


VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Important

This Technical Data Sheet and the corresponding Installation Instructions provide important information to ensure the installed engine will operate according to the design specification in the Volvo Penta application for certification.

Requirements marked with  are considered as critical for exhaust emissions compliance according to the design specification in the Volvo Penta application for certification.

Failing to follow and meet these instructions and requirements when installing a certified engine in a piece of nonroad equipment for use in the United States violates U.S. federal law (40 CFR 1068.105(b)), subject to fines or other penalties as described in the Clean Air Act.

General

In-line four stroke diesel engine with direct injection. Rotation direction, anti-clockwise viewed towards flywheel

Number of cylinders			6
Displacement, total		liters	12,78
		in ³	780
Firing order			1-5-3-6-2-4
Bore		mm	131
		in	5,16
Stroke		mm	158
		in	6,22
Compression ratio			17.8:1
Wet weight	Engine only	kg	1325
		lb	2921
	Power pac	kg	1790
		lb	3946

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Performance			rpm	1200	1500	1800	1900
IFN Power	256 kW	without fan	kW	219	256	256	256
			hp	298	348	348	348
	890 mm	with fan	kW	215	250	246	244
			hp	292	340	335	332
IFN Power	256 kW	without fan	kW	219	256	256	256
			hp	298	348	348	348
	890 mm	with fan	kW	215	250	246	244
			hp	292	340	335	332
Torque at:	IFN Power 256 kW		Nm	1743	1630	1358	1287
			lbf ft	1285	1202	1002	949
IFN Power 256 kW			Nm	1743	1630	1358	1287
			lbf ft	1285	1202	1002	949
Max torque at engine speed	IFN Power	1200 rpm	Nm	1745			
			lbf ft	1287			
			Nm				
			lbf ft				
Power tolerance			%	±2%			
Mean piston speed			m/s	6,3	7,9	9,5	10,0
			ft/sec	20,7	25,9	31,1	32,8
Effective mean pressure at:	IFN Power 256 kW		MPa	1,71	1,60	1,34	1,27
			psi	249	232	194	183
Max combustion pressure at:	IFN Power 256 kW		MPa	12,7	13,8	14,2	13,7
			psi	1842	2001	2059	1987
Total mass moment of inertia, J (mR ²) (not including flywheel)			kgm ²	3,43			
			lbft ²	81,4			
Friction Power			kW	21	31	45	51
			hp	29	42	61	69
Derating see Technical Diagrams							

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Cold start performance

*Cold start limit temperature	without starting aid	°C	-15	
		°F	5	
	with manifold heater 4 kW	°C	-25	
		°F	-13	
	with manifold heater 4 kW and block heater	°C	-30	
		°F	-22	
*Specify oil and fuel quality	Oil: VDS3 10W/30, Fuel: MK1			
Block heater type	Make	Power kW	Engaged hours	Cooling water temp engine block
Self circulating	Volvo 3828643	2	12	-1°C 30°F

* See also general section in the sales guide

Lubrication system

Lubricating oil consumption at max rpm at:	IFN Power 256 kW	liter/h	0,02
		US gal/h	0,005
Oil system capacity including filters		liter	Std sump 36 / Aluminium sump 52
		US gal	Std sump 9,51 / Aluminium sump 13,74
Plastic Oil sump capacity (Std):	Max	liter	30
		US gal	7,93
	Min	liter	19
		US gal	5,02
Aluminium Oil sump capacity:	Max	liter	46
		US gal	12,15
	Min	liter	36
		US gal	9,51
Oil change intervals/specifications	VDS3	h	600
Engine angularity limits:	front up	°	Std oil sump 11 / Aluminium oil sump 35
	front down	°	Std oil sump 11 / Aluminium oil sump 35
	side tilt	°	Std oil sump 11 / Aluminium oil sump 35
Oil pressure at rated speed		kPa	300-650
		psi	44-94
Oil pressure shut down switch setting		kPa	N/A
		psi	

Lubrication system




Lubrication oil temperature in sump:	max	°C	130
		°F	266
Oil filter micron size		µ	40

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Fuel system	rpm	1200	1500	1800	1900
Fuel to conform to		EN590 ASTM D 975 No 1D and 2D (Max 20 ppm sulphur and 7% FAME)			

Fuel system		
System supply flow at max. speed	liter/h	100
	US gal/h	26,4
Fuel supply line max. restriction (Measured at fuel inlet connection)	kPa	30
	psi	4,4
Fuel supply line max. pressure, during engine stand still (measured at fuel inlet connection)	kPa	16,5
	psi	2,4
System return flow at max. speed	liter/h	18,0
	US gal/h	4,8
Fuel return line max. restriction (Measured at fuel return connection)	kPa	20
	psi	2,9
Max. allowable inlet fuel temp (Measured at fuel inlet connection)	°C	60
	°F	140
Prefilter / Water separator micron size	µ	10
Fuel filter micron size	µ	5
Governor type/make, standard	Volvo/EMS2.2	
Injection pump type/make	Delphi E3	

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08



Intake and exhaust system		Inlet air temp	rpm	1200	1500	1800	1900
Air consumption at: (+25°C and 100kPa)	IFN Power 256 kW		m ³ /min cfm	17,0 600	22,0 777	26 918	27 954
 See front page for important information Max allowable air intake restriction including piping			kPa psi	5 0,7			
Heat rejection to exhaust at:	IFN Power 256 kW		kW BTU/min	145 8246	175 9952	187 10635	202 11488
Exhaust gas temperature after turbine at:	IFN Power 256 kW		°C °F	420 788	385 725	360 680	355 671
 See front page for important information Max allowable back pressure in exhaust line (after turbine) Pipe dimension Ø: 125 mm			kPa psi	15 2,2	22 3,2	26 3,8	28 4,1
 See front page for important information Max allowable temperature drop between turbine and SCR muffler inlet.			°C °F	10 18			
SCR muffler pressure drop			kPa psi	11 1,6	16 2,3	19 2,8	20 2,9
Exhaust gas flow at: (temp and pressure after turbine at the corresponding power setting)	IFN Power 256 kW		m ³ /min cfm	36,0 1271	44,0 1554	48 1695	49 1730
Exhaust gas smoke	IFN Power 256 kW		*Bosch Units	0,013	0,014	0,016	0,02

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Cooling system		rpm	1200	1500	1800	1900
Heat rejection radiation from engine at:	IFN Power 256 kW	kW	4	5	5	5,9
		BTU/min	227	279	284	336
Heat rejection to coolant at:	IFN Power 256 kW	kW	98	110	123	132
		BTU/min	5573	6256	6995	7507
Radiator cooling system type			Closed circuit			
Standard radiator core area		m ²	0,8			
		foot ²	8,61			
Fan diameter	890 mm	mm	890			
		in	35,04			
Fan power consumption	890 mm	kW	4,0	6,0	10,0	12,0
		hp	5	8	14	16
Fan drive ratio	fan Ø890		0,84			
Coolant capacity:	engine	liter	20			
		US gal	5,3			
	std. 0,8m ² radiator with hoses	liter	24			
		US gal	6,3			
Coolant pump		drive/ratio	belt/1.43:1			
Coolant flow with standard system		l/s	3,7	4,7	5,7	6
		US gal/s	1,0	1,2	1,5	1,6
Minimum coolant flow		l/s	3,2	4,2	5,2	5,5
		US gal/s	0,8	1,1	1,4	1,5
Maximum outer circuit restriction incl. piping		kPa	55,0			
		psi	8,0			
Thermostat:	start to open	°C	82			
		°F	180			
	fully open	°C	92			
		°F	198			
Maximum static pressure head (expansion tank height + pressure cap setting)		kPa	100			
		psi	14,5			
Minimum static pressure head (expansion tank height + pressure cap setting)		kPa	70			
		psi	10,2			
Standard pressure cap setting		kPa	75			
		psi	10,9			
Maximum top tank temperature		°C	107			
		°F	225			
Recommended Draw down capacity.						

