

# GX SERIES

STAGE V EMISSION COMPLIANT

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

MODEL  
 MODELE  
 MODELO  
 MODELLO

## GX110K V

POWERED BY

### KOHLER



**LERROY  
SOMER**



**SOUNDPROOF VERSION**



| GENERATING SET PERFORMANCE<br>PERFORMANCES DU GROUPE<br>PRESTACIONES DEL GRUPO<br>PRESTAZIONI DEL GRUPPO     |       | 50 Hz |            |
|--------------------------------------------------------------------------------------------------------------|-------|-------|------------|
| Voltage<br>Voltage<br>Voltaje<br>Tensione                                                                    |       | V     | 400 / 230  |
| Prime Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo         | PRP   | kVA   | <b>100</b> |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza | LTP   | kVA   | <b>110</b> |
| Prime Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo         | PRP   | kWe   | 80         |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza | LTP   | kWe   | 88         |
| Power factor<br>Facteur de puissance<br>Factor de potencia<br>Fattore di potenza                             | cos φ |       | 0,8        |
| Fuel consumption<br>Consommation combustible<br>Consumo de combustible<br>Consumo combustibile               | 70 %  | l/h   | 14,8       |

| ENGINE<br>MOTEUR<br>MOTOR<br>MOTORE                        |          | KOHLER   | KDI3404TCR SCR |                       |
|------------------------------------------------------------|----------|----------|----------------|-----------------------|
| PERFORMANCE<br>PERFORMANCES<br>PRESTACIONES<br>PRESTAZIONI |          | 1500 rpm |                |                       |
| Prime Power                                                | PRP      | kWm      | 89,7           |                       |
| Puissance service continue                                 |          |          |                |                       |
| Potencia servicio continuo                                 |          |          |                |                       |
| Potenza servizio continuo                                  |          |          |                |                       |
| Stand-by Power                                             | LTP      | kWm      | 98,7           |                       |
| Puissance service secours                                  |          |          |                |                       |
| Potencia servicio emergencia                               |          |          |                |                       |
| Potenza servizio in emergenza                              |          |          |                |                       |
| Specific fuel consumption                                  |          | g/kWh    | 25% 242        |                       |
| Consommation spécifique combustible                        |          |          | 50% 210        |                       |
| Consumo específico de combustible                          |          |          | 75% 203        |                       |
| Consumo specifico combustibile                             |          |          | 100% 203       |                       |
| Diesel 4 Stroke – Injection type                           |          |          |                | direct                |
| Diesel 4 temps – Type injection                            |          |          |                | directe               |
| Diesel 4 tiempos – Tipo de inyeccion                       |          |          |                | directa               |
| Diesel a 4 tempi – Tipo di iniezione                       |          |          |                | diretta               |
| Aspiration type                                            |          |          |                | Turbocharged          |
| Type d’aspiration                                          |          |          |                | Suraalimentée         |
| Tipo de aspiracion                                         |          |          |                | sobrealimentato       |
| Tipo d’aspirazione                                         |          |          |                | sovralimentata        |
| Cooling system                                             |          |          |                | Water                 |
| Refroidissement                                            |          |          |                | Eau                   |
| Sistema de refrigeracion                                   |          |          |                | Agua                  |
| Raffreddamento                                             |          |          |                | Acqua                 |
| Speed governor                                             |          |          |                | Electronic            |
| Régulateur de tours                                        |          |          |                | Electronique          |
| Regulador                                                  |          |          |                | Electronico           |
| Regolatore di giri                                         |          |          |                | Elettronico           |
| Cylinders, numbers and arrangement                         |          |          |                | 4 L                   |
| Nombre et disposition des cylindres                        |          |          |                |                       |
| Cilindros, numero y disposicion                            |          |          |                |                       |
| Numero e disposizione dei cilindri                         |          |          |                |                       |
| Total displacement                                         |          |          |                | cm <sup>3</sup> 3.400 |
| Cylindrée totale                                           |          |          |                |                       |
| Cilindrata total                                           |          |          |                |                       |
| Cilindrata totale                                          |          |          |                |                       |
| Bore x stroke                                              |          |          |                | mm 96 x 116           |
| Alésage x course                                           |          |          |                |                       |
| Diametro x carrera                                         |          |          |                |                       |
| Alesaggio x corsa                                          |          |          |                |                       |
| Compression ratio                                          |          |          |                | ---                   |
| Rapport de compression                                     |          |          |                |                       |
| Relación de compresión                                     |          |          |                |                       |
| Rapporto di compressione                                   |          |          |                |                       |
| Engine electric system voltage                             |          |          |                | 12V                   |
| Voltage système électrique moteur                          |          |          |                |                       |
| Voltaje sistema eléctrico motor                            |          |          |                |                       |
| Voltaggio sistema elettrico motore                         |          |          |                |                       |
| Derating for temperature                                   | 0 ÷ 25°C |          |                | 0                     |
| Déclassement pour temperature                              |          |          |                |                       |
| Declasamiento para temperatura                             | > 25 °C  |          |                | 2%/5°C                |
| Declassamento per temperatura                              |          |          |                |                       |
| Derating for altitude                                      |          |          |                | 0                     |
| Déclassement pour altitude                                 | 0÷100 mt |          |                |                       |
| Declasamiento para altitud                                 |          |          |                | 1%/100m               |
| Declassamento per altitudine                               | >100 mt  |          |                |                       |

| ALTERNATOR<br>ALTERNATEUR<br>ALTERNADOR<br>ALTERNATORE                                                                                                                                                                                                                    |                                                                                                                                                                                                                                  | LEROY SOMER                                  |                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------------------|
| PERFORMANCE<br>PERFORMANCES<br>PRESTACIONES<br>PRESTAZIONI                                                                                                                                                                                                                |                                                                                                                                                                                                                                  | 1500 rpm                                     |                                      |
| Model<br>Modèle<br>Modelo<br>Modello                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                  | LSA 44.3S5                                   |                                      |
| Prime Power<br>Puissance service continue<br>Potencia servicio continuo<br>Potenza servizio continuo                                                                                                                                                                      | 40 °C                                                                                                                                                                                                                            | kVA<br>kWe                                   | <b>100</b><br>80                     |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                                                                                                                                                              | 40 °C                                                                                                                                                                                                                            | KVA<br>kWe                                   | <b>106</b><br>84,8                   |
| Stand-by Power<br>Puissance service secours<br>Potencia servicio emergencia<br>Potenza servizio in emergenza                                                                                                                                                              | 27 °C                                                                                                                                                                                                                            | KVA<br>kWe                                   | <b>110</b><br>88                     |
| Efficiency<br>Rendement<br>Eficienza<br>Efficienza                                                                                                                                                                                                                        |                                                                                                                                                                                                                                  | 1/4<br>2/4<br>3/4<br>4/4                     | 88,5 %<br>91,9 %<br>92,3 %<br>92,0 % |
| Standard winding connections<br>Liaison des bobinages<br>Tipo de conexión<br>Collegamento avvolgimenti                                                                                                                                                                    |                                                                                                                                                                                                                                  | Y                                            |                                      |
| Exciter<br>Eccitatrice<br>Excitador<br>Eccitatrice                                                                                                                                                                                                                        | brushless rotating exciter design with solid state<br>pivotante <b>sans brosses</b> avec pont de diodes pivotants<br>puente de diodos <b>sin escobillas</b> rotantes<br>rotante <b>senza spazzole</b> con ponte di diodi rotanti |                                              |                                      |
| Poles<br>Poles<br>Polos<br>Poli                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                  | 4                                            |                                      |
| Phases<br>Phases<br>Fases<br>Fasi                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                  | 3 + N                                        |                                      |
| Wires<br>Fils<br>Hilos<br>Morsetti                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                  | 12                                           |                                      |
| Voltage regulation<br>Regulation Voltage<br>Regulación voltaje<br>Regolazione tensione                                                                                                                                                                                    |                                                                                                                                                                                                                                  | ± 0,25 %                                     |                                      |
| Insulation class<br>Classe d' isolation<br>Classe de aislamiento<br>Classe di isolamento                                                                                                                                                                                  |                                                                                                                                                                                                                                  | H                                            |                                      |
| Enclosure<br>Degré de protection mécanique<br>Grado de protección mecánica<br>Grado di protezione meccanica                                                                                                                                                               |                                                                                                                                                                                                                                  | IP 23                                        |                                      |
| Maximun overspeed<br>Survitesse<br>Régimen máximo<br>Velocità di fuga                                                                                                                                                                                                     |                                                                                                                                                                                                                                  | 2250 min                                     |                                      |
| AVR model with <b>300%</b> shortcircuit <b>current</b><br>Modèle AVR avec un <b>courant</b> de court-circuit du <b>300%</b><br>Modelo AVR con una <b>corriente</b> de corto circuito del <b>300%</b><br>Modello AVR con <b>corrente</b> di corto circuito del <b>300%</b> |                                                                                                                                                                                                                                  | (3 In) : 10s                                 | D 350<br>AREP                        |
| Derating for temperature<br>Déclassement pour temperature<br>Declasamiento para temperatura<br>Declassamento per temperatura                                                                                                                                              |                                                                                                                                                                                                                                  | 0 ÷ 40°C<br><br>> 40 °C                      | 0<br><br>3 % / 5°C                   |
| Derating for altitude<br>Déclassement pour altitude<br>Declasamiento para altitud<br>Declassamento per altitudine                                                                                                                                                         |                                                                                                                                                                                                                                  | 0 ÷ 1000 m<br>1000 ÷ 2500 m<br>2500 ÷ 3000 m | 0<br>3% / 500 m<br>4% / 500 m        |

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

|                                                                                              | Integrated fuel tank capacity<br>Capacité réservoir intégré<br>Capacidad Tanque integrado<br>Capacità Serbatoio integrato |        |               | Weight<br>Poids<br>Peso<br>Peso | Dimensions<br>Cotes d'encombrement<br>Medidas externas<br>Dimensioni d'ingombro |     |     |
|----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------|---------------|---------------------------------|---------------------------------------------------------------------------------|-----|-----|
|                                                                                              | ( L. )                                                                                                                    |        |               | (kg)                            | (cm)                                                                            |     |     |
|                                                                                              | STD                                                                                                                       | EXTRA1 | EXTRA2        |                                 | L                                                                               | W   | H   |
| SOUND PROOF VERSION<br>VERSION INSONORISEE<br>VERSION INSONORISADA<br>VERSIONE INSONORIZZATA | 185                                                                                                                       | 300    | ON<br>REQUEST | 1680                            | 255                                                                             | 113 | 164 |
| AdBlue tank (L.)                                                                             | 16                                                                                                                        |        |               |                                 |                                                                                 |     |     |

**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>Vibration dampers</li> <li>Integrated bunded fuel tank</li> <li>Battery</li> <li>Manual autostart control panel With <b>DSE7310</b></li> <li>Emergency stop button</li> <li>Sound proof canopy of galvanized steel with <b>residential</b> silencer</li> <li>Fork lift guides</li> </ul> | <ul style="list-style-type: none"> <li>Crochet de levage</li> <li>Amortisseurs de vibrations</li> <li>Réservoir intégré avec bac de rétention</li> <li>Batterie</li> <li>Coffret de contrôle manuel autostart avec <b>DSE7310</b></li> <li>Bouton arrêt d'urgence</li> <li>Capote d'insonorisation d'acier galvanisé avec silencieux <b>résidentiel</b></li> <li>Supports pour fourches</li> </ul> | <ul style="list-style-type: none"> <li>Gancho central</li> <li>Apagadores de vibracion</li> <li>Tanque combustible integrado con bandeja para la recogida de líquidos</li> <li>Bateria</li> <li>Cuadro manual autostart con <b>DSE7310</b></li> <li>Botón parada de emergencia</li> <li>Cabina de insonorización de acero cincado con silenciador <b>residencial</b></li> <li>Supportes para carretilla</li> </ul> | <ul style="list-style-type: none"> <li>Gancio centrale di sollevamento</li> <li>Antivibranti</li> <li>Serbatoio integrato con vasca di raccolta liquidi</li> <li>Batteria</li> <li>Quadro manuale autostart con <b>DSE7310</b></li> <li>Pulsante arresto di emergenza</li> <li>Cabina di insonorizzazione di acciaio zincato con marmitta <b>residenziale</b></li> <li>Porta forche</li> </ul> |

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

# Q7310 AUS

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

|                                                                                                                                                     |                                                                                                                                                                         |                                                                                                                                                           |                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>STANDARD EQUIPMENT:</b><br>4 poles circuit breaker<br>Electronic control board <b>DSE 7310</b><br>Control panel box key<br>Emergency Stop button | <b>EQUIPEMENT STANDARD:</b><br>Disjoncteur de protection 4 pôles<br>Fiche électronique <b>DSE 7310</b><br>Clé pour serrure du coffret<br>Interrupteur d'arrêt d'urgence | <b>EQUIPAMIENTO STANDARD:</b><br>Interruptor magnetotermico 4 polos<br>Carta electronica <b>DSE 7310</b><br>Llave cuadro<br>Botón de parada de emergencia | <b>EQUIPAGGIAMENTO STANDARD:</b><br>Interruttore magnetotermico 4 poli<br>Scheda elettronica <b>DSE 7310</b><br>Chiave quadro<br>Pulsante di arresto di emergenza |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|


**DSE 7310**
**CONTROL BOARD**  
**CARTE ELECTRONIQUE DE CONTROL**  
**CARTA ELECTRONICA DE CONTROL**  
**SCHEDA ELETTRONICA DI CONTROLLO**

| PROTECTIONS                                                                                                                                                                                                                                                                         | PROTECTIONS                                                                                                                                                                                                                                                                                                            | PROTECCIONES                                                                                                                                                                                                                                                                                                                             | PROTEZIONI                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Low oil pressure<br>High engine temperature<br>Low fuel level<br>Fail to start<br>Fail to stop<br>Emergency stop<br>Over/under generator frequency<br>Over/under generator voltage<br>Over/under speed<br>Fuel level<br>Belt breakage<br>Over current<br>Over/under battery voltage | Basse pression huile moteur<br>Haute température moteur<br>Basse niveau combustible<br>Non démarrage<br>Non arrêt<br>Arrêt d'urgence<br>Sur/sous générateur fréquence<br>Sur/sous générateur voltage<br>Sur/sous vitesse<br>Niveau de combustible<br>Rupture courroie<br>Surcoursant<br>Sur/sus la tension de batterie | Baja presión aceite<br>Elevada temperatura motor<br>Baja nivel carburante<br>Falta de arranque<br>Falta de parada<br>Parada de emergencia<br>Sobre/bajo generatore frecuencia<br>Sobre/bajo generatore voltaje<br>Sobre/bajo velocidad<br>nivel de combustible<br>Ruptura correa<br>Corriente maxima<br>Sobre/bajo voltaje de la batería | Bassa pressione olio<br>Alta temperatura motore<br>Basso livello di carburante<br>Mancato avviamento<br>Mancato arresto<br>Stop d'emergenza<br>Sovra/sotto frequenza generatore<br>Sovra/sotto voltaggio generatore<br>Sovra/sotto velocità<br>Livello del carburante<br>Rottura cinghia<br>Sovraccorrente<br>Sovra/sotto tensione della batteria |
| DIGITAL METERS                                                                                                                                                                                                                                                                      | VOYANT NUMERIQUE POUR                                                                                                                                                                                                                                                                                                  | VISOR DIGITAL PARA                                                                                                                                                                                                                                                                                                                       | MISURATORE DIGITALE PER                                                                                                                                                                                                                                                                                                                           |
| Generator volts ( 3 phases )<br>Generator amperes ( 3 phases )<br>Generator frequency<br>KW-meter<br>KVA-meter<br>Cos φ-meter<br>Rpm meter<br>Gen set hours counter<br>Battery Volts                                                                                                | Voltmètre générateur ( 3 phases )<br>Ampèremètre générateur (3 phases)<br>Fréquencemètre générateur<br>KW- mètre<br>kVA- mètre<br>Cos φ- mètre<br>Tm mètre<br>Totalisateur d'heures de marche<br>Voltmètre batterie                                                                                                    | Voltmetro ( 3 fases )<br>Amperimetro ( 3 fases )<br>Frecuencimetro<br>KW- metro<br>kVA- metro<br>Cos φ- metro<br>Revoluciones por minuto metro<br>Medida horas de marcha<br>Voltmetro batería                                                                                                                                            | Voltmetro tensione generatore (3 fasi)<br>Amperometro generatore ( 3 fasi )<br>Frequenzimetro generatore<br>KW- metro<br>kVA- metro<br>Cos φ- metro<br>Gm metro<br>Contaore di funzionamento gruppo<br>Voltmetro batteria                                                                                                                         |

