



Natural Gas Engines



GTA28

ENGINE DATA SHEET #DS5750D

GENERATOR DRIVE MARKETS

GENERAL ENGINE DATA

Type	4 Cycle, In-Line, 6 Cylinder
Aspiration	Turbocharged & Aftercooled
Bore - in. (mm) x Stroke - in. (mm)	5 ½ (140) x 6 (152)
Displacement - cu. in. (litre)	1710 (28.0)
Compression Ratio	10:1 and 8.5:1
Dry Weight	
Fan Hub to Flywheel - lb. (kg)	6960 (3157)
Radiator Cooled Engine - lb. (kg)	10800 (4899)
Heat Exchanger Cooled Engine - lb. (kg)	7090 (3216)
Wet Weight	
Fan Hub to Flywheel - lb. (kg)	7620 (3293)
Radiator Cooled Engine - lb. (kg)	11280 (5116)
Heat Exchanger Cooled Engine - lb. (kg)	7394 (3354)
C.G. Distance From Front Face of Block (Engine Only) - in. (mm)	24.4 (619)
C.G. Distance Above Crank Centerline (Engine Only) - in. (mm)	14.4 (356)
Moment of Inertia of Rotating Components (w/o Flywheel, w/ Flywheel) - lb. - ft. ² (kg m ²)	87.2 (3.7)
Firing Order	1L-6R-2L-5R-4L-3R
.....	6L-1R-5L-2R-3L-4R

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block - lb. ft. (N m)	1000 (1356)
Moment of Inertia About Roll Axis - lb. - ft. ² (kg m ²)	3120 (132)

EXHAUST SYSTEM

Maximum Allowable Back Pressure - in. Hg. (mm Hg)	2 (50)
Exhaust Outlet Pipe Size - in. (mm)	Dual 4 (102)
Maximum Turbine Inlet Temp (Dry Manifold) - °F (°C)	1350 (732)

AIR INDUCTION SYSTEM

IMPCO High Altitude, Low Pressure Gas System (Std)	
Maximum Allowable Intake Air Restriction With Heavy Duty Air Cleaner	
Clean Element - in. H ₂ O (mm H ₂ O)	8 (203)
Dirty Element - in. H ₂ O (mm H ₂ O)	15 (381)
Minimum Dirt Holding Capacity With Heavy Duty Air Cleaner - gm/cfm (gm L/s)	25 (53)

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity - Cold Soak 0° F (-18° C) or Above	24 Volt
Engine Only (De-clutched Load)	
- Cold Cranking Amperes – CCA	1800
- Reserve Capacity - min.	640
Engine With Connected Drive Train	
- Cold Cranking Amperes – CCA	N/A
- Reserve Capacity - min.	N/A
Maximum Allowable Resistance of Starting Circuit – Ohms	.002

COOLING SYSTEM

Coolant Capacity - Engine Only U.S. qt. (litre)	85 (80)
- Engine With Radiator - U.S. qt. (litre).....	174 (165)
- Engine With Heat Exchanger - U.S. qt. (litre)	108 (102.2)
- Aftercooler Circuit - U.S. qt. (litre)	9 (8.5)
- Aftercooler Circuit (Unit Mtd. Heat Exchanger) - U.S. qt. (litre).....	16 (15.1)
Engine Coolant Flow – 5 PSI External Water Circuit Resistance – U.S. GPM (L/min) 1800 RPM	214 (810)
1500 RPM	176 (666)
1200 RPM	150 (568)
Maximum Coolant Friction Head External to the Engine - PSI (kPa)	5 (34)
Maximum Static Head of Coolant Above Engine Crank Centerline - ft. (m).....	60 (18)
Maximum Air Restriction Across a Radiator - in. H ₂ O (mm H ₂ O).....	5 (13)
Minimum Raw Water Flow @ 90° F (32° C) to Heat Exchanger - U.S. GPM (L/m)	42 (159)
Aftercooler Aux. Water Pump Coolant Flow – 3 PSI External Water Circuit Resistance-U.S. GPM(L/min) 1800 RPM	27 (102)
1500 RPM	20 (76)
1200 RPM	16 (61)
Maximum Raw Water Inlet Pressure at Heat Exchanger - PSI (kPa)	150 (1034)
Standard Thermostat (Modulating) Range - °F (°C)	175 – 195 (79 – 91)
Maximum Output Pressure of Engine Water Pump - PSI (kPa)	35 (241)
Minimum Allowable Pressure Cap - PSI (kPa)	7 (48)
Maximum Allowable Top Tank Temperature - °F (°C)	200 (93)
Minimum Recommended Top Tank Temperature - °F (°C)	160 (71)
Minimum Allowable Fill Rate - U.S. GPM (L/min)	5 (19)
Maximum Allowable Initial Fill Time - min.	5
Minimum Allowable Coolant Expansion Space - % of System Capacity	6
Maximum Allowable Deaeration Time - min.	25
Minimum Allowable Drawdown - U.S. qt. (litre).....	15.5 (14.7)
(Drawdown does not include expansion area and must exceed volume not initially filled.)	
Fan HP BHP (kW) @ Fan Speed RPM.....1800 RPM @ 1150 RPM Fan Speed	52.5 (39.0)
1500 RPM @ 958 RPM Fan Speed	30.4 (22.7)
1200 RPM @ 767 RPM Fan Speed	16 (11.9)
Cooling Fan Air Flow @ 1" Static H ₂ O Pressure and 100° F @ Radiator – cfm (L/s) 1800 RPM	74000 (34883)
1500 RPM	61000 (28755)
1200 RPM	49440 (23336)

