

Name 12V1600G20F Speed [rpm] 1500 **Application Group** 3B Nominal power [kW] 576 Dataset Ref. 25°C/-Nominal power [bhp] 772 Frequency [Hz] 50

Exhaust Regulations MoEF India / CPCB Stage II;

Reference conditions

No.	Description	Index	Value	Unit
6	Intake air temperature		25	°C
8	Barometric pressure		1000	mbar
9	Site altitude above sea level		100	m

0. Data-relevant engine design configuration

	or zata reteration distribution				
No.	Description	Index	Value	Unit	
o	Engine rated speed switchable				
°	(1500/1800 rpm)		-	-	
13	Engine without sequential turbocharging		v		
13	(turbochargers without cut-in/cut-out control)		^	-	
31	Engine with air-cooled charge air		х	-	

1. Power-related data

No.	Description	Index	Value	Unit
1	Engine rated speed	Α	1500	rpm
3	Mean piston speed		7.5	m/s
4	Continuous power ISO 3046 (10% overload capability)	۸	576	kW
4	(design power DIN 6280, ISO 8528)	А	370	KVV
5	Fuel stop power ISO 3046	Α	634	kW
0	Mean effective pressure (MEP)		21.96	har
0	(Continuous power ISO 3046)		21.90	bar
0	Mean effective pressure (MEP)		24.15	la a u
9	(Fuel stop power ISO 3046)		24.15	bar

2. General Conditions (for maximum power)

	neral Conditions (for maximum power)		1 .	
No.	Description	Index	Value	Unit
1	Intake air depression (new filter)	А	25	mbar
2	Intake air depression, max.	L	50	mbar
3	Exhaust back pressure	А	85	mbar
4	Exhaust back pressure, max.	L	85	mbar
5	Fuel temperature at fuel feed connection	R	38	°C
0	Fuel temperature at fuel feed connection, max.		60	°C
9	(w/o power reduction)	L	60	C
10	Fuel temperature at fuel feed connection, max.	L	70	°C
49	Max. ambient temperature in direct vicinity		FF	°C
	of vibration damper	L	55	C

3. Consumption

No.	Description	Index	Value	Unit
17	Specific fuel consumption (be) - 100 % CP	В	199.9	- /I->A/I-
17	(+ 5 %; EN 590; 42.8 MJ/kg)	K	199.9	g/kWh

BL Reference value: fuel stop power
Maximum engine power that cannot be run continuously on
some applications (stabilization reserve)
DL Reference value: continuous power
Engine power that can be run continuously under standard
conditions

> Actual value must be greater than specified value <a> Actual value must be less than specified value

IX Applicable
The module is valid for this product type
In Non-applicable
The module is not valid for this product type
IX Value not named
The value has not yet been named or will not be named

* Adequate verification not yet available (tolerance +/-10%)
** Adequate verification not yet available (tolerance +/-5%)

A Design value

Value required for the design of an external system (plant)

R Guideline value

Typical average value as information – only suitable for design purposes to a limited extent

Limit value

A value representing the lower limit/minimum value or upper limit/maximum value that may not be exceeded. Not suitable for design purposes



