DAR AL-EBDA'A
POWER GENERATORS COMPANY

dpg GENERATORS

Perkins® TECHNICAL DATA SHEET

PL60

Prime Power	Standby Power	Voltage/Ph	Hz/RPM	PF
60 kVA/48 kW	66kVA/53 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 for1 hour in every 12 hours operaton.
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 1103A-33TG2
Alternator Make /Model	Leroy Somer TAL-042-H
Control Panel	DSE 4510 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	220L
Battery	Maintenance free Lead Acid

Dimensions	Length (cm)	Width (cm)	Height (cm)	Weight (KG)
Close Type	227	105	133	1050
Open Type	170	80	145	945

ENGINE SPECIFICATIONS

Engine Make Model	PERKINS 1103A-33TG2
No. of Cylinders	3 vertical in-line
Cycle	4 Stroke
Aspiration	Naturally Aspirated
Cooling Method	Water cooled
Governing Type	Mechanical
Governing Class	G2 - ISO 8528 Part 1
Compression Ratio	17.25:1
Displacement	3.3 L
Bore/Stroke	105 x 127 mm
Dynamic Charging Alter nator	65AMP, 12V

LUBRICATION SYSTEM

Oil Filter Type	Spin-On Full Flow
Total Oil Capacity	7.9 L
Oil Type	API-CH-4 or ACEA E5

AIR SYSTEM

Air Filter Type	Dry Element
Combustion Air Flow (PRP)	3.8 m³/min
Combustion Air Flow (ESP)	3.9 m³/min
Max Air Filter Intake Restriction	8 kPA

COOLING SYSTEM

Total Coolant Capacity (L)	10.2 L
Cooling Fan Air Flow	53 m³/ min
Radiator Fan Load	0.4 kW
Cooling system design	Above 50ºC
Heat Radiation to Room (PRP)	11 kW

Exhaust System

Muffler Type	Industrial Grade
Max. Back Pressure	10 kPa
Exhaust Gas Flow (PRP/ESP)	10.1/10.4 m³/ min
Exhaust Gas Tempera ture	< 571ºC

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.

Mob.: +964 790 137 7841
+964 771 648 8838
info@dar-alebdaco.com
www.dar-alebdaco.com
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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POWER GENERATORS COMPANY

Perkins® TECHNICAL DATA SHEET

PL60

Perkins Engine
1103A-33TG2

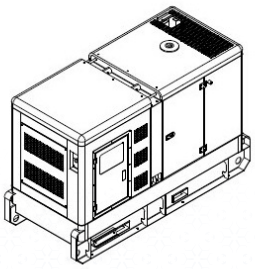
Engine Fuel System	
Recommended Fuel	Class A2 Diesel
Fuel Consumption Standby	15.4 L/hr
Fuel Consumption 100% PRP	13.9 L/hr
Fuel Consumption 75% PRP	10.4 L/hr
Fuel Consumption 50% PRP	7.2 L/hr

Leroy Somer
TAL 042-H

ALTERNATOR SPECIFICATIONS	
Alternator Make /Model	Leroy Somer TAL-042-H
AVR Model	R120
Number of Poles	4
Number of Winding Leads	6
Type of Bearing	Single Bearing
Insulation Class - Temp Rise	Cont. H - 125/40ºC
Ingress Protection Rating	IP 23
Excitation System	Self Excited
Voltage Regulation	±1%
Harmonic Coefficient THF	< 2%
Tel. influence TIF	< 50
Cooling air flow	0.10 m³/ Sec

DSE 4510MKII

Controller Make & Model | DeepSea 4510MKII	
Operation Mode	AMF
Display	Graphic Back-lit LCD (128x64) pixles
Ingress Protection Rating	IP65
Binary Inputs/Outputs	4 / 4
Analog Inputs	3
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

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1100 Series 1103A-33TG2 Diesel Engine – ElectropaK

59.3 kWm at 1500 rpm
67.5 kWm at 1800 rpm

Building upon Perkins proven reputation within the power generation industry, the 1100 Series range of ElectropaK engines now fit even closer to customers needs.

In the world of power generation success is only gained by providing more for less. With the 1103A-33TG2 Perkins has engineered even higher levels of reliability, yet lowered the cost of ownership.

1100A units are designed for territories that do not require compliance to EPA or EU emissions legislation. These units are able to meet TA luft legislation.

Compact, efficient power

- 1100 Series is the result of an intensive period of customer research that has guided the development of the range
- The new 3.3 litre cylinder block ensures bore roundness is maintained under the pressures of operation. It also ensures combustion and mechanical noise is lowered
- A new cylinder head has re-established Perkins mastery of air control

Quality by design

- Product design and Class A manufacturing improvements enhance product reliability while maintaining Perkins legendary reputation for durability

Cost effective power

- Compact size and low noise
- Lower fuel consumption and oil use
- 500 hour service intervals
- Two year warranty

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

Discover more
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www.perkins.com/esc

www.perkins.com/distributor
To find your local distributor

Engine Speed rpm	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Prime Power	60.0	48.0	55.0	73.8	53.8	72.1
	Standby Power	66.0	52.8	60.5	81.1	59.3	79.5
1800	Prime Power	68.1	54.5	63.3	84.9	61.2	82.1
	Standby Power	75.1	60.1	69.6	93.3	67.5	90.5

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS5514/1. **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 DIN EN 590. **Lubricating oil**: 15W40 to API CG4.

Rating Definitions
Prime Power: Variable load. Unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hour period. A 10% overload is available for 1 hour in every 12 hours of operation. **Standby Power**: Variable load. Limited to 500 hours annual usage, up to 300 hours of which may be continuous running. No overload is permitted.

Perkins®
THE HEART OF EVERY GREAT MACHINE

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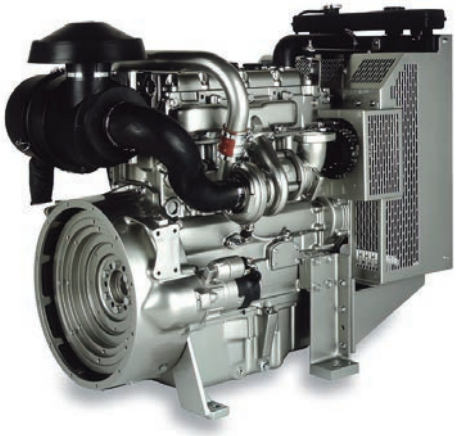
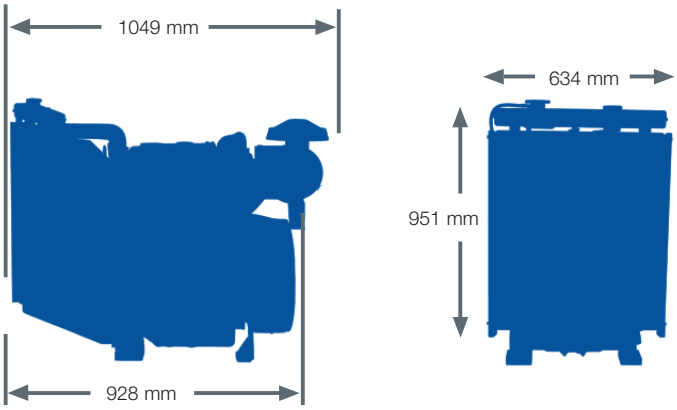
1100 Series 1103A-33TG2 Diesel Engine – ElectropaK

59.3 kWm at 1500 rpm
67.5 kWm at 1800 rpm





Standard ElectropaK specification

Air inlet
- Mounted air filter

Fuel system
- Rotary type pump
- Ecoplus fuel filter

Lubrication system
- Wet sump with filler and dipstick
- Spin-on oil filter

Cooling system
- Thermostatically controlled system with gear-driven circulation pump and belt-driven pusher fan
- Mounted radiator and piping

Electrical equipment
- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- 12 volt shutdown solenoid energised to run

Flywheel and housing
- High inertia flywheel to SAE J620 Size 10/11½
- SAE 3 flywheel housing

Mountings
- Front engine mounting bracket

Literature
- User's Handbook

Optional equipment
- Woodward electronic governor (LCG2)
- Workshop manual
- Parts book

Option groups
A selection of optional items is available to enable the customer to prepare a specification precisely matched to the needs.

