

658100

658120

658140

658160

658180

992140

992140

992120

992120

992100

992100

658100

658120

658140

658160

658180

COORDENADAS UTM  
ESTE: 658106.110721  
NORTE: 992123.594613  
ZONA 17

PLANTA  
ELECTRICA  
UBICACION

CASETA

MONUMENTO

BARCA

BARCA

BARCA

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PLANTA GENERAL  
ESCALA: 1:150

NOTAS TÉCNICAS:  
1. EL TRABAJO SE REALIZÓ BAJO EL SISTEMA MÉTRICO INTERNACIONAL (DISTANCIAS EN METROS).  
2. PARA EL POSICIONAMIENTO SE UTILIZÓ UN DGPS SOUTH MODELO GALAXY 3, EN CONFIGURACION RTK CON SEÑAL DE AMARRE CON EL PUNTO AUX-2.  
NORTE: 992126.15  
ESTE: 658168.24  
ELEVACION: 16.609m

3. COORDENADAS DEL POLIGONO EN ESCRITURA  
1 658170.359, 992115.711  
2 658121.063, 992099.160  
3 658115.812, 992114.801  
4 658112.020, 992113.528  
5 658106.195, 992130.876  
6 658159.010, 992148.523

POLIGONO BAJO ESCRITURA  
AREA: 1,874.29m<sup>2</sup>

4. EL TIPO DE NORTE ES DE CUADRICULA.

5. FECHA DEL LEVANTAMIENTO: 28 DE ENERO 2023.

6. SIMBOLOGIA

PE POSTE ELECTRICO  
LE LETRERO  
CI PLUVIAL  
EC MONUMENTO  
CERCA  
VERTICE POLIGONO  
PALMA  
ARBOL

REPÚBLICA DE PANAMÁ

PROVINCIA: PANAMA  
CORREG: ANCON  
DISTRITO: PANAMA  
LUGAR: ALBROOK

PLANO TOPOGRAFICO AREA TERRESTRE COLINDANTE AL  
EDIFICIO 809 UBICADO EN ALBROOK  
CONSORCIO CONSTRUCTION BUILDINGS

LEVANTADO:  
DIBUJADO:  
ADALBERTO ALGUERO

ADALBERTO A. ALGUERO MENDEZ  
INGENIERO CIVIL  
IDONEIDAD No. 2008-006-098

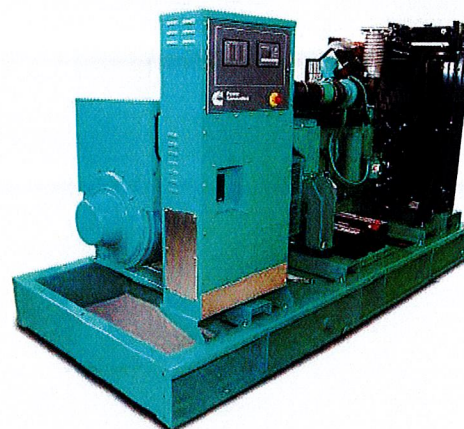
FECHA: FEBRERO 2024  
ESCALA: 1:250





# Diesel generator set QSL9 series engine

275 kVA - 330 kVA 50 Hz  
250 kWe - 300 kWe 60 Hz



## Description

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability and versatility for stationary Standby and Prime Power applications.

## Features

**Cummins heavy-duty engine** - Rugged 4-cycle industrial diesel delivers reliable power, low emissions and fast response to load changes.

**Optional Permanent Magnet Generator (PMG)** - Offers enhanced motor starting and fault clearing short circuit capability.

**Alternator** - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

**Cooling system** - Standard integral set-mounted radiator system, designed and tested for rated ambient temperatures, simplifies facility design requirements for rejected heat.

**Control system** - The PowerCommand® electronic control is standard equipment and provides total system integration, including auto remote start/stop, alarm and status message display.

**Enclosures** - Optional sound attenuated enclosures.

**Warranty** - Backed by a comprehensive warranty and worldwide distributor network.

| Genset model   | Engine model | Standby            |                    | Prime              |                    | Emissions<br>TA Luft/ EU Stage/EPA | Data sheets |        |
|----------------|--------------|--------------------|--------------------|--------------------|--------------------|------------------------------------|-------------|--------|
|                |              | 50 Hz<br>kVA (kWe) | 60 Hz<br>kWe (kVA) | 50 Hz<br>kVA (kWe) | 60 Hz<br>kWe (kVA) |                                    | 50 Hz       | 60 Hz  |
| C275 D5e       | QSL9-G3      | 275 (220)          |                    | 250 (200)          |                    | Tier 3                             | D-6375      |        |
| C250 D6e       | QSL9-G3      |                    | 250 (313)          |                    | 225 (281)          | Tier 3                             |             | D-6378 |
| C330 D5        | QSL9-G5      | 330 (264)          |                    | 300 (240)          |                    |                                    | D-6376      |        |
| <b>C300 D6</b> | QSL9-G5      |                    | 300 (375)          |                    | 270 (338)          |                                    |             | D-6379 |
| C330 D5e       | QSL9-G7      | 330 (264)          |                    | 300 (240)          |                    | Tier 3                             | D-6377      |        |
| C300 D6e       | QSL9-G7      |                    | 300 (275)          |                    | 270 (338)          | Tier 3                             |             | D-6380 |

## Generator set specifications

|  |             |
|--|-------------|
| Voltage regulation, no load to full load | ± 1%        |
| Random voltage variation                 | ± 1%        |
| Frequency regulation                     | Isochronous |
| Random frequency variation               | ± 0.5%      |

## Engine specifications

|                             |   |
|-----------------------------|---|
| Design                      | 4 cycle, in-line, turbocharged, charge air cooled |
| Bore                        | 114 mm (4.5 in.)                                  |
| Stroke                      | 145 mm (5.7 in.)                                  |
| Displacement                | 8.8 liter (543 in <sup>3</sup> )                  |
| Cylinder block              | Cast iron, 6 cylinders                            |
| Battery capacity            | 100 AH  |
| Battery charging alternator | 70 amps   |
| Starting voltage            | 24 volts, negative ground                         |
| Fuel system                 | Bosch HPCR  |
| Fuel filter                 | Dual filter spin-on with water separator          |
| Air cleaner type            | OptiAir™ technology, 2-stage air filters          |
| Lube oil filter type(s)     | Venturi Combo Filter Stratapore                   |
| Standard cooling system     | Cooling system for high ambient temperature       |