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		1	
Specific fuel consumption (be) - 75 % CP	R	212 3	g/kWh
(+ 5 %; EN 590; 42.8 MJ/kg)	I.	212.5	g/KVVII
Specific fuel consumption (be) - 50 % CP	D	227 5	-/1.54/1-
(+ 5 %; EN 590; 42.8 MJ/kg)	N	237.5	g/kWh
Specific fuel consumption (be) - 25 % CP	_	255.7	~ /L\A/b
(+ 5 %; EN 590; 42.8 MJ/kg)	K	233.7	g/kWh
Specific fuel consumption (be) - 100 % FSP	<u> </u>	201.7	g/kWh
(+ 5 %; EN 590; 42.8 MJ/kg)	K		
Specific fuel consumption (be) - 75 % FSP	В	210.6	a /law/b
(+ 5 %; EN 590; 42.8 MJ/kg)	K	210.0	g/kWh
Specific fuel consumption (be) - 50 % FSP	_	236.3	g/kWh
(+ 5 %; EN 590; 42.8 MJ/kg)	K		
Specific fuel consumption (be) - 25 % FSP	_	252.1	- /I->A/I-
(+ 5 %; EN 590; 42.8 MJ/kg)	K	232.1	g/kWh
No-load fuel consumption	R	8.2	kg/h
Lube oil consumption after 100 h of operation	В	<0.2	% of B
(B = fuel consumption per hour)	R	<0.2	% UI B
Lube oil consumption after 100 h of operation, max.		<0.5	% of B
(B = fuel consumption per hour)	L	0.3	
	(+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 50 % CP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 25 % CP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 100 % FSP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 75 % FSP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 50 % FSP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 25 % FSP (+ 5 %; EN 590; 42.8 MJ/kg) Specific fuel consumption (be) - 25 % FSP (+ 5 %; EN 590; 42.8 MJ/kg) No-load fuel consumption Lube oil consumption after 100 h of operation (B = fuel consumption after 100 h of operation, max.	(+ 5 %; EN 590; 42.8 MJ/kg) R Specific fuel consumption (be) - 50 % CP R (+ 5 %; EN 590; 42.8 MJ/kg) R Specific fuel consumption (be) - 25 % CP R (+ 5 %; EN 590; 42.8 MJ/kg) R Specific fuel consumption (be) - 100 % FSP R (+ 5 %; EN 590; 42.8 MJ/kg) R Specific fuel consumption (be) - 75 % FSP R (+ 5 %; EN 590; 42.8 MJ/kg) R Specific fuel consumption (be) - 50 % FSP R (+ 5 %; EN 590; 42.8 MJ/kg) R No-load fuel consumption R Lube oil consumption after 100 h of operation R Lube oil consumption after 100 h of operation, max. R	(+ 5 %; EN 590; 42.8 MJ/kg) R 212.3 Specific fuel consumption (be) - 50 % CP R 237.5 (+ 5 %; EN 590; 42.8 MJ/kg) R 255.7 Specific fuel consumption (be) - 25 % CP R 255.7 (+ 5 %; EN 590; 42.8 MJ/kg) R 201.7 Specific fuel consumption (be) - 75 % FSP R 210.6 (+ 5 %; EN 590; 42.8 MJ/kg) R 210.6 Specific fuel consumption (be) - 50 % FSP R 236.3 (+ 5 %; EN 590; 42.8 MJ/kg) R 252.1 No-load fuel consumption R 8.2 Lube oil consumption after 100 h of operation R <0.2

4. Model-related data (basic design)

No.	Description	Index	Value	Unit
3	Engine with exhaust turbocharger (ETC) and intercooler		X	-
4	Exhaust piping, non-cooled		X	-
33	Working method: four-cycle, diesel, single-acting		X	-
34	Combustion method: direct injection		X	-
36	Cooling system: conditioned water		X	-
37	Direction of rotation: c.c.w. (facing driving end)		X	-
6	Number of cylinders		12	-
7	Cylinder configuration: V angle		90	degrees (°)
10	Bore		122	mm
11	Stroke		150	mm
12	Displacement, cylinder		1.75	liter
13	Displacement, total		21.0	liter
14	Compression ratio		17.5	-
41	Cylinder liners: wet, replaceable		Х	-
24	Number of inlet valves, per cylinder		2	-
25	Number of exhaust valves, per cylinder		2	-
15	Number of turbochargers		2	-
28	Standard flywheel housing flange (engine main PTO)		01	SAE
43	Flywheel interface (DISC)		14"	-

5. Combustion air / exhaust gas

Ν	0.	Description	Index	Value	Unit
1	9	Charge-air temperature before cylinder	Α	50	°C
3	3	Charge-air flow through external air-to-air intercooler	Α	0.36	m³/s

BL Reference value: fuel stop power Maximum engine power that cannot be run continuously on some applications (stabilization reserve)
DL Reference value: continuous power Engine power that can be run continuously under standard conditions

