



DAR AL-EBDA'A

POWER GENERATORS COMPANY



Perkins® TECHNICAL DATA SHEET

PL500

Prime Power	Standby Power	Voltage/Ph	Hz/RPM	PF
500 kVA/400 kW	550kVA/440 kW	400/3Ph	50/1500	0.8

Prime power

unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hours period. a 10% overload is available for 1 hour in every 12 hours operation.

The generator is working normally at 55 degrees with derating

Standby power

Limited to 500 hours annual usage with an average load factor of 80% of the published Standby power rating over each 24 hour

period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on Standby power. Available in 60HZ for all voltage ratings.

Standard Reference Condition

Note: Standard reference conditions 40°C (104°F) Air Inlet Temp, 100m (328 ft) A.S.L. 30% relative humidity.



Diesel Generator Set				
Engine Make /Model		PERKINS 2506A-E15TAG2		
Alternator Make /Model		Leroy Somer TAL-0473-C		
Control Panel		DSE 6120 MKII		
Base Frame / Silent Canopy		Robust Structure/ Corrosion Resistant		
Circuit Breaker Type		3 Pole MCCB (4P Available as optional)		
Built in Base Fuel Tank Capacity		650L		
Battery		Maintenance free Lead Acid		
Dimensions	Length (cm)	Width (cm)	Height (cm)	Weight (KG)
Close Type	450	160	235	3920
Open Type	390	110	222	3528

ENGINE SPECIFICATIONS		LUBRICATION SYSTEM	
Engine Make Model	PERKINS 2506A-E15TAG2	Oil Filter Type	Spin-On Full Flow
No. of Cylinders	6 vertical in-line	Total Oil Capacity	62 L
Cycle	4 Stroke	Oil Type	API-CH-4 or ACEA E5
Aspiration	Turbocharged	AIR SYSTEM	
Cooling Method	Water cooled	Air Filter Type	Dry Element
Governing Type	Electronic	Combustion Air Flow (PRP)	35.8 m³/min
Governing Class	G2 - ISO 8528 Part 1	Combustion Air Flow (ESP)	36.6 m³/min
Compression Ratio	16:1	Max Air Filter Intake Restriction	6.2 kPa
Displacement	15.2 L		
Bore/Stroke	137 x 171 mm		
Dynamic Charging Alternator	70AMP, 24V		

COOLING SYSTEM		Exhaust System	
Total Coolant Capacity (L)	58L	Muffler Type	Industrial Grade
Cooling Fan Air Flow	660 m³/ min	Max. Back Pressure	10 kPa
Radiator Fan Load	8.8 kW	Exhaust Gas Flow (PRP/ESP)	94/98 m³/ min
Cooling system design	Above 50°C	Exhaust Gas Temperature	< 550°C
Heat Radiation to Room (PRP)	35.8 kW		

Comply with Standards	
ISO 3046, BS 5514, DIN 6271, NEMA-MGI, DIN EN, BS 5000, IEC 60034, IEC 60947-2	

PL Generator Set Reliable, Premium Power Supply

Features & Benefits:

- PL Gen set is driven by Perkins Engine, a world-renowned manufacturer with over 85 years of experience and a strong reputation for innovation, quality, and customer support across 182 countries through 3,500 outlets.
- PL Gen set is equipped with a Leroy Somer Alternator, one of the leading global alternator manufacturers, offering more than 99 years of experience, over 120 active patents, operations in more than 40 countries, and over 80 service centers.
- PL Gen set comes with a DSE Control System, supplied by one of the UK's leading manufacturers, with more than 40 years of expertise in advanced, reliable, and user-friendly generator controllers.
- Low fuel consumption, providing greater efficiency and reducing overall fuel operating costs.
- Compact and durable construction, minimizing transportation requirements and reducing storage expenses.
- Engineered with a space-efficient configuration, making it suitable for critical applications where installation space comes at a premium.
- Low noise and reduced vibration levels, ideal for sensitive and critical environments where noise control is essential.
- Easy servicing and extended operating life, helping reduce maintenance requirements and associated service costs.
- Every unit is rigorously tested, including load, cooling, vibration, and noise testing, before being delivered to the customer.
- Designed for simple operation and reliable performance, even under demanding environmental and harsh operating conditions.
- Fitted with a built-in fuel tank providing sufficient capacity for approximately 8 to 10 hours of operation.
- Fully engineered with a wide selection of optional accessories available to meet different operational requirements.

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Branch 1 - Iraq - Baghdad - Camp Sarah - Near Square52 - Opposite Al-Jumhuriya Preparatory Girls school
Branch 2 - Iraq - Baghdad - Khalid Ibn Al-Walid Street - Opposite the Martyrs Foundation



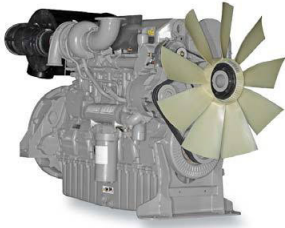
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Perkins® TECHNICAL DATA SHEET

PL500



Perkins Engine
2506A-E15TAG2

Engine Fuel System

Recommended Fuel	Class A2 Diesel
Fuel Consumption Standby	114 L/hr
Fuel Consumption 100% PRP	106 L/hr
Fuel Consumption 75% PRP	81 L/hr
Fuel Consumption 50% PRP	55 L/hr



Leroy Somer
TAL-0473-C

ALTERNATOR SPECIFICATIONS

Alternator Make /Model	Leroy Somer TAL-0473-C
AVR Model	R150
Number of Poles	4
Number of Winding Leads	6
Type of Bearing	Single Bearing Insulation
Insulation Class - Temp Rise	Cont. H - 125/40°C Ingress
Ingress Protection Rating	IP 23
Excitation System	Self Excited
Voltage Regulation	±1%
Harmonic Coefficient THF	< 2%
Tel. influence TIF	< 50
Cooling air flow	0.9 m³/ Sec



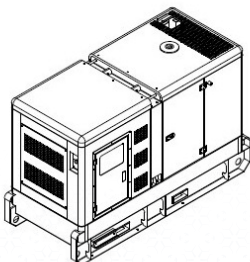
DSE 6120MKII

Controller Make & Model | DeepSea 6120MKII

Operation Mode	AMF
Display	Graphic Back-lit LCD (132x64) pixels
Ingress Protection Rating	IP65
Binary Inputs/Outputs	9 / 8
Analog Inputs	4
Measurement	Vac, A, Hz, kVA, kW, Vdc
Event Log	Alarms log, Hrs log
Communication	USB

Enclosure Type

Drainage	Fuel and Water Drainage Provision
Transportation	Tested Single Point Lifting Facility & Forklift Pockets
Ingress Protection	IP 23
Lifting	ISO Standard Lifting
Canopy RAL Color	RAL 9010 - Powder coated
Base frame RAL Color	RAL 9005 - Powder coated
Noise Pressure level	85 dBA @ 1 to 3 m



WARRANTY

1. WARRANTY POLICY

DPG generators are covered for 1,000 operating hours or one year, whichever comes first, against manufacturing defects. Warranty excludes improper fuel, misuse, incorrect operation, and maintenance-related failures. Minimum operating load: 60%.

2. DOCUMENTATION

Each generator is supplied with Operation & Maintenance Manual, GAD, Wiring Diagram, and FAT Report.

3. OPTIONAL FEATURES

Engine: Heavy-Duty Air Filter, Coolant/Oil Heater, Fuel & Water Separator, Oil Rotary Pump.

Alternator: Anti-Condensation Heater, PMG + AVR, Double Bearing, RTD Sensors.

Cooling & Control: 55°C or Remote Radiator, AMF/Parallel Operation, Remote Annunciator, 4-Pole Manual/Motorized Breaker.

ATS & Battery: Contactor or Motorized ATS, Nickel-Cadmium or Maintenance-Free Battery, Charger, Selector Switch and Current Meter. Exhaust: Residential, Critical or Hospital Grade Mufflers.

Available Voltages: 400/230V, 480/277V, 380/220V, 440/254V, 416/240V, 220/127V, 208/120V.

