General

4-stroke direct injected, turbocharged and aftercooled diesel engine

Number of cylinders		6
No of valves		24
Displacement, total	litres in³	16,12 983,9
Firing order		1-5-3-6-2-4
Rotational direction, viewed from the front		Clockwise
Bore	mm in	144 5,67
Stroke	mm in	165 6,50
Compression ratio		17,5:1
Compression pressure at 240 rpm	MPa psi	N/A
Max. static forward inclination:	°	5
Max. static backward inclination:	°	11
Max. intermittent forward inclination while running:	°	10
Max. intermittent backward inclination while running:	°	21
Max. intermittent side inclination while running:	°	30
Idling speed	rpm	550 - 800
Rated speed D16MH 600 R1	rpm	1800
Rated speed D16MH 550 R1	rpm	1800
Rated speed D16MH 500 R1	rpm	1800
Propeller selection range D16MH 600 R1	rpm	1780 - 1850
Propeller selection range D16MH 550 R1	rpm	
Propeller selection range D16MH 500 R1	rpm	
Dry weight engine BT	kg lb	1750 3858
	kg lb	
	kg lb	
	kg lb	
	kg lb	

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Performance	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Crankshaft power 1), 5)	1	kW	85	167	302	389	429	439	441	441		
D16MH 600		hp	116	227	410	528	584	597	600	600		
D16MH 550	1	kW	83	166	287	365	401	404	405	405		
		hp	113	226	390	497	545	550	551	551		
D16MH 500	1	kW	84	166	271	348	369	367	369	368		
		hp	114	226	369	473	501	500	501	501		
Propeller shaft power 1) (At full load)	1	kW	83	162	292	377	416	426	428	428		
With reverse gear TD MG 5170		hp	113	220	398	513	566	579	582	582		
With reverse gear TD MG 5170	1	kW	81	161	278	354	388	392	393	393		
		hp	110	219	379	482	528	533	534	534		
With reverse gear TD MG 5170	1	kW	81	161	263	337	357	356	358	357		
		hp	110	219	358	459	486	485	486	486		
Propellershaft power at prop. load $x^{2,5}$	1	kW	27	56	98	155	228	271	319	428		
With reverse gear TD MG 5170		hp	37	77	134	211	311	369	434	582		
With reverse gear TD MG 5170	1	kW	25	52	90	143	210	249	293	393		
		hp	34	70	123	194	285	339	398	534		
With reverse gear TD MG 5170	1	kW	23	47	82	130	191	227	266	358		
		hp	31	64	112	176	259	308	362	486		
Propellershaft power at prop. load x^3	1	kW	16	38	73	127	201	248	301	428		
With reverse gear TD MG 5170		hp	22	51	100	173	274	337	409	582		
With reverse gear TD MG 5170	1	kW	15	34	67	116	185	227	276	393		
		hp	20	47	92	158	251	309	375	534		
With reverse gear TD MG 5170	1	kW	13	31	61	106	168	207	251	358		
		hp	18	43	83	144	229	281	342	486		
Torque at crankshaft 2)	1	Nm	1359	1989	2879	3092	2928	2793	2634	2340		
		lbf ft	1002	1467	2124	2280	2160	2060	1943	1726		
	1	Nm	1327	1983	2741	2907	2732	2574	2417	2148		
		lbf ft	979	1462	2021	2144	2015	1898	1783	1584		
	1	Nm	1329	1983	2591	2766	2514	2338	2200	1954		
		lbf ft	980	1462	1911	2040	1854	1725	1623	1442		
Mean piston speed		m/s	3,3	4,4	5,5	6,6	7,7	8,3	8,8	9,9		
		ft/s	10,8	14,4	18,0	21,7	25,3	27,1	28,9	32,5		
Effective mean pressure 2)	1	MPa	1,06	1,55	2,24	2,41	2,28	2,18	2,05	1,82		
		psi	153,6	224,8	325,5	349,5	331,0	315,8	297,8	264,5		
	1	MPa	1,03	1,55	2,14	2,27	2,13	2,01	1,88	1,67		
		psi	150,0	224,1	309,8	328,6	308,8	291,0	273,2	242,8		
	1	MPa	1,04	1,55	2,02	2,16	1,96	1,82	1,71	1,52		
		psi	150,2	224,1	292,9	312,7	284,1	264,3	248,7	220,9		
Max combustion pressure 2)	1	MPa	11,1	14	17,2	16,8	16,9	16,6	16,3	15		
		psi	1610	2031	2495	2437	2451	2408	2364	2176		
	1	MPa	10,9	13,9	16,6	15,5	15,8	15,3	14,8	14		
		psi	1581	2016	2408	2248	2292	2219	2147	2031		
	1	MPa	10,9	13,9	16	14,7	14,6	13,9	13,4	13		
		psi	1581	2016	2321	2132	2118	2016	1944	1885		

Lubricating system

Specific lubricating oil consumption.	g/kWh	0,08
Max. oil volume including filters for all allowed installation inclinations:	litres	55
	US gal	14,53
Max. oil volume excluding filters for all allowed installation inclinations:	litres	49
	US gal	12,94
Min. oil volume excluding filters for all allowed installation inclinations:	litres	39
	US gal	10,30

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Fuel system	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Specific fuel consumption 2)	1	g/kWh	240,4	235,7	212,2	199,8	195,2	194,8	197,3	209,3		
		lb/hph	0,389	0,382	0,344	0,324	0,316	0,316	0,32	0,339		
	1	g/kWh	233,1	233,2	219	201,6	195,6	195,5	199,2	208,5		
		lb/hph	0,378	0,378	0,355	0,327	0,317	0,317	0,323	0,338		
	1	g/kWh	235,2	234,9	219	203,4	197,3	199,8	202,2	209,4		
		lb/hph	0,381	0,381	0,355	0,33	0,32	0,324	0,328	0,339		
Fuel consumption, Test cycle E3	1	g/kWh	206,4									
		lb/hph	0,33									
	1	g/kWh	206,6									
		lb/hph	0,33									
	1	g/kWh	207,7									
		lb/hph	0,34									
Fuel consumption at prop. load x [2,5]	1	l/h	8,2	15,0	25,7	39,0	57,8	68,0	80,0	110,2		
		US gal/h	2,2	4,0	6,8	10,3	15,3	18,0	21,1	29,1		
	1	l/h	7,5	14,0	23,7	36,1	53,3	63,2	73,7	101,2		
		US gal/h	2,0	3,7	6,3	9,5	14,1	16,7	19,5	26,7		
	1	l/h	6,9	12,8	21,9	33,4	48,6	57,5	67,3	92,1		
		US gal/h	1,8	3,4	5,8	8,8	12,8	15,2	17,8	24,3		