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			1	•
34	Charge-air temperature before external	Α	193	°C
J 1	air-to-air intercooler	^	133	C
35	Charge-air temperature after external	^	50	°C
33	air-to-air intercooler	Α	30	C
36	Charge-air temperature after external		65	°C
30	air-to-air intercooler, max.	L	03	C
37	Charge-air temperature after external		-15	°C
3/	air-to-air intercooler, min.	L .	-13	C
39	Pressure differential in external		130	mbar
39	air-to-air intercooler, max.	L .	130	IIIDai
8	Charge-air pressure before cylinder - CP	R	3.06	bar abs
27	Charge-air pressure before cylinder - FSP	R	3.33	bar abs
9	Combustion air volume flow - CP	R	0.75	m³/s
10	Combustion air volume flow - FSP	R	0.81	m³/s
11	Exhaust volume flow (at exhaust temperature) - CP	R	1.85	m³/s
12	Exhaust volume flow (at exhaust temperature) - FSP	R	2.1	m³/s
15	Exhaust temperature after turbocharger - CP	R	491	°C
16	Exhaust temperature after turbocharger - FSP	R	490	°C

6. Heat dissipation

No.	Description	Index	Value	Unit
16	Heat dissipated by engine coolant - FSP	D	250	kW
10	with oil heat, without charge-air heat	ĸ	230	KVV
26	Charge-air heat dissipation - CP	R	125	kW
27	Charge-air heat dissipation - FSP	R	155	kW
31	Heat dissipated by return fuel flow - CP	R	3.6	kW
32	Heat dissipated by return fuel flow - FSP	R	3.8	kW
33	Radiation and convection heat, engine - CP	R	24	kW

7. Coolant system (high-temperature circuit)

7. CO	plant system (nign-temperature circuit)			
No.	Description	Index	Value	Unit
17	Coolant temperature	^	95	°C
17	(at engine outlet to cooling equipment)	Α	93	C
20	Coolant temperature after engine, limit 1	L	105	°C
21	Coolant temperature after engine, limit 2	L	109	°C
25	Coolant antifreeze content, max.	L	50	%
30	Cooling equipment: coolant flow rate	А	26	m³/h
35	Coolant pump: inlet pressure, min.	L	1.4	bar
36	Coolant pump: inlet pressure, max.	L	3.5	bar
41	Pressure loss in off-engine cooling system, max.	L	1	bar
47	Breather valve (expansion tank)		1	har
47	opening pressure (excess pressure)	R		bar
54	Cooling equipment: height above engine, max.	L	15	m
48	Breather valve (expansion tank)		-0.2	la a s
40	opening pressure (depression)	R	-0.2	bar
49	Pressure in cooling system, max.	L	5.0	bar



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Exhaust Regulations MoEF India / CPCB Stage II;

10. Lube oil system

10. L	abe on system			
No.	Description	Index	Value	Unit
1	Lube oil operating temp. before engine, from	R	-	°C
2	Lube oil operating temp. before engine, to	R	-	°C
8	Lube oil operating press. bef. engine, from	R	4.5	bar
9	Lube oil operating press. bef. engine, to	R	5.5	bar
10	Lube oil pressure before engine, alarm	L	2.6	bar
11	Lube oil pressure before engine, shutdown	L	2.4	bar
19	Lube oil fine filter (main circuit):		1	
19	number of units		1	-
20	Lube oil fine filter (main circuit):		4	
20	number of elements per unit		4	-
56	Lube-oil fine filter (main flow), particle size 1		10	μm
57	Lube-oil fine filter (main flow), filtering efficiency re 1		26	%
58	Lube-oil fine filter (main flow), particle size 2		15	μm
59	Lube-oil fine filter (main flow), filtering efficiency re 2		50	%
60	Lube-oil fine filter (main flow), particle size 3		20	μm
61	Lube-oil fine filter (main flow), filtering efficiency re 3		75	%
22	Lube oil fine filter (main circuit):		2	la a v
32	pressure differential, max.	L	2	bar

11 Fuel system

No.	Description	Index	Value	Unit
1	Fuel pressure at engine fuel feed connection, min.		0.5	
1	(when engine is starting)	L	-0.5	bar
า	Fuel pressure at engine fuel feed connection, max.		0.5	bar
2	(when engine is starting)	L	0.5	Dar
74	Max. fuel supply volume	R	4.8	liter/min
74	Normal mode	ĸ	4.0	inter/min
4183	Max. fuel supply volume	0	5.3	lika u /unia
4103	Failure mode	R	5.5	liter/min
77	Max. fuel return volume	D	2.1	liba a /aai a
77	Normal mode	R	2.1	liter/min
4404	Max. fuel return volume	D	4.1	liter/min
4184	Failure mode	R	4.1	iiter/min
10	Fuel pressure at return connection on engine, max.	L	<0.4	bar
18	Fuel fine filter (main circuit): number of units	А	1	-
19	Fuel fine filter (main circuit): number of elements per unit	А	1	-
68	Fuel fine filter, particle size 1		4	μm
69	Fuel fine filter, filtering efficiency re 1		99.5	%
70	Fuel fine filter, particle size 2		6	μm
71	Fuel fine filter, filtering efficiency re 2		99.8	%
72	Fuel fine filter, particle size 3		14	μm
73	Fuel fine filter, filtering efficiency re 3		99.8	%
21	Fuel fine filter (main circuit): pressure differential, max.	L	2	bar

