DAE Pumps
DESIGNED AND ENGINEERED PUMPING SOLUTIONS

Horton 200

Mobile Generator

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Horton 200 Mobile Generator

Standard Scope of Supply

The Horton 200 mobile generators are prime power, multi-voltage, sound attenuated, mobile generators. They are powered by a John Deere T4 Final liquid-cooled, six-cylinder diesel engine.

The units consist of an alternator, diesel engine, cooling system, electrical distribution and control systems - all enclosed within a sound attenuated enclosure fabricated powder coated zinc rich primer 100-hour salt spray tested.

A broad range of undercarriage formats and options are available.

Special attention has been given to the overall product quality, user friendliness, ease of serviceability, and economical operation to ensure best in class total cost of ownership.

Standard Features

- Compact, sound attenuated, corrosion resistant, with single point lifting and 110% fluid containment
- Dual axle trailer as standard, available as a skid mounted unit with forklift pockets as an option
- Heavy Duty alternator with AREP excitation and marine grade protection
- Single side service with long run filters and 500-hour service intervals
- Extremely reliable and durable John Deere 6068HFG05
- Emergency Stop
- Remote signal Start / Stop

Benefits

- Extremely durable and environmentally sensitive, designed to be used for everything from the oil field to special event power
- Versatility, giving you the flexibility to match your machine to the correct application
- Start-up power for the most demanding sites with 300% over load starting capabilities
- Heavy duty oil, air and fuel filters extend the maintenance interval to 500 hours for reduced total cost of ownership
- Proven engine platform with high reliability and durability
- External, recessed emergency stop for increased safety
- Allows connection as a critical back-up unit via a 2- wire dry contact connection in the distribution panel

Technical Data[1]

Performance	Units	Horton 200	
Frequency	Hz	50	60
Rated Prime Power 3Ø	kW / kVA	131/164	160/200
Rated Standby Power 3Ø	kW / kVA	144/180	176/220
3Ø Power Factor		0.8	0.8
3Ø Voltage @ 480V (Series Star w/Neutral)	V	-	480Y/277
Amp Capacity @ 480V	A	-	241
3Ø Voltage @ 240-208V (Parallel Star w/ Neutral)	V	-	240Y/139 – 208Y/120
Amp Capacity @ 240V	A	-	425
Amp Capacity @ 208V	A	-	492
Rated Prime Power 1Ø	kW / kVA	-	102 / 102
1Ø Power Factor		-	1.0
1Ø Voltage @ 120-240V (Zig-Zag)	V	-	240/120
Amp Capacity @ 240V	A	-	425
Amp Capacity @ 120V	A	-	2 x 425
3Ø Voltage @ 400V (Series Star w/Neutral)	V	400Y/231	
Amp Capacity @ 400V	A	237	
Performance Class (acc. ISO 8528-5:1993)		G2	G2
Single Step Load Acceptance (0-PRP) @60Hz	kW (%)	89 (68%)	113 (70.6%)
Sound Pressure Level @ 23'(7 m) @ 75% Load[2]		69	71
Alternator (4 Pole, 12 Wire)	Leroy Somer	LSA 44.3 VL13	
Excitation		AREP	
Automatic Voltage Regulator (+/- 0.5%)	Leroy Somer	D350	
Insulation		Class H	
Main Breaker - Shunt Trip	A	500	
Power Distribution – Terminal Board		5 Wire (L1, L2, L3, N, Ground)	
Terminal Board Connections		Bare Wire Terminals	
Maximum Terminal Cable Size		350MCM	
Convenience Receptacles[3]		(2) NEMA 5-20R & (3) 125/250V 50A CS6364	

