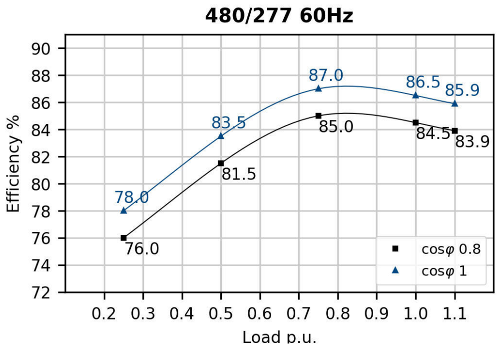
ECP3 1S2



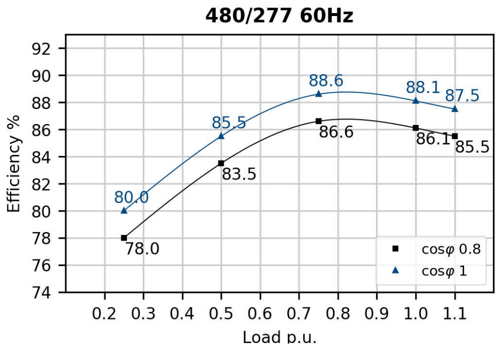
ECP3 2S2



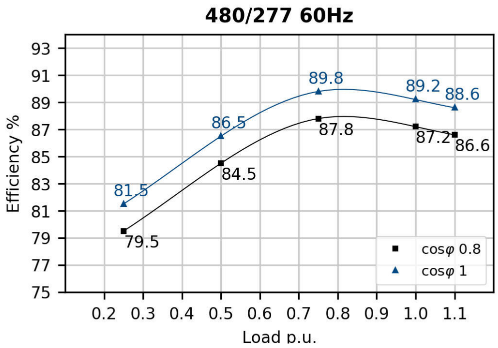
ECP3 3S2



ECP3 1L2

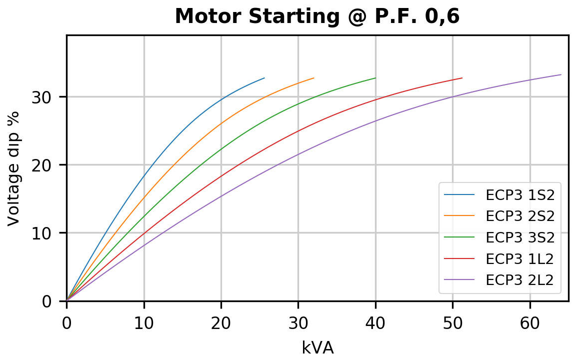


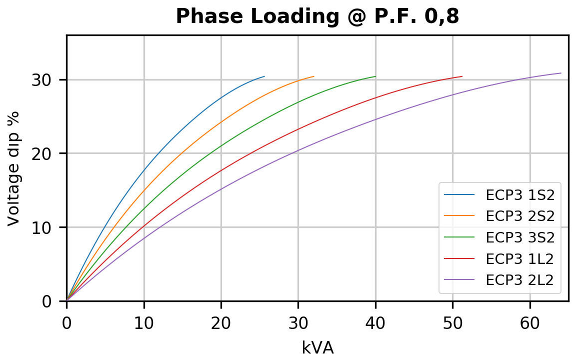
ECP3 2L2

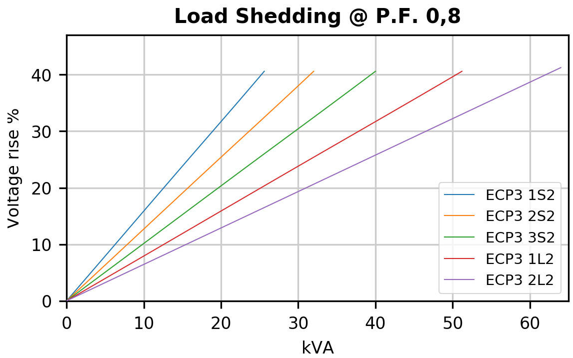


Transients voltage

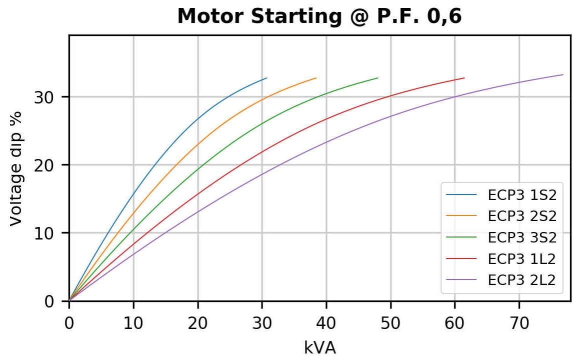
400V - 50Hz

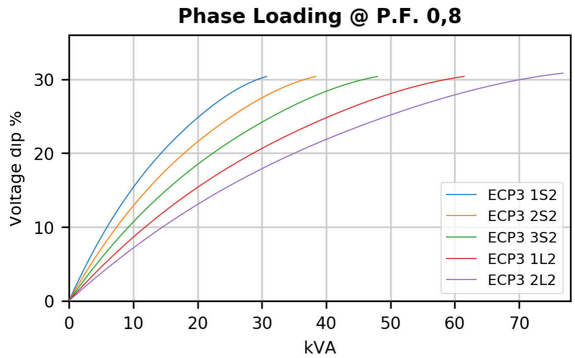


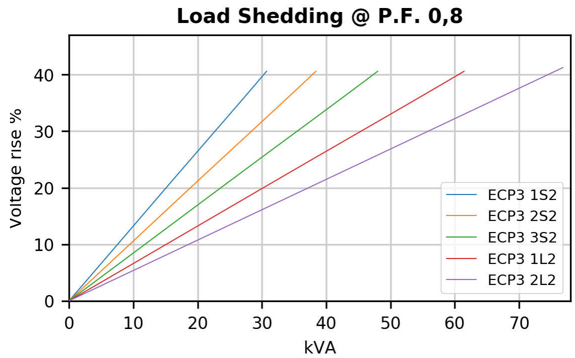




480V - 60Hz







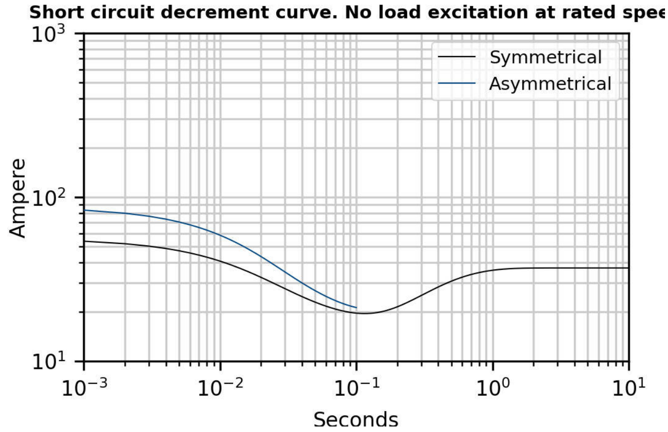
In order to scale transient curves as a function of a power factor or voltage if not indicated, please proceed as follows:

Power Factor coefficient corrector (PFCC), to be used on power factor 0.6 curves:
PFCC=sin(ARCcos (PFnew))/0.8
Example. The PFCC at power factor 0.3 is 1.192 [PFCC= sin(ARCcos (0.3))/0.8]. This means that the voltage fall at a given power at pf 0.3 is equivalent to the one that can be read on the pf 0.6 curve if the load is considered 1.192 times bigger (19% higher value.).
In this example, a 100 kVA load insertion at pf 0.3 is equivalent in voltage fall to a 119kVA load insertion at pf 0.6.

