

**Haier Lift Station Standby Generator Installation
SCOPE OF WORK**

February 2016



The City of Camden, South Carolina is seeking bids for the installation of a 40 Kilowatt, permanently mounted, natural gas fueled standby generator for its Haier Sewage Lift Station. The Haier Lift Station is located at 41 Haier Blvd. in the Steeplechase Industrial Park off of Black River Road near Camden, South Carolina.

General Scope of Work

The selected contractor shall provide in complete and perfect working order a new 40 Kw (nominal) generator system mounted on an appropriately sized concrete pad within the Haier sewer lift station site. The contractor shall provide all necessary materials, appurtenances, and labor to provide for a standby power system that will automatically start and transfer from normal power to standby power upon a power failure in order to maintain operation of the sewer lift station. **The Owner (City of Camden) will pre-purchase a Caterpillar Olympian generator set and ASCO automatic transfer switch (ATS) directly from Blanchard Power Systems of Summerville, South Carolina** to be installed by the Contractor.

The Contractor shall be responsible for coordinating with the generator/ATS supplier, Duke Energy and the Owner for electrical, SCE&G for gas, the Owner's Electrical Engineer and the Owner to locate the components on-site, to install the system, and provide-start-up. Blanchard Power Systems estimates the unit will be delivered between approximately March 7 and March 30, 2016.

The existing lift station has two installed 10 horsepower, 460 volt, 3-phase submersible pumps that may operate individually or together. The proposed generating system must be capable of running both pumps simultaneously. The generator system shall include appropriate controls and/or shall be sized to start both pumps simultaneously. The generator set shall be started and accelerated to rated speed immediately upon loss of normal power after an adjustable time delay and be equipped with cold starting aids such as a jacket water heater. The generator set shall accept load in one step, up to the engine capability to recover to rated speed.

The engine/generator set shall be capable of producing the rated kW and kVA when operating at the local altitude and temperature range. The generator manufacturer will provide data to verify the generator set will operate as required in the ambient conditions of 500 feet Altitude, minimum temperature: 5F° and maximum temperature of 120F°.

Site Preparation

The Contractor shall coordinate with the Engineer and City Operations staff to locate the generator and appurtenances within the site so as to minimize any conflict with access and interference with other existing equipment and facilities.

Adequate clearances shall be provided to allow for proper maintenance of the components.

The Contractor shall provide a reinforced concrete pad under the generator base of adequate dimensions and strength to properly support the unit as recommended by the manufacturer, but shall be no less than six (6) inches in thickness. The concrete shall have a compressive strength of a minimum of 3000 psi and shall extend a minimum of eighteen (18) inches outside the perimeter of the generator enclosure and mounting base. Minimum 8 gauge wire mesh or No. 6 rebar placed on 12-inch centers shall be incorporated in the foundation. The pad shall be three (3) to eight (8) inches above finished grade. The site shall be graded and properly compacted to support the pad and generator, etc. and not cause standing water to accumulate. The concrete pad shall accommodate any required electrical and gas conduits, etc. in accordance with the manufacturer recommendations. Any such conduits shall be properly sized for the required cables and gas, placed and bedded in appropriate stone under the pad. Concrete shall be level within the framework of the generator base and shall not allow ponding of water. The unit shall have a minimum of five (5) feet of clearance on all sides to accommodate maintenance on the system. The base frame shall be securely fastened to the foundation using appropriate fasteners. Any openings in the base frame shall be plugged or otherwise closed to prevent debris and animals, etc. from getting under the unit.

All stub-up conduit, electrical and gas, connected to the generator set shall be flexible due to vibration, and shall be installed in such a manner as not to cut or abrade wires, gas lines, or conduits, etc. due to movement, rubbing, pinching or stress. Underground electrical conduits shall be PVC-coated rigid steel and installed a minimum of 1' 6" below grade except where run under a concrete slab on grade. All electrical conduits shall be sealed with non-hardening sealing compound after cables have been installed. All equipment, piping, conduit, etc. shall be properly mounted, bonded, and grounded in accordance with applicable standards.

The base shall be designed to rigidly support the engine generator set, ensure permanent alignment of rotating parts and be arranged to provide easy access to allow changing of lube-oil and engine coolant. The base will be constructed of steel and ensure that all alignment is maintained during shipping and normal operations. The base shall permit skidding in any direction for installation and shall withstand and mitigate the effects of vibration of the engine and generator. Anchor bolt holes shall also be provided. Standard pad isolation to guard against vibration of the base and foundation shall also be included.

Any externally mounted panel boxes shall be stainless steel, NEMA 4X, securely mounted on a framework of rigid A316 stainless steel using A316 stainless hardware. The existing framework may be utilized if adequately sized.

The contractor shall coordinate with the gas supplier, (South Carolina Electric & Gas, SCE&G) to insure the natural gas supplied shall be capable of sustaining 752 cubic feet/hour at 7" to 11" water column. A natural gas supply line is located within approximately fifty to sixty (50-60) feet of the lift station site; however SCE&G will supply the meter, regulator and piping up to the interface with the generator. The final flexible connection shall be provided by the Contractor.

System Components by Blanchard Power Systems (See Blanchard submittal below; note items not supplied by Blanchard Power Systems which will be Contractor's responsibility unless otherwise noted.)

The generator and related enclosure shall be supplied by Blanchard Power Systems. The 40 Kw generator shall be manufactured by Caterpillar, Olympian LG Series, be fueled by natural gas, and have the following as a minimum:

- Engine manufactured by Caterpillar (62 hp at rated 40 Kw) and for operation on natural gas
- Model G40LG2 or latest update, 460/480v, Three phase, 60 Hz alternator
- Weatherproof standard steel enclosure, 74 dba at 23 feet
- EPA certified
- Permanent magnet excited alternator, tropical coating, strip heater
- Pad type Isolator
- 10 amp battery charger
- H100 Common Control Panel with internal digital voltage regulator and electronic engine governor. Generator Running relay.
- 100 amp main breaker; shunt trip and auxiliary contacts
- Audible alarm siren; volt free contacts for alarm
- Block coolant heater; Low Coolant Temperature alarm and Low Coolant shutdown circuit
- 300 Series Automatic Transfer Switch by ASCO with 100 amp, 3-pole, 4 wire, 460/480v, 3-Phase (open Transition) and 300 Series Group G Microprocessor Controller. Stainless Steel NEMA 4X enclosure(s).
- Extended 5-year "Platinum ESC", \$0-deductible warranty coverage

Mainline Circuit Breaker and other Circuit Breakers:

The Contractor shall confirm which breakers will be supplied with the generator and any additional that may be required. All circuit breakers shall be listed by UL to conform to applicable requirements of NEMA Standard Publication No. AB1 and meet appropriate classifications of Federal Specifications W C 37511/Gen. The interrupting rating of the circuit breakers shall be at least equal to the available short circuit at the line terminals of the circuit breaker and correspond to the UL listed integrated short circuit current ratings specified. All circuit breakers shall be sized according to UL2200. The circuit breaker shall be equipped with interchangeable overload trip units and changeable rating plugs that cover the range from the breakers 100% rating to at least 50% of the frame rating. All

circuit breakers shall have a quick-make, quick-break over center toggle-type mechanism and the handle shall be trip free to prevent holding contacts against a short circuit or overload. Circuit breaker handles shall assume a position between ON and OFF when tripped. Multi-pole circuit breakers shall be common-trip so that an overload or short-circuit on any one pole will result in all poles opening. Magnetic arc chutes will be used to stop arcing and all ratings are to be clearly visible. Thermal-magnetic tripping devices located in each pole provide inverse time delay and instantaneous protection. The instantaneous magnetic trip shall be accessible and adjustable from the front and shall be ambient temperature-compensated such that as the temperature increases the circuit breaker de-rates itself so as to protect its associated conductor. Any additional breakers needed for proper installation and are not provided by Blanchard Power Systems shall be provided by the Contractor at no additional cost.

