

# DIESEL GENERATOR SET



## DE165E0

Output Ratings		
Generator Set Model - 3 Phase	Prime*	Standby*
400/230 V, 50 Hz	150.0 kVA 120.0 kW	165.0 kVA 132.0 kW
480/277 V, 60 Hz	168.8 kVA 135.0 kW	187.5 kVA 150.0 kW

\* Refer to ratings definitions on page 4.  
Ratings at 0,8 power factor.

Technical Data		
Engine Make & Model:	Cat® C7.1	
Generator Model:	R2453L4	
Control Panel:	EMCP 4.1	
Base Frame Type:	Heavy Duty Fabricated Steel	
Circuit Breaker Type:	3 Pole MCCB	
Frequency:	<b>50 Hz</b>	<b>60 Hz</b>
Engine Speed: RPM	1500	1800
Fuel Tank Capacity: litres (US gal)	349 (92.2)	
Fuel Consumption, Prime: l/hr (US gal/hr)	32.4 (8.6)	37.9 (10.0)
Fuel Consumption, Standby : l/hr (US gal/hr)	35.1 (9.3)	41.6 (11.0)

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## Engine Technical Data

Physical Data	
<b>Manufacturer:</b>	Caterpillar
<b>Model:</b>	C7.1
<b>No. of Cylinders/Alignment:</b>	6 / In Line
<b>Cycle:</b>	4 Stroke
<b>Induction:</b>	Turbocharged Air To Air Charge Cooled
<b>Cooling Method:</b>	Water
<b>Governing Type:</b>	Mechanical
<b>Governing Class:</b>	ISO 8528 G2
<b>Compression Ratio:</b>	16.0:1
<b>Displacement:</b> l(cu.in)	7.0 (427.8)
<b>Bore/Stroke:</b> mm(in)	105.0 (4.1)/135.0 (5.3)
<b>Moment of Inertia:</b> kgm <sup>2</sup> (lb.in <sup>2</sup> )	1.53 (5228)
<b>Engine Electrical System:</b>	
-Voltage/Ground:	12/Negative
-Battery Charger Amps:	85
<b>Weight:</b> kg (lb) -Dry:	788 (1737)
- Wet:	822 (1812)

Air System	50 Hz	60 Hz
<b>Air Filter Type:</b>	Paper Element	
<b>Combustion Air Flow:</b>		
m <sup>3</sup> /min (cfm)	<b>-Standby:</b> 10.7 (377)	15.0 (529)
	<b>-Prime:</b> 10.0 (354)	14.4 (509)
<b>Max. Combustion Air Intake</b>		
<b>Restriction:</b> kPa (in H <sub>2</sub> O)	3.0 (12.0)	3.0 (12.0)
<b>Radiator Cooling Air Flow:</b>		
m <sup>3</sup> /min (cfm)	303.4 (10714)	239.4 (8454)
<b>External Restriction to</b>		
<b>Cooling Air Flow:</b> Pa (in H <sub>2</sub> O)	125 (0.5)	125 (0.5)

Cooling System	50 Hz	60 Hz
<b>Cooling System Capacity:</b>		
l (US gal)	21.0 (5.5)	21.0 (5.5)
<b>Water Pump Type:</b> Centrifugal		
<b>Heat Rejected to Water &amp; Lube Oil:</b> kW (Btu/min)		
	<b>-Standby:</b> 75.7 (4305)	80.1 (4555)
	<b>-Prime:</b> 69.1 (3930)	73.5 (4180)
<b>Heat Radiation to Room:</b> Heat radiated from engine and alternator		
kW (Btu/min)	<b>-Standby:</b> 22.3 (1268)	25.0 (1422)
	<b>-Prime:</b> 20.0 (1137)	22.6 (1285)
<b>Radiator Fan Load:</b> kW (hp)	4.5 (6.0)	8.0 (10.7)

Cooling system designed to operate in ambient conditions up to 50°C (122°F). Contact your local Cat dealer for power ratings at specific site conditions.