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

The difference between min coolant level in the expansion tank and the lowest level where the engine's coolant system still are functioning	liter	2
	US gal	0,5

Charge air cooler system		rpm	1200	1500	1800	1900
Heat rejection to charge air cooler	IFN Power 256 kW	kW	29	44	54	59
		BTU/min	1649	2502	3071	3355
Charge air mass flow	IFN Power 256 kW	kg/s	0,31	0,42	0,49	0,51
Charge air inlet temp. (Charge air temp after turbo compressor)	IFN Power 256 kW	°C	134	150	158	164
		°F	273	302	316	327
 See front page for important information Max allowable Charge air outlet temp. (Charge air temp after charge air cooler)	IFN Power 256 kW	°C	36	41	46	50
		°F	97	106	115	122
 See front page for important information Maximum pressure drop over charge air cooler incl. Piping (throttle not included)		kPa	12			
		psi	1,74			
Charge air pressure at rated power (After charge air cooler)		kPa	165			
		psi	23,93			
Standard charge air cooler core area		m ²	0,8			
		foot ²	8,61			

Cooling performance: 0,8 m² radiator and Pull 890 fan
Cooling air flow and maximum additional external restriction at different radiator air temperatures based on 107°C TTT and 40% coolant. Valid at 1 atm.

Engine speed	Engine power	Air on temp		Air flow		External restriction	
		°C	°F	m ³ /s	ft ³ /s	Pa	psi
1900	256	68	154	6,4	226,0	260	0,038
0,84	348	70	158	7	247,2	100	0,015
		71	160	7,3	257,8	0	

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Engine management system

Functionality	Alternatives	Default setting
Governor mode	Isochronus	
Governor droop	0%	
Governor response	Adjustable PI-constants	1
Idle speed	600-900	700
Stop function	Energized to run/Stop	
Preheating function	On/Off	
Lamp test	On/Off	

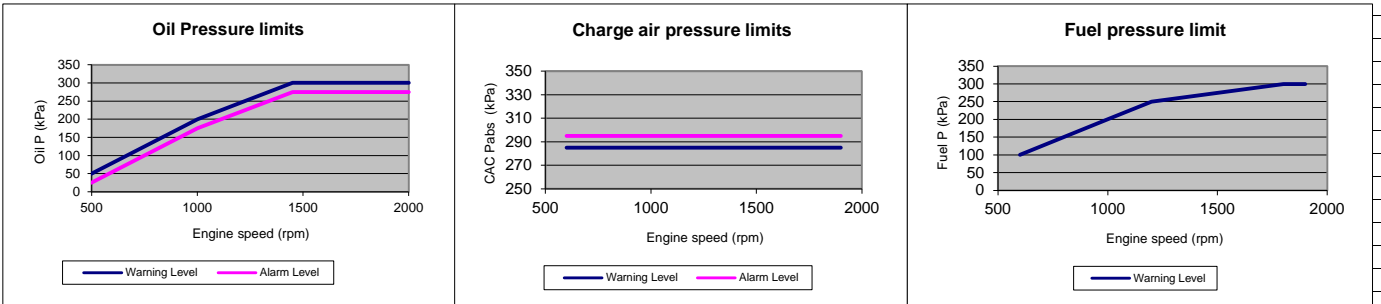
Parameter	Warning level	Alarm level	Engine protection	
Parameter for Power Pack	Default setting	Level	Action.	Default/Alternative
Oil temp	125°C	Setting +5°C	Shut down. ON/OFF*	
Oil pressure	50 kPa	25 kPa	Shut down. ON/OFF*	
Rated speed	300 kPa	275 kPa	Shut down. ON/OFF*	
Oil level	Min level	-	-	
Coolant temp	105°C	107°C	Shut down. ON/OFF*	
Coolant level	Low level	-	-	
Fuel feed pressure	Low idle	100 kPa	-	
1200	-	250 kPa	-	
Water in fuel	High level	-	-	
Crank case pressure	Press inc	-	Shut down. ON/OFF*	
Air filter pressure drop	5 kPa	-	-	
Altitude, above sea	Automatic derating, see section derating			
Charge air temp	80°C	85°C	Shut down. ON/OFF*	
Charge air pressure	Warning map value + 5kPa	Alarm map value + 5kPa	Shut down. ON/OFF*	
Engine speed	120%	-	Shut down. ON/OFF*	
Cat temp protection (exhaust temp)	-	-	Derates the engine in order to not exceed exhaust T>550°C	

* Off: disables the function, i e no shut down.

Parameter	Warning level	Alarm level	Engine protection			
Parameter for Mobile	Warning	Alarm	Derated 0% to engine protection map	Derated 100% to engine protection map	Forced idle after sec	Forced shut down after 2 sec
Oil temp	125°C	127°C	127°C	130°C	N/A	N/A
Oil pressure	Warning map value	Alarm map value	N/A	N/A	N/A	Alarm map value
Oil level	Min level	N/A	N/A	N/A	N/A	N/A
Coolant temp	105°C	107°C	107°C	108°C	N/A	N/A
Coolant level	Low level	N/A	N/A	N/A	N/A	N/A
Fuel feed pressure	Warning map value	N/A	N/A	N/A	N/A	N/A
Water in fuel	High level	N/A	N/A	N/A	N/A	N/A
Crank case pressure	N/A	Press incr 5kPa	N/A	N/A	N/A	Press incr 5kPa
Air filter pressure drop	5 kPa	N/A	N/A	N/A	N/A	N/A
Altitude, above sea	Automatic derating, see section derating					

VOLVO PENTA TAD1360VE	Document No	Issue Index
	21593477	08

Charge air temp	80°C	85°C	85°C	86°C	N/A	N/A
Charge air pressure	Warning map value	Alarm map value	Alarm map value	Alarm map value	N/A	N/A
Engine speed	120%	N/A	N/A	N/A	N/A	N/A
Cat protection (exhaust temp)	-	-	Derates the engine in order to not exceed exhaust T>550°C			



Electrical system

Voltage and type		24 V			
Alternator:	make	Bosch			
	output	A			
	tacho output	Hz/alternator rev.			
	drive ratio	5,3:1			
Starter motor:	make	Melco			
	type	105P70			
	output	kW	7		
Number of teeth on:	flywheel	hp	9,5		
	starter motor		12		
Inlet manifold heater (at 20 V)	kW	4			
Power relay for the manifold heater	A	1			
Conditions: (4 mΩ main circuit resistance@ 20°C)	Temperature	°C			
	Battery	Ah / CCA	25	0	-15
Crank speed	rpm	171	118	98	
Crank current	A	290	400	480	
Starter input power during crank	kW	6,2	7,5	7,7	
Battery power during crank	kW	6,5	8,1	8,5	
Min battery	Ah / CCA	120 / 700	140 / 800	145 / 1050	

Power take off

	rpm	1200	1500	1800	1900	
Front end belt pulley load. Direction of load viewed from flywheel side:	max left	kW	42	53	62	68
		hp	57	72	84	92
	max down	kW	36	44	52	60
		hp	49	60	71	82
	max right	kW	42	53	62	68
		hp	57	72	84	92
Continuous torque at: Timing gear at compressor PTO max: *	Nm	300				
PTO SAE B	lbf ft	221				
Speed ratio direction of rotation viewed from flywheel side		1.31:1 / ccw				
Timing gear at servo pump PTO max: *	Nm	100				
	lbf ft	74				
Speed ratio direction of rotation viewed from flywheel side		1.75:1 / ccw				
Max allowed bending moment in flywheel housing	Nm	15000				
	lbf ft	11063				
Max. rear main bearing load	N	4000				
	lbf	899,2				

* Maximum allowed torque at individual PTO,s.

