

# FUSTEQ SERIES

**DIESEL GENERATOR  
GROUPE ELECTROGENE DIESEL  
GRUPO ELECTROGENO DIESEL  
GRUPPO ELETTOGENO DIESEL**

MODEL  
MODELE  
MODELO  
MODELLO

## PK 111FQ\*

### POWERED BY



**LERROY  
SOMER**



### ULTRA SILENT VERSION



GENERATING SET PERFORMANCE PERFORMANCES DU GROUPE PRESTACIONES DEL GRUPO PRESTAZIONI DEL GRUPPO		50 Hz	60 Hz
Voltage Voltage Voltaje Tensione		V 400 / 230	V 220 / 127
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kVA 100	kVA 115
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kVA 110	kVA 127
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWe 80	kWe 92
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWe 88	kWe 101,6
Power factor Facteur de puissance Factor de potencia Fattore di potenza	cos φ	0,8	0,8
Fuel consumption Consommation combustible Consumo de combustible Consumo combustibile	70 %	l/h 14,6	l/h 17,3
Noise level Niveau de bruit Nivel de ruido Livello rumorosità	dB(A)@7m	54dB(A) without load	
Limit ambient temperature Limite de la température ambiante Limite de la temperatura ambiente Limite di temperatura ambientale		55°C minimum	

ENGINE MOTEUR MOTOR MOTORE		PERKINS		1104C-44TAG2	
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Continuous Power Puissance service continue Potencia servicio continuo Potenza servizio continuo	PRP	kWm	92,4	kWm	105,6
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza	LTP	kWm	101,8	kWm	116,3
Specific fuel consumption Consommation spécifique combustible Consumo específico de combustible Consumo specifico combustibile		g/kWh	50 % 204 75 % 207 100 % 205 110 % 205	g/kWh	50 % 228 75 % 218 100 % 218 110 % 214
Diesel 4 Stroke – Injection type Diesel 4 temps – Type injection Diesel 4 tiempos – Tipo de inyeccion Diesel a 4 tempi – Tipo di iniezione					direct directe directa diretta
Aspiration type Type d'aspiration Tipo de aspiracion Tipo d'aspirazione					Turbocharged Suraalimentée sobrealimentato sovralimentata
Cooling system Refroidissement Sistema de refrigeracion Raffreddamento					Water Eau Agua Acqua
Speed governor Régulateur de tours Regulador Regolatore di giri					Electronic Electronique Electronico Elettronico
Cylinders, numbers and arrangement Nombre et disposition des cylindres Cilindros, numero y disposicion Numero e disposizione dei cilindri					4 L
Total displacement Cylindrée totale Cilindrata total Cilindrata totale				cm <sup>3</sup>	4.410
Bore x stroke Alésage x course Diámetro x carrera Alesaggio x corsa				mm	105.0 x 127.0
Compression ratio Rapport de compression Relación de compresión Rapporto di compressione					18.2 :1
Engine electric system voltage Voltage système électrique moteur Voltaje sistema eléctrico motor Voltaggio sistema elettrico motore					12 V
Derating for temperature Déclassement pour temperature Declasamiento para temperatura Declassamento per temperatura				0 ÷ 25°C > 25 °C	0 2 % / 10°C
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine				0 ÷ 1000 m > 1000m	0 1,5 % / 500 m

ALTERNATOR ALTERNATEUR ALTERNADOR ALTERNATORE		LEROY SOMER			
PERFORMANCE PERFORMANCES PRESTACIONES PRESTAZIONI		1500 rpm		1800 rpm	
Model Modèle Modelo Modello		LSA 44.2 VS45		LSA 44.2 VS45	
Continuous Power Puissance service continué Potencia servicio continuo Potenza servizio continuo		40 °C	kVA 105 kWe 84	kVA 123 kWe 98	
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		40 °C	KVA 110 kWe 88	KVA 131 kWe 105	
Stand-by Power Puissance service secours Potencia servicio emergencia Potenza servizio in emergenza		27 °C	KVA 116 kWe 93	KVA 135 kWe 108	
Efficiency Rendement Eficienza Efficienza			1/4 90,2 % 2/4 92,1 % 3/4 91,7 % 4/4 90,8 %	1/4 89,0 % 2/4 91,8 % 3/4 91,8 % 4/4 91,0 %	
Standard winding connections Liaison des bobinages Tipo de conexión Collegamento avvolgimenti			Y	YY	
Exciter Eccitatrice Excitador Eccitatrice		brushless rotating exciter design with solid state pivotante <b>sans brosses</b> avec pont de diodes pivotants puente de diodos <b>sin escobillas</b> rotantes rotante <b>senza spazzole</b> con ponte di diodi rotanti			
Poles Poles Polos Poli				4	
Phases Phases Fases Fasi				3 + N	
Wires Fils Hilos Morsetti				12	
Voltage regulation Regulation Voltage Regulación voltaje Regolazione tensione				± 0,5 %	
Waveform distortion Taux d'harmonique Distorsión forma de onda Distorsione forma d'onda				IEC	< 2%
Insulation class Classe d' isolation Classe de aislamiento Classe di isolamento					H
Enclosure Degré de protection mécanique Grado de protección mecánica Grado di protezione meccanica					IP 23
Maximun overspeed Survitesse Régimen máximo Velocità di fuga					2250 min
AVR model with <b>300% shortcircuit current</b> Modèle AVR avec un <b>courant</b> de court-circuit du <b>300%</b> Modelo AVR con una <b>corriente</b> de corto circuito del <b>300%</b> Modello AVR con <b>corrente</b> di corto circuito del <b>300%</b>				(3 In) : 10s	<b>R 438</b> <b>AREP</b>
Derating for temperature Déclassement pour temperature Declasamiento para temperatura Declassamento per temperatura			0 ÷ 40°C	0	
			> 40 °C	3 % / 5°C	
Derating for altitude Déclassement pour altitude Declasamiento para altitud Declassamento per altitudine			0 ÷ 1500 m	0	
			1500 ÷ 2500 m	3% / 500 m	
			2500 ÷ 3000 m	4% / 500 m	

**LOGISTIC INFORMATION**  
**INFORMATIONS LOGISTIQUES**  
**INFORMATION LOGISTICA**  
**INFORMAZIONI LOGISTICHE**

	Integrated fuel tank capacity Capacité réservoir intégré Capacidad Tanque integrado Capacità Serbatoio integrato		Weight Poids Peso Peso	Dimensions Cotes d'encombrement Medidas externas Dimensioni d'ingombro			
	( L. )			(kg)	(cm)		
	STD	EXTRA1			L	W	H
SOUND PROOF VERSION VERSION INSONORISEE VERSION INSONORISADA VERSIONE INSONORIZZATA	300	ON REQUEST	2050	260	113	180	

**GENSET STANDARD EQUIPMENT**  
**EQUIPEMENT STANDARD GROUPE ELECTROGENE**  
**EQUIPAMIENTO STANDARD GRUPO ELECTROGENO**  
**EQUIPAGGIAMENTO STANDARD GRUPPO ELETTROGENO**


GB	F	E	I
<ul style="list-style-type: none"> <li>✓ Lifting eye</li> <li>✓ Fully bunded fuel tank</li> <li>✓ Integrated fuel tank</li> <li>✓ Vibration dampers</li> <li>✓ One or more electric fans controlled by Inverter VSi</li> <li>✓ Manual autostart control panel <b>ACP7310AUS</b> with circuit breaker</li> <li>✓ Battery</li> <li>✓ Ultra silent canopy</li> <li>✓ Residential silencer</li> <li>✓ Fork lift guides</li> </ul>	<ul style="list-style-type: none"> <li>✓ Crochet de levage</li> <li>✓ Bac de rétention</li> <li>✓ Réservoir intégré</li> <li>✓ Amortisseurs de vibration</li> <li>✓ Un ou plusieurs ventilateurs électriques commandés par Inverter VSi</li> <li>✓ Démarrage manuel autostart <b>ACP7310AUS</b> avec disjoncteur de protection</li> <li>✓ Batterie</li> <li>✓ Capotage ultra-silencieux</li> <li>✓ Silencieux résidentielle</li> <li>✓ Supports pour fourches</li> </ul>	<ul style="list-style-type: none"> <li>✓ Gancho central</li> <li>✓ Tanque del combustible con sistema de recolección de líquidos</li> <li>✓ Tanque de combustible integrado</li> <li>✓ Sistema de amortiguación anti-vibrante</li> <li>✓ Uno o más ventiladores eléctricos controlados para Inverter VSi</li> <li>✓ Cuadro manual autostart <b>ACP7310AUS</b> con interruptor magnetotérmico</li> <li>✓ Batería</li> <li>✓ Cabina ultra-silenciosa</li> <li>✓ Silenciador residencial</li> <li>✓ Supportes para carretilla</li> </ul>	<ul style="list-style-type: none"> <li>✓ Gancio di sollevamento centrale</li> <li>✓ Serbatoio con vasca di raccolta liquidi</li> <li>✓ Serbatoio integrato</li> <li>✓ Anti vibranti</li> <li>✓ Una o più ventole elettriche controllate da tecnologia Inverter VSi</li> <li>✓ Quadro di comando manuale autostart <b>ACP7310AUS</b> con interruttore magnetotermico</li> <li>✓ Batteria</li> <li>✓ Cabina ultra silenziosa</li> <li>✓ Marmitta residenziale</li> <li>✓ Porta forche</li> </ul>

**MANUAL AUTOSTART CONTROL PANEL**  
**COFFRET ELECTRIQUE MANUEL AUTOSTART**  
**CUADRO ELECTRICO MANUAL AUTOSTART**  
**QUADRO ELETTRICO MANUALE AUTOSTART**

# ACP 7310 AUS

160 A (400 V - 3 ph - 50Hz - 1500 rpm)  
 400 A (220 V - 3 ph - 60Hz - 1800 rpm)

<b>STANDARD EQUIPMENT:</b> 4 poles circuit breaker Electronic control board <b>DSE 7310</b> Control panel box key Emergency Stop button	<b>EQUIPEMENT STANDARD:</b> Disjoncteur de protection 4 pôles Fiche électronique <b>DSE 7310</b> Clé pour serrure du coffret Interrupteur d'arrêt d'urgence	<b>EQUIPAMIENTO STANDARD:</b> Interruptor magnetotermico 4 polos Carta electronica <b>DSE 7310</b> Llave cuadro Botón de parada de emergencia	<b>EQUIPAGGIAMENTO STANDARD:</b> Interruttore magnetotermico 4 poli Scheda elettronica <b>DSE 7310</b> Chiave quadro Pulsante di arresto di emergenza
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 <p><b>DSE 7310</b></p>	<p><b>CONTROL BOARD</b>  <b>CARTE ELECTRONIQUE DE CONTROL</b>  <b>CARTA ELECTRONICA DE CONTROL</b>  <b>SCHEDA ELETTRONICA DI CONTROLLO</b></p>
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PROTECTIONS	PROTECTIONS	PROTECCIONES	PROTEZIONI
Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under generator frequency Over/under generator voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage	Basse pression huile moteur Haute température moteur Basse niveau combustible Non démarrage Non arrêt Arrêt d'urgence Sur/sous générateur fréquence Sur/sous générateur voltage Sur/sourvitesse Niveau de combustible Rupture courroie Surcourant Sur/sus la tension de batterie	Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo generatore frecuencia Sobre/bajo generatore voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería	Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza generatore Sovra/sotto voltaggio generatore Sovra/sotto velocità Livello del carburante Rottura cinghia Sovraccorrente Sovra/sotto tensione della batteria
DIGITAL METERS	VOYANT NUMERIQUE POUR	VISOR DIGITAL PARA	MISURATORE DIGITALE PER
Generator volts ( 3 phases ) Generator amperes ( 3 phases ) Generator frequency KW-meter kVA-meter Cos φ-meter Rpm meter Gen set hours counter Battery Volts	Voltmètre générateur ( 3 phases ) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Totalisateur d'heures de marche Voltmètre batterie	Voltmetro ( 3 fases ) Amperímetro ( 3 fases ) Frecuencímetro KW- metro kVA- metro Cos φ-metro Revolutiones por minuto metro Medida horas de marcha Voltmetro batería	Voltmetro tensione generatore (3 fasi) Amperometro generatore ( 3 fasi ) Freqüenzímetro generatore KW- metro kVA- metro Cos φ-metro Gm metro Contatore di funzionamento gruppo Voltmetro batteria

