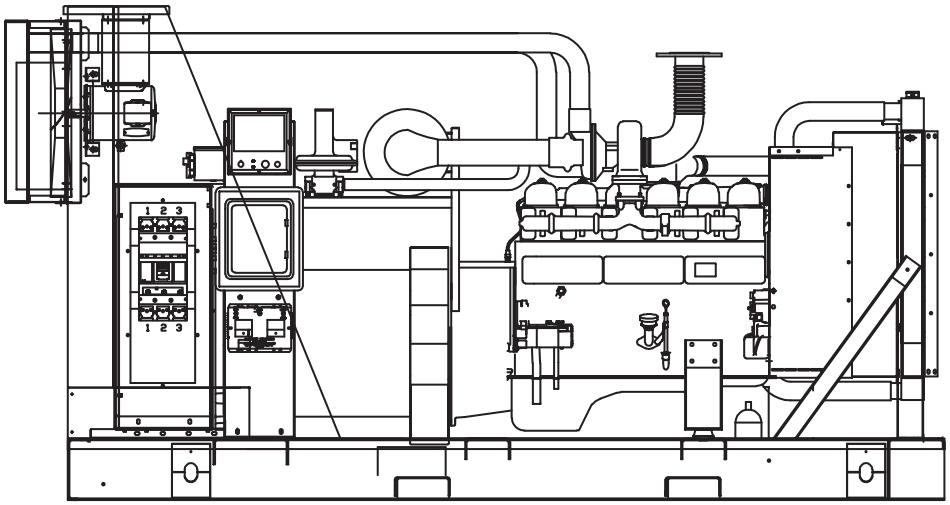
SB300 Liquid Cooled Bi-Fuel Diesel Engine Generator Sets

Standby Power Rating

300KW 60 Hz



Power Matched

GENERAC 12.0DTA ENGINE

Turbocharged, Aftercooled

Diesel/Natural Gas Powerered

FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.

- **TEST CRITERIA:**
  - ✓ PROTOTYPE TESTED
  - ✓ SYSTEM TORSIONAL TESTED
  - ✓ ELECTRO-MAGNETIC INTERFERENCE
  - ✓ NEMA MG1 EVALUATION
  - ✓ MOTOR STARTING ABILITY
  - ✓ SHORT CIRCUIT TESTING
  - ✓ UL2200 LISTED

- **POWERMANAGER® DIGITAL CONTROL PLATFORM.** The PowerManager® Digital Control Platform (PM-DCP) is a powerful control system built around a 32 bit industrial microprocessor. Standard factory programming controls the entire engine generator system while allowing the PM-DCP, with its onboard PLC, to be customized to meet any application requirement. The system is available on single unit gas, diesel or bi-fuel installations as well as Modular Paralleling Systems (MPS) from 200 kW - 3000 kW.

- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.

- **ECONOMICAL POWER.** Microprocessor controlled bi-fuel diesel engine starts on diesel fuel and provides power from an air/natural gas mixture ignited by the diesel injectors.

- **LONGER ENGINE LIFE.** Generac heavy-duty bi-fuel diesels provide long and reliable operating life.

- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

GENERAC®

APPLICATION & ENGINEERING DATA

GENERATOR SPECIFICATIONS

TYPE ..... Four-pole, revolving field
ROTOR INSULATION ..... Class H
STATOR INSULATION ..... Class H
TOTAL HARMONIC DISTORTION ..... <3%
TELEPHONE INTERFERENCE FACTOR (TIF) ..... <50
ALTERNATOR ..... Self-ventilated and drip-proof
BEARINGS (PRE-LUBED & SEALED) 1
COUPLING ..... Direct, Flexible Disc

NOTE: Emergency loading in compliance with NFPA 99, NFPA 110, paragraph 5-13.2.6. Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046 and DIN6271 standards.

