

# OLYMPIAN™ RATINGS GUIDE

Generator Sets

Exclusively available from your  
**Cat® Dealer.**

For additional information or to find  
your nearest dealer go to:

[www.catelectricpowerinfo.com/rg](http://www.catelectricpowerinfo.com/rg)

LEXE7581-03

March 2011

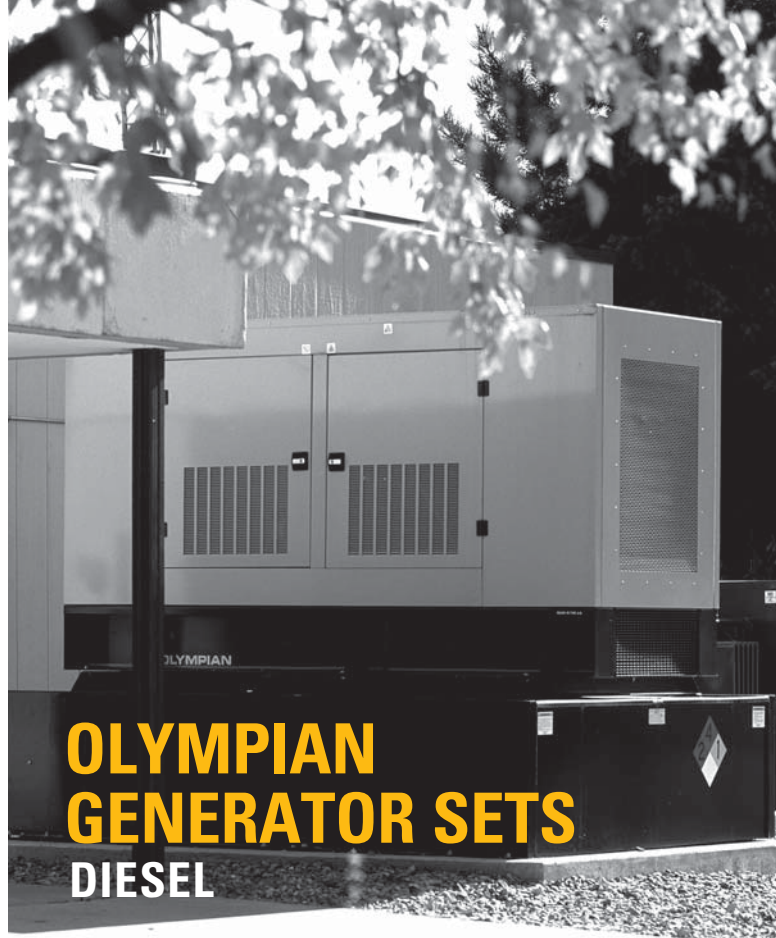
© 2011 Caterpillar. All Rights Reserved. Printed in USA. CAT, CATERPILLAR, their respective logos, ACERT, ADEM, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

**OLYMPIAN™**  
**GENERATOR SETS**

# CONTENTS

## RATINGS GUIDE

4	Olympian™ Diesel Ratings - 50 Hz
7	Olympian Diesel Ratings - 60 Hz
9	Olympian Diesel Rental Ratings
9	Diesel Ratings Definitions
11	Olympian Gas Ratings
15	Gas Ratings Definitions
17	Conversions
28	Product Support - Extended Service Coverage (ESC)
29	Notes



# **OLYMPIAN GENERATOR SETS**

**DIESEL**

**OLYMPIAN INTERNATIONAL**  
50 Hz DIESEL RATINGS: 6.8 kVA - 80 kVA

**OLYMPIAN INTERNATIONAL**  
50 Hz DIESEL RATINGS: 8.5 kVA - 110 kVA

----- 50 Hz - kVA (ekW) -----			Generator Set Model
RPM	Standby	Prime	
<b>Single phase output</b>			
1500	7.5 (7.5)	6.8 (6.8)	GEP7.5SP2
1500	11 (11)	10 (10)	GEP11SP4
1500	14 (14)	13 (13)	GEP14SP4
1500	16.5 (16.5)	15 (15)	GEP16SP4
1500	26 (26)	24 (24)	GEP26SP3
1500	26 (26)	24 (24)	GEP26SP4
1500	35 (35)	32 (32)	GEP35SP9
1500	35 (35)	32 (32)	GEP35SP4
1500	35 (35)	32 (32)	GEP35SP11*
1500	50 (50)	45 (45)	GEP50SP9
1500	50 (50)	45 (45)	GEP50SP11*
1500	50 (50)	45 (45)	GEP50SP4
1500	64 (64)	58 (58)	GEP64SP1
1500	64 (64)	58 (58)	GEP64SP2
1500	80 (80)	72 (72)	GEP80SP4