Fuel system	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Fuel consumption at prop. load x [3]	1	l/h	5,4	10,6	19,7	32,4	50,9	62,0	75,1	109,5		
		US gal/h	1,4	2,8	5,2	8,6	13,4	16,4	19,8	28,9		
	1	l/h	5,1	10,0	18,5	29,8	47,0	57,5	69,5	101,1		
		US gal/h	1,3	2,7	4,9	7,9	12,4	15,2	18,4	26,7		
	1	l/h	4,8	9,3	17,0	27,8	42,9	52,9	63,6	92,4		
		US gal/h	1,3	2,5	4,5	7,3	11,3	14,0	16,8	24,4		
Fuel consumption at full load	1	l/h	24,6	47,0	76,6	92,9	100,3	102,3	104,2	110,4		
		US gal/h	6,5	12,4	20,2	24,5	26,5	27,0	27,5	29,2		
	1	l/h	23,3	46,3	75,2	88,1	93,7	94,6	96,5	101,0		
		US gal/h	6,1	12,2	19,9	23,3	24,8	25,0	25,5	26,7		
	1	l/h	23,5	46,7	71,1	84,6	87,0	87,8	89,2	92,3		
		US gal/h	6,2	12,3	18,8	22,3	23,0	23,2	23,6	24,4		

Intake and exhaust system	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Specific exhaust heating effect in percent of crankshaft power	1		75	88	82	70	66	65	66	73		
	1	%	72	86	82	71	67	66	68	73		
	1		72	87	82	73	68	69	71	74		
Exhaust temperature at the exhaust pipe connecting flange after the turbo charger.	1	°C	551	681	653	532	456	439	423	411		
		°F	1024	1258	1207	990	853	822	793	772		
	1	°C	527	671	651	531	457	434	418	400		
		°F	981	1240	1204	988	855	813	784	752		
	1	°C	527	678	647	538	460	437	420	398		
		°F	981	1252	1197	1000	860	819	788	748		
Permitted back pressure in the exhaust line at rated speed. (Installed back pressure)		kPa							Max	15		
		psi								2,2		
		kPa							Min	0		
		psi								0,0		

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Intake and exhaust system	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%.	1	m³/min	5,133	9,183	16,32	23,13	28,92	30,95	32,72	37,55		
		cu.ft./min	181,3	324,3	576,3	816,8	1021	1093	1155	1326		
	1	m³/min	5,067	9,083	15,57	22,17	27,2	29,3	31,28	35,48		
		cu.ft./min	178,9	320,8	549,8	782,9	960,6	1035	1105	1253		
	1	m³/min	5,05	9,033	14,82	21,32	25,47	27,52	29,6	32,97		
		cu.ft./min	178,3	319	523,4	752,9	899,5	971,9	1045	1164		
Charge air pressure Inlet manifold	1	kPa	20	60	132	174	194	194	193	200		
		psi	2,9	8,7	19,1	25,2	28,1	28,1	28,0	29,0		
	1	kPa	18	59	121	163	177	178	179	181		
		psi	2,6	8,6	17,5	23,6	25,7	25,8	26,0	26,3		
	1	kPa	18	59	111	151	158	160	163	161		
		psi	2,6	8,6	16,1	21,9	22,9	23,2	23,6	23,4		
Exhaust gas flow	1	m³/min	15,38	31,53	52,63	61,93	67,77	69,9	71,72	79,27		
		cu.ft./min	543,1	1113	1859	2187	2393	2468	2533	2799		
	1	m³/min	14,73	31,02	50,3	59,57	64,47	66,13	68,63	74,62		
		cu.ft./min	520,2	1095	1776	2104	2277	2335	2424	2635		
	1	m³/min	14,63	30,75	47,55	56,98	60,08	62,12	64,62	68,6		
		cu.ft./min	516,7	1086	1679	2012	2122	2194	2282	2423		

Cooling system	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Radiated heat in percent of crankshaft power.	1	%	17	12	5	3	3	3	4	4		
	1		13	12	7	4	3	4	4	3		
	1		16	12	7	3	3	3	2	3		
Heat rejection to charge air cooler in percent of crankshaft power.	1	%	2	5	10	13	16	17	18	22		
	1		2	5	9	13	15	16	18	21		
	1		2	5	9	12	14	15	17	19		
Coolant heat rejection to HE, incl. engine oil cooler and excl. charge air cooler, in percent of crankshaft power.	1	%	11	71	60	51	48	49	49	54		
	1		14	70	61	53	50	50	50	55		
	1		75	70	59	54	50	51	52	55		
Coolant flow with fully open thermostat and std cooling system		l/min	168,7	263,3	318,2	406,8	479,7	513,5	546,5	617		
		cu.ft./min	6,0	9,3	11,2	14,4	16,9	18,1	19,3	21,8		
Extra water pump flow through charge air cooler		l/min										
		cu.ft./min										
Max. pump pressure at extra pump pressure side (pressure set system)		kPa										
		psi										
Max. permissible temperature on coolant in engine outlet		°C	96									
		°F	205									
Coolant volume engine, including heat exchanger and charge air cooler		litres	56									
		US gal.	14,79									
Max. additional coolant for cabin heater etc. with std. Expansion tank		litres	20									
		US gal.	5,28									
Maximum coolant flow to cabin heater etc.		l/min										
		cu.ft./min										
Thermostat, start open at		°C	86									
		°F	187									
Thermostat, fully open at		°C	96									
		°F	205									

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Raw water circuit	r/min	600	800	1000	1200	1400	1500	1600	1800		
Nominal raw water design flow	l/min	153	205	258	306	351	371	394	432		
	cu.ft/min	5,4	7,2	9,1	10,8	12,4	13,1	13,9	15,3		
Nominal raw water pump pressure head at design flow. (measured before and after pump)	kPa										
	psi										
Maximum raw water pump suction head	kPa	30									
	psi	4,4									
Maximum additional pressure drop excl. reverse gear oil cooler	kPa	7	10	13	17	21	26	31	33		
	psi	1,0	1,5	1,9	2,5	3,0	3,8	4,5	4,8		
Pressure drop over reverse gear oil cooler (optional equipment)	kPa	4	6	10	14	18	21	23	28		
	psi	0,6	0,9	1,5	2,0	2,6	3,0	3,3	4,1		
Maximum raw water temperature entering heat exchanger	°C	32									
	°F	90									