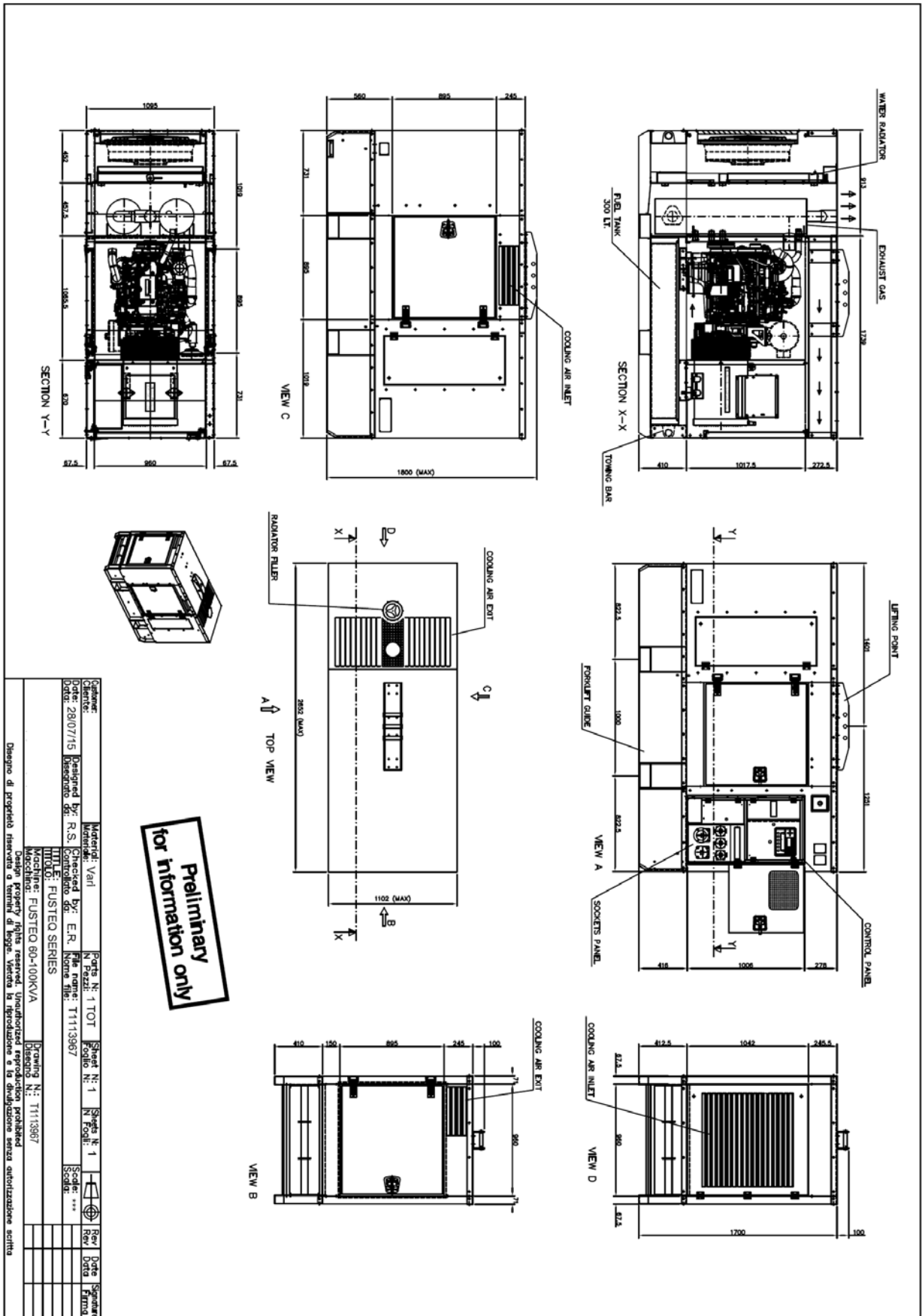
**AUTOMATIC CONTROL PANEL  
COFFRET ELECTRIQUE AUTOMATIQUE  
CUADRO ELECTRICO AUTOMATICO  
QUADRO ELETTRICO AUTOMATICO**

<p>1) <b>ACP 7320 ATS</b></p> 	<p><b>COMPLETE CONTROL PANEL FREE STANDING TYPE</b> Equipment: control board, circuit breaker, battery charger, transfer switch, box key. <b>COFFRET ELECTRIQUE COMPLET TYPE ARMOIRE SEPRE DU GROUPE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source, clé coffret. <b>CUADRO ELECTRICO COMPLETO EN ARMARIO SEPARADO DEL GRUPO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, transferencial, llave quadro. <b>QUADRO ELETTRICO COMPLETO SEPARATO DAL GRUPPO</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, telecommutazione e chiave quadro.</p>
<p>2) <b>ACP 7320 AMF</b></p> 	<p><b>AMF CONTROL PANEL FITTED ON THE GEN-SET WITHOUT TRANSFER SWITCH</b> Equipment: control board, circuit breaker, battery charger, box key. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE SANS INVERSEUR DE SOURCE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO SIN TRANSFERENCIAL</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro. <b>QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO SENZA TELECOMMUTAZIONE</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro.</p>
<p>3) <b>ACP 7320 STS</b></p> 	<p><b>CONTROL PANEL FITTED ON THE GEN-SET WITH TRANSFER SWITCH SUPPLIED IN A SEPARATED BOX</b> Equipment: control board, circuit breaker, battery charger, box key, separate transfer switch. <b>COFFRET ELECTRIQUE MONTE SUR LE GROUPE + INVERSEUR DE SOURCE FOURNI DANS UN COFFRET SEPRE</b> Equipement : carte électronique de contrôle, disjoncteur de protection, chargeur de batterie, inverseur de source séparé, clé coffret. <b>CUADRO ELECTRICO MONTADO SOBRE EL GRUPO CON TRANSFERENCIAL SEPARADO</b> Equipamiento: carta electronica de controllo, interruptor magnetotermico, cargador de bateria, llave quadro, transferencial separado. <b>QUADRO ELETTRICO MONTATO SUL GRUPPO ELETTROGENO CON TELECOMMUTAZIONE SEPARATA</b> Equipaggiamento: scheda elettronica di controllo, interruttore magnetotermico, carica batteria, chiave quadro, telecommutazione in armadio separado.</p>

**CONTROL BOARD  
CARTE ELECTRONIQUE DE CONTROL  
CARTA ELECTRONICA DE CONTROL  
SCHEDA ELETTRONICA DI CONTROLLO**

GB	F	E	I
<p>The DSE7320 is an Automatic Mains Failure Control Module designed to automatically start and stop diesel generating sets that include electronic and non electronic engines. The module also provides excellent genset monitoring and protection features.</p>	<p>La DSE7320 est une carte de contrôle projetée pour démarrer et arrêter automatiquement groupes électrogènes diesels avec moteurs électroniques et non électroniques. La carte représente un système excellent de contrôle et de protection du groupe électrogène.</p>	<p>La DSE7320 es una carta de control para arrancar y parar automáticamente grupos electrógenos diesel con motores electrónicos y no electrónicos. La carta constituye un excelente sistema de control y protección del grupo electrógeno.</p>	<p>La DSE7320 è una scheda di controllo progettata per avviare e arrestare automaticamente gruppi elettrogeni diesel con motori elettronici e non elettronici. La scheda costituisce un eccellente sistema di controllo e di protezione del gruppo elettrogeno.</p>
<b>FEATURES</b>	<b>EQUIPEMENT</b>	<b>EQUIPMENT</b>	<b>EQUIPAGGIAMENTO</b>
<p>Stop/reste – Auto – Manual – Start LCD display scroll Event log view Acoustic alarm</p>	<p>Fiche électronique de contrôle DSE7320 Disjoncteur de protection Chargeur de batterie Bouton poussoir arrière d'urgence</p>	<p>Ficha electrónica de control DSE7320 Interruptor magnetotermico Cargador de batería Boton de parada de emergencia</p>	<p>Scheda elettronica di controllo DSE7320 Interruttore magnetotermico Carica batteria Pulsante stop emergenza</p>
<b>DIGITAL MEASURING</b>	<b>MESURES NUMERIQUES</b>	<b>MEDIDAS DIGITALES</b>	<b>MISURAZIONI DIGITALI</b>
<p>Generator volts (3 phases) Generator amperes (3 phases) Generator frequency KW-meter kVA-meter Cos φ-meter Rpm meter Water temperature (optional) Oil pressure (optional) Gen set hours counter Mains volts Battery volts Mains frequency Charging voltage Start-counter Fuel level %</p>	<p>Voltmètre générateur (3 phases) Ampèremètre générateur (3 phases) Fréquencemètre générateur KW-mètre kVA- mètre Cos φ- mètre Tm mètre Température eau (facultatif) Pression huile (facultatif) Totalisateur d'heures de marche Voltmètre secteur Voltmètre batterie Fréquence réseau Tension de charge Compteur démarrages Niveau combustible %</p>	<p>Voltmetro (3 fases) Amperimetro (3 fases) Frecuencimetro KW- metro kVA- metro Cos φ- metro Revoluciones por minuto metro Termometro agua (opcional) Presión aceite (opcional) Medida horas de marcha Voltmetro tensión de red Voltmetro batería Frecuencia red Tensión de carga Numero de arranques Nivel carburante %</p>	<p>Voltmetro tensione generatore (3 fasi) Amperometro generatore (3 fasi) Frequenzimetro generatore KW- metro kVA- metro Cos φ- metro Gm metro Temperatura acqua (facoltativo) Pressione olio (facoltativo) Contatore di funzionamento gruppo Voltmetro tensione rete Voltmetro batteria Frequenza rete Tensione di carica Contavviamenti Livello carburante %</p>
<b>INDICATORS</b>	<b>INDICATEURS</b>	<b>INDICADORES</b>	<b>INDICATORI</b>
<p>Mains live Generator live Mains contactor closed Generator contactor closed Engine running</p>	<p>Présence secteur Présence tension générateur Inverseur secteur fermé Inverseur générateur fermé Moteur en marche</p>	<p>Presencia tensión de red Presencia tensión grupo Transferencial red cerrado Transferencial grupo cerrado Motor en marcha</p>	<p>Presenza tensione di rete Presenza tensione generatore Erogazione da rete Erogazione da gruppo Motore avviato</p>
<b>PROTECTIONS</b>	<b>PROTECTIONS</b>	<b>PROTECCIONES</b>	<b>PROTEZIONI</b>
<p>Low oil pressure High engine temperature Low fuel level Fail to start Fail to stop Emergency stop Over/under frequency Over/under voltage Over/under speed Fuel level Belt breakage Over current Over/under battery voltage</p>	<p>Bas pression huile moteur Haute température moteur Bas niveau combustible Non démarrage Non arrêt Arrêt d'urgence Sur/sous fréquence Sur/sous voltage Sur/sous vitesse Niveau de combustible Rupture courroie Surcourant Sur/sus la tension de batterie</p>	<p>Baja presión aceite Elevada temperatura motor Baja nivel carburante Falta de arranque Falta de parada Parada de emergencia Sobre/bajo frecuencia Sobre/bajo voltaje Sobre/bajo velocidad nivel de combustible Ruptura correa Corriente maxima Sobre/bajo voltaje de la batería</p>	<p>Bassa pressione olio Alta temperatura motore Basso livello di carburante Mancato avviamento Mancato arresto Stop d'emergenza Sovra/sotto frequenza Sovra/sotto voltaggio Sovra/sotto velocità Livello del carburante Rottura cinghia Sovracorrente Sovra/sotto tensione della batteria</p>

