



ottomotores

# CUMMINS SERIE QSL

Energía que Mueve al Mundo

## Definiciones

### Potencia Prime

Estos valores son aplicables para el suministro de energía eléctrica continua (a carga variable) en lugar de la red comercial + 10% sobrecarga

### Potencia Stand by

Estos valores son aplicables para el suministro de energía eléctrica continua (con carga variable) en caso de falla de la red comercial. No se permite sobrecarga sobre estos valores.

## Tabla de Potencias

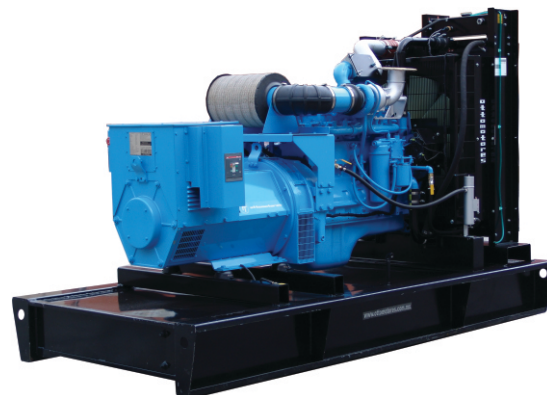
| Modelo | Voltaje  | kVA Prime | kWe Prime | kVA Stand-by | kWe Stand-by |
|--------|----------|-----------|-----------|--------------|--------------|
| CNY250 | 220-440V | 281       | 225       | 313          | 250          |
| CNY300 | 220-440V | 326       | 261       | 375          | 300          |

0.8 Factor de potencia



## Información Técnica

| Datos Técnicos  | CNY250               | CNY300               |
|---|----------------------|----------------------|
| <b>Frecuencia:</b>  | 60 Hz                | 60 Hz                |
| <b>Marca / Modelo</b>   | QSL9G3               | QSL9G5               |
| <b>Generador Modelo:</b>  | Stamford UCI274K     | Stamford HCI434D     |
| <b>Número de Cilindros:</b>   | 6 en línea           | 6 en línea           |
| <b>Diametro por Carrera :in (mm)</b>                                | 4.49X5.69 (114X145)  | 4.49X5.69 (114X145)  |
| <b>Relación de Compresión:</b>                                      | 16.8 : 1             | 16.8 : 1             |
| <b>Aspiración:</b>  | Turbo y Postenfriado | Turbo y Postenfriado |
| <b>Velocidad:</b>   | 1800 RPM             | 1800 RPM             |
| <b>Potencia: BHP(kWm)</b>   | 399 (298)            | 476 (355)            |
| <b>Presion Efectiva: psi (kPA)</b>                                  | 325 (2241)           | 387 (2668)           |
| <b>Velocidad dePiston: ft/min (m/s)</b>                             | 1707 (8.7)           | 1707 (8.7)           |
| <b>Consumo a plena carga: lt / hr - 100%</b>                        | 77                   | 89                   |
| <b>Calor Expulsado en el Sistema de Escape: BTU/min (kWm)</b>       | 16015 (285)          | 17175 (305)          |
| <b>Calor Expulsado en el Sistema de Enfriamiento: BTU/min (kWm)</b> | 3600 (65)            | 7705 (140)           |
| <b>Temperatura de Escape: °F (°C)</b>                               | 1105 (595)           | 1070 (580)           |
| <b>Flujo de Enfriamiento en el Radiador m³/seg - FPM</b>            | llame a fabrica      | llame a fabrica      |
| <b>Flujo de Escape: cfm</b>   | 2165 (1020)          | 1355 (640)           |



Nota: Imagen de carácter ilustrativa ya que los equipos en foto pudieran incluir accesorios opcionales

Como leer nuestro codigo: Ejem: CNY250

C=Motor Cummins  
N=Generador Newage Stamford  
Y=60Hz-1800 RPM  
250= Potencia del Equipo.



Ottomotores, S.A de C.V.

Calz. San Lorenzo No.1150  
Col. Cerro de la estrella, C.P. 09860  
Delg. Iztapalapa México, D.F.  
Tels:52-55-5624-5600

Fax: 52-55-5426-5521 / 52-55-5426-5581  
email: [ventas@ottomotores.com.mx](mailto:ventas@ottomotores.com.mx)

sitio web: [www.ottomotores.com.mx](http://www.ottomotores.com.mx)

## Dimensiones

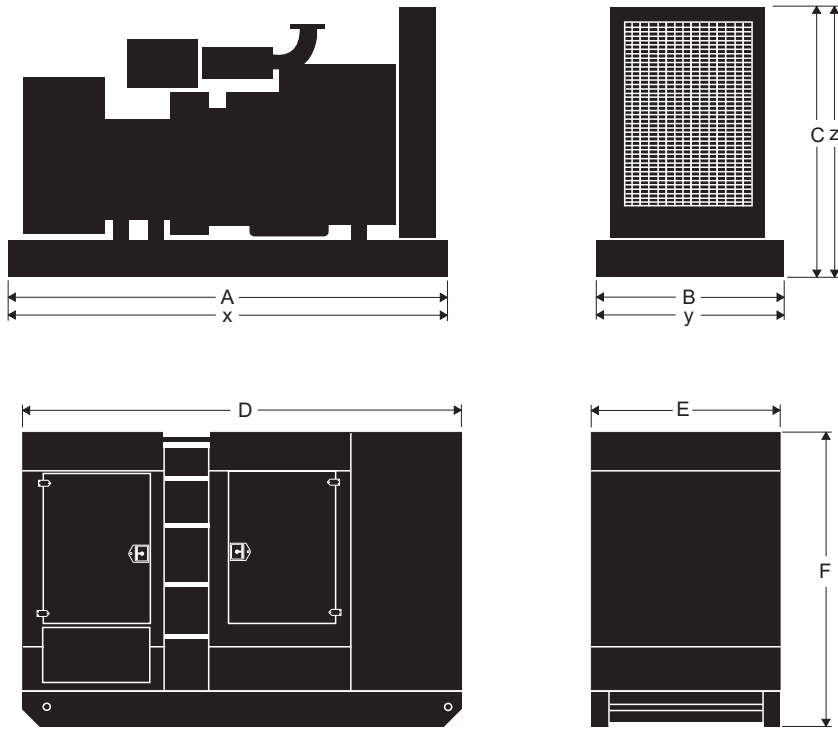


Tabla de Dimensiones

| Modelo | Equipo con Base Estructural |        |        | Equipo con Base Tanque |        |        | Equipo con Caseta Acústica* |        |        |
|--------|-----------------------------|--------|--------|------------------------|--------|--------|-----------------------------|--------|--------|
|        | A                           | B      | C      | x                      | y      | z      | D                           | E      | F      |
| CNY250 | 290,00                      | 110,00 | 181,00 | 320,00                 | 145,00 | 184,00 | 400,00                      | 145,00 | 205,00 |
|        | Peso: 1866,00 kgs           |        |        | Peso: 2522,00 kgs      |        |        |                             |        |        |
| CNY300 | 290,00                      | 110,00 | 181,00 | 320,00                 | 145,00 | 184,00 | 400,00                      | 145,00 | 205,00 |
|        | Peso: 2080,00 kgs           |        |        | Peso: 2805,00 kgs      |        |        |                             |        |        |

[\*] Equipo opcional

## Información Técnica

Nota: las condiciones de referencia estándar son de 25 °C (77 ° F) temperatura de entrada de aire. Todos los datos de desempeño de motores son basados en la potencia mencionada arriba.

Datos de consumo de combustible a plena carga con combustible diesel tienen una gravedad específica de 0,85.

Comercializado por:

## Módulos de Control



Ottomotores tiene una posición única en la fabricación de grupos electrógenos utilizando en ellos módulos de control que cumplen con todos los niveles de requerimiento del mercado nacional y de exportación.



Las diferentes soluciones de controles que se tienen para nuestra gama de plantas generadoras, permite una operación simple en modo manual y automático, así mismo permiten desarrollar proyectos de sincronía entre plantas generadoras o con la red de energía eléctrica.



La familia de módulos de control en transición abierta (DALE 3200) permite tener control en forma automática de la unidad de transferencia, así como el monitoreo del grupo generador.



Nuestro módulos de control cuentan con puerto de comunicación RS485 para la comunicación remota con el grupo generador.



Los módulos pueden ser monitoreados através de un excelente software para observar parámetros del equipo de manera fácil y rápida.