Automatic Transfer Switch (ATS):

The **ATS supplied by Blanchard Power Systems** shall be a Series 300 Power Transfer Switch Group G manufactured by ASCO and shall comply with UL 2008, NFPA 110, NEC Articles 700,701,and 702; and CSA standard C22.2 suitable for the intended conditions.

The ATS will be equipped with a Series 300 Microprocessor with graphical display and LEDs for switch position, source availability, not auto mode, and alert condition. Soft keys for test function and time delay bypass, and emergency source failure alert, and an adjustable time delay for prevention of switch activation upon momentary utility power outages and generator dips. Auxiliary contacts to indicate position of main contacts, normal and emergency positions. The system shall be capable of at a minimum, weekly generator exercise with or without load.

Execution

1. Within seven (7) days of Notice of Award/Notice to Proceed the selected contractor shall submit to the Owner/Engineer for approval three (3) copies of all manufacturer specifications, catalog sheets, etc. for all equipment that will not be provided by Blanchard Power Systems along with foundation drawings and equipment locations. Compare all current literature describing the engine generator set and accessories including complete dimensional and electrical drawings, locating accessories, anchor bolt and mounting dimensions, fuel, exhaust and cooling piping and connections.
2. Factory Testing:

The installation contractor will not be responsible for factory testing. Prior to delivery to the site the generator manufacturer will have conducted factory testing. The generator set shall be tested and a Performance Assurance Certification shall be completed at the factory on the unit. A certified copy of the test of the engine-generator performance shall be provided to the Contractor for review.

Factory tests shall include, but not be limited to the following:

Full load at rated power factor will be applied;

Full load at unity, 1.0 PF;

Recordings of the maximum load carrying capabilities of the engine generator set:

Maximum single block load pick-up capability;

Kilowatts;

Amperes;

Voltage;

Kilovolt amperes;

Resistance of exciter field and stator;

Insulation test, generator field, exciter armature, exciter field, generator armature;

Dielectric test, generator armature, generator field, exciter armature, exciter field;

Lube oil pressure;

Time;

Water temperature;

Battery charge rate;

Heaters, jacket water or equivalent circulating water heater system and/or lube oil;

Safety shutdowns and automatic controls;

Annunciator panel, charger, pumps as supplied;

Phase sequence on three phase;

Frequency;

Full load and .4PF to verify the motor starting capability;

Full rated load at rated PF and maximum load to verify engine power and maximum capability;

kVA, kilowatts, amperes, voltage, frequency and voltage transience at half and rated load

frequency at: no load, full load rated and maximum output;

Regulator range – adjust, phase sequence, phase voltage balance;

Stator and exciter field resistance;

All safety shutdown and automatic controls;

Testing shall include portions of MIL-STD-705.

3. The Contractor shall coordinate with the generator supplier for delivery to the site for installation by the Contractor. Within sixty (60) days of

shop drawing approval the contractor shall have substantially completed the project, providing for a complete system ready for transfer to the Owner. The Contractor shall coordinate with the Owner and provide alternative pumping arrangements, if necessary, to insure the lift station remains in operation at all times. The Owner may, but cannot guarantee short durations of interruptions, if necessary for integration and testing of new components.

All work shall be done, where applicable, in accordance with the National Electric Code (NEC), National Electrical Safety Code (NESC), OSHA, NFPA 54 and 70, South Carolina Building Code, and applicable local regulations and ordinances. The Contractor, at his own expense shall arrange for and obtain any necessary permits and inspections in accordance with local jurisdictions.

The Contractor shall coordinate with SCE&G to arrange for piping installation and inspection of the gas supply piping and final connection to the generator. The Contractor will also coordinate with the Owner and Duke Energy for any electrical power interface work.

4. Field Testing and Start-up:

Prior to start-up the Contractor shall arrange to have the system inspected by an authorized Caterpillar factory representative. All features and functions of the system shall be field tested after installation and start-up. Tests shall include, but not be limited to 100% rated load bank test for 4 hours minimum. A final field test report showing all results will be submitted to the Owner. The start-up of the engine generator set and automatic transfer switch will be performed by an authorized representative of the manufacturer. Start-up, following field testing will include instructions to Owner's employees on normal maintenance and operation of the generator set. Upon completion of start-up the Contractor shall provide to the Owner a minimum of two copies of an Operations and Maintenance manual(s) and all associated documentation.

5. Within thirty (30) days from Substantial Completion the Contractor shall have all punch-list items and close-out documents , etc. completed.

Warranty

1. Blanchard Power Systems./Caterpillar shall provide a five (5) year manufacturer warranty, Caterpillar Platinum Level for all components supplied by Blanchard. The electric generating system components, complete engine-generator, automatic transfer switch, and instrument panel shall be warranted by the manufacturer against defective materials and

factory workmanship. Such defective parts shall be replaced by the manufacturer free of charge. The warranty period shall commence when the generator set system is commissioned and accepted by the Owner. Multiple warranties for individual components will not be accepted and warranty documents must be provided.

2. The Contractor shall warrant the remainder of the installation free of defects and workmanship including integration with the generator set, foundation, and connections, etc. for a period of two (2) years following the date of substantial completion.

Instructions to Bidders

1. Sealed proposals, including the supply of necessary labor and materials for the installation of a standby generator system (generator and automatic transfer switch supplied by the Owner) and related improvements to the Haier Sewage Lift Station owned by the City of Camden, South Carolina (hereinafter called the "Owner") will be received on or before 2:00 PM, EST, Wednesday, February 24, 2016, in the offices of the Department of Public Works, 1000 Lyttleton St., Camden, South Carolina, at which time and place they will be publically opened and read.
2. The project consists essentially of the installation of a new 40 KW , 480 volt, 3 phase, natural gas fueled Caterpillar standby power generator and Automatic Transfer Switch to be supplied by the Owner, along with a concrete mounting pad, conduits, wiring, fuel connections and related appurtenances to be supplied by the Contractor.
3. Sealed envelopes containing bids shall be marked as follows:

(Your Company Name)

(address)

To: City of Camden Public Works
Attn: Mr. Ray Peterson
1000 Lyttleton Street
Camden, SC 29020

HAIER GENERATOR PROPOSAL

Bid Opening 2:00 PM on Wednesday, February 24, 2016

4. The successful bidder will in general furnish all labor and materials which may be necessary to effect the aforementioned construction, as more fully described in the plans and document titled "Haier Lift Station Standby Generator Installation Scope of Work, February 2016, City of Camden South Carolina", contained herein.
5. This project is being done at an existing sewage lift station within an industrial park, and the Contractor will have to coordinate his activities with other utilities and not impede access or sewer service to the industrial park.