Fuel Consumption				
Engine Speed	1500 rpm		1800 rpm	
	UK g/hr	l/hr	UK g/hr	l/hr
Standby	3.3	15.4	4.0	18.2
Prime Power	3.0	13.9	3.6	16.6
75% of Prime Power	2.2	10.4	2.7	12.5
50% of Prime Power	1.5	7.2	1.9	8.8

General data

Number of cylinders ..... 3 vertical in-line
Bore and stroke..... 105 x 127 mm (4.1 in x 5 in)
Displacement ..... 3.3 litres (201 cubic in)
Aspiration ..... Turbocharged
Cycle ..... 4 stroke
Combustion system..... Direct injection
Compression ratio 17.25:1
Rotation..... Anti-clockwise viewed from flywheel
Cooling system..... Water-cooled
Total lubrication system capacity..... 7.9 litres (2.1 US gals)
Total coolant capacity ..... 10.2 litres (2.7 US gals)
Dimensions – Length ..... 1049 mm (41.3 in
Width ..... 634 mm (24.9 in
Height ..... 951 mm (37.4 in)
Dry weight (approx)..... 420 kg 926 lb)

Final weight and dimensions will depend on completed specification

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Perkins Engines Company Limited
Peterborough PE1 5FQ
United Kingdom
Telephone +44 (0)1733 583000
Fax +44 (0)1733 582240
www.perkins.com

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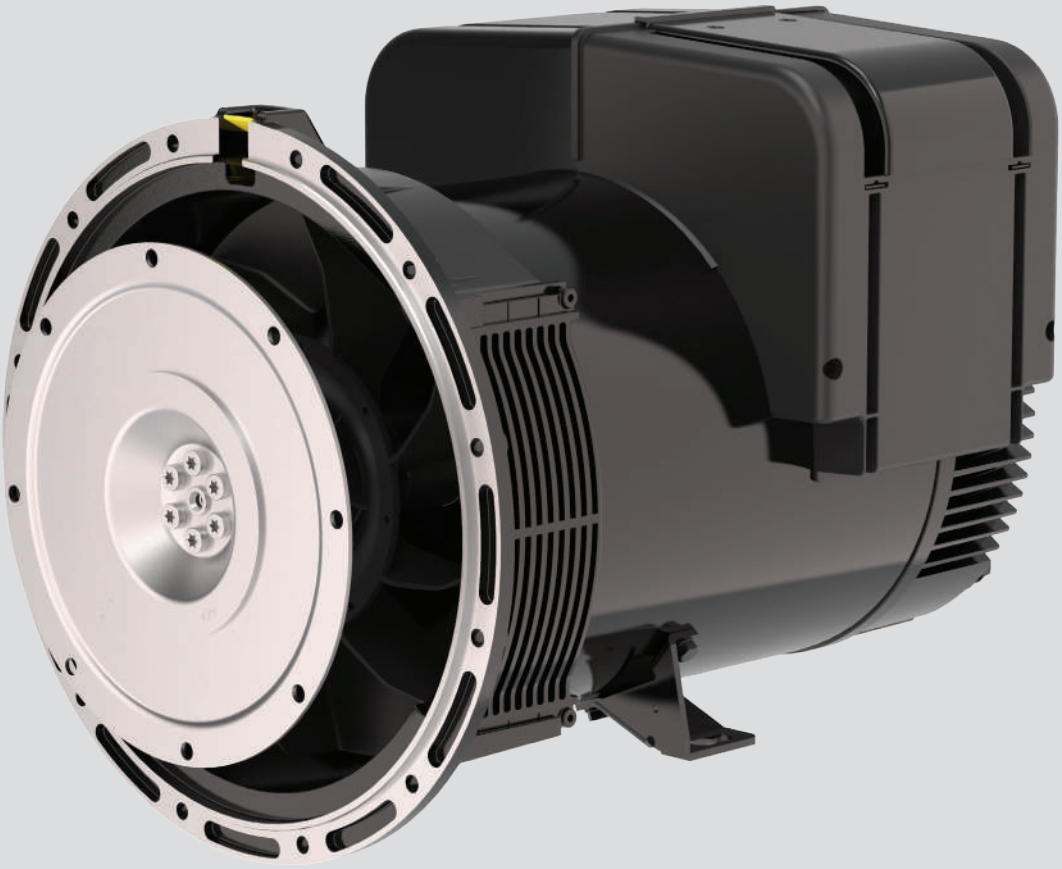
THE HEART OF EVERY GREAT MACHINE



TAL 042

Low Voltage Alternator - 4 pole

Three-phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz
Dedicated single-phase 18 to 42 kVA - 50 Hz / 23 to 53 kVA - 60 Hz
Electrical and mechanical data

LEROY-SOMER™

Nidec
All for dreams

Adapted to needs

The TAL alternator range is designed to meet the needs of general applications such as prime power and stand-by.

Compliant with international standards

The TAL range complies with international standards and regulations: IEC 60034 and derivative.
The range is designed, manufactured and marketed in an ISO 9001 and 14001 environment.

Electrical design

- Class H insulation
- Shunt excitation
- Low voltage winding:
  Three-phase 50 Hz: 380V - 400V - 415V - 440V / 220V - 230V - 240V
  60 Hz: 380V - 416V - 440V - 480V / 220V - 208V - 240V
  Single-phase 50 Hz: 115V - 230V
  60 Hz: 120V - 240V
- 4-terminal plates in 6-wire version
- Optimized performance
- Complies with EN 61000-6-3, EN 61000-6-2, EN 55011, group 1 class B for European zone (EC marking)

Robust design

- Compact and rugged assembly to withstand engine vibrations
- Steel frame
- Aluminum flanges and shields
- Single bearing design compatible with most diesel engines
- Sealed for life single bearing
- Direction of rotation: clockwise and counterclockwise without derating

Excitation and regulation system suited to the application

	Excitation system				Regulation options	
	AVR	**SHUNT**	**AREP+** (option)	**PMG** (option)	**ULc/us**	**Remote voltage potentiometer**
Three-phase 6-wire	**R120**	Standard				
	R150	Option				√
	R180		Standard	Standard		√
	D350	Option	Option	Option	√	√
Three-phase 12-wire	**R120**	Standard				
	R220	Option			√	√
	R180		Standard	Standard		√
	D350	Option	Option	Option	√	√
Single-phase	**R121**	Standard				√
	R221	Option			√	√

√ : Possible option

Compact terminal box

- Easy access to AVR and terminals

Environment and protection

- IP Code IP 23
- Standard winding protection for non-harsh environment with relative humidity ≤ 95%

Available options

- Three-phase 12-wire with 8-terminal plates
- AREP+ or PMG excitation
- ULc/us
- Customized painting (machine not painted as standard)
- Space heaters
- Flying leads
- Dedicated single-phase
- Winding 8 optimized for three-phase 380V / 416V - 60Hz
- Winding protection for harsh environments and relative humidity greater than 95% (system 2 - 4): derating according to the following table

	50 Hz			**60 Hz**
Type	380 V	400 V	415 V	All voltages
TAL 042	0.97	1 except 0.97 for TAL 042 G & H	1 except 0.97 for TAL 042 G & H	1 except 0.97 for TAL 042 G & H

TAL 042 - Three-phase 25 to 60 kVA - 50 Hz / 31.5 to 75 kVA - 60 Hz

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	R120	R180
Number of wires	6-wire (12-wire option)	Excitation system 12-wire (option)	SHUNT	AREP+ / PMG
Protection	IP 23	AVR type	R120	R180
Altitude	≤ 1000 m	Voltage regulation (*)	± 1 %	
Overspeed	2250 R.P.M.	Total Harmonic Distortion THD (**) in no-load	< 2 %	
Air flow 50 Hz (m³/s)	0.10	Total Harmonic Distortion THD (**) in linear load	< 5 %	
Air flow 60 Hz (m³/s)	0.13	Waveform: NEMA = TIF (**)	< 50	
AREP+ Short-circuit current = 2.7 In: 5 second		Waveform: I.E.C. = FHT (**)	< 2%	

(*) 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.				1 ph.	3 ph.				1 ph.	3 ph.				1 ph.	3 ph.				1 ph.
Y		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V		380V	400V	415V	440V	
Δ		220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V	220V	230V	240V		230V
YY (*)					220V					220V					220V					220V	
ΔΔ (*)						230V					230V					230V					230V
TAL 042 A	kVA	25	**25**	25	24.5	15	23	**23**	23	22.5	13.5	26.5	**26.5**	26.5	26	16	27.5	**27.5**	27.5	27	16.5
	kW	*20*	*20*	*20*	*19.5*	*12*	*18.5*	*18.5*	*18.5*	*18*	*11*	*21*	*21*	*21*	*21*	*13*	*22*	*22*	*22*	*21.5*	*13*
TAL 042 B	kVA	27	**27**	27	26	16	24.5	**24.5**	24.5	23.5	14.5	28.5	**28.5**	28.5	27.5	17	30	**30**	30	28.5	17.5
	kW	*21.5*	*21.5*	*21.5*	*21*	*13*	*19.5*	*19.5*	*19.5*	*19*	*11.5*	*23*	*23*	*23*	*22*	*13.5*	*24*	*24*	*24*	*23*	*14*
TAL 042 C	kVA	31	**32**	32	30	19	28	**29**	29	27.5	17.5	33	**34**	34	32	20	34	**35**	35	33	21
	kW	*25*	*25.5*	*25.5*	*24*	*15*	*22.5*	*23*	*23*	*22*	*14*	*26.5*	*27*	*27*	*25.5*	*16*	*27*	*28*	*28*	*26.5*	*17*
TAL 042 D	kVA	35	**35**	35	30.5	22	32	**32**	32	28	20	37	**37**	37	32.5	23.5	38.5	**38.5**	38.5	33.5	24
	kW	*28*	*28*	*28*	*24.5*	*17.5*	*25.5*	*25.5*	*25.5*	*22.5*	*16*	*29.5*	*29.5*	*29.5*	*26*	*19*	*31*	*31*	*31*	*27*	*19*
TAL 042 E	kVA	39.5	**40**	40	35	25	36	**36.5**	36.5	32	23	42	**42.5**	42.5	37	26.5	43.5	**45**	45	38.5	27.5
	kW	*31.5*	*32*	*32*	*28*	*20*	*29*	*29*	*29*	*25.5*	*18.5*	*33.5*	*34*	*34*	*29.5*	*21*	*35*	*36*	*36*	*31*	*22*
TAL 042 F	kVA	43	**45**	45	39	27	39	**41**	41	35.5	24.5	45.5	**47.5**	47.5	41.5	28.5	47.5	**50**	50	43	29.5
	kW	*34.5*	*36*	*36*	*31*	*21.5*	*31*	*33*	*33*	*28.5*	*19.5*	*36.5*	*38*	*38*	*33*	*23*	*38*	*40*	*40*	*34.5*	*23.5*
TAL 042 G	kVA	47.5	**50**	50	43	30	43	**45.5**	45.5	39	27.5	50	**53**	53	45.5	32	52	**55**	55	47.5	33
	kW	*38*	*40*	*40*	*34.5*	*24*	*34.5*	*36.5*	*36.5*	*31*	*22*	*40*	*42*	*42*	*36.5*	*25.5*	*42*	*44*	*44*	*38*	*26.5*
TAL 042 H	kVA	58	**60**	60	52	36	53	**55**	55	47	33	61	**64**	64	55	38	64	**66**	66	57	39.5
	kW	*46*	*48*	*48*	*42*	*29*	*42*	*44*	*44*	*37.5*	*26.5*	*49*	*51*	*51*	*44*	*30.5*	*51*	*53*	*53*	*46*	*31.5*

(*) 12-wire option

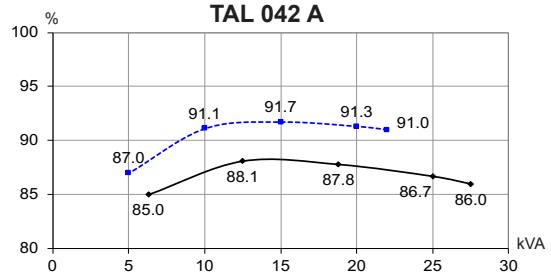
Ratings 60 Hz - 1800 R.P.M.