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

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

| GB                                                                                                                                                                                                                                                                                                                                 | F                                                                                                                                                                                                                                                                                                                                                                                             | E                                                                                                                                                                                                                                                                                                                                                                  | I                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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.                                                                         | La DSE7320 est une carte de contrôle projetée pour démarrer et arrêter automatiquement groupes électrogènes diesel avec moteurs électroniques et non électroniques. La carte représente un système excellent de contrôle et de protection du groupe électrogène.                                                                                                                              | 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.                                                                                                                            | 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.                                                                                                                                            |
| FEATURES                                                                                                                                                                                                                                                                                                                           | EQUIPEMENT                                                                                                                                                                                                                                                                                                                                                                                    | EQUIPMENT                                                                                                                                                                                                                                                                                                                                                          | EQUIPAGGIAMENTO                                                                                                                                                                                                                                                                                                                                                                                         |
| Stop/restart – Auto – Manual – Start<br>LCD display scroll<br>Event log view<br>Acoustic alarm                                                                                                                                                                                                                                     | Fiche électronique de contrôle DSE7320<br>Disjoncteur de protection<br>Chargeur de batterie<br>Bouton poussoir arrête d'urgence                                                                                                                                                                                                                                                               | Ficha electrónica de control DSE7320<br>Interrupor magnetotermico<br>Cargador de batería<br>Boton de parada de emergencia                                                                                                                                                                                                                                          | Scheda elettronica di controllo DSE7320<br>Interruttore magnetotermico<br>Carica batteria<br>Pulsante stop emergenza                                                                                                                                                                                                                                                                                    |
| DIGITAL MEASURING                                                                                                                                                                                                                                                                                                                  | MESURES NUMERIQUES                                                                                                                                                                                                                                                                                                                                                                            | MEDIDAS DIGITALES                                                                                                                                                                                                                                                                                                                                                  | MISURAZIONI DIGITALI                                                                                                                                                                                                                                                                                                                                                                                    |
| Generator volts (3 phases)<br>Generator amperes (3 phases)<br>Generator frequency<br>KW-meter<br>KVA-meter<br>Cos φ-meter<br>Rpm meter<br>Water temperature (optional)<br>Oil pressure (optional)<br>Gen set hours counter<br>Mains volts<br>Battery volts<br>Mains frequency<br>Charging voltage<br>Start-counter<br>Fuel level % | Voltmètre générateur (3 phases)<br>Ampèremètre générateur (3 phases)<br>Fréquencemètre générateur<br>KW- mètre<br>kVA- mètre<br>Cos φ- mètre<br>Tm mètre<br>Température eau (facultatif)<br>Pression huile (facultatif)<br>Totalisateur d'heures de marche<br>Voltmètre secteur<br>Voltmètre batterie<br>Fréquence réseau<br>Tension de charge<br>Compteur démarrages<br>Niveau combustible % | Voltmetro (3 fases)<br>Amperimetro (3 fases)<br>Frecuencimetro<br>KW- metro<br>kVA- metro<br>Cos φ-metro<br>Revoluciones por minuto metro<br>Termometro agua (opcional)<br>Presión aceite (opcional)<br>Medida horas de marcha<br>Voltmetro tensión de red<br>Voltmetro batería<br>Frecuencia red<br>Tensión de carga<br>Numero de arranques<br>Nivel carburante % | Voltmetro tensione generatore (3 fasi)<br>Amperometro generatore (3 fasi )<br>Frequenzimetro generatore<br>KW- metro<br>kVA- metro<br>Cos φ-metro<br>Gm metro<br>Temperatura acqua (facoltativo)<br>Pressione olio (facoltativo)<br>Contaore di funzionamento gruppo<br>Voltmetro tensione rete<br>Voltmetro batteria<br>Frequenza rete<br>Tensione di carica<br>Contavviamanti<br>Livello carburante % |
| INDICATORS                                                                                                                                                                                                                                                                                                                         | INDICATEURS                                                                                                                                                                                                                                                                                                                                                                                   | INDICADORES                                                                                                                                                                                                                                                                                                                                                        | INDICATORI                                                                                                                                                                                                                                                                                                                                                                                              |
| Mains live<br>Generator live<br>Mains contactor closed<br>Generator contactor closed<br>Engine running                                                                                                                                                                                                                             | Présence secteur<br>Présence tension générateur<br>Inverseur secteur fermé<br>Inverseur générateur fermé<br>Moteur en marche                                                                                                                                                                                                                                                                  | Presencia tensión de red<br>Presencia tensión grupo<br>Transferencial red cerrado<br>Transferencial grupo cerrado<br>Motor en marcha                                                                                                                                                                                                                               | Presenza tensione di rete<br>Presenza tensione generatore<br>Erogazione da rete<br>Erogazione da gruppo<br>Motore avviato                                                                                                                                                                                                                                                                               |
| PROTECTIONS                                                                                                                                                                                                                                                                                                                        | PROTECTIONS                                                                                                                                                                                                                                                                                                                                                                                   | PROTECCIONES                                                                                                                                                                                                                                                                                                                                                       | PROTEZIONI                                                                                                                                                                                                                                                                                                                                                                                              |
| Low oil pressure<br>High engine temperature<br>Low fuel level<br>Fail to start<br>Fail to stop<br>Emergency stop<br>Over/under frequency<br>Over/under voltage<br>Over/under speed<br>Fuel level<br>Belt breakage<br>Over current<br>Over/under battery voltage                                                                    | Bas pression huile moteur<br>Haute température moteur<br>Bas niveau combustible<br>Non démarrage<br>Non arrêt<br>Arrêt d'urgence<br>Sur/sous fréquence<br>Sur/sous voltage<br>Sur/sous vitesse<br>Niveau de combustible<br>Rupture courroie<br>Surcoursant<br>Sur/sus la tension de batterie                                                                                                  | Baja presión aceite<br>Elevada temperatura motor<br>Baja nivel carburante<br>Falta de arranque<br>Falta de parada<br>Parada de emergencia<br>Sobre/bajo frecuencia<br>Sobre/bajo voltaje<br>Sobre/bajo velocidad<br>nivel de combustible<br>Ruptura correa<br>Corriente maxima<br>Sobre/bajo voltaje de la batería                                                 | Bassa pressione olio<br>Alta temperatura motore<br>Basso livello di carburante<br>Mancato avviamento<br>Mancato arresto<br>Stop d'emergenza<br>Sovra/sotto frequenza<br>Sovra/sotto voltaggio<br>Sovra/sotto velocità<br>Livello del carburante<br>Rottura cinghia<br>Sovracorrente<br>Sovra/sotto tensione della batteria                                                                              |

# SOUNDPROOF CANOPY

## CAPOTE D'INSONORISATION

## CAPOTA DE INSONORIZACION

## CABINA INSONORIZZATA

| GB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | F                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Bruno Super Silent soundproof canopy has been designed with the aim of achieving the maximum noise level reduction and to provide a perfect cooling of the engine. The cooling airflow is forced through fixed circuits. The canopy is suitable for tropical ambient application. The exhaust gas silencer is residential type internally mounted. The canopy is completely built of hot galvanized carbon sheet steel. The sheets have a thickness 20/10. The structure is fully bolted, fixed by a special polyethylene sealing, completely free from electrical installation. All the panels can be easily removed. The cab is provided with doors of wide opening for easy access to generating set for the maintenance operations. The soundproofing materials are highly fire resistant and self-extinguishing. | La capote insonorisée Bruno Super Silent à été conçue pour atteindre le niveau de bruit le mineur possible et un refroidissement du moteur parfait. Le soufflé d'air refroidissant est canalisé en circuits fixes. La capote est apte à être utilisée dans les ambiances tropicales. Le silencieux des gaz d'échappement, de type résidentiel, est mis à l'intérieur de la capote. La cabine est construite en acier galvanisé à chaud. Les tôles ont une épaisseur de 20/10. La structure est complètement boulonnée et fixée à travers des garnitures spéciales au polyéthylène. Tous les panneaux sont facilement amovibles. La cabine est dotée de portes avec grandes ouvertures qui permettent un accès facile au groupe électrogène pour les opérations de maintenance. Les matériaux d'insonorisation sont fortement résistants au feu et auto-extinguibles. | La capota insonorizada Bruno Super Silent tiene sido planeada con el objetivo de alcanzar el menor nivel de rumorosidad posible y un perfecto enfriamiento del motor. El sople de aire es canalizado en circuitos fijos. La cabina es apta a ser utilizada en ambientes tropicales. El silenciador de los gases de descargue, de tipo residencial, es colocado dentro de la cabina. La cabina es construida en acero cincado. Las chapas tienen un espesor de 20/10. La estructura es completamente bullonada y montada con sellos especiales de polietilene. Todos los paneles son fácilmente removibles. La cabina es dotada con puertas con amplias aberturas que permiten el fácil acceso al grupo electrógeno por las operaciones de manutención. Los materiales insonorizantes son muy resistentes al fuego y auto-extinguentes. | La cabina insonorizzata Bruno Super Silent è stata progettata allo scopo di raggiungere il minor livello di rumorosità possibile e un perfetto raffreddamento del motore. Il soffio d'aria raffreddante è canalizzato in circuiti fissi. La cabina è adatta ad essere utilizzata in ambienti tropicali. Il silenziatore dei gas di scarico, di tipo residenziale, è collocato all'interno della cabina. La cabina è costruita in acciaio zincato a caldo. Le lamiere hanno uno spessore di 20/10. La struttura è completamente bullonata e fissata tramite speciali sigilli al polietilene. Tutti i pannelli sono facilmente rimovibili. La cabina è dotata di porte con ampie aperture che consentono il facile accesso al gruppo elettrogeno per le operazioni di manutenzione. I materiali insonorizzanti sono altamente resistenti al fuoco e autoestinguenti. |

### Our quality in 13 points

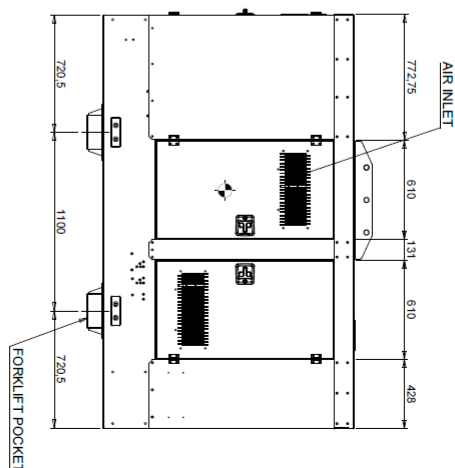
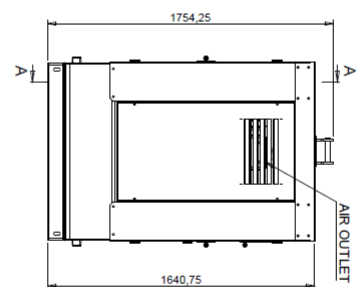
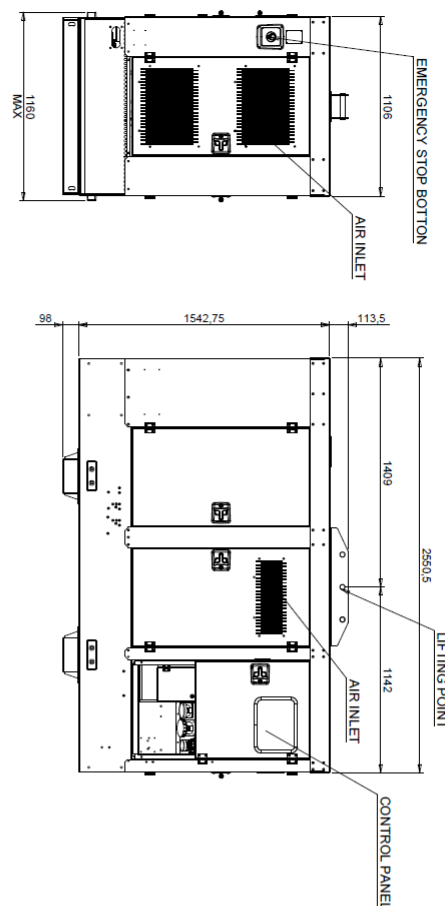
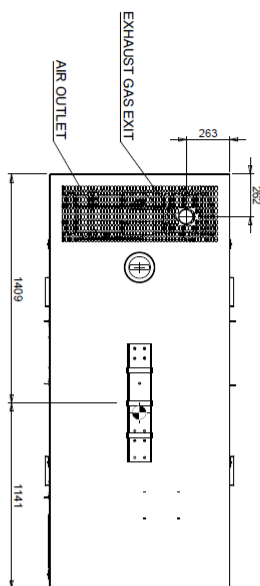
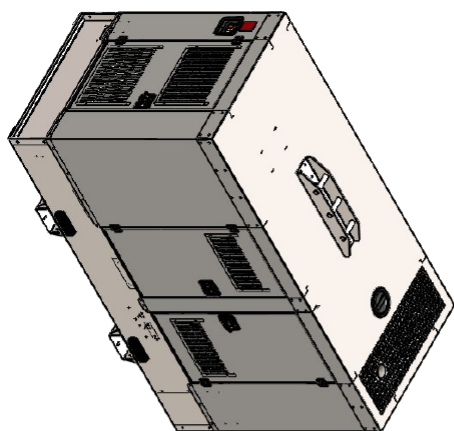
### Notre qualité résumée en 13 points

