



CUMMINS ENGINE COMPANY, INC

Columbus, Indiana 47201

Construction Performance Curve

Basic Engine Model:

KTTA19-C

Curve Number:

P-4524-B

Engine Family:

D19

CPL Code:

0951

Date:

07Dec92

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Displacement: 1150 in.³ (18.9 litre)

Aspiration: Turbocharged & Aftercooled

Rating:

Bore: **6.25 in. (159 mm)**

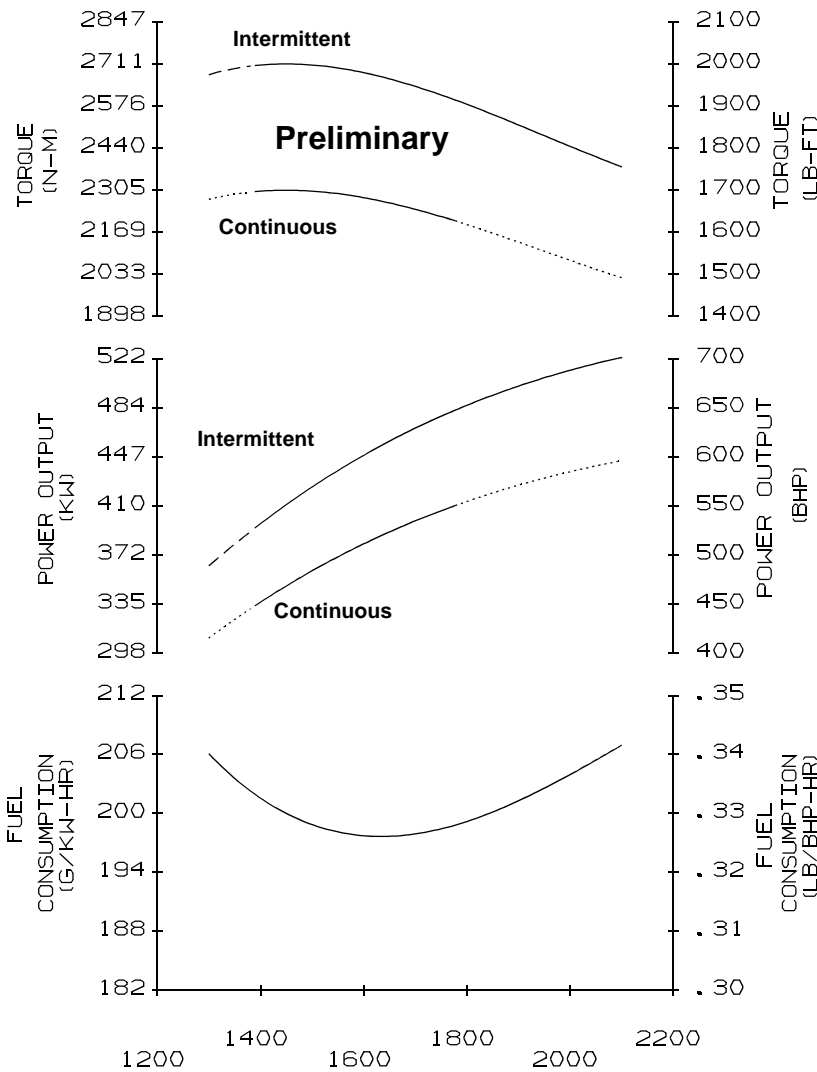
Stroke: **6.25 in. (159 mm)**

No. of Cylinders: **6**

HP (kW) @ RPM
700 (522) @ 2100

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler; not included are alternator, compressor, fan, optional equipment and driven components.

