mecc alte

Totally Focused. Totally Independent.

Technical Specification

ECO47LV 4 B

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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The information contained in this document does not constitute a guarantee of performance for any specific application. For specific technical information, please contact your local Mecc Alte office.

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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.

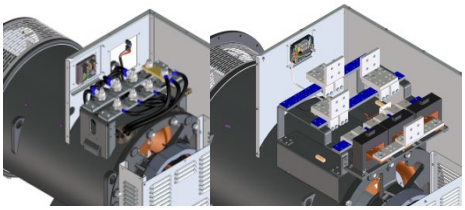
For more information visit: Insulation_System_Guide

Construction

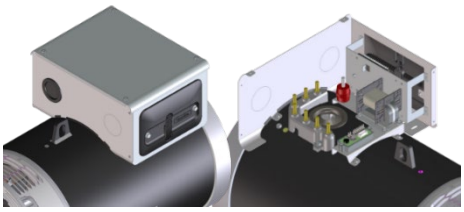
The robust mechanical structure withstands up to 5G in any direction and 9G vertically, and its design allows easy access to connections and components during routine maintenance checks. The mechanical design used the most advanced FEM techniques. The materials used are: DD12 steel for the frame, C45 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

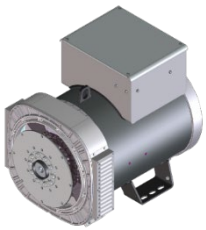
Easy access to the regulators is ensured by a pull-out drawer or drop-down panel to allow for safer adjustment. Large terminal blocks allow easy access of power cables, in the higher power ranges ECO43 and ECO46 terminals allow convenient choice of power cable or busbar connection with input and connection 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

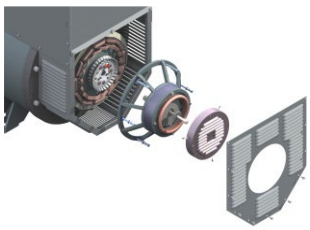
Optional PMG

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



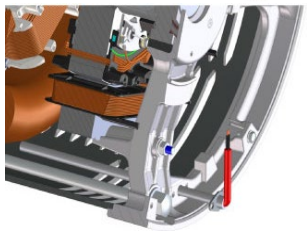
On the ECO 40, 43 and 46 series it is optionally available factory-fitted or retrofitted. On the ECO47 the PMG is standard.

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	4	NDE Bearing type	6226
Execution	Brushless	DE Bearing type	6232
Regulator type	M3Ks-HD	Maximum Overspeed	2250
Winding pitch	2/3	Altitude	0-1000
Code voltage reference	T0405P3	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
ECO47LV 1S4 B	**kVA**	3128	**3300**	3128	2994	2998	**3162**	2998	2868	2898	**3056**	2898	2773	2606	**2750**	2606	2494	2318	**2444**	2318	2218
	kW	2502	**2640**	2502	2395	2398	**2530**	2398	2294	2318	**2445**	2318	2218	2085	**2200**	2085	1995	1854	**1955**	1854	1774
ECO47LV 2S4 B	**kVA**	3334	**3510**	3334	3190	3194	**3362**	3194	3056	3088	**3250**	3088	2955	2778	**2924**	2778	2658	2470	**2600**	2470	2362
	kW	2668	**2808**	2668	2552	2555	**2690**	2555	2445	2470	**2600**	2470	2364	2222	**2339**	2222	2126	1976	**2080**	1976	1890
ECO47LV 2M4 B	**kVA**	3590	**3780**	3590	3436	3440	**3622**	3440	3292	3325	**3500**	3325	3182	3000	**3150**	3000	2862	2660	**2800**	2660	2544
	kW	2872	**3024**	2872	2749	2752	**2898**	2752	2634	2660	**2800**	2660	2546	2400	**2520**	2400	2290	2128	**2240**	2128	2035
ECO47LV 1L4 B	**kVA**	4236	**4460**	4236	4054	4060	**4274**	4060	3884	3924	**4130**	3924	3755	3530	**3716**	3530	3378	3138	**3304**	3138	3002
	kW	3389	**3568**	3389	3243	3248	**3419**	3248	3107	3139	**3304**	3139	3004	2824	**2973**	2824	2702	2510	**2643**	2510	2402

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
ECO47LV 1S4 B	**kVA**	3416	3622	3788	**3960**	3274	3472	3630	**3794**	3164	3355	3508	**3667**	2846	3018	3156	**3300**	2530	2684	2806	**2932**
	kW	2733	2898	3030	**3168**	2619	2778	2904	**3035**	2531	2684	2806	**2934**	2277	2414	2525	**2640**	2024	2147	2245	**2346**
ECO47LV 2S4 B	**kVA**	3640	3860	4036	**4212**	3488	3700	3868	**4034**	3372	3575	3738	**3900**	3034	3216	3362	**3508**	2696	2860	2990	**3120**
	kW	2913	3088	3229	**3370**	2791	2960	3094	**3227**	2698	2860	2990	**3120**	2426	2573	2690	**2806**	2157	2288	2392	**2496**
ECO47LV 2M4 B	**kVA**	3920	4158	4346	**4536**	3758	3984	4164	**4346**	3631	3850	4025	**4200**	3268	3464	3622	**3780**	2904	3080	3220	**3360**
	kW	3136	3326	3477	**3629**	3006	3188	3331	**3477**	2905	3080	3220	**3360**	2614	2770	2898	**3024**	2323	2464	2576	**2688**
ECO47LV 1L4 B	**kVA**	4626	4906	5128	**5352**	4434	4702	4914	**5128**	4285	4543	4750	**4956**	3856	4088	4274	**4458**	3426	3634	3798	**3964**
	kW	3701	3925	4102	**4282**	3547	3762	3931	**4102**	3428	3634	3800	**3965**	3085	3270	3419	**3566**	2741	2907	3038	**3171**

