DAE Pumps
DESIGNED AND ENGINEERED PUMPING SOLUTIONS

Horton 700

Mobile Generator

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Horton 700 Mobile Generator

Standard Scope of Supply

The Horton 700 mobile generator is a prime power, multi-voltage, sound attenuated, mobile generator. It is powered by a Volvo 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 from powder coated steel.

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
- Tri axle trailer as standard
- Heavy Duty alternator with AREP excitation and marine grade protection
- Single side service with long run filters and 500 hour service intervals
- Volvo TWD1683GE T4F engine (also StageV approved)
- SCR-only exhaust after treatment
- Voltage selector switch
- External Fuel Tank Connections (3-way valve) located inside the enclosure + RACOR dual fuel filters
- Cam Lock Panel
- Emergency Stop
- Battery Charger
- Internal Lights
- Remote signal Start / Stop

Benefits

- Extremely durable and environmentally sensitive, designed to be used for everything from the oil patch 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
- Simplified, lower cost of ownership system
- Simple voltage change within seconds
- Flexibility to work with an external and larger fuel tank for extended autonomy. Dual fuel filters with water separator for optimal fuel quality at the engine intake
- Quick and easy connection of power cables
- External, recessed emergency stop for increased safety
- Insures the batteries are always ready for starting
- Safety and convenience when servicing the unit
- Allows connection as a critical back-up unit via a 2-wire dry contact connection in the distribution panel

Technical Data[1]

Generator	Units	Horton 700
Rated Prime Power 3Ø @ 480V 60hz	kW / kVA	560 / 700
3Ø Power Factor		0.8
3Ø Voltage In 480V Switch Position (Series Star w/ Neutral)	V	480Y/277
Amp Capacity @ 480V / 60Hz	A	842
3Ø Voltage In 240-208V Switch Position (Parallel Star w/ Neutral)	V	240YY/139 – 208YY/120
Rated Prime Power 3Ø @ 240V 60Hz	kW / kVA	506 / 632
Amp Capacity @ 240V / 60Hz	A	1520
Rated Prime Power 3Ø @ 208V 60hz	kW / kVA	438 / 548
Amp Capacity @ 208V / 60Hz	A	1521
3Ø Voltage In 400V 50Hz Switch Position (Series Star w/ Neutral)	V	400Y/231
Rated Prime Power 3Ø @ 400V 50hz	kW / kVA	446 / 558
Amp Capacity @ 400V / 50Hz	A	805
1Ø Power Factor		1
1Ø Voltage In 120-240V Switch Position (Zig-Zag)	V	120-240
Rated Prime Power 1Ø @ 120-240V 60hz	kW / kVA	260 / 260
Amp Capacity @ 240V / 60Hz	A	1083
Amp Capacity @ 120V / 60Hz	A	2 x 1083
Performance class (acc. ISO 8528-5:1993)		G2
Single step load acceptance (0-PRP) @60Hz	kW- %	247.9 (55.6%) @50Hz | 374.7 (66.9%) @60Hz
Alternator (4 Pole, 12 Wire)	Leroy Somer	LSA 47.2 M8
Excitation		AREP
Automatic Voltage Regulator (+/- 0.25%)		D350 (Standard) / DVC550 (Parallel option)
Insulation		Class H
Frequency	Hz	50 / 60
Main Breaker – Rated Current In	A	1600
Power Distribution – Terminal Board		5 Wire (L1, L2, L3, N, Ground)
Terminal Board Connections		Bare Wire Terminals
Maximum Terminal Cable Size		350MCM
Convenience Receptacles[2]		2 x NEMA 5-20R GFCI, 3 x 125/250V 50A CS6369