## Alternator specifications

|  |  |
|--|--|
| Design                                       | Brushless, revolving field                             |
| Stator                                       | 2/3 pitch  |
| Rotor  | Single bearing, flexible disc                          |
| Insulation system                            | Class H  |
| Level of protection                          | IP23   |
| Exciter type                                 | Self-excited or separately excited by PMG              |
| Phase rotation                               | A (U), B (V), C (W)                                    |
| Alternator cooling                           | Direct drive centrifugal blower fan                    |
| AC waveform Total Harmonic Distortion (THDV) | No load <1.5%. Non-distorting balanced linear load <5% |
| Telephone Influence Factor (TIF)             | < 50 per NEMA MG1-22.43                                |
| Telephone Harmonic Factor (THF)              | <2%  |

## Available voltages

| 50 Hz Line-Neutral/Line-Line   | 60 Hz Line-Neutral/Line-Line   |
|--|--|
| <ul style="list-style-type: none"> <li>• 255/440</li> <li>• 230/400</li> <li>• 220/380</li> <li>• 127/220</li> </ul> | <ul style="list-style-type: none"> <li>• 277/480</li> <li>• 255/440</li> <li>• 220/380</li> <li>• 127/220</li> </ul> |

Note: Consult factory for other voltages.



## Generator set options and accessories<sup>1</sup>

### Engine

- 220 ~ 240V thermo-statically controlled coolant heater
- Heavy duty air cleaner

### Alternator

- 105 °C rise<sup>2</sup>
- 125 °C rise<sup>2</sup>
- 150 °C rise<sup>2</sup>
- Anti-condensation heater

### Control panel

- PowerCommand 1.1 with/ without bargraf
- PowerCommand 2.3 without bargraf
- PowerCommand 3.3 with bargraf

### Switch Gear

- ATS Outside of generator (Gtec)

### Exhaust system

- Residential grade exhaust silencer (9 dB)
- Critical grade exhaust silencer (29 dB)

### Generator set

- Battery
- Battery charger
- Circuit breaker
- In-skid AVM
- Manual / Labels language – English, Portuguese and Spanish

### Sound Attenuation

- Enclosure for 85dB
- Inlet / outlet room attenuator for:
  - 65dB
  - 75dB
  - 85dB
- Acoustic door

### Remote Monitoring System

- PC500/550 remote monitoring system

### Notes:

<sup>1</sup> Some options may not be available on all models - consult factory for availability.

<sup>2</sup> Consult the factory to see available temperature raise for each genset model.

DIRECCION DE INFRAESTRUCTURA DE SALUD  
INSPECCION DA-DIS-MINSA  
REVISION PRELIMINAR  
APROBADO

Fecha

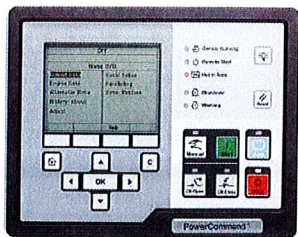
Firma

16.03.2022

MACOIN E.S. DRUTERO DZ.



## PowerCommand 3.3 control system



The PowerCommand control system is an integrated microprocessor based generator set control system providing voltage regulation, engine protection, alternator protection, operator interface and isochronous governing. Refer to document S-1567 and S-1570 for more detailed information on the control

**Masterless Load Demand (MLD)** - The controller is capable of smartly managing power from paralleled generators to match varying load patterns.

**Power management** - Control function provides battery monitoring and testing features and smart starting control system.

**Advanced control methodology** - Three phase sensing, full wave rectified voltage regulation, with a PWM output for stable operation with all load types.

**Regulation compliant** - Prototype tested: UL, CSA and CE compliant.

**Service** - InPower™ PC-based service tool available for detailed diagnostics, setup, data logging and fault simulation.

**Easily upgradeable** - PowerCommand controls are designed with common control interfaces.

**Reliable design** - The control system is designed for reliable operation in harsh environment.

### Operator panel features

#### Operator/display functions

- Displays paralleling breaker status
- Provides direct control of the paralleling breaker
- 320 x 240 pixels graphic LED backlight LCD
- Auto, manual, start, stop, fault reset and lamp test/panel lamp switches
- Alpha-numeric display with pushbuttons
- Heated HMI
- LED lamps indicating genset running, remote start, not in auto, common shutdown, common warning, manual run mode, auto mode and stop

#### Paralleling control functions

- First Start Sensor™ system selects first genset to close to bus
- Phase lock loop synchronizer with voltage matching
- Sync check relay
- Isochronous kW and kVar load sharing
- Enhanced safety features for paralleling generators

#### Alternator data

- Line-to-Neutral and Line-to-Line AC volts
- 3-phase AC current
- Frequency
- kW, kVA, power factor kVA (three phase and total)

#### Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Comprehensive FAE data (where applicable)

#### Other data

- Fault history
- Data logging and fault simulation (requires InPower)

### Standard control functions

#### Digital governing

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

#### Digital voltage regulation

- Integrated digital electronic voltage regulator
- 3-phase, 4-wire Line-to-Line sensing
- Configurable torque matching

#### AmpSentry™ AC protection

- AmpSentry protective relay
- Over current and short circuit shutdown
- Over current warning
- Single and three phase fault regulation
- Over and under voltage shutdown
- Over and under frequency shutdown
- Overload warning with alarm contact
- Reverse power and reverse Var shutdown
- Field overload shutdown

#### Engine protection

- Battery voltage monitoring, protection and testing
- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Cranking lockout
- Sensor failure indication
- Full authority electronic engine protection

#### Control functions

- Time delay start and cool down
- Real time clock for fault and event time stamping
- Cycle cranking
- Load shed
- Remote emergency stop



## Ratings definitions

### Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514

### Limited-Time Running Power (LTP):

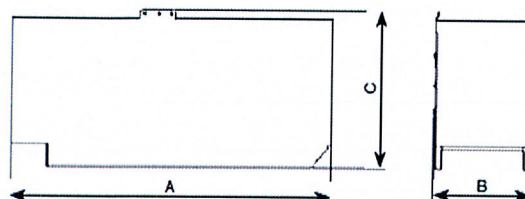
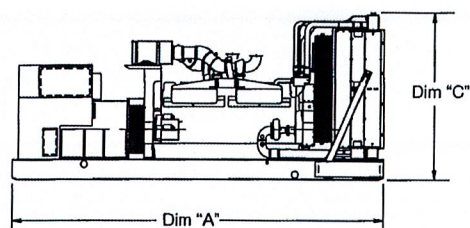
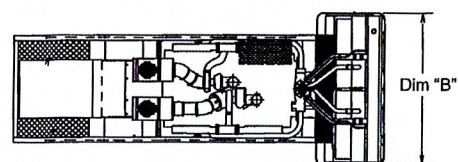
Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528.

### Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

### Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



Those outlines drawings are to provide representative configuration details for model series only. See respective model data sheet for specific model outline drawing number.  
Do not use for installation design.

| Open Set model | Dim "A" mm | Dim "B" mm | Dim "C" mm | Set weight dry* kg | Set weight wet* kg |
|----------------|------------|------------|------------|--------------------|--------------------|
| C275D5e        | 3000       | 1360       | 1874       | 1983               | 2031               |
| C250D6e        | 3000       | 1360       | 1874       | 1983               | 2031               |
| C330D5         | 3000       | 1360       | 1874       | 2328               | 2381               |
| C300D6         | 3000       | 1360       | 1874       | 2328               | 2381               |
| C330D5e        | 3000       | 1360       | 1874       | 2333               | 2380               |
| C300D6e        | 3000       | 1360       | 1874       | 2294               | 2341               |

\*Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.




| Enclosure model | Dim "A" mm | Dim "B" mm | Dim "C" mm | Set weight dry* kg | Set weight wet* kg |
|-----------------|------------|------------|------------|--------------------|--------------------|
| C275D5e         | 4251       | 1414       | 2316       | 2888               | 2936               |
| C250D6e         | 4251       | 1414       | 2316       | 2888               | 2936               |
| C330D5          | 4251       | 1414       | 2316       | 3360               | 3410               |
| C300D6          | 4251       | 1414       | 2316       | 3360               | 3410               |
| C330D5e         | 4251       | 1414       | 2316       | 3238               | 3285               |
| C300D6e         | 4251       | 1414       | 2316       | 3199               | 3246               |

\*Note: Weights represent a set with standard features. See outline drawings for weights of other configurations.



## Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

|   |  |           |   |
|---|--|-----------|---|
|  | This product designed and manufactured in facilities certified to ISO 9001 and ISO 14001 | ISO 8528  | Reciprocating internal combustion engine driven generating sets |
|   |  | NR12      | Safety at Work in Machinery and Equipment                       |
|  | Colombia's Certification   | ISO 3046  | Reciprocating Internal Combustion Engines                       |
|  | Chile's Certification  | IEC 60034 | Rotating electrical machines                                    |

**Warning:** Back feed to a utility system can cause electrocution and/ or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor  
or visit [power.cummins.com](http://power.cummins.com)

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REV0619





## Generator set data sheet



**Model:** C300D6e  
**Frequency:** 60 Hz  
**Fuel type:** Diesel  
**kW rating:** 300 Standby  
                   270 Prime  
                   218 Continuous  
**Emissions level:** Tier 3

|                                 |                   |
|---------------------------------|-------------------|
| Exhaust emission data sheet:    |                   |
| Sound performance data sheet:   |                   |
| Cooling performance data sheet: |                   |
| Genset outline:                 | A055D124/A057Y796 |

| Fuel consumption | Standby   |      |      |      | Prime     |      |      |      | Continuous |      |      |      |
|------------------|-----------|------|------|------|-----------|------|------|------|------------|------|------|------|
|                  | kW (kVA)  |      |      |      | kW (kVA)  |      |      |      | kW (kVA)   |      |      |      |
| Ratings          | 300 (375) |      |      |      | 270 (338) |      |      |      | 218 (273)  |      |      |      |
| Load             | 1/4       | 1/2  | 3/4  | Full | 1/4       | 1/2  | 3/4  | Full | 1/4        | 1/2  | 3/4  | Full |
| US gph           | 7,4       | 13,7 | 19,0 | 23,5 | 6,3       | 12,7 | 17,4 | 21,1 | 6,1        | 11,1 | 16,1 | 19,3 |
| L/h              | 28,0      | 52,0 | 72,0 | 89   | 24        | 48   | 66   | 80   | 23         | 42   | 61   | 73   |

| Engine                               | Standby rating                  | Prime rating | Continuous rating |
|--------------------------------------|---------------------------------|--------------|-------------------|
| Engine manufacturer                  | Cummins Inc.                    |              |                   |
| Engine model                         | QSL9-G7                         |              |                   |
| Configuration                        | 6-Cylinder                      |              |                   |
| Aspiration                           | Turbocharged/ Charge Air Cooled |              |                   |
| Gross engine power output, kWm (bhp) | 346 (464)                       | 312 (419)    | 263 (353)         |
| BMEP at set rated load, kPa (psi)    | 2606 (378)                      | 2351 (341)   |                   |
| Bore, mm (in.)                       | 114 (4,49)                      |              |                   |
| Stroke, mm (in.)                     | 145 (5,69)                      |              |                   |
| Rated speed, rpm                     | 1800                            |              |                   |
| Piston speed, m/s (ft/min)           | 8,7 (1707)                      |              |                   |
| Compression ratio                    | 16,1:1                          |              |                   |
| Lube oil capacity, L (US gal)        | 26,5 (7)                        |              |                   |
| Overspeed limit, rpm                 | 2100 ±50                        |              |                   |



## Fuel flow

|   |            |
|---|------------|
| Maximum fuel flow, L/hr (US gph)                  | 159 (42)   |
| Maximum fuel inlet restriction, kPa (in Hg)       | 33,86 (10) |
| Maximum fuel inlet temperature, °C (°F)           | 70 (160)   |
| Maximum fuel return line restriction, kPa (in Hg) | 33,86 (10) |

## Air

|  | Standby rating | Prime rating | Continuous rating |
|--|----------------|--------------|-------------------|
| Combustion air, CFM (L/s)                                  | 898,41 (424)   | 866,62 (409) |                   |
| Maximum air cleaner restriction, kPa (in H <sub>2</sub> O) | 6,23 (25)      |              |                   |
| Alternator cooling air, m <sup>3</sup> /min (cfm)          | 59,4 (2100)    |              |                   |

