

## Protector® Series

### PROTECTOR® SERIES Standby Generators Liquid-Cooled Gaseous Engine

Standby Power Rating

#### INCLUDES:

- Two-Line LCD Multilingual Digital Evolution™ Controller (English / Spanish / French / Portuguese) with external viewing window for easy indication of generator status and breaker position.
- True Power™ Electrical Technology
- Isochronous Electronic Governor
- Sound Attenuated Enclosure
- Closed Coolant Recovery System
- Smart Battery Charger
- UV / Ozone Resistant Hoses
- ±1% Voltage Regulation
- Natural Gas or LP Operation
- 3 Year Limited Warranty

Model RG045 (Aluminum - Bisque) - 45 kW 60 Hz  
Model RG060 (Aluminum - Bisque) - 60 kW 60 Hz



Not for sale in US and Canada

## FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing reliability testing environmental testing destruction and life testing, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
  - ✓ **PROTOTYPE TESTED**
  - ✓ **SYSTEM TORSIONAL TESTED**
  - ✓ **NEMA MG1-22 EVALUATION**
  - ✓ **MOTOR STARTING ABILITY**
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine. Digital voltage regulation at ±1%.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's extensive service network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component.
- **GENERAC TRANSFER SWITCHES.** Long life and reliability are synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is the GENERAC product line is offered with its own transfer systems and controls for total system compatibility.

### 45 • 60 kW

#### GENERATOR SPECIFICATIONS

Type	Synchronous
Rotor Insulation Class	H
Stator Insulation Class	H
Telephone Interference Factor (TIF)	<50
Alternator Output Leads 1-Phase	4 wire
Alternator Output Leads 3-Phase	6 wire
Bearings	Sealed Ball
Coupling	Flexible Disc
Excitation System	Direct

#### VOLTAGE REGULATION

Type	Electronic
Sensing	Single Phase
Regulation	± 1%

#### GOVERNOR SPECIFICATIONS

Type	Electronic
Frequency Regulation	Isochronous
Steady State Regulation	± 0.25%

#### ELECTRICAL SYSTEM

Battery Charge Alternator	12 Volt 30 Amp – 45, & 60 kW
Static Battery Charger	2 Amp
Recommended Battery (battery not included)	Group 26F, 525 CCA
System Voltage	12 Volts

#### GENERATOR FEATURES

<p>Revolving field heavy duty generator                  Directly connected to the engine                  Operating temperature rise 120 °C above a 40 °C ambient                  Class H insulation is NEMA rated                  All models fully prototyped tested</p>
--

#### ENCLOSURE FEATURES

Aluminum weather protective enclosure	Ensures protection against mother nature. Electrostatically applied textured epoxy paint for added durability.
Enclosed critical grade muffler	Quiet, critical grade muffler is mounted inside the unit to prevent injuries.
Small, compact, attractive	Makes for an easy, eye appealing installation.
SAE	Sound attenuated enclosure ensures quiet operation.

#### ENGINE SPECIFICATIONS: 45, & 60 kW

Make	Generac
Model	In-line
Cylinders	4
Displacement (Liters)	2.4
Bore (in / mm)	3.41 / 86.5
Stroke (in / mm)	3.94 / 100
Compression Ratio	9.5:1
Intake Air System	Naturally Aspirated (45 kW) Turbocharged / Aftercooled (60 kW)
Lifter Type	Hydraulic

#### ENGINE LUBRICATION SYSTEM

Oil Pump Type	Gear
Oil Filter Type	Full flow spin-on cartridge
Crankcase Capacity (qt/l)	4 / 3.8 – 45 kW 5.25 / 4.96 – 60 kW

#### ENGINE COOLING SYSTEM

Type	Closed
Water Pump	Belt driven
Fan Speed (rpm)	1 865 – 45 kW 2,100 – 60 kW
Fan Diameter (in / mm)	22 / 558.8 (45, & 60 kW)
Fan Mode	Puller (45, & 60 kW)