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2 circuit keel cooling system, LT	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Maximum temperature to charge air cooler from external LT-cooling system circuit	1	°C	20	22	28	34	37	38	40	44		
		°F	68	72	82	93	99	100	104	111		
	1	°C	20	23	29	34	38	40	41	44		
		°F	68	73	84	93	100	104	106	111		
	1	°C	21	24	28	34	36	38	39	41		
		°F	70	75	82	93	97	100	102	106		
Coolant flow through keel cooler, LT-cooling system circuit	1	l/min	38	47	53	63	72	75	78	85		
		cu.ft./min	1,3	1,7	1,9	2,2	2,5	2,6	2,8	3,0		
	1	l/min	40	48	53	63	72	75	78	83		
		cu.ft./min	1,4	1,7	1,9	2,2	2,5	2,6	2,8	2,9		
	1	l/min	38	47	52	62	68	72	75	80		
		cu.ft./min	1,3	1,7	1,8	2,2	2,4	2,5	2,6	2,8		
Pressure drop in external LT-cooling system circuit, including piping		kPa	50									
		psi	7,3									
Coolant volume charge air cooler		litres	5									
		US gal.	1,32									

2 circuit keel cooling system, HT	Rating	r/min	600	800	1000	1200	1400	1500	1600	1800		
Design point for keel cooler, engine outlet temperature	1	°C								90		
		°F								194		
	1	°C								89		
		°F								192		
	1	°C								89		
		°F								192		
Maximum temperature to engine from external HT-cooling system circuit	1	°C								63		
		°F								145		
	1	°C								63		
		°F								145		
	1	°C								64		
		°F								147		
Coolant flow through keel cooler, HT-cooling system circuit at design point	1	l/min								144		
		cu.ft./min								5,1		
	1	l/min								137		
		cu.ft./min								4,8		
	1	l/min								132		
		cu.ft./min								4,7		
Maximun coolant flow through keel cooler, HT-cooling system circuit	1	l/min								445		
		cu.ft./min								15,7		
	1	l/min								441		
		cu.ft./min								15,6		
	1	l/min								439		
		cu.ft./min								15,5		
Pressure drop in external HT-cooling system circuit, including piping		kPa	50									
		psi	7,3									
Coolant volume engine, excl. heat exchangers		litres	38									
		US gal.	10,04									

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Emissions	**Rating**	**r/min**	**600**	**800**	**1000**	**1200**	**1400**	**1500**	**1600**	**1800**		
Smoke at prop. load $x^{2,5}$	1	*BSU	0,0	0,1	0,3	0,7	0,5	0,3	0,2	0,2		
	1	*BSU	0,0	0,1	0,3	0,6	0,6	0,4	0,3	0,2		
	1	*BSU	0,0	0,1	0,3	0,6	0,7	0,4	0,3	0,2		
Smoke at prop. load x^{3}	1	*BSU	0,0	0,0	0,2	0,6	0,6	0,3	0,2	0,2		
	1	*BSU	0,0	0,0	0,2	0,5	0,7	0,4	0,3	0,2		
	1	*BSU	0,0	0,1	0,1	0,4	0,7	0,5	0,3	0,2		
Noise at prop. load $x^{2,5}$. 4)	1	dBA	103,4	105,7	108,6	110,5	113,7	114,1	115,8	121		
	1	dBA	103,3	105,4	108,3	110,2	113,6	114	114,7	120,1		
	1	dBA	103,3	105,4	108,3	110,2	113,6	114	114,7	120,1		
Noise at prop. load x^{3}. 4)	1	dBA	103,8	105,9	108,4	110,4	113,6	114,5	115,2	121,3		
	1	dBA	103,5	106	108,4	110,2	113,3	114	114,5	120,5		
	1	dBA	103,5	106	108,4	110,2	113,3	114	114,5	120,5		

***NB.!** BSU are calculated values. Measured values are acc. to ISO 10054 in FSN units

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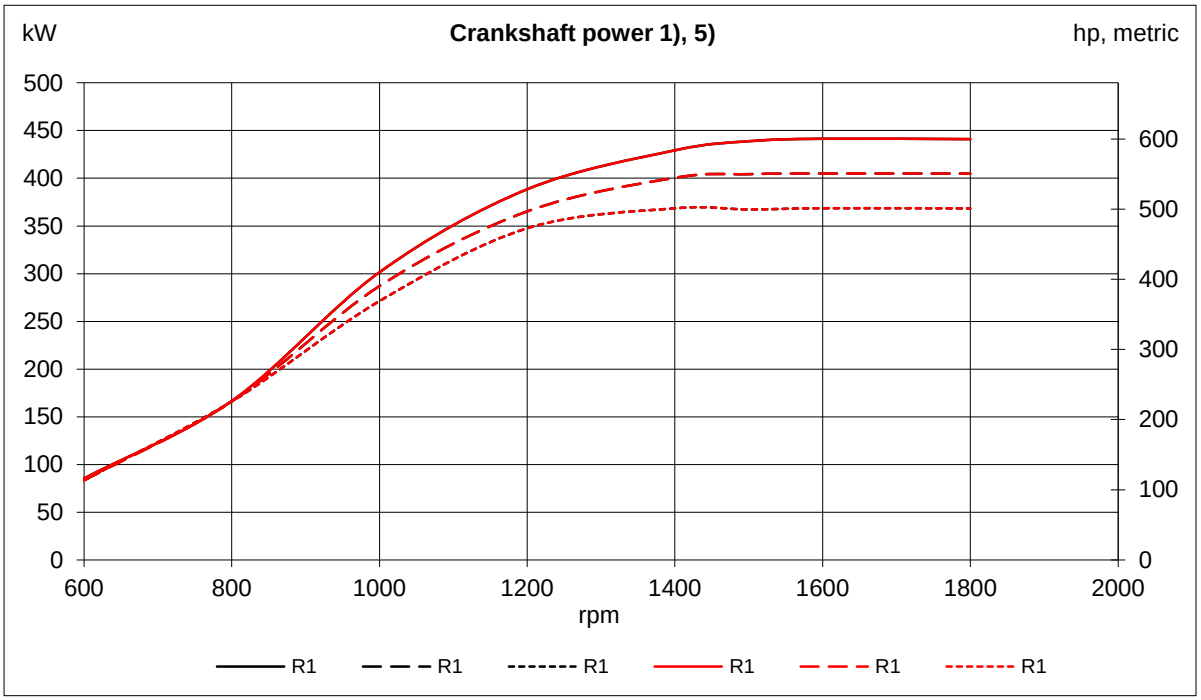