### Nuestra calidad en 13 puntos

### La nostra qualità in 13 punti

|    |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  |    | Internal residential silencer for lower sound levels<br>Silencieux interne pour un niveau bas de bruit<br>Silenciador interno para un nivel de rumorosidad más bajo<br>Silenziatore interno per un livello di rumorosità più basso                                                                                                                                                                                      |
| 2  |   | Integrated fuel tank of different sizes<br>Réservoirs de combustible disponibles, sur demande, de capacité supérieure<br>Tanques integrados disponibles, como opción, de capacidad superior<br>Serbatoi integrati disponibili, su richiesta, di capacità superiore                                                                                                                                                      |
| 3  |  | Control panel viewing window to easily check status of generating set<br>Fenêtre de visualisation du panneau de contrôle pour un contrôle plus facile du status opérationnel du groupe<br>Ventana de visualización del panel de control por un más fácil control del estatus operativo del grupo<br>Finestra di visualizzazione del pannello di controllo per un più facile controllo dello status operativo del gruppo |
| 4  |  | Lockable access doors for extra safety and security<br>Porte d'accès avec serrure pour une sûreté majeure<br>Puertas de acceso con cerradura para una mayor seguridad<br>Porte di accesso con serratura per una maggiore sicurezza                                                                                                                                                                                      |
| 5  |  | Galvanized bolts<br>Boulons galvanisés<br>Pernos cincados<br>Bulloni zincati                                                                                                                                                                                                                                                                                                                                            |
| 6  |  | Emergency stop button<br>Interrupteur d'arrêt d'urgence<br>Botón parada de emergencia<br>Pulsante arresto di emergenza                                                                                                                                                                                                                                                                                                  |
| 7  |  | Fuel tank cap with external key (optional)<br>Bouchon gasoil avec clé positionne à l'extérieur (en option)<br>Tapo gasoleo con llave situado a l'externo (opcional)<br>Tappo gasolio con chiave posizionato all'esterno (in opzione)                                                                                                                                                                                    |
| 8  |  | Fully bundled base frame<br>Réservoir amovible avec bague de retention<br>Tanque integrado sfilable con el envase para recoger los líquidos<br>Serbatoio integrato sfilabile con vasca raccolta liquidi                                                                                                                                                                                                                 |
| 9  |  | Central lifting hook<br>Crochet central d'enlèvement<br>Gancho de elevación<br>Gancio di sollevamento centrale                                                                                                                                                                                                                                                                                                          |
| 10 |  | Doors location convenient to controls and service area<br>Placement des portes pour rendre les contrôles plus faciles<br>Colocación de las puertas para facilitar los controles<br>Collocazione delle porte per facilitare i controlli                                                                                                                                                                                  |
| 11 |  | High serviceability level<br>Haut niveau d'accessibilité pour la manutention<br>Alto nivel de accesibilidad para la manutención<br>Alto livello di accessibilità per la manutenzione                                                                                                                                                                                                                                    |
| 12 |  | Large cable entry area for easy installation<br>Grande zone d'entré des câbles pour une installation plus facile<br>Amplia área de entrada cables para una instalación fácil<br>Ampia area di entrata cavi per una facile installazione                                                                                                                                                                                 |
| 13 |  | Galvanized metal steel sheet pre-treated prior to powder coating<br>Tôles en acier galvanisé pré-traitées avant le vernissage à poudre<br>Chapas de acero cincado pre-tratadas antes de la pintura a polvo<br>Lamiere di acciaio zincato pre-trattate prima della verniciatura a polvere                                                                                                                                |

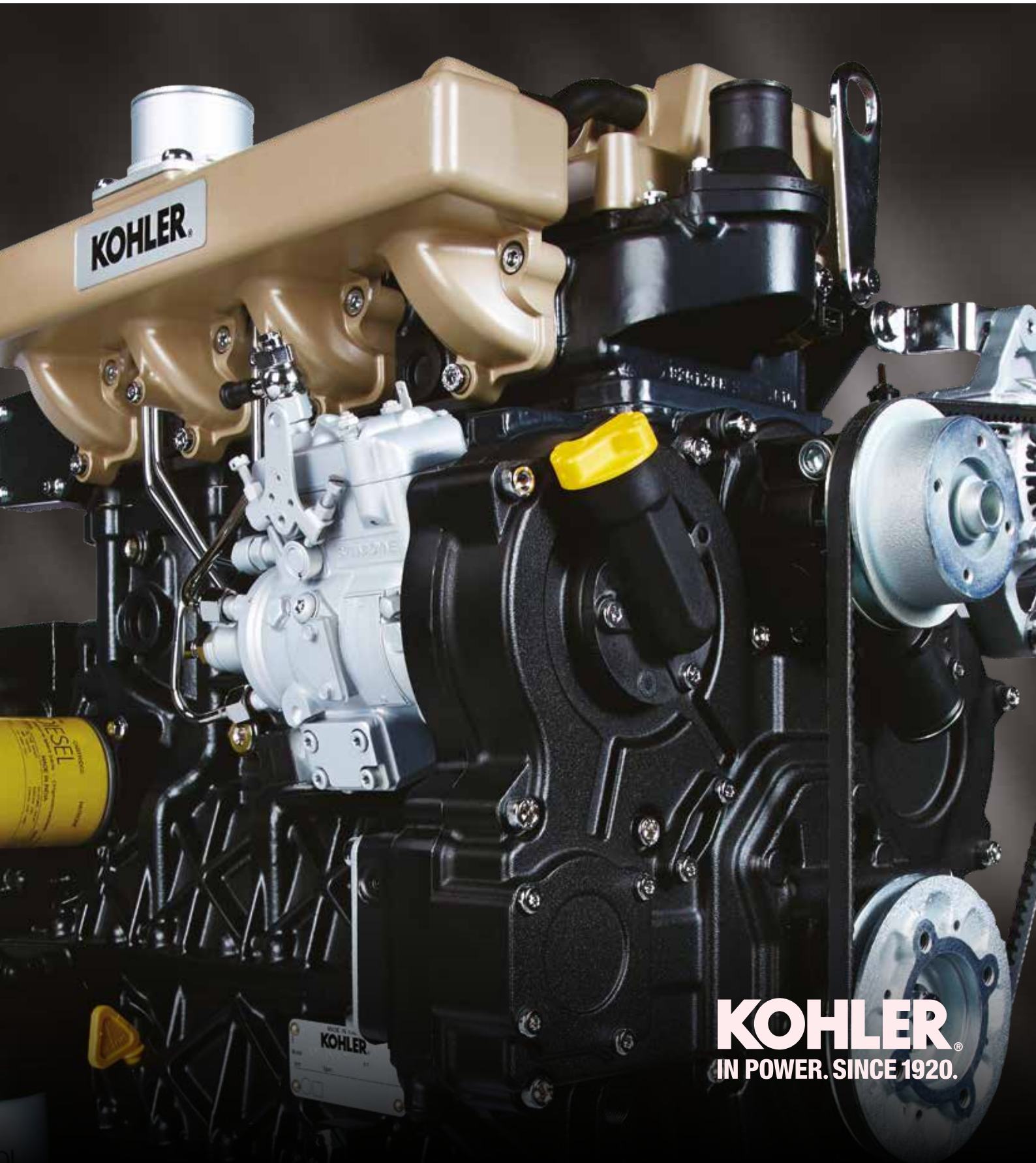
**SOUND PROOF VERSION DRAWING  
DESSIN VERSION INSONORISEE  
DIBUJO VERSION INSONORISADA  
DISEGNO VERSIONE INSONORIZZATA**



| STATO           |               | MATERIALE    |           | SPECIFICHE |           |
|-----------------|---------------|--------------|-----------|------------|-----------|
| NEW             | PRODOTTO      | PRODOTTO     | PRODOTTO  | PRODOTTO   | PRODOTTO  |
| 375905.9        | 1000/2019     | 1000/2019    | 1000/2019 | 1000/2019  | 1000/2019 |
| DA              | DA            | DA           | DA        | DA         | DA        |
| Tormino Villano | Ermanno Rizzo | Romano Bruno |           |            |           |
| GR110K STAGE V  |               |              |           |            |           |
| 11127835        |               |              |           |            |           |
| SP00AP000217    |               |              |           |            |           |