La familia de módulos de control para la sincronía (6100, 6050 y 6300), incorporan un amplio sistema de monitoreos además de conexión a Internet (LAN) o mensaje SMS vía celular, o usando los puertos de comunicación RS485 a través de ModBus



**ottomotores**

Energía que Mueve al Mundo

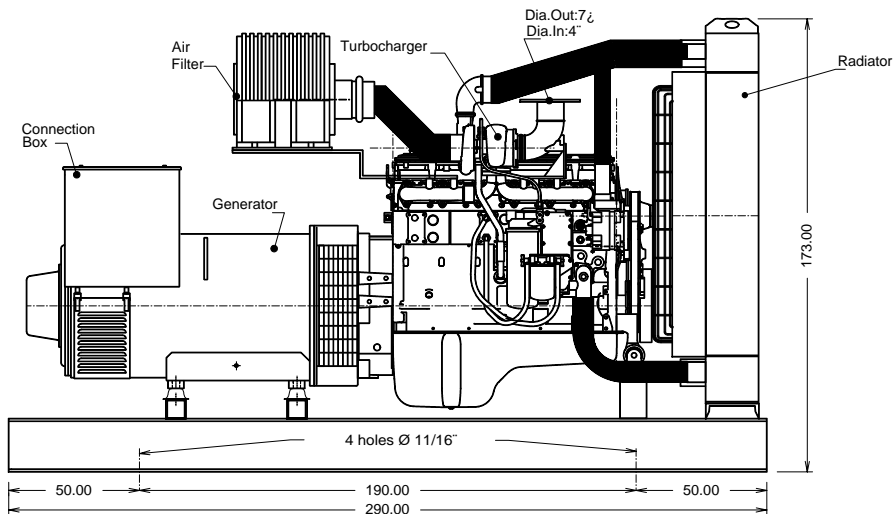
Calz. San Lorenzo No.1150  
Col. Cerro de la Estrella, C.P.09860  
Delegación Iztapalapa México D.F.  
Tels: 52-55-5624-5600  
Fax: 52-55-5426-55-21 / 52-55-54265581

E-mail [ventas1@ottomotores.com.mx](mailto:ventas1@ottomotores.com.mx)  
[ventas2@ottomotores.com.mx](mailto:ventas2@ottomotores.com.mx)

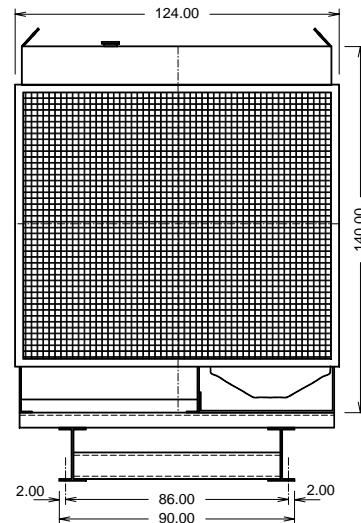
Web site. [www.ottomotores.com.mx](http://www.ottomotores.com.mx)

© Ottomotores se reserva el derecho de hacer cambios sin previo aviso con el fin de mejorar nuestros productos 2010

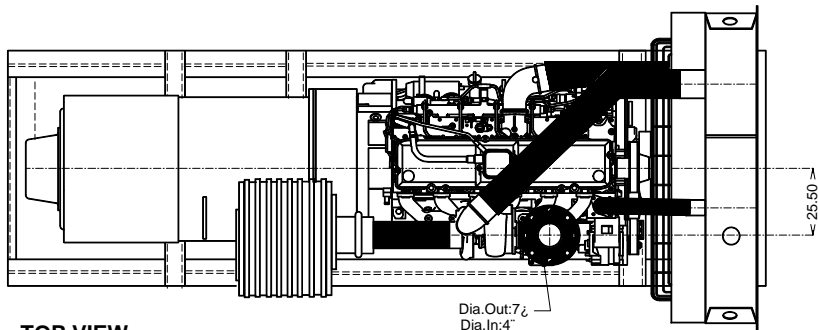
| MODELS |
|--------|
| CNY220 |
| CNY250 |
| CNY300 |
| CNE261 |
| CNE290 |
| CNE350 |



**SIDE VIEW**



**FRONT VIEW**



**TOP VIEW**

| DESCRIPTION    |                    |
|----------------|--------------------|
| RADIATOR:      | CM07 TM PAQ G5 300 |
| ENGINE:        | QSL9G2/G3/G5       |
| AIR FILTER:    | AH1135             |
| BASE FRAME:    | BP-QSL9G5-STF      |
| # SPRING AVMS: | 4 PZS              |

-THE GENSET DIMENSIONS ARE THE SAME BY FAMILY MODEL, THERE COULD BE ONLY DIFFERENCES ON THE ALTERNATOR LENGTH SEE SPECIFIC GENERAL ARRANGEMENT DRAWING OF CERTAIN MODEL  
 -TOTAL WEIGHT COULD VARY CHECK RATING CHART FOR EACH MODEL

|                |             |      |              |  |                     |                      |                      |       |
|----------------|-------------|------|--------------|--|---------------------|----------------------|----------------------|-------|
| Customer:      |             | S/O: |              | Title: <b>CUMMINS ENGINE QSL9G2/G3/G5 - STAMFORD ALTERNATOR</b>            |                     |                      |                      |       |
|                |             |      |              | Draw: R.G.C.   | Revised: F.H.M.     | Certificated: F.H.M. | Code: <b>CNEY-21</b> |       |
|                |             |      |              | Date: JAN 05th 2005  | Date: JAN 05th 2005 | Date: JAN 05th 2005  | Dept.: Engineering   |       |
|                |             |      |              |  |                     |                      | Marks: cms           | Draw: |
|                |             |      |              |  |                     |                      | Scale: s/s           | Of:   |
| Rev.           | Description | Date | Certificated |  |                     |                      |                      |       |
| <b>Reviews</b> |             |      |              | Otomotores keeps the right to change the information with out prior notice |                     |                      |                      |       |



# Cummins Inc.

Columbus, Indiana 47201

## Engine Data Sheet

Basic Engine Model:  
**QSL9-G3 NR3**

Curve Number:  
**FR-91996**

G-DRIVE  
**QSL  
1**

Engine Critical Parts List:  
**CPL: 41404**

Date:  
**31Mar06**

Displacement : **8.8 litre (543 in<sup>3</sup>)**

Bore : **114 mm (4.49 in.)** Stroke : **145 mm (5.69 in.)**

No. of Cylinders : **6**

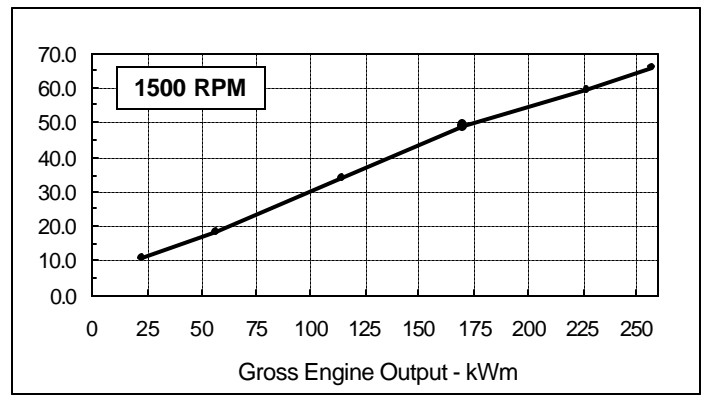
Aspiration : **Turbocharged and Charge Air Cooled**

| Engine Speed<br>RPM | Standby Power |     | Prime Power |     | Continuous Power |     |
|---------------------|---------------|-----|-------------|-----|------------------|-----|
|                     | kWm           | BHP | kWm         | BHP | kWm              | BHP |
| 1500                | 257           | 345 | 227         | 305 | 193              | 259 |
| 1800                | 297           | 399 | 262         | 352 | 223              | 299 |

### Engine Performance Data @ 1500 RPM

| OUTPUT POWER            |     |     | FUEL CONSUMPTION |              |                |                   |
|-------------------------|-----|-----|------------------|--------------|----------------|-------------------|
| %                       | kWm | BHP | kg/<br>kWm-h     | lb/<br>BHP-h | litre/<br>hour | U.S. Gal/<br>hour |
| <b>STANDBY POWER</b>    |     |     |                  |              |                |                   |
| 100                     | 257 | 345 | 0.217            | 0.357        | 66             | 17.3              |
| <b>PRIME POWER</b>      |     |     |                  |              |                |                   |
| 100                     | 227 | 305 | 0.221            | 0.364        | 59             | 15.6              |
| 75                      | 170 | 228 | 0.246            | 0.405        | 49             | 13.0              |
| 50                      | 114 | 152 | 0.253            | 0.416        | 34             | 8.9               |
| 25                      | 57  | 76  | 0.264            | 0.435        | 18             | 4.7               |
| <b>CONTINUOUS POWER</b> |     |     |                  |              |                |                   |
| 100                     | 193 | 259 | 0.234            | 0.386        | 53             | 14.1              |

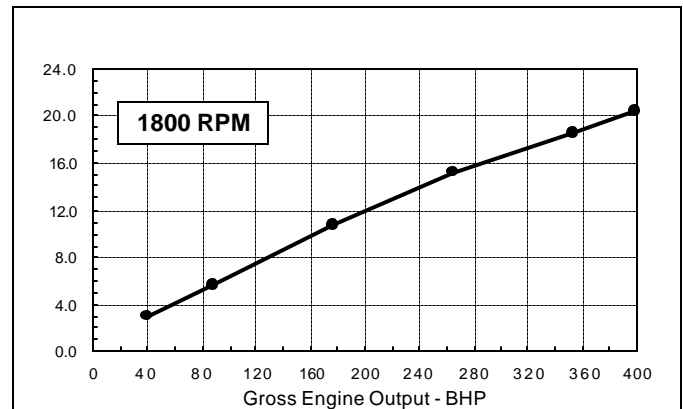
Litre/hour



### Engine Performance Data @ 1800 RPM

| OUTPUT POWER            |     |     | FUEL CONSUMPTION |              |                |                   |
|-------------------------|-----|-----|------------------|--------------|----------------|-------------------|
| %                       | kWm | BHP | kg/<br>kWm-h     | lb/<br>BHP-h | litre/<br>hour | U.S. Gal/<br>hour |
| <b>STANDBY POWER</b>    |     |     |                  |              |                |                   |
| 100                     | 297 | 399 | 0.221            | 0.364        | 77             | 20.4              |
| <b>PRIME POWER</b>      |     |     |                  |              |                |                   |
| 100                     | 262 | 352 | 0.226            | 0.373        | 70             | 18.5              |
| 75                      | 197 | 264 | 0.248            | 0.409        | 58             | 15.2              |
| 50                      | 131 | 176 | 0.266            | 0.437        | 41             | 10.8              |
| 25                      | 66  | 88  | 0.274            | 0.451        | 21             | 5.6               |
| <b>CONTINUOUS POWER</b> |     |     |                  |              |                |                   |
| 100                     | 223 | 299 | 0.241            | 0.396        | 63             | 16.7              |