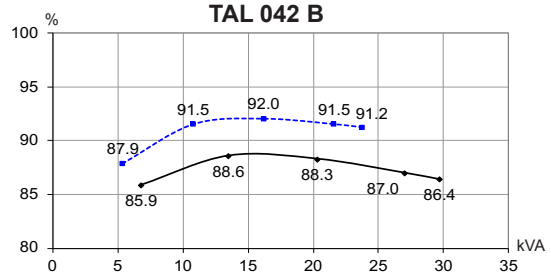
kVA / kW - P.F. = 0.8

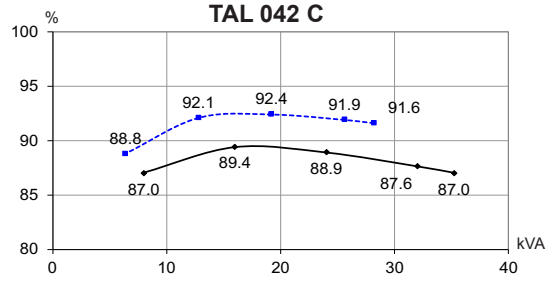
Duty / T° C		Continuous / 40 °C					Continuous / 40 °C					Stand-by / 40 °C					Stand-by / 27 °C				
Class / T° K		H / 125° K					F / 105° K					H / 150° K					H / 163° K				
Phase		3 ph.				1 ph.	3 ph.				1 ph.	3 ph.				1 ph.	3 ph.				1 ph.
Y		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V		380V	416V	440V	480V	
Δ		220V	240V			240V	220V	240V			240V	220V	240V			240V	220V	240V			240V
YY (*)			208V	220V	240V			208V	220V	240V			208V	220V	240V			208V	220V	240V	
ΔΔ (*)						240V					240V					240V					240V
TAL 042 A	kVA	29	31.5	31.5	**31.5**	18.9	26.5	28.5	28.5	**28.5**	17	30.5	33.5	33.5	**33.5**	20	32	34.5	34.5	**34.5**	20.8
	kW	*23*	*25*	*25*	*25*	*15*	*21*	*23*	*23*	*23*	*13.5*	*24.5*	*27*	*27*	*27*	*16*	*25.5*	*27.5*	*27.5*	*27.5*	*16.5*
TAL 042 B	kVA	30	32	34	**34**	19.2	27.5	29	31	**31**	17.5	32	34	36	**36**	20.5	33	35	37.5	**37.5**	21.1
	kW	*24*	*25.5*	*27*	*27*	*15.5*	*22*	*23*	*25*	*25*	*14*	*25.5*	*27*	*29*	*29*	*16.5*	*26.5*	*28*	*30*	*30*	*17*
TAL 042 C	kVA	33.5	37	39	**40**	23	30.5	33.5	35.5	**36.5**	21	35.5	39	41.5	**42.5**	24.5	37	40.5	43	**44**	25.5
	kW	*27*	*29.5*	*31*	*32*	*18.5*	*24.5*	*27*	*28.5*	*29*	*17*	*28.5*	*31*	*33*	*34*	*19.5*	*29.5*	*32.5*	*34.5*	*35*	*20.5*
TAL 042 D	kVA	37.5	40.5	43	**44**	24	34	37	39	**40**	22	40	43	45.5	**46.5**	25.5	41.5	44.5	47.5	**48.5**	26.5
	kW	*30*	*32.5*	*34.5*	*35*	*19*	*27*	*29.5*	*31*	*32*	*17.5*	*32*	*34.5*	*36.5*	*37*	*20.5*	*33*	*35.5*	*38*	*39*	*21*
TAL 042 E	kVA	41.5	45.5	48.5	**50**	27.5	38	41.5	44	**45.5**	25	44	48	51	**53**	29	45.5	50	53.5	**55**	30.5
	Kw	*33*	*36.5*	*39*	*40*	*22*	*30.5*	*33*	*35*	*36.5*	*20*	*35*	*38.5*	*41*	*42*	*23*	*36.5*	*40*	*43*	*44*	*24.5*
TAL 042 F	kVA	44	48	51	**56.5**	30	40	43.5	46.5	**51**	27.5	46.5	51	54	**60**	32	48.5	53	56	**62**	33
	kW	*35*	*38.5*	*41*	*45*	*24*	*32*	*35*	*37*	*41*	*22*	*37*	*41*	*43*	*48*	*25.5*	*39*	*42*	*45*	*50*	*26.5*
TAL 042 G	kVA	49	53.5	56.5	**62.5**	34	44.5	48.5	51	**57**	31	52	57	60	**66.5**	36	54	59	62	**69**	37.5
	kW	*39*	*43*	*45*	*50*	*27*	*35.5*	*39*	*41*	*46*	*25*	*42*	*46*	*48*	*53*	*29*	*43*	*47*	*50*	*55*	*30*
TAL 042 H	kVA	57	65	66.5	**75**	39	52	59	61	**68**	35.5	60	69	70	**80**	41.5	62.5	72	73	**82.5**	43
	kW	*46*	*52*	*53*	*60*	*31*	*42*	*47*	*49*	*54*	*28.5*	*48*	*55*	*56*	*64*	*33*	*50*	*58*	*58*	*66*	*34.5*

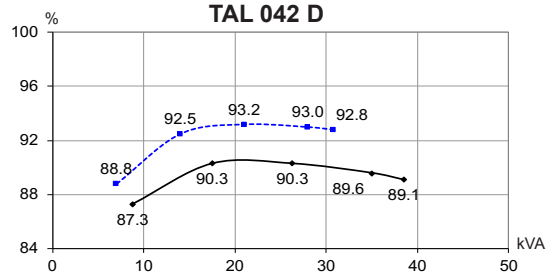
(*) 12-wire option

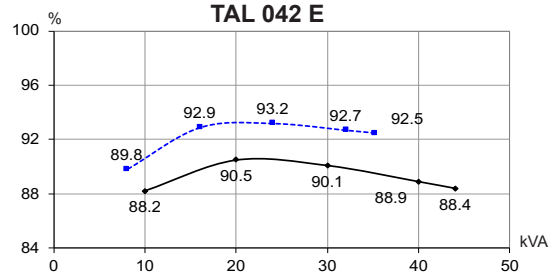
Efficiencies 400 V - 50 Hz (— P.F.: 0.8) (····· P.F.: 1)