# KOHLER DIESEL ENGINES

Generator Ratings



**KOHLER**  
IN POWER. SINCE 1920.

# LIQUID COOLED

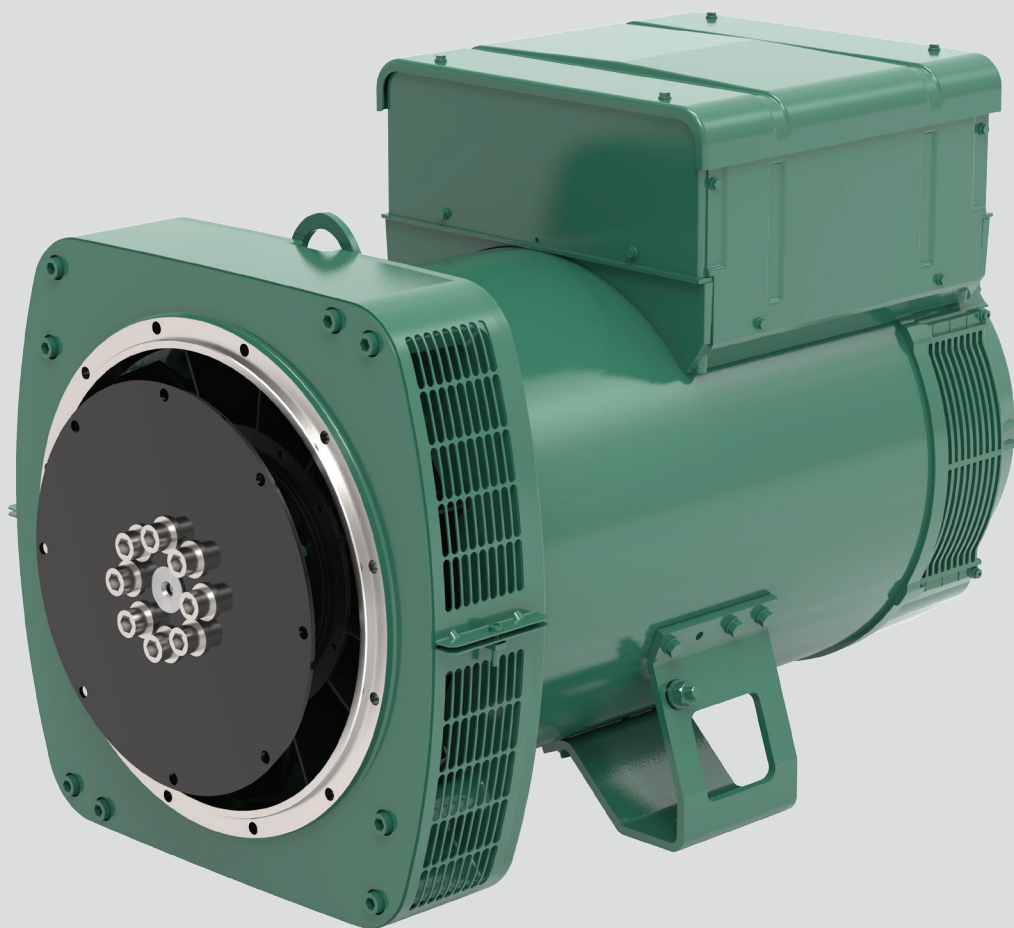
## DIESEL ENGINES

| Freq. | Rpm  | ENGINE MODEL     | GROSS ENGINE POWER* |               | Given alternator efficiency % | ELECTRICAL POWER**      |       |                    |        | Flanging      | Emission compliance      |                                       |
|-------|------|------------------|---------------------|---------------|-------------------------------|-------------------------|-------|--------------------|--------|---------------|--------------------------|---------------------------------------|
|       |      |                  | Stand-by            | Prime         |                               | Intermittent (Stand-by) |       | Continuous (Prime) |        |               |                          |                                       |
|       |      |                  |                     |               |                               | kW-hp                   | kW-hp | kVA                | kW     |               |                          | kVA                                   |
| 50 Hz | 1500 | KDW702           | 5.5 - 7.5           | 5.0 - 6.8     | 80%                           | 5.5                     | 4.4   | 5.0                | 4.0    | SAE 5 - 6.5"  | -                        |                                       |
|       |      | KDW702           | -                   | 5.0 - 6.8 #   | 82%                           | -                       | -     | 4.9 #              | 4.0 #  | SAE 5 - 6.5"  | EU Stage V               |                                       |
|       |      | KDW1003          | 8.5 - 11.6          | 7.7 - 10.5    | 85%                           | 9.0                     | 7.2   | 8.2                | 6.5    | SAE 5 - 6.5"  | -                        |                                       |
|       |      | KDW1003          | 8.0 - 10.7          | 7.7 - 10.5    | 85%                           | 8.1                     | 6.5   | 7.8                | 6.2    | SAE 5 - 6.5"  | EU Stage V               |                                       |
|       |      | KDW1404          | 11.5 - 15.6         | 10.5 - 14.3   | 85%                           | 12.2                    | 9.8   | 11.2               | 8.9    | SAE 5 - 6.5"  | -                        |                                       |
|       |      | KDW1404          | 11.0 - 14.7         | 10.5 - 14.3   | 85%                           | 11.1                    | 8.9   | 10.6               | 8.5    | SAE 5 - 6.5"  | EU Stage V               |                                       |
|       |      | KDW1603          | 15.5 - 21.1         | 14.1 - 19.2   | 86%                           | 16.7                    | 13.3  | 15.1               | 12.1   | SAE 4 - 7.5"  | -                        |                                       |
|       |      | KDW1603          | 15.0 - 20.1         | 14.1 - 19.2   | 86%                           | 15.4                    | 12.3  | 14.4               | 11.5   | SAE 4 - 7.5"  | EU Stage V               |                                       |
|       |      | KDI 1903M        | 19.0 - 25.5         | 17.3 - 23.1   | 88%                           | 20.9                    | 16.7  | 19.0               | 15.2   | SAE 4 - 7.5"  | EU Stage IIIA            |                                       |
|       |      | KDI 1903M        | -                   | 18.9 - 25.3 # | 88%                           | -                       | -     | 20.8 #             | 16.6 # | SAE 4 - 7.5"  | EU Stage V               |                                       |
|       |      | KDW2204          | 19.5 - 26.5         | 17.7 - 24.1   | 88%                           | 21.5                    | 17.2  | 19.5               | 15.6   | SAE 4 - 7.5"  | EU Stage IIIA            |                                       |
|       |      | KDI 2504M        | 25.4 - 34.0         | 23.1 - 30.9   | 88%                           | 27.9                    | 22.4  | 25.4               | 20.3   | SAE 4 - 7.5"  | EU Stage IIIA            |                                       |
|       |      | KDW2204/T        | 26.0 - 35.4         | 23.6 - 32.1   | 88%                           | 28.6                    | 22.9  | 26.0               | 20.8   | SAE 4 - 7.5"  | EU Stage II              |                                       |
|       |      | KDI 2504TM-30    | 32.0 - 42.9         | 29.1 - 39.0   | 88%                           | 35.2                    | 28.2  | 32.0               | 25.6   | SAE 3 - 11.5" | EU Stage IIIA            |                                       |
|       |      | KDI 2504TM-40-EU | 36.9 - 49.4         | 33.5 - 45.0   | 88%                           | 40.6                    | 32.5  | 36.9               | 29.5   | SAE 3 - 11.5" | EU Stage IIIA            |                                       |
|       |      | KDI 2504TM-40    | 41.0 - 54.9         | 37.3 - 50.0   | 88%                           | 45.1                    | 36.1  | 41.0               | 32.8   | SAE 3 - 11.5" | -                        |                                       |
|       |      | KDI 3404TM       | 61.0 - 81.7         | 55.5 - 74.3   | 89%                           | 67.9                    | 54.3  | 61.7               | 49.4   | SAE 3 - 11.5" | -                        |                                       |
|       |      | KDI 3404TM ◊     | 61.5 - 82.4         | 55.9 - 74.9   | 89%                           | 68.4                    | 54.7  | 62.2               | 49.8   | SAE 3 - 11.5" | EU Stage IIIA            |                                       |
|       |      | KDI 1903TCR ◊    | 35.3 - 47.3         | 32.1 - 43.0   | 88%                           | 36.6                    | 29.3  | 33.1               | 26.5   | SAE 3 - 11.5" | EU Stage V               |                                       |
|       |      | KDI 2504TCR ◊    | 47.1 - 63.1         | 42.8 - 57.4   | 88%                           | 49.6                    | 39.7  | 44.9               | 35.9   | SAE 3 - 11.5" | EU Stage V               |                                       |
|       |      | KDI 3404TCR ◊    | -                   | 55.0 - 73.7 # | 88%                           | -                       | -     | 57.8 #             | 46.2 # | SAE 3 - 11.5" | EU Stage V               |                                       |
|       |      | KDI 3404TCR SCR  | 100 - 134           | 90.9 - 121.8  | 92%                           | 112.1                   | 89.7  | 101.7              | 81.3   | SAE 3 - 11.5" | EU Stage V               |                                       |
|       | 3000 | KDW702           | 11.0 - 15.0         | 10.0 - 13.6   | 85%                           | 11.7                    | 9.4   | 10.6               | 8.5    | SAE 5 - 6.5"  | Not emitted / EU Stage V |                                       |
|       |      | KDW1003          | 18.0 - 24.2         | 16.4 - 22.0   | 85%                           | 19.1                    | 15.3  | 17.4               | 13.9   | SAE 5 - 6.5"  | EU Stage V               |                                       |
|       |      | KDW1404          | 22.0 - 29.9         | 20.0 - 27.2   | 85%                           | 23.4                    | 18.7  | 21.3               | 17.0   | SAE 5 - 6.5"  | EU Stage IIIA            |                                       |
|       |      | KDW1404          | -                   | 18.9 - 25.3 # | 85%                           | -                       | -     | 20.1 #             | 16.1 # | SAE 5 - 6.5"  | EU Stage V               |                                       |
|       |      | KDW1603          | 26.7 - 36.3         | 24.3 - 33.0   | 86%                           | 28.7                    | 23.0  | 26.1               | 20.9   | SAE 4 - 7.5"  | EU Stage IIIA            |                                       |
|       |      | KDW2204          | 34.5 - 46.9         | 31.4 - 42.7   | 86%                           | 37.6                    | 29.7  | 34.2               | 27.0   | SAE 4 - 7.5"  | EU Stage IIIA            |                                       |
|       |      | KDW2204/T        | 44.3 - 60.2         | 40.3 - 54.8   | 86%                           | 47.6                    | 38.1  | 43.3               | 34.6   | SAE 4 - 7.5"  | EU Stage II              |                                       |
| Freq. | Rpm  | ENGINE MODEL     | GROSS ENGINE POWER* |               | Given alternator efficiency % | ELECTRICAL POWER**      |       |                    |        | Flanging      | Emission compliance      | Max. Emission compliance available*** |
|       |      |                  | Stand-by            | Prime         |                               | Intermittent (Stand-by) |       | Continuous (Prime) |        |               |                          |                                       |
|       |      |                  |                     |               |                               | kW-hp                   | kW-hp | kVA                | kW     |               |                          |                                       |
| 60 Hz | 1800 | KDW702           | 6.5 - 8.8           | 5.9 - 8.0     | 80%                           | 6.5                     | 5.2   | 6.0                | 4.7    | SAE 5 - 6.5"  | Tier 2                   | Tier 4 F                              |
|       |      | KDW1003          | 10.0 - 13.6         | 9.1 - 12.4    | 85%                           | 10.6                    | 8.5   | 9.7                | 7.7    | SAE 5 - 6.5"  | Tier 2                   | Tier 4 F                              |
|       |      | KDW1404          | 13.5 - 18.4         | 12.3 - 16.7   | 85%                           | 14.3                    | 11.5  | 13.1               | 10.4   | SAE 5 - 6.5"  | Tier 2                   | Tier 4 F                              |
|       |      | KDI 1903M        | -                   | 18.4 - 24.7 # | 88%                           | -                       | -     | 20.2 #             | 16.2 # | SAE 4 - 7.5"  | Tier 4 F                 | Tier 4 F                              |
|       |      | KDW1603          | 18.5 - 25.2         | 16.8 - 22.9   | 86%                           | 19.9                    | 15.9  | 18.0               | 14.5   | SAE 4 - 7.5"  | Tier 2                   | Tier 2                                |
|       |      | KDI 1903M        | 21.0 - 28.1         | 19.1 - 25.6   | 88%                           | 23.1                    | 18.5  | 21.0               | 16.8   | SAE 4 - 7.5"  | Tier 3                   | Tier 3                                |
|       |      | KDW 2204         | 22.5 - 30.6         | 20.5 - 27.8   | 88%                           | 24.8                    | 19.8  | 22.5               | 18.0   | SAE 4 - 7.5"  | Tier 2                   | Tier 2                                |
|       |      | KDI 2504M        | 29.5 - 39.5         | 26.8 - 35.9   | 88%                           | 32.5                    | 26.0  | 29.5               | 23.6   | SAE 4 - 7.5"  | Tier 3                   | Tier 3                                |
|       |      | KDW 2204/T       | 31.5 - 42.8         | 28.6 - 38.9   | 88%                           | 34.7                    | 27.7  | 31.5               | 25.2   | SAE 3 - 11.5" | Tier 2                   | Tier 2                                |
|       |      | KDI 2504TM       | 36.4 - 48.8         | 33.1 - 44.3   | 88%                           | 40.0                    | 32.0  | 36.4               | 29.1   | SAE 4 - 7.5"  | Tier 3                   | Tier 3                                |
|       |      | KDI 1903TCR ◊    | 37.0 - 49.6         | 33.6 - 45.1   | 88%                           | 40.7                    | 32.6  | 37.0               | 29.6   | SAE 4 - 7.5"  | Tier 4 F                 | Tier 4 F                              |
|       |      | KDI 2504TCR ◊    | 47.1 - 63.1         | 42.8 - 57.4   | 88%                           | 51.8                    | 41.4  | 47.1               | 37.7   | SAE 3 - 11.5" | Tier 4 F                 | Tier 4 F                              |
|       |      | KDI 3404TCR ◊    | 55.4 - 74.2         | 50.4 - 67.5   | 89%                           | 61.6                    | 49.3  | 56.0               | 44.8   | SAE 3 - 11.5" | Tier 4 F                 | Tier 4 F                              |
|       |      | KDI 3404TM ◊     | 70.0 - 93.8         | 63.6 - 85.2   | 89%                           | 77.9                    | 62.3  | 70.8               | 56.6   | SAE 3 - 11.5" | Tier 3                   | Tier 3                                |
|       | 3600 | KDW702           | 11.7 - 16.0         | 10.6 - 14.5   | 85%                           | 12.2                    | 9.9   | 11.0               | 9.0    | SAE 5 - 6.5"  | Tier 2                   | Tier 2                                |
|       |      | KDW1003          | 18.0 - 24.5         | 16.4 - 22.3   | 85%                           | 19.1                    | 15.3  | 17.4               | 13.9   | SAE 5 - 6.5"  | Tier 2                   | Tier 4 F                              |
|       |      | KDW1404          | 24.5 - 33.3         | 22.3 - 30.3   | 85%                           | 26.0                    | 20.8  | 23.7               | 18.9   | SAE 5 - 6.5"  | Tier 3                   | Tier 3                                |

◊ Equipped with charged air after cooler

# Prime Power no overload

For more information, contact your KOHLER source of supply.  
Kohler Co. reserves the right to make modifications without prior notice.



# LSA 44.3

## Low Voltage Alternator - 4 pole

70 to 200 kVA - 50 Hz / 88 to 250 kVA - 60 Hz  
Electrical and mechanical data

**LEROY-SOMER**™

**Nidec**  
All for dreams

## Specially adapted to applications

The LSA 44.3 alternator is designed to be suitable for typical generator applications, such as: backup, prime power, cogeneration, marine applications, rental, telecommunications, etc.

## Compliant with international standards

The LSA 44.3 alternator conforms to the main international standards and regulations: IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2 n°100-14, UL 1446 (UL 1004 on request), marine regulations, etc.

It can be integrated into a EC marked generator.

The LSA 44.3 is designed, manufactured and marketed in an ISO 9001 environment and ISO 14001.

## Top of the range electrical performance

- Class H insulation
- Standard 12 wire re-connectable winding, 2/3 pitch, type no. 6
- Voltage range:
  - 50 Hz: 220 V - 240 V and 380 V - 415 V (440 V)
  - 60 Hz: 208 V - 240 V and 380 V - 480 V
- High efficiency and motor starting capacity
- Other voltages are possible with optional adapted windings:
  - 50 Hz: 440 V (no. 7), 500 V (no. 9), 690 V (n°10 or 52)
  - 60 Hz: 380 V and 416 V (no. 8), 600 V (no. 9)
- Complies with EN 61000-6-3, EN 61000-6-2, EN 55011, group 1 class B for European zone (EC marking)

## Reinforced mechanical structure using finite element modelling

- Compact rigid assembly to better withstand generator vibrations
- Steel frame and terminal box
- Aluminium/cast iron flanges and shields
- Two-bearing and single-bearing versions designed to be suitable for commercially-available heat engines
- Half-key balancing two bearing
- Permanently greased bearings (20 000h)
- Direction of rotation: clockwise and anti-clockwise (without derating)

## Excitation and regulation system suited to the application

| Excitation system |          |               |              | Regulation options                       |                   |                 |                              |
|-------------------|----------|---------------|--------------|------------------------------------------|-------------------|-----------------|------------------------------|
| Voltage regulator | SHUNT    | AREP (option) | PMG (option) | C.T. Current transformer for paralleling | Mains paralleling | 3-phase sensing | Remote voltage potentiometer |
| R250              | Standard | -             | -            | -                                        | -                 | -               | √                            |
| D350              | -        | Standard      | Standard     | √                                        | -                 | √               | √                            |
| D550              | Option   | Option        | Option       | √                                        | √                 | √               | √                            |

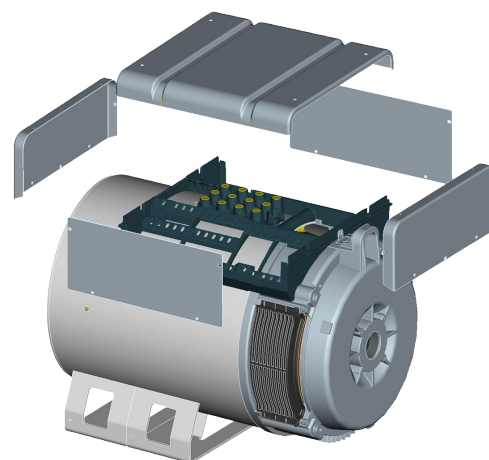
√ : Possible option

## Compact and design terminal box

- Easy access to the AVR (lid) and to the connections
- Terminal block for reconnecting the voltage

## Protection system suited to the environment

- The LSA 44.3 is IP 23
- Standard winding protection for clean environments with relative humidity  $\leq 95\%$ , including indoor marine environments
- Options:
  - Filters on air inlet: derating 5%
  - Filters on air inlet and air outlet (IP 44) : derating 10%
  - Space heaters
  - Thermal protection for stator windings
  - Winding protection for harsh environments and relative humidity greater than 95%
  - Shaft height: H = 225 mm on demand
  - Cable outlet at right



## General characteristics

|                  |                                   |                                                      |        |                   |
|------------------|-----------------------------------|------------------------------------------------------|--------|-------------------|
| Insulation class | H                                 | Excitation system                                    | SHUNT  | AREP / PMG        |
| Winding pitch    | 2/3 (wdg 6)                       | AVR type                                             | R250   | D350              |
| Number of wires  | 12                                | Voltage regulation (*)                               | ± 0.5% | ± 0.25%           |
| Protection       | IP 23                             | Short-circuit current                                | -      | 300% (3 IN): 10 s |
| Altitude         | ≤ 1000 m                          | Total Harmonic Distortion THD (**) in no-load .....  | < 2%   |                   |
| Overspeed        | 2250 min <sup>-1</sup>            | Total Harmonic Distortion THD (**) on linear load .. | < 5%   |                   |
| Air flow         | 0.25m³/s, 50 Hz - 0.30m³/s, 60 Hz | Waveform: NEMA = TIF (**)                            | < 50   |                   |