#### FUEL SYSTEM

Usable Fuels	Liquid Propane (LP) Vapor & Natural Gas (NG)
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
LP Vapor Fuel Pressure	5-14 in. Water Column (1.24-3.48 kPa)
NG Fuel Pressure	5-14 in. Water Column (1.24-3.48 kPa)

### 45 • 60 kW

#### GENERATOR OUTPUT VOLTAGE/kW - 60 Hz

		kW LPG	Amp LPG	kW Nat Gas	Amp Nat Gas	CB Size (Both)
RG045	120 / 240 V, 1Ø, 1.0 pf	45	188	45	188	200
	120 / 208 V, 3Ø, 0.8 pf	45	156	45	156	175
	120 / 240 V, 3Ø, 0.8 pf	45	135	45	135	150
	277 / 480 V, 3Ø, 0.8 pf	45	68	45	68	80
RG060	120 / 240 V, 1Ø, 1.0 pf	60	250	60	250	300
	120 / 208 V, 3Ø, 0.8 pf	60	208	60	208	250
	120 / 240 V, 3Ø, 0.8 pf	60	180	60	180	200
	277 / 480 V, 3Ø, 0.8 pf	60	90	60	90	100

#### SURGE CAPACITY IN AMPS

		Voltage Dip @ < .4 pf	
		15%	30%
RG045	120/240 V, 1Ø	105	240
	120/208 V, 3Ø	44	130
	120/240 V, 3Ø	38	115
	277/480 V, 3Ø	20	60
RG060	120/240 V, 1Ø	140	320
	120/208 V, 3Ø	70	210
	120/240 V, 3Ø	61	182
	277/480 V, 3Ø	30	91

#### ENGINE FUEL CONSUMPTION

		Natural Gas		Propane		
		(ft³/hr)	(m³/hr)	(gal/hr)	(l/hr)	(ft³/hr)
RG045	Exercise cycle	65	1.8	0.7	2.6	25
	25% of rated load	210	6	2.3	8.6	83
	50% of rated load	380	10.8	4.2	15.7	151
	75% of rated load	545	15.5	5.9	22.4	216
	100% of rated load	730	20.7	8	30.1	290
RG060	Exercise cycle	123	3.5	1.34	5.1	49.3
	25% of rated load	267	7.6	2.7	10.5	101
	50% of rated load	483	13.7	5	19	183
	75% of rated load	672	19.1	7	26.5	255
	100% of rated load	862	24.5	9	33.9	327

Note: **Fuel pipe must be sized for full load.**

For Btu content, multiply ft³/hr x 2,520 (LP) or ft³/hr x 1,000 (NG)

For megajoule content, multiply m³/hr x 93.15 (LP) or m³/hr x 37.26 (NG)

STANDBY RATING: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046-1. Design and specifications are subject to change without notice.

**45 • 60 kW**

**ENGINE COOLING**

	45 kW	60 kW
Air flow (inlet air including alternator and combustion air in cfm/cmm)	2,725 / 77.2	3,280 / 92.9
System coolant capacity (gal / liters)	2.5 / 9.5	2.5 / 9.5
Heat rejection to coolant (BTU per hr/MJ per hr)	193,000 / 203.6	270,000 / 284.9
Maximum operation air temperature on radiator (°F / °C)	140 / 60	
Maximum ambient temperature (°F / °C)	122 / 50	

**COMBUSTION REQUIREMENTS**

Flow at rated power (cfm / cmm)	144 / 4.1	180 / 5.1
---------------------------------	-----------	-----------

**SOUND EMISSIONS**

Sound output in dB(A) at 23 ft (7 m) with generator in exercise mode*	61	65
Sound output in dB(A) at 23 ft (7 m) with generator operating at normal load*	73	72

\*Sound levels are taken from the front of the generator. Sound levels taken from other sides of the generator may be higher depending on installation parameters.