6. The basic plans, drawings, and specifications are included within this document. The Contractor is directed to the generator supplier (Blanchard Power Systems) for specific operating and installation instructions prior to and during the installation for specific generator and transfer switch installation guidance.
7. The successful contractor and/or its specified subcontractors shall have demonstrable experience in the installation of standby generators, concrete foundations, gas supply, and wiring, etc. to be employed on this project. The Owner shall have the right to approve any proposed subcontractors.
8. Consideration will be given only to bids of contractors licensed under the South Carolina "Act to Regulate the Practice of General Contracting" in the applicable category(ies) required by the nature and amount of the work. In addition, the bidder must possess a business license issued by the City of Camden. The contractor must also maintain Worker Compensation insurance coverage of no less than one million dollars (\$1,000,000), liability insurance of \$1,000,000 and property damage of \$1,000,000.
9. Copies of project documents and all necessary forms for bidders may be obtained from the Owner at the City of Camden Department of Public Works office located at 1000 Lyttleton Street, Camden South Carolina 29020; or downloaded from the City of Camden website: www.cityofcamden.org Hard copies may be reviewed at the Department of Public Works as noted above.
10. Proposals, together with all supporting instruments must be submitted on forms provided within this Bid Request without modification.
11. The successful bidder will be required to enter into a contract with the Owner. The Owner reserves the right to waive minor irregularities or minor errors in any Proposal if it appears to the Owner that such irregularities were made through inadvertence. Any such errors or irregularities so waived must be corrected prior to execution of any contract. The City of Camden reserves the right to reject any and all bids and to accept any bid which appears to be in the best interest of the Owner.
12. The Bidder understands and agrees that if his proposal is accepted, the Bidder shall take possession and assume full responsibility for the safekeeping and protection of the materials and equipment pre-purchased by the Owner (Caterpillar generator set and ASCO Automatic Transfer Switch and appurtenances).

13. All blank spaces on the Proposal form must be filled in, as required. All price information shall be shown in figures where required. No changes shall be made in the phraseology of the form.

Any proposal shall be deemed informal which contains omissions, erasures, alterations, or additions of any kind, or prices uncalled for, or in which any prices are obviously unbalanced, or which in any manner shall fail to conform to the conditions of the Instructions to Bidders.

14. If the successful Bidder is a non-resident contractor he will be required to complete a non-resident taxpayer affidavit to be held by the Owner certifying that the contractor is currently registered with the South Carolina Secretary of State or the South Carolina Department of Revenue as a non-resident taxpayer.
15. Questions regarding the project during the Bid Phase should be directed in writing to Raymond Peterson, Deputy Director for Public Works, at rpeterson@camdensc.org
16. Site visits for inspection during the Bid Phase may be arranged by contacting Raymond Peterson, Deputy Director for Public Works, at (803) 425-6045.

CITY OF CAMDEN
CAMDEN, SOUTH CAROLINA
(Owner)

February 12, 2016

CONTRACTOR'S/BIDDER'S PROPOSAL FORM
Haier Lift Station Generator Installation

TO: City of Camden
1000 Lyttleton Street
Camden, SC 29020

LABOR AND MATERIAL PROPOSAL

The undersigned (hereinafter called the "Bidder") hereby proposes to receive and install such materials and equipment as may hereinafter be specified to be furnished by the Owner, and to furnish all other materials and equipment, machinery, tools, labor, transportation and other means required to construct improvements to the Haier Sewage Lift Station near Camden, South Carolina in strict accordance with the plans, specifications, drawings, and Scope of Work, attached hereto and made part hereof.

The quantity of work is to be in and around the City of Camden, South Carolina as directed by the Owner/Engineer. The Bidder will furnish all materials, labor and services necessary thereof under the Labor and Material Proposal for the unit prices stated in the proposal.

The intent of the work included in the bid is to provide the labor to install a 40 Kw natural gas standby power generator and automatic transfer switch (supplied by the Owner); and provide a concrete foundation and related materials to secure and connect the generator set, coordinate on-site testing, and start-up to provide for a complete working system at the City of Camden's existing sewage lift station serving the Steeplechase Industrial Park.

Installation Units

Labor and materials for reinforced concrete foundation \$ _____

Labor and materials for installation of Generator and Automatic Transfer Switch and start-up _____

State and local taxes (if applicable) _____

Total Project Cost \$ _____

SC Contractor License No. _____

City of Camden Business License No. _____

(List any subcontractors and contact information on separate sheet)

(Bid Page 1 of 2)

CONTRACTOR'S/BIDDER'S PROPOSAL FORM (Continued)
Haier Lift Station Generator Installation

(Name of Bidder) _____

(By) _____
(Signature)

(Printed Name)

(Title of Officer) _____

(Address of Bidder) _____

(Date) _____

(Telephone & e-mail address of Bidder) _____

(The Proposal must be signed with the full name of the Bidder. In the case of a partnership the Proposal must be signed in the firm name by each partner. In the case of a corporation the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation. A typewritten copy of all such names and signatures shall be appended.)

(Bid Page 2 of 2)

Attachments

Existing Site





Quote #: 30094442rev



**Generator Quotation for:
City of Camden
40kw Natural Gas Standby Generator
11/9/2015**

Prepared by:

Sara Cox

C: (843)412-6824

sbcox@blanchardmachinery.com

THIS QUOTATION INCLUDES AND IS SUBJECT TO ALL THE PROVISIONS ON THE REVERSE HEREOF. PRICES QUOTED ARE GUARANTEED FOR 30 DAYS FROM THE DATE OF THE PROPOSAL.

PLEASE REVIEW YOUR SPECIFICATIONS TO BE SURE THAT THE APPARATUS DESCRIBED ABOVE MEETS YOUR REQUIREMENTS. This quotation covers such apparatus as described herein and does not constitute a job proposal. Reference herein to a job name or a job number does not institute a representation or warranty that such apparatus meets any particular specification. Thank you for your request and for your consideration of this quotation.

Plus all applicable state and local taxes. Telephone and verbal orders are to be confirmed in writing. We reserve the right to correct stenographic or clerical errors. Deliveries are subject to occurrences beyond our control.