If more than one PTO output is used simultaneously, calculations needs to be performed to determine maximum available torque, depending on application inertia.

VOLVO PENTA

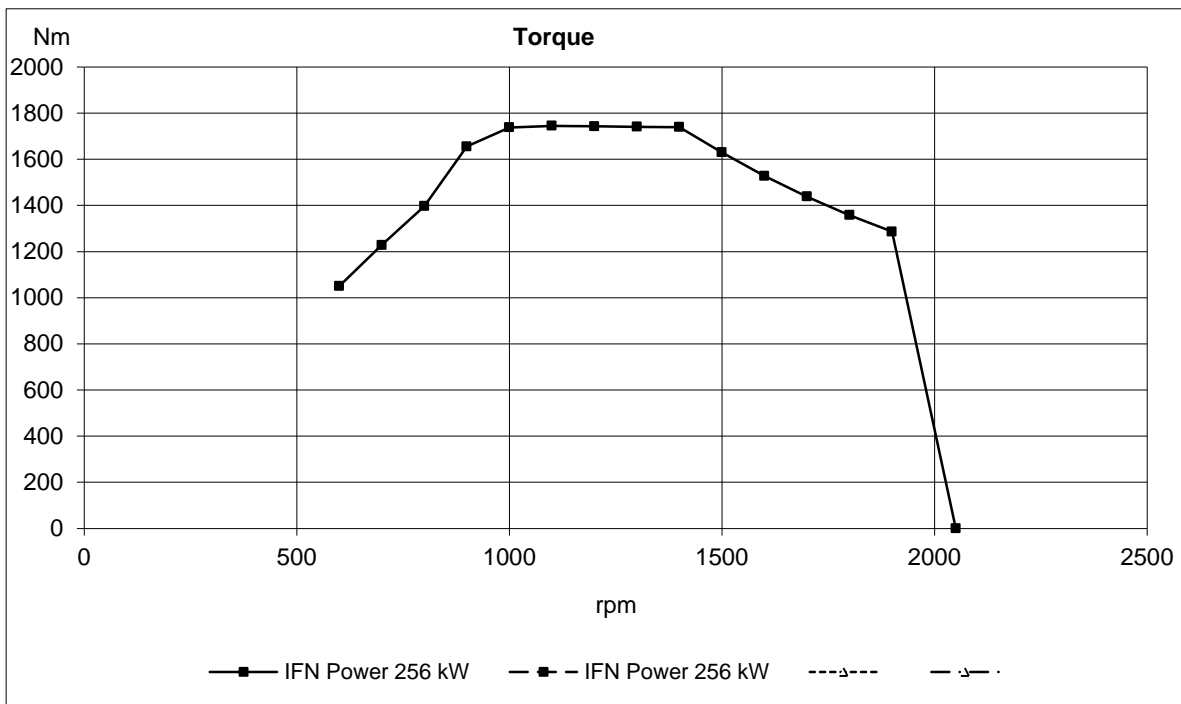
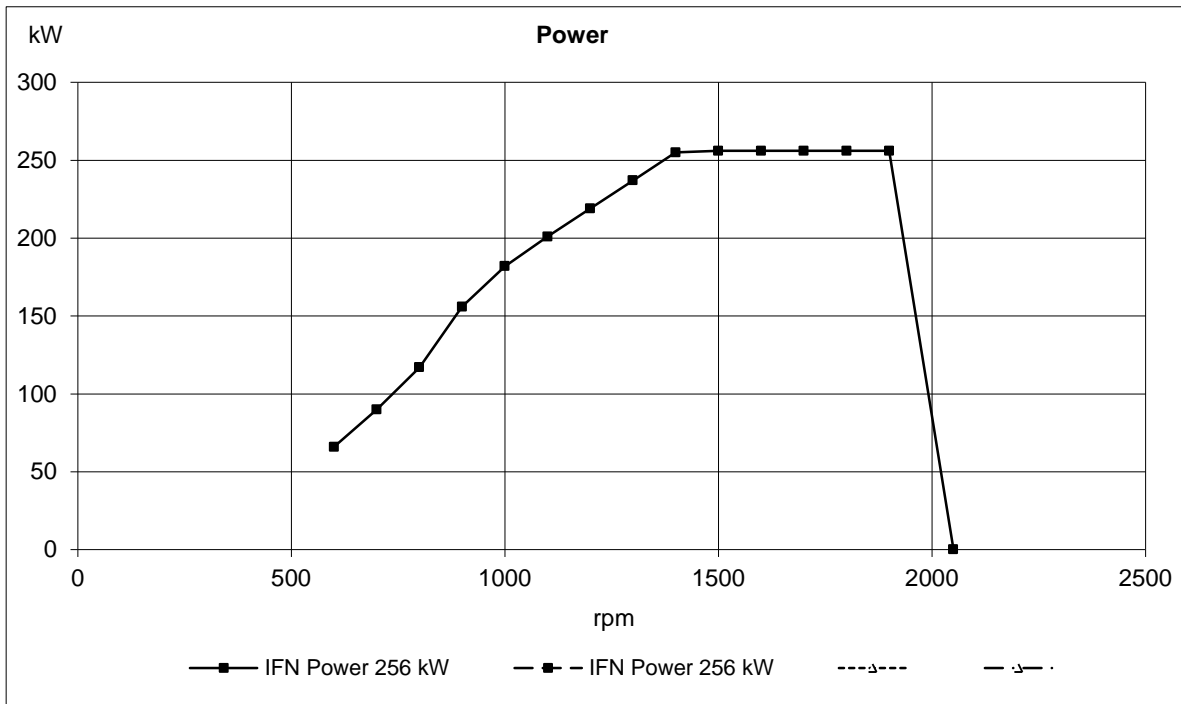
TAD1360VE

