mecc alte

Totally Focused. Totally Independent.

Technical Specification

ECP3 4 C

DDS
Dynamic Data Support

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

Rev. 0

All electrical and mechanical data contained in this document is provided for reference only and represents typical values under optimal operating conditions.
Actual performances may be subjected to cumulative tolerances or variances due to materials, construction or other specific operating and loading conditions, in accordance with IEC 60034.

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Regulations and Certifications

The alternators are designed, built and tested in accordance with **ISO 9001**, within a certified quality management system. The entire range meets the most common international specifications, including:

CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530

BS 4999-5000, NF 51.111, NEMA MG 1-2011

ISO 8528-3

In addition, they comply with specific regulations for particular markets, such as:

UL 1446, UL 1004-4, UL 1004-B

CAN/CSA-C22.2 No14-95 / No100-95

The ECP and ECO series comply with EEC directives **2006/42/EC (Machinery Directive), 2014/35/EC (Low Voltage Directive), 2014/30/EC (Electromagnetic Compatibility Directive), 2011/65/EC (RoHS 2) and 2015/863 (RoHS 3).**

Windings and performance

- All alternators feature **reduced-pitch** (2/3) windings, which:
  - Eliminate triple harmonics in the voltage waveform
  - Reduce neutral currents during parallel operation
- **Parallel operation** Use alternators of the same model and winding configuration. For different models, contact Mecc Alte Application Engineering to verify compatibility.
- **Damping cage** All models except the ECP3 series include an aluminum or copper damping cage for greater stability during load transients.
- **Reconnectable windings**
  - 12 leads: 50 Hz 380–440 V and 220/110–240/120 V (derating may apply); 60 Hz 380–480 V and 220/110–240/120 V (derating may apply)
  - 6 leads: 50 Hz 380–440 V and 220–240 V (derating may apply); 60 Hz 380–480 V and 220–240 V (derating may apply)

Winding configurations	Standard		Special (dedicated)			
	12 reconnectable wires	6 reconnectable wires	380 V and 600 V 60 Hz	690V 50/60Hz	220-240V 1ph 50Hz	220-240V 1ph 60Hz
ECP3 to ECO38 & (NPE)	●	○	○	○	○	○
ECO40 to ECO46	○	●	○	○	○ *	○ *
ECO47	● 4 wires		○	○	–	-
THD (Total Harmonic Distortion)	<3.5% at full load L-L	<3.0% at full load L-L	<3.5% at full load L-L	<3.5% at full load L-L	<4.5% at full load L-N	<4.5% at full load L-N
Interference suppression	VDE 0875 G/N/K, EN61000-6-3, EN61000-6-2, others available on request					

* Only up to ECO40 series ● Standard ○ Optional

Insulating Materials and Electrical Performance

- **Insulation Class:** H on the entire range
- **Efficiency:** High efficiency as standard
- **Motor Start:** Inrush current >300% for 20 seconds
- **THD (Total Harmonic Distortion):**
  - <3.5% L-L typical (three-phase windings)
  - <4.5% L-N typical (single-phase windings)

Winding protection

Winding protection is crucial to ensure the longevity of the generator based on environmental conditions and electrical stress.

Protection Level	Standard	Standard+	Grey	Grey+	Total+	V-Type
Treated Components	Active parts	Exciter stator	Main stator + exciter	Stator + Exciter	Stator + Exciter + Rotor	Complete system
Type of Treatment	Impregnation resin only	Resin + Grey paint EG43	Grey paint EG43	Stator (EG43) + Exciter (Black severe ep.)	Black protection (stators) + EG43 (rotating parts)	Double VPI, Anti-Corona Wire, Double Layer Black
Series/Typical Application	ECP3, ECP4 (Standard Use)	ECP28, 30, 32	Marine Applications / NPE, ECO, HCP	Harsh industrial environments	Extreme/abusive conditions	Harsh Environments (Extended Warranty)

Detail of specific treatments

- **Grey paint EG43:** Standard protection against moisture and contaminants.
- **Black Protection:** Advanced physical barrier against chemicals and high humidity.
- **V-Type Treatment:** Includes vacuum impregnation (VPI), internal stator insulation, and corona-resistant materials for maximum reliability.

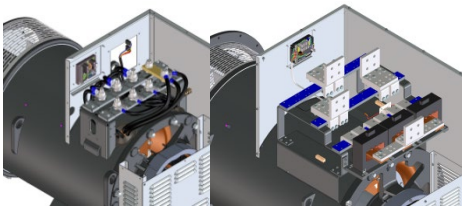
For more information visit: Insulation_System_Guide

Construction

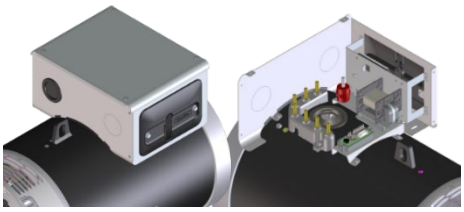
The robust mechanical structure withstands up to 5G in any direction and 9G vertically, and its design allows easy access to connections and components during routine maintenance checks. The mechanical design used the most advanced FEM techniques. The materials used are: DD12 steel for the frame, C45 steel for the shaft and cast iron or die-cast aluminum for the end brackets: the fans are made of die-cast aluminum and nylon reinforced with fiberglass, UL compliant materials. The rotors are dynamically balanced according to ISO 1940-1 grades 6.3 (up to series 32) or 2.5 (series 34 onwards).

Terminals and terminal blocks

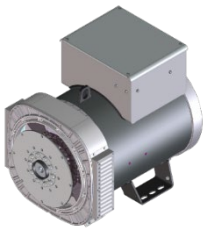
Easy access to the regulators is ensured by a pull-out drawer or drop-down panel to allow for safer adjustment. Large terminal blocks allow easy access of power cables, in the higher power ranges ECO43 and ECO46 terminals allow convenient choice of power cable or busbar connection with input and connection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



A new AVR panel has been installed on the Type-C family. The terminal blocks have been redesigned in a special "L" configuration, specifically to facilitate connections with customers; With this type of terminal block, a second terminal block can be positioned in order to obtain 12 terminals available. Current transformers are available as an option on the ECO38 series with single or dual output.



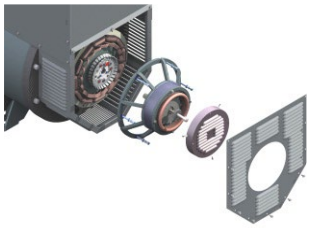
Protection for the environment



In addition to the protection on the windings themselves, alternators can have a higher degree of protection. The standard level is IP23 but the following solutions are also available: IP23 DP with ingress filters, IP23 with terminal box only in IP45, IP43 and IP45. Downgrades may apply.
For more information visit: Bulletin_IP

Optional PMG

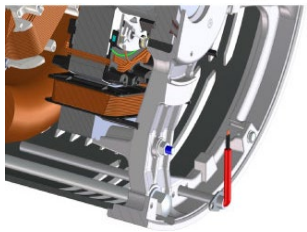
The MeccAlte PMG is optionally available factory-fitted on ECP28, ECP30, ECP32, ECP34 and ECO38; Alternatively, only the preparation for future mounting is optional.



On the ECO 40, 43 and 46 series it is optionally available factory-fitted or retrofitted. On the ECO47 the PMG is standard.

The entire AVR range is fully compatible with MAUX and PMG systems, minimizing spare parts management and inventory flexibility, as one AVR adapts to all applications. The PMG delivers the same amount of kVA as the MAUX.

