**SPECIFICATION FOR TRACK TYPE COMBINE HARVESTER**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. SPECIFICATION**  **1.1 General** | | | | | | | | | | | | | |
|  | | | Name & address of manufacturer | **:** | | | |  | | | | |
|  | | | Make | **:** | | | |  | | | | |
|  | | | Model | **:** | | | |  | | | | |
|  | | | Brand name (if any) | **:** | | | |  | | | | |
|  | | | Type | **:** | | | |  | | | | |
|  | | | Year of manufacture | **:** | | | |  | | | | |
|  | | | Country of origin | **:** | | | |  | | | | |
| **1.2** | | | **Prime mover** |  | | | |  | | | | |
|  | | | Make | **:** | | | |  | | | | |
|  | | | Model | **:** | | | |  | | | | |
|  | | | Type | **:** | | | |  | | | | |
|  | | | **Engine speed (rpm) (Manufacturer’s recommended setting )** | | | | | | | | | | |
|  | | | Maximum speed at no load, rpm | **:** | | | |  | | | | |
|  | | | Rated speed, rpm | **:** | | | |  | | | | |
|  | | | No load engine speed recommended for field operation, rpm | **:** | | | |  | | | | |
|  | | | Low idle speed, rpm | **:** | | | |  | | | | |
|  | | | Country of origin | **:** | | | |  | | | | |
|  | | | Detail of emission certificate if any | **:** | | | |  | | | | |
| **1.2.1** | | | **Cylinder and cylinder head** |  | | | |  | | | | |
|  | | | Number | **:** | | | |  | | | | |
|  | | | Disposition | **:** | | | |  | | | | |
|  | | | Bore/Stroke, mm | **:** | | | |  | | | | |
|  | | | Capacity, cm3 | **:** | | | |  | | | | |
|  | | | Compression ratio | **:** | | | |  | | | | |
|  | | | Arrangement of valves | **:** | | | |  | | | | |
|  | | | Type of cylinder liners | **:** | | | |  | | | | |
|  | | | Type of head | **:** | | | |  | | | | |
|  | | | Type of combustion chamber | **:** | | | |  | | | | |
|  | | | Valve clearance in cold, mm |  | | | |  | | | | |
|  | | | Inlet valve | **:** | | | |  | | | | |
|  | | | Exhaust valve | **:** | | | |  | | | | |
| **1.2.2 3.2.2** | | | **Fuel system** |  | | | |  | | | | |
|  | | | Type of fuel system | **:** | | | |  | | | | |
| **1.2.2.1** | | **Fuel tank** | | |  | | | |  | | | |
|  | | Material | | | **:** | | | |  | | | |
|  | | Size, mm | | | **:** | | | |  | | | |
|  | | capacity, l | | | **:** | | | |  | | | |
| **1.2.2.2** | | **Fuel feed pump** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
|  | | Model/Group combination number | | | **:** | | | |  | | | |
| **1.2.2.3** | | **Fuel filters** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Model/Group combination No. | | | **:** | | | |  | | | |
|  | | Number(s) | | | **:** | | | |  | | | |
|  | | Type of element | | | **:** | | | |  | | | |
|  | | Capacity of final stage filter, l | | | **:** | | | |  | | | |
|  | | **Water separator ( provided/Not provided)** | | |  | | | |  | | | |
| **1.2.2.4** | | **Fuel injection pump** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Model/Group combination No. | | | **:** | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
|  | | Method of drive | | | **:** | | | |  | | | |
| **1.2.2.5** | | **Fuel injectors** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
|  | | Model/Group combination No. | | | **:** | | | |  | | | |
|  | | Injection opening pressure, (kgf/cm2) | | | : | | | |  | | | |
|  | | Injection timing | | | **:** | | | |  | | | |
|  | | Firing order | | | **:** | | | |  | | | |
| **1.2.3** | | **Governor** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
|  | | Designation | | | **:** | | | |  | | | |
|  | | Governed range of engine speed, rpm | | | **:** | | | |  | | | |
| **1.2.4** | | **Air Intake System** | | |  | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
| **1.2.4.1** | | **Pre-cleaner** | | |  | | | |  | | | |
|  | | Make | | | **:** | | | |  | | | |
|  | | Type | | | **:** | | | |  | | | |
|  | | Number(s) | | | **:** | | | |  | | | |
|  | | Location | | | **:** | | | |  | | | |
| **1.2.4.2** | | **Air cleaner** | | |  | | | |  | | |
|  | | Make | | | **:** | | | |  | | |
|  | | Type | | | **:** | | | |  | | |
|  | | Number | | | **:** | | | |  | | |