U.S. Gallons / hour



#### CONVERSIONS: (litres = U.S. Gal x 3.785) (U.S. Gal = litres x 0.2642)

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **STANDBY POWER RATING:** Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency. **PRIME POWER RATING:** Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories: **UNLIMITED TIME RUNNING PRIME POWER:** Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year. **LIMITED TIME RUNNING PRIME POWER:** Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating. **CONTINUOUS POWER RATING:** Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

#### Data Subject to Change Without Notice

Reference AEB 10.47 for determining Electrical Output.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. Derates shown are based on 15 in H<sub>2</sub>O air intake restriction and 2 in Hg exhaust back pressure.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal). Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

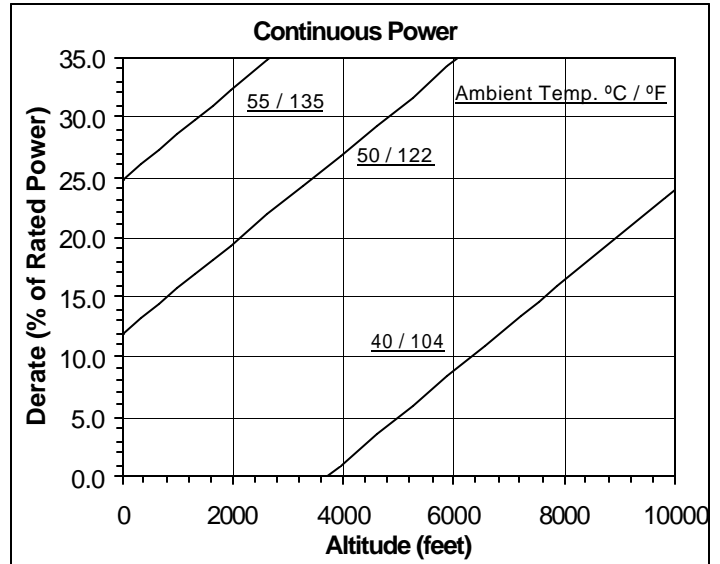
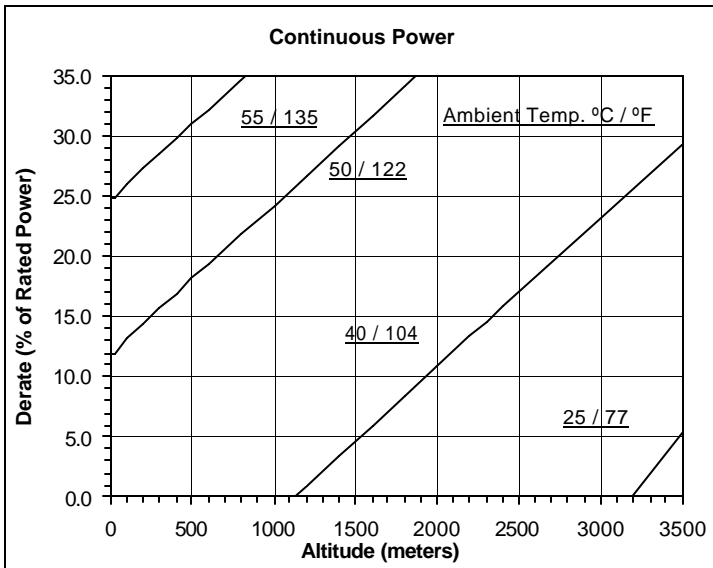
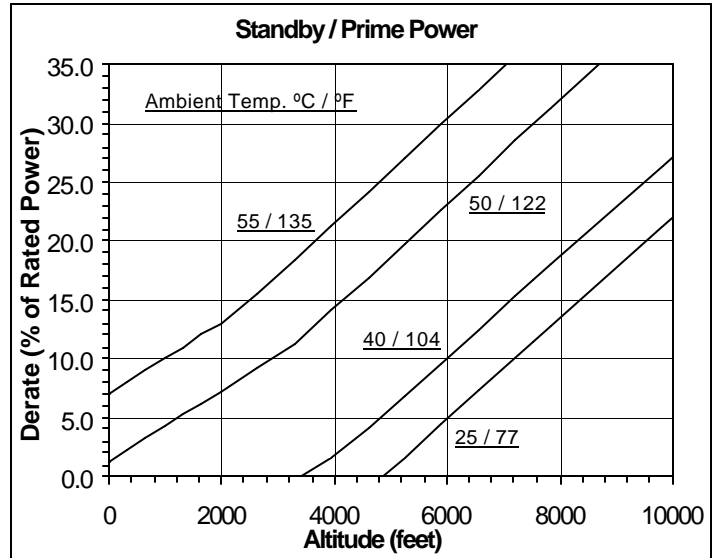
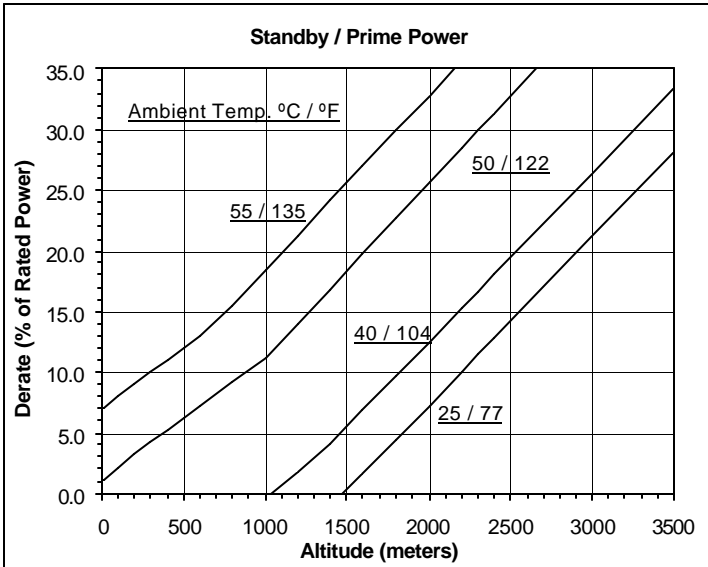
Data Status: --Limited Production--

Data Tolerance: ± 5%

Chief Engineer:

1500 RPM Derate Curves

1800 RPM Derate Curves



**Operation At Elevated Temperature And Altitude:**

For **Standby/Prime operation** above these conditions, derate by an additional 5.0% per 300 m (1000 ft), and 15% per 10° C (18° F).

For **Continuous operation** above these conditions, derate by an additional 4.0% per 300 m (1000 ft), and 25% per 10° C (18° F).

**Operation At Elevated Temperature And Altitude:**

For **Standby/Prime operation** above these conditions, derate by an additional 5.0% per 300 m (1000 ft), and 15% per 10° C (18° F).

For **Continuous operation** above these conditions, derate by an additional 4.0% per 300 m (1000 ft), and 25% per 10° C (18° F).

# Cummins Inc.

## Engine Data Sheet

ENGINE MODEL : **QSL9-G3 NR3** CONFIGURATION NUMBER : D563007GX03

DATA SHEET : DS41404

DATE : 31Mar06

PERFORMANCE CURVE : FR-91996

**INSTALLATION DIAGRAM**

• Fan to Flywheel : xxxxxxxx

**CPL NUMBER**

• Engine Critical Parts List : 41404

**GENERAL ENGINE DATA**

|   |                                     |
|---|-------------------------------------|
| Type .....  | 4-Cycle; In-line; 6-Cylinder Diesel |
| Aspiration .....                                    | Turbocharged and Charge Air Cooled  |
| Bore x Stroke .....                                 | 4.49 x 5.69 (114 x 145)             |
| Displacement .....                                  | 543 (8.8)                           |
| Compression Ratio .....                             | 16.8 : 1                            |
| Dry Weight  |                                     |
| Fan to Flywheel Engine .....                        | 1575 (714)                          |
| Wet Weight  |                                     |
| Fan to Flywheel Engine .....                        | 1627 (738)                          |
| Moment of Inertia of Rotating Components            |                                     |
| • with FW 9520 Flywheel .....                       | 44.85 (1.89)                        |
| • with FW 9525 Flywheel .....                       | 58.66 (2.47)                        |
| Center of Gravity from Rear Face of Block .....     | 16.89 (429)                         |
| Center of Gravity Above Crankshaft Centerline ..... | 8.35 (212)                          |
| Maximum Static Loading at Rear Main Bearing .....   | N.A. N.A.                           |

**ENGINE MOUNTING**Maximum Bending Moment at Rear Face of Block .....

1000 (1356)

**EXHAUST SYSTEM**

Maximum Back Pressure .....