Document No

21593477

Issue Index

08



VOLVO PENTA

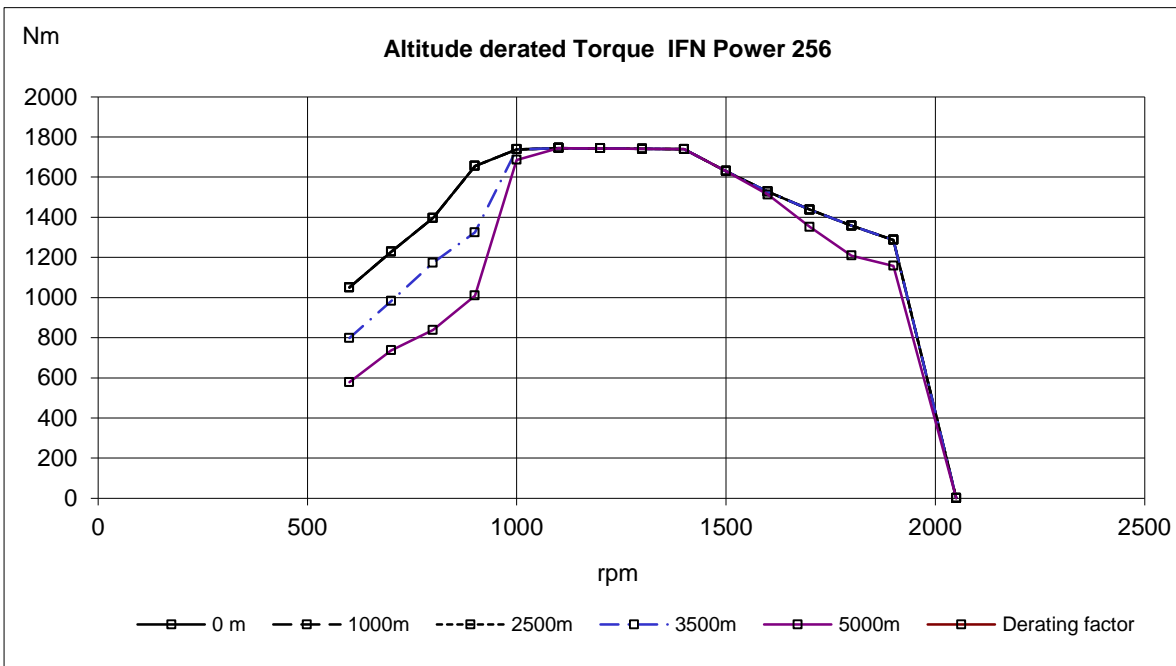
TAD1360VE

Document No

21593477

Issue Index

08



VOLVO PENTA

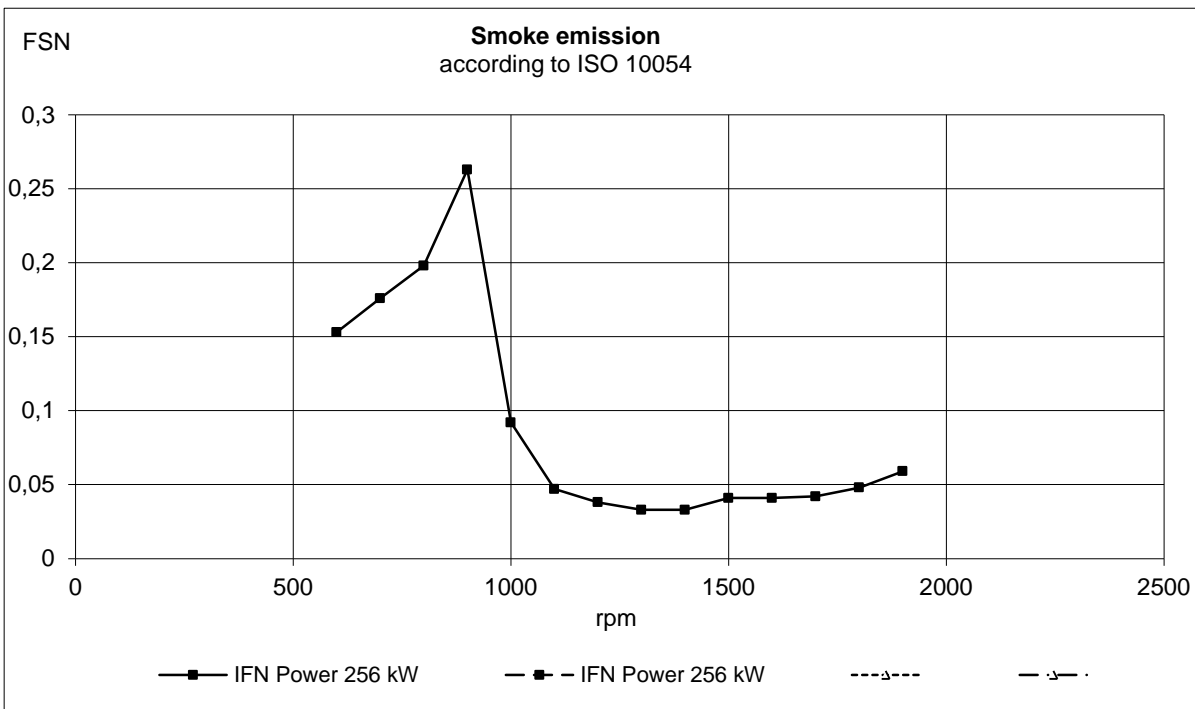
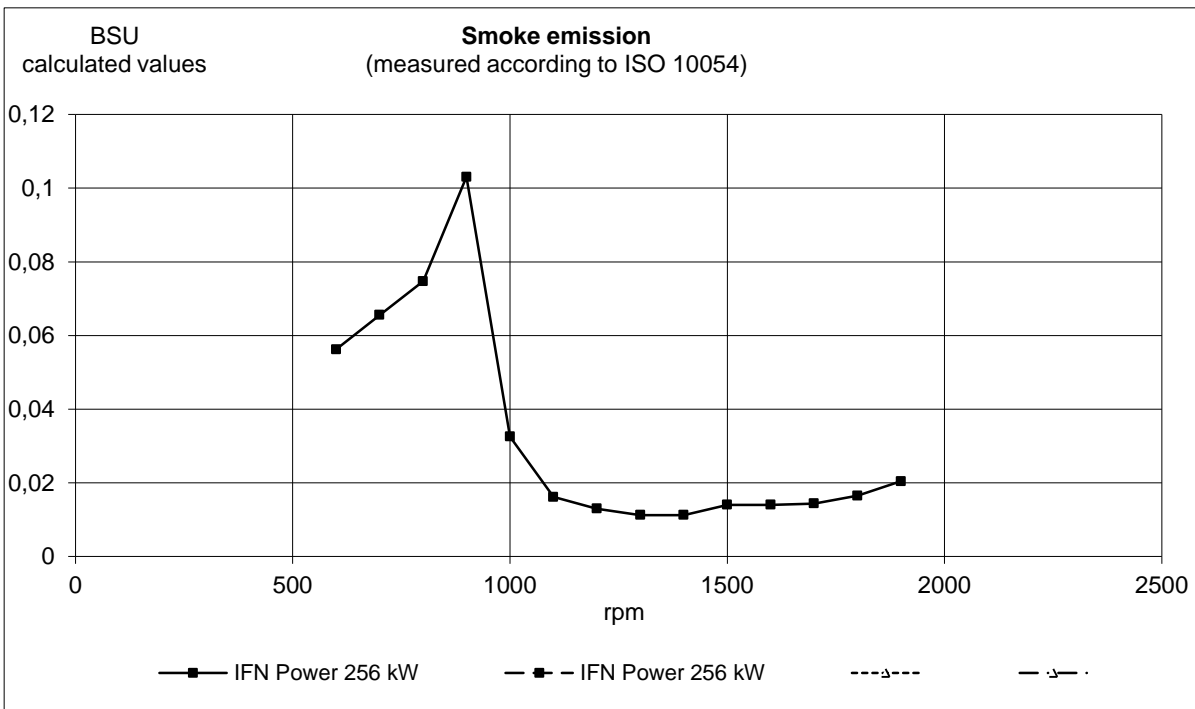
TAD1360VE