|  | | Location | | | **:** | | | |  | | |
|  | | Type of element | | | **:** | | | |  | | |
|  | | Service indicator | | | **:** | | | |  | | |
|  | | Dust unloading valve | | | **:** | | | |  | | |
|  | | Recommended service Schedule | | | **:** | | | |  | | |
|  | | Suction pressure at max. power, kPa | | | **:** | | | |  | | |
| **1.2.5** | | **Exhaust** | | |  | | | |  | | |
|  | | Make | | | **:** | | | |  | | |
|  | | Type | | | **:** | | | |  | | |
|  | | Pressure at max. power, kPa | | | **:** | | | |  | | |
|  | | Provision of spark arresting device/any other device | | | **:** | | | |  | | |
| **1.2.5.1** | | **Details of turbocharger** | | |  | | | |  | | |
|  | | Make | | | **:** | | | |  | | |
|  | | Part No | | | **:** | | | |  | | |
|  | | Number of fan/wheels | | | **:** | | | |  | | |
|  | | Number of blades | | |  | | | |  | | |
|  | | Turbine wheel | | | **:** | | | |  | | |
|  | | Compressor fan | | | **:** | | | |  | | |
|  | | Means of lubrication | | | **:** | | | |  | | |
| **1.2.5.2** | | **Charged air cooler (CAC) unit** | | |  | | | |  | | |
|  | | Type | | | **:** | | | |  | | |
|  | | Make | | | **:** | | | |  | | |
|  | | Size (L XWXH), mm | | | **:** | | | |  | | |
|  | | No of tubes | | | **:** | | | |  | | |
| **1.2.6** | | **Lubrication system** | | |  | | | |  | | |
|  | | Type | | | **:** | | | |  | | |
|  | | Type of oil pump | | | **:** | | | |  | | |
|  | | Method of drive | | | **:** | | | |  | | |
|  | | Lub. oil pump rpm corresponding to rated rpm of engine, rpm | | | **:** | | | |  | | |
|  | | Oil sump capacity, l | | | **:** | | | |  | | |
| **1.2.6.1** | | **Filters** | | |  | | | |  | | |
|  | | Type of oil filters | | | **:** | | | |  | | |
|  | | Relief valve pressure setting, kgf/cm2, | | | **:** | | | |  | | |
|  | | Minimum permissible pressure, kgf/cm2, | | | **:** | | | |  | |
| **1.2.6.2** | | **Details of hydraulic oil cooler** | | |  | | | |  | |
|  | | Type | | | **:** | | | |  | |
|  | | Make& Model | | | **:** | | | |  | |
| **1.2.7** | | **Cooling system** | | |  | | | |  | |
|  | | Type | | | **:** | | | |  | |
| **1.2.7.1** | | **Water pump** | | |  | | | |  | |
|  | | Make | | | **:** | | | |  | |
|  | | Type | | | **:** | | | |  | |
|  | | Size of impeller, mm  Diameter  No. of vanes | | | **:**  **:** | | | |  | |
| **1.2.7.2** | | **Details of fan** | | |  | | | |  | |
|  | | Material & type | | | **:** | | | |  | |
|  | | No. of blade | | | **:** | | | |  | |
|  | | Size, mm | | | **:** | | | |  | |
| **1.2.7.3** | | **Radiator** | | |  | | | |  | |
|  | | Make | | | **:** | | | |  | |
|  | | Type and Radiator cap pressure, kg/cm2 | | | **:** | | | |  | |
|  | | Means of temperature control | | | **:** | | | |  | |
|  | | Bare radiator capacity, l | | | **:** | | | |  | |
|  | | Total coolant capacity, l | | | **:** | | | |  | |
|  | | Means of grill cleaning | | | **:** | | | |  | |
| **1.2.8** | | **Details of Air Compressor if any** | | | **:** | | | |  | |
| **1.2.9** | | **Starting system** | | |  | | | |  | |
|  | | Type | | | **:** | | | |  | |
|  | | Any aid for cold starting | | | **:** | | | |  | |
| **1.2.10** | | **Electrical system** | | |  | | | |  |
| **1.2.10.1** | | **Starter motor** | | |  | | | |  |
|  | | Make | | | **:** | | | |  |
|  | | Type | | | **:** | | | |  |
|  | | Model/ Group combination No. | | | **:** | | | |  |
|  | | Power,kW | | | **:** | | | |  |
| **1.2.10.2** | | **Alternator** | | |  | | | |  |
|  | | Make | | | **:** | | | |  |
|  | | Model/Group combination No. | | | **:** | | | |  |
|  | | Output rating | | | **:** | | | |  |
| **1.2.10.3** | | **Voltage regulator** | | | **:** | | | |  |
| **1.2.10.4** | | **Battery** | | |  | | | |  |
|  | | Make | | | **:** | | | |  |
|  | | Model/Type No. | | | **:** | | | |  |
|  | | Type | | | **:** | | | |  |
|  | | 20h rating | | | **:** | | | |  |
| **1.2.10.6** | | **Horn** | | | | |  |  | | |
|  | | Make | | | | | **:** |  | | |
|  | | Type | | | | | **:** |  | | |
|  | | Detail of approved type of horn | | | | | **:** |  | | |
