SPECTRUM®

DETROIT DIESEL

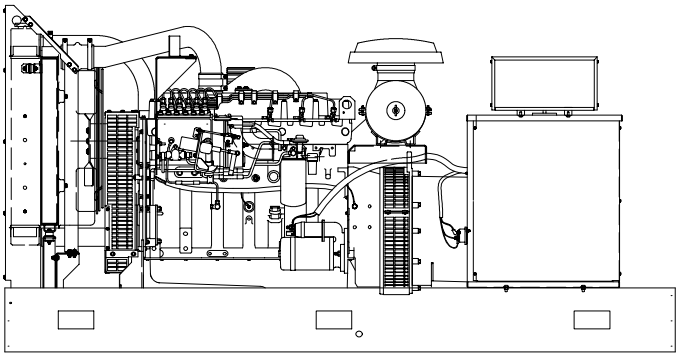
Model: 150DS

Diesel

ISO 9001 INTERNATIONALLY REGISTERED SPECTRUM®

Standard Features

- **Spectrum® product distributors provide one-source responsibility for the generating system and accessories.**
- **All generator sets and components are prototype tested, factory built, and production tested.**
- **Generator set provides one-step load acceptance per NFPA 110.**
- **Generator set engine on 60 Hz model is Environmental Protection Agency (EPA) certified.**
- **A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are available.**
- **Generator features:**
  - **Brushless, rotating-field generator has broadrange reconnectability.**
  - **Permanent magnet-excited generator (PMG) provides superior short-circuit capability.**
- **Other features:**
  - **Controllers are available to meet all applications. See controller features inside.**
  - **Low coolant level shutdown protects generator set from overheating.**
  - **Integral vibration isolation eliminates the need for installation of vibration spring isolators under the unit.**



Generator Ratings

Model Series	Voltage Code	Voltage	Standby Amps	Phase	Hz	Generator Model	Standby Rating kW/kVA	Prime Rating kW/kVA
150DS60	01	120/240	451	3	60	4S13	150/188	130/163
150DS60	51	139/240	451	3	60	4S13	150/188	136/170
150DS60	51	127/220	493	3	60	4S13	150/188	135/169
150DS60	61	120/240	458	1	60	4S13	110/110	100/100
150DS60	71	277/480	226	3	60	4S13	150/188	136/170
150DS60	71	220/380	285	3	60	4UA7	150/188	136/170
150DS60	81	120/208	520	3	60	4S13	150/188	130/163
150DS60	91	347/600	181	3	60	4S13	150/188	136/170
150DS50	01	110/220	394	3	50	4S13	120/150	105/131
150DS50	51	110/190	456	3	50	4S13	120/150	107/134
150DS50	61	110/220	418	1	50	4S13	92/92	84/84
150DS50	71	220/380	228	3	50	4S13	120/150	107/134
150DS50	71	230/400	220	3	50	4S13	122/153	108/135
150DS50	71	240/416	217	3	50	4S13	125/156	110/138
150DS50	81	120/208	434	3	50	4S13	125/156	110/138

RATINGS: Standby ratings are continuous for the duration of any power outage. No overload capacity is specified at this rating. Prime ratings are continuous per BS 5514, DIN 6271, ISO-3046, and IEC 34-1 with 10% overload capacity one hour in twelve hours. All single-phase units are rated at 1.0 power factor. All 3-phase units are rated at 0.8 power factor. Contact the factory for ratings of city water-cooled and remote radiator models. Larger alternators may be used to meet special application requirements. Availability is subject to change without notice. The manufacturer of Spectrum products reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. Contact your local Spectrum products distributor for availability. GENERAL GUIDELINES FOR DERATION: *ALTITUDE*: Derate 1.0% per 1000 ft. (305 m) elevation above 1000 ft. (305 m)). *TEMPERATURE*: Derate 1.0% per 10°F (5.5°C) temperature above 77°F (25°C).

Alternator Specifications

Type	4-Pole, Rotating Field
Exciter type	Brushless, Permanent Magnet
Number of leads	12, Reconnectable
Voltage regulator	Solid State, Volts/Hz
Insulation: NEMA MG1-1.66	
Material	Class H
Temperature rise	130°C, Standby
Bearing, number, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no load to full load	±2%
One-step load acceptance per NFPA110	100% of Rating
Peak motor starting kVA:	(35% dip for 480 V, 60 Hz and 380 V, 50 Hz)
4S13	515 (60Hz), 370 (50Hz)
4UA7	480 (60Hz), 380 (50Hz)