Due to continuous research & product development, we reserve the right to change specification with out notice

Perkins® LEROY-SOMER™



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2500 Series 2506A-E15TAG2

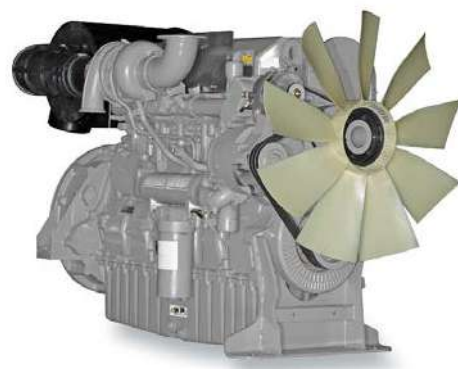
Diesel Engine – ElectropaK – Non-Emissions compliant

478 kWm at 1500 rpm

The 2500 Series engine has been developed using the latest engineering techniques and builds on the strengths of the already very successful 2000Series family and addresses today's uncompromising demands within the power generation industry. Developed from a proven heavy-duty industrial base these products offer superior performance and reliability.

The 2506A-E15TAG2 is a turbocharged and air-to-air charge-cooled, 6 cylinder diesel engine. Its premium features provide exceptional power-to-weight ratio resulting in exceptional fuel consumption.

The overall performance and reliability characteristics make this the prime choice for today's power generation industry.



Specification		
Number of cylinders	6 vertical in-line	
Bore and stroke	137 x 171 mm	5.4 x 6.7 in
Displacement	15.2 litres	927 in ³
Aspiration	Turbocharged and air-to-air charge cooled	
Cycle	4 stroke	
Combustion system	Direct injection	
Compression ratio	16:1	
Rotation	Anti-clockwise, viewed on flywheel	
Total lubricating capacity	62 litres	16.4 US gal
Cooling system	Water-cooled	
Total coolant capacity	58 litres	15.3 US gal

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Photographs are for illustrative purposes only and may not reflect final specification.
All information in this document is substantially correct at time of printing and may be altered subsequently.
Final weight and dimensions will depend on completed specification.

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 **Perkins®**

THE HEART OF EVERY GREAT MACHINE

2500 Series 2506A-E15TAG2

Diesel Engine – ElectropaK – Non-Emissions compliant

478 kWm at 1500 rpm

Features and benefits

Economic power

- Mechanically operated unit fuel injectors with advanced electronic control, combined with carefully matched turbocharging, give excellent fuel atomisation which leads to exceptional low fuel consumption

Reliable power

- Developed and tested using the latest engineering techniques and finite element analysis for high reliability
- Low oil usage and low wear rates
- High compression ratio ensures clean rapid starting in all conditions
- Perkins global product support is designed to enhance the customer experience of owning a Perkins powered machine. We deliver this through the quality of our distribution network, extensive global coverage and a range of Perkins supported OEM partnership options. So whether you are an end-user or an equipment manufacturer our engine expertise is essential to your success

Compact, clean and efficient power

- Exceptional power to weight ratio and compact size gives optimum power density for ease of installation and more cost effective transportation
- Designed to provide excellent service access for ease of maintenance

Product support

- Perkins actively pursues product support excellence by ensuring our distribution network invest in their territory – strengthening relationships and providing more value to you, our customer
- Through an experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their fingertips covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Throughout the entire life of a Perkins engine, we provide access to genuine OE specification parts and service. We give 100% reassurance that you receive the very best in terms of quality for lowest possible cost .. wherever your Perkins powered machine is operating in the world

This engine does not comply with harmonized international regulated emissions limits

2500 Series 2506A-E15TAG2

Diesel Engine – ElectropaK – Non-Emissions compliant
478 kWm at 1500 rpm

Technical information

Air inlet

- Mounted air filter

Fuel system

- Mechanically actuated electronically controlled unit fuel injectors with full authority electronic control
- Governing to ISO 8528-5 class G3 with isochronous capability
- Replaceable 'Ecoplus' fuel filter elements with primary filter/water separator
- Fuel cooler

Lubrication system

- Wet sump with filler and dipstick
- Full-flow replaceable 'Ecoplus' filter
- Oil cooler integral with filter header

Cooling system

- Gear-driven circulating pump
- Mounted belt-driven fan
- Radiator supplied loose incorporating air-to-air charge cooler
- System designed for ambients up to 50°C

Electrical equipment

- 24 volt starter motor and 24 volt 70 amp alternator with DC output
- ECM mounted on engine with wiring looms and sensors
- 3 level engine protection system

Flywheel and housing

- High inertia flywheel to SAE J620 size 14
- SAE ½ flywheel housing

Mountings

- Front engine mounting bracket

Optional equipment

- 110 volt/240 volt immersion heater
- Additional speed sensor
- Temperature and pressure sensors for gauges
- Air filter rain hood
- Twin starters/facility for second starter
- Tool kit
- Additional manuals
- Closed circuit crankcase ventilation system

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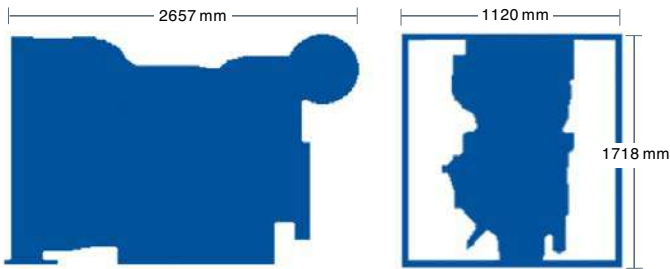
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 **Perkins®**

THE HEART OF EVERY GREAT MACHINE

2500 Series 2506A-E15TAG2

Diesel Engine – ElectropaK – Non-Emissions compliant
478 kWm at 1500 rpm



Engine package weights and dimensions		
Length	2657 mm	105 in
Width	1120 mm	44 in
Height	1718 mm	68 in
Weight (dry)	1633 kg	3600 lb

2500 Series 2506A-E15TAG2

Diesel Engine – ElectropaK – Non-Emissions compliant

478 kWm at 1500 rpm

Speed rpm	Type of operation	Typical generator output (Net)		Engine power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime power	500	400	451	605	435	583
	Standby power	550	440	495	664	478	641

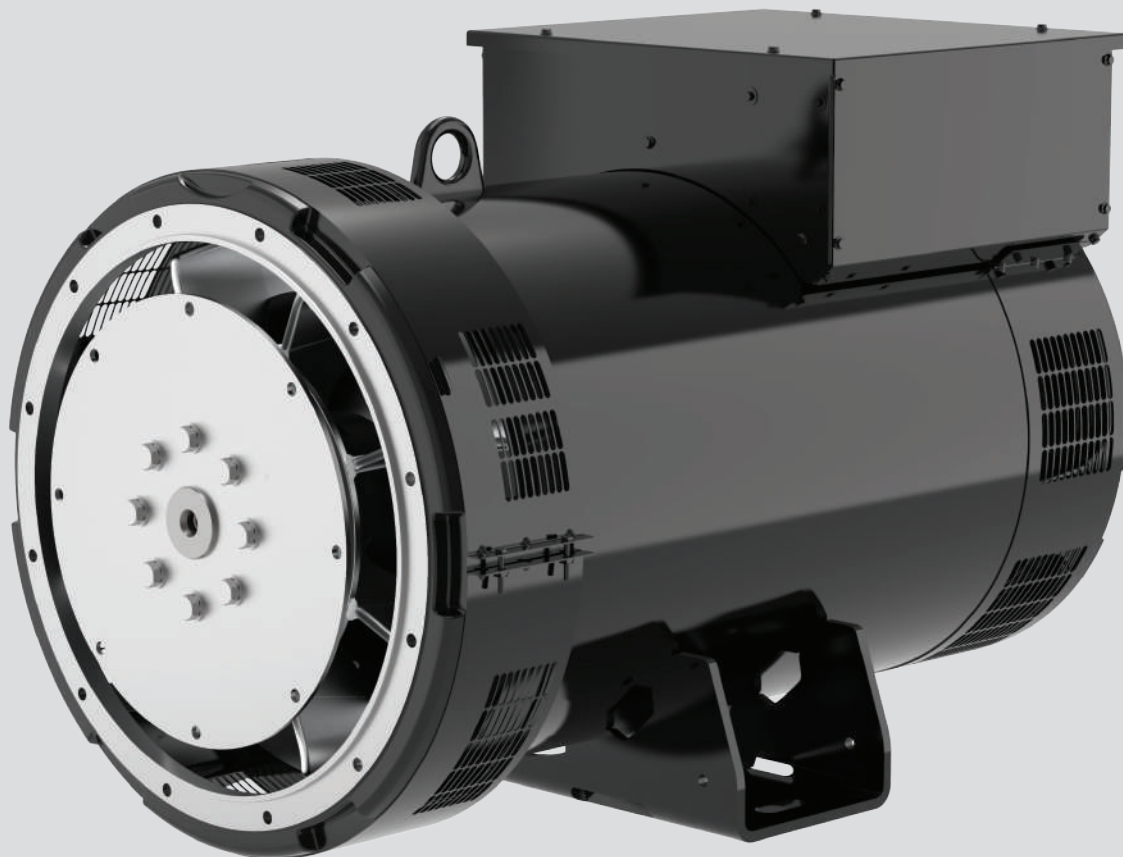
The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1. **Derating may be required for conditions outside these; consult Perkins Engines Company Limited.**

