

Perf No: EM2283

Change Level: 00

General

Heat Rejection

Sound

Emissions

Regulatory

Cross Reference

Supplementary Data

Perf Param Ref

View PDF

SALES MODEL:	C32	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		PEAK TORQUE SPEED (RPM):	1,300
ENGINE POWER (BKW):	492.0	TORQUE RISE (%):	27
PEAK TORQUE (NM):	3,321.0	ASPIRATION:	TA
COMPRESSION RATIO:	16.5	AFTERCOOLER TYPE:	SCAC
RATING LEVEL:	A RATING (UNRESTRICTED CONTINUOUS)	AFTERCOOLER CIRCUIT TYPE:	JW+OC, AC
PUMP QUANTITY:	1	AFTERCOOLER TEMP (C):	52
FUEL TYPE:	DIESEL	JACKET WATER TEMP (C):	85
MANIFOLD TYPE:	WET	TURBO CONFIGURATION:	PARALLEL
ELECTRONICS TYPE:	ADEM4	TURBO QUANTITY:	2
IGNITION TYPE:	CI	TURBOCHARGER MODEL:	S410W021-1.04
INJECTOR TYPE:	EUI	CERTIFICATION YEAR:	2007
REF EXH STACK DIAMETER (MM):	254	PISTON SPD @ RATED ENG SPD (M/SEC):	9.7
MAX OPERATING ALTITUDE (M):	300		

INDUSTRY	SUB INDUSTRY	APPLICATION
MARINE	DREDGE	MARINE PROPULSION
MARINE	FERRY	MARINE PROPULSION
MARINE	OFFSHORE	MARINE PROPULSION
MARINE	GENERAL CARGO	MARINE PROPULSION
MARINE	TUG & SALVAGE	MARINE PROPULSION
MARINE	FISHING	MARINE PROPULSION
MARINE	INLAND WATERWAY	MARINE PROPULSION

General Performance Data [Top](#)

MAXIMUM LIMIT								
ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)			
RPM	BKW	NM	KPA	G/BKW-HR	L/HR			
1,800	492	2,610	1,022	208.4	120.7			
1,700	492	2,764	1,082	206.9	119.7			
1,600	492	2,936	1,149	206.5	119.5			
1,500	492	3,132	1,226	206.4	119.5			
1,400	475	3,240	1,268	209.1	116.8			
1,300	450	3,306	1,294	214.3	113.4			
1,200	382	3,040	1,190	215.0	96.6			
1,100	320	2,778	1,087	212.0	79.8			
1,000	315	3,008	1,178	206.6	76.6			
900	245	2,600	1,018	204.6	59.0			
800	228	2,722	1,065	204.3	54.8			
700	185	2,524	988	204.9	44.6			
600	140	2,228	872	206.6	34.0			

MAXIMUM LIMIT								
ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
1,800	492	108.8	57.9	413.7	107.7	290.9	111	121.0

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
1,700	492	106.5	57.8	428.4	99.5	307.3	109	119.1
1,600	492	104.9	57.3	445.7	92.5	322.8	107	116.7
1,500	492	102.8	55.7	467.2	86.2	339.3	106	114.8
1,400	475	99.2	56.8	488.6	77.3	360.5	102	112.4
1,300	450	94.9	56.6	518.0	68.9	387.0	97	110.2
1,200	382	73.1	55.3	504.3	50.8	389.8	75	94.2
1,100	320	52.2	53.6	482.0	35.4	377.7	54	77.4
1,000	315	43.4	53.2	498.1	27.3	389.4	44	70.5
900	245	28.7	50.1	451.1	17.9	351.8	29	56.7
800	228	24.5	47.1	455.0	14.2	348.6	25	52.9
700	185	18.7	43.6	419.9	10.9	318.6	19	47.0
600	140	14.2	40.8	368.2	9.0	282.3	15	43.6

MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
1,800	492	51.0	98.8	3,537.8	3,640.4	47.8	44.4
1,700	492	48.0	95.6	3,319.6	3,421.6	45.0	41.6
1,600	492	45.4	92.5	3,124.6	3,226.2	42.4	39.1
1,500	492	42.8	89.6	2,934.2	3,035.7	39.9	36.7
1,400	475	39.5	85.3	2,698.3	2,797.6	36.8	33.6
1,300	450	36.1	81.1	2,457.3	2,553.8	33.6	30.5
1,200	382	29.9	67.4	2,024.1	2,106.1	27.8	25.2
1,100	320	24.3	53.6	1,633.6	1,701.4	22.5	20.4
1,000	315	20.7	46.3	1,385.9	1,451.0	19.1	17.1
900	245	16.7	35.2	1,114.9	1,165.1	15.4	13.9
800	228	14.4	30.2	953.3	999.9	13.3	11.9
700	185	12.1	24.2	804.2	842.1	11.2	10.0
600	140	10.3	19.1	685.5	714.4	9.4	8.5

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)
RPM	BKW	NM	KPA	G/BKW-HR	L/HR
1,800	492	2,610	1,022	208.4	120.7
1,700	414	2,328	911	210.7	102.8
1,600	346	2,062	807	211.9	86.2
1,500	285	1,813	710	212.9	71.3
1,400	231	1,579	618	215.8	58.8
1,300	185	1,361	533	223.7	48.8
1,200	146	1,160	454	226.5	38.9
1,100	112	975	382	227.2	30.0
1,000	84.4	806	315	230.5	22.9
900	61.5	653	255	239.4	17.3
800	43.2	516	202	253.8	12.9
700	28.9	395	155	276.9	9.4
600	18.2	290	114	316.6	6.8

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
1,800	492	108.8	57.9	413.7	107.7	290.9	111	121.0
1,700	414	88.9	56.9	400.9	84.8	291.8	92	106.2
1,600	346	69.2	55.8	387.0	64.5	290.2	72	91.4
1,500	285	52.7	54.6	369.4	48.6	284.0	55	77.3
1,400	231	39.2	53.5	349.0	36.9	271.4	41	65.7
1,300	185	30.0	52.0	328.6	28.5	261.4	31	56.9
1,200	146	21.3	49.9	293.4	21.5	237.9	23	48.8
1,100	112	14.4	47.8	258.3	15.7	212.6	15	42.4

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
1,000	84.4	9.4	46.0	224.4	11.1	187.1	10	37.7
900	61.5	6.2	43.8	193.7	8.1	163.8	7	34.4
800	43.2	3.9	41.6	166.2	6.0	142.9	5	32.0
700	28.9	2.3	39.5	142.6	4.4	124.7	3	30.3
600	18.2	1.3	37.4	123.3	3.4	109.5	2	29.2

PROP DEMAND CURVE P

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
1,800	492	51.0	98.8	3,537.8	3,640.4	47.8	44.4
1,700	414	44.6	85.6	3,061.5	3,148.9	41.4	38.5
1,600	346	38.2	72.6	2,604.9	2,678.2	35.2	32.7
1,500	285	32.6	60.7	2,207.4	2,268.0	29.8	27.7
1,400	231	28.0	50.8	1,887.0	1,937.0	25.5	23.8
1,300	185	24.5	43.5	1,645.2	1,686.6	22.2	20.8
1,200	146	21.3	36.2	1,425.9	1,458.9	19.4	18.2
1,100	112	18.5	29.7	1,235.8	1,261.2	16.7	15.7
1,000	84.4	16.1	24.2	1,074.9	1,094.3	14.4	13.6
900	61.5	14.2	20.2	944.4	959.1	12.6	12.0
800	43.2	12.4	16.8	829.2	840.1	11.0	10.6
700	28.9	10.9	14.0	723.0	731.0	9.6	9.2
600	18.2	9.3	11.6	622.1	627.9	8.3	8.0

