



# VTA28-G6 Advantage Data Sheet

Cummins Engine Company, Inc. Columbus, Indiana 47201

|  |  |                                  |
|--|--|----------------------------------|
| Curve Number: <b>FR-5196</b>                           | Engine Critical Parts List: <b>CPL 5713</b>      | Date: <b>15Apr02</b>             |
| Displacement : <b>28.0 litre (1710 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>12</b>                           | Aspiration : <b>Turbocharged and Aftercooled</b> |                                  |

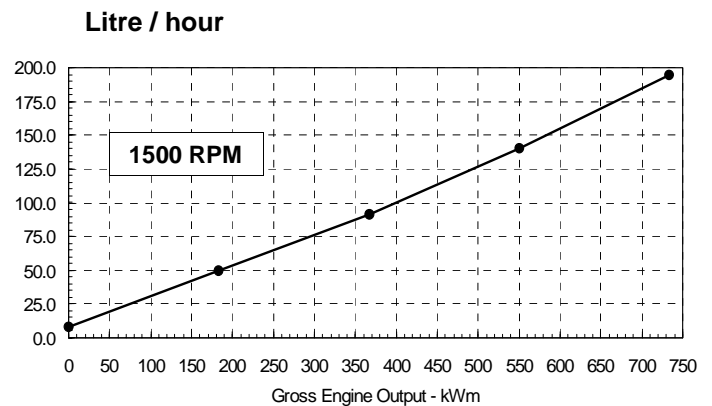
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**Emergency Standby Ratings for application in Corporate Generator Sets Only**

| Engine Speed | Standby Power |            |
|--------------|---------------|------------|
| RPM          | kWm           | BHP        |
| <b>1500</b>  | <b>733</b>    | <b>982</b> |

## 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                  | 733 | 982 | 0.226            | 0.371        | 195            | 51.3              |
| 75                   | 550 | 737 | 0.216            | 0.354        | 140            | 36.7              |
| 50                   | 367 | 491 | 0.211            | 0.346        | 91             | 23.9              |
| 25                   | 183 | 246 | 0.232            | 0.381        | 50             | 13.2              |



**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.



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## POWER RATING APPLICATION GUIDELINES FOR EMERGENCY STANDBY ENGINES FOR APPLICATION IN CORPORATE GENERATOR SETS ONLY

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

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this standby rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Emergency Standby Power rating. This rating should be applied where reliable utility power is available. An emergency standby rated engine should be sized for a maximum of an **70%** typical load factor and **200 hours** of operation per year. This includes a maximum of **1 hour** in a **12 hour** period at the Emergency Standby Power rating. Emergency Standby rating 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:

For corporate generator sets using corporate cooling system design, this generator set can be used at:

1500 RPM up to 3280 ft (1000 m) and 104° F (40° C) ambient without power deration. For sustained operation above these conditions, derate by 4% per 1000 ft (300 m) and 2% per 10° F (4% per 11° C).



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## Cummins Engine Company, Inc. Engine Data Sheet

**ENGINE MODEL : VTA28-G6**

**CONFIGURATION NUMBER : D153103DX02**

**DATA SHEET : DS-4886-B**

**DATE : 15Apr02**

**PERFORMANCE CURVE : FR-5196**

**INSTALLATION DIAGRAM**

- Fan to Flywheel : 3626364
- Heat Exchanger Cooled : N.A.

**CPL NUMBER**

- Engine Critical Parts List

**GENERAL ENGINE DATA**

|                         |                                      |
|-------------------------|--------------------------------------|
| Type.....               | 4-Cycle; 40° Vee; 12-Cylinder Diesel |
| Aspiration.....         | Turbocharged and Aftercooled         |
| Bore x Stroke .....     | 5.5 x 6.0 (140 x 152)                |
| Displacement .....      | 1710 (28.0)                          |
| Compression Ratio ..... | 13.1 : 1                             |

|                              |           |      |        |
|------------------------------|-----------|------|--------|
| Dry Weight                   |           |      |        |
| Fan to Flywheel Engine ..... | — lb (kg) | 6395 | (2900) |
| Wet Weight                   |           |      |        |
| Fan to Flywheel Engine ..... | — lb (kg) | 6725 | (3050) |