**EXHAUST**

Exhaust flow at rated output (cfm / cmm)	420 / 11.9	494 / 14
Exhaust temperature at muffler outlet (°F / °C)	1,100 / 593	1,050 / 566

**ENGINE PARAMETERS**

Rated Synchronous rpm	3,600
-----------------------	-------

**POWER ADJUSTMENT FOR AMBIENT CONDITIONS**

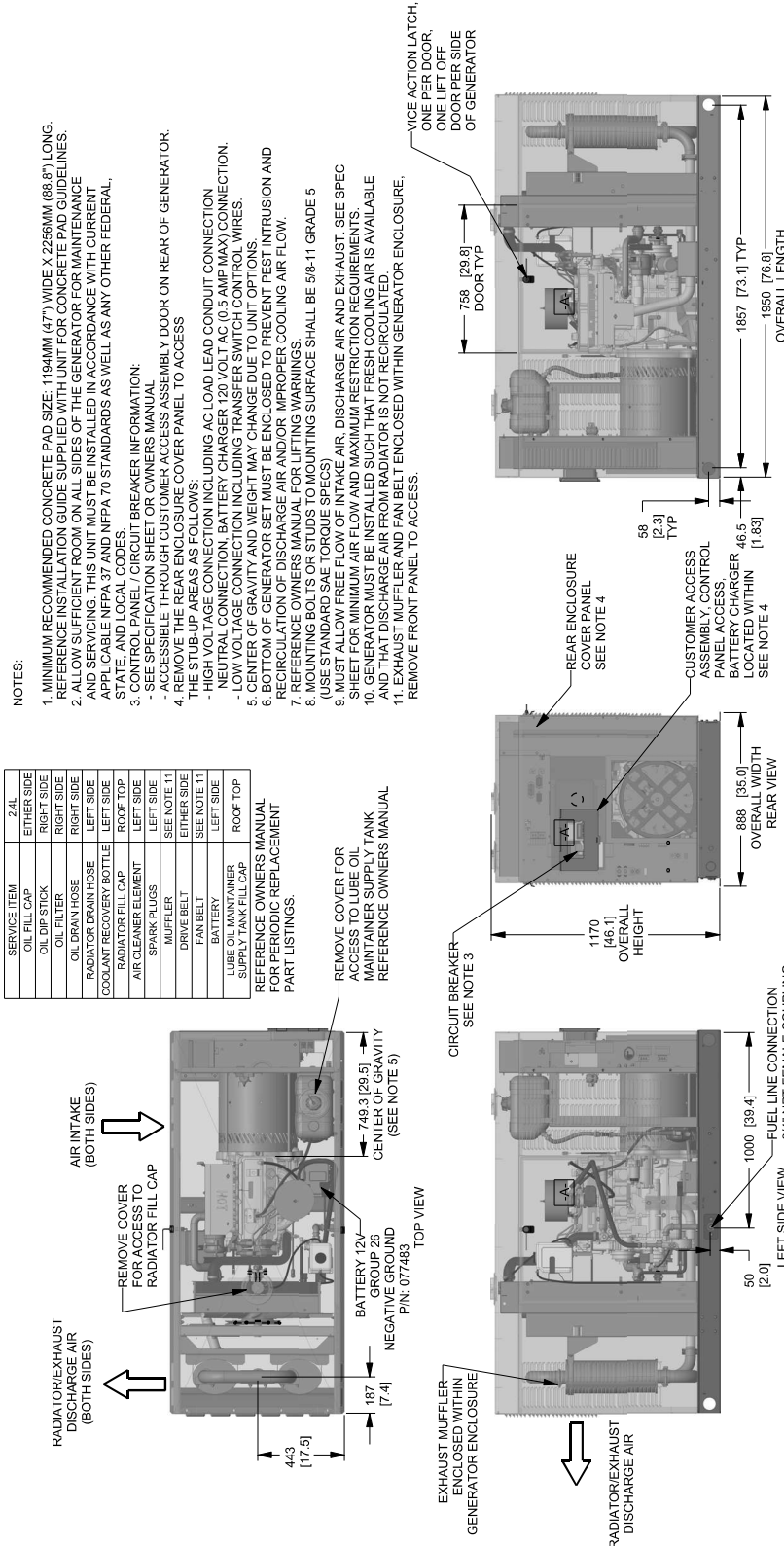
Temperature Deration .....	3% for every 10 °C above 25 °C or 1.65% for every 10 °F above 77 °F
Altitude Deration (36, & 45 kW) .....	1% for every 100 m above 183 m or 3% for every 1,000 ft above 600 ft
Altitude Deration (60 kW) .....	1% for every 100 m above 915 m or 3% for every 1,000 ft above 3,000 ft