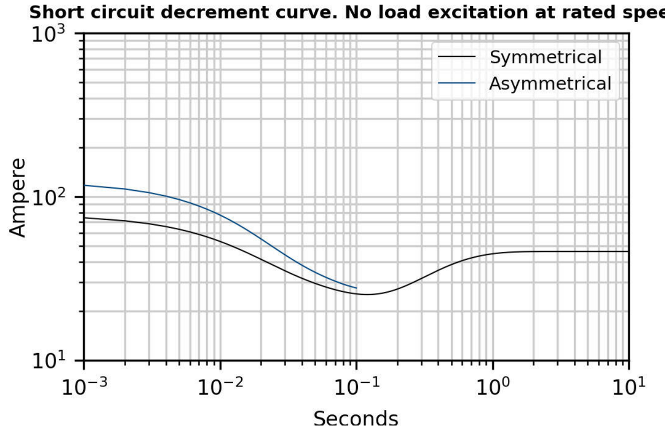
Voltage coefficient corrector (VCC):
VCC=(400/Vnew)2 if 50 Hz; VCC=(480/Vnew)2 if 60 Hz
Example. VCC at 415V 60 Hz is 1.338 [VCC=(480/415)^2]. This means that the voltage fall at a given power at 415V is equivalent to the one that can be read on the power factor 0.6 curve if the load is considered 1.338 times bigger (33% higher value.).
In this example, a 100 kVA load insertion at 415V is equivalent in voltage fall to a 133kVA load insertion at 480V.