Anti-condensation heater



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

Accessories

Additional optional can be mounted on our alternator series, such as PTC or PT100 thermistors on both windings and bearings, anti-condensation heaters, high and low profile terminal blocks (on most series), parallel devices, current and voltage transformers, air filters, IP43 and IP45 protections and many more. For more information visit: C-type-accessories

Excitation and regulation systems

All ECP/ECO series are equipped with MAUX auxiliary winding to power the digital controller.

DxR

Both the DSR and DER1 are available for PC connection via the DxR2 USB interface and DxR TERMINAL software to query/download alarms and settings for analysis or for cloning other controllers. DER2 has a built-in USB connection and can be connected to your PC without any optional connection card. Through the DxR connection, other settings such as LAMS, synchronous external control based on digital RAM, and soft start can be achieved. Simple analog potentiometers are available for the most common adjustments.

MxK

The digital controllers of the MxK series (M2K, M2KS, M3K, M3KS, M3KSHD) are configurable via the MeccAlte App for PC or mobile devices, using the USB2MxK (USB) or MxKonnect (Wi-Fi) accessories. The M3KSHD model integrates a USB port for direct connection to the PC, without the need for optional cards. The M2KS, M3KS and M3KSHD models also support CAN Bus communication (SAE J-1939) for integration with MeccAlte GC controllers. Software-accessible features include LAMS, external voltage control (±10V), soft start, and PID autotuning. The controller records up to 64 alarms in E2PROM memory and provides the current status via A ALARMS address. There are analog potentiometers for VOLT, STAB, AMP, and DROOP (the latter on M3K, M3KS, and M3KSHD models only). The M3KSHD includes High Dynamic Response (HDR) for a quick rush of excitement. All MxK regulators are equipped with protections against over/under excitation, overcurrent, V/f, short circuit and power overvoltage.

Regulator	M2K	M2Ks	M3K	M3Ks	M3KsHD	DSR	DER1	DER2
ECP3 to ECO38 & (NPE)	●	○	○	○	○	○	○	○
ECO40 to ECO46	○	○	●	○	○	○	○	○
ECO47	○	○	○	○	●	○	○	○
Parallel operation	-	-	√	√	√	√	√	√
Network Parallel	-	-	√	√	√	√	√	√
Reference 3 phase (rms)	-	-	√	√	√	-	√	√
Accuracy	+/-0.5%	+/-0.5%	+/-0.5%	+/-0.5%	+/-0.5%	+/-1%	+/-0.5%	+/-0.5%
Remote voltage control	√	√	√	√	√	√	√	√
Alarm log	√	√	√	√	√	√	√	√
Analog and digital configurable	√	√	√	√	√	√	√	√
LAMS (Load Acceptance V/f)	√	√	√	√	√	√	√	√
APO (Active Protection Output)	-	-	-	-	√	√	√	√
Soft start	√	√	√	√	√	√	√	√
High Dynamic Response	-	-	-	-	√	-	-	√
USB connection without external cards	-	-	-	-	√	-	-	√

● Standard ○ Optional √ Available

Derating 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 coefficients indicated must be used to correct the values of the three-phase short-circuit curves as a function of the nominal 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 must be used to correct the values of the three-phase short-circuit curves as a function of the type of short-circuit voltage.

	3 Steps	*2 L-L phases*	*1 L-N phase*
Instant	1x	0.87x	1.30x
Minimum	1x	1.80x	3.20x
Supported	1x	1.50x	2.50x
Maximum duration	20 s	10 s	4 s

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

A smaller generator can be selected for a given engine starting service, as it has lower subtransient reactance values for nonlinear loads. The entire range from 6.5 to 3400 kVA is capable of delivering a sustained short-circuit current of >300% for up to 20 seconds.

Selection & Sizing Tools

Online tools available at select.meccalte.com support alternator selection, sizing and configuration:

- **Sizing Tool** – power sizing, motor starting and electrical verification for industrial alternators.
- **Ratings Book** – complete kVA ratings reference, 50/60 Hz, all standard voltages and temperature classes.
- **PMG Configurator** – model selection and output configuration for permanent magnet generators.
- **3D/2D CAD Library** – STEP models and 2D drawings for alternators and AVR regulators.
- **Winding Resistance** – reference resistance data for all alternator families.

For more information visit: select.meccalte.com

General characteristics

Pole number	4	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	M2K	Maximum Overspeed	2250
Winding pitch	2/3	Altitude	0-1000
Code voltage reference	T0405S3	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 1S4 C	**kVA**	7	**7**	7	5,9	6,8	**6,8**	6,8	5,6	6,5	**6,5**	6,5	5,5	6	**6**	6	5	5,2	**5,2**	5,2	4,4
	kW	5,6	**5,6**	5,6	4,7	5,4	**5,4**	5,4	4,5	5,2	**5,2**	5,2	4,4	4,8	**4,8**	4,8	4	4,2	**4,2**	4,2	3,5
ECP3 2S4 C	**kVA**	8,8	**8,8**	8,8	7,4	8,3	**8,3**	8,3	7	8	**8**	8	6,8	7,5	**7,5**	7,5	6,4	6,4	**6,4**	6,4	5,4
	kW	7	**7**	7	5,9	6,6	**6,6**	6,6	5,6	6,4	**6,4**	6,4	5,4	6	**6**	6	5,1	5,1	**5,1**	5,1	4,3
ECP3 1L4 C	**kVA**	11,8	**11,8**	11,8	9,6	11,4	**11,4**	11,4	9,4	11	**11**	11	9	10	**10**	10	8	8,8	**8,8**	8,8	7,2
	kW	9,4	**9,4**	9,4	7,7	9,1	**9,1**	9,1	7,5	8,8	**8,8**	8,8	7,2	8	**8**	8	6,4	7	**7**	7	5,8
ECP3 2L4 C	**kVA**	14,5	**14,5**	14,5	11,8	14	**14**	14	11,4	13,5	**13,5**	13,5	11	12,5	**12,5**	12,5	10	10,8	**10,8**	10,8	8,8
	kW	11,6	**11,6**	11,6	9,4	11,2	**11,2**	11,2	9,1	10,8	**10,8**	10,8	8,8	10	**10**	10	8	8,6	**8,6**	8,6	7
ECP3 3L4 C	**kVA**	16	**16**	16	12,8	15,5	**15,5**	15,5	12,4	15	**15**	15	12	14	**14**	14	10,5	12	**12**	12	9,6
	kW	12,8	**12,8**	12,8	10,2	12,4	**12,4**	12,4	9,9	12	**12**	12	9,6	11,2	**11,2**	11,2	8,4	9,6	**9,6**	9,6	7,7