Lubrication System	50 Hz	60 Hz
<b>Oil Filter Type:</b>	Spin-On, Full Flow	
<b>Total Oil Capacity:</b> l (US gal):	16.5 (4.4)	
<b>Oil Pan l (US gal):</b>	14.9 (3.9)	
<b>Oil Type:</b>	API CH4 / CI4 15W-40	
<b>Cooling Method:</b>	Water	
Performance	50 Hz	60 Hz
<b>Engine Speed:</b> RPM	1500	1800
<b>Gross Engine Power:</b> kW (hp)		
-Standby:	149.1 (200.0)	171.8 (230.0)
-Prime:	136.0 (182.0)	155.4 (208.0)
<b>BMEP:</b> kPa (psi)		
-Standby:	1701.0 (246.7)	1633.0 (236.8)
-Prime:	1551.0 (225.0)	1477.0 (214.2)
<b>Regenerative Power:</b> kW	6.7	7.7

Fuel System	110% Load	100% Load	75% Load	50% Load
<b>Fuel Filter Type:</b>	Replaceable Element			
<b>Recommended Fuel:</b>	Class A2 Diesel or BSEN590			
<b>Fuel Consumption:</b> l/hr (US gal/hr)				
<b>Prime</b>				
50 Hz	35.1 (9.3)	32.4 (8.6)	25.0 (6.6)	16.7 (4.4)
60 Hz	41.6 (11.0)	37.9 (10.0)	29.2 (7.7)	19.9 (5.3)
<b>Standby</b>				
50 Hz	35.1 (9.3)	27.3 (7.2)	18.4 (4.9)	
60 Hz	41.6 (11.0)	32.1 (8.5)	22.0 (5.8)	

(based on diesel fuel with a specific gravity of 0.85 and conforming to BS2869, Class A2)

Exhaust System	50 Hz	60 Hz
<b>Silencer Type:</b>	Industrial	
<b>Silencer Model &amp; Quantity:</b>	EXSY2 (1)	
<b>Pressure Drop Across</b>		
<b>Silencer System:</b> kPa (in Hg)	-	-
<b>Silencer Noise Reduction</b>		
<b>Level:</b> dB	-	-
<b>Max. Allowable Back</b>		
<b>Pressure:</b> kPa (in. Hg)	6.0 (1.8)	6.0 (1.8)
<b>Exhaust Gas Flow:</b>		
m <sup>3</sup> /min (cfm)	<b>-Standby:</b> 25.5 (902)	32.2 (1137)
	<b>-Prime:</b> 23.9 (843)	31.9 (1125)
<b>Exhaust Gas Temperature:</b> °C (°F)		
	<b>-Standby:</b> 484 (903)	407 (765)
	<b>-Prime:</b> 484 (903)	407 (765)

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## Generator Performance Data

Data Item	50 Hz				60 Hz				
	415/240V	400/230V 230/115V 200/115V	380/220V 220/110V	220/127V	480/277V 240/139V	380/220V 220/110V	240/120V 208/120V		440/254V 220/127V
<b>Motor Starting Capability* kVA</b>	232	218	194	261	211	161	187		195
<b>Short Circuit Capacity** %</b>	300	300	300	300	300	300	300		300
<b>Reactances: Per Unit</b>									
<b>X<sub>d</sub></b>	2.750	2.960	3.280	2.450	2.780	3.350	3.700		3.310
<b>X'<sub>d</sub></b>	0.240	0.260	0.290	0.210	0.240	0.390	0.320		0.290
<b>X''<sub>d</sub></b>	0.101	0.109	0.121	0.090	0.102	0.163	0.136		0.122

Reactances shown are applicable to prime ratings.

\*Based on 30% voltage dip at 0 power factor and SHUNT excitation system.

\*\*With optional Auxiliary Winding.

## Generator Technical Data

Physical Data	
<b>R Frame</b>	
<b>Model:</b>	R2453L4
<b>No. of Bearings:</b>	1
<b>Insulation Class:</b>	H
<b>Winding Pitch - Code:</b>	2/3- M0
<b>Wires:</b>	12
<b>Ingress Protection Rating:</b>	IP23
<b>Excitation System:</b>	SHUNT
<b>AVR Model:</b>	Mark V