SOUND PROOF VERSION DRAWING  
 DESSIN VERSION INSONORISEE  
 DIBUJO VERSION INSONORISADA  
 DISEGNO VERSIONE INSONORIZZATA



Preliminary  
 for information only

Customer: _____	Model: Vari 1	Order: 28/07/15	Designed By: R.S.	Checked By: E.R.	Scale: ...
Order: 28/07/15	Disegnato da: _____	Controllo da: _____	File name: T1113967	Nome file: _____	Scale: ...
TITLE: FUSTEO SERIES			Drawing N.: T113967		
Model: FUSTEO 80-100KVA			Disegno N.: T113967		
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# 1100 Series 1104C-44TAG2 Diesel Engine – Electropak

99.5 kWm 1500 rev/min  
112.4 kWm 1800 rev/min

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

In the world of power generation success is greeted for those providing more for even less. Therefore with this new 1104C-44TAG2 unit, Perkins has engineered for its customers even higher levels of reliability, yet lowered the cost of ownership. And with six cylinder capability from a four cylinder package performance increases, but crucially, bare engine noise is lower than ever before.

Rapid starting and pick-up are naturally built-in especially for cold operation, but where legislation or local markets demand an emissions capability, then the 1104C-44TAG2 satisfies EU 2007 Stage II mobile off-highway legislation; and also complies to TA Luft (1986) regulations.

1100 Series see the marriage of technology to customer need. A 4.4 litre unit very quietly setting a new standard in prime power supply and standby for the power generation industry.

## Compact and efficient power

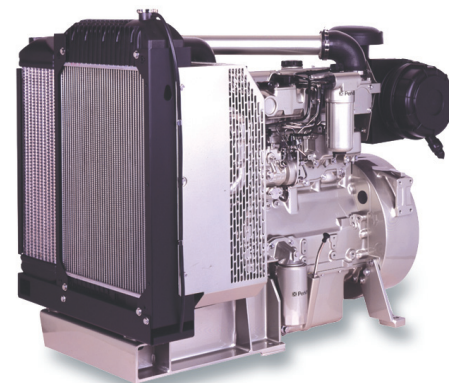
The Perkins 1100 Series family was developed following an intensive period of customer research. The 3.3 and 4.4 litre engines feature new cylinder blocks which ensure bore roundness is maintained under the pressures of operation, as well as significantly reducing mechanical and combustion noise. A new cross-flow cylinder head design optimises combustion control, and combines with turbocharger and charge cooler technology to achieve the best combination of power delivery and low exhaust emissions.

## Cleaner and quieter power

The refined structure of the 1100C range leads to an exceptionally low noise signature. To meet environmental needs swirl conditioned air is delivered through the new cross-flow cylinder head, and burns cleanly with the high pressure fuel from an advanced technology rotary pump.

## Quality by design

Class A manufacturing improvements ensure that product reliability meets the high standards demanded by customers. Product design is focused on maintaining Perkins' legendary reputation for durability.



## Cost effective power

The compact packaging and low noise performance of the 1100C range bring clear benefits to the Genset packager. Low cost of operation is assured by lower fuel and oil consumption, 500 hour service intervals, and the 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

*Certified against the requirements of EU 2007 (EU 97/68/EC Stage II) legislation for non-road mobile machinery, powered by constant speed engines*

Engine Speed (rev/min)	Type of Operation	Typical Generator Output (Net)		Engine Power			
				Gross		Net	
		kVA	kWe	kWm	bhp	kWm	bhp
1500	Prime Power	101.4	81.4	93.6	125.5	90.1	120.8
	Standby (maximum)	111.9	89.6	103.0	138.0	99.5	133.4
1800	Prime Power	114.4	91.5	106.8	143.2	101.7	136.3
	Standby (maximum)	126.5	101.2	117.5	157.5	112.4	150.7

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 typical alternator efficiencies and a power factor and a power factor (cos  $\theta$ ) of 0.8. Fuel specification: BS 2869 Class 2 or ASTM D975 D2. Lubricating oil: API CH4/ACEA E5.

### Rating Definitions

**Prime Power:** Power available for variable load in lieu of a main power network. Overload of 10% permitted for 1 hour in every 12 hours operation.  
**Standby (maximum):** Power available at variable load in the event of a main power network failure. No overload is permitted.

Photographs are for illustrative purposes only and may not reflect final specification.

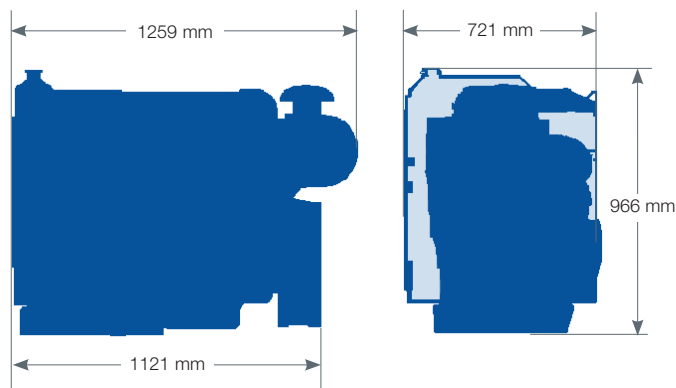
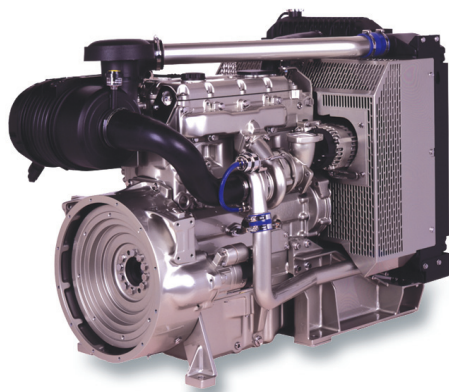
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 **Perkins**<sup>®</sup>

THE HEART OF EVERY GREAT MACHINE

# 1100 Series 1104C-44TAG2 Diesel Engine – Electropak

99.5 kWm 1500 rev/min  
112.4 kWm 1800 rev/min



## Engine specification

### Air inlet

- Mounted air filter

### Fuel system

- Rotary type pump
- Ecoplus fuel filter

### Lubrication system

- Wet cast iron 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 incorporating air-to-air charge cooler

### Electrical equipment

- 12 volt starter motor and 12 volt 65 amp alternator with DC output
- 12 volt shutdown solenoid energised to run
- Glow plug cold start aid

### Flywheel and housing

- Flywheel to SAE J620 size 10/11½
- SAE 3 flywheel housing

### Literature

- User's Handbook

### Optional equipment

- 24 volt alternator
- 24 volt starter motor
- Workshop manual
- Parts book

Engine Speed	Fuel Consumption			
	1500 rev/min		1800 rev/min	
	g/kWh	l/hr	g/kWh	l/hr
Standby	205	24.9	214	29.7
Prime Power	205	22.6	218	26.9
75% of Prime Power	207	17.1	218	20.2
50% of Prime Power	204	11.2	228	14.1

## General data

Number of cylinders .....	4 vertical in-line
Bore and stroke.....	105 x 127 mm
Displacement .....	4.41 litres
Aspiration .....	Turbocharged, air to air
Cycle.....	4 stroke
Combustion system.....	Direct injection
Compression ratio .....	18.2:1
Rotation.....	Anti-clockwise viewed on flywheel
Cooling system.....	Water-cooled
Total lubrication system capacity .....	8.0 litres
Total coolant capacity.....	12.6 litres
Dimensions – Length .....	1259 mm
Width .....	721 mm
Height .....	966 mm
Dry weight (Electropak) .....	550 kg

Final weight and dimensions will depend on completed specification

Photographs are for illustrative purposes only and may not reflect final specification.

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THE HEART OF EVERY GREAT MACHINE





**EMERSON**<sup>™</sup>  
Industrial Automation



90 ... 165 kVA - 50 Hz  
115 ... 206 kVA - 60 Hz

3820 en - 2011.04 / 9



## **PARTNER ALTERNATORS**

**LSA 44.2 - 4 Pole**

Electrical and mechanical data

### SPECIALY ADAPTED FOR APPLICATIONS

The LSA 44.2 alternator is designed to be suitable for typical generator applications, such as: backup, standard production, cogeneration, marine applications, rental, telecommunications, etc.

### COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 44.2 alternator conforms to the main international standards and regulations:

IEC 60034, NEMA MG 1.22, ISO 8528, CSA/UL on request, marine regulations, etc.

It can be integrated into a CE marked generator.

The LSA 44.2 is designed, manufactured and marketed in an ISO 9001 environment.

### TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 12-wire re-connectable winding, 2/3 pitch, type no. 6 .
- Voltage range: 220 V - 240 V and 380 V - 415 V (440 V) - 50 Hz / 208 V - 240 V and 380 V - 480 V - 60 Hz.
- High efficiency and motor starting capacity.
- Other voltages are possible with optional adapted windings:
  - 50 Hz: 440 V (no. 7), 500 V (no. 9), 600 V (no. 22 or 23), 690 V (no. 10 or 52)
  - 60 Hz: 380 V and 416 V (no. 8), 600 V (no. 9).
- Total harmonic distortion HDT < 2%.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

### EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

Excitation system				Regulation options				
Voltage regulator	SHUNT	AREP	PMG	T.I. Current transformer for paralleling	R 726 Mains paralleling	R 731 3-phase sensing	R 734 3-phase sensing on mains paralleling unbalanced	P Remote voltage potentiometer
R 250	Std	-	-	-	-	-	-	√
R 438	-	Std	Std	√	√	√	√	√
D 510	-	optional	optional	√	included	included	NA	√

Voltage regulator accuracy +/- 0.5% - ÷ : possible adaptation - NA : not possible.

### PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 44. 2 is IP 23.
- Standard winding protection for clean environments with relative humidity ≤ 95 %, including indoor marine environments.
- Options:
  - Filters on air inlet : derating 5%.
  - Filters on air inlet and air outlet (IP 44) : derating 10%.
  - Winding protections for harsh environments and relative humidity greater than 95%.
  - Space heaters.
  - Thermal protection for windings and shields.

### REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact and rigid assembly to better withstand generator vibrations.
- Steel frame.
- Cast iron flanges and shields.
- Twin-bearing and single-bearing versions designed to be suitable for engines on the market.
- Half-key balancing.
- Greased for life bearings.
- Regreasable bearing option available on SHUNT and AREP versions, not available with PMG.

### ACCESSIBLE TERMINAL BOX PROPORTIONED FOR OPTIONAL EQUIPMENT

- Easy access to the voltage regulator and to the connections.
- Possible clusion of accessories for paralleling, protection and measurement.
- 8 way terminal block for reconnecting voltage reconnection.
- D 510 digital AVR adapted to the machine exterior

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## Common data

Insulation class	H	Excitation system	SHUNT	A R E P or PMG
Winding pitch Code	2/3 ( N° 6 )	A.V.R. model	R 250	R 438
Terminals Drio or	12	Voltage regulation (*)	± 0,5 %	± 0,5 %
Drip proof	IP 23	Sustained short-circuit current	-	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total Harmonic distortion THD (**)	at no load < 2 % - on load < 2%	
Overspeed	2250 min <sup>-1</sup>	Waveform : NEMA = TIF (**)	< 50	
Air flow	0,37 m³/s (50Hz)/ 0,44 (60Hz)			

(\*) Steady state duty. (\*\*) Total harmonic distortion content line to line, at no load or full rated linear and balanced load.

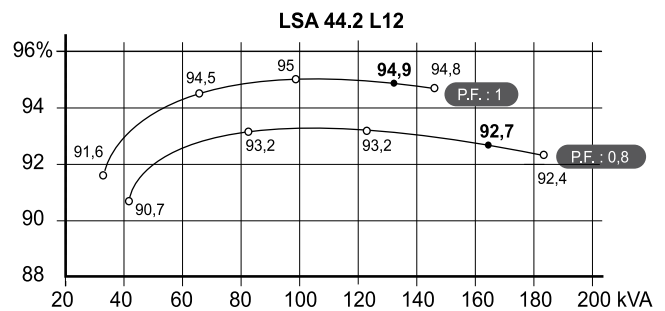
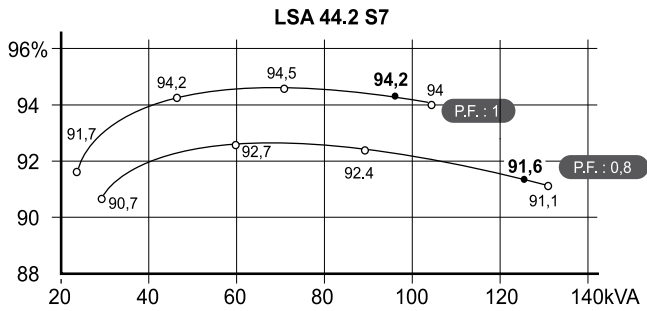
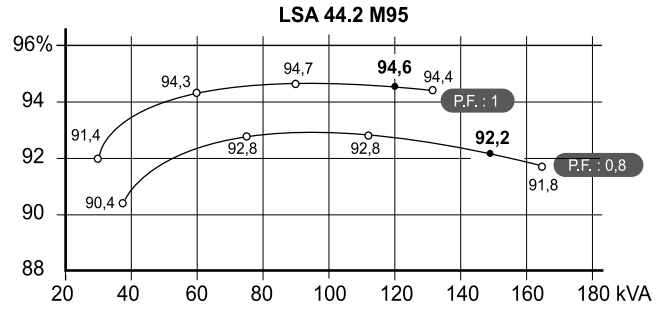
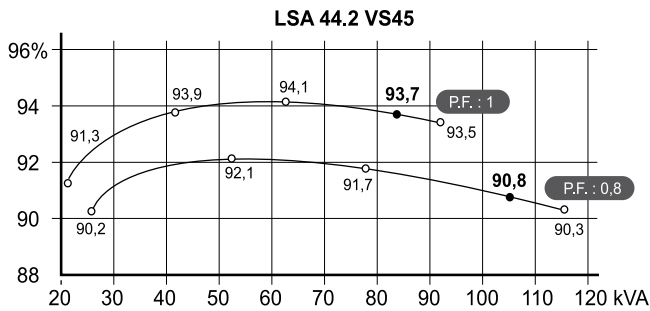
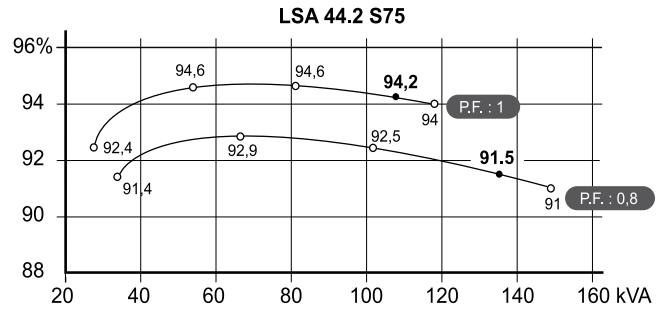
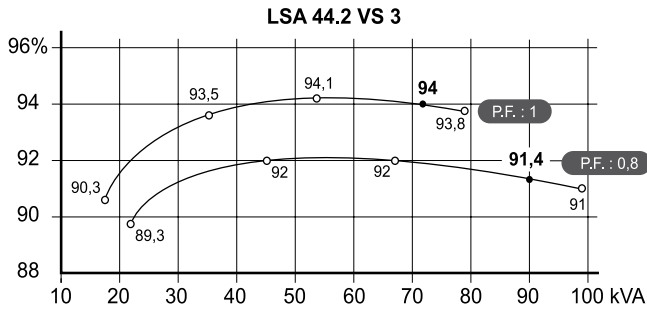
## Ratings 50 Hz - 1500 R.P.M.

kVA / kW - Power factor = 0,8																					
Duty	T° C	Continuous duty 40°C					Continuous duty 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	ΔΔ	380V	400V	415V	440V	ΔΔ	380V	400V	415V	440V	ΔΔ	380V	400V	415V	440V	ΔΔ
Δ		220V	230V	240V	230V		220V	230V	240V	230V		220V	230V	240V	230V		220V	230V	240V	230V	
YY		220V					220V					220V				220V					
44.2 VS3	kVA	90	<b>90</b>	90	90	55	80	<b>80</b>	80	80	50	95	<b>95</b>	95	95	58	100	<b>100</b>	100	100	60
	kW	72	<b>72</b>	72	72	44	64	<b>64</b>	64	64	40	76	<b>76</b>	76	76	46	80	<b>80</b>	80	80	48
44.2 VS45	kVA	105	<b>105</b>	105	105	66	95	<b>95</b>	95	95	62	110	<b>110</b>	110	110	69	116	<b>116</b>	116	116	72
	kW	84	<b>84</b>	84	84	53	76	<b>76</b>	76	76	50	88	<b>88</b>	88	88	55	93	<b>93</b>	93	93	58
44.2 S7	kVA	120	<b>125</b>	120	120	73	110	<b>112</b>	110	110	65	126	<b>131</b>	126	126	77	132	<b>138</b>	132	132	82
	kW	96	<b>100</b>	96	96	58	88	<b>90</b>	88	88	52	101	<b>105</b>	101	101	62	106	<b>110</b>	106	106	66
44.2 S75	kVA	130	<b>135</b>	130	125	83	115	<b>122</b>	115	114	75	138	<b>143</b>	138	132	88	144	<b>150</b>	144	137	93
	kW	104	<b>108</b>	104	100	66	92	<b>98</b>	92	91	60	110	<b>114</b>	110	106	70	115	<b>120</b>	115	110	74
44.2 M95	kVA	150	<b>150</b>	145	125	94	135	<b>135</b>	130	114	87	156	<b>156</b>	150	132	101	165	<b>165</b>	160	137	104
	kW	120	<b>120</b>	116	100	75	108	<b>108</b>	104	91	70	125	<b>125</b>	120	106	81	132	<b>132</b>	128	110	83
44.2 L12	kVA	165	<b>165</b>	165	135	102	150	<b>150</b>	150	123	94	170	<b>170</b>	170	143	109	175	<b>175</b>	175	148	113
	kW	132	<b>132</b>	132	110	82	120	<b>120</b>	120	98	75	136	<b>136</b>	136	114	87	140	<b>140</b>	140	89	90

## Ratings 60 Hz - 1800 R.P.M.

kVA / kW - Power factor = 0,8																					
Duty	T° C	Continuous duty 40°C					Continuous duty 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	ΔΔ	380V	416V	440V	480V	ΔΔ	380V	416V	440V	480V	ΔΔ	380V	416V	440V	480V	ΔΔ
Δ		220V	240V	240V	240V		220V	240V	240V	240V		220V	240V	240V	240V		220V	240V	240V	240V	
YY		208V					208V					208V				208V					
44.2 VS3	kVA	95	100	105	<b>115</b>	65	85	90	95	<b>105</b>	59	100	105	110	<b>120</b>	69	105	110	115	<b>125</b>	72
	kW	76	80	84	<b>92</b>	52	68	72	76	<b>84</b>	47	80	84	88	<b>96</b>	55	84	88	92	<b>100</b>	58
44.2 VS45	kVA	109	117	123	<b>131</b>	74	101	108	113	<b>122</b>	68	117	125	131	<b>138</b>	79	120	129	135	<b>144</b>	81
	kW	87	94	98	<b>105</b>	59	81	86	90	<b>98</b>	54	94	100	105	<b>110</b>	63	96	103	108	<b>115</b>	65
44.2 S7	kVA	126	137	144	<b>155</b>	83	115	123	130	<b>140</b>	77	133	143	151	<b>163</b>	89	139	151	158	<b>170</b>	92
	kW	100	110	115	<b>124</b>	66	92	98	104	<b>112</b>	62	106	114	120	<b>130</b>	71	111	120	126	<b>136</b>	74
44.2 S75	kVA	136	146	155	<b>169</b>	95	122	132	139	<b>152</b>	85	143	154	163	<b>178</b>	100	150	162	172	<b>187</b>	105
	kW	109	117	124	<b>135</b>	76	98	106	111	<b>122</b>	68	114	123	130	<b>142</b>	80	120	130	138	<b>150</b>	84
44.2 M95	kVA	156	167	174	<b>188</b>	104	144	154	160	<b>167</b>	96	167	179	186	<b>196</b>	110	173	185	194	<b>206</b>	115
	kW	125	134	139	<b>150</b>	83	115	123	128	<b>134</b>	77	134	143	149	<b>157</b>	88	138	148	155	<b>165</b>	92
44.2 L12	kVA	169	180	190	<b>206</b>	110	155	165	171	<b>185</b>	102	181	193	200	<b>215</b>	118	187	201	209	<b>225</b>	123
	kW	135	144	152	<b>165</b>	88	124	132	137	<b>148</b>	82	145	154	160	<b>172</b>	94	150	161	167	<b>180</b>	98