50Hz Short circuit decrement curves - No load excitation at rated speed

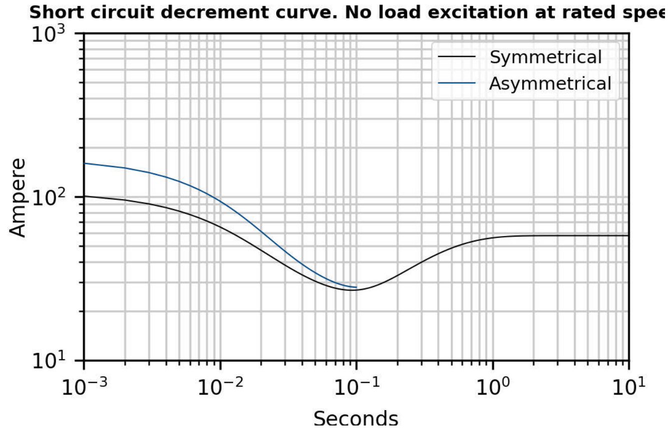
ECP3 1S2



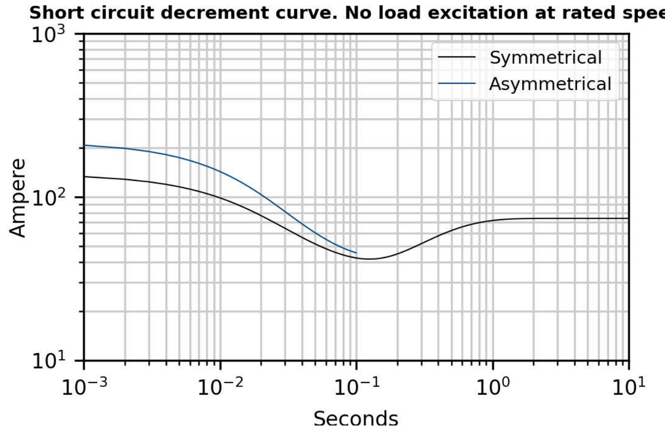
ECP3 2S2



ECP3 3S2



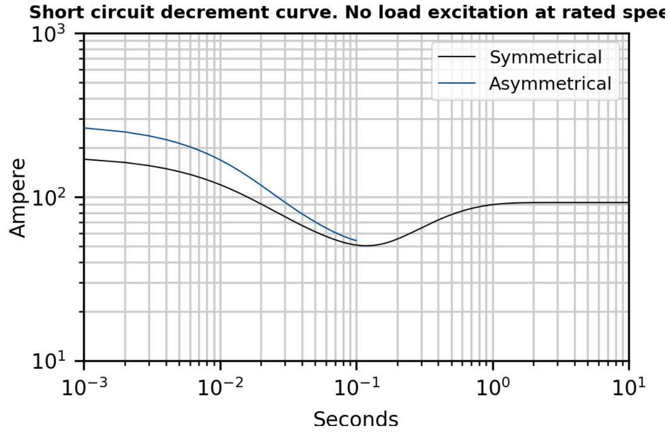
ECP3 1L2



*Please refer to tables at page 6

50Hz Short circuit decrement curves - No load excitation at rated speed

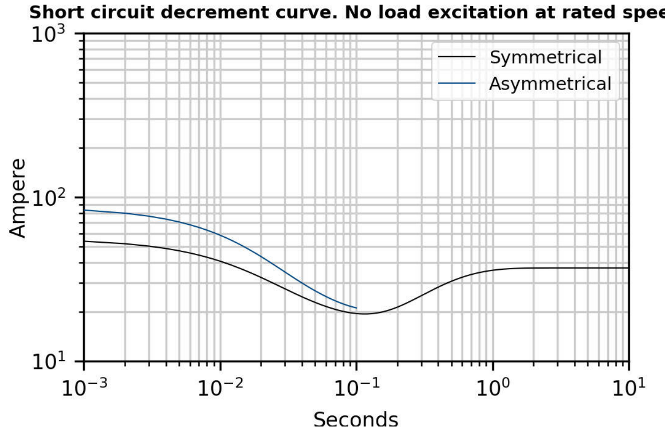
ECP3 2L2



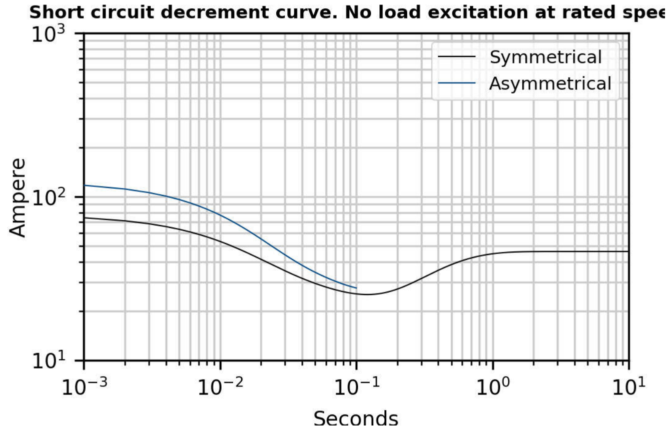
*Please refer to tables at page 6

60Hz Short circuit decrement curves - No load excitation at rated speed

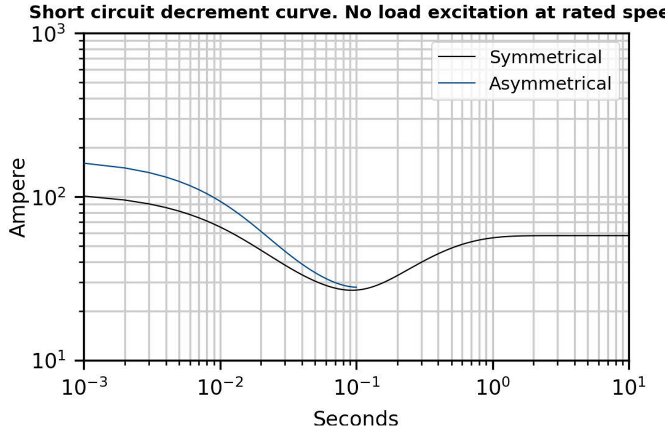
ECP3 1S2



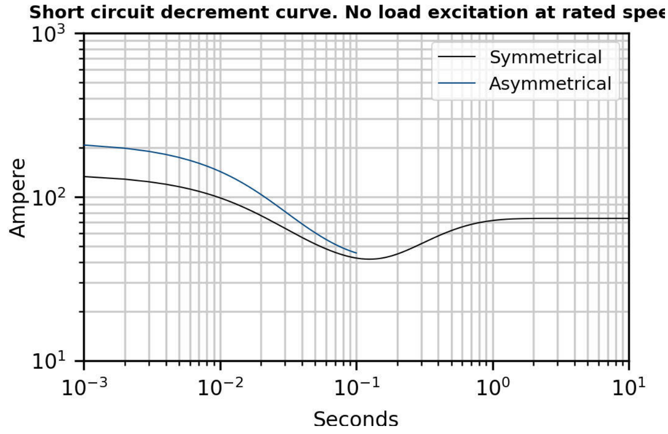
ECP3 2S2



ECP3 3S2



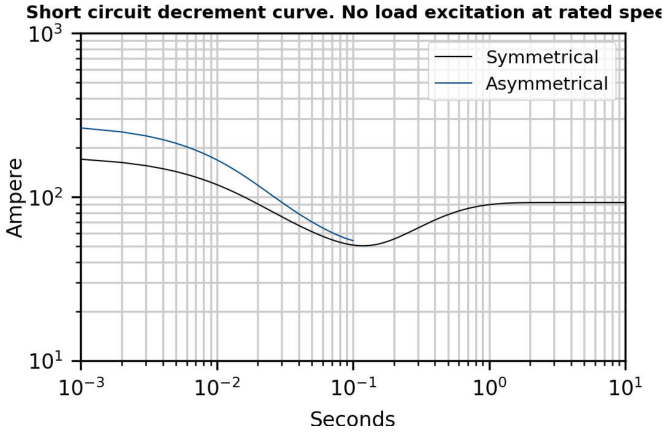
ECP3 1L2



*Please refer to tables at page 6

60Hz Short circuit decrement curves - No load excitation at rated speed

ECP3 2L2



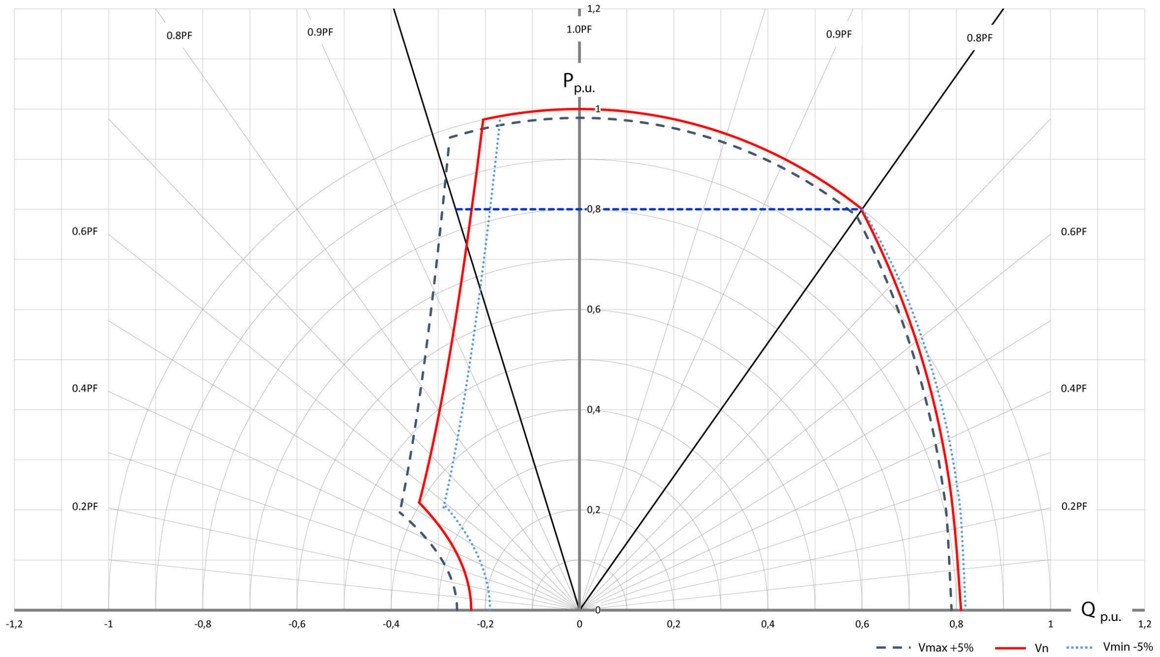
*Please refer to tables at page 6

ECP3 2

Additional Characteristics

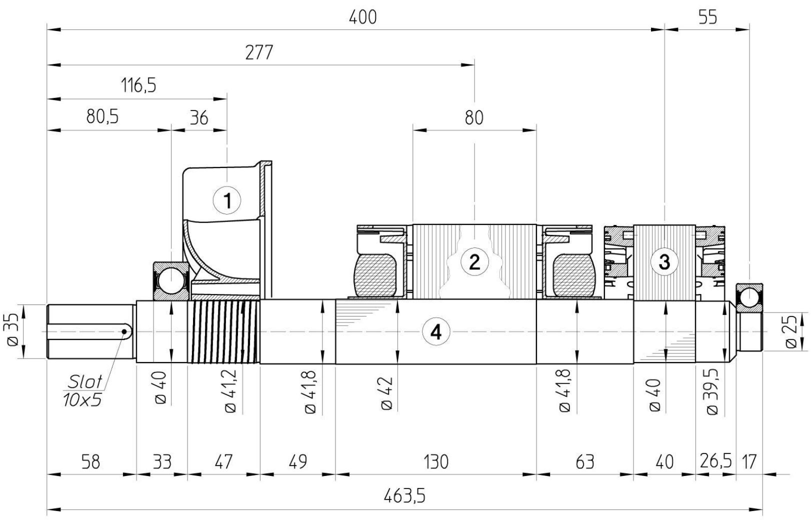
Data		ECP3 1S2		ECP3 2S2		ECP3 3S2		ECP3 1L2		ECP3 2L2	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
Damper cage		None									
Stator Winding Resistance (20°C)	Ω	0,804		0,542		0,339		0,339		0,221	
Rotor Winding Resistance (20°C)	Ω	6,702		7,364		8,238		9,487		9,627	
Stator Exciter Resistance (20°C)	Ω	15,71		15,71		15,71		15,71		15,71	
Rotor Exciter Resistance (20°C)	Ω	1,453		1,453		1,453		1,453		1,453	
Auxiliary Winding Resistance (20°C)	Ω	2,2		-		-		-		1,48	
Weight of complete generator	kg	56,0		62,0		68,0		80,0		88,0	
Unbalanced magnetic pull	kN/mm	2,4		2,6		2,8		2,9		3,1	
Air flow	m^3/min	6,4	7,8	6,3	7,8	6,2	7,8	6,0	7,2	5,8	6,8
Noise level at 1m/7m	dB(A)	85	89	85	89	85	89	85	89	85	89