Document No

21593477

Issue Index

08



VOLVO PENTA

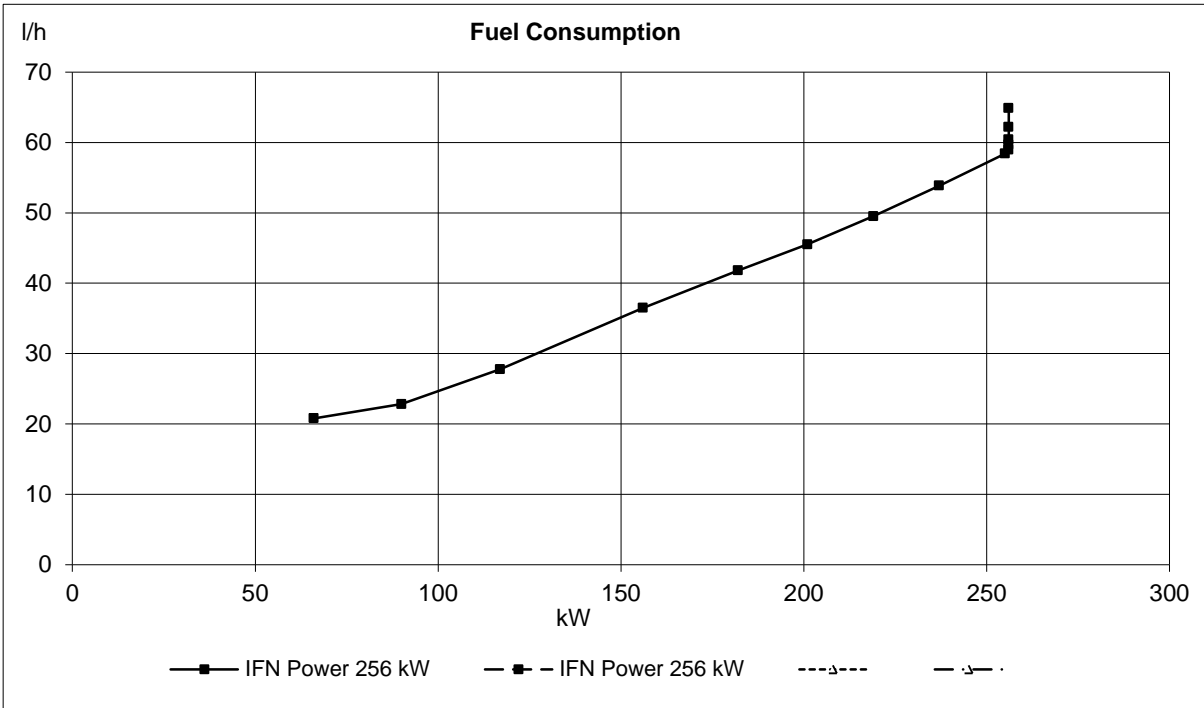
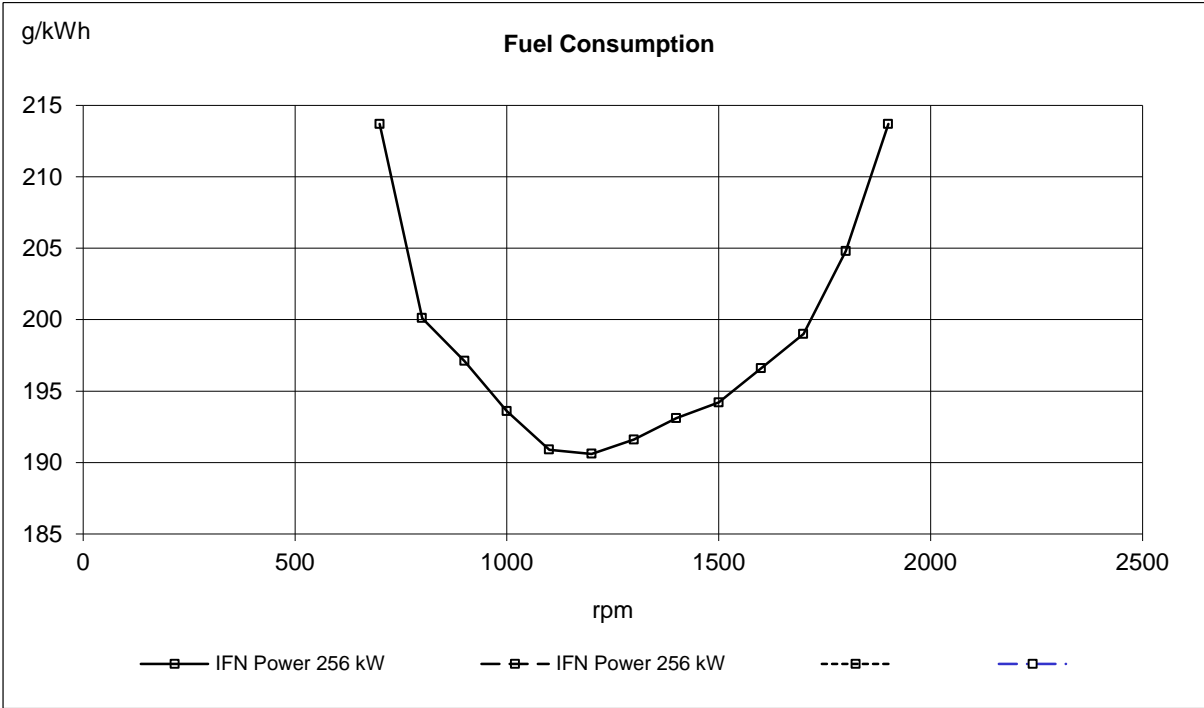
TAD1360VE