3 (76)

**AIR INDUCTION SYSTEM**

|                                   |          |
|-----------------------------------|----------|
| Maximum Intake Air Restriction    |          |
| • with Dirty Filter Element ..... | 25 (635) |
| • with Clean Filter Element ..... | 15 (381) |

**COOLING SYSTEM**

**Jacket Water Circuit Requirements**

|  |                       |
|--|-----------------------|
| Coolant Capacity — Engine Only .....                               | 2.9 (11)              |
| Maximum Static Head of Coolant Above Engine Crank Centerline ..... | 60 (18.3)             |
| Standard Thermostat (Modulating) Range .....                       | 180 - 199 (82 - 93)   |
| Minimum Pressure Cap .....   | 15 (103)              |
| Maximum Top Tank Temperature for Standby / Prime Power .....       | 230 / 219 (110 / 104) |
| Maximum Coolant Friction Head External to Engine .....             | 5 (35)                |
| — 1800 rpm .....   | 5 (35)                |
| — 1500 rpm .....   | 4 (28)                |

**Air-to-Air Core Requirements**

|   |            |
|---|------------|
| Maximum Temp. Rise Between Engine Air Intake and Intake Manifold .....              | 45 (25)    |
| Maximum Air Pressure Crop from Turbo Air outlet to Intake Manifold — 1800 rpm ..... | 4 (102)    |
| — 1500 rpm .....  | 2.5 (63.5) |

**LUBRICATION SYSTEM**

|  |                     |
|--|---------------------|
| Oil Pressure @ Idle Speed .....                      | 15 (103)            |
| @ Governed Speed .....                               | 40 - 60 (276 - 414) |
| Maximum Oil Temperature .....                        | 250 (121)           |
| Oil Capacity with OP 9451 Oil Pan : High - Low ..... | 5.3-6.3 (20-24)     |
| Total System Capacity (Including Combo Filter) ..... | 7 (26.5)            |
| Angularity of OP 9451 Oil Pan — Front Down .....     | 45°                 |
| — Front Up .....                                     | 45°                 |
| — Side to Side .....                                 | 45°                 |

**FUEL SYSTEM**

|   |            |       |
|---|------------|-------|
| Type Injection System .....   | Bosch HPCR |       |
| Maximum Restriction at Lift Pump .....  | 6          | (152) |
| Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)..... | 10         | (254) |
| Maximum Fuel Flow to Injector Pump.....   | 43         | (165) |
| Maximum Return Fuel Flow.....   | 8          | (30)  |
| Maximum Fuel Inlet Temperature .....  | 160        | (70)  |

**ELECTRICAL SYSTEM**

|   |       |       |
|---|-------|-------|
| Cranking Motor (Heavy Duty, Positive Engagement)..... | 12    | 24    |
| Battery Charging System, Negative Ground.....         | 100   | 70    |
| Maximum Allowable Resistance of Cranking Circuit..... | 0.001 | 0.002 |
| Minimum Recommended Battery Capacity                  |       |       |
| Cold Soak @ 50-F (10-C) and Above.....                | TBD   | (TBD) |
| Cold Soak @ 32 to 50-F (0 to 10-C) .....              | TBD   | (TBD) |
| Cold Soak @ 0 to 32-F (-18 to 0-C) .....              | 1500  | (750) |

**COLD START CAPABILITY**

|   |     |       |
|---|-----|-------|
| Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 seconds..... | TBD | (TBD) |
| Minimum Ambient Temperature for Unaided Cold Start .....                                      | 10  | (-12) |

**PERFORMANCE DATA**

- All data is based on:
- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
  - Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
  - ISO 3046, Part 1, Standard Reference Conditions of:
 

|                     |                         |                   |                 |
|---------------------|-------------------------|-------------------|-----------------|
| Barometric Pressure | : 100 kPa (29.53 in Hg) | Air Temperature   | : 25 °C (77 °F) |
| Altitude            | : 110 m (361 ft)        | Relative Humidity | : 30%           |

|   |         |         |
|---|---------|---------|
| Steady State Stability Band at Any Constant Load .....                                      | — %     | +/-0.25 |
| Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45 °..... | --- dBA | TBD     |

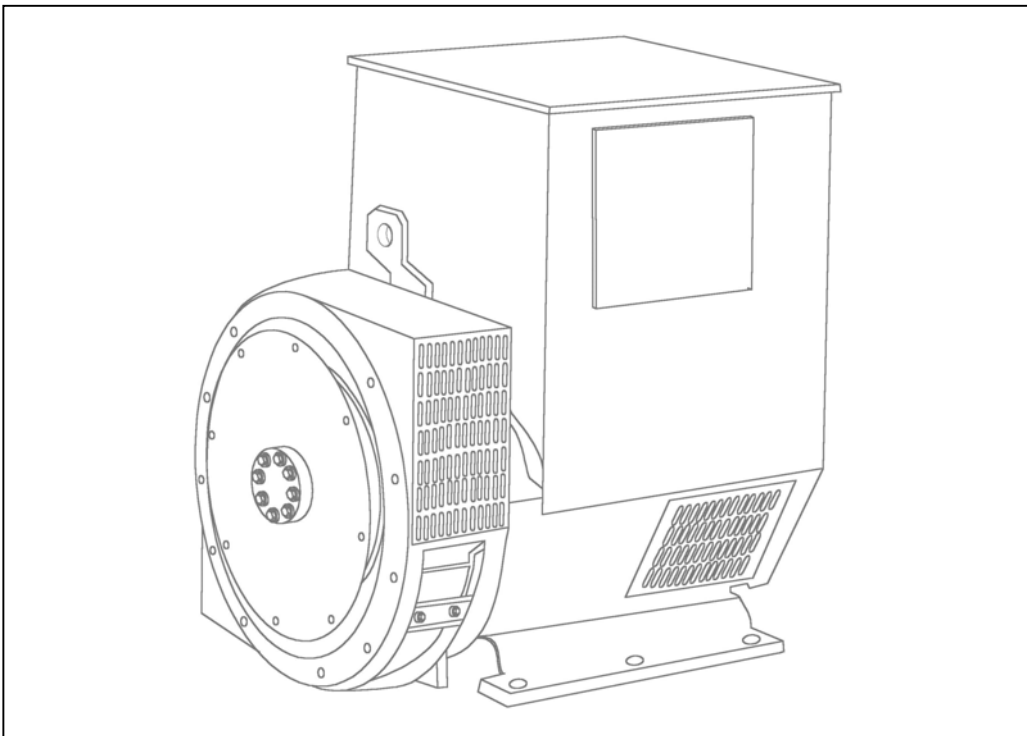
|   |                          |
|---|--------------------------|
| Governed Engine Speed .....                                   | — rpm                    |
| Engine Idle Speed .....                                       | — rpm                    |
| Gross Engine Power Output.....                                | — BHP (kW <sub>m</sub> ) |
| Brake Mean Effective Pressure .....                           | — psi (kPa)              |
| Piston Speed .....  | — ft / min (m / s)       |
| Friction Horsepower .....                                     | — HP (kW <sub>m</sub> )  |
| Engine Water Flow at Stated Friction Head External to Engine: |                          |
| • 2.5 psi Friction Head.....                                  | — US gpm (litre / s)     |
| • Maximum Friction Head.....                                  | — US gpm (litre / s)     |

|   | <b>STANDBY</b> |              | <b>PRIME POWER</b> |              |
|---|----------------|--------------|--------------------|--------------|
|   | <b>60 hz</b>   | <b>50 hz</b> | <b>60 hz</b>       | <b>50 hz</b> |
|   | 1800           | 1500         | 1800               | 1500         |
|   | 700 - 900      | 700 - 900    | 700 - 900          | 700 - 900    |
| Governed Engine Speed .....                                   | 399 (298)      | 345 (257)    | 352 (262)          | 305 (227)    |
| Engine Idle Speed .....                                       | 325 (2241)     | 338 (2330)   | 287 (1979)         | 297 (2048)   |
| Gross Engine Power Output.....                                | 1707 (8.7)     | 1422 (7.2)   | 1707 (8.7)         | 1422 (7.2)   |
| Brake Mean Effective Pressure .....                           | 47 (35)        | 35 (26)      | 47 (35)            | 35 (26)      |
| Piston Speed .....  | 64 (4.0)       | 52 (3.3)     | 64 (4.0)           | 52 (3.3)     |
| Friction Horsepower .....                                     | 60 (3.8)       | 47 (3.0)     | 60 (3.8)           | 47 (3.0)     |
| Engine Water Flow at Stated Friction Head External to Engine: |                |              |                    |              |
| • 2.5 psi Friction Head.....                                  | 785 (370)      | 660 (315)    | 770 (365)          | 655 (310)    |
| • Maximum Friction Head.....                                  | 1105 (595)     | 1080 (585)   | 1035 (560)         | 995 (535)    |
| Intake Air Flow.....  | 2165 (1020)    | 1800 (850)   | 2040 (965)         | 1685 (795)   |
| Exhaust Gas Temperature .....                                 | 23 : 1         | 23 : 1       | 25 : 1             | 25 : 1       |
| Exhaust Gas Flow .....  | 1160 (25)      | 1090 (20)    | 1145 (25)          | 960 (20)     |
| Air to Fuel Ratio.....  | 6940 (125)     | 6030 (110)   | 6310 (115)         | 5535 (100)   |
| Radiated Heat to Ambient .....                                | 16015 (285)    | 13150 (235)  | 14510 (255)        | 11735 (210)  |
| Heat Rejection to Jacket Coolant.....                         | 65 (1.1)       | 65 (1.1)     | 65 (1.1)           | 65 (1.1)     |
| Heat Rejection to Exhaust .....                               | 3600 (65)      | 3005 (55)    | 3430 (65)          | 2925 (55)    |
| Heat Rejected to Fuel .....                                   | 56 (26)        | 47 (22)      | 55 (25)            | 46 (22)      |
| Heat Rejected to Aftercooler.....                             | 65 (1651)      | 64 (1626)    | 63 (1600)          | 61 (1549)    |
| Charge Air Flow.....  | 374 (190)      | 368 (187)    | 364 (184)          | 357 (181)    |
| Turbocharger Compressor Outlet Pressure .....                 |                |              |                    |              |
| Turbocharger Compressor Outlet Temperature.....               |                |              |                    |              |

N.A. - Not Available  
 N/A - Not Applicable to this Engine  
 TBD - To Be Determined

**ENGINE MODEL : QSL9-G3 NR3**  
**DATA SHEET : DS-41404**  
**DATE : 31Mar06**  
**CURVE NO. : FR-91996**

## UCDI274K - Technical Data Sheet



# UCDI274K

## SPECIFICATIONS & OPTIONS



### STANDARDS

Newage Stamford industrial generators meet the requirements of BS EN 60034 and the relevant section of other international standards such as BS5000, VDE 0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359. Other standards and certifications can be considered on request.

### VOLTAGE REGULATORS

#### SX460 AVR - STANDARD

With this self excited control system the main stator supplies power via the Automatic Voltage Regulator (AVR) to the exciter stator. The high efficiency semiconductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three phase full wave bridge rectifier. This rectifier is protected by a surge suppressor against surges caused, for example, by short circuit.