Models ending in 2 or 4 meet EU Stage II Emissions

All ratings at 1.0 pf and 27° C (80.6° F)

\*Brazil-sourced only

----- 50 Hz - kVA (ekW) -----			Generator Set Model
RPM	Standby	Prime	
<b>3 - phase output</b>			
1500	9.5 (7.6)	8.5 (6.8)	GEP9.5-2
1500	13.8 (11.0)	12.5 (10)	GEP13.5-4
1500	18 (14.4)	16.5 (13.2)	GEP18-4
1500	22 (17.6)	20 (16)	GEP22-4
1500	30 (24)	27 (21.6)	GEP30-1
1500	30 (24)	27 (21.6)	GEP30-2
1500	33 (26.4)	30 (24)	GEP33-3
1500	33 (26.4)	30 (24)	GEP33-4
1500	44 (35.2)	40 (32)	GEP44-9*
1500	50 (40)	45 (36)	GEP50-7
1500	49.7 (39.8)	45 (36)	GEP50-4
1500	55 (44)	50 (40)	GEP55-3
1500	55 (44)	50 (40)	GEP55-4
1500	65 (52)	60 (48)	GEP65-9
1500	65 (52)	60 (48)	GEP65-11*
1500	65 (52)	60 (48)	GEP65-4
1500	88 (70.4)	80 (64)	GEP88-3
1500	88 (70.4)	80 (64)	GEP88-4
1500	110 (88)	100 (80)	GEP110-4

Models ending in 2 or 4 meet EU Stage II Emissions

All ratings at 0.8 pf and 27° C (80.6° F)

\*Brazil-sourced only

## OLYMPIAN INTERNATIONAL 50 Hz DIESEL RATINGS: 135 kVA - 700 kVA

50 Hz – kVA (ekW)			Generator Set Model
RPM	Standby	Prime	
<b>3 – phase output</b>			
1500	150 (120)	135 (108)	GEP150-1
1500	150 (120)	135 (108)	GEP150-4
1500	165 (132)	150 (120)	GEP165-1
1500	165 (132)	150 (120)	GEP165-4
1500	200 (160)	180 (144)	GEP200-4
1500	220 (176)	200 (160)	GEH220-2
1500	250 (200)	230 (184)	GEH250-2
1500	275 (220)	250 (200)	GEH275-2
1500	400 (320)	350 (280)	GEP400-3
1500	400 (320)	350 (280)	GEP400-4
1500	450 (360)	400 (320)	GEP450-3
1500	450 (360)	400 (320)	GEP450-4
1500	500 (400)	450 (360)	GEP500-1
1500	500 (400)	450 (360)	GEP500-2
1500	550 (440)	500 (400)	GEP550-1
1500	550 (440)	500 (400)	GEP550-2
1500	605 (484)	550 (440)	GEP605-1
1500	605 (484)	550 (440)	GEP605-2
1500	650 (520)	591 (473)	GEP650-2
1500	660 (528)	600 (480)	GEP660-1
1500	700 (560)	635 (508)	GEP700-1

Models ending in 2 or 4 meet EU Stage II Emissions  
All ratings at 0.8 pf and 27° C (80.6° F)

## OLYMPIAN INTERNATIONAL 60 Hz DIESEL RATINGS: 8 kVA - 90 kVA

60 Hz – kVA (ekW)			Generator Set Model
RPM	Standby	Prime	
<b>Single phase output</b>			
1800	8.8 (8.8)	8 (8)	GEP7.5SP2
1800	13 (13)	12 (12)	GEP11SP4
1800	17 (17)	15.5 (15.5)	GEP14SP4
1800	20 (20)	18 (18)	GEP16SP4
1800	40 (40)	36 (36)	GEP35SP9
1800	40 (40)	36 (36)	GEP35SP11*
1800	55 (55)	50 (50)	GEP50SP9
1800	55 (55)	50 (50)	GEP50SP11*
1800	90 (90)	82 (82)	GEP80SP4