LUBRICATION SYSTEM

CNGE recommends a multi-viscosity or a straight weight single viscosity NATURAL GAS ENGINE OIL that meets Mil-2104A(CB), Mil-2104B (CC), Mil-2104C (CD/SC), CE and CF-4 specification. Ash Content between .15 and .85 of one percent. Refer to CNGE Service Bulletin SB91-02, dated 6/91 for specific details.

Oil Pressure @ Idle - PSI (kPa) (minimum allowable)	20 (138)
@ Rated Speed - PSI (kPa) (minimum allowable)	50 – 90 (345 – 621)
Maximum Allowable Oil Temperature - °F (°C)	225 (107)
Maximum Oil Consumption - U.S. qt./hr. (L/hr)	50 (.47)
Full Flow Filter Capacity – Replaceable Element Type - U.S. gal. (litre)	2.7 (10.2)
By-Pass Filter Capacity – Replaceable Element Type – U.S. gal. (litre)	8 (30.3)
Oil Pan Capacity - High/Low - U.S. gal. (litre).....	18 – 16 (68 – 61)
Total System Capacity (Including By-Pass Filter) - U.S. gal. (litre).....	29.7 – 27.7 (112.4 – 104.9)

FUEL SYSTEM

Standard Carburetor - IMPCO Make

Low Pressure Dry Processed Natural Gas - (905 BTU/ft.³ L.H.V.)

Maximum Running Pressure to Carburetor (After Regulation) - in. H ₂ O (mm H ₂ O)	6 (152)
Maximum Running Pressure to Engine Mounted Regulator - in. H ₂ O (mm H ₂ O)	20 (508)
Minimum Running Pressure to Engine Mounted Regulator - in. H ₂ O (mm H ₂ O)	10 (254)
Minimum Gas Supply Pipe Size @ Engine - in. (mm)	2 (51)
Gas Supply Filter Pressure Rating - PSI (kPa)	100 (690)

Low Pressure Propane (HD5) Industrial Grade

Maximum Pressure to LPG Converter and Safety Valve - PSI (kPa)*	250 (1754)
Minimum LPG Supply Pipe Size (Liquid)* - in. (mm)*	50 (12.7)
Minimum LPG Supply Pipe Size (Vapor) - in. (mm)*	2 (51)

The preceding pipe sizes are only suggestions and piping may vary with temperatures, distance from fuel supply and application of local codes. Gas must be available at adequate volume and pressure for engine at the regulator.

FUEL APPLICATION GUIDE

Compression Ratio	8.5:1	10:1
Dry Processed Natural Gas	•	•
Propane (HD-5)	•	

All gases such as field gas, digester and sewage require an analysis of the specified gas and pre-approval from CNGE. Consult your distributor for details.

PERFORMANCE DATA

Low Idle Speed - RPM.....	900
Maximum No-Load Governed Speed - RPM	1980
Maximum Overspeed Capability - RPM.....	2100
Crankshaft Thrust Bearing Load Limit - Maximum Intermittent - lb. (N)	4000 (17792)
- Maximum Continuous - lb. (N)	2000 (8896)
Maximum Allowable Power From Front of Crankshaft - HP (kW)	770 (574)
Maximum Allowable Power From Accessory Drive - HP (kW)	60 (45)
Minimum Cranking Speed - RPM	110

All data is based on the engine operating with fuel system, water pump and lubrication oil pump; not included are battery charging alternator, fan, optional equipment, driven components or installation of catalytic converter.