EXCITATION SYSTEM

PERMANENT MAGNET EXCITER ..... Eighteen-pole exciter ✓
Magnetically coupled DC current ✓
REGULATION ..... Digital Solid-state ✓
±0.25% regulation ✓

GENERATOR FEATURES

- Four pole, revolving field generator, directly connected to the engine shaft through a heavy-duty, flexible disc for permanent alignment.
- Generator meets the temperature rise standards for class "F" insulation as defined by NEMA MG1-32.6, while the insulation system meets the requirements for the higher class "H" rating.
- All prototype models have passed a three-phase symmetrical short circuit test to assure system protection and reliability.
- All prototype models are tested for motor starting ability by measuring the instantaneous voltage dip with a waveform data acquisition system.
- All models utilize an advanced wire harness design for reliable interconnection within the circuitry.
- Magnetic circuit, including amortisseur windings, tooth and skewed stator design, provides a minimal level of waveform distortion and an electromagnetic interference level which meets accepted requirements for standard AM radio, TV, and marine radio telephone applications.
- Voltage waveform deviation, total harmonic content of the AC waveform, and T.I.F. (Telephone Influence Factor) have been evaluated to acceptable standards in accordance with NEMA MG1-32.
- Alternator is self-ventilated and drip-proof constructed.
- Fully life-tested protective systems, including "field circuit and thermal overload protection" and optional main-line circuit breakers capable of handling full output capacity.
- System torsional acceptability confirmed during prototype testing.

ENGINE SPECIFICATIONS

MAKE ..... Mitsubushi / GENERAC
MODEL 12.0DTA
CYLINDERS ..... 6 in-line
DISPLACEMENT ..... 11.945 Liter (729 cu. in.)
BORE ..... 130 mm (5.11 in.)
STROKE ..... 150 mm (5.91 in.)
COMPRESSION RATIO 16.5:1
INTAKE AIR ..... Turbocharged, Aftercooled
NUMBER OF MAIN BEARINGS 7
CONNECTING RODS ..... 6-Carbon Steel
CYLINDER HEAD ..... (6) 1-Cylinder Cast Iron with Overhead Valve
PISTONS ..... 6-Heat Resistant Aluminum Alloy
CRANKSHAFT ..... Case Hardened, Die Forged, Carbon Steel

VALVE TRAIN

LIFTER TYPE ..... Solid
INTAKE VALVE MATERIAL ..... Stellite Faced Heat Resistant Steel
EXHAUST VALVE MATERIAL ..... Stellite Faced Heat Resistant Steel
HARDENED VALVE SEATS ..... Replaceable

ENGINE GOVERNOR

❒ ELECTRONIC ..... Standard
FREQUENCY REGULATION, NO-LOAD TO FULL LOAD 0.5%
STEADY STATE REGULATION ..... ±0.25%

LUBRICATION SYSTEM

TYPE OF OIL PUMP ..... Gear
OIL FILTER ..... Bypass and Full flow, cartridge
CRANKCASE CAPACITY ..... 31 Liters (8.2 U.S. gal.)

COOLING SYSTEM

TYPE OF SYSTEM ..... Pressurized, closed recovery
WATER PUMP ..... Pre-lubed, self-sealing
TYPE OF FAN ..... Pusher
NUMBER OF FAN BLADES 7
DIAMETER OF FAN ..... 864 mm (34 in.)
COOLANT HEATER ..... 240V, 2000 W

FUEL SYSTEM

FUEL ..... #2D Fuel (Min Cetane #40)
(Fuel should conform to ASTM spec.)
FUEL ..... Natural Gas 2 psi Minimum
FUEL FILTER ..... 10 Micron
FUEL INJECTION PUMP ..... Bosch PE6P Type
GAS INJECTOR ..... GENERAC
FUEL PUMP ..... Mechanical
INJECTORS ..... Multi-hole, nozzle type
ENGINE TYPE ..... Direct injection
FUEL LINE (Supply) ..... 9.53 mm (0.375 in.)
FUEL RETURN LINE ..... 9.53 mm (0.375 in.)
NATURAL GAS LINE ..... 2" NPT

ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR ..... 35 Amps at 24 V
STARTER MOTOR ..... 24 V
RECOMMENDED BATTERY ..... 700CCA (2)—12V, 27 F
GROUND POLARITY ..... Negative

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271).