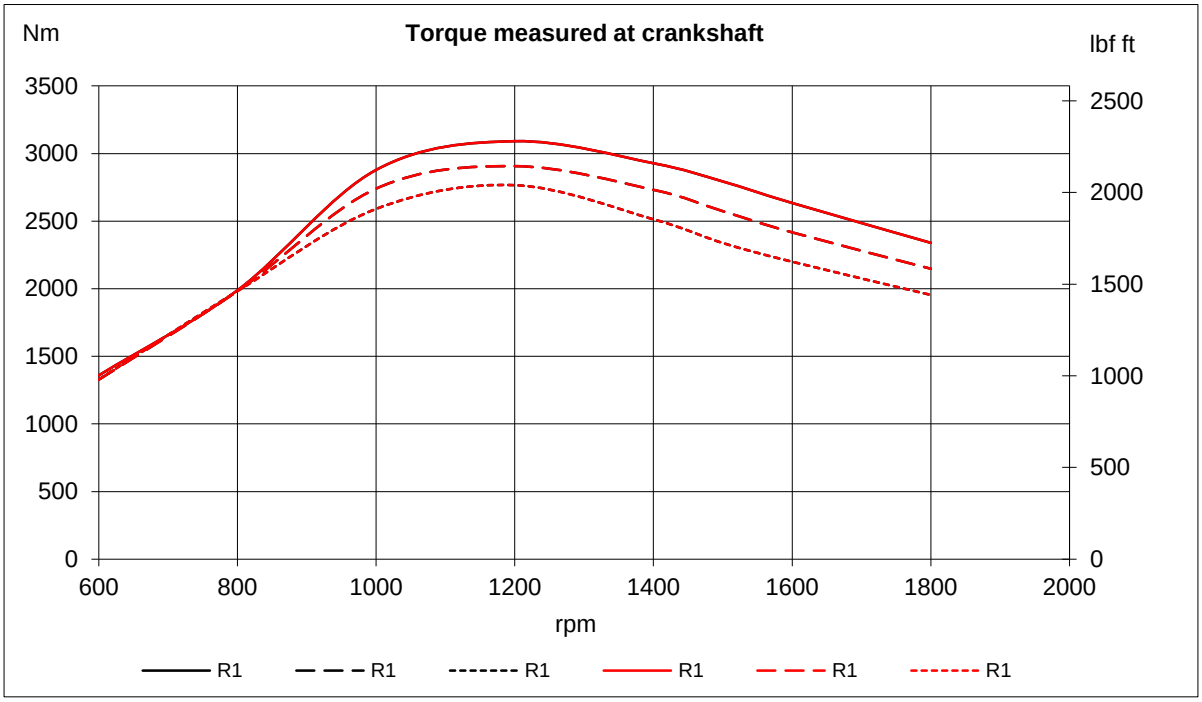

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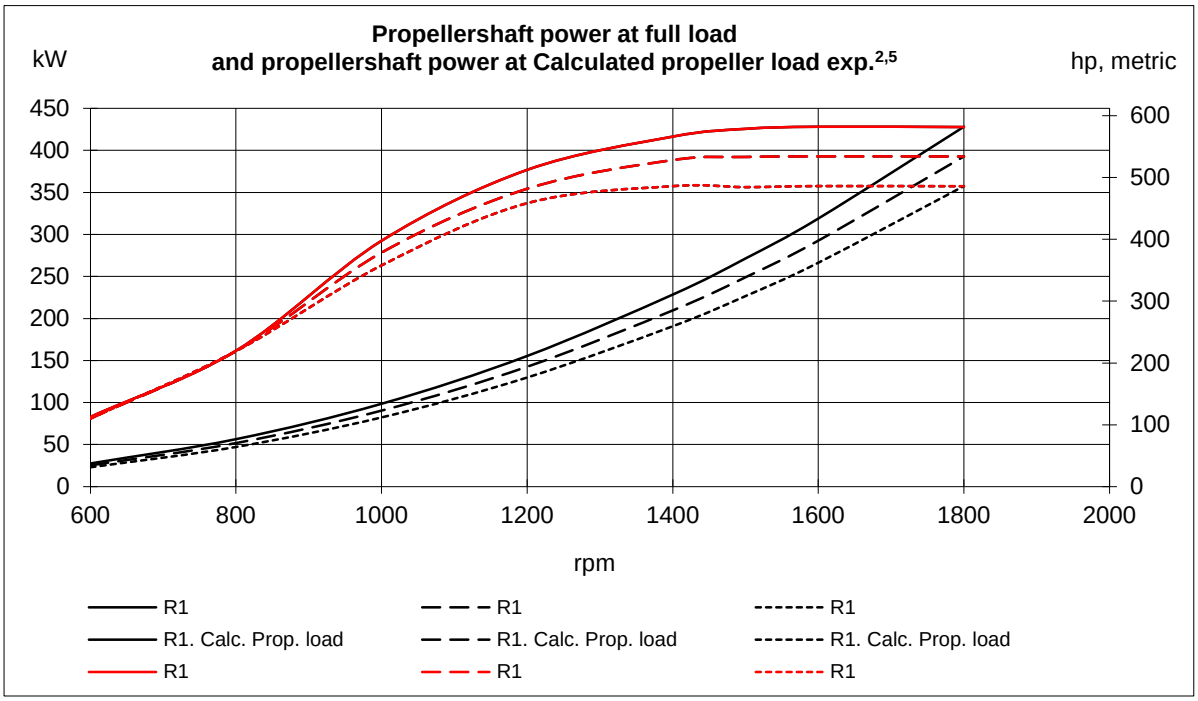
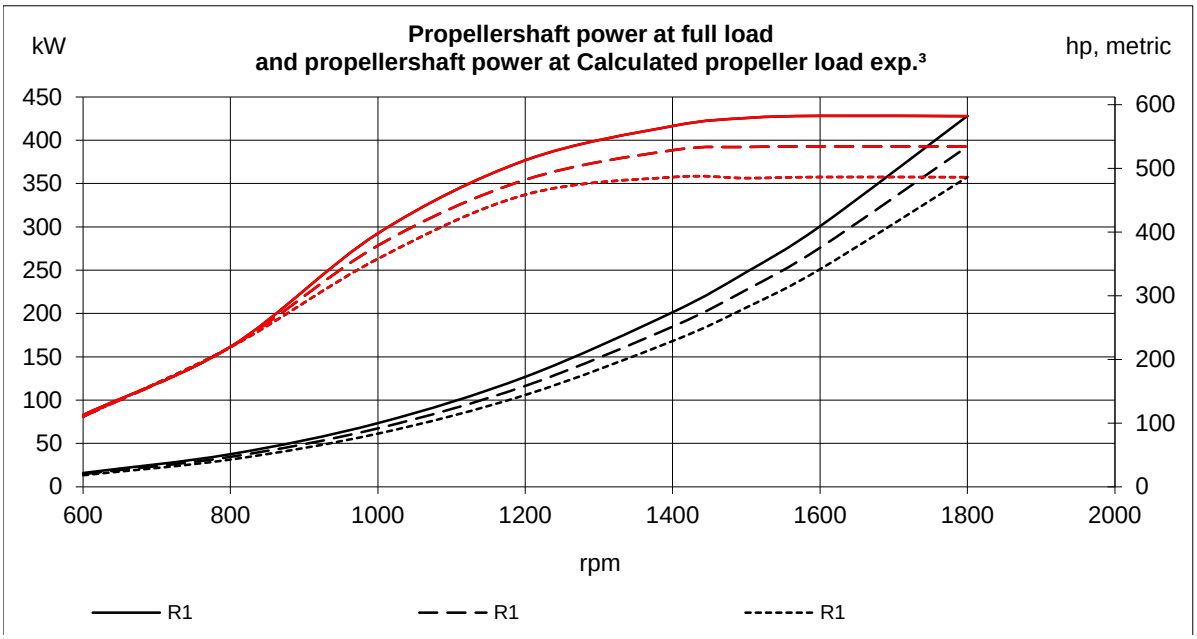
2017-10-11





