PERFORMANCE DATA[EM0128]

October 17, 2024

Performance Number: EM0128 **Change Level: 04**

SALES MODEL:	C18	**COMBUSTION:**	DIRECT INJECTION
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
MACHINE SALES MODEL:		**HERTZ:**	60
ENGINE POWER (BKW):	599.0	**ASPIRATION:**	TA
GEN POWER W/O FAN (EKW):	550.0	**AFTERCOOLER TYPE:**	SCAC
COMPRESSION RATIO:	16.5	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, AC
RATING LEVEL:	PRIME	**AFTERCOOLER TEMP (C):**	52
PUMP QUANTITY:	1	**JACKET WATER TEMP (C):**	85
FUEL TYPE:	DIESEL	**TURBO CONFIGURATION:**	SINGLE
MANIFOLD TYPE:	WATER COOLED	**TURBO QUANTITY:**	1
GOVERNOR TYPE:	ELEC	**TURBOCHARGER MODEL:**	S510W IIONJ2 120H/70AA 1.15VOW
ELECTRONICS TYPE:	ADEM4	**CERTIFICATION YEAR:**	2013
CAMSHAFT TYPE:	STANDARD	**PISTON SPD @ RATED ENG SPD (M/SEC):**	11.0
IGNITION TYPE:	CI		
INJECTOR TYPE:	EUI		
REF EXH STACK DIAMETER (MM):	203		
MAX OPERATING ALTITUDE (M):	300		

INDUSTRY	SUBINDUSTRY	APPLICATION
MARINE	INLAND WATERWAY	MARINE AUXILIARY
MARINE	FERRY	MARINE AUXILIARY
MARINE	DREDGE	MARINE AUXILIARY
MARINE	PLEASURE CRAFT	MARINE AUXILIARY
MARINE	FISHING	MARINE AUXILIARY
MARINE	OFFSHORE	MARINE AUXILIARY
MARINE	GOVERNMENT	MARINE AUXILIARY
MARINE	TUG & SALVAGE	MARINE AUXILIARY

General Performance Data

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)
EKW	%	BKW	KPA	G/BKW-HR	G/BKW-HR	L/HR	L/HR
605.0	110	659	2,423	215.1	211.0	166.8	163.6
550.0	100	599	2,203	214.0	209.9	150.8	148.0
495.0	90	539	1,983	211.2	207.2	134.0	131.4
440.0	80	479	1,762	210.5	206.5	118.7	116.5
412.5	75	449	1,652	212.4	208.4	112.3	110.1
385.0	70	419	1,542	214.5	210.4	105.8	103.8
330.0	60	359	1,322	219.4	215.2	92.8	91.0
275.0	50	300	1,101	226.0	221.7	79.6	78.1
220.0	40	240	881	235.3	230.8	66.3	65.1
165.0	30	180	661	249.8	245.0	52.8	51.8
137.5	25	150	551	260.1	255.2	45.8	45.0
110.0	20	120	441	274.0	268.8	38.6	37.9
55.0	10	59.9	220	337.6	331.1	23.8	23.3

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BKW	KPA	DEG C	DEG C	KPA	DEG C	KPA	DEG C
605.0	110	659	273.6	64.6	668.8	262.0	447.3	285	227.5
550.0	100	599	254.2	62.7	635.1	239.9	425.7	265	214.2
495.0	90	539	227.6	60.6	602.1	210.6	407.0	238	197.5
440.0	80	479	200.4	58.7	573.2	183.0	393.2	210	180.9
412.5	75	449	188.8	58.1	562.9	172.2	388.8	198	174.0
385.0	70	419	177.5	57.5	553.6	161.4	385.2	186	167.2
330.0	60	359	155.1	56.2	535.8	139.5	378.6	163	153.3
275.0	50	300	129.8	54.7	514.7	116.6	369.7	137	136.5
220.0	40	240	102.1	52.4	486.4	93.4	355.9	109	117.4
165.0	30	180	74.5	49.4	451.5	71.4	337.3	80	97.4
137.5	25	150	61.4	47.3	425.7	61.3	321.3	67	87.3
110.0	20	120	48.8	44.5	390.9	51.9	298.0	54	77.1
55.0	10	59.9	24.5	37.7	306.3	34.5	239.4	29	56.4