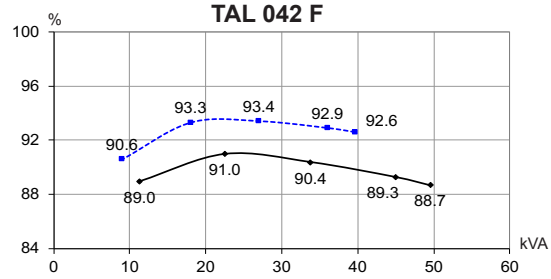


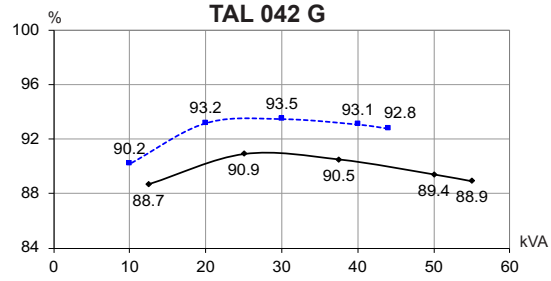


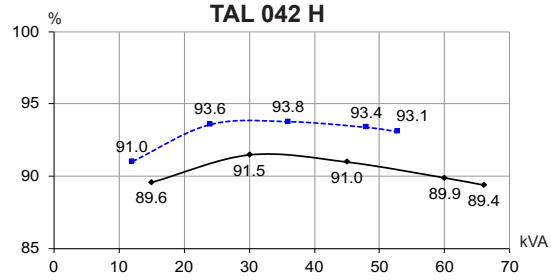












Reactances (%). Time constants (ms) - Class H / 400 V

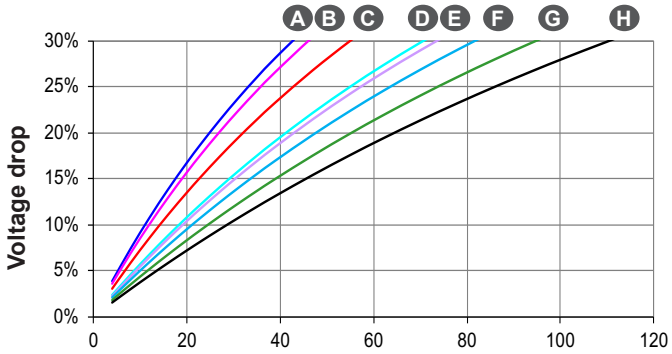
		A	B	C	D	E	F	G	H
Kcc	Short-circuit ratio	0.49	0.46	0.44	0.49	0.42	0.4	0.43	0.4
Xd	Direct-axis synchro. reactance unsaturated	257	267	279	246	281	294	283	303
Xq	Quadrature-axis synchro. reactance unsaturated	131	136	142	125	143	150	144	154
T'do	No-load transient time constant	786	813	861	944	944	980	998	1031
X'd	Direct-axis transient reactance saturated	16.3	16.4	16.2	13	14.8	15	14.1	14.7
T'd	Short-circuit transient time constant	50	50	50	50	50	50	50	50
X"d	Direct-axis subtransient reactance saturated	8.1	8.2	8.1	6.5	7.4	7.5	7	7.3
T"d	Subtransient time constant	5	5	5	5	5	5	5	5
X"q	Quadrature-axis subtransient reactance saturated	11.5	11.6	11.5	9.2	10.6	10.7	10.1	10.5
Xo	Zero sequence reactance	0.68	0.68	0.67	0.54	0.62	0.62	0.59	0.61
X2	Negative sequence reactance saturated	9.88	9.91	9.82	7.89	9.02	9.12	8.61	8.93
Ta	Armature time constant	8	8	8	8	8	8	8	8

Other class H / 400 V data

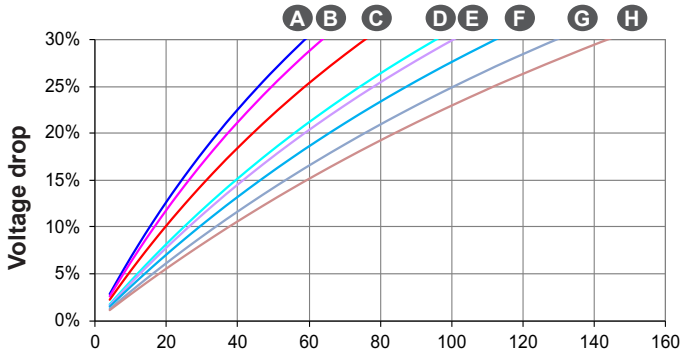
io (A)	No-load excitation current SHUNT and AREP+**	0.63	0.60	0.59	0.56	0.56	0.54	0.58	0.48 / 0.74
ic (A)	On-load excitation current SHUNT and AREP+**	2.14	2.13	2.21	1.92	2.19	2.23	2.38	2.09 / 3.21
uc (V)	On-load excitation voltage SHUNT and AREP+**	32.2	32	32.8	28.5	32.1	32.3	33.9	33.5 / 21.4
ms	Response time (ΔU = 20% transient)	500	500	500	500	500	500	500	500
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) SHUNT*	37	40	48	66	66	73	86	100
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) AREP+*	58	63	75	103	103	114	135	143
%	Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 $_{LAG}$	20.1	20.1	20	17.5	19	19.1	18.4	18.9
%	Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 $_{LAG}$	15.4	15.5	15.4	13.6	14.6	14.7	14.3	15.2
W	No-load losses	739	733	785	888	888	908	1063	1152
W	Heat dissipation	3067	3209	3593	3248	3955	4307	4694	5363

* P.F. = 0.6 - ** H: SHUNT / AREP+

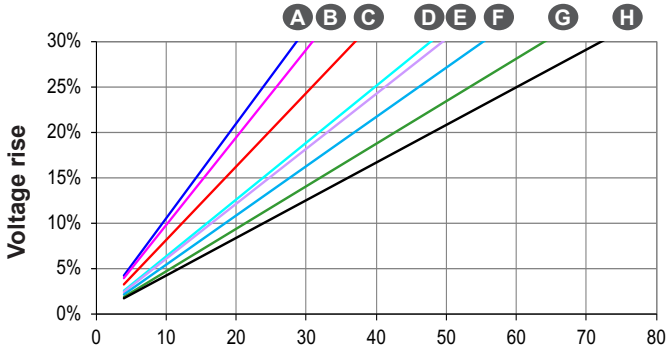
Transient voltage variation 400V - 50 Hz



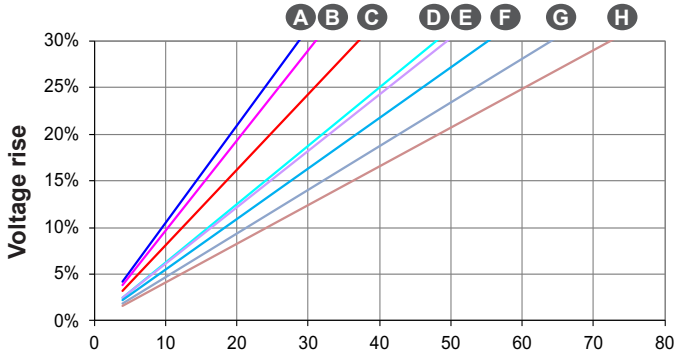
Phase loading (SHUNT) - kVA at P.F. = 0.8



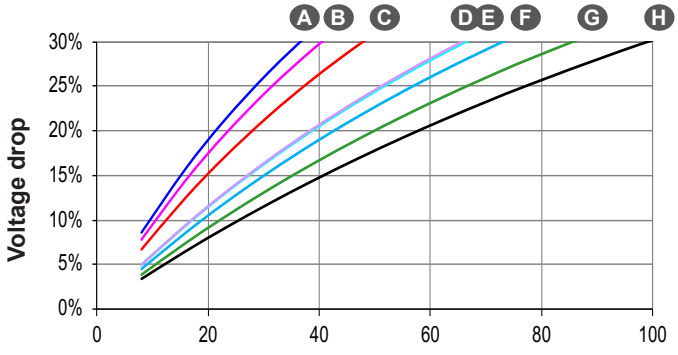
Phase loading (AREP+) - kVA at P.F. = 0.8



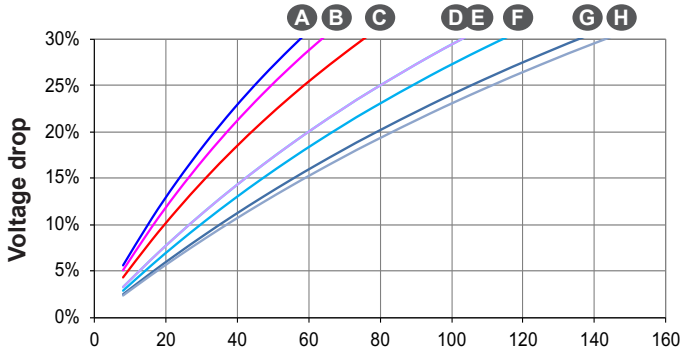
Load shedding (SHUNT) - kVA at P.F. = 0.8



Load shedding (AREP+) - kVA at P.F. = 0.8



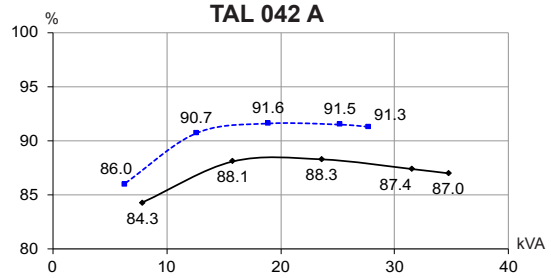
Motor starting (SHUNT)
Locked rotor kVA at P.F. = 0.6

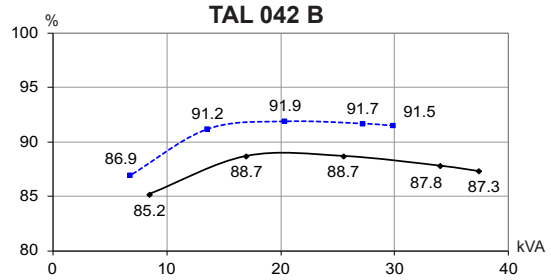


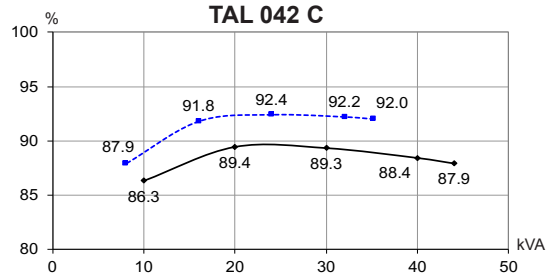
Motor starting (AREP+)
Locked rotor kVA at P.F. = 0.6

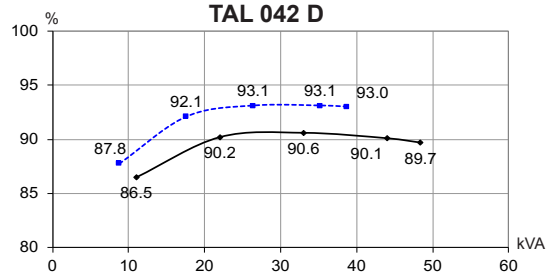
- For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = Sine P.F. / 0.8
- For voltages other than 400V (Y), 230V (Δ) at 50 Hz, then kVA must be multiplied by $(400/U)^2$ or $(230/U)^2$.
- Transient performance of the PMG option, consult us.