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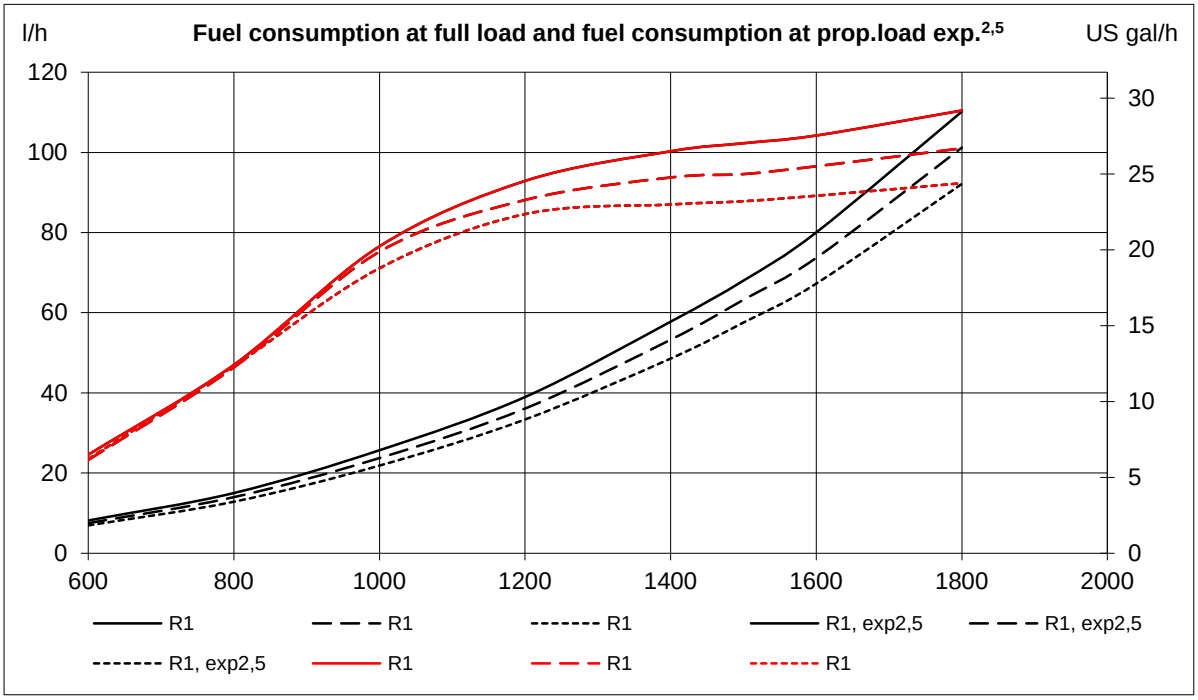