Generator powers are typical and are based on an average alternator efficiency and a power factor (cos. θ) of 0.8. **Fuel specification:** BS 2869: Part 2 1998 Class A2 or ASTM D975 D2. **Lubricating oil:** 15W40 to API CI4.

Rating definitions

Prime power: Power available at variable load with a load factor not exceeding 80% of the prime power rating. Overload of 10% is permitted for 1 hour in every 12 hours' operation. **Standby power:** Power available in the event of a main power network failure up to a maximum of 500 hours per year of which up to 300 hours may be run continuously. Load factor may be up to 100% of standby power. No overload is permitted.

Percent of prime power	Fuel consumption at 1500 rpm g/kWh	Fuel consumption at 1500 rpm l/hr
Standby power	200	111
Prime power	199	100
75%	201	76
50%	211	53



TAL 0473

Low Voltage Alternator - 4 pole

410 to 660 kVA - 50 Hz / 510 to 825 kVA - 60 Hz
Electrical and mechanical data

LEROY-SOMER™

Nidec
All for dreams

The best of performance

Nidec Leroy-Somer TAL 0473 alternator has been designed to offer you the best power generation performances. With its meticulous design and optimized architecture, the TAL 0473 strikes the perfect balance between compactness, reliability, performance and longevity. Whatever your application, the TAL 0473 will meet your needs and will adapt to all situations.

Standards

Nidec Leroy-Somer TAL 0473 alternator meets all key international standards and regulations, including IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2 n°100-14 and UL 1446 (UL 1004 on request). Also compliant with IEC 61000-6-2, IEC 61000-6-3, IEC 61000-6-4, VDE 0875G, VDE 0875N and EN 55011, group 1 class A for European zone. Nidec Leroy-Somer TAL 0473 alternator can be integrated in EC marked generator set, and bears EC, EAC and CMIM markings. It is designed, manufactured and marketed in an ISO 9001 and ISO 14001 quality assurance environment.

Electrical characteristics and performances

- Class H insulation
- Shunt excitation
- Low voltage winding:
 - Three-phase 50 Hz: 220V - 240V and 380V - 415V (440V)
 - 60 Hz: 208V - 240V and 380V - 480V
- 6-terminal plates in 6-wire version or suitable for 12-wire option
- Optimized performance

Excitation and regulation system

	Excitation system				Regulation options		
	AVR	SHUNT	AREP+ (option)	PMG (option)	ULC/us	Remote voltage potentiometer	C.T. Current transformer for paralleling
Three-phase 6-wire	R150	Standard				√	
	R180		Standard	Standard		√	√
	D350	Option	Option	Option	√	√	√*
Three-phase 12-wire	R150	Standard				√	
	R250	Option			√	√	
	R180		Standard	Standard		√	√
	D350	Option	Option	Option	√	√	√*

*: only with AREP+ or PMG

Protection system and options

- Degree of protection: IP 23
- Complete winding protection for non-harsh environments with relative humidity $\leq 95\%$
- Options:
 - Three-phase 12-wire version with 9-terminal plates
 - AREP+ or PMG excitation
 - ULC/us
 - Customized painting (unpainted machine as standard)
 - Space heater
 - Droop kit for alternator paralleling
 - Stator sensors
 - Winding 8 optimized for three-phase 380V / 416V - 60 Hz
 - Reinforced winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): for TAL 0473 A, D & F apply a derating coefficient of 0.95

Mechanical construction

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Cast iron flanges and shields
- Single-bearing design to be suitable with most diesel engines
- Greased for life bearings
- Standard direction of rotation: clockwise when looking at the drive end view (for anti-clockwise, derate the machine by 5%)

Terminal box design

- Easy access to AVR and terminals
- Standard terminal box with possibility of mounting measurement CTs
- Possibility of current transformer for parallel operation



General characteristics

Insulation class	H	Excitation system 6-wire	SHUNT	AREP+ / PMG
Winding pitch	2/3 (wind.6S - 6-wire / wind.6 - 12-wire)	AVR type	R150	R180
Number of wires	6 (12 option)	Excitation system 12-wire (option)	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R150	R180
Altitude	≤ 1000 m	Voltage regulation (**)	± 0.8 %	± 0.5 %
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (***) in no-load	< 1.5 %	
Air flow 50 Hz	0.9 m³/s	Total Harmonic Distortion THD (***) in linear load	< 5 %	
Air flow 60 Hz	1.1 m³/s	Waveform: NEMA = TIF (***)	< 50	
AREP+/PMG Short-circuit current = 2.7 I _n : 5 seconds (*)		Waveform: I.E.C. = THF (***)	< 2%	

(*) D350: 10 seconds (**) Steady state (***) Total harmonic distortion between phases, no-load or on-load (non-distorting)

Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8																	
Duty / T° C		Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
Class / T° K		H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Phase		3 ph.				3 ph.				3 ph.				3 ph.			
Y		380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V	380V	400V	415V	440V
Δ		220V	230V	240V		220V	230V	240V		220V	230V	240V		220V	230V	240V	
YY (*)			200V		220V		200V		220V		200V		220V		200V		220V
TAL 0473 A	kVA	390	410	410	400	355	375	375	364	413	435	435	424	429	450	450	440
	kW	312	328	328	320	284	300	300	291	330	348	348	339	343	360	360	352
TAL 0473 B	kVA	455	455	455	445	415	415	415	405	480	480	480	472	500	500	500	490
	kW	364	364	364	356	332	332	332	324	384	384	384	378	400	400	400	392
TAL 0473 C	kVA	500	500	500	490	455	455	455	449	530	530	530	519	550	550	550	539
	kW	400	400	400	392	364	364	364	359	424	424	424	415	440	440	440	431
TAL 0473 D	kVA	525	550	550	540	478	500	500	491	557	585	585	572	578	600	600	594
	kW	420	440	440	432	382	400	400	393	446	468	468	458	462	480	480	475
TAL 0473 E	kVA	600	600	600	550	545	545	545	501	635	635	635	583	660	660	660	605
	kW	480	480	480	440	436	436	436	401	508	508	508	466	528	528	528	484
TAL 0473 F	kVA	645	660	660	630	587	600	600	573	684	700	700	668	710	730	730	693
	kW	516	528	528	504	470	480	480	458	547	560	560	534	568	584	584	554