General Performance Data (Continued)

PERFORMANCE DATA[EM0128]

October 17, 2024

GENSET POWER WITHOUT FAN	PERCENT LOAD	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)
EKW	%	BKW	M3/MIN	M3/MIN	KG/HR	KG/HR	M3/MIN	M3/MIN
605.0	110	659	48.3	120.5	3,336.4	3,478.1	45.7	41.4
550.0	100	599	46.4	111.8	3,198.1	3,326.3	43.7	39.8
495.0	90	539	43.5	101.5	2,985.3	3,099.2	40.7	37.2
440.0	80	479	40.3	91.6	2,758.2	2,858.6	37.5	34.4
412.5	75	449	39.0	87.6	2,659.9	2,754.6	36.1	33.2
385.0	70	419	37.6	83.8	2,562.6	2,651.7	34.8	32.0
330.0	60	359	34.8	76.5	2,365.4	2,443.9	32.1	29.6
275.0	50	300	31.6	68.3	2,138.8	2,206.6	29.0	26.8
220.0	40	240	28.0	59.1	1,888.3	1,944.9	25.7	23.8
165.0	30	180	24.3	49.6	1,639.4	1,684.4	22.2	20.7
137.5	25	150	22.6	44.7	1,521.9	1,560.9	20.6	19.2
110.0	20	120	21.0	39.8	1,409.8	1,442.6	19.1	17.9
55.0	10	59.9	17.8	29.9	1,194.5	1,214.7	15.9	15.1

Heat Rejection Data

GENSET POWER WITHOUT FAN	PERCENT LOAD	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
EKW	%	BKW	KW	KW	KW	KW	KW	KW	KW	KW	KW
605.0	110	659	386	34.1	560	279	89.7	161	659	1,685	1,795
550.0	100	599	349	30.9	504	244	81.2	142	599	1,524	1,623
495.0	90	539	312	28.1	445	210	72.1	120	539	1,354	1,442
440.0	80	479	278	25.8	393	181	63.6	98.6	479	1,195	1,273
412.5	75	449	265	24.8	373	171	60.0	90.4	449	1,127	1,201
385.0	70	419	253	23.8	355	161	56.6	82.6	419	1,063	1,132
330.0	60	359	229	22.2	320	144	49.8	67.7	359	936	997
275.0	50	300	198	20.8	284	124	42.6	50.9	300	800	852
220.0	40	240	172	18.9	242	101	35.4	35.1	240	664	707
165.0	30	180	155	16.6	194	77.9	28.4	22.7	180	533	567
137.5	25	150	143	15.4	169	64.7	24.7	17.6	150	464	494
110.0	20	120	127	14.3	143	49.9	20.9	13.2	120	391	417
55.0	10	59.9	87.5	12.1	90.2	21.4	12.8	6.5	59.9	240	256

Sound Data

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
605.0	110	659	128.1	108.8	107.8	104.8	111.7	114.2	112.2	112.1	112.5	113.3	115.3
550.0	100	599	127.4	108.6	108.5	103.9	110.8	113.7	111.5	111.6	111.7	112.6	114.6
495.0	90	539	126.7	108.1	109.6	102.8	110.2	113.9	111.6	111.3	111.7	112.7	113.9
440.0	80	479	125.8	106.9	110.2	102.1	109.9	113.6	110.4	110.9	110.7	112.1	113.4
412.5	75	449	125.6	107.3	109.9	102.1	110.1	114.0	110.5	110.9	110.9	112.2	113.3
385.0	70	419	125.3	107.4	109.8	101.9	109.9	113.8	110.2	110.7	110.7	112.2	113.1
330.0	60	359	124.5	106.7	108.8	101.0	107.8	112.2	108.1	109.3	110.0	111.8	112.9
275.0	50	300	123.9	106.3	108.7	100.9	107.6	111.8	108.0	109.6	110.0	111.6	112.5
220.0	40	240	123.2	105.9	109.5	101.6	107.5	112.0	108.4	109.6	110.1	111.4	111.7
165.0	30	180	121.0	103.7	109.6	101.6	106.2	109.9	105.7	107.4	108.5	109.1	110.1
137.5	25	150	119.1	101.2	106.0	98.6	103.8	105.2	106.3	105.1	106.6	107.6	108.6
110.0	20	120	117.7	99.8	101.9	100.2	101.2	103.7	103.5	104.1	105.0	107.0	108.0
55.0	10	59.9	115.0	95.3	99.1	99.4	96.5	99.7	101.1	104.0	104.4	104.9	106.4