**CONTROLLER FEATURES**

Two-Line Plain Text LCD Display .....	Simple user interface for ease of operation.
Mode Switch: Auto .....	Automatic Start on Utility failure. 7 day exerciser.
Off .....	Stops unit. Power is removed. Control and charger still operate.
Manual .....	Start with starter control, unit stays on. If utility fails, transfer to load takes place.
Programmable start delay between 10 – 30 seconds .....	Standard 10 sec
Engine Start Sequence .....	Cyclic cranking: 16 sec on, 7 rest (90 sec maximum duration)
Engine Warm-up .....	5 sec
Engine Cool-Down .....	1 min
Starter Lock-out .....	Starter cannot re-engage until 5 sec after engine has stopped.
Smart Battery Charger .....	Standard
Automatic Voltage Regulation with Over and Under Voltage Protection .....	Standard
Automatic Low Oil Pressure Shutdown .....	Standard
Overspeed Shutdown .....	Standard, 72 Hz
High Temperature Shutdown .....	Standard
Overcrank Protection .....	Standard
Safety Fused .....	Standard
Failure to Transfer Protection .....	Standard
Low Battery Protection .....	Standard
50 Event Run Log .....	Standard
Future Set Capable Exerciser .....	Standard
Incorrect Wiring Protection .....	Standard
Internal Fault Protection .....	Standard
Common External Fault Capability .....	Standard
Governor Failure Protection .....	Standard

### 45 kW

Drawing #0K8636-B (1 of 2)



- NOTES:**
- MINIMUM RECOMMENDED CONCRETE PAD SIZE: 194MM (47") WIDE X 2256MM (88.8") LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
  - ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE, AND LOCAL CODES.
  - CONTROL PANEL / CIRCUIT BREAKER INFORMATION:
    - SEE SPECIFICATION SHEET OR OWNERS MANUAL
    - ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR. THE STUB-UP AREAS AS FOLLOWS:
      - HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION
      - NEUTRAL CONNECTION, BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.
      - LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES.
    - CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
  - BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND AIR EXHAUST MUST BE ENCLOSED TO PREVENT COOLING AIR FLOW.
  - REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
  - MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
  - MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
  - GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
  - EXHAUST MUFFLER AND FAN BELT ENCLOSED WITHIN GENERATOR ENCLOSURE. REMOVE FRONT PANEL TO ACCESS.

SERVICE ITEM	2.4L
OIL FILL CAP	EITHER SIDE
OIL DIP STICK	RIGHT SIDE
OIL FILTER	RIGHT SIDE
OIL DRAIN HOSE	RIGHT SIDE
RADIATOR DRAIN HOSE	LEFT SIDE
COOLANT RECOVERY BOTTLE	LEFT SIDE
RADIATOR FILL CAP	ROOF TOP
AIR CLEANER ELEMENT	LEFT SIDE
MUFFLER	SEE NOTE 11
DRIVE BELT	EITHER SIDE
BATTERY	SEE NOTE 11
LUBE OIL MAINTAINER SUPPLY TANK FILL CAP	LEFT SIDE
	ROOF TOP

ENGINE/KW	ENCLOSURE MATERIAL	WEIGHT GENSET ONLY (KG)	WEIGHT SHIPPING SKID (KG)	SHIPPING WEIGHT (KG)
2.4L 45KW	ST	640 (1411)	44 (98)	640 (1411)
2.4L 45KW	AL	572 (1260)	44 (98)	616 (1358)