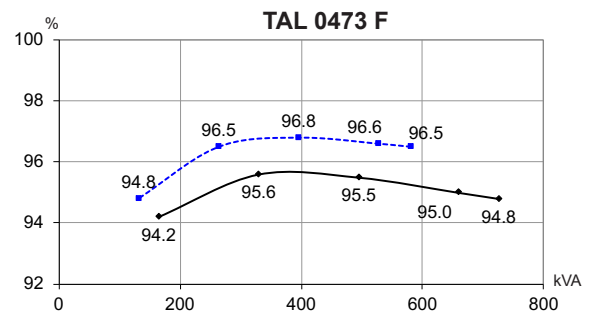
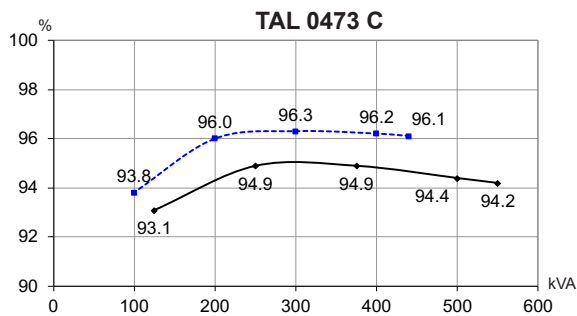
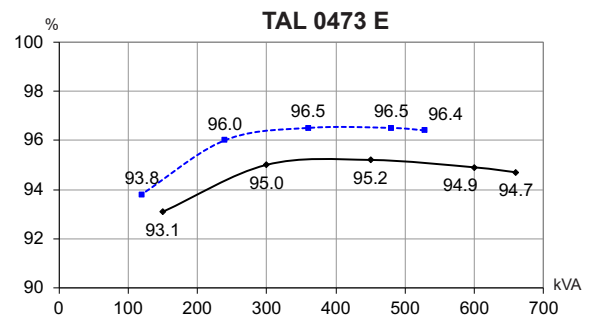
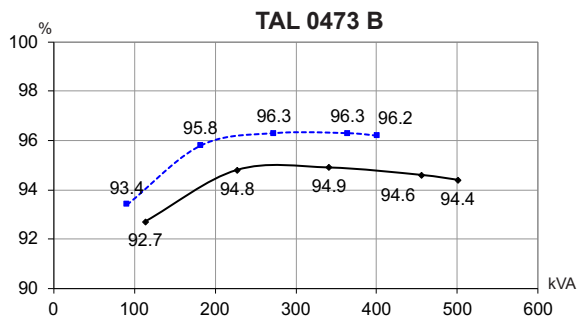
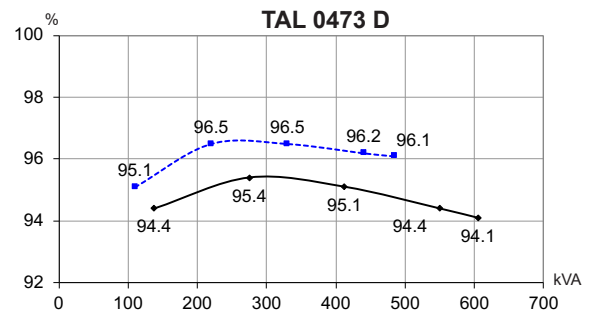
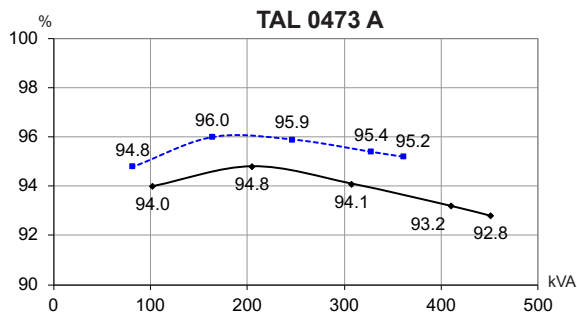
(*) 12-wire option

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8																	
Duty / T° C		Continuous / 40 °C				Continuous / 40 °C				Stand-by / 40 °C				Stand-by / 27 °C			
Class / T° K		H / 125° K				F / 105° K				H / 150° K				H / 163° K			
Phase		3 ph.				3 ph.				3 ph.				3 ph.			
Y		380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V	380V	416V	440V	480V
Δ		220V	240V			220V	240V			220V	240V			220V	240V		
YY (*)			208V	220V	240V		208V	220V	240V		208V	220V	240V		208V	220V	240V
TAL 0473 A	kVA	450	480	500	510	410	435	455	465	475	510	530	540	495	530	550	560
	kW	360	384	400	408	328	348	364	372	380	408	424	432	396	424	440	448
TAL 0473 B	kVA	475	510	530	570	430	465	480	520	505	540	560	605	525	560	585	625
	kW	380	408	424	456	344	372	384	416	404	432	448	484	420	448	468	500
TAL 0473 C	kVA	520	555	590	625	475	505	535	570	550	590	625	665	570	610	650	690
	kW	416	444	472	500	380	404	428	456	440	472	500	532	456	488	520	552
TAL 0473 D	kVA	560	610	630	690	510	555	575	630	595	645	670	730	615	670	695	750
	kW	448	488	504	552	408	444	460	504	476	516	536	584	492	536	556	600
TAL 0473 E	kVA	600	660	685	750	545	600	625	685	635	700	725	795	660	725	755	825
	kW	480	528	548	600	436	480	500	548	508	560	580	636	528	580	604	660
TAL 0473 F	kVA	650	715	755	825	590	650	685	750	690	760	800	875	720	785	830	910
	kW	520	572	604	660	472	520	548	600	552	608	640	700	576	628	664	728

(*) 12-wire option

Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (..... P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 400 V

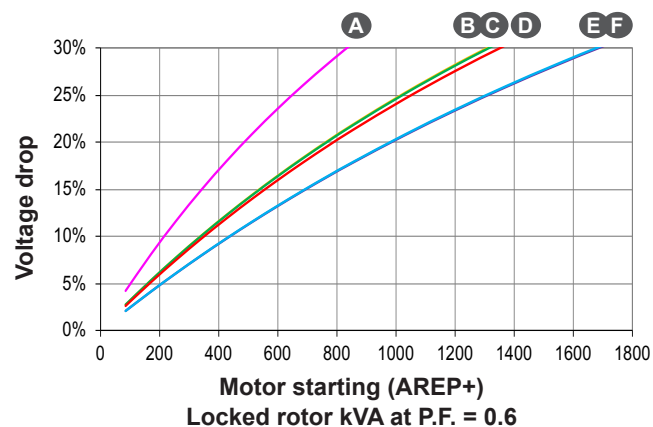
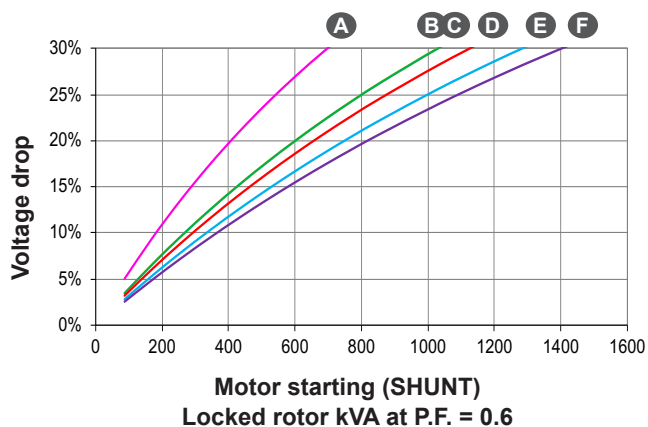
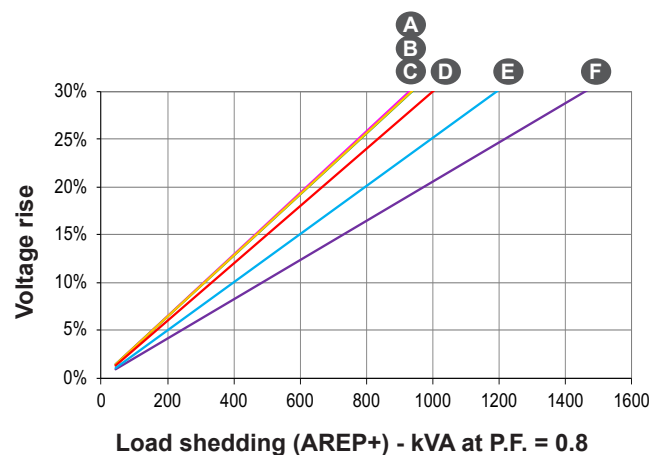
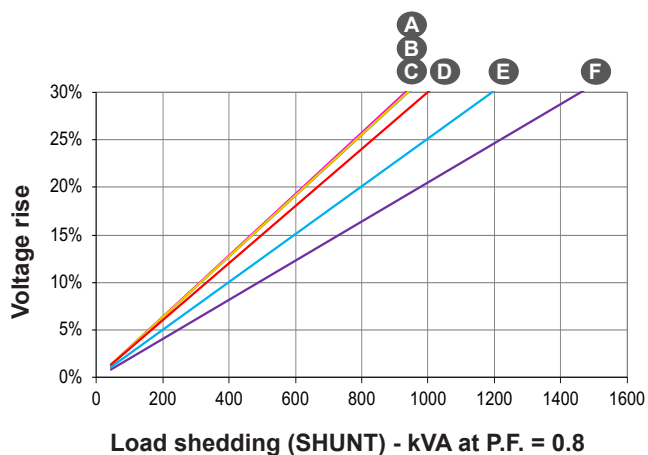
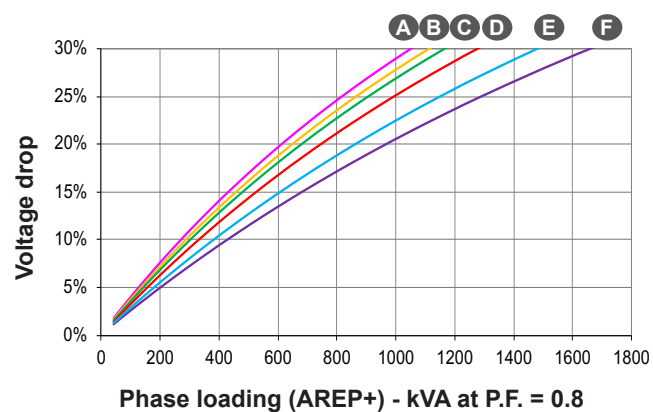
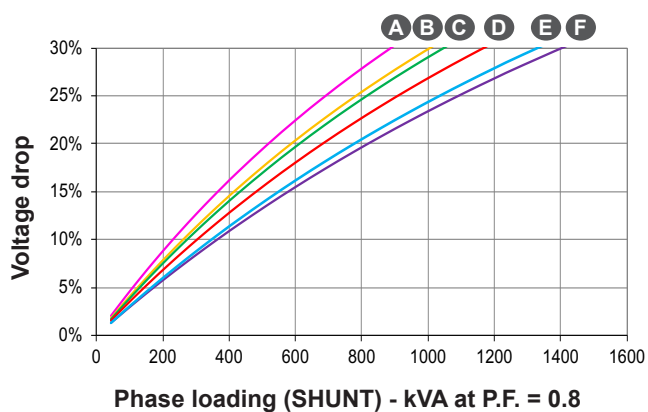
	A	B	C	D	E	F
Kcc Short-circuit ratio	0.25	0.52	0.47	0.32	0.55	0.41
Xd Direct-axis synchronous reactance unsaturated	483	302	332	403	294	343
Xq Quadrature-axis synchronous reactance unsaturated	246	154	169	205	150	175
T'do No-load transient time constant	1968	1982	1982	1987	1994	1996
X'd Direct-axis transient reactance saturated	24.5	15.2	16.7	20.3	14.7	17.2
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	17.2	10.6	11.7	14.2	10.3	12
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	19.2	13.6	14.9	18.9	14.7	17.4
Xo Zero sequence reactance	1.02	0.63	0.69	0.84	0.61	0.71
X2 Negative sequence reactance saturated	18.23	12.15	13.35	16.6	12.52	14.74
Ta Armature time constant	15	15	15	15	15	15