## Exhaust

|  |                |               |  |
|--|----------------|---------------|--|
| Exhaust flow at set rated load, CFM (L/s)        | 2341,36 (1105) | 2199,4 (1038) |  |
| Exhaust temperature, °C (°F)                     | 525 (977)      | 493 (919)     |  |
| Maximum back pressure, kPa (in H <sub>2</sub> O) | 6,23 (25)      |               |  |

## Standard set-mounted radiator cooling

|  |               |             |  |
|--|---------------|-------------|--|
| Ambient design, °C (°F)  | 56 (132,8)    |             |  |
| Fan load, kWm (HP)   | 23,4 (31,36)  |             |  |
| Coolant capacity (with radiator), L (US gal)                           | 29 (7,66)     |             |  |
| Cooling system air flow, m <sup>3</sup> /min (scfm)                    | 564 (19796,4) |             |  |
| Total heat rejection, MJ/min (Btu/min)                                 | 8,72 (8262)   | 7,88 (7469) |  |
| Maximum cooling air flow static restriction, kPa (in H <sub>2</sub> O) | 0,12 (0,5)    |             |  |

## Weights

|                               |      |
|-------------------------------|------|
| Unit Open dry weight, kgs     | 2294 |
| Unit Open wet weight, kgs     | 2341 |
| Unit Enclosed dry weight, kgs | 3199 |
| Unit enclosed wet weight, kgs | 3246 |



## Derating factors

|                   |  |
|-------------------|--|
| <b>Standby</b>    | Full rated power available up to 1036 m (3400 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 7% per 305 m (1000 ft), and 12% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor. |
| <b>Prime</b>      | Full rated power available up to 1036 m (3400 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 7% per 300 m (984 ft), and 19% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor.  |
| <b>Continuous</b> | Full rated power available up to 1829 m (6000 ft) elevation at ambient temperature of 25 °C (77 °F). Above these conditions, derate by an additional 9% per 305 m (1000 ft), and 25% per 16 °C (18 °F). For other temperature and altitude limits, consult your local Cummins distributor. |

## Ratings definitions

| <b>Emergency Standby Power (ESP):</b>  | <b>Limited-Time Running Power (LTP):</b>   | <b>Prime Power (PRP):</b>   | <b>Base Load (Continuous) Power (COP):</b>   |
|--|--|---|--|
| Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514. | Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528. | Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514. | Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514. |

## Alternator data

| Voltage | Connection  | Temp rise degrees C | Duty <sup>1</sup> | Winding No. | Frame Size |
|---------|-------------|---------------------|-------------------|-------------|------------|
| 220     | Wye, 3Phase | 150                 | S/P/C             | 311         | HC4D       |
| 380     | Wye, 3Phase | 150                 | S/P/C             | 311         | HC4E       |
| 440     | Wye, 3Phase | 150                 | S/P/C             | 311         | HC4D       |
| 480     | Wye, 3Phase | 150                 | S/P/C             | 311         | HC4D       |

### Notes:

<sup>1</sup> Standby (S), Prime (P) and Continuous ratings (C).



## Formulas for calculating full load currents:

### Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

**For more information contact your local Cummins distributor  
or visit [power.cummins.com](http://power.cummins.com)**

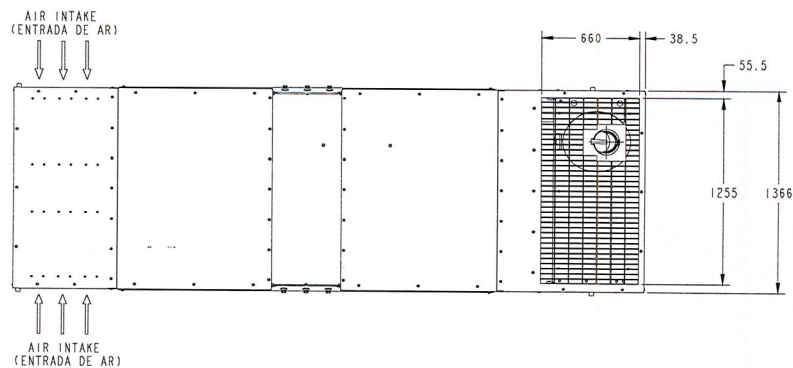


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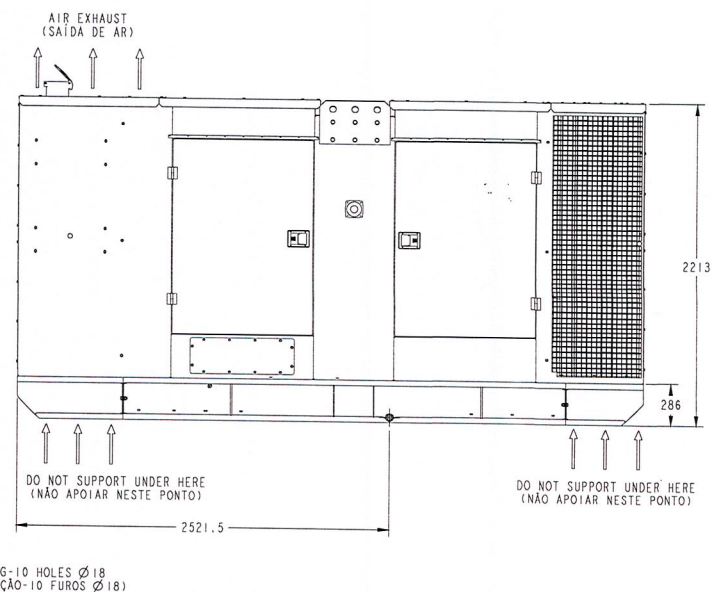
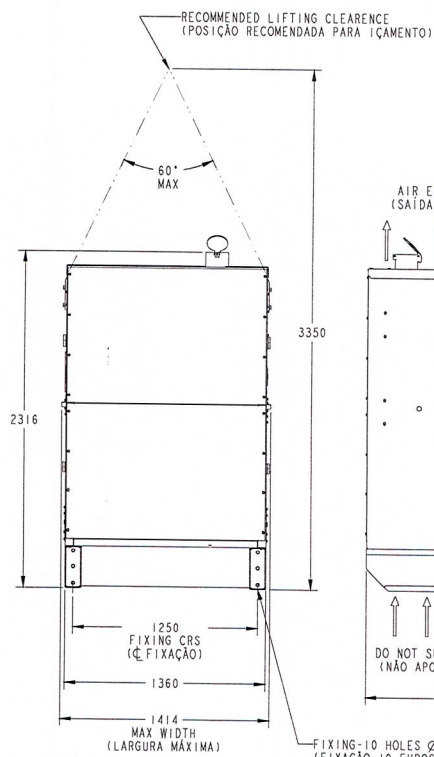


|            |     |    |                    |     |      |              |         |
|------------|-----|----|--------------------|-----|------|--------------|---------|
| REL NO     | REV | NO | REVISION           | DRN | CHER | APVD         | DATE    |
| ECO-170163 | A   | 1  | PRODUCTION RELEASE | JR  | LEP  | E. MATSUMURA | 31AUG18 |