Reactance & Time constants- Class H / 400V

Unsaturated (ref. EN60034-4)			ECO47LV 1S4 B	ECO47LV 2S4 B	ECO47LV 2M4 B	ECO47LV 1L4 B
Xd	Direct-axis synchronous reactance	%	340,5	382,9	312,4	380,4
X'd	Direct-axis transient reactance	%	32,1	39,2	30,4	36,8
X"d	Direct-axis subtransient reactance	%	14,88	15,7	11,3	12,75
Xq	Quadrature-axis synchronous reactance	%	180,3	201,3	168,5	203,4
X'q	Quadrature-axis transient reactance	%	180,3	201,3	168,5	203,4
X"q	Quadrature-axis subtransient reactance	%	47,2	52,6	45,6	54,5
X_2	Negative-sequence reactance	%	31,04	34,15	28,45	33,63
X_0	Zero sequence reactance	%	7,7	8,5	6,6	5,9
Saturated						
Xd	Direct-axis synchronous reactance	%	282,6	317,8	259,3	315,7
X'd	Direct-axis transient reactance	%	26,6	32,5	25,2	30,5
X"d	Direct-axis subtransient reactance	%	12,4	13,1	9,3	10,6
Xq	Quadrature-axis synchronous reactance	%	149,6	167,1	139,9	168,8
X'q	Quadrature-axis transient reactance	%	149,6	167,1	139,9	168,8
X"q	Quadrature-axis subtransient reactance	%	39,2	43,7	37,8	45,2
X_2	Negative-sequence reactance	%	25,08	28,04	23,55	27,9
X_0	Zero sequence reactance	%	7,7	8,5	6,6	5,9
Kcc	Short circuit ratio		0,35	0,31	0,39	0,32
T'd	Transient time constant	sec	0,275	0,273	0,271	0,267
T"d	Subtransient time constant	sec	0,033	0,032	0,03	0,026
T'do	Open circuit time constant	sec	7,8	7,7	7,5	7,3
Ta	Armature time constant	sec	0,037	0,036	0,034	0,031

Additional information - Class H / 400V

Io	Excitation current at no load	A	1,1	1,1	1,1	1,1
Ic	Excitation current at full load	A	4,8	5,0	5,0	5,0
Overload				-		
Overload per 20 sec. PRP or 10 sec. COP		%		300		
Heat dissipation		W	123267	136842	116667	130511
Telephone Harmonic Factor - THF		%	<2	<2	<2	<2
Waveform Distors.(THD) full load LL/LN		%	3,3 / 2,9	3,4 / 3,3	3,3 / 2,5	3,3 / 2,9
Waveform Distors.(THD) no load LL/LN		%	2,5 / 2,4	2,9 / 2,8	2,7 / 2,5	2,7 / 2,6

Reactance & Time constants- Class H / 480V

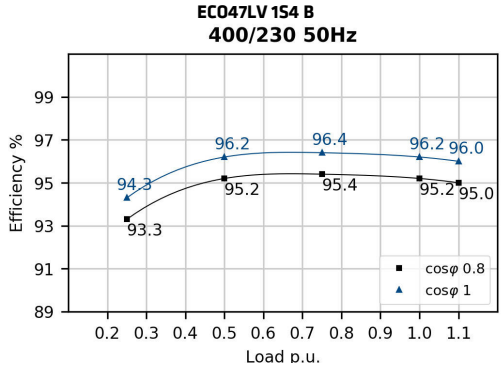
Unsaturated (ref. EN60034-4)			ECO47LV 1S4 B	ECO47LV 2S4 B	ECO47LV 2M4 B	ECO47LV 1L4 B
Xd	Direct-axis synchronous reactance	%	340,5	382,9	312,4	380,4
X'd	Direct-axis transient reactance	%	32,1	39,2	30,4	36,8
X"d	Direct-axis subtransient reactance	%	14,88	15,7	11,3	12,75
Xq	Quadrature-axis synchronous reactance	%	180,3	201,3	168,5	203,4
X'q	Quadrature-axis transient reactance	%	180,3	201,3	168,5	203,4
X"q	Quadrature-axis subtransient reactance	%	47,2	52,6	45,6	54,5
X_2	Negative-sequence reactance	%	31,04	34,15	28,45	33,63
X_0	Zero sequence reactance	%	7,7	8,5	6,6	5,9
Saturated						
Xd	Direct-axis synchronous reactance	%	282,6	317,8	259,3	315,7
X'd	Direct-axis transient reactance	%	26,6	32,5	25,2	30,5
X"d	Direct-axis subtransient reactance	%	12,4	13,1	9,3	10,6
Xq	Quadrature-axis synchronous reactance	%	149,6	167,1	139,9	168,8
X'q	Quadrature-axis transient reactance	%	149,6	167,1	139,9	168,8
X"q	Quadrature-axis subtransient reactance	%	39,2	43,7	37,8	45,2
X_2	Negative-sequence reactance	%	25,08	28,04	23,55	27,9
X_0	Zero sequence reactance	%	7,7	8,5	6,6	5,9
Kcc	Short circuit ratio		0,35	0,31	0,39	0,32
T'd	Transient time constant	sec	0,275	0,273	0,271	0,267
T"d	Subtransient time constant	sec	0,033	0,032	0,03	0,026
T'do	Open circuit time constant	sec	7,8	7,7	7,5	7,3
Ta	Armature time constant	sec	0,037	0,036	0,034	0,031