Models ending in 2 or 4 meet EU Stage II Emissions  
All ratings at 1.0 pf and 27° C (80.6° F)

\*Brazil-sourced only

## OLYMPIAN INTERNATIONAL 60 Hz DIESEL RATINGS: 10 kVA - 56.3 kVA

60 Hz – kVA (ekW)			Generator Set Model
RPM	Standby	Prime	
<b>3 – phase output</b>			
1800	11 (8.8)	10 (8)	GEP9.5-2
1800	16.2 (13)	15 (12)	GEP13.5-4
1800	21.3 (17)	19.4 (15.5)	GEP18-4
1800	25 (20)	22.5 (18)	GEP22-4
1800	34 (27.2)	30 (24)	GEP30-1
1800	37.5 (30)	33.8 (27)	GEP33-3
1800	50 (40)	45 (36)	GEP44-9*
1800	56.3 (45)	50 (40)	GEP50-7

Models ending in 2 or 4 meet EU Stage II Emissions  
All ratings at 0.8 pf and 27° C (80.6° F)

\*Brazil-sourced only

## OLYMPIAN INTERNATIONAL 60 Hz DIESEL RATINGS: 56.3 kVA - 750 kVA

## OLYMPIAN RENTAL 50 Hz & 60 Hz DIESEL RATINGS: 20 kVA - 250 kVA

60 Hz – kVA (ekW)			Generator Set Model
RPM	Standby	Prime	
<b>3 – phase output</b>			
1800	62.5 (50)	56.3 (45)	GEP55-3
1800	75 (60)	68.8 (55)	GEP65-9
1800	75 (60)	68.8 (55)	GEP65-11*
1800	100 (80)	90 (72)	GEP88-3
1800	125 (100)	113 (90.4)	GEP110-4
1800	165 (132)	150 (120)	GEP150-1
1800	218.8 (175)	196.9 (157.5)	GEP200-4
1800	250 (200)	225 (180)	GEH220-2
1800	750 (600)	675 (540)	GEP750-1

Models ending in 2 or 4 meet EU Stage II Emissions

All ratings at 0.8 pf and 27° C (80.6° F)

All models available with selected options to create rental configuration

\*Brazil-sourced only

50 Hz & 60 Hz – kVA				Generator Set Model
RPM	Prime	RPM	Prime	
<b>3 – phase output</b>				
1500	20	–	–	XQE20-4*
1500	30	1800	34	XQE30-2*
1500	60	1800	65	XQE60-2
1500	80	1800	83	XQE80-2*
1500	100	1800	106	XQE100-2*
1500	150	1800	163	XQE150-2*
1500	200	1800	225	XQE200-2*
1500	250	–	–	XQE250-2*

All ratings at 0.8 pf and 27° C (80.6° F)

\*Subject to availability

## DIESEL RATINGS DEFINITIONS

### Standby Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in the event of a utility power failure. No overload is permitted on these ratings. The alternator on this model is peak continuous rated (as defined in ISO 8528-3).

### Prime Rating

These ratings are applicable for supplying continuous electrical power (at variable load) in lieu of commercially purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

### OLYMPIAN INTERNATIONAL 50 Hz GAS RATINGS: 10 kVA - 30 kVA

# OLYMPIAN GENERATOR SETS GAS

RPM	Standby kVA (ekW)		Prime kVA (ekW)		Generator Set Model
	LP	Natural	LP	Natural	
<b>Single phase output</b>					
1500	13 (13)	11.8 (11.8)	11 (11)	10 (10)	**GEUG13S1
3000	24 (24)	24 (24)	—	—	**GEUHG24S1
<b>3 - phase output</b>					
1500	16.5 (13.2)	15 (12)	14 (11.2)	12.5 (10)	*GEUG16-1
3000	30 (24)	30 (24)	—	—	*GEUHG30-1

\*Ratings at 0.8 pf and 25° C (77° F)

\*\*Ratings at 1.0 pf and 25° C (77° F)

### OLYMPIAN INTERNATIONAL

60 Hz GAS RATINGS: 13 kVA - 31.3 kVA

RPM	Standby kVA (ekW)		Prime kVA (ekW)		Generator Set Model
	LP	Natural	LP	Natural	
<b>Single phase output</b>					
1800	16 (16)	15 (15)	13.5 (13.5)	13 (13)	**GEUG13S1
3600	25 (25)	25 (25)	–	–	**GEUHG24S1
<b>3 – phase output</b>					
1800	20 (16)	18.3 (14.6)	16.9 (13.5)	16.9 (13.5)	*GEUG16-1
3600	31.3 (25)	31.3 (25)	–	–	*GEUHG30-1

