# BELL & POWER SYSTEMS

# Model: A56PE3

## Diesel Generator Set

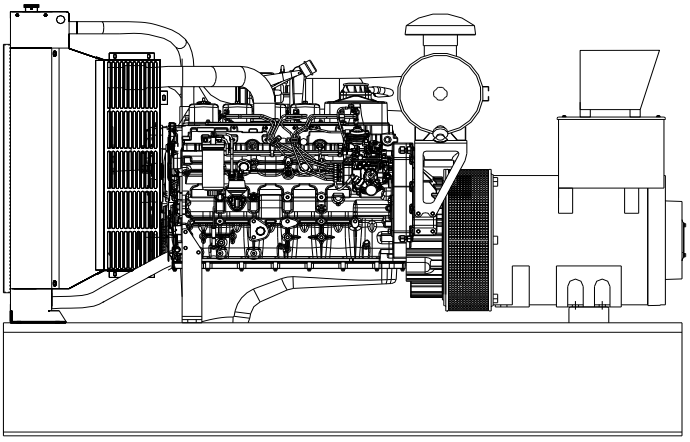
### FEATURES

- Bell & Power Systems provides one-source responsibility for the generator system and its accessories.
- All units and components are factory tested during prototype and manufacturing stages assuring long product life.
- Generator set accepts one-step 100% of full load per NFPA 110.
- A **one-year** limited **warranty** covers all systems and components. Extended warranties are available.
- Rugged 4 cycle heavy-duty diesel engine, with swirl intake ports for a low fuel consumption and excellent transient response.

**Generator features:**

- Unique Volts per Hertz compensated electronic AVR excitation system delivers reliable voltage response for in rush loads.
- Brushless, rotating-field generator has low reactance, 2/3 pitch, class H insulation, minimizes voltage distortion when powering non-linear loads.

**TIER III SERIES**



More features:

- Controllers are available to meet your most demanding applications.
- In the event of low oil pressure or high coolant temperature the self-protecting system will automatically stop the engine.

## GENERATOR SET RATINGS

| Model | Volt Code | Voltage | Winding Connection | Phase | Power Factor | Hz | Amps Standby | Standby kW / kVA | Prime kW / kVA |
|---|---|---|---|---|---|---|---|---|---|
| A56PE3 | 61 | 480 / 277 | HI WYE | 3 | 0.8 | 60 | 84 | 56 (70) | 51 (64) |
| A56PE3 | 62 | 460 /266 | HI WYE | 3 | 0.8 | 60 | 88 | 56 (70) | 51 (64) |
| A56PE3 | 63 | 440 / 254 | HI WYE | 3 | 0.8 | 60 | 92 | 56 (70) | 51 (64) |
| A56PE3 | 63.1 | 380 / 220 | HI WYE | 3 | 0.8 | 60 | 106 | 56 (70) | 51 (64) |
| A56PE3 | 64 | 240 / 139 | LOW WYE | 3 | 0.8 | 60 | 169 | 56 (70) | 51 (64) |
| A56PE3 | 65 | 220 / 127 | LOW WYE | 3 | 0.8 | 60 | 184 | 56 (70) | 51 (64) |
| A56PE3 | 66 | 208 / 120 | LOW WYE | 3 | 0.8 | 60 | 195 | 56 (70) | 51 (64) |
| A56PE3 | 67 | 240 / 120 | 2 DELTA | 1 | 1.0 | 60 | 233 | 56 (56) | 51 (51) |
| A56PE3 | 51 | 415 / 240 | HI WYE | 3 | 0.8 | 50 | - | - | - |
| A56PE3 | 53 | 380 / 220 | HI WYE | 3 | 0.8 | 50 | - | - | - |
| A56PE3 | 55 | 220 / 127 | LOW WYE | 3 | 0.8 | 50 | - | - | - |
| A56PE3 | 57 | 220 / 110 | 2 DELTA | 1 | 1.0 | 50 | - | - | - |

Stand-By ratings are continuous electrical service during the interruption of normal power. No overload capacity is specified at these ratings.
Prime ratings available with variable loads are continuous, 10% overload capacity for one hour in twelve hours periods.
Both ratings per BS 5514, DIN 6271, ISO-3046
Many industrial, commercial and residential voltages are available

# ALTERNATOR SPECIFICATIONS A56PE3

| | |
|---|---|
| **Type** | **Four pole, revolving field** |
| **Rotor Insulation** | **Class H** |
| **7Temperature Rise** | **150°C Standby** |
| **Material** | **Epoxy resin** |
| **Line-To-Line Harmonic Factor (Max)** | **5%** |
| **Telephone Interference Factor (Tif)** | **1%** |
| **Voltage Regulator** | **Solid State** |
| **Cooling** | **Self-ventilated and drip proof** |
| **Bearing** | **1 each, pre-lubed** |
| **Coupling** | **Direct, Flexible Disc** |
| **Load Capacity (Standby)** | **100%** |
| **Overload Capacity (Prime)** | **110%** |
| **Voltage Regulation** | |
| **No Load To Full Load** | **±1 %** |
| **One Step Load Acceptance** | |
| **Per NFPA 110** | **100%** |