Operating Data	
<b>Overspeed: RPM</b>	2250
<b>Voltage Regulation: (steady state)</b>	+/- 0.5%
<b>Wave Form NEMA = TIF:</b>	50
<b>Wave Form IEC = THF:</b>	2.0%
<b>Total Harmonic Content LL/LN:</b>	2.0%
<b>Radio Interference:</b>	Suppression is in line with European Standard EN61000-6
<b>Radiant Heat: kW (Btu/min)</b>	
-50 Hz:	10.1 (574)
-60 Hz:	12.7 (722)

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## Technical Data

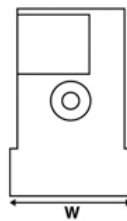
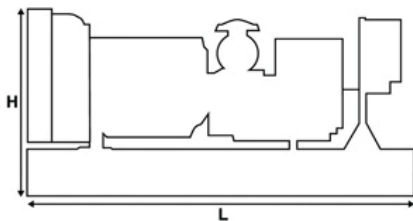
Voltage 50 Hz	Prime		Standby	
	kVA	kW	kVA	kW
415/240V	150.0	120.0	165.0	132.0
400/230V	150.0	120.0	165.0	132.0
380/220V	150.0	120.0	165.0	132.0
230/115V	150.0	120.0	165.0	132.0
220/127V	150.0	120.0	165.0	132.0
220/110V	150.0	120.0	165.0	132.0
200/115V	150.0	120.0	165.0	132.0

Voltage 60 Hz	Prime		Standby	
	kVA	kW	kVA	kW
480/277V	168.8	135.0	187.5	150.0
220/127V	168.8	135.0	187.5	150.0
380/220V	168.8	135.0	185.0	148.0
240/120V	168.8	135.0	187.5	150.0
220/110V	168.8	135.0	185.0	148.0
208/120V	168.8	135.0	187.5	150.0
240/139V	168.8	135.0	187.5	150.0

## Weights & Dimensions

Weights: kg (lb)	
Net (+ lube oil)	1707 (3763)
Wet (+ lube oil & coolant)	1728 (3810)
Fuel, lube oil & coolant	2024 (4461)

Dimensions: mm (in)	
Length	2500 (98.4)
Width	1120 (44.1)
Height	1528 (60.2)



**Note:** General configuration not to be used for installation. See general dimension drawings for detail.

## Definitions

### Standby Rating

Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

### Prime Rating

Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

### Standard Reference Conditions

Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, ClassA2.

## General Data

### Documents

A full set of operation and maintenance manuals and circuit wiring diagrams.

### Quality Standards

The equipment meets the following standards: **IEC60034-1, IEC60034-22, ISO3046, ISO8528, NEMA MG 1-32, NEMA MG 1-33, 2004/108/EC, 2006/42/EC, 2006/95/EC.**

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Price List: C7.1PGBI, C7.1PGBT

Gen. Arr. Number: 502-7328

Source: Europe

LEHE1149-00 (0816)



## Sound Attenuated Level 2 Enclosures

24 – 220 kVA Range

The sound attenuated Level 2, factory installed enclosures incorporate internally mounted critical level silencers. They are the premium enclosure offering for this range, designed for safety and aesthetic value on an integral fuel tank base. Extremely durable and weather resistant, these enclosures are designed to resist corrosion and handling damage.

The enclosures are the result of continuing research and development by our specialist acoustic engineers.

These enclosures reduce sound levels to comply with the Stage 2 levels of the European Community Directive 2000/14/EC which became effective January 3, 2006.

## Features

### Durable and Robust Construction

- Manufactured from galvanized steel
- Advanced powder-coated paint finish
- Single-piece main roof
- Base frame extends beyond enclosure, protecting against handling damage
- Minimal external fixings exposed to environment
- Zinc-plated fasteners
- Corner posts and air handling units manufactured from high-grade engineering thermoplastic

### Security and Safety

- Secure, lockable doors prevent unauthorized access to control panel, fuel fill, and battery
- Emergency stop button mounted on exterior, convenient to control panel
- Cooling fan and battery charging alternator fully guarded

### Excellent Service and Maintenance Access

- Side-hinged doors on both sides of the enclosure incorporate lift-off hinges at 45°
- Radiator fill via removeable, flush-mounted rain cap fitted with compression seal
- Lube oil cooling water drains piped to baseframe side rail, on exterior
- Removable end panels allow access to radiator, exhaust outlet, and alternator rear
- Doors positioned for optimum access of frequently serviced items