PERFORMANCE DATA[EM0128]

October 17, 2024

EXHAUST:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
605.0	110	659	116.5	119.0	119.7	119.9	119.0	117.9	113.9	108.3	101.7	93.9	86.9
550.0	100	599	116.0	118.3	119.2	119.2	117.9	116.8	113.0	107.5	100.9	92.2	84.9
495.0	90	539	115.7	117.5	118.4	118.3	116.9	115.5	111.4	105.9	99.5	90.2	82.7
440.0	80	479	115.0	116.5	117.7	116.9	115.8	114.0	109.6	104.1	97.2	87.3	79.7
412.5	75	449	114.7	116.1	117.2	116.5	115.3	113.7	109.3	103.8	96.7	86.8	79.1
385.0	70	419	114.5	115.7	116.8	116.1	114.8	113.3	108.7	103.2	96.0	85.9	77.9
330.0	60	359	114.1	115.2	116.4	115.6	114.0	112.5	107.6	102.1	94.6	84.5	75.9
275.0	50	300	113.4	114.4	115.6	114.6	113.0	111.2	106.0	100.6	92.7	82.6	73.3
220.0	40	240	112.6	113.1	114.4	113.5	111.7	109.5	104.3	98.4	90.3	79.7	70.3
165.0	30	180	110.5	111.2	111.9	110.6	108.4	106.1	100.4	93.8	85.1	73.2	65.1
137.5	25	150	109.4	110.3	110.3	108.1	106.2	104.2	97.6	90.9	81.7	69.7	63.0
110.0	20	120	108.6	109.2	108.6	106.3	104.7	101.9	95.1	88.6	79.6	67.4	61.5
55.0	10	59.9	106.2	105.3	104.0	103.0	101.5	97.1	90.8	85.3	78.6	65.8	63.3

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	OVERALL SOUND	100 HZ	125 HZ	160 HZ	200 HZ	250 HZ	315 HZ	400 HZ	500 HZ	630 HZ	800 HZ
EKW	%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
605.0	110	659	124.3	76.8	83.2	88.4	94.9	94.3	97.8	104.8	109.5	106.5	108.6
550.0	100	599	123.6	76.1	82.0	87.3	92.8	93.6	96.7	104.0	108.7	107.0	108.8
495.0	90	539	122.2	74.9	81.0	88.9	92.9	93.8	96.2	102.8	107.7	106.0	108.1
440.0	80	479	120.3	70.2	83.2	88.8	92.6	93.4	95.9	101.9	107.1	106.1	107.0
412.5	75	449	119.5	69.7	83.5	88.8	93.0	93.4	95.8	101.3	106.8	104.4	106.3
385.0	70	419	119.2	71.7	83.4	88.1	93.2	92.7	94.3	100.8	106.0	103.4	105.3
330.0	60	359	119.1	71.1	82.6	87.2	92.4	92.8	93.9	100.5	104.0	103.0	105.4
275.0	50	300	119.7	71.2	82.0	86.7	92.0	92.3	93.8	99.7	103.0	103.0	106.1
220.0	40	240	116.9	71.2	82.0	85.5	90.9	90.9	93.5	98.9	101.5	102.4	105.3
165.0	30	180	115.1	70.5	83.6	83.5	89.4	88.9	92.9	98.4	101.7	100.8	104.8
137.5	25	150	114.4	70.0	82.7	82.6	87.9	87.1	93.3	98.0	100.3	101.2	104.2
110.0	20	120	113.4	70.5	81.9	81.8	87.3	87.1	94.2	96.5	99.6	100.6	102.9
55.0	10	59.9	112.5	70.5	81.7	80.6	86.7	87.4	92.1	95.8	97.9	101.4	104.6