PQ Diagram



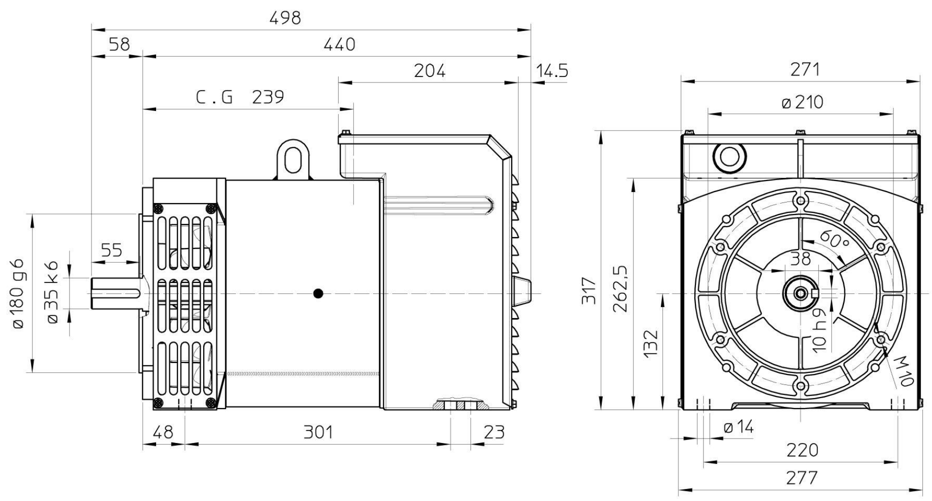
ECP3 1S2

TWO BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	9,2	0,02176
3	EX. ROTOR	4,2	0,01086
4	SHAFT	4,5	0,00093
	TOTAL	18,3	0,03561

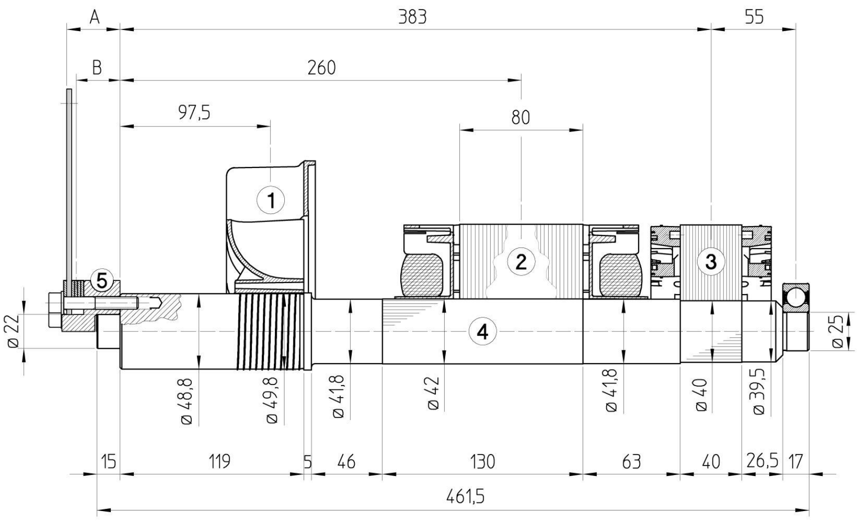
TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

ECP3 1S2

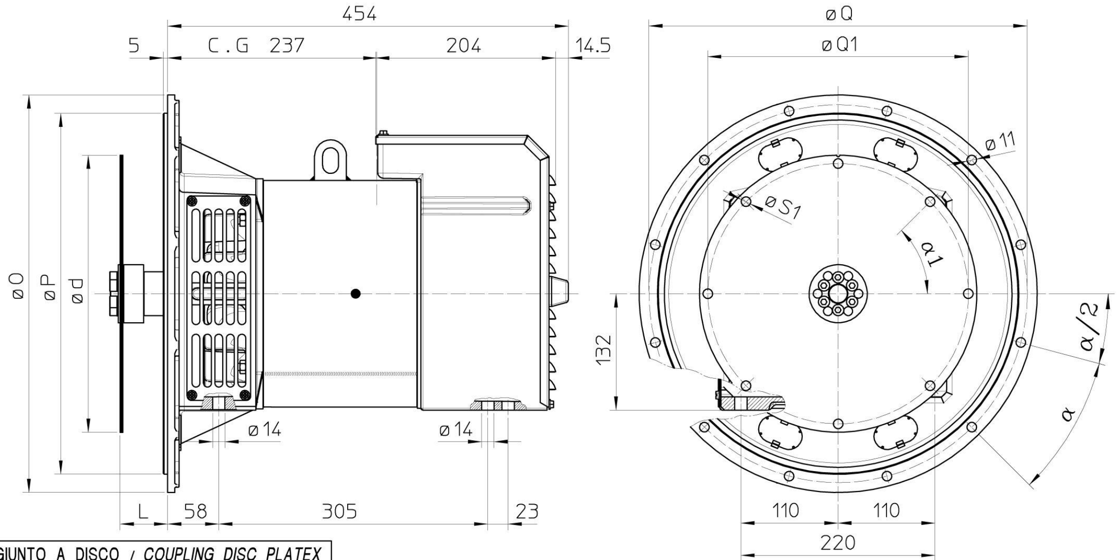
SINGLE BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	9,2	0,02176
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,1	0,00123
	TOTAL	18,9	0,03591

SAE	5 SHAFTS COUPLING FLEX PLATE			
N°	A	B	WEIGHT kg	J kgm^2
6 1/2	3	1,5	1,00	0,00495
7 1/2	3	1,5	1,20	0,00769
8	34,6	29,5	1,75	0,01114
10	26,6	23,5	2,14	0,02220
11 1/2	13	11	2,60	0,03524

SINGLE BEARING DIMENSIONS



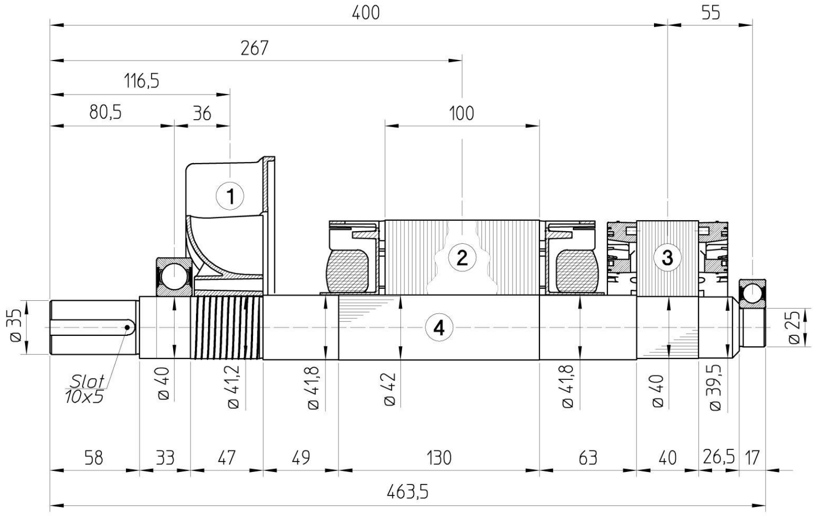
GIUNTO A DISCO / *COUPLING DISC PLATEX*					
SAE	L	d	Q1	S1	α_1
6 ½	30,2	215,9	200	9	60°
7 ½	30,2	241,3	222,25	9	45°
8	62	263,52	244,47	11	60°
10	53,8	314,52	295,27	11	45°
11 ½	39,6	352,42	333,37	11	45°