### Transportability

- Optional tested and certified lifting arch
- Lifting and drag points on base frame facilitate handling from both sides

### Sound Pressure Levels (dBA)

Generator Set Model Three-phase		LWA	50 Hz						60 Hz					
			15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)		15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)	
			75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load
DE33E0	Prime	94	61	62	67	68	76	77	61	63	67	69	77	79
	Standby	94	61	62	67	68	76	77	61	64	67	70	78	80
DE33E3	Prime	94	59	61	65	67	75	77	-	-	-	-	-	-
	Standby	94	60	62	66	68	76	78	-	-	-	-	-	-
DE50E0	Prime	93	57	58	63	64	74	74	60	61	66	67	76	77
	Standby	93	57	58	63	64	74	75	60	62	66	68	77	78
DE50E2	Prime	93	56	56	62	62	74	75	-	-	-	-	-	-
	Standby	93	56	57	62	63	74	75	-	-	-	-	-	-
DE55E0	Prime	93	57	58	63	64	74	75	60	62	66	68	77	78
	Standby	93	57	59	63	65	74	76	61	62	67	68	77	79
DE55E2	Prime	93	56	57	62	63	74	74	-	-	-	-	-	-
	Standby	93	56	57	62	63	74	75	-	-	-	-	-	-
DE65E0	Prime	93	58	60	64	66	74	76	61	63	67	69	77	79
	Standby	93	58	61	64	67	75	77	62	64	68	70	78	80
DE65E3	Prime	93	58	59	64	65	75	76	-	-	-	-	-	-
	Standby	93	58	59	64	65	75	76	-	-	-	-	-	-
DE88E0	Prime	93	58	59	64	65	76	76	61	61	67	67	78	79
	Standby	93	58	60	64	66	76	77	61	62	67	68	79	79
DE88E3	Prime	97	61	61	67	67	79	79	-	-	-	-	-	-
	Standby	97	61	62	67	68	79	79	-	-	-	-	-	-
DE110E2	Prime	97	62	63	68	69	80	81	65	65	71	71	84	84
	Standby	97	63	64	69	70	80	81	65	66	71	72	84	84
DE110E3	Prime	97	61	62	67	68	79	79	-	-	-	-	-	-
	Standby	97	62	62	68	68	79	79	-	-	-	-	-	-
DE150E0	Prime	97	60	61	66	67	76	76	61	61	67	67	77	77
	Standby	97	60	61	66	67	76	77	61	61	67	67	77	78
DE165E0	Prime	97	59	59	65	65	74	74	61	62	67	68	77	77
	Standby	97	59	59	65	65	74	75	62	62	68	68	77	78

## Sound Pressure Levels (dBA)

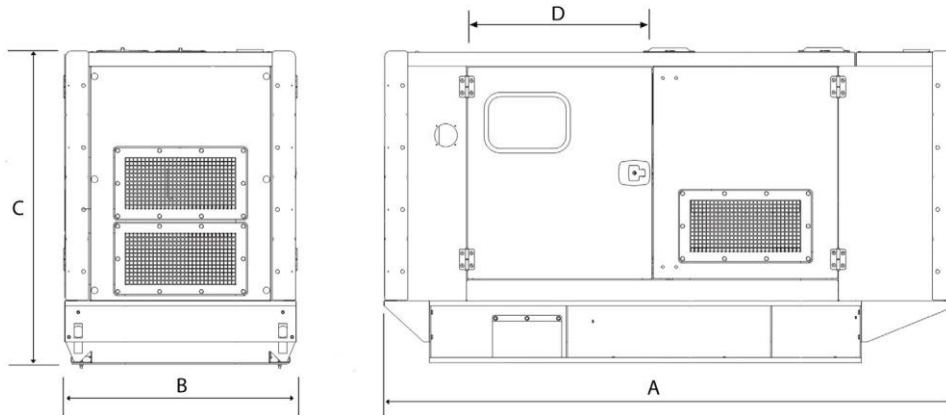
Generator Set Model Three-phase		LWA	50 Hz						60 Hz					
			15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)		15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)	
			75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load
DE165E3*	Prime	–	58	59	64	65	73	74	–	–	–	–	–	–
	Standby	–	58	59	64	65	74	74	–	–	–	–	–	–
DE175E3*	Prime	–	58	59	64	65	74	74	–	–	–	–	–	–
	Standby	–	58	59	64	65	74	75	–	–	–	–	–	–
DE200E0	Prime	97	62	62	68	68	78	78	65	65	71	71	81	81
	Standby	97	62	63	68	69	78	78	65	65	71	71	81	81
DE200E3*	Prime	–	59	60	65	66	74	75	–	–	–	–	–	–
	Standby	–	59	60	65	66	74	75	–	–	–	–	–	–
DE220E0	Prime	97	62	64	68	70	78	79	–	–	–	–	–	–
	Standby	97	63	64	69	70	78	79	–	–	–	–	–	–