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 Speed [rpm]
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 Nominal power [kW]
 576

 Nominal power [bhp]
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 Frequency [Hz]
 50

Exhaust Regulations MoEF India / CPCB Stage II;

12. General operating data

12. Gen	eral operating data			
No.	Description	Index	Value	Unit
1	Cold start capability: air temperature	R	-20	°C
1	(w/o starting aid, w/o preheating) - (case A)	I.	-20	C
2	Additional condition (to case A):	R	-20	°C
2	engine coolant temperature	I.	-20	C
3	Additional condition (to case A): lube oil temperature	R	-20	°C
4	Additional condition (to case A): lube oil viscosity	R	10W40	SAE
9	Cold start capability: air temperature	R	-40	°C
9	(w/o starting aid, w/ preheating) - (case C)	ĸ	-40	C
10	Additional condition (to case C):	R	32	°C
10	engine coolant temperature	K	32	C
11	Additional condition (to case C): lube oil temperature	R	32	°C
12	Additional condition (to case C): lube oil viscosity	R	10W40	SAE
21	Coolant preheating, heater performance (standard)	R	3	kW
22	Coolant preheating, preheating temperature, min.	L	32	°C
3506	Coolant preheating, preheating temperature, max.	L	55	°C
28	Breakaway torque (without driven machinery)	R	750	Nm
20	coolant temperature +5°C	K	730	INITI
30	Breakaway torque (without driven machinery)	R	450	Nm
30	coolant temperature +40°C	K	430	INITI
20	Cranking torque at firing speed (without driven machinery)	_	400	Nice
29	coolant temperature +5°C	R	400	Nm
21	Cranking torque at firing speed (without driven machinery)	<u> </u>	270	Nime
31	coolant temperature +40°C	R	270	Nm
0.0	Starting is blocked if the engine coolant temperature is		-20	0.0
96	below		-20	°C
37	High idling speed, max. (static)	L	1560	rpm
38	Limit speed for overspeed alarm / emergency shutdown	L	2200	rpm
42	Firing speed, from	R	80	rpm
43	Firing speed, to	R	120	rpm
44	Engine coolant temperature before starting full-load operation, recommended	R	60	°C
44	min.	K	60	°C
48	Minimum continuous load	R	20	%
F0	Engine mass moment of inertia		1.540	1 2
50	(without flywheel)	R	1.548	kgm²
52	Standard flywheel mass moment of inertia	R	1.44	kgm²
1981	Block bending moment - SAE 0	R	3	kNm
1982	Block bending moment - SAE 1	R	3	kNm
Г1	Engine mass moment of inertia	D	2.088	12
51	(with standard flywheel)	R	2.988	kgm²
109	Speed droop (with electronic governor) adjustable P1	R	4	%
110	Speed droop (with electronic governor) adjustable P2	R	0	%
95	Number of starter ring-gear teeth on engine flywheel		157	-

DL Reference value: continuous power
Engine power that can be run continuously under standard
conditions

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Exhaust Regulations MoEF India / CPCB Stage II;