1. DIMENSIONS SHOWN IN "mm".  
(DIMENSÕES INDICADAS EM "mm")
2. FUEL TANK CAPACITY: 400litres.  
(CAPACIDADE DO TANQUE DE COMBUSTÍVEL: 400 litros)
3. WET WEIGHT IN THE TABLES IS WITHOUT FUEL IN TANK.  
(O PESO ÚMIDO APRESENTADO NA TABELA NÃO CONSIDERA O COMBUSTÍVEL)

| TABULATION     |                |                     |                                   |                             |                              |  |          |
|----------------|----------------|---------------------|-----------------------------------|-----------------------------|------------------------------|--|----------|
| MODEL (MODEL0) | ENGINE (MOTOR) | GENERATOR (GERADOR) | FUEL TANK (TANQUE DE COMBUSTIVEL) | DRY WEIGHT (PESO SECO) (kg) | WET WEIGHT (PESO UMIDO) (kg) | TOTAL WEIGHT-FULL TANK (PESO TOTAL-TANQUE CHEIO) | CG       |
|                |                |                     |                                   |                             |                              |  | A B      |
| C250D6E        | QSL9-63        | UC274K              | 400 L                             | 2888                        | 2936                         | 3276   | 2760 869 |
| C275D5E        | QSL9-63        | UC274K              | 400 L                             | 2888                        | 2936                         | 3276   | 2760 869 |
| C300D6E        | QSL9-67        | HC4E                | 400 L                             | 3199                        | 3246                         | 3586   | 2692 861 |
| C330D5E        | QSL9-67        | HC4D                | 400 L                             | 3238                        | 3285                         | 3625   | 2715 864 |

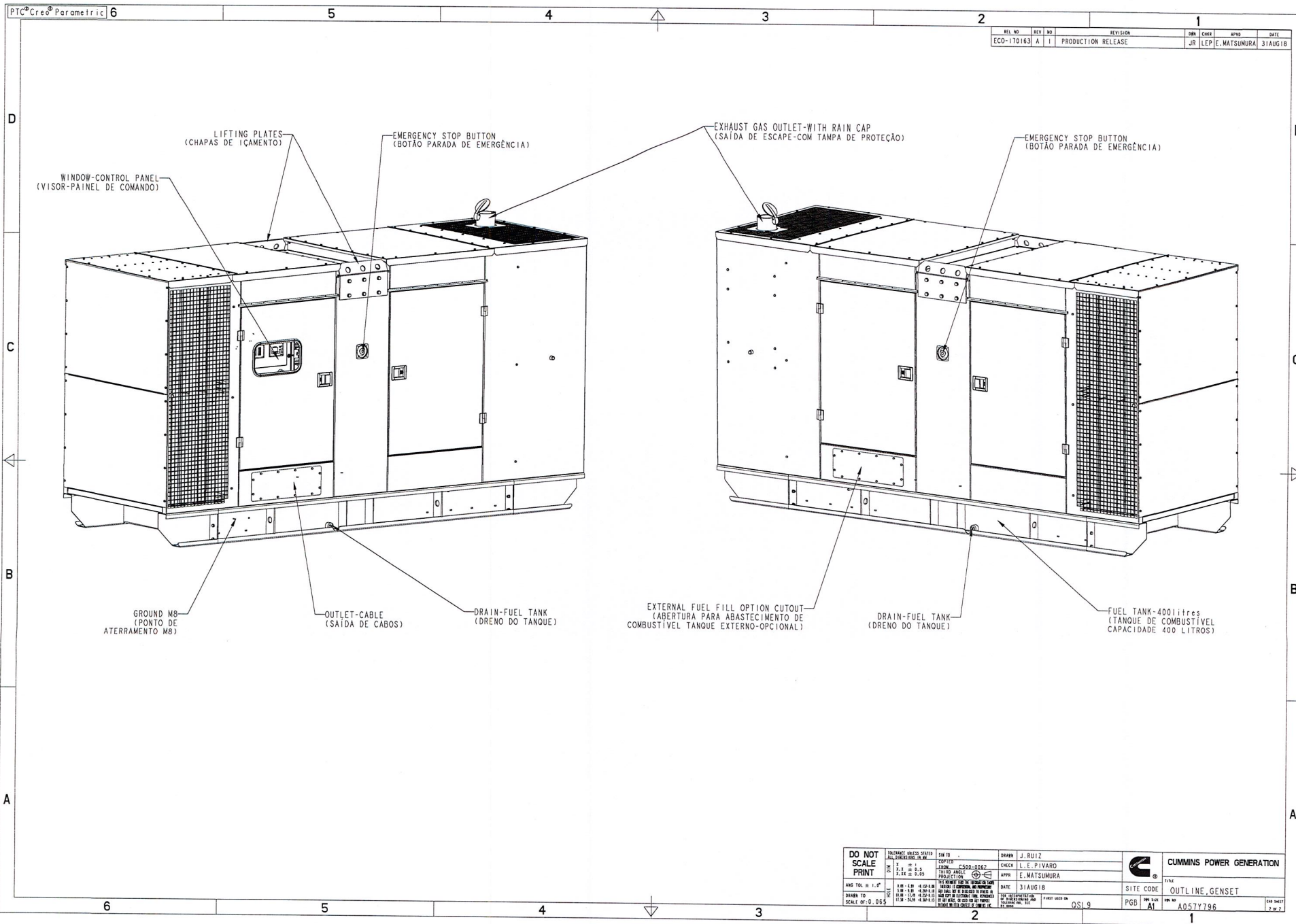


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(FIXAÇÃO-10 FUROS  $\varnothing 18$ )

FIXING-10 HOLES Ø18  
(FIXAÇÃO-10 FUROS Ø18)