## Efficiencies 50 Hz - P.F. : 1 / P.F. : 0,8



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

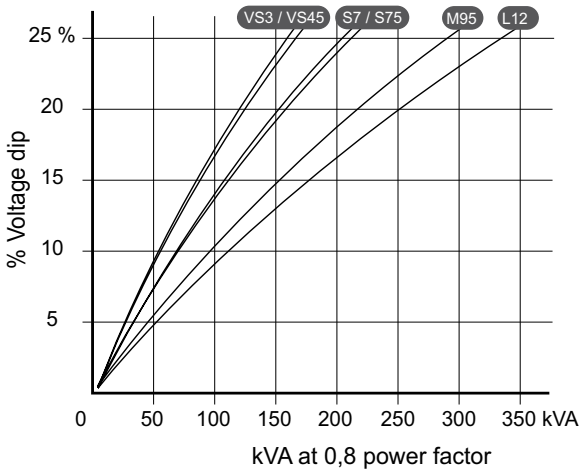
	VS3	VS45	S7	S75	M95	L12
<b>Kcc</b> Short-circuit ratio	0,40	0,35	0,33	0,31	0,42	0,43
<b>Xd</b> Direct axis synchro.reactance unsaturated	311	362	363	392	317	306
<b>Xq</b> Quadra. axis synchr.reactance unsaturated	186	217	218	235	190	184
<b>T'do</b> Open circuit time constant	2555	2555	2734	2734	2865	2966
<b>X'd</b> Direct axis transient reactance saturated	12,1	14,1	13,2	14,3	11	10,3
<b>T'd</b> Short-Circuit transient time constant	100	100	100	100	100	100
<b>X''d</b> Direct axis subtransient reactance saturated	7,3	8,5	7,9	8,6	6,6	6,2
<b>T''d</b> Subtransient time constant	10	10	10	10	10	10
<b>X''q</b> Quadra. axis subtransient reactance saturated	8,9	10,4	9,6	10,3	7,8	7,2
<b>Xo</b> Zero sequence reactance unsaturated	0,3	0,5	0,7	0,9	0,1	0,8
<b>X2</b> Negative sequence reactance saturated	8,1	9,5	8,8	9,5	7,3	6,7
<b>Ta</b> Armature time constant	15	15	15	15	15	15

### Other data - Class H / 400 V

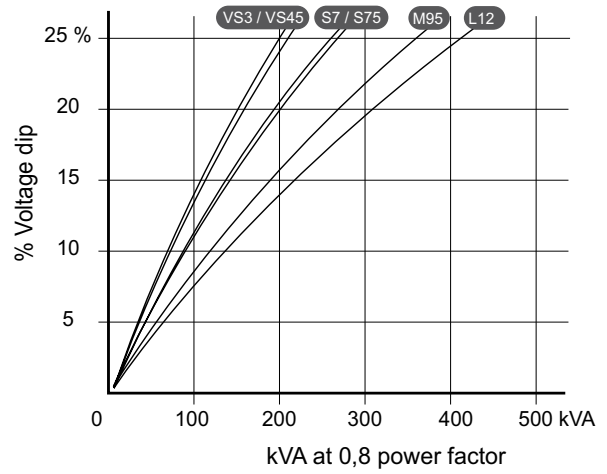
<b>io (A)</b> No load excitation current (SHUNT / AREP or PMG)	0,5/1	0,5/1	0,5/1	0,5/1	0,6/1,2	0,5/1
<b>ic (A)</b> Full load excitation current (SHUNT / AREP or PMG)	1,8/3,6	2,1/4,2	2/3,8	2,1/4,2	2/4	1,9/3,8
<b>uc (V)</b> Full load excitation voltage (SHUNT / AREP or PMG)	33/17	38/19	36/17	38/19	36/18	34/17
<b>ms</b> Recovery time ( $\Delta U = 20\%$ trans.)	500	500	500	500	500	500
<b>kVA</b> Motor start. ( $\Delta U = 20\%$ sust.) or ( $\Delta U = 50\%$ trans.) SHUNT	194,4	194,4	243,9	246,4	284,2	331,4
<b>kVA</b> Motor start. ( $\Delta U = 20\%$ sust.) or ( $\Delta U = 50\%$ trans.) AREP	227,9	227,9	286,2	287,3	329,2	383,1
<b>%</b> Transient dip (rated step load) SHUNT / PF : 0,8 LAG	15,6	17,3	16,6	17,5	14,7	14
<b>%</b> Transient dip (rated step load) AREP / PF : 0,8 LAG	13	14,3	13,4	14,4	12,2	11,7
<b>W</b> No load losses	1800	1800	1970	1970	2620	2830
<b>W</b> Heat rejection	6760	8500	9410	9980	10150	10330

## Transient voltage variation 400 V - 50 Hz

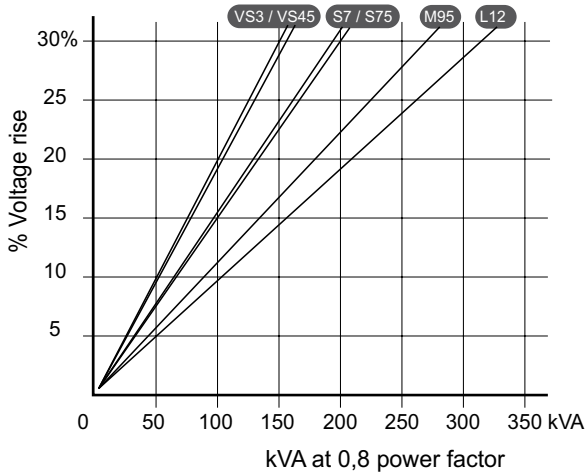
Load application (Shunt excitation)



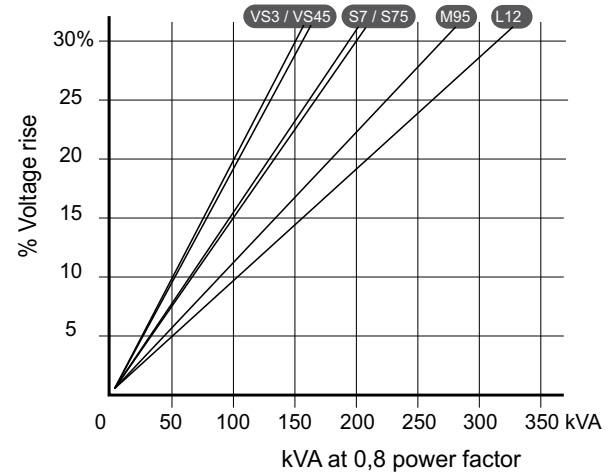
Load application (AREP ou PMG excitation)



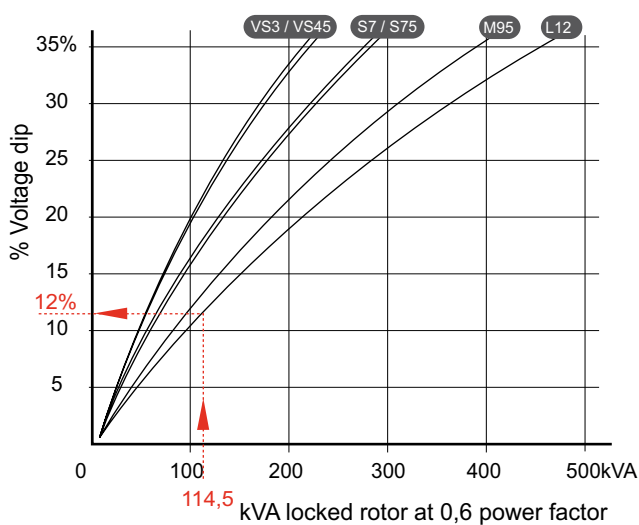
Load rejection (Shunt excitation)



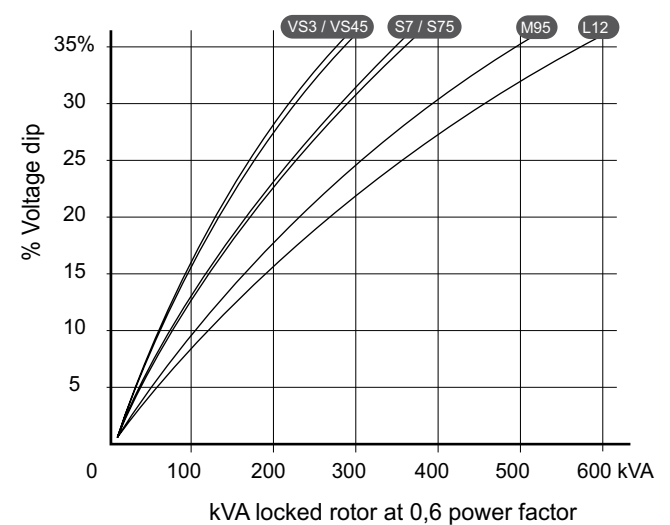
Load rejection (AREP or PMG excitation)



Motor starting (SHUNT excitation)



Motor starting (AREP or PMG excitation)



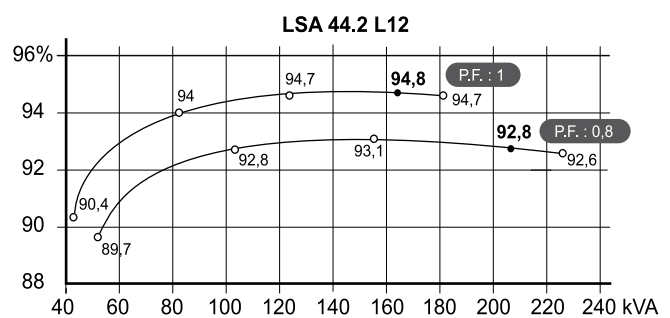
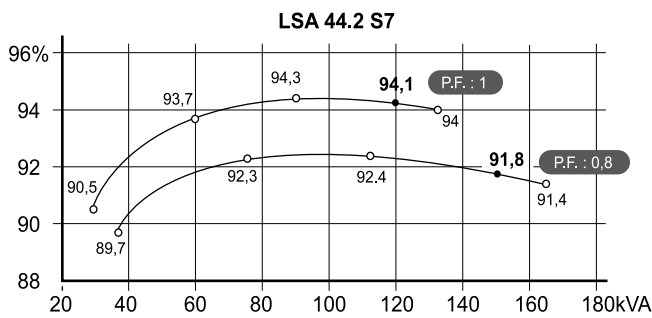
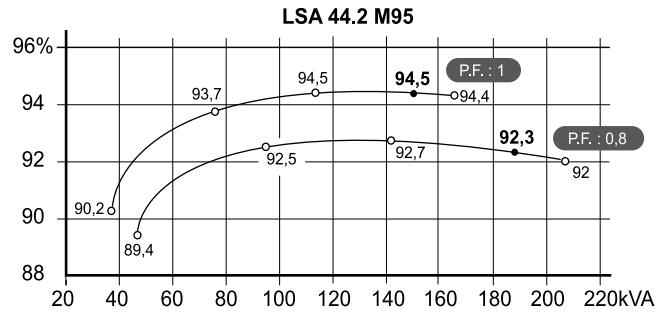
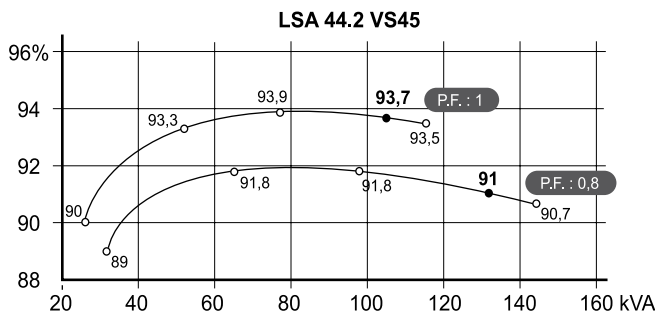
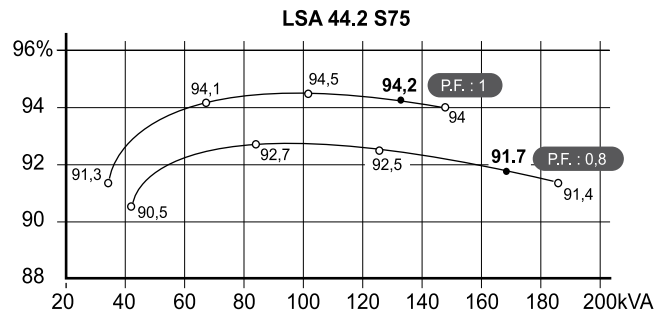
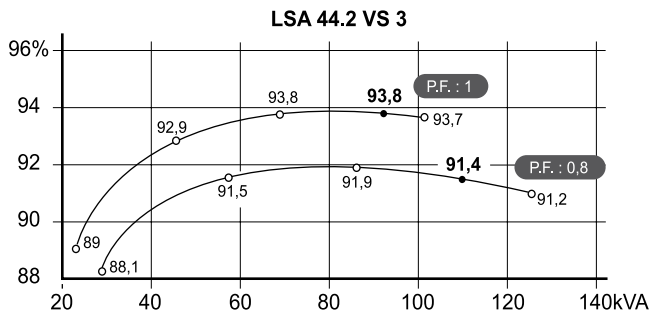
1) For a starting P.F. other than 0,6 , the starting kVA must be multiplied by  $K = \text{Sine } \varnothing / 0,8$