\*Ratings at 0.8 pf and 25° C (77° F)

\*\*Ratings at 1.0 pf and 25° C (77° F)

### OLYMPIAN NORTH AMERICA

60 Hz GAS RATINGS: 25 ekW - 55 ekW

#### LTA MODELS (STANDARD)

RPM	Standby		Generator Set Model
	NG kVA (ekW)	LP kVA (ekW)	
<b>Single phase output</b>			
1800	25 (25)	25 (25)	*G25LTA
1800	55 (55)	55 (55)	*G55LTA

OLYMPIAN NORTH AMERICA  
60 Hz GAS RATINGS: 35 ekW - 200 ekW

#### LG MODELS (CUSTOMIZABLE)

RPM	Standby		Generator Set Model
	ekW-NG	ekW-LP	
<b>Single phase output</b>			
1800	35	35	**G35LG
1800	40	40	**G40LG
1800	42	45	*G45LG
1800	50	50	**G50LG
1800	60	60	**G60LG
1800	64	67	*G70LG
2300	80	80	***G80LG
2300	89	100	*G100LG
3000	117	130	*G130LG
3600	136	144	*G150LG
1800	175	–	***G175LG
1800	200	–	***G200LG

\*Ratings at 1.0 pf and 25° C (77° F)

\*\*Ratings at 1.0 pf and 40° C (104° F)

\*\*\*Ratings at 1.0 pf and 43° C (110° F)

## OLYMPIAN NORTH AMERICA 60 Hz GAS RATINGS: 25 ekW - 55 ekW

### LTA MODELS (STANDARD)

RPM	Standby		Generator Set Model
	ekW-NG	ekW-LP	
<b>3 – phase output</b>			
1800	†25	25	*G25LTA
1800	†55	55	*G55LTA

## OLYMPIAN NORTH AMERICA 60 Hz GAS RATINGS: 35 ekW - 300 ekW

### LG MODELS (CUSTOMIZABLE)

RPM	Standby		Generator Set Model
	ekW-NG	ekW-LP	
<b>3 – phase output</b>			
1800	†35	35	**G35LG
1800	†40	40	**G40LG
1800	43	45	*G45LG
1800	50	50	**G50LG
1800	60	60	**G60LG
1800	†67	70	*G70LG
2300	80	80	***G80LG
2300	†94	100	*G100LG
3000	122	130	*G130LG
3600	†142	150	*G150LG
1800	175	–	***G175LG
1800	206	–	***G200LG
2300	230	–	***G230LG
2300	250	–	***G250LG
2300	275	–	**G275LG
2300	300	–	**G300LG

†ekW rating is based on LPG fuel and may derate with natural gas

\*Ratings at 0.8 pf and 25° C (77° F)

\*\*Ratings at 0.8 pf and 40° C (104° F)

\*\*\*Ratings at 0.8 pf and 43° C (110° F)

## GAS RATINGS DEFINITIONS

### Standby Rating

These ratings are applicable to variable loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO - 3046-1.

### Gas Rating

Ratings based on LPG fuel and may derate with natural gas. Please contact dealer for natural gas rating.

## FUEL SYSTEM - DIESEL

### Day Tank Sizing

$$\text{Tank Size (gal)} = \frac{\text{Rated BSFC (lb/hp}\cdot\text{hr)}}{7.076 \text{ (lb/gal)}} \times \text{Rated HP} \times \text{Load Factor}$$

x Hours Between Refilling  
+ Reserve Requirement

OR

### Rule of Thumb for tank size with 25% reserve

$$0.056 \times \text{Ave. BHP demand} \times \text{Hours between refills} \times 1.25 = \text{_____ gal.}$$
$$0.27 \times \text{Ave. BkW demand} \times \text{Hours between refills} \times 1.25 = \text{_____ liters.}$$

Note: Additional tank capacity required for cooling of recirculated fuel in unit-injected engines. Tank should be located below level of injectors or nozzles.