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**Part A057Y796 A**

| Description    | Legacy Name | External Regulations          | Application Status | Release Phase Code | Security Classification | Alternates |
|----------------|-------------|-------------------------------|--------------------|--------------------|-------------------------|------------|
| OUTLINE,GENSET | A057Y796    | No External Regulations Apply | Production Only    | Production         | Confidential            |            |

**Part Specifications :A057Y796 A**

| Name     | Description            | Legacy Name |
|----------|------------------------|-------------|
| A030B356 | SPECIFICATION,MATERIAL | CES10903    |
| A057Y797 | DRAWING,ENGINEERING    | A057Y797    |



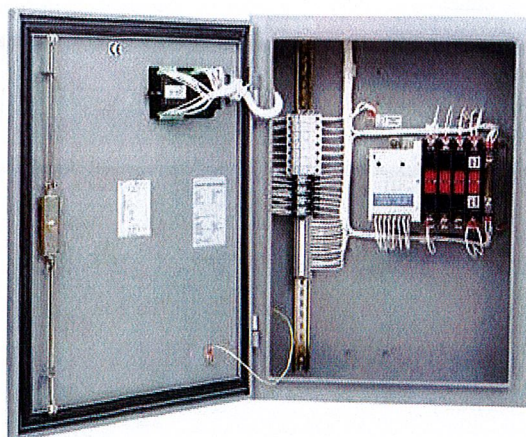


# GTEC

## Transfer switch

### open transition

40 – 2000 amp



### Description

GTEC transfer switches combine reliability and flexibility in a small, economical package for transferring loads between a utility and a generator set, or between two generators.

The microprocessor control monitors utility and emergency Standby generator power. When utility power fails or is unsatisfactory, the control starts the generator, then transfers the load from the utility to the generator. When stable utility power returns, the switch automatically transfers the load back to the utility.

For genset-to-genset applications, the generator set that is connected to the utility side of the control is the lead genset. If the lead generator set goes down or is taken offline, the transfer switch starts the second generator set and transfers the load. The control can be programmed to alternate between the two generator set at a set interval up to 300 hours.

The fully integrated controller is designed for practical functionality, with LED indicators and digital push-buttons for ease of operator use.

### Features

**Microprocessor control:** Easy-to-use, standard control. LED displays indicate transfer switch status. Pushbuttons allow operator to activate test, exercise timing and transfer mode.

**Programmed transition:** Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period. Recommended for inductive loads to prevent nuisance tripping.

**Advanced transfer switch mechanism:** True transfer switch mechanism with break-before-make action.

**Manual operation:** Standard removable handle can be used to manually operate the switch after the power source has been completely disconnected.

**Multi-voltage rating:** The multiple selectable voltage setting is field adjustable, and allows GTEC to be applied to voltage ranging from 110 V to 277 V without using external transformers.

**Positive interlocking:** Mechanical and electrical interlocking prevent source-to-source connection through the power or control wiring.

**Main contacts:** Silver alloy contacts with multi-leaf arc chutes are rated for 100% load interruption. They require no routine contact maintenance and provide 100% Continuous current ratings.

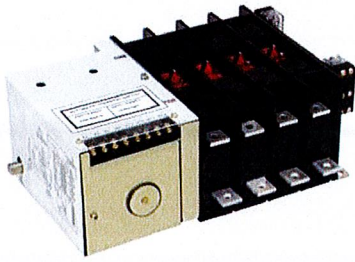
**Easy to service:** Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; no tool is required.

**Complete product line:** Cummins® offers a wide range of equipment, accessories and services to suit virtually any backup power application.

**Warranty and service:** Products are backed by a comprehensive warranty and a worldwide network of distributors with factory-trained service technicians.



## Transfer switch mechanism



- A powerful, economical AC solenoid operates GTEC transfer switches.
- Independent break-before-make action is used for 2-pole, 3-pole and 4-pole switches. On 4-pole/switched neutral switches, this action prevents the objectionable ground currents and nuisance ground fault tripping that can result from overlapping designs.
- A mechanical interlock prevents simultaneous closing of normal and emergency contacts.
- Electrical interlocks prevent simultaneous closing signals to normal and emergency contacts and interconnection of normal and emergency sources through the control wiring.
- High-pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contacts are mechanically held in both normal and emergency positions for reliable, quiet operation.
- Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. Protective covers for lugs are available.

## Specifications

|  |   |
|--|---|
| Voltage rating                         | Up to 480 V AC, 50 or 60 Hz.  |
| Arc interruption                       | Multiple leaf arc chutes provide dependable arc interruption.   |
| Neutral bar                            | A full current-rated neutral bar is Standard on enclosed 3-pole transfer switches.  |
| Auxiliary contacts                     | Two isolated contacts (one for each source) indicating switch position are provided for customer use. Contacts are normally open, and close to indicate connection to the source. Wired to terminal block for easy access. Rated at 5 amps Continuous at 100 V AC or 2.5 amps Continuous at 200 V AC. |
| Operating temperature                  | -30° C (-22° F) to 60° C (140° F).  |
| Storage temperature                    | -40° C (-40° F) to 60° C (140° F).  |
| Humidity                               | Up to 95% at 20° C.   |
| Altitude                               | Up to 2,000 m (6,561 ft) without derating.  |
| Total transfer time (source-to-source) | Will not exceed 100 msec with normal voltage applied to the actuator and without programmed transition enabled.   |
| Manual operating handle                | Transfer switches are equipped with a removable operating handle which allows operation during servicing to facilitate troubleshooting with sources of power disconnected.  |

## Certifications



40-2000 amp switches are third-party certified as meeting IEC 60947-6-1 AC31A.



All switches bear the CE mark.



40-1250 amp switches are CCC certified by the China Quality Certification Centre.

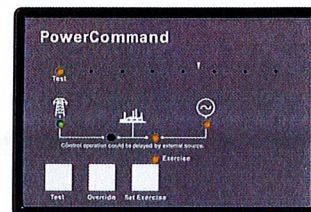


This transfer switch is designed and manufactured in facilities certified to ISO9001.



## Microprocessor control

- Simple, easy-to-use control provides transfer switch information and operator controls.
- LED lamps for source availability and source connected indication, exercise mode, and test mode. LED status lamps also provided for control set-up and configuration.
- Pushbutton controls for initiating test, overriding time delays and setting exercise time.
- Field-configurable for open or programmed transition.
- Integral exerciser clock.
- Control is prototype-tested to withstand voltage surges per EN60947-6-1.
- Gold-flashed generator start contacts.