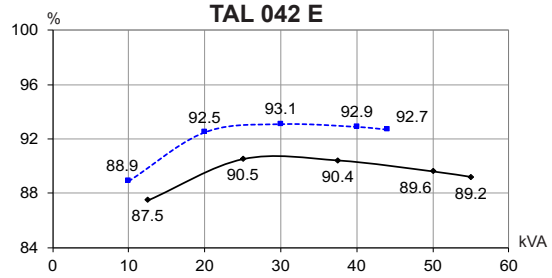
Efficiencies 480 V - 60 Hz (— P.F.: 0.8) (····· P.F.: 1)

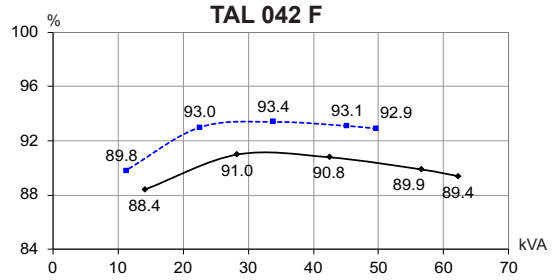


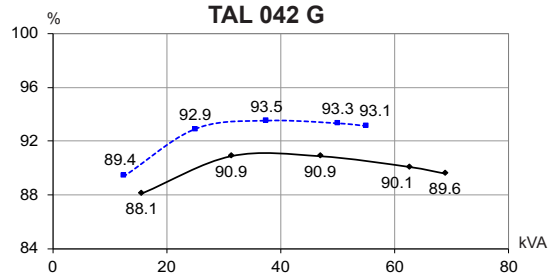


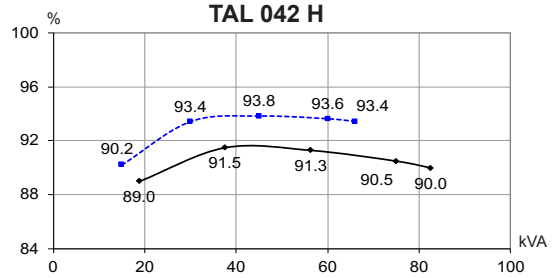












Reactances (%). Time constants (ms) - Class H / 480 V

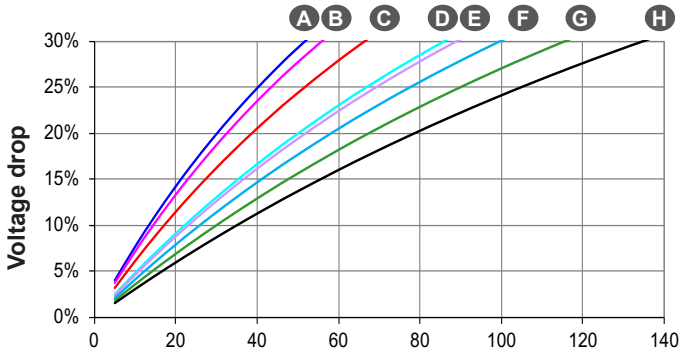
		A	B	C	D	E	F	G	H
Kcc	Short-circuit ratio	0.47	0.44	0.42	0.46	0.41	0.38	0.41	0.38
Xd	Direct-axis synchro. reactance unsaturated	270	280	292	257	292	308	295	316
Xq	Quadrature-axis synchro. reactance unsaturated	138	143	148	131	149	157	150	161
T'do	No-load transient time constant	786	813	861	944	944	980	998	1031
X'd	Direct-axis transient reactance saturated	17.2	17.2	16.9	13.6	15.5	15.7	14.7	15.3
T'd	Short-circuit transient time constant	50	50	50	50	50	50	50	50
X"d	Direct-axis subtransient reactance saturated	8.6	8.6	8.4	6.8	7.7	7.8	7.3	7.6
T"d	Subtransient time constant	5	5	5	5	5	5	5	5
X"q	Quadrature-axis subtransient reactance saturated	12.1	12.1	12	9.7	11	11.2	10.5	10.9
Xo	Zero sequence reactance	0.71	0.71	0.7	0.56	0.64	0.65	0.61	0.63
X2	Negative sequence reactance saturated	10.37	10.4	10.24	8.27	9.39	9.55	8.97	9.3
Ta	Armature time constant	8	8	8	8	8	8	8	8

Other class H / 480 V data

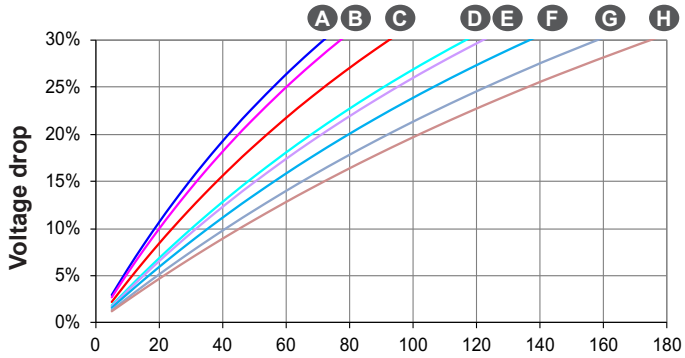
io (A)	No-load excitation current SHUNT and AREP+**	0.63	0.60	0.59	0.56	0.56	0.54	0.58	0.48 / 0.74
ic (A)	On-load excitation current SHUNT and AREP+**	2.16	2.15	2.21	1.92	2.17	2.21	2.32	2.04 / 3.13
uc (V)	On-load excitation voltage SHUNT and AREP+**	32.8	32.6	33.3	29	32.4	32.7	34.1	33.6 / 21.5
ms	Response time (ΔU = 20% transient)	500	500	500	500	500	500	500	500
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) SHUNT*	45	48	58	79	79	88	104	119
kVA	Start (ΔU = 20% cont. or ΔU = 30% trans.) AREP+*	70	75	90	124	124	137	161	171
%	Transient ΔU (on-load 4/4) SHUNT - P.F.: 0.8 $_{LAG}$	20.7	20.7	20.5	18	19.4	19.6	18.9	19.3
%	Transient ΔU (on-load 4/4) AREP+ - P.F.: 0.8 $_{LAG}$	15.9	15.9	15.7	14	15	15.1	14.6	15.6
W	No-load losses	1051	1047	1121	1270	1270	1300	1513	1642
W	Heat dissipation	3603	3764	4184	3867	4620	5061	5489	6275

* P.F. = 0.6 - ** H: SHUNT / AREP+

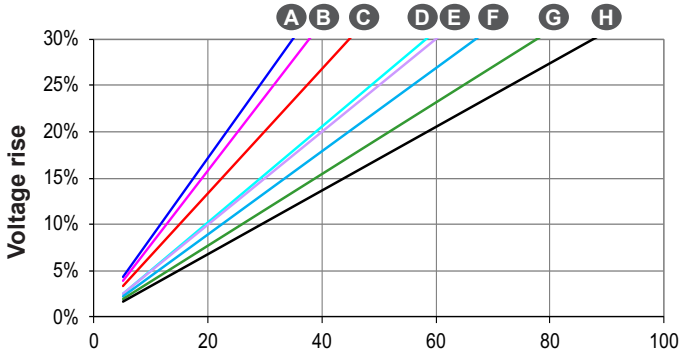
Transient voltage variation 480V - 60 Hz



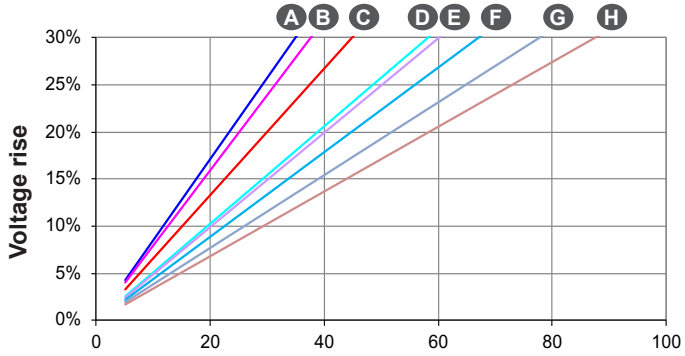
Phase loading (SHUNT) - kVA at P.F. = 0.8



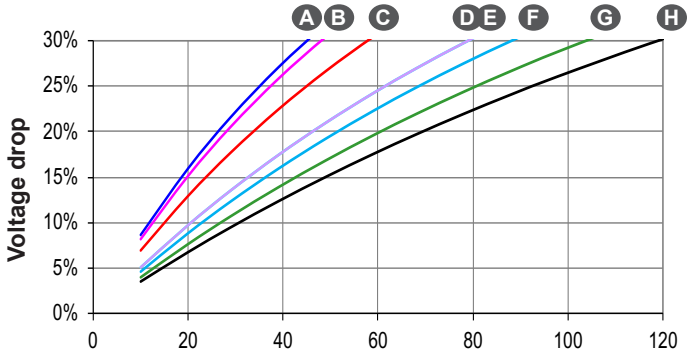
Phase loading (AREP+) - kVA at P.F. = 0.8



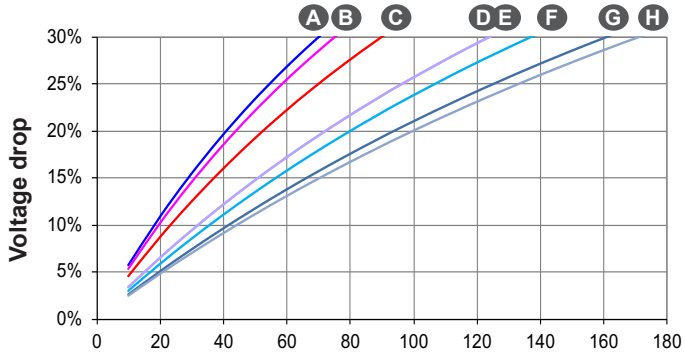
Load shedding (SHUNT) - kVA at P.F. = 0.8