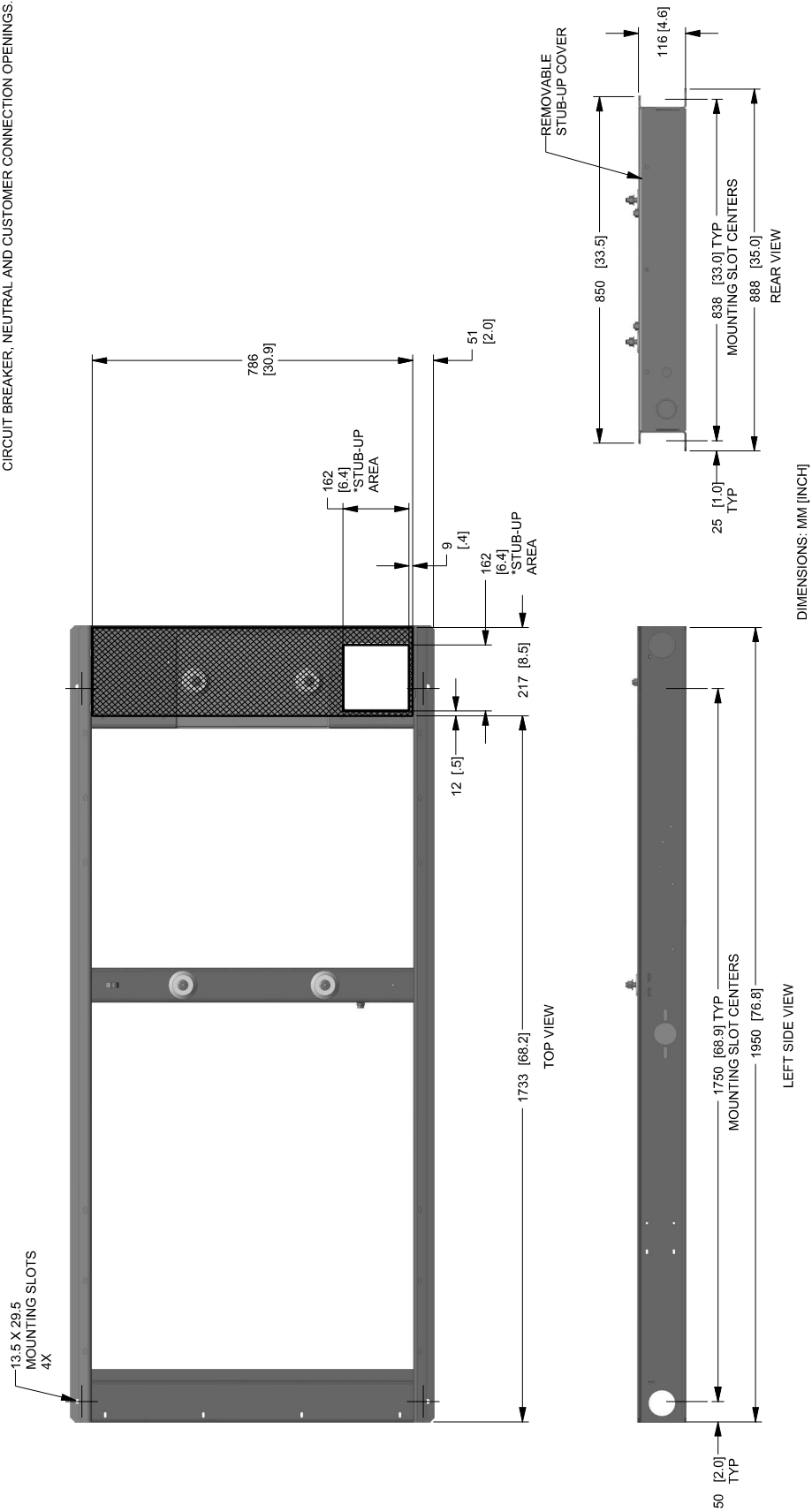
DIMENSIONS: MM [INCH]