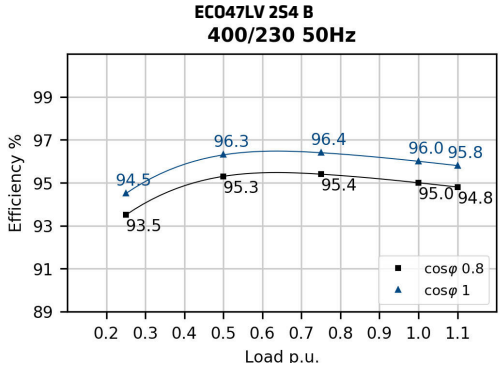
Additional information - Class H / 480V

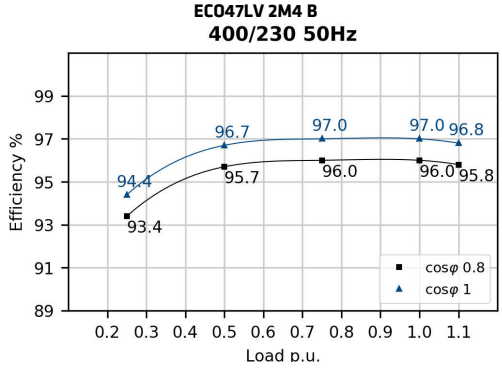
Io	Excitation current at no load	A	1,1	1,1	1,1	1,1
Ic	Excitation current at full load	A	4,8	5,0	5,0	5,0
Overload				-		
Overload per 20 sec. PRP or 10 sec. COP		%		300		
Heat dissipation		W	144679	153872	132723	148063
Telephone Interferance Factor - TIF			<40	<40	<40	<40
Waveform Distors.(THD) full load LL/LN		%	3,3 / 2,9	3,4 / 3,3	3,3 / 2,5	3,3 / 2,9
Waveform Distors.(THD) no load LL/LN		%	2,5 / 2,4	2,9 / 2,8	2,7 / 2,5	2,7 / 2,6

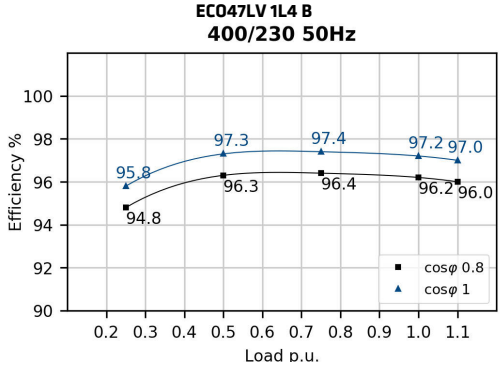
Efficiencies @ 50Hz

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
ECO47LV 1S4 B	%	93,3	95,1	95,5	95,1	95,0	93,3	95,2	95,4	95,2	95,0	93,2	95,4	95,3	95,0	94,9	93,2	95,0	95,2	95,0	94,8
ECO47LV 2S4 B	%	93,4	95,1	95,3	94,9	94,8	93,5	95,3	95,4	95,0	94,8	93,5	95,1	95,4	95,0	94,9	93,3	94,9	95,2	94,8	94,7
ECO47LV 2M4 B	%	93,3	95,6	95,9	95,9	95,6	93,4	95,7	96,0	96,0	95,8	93,4	95,7	95,9	96,0	95,7	93,2	95,5	95,8	95,8	95,4
ECO47LV 1L4 B	%	94,7	96,2	96,3	96,0	95,9	94,8	96,3	96,4	96,2	96,0	94,8	96,3	96,3	96,1	95,9	94,7	96,2	96,2	96,1	96,0



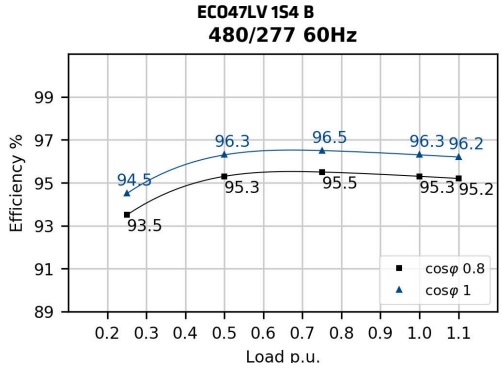


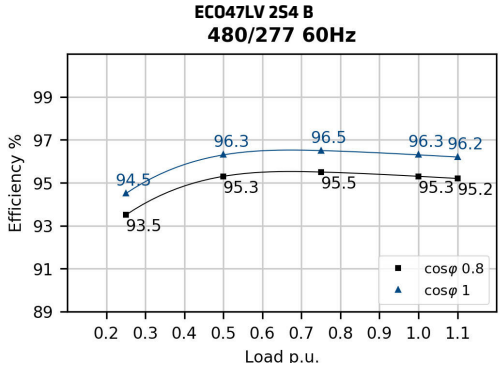


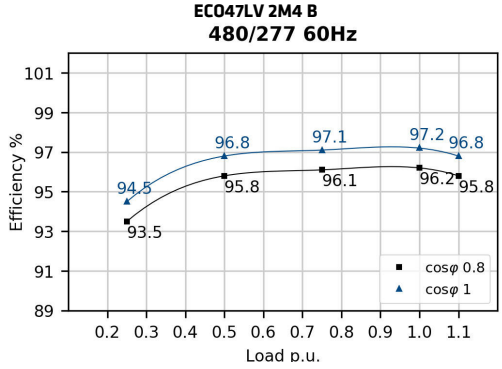


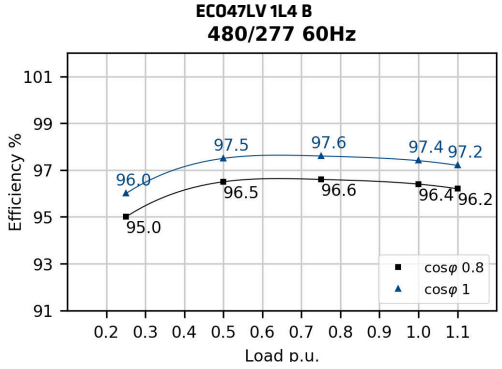
Efficiencies @ 60Hz

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
ECO47LV 1S4 B	%	93,4	95,3	95,3	95,1	95,0	93,4	95,2	95,3	95,3	95,2	93,3	95,1	95,2	95,1	95,0	93,5	95,3	95,5	95,3	95,2
ECO47LV 2S4 B	%	93,4	95,2	95,2	95,0	94,8	93,3	95,1	95,3	95,1	95,0	93,4	95,2	95,4	95,2	95,1	93,5	95,3	95,5	95,3	95,2
ECO47LV 2M4 B	%	93,4	95,2	95,2	95,0	94,8	93,3	95,6	95,8	95,8	95,6	93,4	95,7	95,9	95,9	95,7	93,5	95,8	96,1	96,2	95,8
ECO47LV 1L4 B	%	94,9	96,4	96,5	96,2	96,1	95,0	96,5	96,5	96,3	96,1	94,9	96,4	96,5	96,2	96,1	95,0	96,5	96,6	96,4	96,2