| **1.3** | | **Combine** | | | | |  |  | | |
| **1.3.1** | | **Track laying equipments** | | | | |  |  | | |
| **1.3.1.1** | | **Track** | | | | |  |  | | |
|  | | Make | | | | | **:** |  | | |
|  | | Type | | | | | **:** |  | | |
|  | | Number | | | | | **:** |  | | |
|  | | Track distance/spacing, mm | | | | | **:** |  | | |
|  | | Width of track, mm | | | | | **:** |  | | |
|  | | Grouser height, mm | | | | | **:** |  | | |
|  | | Number of grouser | | | | | **:** |  | | |
|  | | Grouser pitch, mm | | | | | **:** |  | | |
|  | | Length of track on ground, mm | | | | | **:** |  | | |
|  | | Method of track tensioning | | | | | **:** |  | | |
| **1.3.1.2** | | **Driving sprocket** | | | | |  |  | | |
|  | | Diameter, mm | | | | | **:** |  | | |
|  | | No. of teeth, mm | | | | | **:** |  | | |
|  | | Pitch of teeth, mm | | | | | **:** |  | | |
| **1.3.1.3** | | **Type of suspension** | | | | | **:** |  | | |

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| --- | --- | --- | --- |
| **1.3.1.4** | **Guide roller/Idler** |  |  |
|  | Number | **:** |  |
|  | Diameter, mm | **:** |  |
|  | Face width, mm | **:** |  |
|  | Method of mounting | **:** |  |
| **1.3.1.5** | **Carrier rollers** |  |  |
|  | Number | **:** |  |
|  | Diameter, mm | **:** |  |
|  | Face width, mm | **:** |  |
|  | Lubricants | **:** |  |
|  | Method of mounting | **:** |  |
| **1.3.1.6** | **Track roller** |  |  |
|  | Number | **:** |  |
|  | Diameter, mm | **:** |  |
|  | Face width, mm | **:** |  |
|  | Lubricant | **:** |  |
|  | Distance between front track roller to rear, mm | **:** |  |
|  | Distance between centre of drive sprocket & idler roller, mm | **:** |  |
| **1.3.1.7** | **Support roller** |  |  |
|  | Number | **:** |  |
|  | Diameter, mm | **:** |  |
|  | Face width, mm | **:** |  |
| **1.3.2** | **Transmission system** |  |  |
|  | Type | **:** |  |
| **2.3.2.1** | **Ground speed (kmph)** (at full throttle engine speed ) | **:** |  |
| **1.3.2.2** | **Final reduction unit** |  |  | |
|  | Type | **:** |  | |
|  | Make | **:** |  | |
|  | Overall speed reduction ratio | **:** |  | |
|  | Lubricant capacity, l | **:** |  | |
| **1.3.3** | **Brakes** |  |  | |
| **1.3.3.1** | **Service brake**  (Make , Model, Type) | **:** |  | |
| **1.3.3.2** | **Parking brake**  (Make , Model, Type) | **:** |
| **1.3.4** | **Steering** |  |  | |
|  | Type | **:** |  | |
|  | Method of operation | **:** |  | |
| **1.3.5 3.7** | **Hydraulic system** |  |  | |
| **1.3.5.1** | **Hydraulic pump** |  |  | |
|  | Type | **:** |  | |
|  | Make | **:** |  | |
|  | Model | **:** |  | |
|  | Number(s) | **:** |  | |
| **1.3.5.2** | **Hydraulic Motor** |  |  | |
|  | Type | **:** |  | |
|  | Make | **:** |  | |
|  | Model | **:** |  | |
|  | Number(s) | **:** |  | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.3.5.3** | | No. of hydraulic cylinders | | | **:** | | |  |
| **1.3.5.4** | | | **Hydraulic tank** | |  | | |  |
|  | | | Type | | **:** | | |  |
|  | | | Capacity of hydraulic tank, l | | **:** | | |  |
|  | | | No. & type of oil filters | | **:** | | |  |
| **1.3.5.5** | | | **Hydraulic oil coolers** | |  | | |  |
|  | | | Number(s) | | **:** | | |  |
|  | | | Make & Model | | **:** | | |  |
|  | | | Type | | **:** | | |  |
| **1.3.6** | | | **Reel assembly** | |  | | |  |
|  | | | Type | | **:** | | |  |
|  | | | Type & Number of tine bars | | **:** | | |  |
|  | | | Size of tine bars, mm | |  | | |  |
|  | | | Diameter | | **:** | | |  |
|  | | | Length | | **:** | | |  |
|  | | | Diameter & working width of reel, mm | | **:** | | |  |
|  | | | Range of speed corresponding to recommended no load speed of engine, rpm | | **:** | | |  |
|  | | | Number of tines on each bar and their spacing, mm | | **:** | | |  |
|  | | | Arrangement for raising and lowering the reel assembly | | **:** | | |  |
|  | | | Safety device in reel drive | | **:** | | |  |
| **1.3.7** | | | **Cutter bar assembly** | |  | | |  |
|  | | | Working width, cm | | **:** | | |  |
|  | | | Effective cutter bar width, cm | | **:** | | |  |