# 45 kW

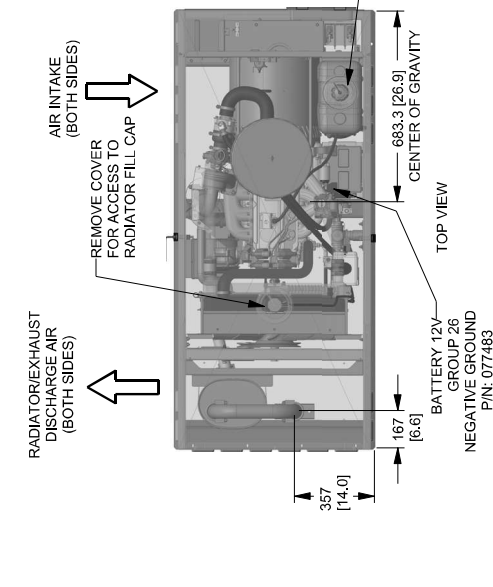
## installation layout

Drawing #0K8636-B (2 of 2)

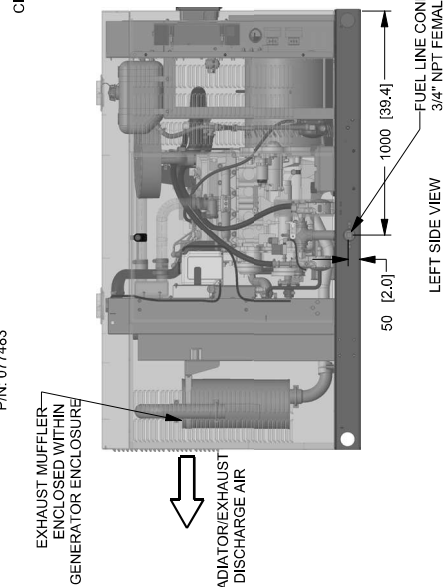
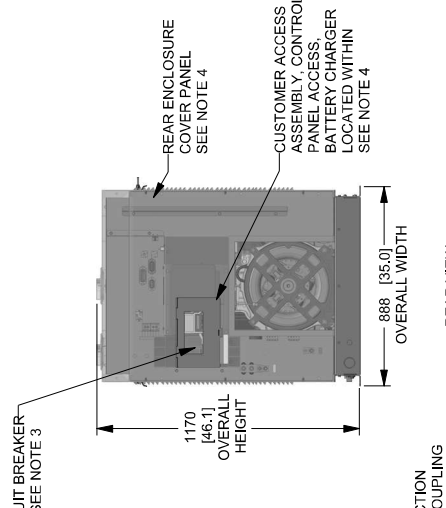
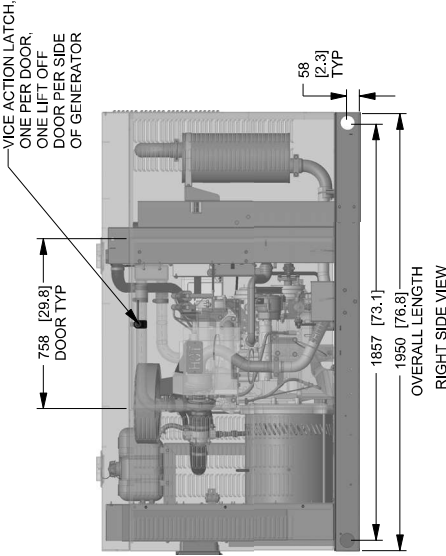
\*NOTE - STUB-UP AREA FOR HIGH AND LOW VOLTAGE CONNECTIONS, CIRCUIT BREAKER, NEUTRAL AND CUSTOMER CONNECTION OPENINGS.