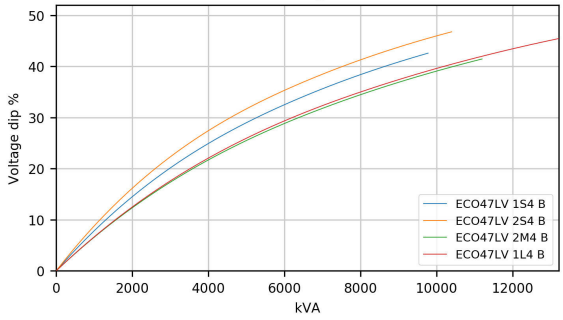




Transients voltage

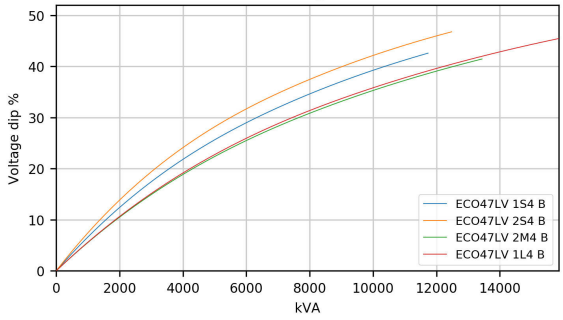
400V - 50Hz

Motor Starting @ P.F. 0,6

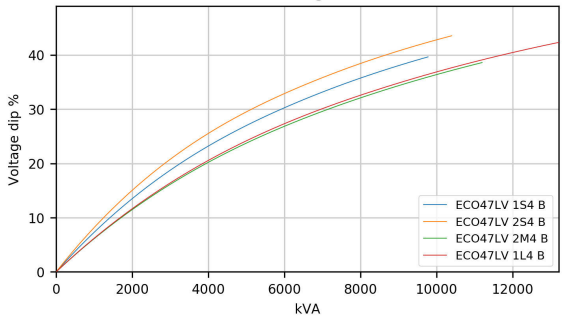


480V - 60Hz

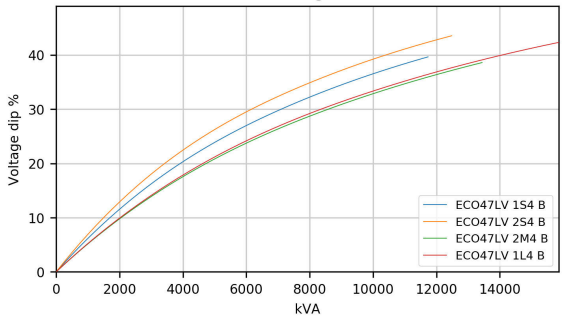
Motor Starting @ P.F. 0,6



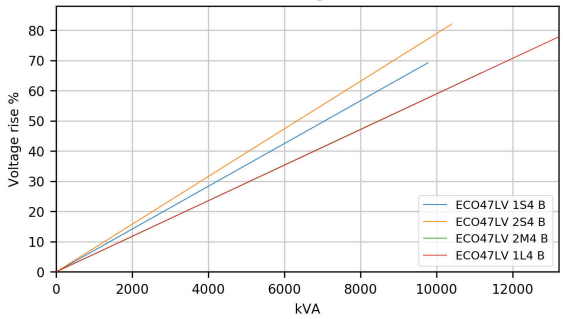
Phase Loading @ P.F. 0,8



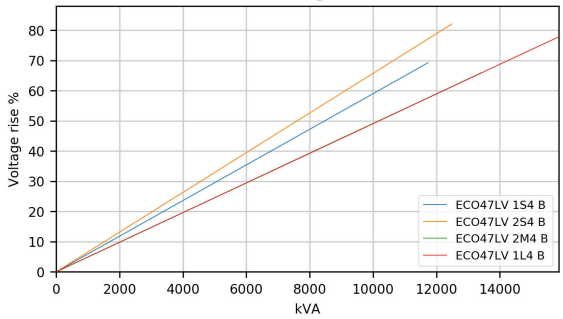
Phase Loading @ P.F. 0,8



Load Shedding @ P.F. 0,8



Load Shedding @ P.F. 0,8



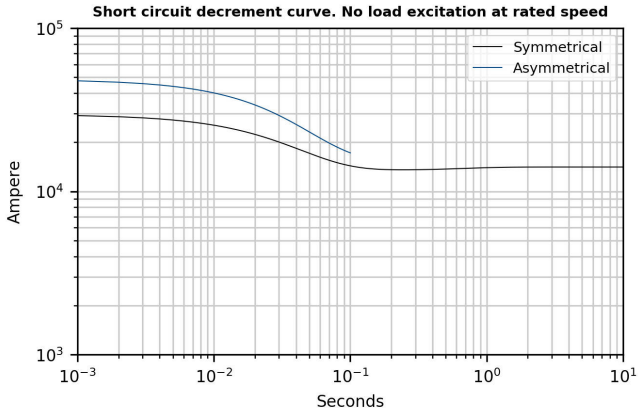
In order to scale transient curves as a function of a power factor or voltage if not indicated, please proceed as follows:

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.