Other class H / 400 V data

io (A) No-load excitation current SHUNT/AREP+	0.68	1.07	1.07	0.8	1.13	0.93
ic (A) On-load excitation current SHUNT/AREP+	3.63	3.35	3.62	3.5	3.47	3.44
uc (V) On-load excitation voltage SHUNT/AREP+	37.9	34.9	37.7	36.4	36	35.6
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT/AREP+*	697/836	1026/1309	1029/1314	1125/1352	1284/1682	1398/1679
% Transient ΔU (on-load 4/4) SHUNT/AREP+ - P.F.: 0.8 _{LAG}	16.5/14.4	16.3/14.9	17.1/15.6	14.4/12.5	18/16.8	17.6/16.1
W No-load losses	3935	6288	6288	5194	7696	6770
W Heat dissipation	23728	20427	23283	25761	25676	27502

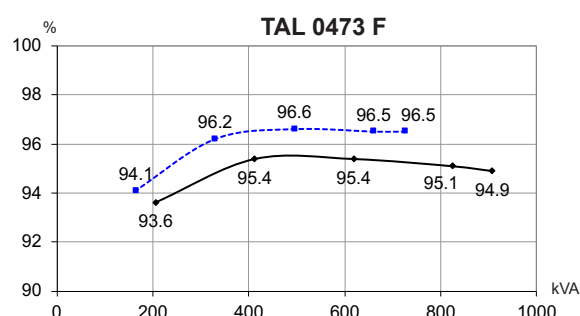
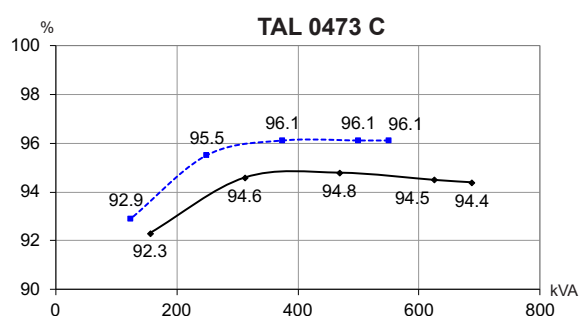
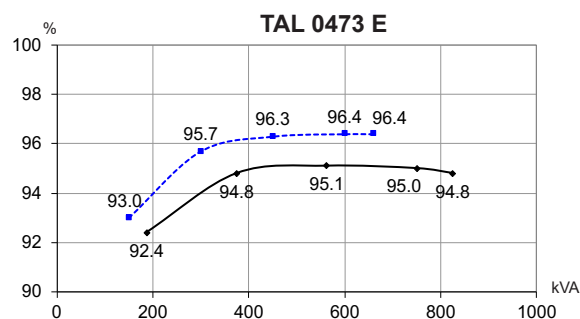
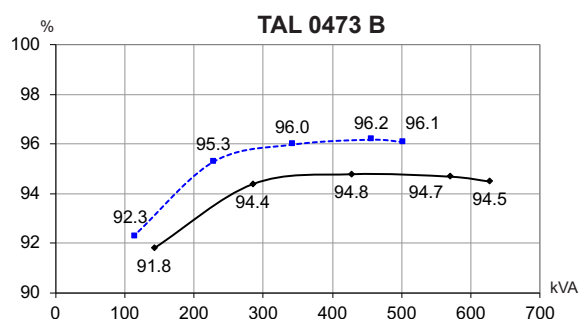
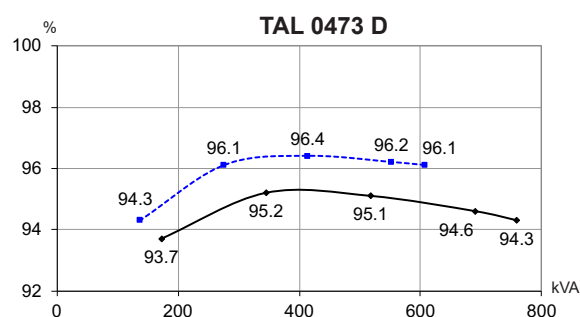
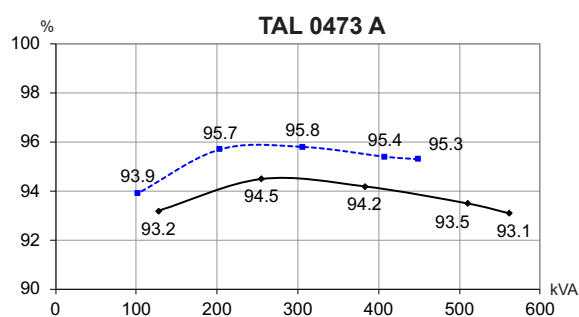
* P.F. = 0.6

Transient voltage variation 400 V - 50 Hz



- For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.8$
- For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.
- Transient performance of the PMG option, consult us.

Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (..... P.F.: 1)



Reactances (%). Time constants (ms) - Class H / 480 V

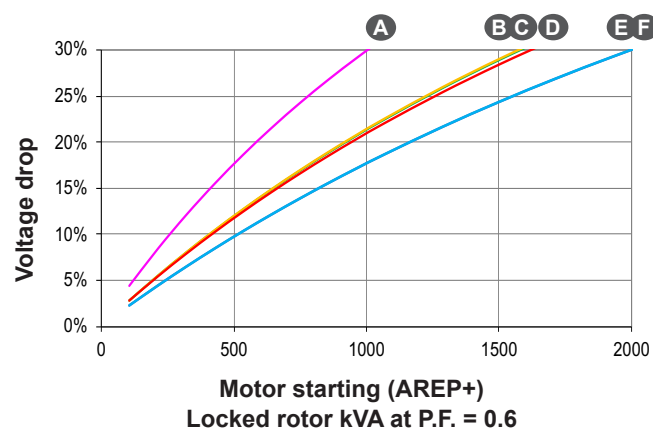
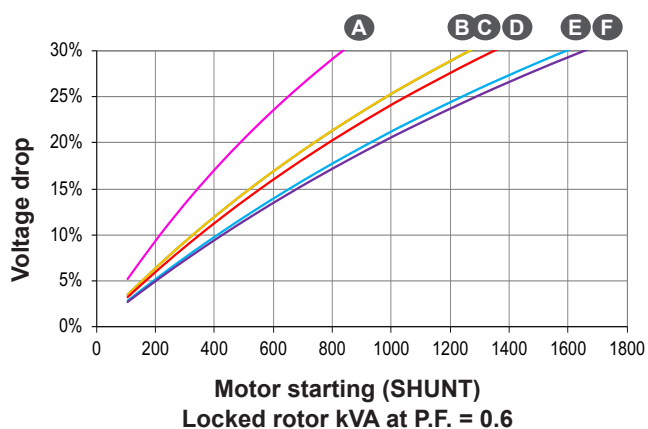
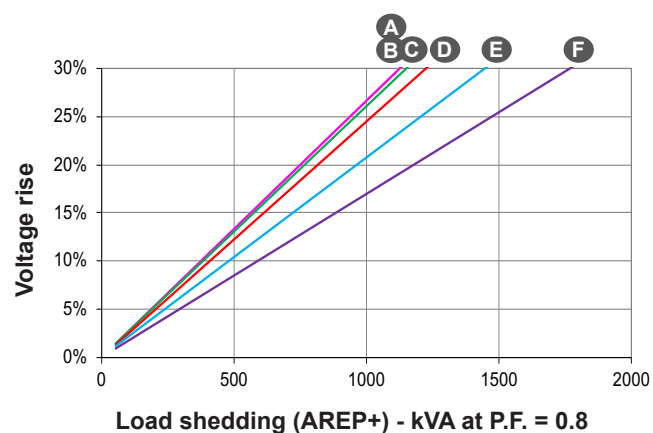
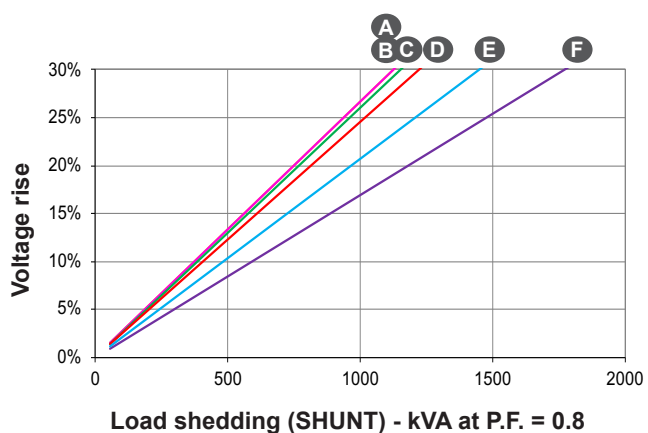
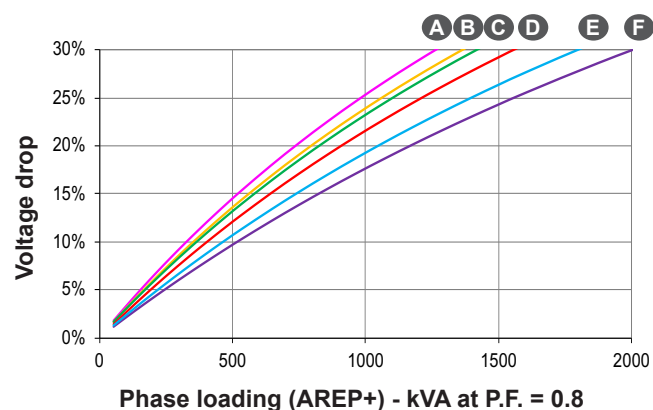
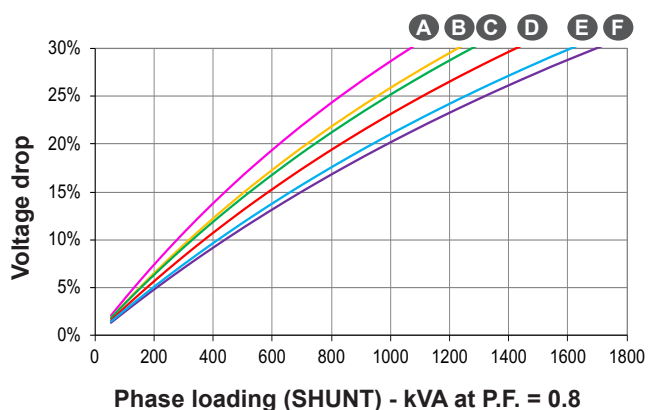
	A	B	C	D	E	F
Kcc Short-circuit ratio	0.24	0.5	0.45	0.31	0.52	0.39
Xd Direct-axis synchronous reactance unsaturated	501	315	345	422	309	361
Xq Quadrature-axis synchronous reactance unsaturated	255	160	176	215	157	184
T'do No-load transient time constant	1968	1982	1982	1987	1994	1996
X'd Direct-axis transient reactance saturated	25.4	15.9	17.4	21.2	15.5	18
T'd Short-circuit transient time constant	100	100	100	100	100	100
X''d Direct-axis subtransient reactance saturated	17.8	11.1	12.2	14.8	10.8	12.6
T''d Subtransient time constant	10	10	10	10	10	10
X''q Quadrature-axis subtransient reactance saturated	19.9	14.2	15.6	19.8	15.4	18.3
Xo Zero sequence reactance	1.06	0.66	0.72	0.88	0.64	0.75
X2 Negative sequence reactance saturated	18.89	12.68	13.91	17.35	13.15	15.48
Ta Armature time constant	15	15	15	15	15	15

Other class H / 480 V data

io (A) No-load excitation current SHUNT/AREP+	0.68	1.07	1.07	0.8	1.11	0.92
ic (A) On-load excitation current SHUNT/AREP+	3.7	3.41	3.68	3.58	3.5	3.49
uc (V) On-load excitation voltage SHUNT/AREP+	38.8	35.7	38.5	37.4	36.5	36.3
ms Response time ($\Delta U = 20\%$ transient)	500	500	500	500	500	500
kVA Start ($\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT/AREP+*	834/1000	1270/1579	1267/1572	1348/1619	1598/1995	1660/1992
% Transient ΔU (on-load 4/4) SHUNT/AREP+ - P.F.: 0.8 _{LAG}	17/14.8	16.6/15.2	17.4/15.9	14.9/12.9	18.5/17.2	18.1/16.5
% No-load losses	6155	9429	9429	7916	11204	10008
W Heat dissipation	28350	25384	28574	31485	31564	33709

* P.F. = 0.6

Transient voltage variation 480 V - 60 Hz

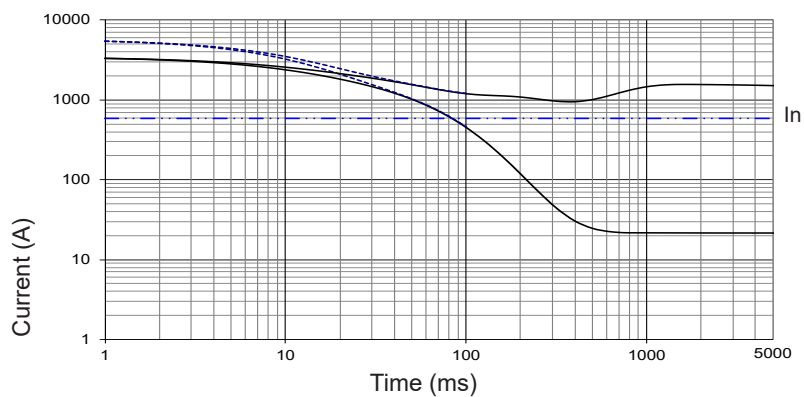


- For a starting P.F. other than 0.6, the starting kVA must be multiplied by $K = \text{Sine P.F.} / 0.6$
- For voltages other than 480V (Y), 277V (Δ), 240V (YY) at 60 Hz, then kVA must be multiplied by $(480/U)^2$ or $(277/U)^2$ or $(240/U)^2$.
- Transient performance of the PMG option, consult us.