### On-Site Power Requirements

Based on 100,000 sq ft. of office bldg., etc and 40°N. Latitudes

- Electric Requirements
  - 600 kW continuous load
  - (Air conditioning is absorption)
  - Use three - 300 kW units
  - (2 prime and 1 standby)
- Air Conditioning and Compressor
  - 400 tons prime load
  - Use two - 200 hp engines
  - (No Standby)

### Refrigeration

- One ton refrigeration = 200 Btu/min = 12,000 Btu/h
- One Boiler hp = 33,475 Btu/h
- One ton compressor rating = One engine hp
- Auxiliary air conditioning equipment requires 1/4 hp/ton of compressor rating

### Ice Plant

- Complete power requires 4-5 hp per daily ton capacity

### Air Compressor

- hp = 1/4 x cu ft m/min at 100 psi
- Increase bhp 10% for 125 psi
- Decrease bhp 10% for 80 psi

### ELECTRICAL TABLES

..... Alternating Current .....			
To Obtain	Single Phase	Three-Phase	Direct Current
Kilowatts	$\frac{V \times I \times P.F.}{1000}$	$\frac{1.732 \times V \times I \times P.F.}{1000}$	$\frac{V \times I}{1000}$
kVA	$\frac{V \times I}{1000}$	$\frac{1.732 \times V \times I}{1000}$	
Horsepower required when kW known (Generator)	$\frac{kW}{.746 \times \text{EFF. (Gen)}}$	$\frac{kW}{.746 \times \text{EFF. (Gen)}}$	$\frac{kW}{.746 \times \text{EFF. (Gen)}}$
kW input when HP known (Motor)	$\frac{HP \times .746}{\text{EFF. (Motor)}}$	$\frac{HP \times .74}{\text{EFF. (Motor)}}$	$\frac{HP \times .74}{\text{EFF. (Motor)}}$
Amperes when HP known	$\frac{HP \times .746}{V \times P.F. \times \text{EFF.}}$	$\frac{HP \times .746}{1.732 \times V \times \text{EFF.} \times P.F.}$	$\frac{HP \times .746}{V \times \text{EFF.}}$
Amperes when kW known	$\frac{kW \times 100}{V \times P.F.}$	$\frac{kW \times 100}{1.732 \times V \times P.F.}$	$\frac{kW \times 100}{V}$
Amperes when kVA known	$\frac{kVA \times 1000}{V}$	$\frac{kVA \times 1000}{1.732 \times V}$	
Frequency (c.p.s)	$\frac{\text{Poles} \times \text{RPM}}{120}$	$\frac{\text{Poles} \times \text{RPM}}{120}$	
Reactive kVA (kVAR)	$\frac{V \times I \times \sqrt{1-(P.F.)^2}}{1000}$	$\frac{1.732 \times V \times I \times \sqrt{1-(P.F.)^2}}{1000}$	
% Voltage Regulation	$\frac{100 (V_{NL} - V_{FL})}{V_{FL}}$	$\frac{100 (V_{NL} - V_{FL})}{V_{FL}}$	$\frac{100 (V_{NL} - V_{FL})}{V_{FL}}$

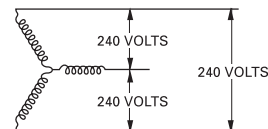
#### Electrical Table Abbreviations

V - voltage in volts  
 I - current in amperes  
 kW - power in kilowatts (actual power)  
 kVA - kilovolt amperes (apparent power)  
 HP - horsepower  
 RPM - revolutions per minute

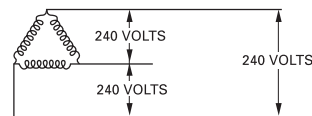
kVAR - reactive kilovolt amperes  
 EFF. - efficiency as a decimal factor  
 NL - no load  
 FL - full load  
 P.F. - power factor