Levels in accordance with European Noise Directive (2000/14/EC). \*Available as DTO only.

## Sound Pressure Levels (dBA)

Generator Set Model Single-phase		LWA	50 Hz						60 Hz					
			15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)		15 m (50 ft)		7 m (23 ft)		1 m (3.3 ft)	
			75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load	75% Load	100% Load
DE26E0S	Prime	94	61	62	67	68	76	77	61	63	67	69	77	79
	Standby	94	61	62	67	68	76	77	61	64	67	70	78	80
DE26E3S	Prime	94	59	61	65	67	75	77	–	–	–	–	–	–
	Standby	94	60	62	66	68	76	77	–	–	–	–	–	–
DE40E0S	Prime	93	57	58	63	64	74	74	60	61	66	67	76	77
	Standby	93	57	58	63	64	74	75	60	62	66	68	77	78
DE40E2S	Prime	93	56	56	62	62	74	75	–	–	–	–	–	–
	Standby	93	56	57	62	63	74	75	–	–	–	–	–	–
DE50E0S	Prime	93	57	58	63	64	75	76	60	61	66	67	78	78
	Standby	93	57	58	63	64	75	76	60	61	66	67	78	78
DE55E3S	Prime	93	58	59	64	65	75	76	–	–	–	–	–	–
	Standby	93	58	59	64	65	75	76	–	–	–	–	–	–
DE90E2S	Prime	97	62	63	68	69	80	81	65	65	71	71	84	84
	Standby	97	63	64	69	70	80	81	65	66	71	72	84	84
DE90E3S	Prime	97	61	62	67	68	79	79	–	–	–	–	–	–
	Standby	97	62	62	68	68	79	79	–	–	–	–	–	–

Levels in accordance with European Noise Directive (2000/14/EC).