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 1S4 C	**kVA**	7,5	8,4	8,4	**8,4**	7,2	8	8	**8**	7	7,8	7,8	**7,8**	6,5	7,2	7,2	**7,2**	5,6	6,2	6,2	**6,2**
	kW	6	6,7	6,7	**6,7**	5,8	6,4	6,4	**6,4**	5,6	6,2	6,2	**6,2**	5,2	5,8	5,8	**5,8**	4,5	5	5	**5**
ECP3 2S4 C	**kVA**	9,8	10,5	10,5	**10,5**	9,4	10	10	**10**	9	9,6	9,6	**9,6**	7,5	9	9	**9**	7,2	7,7	7,7	**7,7**
	kW	7,8	8,4	8,4	**8,4**	7,5	8	8	**8**	7,2	7,7	7,7	**7,7**	6	7,2	7,2	**7,2**	5,8	6,2	6,2	**6,2**
ECP3 1L4 C	**kVA**	12,9	14,3	14,3	**14,3**	12,4	13,8	13,8	**13,8**	12	13,2	13,2	**13,2**	11	12	12	**12**	9,6	10,6	10,6	**10,6**
	kW	10,3	11,4	11,8	**11,4**	9,9	11	11	**11**	9,6	10,6	10,6	**10,6**	8,8	9,6	9,6	**9,6**	7,7	8,5	8,5	**8,5**
ECP3 2L4 C	**kVA**	15,1	17,5	17,5	**17,5**	14,6	16,9	16,9	**16,9**	14	16,2	16,2	**16,2**	12,5	15	15	**15**	11,2	13	13	**13**
	kW	12,1	14	14	**14**	11,7	13,5	13,5	**13,5**	11,2	13	13	**13**	10	12	12	**12**	9	10,4	10,4	**10,4**
ECP3 3L4 C	**kVA**	17,1	19,3	19,3	**19,3**	16,7	18,8	18,8	**18,8**	16	18	18	**18**	14,5	16,5	16,5	**16,5**	12,8	14,4	14,4	**14,4**
	kW	13,7	15,4	15,4	**15,4**	13,4	15	15	**15**	12,8	14,4	14,4	**14,4**	11,6	13,2	13,2	**13,2**	10,2	11,5	11,5	**11,5**

Reactance & Time constants- Class H / 400V

Unsaturated (ref. EN60034-4)			ECP3 1S4 C	ECP3 2S4 C	ECP3 1L4 C	ECP3 2L4 C	ECP3 3L4 C
Xd	Direct-axis synchronous reactance	%	173,4	186,6	220,4	142,3	144
X'd	Direct-axis transient reactance	%	17	16,8	22	14,2	14,6
X"d	Direct-axis subtransient reactance	%	14,4	12,1	15,6	10	10
Xq	Quadrature-axis synchronous reactance	%	60,9	61,6	70,5	71	79,95
X'q	Quadrature-axis transient reactance	%	60,9	61,6	70,5	71	79,95
X"q	Quadrature-axis subtransient reactance	%	69,8	65,9	81,9	52,9	53,3
X_2	Negative-sequence reactance	%	15,9	16,6	18,8	17	17,5
X_0	Zero sequence reactance	%	6,25	5,8	6,15	5,64	5,5
Saturated							
Xd	Direct-axis synchronous reactance	%	147,4	158,6	187,3	120,9	122,4
X'd	Direct-axis transient reactance	%	14,5	14,3	18,7	12,1	12,4
X"d	Direct-axis subtransient reactance	%	12,3	10,3	13,3	8,54	8,5
Xq	Quadrature-axis synchronous reactance	%	51,7	52,4	59,9	60,4	67,96
X'q	Quadrature-axis transient reactance	%	51,7	52,4	59,9	60,4	67,96
X"q	Quadrature-axis subtransient reactance	%	59,3	56	69,6	45	45,3
X_2	Negative-sequence reactance	%	13,5	14,1	16	14,5	14,9
X_0	Zero sequence reactance	%	6,25	5,8	6,15	5,64	5,5
Kcc	Short circuit ratio		1	0,8	0,9	0,98	1,1
T'd	Transient time constant	sec	0,026	0,017	0,036	0,044	0,042
T"d	Subtransient time constant	sec	0,025	0,011	0,013	0,009	0,01
T'do	Open circuit time constant	sec	0,71	0,73	0,79	0,84	0,84
Ta	Armature time constant	sec	0,011	0,012	0,046	0,011	0,011

Additional information - Class H / 400V

Io	Excitation current at no load	A	0,36	0,29	0,34	0,35	0,35
Ic	Excitation current at full load	A	1,1	0,8	1,5	1,2	1,2
Overload					-		
Overload per 20 sec. PRP or 10 sec. COP		%			300		
Heat dissipation		W	1157	1246	1444	1743	1905
Telephone Harmonic Factor - THF		%	<2	<2	<2	<2	<2
Waveform Distors.(THD) full load LL/LN		%	2,8 / 2,6	2,8 / 2,4	2,3 / 2	2,8 / 2,7	2,2 / 2
Waveform Distors.(THD) no load LL/LN		%	2,93 / 2,5	2,7 / 2,5	2,6 / 2,6	2,2 / 2	2,8 / 2,7

Reactance & Time constants- Class H / 480V

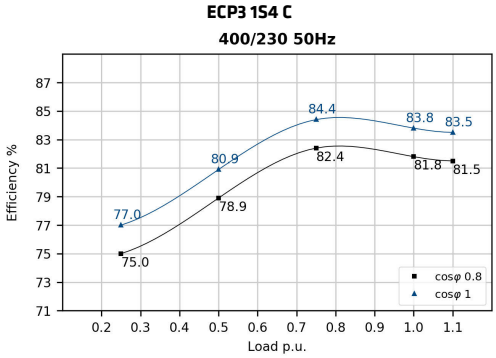
Unsaturated (ref. EN60034-4)			ECP3 1S4 C	ECP3 2S4 C	ECP3 1L4 C	ECP3 2L4 C	ECP3 3L4 C
Xd	Direct-axis synchronous reactance	%	173,4	186,6	220	142,3	144
X'd	Direct-axis transient reactance	%	17	16,8	22	14,2	14,6
X"d	Direct-axis subtransient reactance	%	14,4	12,1	15,6	10	10
Xq	Quadrature-axis synchronous reactance	%	60,9	61,6	70,5	71	79,95
X'q	Quadrature-axis transient reactance	%	60,9	61,6	70,5	71	79,95
X"q	Quadrature-axis subtransient reactance	%	69,8	65,9	81,9	52,9	53,3
X_2	Negative-sequence reactance	%	15,9	16,6	18,8	17	17,5
X_0	Zero sequence reactance	%	6,25	5,8	6,15	5,64	5,5
Saturated							
Xd	Direct-axis synchronous reactance	%	147,4	158,6	187	120,9	122,4
X'd	Direct-axis transient reactance	%	14,5	14,3	18,7	12,1	12,4
X"d	Direct-axis subtransient reactance	%	12,3	10,3	13,3	8,54	8,5
Xq	Quadrature-axis synchronous reactance	%	51,7	52,4	59,9	60,4	67,96
X'q	Quadrature-axis transient reactance	%	51,7	52,4	59,9	60,4	67,96
X"q	Quadrature-axis subtransient reactance	%	59,3	56	69,6	45	45,3
X_2	Negative-sequence reactance	%	13,5	14,1	16	14,5	14,9
X_0	Zero sequence reactance	%	6,25	5,8	6,15	5,64	5,5
Kcc	Short circuit ratio		1	0,8	0,9	0,98	1,1
T'd	Transient time constant	sec	0,026	0,017	0,036	0,044	0,042
T"d	Subtransient time constant	sec	0,025	0,011	0,013	0,009	0,01
T'do	Open circuit time constant	sec	0,71	0,73	0,79	0,84	0,84
Ta	Armature time constant	sec	0,011	0,012	0,046	0,011	0,011