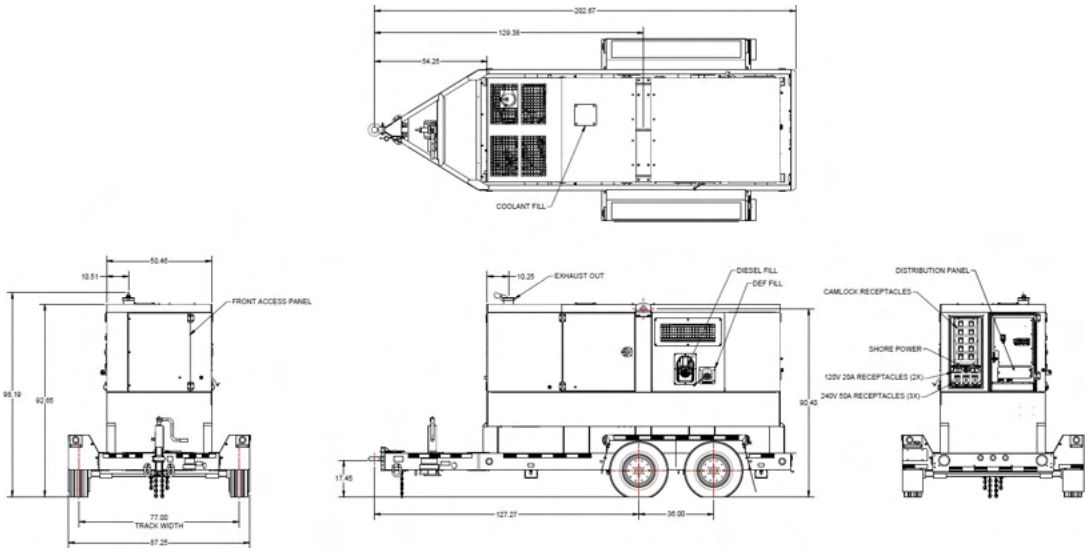
Engine	Units	Horton 200
Model	John Deere	6068HFG05
US EPA Tier		Tier 4 Final
Displacement	L	6.8
Cylinders	#	6
Continuous Engine Power Output	HP (kW)	235 (175)
Gross Engine Power Output	HP (kW)	257 (192)
Rated Speed	RPM	1800
Engine Control		ECU
Aspiration		Turbocharged w/ Intercooler
Engine oil capacity[4]	US Gal (L)	8.6 (32.5)
Engine coolant capacity	US Gal (L)	10.5 (39.7)
Maximum Ambient Temperature (@ Sea Level)[5]	°F (°C)	120 (49)
Min. Starting Temp (w/o heater)	°F (°C)	14 (-10)
Minimum Starting Temperature (with heater)[6]	°F (°C)	-13 (-25)
Electrical System (Negative Ground)	V	24
Engine Alternator Output	A	60
Battery Capacity (Cold Cranking Amps)	A	(2) 685

Fuel System		Units	Horton 200	
Fuel Consumption @ 25% load	50Hz / 60Hz	US Gal/hr (L/hr)	3.2 (12.0)	4.6 (17.4)
Fuel Consumption @ 50% load	50Hz / 60Hz	US Gal/hr (L/hr)	5.2 (19.7)	6.4 (24.2)
Fuel Consumption @ 75% load	50Hz / 60Hz	US Gal/hr (L/hr)	7.0 (26.5)	8.2 (31.0)
Fuel Consumption @ 100% load	50Hz / 60Hz	US Gal/hr (L/hr)	8.8 (33.3)	10.9 (41.3)
Fuel Type			Ultra-Low Sulfur Diesel ONLY[7]	
Fuel Tank Capacity		US Gal (L)	335 (1268)	
Fuel Autonomy @ 75% load		Hr	43.1	36.6
DEF Tank Capacity		US Gal (L)	25 (94.6)	

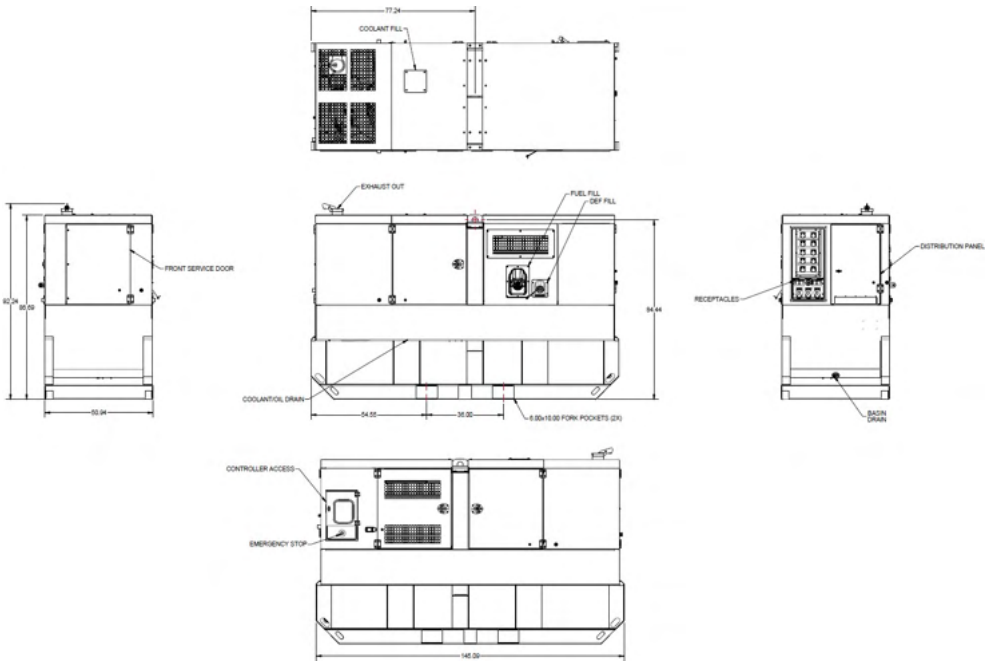
1 All ratings are at a reference condition of 0' altitude and 20°C (72°F)
2 Please see receptacle voltage configuration in Power Distribution section
3 Engine oil to meet CJ-4 (low ash oil)
4 Please see "Derate Table" for altitude and temperature calculations
5 Cold start option comes with 120V block heater and 0W40 synthetic engine oil
6 Measured in accordance with ISO 2151 under free field conditions @ 7m distance
7 Engine and emissions require the use of Ultra Low Sulfur Diesel in accordance to ASTM-D975 Grade No.1-D S15 & No.2-D S15
8 Based on 90% volume of fuel tank