- Compliance with NEMA, IEEE, and ANSI standards for temperature rise.
- Sustained short-circuit current of up to 300% of rated current for up to 10 seconds.
- Sustained short-circuit capability enabling downstream circuit breakers to trip without collapsing the generator field.
- Self-ventilation and drip-proof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.
- Solid-state, volts-per-hertz voltage regulator with ±2% no-load to full-load regulation.
- Brushless alternator with brushless exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Detroit Diesel	
Engine, model, type	Series 40-7.6LTA, 4-Cycle Turbocharged, Air-to-Air Charge Cooled	
Cylinder arrangement	6 In-line	
Displacement, cu. in. (L)	466 (7.6)	
Bore and stroke, in. (mm)	4.30 (109) x 5.35 (136)	
Compression ratio	15.8:1	
Piston speed, ft/min. (m/sec.)	1605 (8.2)	1338 (6.8)
Main bearings: number, type	7, Replaceable Insert	
Rated rpm	1800	1500
Max. power at rated rpm, hp (kW)	250 (186)	230 (172)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve material:		
Intake	Chromium-Silicon Steel	
Exhaust	Inconel	
Governor, type, make/model	Mechanical, Bosch P	
Frequency regulation, no load to full load	3%-5%	
Frequency regulation, steady state	±0.33%	
Air cleaner type, all models	Dry, Paper Element	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, cfm (m^3/min.)	1370 (38.8)	1230 (34.8)
Exhaust temperature at rated kW, dry exhaust, °F (°C)	863 (462)	970 (512)
Maximum allowable back pressure, in. Hg (kPa)	2.5 (8.4)	
Exhaust outlet size at hookup, in. (mm)	5 (127.0)	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	66	
Starter motor rated voltage (DC)	12	
Recommended battery cold cranking amps (CCA) rating for 0°F (–18°C)	1250	
Quantity of batteries	2	
Battery voltage (DC)	12	
Rolling current at 32°F (0°C)	900	

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, in. (mm)	0.31 (8.0)	
Fuel return line, min. ID, in. (mm)	0.19 (5.0)	
Max. lift, engine-driven fuel pump, ft. (m)	3.3 (1.0)	
Max. fuel flow, gph (Lph)	47.6 (180.2)	
Fuel prime pump	Manual	
Fuel filter	Secondary	
Recommended fuel	#2 Diesel, min. 45 Cetane	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, qts. (L)	22 (20.8)	
Oil pan capacity with filter, qts. (L)	26 (24.6)	
Oil filter, quantity, type	1, Cartridge	
Oil cooler	Water Cooled	

Application Data

Cooling (Standard Radiator)

Cooling System	60 Hz	50 Hz
Ambient temperature °F (°C)	105 (40)	
Engine jacket water capacity, gal. (L)	4.5 (17.0)	
Radiator system capacity, including engine, gal. (L)	8.5 (32)	
Engine jacket water flow, gpm (Lpm)	82 (310)	68 (259)
Heat rejected to cooling water at rated kW, dry exhaust Btu/min.	4750	3960
Heatrej.tochargeairatratedkW,Btu/min.	1700	1035
Water pump type	Centrifugal	
Fan diameter, including blades, in. (mm)	26.0 (660)	
Fan hp (kW)	18.0 (13.4)	10.4 (7.8)
Max. restriction of cooling air, intake and discharge side of rad., in. H_2O (kPa)	0.5 (0.125)	

Cooling (Optional Systems)

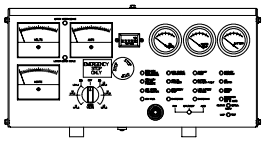
High Ambient Radiator System	60 Hz	50 Hz
Ambient temperature °F (°C)	120 (49)	
Engine jacket water capacity, gal. (L)	4.5 (17)	
Radiator system capacity, including engine, gal. (L)	8.6 (32.9)	
Engine jacket water flow, gpm (Lpm)	82 (310)	68 (259)
Heat rejected to cooling water at rated kW, dry exhaust Btu/min.	4750	3960
Heatrej.tochargeairatratedkW,Btu/min.	1700	1035
Water pump type	Centrifugal	
Fan diameter, including blades, in. (mm)	26.0 (660)	
Fan hp (kW)	18.0 (13.4)	10.4 (7.8)
Max. restriction of cooling air, intake and discharge side of rad., in. H_2O (kPa)	0.5 (0.125)	

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, cfm (m^3/min.)	8250 (234)	6880 (194)
Cooling air required for gen. set when equipped with CWC or remote radiator, based on 25°F (14°C) rise and ambient temp. of 85°F (29°C), cfm (m^3/min.)	-	
Combustion air, cfm (m^3/min.)	542 (15.3)	447 (12.7)
Heat rejected to ambient air:		
Engine BTU/min.	2010	1610
Generator BTU/min.	650	570

Fuel Consumption	60 Hz	50 Hz
Diesel, gph (Lph) at % load		
100%	11.6 (43.9)	9.3 (35.2)
75%	8.9 (33.7)	7.2 (27.3)
50%	6.3 (23.9)	5.0 (18.9)
25%	4.0 (15.1)	3.1 (11.7)

Controllers



Standard Controller

Microprocessor-Plus, 16-Light Controller
Audio/visual annunciation with NFPA-110, Level 1 capability
Microprocessor logic with AC meters and engine gauges
Compatible with 12-volt and 24-volt engine electrical systems
Remote start, prime power, and remote annunciation capability

Optional Controllers

Digital Controller
Audio/visual annunciation with NFPA-110, Level 1 capability
Programmable microprocessor logic with digital display
Compatible with 12-volt and 24-volt engine electrical systems
Remote start, prime power, remote annunciation, and remote communication capability