FLANGIE / *FLANGE*				
SAE	O	P	Q	α
6	308	266,7	285,75	45°
5	356	314,3	333,4	45°
4	403	362	381	30°
3	451	409,6	428,6	30°

C.G.= GRAVITY CENTER

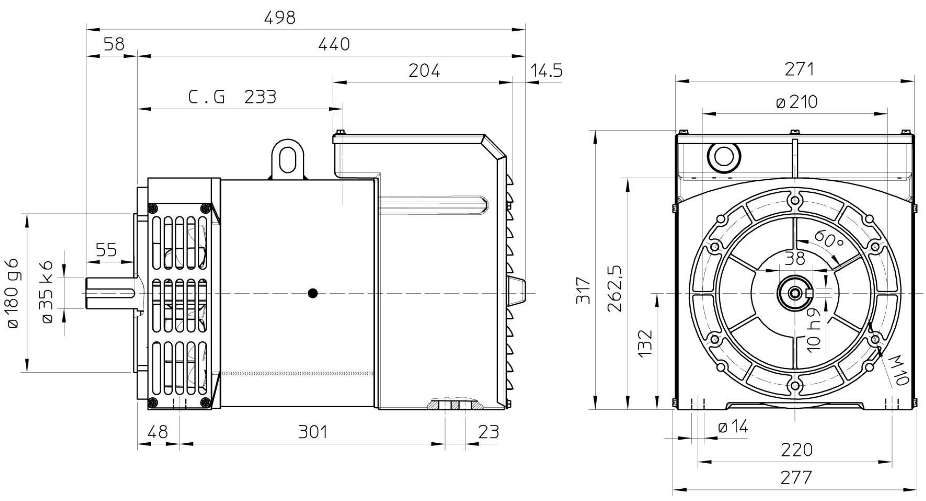
ECP3 2S2

TWO BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	10,8	0,02570
3	EX. ROTOR	4,2	0,01086
4	SHAFT	4,5	0,00093
	TOTAL	19,9	0,03955

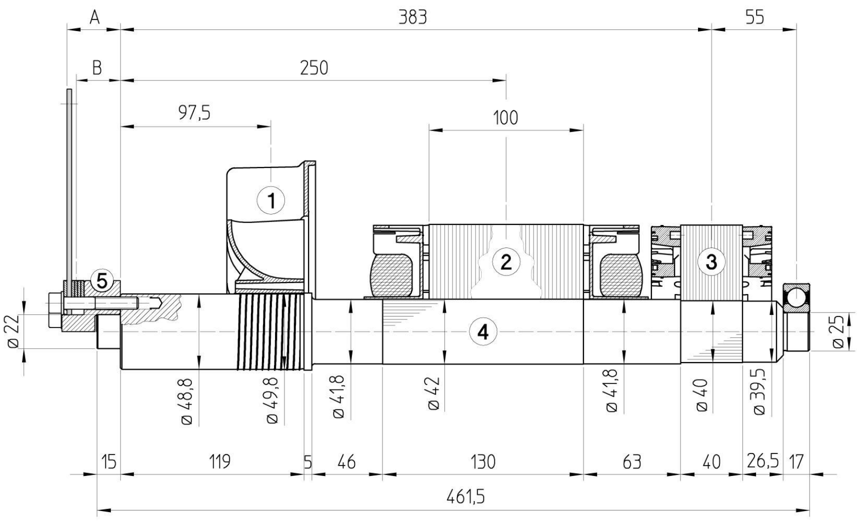
TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

ECP3 2S2

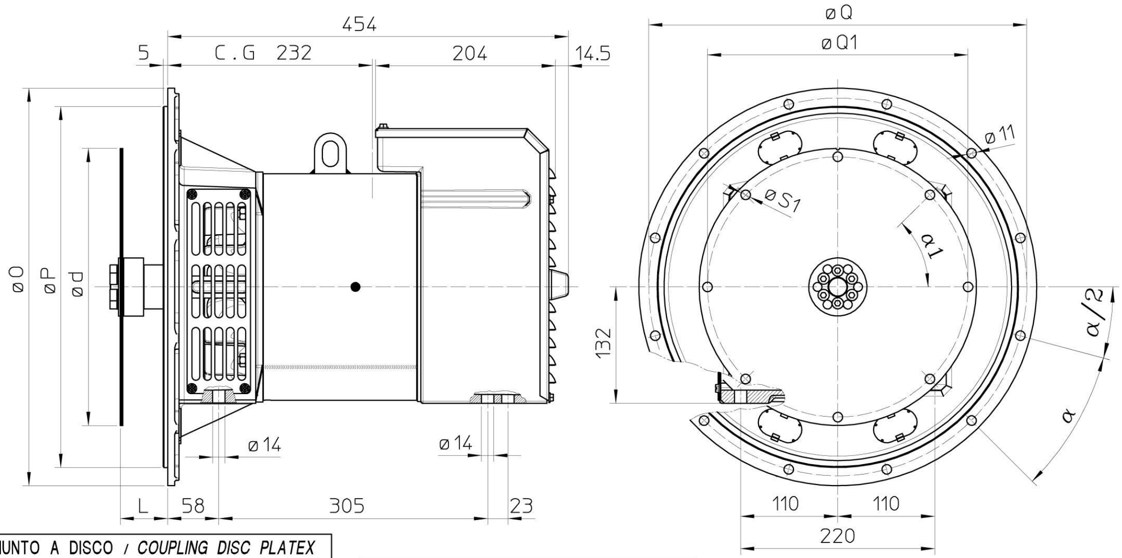
SINGLE BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	10,8	0,02570
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,1	0,00123
	TOTAL	20,5	0,03985

SAE	5 SHAFTS COUPLING FLEX PLATE			
N°	A	B	WEIGHT kg	J kgm^2
6 1/2	3	1,5	1,00	0,00495
7 1/2	3	1,5	1,20	0,00769
8	34,6	29,5	1,75	0,01114
10	26,6	23,5	2,14	0,02220
11 1/2	13	11	2,60	0,03524

SINGLE BEARING DIMENSIONS



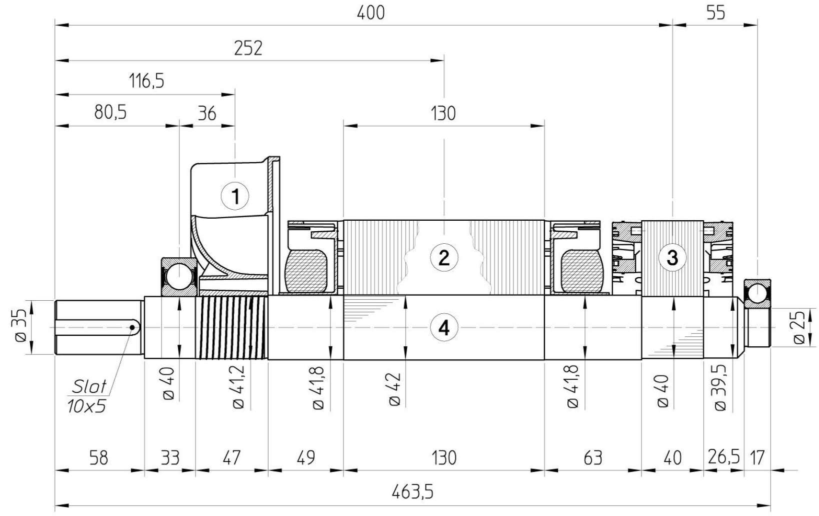
GIUNTO A DISCO / *COUPLING DISC PLATEX*					
SAE	L	d	Q1	S1	α1
6 ½	30,2	215,9	200	9	60°
7 ½	30,2	241,3	222,25	9	45°
8	62	263,52	244,47	11	60°
10	53,8	314,52	295,27	11	45°
11 ½	39,6	352,42	333,37	11	45°