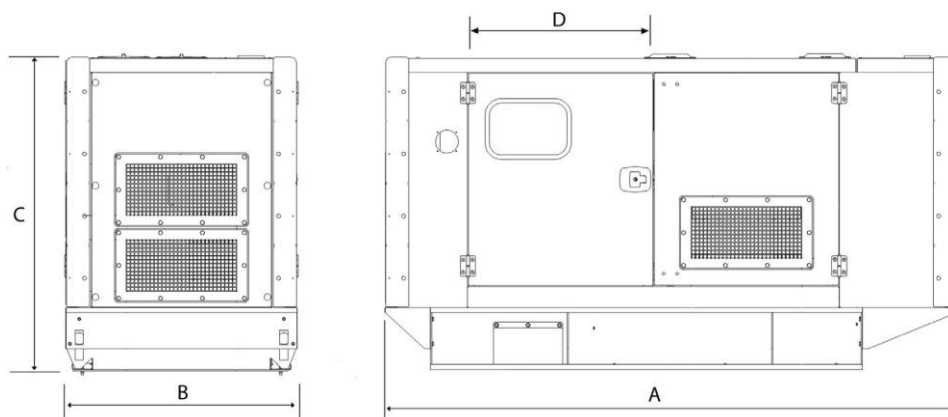
### Weights and Dimensions

Generator Set Model Three-phase	A: mm (in)	B: mm (in)	C: mm (in)	D*: mm (in)	Fuel Capacity: l (US gal)	Weight: kg (lb)
DE33E0	2120 (83.5)	980 (38.6)	1519 (59.8)	716 (28.2)	161 (43.0)	1002 (2209)
DE33E3	2120 (83.5)	980 (38.6)	1519 (59.8)	716 (28.2)	161 (43.0)	1002 (2209)
DE50E2	2300 (90.6)	1132 (44.6)	1519 (59.8)	761 (30.0)	219 (58.0)	1237 (2727)
DE50E0	2300 (90.6)	1132 (44.6)	1519 (59.8)	761 (30.0)	219 (58.0)	1237 (2727)
DE55E0	2300 (90.6)	1132 (44.6)	1519 (59.8)	761 (30.0)	219 (58.0)	1229 (2709)
DE55E2	2300 (90.6)	1130 (44.5)	1525 (60.0)	761 (30.0)	219 (58.0)	1277 (2815)
DE65E0	2300 (90.6)	1132 (44.6)	1519 (59.8)	761 (30.0)	219 (58.0)	1249 (2754)
DE65E3	2300 (90.6)	1130 (44.5)	1519 (59.8)	761 (30.0)	219 (58.0)	1319 (2908)
DE88E0	2300 (90.6)	1130 (44.5)	1519 (59.8)	761 (30.0)	219 (58.0)	1416 (3122)
DE88E3	2770 (109.1)	1130 (44.5)	1530 (60.2)	893 (35.2)	250 (66.0)	1554 (3426)
DE110E2	2770 (109.1)	1130 (44.5)	1530 (60.2)	893 (35.2)	250 (66.0)	1615 (3560)
DE110E3	2770 (109.1)	1130 (44.5)	1530 (60.2)	893 (35.2)	250 (66.0)	1744 (3845)
DE150E0	3520 (138.6)	1130 (44.5)	1809 (71.2)	1143 (45.0)	349 (92.2)	1918 (4228)
DE165E0	3520 (138.6)	1130 (44.5)	1809 (71.2)	1143 (45.0)	349 (92.2)	2016 (4445)
DE165E3**	3520 (138.6)	1130 (44.5)	1809 (71.2)	1143 (45.0)	349 (92.2)	2158 (4758)
DE175E3**	3520 (138.6)	1130 (44.5)	1809 (71.2)	1143 (45.0)	349 (92.2)	2158 (4758)
DE200E0	3520 (138.6)	1330 (52.4)	1809 (71.2)	1078 (42.4)	418 (110.0)	2198 (4836)
DE200E3**	3520 (138.6)	1330 (52.4)	1809 (71.2)	1078 (42.4)	418 (110.0)	2248 (4956)
DE220E0	3520 (138.6)	1330 (52.4)	1809 (71.2)	1078 (42.4)	418 (110.0)	2238 (4934)

\*Clearance required on both sides of set. \*\*Available as DTO only.

Weight with lube oil and coolant, no fuel.





## Weights and Dimensions

Generator Set Model Single-phase	A: mm (in)	B: mm (in)	C: mm (in)	D*: mm (in)	Fuel Capacity: l (US gal)	Weight: kg (lb)
DE26E0S	2120 (83.5)	980 (38.58)	1519 (59.8)	716 (28.2)	161 (43.0)	991 (2185)
DE26E3S	2120 (83.5)	980 (38.58)	1519 (59.8)	716 (28.2)	161 (43.0)	991 (2185)
DE40E0S	2300 (90.6)	1132 (44.7)	1519 (59.8)	761 (30.0)	219 (58.0)	1247 (2749)
DE40E2S	2300 (90.6)	1132 (44.7)	1519 (59.8)	761 (30.0)	219 (58.0)	1199 (2643)
DE50E0S	2300 (90.6)	1132 (44.7)	1519 (59.8)	761 (30.0)	219 (58.0)	1315 (2899)
DE55E3S	2300 (90.6)	1130 (44.5)	1519 (59.8)	765 (30.1)	219 (58.0)	1355 (2987)
DE90E2S	2770 (109.1)	1130 (44.5)	1530 (60.2)	893 (35.2)	250 (66.0)	1613 (3556)
DE90E3S	2770 (109.1)	1130 (44.5)	1530 (60.2)	893 (35.2)	250 (66.0)	1653 (3644)

\*Clearance required on both sides of set.  
Weight with lube oil and coolant, no fuel.

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