The fuel consumption data shown above is published as approximate value for purposes of establishing pipe and system sizing.

Data shown above represents gross engine performance capabilities obtained and corrected to condition of 29.61 in. Hg. (100 kPa) barometric pressure [300 ft. (91 m) altitude], 77° F (25° C) inlet air temperature and 0.30 in. Hg. (1 pa) water vapor pressure using dry processed natural gas fuel with 905 BTU per standard cubic foot (33.72 kJ/l) lower heating value.

Rating Dependent Engine Data

Engine Data	C/R	1800 RPM	1500 RPM	1200 RPM
Brake Mean Effective Pressure - PSI (kPa)	8.5:1	190 (1315)	192 (1328)	192 (1328)
	10:1	198 (1370)	201 (1386)	201 (1386)
Exhaust Gas Flow cfm (L/s)	8.5:1	4778 (2258)	3917 (1849)	2916 (1376)
	10:1	4863 (2295)	4070 (1921)	3054 (1441)
Intake Air Flow Requirement @ Rated RPM and Load +/- 5 % cfm (L/s)	8.5:1	1769 (835)	1348 (637)	998 (471)
	10:1	1799 (850)	1399 (660)	1119 (528)
Heat Rejection to Ambient - Wet Manifold BTU/min. (kW)	8.5:1	3088 (54)	2682 (47)	2296 (40)
	10:1	3207 (56)	2887 (51)	2571 (45)
Heat Rejection to Coolant - Wet Manifold BTU/min. (kW)	8.5:1	27354 (481)	23753 (417)	20340 (357)
	10:1	28406 (500)	25567 (449)	22771 (400)
Heat Rejection to Aftercooler - Wet Manifold BTU/min. (kW)	8.5:1	3530 (62)	3065 (54)	2625 (46)
	10:1	3365 (64)	3299 (58)	2938 (52)
Heat Rejection to Exhaust - Wet Manifold BTU/min. (kW)	8.5:1	22059 (388)	19156 (337)	16403 (288)
	10:1	22908 (403)	20619 (362)	18364 (323)
Maximum Fuel Consumption at Maximum Rated Output and Speed - cu. ft./hr	8.5:1	5850	5080	4350
	10:1	6075	5468	4870

REFERENCE INFORMATION

	CR	1800 RPM	1500 RPM	1200 RPM
Performance Curve Numbers	8.5:1	PC5751A	PC5721A	NA
	10:1	PC5750B	PC5720A	PC2053A
Emissions	8.5:1	ES5751A	ES5721A	NA
	10:1	ES5750C	ES5720A	ES2053A

INSTALLATION DIAGRAM NUMBERS

Generator Base [ID3395188](#)
 GE/GP [ID3396348](#)

ENGINE RATINGS

		1800 RPM		1500 RPM		1200 RPM	
LOAD RATING	C/R	HP	KWm	HP	kWm	HP	KWm
STANDBY POWER	8.5:1	730	544	617	460	497	371
	10:1	770	574	644	480	520	388
PRIME POWER	8.5:1	664	495	561	418	452	337
	10:1	700	522	585	436	473	353
CONTINUOUS POWER	8.5:1	564	421	477	356	384	286
	10:1	595	444	497	371	402	300

For Load Rating definitions, please refer to a GTA28 Performance Curve.

ALTITUDE & AMBIENT TEMPERATURE REQUIREMENTS

The engine may be operated at the STANDBY RATING up to 3000 ft. (914 m) altitude and 100° F (38° C) intake manifold temperature and at the PRIME AND CONTINUOUS POWER RATING up to 5000 ft. (1524 m) altitude and 100° F (38° C) intake manifold temperature. For sustained operation at high load factor at higher altitudes and temperatures, please contact factory.

LIMITED WARRANTY

Cummins Natural Gas Engines carry a Limited Warranty on both factory workmanship and materials. See your nearest Cummins Distributor or dealer for full details, or write Cummins Natural Gas Engines, Inc., 8713 Airport Freeway, Suite #316, Fort Worth, Texas 76180, U.S.A.

This **Data Sheet** is subject to change without notice.

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