|   |  |      |        |
|---|--|------|--------|
| Moment of Inertia of Rotating Components                            |  |      |        |
| • with FW 5013 Flywheel .....                                       | — lb <sub>m</sub> • ft <sup>2</sup> (kg • m <sup>2</sup> ) | 256  | (10.8) |
| Center of Gravity from Rear Face of Flywheel Housing (FH 5020)..... | — in (mm)  | 33.7 | (856)  |
| Center of Gravity Above Crankshaft Centerline.....                  | — in (mm)  | 14.0 | (356)  |
| Maximum Static Loading at Rear Main Bearing .....                   | — lb (kg)  | 1950 | (885)  |

**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 (Litre) | 21.2      | (80)      |
| Maximum Coolant Friction Head External to Engine — 1500 rpm.....  | — psi (kPa)      | 8         | (55)      |
| 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)     |

**LUBRICATION SYSTEM**

|  |                  |         |             |
|--|------------------|---------|-------------|
| Oil Pressure @ Idle Speed.....                       | — psi (kPa)      | 20      | (138)       |
| @ Governed Speed.....                                | — psi (kPa)      | 50 - 90 | (345 - 621) |
| Maximum Oil Temperature .....                        | — °F (°C)        | 250     | (121)       |
| Oil Capacity with OP 5127 Oil Pan : High - Low.....  | — US gal (Litre) | 18 - 16 | (68 - 61)   |
| Total System Capacity (including Bypass Filter)..... | — US gal (Litre) | 21.9    | (83)        |
| Angularity of OP 5127 Oil Pan — Front Down.....      |                  |         | 30°         |
| — Front Up.....                                      |                  |         | 35°         |
| — Side to Side .....                                 |                  |         | 35°         |



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## 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) 6.5 (165)       |
| Maximum Fuel Flow to Injection Pump .....   | — US gph (Litre / hr) 118 (448) |

## 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.....            | — 0°F CCA 1200 |
| • Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C).....     | — 0°F CCA 1280 |
| • Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C).....     | — 0°F CCA 1800 |

## 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) 40 (4)  |

## 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 / 1500 RPM].....                                  | — dBA 97 / 97   |
| Exhaust Noise at 1 m Horizontally from C <sub>L</sub> of Exhaust Pipe Outlet Upwards at 45° [1800 / 1500 RPM]..... | — dBA 112 / 112 |

### STANDBY 50 hz

|   |                                    |
|---|------------------------------------|
| Governed Engine Speed.....                                    | — rpm 1500                         |
| Engine Idle Speed.....  | — rpm 575 - 650                    |
| Gross Engine Power Output .....                               | — BHP (kW <sub>m</sub> ) 982 (733) |
| Brake Mean Effective Pressure .....                           | — psi (kPa) 304 (2096)             |
| Piston Speed.....   | — ft / min (m / s) 1500 (7.6)      |
| Friction Horsepower.....                                      | — HP (kW <sub>m</sub> ) 78 (58)    |
| Engine Water Flow at Stated Friction Head External to Engine: |                                    |
| • 3 psi Friction Head.....                                    | — US gpm (Litre / s) 194 (12.2)    |
| • Maximum Friction Head.....                                  | — US gpm (Litre / s) 173 (10.9)    |

### Engine Data with Dry Type Exhaust Manifold

|                                |  |
|--------------------------------|--|
| Intake Air Flow.....           | — cfm (Litre / s) 1940 (914)               |
| Exhaust Gas Temperature .....  | — °F (°C) 915 (489)                        |
| Exhaust Gas Flow.....          | — cfm (Litre / s) 4690 (2212)              |
| Radiated Heat to Ambient ..... | — BTU / min (kW <sub>m</sub> ) 5140 (90)   |
| Heat Rejection to Coolant..... | — BTU / min (kW <sub>m</sub> ) 32700 (575) |
| Heat Rejection to Exhaust..... | — BTU / min (kW <sub>m</sub> ) 30300 (532) |

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

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