Calculation example for a different P.F. : Starter motor kVA calculated at 0.4 P.F. = 100 kVA

▶  $\text{Sin } \varnothing 0,4 = 0,9165$  ▶  $K = 1,145$  ▶ kVA corrected = 114,5 kVA ▶ Voltage dip corresponding to L12 = 12 %.

2) For voltages other than 400V (Y) , 230V (Δ) at 50 Hz, then kVA must be multiplied by  $(400/U)^2$  or  $(230/U)^2$ .

## Efficiencies 60 Hz - P.F. : 1 / P.F. : 0,8



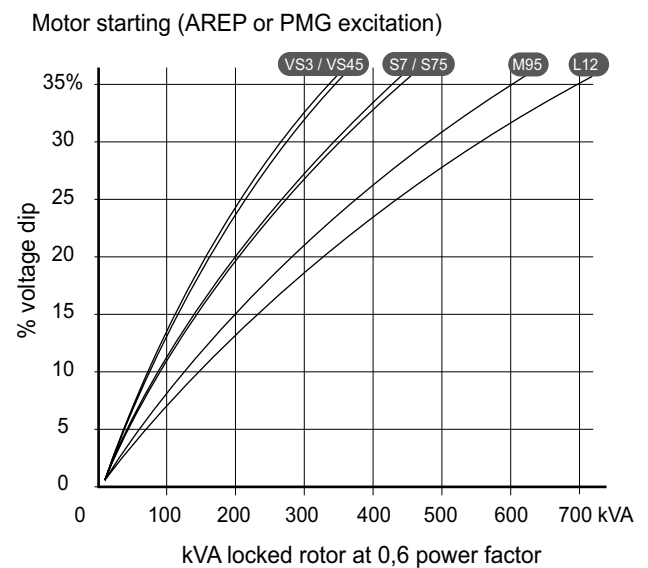
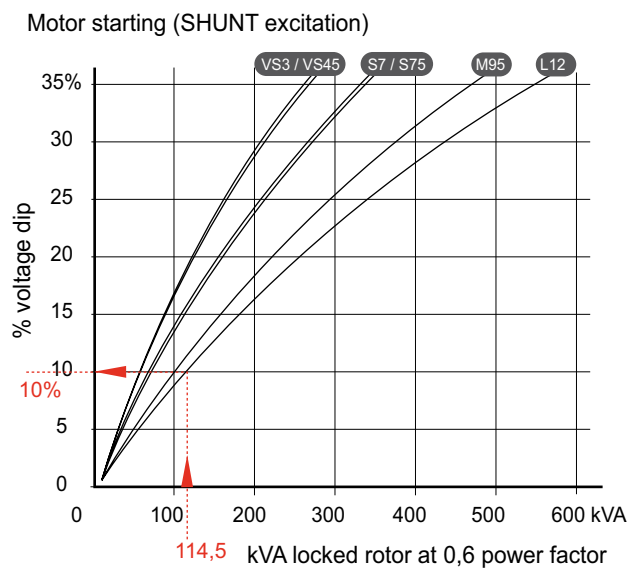
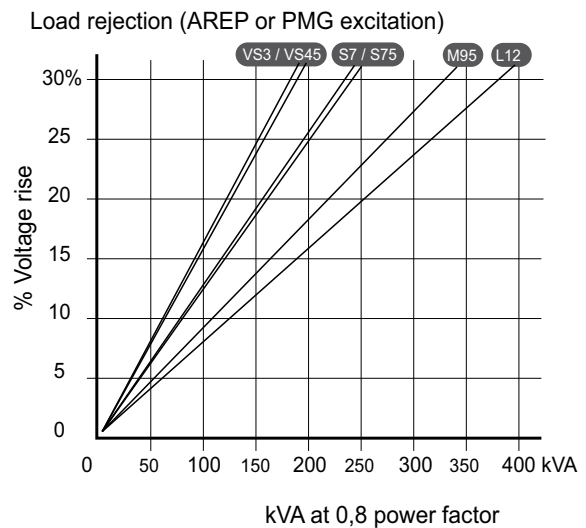
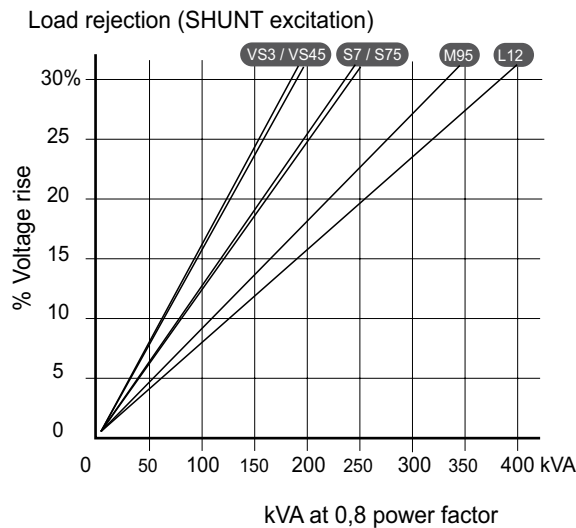
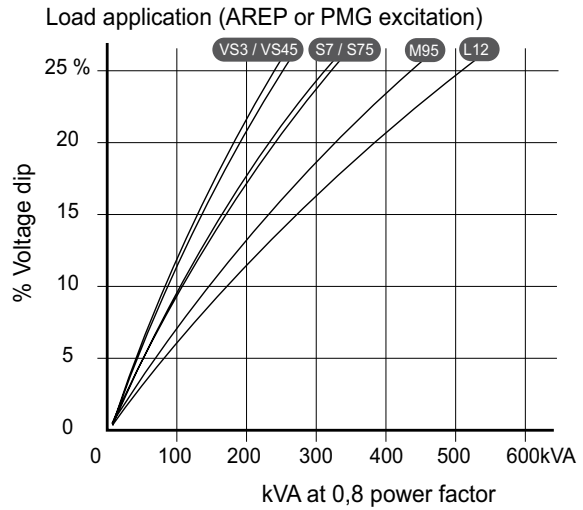
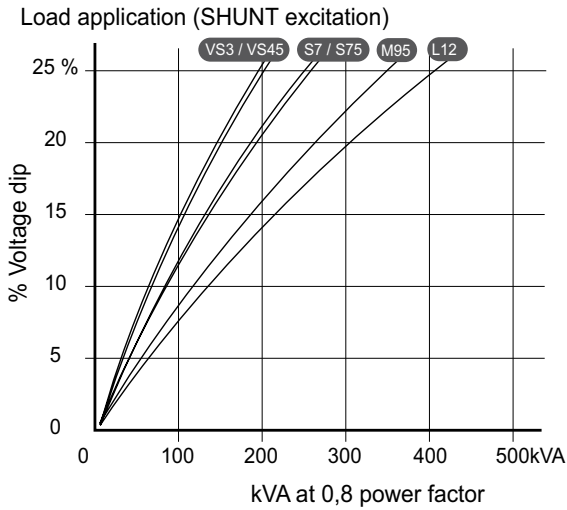
## Reactances (%) . Time constants (ms) - Class H / 480 V

		VS3	VS45	S7	S75	M95	L12
<b>Kcc</b>	Short-circuit ratio	0,38	0,33	0,33	0,29	0,41	0,41
<b>Xd</b>	Direct axis synchro.reactance unsaturated	331	377	363	409	331	319
<b>Xq</b>	Quadra. axis synchr.reactance unsaturated	198	226	218	245	198	191
<b>T'do</b>	Open circuit time constant	2555	2555	2734	2734	2865	2966
<b>X'd</b>	Direct axis transient reactance saturated	12,9	14,7	13,2	14,9	11,5	10,7
<b>T'd</b>	Short circuit transient time constant	100	100	100	100	100	100
<b>X''d</b>	Direct axis subtransient reactance saturated	7,7	8,8	7,9	8,9	6,9	6,4
<b>T''d</b>	Subtransient time constant	10	10	10	10	10	10
<b>X''q</b>	Quadra. axis subtransient reactance saturated	9,5	10,8	9,6	10,8	8,2	7,5
<b>Xo</b>	Zero sequence reactance unsaturated	0,6	0,9	0,7	0,5	0,2	0,5
<b>X2</b>	Negative sequence reactance saturated	8,7	9,9	8,8	9,9	7,6	7
<b>Ta</b>	Armature time constant	15	15	15	15	15	15

