/**Government of India**
रीप्रशिक्षणएवंपरीक्षणसंस्थान/ **Northern Region Farm Machinery Training and Testing Institute**
ट्रैक्टरनगर, सिरसारोड, हिसार) हरियाणा(/**Tractor Nagar, Sirsa Road, Hisar (Haryana)- 125 001**
Website: http://nrfmtti.gov.in E-mail: fmti-nr@nic.in Tel./Fax: 01662276984 GSTIN:06AAAGN0273PIZ3
[ISO – 9001 : 2015 CERTIFIED]

TECHNICAL SPECIFICATIONS FOR INTERNAL COMBUSTION ENGINE

1	**General:**		
	Make	**:**	
	Model	**:**	
	Type	**:**	
	Name & address of manufacturer	**:**	
	Name & address of applicant	**:**	
	Country of origin	**:**	
	Year of manufacture	**:**	
	Engine serial No	**:**	
	Max. Torque, Nm	**:**	
	Speed at max. Torque, rpm	**:**	
	Maximum Power, kW	**:**	
	Rated power, kW	**:**	
	Maximum torque, N-m	**:**	
	Engine speed (Manufacturer's Recommended settings), rpm:		
	Maximum speed at no load	**:**	
	Rated speed	**:**	
	Low idle speed	**:**	
	Engine speed corresponding to Max. Power	**:**	
	Engine speed corresponding to Rated Power	**:**	
	Engine speed corresponding to maximum torque	**:**	
	Max. Engine oil temperature, °C	**:**	
	Max. Coolant/liner wall temperature, °C	**:**	
	Compliance with Emission Norms (Yes/ No)	**:**	
	If yes, then specify valid Emission Certificate No. and upload copy of the certificate		
2	**Cylinder and cylinder head:**		
	Number	**:**	
	Disposition	**:**	
	Bore/Stroke ,mm	**:**	
	Capacity , cc	**:**	

	Compression ratio	:	
	Type of cylinder head	:	
	Type of cylinder liner	:	
	Type of combustion chamber	:	
	Arrangement of valves	:	
	Valve clearance, mm:		
	-Inlet	:	
	-Exhaust	:	
3	**Fuel system:**	:	
	Type of fuel system	:	
	Capacity of fuel tank, l	:	
3.1	**Fuel feed pump:**		
	Type	:	
	Make & model/group combination number of feed pump		
	Provision of sediment bowl	:	
3.2	**Fuel filter:**		
	Type	:	
	Make & model/group combination number of fuel filter	:	
	Numbers	:	
	Type of element	:	
	Capacity of final stage filter, l	:	
3.3	**Ignition:**		
	Type	:	
	Magneto contact breaker point gap, mm	:	
	Ignition timing	:	
3.4	**Fuel Injection pump:**		
	Make & model group combination number	:	
	Type	:	
	Serial number	:	
	Method of drive	:	
3.5	**Fuel injector:**	:	
	Make & Model group combination number	:	
	Type	:	

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :

	Manufacturer's production pressure setting , Mpa	:		
	Injection timing	:		
	Firing order	:		
3.6	**Governor:**	:		
	Make & Model	:		
	Type	:		
	Governed range of engine speed, rpm	:		
	Rated speed, rpm	:		
3.7	**Spark plug (if applicable):**			
	Make	:		
	Electrode gap, mm	:		
3.8	**Carburettor (if applicable):**			
	Make	:		
	Type	:		
4	**Air intake system:**	:		
	Type	:		
4.1	**Pre-cleaner:**			
	Type	:		
	Make & model	:		
	Number	:		
	Location	:		
4.2	**Air cleaner:**			
	Type	:		
	Make & model	:		
	Number	:		
	Location	:		
	No. & type of element	:		
	Oil capacity (Oil bath type),l	:		
	Recommended grade of oil	:		
	Recommended service schedule, h	:		
	Size of element (dry type), mm:		**Primary (outer)**	**Secondary (inner)**
	-ID/OD	:		
	-Length			
	Provision of service indicator	:		