FLANGIE / *FLANGE*				
SAE	O	P	Q	α
6	308	266,7	285,75	45°
5	356	314,3	333,4	45°
4	403	362	381	30°
3	451	409,6	428,6	30°

C.G.= GRAVITY CENTER

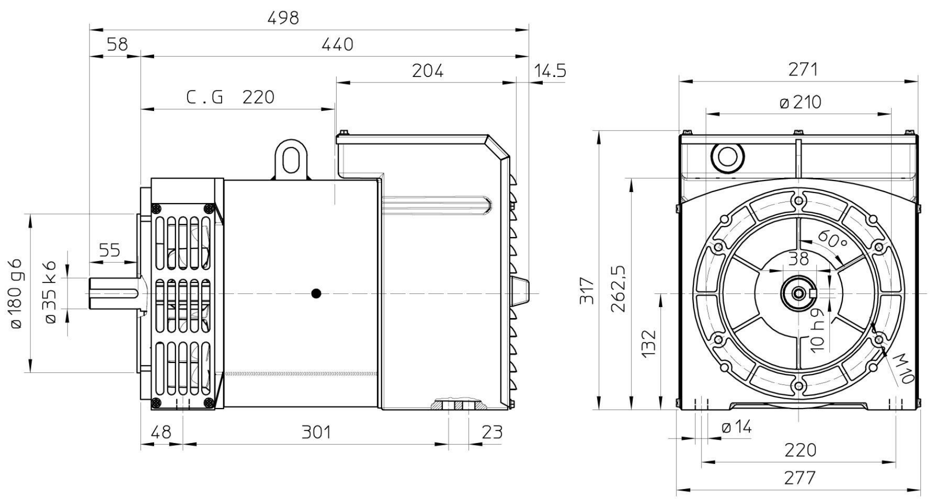
ECP3 3S2

TWO BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	13,2	0,03179
3	EX. ROTOR	4,2	0,01086
4	SHAFT	4,5	0,00093
	TOTAL	22,3	0,04564

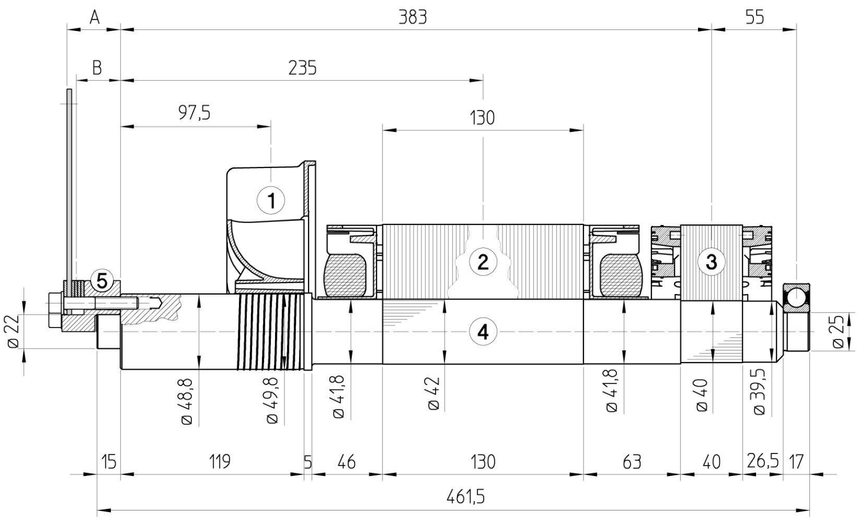
TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

ECP3 3S2

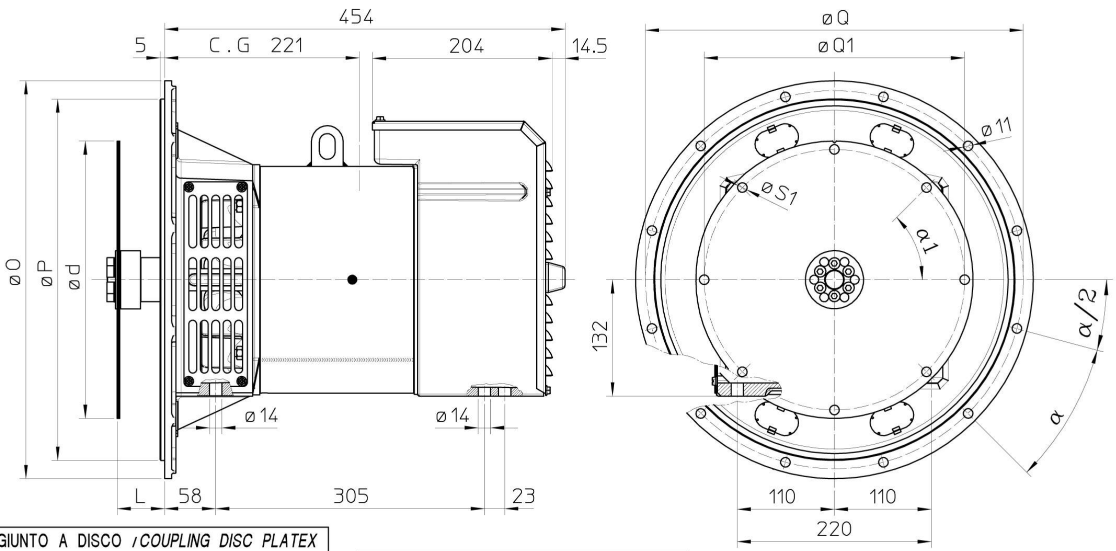
SINGLE BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	13,2	0,03179
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,1	0,00123
	TOTAL	22,9	0,04594

SAE	5 SHAFTS COUPLING FLEX PLATE			
N°	A	B	WEIGHT kg	J kgm^2
6 1/2	3	1,5	1,00	0,00495
7 1/2	3	1,5	1,20	0,00769
8	34,6	29,5	1,75	0,01114
10	26,6	23,5	2,14	0,02220
11 1/2	13	11	2,60	0,03524

SINGLE BEARING DIMENSIONS



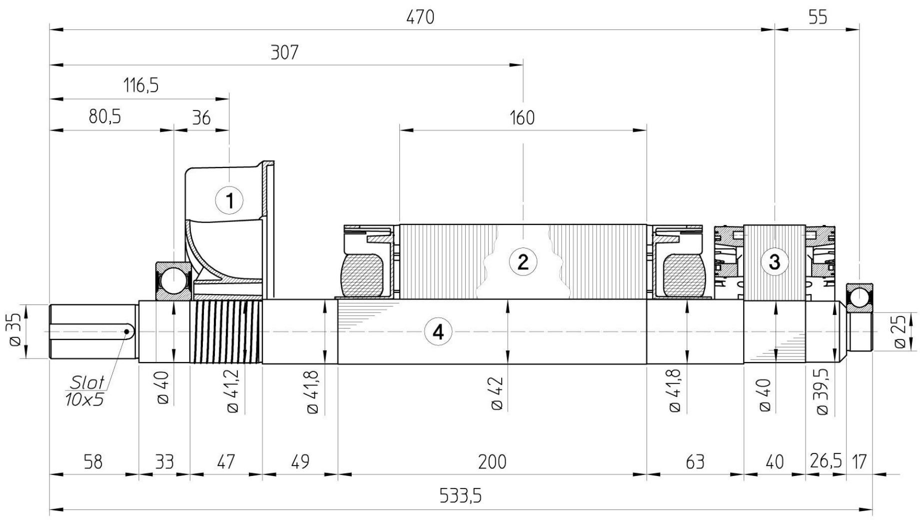
GIUNTO A DISCO / *COUPLING DISC PLATEX*					
SAE	L	d	Q1	S1	α_1
6 ½	30,2	215,9	200	9	60°
7 ½	30,2	241,3	222,25	9	45°
8	62	263,52	244,47	11	60°
10	53,8	314,52	295,27	11	45°
11 ½	39,6	352,42	333,37	11	45°