Columbia 3151 Charleston Hwy W. Columbia, SC 29172 803.791.7100 tel 803.791.9874 fax	Greenville 6755 Frontage Rd Greenville, SC 29605 864.672.0500 tel 864.672.0501 fax	Florence 3031 Caterpillar Lane Florence, SC 29506 843.678.8520 tel 843.678.8538 fax	Rock Hill 3777 Lazy Hawk Rd Rock Hill, SC 29730 803.324.9600 tel 803.324.9710 fax	Myrtle Beach 2334 Chestnut Road Longs, SC 29568 843.399.1692 tel 843.399.2092 fax	Summerville 153 Farmington Drive Summerville, SC 29483 843.871.2001 tel 843.285.2854 fax
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http://www.blanchardmachinery.com/power_systems/



Quote #: 30094442rev

One OLYMPIAN Natural Gas Standby Generator as follow:

G40LG model, 40kw, 60Hz , 3PH, 480volt

- STANDBY POWER APPLICATION, EPA certified for NSPS emissions regulations
- NFPA 110 Upgrade, UL Certification, IBC seismic certification
- **Standard Weatherproof Enclosure**, White with internally mounted catalytic converter/muffler, 74 dba at 23 feet
- H100 Common Control Panel with internal digital voltage regulator and electronic engine governor
- Battery Charger UL 10A
- Lead Acid Battery ; racks and cables; battery heater
- **100A Main Breaker** ; shunt trip and aux contacts
- Audible Alarm Siren, Volt Free Contacts for Alarm
- **Permanent Magnet excited Alternator, tropical coating, strip heater**
- Low Coolant temp alarm, Low Coolant shutdown circuit
- Coolant Heater
- Delivery to job site
- Factory technician start up with load bank testing
- Extended 5 year warranty, Platinum level

Automatic Transfer Switch: (1) 100 amp, open transition, 60 hz, 480 volt, 3 phase, 3 pole, 4 wire, NEMA 4x enclosure

ASCO[®] SERIES 300 Power Transfer Switches

Designed to Fit Anywhere

The ASCO SERIES 300 product line represents the most compact design of automatic power transfer switches in the industry. With space in electrical closets being at a premium, the use of wall- or floor-mounted ASCO Power Transfer Switches assure designers optimum utilization of space.

All transfer switches through 2000 amperes are designed to be completely front accessible. This permits the enclosures to be installed flush against the wall and still allow installation of all power cabling and connections from the front of the switch. Cable entrance plates are also standard on the 1600 and 2000 amperes units to install optional side-mounted pull boxes for additional cable bending space.



Fig. 2: ASCO Power Transfer Switch rated 200 amperes



Quote #: 30094442rev

***Related Items Not Included*:**

- Unloading equipment at the jobsite
- Setting In Place
- Installation of the Equipment (Including shipped loose accessories)
- Wiring terminations or splice kits. (Including control wires)
- Coordination Studies for Relays or Breakers or Relay Calibration/Setting/Testing
- Fueling of generator
- Lugs on Generator Bus Bars or the breakers
- Infrared Scanning of equipment supplied above
- NETA / Independent Testing
- Any Applicable Taxes
- Identifying Signs

NOTES:

- (1) **Installation, offset, fuel piping, regulator and natural gas supply/fueling are not included. Natural Gas installations require careful coordination with utility to ensure proper gas pressure and volume are delivered to generator.**
- (2) Factory lead time for generator is 8 weeks from time of approved submittal.
Factory lead time for ATS is 4 weeks from time of approved submittal.
- (3) Quotation was based on standard consist. No electrical drawings or specification provided.

Columbia
 3151 Charleston Hwy
 W. Columbia, SC 29172
 803.791.7100 tel
 803.791.9874 fax

Greenville
 6755 Frontage Rd
 Greenville, SC 29605
 864.672.0500 tel
 864.672.0501 fax

Florence
 3031 Caterpillar Lane
 Florence, SC 29506
 843.678.8520 tel
 843.678.8538 fax

Rock Hill
 3777 Lazy Hawk Rd
 Rock Hill, SC 29730
 803.324.9600 tel
 803.324.9710 fax

Myrtle Beach
 2334 Chestnut Road
 Longs, SC 29568
 843.399.1692 tel
 843.399.2092 fax

Summerville
 153 Farmington Drive
 Summerville, SC 29483
 843.871.2001 tel
 843.285.2854 fax

http://www.blanchardmachinery.com/power_systems/

ASCO® SERIES 300 Power Transfer Switches

Maximum Reliability & Excellent Value

With a SERIES 300 Transfer Switch, you get a product backed by ASCO Power Technologies, the industry leader responsible for virtually every major technological advance in the Transfer Switch industry.

The ASCO SERIES 300 was designed for one purpose—to automatically transfer critical loads in the event of a power outage. Each and every standard component was designed by ASCO engineers for this purpose.

The SERIES 300 incorporates the Group G controller with enhanced capabilities for dependable operation in any environment. A user-friendly control interface with a 128x64 graphical LCD display and intuitive symbols allow for ease of operation while visual LED indicators display the transfer switch status. Operating parameters and feature settings can be adjusted without opening the enclosure door.

The rugged construction and proven performance of the ASCO SERIES 300 assure the user of many years of complete reliability. The SERIES 300 is even designed to handle the extraordinary demands placed on the switch when switching stalled motors and high inrush loads.

ASCO's SERIES 300 modular, compact design makes it easy to install, inspect and maintain. All parts are accessible from the front so switch contacts can be easily inspected.

Features

- The SERIES 300 is listed to UL 1008 standard for total system loads and CSA standard C22.2 for automatic transfer switches.
- Meets NFPA 110 for Emergency and Standby Power Systems and the National Electrical Code (NEC) Articles 700, 701 and 702.

UL1008 Withstand and Close-on Ratings for ASCO Series 300 Group G Products ^{1,2} (RMS Symmetrical Amperes)

Frame	Switch Ratings (Amperes)	Current Limiting Fuses				Specific Breaker		
		Transfer Switches	480V Max.	600V Max.	Max. Size, A	Class	240V Max.	480V Max.
D	30	100kA	-	60	J	22kA	22kA	10kA
D	70 - 100	35kA	35kA	200	RK1	42kA	22kA	10kA
		200kA	35kA	200	J			
D	150	35kA	35kA	200	RK1	65kA	25kA	10kA
		200kA	35kA	200	J			
D	200	200kA	-	200	J	65kA	25kA	10kA
D	230	100kA	-	300	J	65kA	25kA	10kA
E	260, 400	200kA	-	600	J	65kA	42kA	35kA
J	150 ⁴ , 200 ⁴ 230 ⁴ , 260 400	200kA	200kA	600	J	65kA	50kA	42kA
J	600	200kA	200kA	800	L	65kA	50kA	42kA
H	600	200kA	200kA	800	L	65kA	65kA	65kA
H	800 - 1200	200kA	200kA	1600	L	65kA	65kA	65kA
G	1000 - 1200	200kA	200kA	2000	L	85kA	85kA	85kA
G	1600 - 2000 ³	200kA	200kA	2500	L	85kA ³	85kA ³	85kA ³
G	2600 - 3000	200kA	200kA	4000	L	100kA	100kA	100kA

- Notes:**
1. All WCR values indicated are tested in accordance with the requirements of UL 1008, 7th Edition. See ASCO Pub. 1128 for more WCR information.
 2. Application requirements may permit higher WCR for certain switch sizes.
 3. Front connected only.
 4. J150, 200, 230 Amperes available in 3ADTS and 3NDTS only.



