


# TRUCK ENGINE PERFORMANCE DATA [4MG38299]

SEPTEMBER 01, 2018

Performance Number: TM7710

Change Level: 03 

<b>Sales Model:</b> 3406BDITA	<b>Combustion:</b> DI	<b>Aspr:</b> TA
<b>Engine Power:</b> 425 HP	<b>Speed:</b> 2,100 RPM	<b>After Cooler:</b> AA
<b>Manifold Type:</b> DRY	<b>Governor Type:</b> MECHA	<b>After Cooler Temp(F):</b> 115
<b>Turbo Quantity:</b>	<b>Engine App:</b> TR	<b>Turbo Arrangement:</b>
<b>Application Type:</b> ON-HIGHWAY	<b>Engine Rating:</b> TR	<b>Strategy:</b>
<b>Rating Type:</b> HEAVY DUTY	<b>Certification:</b> 1989 EPA/CARB	

## General Performance Data

ENGINE SPEED RPM	ENGINE POWER BHP	ENGINE TORQUE LB.FT	ENGINE BMEP PSI	FUEL BSFC LB/BHP- HR	FUEL RATE GPH	INTAKE MFLD TEMP DEG F	INTAKE MFLD P IN-HG	INTAKE AIR FLOW CFM	EXH MFLD TEMP DEG F	EXH STACK TEMP DEG F	EXH GAS FLOW CFM
2,100	425	1,062.82	179.41	0.34	20.58	113	34.88	1,114.18	980.06	784.04	2,573.03
2,000	431	1,130.68	190.73	0.34	20.55	111.56	36.13	1,084.16	992.12	796.82	2,538.07
1,900	430	1,188.95	200.59	0.33	20.42	110.48	37.22	1,053.08	1,002.92	809.6	2,492.86
1,800	427	1,246.48	210.31	0.33	20.16	109.58	38.11	1,018.83	1,013.9	823.1	2,438.13
1,700	422	1,302.53	219.74	0.33	19.81	108.68	38.65	977.51	1,028.48	840.56	2,373.15
1,600	410	1,346.78	227.28	0.33	19.36	107.06	38.59	925.6	1,048.46	865.22	2,292.98
1,500	396	1,387.35	234.09	0.33	18.78	104.9	37.7	863.09	1,073.3	898.34	2,191.63
1,400	379	1,421.28	239.9	0.33	17.99	102.38	35.8	789.28	1,103.54	941	2,065.91
1,300	357	1,442.67	243.52	0.33	17.04	99.68	32.96	705.94	1,136.66	989.24	1,914.76
1,200	331	1,450.04	244.68	0.34	15.93	96.98	29.7	619.77	1,169.78	1,038.2	1,742.43
1,100	302	1,443.4	243.52	0.34	14.71	94.82	26.42	534.31	1,201.28	1,085.72	1,556.32

## Engine Heat Rejection Data

ENGINE SPEED RPM	ENGINE POWER BHP	REJ TO JW BTU/MN	REJ TO ATMOS BTU/MN	REJ TO EXHAUST BTU/MN	FROM OIL CLR BTU/MN	FROM AFT CLR BTU/MN	WORK ENERGY BTU/MN
2,100	425	7,563.7	3,878.5	14,786.2	2,354.4	3,349.6	18,027.8
2,000	431	7,279.3	3,918.3	14,843.0	2,348.7	3,281.4	18,198.4
1,900	430	7,051.9	3,941.1	14,786.2	2,331.7	3,184.7	18,255.2
1,800	427	6,824.4	3,946.8	14,672.4	2,303.2	3,076.7	18,141.5
1,700	422	6,653.8	3,941.1	14,445.0	2,263.4	2,940.2	17,857.1
1,600	410	6,540.0	3,912.6	14,160.6	2,212.2	2,775.2	17,402.2
1,500	396	6,426.3	3,844.4	13,762.5	2,144.0	2,559.1	16,833.5
1,400	379	6,312.6	3,725.0	13,250.7	2,058.7	2,280.5	16,037.3
1,300	357	6,142.0	3,565.7	12,625.1	1,944.9	1,962.0	15,127.4
1,200	331	5,914.5	3,355.3	11,885.8	1,819.8	1,637.8	14,046.9
1,100	302	5,687.0	3,116.5	11,089.6	1,683.3	1,325.1	12,852.6

**The powers listed above and all the Powers displayed are Corrected Powers**

<b>Identification Reference and Notes</b>			
<b>Engine Arrangement:</b>	7C7170	<b>Lube Oil Press @ Rated Spd(PSI):</b>	64.7
<b>Effective Serial No:</b>	4MG43578	<b>Piston Speed @ Rated Eng SPD (FT/Min):</b>	2,165.4
<b>Primary Engine Test Spec:</b>	0T7799	<b>Max Operating Altitude(FT):</b>	7,381.9
<b>Performance Parm Ref:</b>	TM5740	<b>PEEC Elect Control Module Ref</b>	
<b>Performance Data Ref:</b>	TM7710	<b>PEEC Personality Cont Mod Ref</b>	
<b>Aux Coolant Pump Perf Ref:</b>			
<b>Cooling System Perf Ref:</b>		<b>Turbocharger Model</b>	TV7802-1.58 VTF
<b>Certification Ref:</b>	EPA/CARB	<b>Fuel Injector</b>	7W7026
<b>Certification Year:</b>	1989	<b>Timing-Static (DEG):</b>	18.00
<b>Compression Ratio:</b>	15.2	<b>Timing-Static Advance (DEG):</b>	10.00
<b>Combustion System:</b>	DI	<b>Timing-Static (MM):</b>	--
<b>Aftercooler Temperature (F):</b>	115	<b>Unit Injector Timing (MM):</b>	--
<b>Crankcase Blowby Rate(CFH):</b>	--	<b>Torque Rise (percent)</b>	36.0
<b>Fuel Rate (Rated RPM) No Load (Gal/HR):</b>	--	<b>Peak Torque Speed RPM</b>	1200
<b>Lube Oil Press @ Low Idle Spd(PSI):</b>	33.6	<b>Peak Torque (LB.FT):</b>	1,450.0