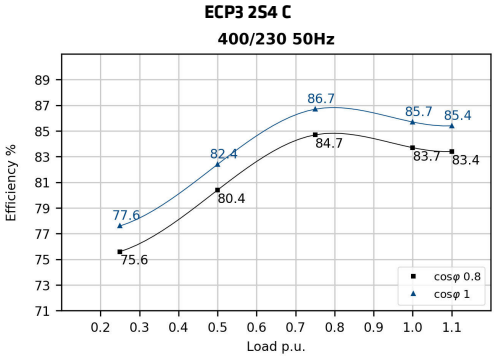
Additional information - Class H / 480V

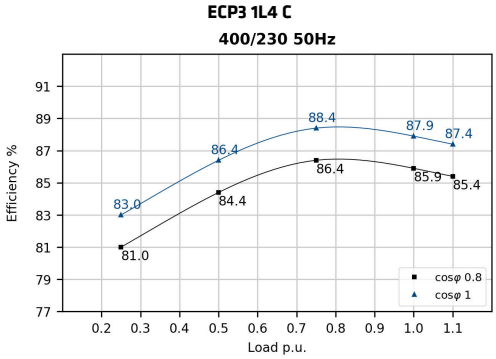
Io	Excitation current at no load	A	0,25	0,27	0,3	0,32	0,32
Ic	Excitation current at full load	A	1,0	0,8	1,4	1,2	1,2
Overload					-		
Overload per 20 sec. PRP or 10 sec. COP		%			300		
Heat dissipation		W	1251	1314	1481	1784	1927
Telephone Interferance Factor - TIF			<45	<45	<45	<45	<45
Waveform Distors.(THD) full load LL/LN		%	2,8 / 2,6	2,8 / 2,4	2,3 / 2	2,8 / 2,7	2,2 / 2
Waveform Distors.(THD) no load LL/LN		%	2,93 / 2,5	2,7 / 2,5	2,6 / 2,6	2,2 / 2	2,8 / 2,7

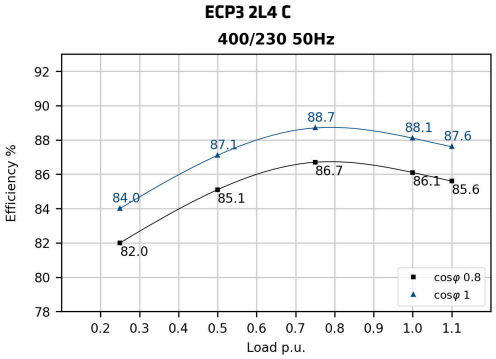
Efficiencies @ 50Hz

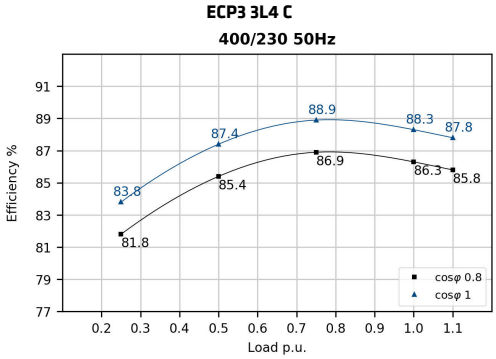
Models		380V 50Hz					400V 50Hz					415V 50Hz					440V 50Hz				
		0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1
ECP3 1S4 C	%	75,1	78,8	82,1	81,7	81,4	75,0	78,9	82,4	81,8	81,5	74,8	78,9	82,3	81,5	81,0	74,3	78,6	82,0	81,3	80,9
ECP3 2S4 C	%	75,5	80,3	84,4	83,6	83,3	75,6	80,4	84,7	83,7	83,4	75,4	80,4	84,6	83,4	82,9	74,9	80,1	84,3	83,2	82,8
ECP3 1L4 C	%	81,1	84,3	86,1	85,8	85,5	81,0	84,4	86,4	85,9	85,4	80,8	84,4	86,3	85,6	85,0	80,3	84,1	86,0	85,4	84,8
ECP3 2L4 C	%	82,0	85,0	86,4	86,0	85,7	82,0	85,1	86,7	86,1	85,6	81,8	85,1	86,6	85,8	85,2	81,3	84,8	86,3	85,6	85,0
ECP3 3L4 C	%	81,8	85,3	86,6	86,2	85,9	81,8	85,4	86,9	86,3	85,8	81,6	85,4	86,8	86,0	85,4	81,1	85,1	86,5	85,8	85,2





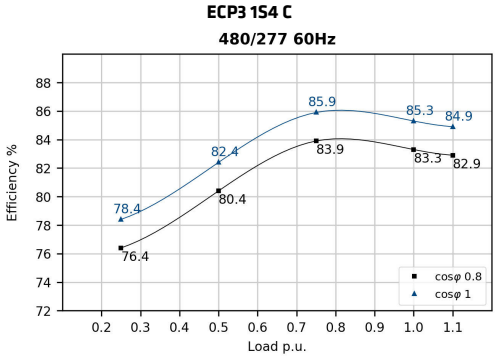


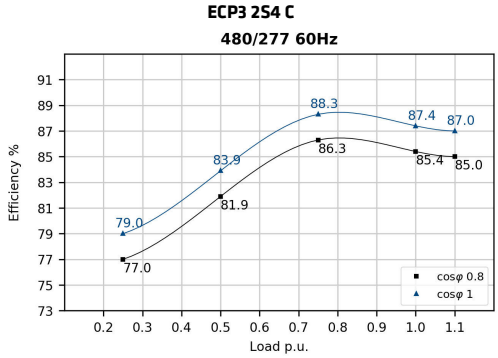


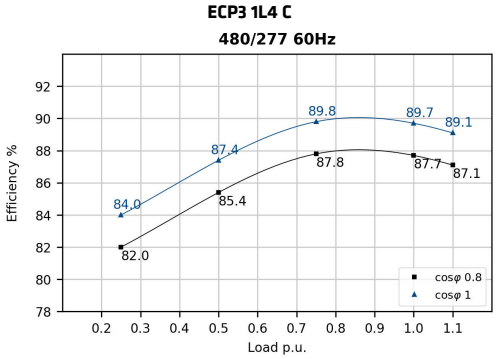


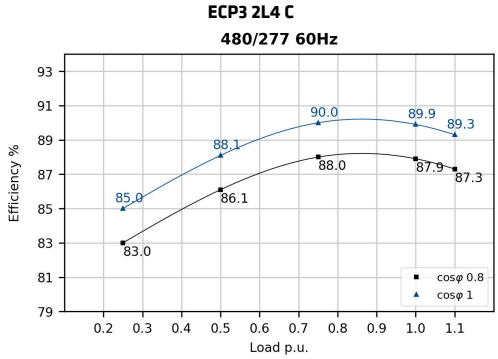
Efficiencies @ 60Hz

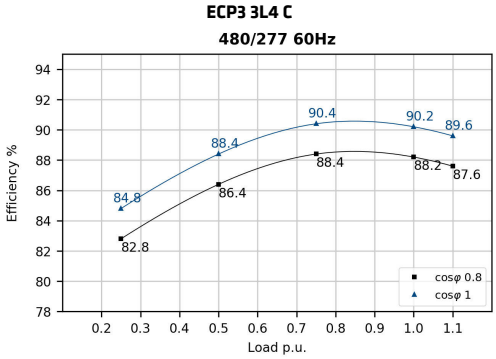
Models		415V 60Hz					440V 60Hz					460V 60Hz					480V 60Hz				
		0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1	0.25	0.5	0.75	1	1.1
ECP3 1S4 C	%	76,2	80,1	83,3	82,6	82,1	76,0	80,2	83,5	83,1	82,8	76,1	80,3	83,7	83,2	82,9	76,4	80,4	83,9	83,3	82,9
ECP3 2S4 C	%	76,8	81,6	85,7	84,7	84,2	76,6	81,7	85,9	85,2	84,9	76,7	81,8	86,1	85,3	84,9	77,0	81,9	86,3	85,4	85,0
ECP3 1L4 C	%	81,8	85,1	87,2	87,0	86,5	81,6	85,2	87,4	87,5	87,1	81,7	85,3	87,6	87,6	87,1	82,0	85,4	87,8	87,7	87,1
ECP3 2L4 C	%	82,8	85,8	87,4	87,2	86,7	82,6	85,9	87,6	87,7	87,3	82,7	86,0	87,8	87,8	87,4	83,0	86,1	88,0	87,9	87,3
ECP3 3L4 C	%	82,6	86,1	87,8	87,5	87,0	82,4	86,2	88,0	88,0	87,6	82,5	86,3	88,2	88,1	87,7	82,8	86,4	88,4	88,2	87,6