Fig. 1: ASCO Power Transfer Switch rated 200 amperes

- Restriction of Hazardous Substances (RoHS) compliant controller.
- 30 through 3000 amperes in a compact design.
- Switch operating temperature range of 0 to +40°C.
- Available to 600 VAC, single or three phase.
- True double-throw operation: The single solenoid design is inherently inter-locked and prevents connections to both sources at the same time.
- No danger of the SERIES 300 ATS transferring loads to a dead source because the unique ASCO single-solenoid operator derives power to operate from the source to which the load is being transferred.
- Easy-to-navigate 128x64 graphical LCD display with keypad provides LED indicators for switch position, source availability, not in auto mode, and alert condition.
- Integrated multilingual user interface for configuration and monitoring.
- Delayed transition operation is now available (Dual Operator Configuration).
- Non-automatic operation can be selected using the key pad without opening enclosure door.
- Relay expansion module with extra relays for accessory outputs (optional).
- Includes soft keys for test function and time delay bypass as standard features.
- Emergency source failure alert indication.
- Historical event log (optional).
- Statistical ATS system monitoring information.
- Diagnostic functions.
- Password protection to prevent unauthorized tampering of settings.
- Adjustable time-delay feature prevents switch from being activated due to momentary utility power outages and generator dips.
- Auxiliary contacts to indicate position of main contacts. Two (2) for normal and two (2) emergency position
- Supplied with solid neutral termination.
- Optional switched neutral pole available.
- Field modification accessory kits available.
- Available for immediate delivery.

ASCO[®] SERIES 300 New Microprocessor Controller



The SERIES 300 incorporates the group “G” controller with enhanced capabilities for dependable operation in any environment.

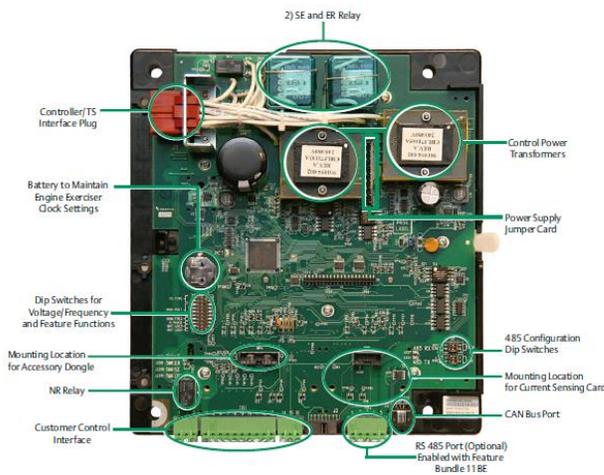


Fig. 8: ASCO SERIES 300 Microprocessor Controller

Control and Display Panel

- Easy-to-navigate 128x64 graphical LCD display with keypad provides LED indicators for switch position, source availability, not in auto mode, and alert condition. It also includes test and time delay bypass soft keys.

Voltage, Frequency & Current Sensing

- 3-phase under and over voltage settings on normal and single phase sensing on emergency source.
- Under and over frequency settings on normal and emergency.
- True RMS voltage sensing with +/-1% accuracy.
- Frequency sensing accuracy is +/- 0.1Hz.
- Voltage and frequency parameters adjustable in 1% increments.
- Selecting settings: single or three phase voltage sensing on normal, and single phase sensing on emergency; 50 or 60Hz. 3-phase voltage unbalance on normal.
- Load current sensing card (optional).

Time Delays

- Engine start time delay – delays engine starting signal to override momentary normal source outages, adjustable from 0 to 6 seconds (Feature 1C).
- Emergency source stabilization time delay to ignore momentary transients during initial generator set loading, adjustable from 0 to 4 seconds (Feature 1F).
- Re-transfer to normal time delay with two settings (Feature 3A).
 - Power failure mode – 0 to 60 minutes
 - Test mode – 0 to 10 hours
- Unloaded running time delay for engine cooldown, adjustable from 0 to 60 minutes (Feature 2E).
- Pre- and post-signal time delay for selective load disconnect with a programmable bypass on source failures, adjustable from 0 to 5 minutes (specify ASCO optional accessory 31Z).
- Optional fully programmable engine exerciser with seven independent routines to exercise the engine generator, with or without loads, on a daily, weekly, bi-weekly or monthly basis (specify ASCO optional accessory feature bundle 11BE).
- Delayed transition load disconnect time delay, adjustable from 0 to 5 minutes (3ADTS/3NDTS configuration only).

Standard Selectable Features

- Inphase monitor to transfer motor loads, without any intentional off time, to prevent inrush currents from exceeding normal starting levels.
- Engine exerciser to automatically test backup generator each week, with or without load 20 minutes not adjustable.
- Commit to transfer.
- Selective load disconnect circuit to provide a pre-transfer and/or post-transfer signal when transferring from emergency to normal and/or normal to emergency.
- Re-transfer to normal through soft keys on user interface permits selection of “manual” or “automatic” operation.
- 60Hz or 50Hz selectable switch.
 - Three-/single- phase selectable switch.

Remote Control Features

External inputs for connecting:

- Remote test switch.
- Remote contact for test or peak shaving applications. If emergency source fails, switch will automatically transfer back to normal source if acceptable.
- Inhibit transfer to emergency.
- Remote time delay bypass switch emergency to normal.

ASCO® SERIES 300 Group G Offers Sophisticated Functionality

The new Group G controller offers an intuitive, easy-to-navigate 128*64 graphical LCD display with soft keypad and provides six (6) LED indicators.

- Switch Position (green for normal, red for emergency LED)

- Source Availability (green for normal, red for emergency LED)
- “Not In Auto” (amber LED)
- Common Alarm (amber LED)

The ASCO group “G” controller is self-contained with an integrated display (no other