### Other data - Class H / 480 V

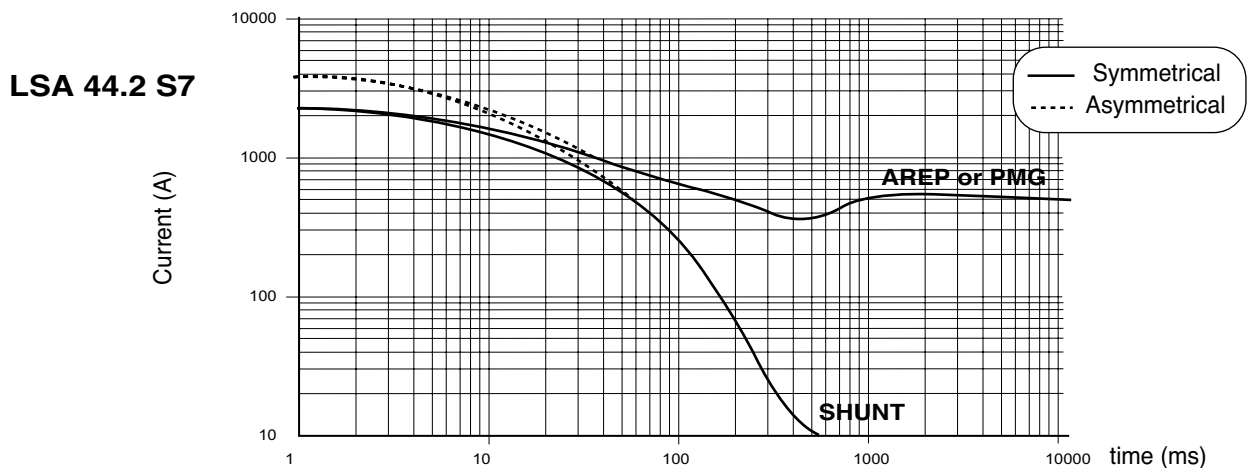
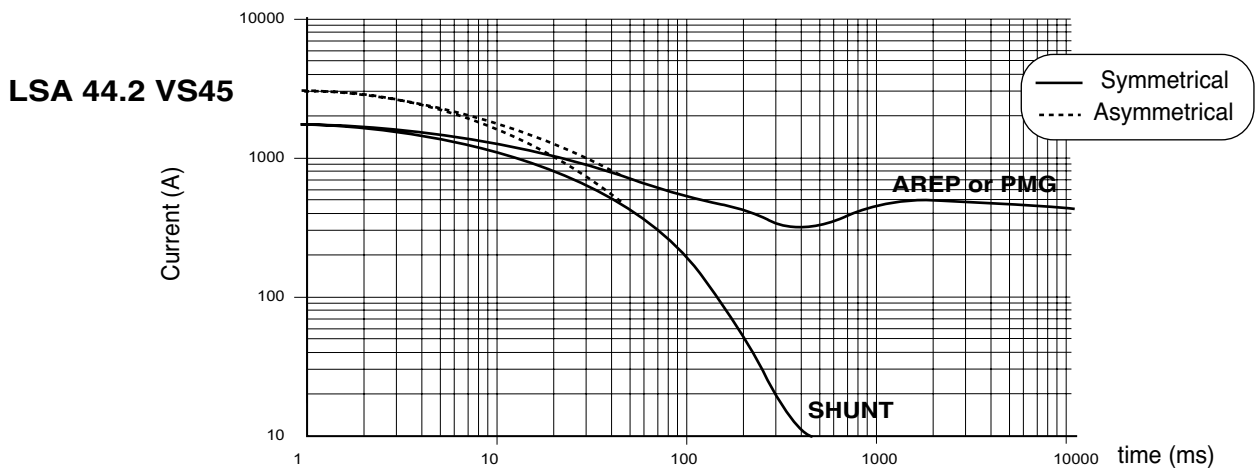
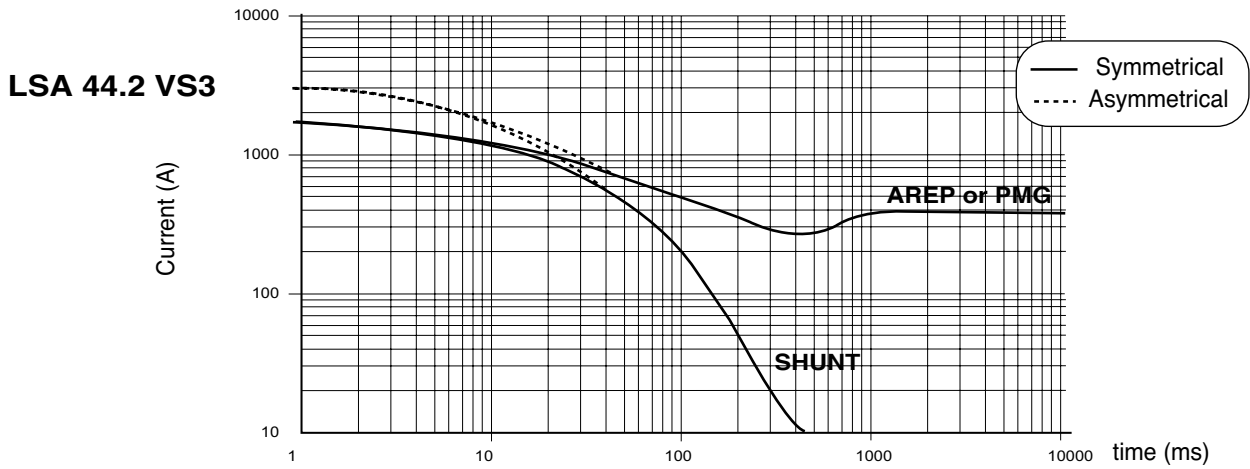
<b>io (A)</b>	No load excitation current (SHUNT / AREP or PMG)	0,5/1	0,5/1	0,5/1	0,5/1	0,6/1,2	0,5/1
<b>ic (A)</b>	Full load excitation current (SHUNT / AREP or PMG)	1,8/3,6	2,1/4,2	1,9/3,8	2,1/4,2	2/4	1,9/3,8
<b>uc (V)</b>	Full load excitation voltage (SHUNT / AREP or PMG)	34/17	38/19	36/18	40/20	38/19	36/18
<b>ms</b>	Recovery time ( $\Delta U = 20\%$ trans.)	500	500	500	500	500	500
<b>kVA</b>	Motor start. ( $\Delta U = 20\%$ sust.) or ( $\Delta U = 50\%$ trans.) SHUNT	238,2	238,2	300,7	301,6	349,9	408,8
<b>kVA</b>	Motor start. ( $\Delta U = 20\%$ sust.) or ( $\Delta U = 50\%$ trans.) AREP	280,4	280,4	351,8	352,8	407,1	478,2
<b>%</b>	Transient dip (rated step load) SHUNT / PF : 0,8 LAG	16,3	17,8	16,6	18	15,1	14,4
<b>%</b>	Transient dip (rated step load) AREP / PF : 0,8 LAG	13,5	14,7	13,7	14,8	12,5	12
<b>W</b>	No load losses	2720	2720	2960	2960	3870	4170
<b>W</b>	Heat rejection	8550	10250	10680	12070	12440	12680

## Transient voltage variation - 480 V - 60 Hz



- For a starting P.F. other than 0,6 , the starting kVA must be multiplied by  $K = \text{Sine } \varnothing / 0,8$   
*Calculation example* for a different P.F. : Starter motor kVA calculated at 0.4 P.F. = 100 kVA  
 $\blacktriangleright \text{Sin } \varnothing 0,4 = 0,9165 \blacktriangleright K = 1,145 \blacktriangleright \text{kVA corrected} = 114,5 \text{ kVA} \blacktriangleright \text{Voltage dip corresponding to L12} = 10 \%$
- For voltages other than 480V (Y), 277V ( $\Delta$ ), 240V (YY) at 60 Hz ,  
then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$  .

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



**Influence due to connexion.**

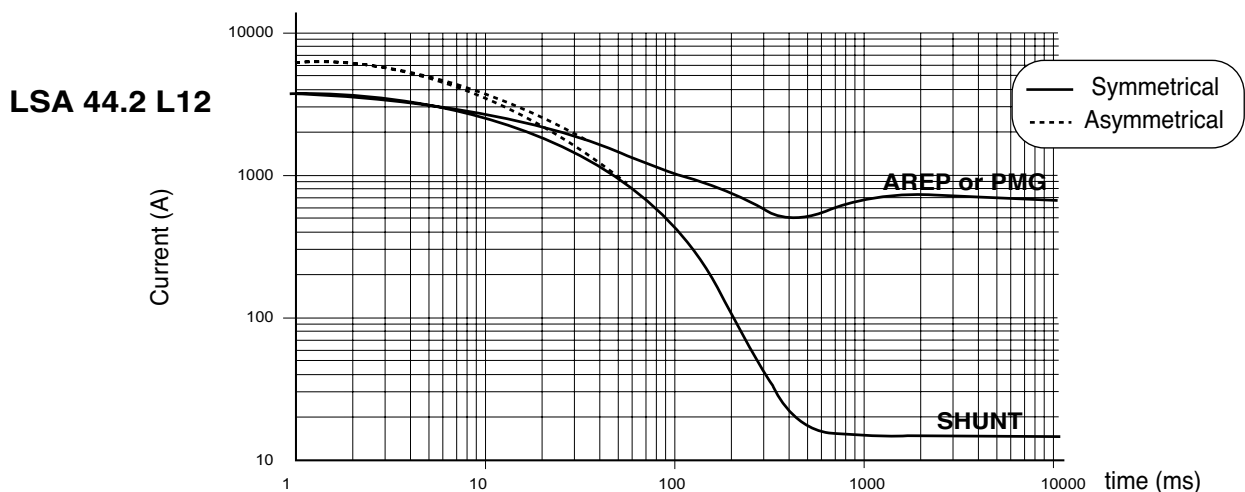
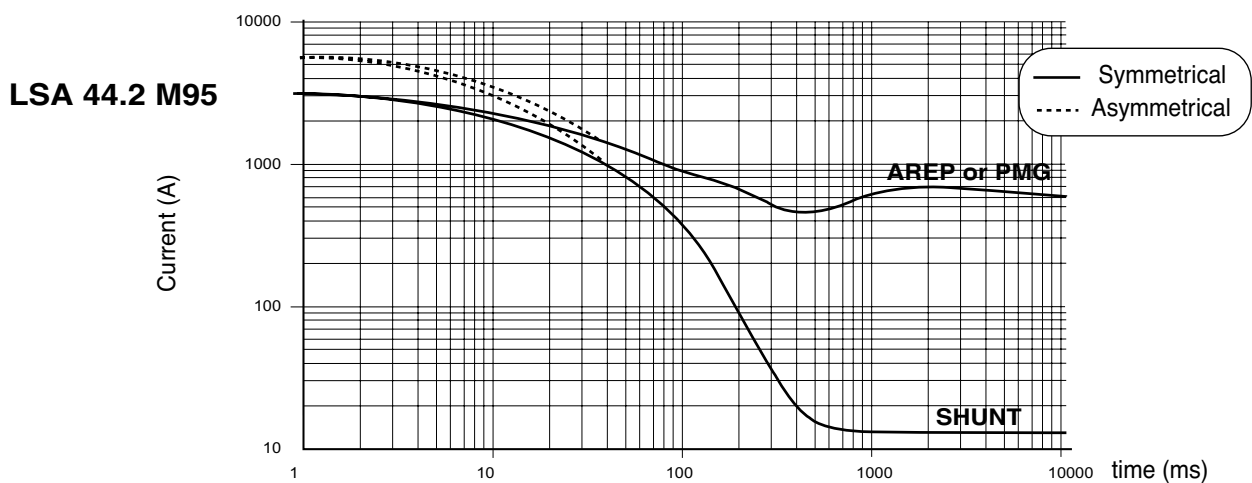
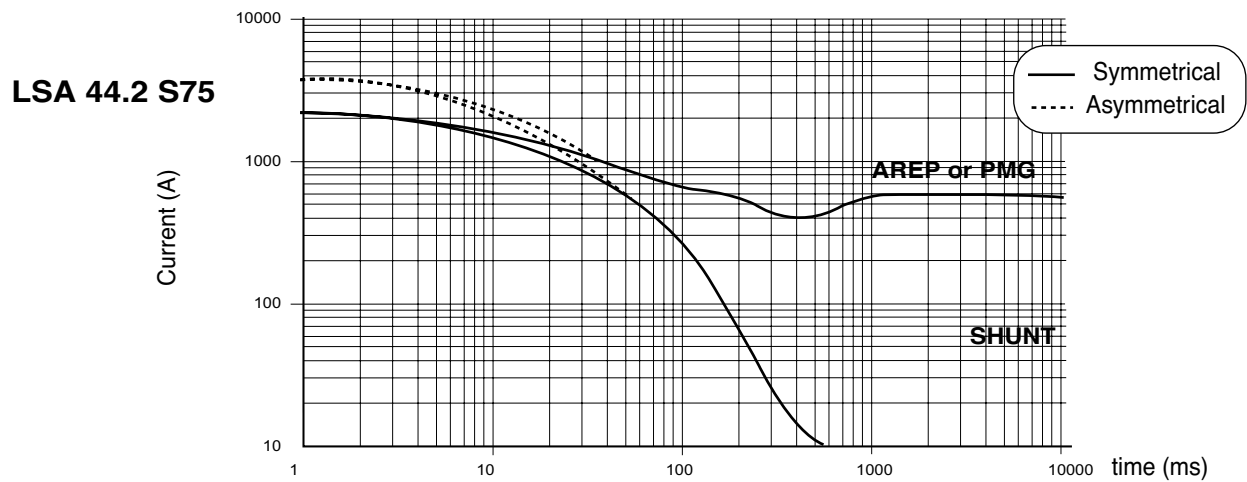
Curves shown are for star connection (Y).

For other connections, use the following multiplication factors :

- Series delta : Current value x 1,732
- Parallel star : Current value x 2



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



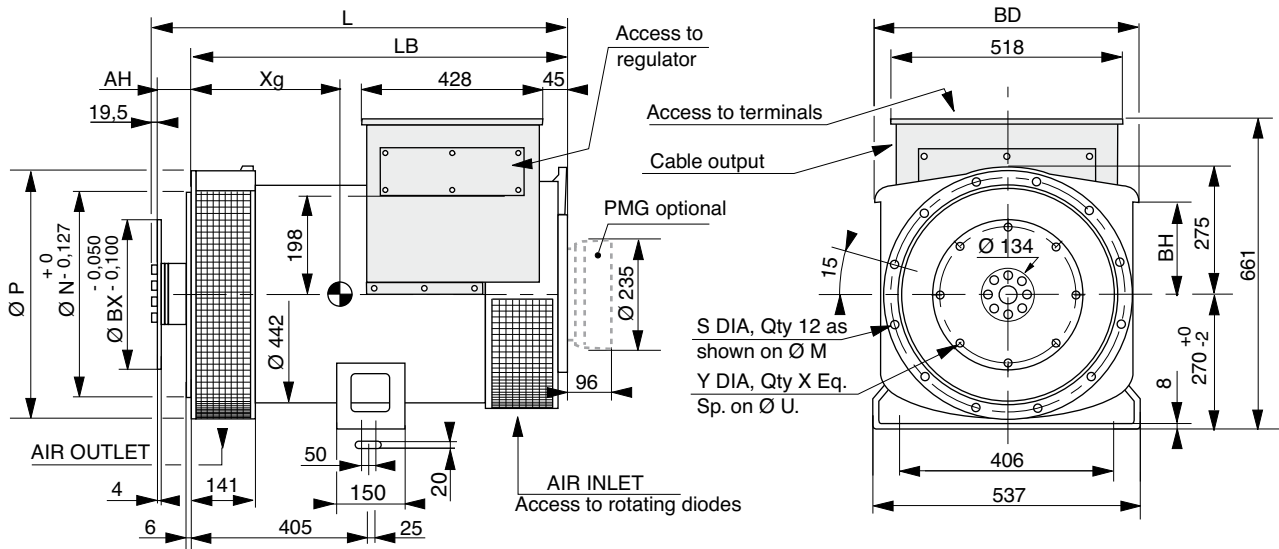
### Influence due to short-circuit.

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
Sustained	1	1,5	2,2
Max sustained duration (AREP/ PMG)	10 sec.	5 sec.	2 sec.

## Single bearing dimensions



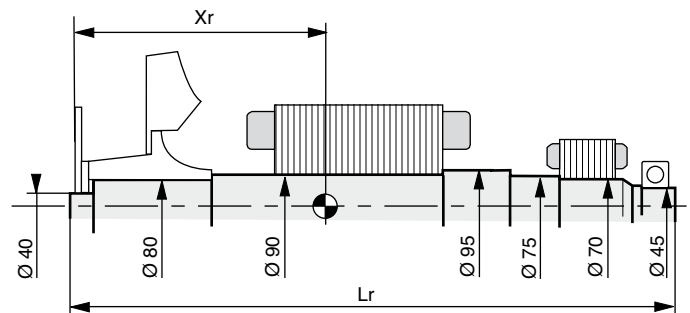
Frame dimensions				
TYPE	L max without PMG	LB	Xg	Weight (kg)
LSA 44.2 VS3	755	685	335	385
LSA 44.2 VS45	755	685	335	385
LSA 44.2 S7	815	745	365	440
LSA 44.2 S75	815	745	365	440
LSA 44.2 M95	875	805	395	495
LSA 44.2 L12	935	865	420	550

Coupling			
Flex plate	10	11 <sup>1/2</sup>	14
Flange S.A.E 3	X	X	
Flange S.A.E 2	X	X	
Flange S.A.E 1		X	X

Flange (mm)						
S.A.E.	BD	S	BH	P	N	M
3	530	11	210	450	409,575	428,625
2	530	11	210	488	447,675	466,725
1	590	12,5	240	554	511,175	530,225

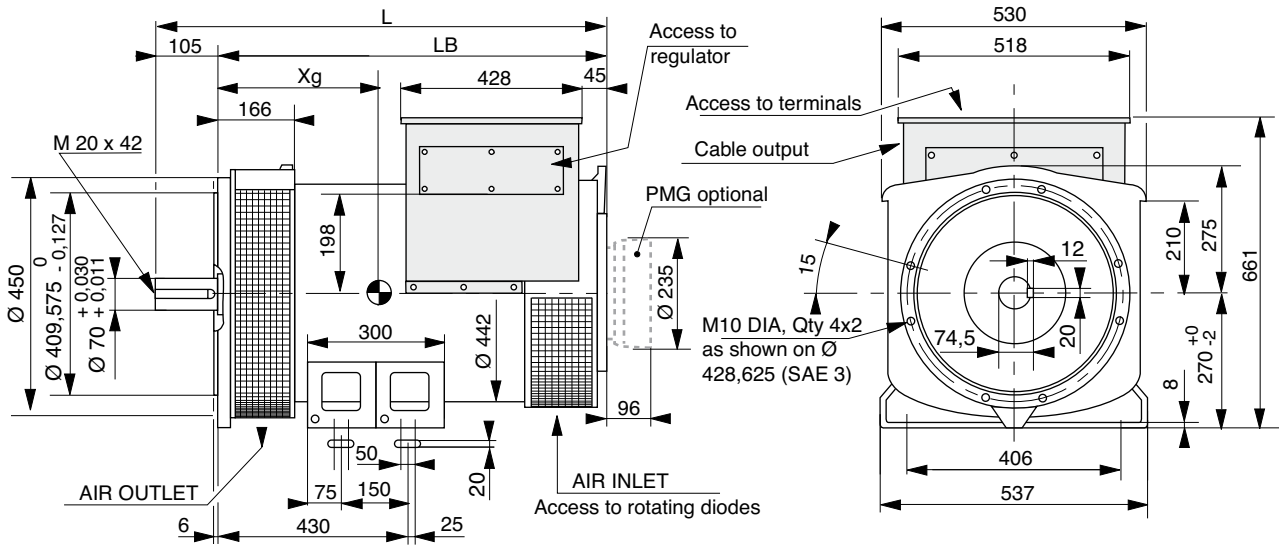
Flex plate (mm)					
S.A.E.	BX	U	X	Y	AH
14	466,72	438,15	8	14	25,4
11 1/2	352,42	333,38	8	11	39,6
10	314,32	295,28	8	11	53,8

## Torsional analysis data



TYPE	Flex plate S.A.E. 10				Flex plate S.A.E. 11 1/2				Flex plate S.A.E. 14			
	Xr	Lr	M	J	Xr	Lr	M	J	Xr	Lr	M	J
LSA 44.2 VS3	366	731	140,4	0,8569	352	731	140	0,8689	337	731	140,7	0,9329
LSA 44.2 VS45	366	731	140,4	0,8569	352	731	140	0,8689	337	731	140,7	0,9329
LSA 44.2 S7	395	791	162,9	1,0078	382	791	163	1,0198	367	791	163,2	1,0838
LSA 44.2 S75	395	791	162,9	1,0078	382	791	163	1,0198	367	791	163,2	1,0838
LSA 44.2 M95	425	851	185,4	1,1587	412	851	185	1,1707	397	851	185,8	1,2347
LSA 44.2 L12	456	911	207,9	1,3095	443	911	208	1,3215	427	911	208,3	1,3855

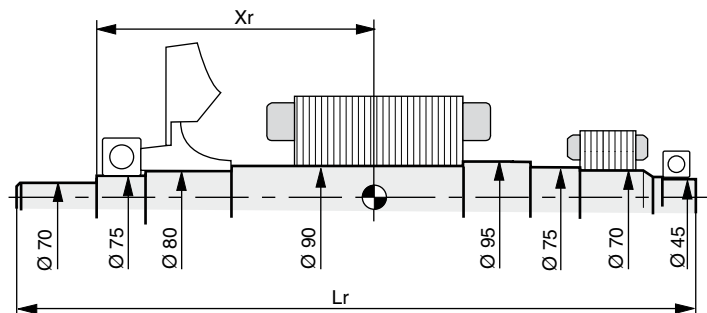
## Two bearing dimensions



### Frame dimensions

TYPE	L max without PMG	LB	Xg	Weight (kg)
LSA 44.2 VS3	815	710	360	405
LSA 44.2 VS45	815	710	360	405
LSA 44.2 S7	875	770	390	460
LSA 44.2 S75	875	770	390	460
LSA 44.2 M95	935	830	420	515
LSA 44.2 L12	995	890	450	570

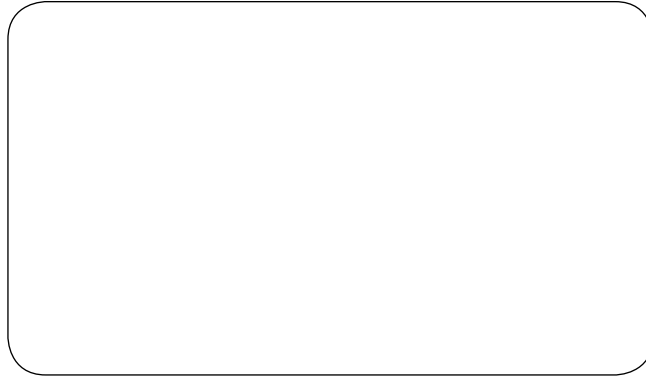
## Torsional analysis data



### Gravity center : Xr (mm), Rotor length Lr (mm), Weight : M (kg), Moment of inertia : J (kgm<sup>2</sup>) : (4J = MD<sup>2</sup>)

TYPE	Xr	Lr	M	J
LSA 44.2 VS3	341	803	137	0,8276
LSA 44.2 VS45	341	803	137	0,8276
LSA 44.2 S7	371	863	160	0,9785
LSA 44.2 S75	371	863	160	0,9765
LSA 44.2 M95	422	923	182	1,1294
LSA 44.2 L12	473	983	205	1,2803

## Contact



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