13 Starting (electric)

	rting (electric)			
No.	Description	Index	Value	Unit
2309	Manufacturer		Prestolite	-
2310	Number of starter		1	-
2312	Starter electrically redundant		-	-
2313	Rated power per starter	R	7.5	kW
2314	Starter, rated voltage	R	24	VDC
2315	Rated short-circuit current per starter	L	1730	Α
3000	Power consumption per starter	R	400	Α
3000	(at an engine speed of 100 rpm, SAE0)	K	400	A
3002	Power consumption per starter	R	540	^
3002	(at an engine speed of 100 rpm, SAE1)	K	340	Α
2317	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2318	Manufacturer		Prestolite	-
2319	Number of starter		1	-
2320	Starter electrically redundant		X	-
2321	Rated power per starter	R	7.5	kW
2322	Starter, rated voltage	R	24	VDC
2323	Rated short-circuit current per starter	L	1730	Α
2004	Power consumption per starter		400	
3001	(at an engine speed of 100 rpm, SAE0)	R	400	Α
3003	Power consumption per starter		540	
3003	(at an engine speed of 100 rpm, SAE1)	R	540	Α
2325	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2326	Manufacturer		Prestolite	-
2327	Number of starter		2	-
2328	Starter electrically redundant		-	-
2329	Rated power per starter	R	7.5	kW
2330	Starter, rated voltage	R	24	VDC
2331	Rated short-circuit current per starter	L	1730	A
3251	Power consumption per starter		400	
3251	(at an engine speed of 100 rpm, SAE0)	R	400	Α
3252	Power consumption per starter	2	540	
3232	(at an engine speed of 100 rpm, SAE1)	R	340	Α
2333	Internal resistance of power supply + line resistance per starter	Α	0.008	Ω
2347	Generally valid data for starter		X	-
2342	Rated starting-attempt Duration (at +20°C ambient temperature with battery	R	3	s
2242	Interval between starts		F	
2343	(at rated starting-attempt duration), min.	L	5	S
2345	Maximum acceptable starting-attempt duration	L	15	s
2244	Interval between starts	_	60	
2344	(when starting-attempt duration > rated starting-attempt duration)	R	60	S
2246	Starting attempts within 30 minutes		c	
2346	(at +20°C ambient temperature with battery full), max.	L	6	-

16. Inclinations - standard oil system (ref.: waterline)

No.	Description	Index	Value	Unit	
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	Longitudinal inclination, continuous max.			
15	driving end down	L	15	degrees (°)
	(Option: max. operating inclinations)			
	Longitudinal inclination, continuous max.			
17	driving end up	L	15	degrees (°)
	(Option: max. operating inclinations)			
19	Transverse inclination, continuous max.		15	dograps (°)
	(Option: max. operating inclinations)	L	13	degrees (°)

18. Capacities

10. 0	apacities			
No.	Description	Index	Value	Unit
1	Engine coolant capacity (without cooling equipment)	R	65	liter
11	On-engine fuel capacity	R	3 *	liter
	Engine oil capacity, initial filling			
14	(standard oil system)	R	72.5	liter
	(Option: max. operating inclinations)			
	Oil change quantity, max.			
20	(standard oil system)	R	64	liter
	(Option: max. operating inclinations)			
	Oil pan capacity, dipstick mark min.			
28	(standard oil system)	L	56	liter
	(Option: max. operating inclinations)			
	Oil pan capacity, dipstick mark max.			
29	(standard oil system)	L	64	liter
	(Option: max. operating inclinations)			

19. Masses / dimensions

No.	Description	Index	Value	Unit
7	Engine dry mass (with engine-mounted	D	R 1855 *	ka
′	standard accessories, without coupling)	ĸ		kg
12	Engine mass, wet	D	1918	1
12	(with engine-mounted standard accessories, without coupling)	K	1910	kg

20. Fan / fan cooler

No.	Description	Index	Value	Unit
3	Fan, pusher-type		X	-
18	Fan arrangement: vertical above crankshaft		X	-
9	Fan drive: mechanical via V-belt		X	-
13	Fan: speed	R	1500	rpm

21. Exhaust emissions

No. Description	Index	Value	Unit
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1	947	Emissions data sheet:	EDS16000103	
1	947	"TA-Luft" - CP	ED316000103	-