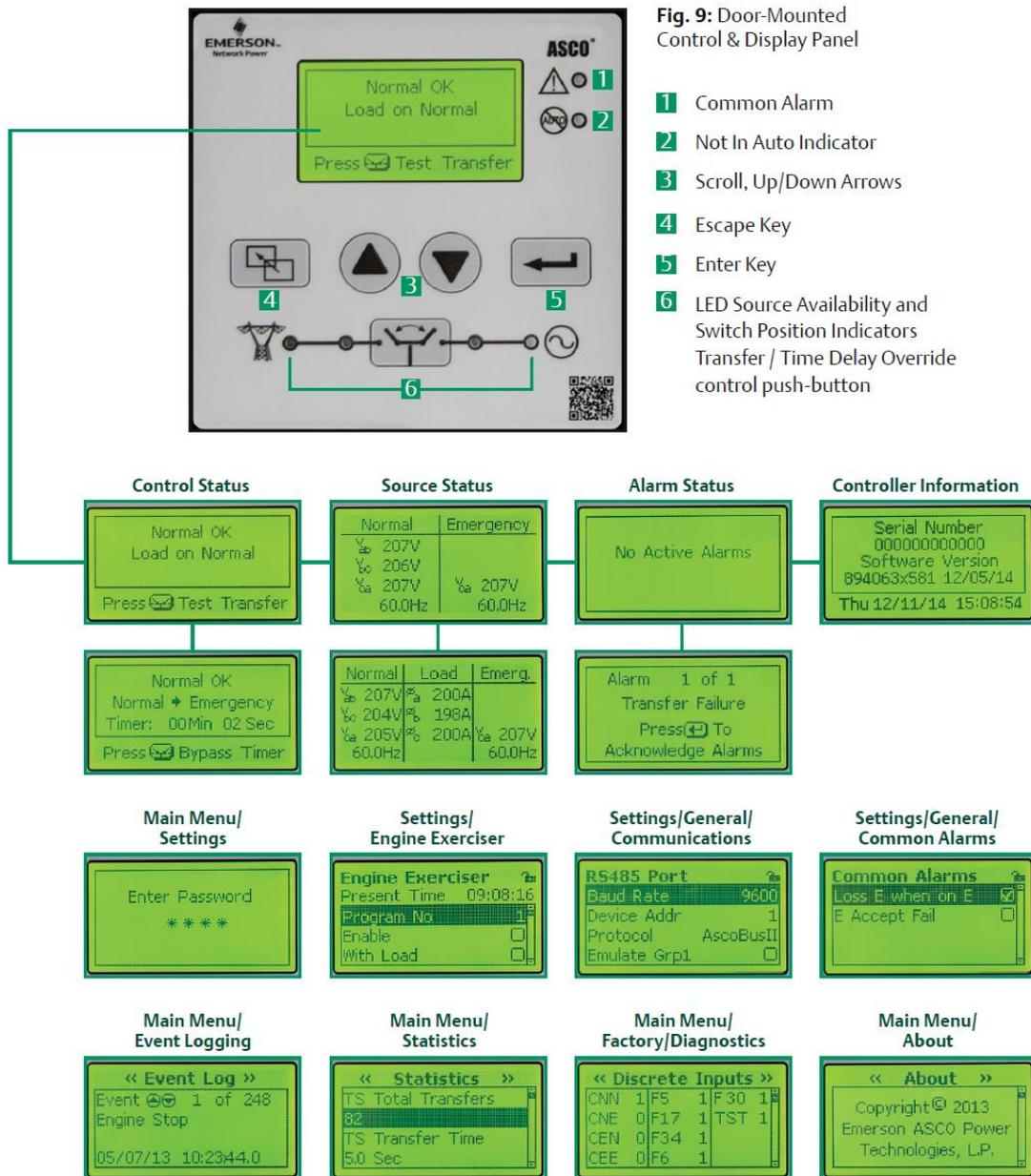
components are required for efficient operation).

The controller allows for open or delayed transition transfer operation (both automatic, and non-automatic configurations).

An integrated multilingual user interface for configuration and monitoring (this design approach allows greater

application flexibility).

Multiple source-sensing capabilities of voltage, frequency (under frequency sensing on normal and emergency sources), and optional current card, single and three phase (does not require an external metering device).



OUTLINE FOR AS60 300 SERIES TRANSFER SWITCHES (DRATS/DNITS) 30-200 AMPERES, TYPE 8R/4X/12 ENCLOSURE

REQUIREMENTS:

1. TYPE 8R/4X/12 WALL MOUNTED ENCLOSURE
2. STANDARD FINISH - URT GRAY, ANSI #1.
3. SINGLE DOOR, RIGHT HANDED, 3/4" HINGE, 3/4" LATCH H-SP AND LATCH DOOR LAMPS ON LEFT SIDE
4. TERMINALS - SCREW TYPE LUGS FOR INTERNAL CONNECTIONS
5.  - CENTER OF GRAVITY
6. THREE POLE SWITCH WITH SOLID METAL DOWN FOR REVERSE
7. METAL CONNECTIONS

AN ORIGINAL FULL RATED METAL CONNECTION FOR EACH SOURCE AND THE LOAD SHALL BE PROVIDED. THE EQUIPMENT SHALL BE THE FOLLOWING: (A) 3/4" (B) 1/2" (C) 3/8" (D) 1/4" (E) 3/16" (F) 1/8" (G) 1/16" (H) 1/32" (I) 1/64" (J) 1/128" (K) 1/256" (L) 1/512" (M) 1/1024" (N) 1/2048" (O) 1/4096" (P) 1/8192" (Q) 1/16384" (R) 1/32768" (S) 1/65536" (T) 1/131072" (U) 1/262144" (V) 1/524288" (W) 1/1048576" (X) 1/2097152" (Y) 1/4194304" (Z) 1/8388608" (AA) 1/16777216" (AB) 1/33554432" (AC) 1/67108864" (AD) 1/134217728" (AE) 1/268435456" (AF) 1/536870912" (AG) 1/1073741824" (AH) 1/2147483648" (AI) 1/4294967296" (AJ) 1/8589934592" (AK) 1/17179869184" (AL) 1/34359738368" (AM) 1/68719476736" (AN) 1/137438953472" (AO) 1/274877906944" (AP) 1/549755813888" (AQ) 1/1099511627776" (AR) 1/2199023255552" (AS) 1/4398046511104" (AT) 1/8796093022208" (AU) 1/17592186044416" (AV) 1/35184372088832" (AW) 1/70368744177664" (AX) 1/140737488355328" (AY) 1/281474976710656" (AZ) 1/562949953421312" (BA) 1/1125899906842624" (BB) 1/2251799813685248" (BC) 1/4503599627370496" (BD) 1/9007199254740992" (BE) 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OLYMPIAN™

G40LG2

5.4L

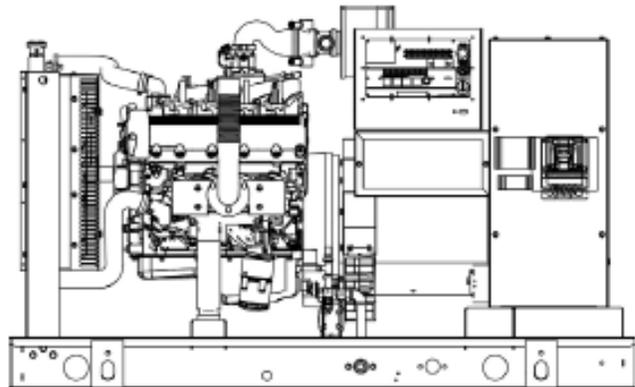
Industrial Spark-Ignited Generator Set

EPA Certified Stationary Emergency

G40LG2 40 kW

Standby Power Rating
40 kW 50 kVA 60 Hz

Prime Power Rating*
36 kW 45 kVA 60 Hz



*EPA Certified Prime ratings are not available in the U.S. or its Territories

Image used for illustration purposes only

Codes and Standards

Olympian products are designed to the following standards:



UL2200, UL506, UL142, UL498



NFPA70, 99, 110, 37



NEC700, 701, 702, 708



ISO9001, 8528, 3046, 7637, Pluses #2b, 4



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41

American National Standards Institute



osHPD

IBC 2009, CBC 2010, IBC 2012, ASCE 7-05, ASCE 7-10, ICC-ES AC-156 (2012)

Prime power or standby service, Olympian Natural gas or Propane fuel generator sets deliver dependable, clean, economical power – even in the most demanding conditions – and Olympian gensets are available in a wide range of configurations with optional equipment.

Olympian generator sets are designed, engineered and manufactured for optimal performance. All major components are tested individually; once assembled, the entire unit is tested at and above 100% of rated load for safety and operation.

