



Natural Gas Engines



GTA38

ENGINE DATA SHEET #DS2041E

GENERATOR DRIVE MARKETS

GENERAL ENGINE DATA

Type	4 Cycle, 60 Degree Vee, 12 Cylinder
Aspiration	Turbocharged & Aftercooled
Bore - in. (mm) x Stroke - in. (mm)	6.25 (159) X 6.25 (159)
Displacement - cu. in. (litre)	2300 (37.8)
Compression Ratio	8.5:1
Dry Weight	
Fan Hub to Flywheel - lb. (kg)	8545 (3880)
Radiator Cooled Engine - lb. (kg)	
Heat Exchanger Cooled Engine - lb. (kg)	
Wet Weight	
Fan Hub to Flywheel - lb. (kg)	9090 (4127)
Radiator Cooled Engine - lb. (kg)	
Heat Exchanger Cooled Engine - lb. (kg)	
C.G. Distance From Front Face of Block (Engine Only) - in. (mm)	32 (812)
C.G. Distance Above Crank Centerline (Engine Only) - in. (mm)	10.0 (254)
Moment of Inertia of Rotating Components (w/o Flywheel, w/ Flywheel) - lb. - ft. ² (kg m ²)	94 (39.8)
Firing Order	1R-6L-5R-2L-3R-4L
.....	6R-1L-2R-5L-4R-3L

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block - lb. ft. (N m)	4500 (6100)
Moment of Inertia About Roll Axis - lb. - ft. ² (kg m ²)	TBD

EXHAUST SYSTEM

Maximum Allowable Back Pressure - in. Hg. (mm Hg)	2 (50)
Exhaust Outlet Pipe Size - in. (mm)	5 (127)
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)	1350 (732)

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

Page 2

Coolant Capacity - Engine Only U.S. qt. (litre)	142 (134)
- Aftercooler Circuit - U.S. qt. (litre)	24 (22.7)
Maximum Coolant Friction Head External to the Engine - PSI (kPa)	15 (103)
Maximum Static Head of Coolant Above Engine Crank Centerline - ft. (m)	60 (18.3)
Standard Thermostat (Modulating) Range - °F (°C)	175 – 195 (79 – 91)
Maximum Output Pressure of Engine Water Pump - PSI (kPa)	35 (241)
Maximum Output Pressure Cap – PSI (kPa)	NA
Minimum Allowable Pressure Cap - PSI (kPa)	10 (69)
Maximum Allowable Top Tank Temperature - °F (°C)	212 (100)
Minimum Recommended Top Tank Temperature - °F (°C)	NA
Minimum Allowable Fill Rate - U.S. GPM (L/min)	5 (20)
Maximum Allowable Initial Fill Time - min.	5 (20)
Minimum Allowable Coolant Expansion Space - % of System Capacity	6
Maximum Allowable Deaeration Time - min.	25
Minimum Allowable Drawdown - U.S. qt. (litre)	22 (21)
(Drawdown does not include expansion area and must exceed volume not initially filled.)	

LUBRICATION SYSTEM

CNGE recommends a multi-viscosity 15W40 Heavy Duty Gas Engine Oil (HD – GEO) that meets the CD specification. Ash content between .15% and .85% without a catalytic converter and .4% to .6% with a catalytic converter. Refer to CNGE Service Parts Topic SPT99-05 for oil specifications.

Oil Pressure @ Idle - PSI (kPa) (operating range)	20 (138)
@ Rated Speed - PSI (kPa) (operating range)	45 – 70 (310 – 483)
Maximum Allowable Oil Temperature - °F (°C)	225 (107)
Maximum Oil Consumption - U.S. qt./hr. (L/hr)	.40 (.38)
Full Flow Filter Capacity – Replaceable Element Type – U.S. gal. (litre)	4.0 (15.1)
By-Pass Filter Capacity – Replaceable Element Type - U.S. gal. (litre)	N/A
Oil Pan Capacity - High/Low - U.S. gal. (litre)	37 – 30 (140 – 114)
Total System Capacity (Including By-Pass Filter) - U.S. gal. (litre)	41 – 34 (155 – 129)