SB300

OPERATING DATA

	STANDBY
	SB300
GENERATOR OUTPUT VOLTAGE/KW-60Hz	**kW** / **Rated AMP**
120/208V, 3-phase, 0.8 pf	300 / 1042
120/240V, 3-phase, 0.8 pf	300 / 903
277/480V, 3-phase, 0.8 pf	300 / 452
600V, 3-phase, 0.8 pf	300 / 361
MOTOR STARTING KVA	**208-240V** / **480V**
Maximum at 35% instantaneous voltage dip	
with standard alternator; 60 Hz	785 / 1092
with optional alternator; 60 Hz	960 / 1410
COOLING	
Coolant capacity System - US gal.	10.6
Engine - US gal.	5.8
Radiator - US gal.	4.8
Coolant flow/min. 60 Hz - US gal.	59.4
Heat rejection to coolant - BTU/hr.	895,000
Radiator air flow 60 Hz - cfm	17,400
Alternator air flow 60 Hz - cfm	1080
Maximum external pressure drop after radiator "H_2O	0.5
Maximum operating air temperature onto radiator °F	140 **
Maximum operating ambient temperature °F	122 **
COMBUSTION AIR REQUIREMENTS	
Flow at rated power 60 Hz - cfm	886
EXHAUST	
Exhaust flow at rated output 60 Hz - cfm	2494
Max recommended back pressure "Hg	1.5
Exhaust temperature at rated output (pre-turbo) °F	1330
Exhaust outlet size	5" ANSI Flange
ENGINE	
Rated RPM 60 Hz	1800
HP at rated kWe (gross) 60 Hz	437
Piston speed 60 Hz - ft./min.	1772
BMEP 60 Hz psi	264
POWER ADJUSTMENT FOR AMBIENT CONDITIONS	
Temperature	
-2.5% for every 10°F above - °F	77
Altitude	
-2.5% for every 1000 ft. above - ft.	3500

**Note: Values given are maximum temperatures to which power adjustment factors can be applied. Consult your Generac representative if operating conditions exceed these maximums.

ENGINE FEATURES

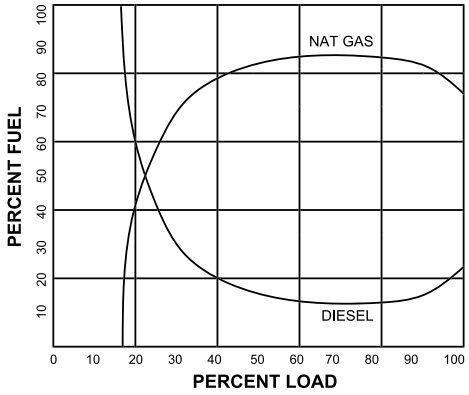
ECONOMICAL POWER Microprocessor controlled bi- fuel diesel engine starts on diesel fuel and provides power from an air/natural gas mixture ignited by diesel injection and continuously monitored by the on board control.

LONGER ENGINE LIFE Generac heavy duty bi-fuel diesels provide long and reliable operating life along with low emissions.

EMISSIONS Capable of low particulate and NOx emission levels. Unit is registered with SCAQMD permitting program (CEP No. 414037)

HOW DOES A BI-FUEL ENGINE WORK?

The diesel engine is equipped with a metering system that feeds natural gas into the incoming air supply. The standard diesel injection pump is used and the injector sprays diesel fuel into the cylinder at the correct time. The diesel fuel ignites and thus ignites the natural gas charge. Total power is derived from a combination of natural gas and diesel as shown in the chart below. The ratio of natural gas to diesel fuel is a function of several factors, including load and intake air temperature. The system is programmed to avoid pre-ignition, but should it occur due to a transient event such as sudden loading or fuel variation, knock sensors will signal the controller to reduce the flow of natural gas and the diesel injectors will take over to maintain engine speed and required power level. The higher thermal efficiency of diesel engines and the lower cost of natural gas, along with low emission levels, combine to make the bi-fuel engine a very economical choice.