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	ENGINE TORQUE	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)
RPM	BKW	NM	KPA	G/BKW-HR	L/HR
1,800	492	2,610	1,022	208.4	120.7
1,700	492	2,764	1,082	206.9	119.7
1,600	492	2,936	1,149	206.5	119.5
1,500	492	3,132	1,226	206.4	119.5
1,400	475	3,240	1,268	209.1	116.8
1,300	450	3,306	1,294	214.3	113.4
1,200	382	3,040	1,190	215.0	96.6
1,100	320	2,778	1,087	212.0	79.8
1,000	315	3,008	1,178	206.6	76.6
900	245	2,600	1,018	204.6	59.0
800	228	2,722	1,065	204.3	54.8
700	185	2,524	988	204.9	44.6
600	140	2,228	872	206.6	34.0

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
RPM	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
1,800	492	108.8	57.9	413.7	107.7	290.9	111	121.0
1,700	492	106.5	57.8	428.4	99.5	307.3	109	119.1
1,600	492	104.9	57.3	445.7	92.5	322.8	107	116.7
1,500	492	102.8	55.7	467.2	86.2	339.3	106	114.8
1,400	475	99.2	56.8	488.6	77.3	360.5	102	112.4
1,300	450	94.9	56.6	518.0	68.9	387.0	97	110.2
1,200	382	73.1	55.3	504.3	50.8	389.8	75	94.2
1,100	320	52.2	53.6	482.0	35.4	377.7	54	77.4
1,000	315	43.4	53.2	498.1	27.3	389.4	44	70.5
900	245	28.7	50.1	451.1	17.9	351.8	29	56.7
800	228	24.5	47.1	455.0	14.2	348.6	25	52.9
700	185	18.7	43.6	419.9	10.9	318.6	19	47.0
600	140	14.2	40.8	368.2	9.0	282.3	15	43.6

MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	ENGINE OUTLET WET EXH VOL FLOW RATE (0 DEG C AND 101 KPA)	ENGINE OUTLET DRY EXH VOL FLOW RATE (0 DEG C AND 101 KPA)
RPM	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
1,800	492	51.0	98.8	3,537.8	3,640.4	47.8	44.4
1,700	492	48.0	95.6	3,319.6	3,421.6	45.0	41.6
1,600	492	45.4	92.5	3,124.6	3,226.2	42.4	39.1
1,500	492	42.8	89.6	2,934.2	3,035.7	39.9	36.7
1,400	475	39.5	85.3	2,698.3	2,797.6	36.8	33.6
1,300	450	36.1	81.1	2,457.3	2,553.8	33.6	30.5
1,200	382	29.9	67.4	2,024.1	2,106.1	27.8	25.2
1,100	320	24.3	53.6	1,633.6	1,701.4	22.5	20.4
1,000	315	20.7	46.3	1,385.9	1,451.0	19.1	17.1
900	245	16.7	35.2	1,114.9	1,165.1	15.4	13.9
800	228	14.4	30.2	953.3	999.9	13.3	11.9
700	185	12.1	24.2	804.2	842.1	11.2	10.0
600	140	10.3	19.1	685.5	714.4	9.4	8.5

Heat Rejection Data [Top](#)

MAXIMUM LIMIT

ENGINE SPEED	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXH RECOVERY TO 177C	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
RPM	BKW	KW	KW	KW	KW	KW	KW	KW	KW	KW
1,800	492	325	23.0	396	119	64.9	62.4	492	1,219	1,298
1,700	492	324	23.0	392	129	64.4	56.9	492	1,210	1,289
1,600	492	326	23.0	393	136	64.3	51.9	492	1,207	1,286
1,500	492	328	23.0	394	143	64.3	48.4	492	1,207	1,286
1,400	475	327	23.0	390	150	62.9	41.9	475	1,180	1,257
1,300	450	325	23.0	386	157	61.0	36.9	450	1,146	1,221
1,200	382	288	23.0	325	132	52.0	22.0	382	976	1,039
1,100	320	247	23.0	258	100	42.9	10.9	320	806	859
1,000	315	248	23.0	231	91.2	41.2	6.7	315	773	824
900	245	191	23.0	173	59.9	31.7	2.1	245	596	635
800	228	174	23.0	163	50.6	29.5	1.5	228	554	590
700	185	138	23.0	133	35.0	24.0	0.8	185	450	480
600	140	107	23.0	95.7	21.9	18.3	0.5	140	344	366

Sound Data [Top](#)