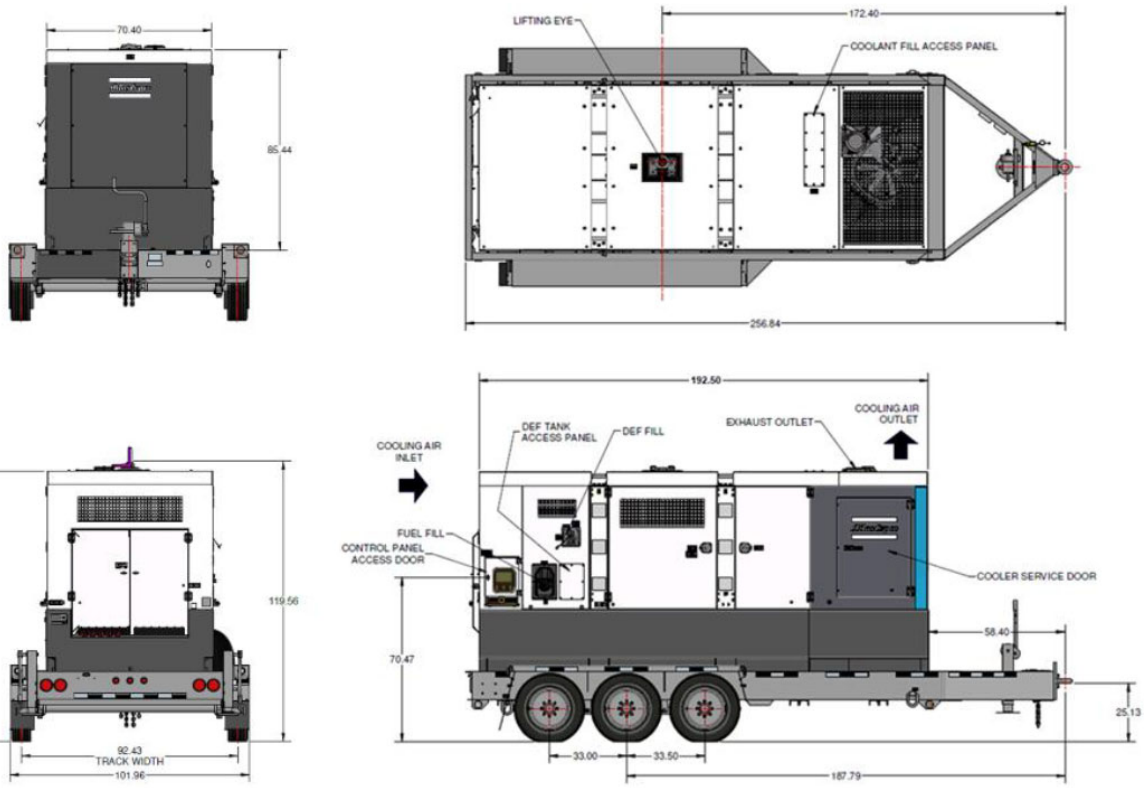
Engine	Units	Horton 700
Model		Volvo TWD1683GE
US EPA Family		MVPXL16.1CDD
US EPA Tier		T4F
Displacement	l	16.12
Cylinders	#	6
Continuous Engine Power Output (@ 1800 RPM)	HP (kW)	811 (596)
Gross Engine Power Output (@ 1800 RPM)		891 (655)
Rated Speed	RPM	1800
Engine Control		ECU
Aspiration		Two-Stage Turbo w/ Intercooler
Engine oil capacity[3]	Gal (l)	11.1 (42)
Engine coolant capacity	Gal (l)	29.3 (111)
Maximum Ambient Temperature (@ Sea Level) [4]	°F (°C)	122°F (50°C)
Minimum Starting Temperature (Without block heater on)	°F (°C)	14°F (-10°C)
Minimum Starting Temperature (With block heater on)	°F (°C)	-13°F (-25°C)
Electrical System (Negative Ground)	V	24
Engine Alternator Output	A	80
Battery Capacity (Cold Cranking Amps)	A	1400 X 2
Sound Pressure Level @ 23'(7 m) @ 75% Load [6]	dB(A)	76

Fuel System	Units	Horton 700
Fuel Consumption @ 25% load	Gal/h (l/h)	12.19 (46.14)
Fuel Consumption @ 50% load	Gal/h (l/h)	19.99 (75.67)
Fuel Consumption @ 75% load	Gal/h (l/h)	28.12 (106.45)
Fuel Consumption @ 100% load	Gal/h (l/h)	36.92 (139.76)
Fuel Type		Ultra-Low Sulfur Diesel ONLY [6]
Fuel Tank Capacity	Gal (l)	707 (2676)
Fuel Autonomy @ 75% load [8]	Hr	22.6
DEF Tank Capacity	Gal (l)	42.3 (160)
DEF Autonomy @ 75% load and 95% of DEF capacity	Hr	23.5

