


|  |  |   |                                 |   |
|--|--|---|---------------------------------|---|
|  | <b>CUMMINS ENGINE COMPANY, INC</b><br>Columbus, Indiana 47201<br><b>ENGINE PERFORMANCE CURVE</b> | Basic Engine Model:<br><b>NTA855-G5</b>                         | Curve Number:<br><b>FR-1831</b> | <i>G-DRIVE</i><br><b>N855</b><br><b>1</b> |
|  |  | Engine Critical Parts List:<br><b>CPL: 2116</b>                 | Date:<br><b>21Dec00</b>         |   |
| Displacement : <b>14.0 litre (855 in<sup>3</sup>)</b>                            |  | Bore : <b>140 mm (5.5 in.)</b> Stroke : <b>152 mm (6.0 in.)</b> |                                 |   |
| No. of Cylinders : <b>6</b>  |  | Aspiration : <b>Turbocharged and Aftercooled</b>                |                                 |   |

**•• PRELIMINARY ••**

| Engine Speed<br>RPM | Standby Power |      | Prime Power                                   | Continuous Power                                   |
|---------------------|---------------|------|---|--|
|                     | kWm           | BHP  |   |  |
| 1500                | ----          | ---- | Not available for<br>Prime Power Applications | Not available for<br>Continuous Power Applications |
| 1800                | 451           | 605  |   |  |

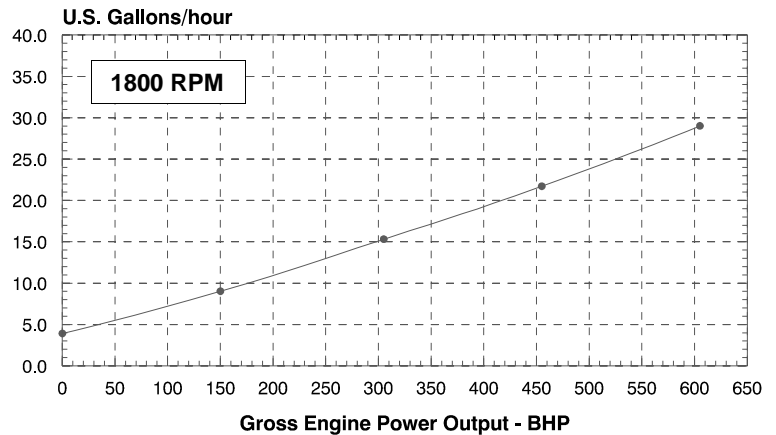
### Engine Performance Data @ 1500 RPM

**Not Available at 1500 RPM  
For 1500 RPM (see NTA855-G6)**

**Not Available at 1500 RPM  
For 1500 RPM (see NTA855-G6)**

### Engine Performance Data @ 1800 RPM

| OUTPUT POWER   |     |     | FUEL CONSUMPTION |                |                   |              |
|--|-----|-----|------------------|----------------|-------------------|--------------|
| %  | kWm | BHP | kg/<br>kWm-h     | litre/<br>hour | U.S. Gal/<br>hour | lb/<br>BHP-h |
| <b>STANDBY POWER</b>                                   |     |     |                  |                |                   |              |
| 100  | 451 | 605 | 0.209            | 110            | 29.1              | 0.342        |
| 75   | 339 | 455 | 0.210            | 84             | 22.1              | 0.344        |
| 50   | 228 | 305 | 0.224            | 60             | 15.9              | 0.370        |
| 25   | 112 | 150 | 0.273            | 36             | 9.1               | 0.431        |
| <b>CONTINUOUS POWER</b>                                |     |     |                  |                |                   |              |
| <i>Not Available for Continuous Power Applications</i> |     |     |                  |                |                   |              |
| <b>PRIME POWER</b>                                     |     |     |                  |                |                   |              |
| <i>Not Available for Prime Power Applications</i>      |     |     |                  |                |                   |              |



**CONVERSIONS:**    (Litres = U.S. Gal x 3.785)    (Engine kWm = BHP x 0.746)    (U.S. Gal = Litres x 0.2642)    (Engine BHP = Engine kWm x 1.34)

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. See reverse side for application rating guidelines.

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.

*D.K. Trueblood*

## POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

**STANDBY POWER RATING is 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.

### Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

### Operation At Elevated Temperature And Altitude:

The engine may be operated at:

1800 RPM up to 2,500 ft (760 m) and 104° F (40° C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000 ft (300 m), and 1% per 10° F (2% per 11° C).