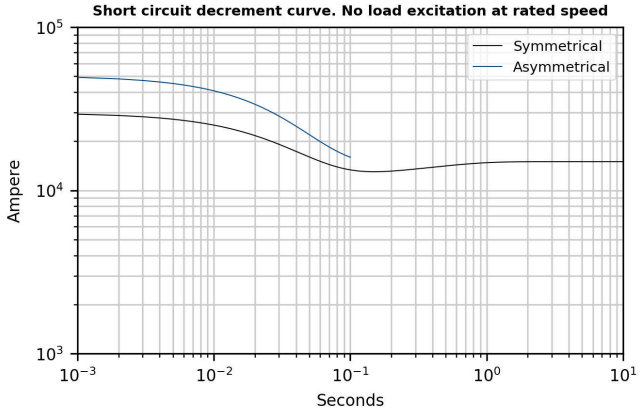
Voltage coefficient corrector (VCC):
VCC=(400/Vnew)2 if 50 Hz; VCC=(480/Vnew)2 if 60 Hz
Example. VCC at 415V 60 Hz is 1.338 [VCC=(480/415)^2]. This means that the voltage fall at a given power at 415V is equivalent to the one that can be read on the power factor 0.6 curve if the load is considered 1.338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

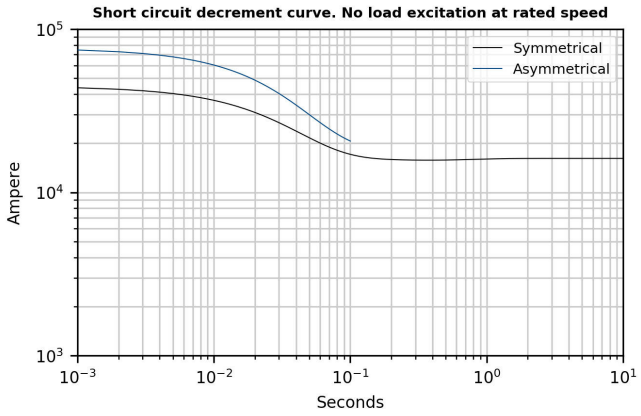
ECO47LV 1S4 B



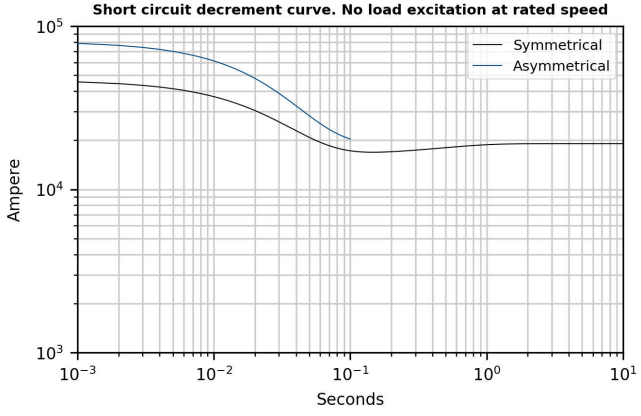
ECO47LV 2S4 B



ECO47LV 2M4 B



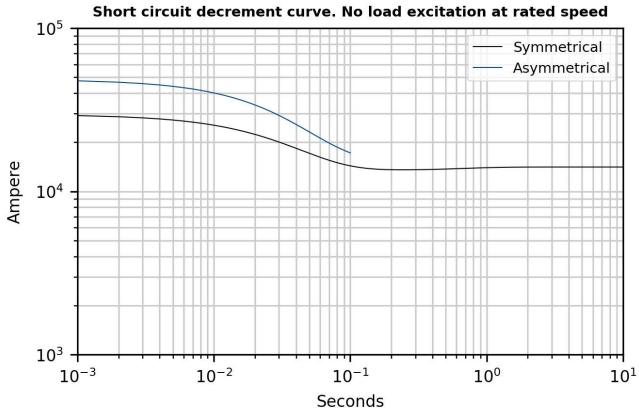
ECO47LV 1L4 B



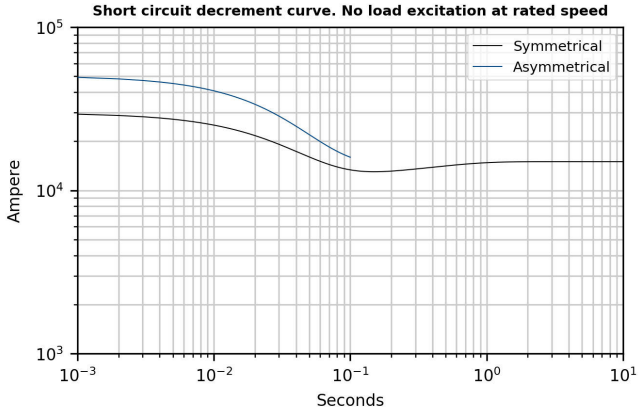
*Please refer to tables at page 6

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

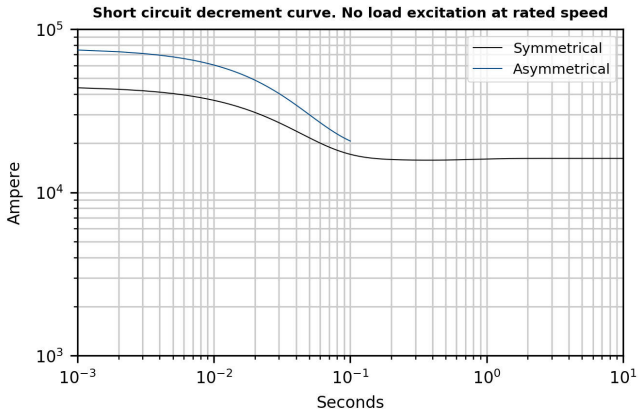
ECO47LV 1S4 B



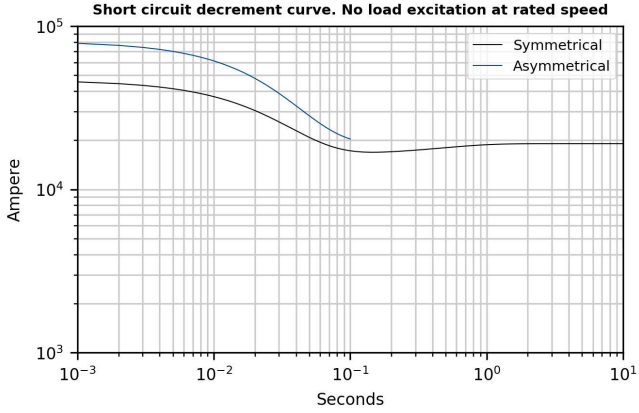
ECO47LV 2S4 B



ECO47LV 2M4 B



ECO47LV 1L4 B

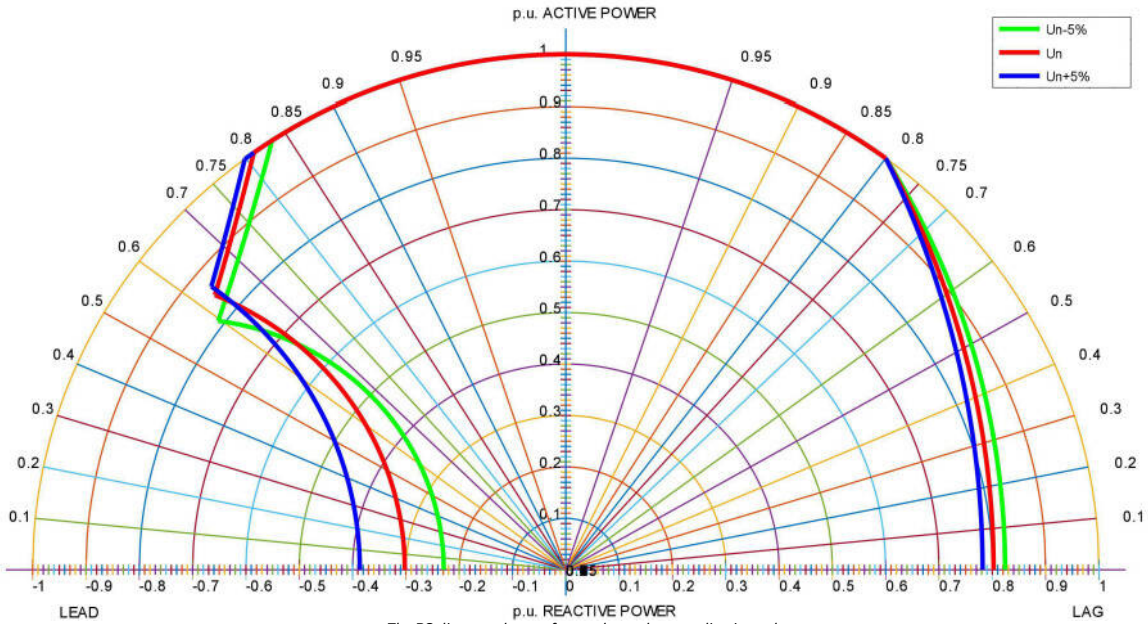


*Please refer to tables at page 6

Additional Characteristics

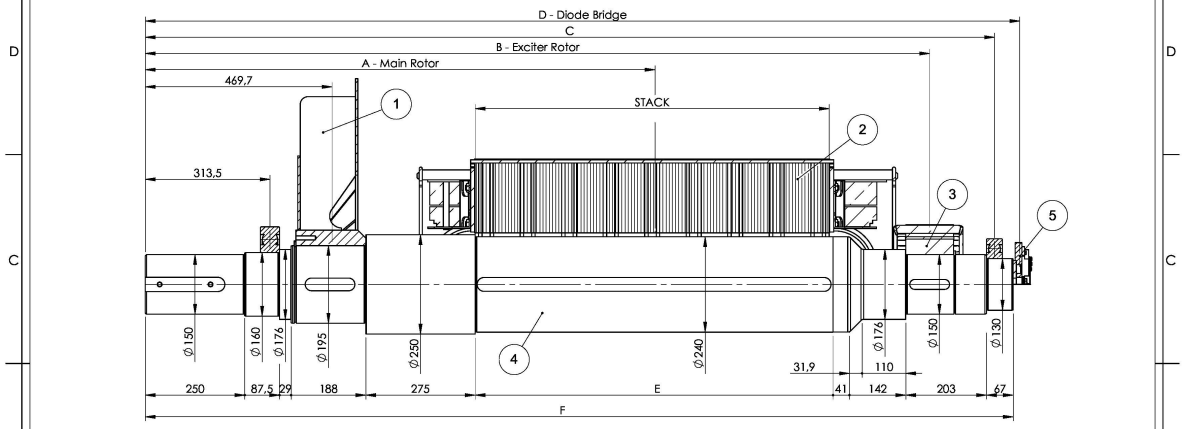
Data		ECO47LV 1S4 B		ECO47LV 2S4 B		ECO47LV 2M4 B		ECO47LV 1L4 B	
		50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz
Damper cage		Copper							