Dimensions

Trailer Mounted



kid Mounted



Weight - Wet (ready to operate)	Units	Horton 200
Trailer Mounted	lbs (Kg)	11062 (5018)
Skid Mounted	lbs (Kg)	10032 (4550)
Dimensions		
Trailer Mounted (L x W x H)	Inches	203 x 87 x 98
Skid Mounted (L x W x H)	Inches	145 x 51 x 92

Principle Data

Alternator

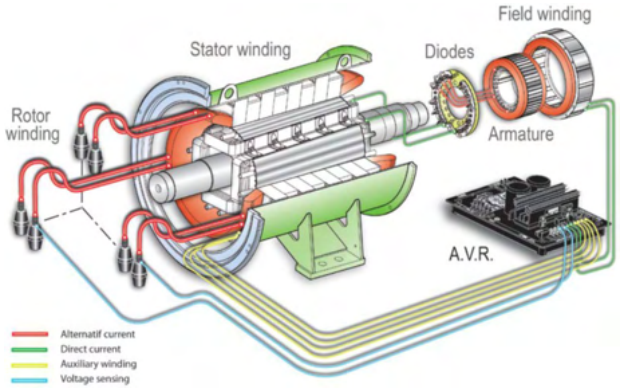
The Leroy Somer LSA alternators are designed for heavy duty continuous applications, with marine winding protection and Leroy Somer's AREP excitation system.

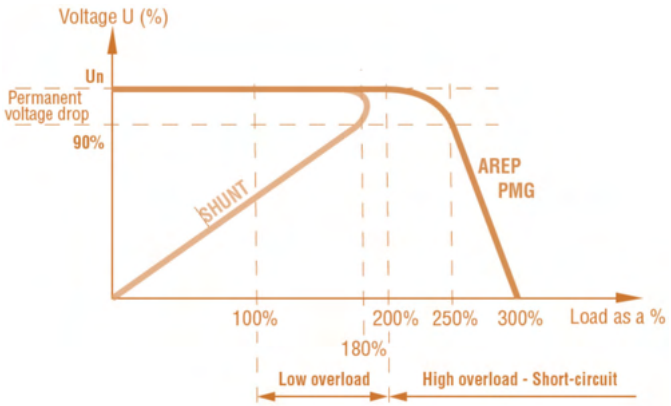
- AREP Excitation for superior motor starting capabilities
- Marine grade (relative humidity >95%) protection
- External multi-voltage selector switch (3 – position)
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating
- Voltage regulation +/- 0.5%
- Full Load acceptance of prime power rating

The AREP system uses 2 independent auxiliary windings located in the main stator to send supply voltage to the AVR:

- The voltage delivered by the first auxiliary winding H1 is proportional to the alternator output voltage (shunt characteristic).
- The voltage delivered by the second auxiliary winding H3 is proportional to the current drawn by the alternator and is a function of the applied load (compound characteristic – booster effect).
- The resulting phase-to-phase voltage supplies power to the AVR.