22. Acoustics

Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated Engine surface noise with attenuated Engine surface noise with attenuated	<u> </u>	ustics			
(free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) R 122 dB(A)	No.	·	Index	Value	Unit
SO 6798, +3dB(A) tolerance Exhaust noise, unsilenced - CP R 122 dB(A)		Exhaust noise, unsilenced - CP			
Exhaust noise, unsilenced - CP (sound power level LLW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP 102 (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LP, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (intake silencer) - CP	101	(free-field sound-pressure level Lp, 1m distance,	R	109	dB(A)
(sound power level LW, ISO 6798, +3dB(A) tolerance) K 122 db(A)					
Exhaust noise, unsilenced - FSP	201	Exhaust noise, unsilenced - CP	D	122	dB(A)
(free-field sound-pressure level Lp, 1m distance, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Figure 3.	201	(sound power level LW, ISO 6798, +3dB(A) tolerance)	I.	122	ub(A)
ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake noise (intake noise (intake noise (intake silencer) - CP		Exhaust noise, unsilenced - FSP			
Exhaust noise, unsilenced - FSP (sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP	102	(free-field sound-pressure level Lp, 1m distance,	R	110	dB(A)
Sound power level LW, ISO 6798, +3dB(A) tolerance) R 123 dB(A)		ISO 6798, +3dB(A) tolerance)			
Sound power level LW, ISO 6798, +3dB(A) tolerance) Exhaust noise, unsilenced - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) R - -	202	Exhaust noise, unsilenced - FSP	D	122	dD(A)
(free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Exhaust noise,unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LD, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP	202	(sound power level LW, ISO 6798, +3dB(A) tolerance)	I.	125	ub(A)
ISO 6798) Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Ly, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP		Exhaust noise, unsilenced - CP			
SDG 6798 Spectrum No. Exhaust noise, unsilenced - CP (sound power level LW, ISO 6798) R - -	102	(free-field sound-pressure level Lp, 1m distance,	D	7351620	
Exhaust noise,unsilenced - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP R	103	ISO 6798)	I.	7331026	-
(sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP		Spectrum No.			
Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP R I 122 dB(A) (Sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP		Exhaust noise,unsilenced - CP			
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intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP R		Spectrum No.			
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Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP	109	(free-field sound-pressure level Lp, 1m distance,	K	104	ub(A)
intake noise (filter) - CP (sound power level LW, ISO 6798, +2dB(A) tolerance) Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP		ISO 6798, +2dB(A) tolerance)			
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Engine surface noise with attenuated intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP	209	intake noise (filter) - CP	R	122	dB(A)
intake noise (filter) - CP (free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP R 735155e - 735155e - 8 - 9 - 9 - 9 - 9 - 9 - 9 - 9		(sound power level LW, ISO 6798, +2dB(A) tolerance)			
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(free-field sound-pressure level Lp, 1m distance, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP	111	intake noise (filter) - CP	D	7251550	
Engine surface noise with attenuated intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP	111	(free-field sound-pressure level Lp, 1m distance,	R	/35155e	-
intake noise (filter) - CP (sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP R		ISO 6798) Spectrum No.			
(sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP		Engine surface noise with attenuated			
(sound power level LW, ISO 6798) Spectrum No. Engine surface noise with attenuated intake noise (intake silencer) - CP	211	intake noise (filter) - CP	_		
Engine surface noise with attenuated intake noise (intake silencer) - CP	211	(sound power level LW, ISO 6798)	K	-	-
intake noise (intake silencer) - CP		Spectrum No.			
113 I I I I I I I I I I I I I I I I I I		Engine surface noise with attenuated			
(free-field sound-pressure level Lp, 1m distance,	112	intake noise (intake silencer) - CP	D	101	4D(A)
	113	(free-field sound-pressure level Lp, 1m distance,	K	101	aB(A)
ISO 6798, +2dB(A) tolerance)		ISO 6798, +2dB(A) tolerance)			
Engine surface noise with attenuated		Engine surface noise with attenuated			
intake noise (intake silencer) - FSP	114	intake noise (intake silencer) - FSP	_	101	-ID(A)
(free-field sound-pressure level Lp, 1m distance,	114	(free-field sound-pressure level Lp, 1m distance,	R		dB(A)
ISO 6798, +2dB(A) tolerance)		ISO 6798, +2dB(A) tolerance)			



Speed [rpm] 1500 Name 12V1600G20F 576 **Application Group** 3B Nominal power [kW] Dataset Ref. 25°C/-Nominal power [bhp] 772 Frequency [Hz] 50

Exhaust Regulations MoEF India / CPCB Stage II;

125	Structure borne noise at engine mounting brackets in vertical direction above resilient engine mounts - CP Spectrum No.	R	735248e	-
	Structure borne noise at engine mounting brackets			
126	in vertical direction above resilient engine mounts - FSP	R	735247e	-
	Spectrum No.			