Note: DC kW = DC kVA

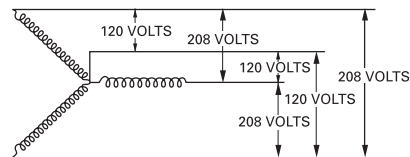
### THREE PHASE CONNECTION SYSTEMS



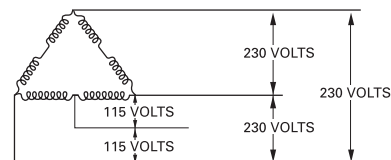
THREE-PHASE, THREE-WIRE (WYE)  
A



THREE-PHASE, THREE-WIRE (DELTA)  
B



THREE-PHASE, FOUR-WIRE (WYE)  
C



THREE-PHASE, FOUR-WIRE (DELTA)  
D

### REDUCED VOLTAGE STARTERS

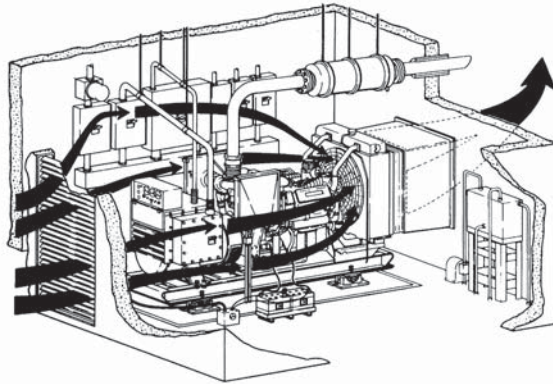
Type of Starter	Motor Voltage (% Line Voltage)	Line Current (% Full Voltage) Starting Current	Starting Torque (% of Full Voltage) Starting Torque
Full Voltage Starter	100	100	100
Auto Transformer			
• 80% Tap	80	68	64
• 65% Tap	65	46	42
• 50% Tap	50	30	25
Resistor Starter Single Step (adjusted for motor voltage to be 80% of line voltage)	80	80	64
Reactor			
• 50% Tap	50	50	25
• 45% Tap	45	45	20
• 37.5% Tap	37.5	37.5	14
Part Winding (low speed motors only)			
• 75% Winding	100	75	75
• 80% Winding	100	50	50

### COMPARISON OF REDUCED VOLTAGE STARTING METHODS

Characteristics	Autotransformer	Primary Resistor	Reactor	Two-Step
Starting Line Current at Same Motor Terminal Voltage	Least	More than autotransformer type		
Starting Power Factor	Low	*High	Low	Low
Power Draw from Line During Starting	Low	More than autotransformer type		
Torque	Increases slightly with speed	Increases rapidly with speed		Increases slightly with speed
Smoothness of Acceleration	Motor momentarily disconnected from line from start to run	Smooth. Transfer made with little change in motor terminal voltage		Smooth
Relative Cost	Average	Lower in small size- otherwise equal	Average	Less than others
Ease of Control	Same	Same	Same	No provision for adjustment of starting current
Maintenance	Same	Same	Same	Less than others
Line Disturbance	Varies with conditions and type of load			More than others

\* Resistor starting adds considerable kW load to generator set. Total power required includes the motor kW and the kW which is lost as heat in the resistor. The series resistors account for a higher than normal starting power factor.

## ENGINE ROOM VENTILATION



Engine room ventilation can be estimated by the following formulas, assuming 100°F (38°C) ambient air temperature:

$$V \text{ (cfm)} = \frac{H}{0.070 \times 0.24 \times \Delta T} + \text{Engine Combustion Air}$$

$$V \text{ (m}^3\text{/min)} = \frac{H}{1.099 \times 0.017 \times \Delta T} + \text{Engine Combustion Air}$$

V = Ventilation air (cfm) (m<sup>3</sup>/min).

H = Heat radiation (Btu/min) (kW).

ΔT = Permissible temperature rise in engine room (°F) (°C).

Density of air at 100°F = 0.070 lb/cu ft (1.099 kg/m<sup>3</sup>).

Specific heat of air = 0.24 Btu/°F (0.017 kW/°C).

## CONVERSION FACTORS

### LENGTH

Unit	mm	in	ft	yd	m	km	mi
mm	1	.03937	.003281	.001094	.001	.00001	—
in	25.4	1	0.08333	.02778	0.0254	0.00003	—
ft	304.8	12	1	0.33333	0.3048	0.00030	—
yd	914.4	36	3	1	0.9144	0.00091	—
m	1000	39.3701	3208.84	1.09361	1	0.001	0.00062
km	100 0000	39 370.1	3208.84	1093.61	1000	1	0.62137
mi	160 9340	63 360	5280	1760	1609.34	1.60934	1

### AREA

Unit	mm <sup>2</sup>	in <sup>2</sup>	m <sup>2</sup>	ft <sup>2</sup>
mm <sup>2</sup>	1	0.00155	—	—
in <sup>2</sup>	645.16	1	0.00064516	0.006944
m <sup>2</sup>	10 00000	1550	1	10.764
ft <sup>2</sup>	92903	144	0.0929	1