This power supply to the AVR power circuit is independent of the voltage sensing measured on the alternator output terminals. Therefore, the excitation current delivered by the AVR to the alternator exciter is independent of any voltage distortions (harmonics) due to the load. The AREP system gives the alternator a high overload capacity (load impact or starting electric motors) and a short-circuit capability (300% - 10 s) in order to provide discriminating protection: the alternator with AREP excitation is shorter than the one with PMG excitation. It is particularly suitable for demanding applications.





Performance @ Altitude and High Ambient Conditions

When using at altitude and high ambient conditions the engine and alternator will de-rate as per chart below.

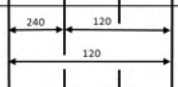
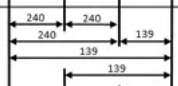
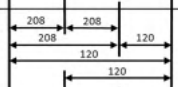
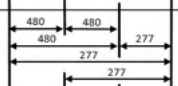
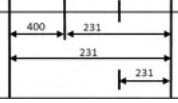
Height m (Feet)	0 (32)	5 (41)	10 (50)	15 (59)	20 (68)	25 (77)	30 (86)	35 (95)	40 (104)	45 (113)	50 (122)
0	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
500 (1640)	100%	100%	100%	100%	100%	100%	100%	100%	100%	97%	94%
1000 (3280)	100%	100%	100%	100%	100%	100%	100%	100%	100%	97%	94%
1500 (4921)	100%	100%	100%	100%	100%	100%	100%	99%	97%	94%	91%
2000 (6561)	100%	100%	100%	100%	100%	98%	97%	95%	94%	91%	88%
2500 (8202)	100%	100%	100%	100%	100%	95%	94%	92%	91%	88%	86%
3000 (9842)	100%	100%	100%	100%	100%	91%	90%	88%	87%	84%	82%
3500 (11,482)	100%	100%	100%	100%	94%	88%	84%	81%	80%	78%	77%
4000 (13,123)	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%
4500 (14,764)	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	70%
5000 (16,404)	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%

Power Distribution

The main power is connected from the alternator through a 4-position voltage selector switch to the main power cubicle. The cubicle incorporates all power distribution, controls, sensing and protection devises.

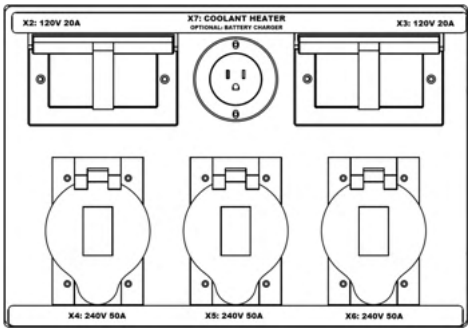
- 4-position Voltage Selector Switch (VSS)
- Current transformer x 3 (1 each leg)
- Single main breaker w/shunt trip
- Individual breakers for each receptacle
- Convenience receptacles located on outside of unit for easy access
- Terminal board for hard wiring
- Cam-Lock external quick connect (available as option)
- External emergency stop switch (recessed)
- Neutral bonded to Ground with a removable bonding link accessible in the control cubicle

Please refer to the chart below for power distribution and voltages. NOTE: All voltages below are subject to change, depending on set point of “Fine Voltage Adjustment” potentiometer and Voltage Selector Switch.

		120V Receptacle NEMA 5-20R	125/250V Receptacle CS6364	Terminal Board
Fine Voltage Adjustment	Voltage Selector Switch Position			
	240/120V 1Ø 60Hz	120V	240/120V	
	240/139V 3Ø 60Hz	139V	240/139V	
	240/139V 3Ø 60Hz	120V	208/120V	
	480/277V 3Ø 60Hz	139V	240/139V	
	400/231V 3Ø 50Hz	N/A	N/A	

All voltages are adjustable with the “Fine Voltage Adjustment” potentiometer located on the control panel. Therefore voltage may be different then what is shown in the above table. All voltages should be verified before connection to the unit.

Convenience Receptacles



Receptacle	Type
X2, X3	120V - NEMA 5-20R
X4, X5, X6	125/250V - CS6364
X7	120V - NEMA 5-15P

Controller - Standard

The Horton 200 come equipped with a DeepSea 7310 control module. This is a fully diagnostic ECU controller with large 3” display, that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and several safety warnings and shut downs on various parameters (listed below).

The controller is powered by a main on/off switch located next to unit.