**Restricted - Documented
Approval Required**



RPM	TORQUE	
	lb.-ft.	N•m
1300	1965	2665
1400	2014	2731
1500	1987	2694
1600	1962	2660
1700	1934	2623
1800	1903	2580
1900	1870	2536
2100	1751	2374

RPM	POWER OUTPUT	
	BHP	kW
1300	486	363
1400	537	400
1500	567	423
1600	598	446
1700	626	467
1800	652	487
1900	677	505
2100	700	522

RPM	FUEL CONSUMPTION	
	lb/BHP-HR	g/kW•hr
1300	.341	207
1400	.332	202
1500	.329	200
1600	.328	200
1700	.328	199
1800	.329	200
1900	.331	202
2100	.342	208

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 conditions of 29.61 in Hg (100 kPa) barometric pressure [300 ft (90 m) altitude], 77°F (25°C) inlet air temperature, and 0.30 in Hg (1 kPa) water vapor pressure with No.2 diesel fuel. The engine may be operated without changing the fuel setting up to 12,000 ft (3 600 m) altitude and 100°F (38°C). For sustained operation at high altitudes, the fuel rate of the engine should be adjusted to limit performance by 4% per 1,000 ft (300 m) above 12,000 ft (3 600 m) and 1% per 10°F above 100°F (2% per 11°C above 38°C).

RATING GUIDELINES

These guidelines are intended for general purpose use in applications requiring high utilization with long periods between overhauls.

1. LOAD RATINGS

- 1.1 *Maximum Rating may be used for intermittent load applications (full throttle operation is cyclically interrupted) where the average load factor does not exceed the continuous rating, and where full throttle operation does not exceed 60 minutes without interruption.
- 1.2 *Continuous Rating may be used for constant load applications requiring uninterrupted service at full throttle for extended periods of time.

2. SPEED RATINGS

- 2.1 If the application qualifies for the continuous load rating the governor cut-in point shall be set within the limits of the solid line portion of the continuous curve.
- 2.2 If the application qualifies for the maximum load rating the governor cut-in point shall be set within the limits of the solid line portion of the maximum curve.

3. DEFINITIONS

- 3.1 Load (Speed) factor is defined as the arithmetic mean of the Load (Speed) profile of the normal duty cycle, not including prolonged periods of idle operation.

4. INTERNATIONAL RATING GUIDELINES

*These ratings represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 and the conditions as stated on front of the curve. The ratings are in conformance with the requirements specified in ISO 3046, BS5514 and DIN 6271. Although these specific standards have a note excluding road construction, earth moving equipment, agricultural tractors and industrial trucks as applications not covered by the standard, these are included as acceptable applications of these ratings.

The Maximum Rating conforms to ISO 3046 overload power and fuel stop power. The Continuous Rating may be used for continuous service in commercial application and it conforms to ISO 3046 continuous power.

Reference standards

BS 5514 and DIN 6271 standards are based on ISO 3046.

Cummins Engine Company, Inc.

Engine Data Sheet

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ENGINE MODEL: **KTТА19-C** CONFIGURATION NUMBER: **D193077CX02**
 GROSS POWER BHP(kW): **700 (522) @ 2100**
 CONTINUOUS RATING BHP (kW): **554 (413) @ 1800**
 INSTALLATION DIAGRAM CPL NUMBER: **0951**

DATA SHEET: **DS-4524-C**
 DATE: **07Dec92**
 PERFORMANCE CURVE: **C-4524-B**

• Fan to Flywheel :3034565

Preliminary Data Sheet

GENERAL ENGINE DATA

Type.....	4 Cycle; In-line 6-Cylinder Diesel
Aspiration.....	Turbocharged and Aftercooled
Bore x Stroke..... — in. x in. (mm x mm)	6.25 (159) X 6..25 (159)
Displacement..... — in. ³ (litre)	1150 (18.9)
Compression Ratio.....	
Firing Order.....	1-5-3-6-2-4
Dry Weight	
Fan hub to Flywheel Engine — lb. (kg)	3800 (1725)
Wet Weight	
Fan hub to Flywheel Engine — lb. (kg)	5760 (2615)
Moment of Inertia of Rotating Components (Excluding Flywheel) — lb.-ft. ² (kg•m ²)	
Center of Gravity from Front Face of Block..... —in. (mm)	22.0 (559)
Center of Gravity above Crankshaft Centerline..... — in. (mm)	9.0 (229)