3-phase short-circuit curves at no load and rated speed (star connection Y)

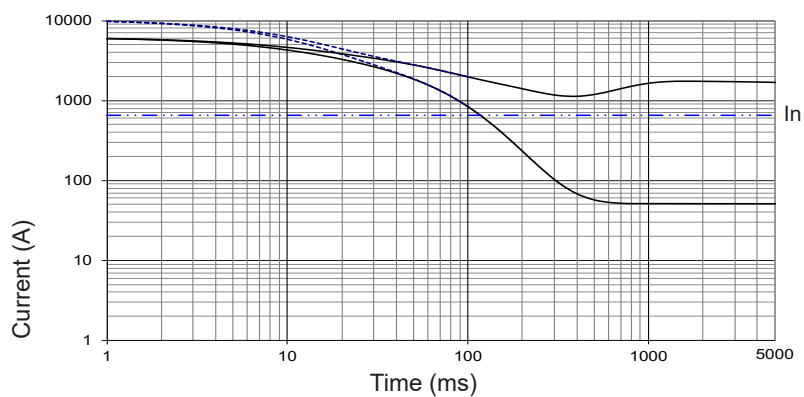
TAL 0473 A

Symmetrical —
Asymmetrical - - -



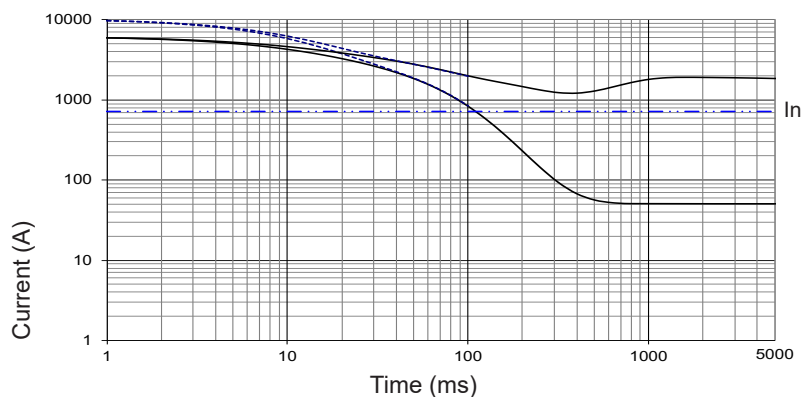
TAL 0473 B

Symmetrical —
Asymmetrical - - -



TAL 0473 C

Symmetrical —
Asymmetrical - - -

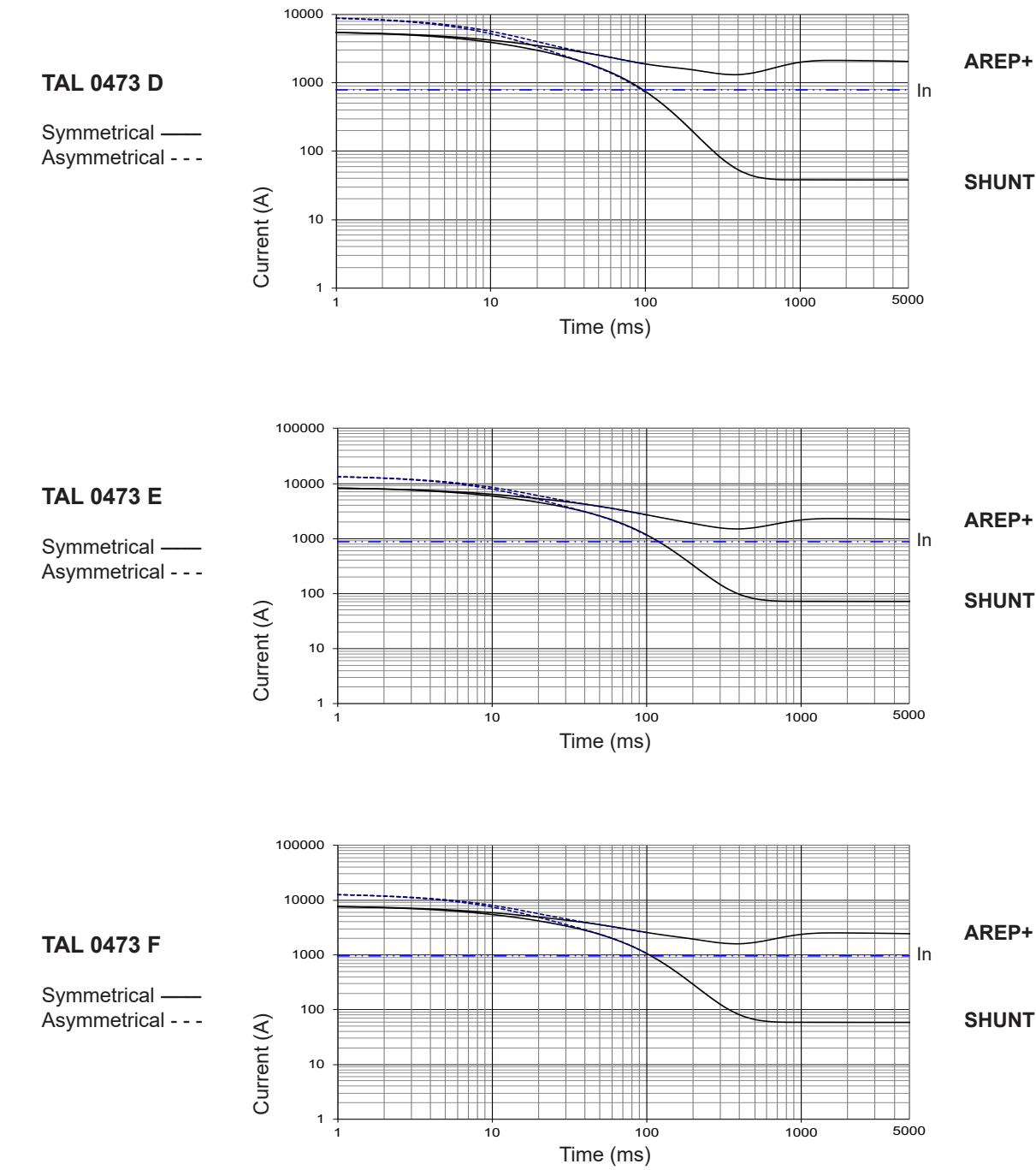


Influence due to connection

For (Δ) connection, use the following multiplication factor:

- Current value x 1.732.