| **1.3.7.1** | | | **Knife blades** | |  | | |  |
|  | | | No. & type of knife blades | | **:** | | |  |
|  | | | Knife drive safety arrangement | | **:** | | |  |
|  | | | Knife stroke, mm | | **:** | | |  |
|  | | | Knife frequency per minute | | **:** | | |  |
|  | | | Knife speed corresponding to recommended no load speed of engine, rpm | | **:** | | |  |
|  | | | Type of crop dividers | | **:** | | |  |
|  | | | Arrangement for lifting lodged crop | | **:** | | |  |
| **1.3.7.3** | | | **Knife guard** | |  | | |  |
|  | | | No & type of knife guard | | **:** | | |  |
|  | | | Type | | **:** | | |  |
| **1.3.7.4** | | | **Knife back** | |  | | |  |
|  | | | Type | | **:** | | |  |
|  | | | Dimensions, mm | | **:** | | |  |
| **1.3.8** | | | **Cutting platform auger** | |  |  | | |
|  | | | Type of crop conveyor | | **:** |  | | |
|  | | | Size of auger, mm | |  |  | | |
|  | | | Speed of the auger corresponding to recommended no load speed of engine, rpm | | **:** |  | | |
|  | | | Arrangement for adjusting the clearance of crop auger | | **:** |  | | |
|  | | | Auger drive safety arrangement | | **:** |  | | |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1.3.9** | | | **Details of retractable fingers** | |  | | |  | | | | | |
|  | | | Number (s) | | **:** | | |  | | | | | |
|  | | | Range of throw out, mm | | **:** | | |  | | | | | |
|  | | | Axial spacing between the fingers, mm | | **:** | | |  | | | | | |
|  | | | Peripheral distance between the fingers, mm | | **:** | | |  | | | | | |
|  | | | Arrangement for adjustment of fingers length | | **:** | | |  | | | | | |
| **1.3.10** | | | **Undershot conveyor** | |  | | |  | | | | | |
|  | | | Type of feeder conveyor | | **:** | | |  | | | | | |
|  | | | No. size and spacing of comb bar | | **:** | | |  | | | | | |
|  | | | Conveyor drive safety arrangement | | **:** | | |  | | | | | |
|  | | | Arrangement for adjusting clearance between comb and platform and tensioning the chain | | **:** | | |  | | | | | |
|  | | | Speed of conveyor corresponding to recommended no load speed of engine, rpm | | **:** | | |  | | | | | |
| **1.3.11** | | | **Threshing drum** | |  | | |  | | | | | |
|  | | | Type | | **:** | | |  | | | | | |
|  | | | Diameter and Width, mm | | **:** | | |  | | | | | |
|  | | | Range of speed corresponding to  recommended no load speed of engine, rpm: | | **:** | | |  | | | | | |
|  | | | No. of bars | | **:** | | |  | | | | | |
|  | | | No. of pegs and their spacing on each bar | | **:** | | |  | | | | | |
|  | | | No. of hub plate | | **:** | | |  | | | | | |
|  | | | Length of peg bar, mm | | **:** | | |  | | | | | |
|  | | | Height of pegs, mm | | **:** | | |  | | | | | |
|  | | | Arrangement of bars | | **:** | | |  | | | | | |
|  | | | Method of speed variation if any and range | | **:** | | |  | | | | | |
|  | | | Provision of stone trap | | **:** | | |  | | | | | |
|  | | | Safety device | | **:** | | |  | | | | | |
| **1.3.12** | | | **Concave** | |  | | |  | | | | | |
|  | | | Overall width of concave, mm | | **:** | | |  | | | | | |
|  | | | Effective width, mm | | **:** | | |  | | | | | |
|  | | | Type of concave | | **:** | | |  | | | | | |
|  | | | No. of bars | | **:** | | |  | | | | | |
|  | | | No. of pegs per bar & height spacing of pegs | | **:** | | |  | | | | | |
|  | | | Peripheral length, mm | | **:** | | |  | | | | | |
|  | | | Peripheral effective length, mm | | **:** | | |  | | | | | |
|  | | | Effective area, sq. cm. | | **:** | | |  | | | | | |
|  | | | Details of extension | | **:** | | |  | | | | | |
|  | | | **Range of clearance, mm** | |  | | |  | | | | | |
|  | | | Front | | **:** | | |  | | | | | |
|  | | | Rear | | **:** | | |  | | | | | |
|  | | | Method of adjusting the clearance between drum and concave | **:** | | |  | | | | | | |
| **1.3.13** | | | **Rear beater** |  | | |  | | | | | | |
|  | | | Type | **:** | | |  | | | | | | |
|  | | | Size of beater, m ( Length and width) | **:** | | |  | | | | | | |