## Control functions

**Under-voltage sensing:** All phases on the normal source, and single phase on generator source.

**Normal source pickup:** adjustable 80-95%

**Dropout:** adjustable 70-90% of nominal voltage

**Generator source pickup:** 90%

**Dropout:** 75% of nominal voltage

**Over-voltage sensing:** All phases on the normal source.

**Source pickup:** 120%

**Dropout:** 125%

**Under-frequency sensing:** Default setting is OFF.

**Generator source pickup:** 90% of nominal frequency

**Dropout:** 85% of nominal frequency

**Normal source pickup:** 80%

**Dropout:** 70%

**Over-frequency sensing:** Default setting is OFF

**Normal source pickup:** 130%

**Dropout:** 140%.

**Genset-to-genset sensing:** Same functions as above, for lead and secondary generators.

**Exercise mode:** The control exerciser clock can be set to operate on a 7, 14, 21 or 28-day cycle with a fixed exercise period duration of 20 minutes. A convenient 12-hour offset feature offsets the exercise time by 12 hours, without having to reprogram the timer. The control can be programmed to exercise the generator with or without load.

**Test mode:** When manually or remotely activated from the control panel, the control will start the generator and run until stopped. Can be configured to test with or without load.

## Transition modes

**Open transition/programmed:** Controls the time required for the device to switch from source to source, so load-generated voltages decay to a safe level before connecting to an energized source. Recommended method of dealing with significantly inductive loads to prevent nuisance tripping. Adjustable 0-10 seconds, default 0 seconds.

**Open transition/in-phase:** Initiates open transition transfer when in-phase monitor senses both sources are in phase. Operates in a break-before-make sequence. Includes ability to enable programmed transition as a back-up. If sources are not in phase within 120 seconds, the system will transfer using programmed transition.

## Time-delay functions

**Engine start:** Prevents nuisance genset starts due to momentary power variation or loss.

Adjustable 0-10 seconds, default 3 seconds.

**Transfer normal to emergency:** Allows genset to stabilize before application of load. Prevents power interruption if normal source variation or loss is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays transfer of load from lead to secondary generator. Adjustable 0-300 seconds, default 5 seconds.

**Re-transfer emergency to normal:** Allows the utility to stabilize before re-transfer of load. Prevents needless power interruption if return of normal source is momentary. Allows staggered transfer of loads in multiple transfer switch systems. For genset-to-genset applications, delays re-transfer of load from secondary back to lead generator.

Adjustable 0-30 minutes, default 10 minutes.

**Engine stop:** Maintains availability of the genset for immediate reconnection if the normal source fails shortly after transfer. Allows gradual genset cool down by running unloaded.

Adjustable 0-30 minutes, default 10 minutes.

**Elevator signal relay:** Requires optional elevator signal relay (M032). Delays transfer for specified interval to prevent a power interruption during elevator operation.

## Options

**Elevator signal relay (M032):** Provides relay output contacts for sending a load-disconnect warning signal to the elevator control. Transfer/re-transfer delay time is selectable for 0, 1, 2, 3, 5, 30, 120 or 300 seconds.

**Programmable exerciser clock (J030):** Provides a fully-programmable 7-day clock to provide greater flexibility in scheduling exercise periods than standard integral exerciser. Peaking function feature allows for generator operation during periods of high utility rates.

**Manual restore (S006):** Provides a key switch on the front door to allow the operator to control when the switch transfers to the available normal source.

## Electrical performance

The transfer switches listed below must be protected by either circuit breakers or fuses. The following WCR ratings are available when protecting the transfer switch with a circuit breaker or fuse. Short circuit ratings are stated in symmetrical RMS ampere.

### Fuse protection

| Transfer switch ampere | Overload current (make-break test) | Endurance cycles at current (operational performance capability) | WCR at 480 V max with current limiting fuse | Max fuse, size and type            |
|------------------------|------------------------------------|--|---|------------------------------------|
| 40, 63                 | 95 amps                            | 6000 at 63 amps  | 26,000 amps                                 | RT16NT-00 63 amp IEC NH Fuse type  |
| 100, 125               | 188 amps                           | 6000 at 125 amps   | 26,000 amps                                 | RT16NT-00 125 amp IEC NH Fuse type |
| 160, 200, 225, 250     | 375 amps                           | 6000 at 125 amps   | 38,000 amps                                 | RT16NT-2 250 amp IEC NH Fuse type  |
| 350, 400, 500          | 750 amps                           | 1000 at 0 amps<br>2000 at 500 amps                               | 50,000 amps                                 | RT16NT-3 500 amp IEC NH Fuse type  |
| 630, 800               | 1200 amps                          | 1000 at 0 amps<br>2000 at 800 amps                               | 55,000 amps                                 | RT16NT-4 800 amp IEC NH Fuse type  |
| 1000, 1250             | 1875 amps                          | 1500 at 0 amps<br>1500 at 1250 amps                              | 65,000 amps                                 | RT16NT-4 1250 amp IEC NH Fuse type |
| 1600, 2000             | 3000 amps                          | 500 at 0 amps<br>500 at 2000 amps                                | 120,000 amps                                | KRP-C 3000 amp Class L Fuse type   |

| Transfer switch ampere | Max breaker rating | Specified circuit breaker protection manufacturer, model and type                                     |
|------------------------|--------------------|---|
| 40, 63                 | 63 A               | Schneider: NSX160FTM, EZD100, NSD100F, NSD100K Siemens: 3VU, 3RV1, 3VT1 ABB: Isomax S1, S2X80, Sim100 |
| 100, 125               | 125 A              | Schneider: NSX160FTM, NSD160K Siemens: 3VL, 3VT1 ABB: Isomax S2, Isomax S3, S3X, Sim250               |
| 160, 200, 225, 250     | 250 A              | Schneider: NSX250NTM, NSD250K Siemens: 3VL, 3VT2 ABB: Isomax S3, S4X, Sim250                          |
| 350, 400, 500          | 500 A              | Schneider: NSX630NTM, NSD630K Siemens: 3VL, 3VT3 ABB: Isomax S4, S6X, Sim500                          |
| 630, 800               | 800 A              | Schneider: MT08, MT10, NW08 Siemens: 3VL, 3WT, 3VT4 ABB: Isomax S6, E1B, E1N, E1S                     |
| 1000, 1250             | 1250 A             | Schneider: MT12, NW16 Siemens: 3VL, 3WT, 3VT5 ABB: Isomax S7, E2B, E2L                                |
| 1600, 2000             | 2000 A             | Schneider: MT20, MT25, NW20, NW25 Siemens: 3WT ABB: E1N, E2N, E2S, E3S                                |



## Enclosures

The transfer switch and control are mounted in a key-operated locked enclosure. Enclosures meet IEC 60947-6-1 standard. 40-500 amp switches are front-connected. 630-2000 amps are rear-connected. Standard enclosure is grey. Green is available as an option (P152).