#### SX440 AVR

With this self-excited system the main stator provides power via the AVR to the exciter stator. The high efficiency semi-conductors of the AVR ensure positive build-up from initial low levels of residual voltage.

The exciter rotor output is fed to the main rotor through a three-phase full-wave bridge rectifier. The rectifier is protected by a surge suppressor against surges caused, for example, by short circuit or out-of-phase paralleling.

The SX440 will support a range of electronic accessories, including a 'droop' Current Transformer (CT) to permit parallel operation with other ac generators.

If 3-phase sensing is required with the self-excited system, the SX421 AVR must be used.

#### SX421AVR

This AVR also operates in a self-excited system. It combines all the features of the SX440 with, additionally, three-phase rms sensing for improved regulation and performance. Over voltage protection is provided via a separate circuit breaker. An engine relief load acceptance feature is built in as standard.

#### MX341 AVR

This sophisticated AVR is incorporated into the Stamford Permanent Magnet Generator (PMG) control system.

The PMG provides power via the AVR to the main exciter, giving a source of constant excitation power independent of generator output. The main exciter output is then fed to the main rotor, through a full wave bridge, protected by a surge suppressor. The AVR has in-built protection against sustained over-excitation, caused by internal or external faults. This de-excites the machine after a minimum of 5 seconds.

An engine relief load acceptance feature can enable full load to be applied to the generator in a single step.

If three-phase sensing is required with the PMG system the MX321 AVR must be used.

We recommend three-phase sensing for applications with greatly unbalanced or highly non-linear loads.

#### MX321 AVR

The most sophisticated of all our AVRs combines all the features of the MX341 with, additionally, three-phase rms sensing, for improved regulation and performance. Over voltage protection is built-in and short circuit current level adjustments is an optional facility.

### WINDINGS & ELECTRICAL PERFORMANCE

All generator stators are wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches, when in parallel with the mains. A fully connected damper winding reduces oscillations during paralleling. This winding, with the 2/3 pitch and carefully selected pole and tooth designs, ensures very low waveform distortion.

### TERMINALS & TERMINAL BOX

Standard generators are 3-phase reconnectable with 12 ends brought out to the terminals, which are mounted on a cover at the non-drive end of the generator. A sheet steel terminal box contains the AVR and provides ample space for the customers' wiring and gland arrangements. It has removable panels for easy access.

### SHAFT & KEYS

All generator rotors are dynamically balanced to better than BS6861:Part 1 Grade 2.5 for minimum vibration in operation.

### INSULATION/IMPREGNATION

The insulation system is class 'H'.

All wound components are impregnated with materials and processes designed specifically to provide the high build required for static windings and the high mechanical strength required for rotating components.

### QUALITY ASSURANCE

Generators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.

The stated voltage regulation may not be maintained in the presence of certain radio transmitted signals. Any change in performance will fall within the limits of Criteria 'B' of EN 61000-6-2:2001. At no time will the steady-state voltage regulation exceed 2%.

*NB Continuous development of our products entitles us to change specification details without notice, therefore they must not be regarded as binding.*

*Front cover drawing typical of product range.*

## UCDI274K WINDING 311

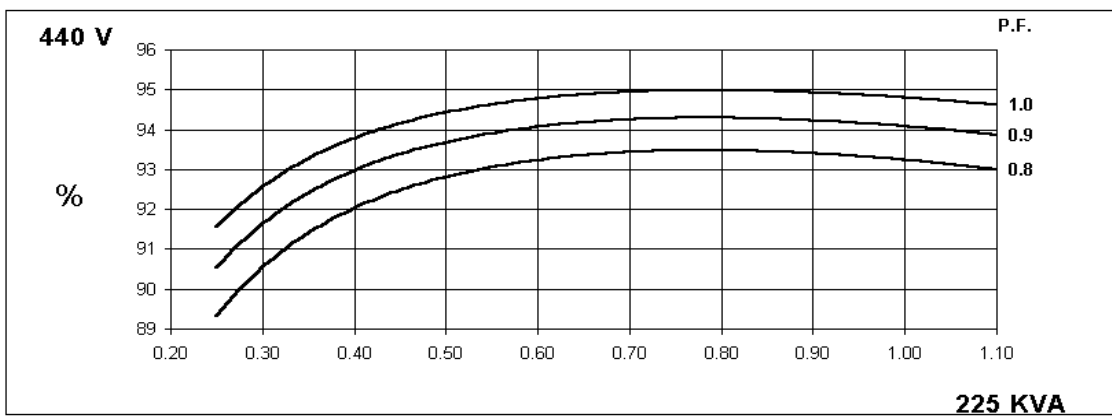
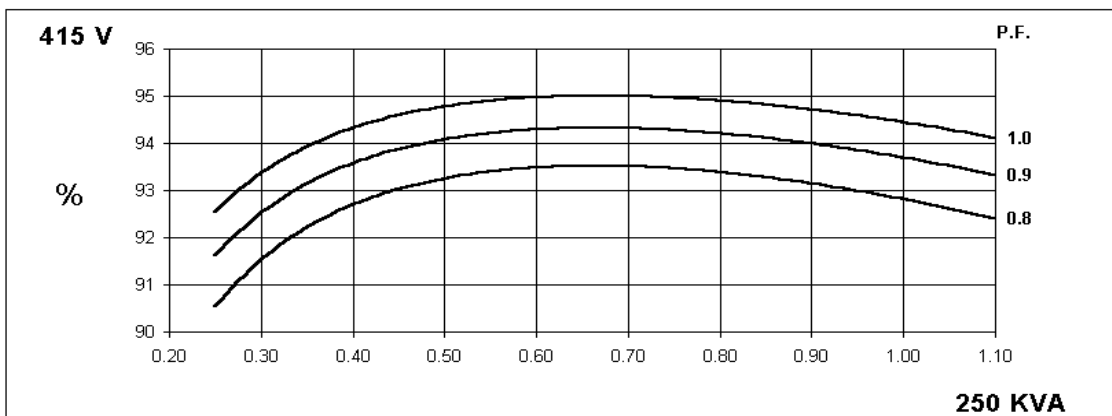
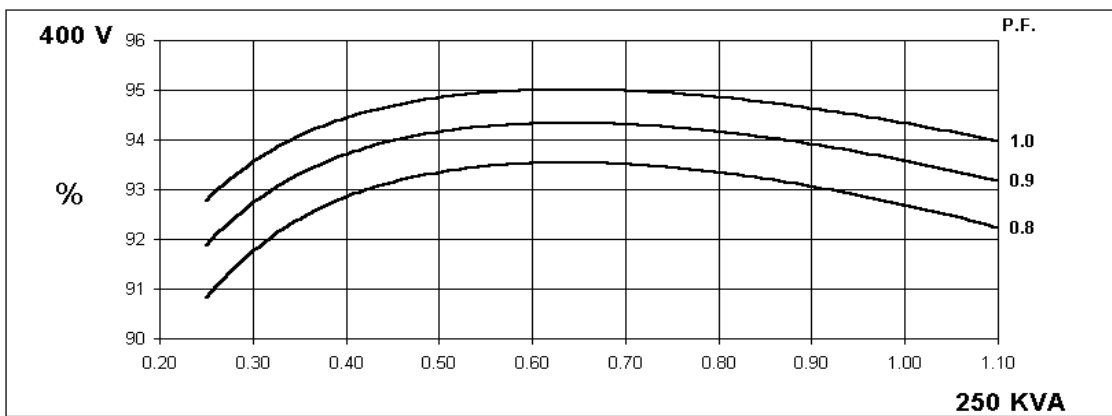
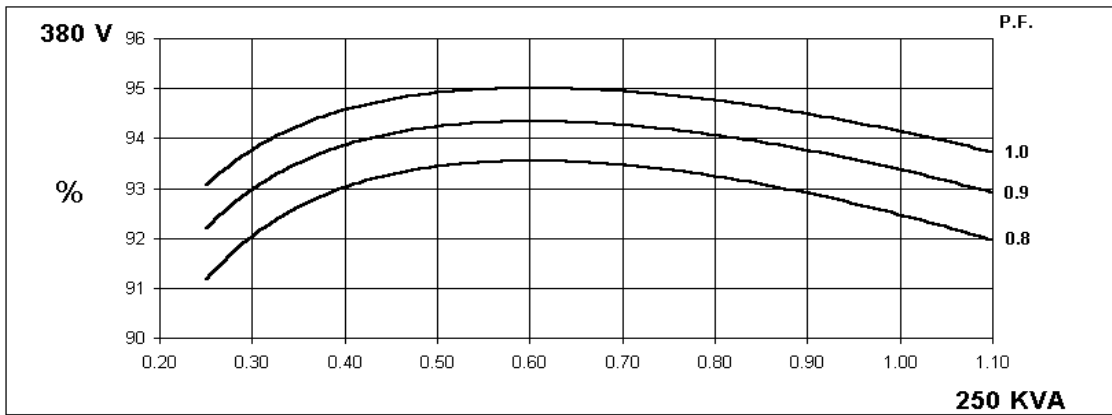
|                                      |  |  |         |                          |                          |                                   |         |         |         |
|--------------------------------------|--|--|---------|--------------------------|--------------------------|-----------------------------------|---------|---------|---------|
| CONTROL SYSTEM                       |  | SEPARATELY EXCITED BY P.M.G.   |         |                          |                          |                                   |         |         |         |
| A.V.R.                               |  | MX321  | MX341   |                          |                          |                                   |         |         |         |
| VOLTAGE REGULATION                   |  | ± 0.5 %  | ± 1.0 % | With 4% ENGINE GOVERNING |                          |                                   |         |         |         |
| SUSTAINED SHORT CIRCUIT              |  | REFER TO SHORT CIRCUIT DECREMENT CURVES (page 7)                                     |         |                          |                          |                                   |         |         |         |
| CONTROL SYSTEM                       |  | SELF EXCITED   |         |                          |                          |                                   |         |         |         |
| A.V.R.                               |  | SX460  | SX440   | SX421                    |                          |                                   |         |         |         |
| VOLTAGE REGULATION                   |  | ± 1.5 %  | ± 1.0 % | ± 0.5 %                  | With 4% ENGINE GOVERNING |                                   |         |         |         |
| SUSTAINED SHORT CIRCUIT              |  | SERIES 4 CONTROL DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT                            |         |                          |                          |                                   |         |         |         |
| INSULATION SYSTEM                    |  | CLASS H  |         |                          |                          |                                   |         |         |         |
| PROTECTION                           |  | IP23   |         |                          |                          |                                   |         |         |         |
| RATED POWER FACTOR                   |  | 0.8  |         |                          |                          |                                   |         |         |         |
| STATOR WINDING                       |  | DOUBLE LAYER CONCENTRIC  |         |                          |                          |                                   |         |         |         |
| WINDING PITCH                        |  | TWO THIRDS   |         |                          |                          |                                   |         |         |         |
| WINDING LEADS                        |  | 12   |         |                          |                          |                                   |         |         |         |
| STATOR WDG. RESISTANCE               |  | 0.0126 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED                                  |         |                          |                          |                                   |         |         |         |
| ROTOR WDG. RESISTANCE                |  | 2.08 Ohms at 22°C  |         |                          |                          |                                   |         |         |         |
| R.F.I. SUPPRESSION                   |  | BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others |         |                          |                          |                                   |         |         |         |
| WAVEFORM DISTORTION                  |  | NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%                            |         |                          |                          |                                   |         |         |         |
| MAXIMUM OVERSPEED                    |  | 2250 Rev/Min   |         |                          |                          |                                   |         |         |         |
| BEARING NON-DRIVE END                |  | BALL. 6310-2RS (ISO)   |         |                          |                          |                                   |         |         |         |
| WEIGHT COMP. GENERATOR               |  | 727 kg   |         |                          |                          |                                   |         |         |         |
| WEIGHT WOUND STATOR                  |  | 304 kg   |         |                          |                          |                                   |         |         |         |
| WEIGHT WOUND ROTOR                   |  | 272.6 kg   |         |                          |                          |                                   |         |         |         |
| WR <sup>2</sup> INERTIA              |  | 2.3934 kgm <sup>2</sup>  |         |                          |                          |                                   |         |         |         |
| SHIPPING WEIGHTS in a crate          |  | 740 kg   |         |                          |                          |                                   |         |         |         |
| PACKING CRATE SIZE                   |  | 123 x 67 x 103 (cm)  |         |                          |                          |                                   |         |         |         |
|                                      |  | 50 Hz  |         |                          |                          | 60 Hz                             |         |         |         |
| TELEPHONE INTERFERENCE               |  | THF<2%   |         |                          |                          | TIF<50                            |         |         |         |
| COOLING AIR                          |  | 0.58 m <sup>3</sup> /sec 1230 cfm  |         |                          |                          | 0.69 m <sup>3</sup> /sec 1463 cfm |         |         |         |
| VOLTAGE SERIES STAR (Y)              |  | 380/220  | 400/231 | 415/240                  | 440/254                  | 416/240                           | 440/254 | 460/266 | 480/277 |
| VOLTAGE PARALLEL STAR (Y)            |  | 190/110  | 200/115 | 208/120                  | 220/127                  | 208/120                           | 220/127 | 230/133 | 240/138 |
| VOLTAGE SERIES DELTA                 |  | 220/110  | 230/115 | 240/120                  | 254/127                  | 240/120                           | 254/127 | 266/133 | 277/138 |
| KVA BASE RATING FOR REACTANCE VALUES |  | 250  | 250     | 250                      | n/a                      | 291                               | 299     | 312.5   | 312.5   |
| Xd DIR. AXIS SYNCHRONOUS             |  | 2.825  | 2.550   | 2.369                    | -                        | 3.161                             | 2.903   | 2.776   | 2.550   |
| X'd DIR. AXIS TRANSIENT              |  | 0.132  | 0.119   | 0.111                    | -                        | 0.148                             | 0.136   | 0.130   | 0.119   |
| X''d DIR. AXIS SUBTRANSIENT          |  | 0.086  | 0.078   | 0.072                    | -                        | 0.097                             | 0.089   | 0.085   | 0.078   |
| Xq QUAD. AXIS REACTANCE              |  | 1.263  | 1.140   | 1.059                    | -                        | 1.413                             | 1.298   | 1.241   | 1.140   |
| X''q QUAD. AXIS SUBTRANSIENT         |  | 0.152  | 0.137   | 0.127                    | -                        | 0.170                             | 0.156   | 0.149   | 0.137   |
| X <sub>L</sub> LEAKAGE REACTANCE     |  | 0.066  | 0.060   | 0.056                    | -                        | 0.074                             | 0.068   | 0.065   | 0.060   |
| X <sub>2</sub> NEGATIVE SEQUENCE     |  | 0.120  | 0.108   | 0.100                    | -                        | 0.134                             | 0.123   | 0.118   | 0.108   |
| X <sub>0</sub> ZERO SEQUENCE         |  | 0.022  | 0.020   | 0.019                    | -                        | 0.025                             | 0.023   | 0.022   | 0.020   |
| REACTANCES ARE SATURATED             |  | VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED                                  |         |                          |                          |                                   |         |         |         |
| T'd TRANSIENT TIME CONST.            |  | 0.049 s  |         |                          |                          |                                   |         |         |         |
| T''d SUB-TRANSTIME CONST.            |  | 0.02 s   |         |                          |                          |                                   |         |         |         |
| T'do O.C. FIELD TIME CONST.          |  | 1.27 s   |         |                          |                          |                                   |         |         |         |
| T <sub>a</sub> ARMATURE TIME CONST.  |  | 0.018 s  |         |                          |                          |                                   |         |         |         |
| SHORT CIRCUIT RATIO                  |  | 1/Xd   |         |                          |                          |                                   |         |         |         |