DeepSea 7310 Controller Functionality:

- Home Page (displayed while running, scrolling every 3 seconds)
  - Generator voltage (ph-ph)
- Status Page
  - Generator voltage (ph-N)
  - Generator voltage (ph-ph)
  - Generator frequency
  - Generator kw
  - Generator power factor
  - Generator amperage
- Generator Page
  - Generator current (A)
  - Generator earth current
  - Generator load (kw)
  - Generator load (kVA)
  - Generator power factor
  - Generator load (kVAr)
  - Generator load (kWh, kVAh, kVArh)
  - Generator phase sequence
  - Dual mutual status
- Event Page
  - Displays the last 15 events
- Remote Start/Stop
  - Automatic start stop via 2 wire dry contact connection
- Operational Buttons
  - Start button
  - Stop button
  - Automatic mode (external remote start)
  - Up/Down arrows
- Info Page
  - Model number
  - USB identification number
  - Configured engine type
  - Module’s date and time
  - Scheduler setting
- Engine Page
  - Engine speed
  - Oil pressure
  - Coolant temperature
  - Engine battery volts
  - Run Time
  - Oil Temperature
  - Fuel Temperature
  - Turbo Pressure
  - Fuel Pressure
  - Fuel Consumption
  - Fuel Used
  - Fuel Level
  - Auxiliary Sensors
  - Engine Maintenance Due
  - Engine ECU Link
- Engine DTC Page

  This page contains any active Diagnostic Trouble Codes that the engine ECU is currently generating. These alarms are conditions detected by the engine ECU and displayed on the DSE controller.

Controller – Paralleling Option

The Horton 200 is also available with a Qc 4003 controller with a capacitive touch screen. This is a fully diagnostic ECU controller with large 7” diagonal (800 x 480 pixel) touch screen display that is intuitive and easy to operate with all functions conveniently at your fingertips. The controller also manages the engine ECU operating system, and a number of safety warnings and shut downs on various parameters.

Additionally, our Power Management System (PMS) enables the optimization of fuel consumption and expands the generator lifetime. PMS manages the quantity of generators running in parallel with load demand, starting and stopping units in line with increases or decreases in load. This ensures the demand on each generator remains at a level which optimizes fuel consumption. This also eliminates the need for generators to run with low load levels, which can cause engine damage and shorten the life expectancy of the equipment.

Qc 4003 Controller Benefits:

Modular Plant Capacity

- The Qc 4003 controller allows up to 32 generators to be coupled in parallel to fit the power requirement of any application.

Remote communication capability

- The Qc 4003 supports serial communication protocols including Modbus (RS-485, USB, and TCP/IP) and Profibus allowing you to supervise and control your genset/plant remotely.

User friendly rental interface

- Rental companies will benefit from the standardized user interfaces. The controller has been designed with ease of operation in mind, and rental companies can easily set and lock parameters to ensure full protection of their equipment.

Available Modes:

- **Island mode** - Power plant with synchronizing generators or a stand-alone generator. Also applicable in critical power plants.
- **Automatic Mains Failure** - Critical power/emergency standby plants, black start generator.
- **Fixed power** - Power plant with fixed kW set point (including building load).
- **Peak shaving** - Power plant where generator supplies peak load demand paralleled to the mains.
- **Load takeover** - Plant mode where the load is moved from mains to generator, for example peak demand periods or periods with risk of power outages.
- **Mains power export** - Power plant with fixed kW set point (excluding building load).
- **Remote maintenance** - Used when the generator must supply the load while a distribution transformer is disconnected for service.

* All modes are configurable, and it is possible to change the plant mode on the fly both in single and in power management applications.

Engine

John Deere

JD Tier 4 Final, turbo charged, intercooled, six-cylinder, liquid-cooled diesel engine provides ample power to operate the generator continuously at full-load.

Meets all US EPA, CARB and Environment Canada exhaust legislations with Tier 4 Final compliance. The engine utilizes a **Selective Catalytic Reduction (SCR)** and Diesel Exhaust Fluid (DEF) to meet final Tier 4 emissions. All functionality of the engine is controlled automatically on the controller.

The engine has the capability to start the generator at 14°F (-10°C) with standard glow-plug aid. A 1000W, 120V coolant heater is standard and allows machine starting for down to -13°F (-25°C).

The 335 Gal (1268L) fuel tank is sufficiently sized to operate the unit at full-load condition for long run times (see the Technical Data table for specifications).

The engine operates on a 24V negative ground electrical system with a charging alternator and lockable battery cutoff switch.

The cooling system is suitably designed for continuous operation in ambient conditions up to 120°F (49°C), with canopy door closed.