SERVICE ITEM	2.4L
OIL FILL CAP	EITHER SIDE
OIL DIP STICK	RIGHT SIDE
OIL FILTER	LEFT SIDE
OIL DRAIN HOSE	RIGHT SIDE
RADIATOR DRAIN HOSE	LEFT SIDE
COOLANT RECOVERY BOTTLE	LEFT SIDE
RADIATOR FILL CAP	ROOF TOP
AIR CLEANER ELEMENT	LEFT SIDE
SPARK PLUGS	LEFT SIDE
MUFFLER	SEE NOTE 11
DRIVE BELT	EITHER SIDE
FAN BELT	SEE NOTE 11
BATTERY	LEFT SIDE
LUBE OIL MAINTAINER SUPPLY TANK FILL CAP	ROOF TOP



- NOTES:**
- MINIMUM RECOMMENDED CONCRETE PAD SIZE: 1194MM (47") WIDE X 2256MM (88.8") LONG. REFERENCE INSTALLATION GUIDE SUPPLIED WITH UNIT FOR CONCRETE PAD GUIDELINES.
  - ALLOW SUFFICIENT ROOM ON ALL SIDES OF THE GENERATOR FOR MAINTENANCE AND SERVICING. THIS UNIT MUST BE INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE NFPA 37 AND NFPA 70 STANDARDS AS WELL AS ANY OTHER FEDERAL, STATE AND LOCAL CODES.
  - CONTROL PANEL / CIRCUIT BREAKER INFORMATION:  
-SEE SPECIFICATION SHEET OR OWNERS MANUAL  
-ACCESSIBLE THROUGH CUSTOMER ACCESS ASSEMBLY DOOR ON REAR OF GENERATOR.
  - REMOVE THE REAR ENCLOSURE COVER PANEL TO ACCESS THE STUB-UP AREAS AS FOLLOWS:  
- HIGH VOLTAGE CONNECTION INCLUDING AC LOAD LEAD CONDUIT CONNECTION  
- NEUTRAL CONNECTION, BATTERY CHARGER 120 VOLT AC (0.5 AMP MAX) CONNECTION.  
- LOW VOLTAGE CONNECTION INCLUDING TRANSFER SWITCH CONTROL WIRES.
  - CENTER OF GRAVITY AND WEIGHT MAY CHANGE DUE TO UNIT OPTIONS.
  - BOTTOM OF GENERATOR SET MUST BE ENCLOSED TO PREVENT PEST INTRUSION AND RECIRCULATION OF DISCHARGE AIR AND/OR IMPROPER COOLING AIR FLOW.
  - REFERENCE OWNERS MANUAL FOR LIFTING WARNINGS.
  - MOUNTING BOLTS OR STUDS TO MOUNTING SURFACE SHALL BE 5/8-11 GRADE 5 (USE STANDARD SAE TORQUE SPECS)
  - MUST ALLOW FREE FLOW OF INTAKE AIR, DISCHARGE AIR AND EXHAUST. SEE SPEC SHEET FOR MINIMUM AIR FLOW AND MAXIMUM RESTRICTION REQUIREMENTS.
  - GENERATOR MUST BE INSTALLED SUCH THAT FRESH COOLING AIR IS AVAILABLE AND THAT DISCHARGE AIR FROM RADIATOR IS NOT RECIRCULATED.
  - EXHAUST MUFFLER AND FAN BELT ENCLOSED WITHIN GENERATOR ENCLOSURE. REMOVE FRONT PANEL TO ACCESS.



ENGINE/KW		ENCLOSURE MATERIAL	WEIGHT GENSET ONLY KG [LBS]	WEIGHT SHIPPING SKID KG [LBS]	SHIPPING WEIGHT KG [LBS]
2.4L 60KW	AL	ST	582 [1285]	44 [98]	626 [1381]
2.4L 60KW	AL	AL	558 [1230]	44 [98]	602 [1328]

DIMENSIONS: MM [INCH]

# 60 kW

## installation layout

Drawing #0L2090-B (2 of 2)

\*NOTE - STUB-UP AREA FOR HIGH AND LOW VOLTAGE CONNECTIONS. CIRCUIT BREAKER, NEUTRAL AND CUSTOMER CONNECTION.