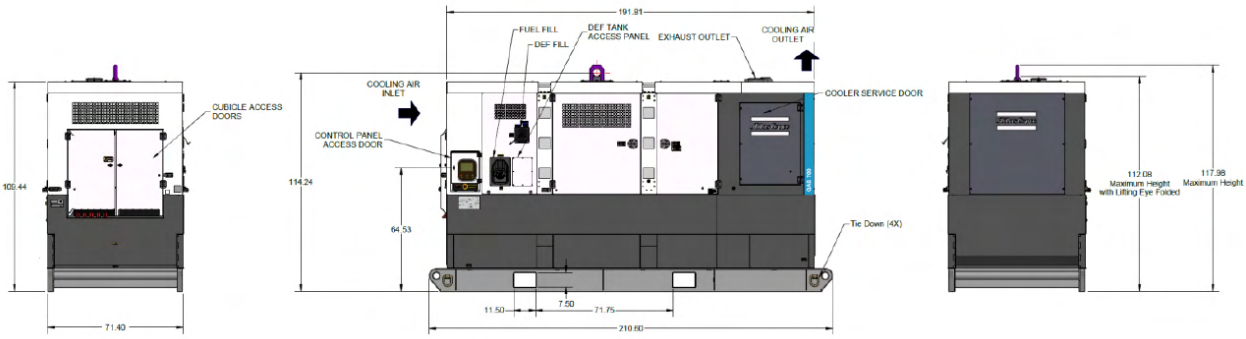
1 All ratings are at a reference condition of 0' altitude and 25°C (77°F)
2 Please see receptacle voltage configuration in Power Distribution section
3 Engine oil to meet CJ-4 (low ash oil)
4 Please see "Derate Table" for altitude and temperature calculations
5 Measured in accordance with ISO 2151 under free field conditions @ 7m distance
6 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

Dimensions

Trailer Mounted



Skid Mounted



Weight - Wet (ready to operate)	Units	Horton 700
Trailer Mounted – Wet (ready to operate)	lbs (Kg)	26,620 (12,075)
Trailer Mounted – Dry	lbs (Kg)	20,935 (9,496)
Skid Mounted – Wet (ready to operate)	lbs (Kg)	23,335 (10,585)
Skid Mounted – Dry	lbs (Kg)	17,650 (8,006)

Dimensions		
Trailer Mounted (L x W x H)	Inches	260 x 102 x 118
Skid Mounted (L x W x H)	Inches	194 x 70 x 110*

*TBD

Main Data

Alternator

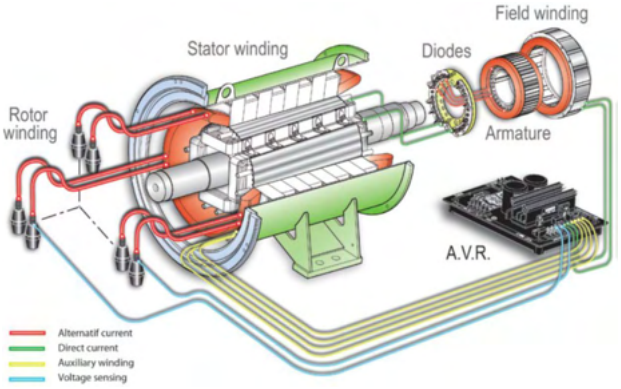
The Leroy Somer LSA alternators are designed for heavy duty continuous applications, with marine winding protection and Leroy Somer's AREP excitation system.

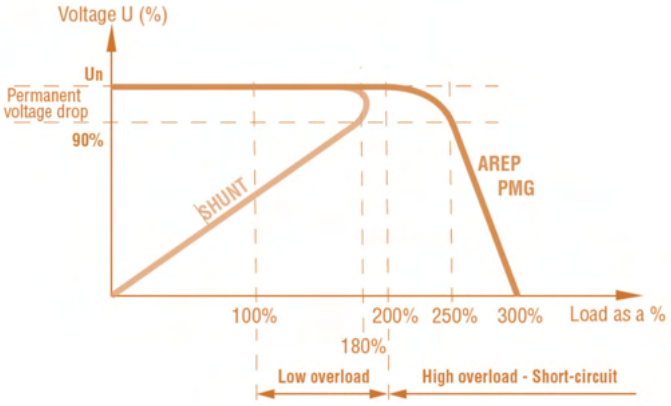
- AREP Excitation for superior motor starting capabilities
- Marine grade (relative humidity >95%) protection
- External multi-voltage selector switch (3 – position)
- 4 pole brushless design with single bearing, Class H insulation and IP23 rating
- Voltage regulation +/- 0.5%
- Full Load acceptance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