Cable tie bars are available to relieve stress on lugs for switches smaller than 500 amps.

### Dimensions: IP32

| Amp rating         | Height |      | Width |      | Door closed |      | Door open |      | Weight |     | Outline drawing |
|--------------------|--------|------|-------|------|-------------|------|-----------|------|--------|-----|-----------------|
|                    | in.    | mm   | in.   | mm   | in.         | mm   | in.       | mm   | lb     | kg  |                 |
| 40, 63             | 31.4   | 800  | 23.6  | 600  | 8.8         | 226  | 31.4      | 800  | 101.4  | 46  | 0300-6004       |
| 100, 125           | 31.4   | 800  | 23.6  | 600  | 8.8         | 226  | 31.4      | 800  | 105.8  | 48  | 0300-6004       |
| 160, 200, 225, 250 | 39.3   | 1000 | 31.4  | 800  | 8.8         | 226  | 39.3      | 1000 | 125.6  | 57  | 0300-6005       |
| 350, 400, 500      | 39.3   | 1000 | 31.4  | 800  | 8.8         | 226  | 39.3      | 1000 | 143.3  | 65  | 0300-6005       |
| 630, 800           | 53.9   | 1370 | 29.2  | 742  | 24.8        | 631  | 53.0      | 1348 | 385.8  | 175 | 0300-6006       |
| 1000, 1250         | 53.9   | 1370 | 29.2  | 742  | 24.8        | 631  | 53.0      | 1348 | 405.6  | 184 | 0300-6006       |
| 1600, 2000         | 78.7   | 2000 | 39.4  | 1000 | 44.3        | 1126 | 83.7      | 2126 | 888.9  | 400 | A0281839        |

### Dimensions: IP54

| Amp rating         | Height |      | Width |     | Door closed |      | Door open |       | Weight |     | Outline drawing |
|--------------------|--------|------|-------|-----|-------------|------|-----------|-------|--------|-----|-----------------|
|                    | in.    | mm   | in.   | mm  | in.         | mm   | in.       | mm    | lb     | kg  |                 |
| 40, 63             | 34.0   | 864  | 23.5  | 598 | 11.6        | 296  | 31.0      | 788   | 110    | 50  | 0300-4559       |
| 100, 125           | 34.0   | 864  | 23.5  | 598 | 11.6        | 296  | 31.0      | 788   | 110    | 52  | 0300-4559       |
| 160, 200, 225, 250 | 41.9   | 1064 | 31.6  | 804 | 11.6        | 296  | 39.0      | 991.8 | 143.3  | 65  | 0300-4560       |
| 350, 400, 500      | 41.9   | 1064 | 31.6  | 804 | 11.6        | 296  | 39.0      | 991.8 | 160.9  | 73  | 0300-4560       |
| 630, 800           | 53.9   | 1370 | 29.5  | 750 | 26.6        | 676  | 51.9      | 1319  |        | 188 | 0300-4561       |
| 1000, 1250         | 53.9   | 1370 | 29.5  | 750 | 26.6        | 676  | 51.9      | 1319  | 414.5  | 188 | 0300-4561       |
| 1600, 2000         | 78.9   | 2004 | 39.2  | 996 | 45.3        | 1150 | 83.7      | 2126  | 892.9  | 405 | A026M050        |

## Submittal detail: options

### Current ratings:

- 40
- 63
- 100
- 125
- 160
- 200
- 225
- 250
- 350
- 400
- 500
- 630
- 800
- 1000
- 1250
- 1600
- 2000

### Voltage ratings:

- R060\* 110 to 139
- R061\* 220 to 240
- R062\* 255 to 277
- R063 110 to 277

### Pole configuration:

- A027 Poles - 2 (solid neutral)
- A028 Poles - 3 (solid neutral)
- A029 Poles - 4 (switched neutral)

### Frequency:

- A044 60 Hertz
- A045 50 Hertz
- A086-7 50/60 Hertz

### Application:

- A035 Utility-to-genset
- A037 Genset-to-genset

\* Only available with L-L controller option.

### System Options:

- A041 Single phase, 2-wire or 3-wire
- A042 Three phase, 3-wire or 4-wire

### Enclosure:

- B004 Open construction: no enclosure - includes automatic transfer switch and controls (1600— 2000 amp open construction not available)
- B901 IP32 general purpose indoor
- B014 IP54 general purpose outdoor
- P152 Optional paint colour: Onan green
- M048 Protective shield

### Control voltage:

- M033 12V, Genset starting voltage
- M034 24V, Genset starting voltage

### Control options:

- J030 Add-on programmable exercisor clock
- M032 Relay signal module
- S006 Manual restore switch

### Battery chargers:

- K001 2 amps, 12/24 volts

### Auxiliary relays:

Relays are factory installed. All relays provide two sets of form C (DPDT) contacts rated 5 amps at 250VAC. Relay terminals accept one 0.75 mm to two 4 mm wires per terminal.

- L101 24 V DC coil: installed, not wired (for customer use).
- L102 24 V DC coil: emergency position - relay energized when GTEC in Source 2 (emergency) position.
- L103 24 V DC coil: normal position - relay energized when GTEC in Source 1 (normal) position
- L201 12 V DC coil: installed, not wired (for customer use)
- L202 12 V DC coil: emergency position - relay energized when GTEC in Source 2 (emergency) position
- L203 12 V DC coil: normal position - relay energized when GTEC in Source 1 (normal) position

### Warranty:

- Warranty: 12 months from commissioning to a maximum 18 months after date of sale.

### Accessories:

- AC-176 Specification sheet

For more information contact your local Cummins distributor  
or visit [power.cummins.com](http://power.cummins.com)

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