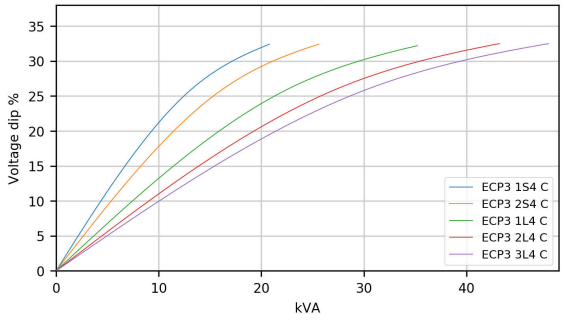




Transients voltage

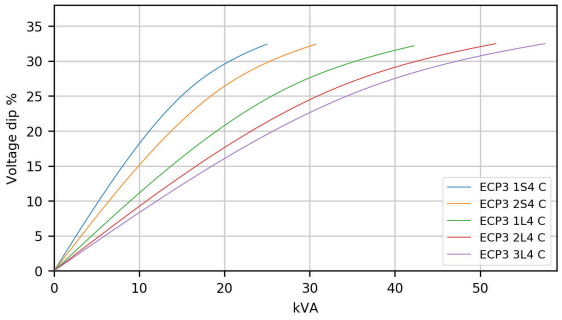
400V - 50Hz

Motor Starting @ P.F. 0,6

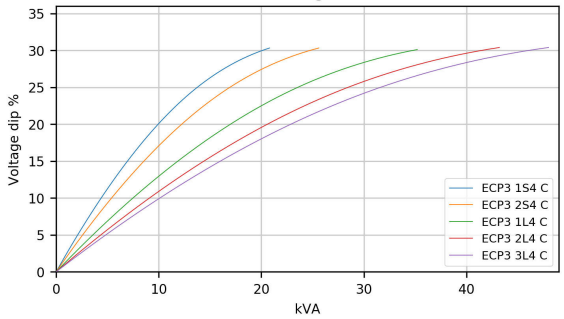


480V - 60Hz

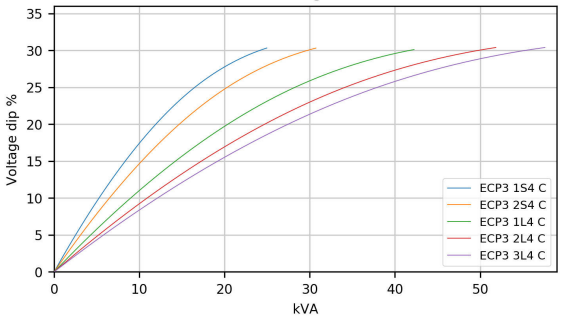
Motor Starting @ P.F. 0,6



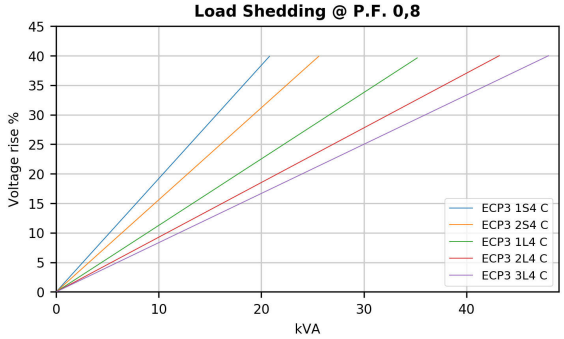
Phase Loading @ P.F. 0,8



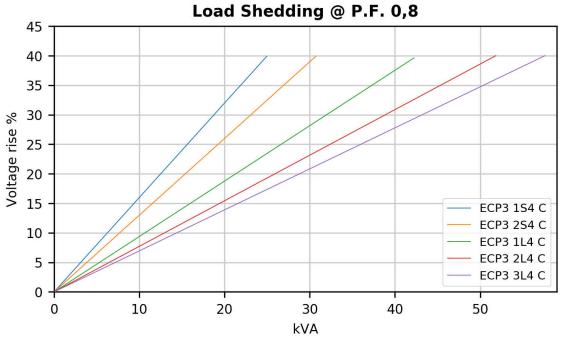
Phase Loading @ P.F. 0,8



Load Shedding @ P.F. 0,8



Load Shedding @ P.F. 0,8



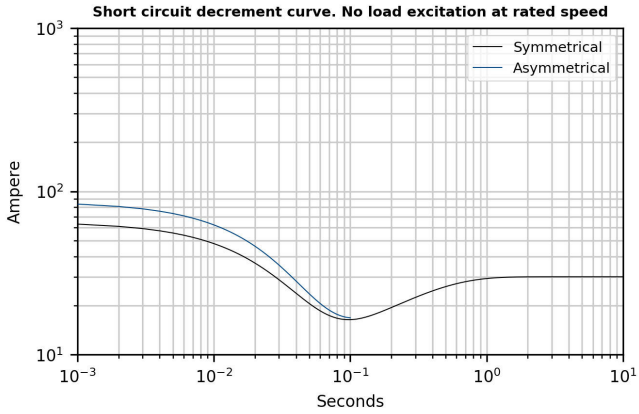
In order to scale transient curves as a function of a power factor or voltage if not indicated, please proceed as follows:

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.

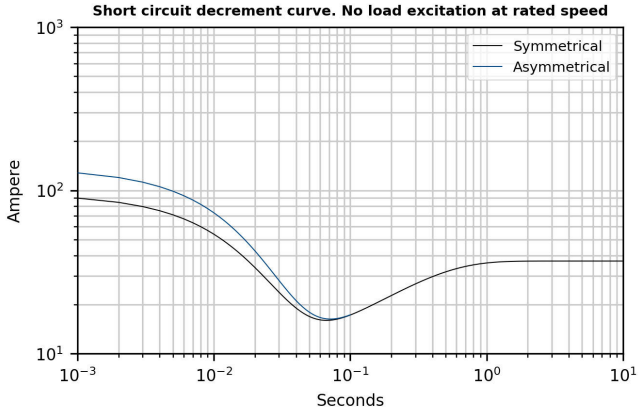
Voltage coefficient corrector (VCC):
VCC=(400/Vnew)2 if 50 Hz; VCC=(480/Vnew)2 if 60 Hz
Example. VCC at 415V 60 Hz is 1.338 [VCC=(480/415)^2]. This means that the voltage fall at a given power at 415V is equivalent to the one that can be read on the power factor 0.6 curve if the load is considered 1.338 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