|  | | | Type of drive | **:** | | |  | | | | | | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | **:** | | |  | | | | | | |
| **1.3.14** | | | **Baffle plate (Deflector)** |  | | |  | | | | | | |
|  | | | Type | **:** | | |  | | | | | | |
|  | | | No. of flap | **:** | | |  | | | | | | |
|  | | | Size of baffle plate, mm | **:** | | |  | | | | | | |
|  | | | Method of flap adjustment if any | **:** | | |  | | | | | | |
| **1.3.15** | **Separating mechanism** | |  | | |  | | | | | | |
| **1.3.15.1** | **Straw walkers (if provided)** | |  | | |  | | | | | | |
|  | Number | | **:** | | |  | | | | | | |
|  | Type | | **:** | | |  | | | | | | |
|  | Size of each straw walker, mm | |  | | |  | | | | | | |
|  | Length | | **:** | | |  | | | | | | |
|  | Width | | **:** | | |  | | | | | | |
|  | Oscillation per minutes corresponding to recommended no load speed of engine | | **:** | | |  | | | | | | |
|  | Method of varying oscillations of straw walkar | |  | | |  | | | | | | |
| **1.3.15.2** | **Stepped grain pan** | |  | | |  | | | | | | |
|  | Type | | **:** | | |  | | | | | | |
|  | Size, mm | | **:** | | |  | | | | | | |
|  | Inclination and method of adjustment if any (degree) | | **:** | | |  | | | | | | |
| **1.3.15.3** | **Cleaning sieves** | |  | | |  | | | | | | |
| **1.3.15.3.1** | **Top sieve** | |  | | |  | | | | | | |
|  | No. of sieve | | **:** | | |  | | | | | | |
|  | Type | | **:** | | |  | | | | | | |
|  | Overall size of sieve (LXW), mm | |  | | | Front | | | Rear | | |
|  | Oscillation per minute corresponding to recommended no load speed of engine | | **:** | | |  | | | | | |
|  | Lift/throw, mm | | **:** | | |  | | | | | |
|  | Arrangement for varying the opening of the sieve | | **:** | | |  | | | | | |
|  | Method of varying oscillation | | **:** | | |  | | | | | |
| **1.3.15.3.2** | | | **Bottom sieve** | | |  | | |  | | |
|  | | | No. of sieve | | | **:** | | |  | | |
|  | | | Type | | | **:** | | |  | | |
|  | | | Overall size of sieve (L XW), mm | | |  | | |  | | |
|  | | | Oscillation per minute corresponding to recommended no load speed of engine | | | **:** | | |  | | |
|  | | | Arrangement for varying the opening of the sieve | | | **:** | | |  | | |
| **1.3.15.4** | | | **Blower** | | |  | | |  | |
|  | | | Dia. mm | | | **:** | | |  | |
|  | | | Effective width, mm | | | **:** | | |  | |
|  | | | No. & type of blade | | | **:** | | |  | |
|  | | | Method of varying the blower speed | | | **:** | | |  | |
|  | | | Range of speed corresponding to recommended no load speed of engine, rpm | | | **:** | | |  | |
|  | | | Method of controlling the air blast | | | **:** | | |  | |
| **1.3.15.5** | | | **Grain pan** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size, mm | | | **:** | | |  | |
|  | | | Inclination (degree) and method of adjustment if any | | | **:** | | |  | |
| **1.3.15.6** | | | **Tailing pan** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size, mm | | | **:** | | |  | |
|  | | | Inclination (degree) and method of adjustment if any | | | **:** | | |  | |
| **1.3.16** | | | **Grain conveying mechanism** | | |  | | |  | |
| **1.3.16.1** | | | **Bottom grain conveyor** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size of conveyor(Length, Dai. And pitch) mm | | |  | | |  | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | | | **:** | | |  | |
| **1.3.16.2** | | | **Grain elevator** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Length of elevator, mm | | | **:** | | |  | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | | | **:** | | |  | |
|  | | | Elevator drive safety arrangement | | | **:** | | |  | |
|  | | | Method of tensioning the chain | | | **:** | | |  | |
| **1.3.16.3** | | | **Upper grain auger** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size of auger (Length, Dia and Pitch), mm | | | **:** | | |  | |
|  | | | Speed corresponding to recommended nom load speed of engine, rpm | | | **:** | | |  | |
|  | | | Drive safety arrangement | | | **:** | | |  | |
| **1.3.17** | | | **Tailing conveying mechanism** | | |  | | |  | |