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :

	Provision of dust unloading valve	:	
	Range of suction pressure at maximum power, kPa	:	
5	**Exhaust:**		
	Type	:	
	Make & model	:	
	Number	:	
	Location	:	
	Shape & Size of muffler	:	
	Provision of spark arresting device/any other device	:	
	Range of exhaust gas pressure at maximum power, kPa	:	
5.1	**Details of turbo charger:**		
	Make & model	:	
	Part No.	:	
	No. of fan/wheel	:	
	No. of blades:		
	-Turbine wheel	:	
	-Compressor wheel	:	
	Method of drive	:	
	Means of lubrication	:	
5.2	**Charged air cooler (CAC) unit:**		
	Type	:	
	Make	:	
	Size(L×W×H), mm	:	
	No of Tubes	:	
5.3	**EGR:**		
	Make	:	
	Type	:	
	Part No.	:	
5.4	**Exhaust treatment system:**		
5.4.1	**Diesel Oxidation Catalyst (DOC):**		
	Make	:	
	DOC description	:	

	Part No.	:	
	Location	:	
5.4.2	**Selective catalyst Reduction (SCR):**		
	Make	:	
	Description	:	
	Location	:	
5.4.3	**Details of diesel exhaust fluid tank:**		
	Capacity, l	:	
	Location	:	
	Material of construction	:	
	Provision of draining	:	
	Recommended diesel exhaust fluid	:	
6	**Lubrication system:**	:	
	Type	:	
	Type of lubricating oil pump	:	
	Lubricating oil pump speed corresponding to rated engine speed , rpm		
	Capacity of lubricating oil pump at rated engine speed, l/min	:	
	Relief valve pressure setting, kg/cm^2	:	
	Oil sump capacity, l		
	Recommended grade of lubricating oil	:	
	Oil change period, h	:	First change after…….....hrs then subsequent changes after every …... hours of operation
	Minimum permissible lubricating oil pressure, kg/cm^2	:	
	Maximum permissible lubricating oil temperature, ^oC	:	
	Method of oil cooling	:	
6.1	**Oil cooler:**		
	Type	:	
	Make & model		
	Part No.	:	
	No. of plates	:	
6.2	**Filter:**		
	Type	:	
	Number	:	
	Location	:	

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :

	Type of element	:	
7	**Cooling System:**		
	Type	:	
7.1	**Water pump/blower:**		
	Type	:	
	Make	:	
	Size of impeller/blower, mm	:	
	No. of vanes/blades	:	
	Method of drive	:	
7.2	**Details of fan:**		
	Type	:	
	Material	:	
	No. of blades	:	
	Diameter, mm	:	
7.3	**Radiator:**		
	Make	:	
	Part No.	:	
	Sr. No.	:	
	Size of radiator (W × H × T), mm	:	
	No. of tubes	:	
	Type of radiator cap	:	
	Radiator cap pressure	:	
	Means of temperature control	:	
	Type of thermostat	:	
	Bare radiator capacity, l	:	
	Total coolant capacity	:	
	Type of coolant recommended	:	
	Coolant water ratio recommended	:	
	Type of radiator grill	:	
	Means of grill cleaning	:	
	Maximum permissible coolant temperature, ^{o}C	:	
8	**Air compressor**	:	
9	**Starting system:**		
	Type	:	
	Aid for cold starting	:	

	Any other device for easy starting	:	
10	**Electrical System:**		
10.1	**Battery:**		
	Make & model	:	
	Number & Type	:	
	Capacity & rating	:	
	Location	:	
10.2	**Starter motor:**		
	Make	:	
	Type	:	
	Model	:	
	Capacity/power	:	
	Sr. No./Part No.	:	
	Location	:	
10.3	**Alternator:**		
	Make	:	
	Type	:	
	Model	:	
	Output rating	:	
	Sr. No./Part No.	:	
	Location	:	
	Method of drive	:	
11	**Overall dimensions, mm:**		
	-Length	:	
	-Width	:	
	-Height	:	
12	**Weight, kg**	:	
13	**Colour**	:	
14	**Labelling plate:**		