**50  
Hz**

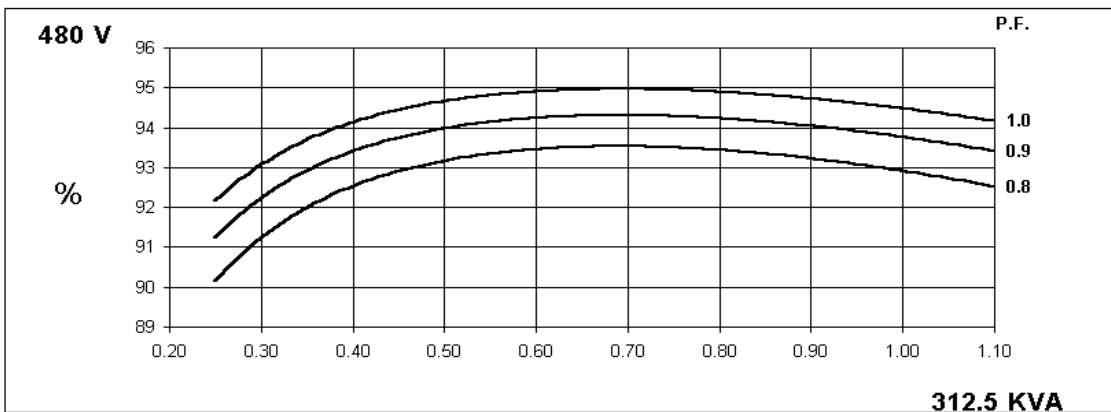
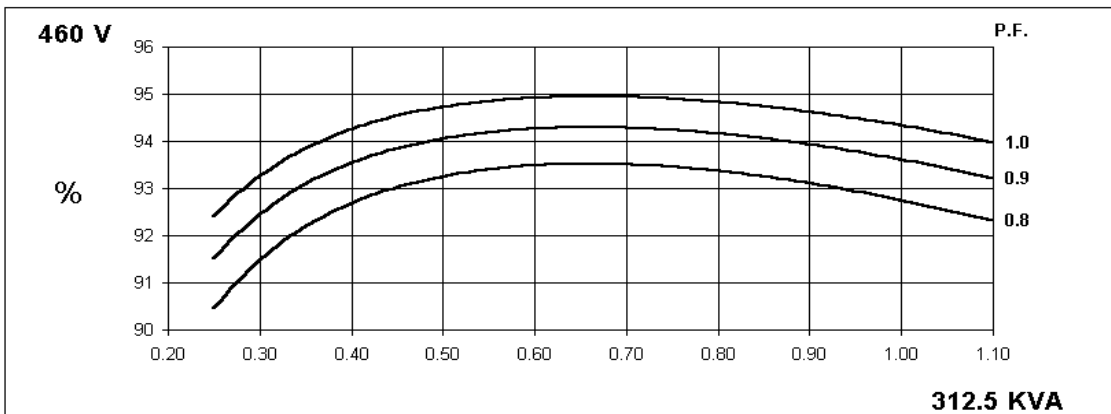
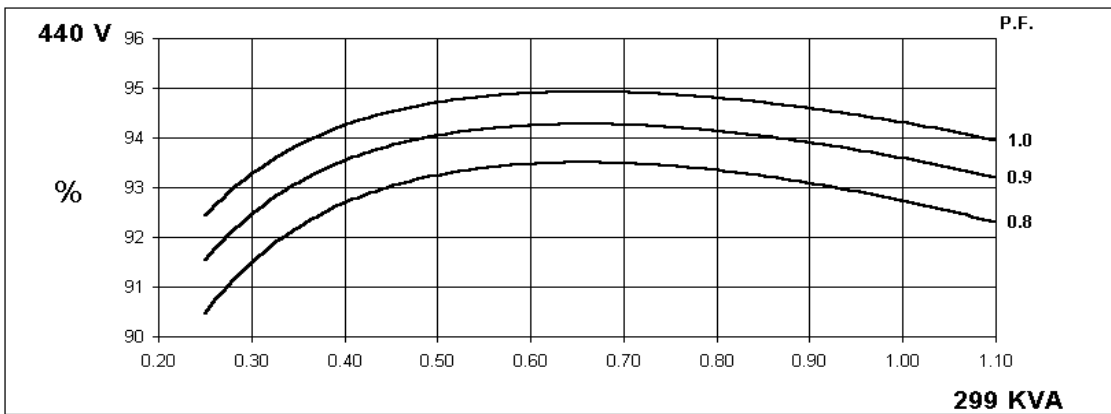
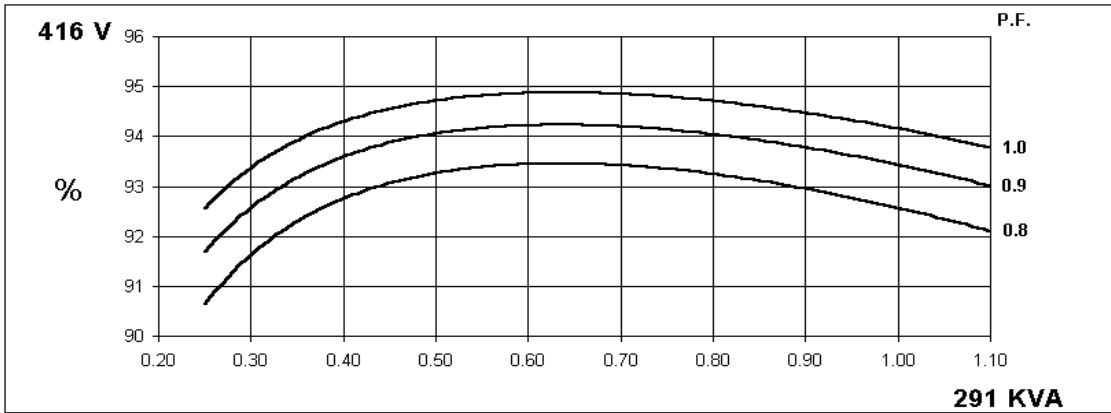
**UCDI274K**  
Winding 311