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block — lb.-ft... (N•m)	1000 (1356)
Moment of Inertia About Roll Axis — lb.-ft. ² (kg•m ²)	

EXHAUST SYSTEM

Maximum Allowable Back Pressure..... — in. Hg (mm Hg)	3.0 (76)
Exhaust Pipe Size Normally Acceptable (Dual Pipes) — in. (mm)	5.0 (127)

AIR INTAKE SYSTEM

Maximum Air Intake Air Restriction with Heavy Duty Air Cleaner	
Clean Element — in. H ₂ O (mm H ₂ O)	15 (381)
Dirty Element — in. H ₂ O (mm H ₂ O)	25 (635)
Minimum Allowable Dirt Holding Capacity with Heavy Duty Air Cleaner — gm/CFM (gm-L/s)	25 (53)

COOLING SYSTEM

Coolant Capacity - Engine Only —U.S. Gal. (litre)	8 (30)
Maximum Friction Head External to Engine — PSI (kPa)	5.0 (34)
Maximum Static Head of Coolant Above Engine Crank Centerline — ft. (m)	60 (18.3)
Maximum Air Restrictions Across Radiator..... — in. H ₂ O (mm H ₂ O)	0.5 (13)
Standard Thermostat (modulating) Range — ° F (° C)	175 - 195 (79 - 91)
Maximum Coolant Pressure (Exclusive of Pressure Cap)..... — PSI (kPa)	35 (241)
Minimum Allowable Pressure Cap — PSI (kPa)	7 (48)
Maximum Top Tank Temperature for Cooling System..... — ° F (° C)	203 (95)
Minimum Top Tank Temperature for Cooling System — ° F (° C)	160 (71)
Minimum Allowable Fill Rate — U.S. GPM (L/min)	5 (19)
Maximum Allowable Initial Fill Time — min	5
Minimum Allowable Coolant Expansion Space —% of System Capacity	5
Maximum Deaeration Time — min	25
Minimum Allowable Drawdown — U.S. quart (litre)	12 (11)

(Drawdown Must Exceed the Volume Not Filled at Initial Fill & Must Not Include Expansion Space)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed..... — psi (kPa)	20 (138)
@ Rated Speed..... — psi (kPa)	55 - 75 (380- 518)
Oil Flow at Rated Speed — U.S. GPM (L/min)	40 (151)
Maximum Allowable Oil Temperature — °F (°C)	250 (121)
By-Pass Filter Capacity —Spin-on Cartridge Type..... — U.S. gal (litre)	0.7 (2.6)
—Replaceable Element Type..... — U.S. gal (litre)	2.9 (11)
Oil Pan Capacity with (Option OP4022) High/ Low — U.S. gal (litre)	12.5 - 10 (47 - 38)

LUBRICATION SYSTEM (Continued)

Total System Capacity (Excluding By-pass Filter).....	— U.S. gal (litre)	12.5	(47)
Degree of Angularity of Standard Oil Pan (Option OP4022).....	— Front Down	45°	
(Option OP4022).....	— Front Up	45°	

FUEL SYSTEM

Maximum Fuel Consumption at Maximum Rated Output and Speed	— lb/hr (kg/hr)	248	(113)
Maximum Fuel Flow to Pump at Maximum Rated Output and Speed.....	— lb/hr (kg/hr)	435	(197)
Maximum Allowable Restriction at PT Fuel Pump	— in.Hg (mm Hg)	4.0	(102)
— with Clean Fuel Filter	— in.Hg (mm Hg)	8.0	(203)
— with Dirty Fuel Filter	— in.Hg (mm Hg)	6.5	(165)
Maximum Allowable Injector Return Line Restriction— With Check Valves.....	— in. Hg (mm Hg)	2.5	(63)
— Less Check Valves	— in. Hg (mm Hg)	15	(425)
Minimum Allowable Tank Vent Capability	— ft. ³ /hr (L/hr)		
With 2.5 in. Hg (63 mm Hg) or Less Back Pressure)			