1 sq mile = 640 acres      1 cir mil = 7.854 x 10<sup>-7</sup>in<sup>2</sup>

1 cir mil = 5.067 x 10<sup>-6</sup>cm<sup>2</sup>      1 acre = 4840 yd<sup>2</sup>

1 cir mil = .7854 x mils<sup>2</sup>

### WEIGHT

Unit	Kilograms	Ounces Avoirdupois	Pounds Avoirdupois	Short	Tens Long	Metric
1 Kilogram	1	35.27	2.205	—	—	—
1 Ounce	0.02835	1	0.0625	—	—	—
1 Pound	0.4536	16	1	—	—	—
1 Short Ton	907.2	32,000	2,000	1	0.8929	0.9072
1 Long Ton	1,016	35,840	2,240	1.12	1	1.016
1 Metric Ton	1,000	35,300	2,205	1.102	0.9842	1

1 grain = 0.064799 gram

### CONVERSION FACTORS

#### FLOW

Unit	U.S. gal/min	million U.S. gal/day	ft <sup>3</sup> /s	m <sup>3</sup> /h	L/s
U.S. gal/min	1	0.001 440	0.002 23	0.2270	0.0631
1 million gal/day	694.5	1	1.547	157.73	43.8
ft <sup>3</sup> /s	448.8	0.0646	1	101.9	28.32
m <sup>3</sup> /h	4.403	0.006 34	0.009 81	1	0.2778
L/s	15.85	0.0228	0.0353	3.60	1

MCFD = 1000 ft<sup>3</sup>/day

MMCFD = 1,000,000 ft<sup>3</sup>/day

lb/bhp-hr x 607.73 = g/kW-hr

#### ENERGY

Unit	Btu	Cal	ft-lb	J	Kcal	Therm
Btu	1	252	778	1055.056	0.252	0.00001
Calorie	0.00397	1	3.08866	4.187	0.001	—
Foot-Pound	0.001285	0.323765	1	1.356	0.003089	—
Joule	0.000948	0.23895	0.73745	1	—	—
Kilocalorie	3.96825	1000	3089	4185	1	2.519
Therm	100,000	396.8254	128.5347	94.78169	0.39682	1

1 Therm = 1,000,000 Btu

Btu/ft<sup>3</sup> = 8.899 kg-cal/m<sup>3</sup>

Btu/ft<sup>2</sup>/min = 0.1220 Watts/in<sup>2</sup>

Btu/lb = .5556 kg-cal/kg

### CONVERSION FACTORS

#### TEMPERATURE CONVERSION

$$^{\circ}\text{F} = (1.8 \times ^{\circ}\text{C}) + 32$$

$$^{\circ}\text{C} = 0.5555 (^{\circ}\text{F} - 32)$$

#### ANGLE

$$1 \text{ quadrant} = 90 \text{ degrees}$$

$$1 \text{ quadrant} = 1.57 \text{ radians}$$

$$1 \text{ radian} = 57.3$$

$$1 \text{ degree} = 60 \text{ minutes}$$

$$1 \text{ minute} = 2.9 \times 10 \text{ radians}$$

#### IDENTIFYING CODE LETTERS

##### ON AC MOTORS

NEMA Code Letter	Starting skVA/hp
A	0.00 - 3.14
B	3.15 - 3.54
C	3.55 - 3.99
D	4.00 - 4.49
E	4.50 - 4.99
F	5.00 - 5.59
G	5.60 - 6.29
H	6.30 - 7.09
J	7.10 - 7.99
K	8.00 - 8.99
L	9.00 - 9.99
M	10.00 - 11.19
N	11.20 - 12.49
P	12.50 - 13.99
R	14.00 - 15.99
S	16.00 - 17.99
T	18.00 - 19.99
U	20.00 - 22.39
V	22.40

Note: Code letters apply to motors up to 200 HP.