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

(\*\*\*) Only for LS 44.3 L12, VL13 & VL14

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

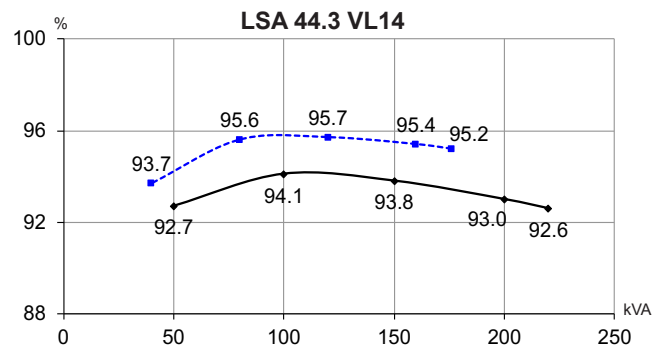
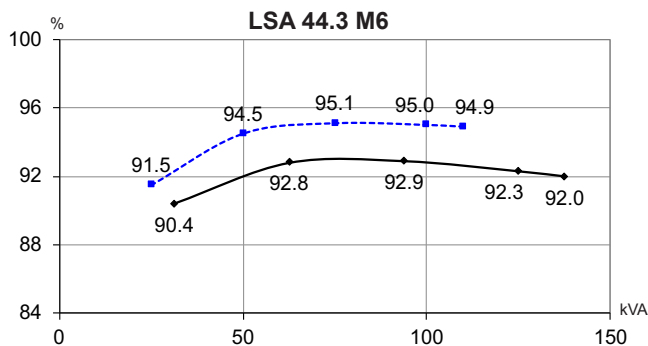
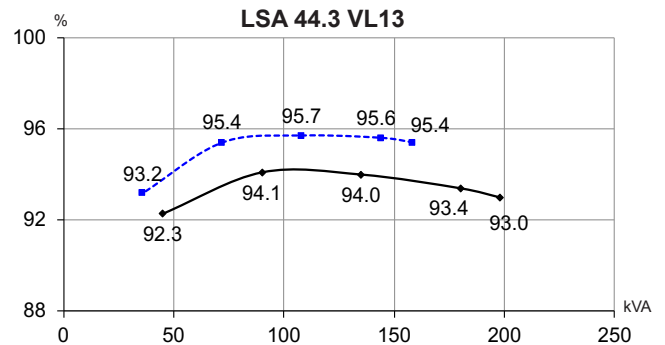
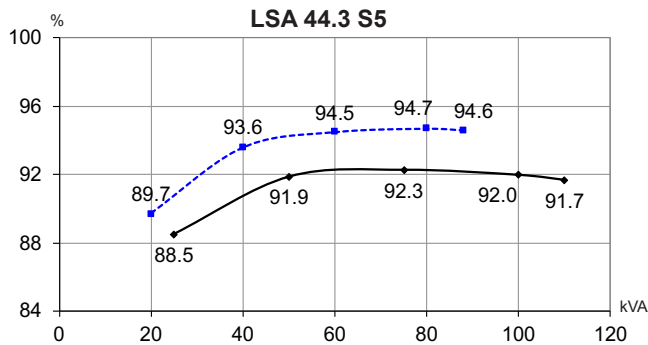
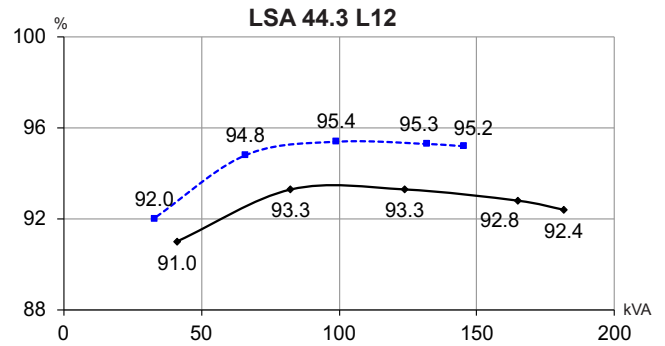
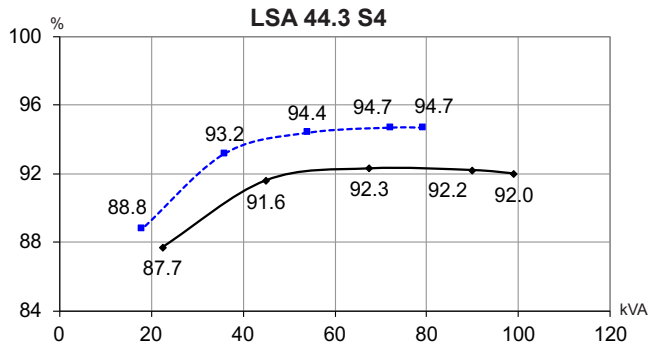
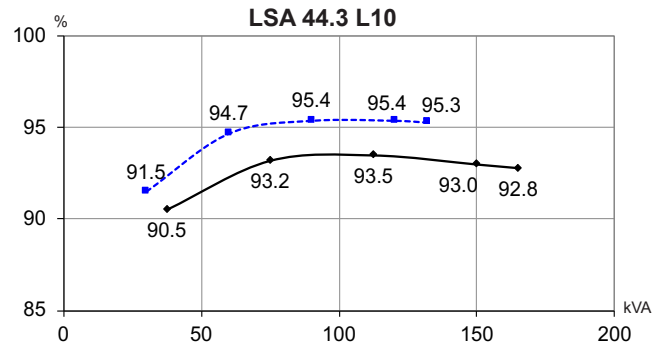
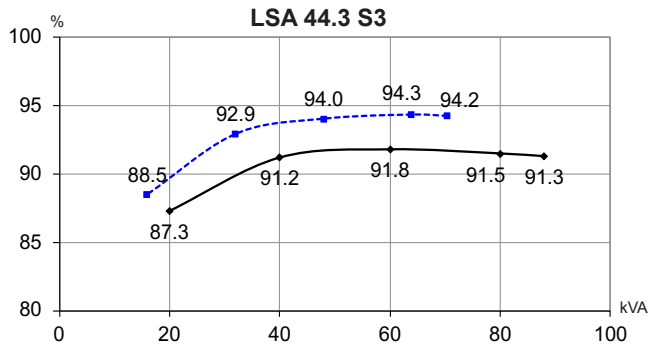
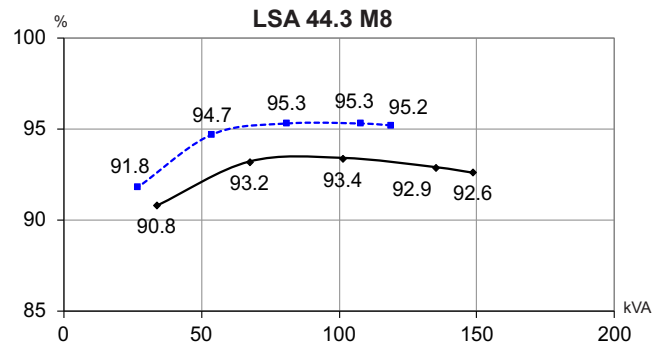
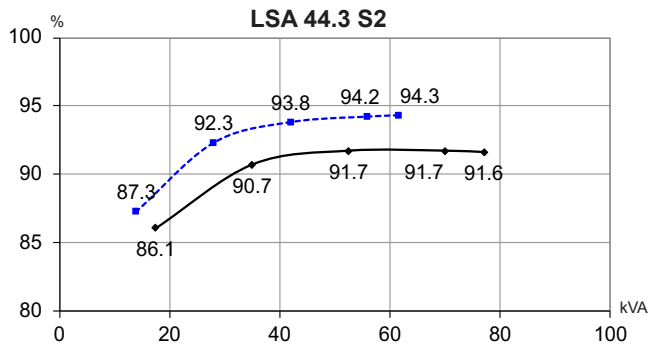
| kVA / kW * - P.F. = 0.8 |     |                      |      |      |       |      |                      |      |      |       |      |               |      |      |       |      |               |      |      |       |      |  |  |  |  |
|-------------------------|-----|----------------------|------|------|-------|------|----------------------|------|------|-------|------|---------------|------|------|-------|------|---------------|------|------|-------|------|--|--|--|--|
| Duty/T°C                |     | Continuous duty/40°C |      |      |       |      | Continuous duty/40°C |      |      |       |      | Stand-by/40°C |      |      |       |      | Stand-by/27°C |      |      |       |      |  |  |  |  |
| Class/T°C               |     | 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 |  |  |  |  |
| LSA 44.3 S2             | kVA | 70                   | 70   | 70   | 63    | 42   | 64                   | 64   | 64   | 57    | 38   | 74            | 74   | 74   | 67    | 45   | 77            | 77   | 77   | 69    | 46   |  |  |  |  |
|                         | kW  | 56                   | 56   | 56   | 50    | 33.5 | 51                   | 51   | 51   | 46    | 30.5 | 59            | 59   | 59   | 54    | 36   | 62            | 62   | 62   | 55    | 37   |  |  |  |  |
| LSA 44.3 S3             | kVA | 80                   | 80   | 80   | 72    | 48   | 73                   | 73   | 73   | 66    | 44   | 85            | 85   | 85   | 76    | 51   | 88            | 88   | 88   | 79    | 53   |  |  |  |  |
|                         | kW  | 64                   | 64   | 64   | 58    | 38.5 | 58                   | 58   | 58   | 53    | 35   | 68            | 68   | 68   | 61    | 41   | 70            | 70   | 70   | 63    | 42   |  |  |  |  |
| LSA 44.3 S4             | kVA | 90                   | 90   | 90   | 81    | 54   | 82                   | 82   | 82   | 74    | 49   | 95            | 95   | 95   | 86    | 57   | 100           | 100  | 100  | 89    | 59   |  |  |  |  |
|                         | kW  | 72                   | 72   | 72   | 65    | 43   | 66                   | 66   | 66   | 59    | 39   | 76            | 76   | 76   | 69    | 46   | 80            | 80   | 80   | 71    | 47   |  |  |  |  |
| LSA 44.3 S5             | kVA | 100                  | 100  | 100  | 90    | 60   | 91                   | 91   | 91   | 82    | 55   | 106           | 106  | 106  | 95    | 64   | 110           | 110  | 110  | 99    | 66   |  |  |  |  |
|                         | kW  | 80                   | 80   | 80   | 72    | 48   | 73                   | 73   | 73   | 66    | 44   | 85            | 85   | 85   | 76    | 51   | 88            | 88   | 88   | 79    | 53   |  |  |  |  |
| LSA 44.3 M6             | kVA | 125                  | 125  | 125  | 113   | 67   | 114                  | 114  | 114  | 103   | 61   | 133           | 133  | 133  | 120   | 71   | 138           | 138  | 138  | 124   | 74   |  |  |  |  |
|                         | kW  | 100                  | 100  | 100  | 90    | 54   | 91                   | 91   | 91   | 82    | 49   | 106           | 106  | 106  | 96    | 57   | 110           | 110  | 110  | 99    | 59   |  |  |  |  |
| LSA 44.3 M8             | kVA | 135                  | 135  | 135  | 122   | 73   | 123                  | 123  | 123  | 111   | 66   | 143           | 143  | 143  | 129   | 77   | 150           | 150  | 150  | 134   | 80   |  |  |  |  |
|                         | kW  | 108                  | 108  | 108  | 98    | 58   | 98                   | 98   | 98   | 89    | 53   | 114           | 114  | 114  | 103   | 62   | 120           | 120  | 120  | 107   | 64   |  |  |  |  |
| LSA 44.3 L10            | kVA | 150                  | 150  | 150  | 135   | 80   | 137                  | 137  | 137  | 123   | 73   | 159           | 159  | 159  | 143   | 85   | 165           | 165  | 165  | 149   | 88   |  |  |  |  |
|                         | kW  | 120                  | 120  | 120  | 108   | 64   | 110                  | 110  | 110  | 98    | 58   | 127           | 127  | 127  | 114   | 68   | 132           | 132  | 132  | 119   | 70   |  |  |  |  |
| LSA 44.3 L12            | kVA | 165                  | 165  | 165  | 138   | 88   | 150                  | 150  | 150  | 126   | 80   | 175           | 175  | 175  | 150   | 93   | 182           | 182  | 182  | 157   | 97   |  |  |  |  |
|                         | kW  | 132                  | 132  | 132  | 110   | 70   | 120                  | 120  | 120  | 101   | 64   | 140           | 140  | 140  | 120   | 74   | 146           | 146  | 146  | 126   | 78   |  |  |  |  |
| LSA 44.3 VL13           | kVA | 180                  | 180  | 180  | 171   | 90   | 164                  | 164  | 164  | 156   | 82   | 191           | 191  | 191  | 181   | 95   | 200           | 200  | 200  | 188   | 99   |  |  |  |  |
|                         | kW  | 144                  | 144  | 144  | 137   | 72   | 131                  | 131  | 131  | 125   | 66   | 153           | 153  | 153  | 145   | 76   | 160           | 160  | 160  | 150   | 79   |  |  |  |  |
| LSA 44.3 VL14           | kVA | 192                  | 200  | 200  | 192   | 100  | 175                  | 182  | 182  | 175   | 91   | 204           | 212  | 212  | 204   | 106  | 211           | 220  | 220  | 211   | 110  |  |  |  |  |
|                         | kW  | 154                  | 160  | 160  | 154   | 80   | 140                  | 146  | 146  | 140   | 73   | 163           | 170  | 170  | 163   | 85   | 169           | 176  | 176  | 169   | 88   |  |  |  |  |