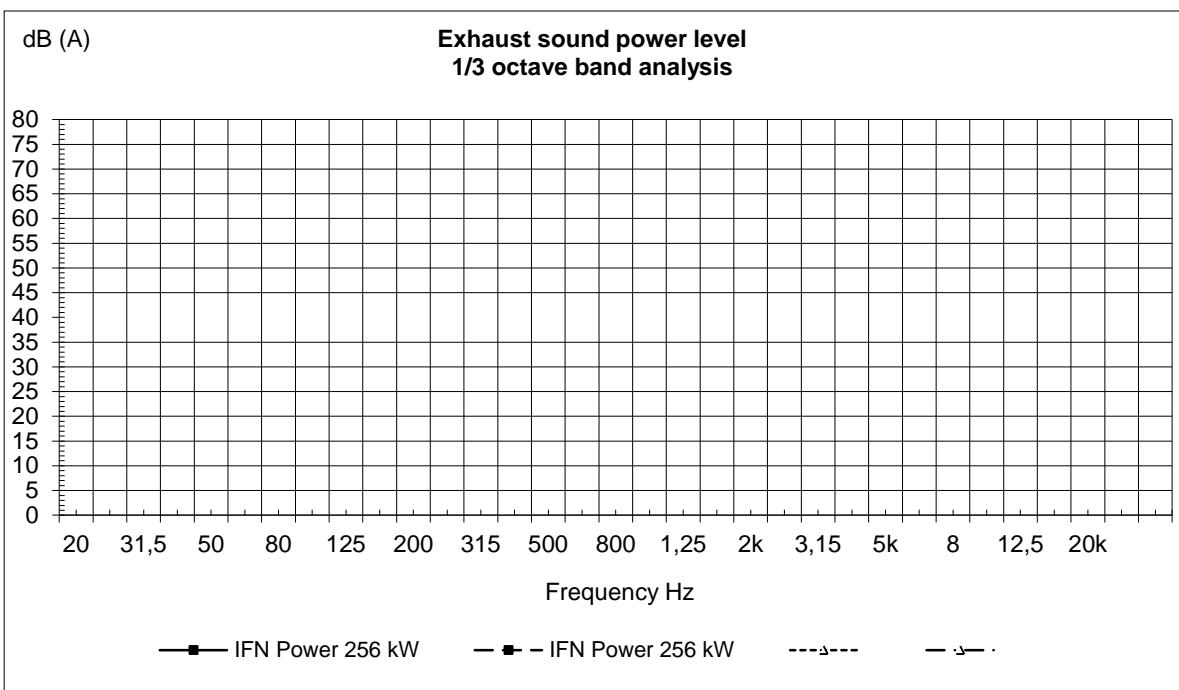
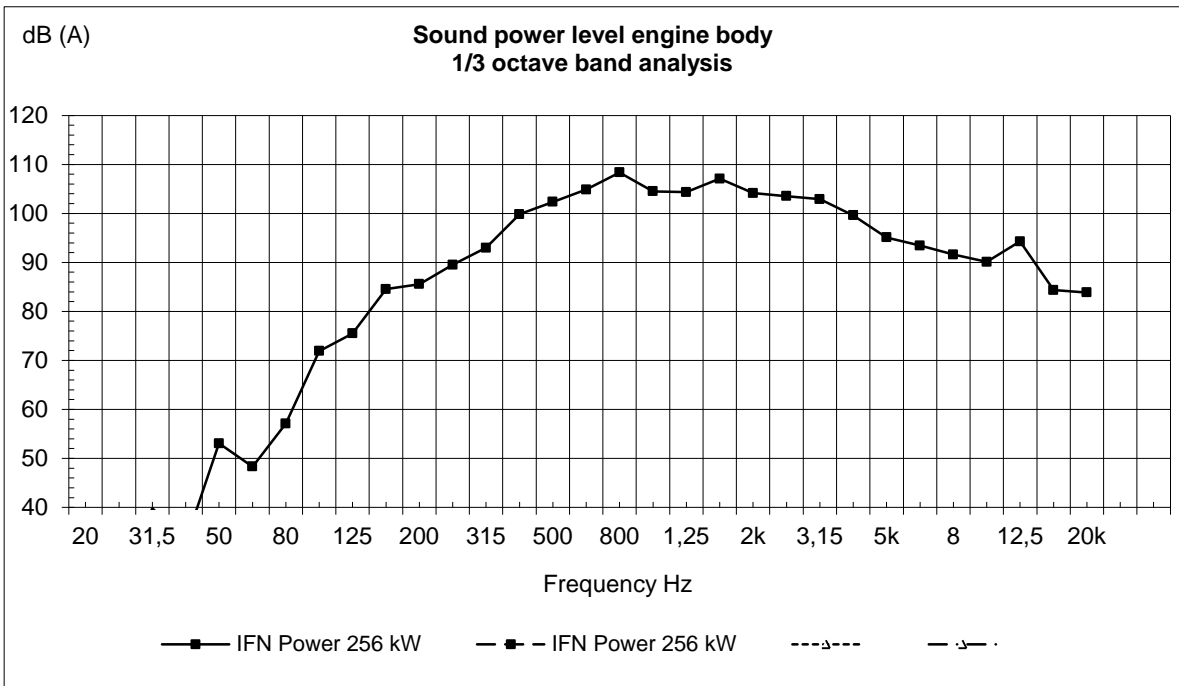
Document No

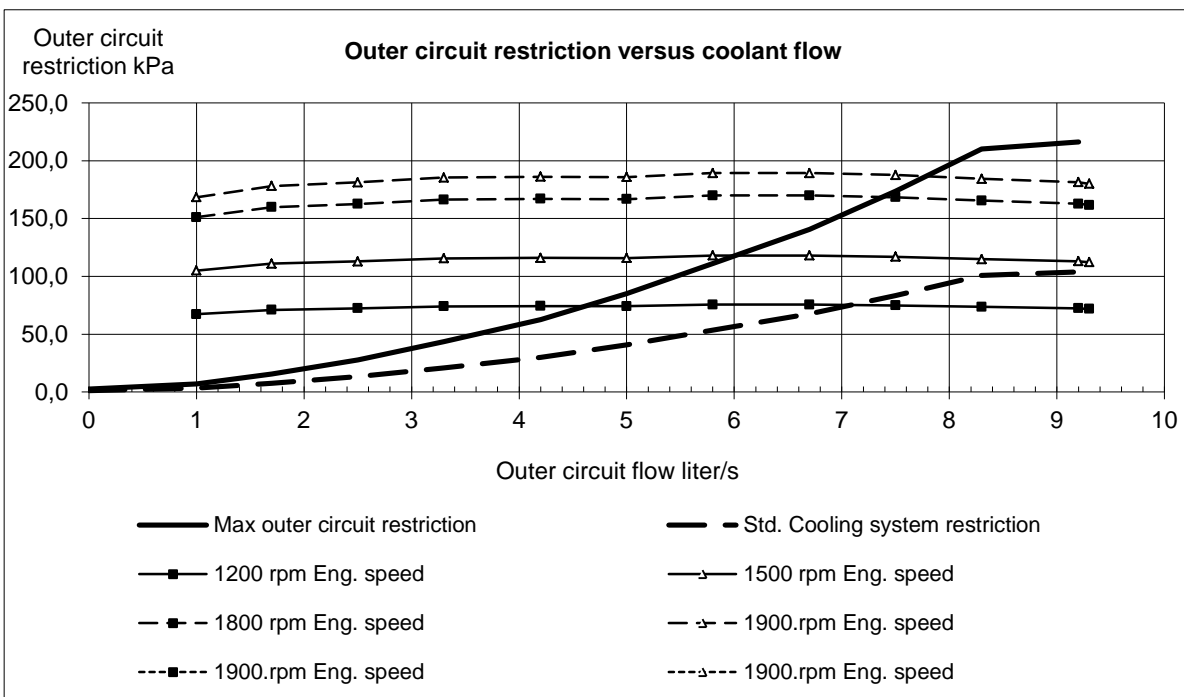
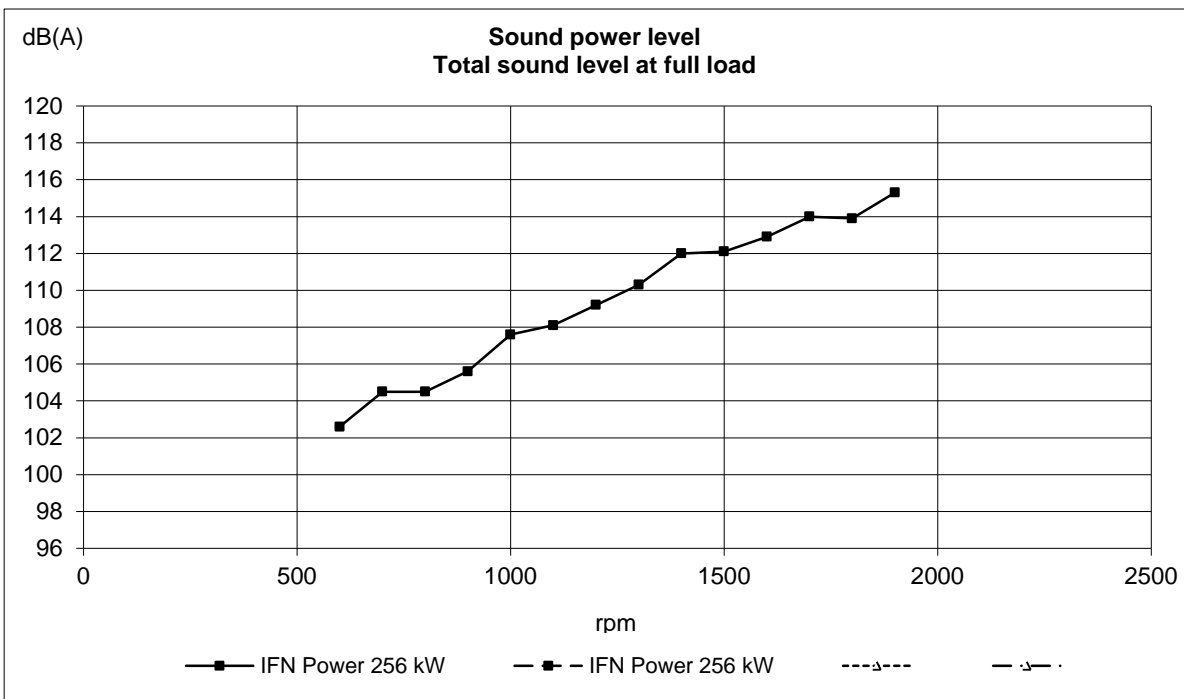
21593477