SELECTED PERFORMANCE AND OTHER CHARACTERISTICS AS PER IS 15806-2018

(TO BE DECLARED BY THE APPLICANT IF THE INTENDED USE OF ENGINE IS FOR COMBINE HARVESTER)

S. No		Characteristics	Category (Evaluative/ Non evaluative)	Requirement	Tolerance	Declarati-on by applicant	Remarks
1		2	3	4	5	6	7
1.	**Prime mover performance:**						
	a)	Max. Power (absolute) - Average max. power observed during 2 hrs. max. power test in natural ambient condition, kW	Evaluative	To be declared by manufacturer	Declared value to be achieved with a tolerance of ±5%		
	b)	Max. power observed during test after adjusting the no load engine speed as per recommendation of the manufacturer for field work, kW	Evaluative	To be declared by manufacturer	-do-		
	c)	Power at rated engine speed, kW (under natural ambient condition)	Non-Evaluative	To be declared by manufacturer	-do-		
	d)	Specific fuel consumption corresponding to average maximum power under 2h maximum power test, g/kWh.	Evaluative	-do-	+5%(Max.)		
	e)	Max. smoke density (Bosch no.) at 80 percent load between the speed at max. power and 55 percent of speed at max. power or 1000 rpm whichever is higher.	Evaluative	As per CMV rules.	Nil	-	
	f)	Max. crank shaft torque, (Nm) observed during the test after no load engine speed is adjusted as per manufacturer's recommendation for field work	Evaluative	To be declared by manufacturer	±8%		
	g)	Back up torque, %	Evaluative	7 percent, (Min.)	Nil	-	

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :

1	2		3	4	5	6	7
	h)	**Max. Operating temperature, 0C:**					
	i)	Engine oil	Evaluative	To be declared by manufacturer	Nil		The observed value under the high ambient condition should not exceed maximum safe value specified by the oil company which will be provided by the applicant
	ii)	Coolant	Evaluative	To be declared by manufacturer	Nil		The declared value should not exceed the boiling temperature of coolant under the pressurized or otherwise and the observed value under high ambient condition should not exceed the declaration.
	i)	Lubrication oil consumption, g/kWh	Evaluative	Not exceeding 1 % of specific fuel consumption at maximum power under high ambient condition	Nil		The value would be based on the test conducted under high ambient condition
2. Air cleaner oil pull over:							
	i)	Max. oil pull over in percentage when tested in accordance with IS: 8122. (Part-2)-2000	Evaluative	0.20% max.	Nil		
3	**Discard Limits :**						
	a)	Cylinder bore diameter, mm	Evaluative	To be declared by manufacturer	Should not exceed the values declared by the manufacture		

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :

1	2		3	4	5	6	7
	b)	Piston diameter, mm	Evaluative	To be declared by manufacturer	-do-		
	c)	Piston to cylinder liner clearance at skirt, mm	Evaluative	To be declared by manufacturer	-do-		
	d)	Ring end gap, mm i) Top compression ring ii) 2nd compression ring iii) Oil ring	Evaluative	To be declared by manufacturer	-do-		
	e)	Ring groove clearance, mm i) Top compression ring ii) 2nd compression ring iii) Oil ring	Evaluative	To be declared by manufacturer	-do-		
	f)	Diametrical and axial clearance of big end bearing, mm Diametrical Axial	Evaluative	To be declared by manufacturer	-do-		
	g)	Diametrical and axial clearance of main bearings, mm Diametrical Crank shaft end float	Evaluative	To be declared by manufacturer	-do-		

Place:

Date:

Signature----------

Name of the applicant----------

Designation----------

Address----------

Name of the Manufacturer/ Applicant	Document No, if any Revision status	Name of the Test Agency: NRFMTTI,Hisar
Signature : Name : Designation :	Make : Model :	Signature : Name :