	Temperature °C (°F)										
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%	95%	90%
500 (1640)	100%	100%	100%	100%	100%	100%	100%	100%	100%	95%	90%
1000 (3280)	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	85%
1500 (4921)	95%	95%	95%	95%	95%	95%	95%	95%	95%	90%	85%
2000 (6561)	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	85%
2500 (8202)	90%	90%	90%	90%	90%	90%	90%	90%	90%	85%	85%
3000 (9842)	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	80%
3500 (11,482)	85%	85%	85%	85%	85%	85%	85%	85%	85%	80%	80%
4000 (13,123)	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%	75%
4500 (14764)	75%	75%	75%	75%	75%	75%	75%	75%	75%	70%	70%
5000 (16404)	70%	70%	70%	70%	70%	70%	70%	70%	70%	65%	65%

Power Distribution

The main power is connected from the alternator through a 3-position voltage selector switch to the main power cubicle. The cubicle incorporates all power distribution, controls, sensing and protection devices.

- 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
- 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.

Fine Voltage Adjustment	Voltage Selector Switch Position	120V Receptacle NEMA 5-20R	125/250V Receptacle CS6369	Terminal Board
	240/120V 1Ø 60Hz	120V	240/120V	L1 L2 L3 N 240 120 120
	240/139V 3Ø 60Hz	139V	240/139V	240 240 240 139 139 139
	240/139V 3Ø 60Hz	120V	208/120V	208 208 208 120 120 120
	480/277V 3Ø 60Hz	139V	240/139V	480 480 480 277 277 277
	400/231V 3Ø 50Hz	N/A	N/A	400 231 231 231

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.

** Fine voltage adjustment with optional paralleling w/TDU via controller parameters*

Receptacle	Type
X2, X3	120V - NEMA 5-20R GFCI (outlets)
X4, X5, X6	125/250V - CS6364 (outlets)
X7	120V - NEMA 5-15P (shore power inlet for coolant heater and battery charger)

Controller - Standard

The Horton 700 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 - Optional

As an option, the Horton 700 comes with the Qc 4004 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 4004 controller allows up to 32 generators to be coupled in parallel to fit the power requirement of any application.

Remote communication capability

- The Qc 4004 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

Volvo

Volvo 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 monitored automatically on the controller.

The engine has the capability to start the generator at 14°F (-10°C) with standard glow-plug aid. A 1500W, 120V coolant heater is standard and allows machine starting for down to -13°F (-25°C).

The 707 Gal (2,646 l) fuel tank is sufficiently sized to operate the unit at full-load condition for long run times

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 122°F (50°C), with canopy door closed.

Fuel System

A large 707 US Gal (2,676 l) 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

NOTE: Site specific operating conditions such as; poor fuel quality and low load profile may require more frequent service intervals.

Enclosure & Frame

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

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

- 14 Ga carbon steel, zinc rich primer, powder coated enclosure
- 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 73 dB(A)

Undercarriage

The Horton 625 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 mounted
  - Triple axle trailer
  - Electric brakes
  - DOT/Federal approved light package and 6 pin plug
  - Adjustable height pintle hitch (3” lunette)
  - 17.5” Rims with 215/75R LR H Tires for trailer use
  - Heavy Duty torsion axles
  - GR70 Safety chains with clevis slip hook and safety latch
  - Screw jack leveling, with pad foot, 25,000lbs capacity
  - Single point lifting structure
  - Tie down points x4
- Skid mounted
  - Sub-frame skid with integrated forklift pockets
  - Heavy duty design for use in extreme conditions
  - Built-in locations for straps or chains to secure the unit for transport
  - Single point lifting structure

Factory Options Available

- Paralleling with TDU (touch display unit)
- Skid mounted
- Cold Weather Option
- Spare tire
- Stabilizer jacks
- Toolbox

Manufacturing & Environmental Standards

The Horton 700 are 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 700 meets 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, Volvo Engine Manual and Parts book, in English as well as electronic copies available on request.
- Warranty Registration card for engine and DAE Pumps 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.

Volvo Engine: Twenty four (24) months or a maximum of three thousand (3000) hours of operation whichever occurs first (with the first twelve (12) months at unlimited running hours).

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.