Fuel System

A large 335 US Gal (1268L) PE fuel tank provides safe diesel storage while eliminating tank corrosion contaminants from being introduced to your fuel system. With integrated fuel water separator and filter, the system is designed to help maintain clean and trouble- free diesel supply to the engine for reliable trouble-free operation.

- Pad-lockable diesel fill cap
- Fuel / Water separator
- Inline priming pump (w/ filter)
- Fuel pre-filter
- Fuel supply pump (w/strainer)
- Fuel level sensor
- Low fuel shut down feature (programmable level)
- External fuel connections w/3-way valve and quick disconnects

Scheduled maintenance

Standard equipped with filters sized and designed to allow 500-hour service intervals under normal operating conditions. Extended time between services reduces down time and total cost of ownership of the unit over its lifetime.

- 500 Hour Service Interval:
  - Oil filter
  - Fuel filter
  - Fuel / water separator
- 1000 Hour Service Interval:
  - Oil filter
  - Fuel filter
  - Fuel / water separator
  - Fuel / water separator

Enclosure & Frame

The generator enclosure is designed for extreme applications to provide superior performance and reliability.

The enclosure is fabricated from zinc rich primer steel which is powder coated for corrosion resistance and tested for 1000 hours. The enclosure and frame are fully sealed from the radiator to the back of the unit, providing a true 110% containment of all fluids.

- Zinc rich primer, powder coated enclosure 1000 hour salt spray tested
- Heavy duty base frame
- 110% fluid containment
- Superior level of rain ingress protection and design features
- Pad-lockable doors and fuel cap
- Engine fluid plumbed to exterior of frame for ease of service
- Central lifting point
- Sound dampening material and design to allow quiet operation at 68 to 71 dB(A)

Undercarriage

The Horton 200 is available with two undercarriage alternatives, providing utmost flexibility in installation, site handling or towing. Both the skid frame and the trailer mount the same way and can be interchanged for versatility.

- Trailer
  - Dual axle trailer
  - Available with electric brakes
  - DOT/Federal MVSS 49CFR571 approved light package
  - Adjustable height pintle hitch (3” lunette)
  - 15” Rims w/ ST225/75R15 Tires for trailer use
  - Heavy Duty torsion axle
  - Safety chains
  - Screw jack leveling, with pad foot, 3,000 lbs static capacity
  - Single point lifting structure
  - D-Ring Tie down points x4
- Skid mounted
  - Sub-frame skid with integrated forklift pockets
  - Heavy duty design for use in extreme conditions
  - Frame is ¼” wider then machine to reduce damage from forklifts
  - Built-in locations for straps or chains to secure the unit for transport
  - Single point lifting structure

Factory Options Available

- Battery charger
- SKID Mount
- Spare tire
- Stabilizer jacks
- Toolbox
- Parallel Cubicle (includes Qc4003 controller + Touch Screen Display, Motorized Breaker and Camlocks)
- Camlocks
- Internal Lights
- External Fuel Tank connections
- Cold Weather Oil (PAROIL E ULTRA – Synthetic 0W40 Oil)

Manufacturing & Environmental Standards

The Horton 200 is manufactured following stringent ISO 9001 regulations, and by a fully implemented Environmental Management System fulfilling ISO 14001 requirements.

Attention has been given to ensure minimum negative impact to the environment.

The Horton 200 meet all current US EPA, CARB and Environment Canada exhaust and noise emission directives.

Supplied Documentation

The unit is delivered with documentation regarding:

- Hard copies of the DAE Pumps Operators Safety and Instruction Manual, DAE Pumps Parts Book, John Deere Engine Manual and Parts book, in English as well as electronic copies available on request.
- Warranty Registration card for engine and DAE Generators (Units must be registered upon receipt).

Warranty Coverage

DAE Pumps Generator: Warrantied to be free from defects with regard to material and workmanship for the period of eighteen (18) months from date of shipment from the factory, or twelve (12) months from date of initial startup, whichever occurs first, without limitation of running hours.

John Deere Engine: John Deere Diesel engines are warranted to be free from defects with regard to materials and workmanship for the period of twelve (12) months without limitations in running hours, or twenty-four (24) months prior to the accumulation of 2,000 hours from the date of invoicing from DAE Pumps.

Leroy Somer Alternator: Warrantied to be free from defects with regard to material and workmanship for the period of twenty-seven (27) months from date of shipment from the factory, or twenty-four (24) months from date of initial startup or 10,000 hours, whichever occurs first.

Extended Warranty Programs: Programs are available; please contact your local sales representative for more info.