Single stator coil resistance (20°C)	Ω	0,00043		0,00044		0,00037		0,0005	
Rotor Winding Resistance (20°C)	Ω	1,1		1,2		1,4		1,5	
Stator Exciter Resistance (20°C)	Ω	13,0		13,0		13,0		13,0	
Rotor Exciter Resistance (20°C)	Ω	0,04		0,04		0,04		0,04	
Auxiliary Winding Resistance (20°C)	Ω	-		-		-		-	
Weight of complete generator	kg	6039,0		6239,0		6771,0		7415,0	
Unbalanced magnetic pull	kN/mm	12,2		12,9		14,0		17,0	
Air flow	m^3/min	192,0	230,0	192,0	230,0	192,0	230,0	192,0	230,0
Noise level at 1m/7m	dB(A)	97/86	100/89	97/86	100/89	97/86	100/89	97/86	100/89

PQ Diagram



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

MOMENTS OF INERTIA - DOUBLE BEARING



TYPE	COMPONENT										TOTAL	
	1 FAN		2 MAIN ROTOR		3 EXCITER ROTOR		4 SHAFT*		5 DIODE BRIDGE			
	Weight [kg]	J [kgm²]	Weight [kg]	J [kgm²]	Weight [kg]	J [kgm²]	Weight [kg]	J [kgm²]	Weight [kg]	J [kgm²]	Weight [kg]	J [kgm²]
ECO47 1S/4B	107.4	9.3738	1402	75.2738	52.1	0.7565	563.29	3.5802	4.7	0.0271	2129.5	89.0113
ECO47 2S/4B			1472.1	79.0775							2199.6	92.8150
ECO47 2M/4B			1638.1	88.0386			598.91	3.8392			2401.3	102.0351
ECO47 1L/4B			1798.9	96.6657			638.01	4.1230			2601.1	110.9460