Microprocessor-Plus, 7-Light Controller
Audio/visual annunciation with NFPA-110, Level 2 capability
Microprocessor logic with AC meters and engine gauges
Compatible with 12-volt and 24-volt engine electrical systems
Remote start, prime power, and remote annunciation capability

Basic Controller
Provides remote or automatic start with NFPA compliance
Uses single-light annunciation with basic control functions
Relay logic with three models—standard Basic, standard Basic with engine gauges, and expanded Basic with AC meters and engine gauges
Compatible with 12-volt engine electrical systems only

Oversized Meterbox Controllers
Provides additional space for optional engine oil temperature gauge, tachometer, and wattmeter
Available with 16-light or 7-light annunciation and microprocessor logic
Same features as Microprocessor-Plus controller
Compatible with 12-volt and 24-volt engine electrical systems

Manual Controller
Designed for prime power and mobile applications
Uses single-light annunciation with basic control functions
Relay logic with AC meters and engine gauges
Compatible with 12-volt engine electrical systems only

Engine Gauge Box Controller for Paralleling Switchgear
Interfaces between generator set and switchgear for paralleling switchgear applications
Engine gauges with emergency stop switch
Compatible with 24-volt engine electrical systems only

NOTE: See the respective controller spec sheet for additional controller features and accessories.

SPECTRUM®
DETROIT DIESEL

SPECTRUM
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Accessories

Enclosed Unit

- ○ Exhaust Silencer, Critical or Residential
- ○ Silencer Mounting Kit for Housing
- ○ Sound Shield Enclosure
- ○ Tail Pipe and Rain Cap Kit
- ○ Weather Housing

Open Unit

- ○ Exhaust Silencer, Critical or Industrial
- ○ Flexible Exhaust Connector, Stainless Steel

Cooling System

- ○ Block Heater
- ○ City Water Cooling
- ○ Radiator Duct Flange
- ○ Remote Radiator Cooling

Fuel System

- ○ Auxiliary Fuel Pump
- ○ Day Tanks
- ○ Flexible Fuel Lines
- ○ Fuel Pressure Gauge
- ○ Subbase Fuel Tanks

Electrical System

- ○ Battery
- ○ Battery Charger, Equalize/Float Type
- ○ Battery Charger, Trickle Type
- ○ Battery Heater
- ○ Battery Rack and Cables

Engine and Generator

- ○ Air Cleaner, Heavy Duty
- ○ Air Cleaner Restriction Indicator
- ○ Bus Bar Kits
- ○ CSA Certification
- ○ Electronic Isochronous Governor
- ○ Generator Strip Heater
- ○ Line Circuit Breaker
- ○ Line Circuit Breaker with Shunt Trip
- ○ NFPA 110 Literature
- ○ Oil Drain Extension with Valve Kit
- ○ Optional Generators
- ○ Rated Power Factor Testing
- ○ Safeguard Breaker
- ○ Voltage Regulation, 1%
- ○ Voltage Regulator Sensing, Three-Phase

Paralleling System

- ○ Load-Sharing Module
- ○ Reactive Droop Compensator
- ○ Remote Speed Adjust Potentiometer/Electronic Governor
- ○ Voltage Adjust Potentiometer
- ○ Voltage Regulator Relocation Kit

Maintenance

- ○ General Maintenance Literature Kit
- ○ Maintenance Kit (includes air, oil, and fuel filters)
- ○ Overhaul Literature Kit

Controller (Standard Controller)

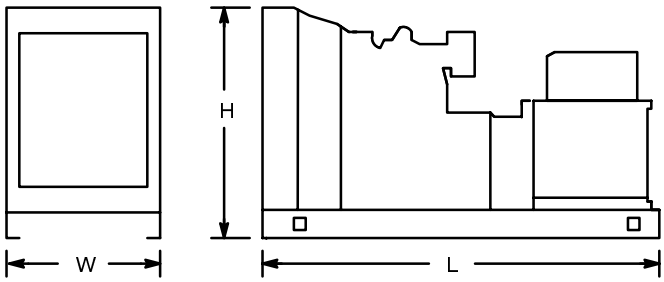
- ○ Common Failure Relay Kit
- ○ Customer Connection Kit
- ○ Dry Contact Kit (Isolated Alarm)
- ○ Extension Wiring Harness for Remote Mounting of Controller
- ○ FASTCHECK® Diagnostic Fault Detector
- ○ Prealarm Sender Kit
- ○ Remote Annunciator Panel
- ○ Remote Audio/Visual Alarm Panel
- ○ Remote Emergency Stop Kit
- ○ Run Relay Kit
- ○ Tachometer Kit/Oversize Meterbox
- ○ Wattmeter Kit/Oversize Meterbox

Miscellaneous Accessories

- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____
- ○ _____

WEIGHTS AND DIMENSIONS

Overall Size, L x W x H, in. (mm):	113.0 x 45.0 x 59.9 (2870 x 1143 x 1521)
Weight (Radiator Model), wet lb. (kg):	3535 (1603)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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