Load shedding (AREP+) - kVA at P.F. = 0.8



Motor starting (SHUNT)
Locked rotor kVA at P.F. = 0.6



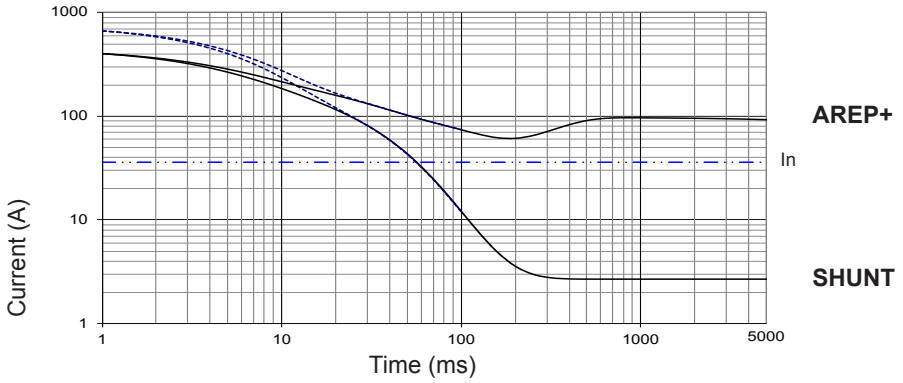
Motor starting (AREP+)
Locked rotor kVA at P.F. = 0.6

- For a starting P.F. other than 0.6, the starting kVA must be multiplied by K = Sine P.F. / 0.8
- 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)

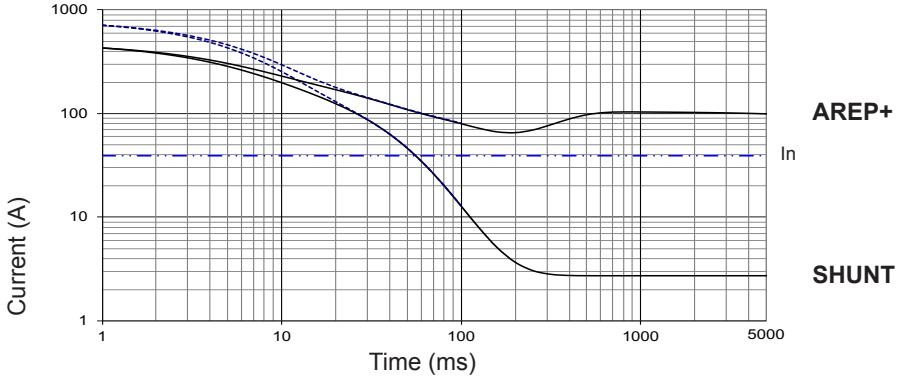
TAL 042 A

Symmetrical ——
Asymmetrical - - -



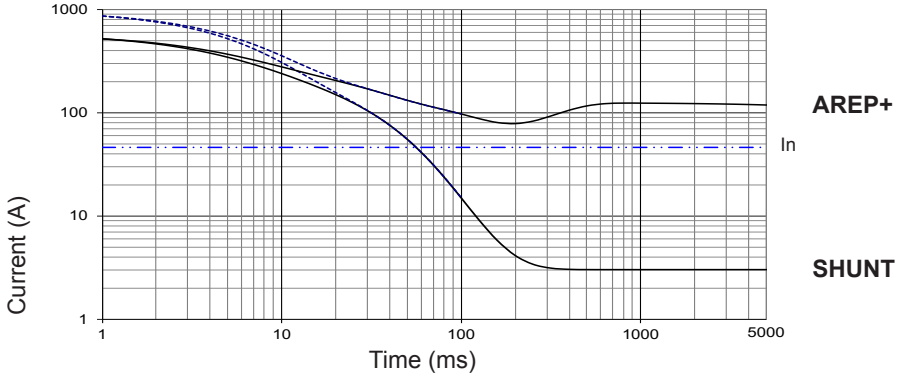
TAL 042 B

Symmetrical ——
Asymmetrical - - -



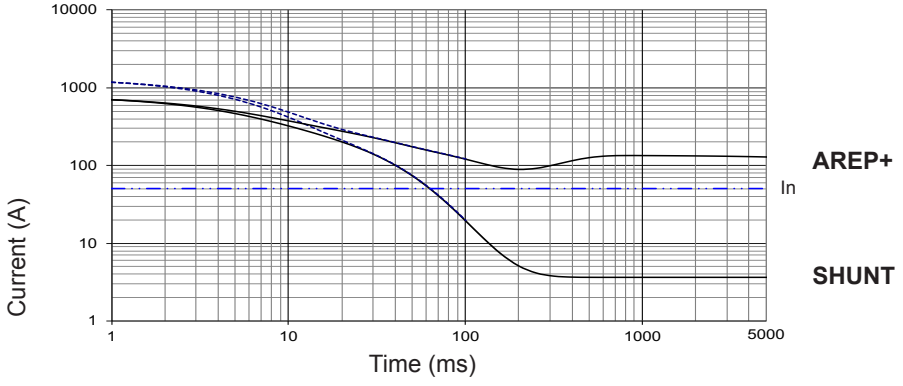
TAL 042 C

Symmetrical ——
Asymmetrical - - -



TAL 042 D

Symmetrical ——
Asymmetrical - - -

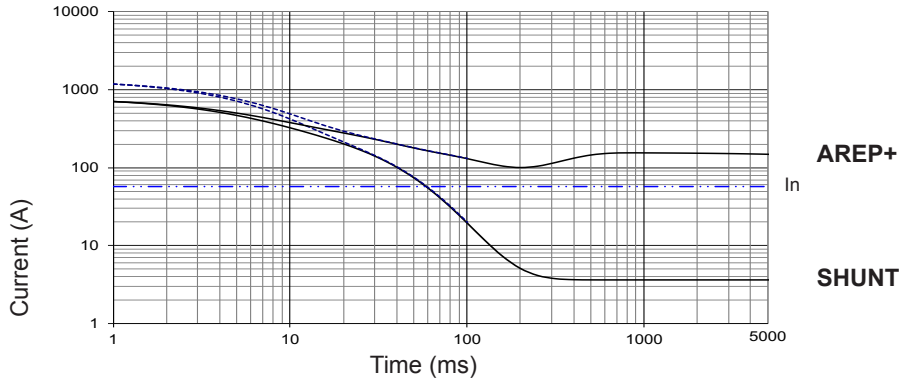


Influence due to connection
For (Δ) connection, use the following multiplication factor:
- Current value x 1.732.

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

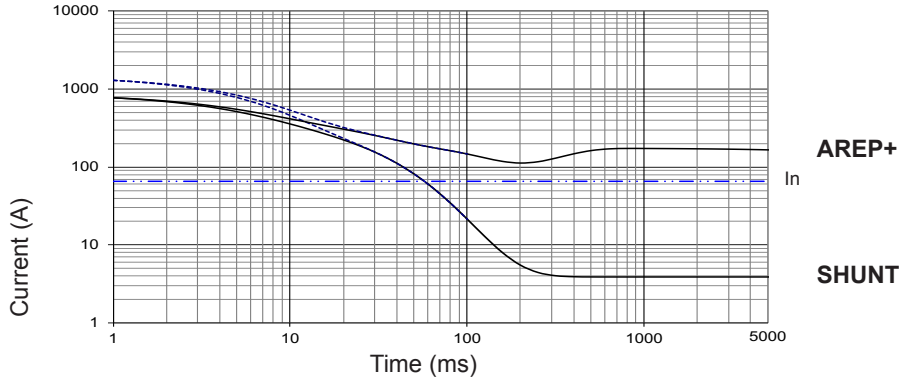
TAL 042 E

Symmetrical ——
Asymmetrical - - -



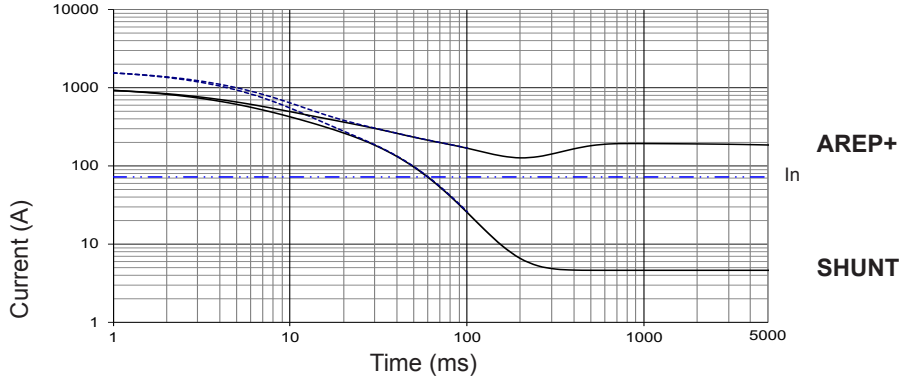
TAL 042 F

Symmetrical ——
Asymmetrical - - -



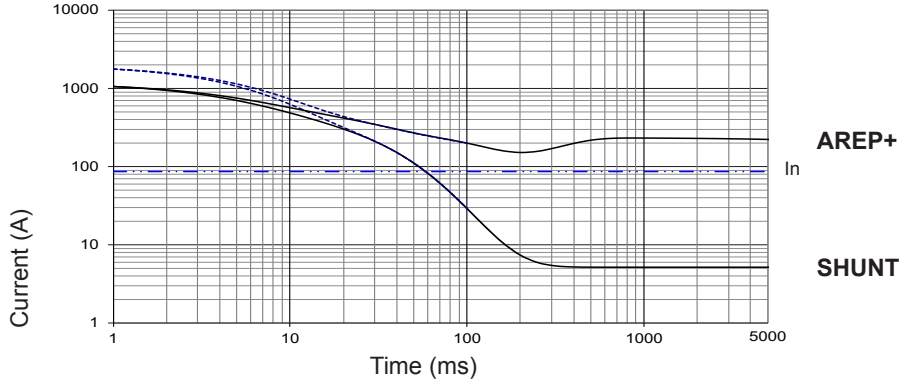
TAL 042 G

Symmetrical ——
Asymmetrical - - -



TAL 042 H

Symmetrical ——
Asymmetrical - - -



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	1	1.5	

General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (wind. M 50 Hz, M1 60 Hz)	AVR type	R121
Number of wires	4	Voltage regulation (*)	± 1 %
Protection	IP 23	Total Harmonic Distortion THD (**) in no-load	< 3.5 %
Altitude	≤ 1000 m	Total Harmonic Distortion THD (**) in linear load	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow (m^3/s)	**50 Hz:** 0.10 - **60 Hz:** 0.13	Waveform: I.E.C. = FHT (**)	< 2 %