EXHAUST:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

Engine Speed		Engine Power	Overall Sound	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz
RPM	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1,800	492	123.5	103.9	105.5	105.1	105.1	101.5	95.1	103.6	110.6	105.7	108.0	
1,700	492	123.4	100.2	109.5	104.6	106.7	101.3	96.7	103.7	110.8	105.9	107.4	
1,600	492	123.5	99.8	108.3	107.7	106.4	99.8	96.7	102.9	110.8	106.5	107.7	
1,500	492	123.7	103.3	105.2	106.5	105.5	102.8	97.0	102.4	111.0	107.3	107.5	
1,400	475	123.7	108.4	102.3	104.8	104.8	106.6	96.7	101.9	111.2	107.6	106.8	
1,300	450	123.5	109.5	99.7	102.7	106.2	107.4	96.1	100.9	111.2	108.1	106.0	
1,200	382	122.6	110.5	97.6	100.1	107.7	105.1	94.1	100.3	110.6	108.2	104.8	
1,100	320	121.7	111.8	97.1	98.9	106.4	101.1	92.0	99.6	109.8	107.8	104.1	
1,000	315	121.5	112.5	98.3	98.5	100.6	98.4	90.9	98.4	109.7	108.4	103.8	
900	245	119.9	111.1	98.2	99.0	94.2	90.5	87.1	96.7	109.0	106.7	103.5	

EXHAUST:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

[illegible]

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
1,800	492	109.7	109.8	113.0	116.0	113.5	114.6	111.9	110.5	110.2	107.8	107.2
1,700	492	108.9	109.0	112.7	115.9	113.1	114.6	111.9	110.2	110.0	107.9	106.3
1,600	492	108.9	108.8	113.1	114.6	114.0	115.3	112.1	110.0	110.3	107.8	105.8
1,500	492	108.9	108.5	113.2	115.3	114.1	115.3	112.8	110.3	110.5	108.2	105.8
1,400	475	108.7	108.1	112.7	116.1	113.6	115.2	113.1	110.4	110.4	108.3	105.7
1,300	450	109.0	107.5	111.9	116.1	113.3	114.9	113.0	110.3	109.9	108.5	104.7
1,200	382	108.7	106.2	110.7	115.3	111.9	114.2	111.7	109.1	108.4	107.8	101.9
1,100	320	108.2	105.2	109.7	114.2	110.4	113.2	110.2	107.4	107.4	106.2	99.6
1,000	315	108.9	105.0	109.4	113.8	110.1	112.9	110.4	107.4	107.9	106.3	100.6
900	245	108.1	104.0	108.2	112.5	108.3	111.3	107.9	104.9	107.1	102.9	98.5

MECHANICAL:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
RPM	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1,800	492	119.2	81.9	91.6	93.6	97.7	92.7	94.5	99.8	103.3	104.6	106.0
1,700	492	119.7	75.8	88.2	94.4	91.0	91.8	95.1	100.6	103.2	104.1	105.5
1,600	492	118.8	77.2	88.5	90.8	91.4	93.9	94.2	101.4	103.2	104.2	104.8
1,500	492	118.4	78.0	86.0	88.8	90.1	92.5	92.4	100.2	102.5	103.4	105.0
1,400	475	117.8	78.3	83.3	86.9	88.3	89.8	90.5	98.5	101.7	102.7	105.6
1,300	450	117.4	78.1	79.7	85.2	87.6	88.8	89.5	97.7	101.3	102.1	105.1
1,200	382	115.9	78.1	76.3	82.4	86.0	86.7	88.4	96.4	100.4	101.0	103.8
1,100	320	114.4	78.1	75.6	81.0	84.5	84.8	87.4	95.6	99.4	100.4	102.8
1,000	315	114.0	77.9	77.3	82.4	84.4	84.8	87.1	96.2	99.3	100.8	102.2
900	245	112.7	73.3	78.5	81.9	81.7	83.7	85.9	94.4	97.7	100.0	100.5