ENGINE MODEL : NTA855-G5

CONFIGURATION NUMBER : D093629DX02

DATA SHEET : DS-1831

DATE : 21Dec00

PERFORMANCE CURVE : FR-1831

**INSTALLATION DIAGRAM**

- Fan to Flywheel : 3170239
- Heat Exchanger Cooled :

**CPL NUMBER**

- Engine Critical Parts List : 2116

**GENERAL ENGINE DATA**

|                         |                                     |
|-------------------------|-------------------------------------|
| Type .....              | 4-Cycle; In-line; 6-Cylinder Diesel |
| Aspiration .....        | Turbocharged and Aftercooled        |
| Bore x Stroke .....     | 5.5 x 6.0 (140 x 152)               |
| Displacement .....      | 855 (14.0)                          |
| Compression Ratio ..... | 14.0 : 1                            |

|                                   |           |             |
|-----------------------------------|-----------|-------------|
| Dry Weight                        |           |             |
| Fan to Flywheel Engine.....       | — lb (kg) | 2900 (1315) |
| Heat Exchanger Cooled Engine..... | — lb (kg) | N. A.       |

|                                   |           |             |
|-----------------------------------|-----------|-------------|
| Wet Weight                        |           |             |
| Fan to Flywheel Engine.....       | — lb (kg) | 3018 (1369) |
| Heat Exchanger Cooled Engine..... | — lb (kg) | N. A.       |

|  |  |              |
|--|--|--------------|
| Moment of Inertia of Rotating Components                   |  |              |
| • with FW 1109 Flywheel .....                              | — lb <sub>m</sub> • ft <sup>2</sup> (kg • m <sup>2</sup> ) | 118.5 (4.99) |
| • with FW 1001 Flywheel .....                              | — lb <sub>m</sub> • ft <sup>2</sup> (kg • m <sup>2</sup> ) | 180.3 (7.60) |
| Center of Gravity from Rear Face of Flywheel Housing ..... | — in (mm)  | 27.7 (704)   |
| Center of Gravity Above Crankshaft Centerline .....        | — in (mm)  | 5.5 (140)    |
| Maximum Static Loading at Rear Main Bearing.....           | — lb (kg)  | N.A.         |

**ENGINE MOUNTING**

|  |                   |             |
|--|-------------------|-------------|
| Maximum Bending Moment at Rear Face of Block ..... | — lb • ft (N • m) | 1000 (1356) |
|--|-------------------|-------------|

**EXHAUST SYSTEM**

|                            |                 |        |
|----------------------------|-----------------|--------|
| Maximum Back Pressure..... | — in Hg (mm Hg) | 3 (76) |
|----------------------------|-----------------|--------|

**AIR INDUCTION SYSTEM**

|  |   |          |
|--|---|----------|
| Maximum Intake Air Restriction                               |   |          |
| • with Dirty Filter Element.....                             | — in H <sub>2</sub> O (mm H <sub>2</sub> O) | 25 (635) |
| • with Normal Duty Air Cleaner and Clean Filter Element..... | — in H <sub>2</sub> O (mm H <sub>2</sub> O) | 10 (254) |
| • with Heavy Duty Air Cleaner and Clean Filter Element.....  | — in H <sub>2</sub> O (mm H <sub>2</sub> O) | 15 (381) |

**COOLING SYSTEM**

|                                     |                  |            |
|-------------------------------------|------------------|------------|
| Coolant Capacity — Engine Only..... | — US gal (liter) | 5.5 (20.8) |
| — with _____ Heat Exchanger.....    | — US gal (liter) | N.A.       |

|  |             |        |
|--|-------------|--------|
| Maximum Coolant Friction Head External to Engine — 1800 rpm..... | — psi (kPa) | 7 (48) |
| — 1500 rpm.....  | — psi (kPa) |        |

|   |                        |                     |
|---|------------------------|---------------------|
| Maximum Static Head of Coolant Above Engine Crank Centerline..... | — ft (m)               | 60 (18.3)           |
| Standard Thermostat (Modulating) Range .....                      | — °F (°C)              | 180 - 200 (82 - 93) |
| Minimum Pressure Cap .....  | — psi (kPa)            | 10 (69)             |
| Maximum Top Tank Temperature for Standby Power .....              | — °F (°C)              | 220 (104)           |
| Minimum Raw Water Flow @ 90°F to _____ Heat Exchanger.....        | — US gpm (liter / min) | N.A.                |
| Maximum Raw Water Inlet Pressure at _____ Heat Exchanger.....     | — psi (kPa)            | N.A.                |