# CONVERSIONS

REFERENCE

# CONVERSIONS

REFERENCE

## CONVERSION FACTORS

## CONVERSION FACTORS

### VOLUME AND CAPACITY

Unit	in <sup>3</sup>	ft <sup>3</sup>	yd <sup>3</sup>	mm <sup>3</sup>	m <sup>3</sup>	U.S. gal	Imp gal	liter
in <sup>3</sup>	1	0.000 58	0.000 02	16387.1	0.000 02	0.004 32	0.003 61	0.01639
ft <sup>3</sup>	1728	1	0.037 04	28 320 000	0.028 32	7.480 52	5.228 83	28.3169
yd <sup>3</sup>	46656	27	1	764 554 858	0.76455	201.974	168.178	764.555
mm <sup>3</sup>	6.1 x 10 <sup>-5</sup>	4.0 x 10 <sup>-6</sup>	—	1	—	2.6 x 10 <sup>-7</sup>	2.2 x 10 <sup>-7</sup>	1.0 x 10 <sup>-6</sup>
m <sup>3</sup>	61 023.7	35.3147	1.307 95	1,000,000,000	1	264.192	219.969	1000
U.S. gal	231	0.133 68	0.004 95	3785420	0.003 78	1	—	3.785 41
Imp gal	277.419	0.160 54	0.005 95	4540090	0.004 55	1.200 95	1	4.546 09
liter	61.023 7	0.035 31	0.001 31	1000 000	0.001	0.264 17	0.219 97	1
acre-ft	—	43 560	1613.33	—	1233.48	325 851	271 335	—

1 board-foot = 144 in<sup>3</sup>

1 bushel = 1.244 ft<sup>3</sup>

1 bushel = 4 pecks

### POWER

Unit	Btu/min	ft-lb/min	hp	J/min	Metric hp	kW	W
Btu/min	1	778.2	0.02358	1055.000	0.02391	0.0175843	17.5843
ft-lb/min	0.00128	1	0.00003	1.3504	0.00003	0.0000226	0.0226
Horsepower	42.456	33000	1	44791	1.014	0.74570	745.7
Joules/min	0.00095	0.7405	0.0000223	1	0.0000226	0.0000166	0.016668
Metric hp	41.827	32550	0.98632	44127	1	0.73549	735.498
Kilowatt	59	44250	1.34102	59997	1.35962	1	1000
Watt	0.05687	44.25	0.00134	59.9968	0.00136	0.001	1

### PRESSURE AND HEAD

Unit	mm/Hg (0°C)	in./Hg (0°C)	in. H <sub>2</sub> O (60°F)	ft. H <sub>2</sub> O (60°F)	lb/in <sup>2</sup>	kg/cm <sup>2</sup>	bar	Atmospheres 101.4 Pa (14.7 psi)	kPa
mm/Hg	1	0.039 37	0.5357	0.04464	0.019 34	0.001 36	0.001 33	0.001 315	—
in./Hg	25.4	1	13.61	1.134	0.491 15	0.034 53	0.033 86	0.033 42	—
in. H <sub>2</sub> O	1.868 27	0.07 355	1	0.083 33	0.036 13	0.002 54	0.002 49	0.002 46	0.249
ft. H <sub>2</sub> O	22.4192	0.882 65	12	1	0.433 52	0.030 479	0.029 89	0.029 50	2.989
lb/in <sup>2</sup>	51.7149	2.036 02	27.70	2.309	1	0.070 31	0.068 95	0.068 05	6.895
kg/cm <sup>2</sup>	735.559	28.959	395	32.84	14.2257	1	0.980 67	0.967 84	98.067
bar	750.062	29.530	401.8	33.49	14.504	1.019 72	1	0.98692	101.325
kPa	7.500 62	0.295 30	4.01835	0.33486	0.145 038	0.010 1972	0.010 000	0.009 869 20	1

# PRODUCT SUPPORT

## DEFINITIONS

### PRODUCT SUPPORT DEFINITIONS

#### Extended Service Coverage (ESC)

Depending on the engine model and application, Silver, Gold or Platinum coverage levels are available from Cat Insurance with terms to meet most applications whether prime or standby.

<b>Equipment</b>	<b>Coverage Option</b>
New engines	New ESC
Used engines	Advantage ESC
Overhauls	OPC*

Electric Power Extended Service Coverage reimburse 100% of the parts at customer list price, labor at selling rates and travel & mileage charges (less any deductibles) for covered repairs.

Available worldwide, Extended Service Coverage (ESC) provides 100% of usual and customary parts and labor costs for system failures due to defects in materials and workmanship on components over the duration of the covered period.

\*Overhaul Protection Coverage



For more information or to find your nearest dealer go to:  
[www.catelectricpowerinfo.com/rg](http://www.catelectricpowerinfo.com/rg)