MECHANICAL:SOUND POWER(1/3 Octave Frequencies)

GENSET POWER WITHOUT FAN	PERCENT LOAD	ENGINE POWER	1000 HZ	1250 HZ	1600 HZ	2000 HZ	2500 HZ	3150 HZ	4000 HZ	5000 HZ	6300 HZ	8000 HZ	10000 HZ
EKW	%	BKW	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)	dB(A)
605.0	110	659	109.3	109.7	110.3	109.7	110.8	108.5	108.3	109.2	103.0	102.4	122.3
550.0	100	599	109.2	108.6	109.4	109.1	111.5	107.8	107.1	106.6	101.9	102.6	121.5
495.0	90	539	108.8	108.5	108.9	108.5	110.6	106.9	106.0	105.6	101.5	103.7	119.5
440.0	80	479	108.8	107.9	108.6	108.4	110.5	107.1	104.7	103.1	102.2	107.7	115.2
412.5	75	449	107.8	107.1	107.9	107.9	108.7	106.5	104.2	102.9	102.5	109.7	114.0
385.0	70	419	106.7	106.7	107.4	107.5	107.9	106.1	104.0	102.7	102.2	112.4	112.2
330.0	60	359	105.1	106.6	106.5	107.4	106.5	105.0	103.8	102.2	102.1	115.3	107.8
275.0	50	300	104.5	105.1	106.1	107.0	105.5	104.5	103.1	101.6	102.4	117.4	101.8
220.0	40	240	104.8	104.4	105.3	105.7	104.6	103.3	102.2	100.5	104.6	112.4	97.4
165.0	30	180	104.3	105.8	105.3	103.9	103.3	103.2	99.6	100.0	108.1	97.5	93.5
137.5	25	150	104.9	104.2	105.4	104.4	102.8	101.7	98.9	105.1	102.7	94.8	93.3
110.0	20	120	103.9	103.4	103.7	104.0	101.8	101.1	98.3	104.8	95.8	93.6	92.4
55.0	10	59.9	103.7	103.2	102.9	102.9	100.5	99.4	101.4	94.3	92.1	92.2	86.5

Emissions Data

DIESEL

PERFORMANCE DATA[EM0128]

October 17, 2024

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITHOUT FAN		EKW	605.0	550.0	412.5	275.0	137.5	55.0
PERCENT LOAD		**%**	**110**	**100**	**75**	**50**	**25**	**10**
ENGINE POWER		BKW	659	599	449	300	150	59.9
TOTAL NOX (AS NO2)		G/HR	4,035	3,519	2,613	1,337	534	323
TOTAL CO		G/HR	411	232	143	151	144	414
TOTAL HC		G/HR	28	26	29	40	33	79
TOTAL CO2		KG/HR	451	408	302	214	124	64
PART MATTER		G/HR	56.6	36.2	20.9	22.6	23.8	39.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,101.6	2,031.4	2,007.2	1,462.8	1,020.9	1,140.3
TOTAL CO	(CORR 5% O2)	MG/NM3	213.1	133.3	112.9	168.4	318.2	1,419.7
TOTAL HC	(CORR 5% O2)	MG/NM3	12.5	12.8	21.0	37.6	61.5	234.0
PART MATTER	(CORR 5% O2)	MG/NM3	24.1	17.2	14.1	21.1	42.3	122.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,024	989	978	712	497	555
TOTAL CO	(CORR 5% O2)	PPM	170	107	90	135	255	1,136
TOTAL HC	(CORR 5% O2)	PPM	23	24	39	70	115	437
TOTAL NOX (AS NO2)		G/HP-HR	4.60	4.40	4.36	3.34	2.66	4.02
TOTAL CO		G/HP-HR	0.47	0.29	0.24	0.38	0.72	5.17
TOTAL HC		G/HP-HR	0.03	0.03	0.05	0.10	0.17	0.98
PART MATTER		G/HP-HR	0.06	0.05	0.03	0.06	0.12	0.49
TOTAL NOX (AS NO2)		LB/HR	8.90	7.76	5.76	2.95	1.18	0.71
TOTAL CO		LB/HR	0.91	0.51	0.32	0.33	0.32	0.91
TOTAL HC		LB/HR	0.06	0.06	0.06	0.09	0.07	0.17
TOTAL CO2		LB/HR	995	899	666	471	274	142
PART MATTER		LB/HR	0.12	0.08	0.05	0.05	0.05	0.09
OXYGEN IN EXH		%	8.4	9.2	10.5	11.7	13.5	16.0
DRY SMOKE OPACITY		%	1.7	1.2	1.0	1.6	1.8	3.5
BOSCH SMOKE NUMBER			0.74	0.47	0.35	0.73	0.80	1.44