FLANGIE / *FLANGE*				
SAE	O	P	Q	α
6	308	266,7	285,75	45°
5	356	314,3	333,4	45°
4	403	362	381	30°
3	451	409,6	428,6	30°

C.G.= GRAVITY CENTER

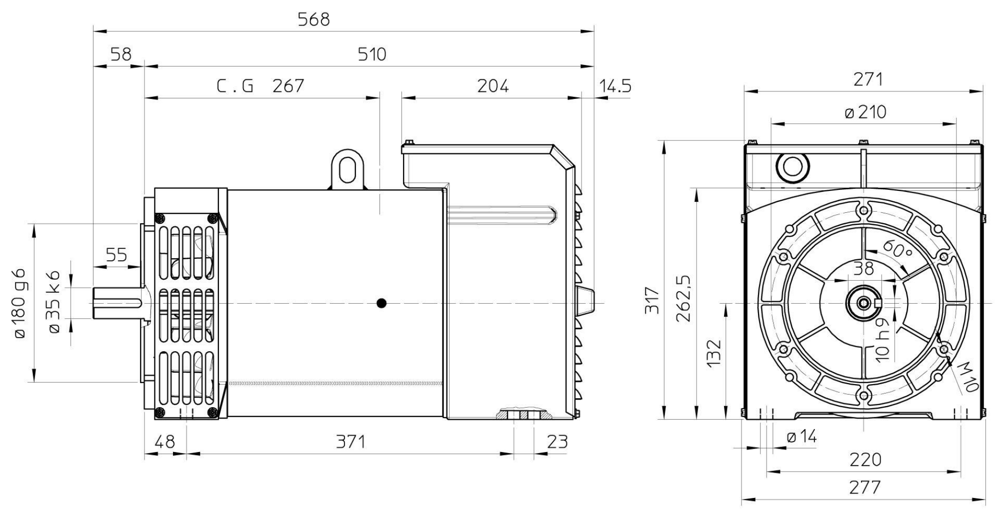
ECP3 1L2

TWO BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	15,5	0,03755
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,2	0,00101
	TOTAL	25,3	0,05148

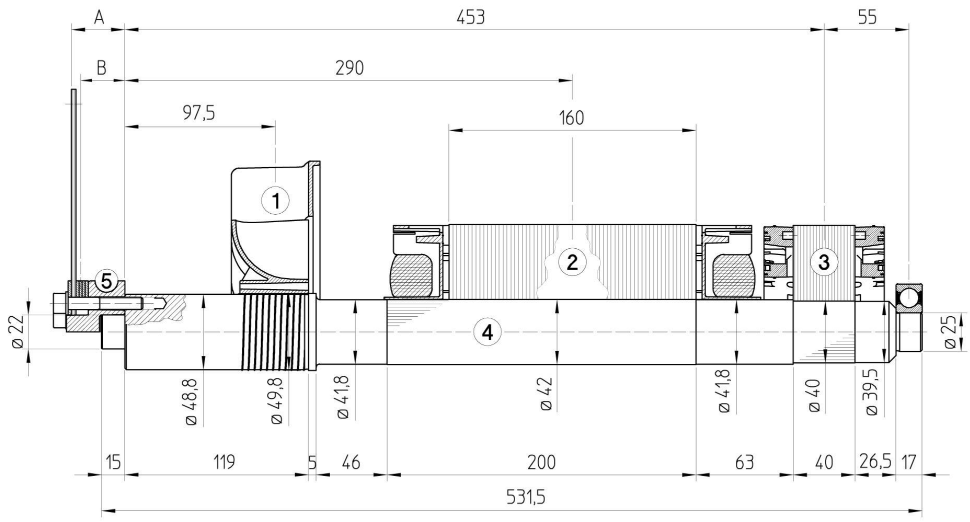
TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

ECP3 1L2

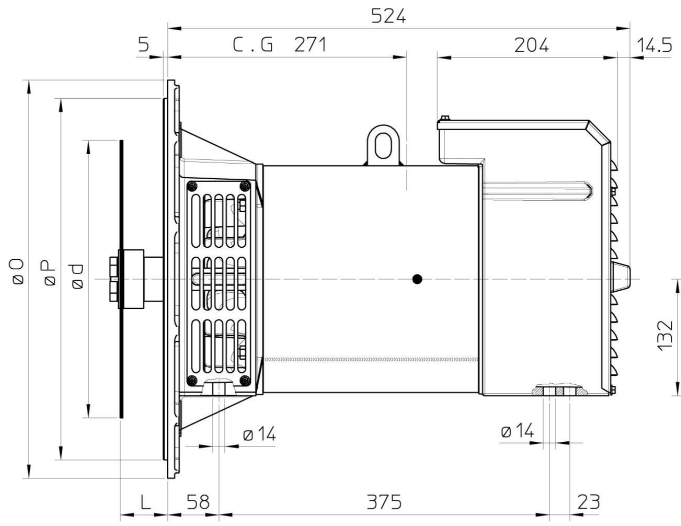
SINGLE BEARING MOMENTS OF INERTIA

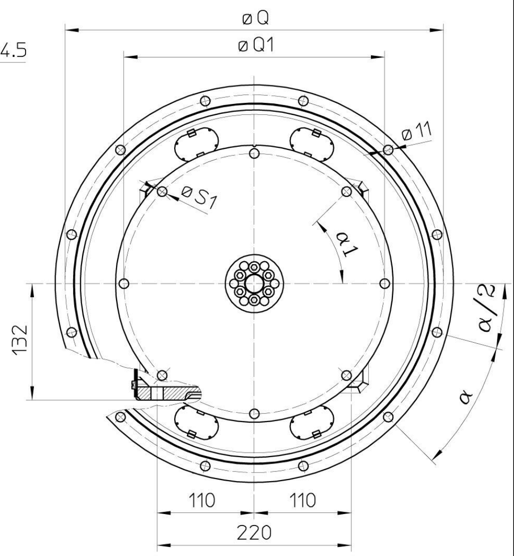


POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	15,5	0,03755
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,8	0,00140
	TOTAL	25,9	0,05187

SAE	5 SHAFTS COUPLING FLEX PLATE			
N°	A	B	WEIGHT kg	J kgm^2
6 1/2	3	1,5	1,00	0,00495
7 1/2	3	1,5	1,20	0,00769
8	34,6	29,5	1,75	0,01114
10	26,6	23,5	2,14	0,02220
11 1/2	13	11	2,60	0,03524

SINGLE BEARING DIMENSIONS





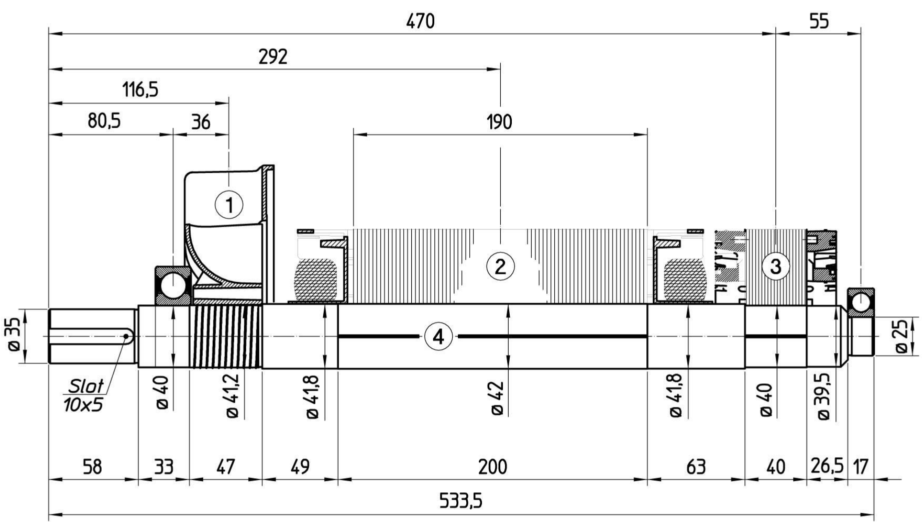
GIUNTO A DISCO / *COUPLING DISC PLATEX*					
SAE	L	d	Q1	S1	α_1
6 1/2	30,2	215,9	200	9	60°
7 1/2	30,2	241,3	222,25	9	45°
8	62	263,52	244,47	11	60°
10	53,8	314,52	295,27	11	45°
11 1/2	39,6	352,42	333,37	11	45°