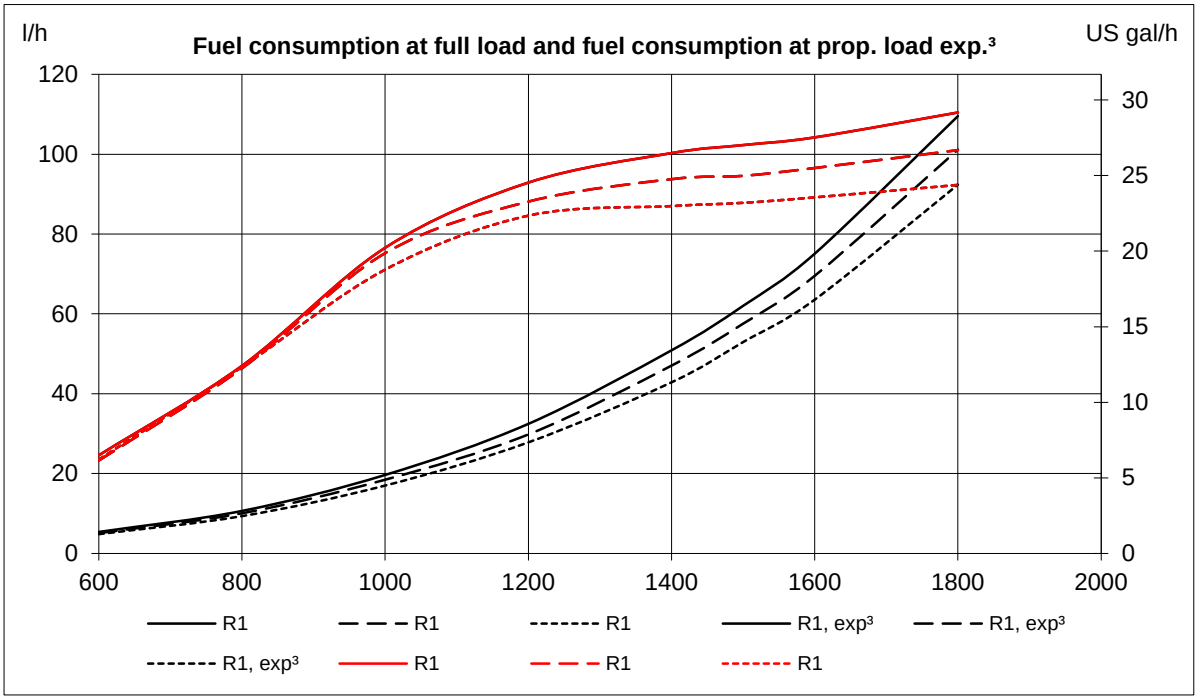

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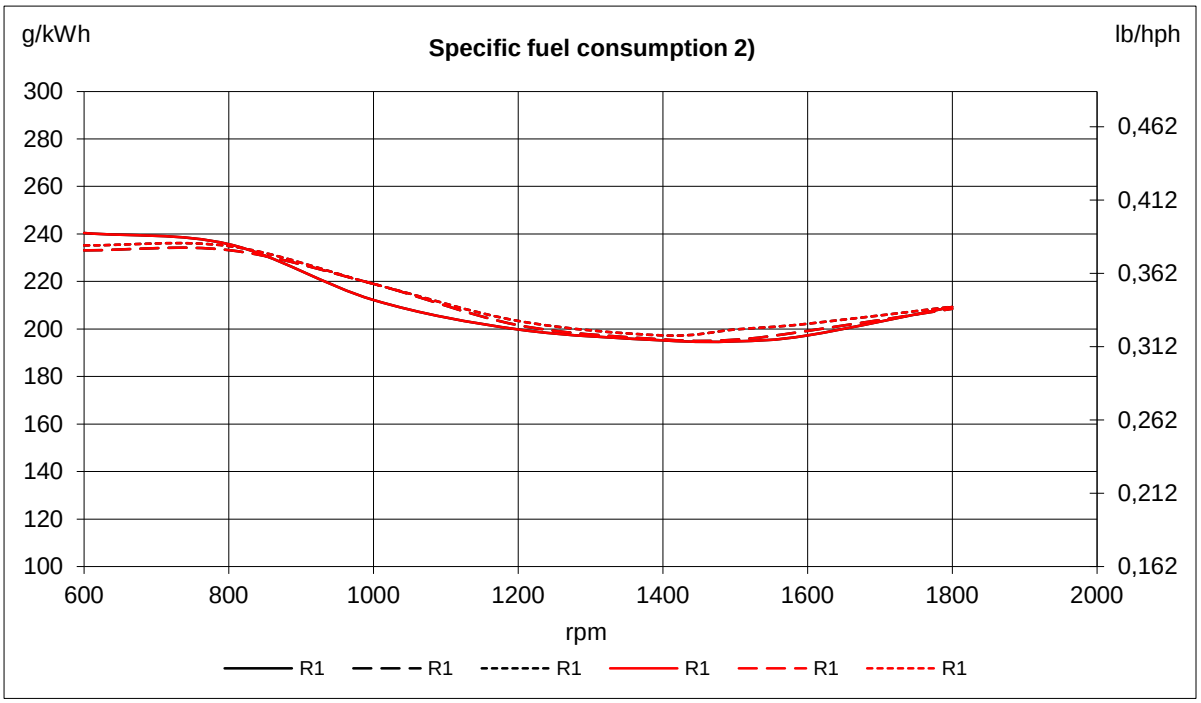
ISO 8665 (=SAE J 1228=ICOMIA 28-83)
2) At power according to 1).
3) If reverse gear is used, 4% in heat rejection will be added for its oil cooler.
4) Acc. to ISO 3744
5) At installed back pressure



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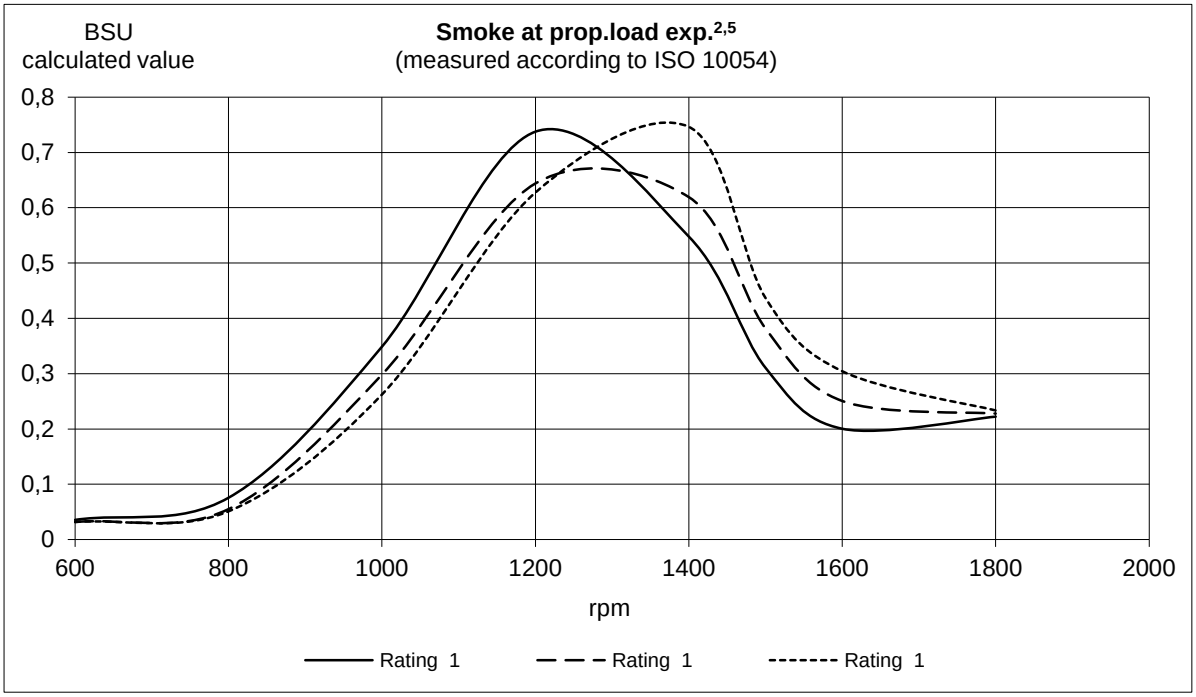