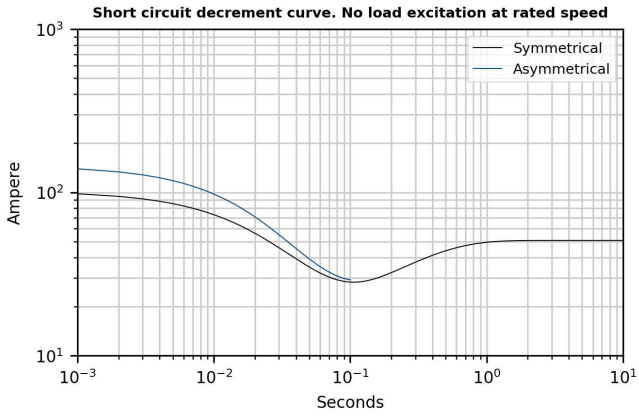
ECP3 1S4 C



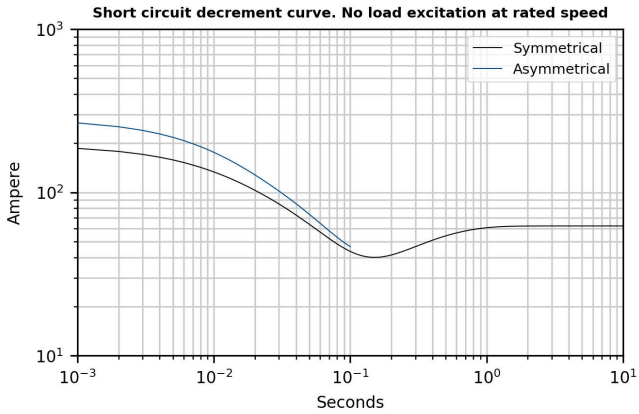
ECP3 2S4 C



ECP3 1L4 C



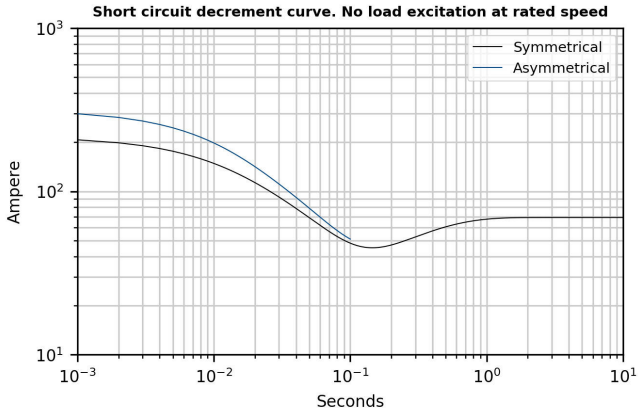
ECP3 2L4 C



*Please refer to tables at page 6

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

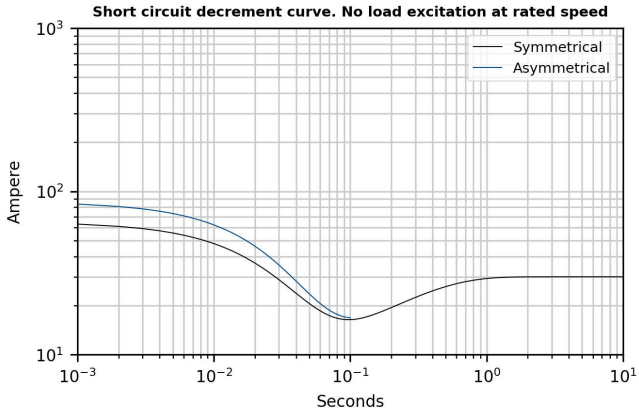
ECP3 3L4 C



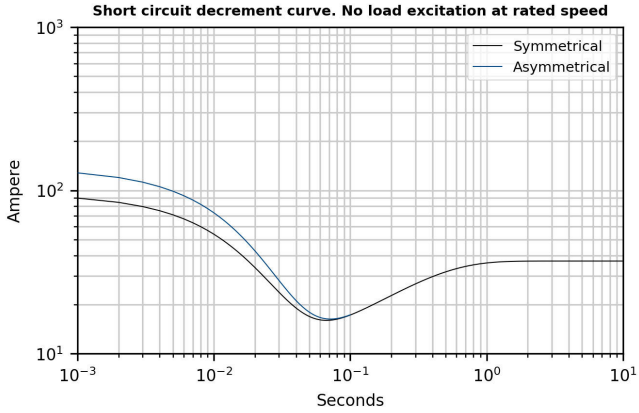
*Please refer to tables at page 6

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

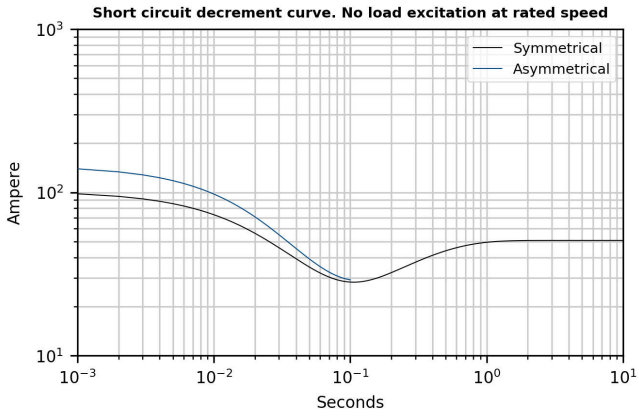
ECP3 1S4 C



ECP3 2S4 C



ECP3 1L4 C



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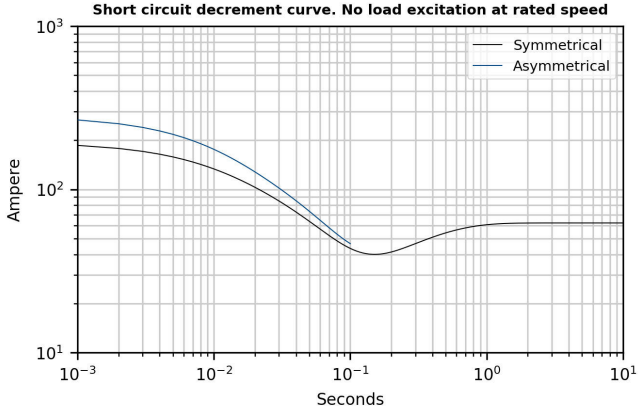
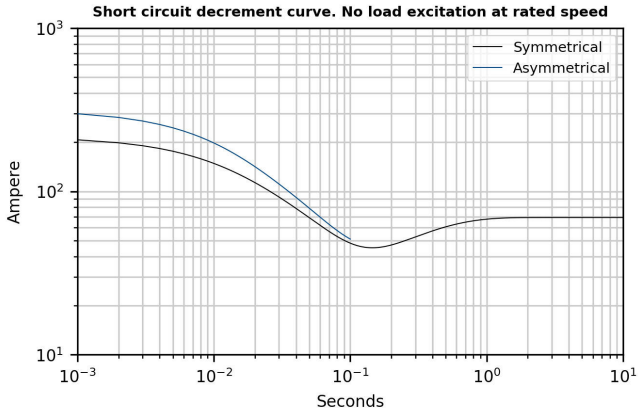