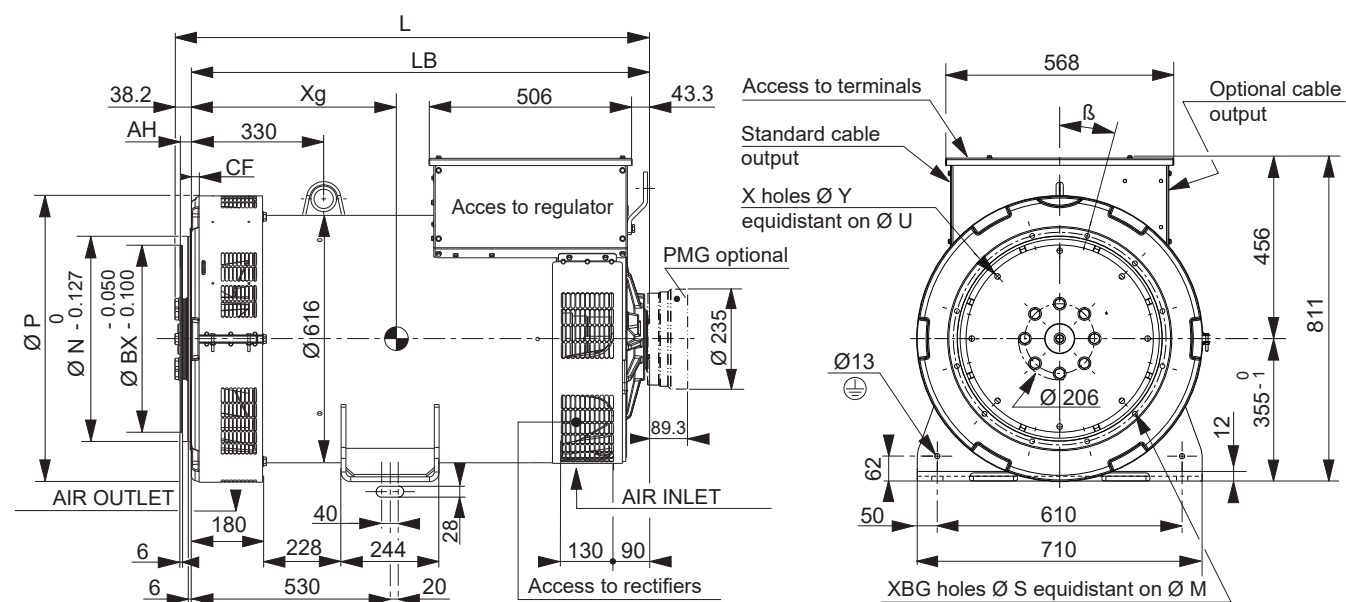
3-phase short-circuit curves at no load and rated speed (star connection Y)



Influence due to short-circuit
Curves are based on a three-phase short-circuit.
For other types of short-circuit,
use the following multiplication factors.

	3 - phase	2 - phase L / L	1 - phase L / N
Instantaneous (max.)	1	0.87	1.3
Continuous	1	1.5	2.2
Maximum duration (AREP+/PMG)		1.5	

Single-bearing dimensions



Dimensions (mm) and weight

Type	L without PMG maxi*	LB	Xg	Weight (kg)
TAL 0473 A	1048	996	451	1013
TAL 0473 B-C	1108	1056	485	1142
TAL 0473 D	1208	1156	515	1230
TAL 0473 E	1228	1176	543	1366
TAL 0473 F	1228	1176	552	1414

* L maxi = LB + AH maxi + 13

Coupling

Flex plate	11 ½	14	18
Flange S.A.E 1	X	X	
Flange S.A.E ½		X	
Flange S.A.E 0		X	X

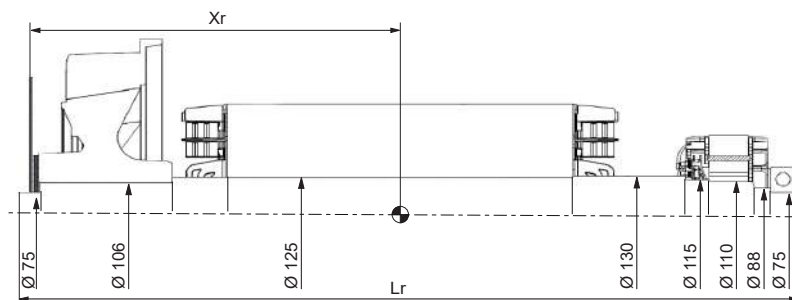
Flange (mm)

S.A.E.	P	N	M	XBG	S	β°	CF
1	713	511.175	530.225	12	12	15°	15
½	713	584.2	619.125	12	14	15°	22
0	713	647.7	679.45	16	14	11° 15'	42

Flex plate (mm)

S.A.E.	BX	U	X	Y	AH
11 ½	352.42	333.38	8	11	39.6
14	466.72	438.15	8	14	25.4
18	571.5	542.92	6	17	15.7

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²): (4J = MD²)

Flex plate	S.A.E. 11 ½				S.A.E. 14				S.A.E. 18			
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL 0473 A	436	1036	413	6.7	421	1023	414	6.77	411	1015	414	7.03
TAL 0473 B-C	473	1096	456	7.3	457	1083	456	7.41	447	1075	457	7.67
TAL 0473 D	502	1196	491	7.8	487	1183	492	7.88	477	1175	492	8.14
TAL 0473 E	533	1216	545	8.7	518	1203	546	8.83	508	1195	546	9.09
TAL 0473 F	544	1216	563	9.1	529	1203	564	9.18	519	1195	564	9.44

NOTE : Dimensions are for information only and may be subject to modifications. The torsional analysis of the transmission is imperative. All values are available upon request.

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Nidec
All for dreams

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Capital social : 38 679 664 €, RCS Angoulême 338 567 258.

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES



DSE6110 MKIII



DSE6120 MKIII

KEY FEATURES

- 4-line back-lit LCD text display
- Multiple display languages
- Five-key menu navigation
- LCD alarm indication
- Customisable power-up text and screen images.
- DSENet® expansion compatibility
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB communications
- Front panel configuration with PIN protection
- Power save mode
- 3-phase generator sensing and protection
- 3-phase mains (utility) sensing and protection (DSE6120 MKIII only)
- Automatic load transfer control (DSE6120 MKIII only)
- Generator current and power monitoring (kW, kvar, kVA, pf)
- Mains (utility) current and power monitoring (kW, kvar, kVA, pf) (DSE6120 MKIII only)
- kW overload alarm
- Over current protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN
- 6 configurable DC outputs
- 4 configurable analogue/digital inputs
- Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Manual and automatic fuel pump control
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel level alarms
- 3 configurable maintenance alarms
- Compatible with a wide range of CAN engines, including Tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress
- Configurable CAN read & transmitted information.
- 1 alternative configuration.

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6120 MKIII only) for convenience.
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING

8 V to 35 V Continuous
5 V for up to 1 minute

CRANKING DROPOUTS

Able to survive 0 V for 100 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT

260 mA at 12 V, 150 mA at 24 V

MAXIMUM STANDBY CURRENT

145 mA at 12 V, 85 mA at 24 V

CHARGE FAIL/EXCITATION RANGE

0 V to 35 V

GENERATOR & MAINS (UTILITY)

VOLTAGE RANGE

15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE

3.5 Hz to 75 Hz

MAGNETIC PICKUP

VOLTAGE RANGE

+/- 0.5 V to 70 V

FREQUENCY RANGE

10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO H

Negative switching

ANALOGUE INPUTS A & D

Configurable as:
Negative switching digital input
0 V to 10 V sensor
4 mA to 20 mA sensor
Resistive sensor

ANALOGUE INPUTS B & C

Configurable as:
Negative switching digital input
Resistive sensor

OUTPUTS

OUTPUT A & B (FUEL & START)

10 A DC at supply voltage

AUXILIARY OUTPUTS C, D, E, F, G & H

2 A DC at supply voltage

DIMENSIONS

OVERALL

216 mm x 158 mm x 43 mm
8.5" x 6.2" x 1.5"

PANEL CUT-OUT

184 mm x 137 mm
7.2" x 5.3"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

STORAGE TEMPERATURE RANGE

-40°C to +85°C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE

NON-HEATED DISPLAY VARIANT
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT

-40 °C to +70 °C
-40 °F to +158 °F

RELATED MATERIALS

TITLE

DSE6110 MKIII & DSE6120 MKIII Installation Instructions
DSE6110 MKIII & DSE6120 MKIII Operator Manual
DSE6110 MKIII & DSE6120 MKIII Configuration Suite PC Manual

PART NO.

053-240
057-289
057-290

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-521

DEEP SEA ELECTRONICS

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EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES

The DSE6110 MKIII is an Auto Start Control Module and the DSE6120 MKIII is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs and remote PC.

The DSE6120 MKIII will also monitor the mains (utility) supply. The modules include USB connection and dedicated DSENet® terminals for system expansion.

Both modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications & PLC functionality.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY

BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY

BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE

BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

VIBRATION

BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 gn

HUMIDITY

BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C
at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
at 93% RH 48 Hours

SHOCK

BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 ms

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES

BS EN 60529
IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS