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

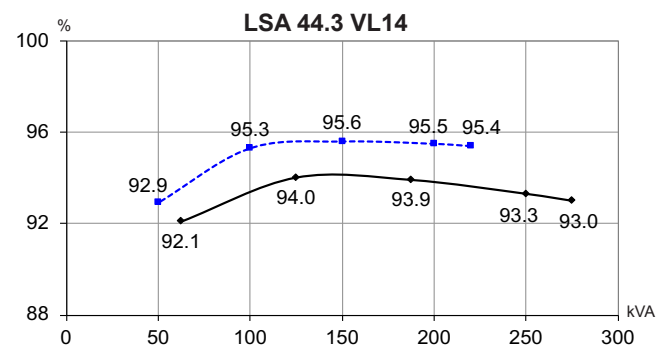
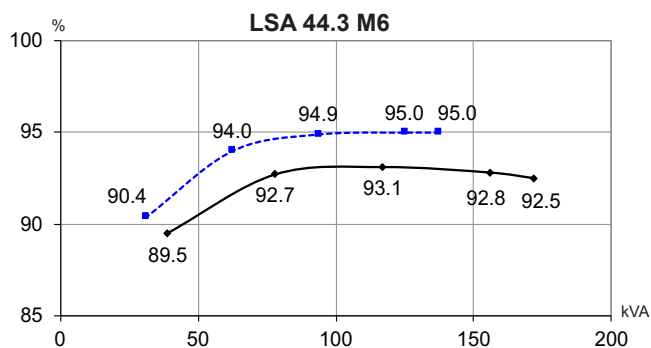
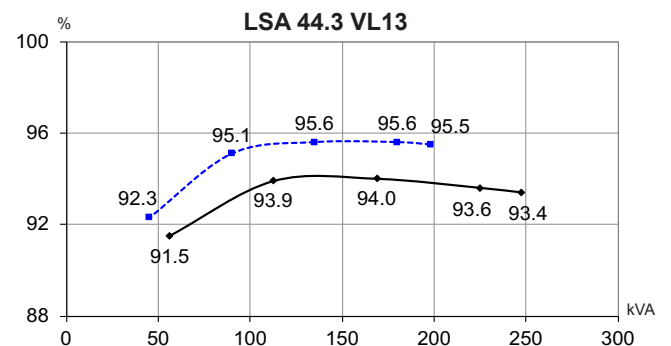
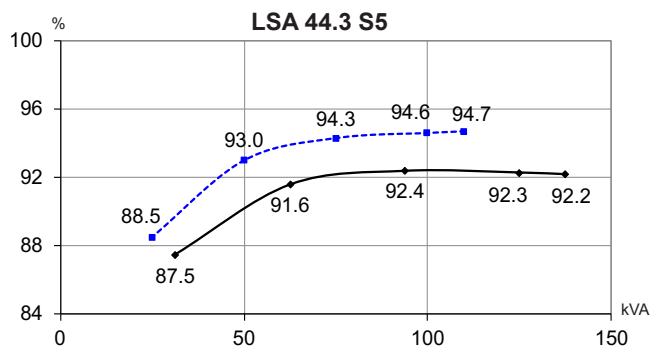
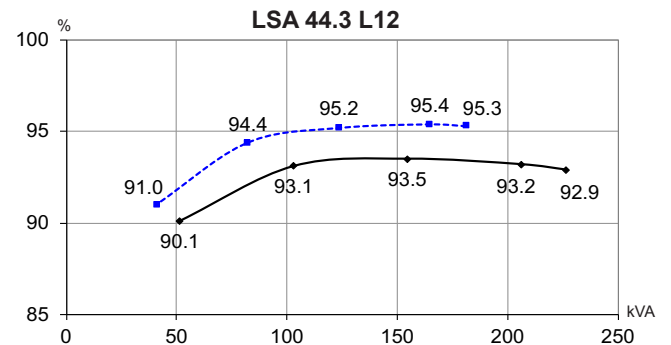
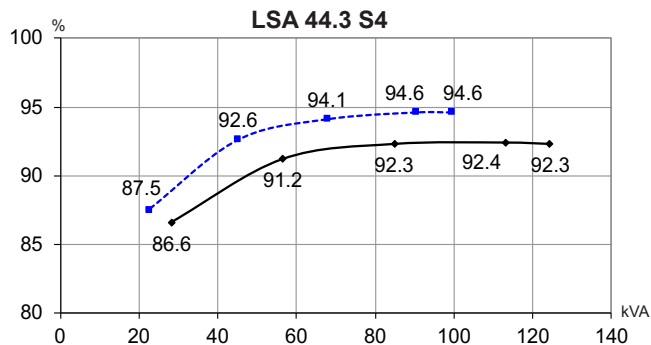
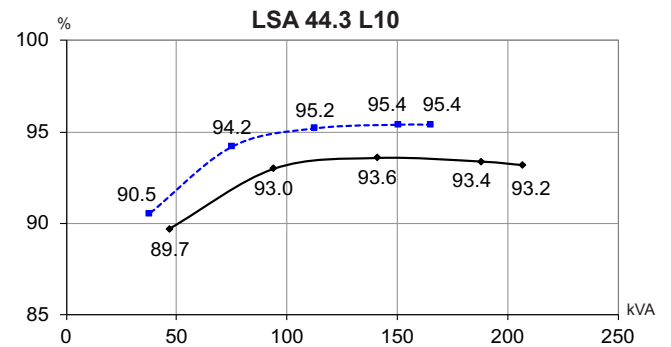
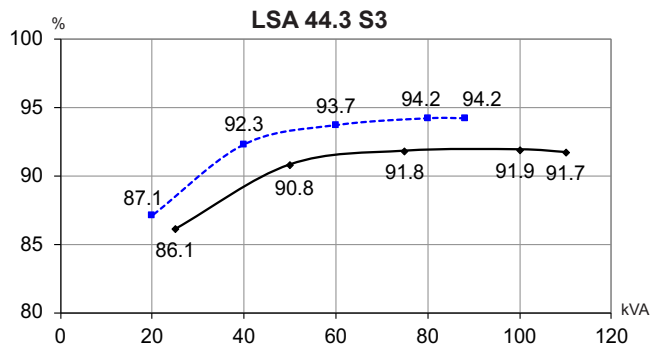
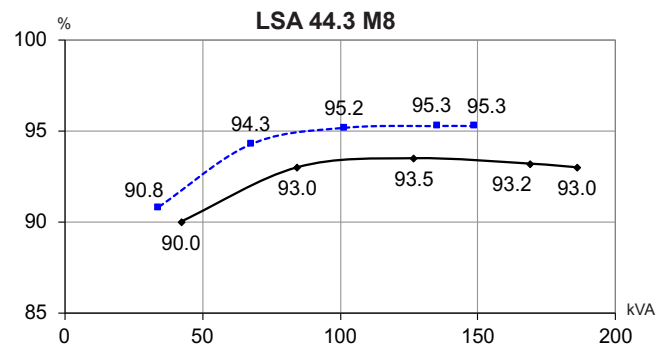
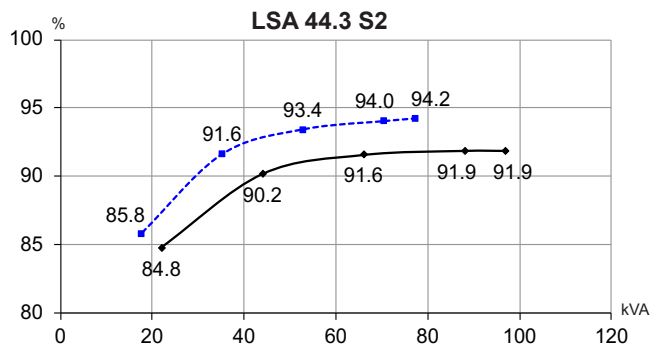
| kVA / kW * - P.F. = 0.8 |     |                      |      |      |       |      |                      |      |      |       |      |               |      |      |       |      |               |      |      |       |      |
|-------------------------|-----|----------------------|------|------|-------|------|----------------------|------|------|-------|------|---------------|------|------|-------|------|---------------|------|------|-------|------|
| 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 | 220V                 | 240V |      |       | 240V | 220V          | 240V |      |       | 240V | 220V          | 240V |      |       | 240V |
| YY                      |     |                      | 208V | 220V | 240V  |      |                      | 208V | 220V | 240V  |      |               | 208V | 220V | 240V  |      |               | 208V | 220V | 240V  |      |
| LSA 44.3 S2             | kVA | 69                   | 76   | 80   | 88    | 46   | 63                   | 69   | 73   | 80    | 42   | 73            | 81   | 85   | 93    | 49   | 76            | 84   | 88   | 97    | 51   |
|                         | kW  | 55                   | 61   | 64   | 70    | 37   | 50                   | 55   | 58   | 64    | 33.5 | 58            | 65   | 68   | 74    | 39   | 61            | 67   | 70   | 78    | 41   |
| LSA 44.3 S3             | kVA | 79                   | 87   | 92   | 100   | 52   | 72                   | 79   | 84   | 91    | 47   | 84            | 92   | 98   | 106   | 55   | 87            | 96   | 101  | 110   | 57   |
|                         | kW  | 63                   | 70   | 74   | 80    | 42   | 58                   | 63   | 67   | 73    | 37.5 | 67            | 74   | 78   | 85    | 44   | 70            | 77   | 81   | 88    | 46   |
| LSA 44.3 S4             | kVA | 89                   | 98   | 103  | 113   | 59   | 81                   | 89   | 94   | 103   | 54   | 94            | 104  | 109  | 120   | 63   | 98            | 108  | 113  | 124   | 65   |
|                         | kW  | 71                   | 78   | 82   | 90    | 47   | 65                   | 71   | 75   | 82    | 43   | 75            | 83   | 87   | 96    | 50   | 78            | 86   | 90   | 99    | 52   |
| LSA 44.3 S5             | kVA | 99                   | 108  | 115  | 125   | 65   | 90                   | 99   | 105  | 114   | 59   | 105           | 114  | 122  | 133   | 69   | 109           | 119  | 127  | 138   | 72   |
|                         | kW  | 79                   | 86   | 92   | 100   | 52   | 72                   | 79   | 84   | 91    | 47   | 84            | 91   | 98   | 106   | 55   | 87            | 95   | 102  | 110   | 58   |
| LSA 44.3 M6             | kVA | 124                  | 135  | 143  | 156   | 76   | 113                  | 123  | 130  | 142   | 69   | 131           | 143  | 152  | 165   | 81   | 136           | 149  | 157  | 172   | 84   |
|                         | kW  | 99                   | 108  | 114  | 125   | 61   | 90                   | 98   | 104  | 114   | 55   | 105           | 114  | 122  | 132   | 65   | 109           | 119  | 126  | 138   | 67   |
| LSA 44.3 M8             | kVA | 134                  | 146  | 155  | 169   | 81   | 122                  | 133  | 141  | 154   | 74   | 142           | 155  | 164  | 179   | 86   | 147           | 161  | 171  | 186   | 89   |
|                         | kW  | 107                  | 117  | 124  | 135   | 65   | 98                   | 106  | 113  | 123   | 59   | 114           | 124  | 131  | 143   | 69   | 118           | 129  | 137  | 149   | 71   |
| LSA 44.3 L10            | kVA | 148                  | 163  | 172  | 188   | 95   | 135                  | 148  | 157  | 171   | 86   | 157           | 173  | 182  | 199   | 101  | 163           | 179  | 189  | 207   | 105  |
|                         | kW  | 118                  | 130  | 138  | 150   | 76   | 108                  | 118  | 126  | 137   | 69   | 126           | 138  | 146  | 159   | 81   | 130           | 143  | 151  | 166   | 84   |
| LSA 44.3 L12            | kVA | 165                  | 179  | 189  | 206   | 105  | 150                  | 163  | 172  | 187   | 96   | 175           | 190  | 200  | 218   | 111  | 182           | 197  | 208  | 227   | 116  |
|                         | kW  | 132                  | 143  | 151  | 165   | 84   | 120                  | 130  | 138  | 150   | 77   | 140           | 152  | 160  | 174   | 89   | 146           | 158  | 166  | 182   | 93   |
| LSA 44.3 VL13           | kVA | 180                  | 195  | 210  | 225   | 113  | 164                  | 177  | 191  | 205   | 102  | 191           | 207  | 223  | 239   | 119  | 200           | 215  | 231  | 250   | 124  |
|                         | kW  | 144                  | 156  | 168  | 180   | 90   | 131                  | 142  | 153  | 164   | 82   | 153           | 166  | 178  | 191   | 95   | 160           | 172  | 185  | 200   | 99   |
| LSA 44.3 VL14           | kVA | 200                  | 215  | 230  | 250   | 125  | 182                  | 196  | 209  | 228   | 114  | 212           | 228  | 244  | 265   | 133  | 220           | 237  | 253  | 275   | 136  |
|                         | kW  | 160                  | 172  | 184  | 200   | 100  | 146                  | 157  | 167  | 182   | 91   | 170           | 182  | 195  | 212   | 106  | 176           | 190  | 202  | 220   | 109  |

\* Values are rounded-off and are subject to change without notice by the manufacturer.

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



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



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

|                                                              | <b>S2</b> | <b>S3</b> | <b>S4</b> | <b>S5</b> | <b>M6</b> | <b>M8</b> | <b>L10</b> | <b>L12</b> | <b>VL13</b> | <b>VL14</b> |
|--------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|-------------|-------------|
| <b>Kcc</b> Short-circuit ratio                               | 0.68      | 0.59      | 0.61      | 0.55      | 0.45      | 0.44      | 0.49       | 0.44       | 0.37        | 0.33        |
| <b>Xd</b> Direct-axis synchro. reactance unsaturated         | 239       | 273       | 258       | 287       | 329       | 323       | 305        | 335        | 343         | 381         |
| <b>Xq</b> Quadrature-axis synchro. reactance unsaturated     | 121       | 139       | 131       | 146       | 167       | 165       | 155        | 171        | 175         | 194         |
| <b>T'do</b> No-load transient time constant                  | 2308      | 2308      | 2211      | 2211      | 2154      | 2112      | 2077       | 2077       | 2025        | 2025        |
| <b>X'd</b> Direct-axis transient reactance saturated         | 10.3      | 11.8      | 11.6      | 12.9      | 15.2      | 15.3      | 14.6       | 16.1       | 16.9        | 18.8        |
| <b>T'd</b> Short-circuit transient time constant             | 100       | 100       | 100       | 100       | 100       | 100       | 100        | 100        | 100         | 100         |
| <b>X''d</b> Direct-axis subtransient reactance saturated     | 6.2       | 7         | 7         | 7.7       | 9.1       | 9.1       | 8.8        | 9.6        | 10.1        | 11.3        |
| <b>T''d</b> Subtransient time constant                       | 10        | 10        | 10        | 10        | 10        | 10        | 10         | 10         | 10          | 10          |
| <b>X''q</b> Quadrature-axis subtransient reactance saturated | 13.2      | 15.1      | 14.5      | 16.1      | 18.6      | 18.3      | 17.4       | 19.1       | 19.7        | 21.9        |
| <b>Xo</b> Zero sequence reactance                            | 0.43      | 0.49      | 0.48      | 0.54      | 0.63      | 0.63      | 0.61       | 0.67       | 0.7         | 0.78        |
| <b>X2</b> Negative sequence reactance saturated              | 9.74      | 11.13     | 10.75     | 11.95     | 13.89     | 13.78     | 13.11      | 14.42      | 14.96       | 16.62       |
| <b>Ta</b> Armature time constant                             | 15        | 15        | 15        | 15        | 15        | 15        | 15         | 15         | 15          | 15          |

**Other class H / 400 V data**

|                                                                                |      |      |      |      |      |      |      |       |       |       |
|--------------------------------------------------------------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| <b>io (A)</b> No-load excitation current SHUNT                                 | 0.75 | 0.75 | 0.73 | 0.73 | 0.66 | 0.62 | 0.67 | 0.67  | 0.78  | 0.78  |
| <b>io (A)</b> No-load excitation current AREP                                  | 0.97 | 0.97 | 0.94 | 0.94 | 0.85 | 0.81 | 0.86 | 0.86  | 0.78  | 0.78  |
| <b>ic (A)</b> On-load excitation current SHUNT                                 | 2.07 | 2.33 | 2.11 | 2.31 | 2.47 | 2.37 | 2.45 | 2.71  | 3.17  | 3.53  |
| <b>ic (A)</b> On-load excitation current AREP                                  | 2.67 | 3    | 2.71 | 2.98 | 3.18 | 3.05 | 3.15 | 3.49  | 3.17  | 3.53  |
| <b>uc (V)</b> On-load excitation voltage SHUNT                                 | 23.1 | 25.8 | 26.5 | 28.9 | 30.6 | 29.3 | 29.9 | 32.7  | 16.2  | 17.9  |
| <b>uc (V)</b> On-load excitation voltage AREP                                  | 18.6 | 20.7 | 21.3 | 23.2 | 24.5 | 23.5 | 24   | 26.3  | 16.2  | 17.9  |
| <b>ms</b> Response time ( $\Delta U = 20\%$ transient)                         | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500   | 500   | 500   |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT* | 184  | 184  | 292  | 293  | 310  | 334  | 371  | 379   | 487   | 487   |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*  | 222  | 221  | 344  | 344  | 366  | 400  | 414  | 414   | 545   | 545   |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>   | 13.3 | 14.5 | 11.6 | 12.4 | 13.8 | 13.8 | 13.4 | 14.3  | 13    | 13.9  |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>    | 11.8 | 12.9 | 10.4 | 11.1 | 12.3 | 12.3 | 12   | 12.7  | 11.6  | 12.4  |
| <b>W</b> No-load losses                                                        | 2174 | 2174 | 2396 | 2396 | 2387 | 2478 | 2894 | 2946  | 2670  | 2670  |
| <b>W</b> Heat dissipation                                                      | 5025 | 5892 | 6073 | 6935 | 8254 | 8251 | 8914 | 10236 | 10165 | 11933 |

\* P.F. = 0.6

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

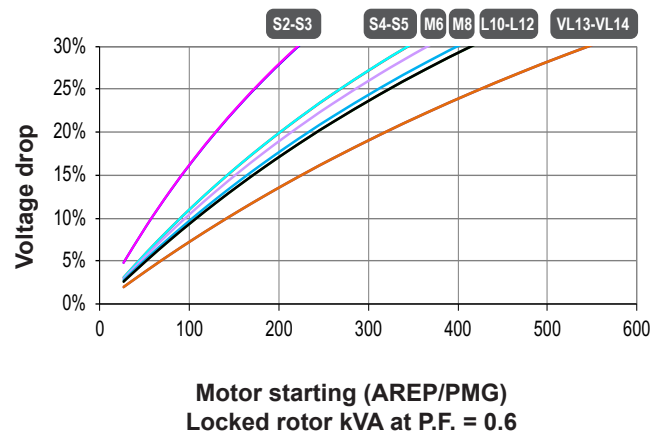
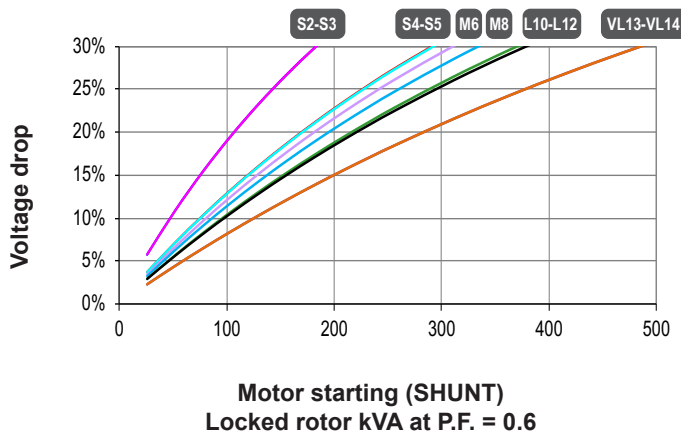
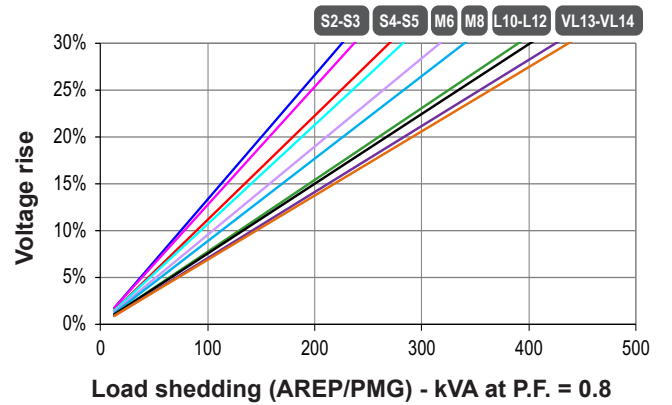
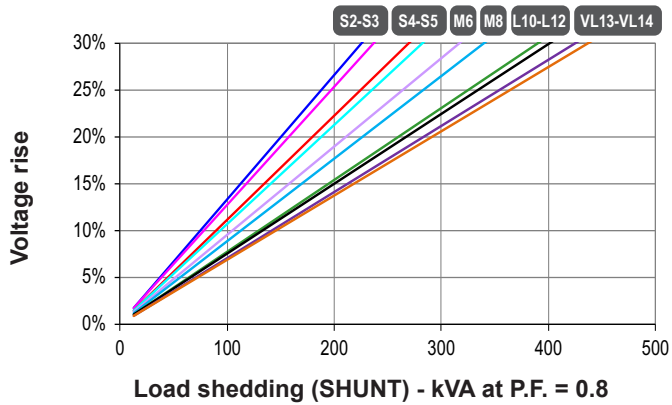
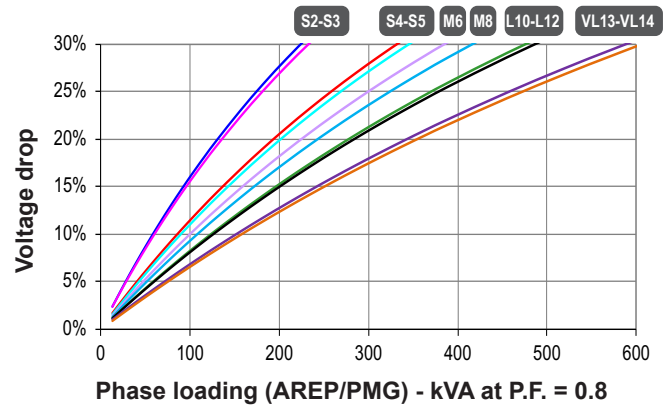
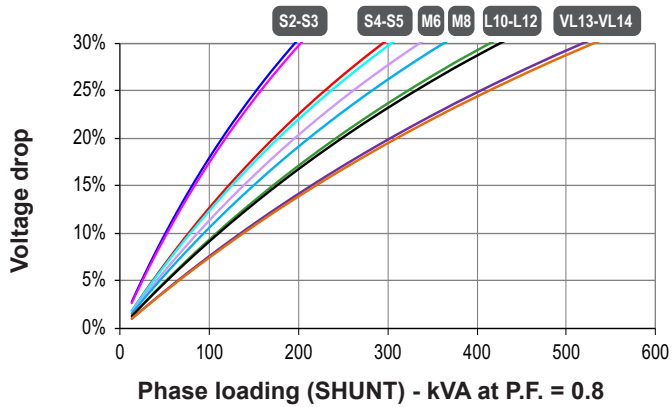
|                                                              | S2   | S3    | S4    | S5    | M6    | M8    | L10  | L12  | VL13  | VL14  |
|--------------------------------------------------------------|------|-------|-------|-------|-------|-------|------|------|-------|-------|
| <b>Kcc</b> Short-circuit ratio                               | 0.65 | 0.57  | 0.58  | 0.53  | 0.43  | 0.42  | 0.47 | 0.43 | 0.36  | 0.32  |
| <b>Xd</b> Direct-axis synchro. reactance unsaturated         | 250  | 284   | 270   | 299   | 342   | 337   | 318  | 349  | 358   | 397   |
| <b>Xq</b> Quadrature-axis synchro. reactance unsaturated     | 127  | 145   | 137   | 152   | 174   | 172   | 162  | 178  | 182   | 202   |
| <b>T'do</b> No-load transient time constant                  | 2308 | 2308  | 2211  | 2211  | 2154  | 2112  | 2077 | 2077 | 2025  | 2025  |
| <b>X'd</b> Direct-axis transient reactance saturated         | 10.8 | 12.3  | 12.2  | 13.5  | 15.8  | 15.9  | 15.3 | 16.8 | 17.6  | 19.6  |
| <b>T'd</b> Short-circuit transient time constant             | 100  | 100   | 100   | 100   | 100   | 100   | 100  | 100  | 100   | 100   |
| <b>X''d</b> Direct-axis subtransient reactance saturated     | 6.5  | 7.3   | 7.3   | 8.1   | 9.5   | 9.5   | 9.2  | 10   | 10.6  | 11.7  |
| <b>T''d</b> Subtransient time constant                       | 10   | 10    | 10    | 10    | 10    | 10    | 10   | 10   | 10    | 10    |
| <b>X''q</b> Quadrature-axis subtransient reactance saturated | 13.9 | 15.7  | 15.1  | 16.7  | 19.3  | 19.1  | 18.1 | 19.9 | 20.5  | 22.8  |
| <b>Xo</b> Zero sequence reactance                            | 0.45 | 0.51  | 0.5   | 0.56  | 0.66  | 0.66  | 0.63 | 0.7  | 0.73  | 0.81  |
| <b>X2</b> Negative sequence reactance saturated              | 10.2 | 11.59 | 11.25 | 12.44 | 14.44 | 14.37 | 13.7 | 15   | 15.59 | 17.32 |
| <b>Ta</b> Armature time constant                             | 15   | 15    | 15    | 15    | 15    | 15    | 15   | 15   | 15    | 15    |

**Other class H / 480 V data**

|                                                                                |      |      |      |      |      |      |       |       |       |       |
|--------------------------------------------------------------------------------|------|------|------|------|------|------|-------|-------|-------|-------|
| <b>io (A)</b> No-load excitation current SHUNT                                 | 0.75 | 0.75 | 0.73 | 0.73 | 0.66 | 0.62 | 0.67  | 0.67  | 0.77  | 0.77  |
| <b>io (A)</b> No-load excitation current AREP                                  | 0.97 | 0.97 | 0.94 | 0.94 | 0.85 | 0.81 | 0.86  | 0.86  | 0.77  | 0.77  |
| <b>ic (A)</b> On-load excitation current SHUNT                                 | 2.08 | 2.31 | 2.13 | 2.32 | 2.47 | 2.38 | 2.44  | 2.68  | 3.21  | 3.56  |
| <b>ic (A)</b> On-load excitation current AREP                                  | 2.67 | 2.98 | 2.75 | 2.99 | 3.18 | 3.06 | 3.14  | 3.45  | 3.21  | 3.56  |
| <b>uc (V)</b> On-load excitation voltage SHUNT                                 | 23.5 | 26   | 27   | 29.4 | 31   | 29.7 | 30.3  | 33    | 16.6  | 18.3  |
| <b>uc (V)</b> On-load excitation voltage AREP                                  | 18.8 | 20.8 | 21.7 | 23.6 | 24.9 | 23.9 | 24.3  | 26.5  | 16.6  | 18.3  |
| <b>ms</b> Response time ( $\Delta U = 20\%$ transient)                         | 500  | 500  | 500  | 500  | 500  | 500  | 500   | 500   | 500   | 500   |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) SHUNT* | 220  | 222  | 352  | 351  | 374  | 403  | 465   | 466   | 589   | 587   |
| <b>kVA</b> Start ( $\Delta U = 20\%$ cont. or $\Delta U = 30\%$ trans.) AREP*  | 265  | 265  | 422  | 423  | 446  | 481  | 541   | 544   | 708   | 706   |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) SHUNT - P.F.: 0.8 <sub>LAG</sub>   | 13.7 | 14.9 | 12   | 12.7 | 14.1 | 14.2 | 13.8  | 14.7  | 13.3  | 14.3  |
| <b>%</b> Transient $\Delta U$ (on-load 4/4) AREP - P.F.: 0.8 <sub>LAG</sub>    | 12.2 | 13.2 | 10.7 | 11.4 | 12.6 | 12.6 | 12.3  | 13    | 11.9  | 12.7  |
| <b>W</b> No-load losses                                                        | 3188 | 3188 | 3501 | 3501 | 3506 | 3639 | 4217  | 4308  | 3928  | 3928  |
| <b>W</b> Heat dissipation                                                      | 6152 | 7047 | 7349 | 8241 | 9669 | 9747 | 10581 | 11988 | 12155 | 14140 |

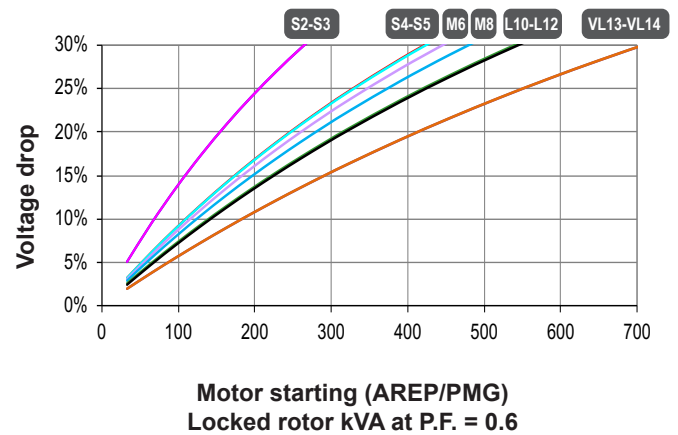
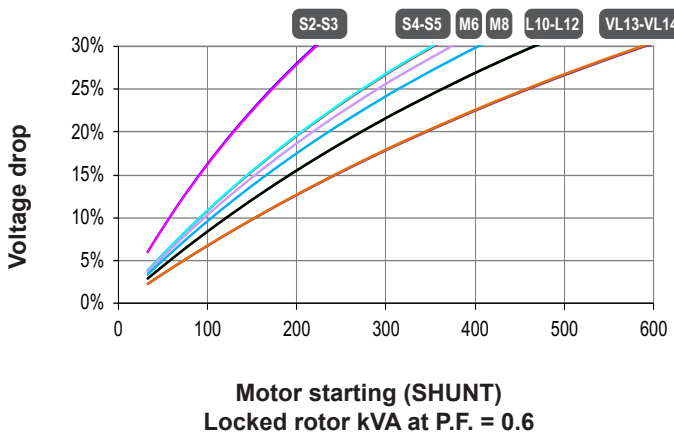
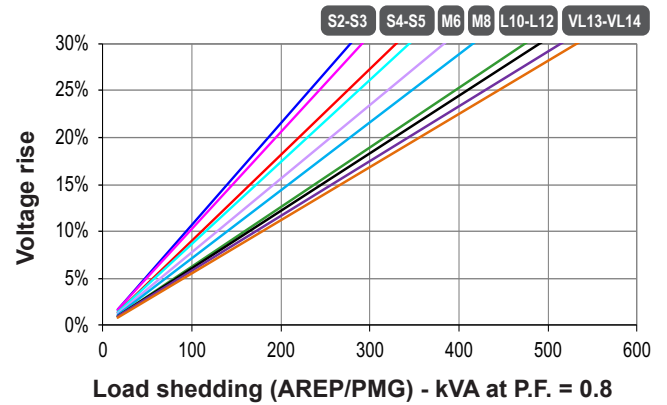
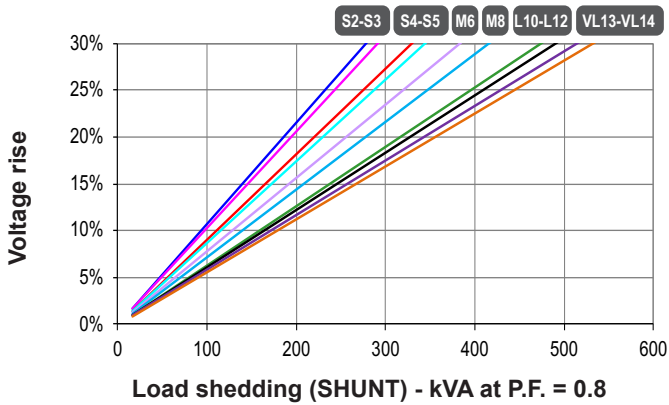
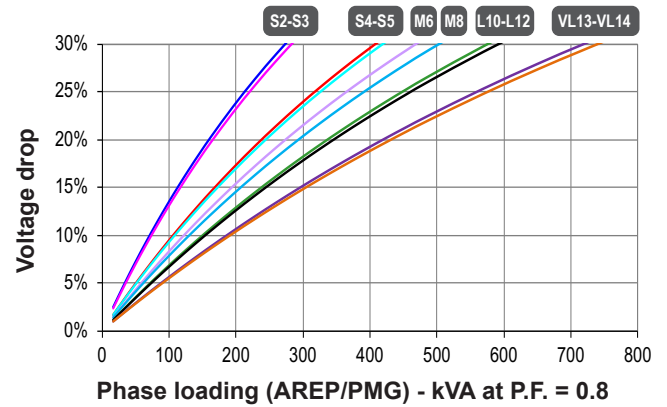
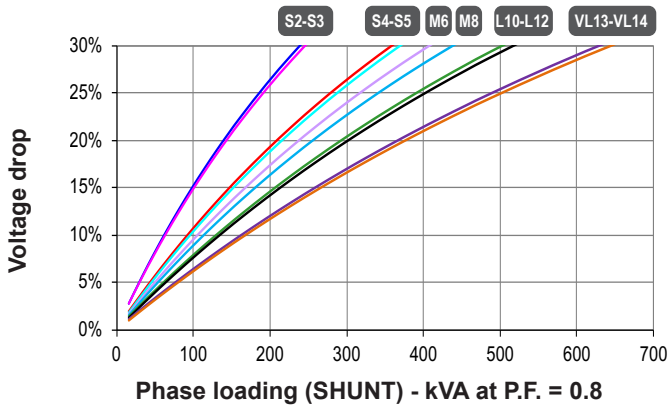
\* P.F. = 0.6

## Transient voltage variation 400V - 50 Hz



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

## Transient voltage variation 480V - 60 Hz

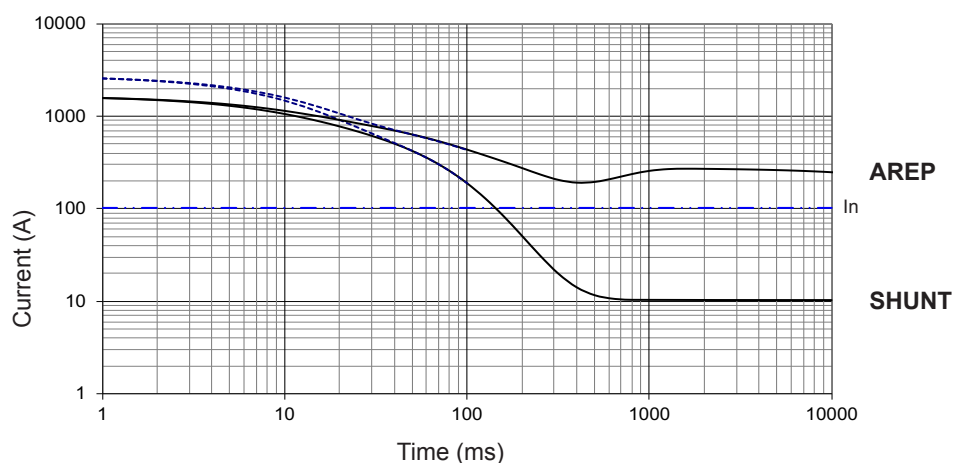


- 1) For a starting P.F. other than 0.6, the starting kVA must be multiplied by  $K = \text{Sine P.F.} / 0.6$
- 2) For voltages other than 480V (Y), 277V ( $\Delta$ ), 240V (YY) at 60 Hz, then kVA must be multiplied by  $(480/U)^2$  or  $(277/U)^2$  or  $(240/U)^2$ .