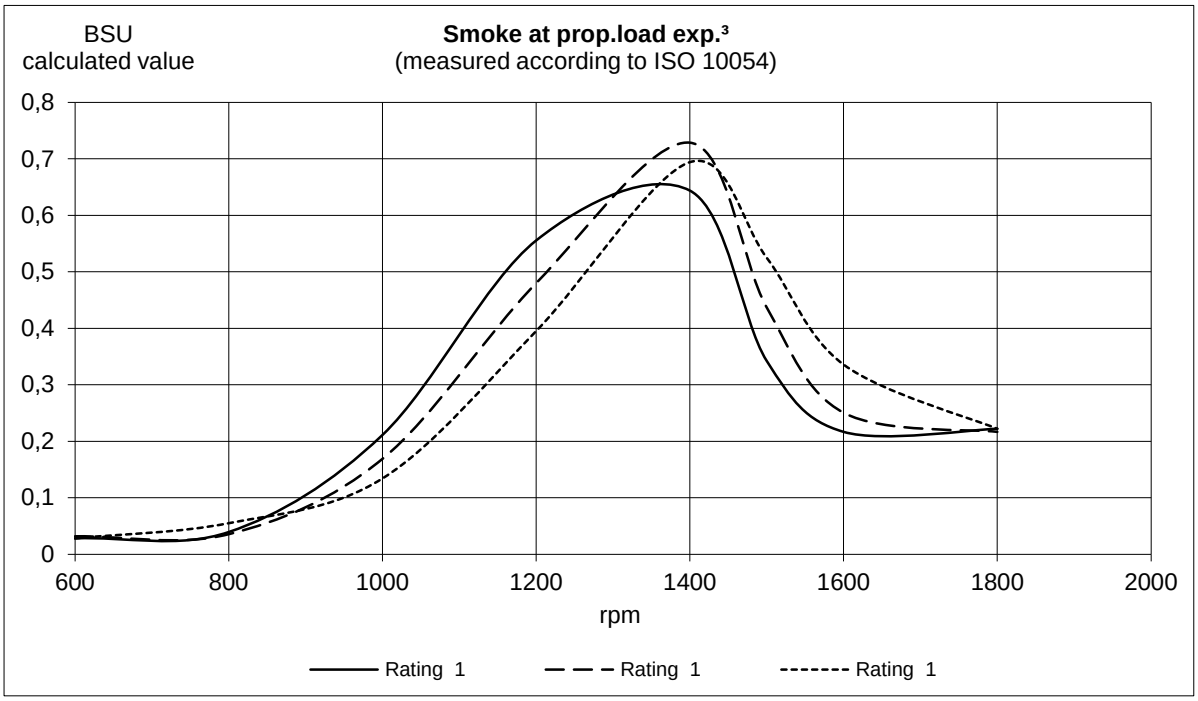

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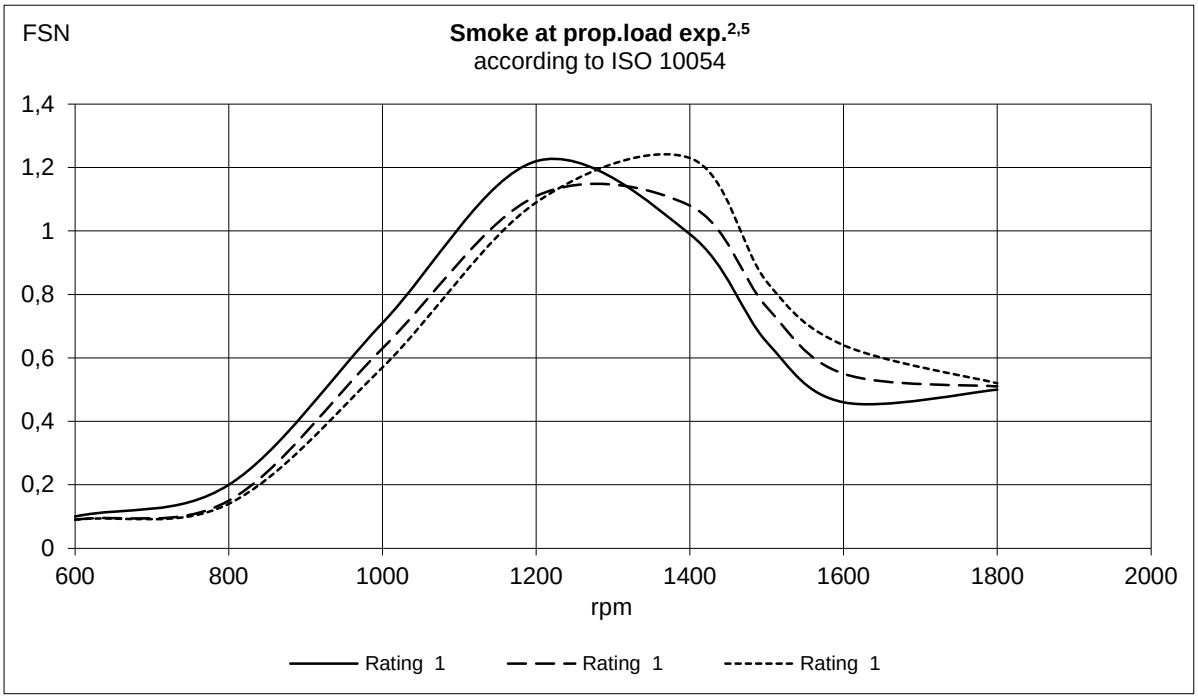