These complete, ready-to-run packages have another distinct advantage. They all come with the comprehensive service and support of Cat® dealers – beginning with prompt delivery and ongoing support throughout the life of the generator set.

OLYMPIAN™**LG Series****Standard Features****ENGINE SYSTEM**General

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel flexible exhaust connection
- Critical Exhaust Silencer (enclosed only)
- Factory Filled Oil
- Radiator dust adapter (open set only)

Fuel System

- Primary and Secondary Fuel Shutoff
- Flexible Fuel Line - NPT Connection

Cooling System

- Closed Coolant Recovery System
- UV/Ozone resistant hoses
- Factory-installed Radiator
- Radiator drain extension
- 50/50 Ethylene glycol antifreeze

Engine Electrical System

- Battery charging alternator
- Battery Cables
- Battery Tray
- Solenoid activated starter motor
- Rubber-booted engine electrical connections

ALTERNATOR SYSTEM

- Class H insulation material
- 2/3 Pitch
- Skewed Stator
- Brushless Excitation
- Sealed Bearings
- Amortisseur winding
- Full load capacity alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of circuits - high/low voltage
- Separation of circuits - multiple breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby rated Units)
- 1 Year Warranty (Prime rated units)
- Silencer mounted in the discharge hood (enclosed only)

ENCLOSURE (if selected)

- Rust-proof fasteners with nylon washers to protect finish
- High performance sound-absorbing material
- Gasketed doors
- Stamped air-intake louvers
- Air discharge hoods for radiator-upward pointing
- Stainless steel lift off door hinges
- Stainless steel lockable handles

CONTROL SYSTEMControl Panel

- Digital H Control Panel - Dual 4x20 Display
- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable PLC RS-232/485
- All-Phase Sensing DVR
- Full System Status
- Utility Monitoring
- Low Fuel Pressure Indication
- 2-Wire Start Compatible
- Power Output (kW)
- Power Factor
- kW Hours, Total & Last Run

- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency
- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto/Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus protocol
- Predictive Maintenance algorithm
- Sealed Boards
- Password parameter adjustment protection

- Single point ground
- 15 channel data logging
- 0.2 msec high speed data logging
- Alarm information automatically comes up on the display

Alarms

- Oil Pressure (Pre-programmable Low Pressure Shutdown)
- Coolant Temperature (Pre-programmed High Temp Shutdown)
- Coolant Level (Pre-programmed Low Level Shutdown)
- Low Fuel Pressure Alarm
- Engine Speed (Pre-programmed Over speed Shutdown)
- Battery Voltage Warning
- Alarms & warnings time and date stamped
- Alarms & warnings for transient and steady state conditions
- Snap shots of key operation parameters during alarms & warnings
- Alarms and warnings spelled out (no alarm codes)

OLYMPIAN™**LG Series****application and engineering data****ENGINE SPECIFICATIONS****General**

Cylinder #	8
Type	V
Displacement - L (Cu In)	5.4 (329.53)
Bore - mm (in)	90.17 (3.55)
Stroke - mm (in)	105.92 (4.17)
Compression Ratio	9:1
Intake Air Method	Naturally Aspirated
Number of Main Bearings	4
Connecting Rods	Forged
Cylinder Head	Aluminum
Cylinder Liners	No
Ignition	Single Fire
Pistons	Aluminum Alloy
Crankshaft	Nodular Iron
Lifter Type	Hydraulic
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Hardened Steel
Hardened Valve Seats	Yes

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	+/- 0.25%

Lubrication System

Oil Pump Type	Gear
Oil Filter Type	Full-flow spin-on cartridge
Crankcase Capacity - L (qts)	5.7 (6)

Cooling System

Cooling System Type	Pressurized Closed Recovery
Water Pump Flow - gpm (lpm)	38 (144)
Fan Type	Pusher
Fan Speed (rpm)	2143
Fan Diameter mm (in)	508 (20)
Coolant Heater Wattage	1500
Coolant Heater Standard Voltage	120 V

Fuel System

Fuel Type	Natural Gas, Propane Vapor
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure	7" - 11" H ₂ O

Engine Electrical System

System Voltage	12 VDC
Battery Charging Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

ALTERNATOR SPECIFICATIONS

Standard Model	390
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	< 5%
Telephone Interference Factor (TIF)	< 50
Standard Excitation	Brushless
Bearings	Sealed Ball
Coupling	Flexible Disc
Prototype Short Circuit Test	Yes

Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	+/- 0.25%

LG Series

POWER RATINGS

	Natural Gas		Propane Vapor	
	kW	Amps	kW	Amps
Single-Phase 120/240 VAC @1.0pf	40 kW	Amps: 167	40 kW	Amps: 167
Three-Phase 120/208 VAC @0.8pf	40 kW	Amps: 139	40 kW	Amps: 139
Three-Phase 120/240 VAC @0.8pf	40 kW	Amps: 120	40 kW	Amps: 120
Three-Phase 277/480 VAC @0.8pf	40 kW	Amps: 60	40 kW	Amps: 60
Three-Phase 346/600 VAC @0.8pf	40 kW	Amps: 48	40 kW	Amps: 48

STARTING CAPABILITIES (kVA)

Alternator	kW	kVA vs. Voltage Dip											
		480 VAC						208/240 VAC					
		10%	15%	20%	25%	30%	35%	10%	15%	20%	25%	30%	35%
Standard	40	27	41	54	68	81	95	20	31	41	51	61	71
Upsize 1	50	34	52	69	86	103	120	26	39	52	65	77	90
Upsize 2	60	42	63	83	104	125	146	32	47	62	78	94	110

FUEL CONSUMPTION RATES*

Natural Gas – ft ³ /hr (m ³ /hr)		Propane Vapor – ft ³ /hr (m ³ /hr)	
Percent Load	Standby	Percent Load	Standby
25%	263 (7.5)	25%	87.8 (2.5)
50%	451 (12.8)	50%	150.5 (4.3)
75%	609 (17.2)	75%	203.2 (5.8)
100%	752 (21.3)	100%	250.9 (7.1)

*Fuel supply installation must accommodate fuel consumption rates at 100% load.

COOLING

		Standby
Air Flow (inlet air combustion and radiator)	ft ³ /min (m ³ /min)	2460 (69.7)
Coolant Flow per Minute	gpm (lpm)	36 (144)
Coolant System Capacity	gal (L)	3 (11.36)
Heat Rejection to Coolant	BTU/hr	165,000
Max. Operating Air Temp on Radiator	°F (°C)	122 (50)
Max. Operating Ambient Temperature (before derate)	°F (°C)	110 (43.3)
Maximum Radiator Backpressure	in H ₂ O	0.5

COMBUSTION AIR REQUIREMENTS

Flow at Rated Power	ctm (m ³ /min)	Standby
		95 (2.7)

ENGINE

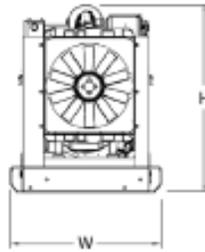
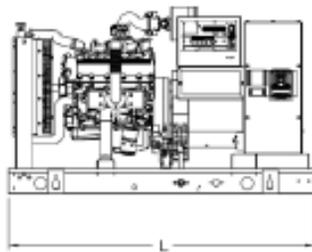
		Standby
Rated Engine Speed	rpm	1800
Horsepower at Rated kW**	hp	62
Piston Speed	ft/min (m/min)	1251 (381)
BMEP	psi	83