Issue Index

08







VOLVO PENTA

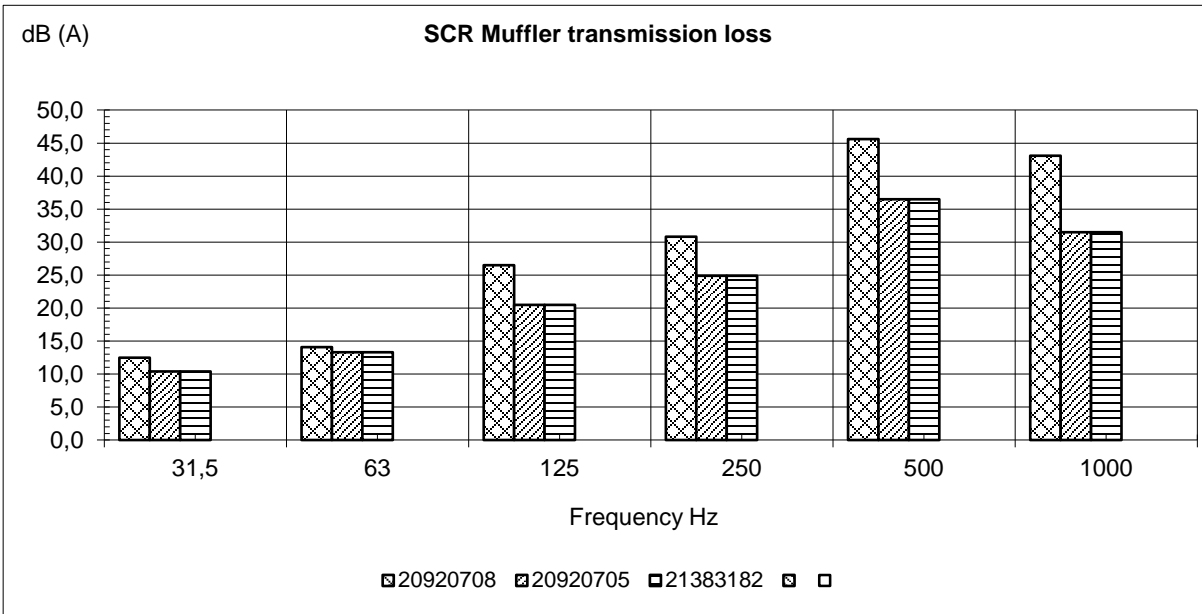
TAD1360VE

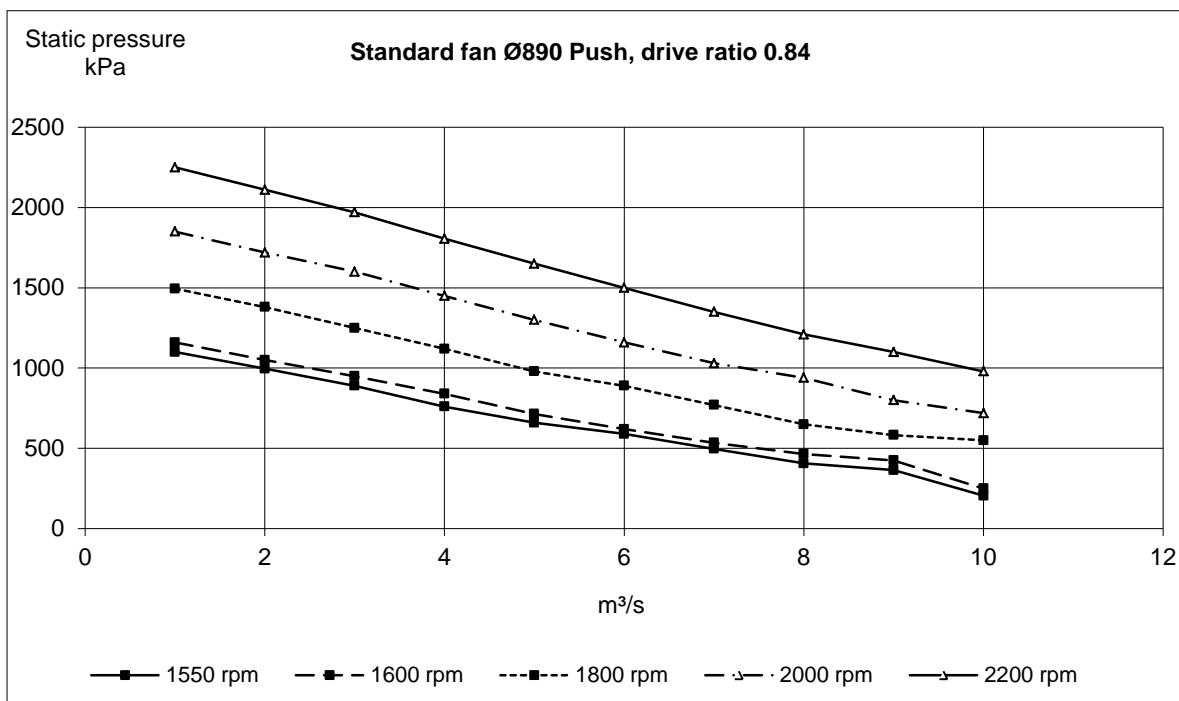
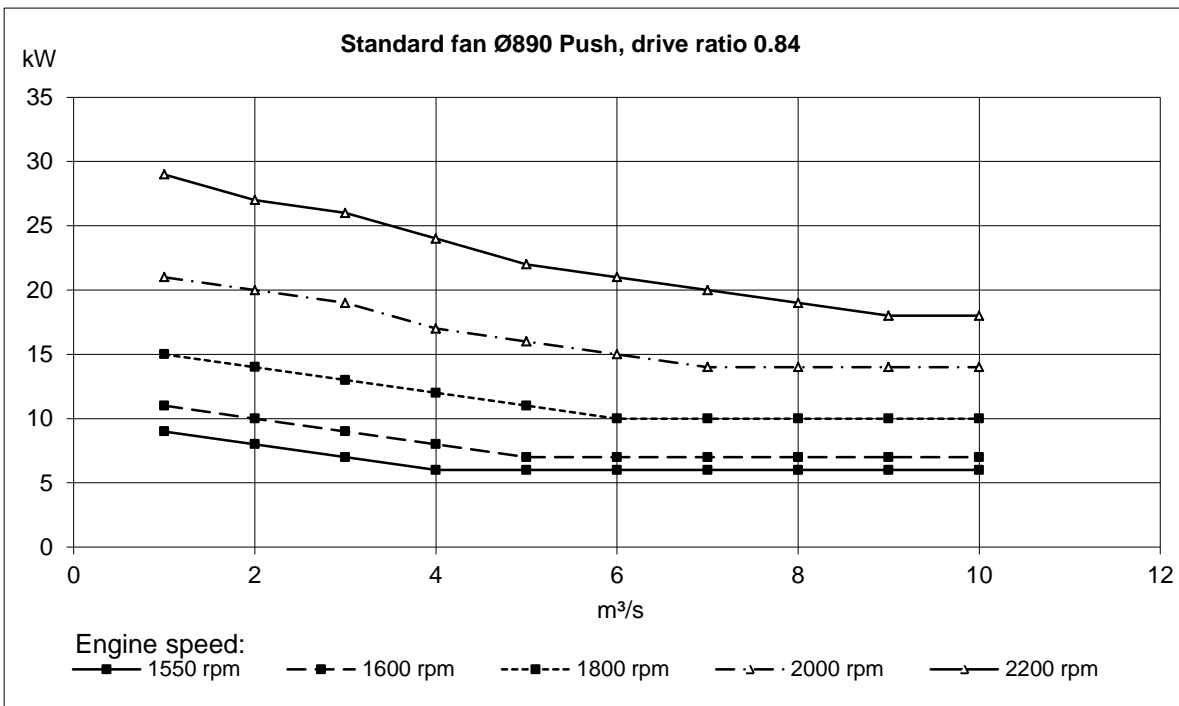
Document No