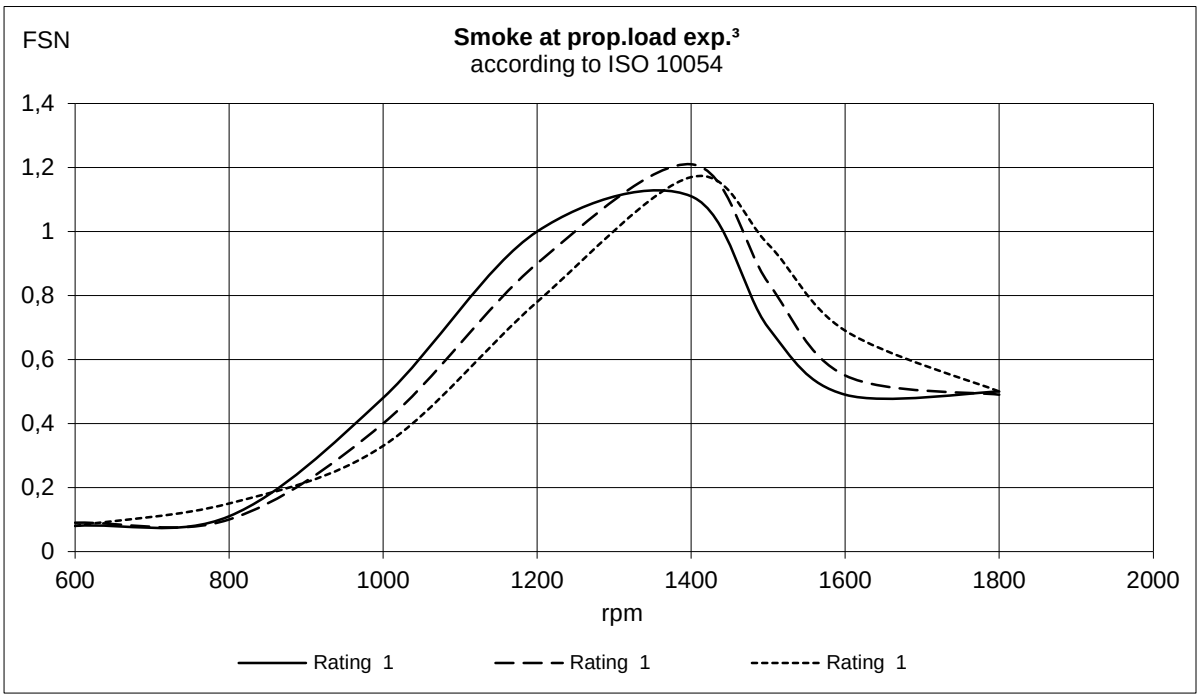

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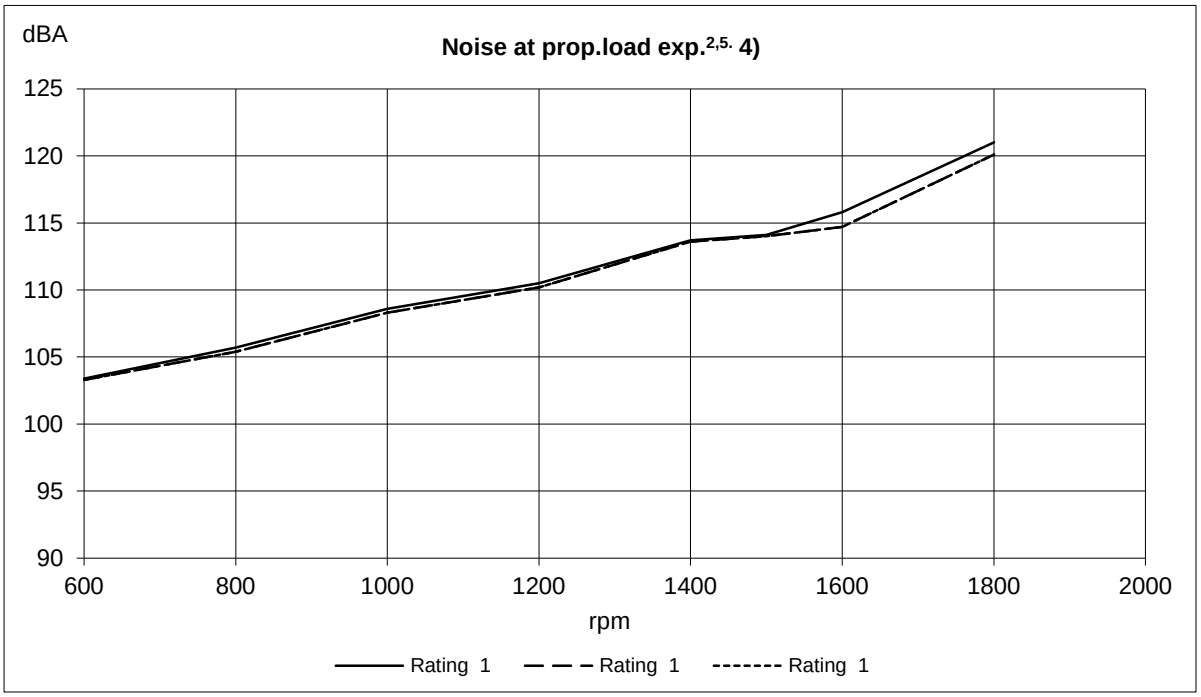

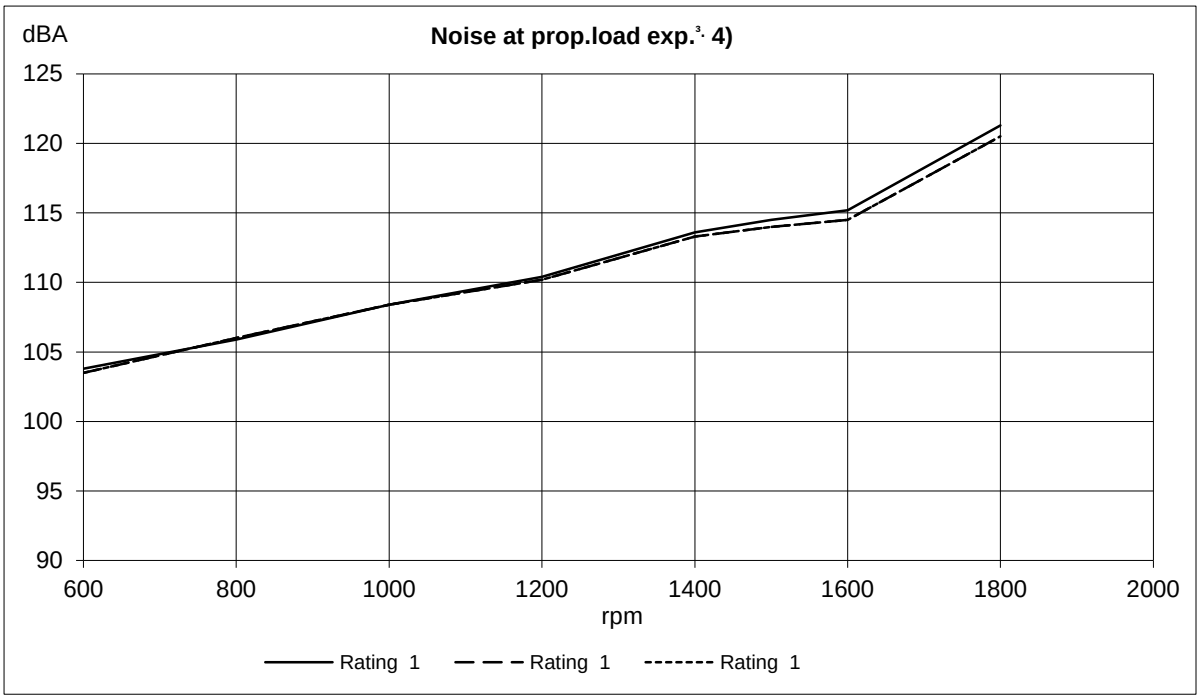

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