Fuel usage as a percentage of load*

FUEL CONSUMPTION*

60 Hertz kW	Nat Gas ft³/hr	Diesel gal/hr
100	783	3.61
125	1272	2.48
175	1832	1.41
200	2093	1.61
225	2355	1.81
250	2617	2.01
275	2815	2.66
300	2504	5.32

Fuel Pressure NG line 2 psi @ full load
BTU Content (Min) 920 BTU/ft³ LHV

*Note: Percentages and consumption can vary depending on air temperature and heat content of fuel

STANDARD ENGINE & SAFETY FEATURES

SB300

- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Secondary Fuel Filter
- Fuel Lockoff Solenoid
- Stainless Steel Flexible Exhaust Connection
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 24 Volt, Solenoid-activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console
- Coolant Heater, 240V
- Isochronous Governor
- Radiator Duct Adapter
- Low Gas Pressure Alarm

POWERMANAGER® DIGITAL CONTROL PLATFORM

The PowerManager® Generator Controller (PM-GC) is a fully programmable, integrated digital generator control console, using a 32-bit industrial microprocessor to handle all the control, monitoring, input and output genset functions. The open architecture used allows customizing the control to meet any customer requirement, yet maintaining the simplicity of operating 'as is' with the factory default programming. (see Generac bulletin #0168840SBY)

OPTIONS

- **OPTIONAL COOLING SYSTEM ACCESSORIES**
  - ❍ Coolant Heater 120V
- **OPTIONAL FUEL ACCESSORIES**
  - ❍ Flexible Fuel Lines
  - ❍ UL Listed Base Tank
  - ❍ Base Tank Low Fuel Alarm
  - ❍ Secondary Diesel Fuel Filters and Heaters
- **OPTIONAL EXHAUST ACCESSORIES**
  - ❍ Critical Exhaust Silencer
- **OPTIONAL ELECTRICAL ACCESSORIES**
  - ❍ Battery, 12 Volt, 135 A.H., 4D (2 req'd)
  - ❍ Battery, 12 Volt, 225 A.H., 8D (2 req'd)
  - ❍ 10A Dual Rate Battery Charger
  - ❍ Battery Heater
- **OPTIONAL ALTERNATOR ACCESSORIES**
  - ❍ Alternator Upsizing
  - ❍ Alternator Strip Heater
  - ❍ Alternator Tropicalization
  - ❍ Main Line Circuit Breaker
- **ADDITIONAL OPTIONAL EQUIPMENT**
  - ❍ Automatic Transfer Switch
- **ADDITIONAL OPTIONAL EQUIPMENT (CONT.)**
  - ❍ 21 Light Remote Annunciator
  - ❍ Remote Relay Panel
  - ❍ Unit Vibration Isolators (Spring)
  - ❍ Oil Make-up System
  - ❍ Oil Heater
  - ❍ 5 Year Warranties
  - ❍ Export Boxing
  - ❍ GenLink® Communications Software
- **OPTIONAL ENCLOSURES**
  - ❍ Weather Protective
  - ❍ Sound Attenuated
  - ❍ Aluminum and Stainless Steel
  - ❍ Enclosed Muffler

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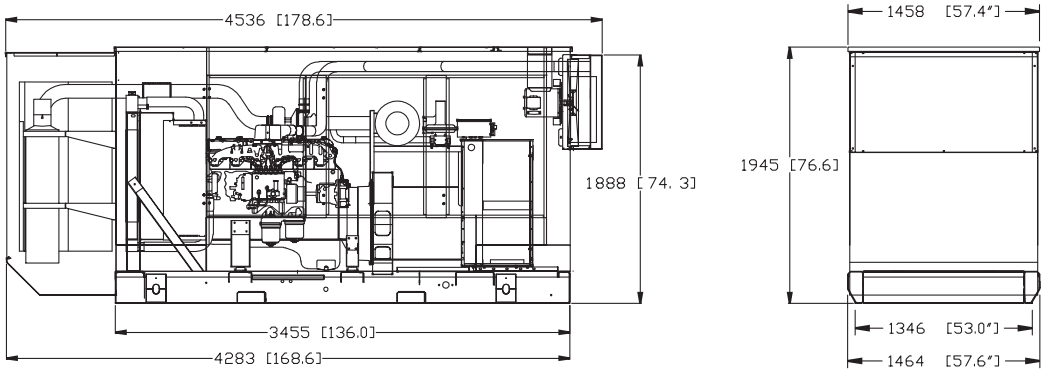
Design and specifications subject to change without notice. Dimensions shown are approximate. Contact your Generac dealer for certified drawings. DO NOT USE THESE DIMENSIONS FOR INSTALLATION PURPOSES.



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Shown with standard weather protective enclosure

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