** Refer to "Emissions Data Sheet" for maximum bhp for EPA and SCADA/D permitting purposes.

EXHAUST

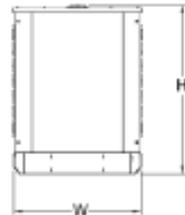
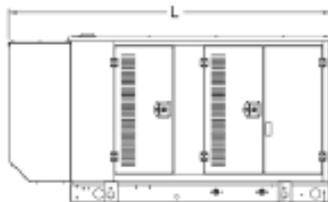
		Standby
Exhaust Flow (Rated Output)	ctm (m ³ /min)	291 (8.2)
Maximum Recommended Back Pressure	inHg	1.5
Exhaust Temp (Rated Output)	°F (°C)	960 (515)
Exhaust Outlet Size (Open Set)	in	2.5" I.D. Flex (No muffler)

Derating – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions. Please consult a CAT® Dealer for additional details. All performance ratings in accordance with ISO8046, BS5514, ISO8508 and DIN6271 standards.



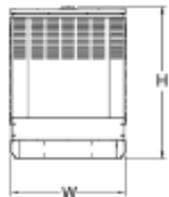
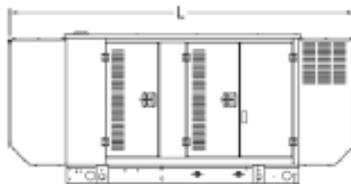
OPEN SET (Includes Exhaust Flex)

L x W x H in (mm)	76 (1930) x 37.4 (949.9) x 47 (1193.8)
Weight lbs (kg)	1575 (714)



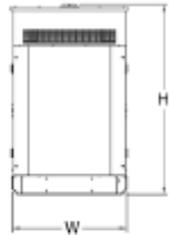
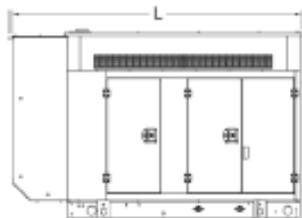
STANDARD ENCLOSURE

L x W x H in (mm)	94.8 (2408.9) x 38 (965.1) x 49.5 (1258.1)
Weight lbs (kg)	Steel: 2100 (952) Aluminum: 1754 (795)



LEVEL 1 ACOUSTIC ENCLOSURE

L x W x H in (mm)	112.5 (2857.1) x 38 (965.1) x 49.5 (1258.1)
Weight lbs (kg)	Steel: 2140 (970) Aluminum: 1767 (801)



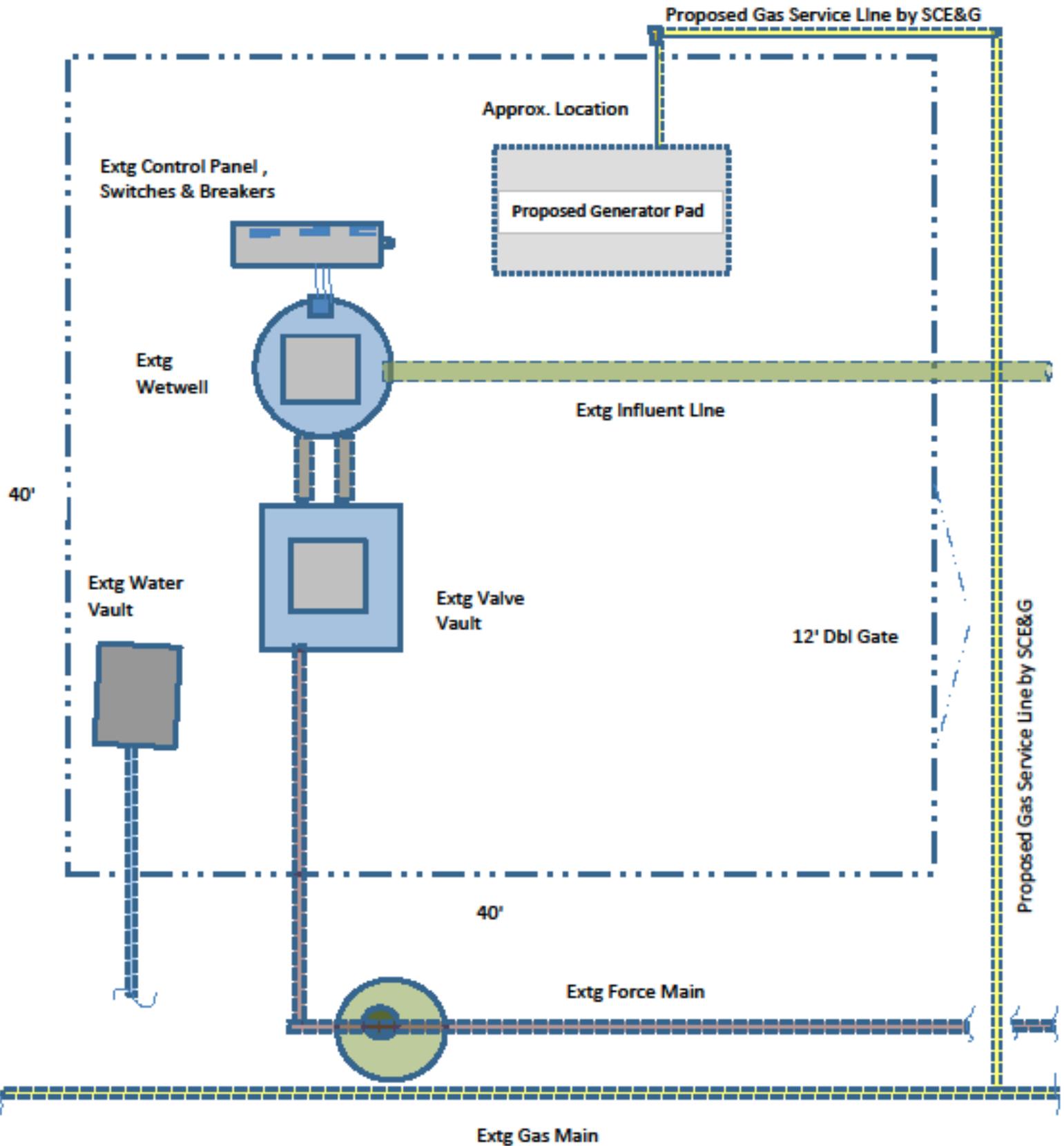
LEVEL 2 ACOUSTIC ENCLOSURE

L x W x H in (mm)	94.8 (2407) x 38 (965.1) x 62 (1573.9)
Weight lbs (kg)	Steel: 2328 (1056) Aluminum: 1831 (830)

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HAIER LIFT STATION




Proposed Haier LS Generator
Steeplechase Industrial Park
Raymond F. Peterson, PE
Dec. 7, 2015 Approx Scale 1"=6'

All underground utilities may not be noted on this drawing. Contractor shall verify all utilities before excavating.



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