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

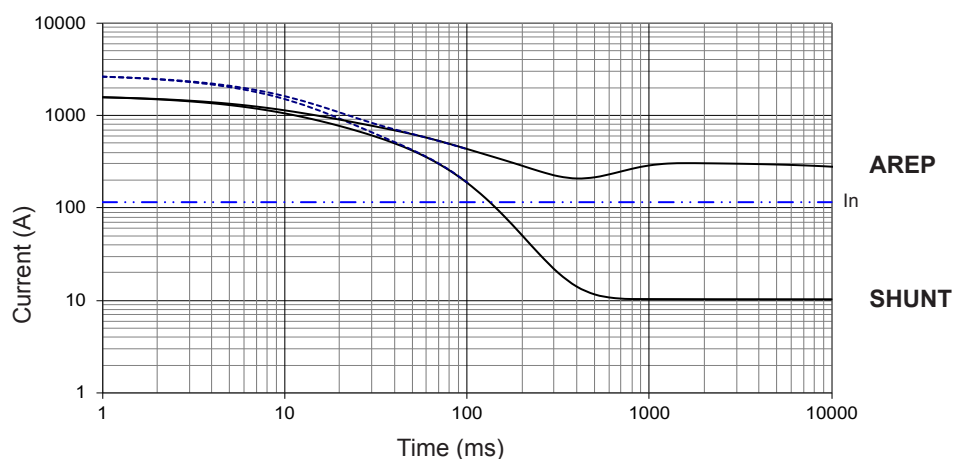
#### LSA 44.3 S2

Symmetrical —  
Asymmetrical - - -



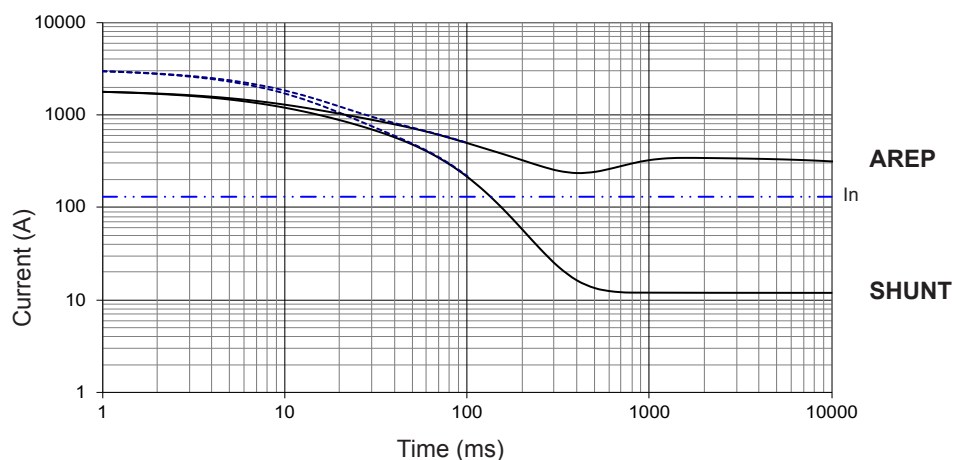
#### LSA 44.3 S3

Symmetrical —  
Asymmetrical - - -



#### LSA 44.3 S4

Symmetrical —  
Asymmetrical - - -



#### Influence due to connection

Curves shown are for star (Y) connection.

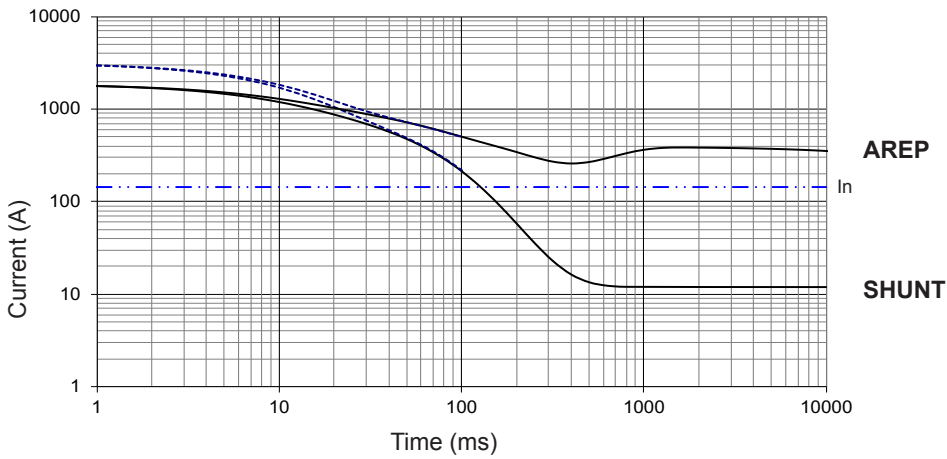
For other connections, use the following multiplication factors:

- 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)

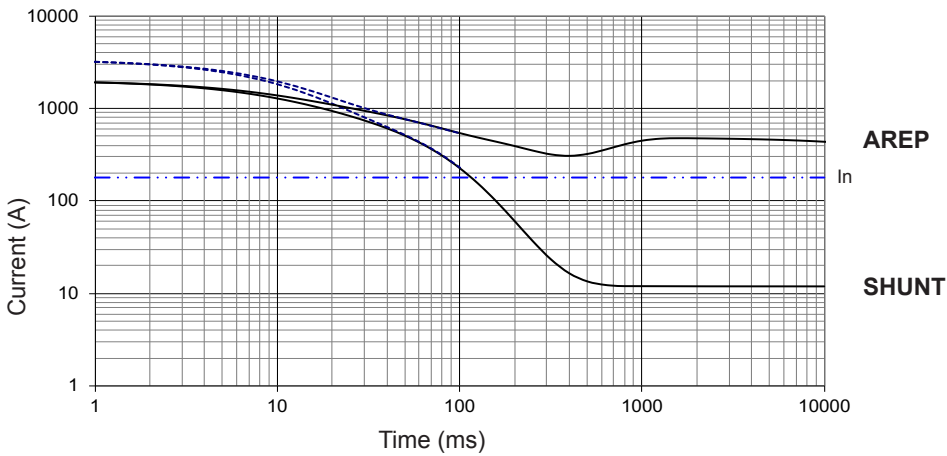
LSA 44.3 S5

Symmetrical —  
Asymmetrical - - -



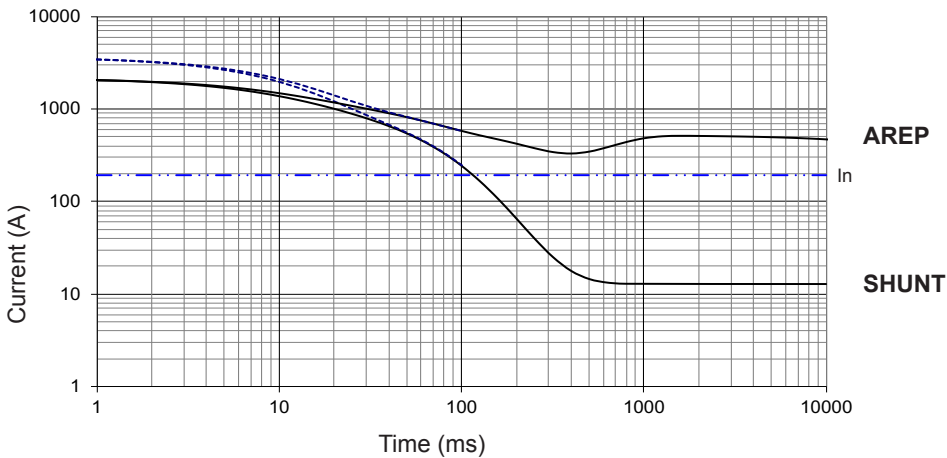
LSA 44.3 M6

Symmetrical —  
Asymmetrical - - -



LSA 44.3 M8

Symmetrical —  
Asymmetrical - - -



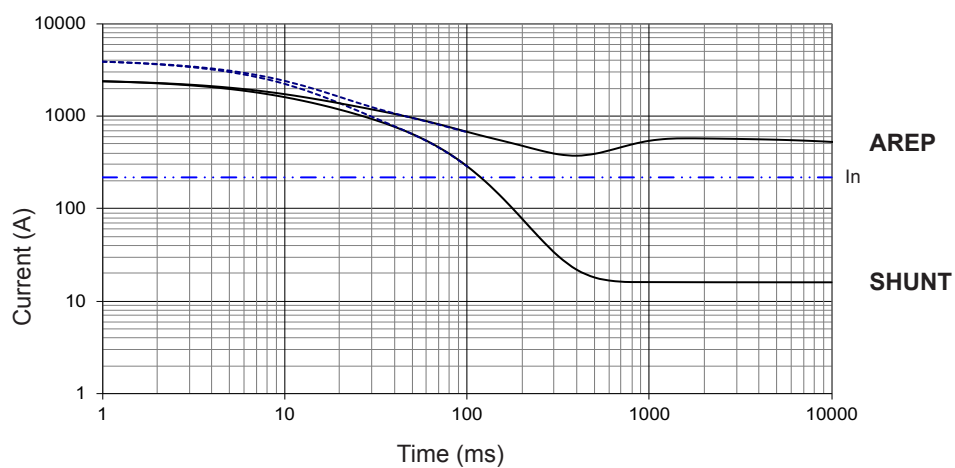
**Influence due to short-circuit**  
Curves are based on a three-phase short-circuit.  
For other types of short-circuit, use the following multiplication factors.

|                             | 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 (AREP/PMG) | 10 sec. | 5 sec.      | 2 sec.      |

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

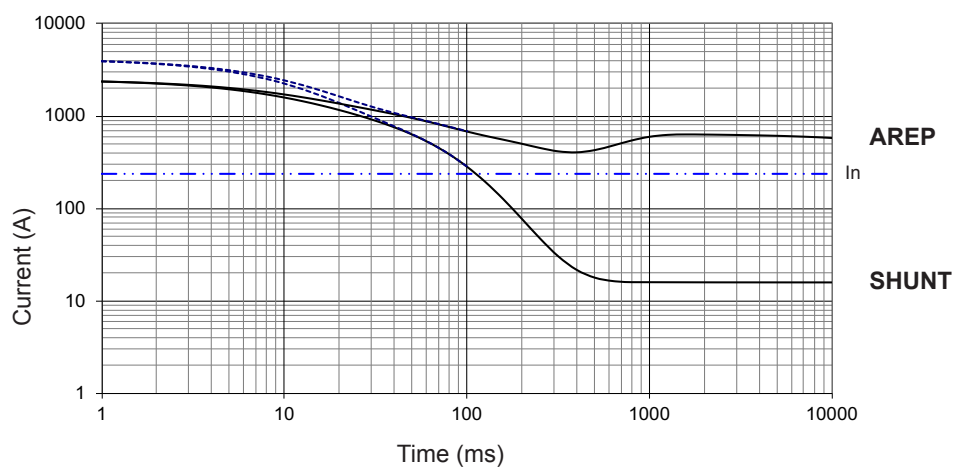
#### LSA 44.3 L10

Symmetrical —  
Asymmetrical - - -



#### LSA 44.3 L12

Symmetrical —  
Asymmetrical - - -



#### Influence due to connection

Curves shown are for star (Y) connection.

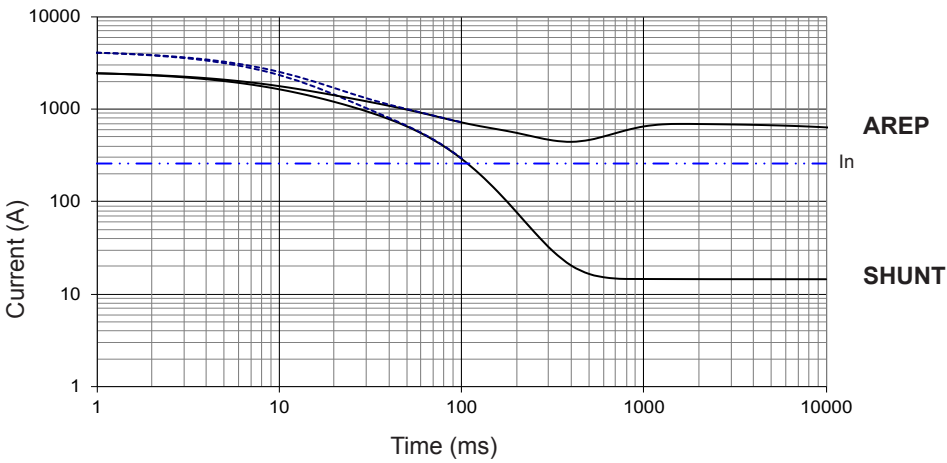
For other connections, use the following multiplication factors:

- 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)

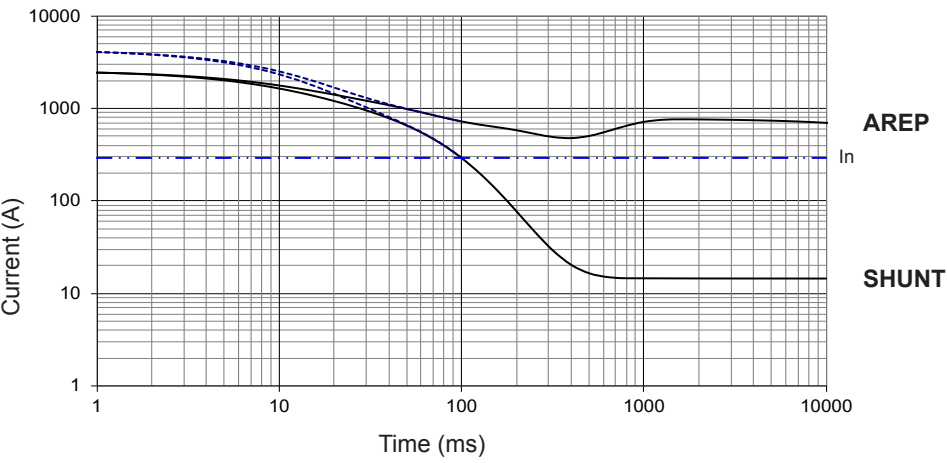
LSA 44.3 VL13

Symmetrical —  
Asymmetrical - - -



LSA 44.3 VL14

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 (AREP/PMG) | 10 sec. | 5 sec.      | 2 sec.      |





**LEROY-SOMER**<sup>TM</sup>

[www.leroy-somer.com/epg](http://www.leroy-somer.com/epg)

[Linkedin.com/company/leroy-somer](https://www.linkedin.com/company/leroy-somer)  
[Twitter.com/Leroy\\_Somer\\_en](https://twitter.com/Leroy_Somer_en)  
[Facebook.com/LeroySomer.Nidec.en](https://www.facebook.com/LeroySomer.Nidec.en)  
[YouTube.com/LeroySomerOfficiel](https://www.youtube.com/LeroySomerOfficiel)



**Nidec**  
All for dreams

© Nidec 2020. The information contained in this brochure is for guidance only and does not form part of any contract. The accuracy cannot be guaranteed as Nidec have an ongoing process of development and reserve the right to change the specification of their products without notice.

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.