**Reference  
Number: TM7710**

THIS ENGINE PERFORMANCE DATA IS TYPICAL OF THE ENGINES APPROVED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) AND THE CALIFORNIA AIR RESOURCES BOARD (CARB) FOR CALENDAR YEAR 1989. THIS ENGINE IS APPROVED FOR USE IN CANADA. THIS DATA MAY CHANGE SUBJECT TO EPA AND CARB APPROVED ENGINEERING CHANGES.

**Parameters  
Reference: TM5740**

**TRUCK - ON HIGHWAY**

**TOLERANCES:**

AMBIENT AIR CONDITIONS AND FUEL USED WILL AFFECT THESE VALUES. EACH OF THE VALUES MAY VARY IN ACCORDANCE WITH THE FOLLOWING TOLERANCES.

Power	+/- 3%
Exhaust stack temperature	+/- 8%
Inlet airflow	+/- 5%
Intake manifold pressure-gage	+/- 10%
Exhaust flow	+/- 6%
Specific fuel consumption	+/- 3%
Fuel rate	+/- 5%
Heat rejection	+/- 5%
Heat rejection exhaust only	+/- 10%

**CONDITIONS:**

ENGINE PERFORMANCE IS CORRECTED TO INLET AIR STANDARD CONDITIONS OF 99 KPA (29.31 IN HG) AND 25 DEG C (77 DEG F).

THESE VALUES CORRESPOND TO STANDARD ATMOSPHERIC PRESSURE AND TEMPERATURE IN ACCORDANCE WITH SAE J1995. ALSO INCLUDED IS A CORRECTION TO STANDARD FUEL GRAVITY OF 35 DEGREES API HAVING A LOWER HEATING VALUE OF 42,780 KJ/KG (18,390 BTU/LB) WHEN USED AT 29 DEG C (84.2 DEG F) WHERE THE DENSITY IS 838.9 G/L (7.002 LB/GAL).

THE CORRECTED PERFORMANCE VALUES SHOWN FOR CATERPILLAR ENGINES WILL APPROXIMATE THE VALUES OBTAINED WHEN THE OBSERVED PERFORMANCE DATA IS CORRECTED TO SAE J1995, ISO 3046-2 & 8665 & 2288 & 9249 & 1585, EEC 80/1269 AND DIN 70020 STANDARD REFERENCE CONDITIONS.

ENGINES ARE EQUIPPED WITH STANDARD ACCESSORIES; LUBE OIL, FUEL PUMP AND JACKET WATER PUMP. THE POWER REQUIRED TO DRIVE AUXILIARIES MUST BE DEDUCTED FROM THE GROSS OUTPUT TO ARRIVE AT THE NET POWER AVAILABLE FOR THE EXTERNAL (FLYWHEEL) LOAD. TYPICAL AUXILIARIES INCLUDE COOLING FANS, AIR COMPRESSORS, AND CHARGING ALTERNATORS.

RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON THE PERFORMANCE DATA SET.

**ALTITUDE:**

ALTITUDE CAPABILITY - THE RECOMMENDED REDUCED POWER VALUES FOR SUSTAINED ENGINE OPERATION AT SPECIFIC ALTITUDE LEVELS AND AMBIENT TEMPERATURES.

COLUMN "N" DATA - THE FLYWHEEL POWER OUTPUT AT NORMAL AMBIENT TEMPERATURE.

AMBIENT TEMPERATURE - TO BE MEASURED AT THE AIR CLEANER AIR INLET DURING NORMAL ENGINE OPERATION.

NORMAL TEMPERATURE - THE NORMAL TEMPERATURE AT VARIOUS SPECIFIC ALTITUDE LEVELS IS FOUND ON TM2001.

RATINGS MUST BE REDUCED TO COMPENSATE FOR ALTITUDE AND/OR AMBIENT TEMPERATURE CONDITIONS ACCORDING TO THE APPLICABLE DATA SHOWN ON THE PERFORMANCE DATA SET.

**DEFINITIONS:**

MEDIUM DUTY - OUTPUT THAT SHOULD BE UTILIZED IN TRUCK TYPE VEHICLES PERFORMING SHORT HAUL PICK-UP AND DELIVERY OR OTHER URBAN TYPE SERVICES.

HEAVY-DUTY - OUTPUT THAT SHOULD BE UTILIZED IN TRUCK TYPE VEHICLES PERFORMING INTERCITY AND LONG HAUL SERVICES.

**SOUND DEFINITIONS:**

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Date Released : 10/04/11

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