

Image shown may not reflect actual engine

## CATERPILLAR ENGINE SPECIFICATIONS

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### I-6, 4-Stroke-Cycle Diesel

Bore.....	145.0 mm (5.71 in)
Stroke.....	183.0 mm (7.2 in)
Displacement.....	18.1 L (1,104.53 in <sup>3</sup> )
Aspiration.....	Turbocharged Aftercooled
Compression Ratio.....	16.3:1
Rotation (from flywheel end).....	Counterclockwise
Weight, Net Dry (approximate).....	1769 kg (3900 lb)

## FEATURES

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### Emissions & Regulations

Meets U.S. EPA Tier 3 and CARB emissions requirements. FM approved. UL listed - US and Canada. Meets NFPA 20 requirements.

### Worldwide Supplier Capability

Caterpillar  
- Casts engine blocks, heads, cylinder liners, and flywheel housings  
- Machines critical components  
- Assembles complete engine  
- Factory-designed systems built at Caterpillar ISO 9001:2000 certified facilities  
Ownership of these manufacturing processes enables Caterpillar to produce high quality, dependable product.

### Testing

Prototype testing on every model:  
- proves computer design  
- verifies system torsional stability  
- functionality tests every model

Every Caterpillar engine is dynamometer tested under full load to ensure proper engine performance.

### Full Range of Attachments

Wide range of bolt-on system expansion attachments, factory designed and tested.

### Unmatched Product Support Offered Through Worldwide Caterpillar Dealer Network

More than 1,800 dealer outlets  
Caterpillar factory-trained dealer technicians service every aspect of your industrial engine  
99.7% of parts orders filled within 24 hours worldwide  
Caterpillar parts and labor warranty  
Preventive maintenance agreements available for repair before failure options

Scheduled Oil Sampling program matches your oil sample against Caterpillar set standards to determine:

- internal engine component condition
- presence of unwanted fluids
- presence of combustion by-products

### Web Site

For all your industrial power requirements, visit [www.cat-industrial.com](http://www.cat-industrial.com).

**STANDARD ENGINE EQUIPMENT****522 bkW/700 bhp @ 1900 rpm****Air Inlet System**

Dual turbocharger: front and rear inlet,  
127.0 mm (5.0 in)  
Separate Circuit Aftercooled (SCAC)

**Charging System**

Charging alternator 24 volt, 50 amp

**Control System**

Dual Electronic Control Modules (ECMs) - primary  
and secondary  
Electronic governing, PTO speed control  
Programmable ratings  
Cold mode start strategy  
Automatic altitude compensation  
Power compensation for fuel temperature  
Programmable low and high idle and total engine  
limit (TEL)  
Electronic diagnostics and fault logging  
Engine monitoring and protection system (speeds,  
temperature, pressure)  
J1939 Broadcast (diagnostic, engine status and  
control)

**Cooling System**

Thermostats and housing, vertical outlet  
Jacket water pump, gear driven, centrifugal  
Heat exchanger (installed)  
Expansion tank

**Exhaust System**

Exhaust manifold, dry  
Dual turbo: exhaust elbow, dry 203 mm (8 in)

**Flywheels and Flywheel Housing**

Flywheel, SAE #1  
Flywheel housing, SAE #1  
SAE standard rotation

**Fuel System**

Electronic unit injector  
Fuel filter, secondary, mid-mount (LH 2 micron high  
performance)  
Fuel transfer pump, LH front  
Fuel priming pump, LH mid-mount  
Fuel sample valve, mounted on fuel filter base  
Primary filter / water separator

**Instrumentation**

Instrument panel, LH  
Engine oil pressure gauge  
Voltmeter gauge  
Water temperature gauge  
Tachometer / engine hour meter

**Lube System**

Crankcase breather, front valve cover  
Oil cooler, RH (dual)  
Oil filter, RH  
Oil pan, front sump  
Oil filler, LH front  
Oil dipstick, LH front  
Oil pump

**Mounting System**

Front and rear support

**Power Take-Offs**

Flywheel stub shaft

**Protection System**

Stop-Start System, automatic (compatible with  
NFPA 20 requirements, able to be energized from  
either of two battery sources and capable of manual  
starter actuation)

**Starting System**

24 volt, LH electric starting motor  
Jacket water heater (3 kW, 120-240 volt)

**General**

Vibration damper and guard  
Paint, Caterpillar fire pump red  
Lifting eyes  
Automatic variable timing, electronic  
Electronic installation kit, 70 pin connector  
(connectors, pins, sockets)  
Literature, Owner and Operator's Manual

**PERFORMANCE CURVES****522 bkW/700 bhp @ 1900 rpm****EM0023-01**

Performance curve is not shown since fire pump technical data is published at constant speed (rpm).