**LUBRICATION SYSTEM**

|  |                  |                         |
|--|------------------|-------------------------|
| Oil Pressure @ Idle Speed.....                       | — psi (kPa)      | 15 (103)                |
| @ Governed Speed .....                               | — psi (kPa)      | 35 - 45 (241 - 310)     |
| Maximum Oil Temperature.....                         | — °F (°C)        | 250 (121)               |
| Oil Capacity with OP 1440 Oil Pan : High - Low ..... | — US gal (liter) | 9.0 - 8.0 (34.1 - 30.3) |
| Total System Capacity (with Combo Filter) .....      | — US gal (liter) | 9.7 (36.7)              |
| Angularity of OP 1440 Oil Pan — Front Down .....     |                  | 45°                     |
| — Front Up .....                                     |                  | 45°                     |
| — Side to Side.....                                  |                  | 45°                     |

### FUEL SYSTEM

|   |                             |
|---|-----------------------------|
| Type Injection System.....  | Direct Injection Cummins PT |
| Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter..... — in Hg (mm Hg)                       | 4.0 (102)                   |
| — with Dirty Fuel Filter..... — in Hg (mm Hg)   | 8.0 (203)                   |
| Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)..... — in Hg (mm Hg) | 6.0 (152)                   |
| Maximum Fuel Flow to Injection Pump..... — US gph (liter / hr)  | 56.3 (213)                  |

### ELECTRICAL SYSTEM

|  |       |
|--|-------|
| Cranking Motor (Heavy Duty, Positive Engagement)..... — volt | 24    |
| Battery Charging System, Negative Ground..... — ampere       | 35    |
| Maximum Allowable Resistance of Cranking Circuit..... — ohm  | 0.002 |
| Minimum Recommended Battery Capacity                         |       |
| • Cold Soak @ 50 °F (10 °C) and Above..... — °F CCA          | 600   |
| • Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C)..... — °F CCA   | 640   |
| • Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)..... — °F CCA   | 900   |

### COLD START CAPABILITY

|   |         |
|---|---------|
| Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 seconds..... — °F (°C) | 50 (10) |
| Minimum Ambient Temperature for Unaided Cold Start..... — °F (°C)                                       | 20 (-7) |

### 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 |
| Estimated Free Field Sound Pressure Level of a Typical Generator Set;                              |          |
| Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm / 1500 rpm..... — dBA          | N.A.     |
| Exhaust Noise at 1 ft Horizontally from Centerline of Exhaust Pipe Outlet upwards at 0°..... — dBA | N.A.     |

|  |            |
|--|------------|
| Governed Engine Speed..... — rpm                               | 1800       |
| Engine Idle Speed..... — rpm                                   | 575 - 675  |
| Gross Engine Power Output..... — BHP (kW <sub>m</sub> )        | 605 (451)  |
| Brake Mean Effective Pressure..... — psi (kPa)                 | 311 (2147) |
| Piston Speed..... — ft / min (m / s)                           | 1800 (9.1) |
| Friction Horsepower..... — HP (kW <sub>m</sub> )               | 47 (35)    |
| Engine Water Flow at Stated Friction Head External to Engine : |            |
| • 2 psi Friction Head (estimated)..... — US gpm (liter / s)    | 130 (8.2)  |
| • Maximum Friction Head (estimated)..... — US gpm (liter / s)  | 116 (7.3)  |

#### Engine Data with Dry Type Exhaust Manifold

|   |             |
|---|-------------|
| Intake Air Flow..... — cfm (liter / s)                        | 1330 (628)  |
| Exhaust Gas Temperature..... — °F (°C)                        | 995 (535)   |
| Exhaust Gas Flow..... — cfm (liter / s)                       | 3780 (1785) |
| Radiated Heat to Ambient..... — BTU / min (kW <sub>m</sub> )  | 3790 (67)   |
| Heat Rejection to Coolant..... — BTU / min (kW <sub>m</sub> ) | 15125 (266) |
| Heat Rejection to Exhaust..... — BTU / min (kW <sub>m</sub> ) | 18520 (326) |

| STANDBY     |   | PRIME POWER                  |       |
|-------------|---|------------------------------|-------|
| 60 hz       | 50 hz                                       | 60 hz                        | 50 hz |
| 1800        |   |                              |       |
| 575 - 675   |   |                              |       |
| 605 (451)   |   |                              |       |
| 311 (2147)  |   |                              |       |
| 1800 (9.1)  |   |                              |       |
| 47 (35)     | For 50 Hz, see NTA855-G6 Data Sheet DS-1832 |                              |       |
| 130 (8.2)   |   |                              |       |
| 116 (7.3)   |   | Prime Power is Not Available |       |
| 1330 (628)  |   |                              |       |
| 995 (535)   |   |                              |       |
| 3780 (1785) |   |                              |       |
| 3790 (67)   |   |                              |       |
| 15125 (266) |   |                              |       |
| 18520 (326) |   |                              |       |

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

•• PRELIMINARY ••