TYPE	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]
ECO47 1S/4B	1211.9	1872	2035.5	2098.6	800	2082.5
ECO47 2S/4B	1232.4					
ECO47 2M/4B	1281.7	1972	2135.5	2198.6	900	2182.5
ECO47 1L/4B	1336.7	2082	2245.5	2308.6	1010	2292.5

* Shaft mass and inertia also include rotor keys

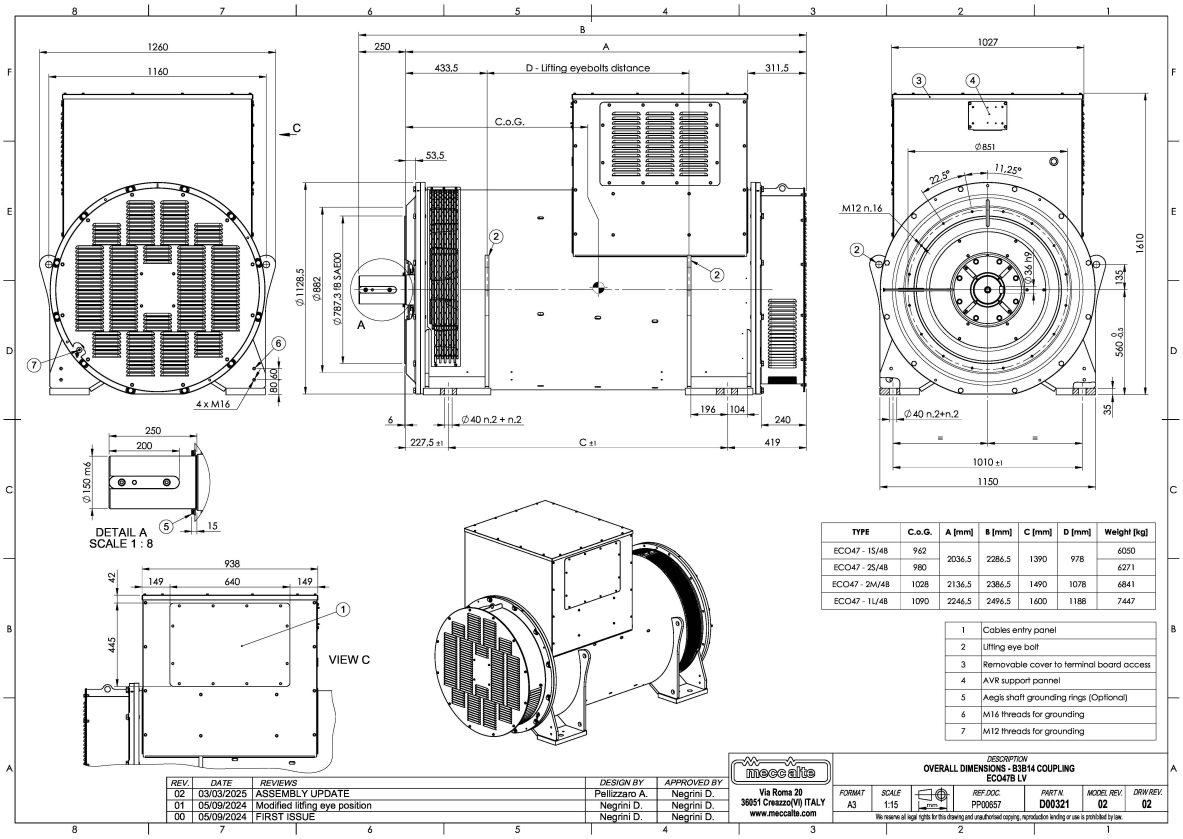
REV.	DATE	REVIEWS	DESIGN BY	APPROVED BY
01	04/04/2025	ADDED "14B"	Masiero M.	Luise F.
00	05/09/2024	FIRST ISSUE	Masiero M.	Negrini D.

Via Roma 20
36051 Creazzo(VI) ITALY
www.meccalte.it

DESCRIPTION: MOMENTS OF INERTIA - DOUBLE BEARING
ECO47B - LV

FORMAT	SCALE	REF.DOC.	PART N.	MODEL REV.	DRW REV.
A4	1:10	-	D00319	00	01

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TYPE	C.o.G.	A [mm]	B [mm]	C [mm]	D [mm]	Weight [kg]
ECO47 - 1S/4B	962	2036.5	2286.5	1390	978	6050
ECO47 - 2S/4B	980					6271
ECO47 - 2M/4B	1028	2136.5	2386.5	1490	1078	6841
ECO47 - 1L/4B	1090	2246.5	2496.5	1600	1188	7447

1	Cables entry panel
2	Lifting eye bolt
3	Removable cover to terminal board access
4	AVR support pannel
5	Aegis shaft grounding rings (Optional)
6	M16 threads for grounding
7	M12 threads for grounding

REV.	DATE	REVIEWS	DESIGN BY	APPROVED BY
02	03/03/2025	ASSEMBLY UPDATE	Pellizzaro A.	Negrini D.
01	05/09/2024	Modified lifting eye position	Negrini D.	Negrini D.
00	05/09/2024	FIRST ISSUE	Negrini D.	Negrini D.

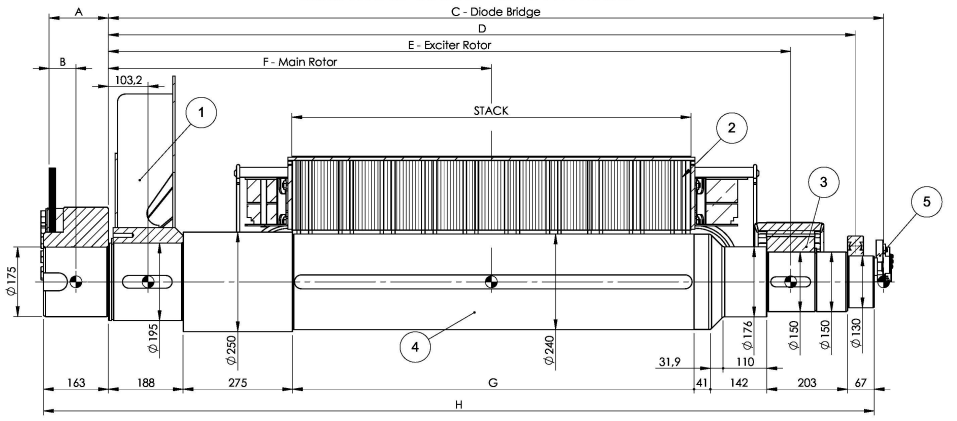
Via Roma 20
36051 Creazzo(VI) ITALY
www.meccalte.it