Below data is shown from 100% load to 10% load.

<b>Engine Speed rpm</b>	<b>Engine Power kW</b>	<b>Torque N·m</b>	<b>BSFC g/kW-hr</b>	<b>Fuel Rate L/hr</b>
1900	522	2624	221.8	138.0
1900	470	2361	226.3	126.7
1900	418	2099	231.5	115.2
1900	392	1968	234.3	109.4
1900	365	1836	237.6	103.5
1900	313	1574	244.4	91.3
1900	261	1312	251.9	78.4
1900	209	1049	247	61.5
1900	157	787	238.9	44.6
1900	131	656	232.4	36.2
1900	104	525	241.8	30.1
1900	52	262	326.9	20.3

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<b>Engine Speed rpm</b>	<b>Engine Power bhp</b>	<b>Engine Torque lb·ft</b>	<b>BSFC lb/bhp-hr</b>	<b>Fuel Rate gal/hr</b>
1900	700	1935	.365	36.5
1900	630	1741	.372	33.5
1900	560	1548	.381	30.4
1900	525	1452	.385	28.9
1900	490	1354	.391	27.3
1900	420	1161	.402	24.1
1900	350	968	.414	20.7
1900	280	774	.406	16.2
1900	210	580	.393	11.8
1900	175	484	.382	9.6
1900	140	387	.398	8.0
1900	70	193	.537	5.4

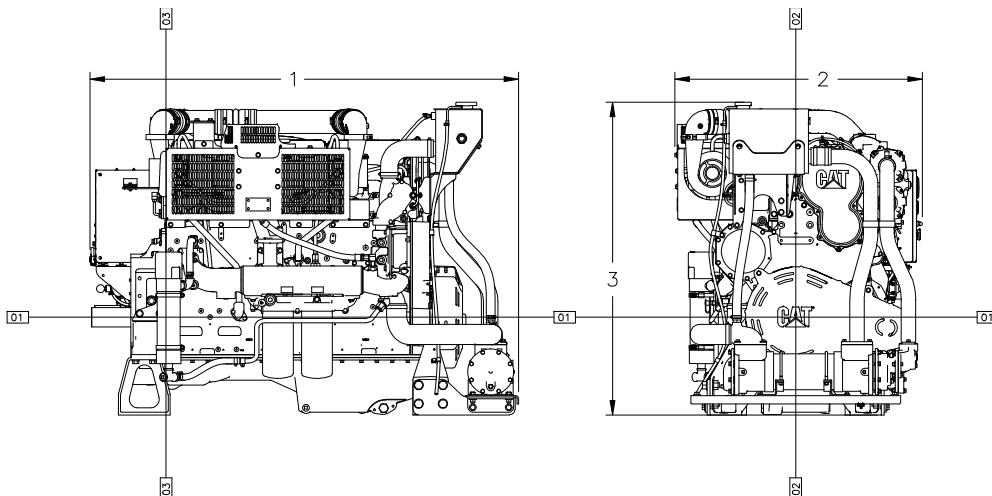
### RATINGS AND CONDITIONS

522 bkW/700 bhp @ 1900 rpm

**Standby Fire Pump** Ratings represent the output which may be utilized to drive stationary fire pumps where the pumping equipment has been sized according to NFPA 20 standards. Engine rating is FM approved and UL listed (US and Canada).

**Engine Performance** Diesel Engines — 7 liter and higher

All rating conditions are based on SAE J1995, inlet air standard conditions of 99 kPa (29.31 in. Hg) dry barometer and 25°C (77°F) temperature. Performance measured using a standard fuel with fuel gravity of 35° API having a lower heating value of 42,780 kJ/kg (18,390 btu/lb) when used at 29° C (84.2° F) with a density of 838.9 g/L.



#### Engine Dimensions

(1) Length	1889.0 mm (74.37 in)
(2) Width	1091.0 mm (42.95 in)
(3) Height	1379.7 mm (54.32 in)

Note: Do not use for installation design. See general dimension drawings for detail (Drawing # 3222516).

Performance Number: EM0023-01

Feature Code: C18DF02 Arr. Number: 3149713

Materials and specifications are subject to change without notice.

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