| **1.3.17.1** | | | **Bottom tailing auger** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size of auger (Length, Dia and Pitch), mm | | | **:** | | |  | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | | | **:** | | |  | |
|  | | | Drive safety | | | **:** | | |  | |
| **1.3.17.2** | | | **Tailing elevator** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Length of elevator, mm | | | **:** | | |  | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | | |  | | |  | |
|  | | | Method of tensioning the chain | | | **:** | | |  | |
|  | | | Elevator drive safety arrangement | | | **:** | | |  | |
| **1.3.17.3** | | | **Upper tailing auger** | | |  | | |  | |
|  | | | Type | | | **:** | | |  | |
|  | | | Size of auger (Length, Dia and Pitch), mm | | | **:** | | |  | |
|  | | | Speed corresponding to recommended no load speed of engine, rpm | | | **:** | | |  | |
|  | | | Drive safety | | | **:** | | |  | |

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| --- | --- | --- | --- | --- | --- | --- |
| **1.3.18** | **Grain tank** | |  | |  | |
|  | Location | | **:** | |  | |
|  | **Capacity** | |  | |  | |
|  | Volume basis, m3 | | **:** | |  | |
|  | Provision of grain tank cover | | **:** | |  | |
|  | Provision for indication of grain tank filling | | **:** | |  | |
| **1.3.18.1** | **Grain conveying auger (Bottom of grain tank)** | | | | | |
|  | Type | | **:** | |  | | |
|  | Size of auger (Length, Dia and Pitch), mm | | **:** | |  | | |
|  | Speed corresponding to recommended no load speed of engine, rpm | | : | |  | | |
|  | Safety device | | **:** | |  | | |
| **1.3.18.2** | **Grain unloading auger** | |  | |  | | |
|  | Type | | **:** | |  | | |
|  | Size of auger (Length, Dia and Pitch), mm | | **:** | |  | | |
|  | Horizontal reach, cm | | **:** | |  | | |
|  | Discharge height above ground level, cm | | **:** | |  | | |
|  | Clearance height, cm | | **:** | |  | | |
|  | Speed corresponding to recommended no load speed of engine, rpm | | **:** | |  | | |
|  | Safety device | | **:** | |  | | |
| **1.4** | **Safety devices provided on the machine** | | | | | | | |
| i)  ii)  iii)  iv)  v) |  | | | | | | | |
| **1.5** | **Details of Operating controls, gauges and instruments** | | | | | | |
| **1.6** | **Seat** |  | |  | | | |
|  | Make | **:** | |  | | | |
|  | Type | **:** | |  | | | |
|  | Type of suspension | **:** | |  | | | |
|  | Type of dampening | **:** | |  | | | |
|  | Horizontal adjustment, mm | **:** | |  | | | |
|  | Adjustment of back rest, mm | **:** | |  | | | |
| **1.7** | **Canopy** |  | |  | | | |
|  | Type | **:** | |  | | | |
|  | Canopy size, mm | **:** | |  | | | |
|  | Height from operator’s platform, mm | **:** | |  | | | |
| **1.8** | **Overall dimensions of combine harvester, cm** |  | | **Working**  **position** | | **Transport Position** | |
|  | Length | **:** | |  | |  | |
|  | Width | **:** | |  | |  | |
|  | Height | **:** | |  | |  | |
| **1.9** | **Mass** |  | |  | | | |
|  | Mass of combine harvester with coolant, fuel, lubricants & grain tank full and 75 kg mass on the operator's seat, kg |  | |  | | | |
|  | Total | **:** | |  | | | |
|  | Front | **:** | |  | | | |
|  | Rear | **:** | |  | | | |
| **1.10** | **Ground clearance, mm** | **:** | |  | | | |
| **1.11** | **Total number of lubricating points:** | | | | | | |
|  | Grease Nipples/grease holes | **:** | |  | | | |
|  | Oiling | **:** | |  | | | |

**1.12 Details of labelling plate:**

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|  |

2 .**STRAW CHOPPER CUM SPREADER (SMS) (IF FITTED)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **2.1** | | **General** |  | |  |
|  | | Make of SMS | **:** | |  |
|  | | Model of SMS | **:** | |  |
|  | | Type of SMS | **:** | |  |
|  | | Name and complete Address of the  manufacturer of SMS including  PIN/Mob./email etc. | **:** | |  |
| **2.2** | | **Rotor** |  | |  |
|  | | Rotor Diameter, mm | **:** | |  |
|  | | No of lugs on Rotor in a row | **:** | |  |
|  | | No of rows in a periphery | **:** | |  |