MECHANICAL:SOUND POWER(1/3 Octave Frequencies) MAXIMUM POWER CURVE M

ENGINE SPEED	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
RPM	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
1,800	492	109.0	109.1	108.0	107.1	105.9	104.6	102.7	100.9	103.6	114.5	106.2
1,700	492	107.7	108.1	107.7	106.8	105.7	104.4	102.8	100.8	105.6	115.7	103.2
1,600	492	108.7	109.8	108.0	107.5	105.6	104.5	103.6	102.4	105.8	112.7	102.0
1,500	492	108.2	108.5	107.8	107.0	105.5	104.4	103.4	101.7	104.8	111.8	100.7
1,400	475	106.6	107.5	107.1	106.3	105.0	103.9	102.8	100.8	105.3	111.1	99.3
1,300	450	106.5	106.5	106.9	106.5	104.3	103.6	102.3	100.9	108.5	107.8	97.5
1,200	382	106.7	105.2	106.6	106.1	103.1	103.1	101.1	101.7	109.0	99.7	95.1
1,100	320	105.5	104.7	105.9	105.3	102.1	102.3	100.6	102.6	102.6	94.7	93.2
1,000	315	104.9	104.9	105.8	104.7	102.1	102.1	101.2	104.0	98.7	94.2	93.0
900	245	103.6	104.6	105.1	103.7	101.4	101.4	102.1	100.9	90.3	92.6	89.3

Emissions Data [Top](#)

Units Filter

All Units

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

ENGINE POWER	BKW	492	369	246	123	49.2
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	3,422	2,019	1,855	1,195	699
TOTAL CO	G/HR	180	205	211	226	256
TOTAL HC	G/HR	54	45	45	47	58
TOTAL CO2	KG/HR	319	251	173	106	68
PART MATTER	G/HR	53.3	50.9	34.4	29.6	28.3
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	2,362.4	1,732.0	2,304.2	2,327.3	2,007.9
TOTAL CO	(CORR 5% O2) MG/NM3	123.5	176.4	259.8	437.4	730.6
TOTAL HC	(CORR 5% O2) MG/NM3	32.2	33.3	47.7	79.0	142.9
PART MATTER	(CORR 5% O2) MG/NM3	31.6	38.2	37.7	52.2	74.9
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,151	844	1,122	1,134	978
TOTAL CO	(CORR 5% O2) PPM	99	141	208	350	584
TOTAL HC	(CORR 5% O2) PPM	60	62	89	147	267
TOTAL NOX (AS NO2)	G/HP-HR	5.22	4.11	5.65	7.27	10.63
TOTAL CO	G/HP-HR	0.27	0.42	0.64	1.37	3.90
TOTAL HC	G/HP-HR	0.08	0.09	0.14	0.29	0.88
PART MATTER	G/HP-HR	0.08	0.10	0.10	0.18	0.43
TOTAL NOX (AS NO2)	LB/HR	7.54	4.45	4.09	2.63	1.54
TOTAL CO	LB/HR	0.40	0.45	0.47	0.50	0.57

ENGINE POWER	BKW	492	369	246	123	49.2
PERCENT LOAD	%	100	75	50	25	10
TOTAL HC	LB/HR	0.12	0.10	0.10	0.10	0.13
TOTAL CO2	LB/HR	703	553	382	234	149
PART MATTER	LB/HR	0.12	0.11	0.08	0.07	0.06
OXYGEN IN EXH	%	12.1	13.1	14.4	16.1	17.4
DRY SMOKE OPACITY	%	1.3	2.3	2.6	2.1	2.1
BOSCH SMOKE NUMBER		0.45	0.81	0.93	0.71	0.69