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)	5 – 7 (127 – 177)
Maximum Running Pressure to Engine Mounted Regulator - in. H ₂ O (mm H ₂ O)	10 – 20 (254 – 508)
Minimum Gas Supply Pipe Size @ Engine - in. (mm)	2.0 (50.8)
Gas Supply Filter Pressure Rating - PSI (kPa)	100 (690)

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
Dry Processed Natural Gas	•
Propane (HD5) Vapor Only	•

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
Maximum Rated Speed - RPM	1800
Piston Speed - ft./min. (m/s)	1875 (9.5)
Crankshaft Thrust Bearing Load Limit - Maximum Intermittent - lb. (N)	NA
- Maximum Continuous - lb. (N)	NA
Maximum Allowable Power From Front of Crankshaft - HP (kW).....	NA
Maximum Allowable Power From Accessory Drive - HP (kW).....	NA
Minimum Cranking Speed - RPM	150

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

Description	RPM	G1	G2	G3
Gross Engine Output – BHP (kWm)	1800	892 (665)	965 (720)	1045 (779)
	1500	744 (555)	804 (600)	871 (650)
Brake Mean Effective Pressure - PSI (kPa)	1800	171 (1179)	185 (1276)	200 (1379)
	1500	171 (1179)	185 (1276)	200 (1379)
Exhaust Gas Flow cfm (L/s)	1800	5680 (2681)	6119 (2888)	6560 (3096)
	1500	5378 (2538)	5573 (2630)	5769 (2723)
Intake Air Flow Req. @ Rated RPM and Load +/- 5 % cfm (L/s)	1800	2094 (988)	2257 (1065)	2420 (1142)
	1500	1949 (920)	2017 (952)	2085 (984)
Engine Coolant Flow (5 PSI External Water Circuit Resistance) U.S. GPM (L/s)	1800	411 (26)	411 (26)	411 (26)
	1500	345 (22)	345 (22)	345 (22)
Aftercooler Aux. Water Pump Coolant Flow – 3 PSI External Water Circuit Resistance – U.S. GPM (L/min)	1800	42 (159)	42 (159)	42 (159)
	1500	33 (125)	33 (125)	33 (125)
Heat Rejection to Ambient - Wet Manifold BTU/min. (kW)	1800	4107 (72)	4365 (77)	4672 (82)
	1500	3453 (61)	3706 (65)	3980 (70)
Heat Rejection to Coolant - Wet Manifold BTU/min. (kW)	1800	36378 (639)	38660 (679)	41381 (727)
	1500	30580 (537)	32824 (577)	35256 (619)
Heat Rejection to Aftercooler - Wet Manifold BTU/min. (kW)	1800	4694 (82)	4988 (88)	5340 (94)
	1500	2946 (69)	4235 (74)	4549 (80)
Heat Rejection to Exhaust - Wet Manifold BTU/min. (kW)	1800	29337 (515)	31177 (548)	33372 (586)
	1500	24661 (433)	26471 (465)	28432 (500)
Max. Fuel Cons. at Max. Rated Output & Speed - cu. ft./hr	1800	7780	8268	8850
	1500	6540	7020	7540

REFERENCE INFORMATION

	G1, G2, G3
Performance Curve Numbers	PC2041A
Emissions	ES2041A

INSTALLATION DIAGRAM NUMBERSGenerator Base [ID3394584](#)**ENGINE RATINGS**

LOAD RATING	RPM	G1		G2		G3	
		HP	kWm	HP	kWm	HP	kWm
STANDBY POWER	1800	892	665	965	720	1045	779
	1500	744	555	804	600	871	650
PRIME POWER	1800	811	605	877	654	950	708
	1500	676	504	731	545	792	591
CONTINUOUS POWER	1800	689	514	745	556	808	602
	1500	574	428	621	463	673	502

For Load Rating definitions, please refer to a GTA38 Performance Curve.

ALTITUDE & AMBIENT TEMPERATURE REQUIREMENTS

The engine may be operated at the STANDBY RATING up to 3000 ft. (914 m) altitude and PRIME POWER RATING up to 5000 ft. (1524 m) altitude, both at 145° F (63° C) maximum intake manifold temperature with 130° F (54° C) or lower water temperature to aftercooler without power deration. For high load factors at higher altitudes, derate the engine by 4% per 1000 feet (305 m) altitude.

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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