DESCRIPTION: OVERALL DIMENSIONS - B3B14 COUPLING
ECO47B LV

FORMAT	SCALE	REF.DOC.	PART N.	MODEL REV.	DRW REV.
A3	1:15	PP00657	D00321	02	02

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MOMENTS OF INERTIA - SINGLE BEARING



* Shaft mass and inertia also include rotor keys

TYPE	COMPONENT										TOTAL	
	1 FAN		2 MAIN ROTOR		3 EXCITER ROTOR		4 SHAFT*		5 DIODE BRIDGE			
	Weight [kg]	J [kg*m²]	Weight [kg]	J [kg*m²]	Weight [kg]	J [kg*m²]	Weight [kg]	J [kg*m²]	Weight [kg]	J [kg*m²]	Weight [kg]	J [kg*m²]
ECO47 1S/4B	107.4	9.3738	1402	75.2738	52.1	0.7565	539.61	3.5319	4.7	0.0271	2105.77	88.9630
ECO47 2S/4B			1472.1	79.0775							2176.1	92.7671
ECO47 2M/4B			1638.1	88.0386			575.16	3.7900			2377.42	101.9859
ECO47 1L/4B			1798.9	96.6657			614.26	4.0739			2577.32	110.8969

SAE N.	6 | SHAFTS COUPLING FLAX PLATE			
	A	B	Weight [kg]	J [kgm²]
18	149	60	124.68	3.32
21	133	44.8	137.36	4.9

TYPE	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]
ECO47 1S/4B	1732	1669	1505.5	845.7	800	1879
ECO47 2S/4B				865.9		
ECO47 2M/4B	1832	1769	1605.5	915.3	900	1979
ECO47 1L/4B	1942	1879	1715.5	970.3	1010	2089

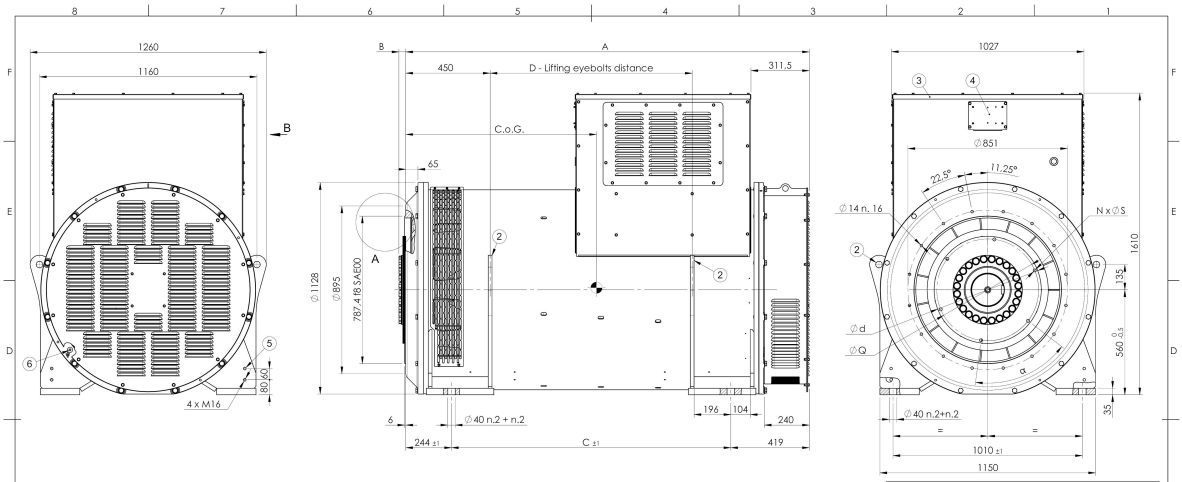
REV.	DATE	REVIEWS	DESIGN BY	APPROVED BY
00	30/04/2025	FIRST ISSUE	Masiero M.	Negrini D.

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www.meccalte.com

DESCRIPTION: MOMENTS OF INERTIA - SINGLE BEARING ECO47B - LV

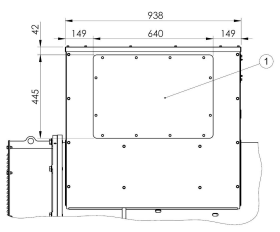
FORMAT	SCALE	REF.DOC.	PART N.	MODEL REV.	DRW REV.
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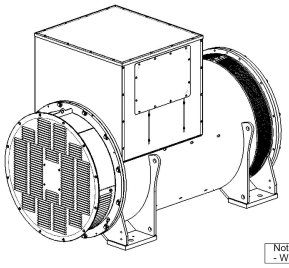


TYPE	C.o.G.	A [mm]	C [mm]	D [mm]	Weight [kg]
ECO47 - 1S/4B	969.8	2053	1390	978	6112
ECO47 - 2S/4B	988	2053	1390	978	6333
ECO47 - 2M/4B	1036	2153	1490	1078	6908
ECO47 - 1L/4B	1085.9	2263	1600	1188	7348

SAE N.	Disc Coupling							
	d [mm]	B [mm]	L [mm]	M [mm]	Q [mm]	S [mm]	N	α [°]
18	571.5	36.4	15.7	16	542.92	16.5	6	60
21	673.1	30	0	20	641.35	16.5	12	30







1	Cables entry panel
2	Lifting eye bolt
3	Removable cover to terminal board access
4	AVR support pannel
5	M16 threads for grounding
6	M12 threads for grounding

Notes :
- Weights and C.o.G. refer to Flywheel 18 configuration

REV.	DATE	REVIEWS	DESIGN BY	APPROVED BY
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DESCRIPTION: OVERALL DIMENSIONS - MD35 COUPLING ECO47B LV

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