**THREE PHASE EFFICIENCY CURVES**



**THREE PHASE EFFICIENCY CURVES**



# UCDI274K

## Winding 311

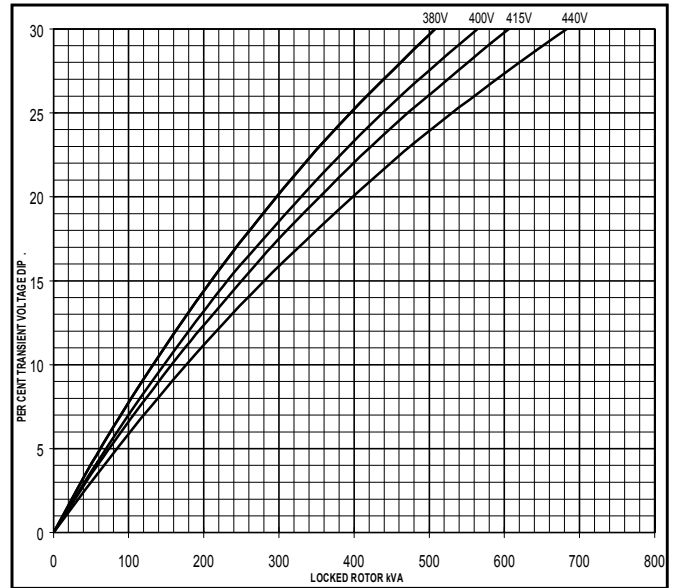
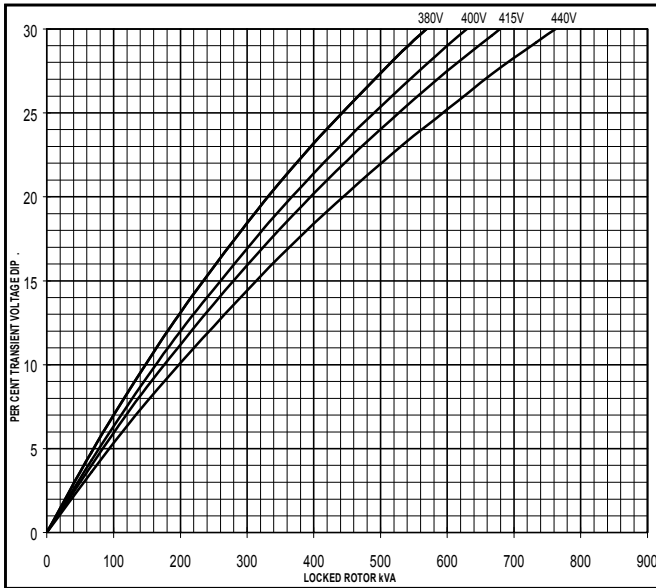


### Locked Rotor Motor Starting Curve

**50  
Hz**

**MX**

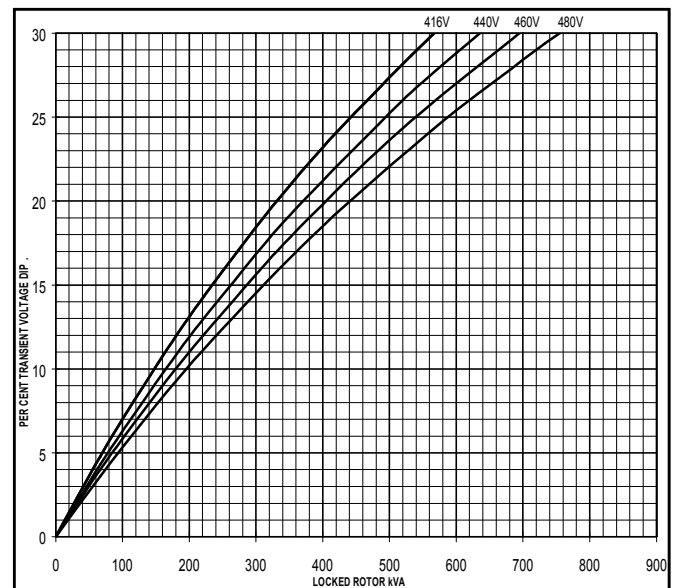
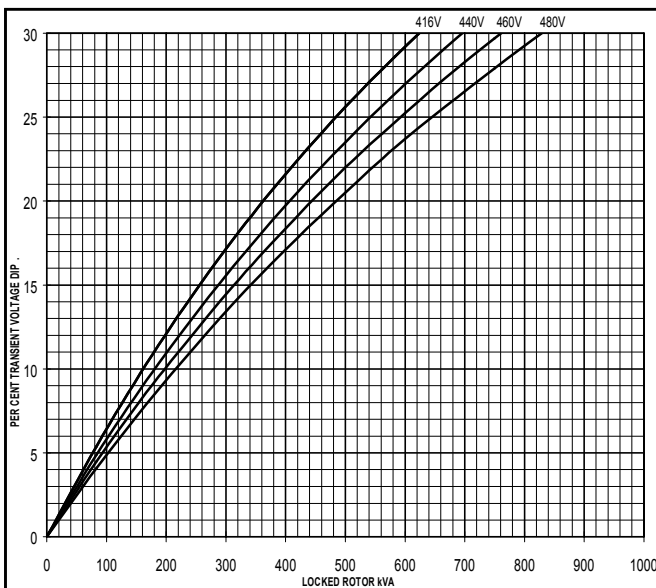
**SX**