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

Ratings / Efficiencies 50 Hz - 1500 R.P.M. - Winding M

kVA / kW - P.F. = 1 (P.F. 0.8 : derating 15%)

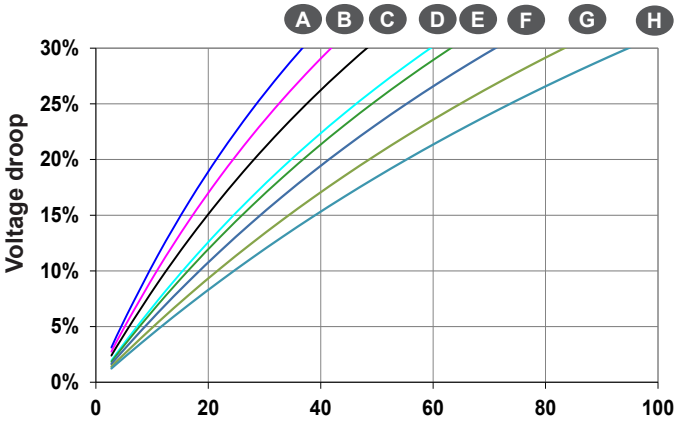
Duty / T° C	Continuous / 40 °C		Continuous / 40 °C	Stand-by / 40 °C	Stand-by / 27 °C	
Class / T° K	H / 125° K		F / 105° K	H / 150° K	H / 163° K	
Serie (SE)	230 V	η %	230 V	230 V	230V	η %
Parallel (PA)	115 V	η %	115 V	115 V	115 V	η %
TAL 042 A	18	88.1	16.5	19	20	87.4
TAL 042 B	20.5	88.1	18.5	21.5	22.5	87.4
TAL 042 C	22.5	89	20.5	24	25	88.4
TAL 042 D	25	90.6	23	26.5	27.5	90.2
TAL 042 E	28	90.1	25.5	29.5	31	89.6
TAL 042 F	31.5	90.3	28.5	33.5	34.5	89.8
TAL 042 G	35	90.4	32	37	38.5	89.9
TAL 042 H	42	90.5	38	44.5	46	90

Ratings / Efficiencies 60 Hz - 1800 R.P.M. - Winding M1

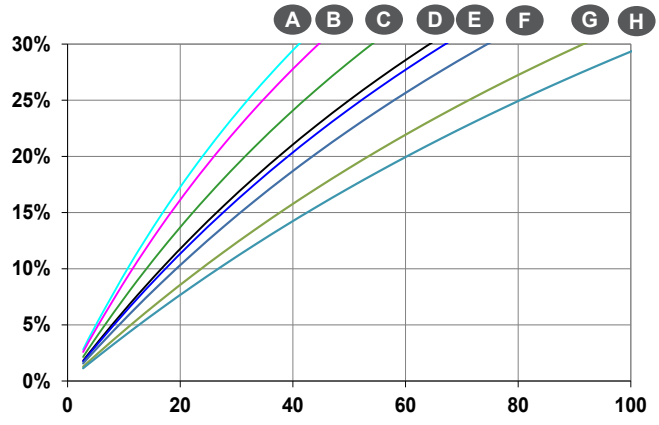
kVA / kW - P.F. = 1 (P.F. 0.8 : derating 15%)

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	
Serie (SE)	240 V	η %	240 V	240 V	240V	η %
Parallel (PA)	120 V	η %	120 V	120 V	120 V	η %
TAL 042 A	23	88.3	21	24.5	25.5	87.7
TAL 042 B	26	88.3	23.5	27.5	28.5	87.6
TAL 042 C	29	89	26	30.5	32	88.5
TAL 042 D	31.5	90.4	28.5	33.5	34.5	90
TAL 042 E	36	89.8	33	38	39.5	89.2
TAL 042 F	40	90	36.5	42.5	44	89.5
TAL 042 G	47	90	43	50	51	89.5
TAL 042 H	53	90.5	48	56	58	90

Starting motor 230V - 50Hz

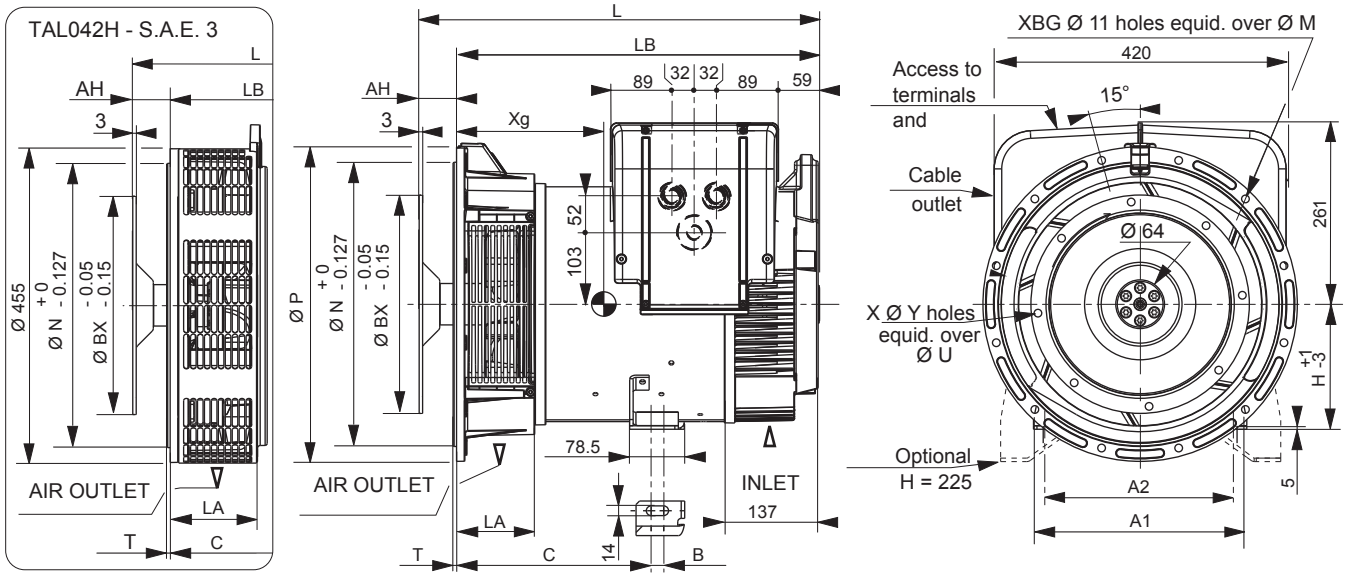


Starting motor 240V - 60Hz



Locked rotor kVA at PF : 0.9

Single bearing general arrangement



Dimensions (mm) and weight (kg)				
Type	L max.	LB max.	Xg	Weight (kg)
TAL 042 A	565	503	237	117
TAL 042 B	565	503	242	122
TAL 042 C	565	503	252	133
TAL 042 D	610	548	275	165
TAL 042 E	610	548	275	165
TAL 042 F	650	588	287	181
TAL 042 G	650	588	295	186
TAL 042 H	680	618	310	187

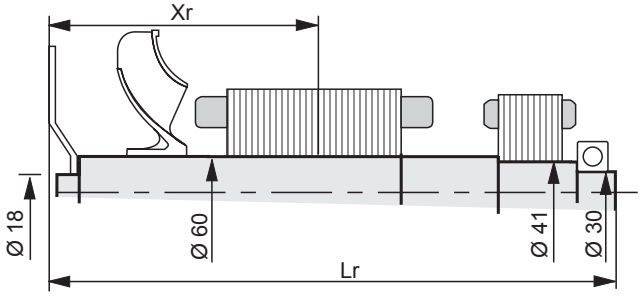
Shaft height (mm)		
	Standard	Option
H	**180**	225
	Feet length	
C	260	299 (A, B, C) / 312.5
B	18	23
A1	307	400
A2	279	356

Coupling		
Flange	**3**	**4**
Flex plate		
11 1/2	x	-
10	x	x
8	-	x
7 1/2	-	x

Flange (mm)						
S.A.E.	P	N	M	XBG	T	LA
4	406	361.95	381	12	6	122
3	452	409.58	428.62	12	5	105.3
-	-	-	-	-	-	-

Flex plate (mm)					
S.A.E.	BX	U	X	Y	AH
11 1/2	352.42	333.38	8	11	39.6
10	314.32	295.28	8	11	53.8
8	263.52	244.48	6	11	62
7 1/2	241.3	222.25	8	9	30.2