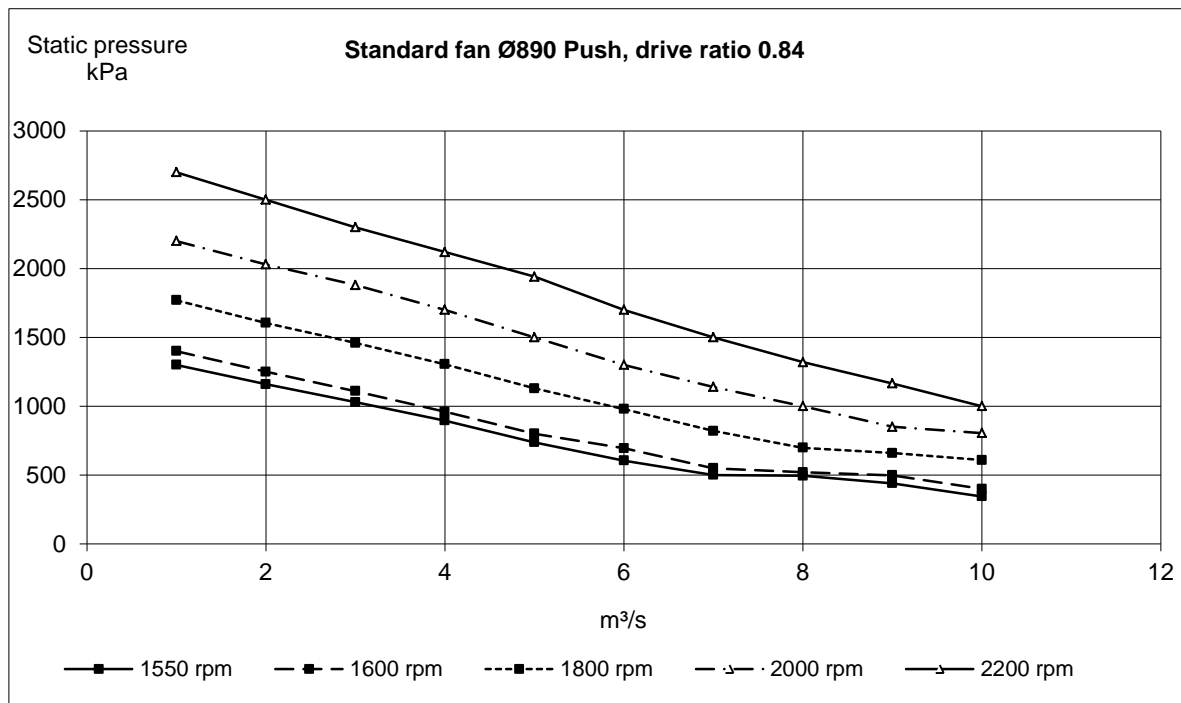
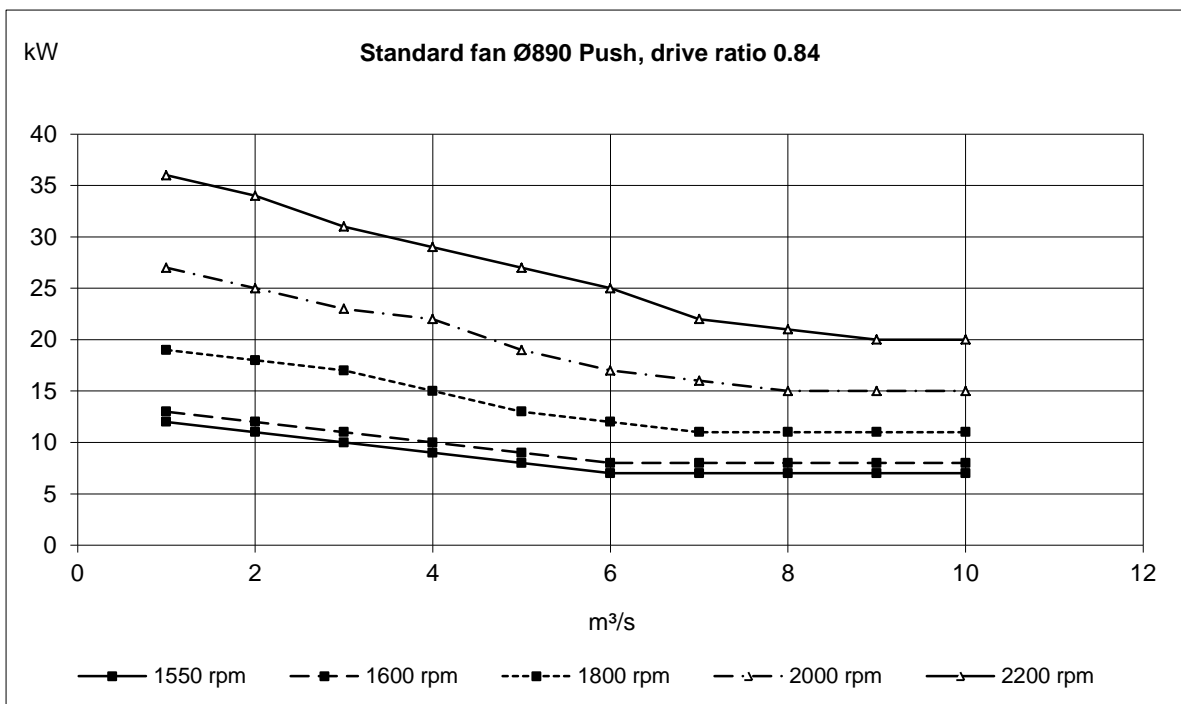
21593477

Issue Index

08







VOLVO PENTA

TAD1360VE

Document No

21593477

Issue Index

05