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

ENGINE POWER	BKW	492	369	246	123	49.2
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	4,140	2,442	2,245	1,446	846
TOTAL CO	G/HR	336	383	395	422	479
TOTAL HC	G/HR	102	85	85	89	109
PART MATTER	G/HR	103.9	99.3	67.2	57.7	55.2
TOTAL NOX (AS NO2)	(CORR 5% O2) MG/NM3	2,858.5	2,095.7	2,788.1	2,816.0	2,429.5
TOTAL CO	(CORR 5% O2) MG/NM3	230.9	329.9	485.8	817.9	1,366.3
TOTAL HC	(CORR 5% O2) MG/NM3	60.8	63.0	90.1	149.3	270.0
PART MATTER	(CORR 5% O2) MG/NM3	61.6	74.4	73.5	101.8	146.1
TOTAL NOX (AS NO2)	(CORR 5% O2) PPM	1,392	1,021	1,358	1,372	1,183
TOTAL CO	(CORR 5% O2) PPM	185	264	389	654	1,093
TOTAL HC	(CORR 5% O2) PPM	113	118	168	279	504
TOTAL NOX (AS NO2)	G/HP-HR	6.32	4.97	6.83	8.79	12.86
TOTAL CO	G/HP-HR	0.51	0.78	1.20	2.57	7.29
TOTAL HC	G/HP-HR	0.16	0.17	0.26	0.54	1.66
PART MATTER	G/HP-HR	0.16	0.20	0.20	0.35	0.84
TOTAL NOX (AS NO2)	LB/HR	9.13	5.38	4.95	3.19	1.86
TOTAL CO	LB/HR	0.74	0.85	0.87	0.93	1.06
TOTAL HC	LB/HR	0.23	0.19	0.19	0.20	0.24
PART MATTER	LB/HR	0.23	0.22	0.15	0.13	0.12

Regulatory Information [Top](#)

EU STAGE IIIA		2009 - 2019		CYCLE : E2,E3	
GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 97/68/EC (AS AMENDED BY EU 2004/26/EC) AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSIONS VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.					
Locality EUROPE	Agency EU	Regulation MARINE COMMERCIAL	Tier/Stage STAGE IIIA	Max Limits - G/BKW - HR CO: 5.0 NOx + HC: 7.2 PM: 0.20	

IMO II		2011 - ----		CYCLE : E2,E3	
GASEOUS EMISSIONS DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN REGULATION 13 OF REVISED ANNEX VI OF MARPOL 73/78 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO INTERNATIONAL MARINE ORGANIZATION'S (IMO) MARINE COMPRESSION-IGNITION EMISSION REGULATIONS.					

Cross Reference [Top](#)

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
OK4285	GG0631	5069200	EE507	-	ZP200001	

Supplementary Data [Top](#)

Type	Classification	Performance Number
SECONDARY RATED SPEED	1600 RPM	EM0704
CHART	BSFC CONTOUR PLOT	EM1019
CHART	AMBIENT CAPABILTY CHART	EM1170

Performance Parameter Reference [Top](#)

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Specific fuel consumption (C7-C18) +/- 4% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10% Heat Rejection values based on using treated water.

Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.

On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.

On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed.

These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal).

GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU FT) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD

Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set. Standard temperature values versus altitude could be seen on TM2001. When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet. Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001. Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.

Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS: Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

WET & DRY EXHAUST/EMISSIONS DESCRIPTION: Wet - Total exhaust flow or concentration of total exhaust flow Dry - Total exhaust flow minus water vapor or concentration of exhaust flow with water vapor excluded

EMISSIONS DEFINITIONS: Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS: Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS: 3500: EM1500

RATING DEFINITIONS: Agriculture : TM6008

Fire Pump : TM6009

Generator Set : TM6035

Generator (Gas) : TM6041

Industrial Diesel : TM6010

Industrial (Gas) : TM6040

Irrigation : TM5749

Locomotive : TM6037

Marine Auxiliary : TM6036

Marine Prop (Except 3600) : TM5747

Marine Prop (3600 only) : TM5748

MSHA : TM6042

Oil Field (Petroleum) : TM6011

Off-Highway Truck : TM6039

On-Highway Truck : TM6038

SOUND DEFINITIONS: Sound Power : DM8702

Sound Pressure : TM7080

Date Released : 03/12/24

Caterpillar Confidential: **Green**

Content Owner: Commercial Processes Division

Web Master(s): [PSG Web Based Systems Support](#)

Current Date: 4-6-2025, 11:06:10

© Caterpillar Inc. 2025 All Rights Reserved.

[Data Privacy Statement](#).

[Cookie-instellingen](#)