|  | | Width of flail, mm | **:** | |  |
|  | | Thickness of flail | **:** | |  |
|  | | No. of flail in one set | **:** | |  |
|  | | Spacing between flail of one set, mm | **:** | |  |
|  | | Distance between adjacent flail unit,  mm | **:** | |  |
|  | | Rotor dia with blade, mm |  | |  |
|  | | No of Rows/bar of serrated blade | **:** | |  |
|  | | No of serrated blade in a row | **:** | |  |
|  | | Spacing between serrated blades, mm | **:** | |  |
|  | | Clearance between pivotal blade and  concave | **:** | |  |
|  | | Overlapping of pivotal blade on serrated blade, mm | **:** | |  |
|  | | Rotor rpm | **:** | |  |
| **2.3** | | **Transmission** | **:** | |  |
|  | | Diameter of Drive Pulley | **:** | |  |
|  | | Diameter of Driven pulley | **:** | |  |
| **2.4** | | **Spreader** |  | |  |
|  | | Total no of flap, mm | **:** | |  |
|  | | Length of flap, mm | **:** | |  |
|  | | Distance between flaps, in (left to right) | **:** | |  |
|  | | Spreader angle with horizontal, Degree | **:** | |  |
|  | | Spreader angle with line of travel ,  degree | **:** | |  |
|  | | Spreader sheet thickness, mm | **:** | |  |
|  | | SMS sheet thickness , mm | **:** | |  |
| **2.5** | | **Overall dimensions (mm)** |  | |  |
|  | | Length | **:** | |  |
|  | | Width | **:** | |  |
|  | | Height | **:** | |  |
| **2.6** | | **Overall Mass (kg)** | **:** | |  |
| **2.7** | **SAFETY REQUIREMENT FOR SMS**  **(evaluative)** | | |  |  |
|  | Guards over all moving parts | | | : |  |
|  | RPM indicator of rotor | | | : |  |
|  | Overlapping of flail and fixed serrated  blade (The clearance should be  adjustable) | | | : |  |

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| **2.8** | **Labeling plate on SMS (details)** |  |  |

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| **3** | | **Lubricants:** | |  |  | |
| **Sl. No.** | **Particulars** | | **As recommended by the applicant** | | | **Oil change period** | |
| 1. | Engine oil | |  | | |  | |
| 2. | Hydraulic oil | |  | | |  | |
| 3. | Transmission and final drive housing oil | |  | | |  | |
| 4. | Hydrostatic steering oil | |  | | |  | |
| 5. | Grease | |  | | |  | |

**SELECTED PERFORMANCE AND OTHER CHARACTERISTICS AS PER IS 15806-2018**

**TO BE DECLARED BY APPLICANT**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No** | **Characteristics** | | | **Category (Evaluative/Non evaluative)** | | **Requirement** | | | | | **Tolerance** | | | | | | | **Declarati-on by applicant** | **Remarks** |
| **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 at 80% load between the speed at max. power & 55% of speed at max. or 1000 rpm whichever is higher | | Evaluative | | As pre CMV rules. | | | | | Nil | | | | | | | - |  |
| **f)** | Max. crank shaft torque, (Nm) observed during the test after no load engine speed is adjusted as per manufacture’s recommendation for field work | | Evaluative | | To be declared by manufacturer | | | | | ±8% | | | | | | |  |  |
| **g)** | Back up torque, % | | Evaluative | | 7 percent, (Min.) | | | | | Nil | | | | | | | - |  |
| **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 should be based on the test conducted under high ambient condition |
| **2.Brake performance at 24km/h or Maximum Speed whichever is less** | | | | | | | | | | | | | | | | | | | |
|  | **a)** | Max. Stopping distance at a force equal to or less than 600 N on brake pedal (m) – (cold brake and hot brake) | | Evaluative | | As pre CMV rules. | | | | | Nil | | | | | | |  |  |
|  | **b)** | Max. Force exerted on brake pedal to achieve a deceleration of 2.5 m/sec2 | | Evaluative | | ≤ 600 N | | | | | Nil | | | | | | |  |  |
|  | **c)** | Effectiveness of parking brake at a force of 600 N at foot pedal or 400 N at Hand lever | | Evaluative | | As pre CMV rules. | | | | | Nil | | | | | | |  | Based on the test conducted, Yes/No as the case may be should be indicated |
| **3.Mechanical vibration** | | | | | | | | | | | | | | | | | | | |
|  | **i)** | Operator’s platform | | Non evaluative | | | 120 μm max. | | | | Nil | | | | | | |  |  |