ELECTRICAL SYSTEM

Minimum Recommended Battery Capacity.....	— Cold Soak at 0° F (–18° C) or Above	12 Volt	24 Volt
Engine Only [De-Clutched Load]	— Cold Cranking Amperes — CCA	900	
.....	— Reserve Capacity — min	320	
Engine With Connected Drive Train	— Cold Cranking Amperes — CCA	900	
.....	— Reserve Capacity — min	320	
Maximum Allowable Resistance of Starting Circuit		0.00075	0.002

PERFORMANCE DATA

Minimum Low Idle Speed	— RPM	725	
Maximum No-Load Governed Speed.....	— RPM	2350	
Maximum Overspeed Capability	— RPM	2625	
Breakaway Torque at Minimum Unaided Start Temperature— lb-ft. (N•m).....			
.....		410	(556)
Cranking Torque at Minimum Unaided Start Temperature— lb-ft. (N•m).....		890	(1207)
Torque Available at Clutch Engagement (800 RPM).....	— lb-ft. (N•m)	1600	
Minimum Recommended Combined Converter and Hydraulic Stall Speed	— RPM	1500	(6700)
Crankshaft Thrust Bearing Load Limit	— Maximum Intermittent — lb (N)	750	(3350)
.....	— Maximum Continuous — lb (N)		
Maximum Allowable Power From Front of Crankshaft.....	— HP (kW)		
Maximum Allowable Power From Accessory Drive.....	— HP (kW)	8	(6)
Estimated Free Field Sound Pressure Level	Right Side —dBa		
At 50ft (15m) and Full Load Governed Speed	Left Side — dBa		
(Excludes Noise From Intake, Exhaust)	Front — dBa		
Cooling System and Driven Components.....	Rear — dBa		
Minimum Ambient Temperature For Unaided Cold Start.....	— ° F (° C)	25	(–4)
Minimum Cranking Speed Required For Unaided Cold Start.....	— RPM	150	

All data are based on: the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler; not included are alternator, compressor, fan, optional equipment and driven components. Data represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 conditions of 20.61 in. Hg (100 kPa) barometric pressure [[300 ft. (90m) altitude], 77° F (25° C) inlet air temperature, and 0.30 in. Hg (1 kPa) water vapor pressure with No. 2 diesel fuel or a fuel corresponding to ASTM D2. All data are subject to change without notice.

	MAXIMUM		CONTINUOUS	
	RATED	PEAK TORQUE	RATED	PEAK TORQUE
Engine Speed	2100	1300	1800	1300
Gross Power Output.....	700 (522)	537 (401)	554 (413)	456 (340)
Torque	1751 (2374)	2014 (2731)	1710 (2319)	1710 (2319)
Nominal Rail Pressure	191 (1317)	122 (841)	129 (889)	97 (669)
Intake Manifold Pressure.....	63 (1600)	48 (1219)	49 (1245)	39 (991)
Brake Mean Effective Pressure.....	230 (1856)	264 (1820)	212 (1462)	224 (1544)
Piston Speed.....	2190 (11.1)	1460 (7.4)	1877 (9.5)	1460 (7.4)
Friction Horsepower	99 (74)	48 (36)	74 (55)	48 (36)
Intake Air Flow	1677 (792)	990 (467)	1249 (590)	890 (420)
Exhaust Gas Flow — Dry Manifold.....	4143 (1955)	2470 (1166)	3104 (1465)	2220 (1048)
Exhaust Gas Temperature — Dry Manifold.....	827 (442)	992 (533)	853 (456)	980 (527)
Heat Rejection to Ambient — Dry Manifold ...	1438 (25.3)	2200 (38.7)	1050 (18.5)	1650 (29.1)
Heat Rejection to Coolant — Dry Manifold.....	16065 (282)	10920 (192)	11715 (206)	9380 (165)
Engine Water Flow	220 (13.9)	137 (8.6)	189 (12)	137 (26.4)