*Please refer to tables at page 6

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

ECP3 3L4 C

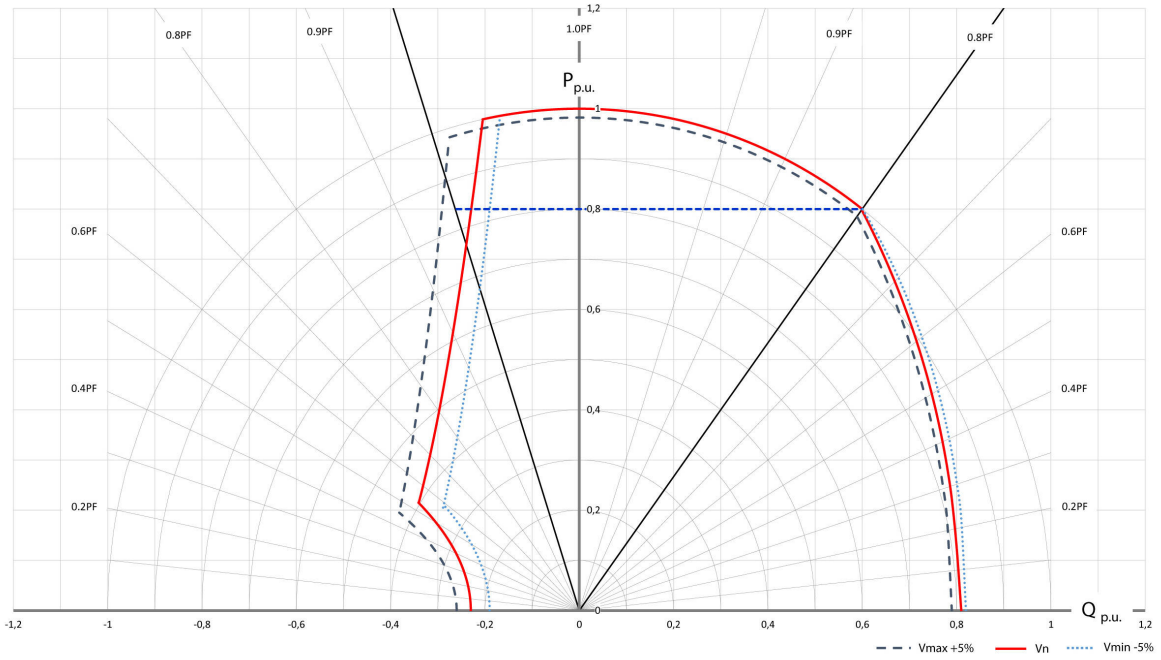


*Please refer to tables at page 6

Additional Characteristics

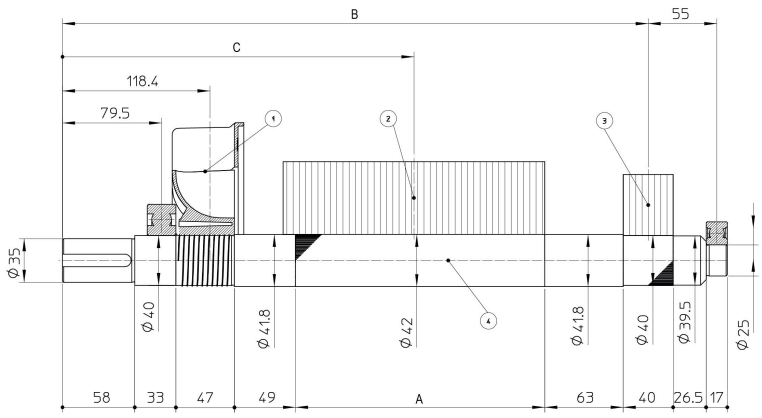
Data		ECP3 1S4 C		ECP3 2S4 C		ECP3 1L4 C		ECP3 2L4 C		ECP3 3L4 C	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
Damper cage		None									
Single stator coil resistance (20°C)	Ω	0,969		0,636		0,457		0,366		0,314	
Rotor Winding Resistance (20°C)	Ω	6,078		7,141		8,539		9,743		10,884	
Stator Exciter 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	4,38		3,9		3,8		3,5		3,75	
Weight of complete generator	kg	59,0		65,0		79,0		87,0		93,0	
Unbalanced magnetic pull	kN/mm	2,5		2,8		2,9		3,0		3,0	
Air flow	m^3/min	3,5	3,9	3,5	4,1	3,3	4,0	3,0	3,5	3,0	3,5
Noise level at 1m/7m	dB(A)	72/58	78/60	72/58	78/60	72/58	78/60	72/58	78/60	72/58	78/60

PQ Diagram



* The PQ diagram above refers to three-phase application only.

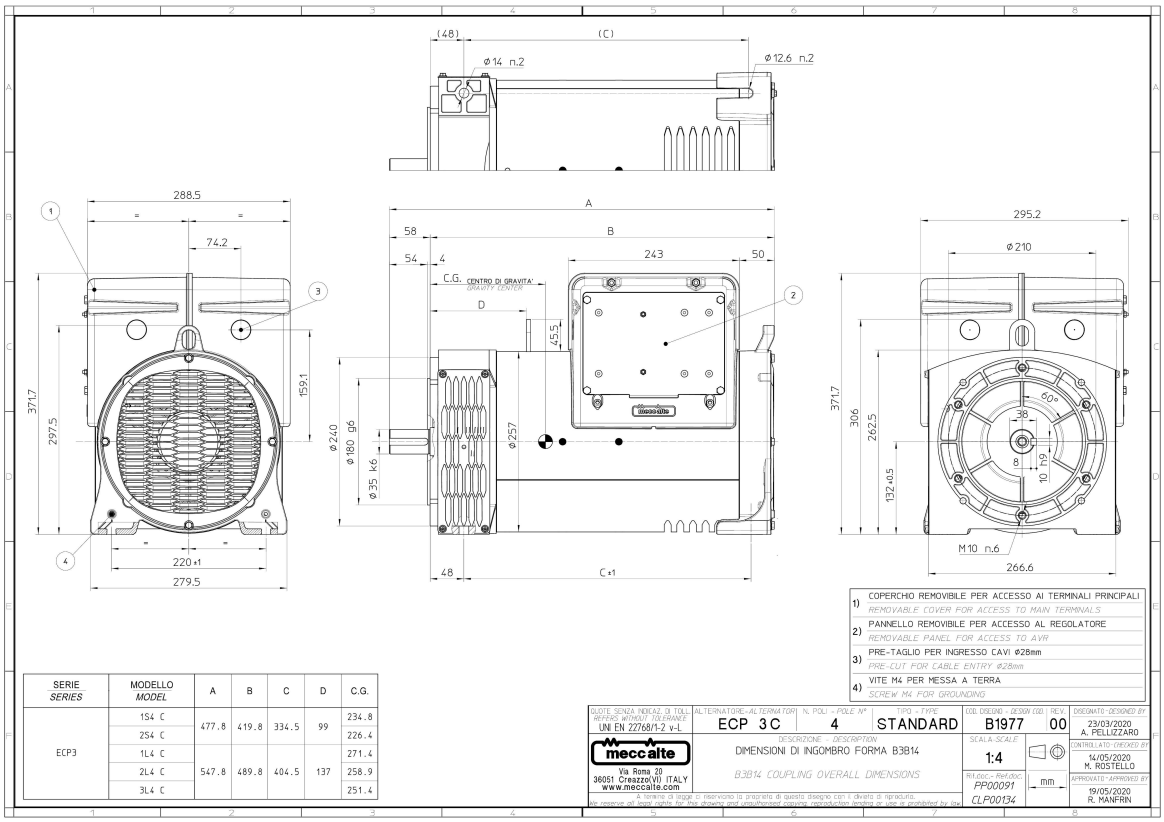
MOMENTS OF INERTIA - DOUBLE BEARING



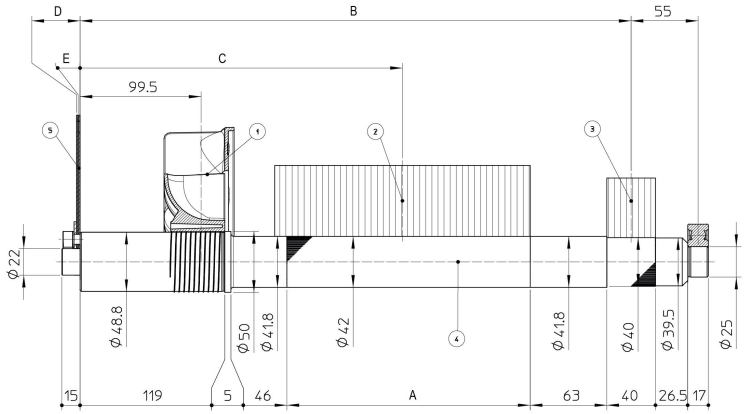
POS.	1		2		3		4		TOTAL	
COMPONENT	FAN		MAIN ROTOR		EXCITER ROTOR		SHAFT			
	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J
TYPE	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]
ECP3 1S4 C	0,41	0,00207	12,32	0,03773	4,34	0,01118	4,45	0,00091	21,52	0,05189
ECP3 2S4 C			14,56	0,04441			4,45	0,00091	23,76	0,05857
ECP3 1L4 C			18,69	0,05687			5,17	0,00107	28,61	0,07119
ECP3 2L4 C			22,47	0,06834			5,17	0,00107	32,39	0,08266
ECP3 3L4 C			24,46	0,07433			5,17	0,00107	34,38	0,08865