FLANGIE / *FLANGE*				
SAE	O	P	Q	α
6	308	266,7	285,75	45°
5	356	314,3	333,4	45°
4	403	362	381	30°
3	451	409,6	428,6	30°

C.G.= GRAVITY CENTER

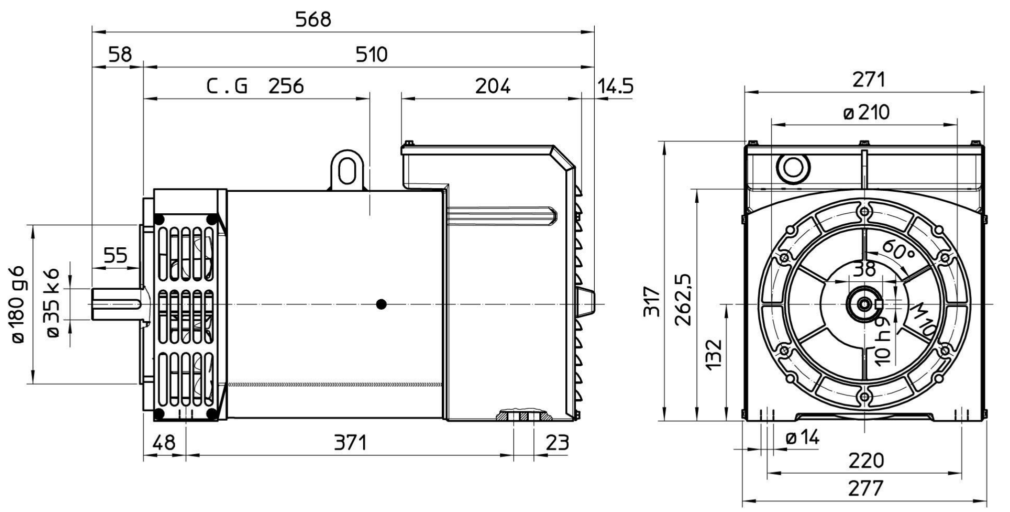
ECP3 2L2

TWO BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm²)
1	FAN	0,4	0,00206
2	MAIN ROTOR	18,0	0,04342
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,2	0,00101
	TOTAL	27,8	0,05735

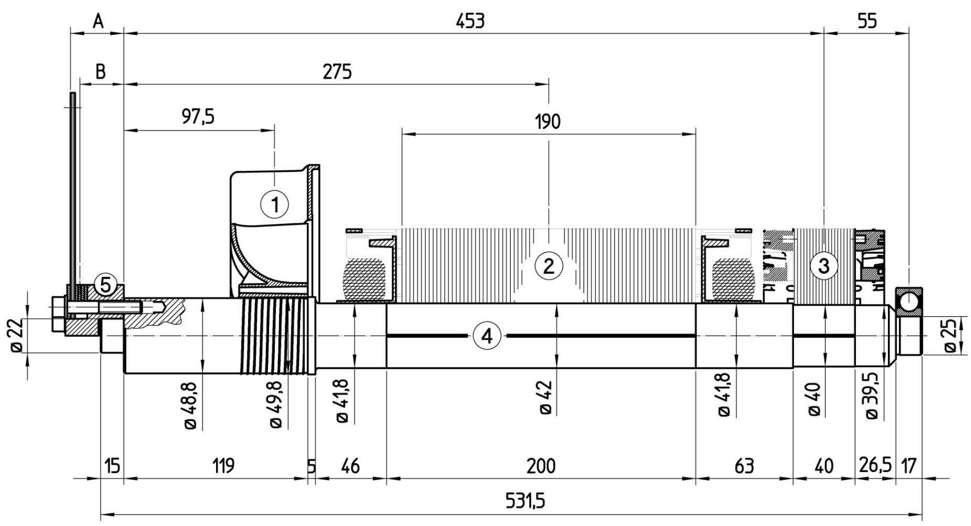
TWO BEARING DIMENSIONS



C.G.= GRAVITY CENTER

ECP3 2L2

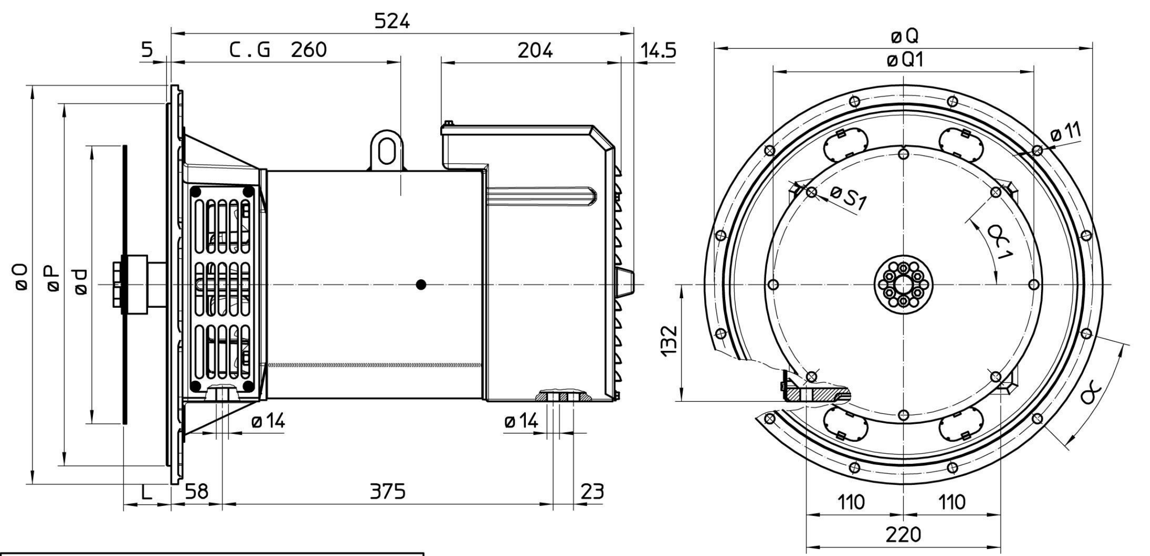
SINGLE BEARING MOMENTS OF INERTIA



POS.	COMPONENT	WEIGHT (kg)	J (kgm^2)
1	FAN	0,4	0,00206
2	MAIN ROTOR	18,0	0,04342
3	EX. ROTOR	4,2	0,01086
4	SHAFT	5,8	0,00140
	TOTAL	28,4	0,05774

SAE	5 SHAFTS COUPLING FLEX PLATE			
N°	A	B	WEIGHT kg	J kgm^2
6 1/2	3	1,5	1,00	0,00495
7 1/2	3	1,5	1,20	0,00769
8	34,6	29,5	1,75	0,01114
10	26,6	23,5	2,14	0,02220
11 1/2	13	11	2,60	0,03524

SINGLE BEARING DIMENSIONS



GIUNTO A DISCO / *COUPLING DISC PLATEX*						
SAE	L	d	Q1	Fori N° *Holes N°*	S1	∝1
6 ½	30,2	215,9	200	6	9	60°
7 ½	30,2	241,3	222,25	8	9	45°
8	62	263,52	244,47	6	11	60°
10	53,8	314,52	295,27	8	11	45°
11 ½	39,6	352,42	333,37	8	11	45°

FLANGIE / *FLANGE*					
SAE	O	P	Q	Fori N° *Holes N°*	∝
6	308	266,7	285,75	8	22°30'
5	356	314,3	333,4	8	22°30'
4	403	362	381	12	15°
3	451	409,6	428,6	12	15°

C.G.= GRAVITY CENTER

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