**60  
Hz**

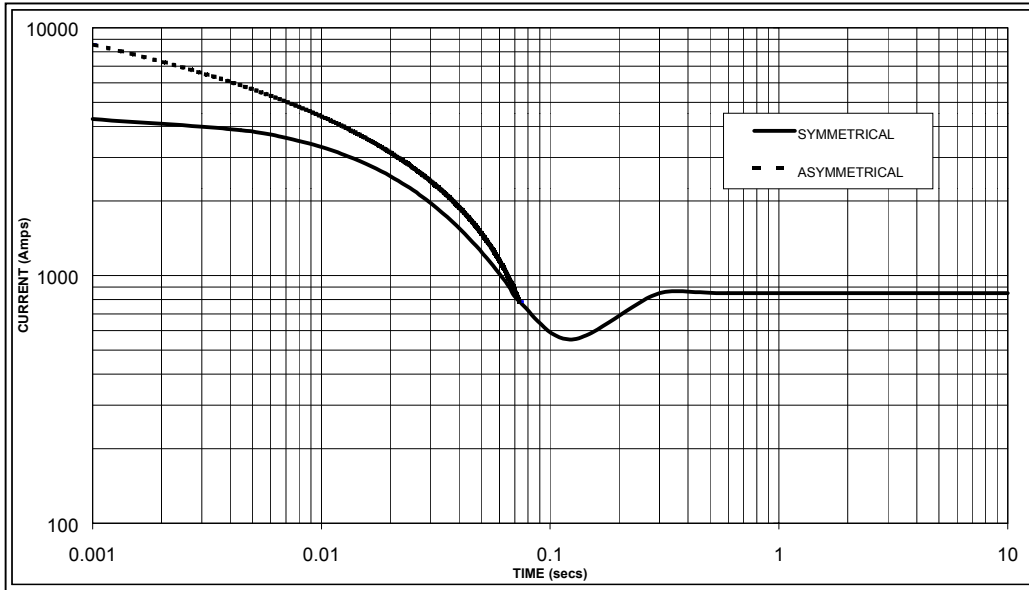
**MX**

**SX**



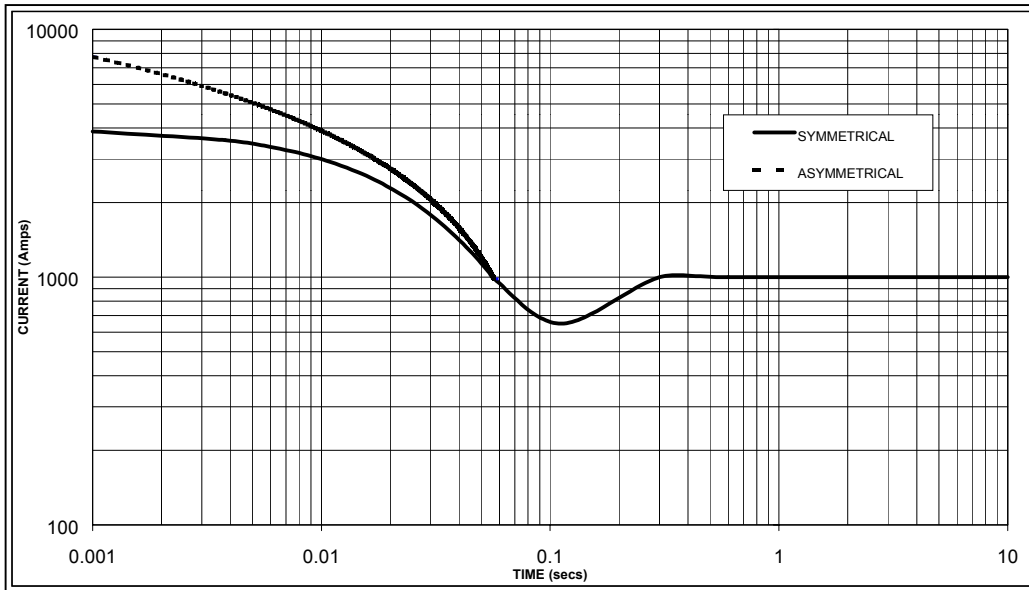
**Three-phase Short Circuit Decrement Curve. No-load Excitation at Rated Speed  
Based on star (wye) connection.**

**50  
Hz**



Sustained Short Circuit = 850 Amps

**60  
Hz**



Sustained Short Circuit = 1,000 Amps

**Note 1**

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

| 50Hz    |        | 60Hz    |        |
|---------|--------|---------|--------|
| Voltage | Factor | Voltage | Factor |
| 380v    | X 1.00 | 416v    | X 1.00 |
| 400v    | X 1.05 | 440v    | X 1.07 |
| 415v    | X 1.10 | 460v    | X 1.12 |
| 440v    | X 1.16 | 480v    | X 1.16 |

The sustained current value is constant irrespective of voltage level

**Note 2**

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

|                         | 3-phase | 2-phase L-L | 1-phase L-N |
|-------------------------|---------|-------------|-------------|
| Instantaneous           | x 1.00  | x 0.87      | x 1.30      |
| Minimum                 | x 1.00  | x 1.80      | x 3.20      |
| Sustained               | x 1.00  | x 1.50      | x 2.50      |
| Max. sustained duration | 10 sec. | 5 sec.      | 2 sec.      |

All other times are unchanged

**Note 3**

Curves are drawn for Star (Wye) connected machines. For other connection the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

Series Delta = Curve current value X 1.732

# UCDI274K

## Winding 311 / 0.8 Power Factor

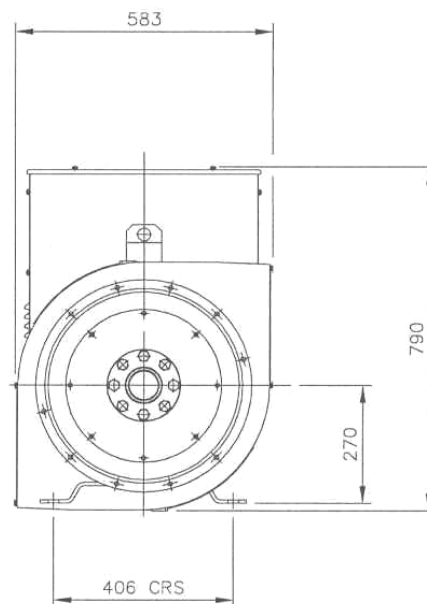
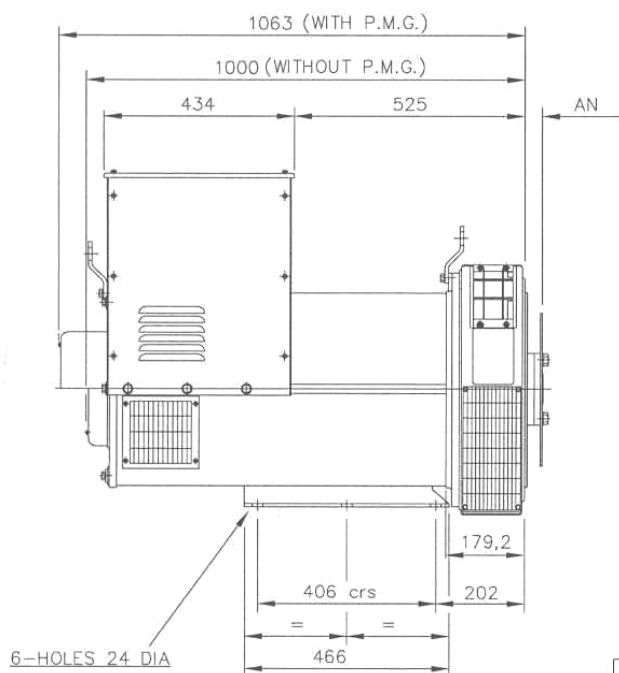


### RATINGS

| Class - Temp Rise | Cont. F - 105/40°C |       |       |     | Cont. H - 125/40°C |       |       |     | Standby - 150/40°C |       |       |     | Standby - 163/27°C |       |       |     |     |
|-------------------|--------------------|-------|-------|-----|--------------------|-------|-------|-----|--------------------|-------|-------|-----|--------------------|-------|-------|-----|-----|
| <b>50 Hz</b>      | Series Star (V)    | 380   | 400   | 415 | 440                | 380   | 400   | 415 | 440                | 380   | 400   | 415 | 440                | 380   | 400   | 415 | 440 |
|                   | Parallel Star (V)  | 190   | 200   | 208 | 220                | 190   | 200   | 208 | 220                | 190   | 200   | 208 | 220                | 190   | 200   | 208 | 220 |
|                   | Series Delta (V)   | 220   | 230   | 240 | 254                | 220   | 230   | 240 | 254                | 220   | 230   | 240 | 254                | 220   | 230   | 240 | 254 |
| kVA               | 229.0              | 229.0 | 229.0 | n/a | 250.0              | 250.0 | 250.0 | n/a | 265.0              | 265.0 | 265.0 | n/a | 275.0              | 275.0 | 275.0 | n/a |     |
| kW                | 183.2              | 183.2 | 183.2 | n/a | 200.0              | 200.0 | 200.0 | n/a | 212.0              | 212.0 | 212.0 | n/a | 220.0              | 220.0 | 220.0 | n/a |     |
| Efficiency (%)    | 92.8               | 93.0  | 93.1  | n/a | 92.5               | 92.7  | 92.8  | n/a | 92.2               | 92.4  | 92.6  | n/a | 92.0               | 92.2  | 92.4  | n/a |     |
| kW Input          | 197.4              | 197.0 | 196.8 | n/a | 216.2              | 215.7 | 215.5 | n/a | 229.9              | 229.4 | 228.9 | n/a | 239.1              | 238.6 | 238.1 | n/a |     |

|                |                   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |     |
|----------------|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|
| <b>60 Hz</b>   | Series Star (V)   | 416   | 440   | 460   | 480   | 416   | 440   | 460   | 480   | 416   | 440   | 460   | 480   | 416   | 440   | 460   | 480 |
|                | Parallel Star (V) | 208   | 220   | 230   | 240   | 208   | 220   | 230   | 240   | 208   | 220   | 230   | 240   | 208   | 220   | 230   | 240 |
|                | Series Delta (V)  | 240   | 254   | 266   | 277   | 240   | 254   | 266   | 277   | 240   | 254   | 266   | 277   | 240   | 254   | 266   | 277 |
| kVA            | 267.0             | 275.0 | 286.5 | 286.5 | 291.0 | 299.0 | 312.5 | 312.5 | 304.0 | 312.5 | 331.3 | 331.3 | 312.0 | 320.0 | 343.8 | 343.8 |     |
| kW             | 213.6             | 220.0 | 229.2 | 229.2 | 232.8 | 239.2 | 250.0 | 250.0 | 243.2 | 250.0 | 265.0 | 265.0 | 249.6 | 256.0 | 275.0 | 275.0 |     |
| Efficiency (%) | 92.9              | 93.0  | 93.1  | 93.2  | 92.6  | 92.7  | 92.8  | 92.9  | 92.4  | 92.6  | 92.5  | 92.7  | 92.2  | 92.4  | 92.3  | 92.5  |     |
| kW Input       | 229.9             | 236.6 | 246.2 | 245.9 | 251.4 | 258.0 | 269.4 | 269.1 | 263.2 | 270.0 | 286.5 | 285.9 | 270.7 | 277.1 | 298.0 | 297.3 |     |

### DIMENSIONS



| COUPLING DISC | AN    |
|---------------|-------|
| SAE 11,5      | 39,68 |
| SAE 14        | 25,4  |



PO Box 17 • Barnack Road • Stamford • Lincolnshire • PE9 2NB

Tel: 00 44 (0)1780 484000 • Fax: 00 44 (0)1780 484100

Website: [www.newage-avkseg.com](http://www.newage-avkseg.com)