DIMENSION	A	B	C
TYPE	[mm]	[mm]	[mm]
ECP3 1S4 C	130	400	272
ECP3 2S4 C			259,5
ECP3 1L4 C	200	470	309,5
ECP3 2L4 C			292
ECP3 3L4 C			282

ECP3C_B3B14



MOMENTS OF INERTIA - SINGLE BEARING

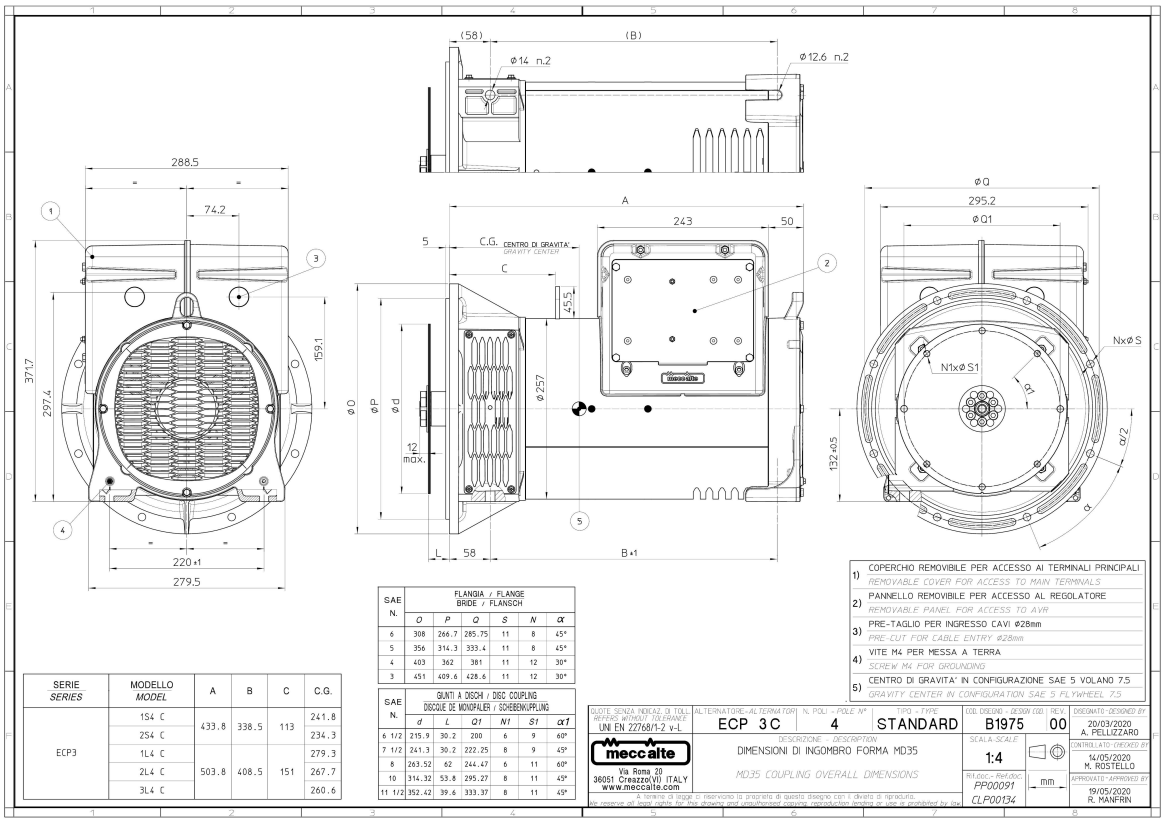


POS.	1		2		3		4		TOTAL	
COMPONENT	FAN		MAIN ROTOR		EXCITER ROTOR		SHAFT			
	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J	WEIGHT	J
TYPE	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]	[kg]	[kgm²]
ECP3 1S4 C	0,39	0,00206	12,32	0,03773	4,34	0,01118	5,02	0,00121	22,07	0,05219
ECP3 2S4 C			14,56	0,04441			5,02	0,00121	24,31	0,05887
ECP3 1L4 C			18,69	0,05687			5,73	0,00136	29,15	0,07148
ECP3 2L4 C			22,47	0,06834			5,73	0,00136	32,93	0,08295
ECP3 3L4 C			24,46	0,07433			5,73	0,00136	34,92	0,08894

DIMENSION	A	B	C
TYPE	[mm]	[mm]	[mm]
ECP3 1S4 C	130	383	255
ECP3 2S4 C			242,5
ECP3 1L4 C	200	453	292,5
ECP3 2L4 C			275
ECP3 3L4 C			265

SAE N°	5	SHAFTS COUPLING FLEXPLATE		
	D	E	WEIGHT [kg]	J [kgm²]
6 1/2	3	1,5	0,97	0,00496
7 1/2	3	1,5	1,18	0,00770
8	34,6	29,5	1,76	0,01114
10	26,6	23,4	2,14	0,02220
11 1/2	13	10,8	2,59	0,03512

ECP3C_MD35



SAE N.	FLANGIA / FLANGE BRIDE / FLANSCH					
	O	P	Q	S	N	α
6	308	266.7	285.75	11	8	45°
5	356	314.3	333.4	11	8	45°
4	403	362	381	11	12	30°
3	451	409.6	428.6	11	12	30°

SAE N.	GIUNTI A DISCHI / DISC COUPLING DISQUE DE MONOPALIER / SCHEIBENKUPPLING					
	d	L	Q1	N1	S1	α1
6 1/2	215.9	30.2	200	6	9	60°
7 1/2	241.3	30.2	222.25	8	9	45°
8	263.52	62	244.47	6	11	60°
10	314.32	53.8	295.27	8	11	45°
11 1/2	352.42	39.6	333.37	8	11	45°

SERIE SERIES	MODELLO MODEL	A	B	C	C.G.
ECP3	1S4 C	433.8	338.5	113	241.8
	2S4 C				234.3
	1L4 C	503.8	408.5	151	279.3
	2L4 C				267.7
	3L4 C				260.6

GIUOTE SENZA INDICAZ. DI TOLL. RIFERITE ALLA NORMA UNI EN 22768/1-2 v-L

ALTERNATORE - ALTERNATOR | N. POLI - POLE Nº | TIPO - TYPE
ECP 3C | 4 | STANDARD

COD. DISEGNO - DESIGN COD. | REV.
B1975 | 00

DESIGNATO - DESIGNED BY
20/03/2020
A. PELLIZZARO

CONTROLLATO - CHECKED BY
14/05/2020
M. ROSTELLO

APPROVATO - APPROVED BY
19/05/2020
R. MANFRIN

DESCRIZIONE - DESCRIPTION
DIMENSIONI DI INGOMBRO FORMA MD35
MD35 COUPLING OVERALL DIMENSIONS

SCALA - SCALE
1:4

Rif.Doc. - Ref.doc.
PP00091
CLP00134

mm

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