Torsional 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. 7 1/2				S.A.E. 8				S.A.E. 10				S.A.E. 11 1/2			
Type	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
TAL 042 A	279	526.2	44.1	0.216	277	558	44.4	0.220	274	549.8	44.9	0.211	272	535.6	45.4	0.244
TAL 042 B	282	526.2	46.1	0.229	280	558	46.4	0.233	277	549.8	46.9	0.224	274	535.6	47.4	0.257
TAL 042 C	287	526.2	50.1	0.255	286	558	50.5	0.258	283	549.8	50.9	0.249	281	535.6	51.4	0.282
TAL 042 D	310	571.2	60.2	0.312	308	603	60.6	0.316	306	594.8	61	0.307	304	580.6	61.5	0.340
TAL 042 E	310	571.2	60.2	0.312	308	603	60.6	0.316	306	594.8	61	0.307	304	580.6	61.5	0.340
TAL 042 F	325	611.2	66.2	0.344	323	643	66.5	0.348	321	634.8	66.9	0.339	319	620.6	67.4	0.372
TAL 042 G	330	611.2	69.2	0.364	328	643	69.5	0.367	326	634.8	69.9	0.358	324	620.6	70.4	0.391
TAL 042 H	344	641.2	77.5	0.414	342	673	77.8	0.418	340	664.8	78.2	0.430	338	650.6	78.8	0.442

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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Moteurs Leroy-Somer SAS. Siège : Bd Marcellin Leroy, CS 10015, 16915 Angoulême Cedex 9, France.
Capital social : 65 800 512 €, RCS Angoulême 338 567 258.

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DSEGenset

DSE4510/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

(ALTERNATOR FREQUENCY & CAN SPEED SENSING)

FEATURES

DSE**4520**

DSE**4510**

KEY BENEFITS

- Ultimate size to feature ratio
- Automatically transfers between mains (utility) and generator (DSE4520 only)
- 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 simultaneously which are clearly displayed on the largest back-lit icon display in its class
- The module can be configured to suit a wide range of applications
- Uses DSE Configuration Suite PC Software for simplified configuration
- Compatible with a wide range of CAN engines
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

KEY FEATURES

- Alternator frequency & CAN speed sensing in one variant
- Largest back-lit icon display in its class
- Heated display option
- Real time clock provides accurate event logging
- Fully configurable via the fascia or PC using USB communication
- Extremely efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE4520 only)
- Compatible with 600 V ph to ph nominal systems
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Generator overload protection (kW)
- Generator/load current monitoring and protection
- Fuel and start outputs (configurable when using CAN)
- 4 configurable DC outputs (2 for DSE4510)
- 3 configurable analogue/digital inputs
- 4 configurable digital inputs
- Configurable staged loading outputs
- 3 engine maintainance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Battery voltage monitoring
- Start on low battery voltage
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD alarm indication
- Event log (50)

RELATED MATERIALS

TITLE	PART NO'S
DSE4510/20 Installation Instructions	053-157
DSE4510/20 Operator Manual	057-171
DSE4510/20 Configuration Suite PC Manual	057-172

SPECIFICATION

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 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
85 mA at 12 V, 96 mA at 24 V

MAXIMUM STANDBY CURRENT
51 mA at 12 V, 47 mA at 24 V

MAXIMUM SLEEP CURRENT
35 mA at 12 V, 32 mA at 24 V

MAXIMUM DEEP SLEEP CURRENT
<10 uA at 12 V, <10 uA at 24 V

MAINS (UTILITY) DSE4520 ONLY

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

OUTPUTS

OUTPUT A (FUEL)
10 A short term, 5 A continuous, at supply voltage

OUTPUT B (START)
10 A short term, 5 A continuous, at supply voltage

AUXILIARY OUTPUTS C & D
2 A DC at supply voltage

AUXILIARY OUTPUTS E & F DSE4520
2 A DC at supply voltage

GENERATOR

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

DIMENSIONS

OVERALL
140 mm x 113 mm x 43 mm
5.5" x 4.4" x 1.7"

PANEL CUT-OUT
118 mm x 92 mm
4.6" x 3.6"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30 °C to +70 °C
-22 °F to +158 °F

-40 °C to +70 °C (for heated display variant)
-40 °F to +158 °F (for heated display variant)

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-282

DEEP SEA ELECTRONICS PLC UK
Highfield House, Hunmanby Industrial Estate, Hunmanby YO14 0PH
TELEPHONE +44 (0) 1723 890099 **FACSIMILE** +44 (0) 1723 893303
EMAIL sales@deepseaplc.com **WEBSITE** www.deepseaplc.com

DEEP SEA ELECTRONICS INC USA
3230 Williams Avenue, Rockford, IL 61101-2668 USA
TELEPHONE +1 (815) 316 8706 **FACSIMILE** +1 (815) 316 8708
EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

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055-132/09/12 (7)

DSEGenset

DSE

DSE4510/20

AUTO START AND AUTO MAINS FAILURE CONTROL MODULES

(ALTERNATOR FREQUENCY & CAN SPEED SENSING)

FEATURES

The DSE4510 Auto Start Control Module and the DSE4520 Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Whilst maintaining functions included within higher end controllers, such as generator or load power monitoring, the DSE45xx range of especially compact controllers provide the user with the ultimate size to feature ratio.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules will give comprehensive engine and alternator protection. This will be indicated on the largest back-lit LCD icon display in its class via an array of warning, electrical trip and shutdown alarms.

Electronic J1939 (CAN) and non-electronic (alternator frequency sensing) engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the module can be easily adapted to suit a wide range of applications.

Through USB Communication both modules can be easily configured using the DSE Configuration Suite PC Software or can be fully configured through the module's front panel editor.

All DSE products are supported by the DSE global technical support team which gives our customers and end users access to 24 hour system help and advice.

*AVAILABLE VARIANTS

4510-03	Auto start with real time clock
4510-04	Auto start with real time clock & heated display
4520-03	Auto Mains Failure with real time clock
4520-04	Auto Mains Failure with real time clock & heated display

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

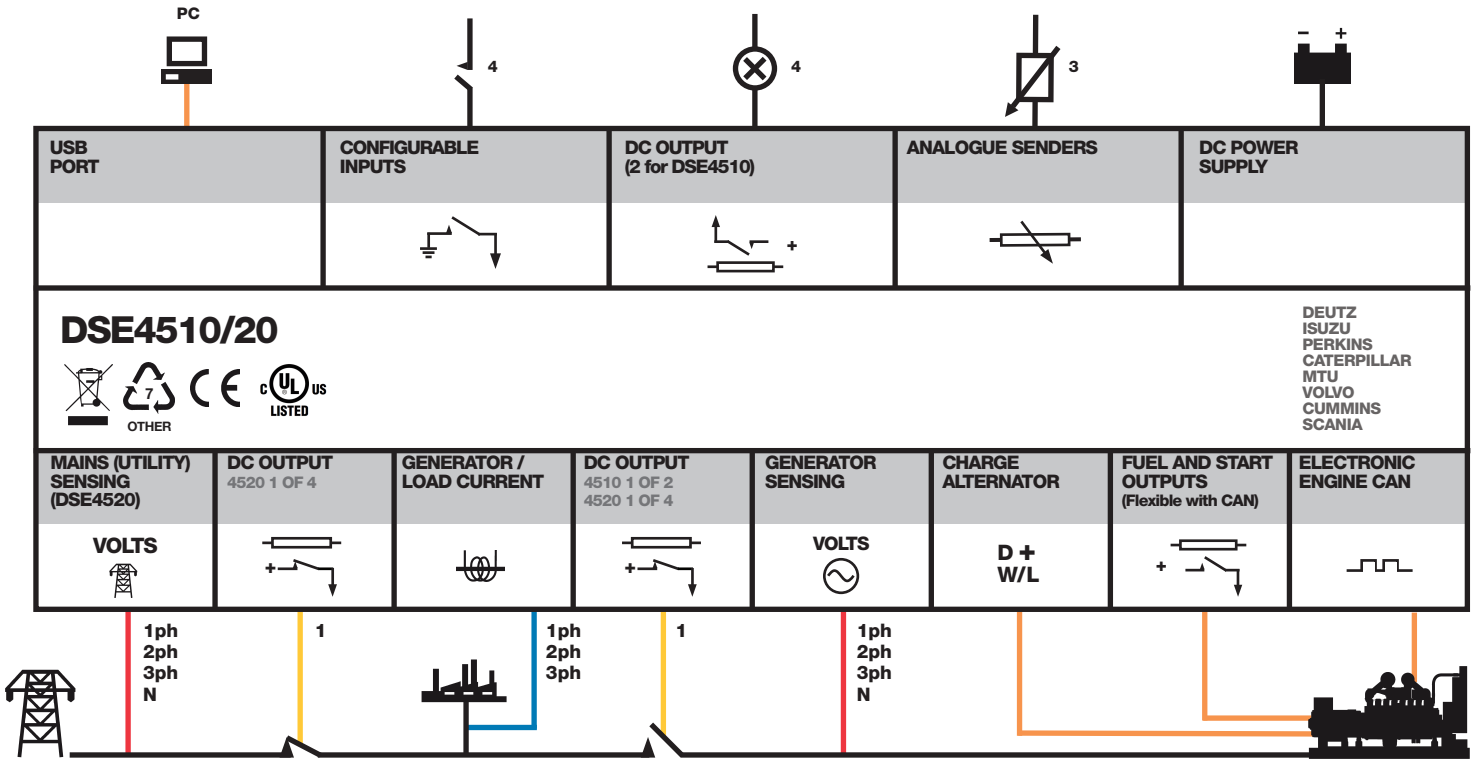
VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 gn

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



ISSUE 1