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITHOUT FAN		EKW	605.0	550.0	412.5	275.0	137.5	55.0
PERCENT LOAD		**%**	**110**	**100**	**75**	**50**	**25**	**10**
ENGINE POWER		BKW	659	599	449	300	150	59.9
TOTAL NOX (AS NO2)		G/HR	4,358	3,800	2,822	1,444	576	348
TOTAL CO		G/HR	769	433	267	282	269	775
TOTAL HC		G/HR	52	48	55	75	63	149
PART MATTER		G/HR	110.4	70.5	40.8	44.1	46.3	76.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,269.7	2,194.0	2,167.8	1,579.8	1,102.6	1,231.5
TOTAL CO	(CORR 5% O2)	MG/NM3	398.5	249.3	211.2	314.9	595.1	2,654.8
TOTAL HC	(CORR 5% O2)	MG/NM3	23.6	24.2	39.7	71.0	116.2	442.3
PART MATTER	(CORR 5% O2)	MG/NM3	47.0	33.5	27.6	41.1	82.5	239.0
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,106	1,069	1,056	769	537	600
TOTAL CO	(CORR 5% O2)	PPM	319	199	169	252	476	2,124
TOTAL HC	(CORR 5% O2)	PPM	44	45	74	133	217	826
TOTAL NOX (AS NO2)		G/HP-HR	4.96	4.76	4.70	3.61	2.88	4.35
TOTAL CO		G/HP-HR	0.88	0.54	0.45	0.70	1.34	9.67
TOTAL HC		G/HP-HR	0.06	0.06	0.09	0.19	0.31	1.85
PART MATTER		G/HP-HR	0.13	0.09	0.07	0.11	0.23	0.95
TOTAL NOX (AS NO2)		LB/HR	9.61	8.38	6.22	3.18	1.27	0.77
TOTAL CO		LB/HR	1.69	0.95	0.59	0.62	0.59	1.71
TOTAL HC		LB/HR	0.12	0.11	0.12	0.17	0.14	0.33
PART MATTER		LB/HR	0.24	0.16	0.09	0.10	0.10	0.17

Regulatory Information

EPA TIER 3	2018 - ----	CYCLE :D2
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1042 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO US EPA MARINE COMMERCIAL COMPRESSION-IGNITION EMISSION REGULATIONS. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.		

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	MARINE COMMERCIAL	TIER 3	CO: 5.0 NOx + HC: 5.6 PM: 0.10

EPA TIER 3	2013 - 2017	CYCLE :D2
GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1042 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THIS ENGINE CONFORMS TO US EPA MARINE COMMERCIAL COMPRESSION-IGNITION EMISSION REGULATIONS. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE MARINE REGULATIONS.		

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	MARINE COMMERCIAL	TIER 3	CO: 5.0 NOx + HC: 5.6 PM: 0.11

EU STAGE IIIA	2009 - 2019	CYCLE :E2,D2
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	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
EUROPE	EU	MARINE COMMERCIAL	STAGE IIIA	CO: 5.0 NOx + HC: 7.2 PM: 0.20

IMO II	2011 - ----	CYCLE :E2,D2
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

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
3717558	PP6949	3770788	GS628	-	DSE00001	
3717558	PP7007	3770788	GS628	-	DSE00001	

Supplementary Data

Type	Classification	Performance Number
CHART	AMBIENT CAPABILTY CHART	EM0463

This performance data is supplementary data for:
EM0463

Performance Parameter Reference

Parameters Reference:DM9600-15

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%

PERFORMANCE DATA[EM0128]

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