- ❑ Four pole, revolving field, direct coupled to engine flywheel, provides excellent alignment.
- ❑ Insulation is of class H, ready to be used on harsh environments where sea spray, sand and chemical corrosion are existing factors.
- ❑ Voltage regulator provides Volts/Hertz compensation to improve the motor starting capabilities, therefore support the engine handling transient loads.
- ❑ Dynamically balanced rotor, with damper winding, help dissipate transient voltage interference during load variations.
- ❑ The windings have a 2/3 pitch in order to reduce the harmonic content of voltage.
- ❑ Robust mechanical structure permits easy access to connections.

# ENGINE SPECIFICATIONS

| | |
|---|---|
| **Manufacturer** | **PERKINS** |
| **Model** | **1104D-44TG1** |
| **Bore** | **4.1 in (105 mm)** |
| **Stroke** | **5.0 in (127 mm)** |
| **Number Of Cylinders** | **4** |
| **Piston Displacement** | **268.5 in3 (4.4L)** |
| **Compression Ratio** | **18.2:1** |
| **Cooling System Type** | **Liquid** |
| **Engine Type** | **In-Line – 4 Cycle** |
| **Aspiration** | **Turbocharged after cooled** |
| **Engine Crankcase Vent System** | **Closed** |
| **Cylinder** | **Replaceable Liner** |
| **EPA Tier** | **3** |
| **Governor Type** | **Mechanical** |
| **Frequency Regulation** | |
| **Constant Load** | **0.25%** |
| **Air Cleaner** | **Dry Element** |

- ❑ Robust industrial grade PERKINS diesel engine, for reliable endurance.
- ❑ Direct fuel injection system and swirl intake ports combine for a low fuel consumption and excellent transient response.
- ❑ Cylinder Head provides superior airflow through specially designed intake manifold ports, large valves and seats resulting in superior engine performance in torque reserve, fuel consumption and emissions. .
- ❑ Dynamically Balanced Crankshaft, with induction-hardened journal surfaces significantly increases wear life.
- ❑ Belt Fan Drive provides superior noise and vibration reduction.

Powered by : Perkins

# STANDARD EQUIPMENT

**ENGINE**
- Air Cleaner
- Fuel Pump
- Fuel Filter
- Oil Pump
- Full Flow Oil Filter
- Jacket Water Pump
- Thermostat and Housing
- Exhaust Manifold Dry
- Oil Cooler
- Blower Fan & Fan Drive
- Radiator - Unit Mounted
- Electric Starting Motor 12VDC
- Turbocharged
- Housing & Flywheel
- Charging Alternator 12VDC
- Battery Kit & Battery Rack

**GENERATOR**
- Synchronous, Brush-less
- Four Pole
- Single Bearing
- Direct Coupled With Flex
- Class H Insulation
- Drip-Proof Construction

**CONTROL PANEL**
- Digital type
- Automatic Mains Failure module provides engine and electrical metering facilities via the LCD display, accessed via the SCROLL push button
- Ac Voltmeter
- Ac Ammeter
- Frequency Meter
- Vibration Shock Mounts
- Engine Shutdowns
  * High Water Temperature
  * Low Oil Pressure
- Engine Gauges
  * Battery Voltmeter
  * Water Temperature
  * Oil Pressure
  * Running Time Meter
  * LED and LCD alarm indication

**GENERAL**
- Steel Skid Base Frame
- Industrial Muffler
- Rain Cap
- Lifting Points
- Acrylic Enamel Paint

# INSTALLATION AND APPLICATION DATA A56PE3

| | Item | Units | Type of Operation and Application | |
|---|---|---|---|---|
| | | | 60 Hz | |
| | | | Prime | Standby |
| Engine | Rated Speed | rpm | 1800 | 1800 |
| | Gross Engine Output | bhp (kWm) | 76 (57) | 84 (63) |
| | BMEP | psi (kPa) | 124.5 (858) | 137.6 (948) |
| | Mean Piston Speed | Ft/s (m/s) | 24.9 (7.6) | |
| Cooling System | Ambient Air Temperature | °F (°C) | 131 (55) | |
| | Coolant Capacity engine only | gal (L) | - | |
| | Coolant Capacity engine + radiator | gal (L) | 4.3 (16.5) | |
| | Cooling system | | Liquiid (50% water + 50% Glycol) | |
| | Pusher Fan Air Flow | $ft^3$/min ($m^3$/min) | 3471 (98.2) | |
| | Heat rejection to coolant | BTU (kWh) | 144333 (42.3) | 157640 (46.2) |
| | Heat rejection to exhaust | BTU (kWh) | 202340 (59.3) | 228272 (66.9) |
| | Heat rejection to air (intercooler) | BTU (kWh) | - | - |
| Fuel system | Fuel Type | | Diesel No.2 | |
| | Fuel Consumption @ 50% Power | gal/hr (L/hr) | 2.38 (9.0) | - |
| | Fuel Consumption @ 75% Power | gal/hr (L/hr) | 3.38 (12.8) | - |
| | Fuel Consumption @ 100% Power | gal/hr (L/hr) | 4.39 (16.6) | 4.9 (18.7) |
| Air Requirement | Combustion Air Flow | $ft^3$/min ($m^3$/min) | 183.6 (5.2) | 187.1 (5.3) |
| | Air Intake Restriction | In.$H_2O$ (kPa) | 20 (5) – Clean air filter | |
| | Maximun Allowable Restriction | In.$H_2O$ (kPa) | 32.1 (8) - Dirty air filter | |
| Exhaust System | Exhaust Gas Flow | $ft^3$/min ($m^3$/min) | 452 (12.8) | 483 (13.7) |
| | Max temperature, after turbo | °F (°C) | 977.0 (525.0) | 1016.6 (547.0) |
| | Connection Outlet Size Diameter | In. (mm) | 2.5 (76.2) | |
| Lubrication System | Total Engine Oil Cap. w/ Filter(s) | gal (L) | 2.1 (8) | |
| | Oil Filter Type | | Cartridge | |
| | Oil Cooler | | Water Cooled | |
| | Lube oil specifications | | API-CC/SE - SAE 15W – 40 | |
| | Lube oil consumption | | < 0.15 % of full load fuel consumption | |
| | Oil and filters interval for replacement | hours | Check your engine operators book | |
| Engine Electricals | Battery Charging Alternator | Volts, Ground | 12VDC, Negative | |
| | Baterry Charging Alternator | Rated amps | 65 | |
| | Recommended Battery Cold Crank | CCA amps | 760 (0°F / -18°C) | |
| | Starter Motor | Volts, Ground | 12DC, Negative | |
| Ambient Deration | temperature | % | Consult Factory | |
| | altitude > | % | Consult Factory | |
| | altitude > | % | Consult Factory | |

# OPTIONAL EQUIPMENT

# A56PE3

**Cooling System**
- ❑ Remote Radiator
- ❑ Jacket Water Heater
- ❑ Crankcase Oil Heater

**Fuel System**
- ❑ Fuel/Water Separator
- ❑ Day Tank
- ❑ Above Ground Fuel Tank
- ❑ Auxiliary Fuel Pump
- ❑ Sub-Base Fuel Tank
  - ❑ Double Wall
  - ❑ UL Listed

**Exhaust System**
- ❑ Industrial Grade Muffler
- ❑ Residential Grade Muffler
- ❑ Critical Grade Muffler
- ❑ Super Critical Grade Muffler

**Start System**
- ❑ Battery Nicad
- ❑ Battery Warmer Plate
- ❑ Battery Charger
  - ❑ Automatic Float Equalizing
  - ❑ Trickle

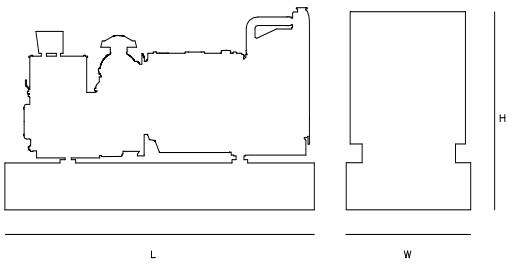
**Switchgear**
- ❑ Main Line Circuit Breaker
  - ❑ Shunt trip
  - ❑ Auxiliary switch
- ❑ Automatic Transfer Switch
- ❑ Paralleling
- ❑ Protective Relays

**Generator**
- ❑ Permanent Magnet Excitation
- ❑ Space Heaters
- ❑ Temperature Rise Detectors

**Control Panel**
- ❑ Emergency stop button
- ❑ Microprocessor Control Panel
- ❑ NFPA 110 Ready
- ❑ Remote Annunciation Panel
- ❑ Audible Alarm

**General**
- ❑ Spring vibration isolators
- ❑ Automatic Transfer Switch
- ❑ Metal Enclosure
- ❑ Interior lights AC or DC
- ❑ Trailer
- ❑ Export Packaging
- ❑ Special Testing
- ❑ Warranties

# DIMENSIONS AND WEIGHT




| | Units | Open Unit | Sound Att. Unit |
|---|---|---|---|
| Length | In. (mm) | 78 (1981) | 110 (2794) |
| Width | In. (mm) | 37 (940) | 37 (940) |
| Height | In. (mm) | 53 (1346) | 72 (1828) |
| Weight | Lbs (kg) | 2206 (999) | 2556 (1162) |

General configuration for reference only, do not use these dimensions for installation purposes. Contact your local dealer for certified drawings.