|  | **ii)** | Steering wheel | | Non evaluative | | | 150 μm max. | | | | Nil | | | | | | |  |
|  | **iii)** | Seat with driver seated | | Non evaluative | | | 120 μm max. | | | | Nil | | | | | | |  |
| **4.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 | | | | | | |  |  |
| **5.Noise measurement** | | | | | | | | | | | | | | | | | | | |
|  | **i)** | Max. ambient noise emitted by combine at by standards position dB (A) | | Evaluative | | | | as per CMVR | | | Nil | | | | | |  | | As per road transport condition |
|  | **ii)** | Max. noise at operator’s ear level dB (A) | | Evaluative | | | | as per CMVR | | | Nil | | | | | |  | | In actual field condition |
| **6. Header Lifting Test** | | | | | | | | | | | | | | | | | | | |
|  |  | Satisfactory completion of header lifting test | | Evaluative | | | |  | | | Nil | | | | | |  | | The observed Hydraulic oil temp should not exceed maximum safe value specified by the oil company which will be provided by the applicant. |
| **7.Discard limit** | | | | | | | | | | | | | | | | | | | |
|  | **a)** | Cylinder bore diameter, mm | | Evaluative | | | | Should not exceed the values declared by the manufacture | | | Nil | | | | |  | | |  |
|  | **b)** | Piston diameter, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **c)** | Piston to cylinder liner clearance at skirt | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **d)** | Ring end gap, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **e)** | Ring groove clearance, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **f)** | Diametrical clearance of big end bearing, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **g)** | Axial clearance of big end bearing, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **h)** | Diametrical clearance of main bearings, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **i)** | Axial clearance of main bearings, mm | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **j)** | Thickness of brake lining | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **k)** | Thickness of clutch plate | | Evaluative | | | | -do- | | | Nil | | | | |  | | |  |
|  | **l)** | Spring stiffness(N/mm) | | - | | | | -do- | | | Nil | | | | |  | | |  |
|  | **m)** | Clearance between valve and valve guide(mm) | | - | | | | -do- | | | Nil | | | | |  | | |  |
| **8.Field performance** | | | | | | | | | | | | | | | | | | | |
|  | **a)** | Suitability for crops | Evaluative | | Wheat & paddy (Wheel type) Paddy (Track type) | | | | | | | Nil | | | |  | | |  |
|  | **b)** | Processing losses (%) | Evaluative | | Wheat  Barley  Rice  Sorghum  Maize  Oil seed, rape  Soya-  beans | | | | :  :  :  :  :  : | Max 3%  Max 4%  Max 4%  Max 3%  Max 4%  Max 4%  Max 5% | | Nil | | | |  | | |  |
|  | **c)** | Threshing efficiency | Evaluative | | - | | | | : | ≥ 98 % for wheat and paddy | | Nil | | | |  | | |  |
|  | **d)** | Cleaning efficiency | Evaluative | | - | | | | : | ≥ 96 % for wheat and paddy | | Nil | | | |  | | |  |
|  | **e)** | Grain breakage in main grain tank | Evaluative | | - | | | | : | ≤ 2.5 % | | Nil | | | |  | | |  |
|  | **f)** | Non collectable losses | Evaluative | | - | | | | : | ≤ 2.5 % for wheat, paddy and gram  ≤ 4.0 % for soyabean | | Nil | | | |  | | |  |
| **9. Field performance for Straw Management System (If fitted)** | | | | | | | | | | | | | | | | | | | |
|  | **a)** | Uniformity of straw spread ,CV (Percent) | Evaluative | | - | | | | : | 20, Max. | | - | | | |  | | |  |
|  | **b)** | Weighted mean size of chopped straw, cm | Evaluative | | - | | | | : | 20,Max. | | - | | | |  | | |  |
| **10. Safety requirements** | | | | | | | | | | | | | | | | | | | |
|  | **a)** | Guards against all moving parts/drives and hot part | | Evaluative | | | | Belt and chain drives, pulleys hydraulic pipes(Around operators workplace) | | | | | -- | |  | | | | As per IS 12239 (Part 1) |
|  | **b)** | Lighting arrangement | | Evaluative | | | | essential as per CMVR | | | | | - | |  | | | | -- |
|  | **c)** | Grain tank cover | | Evaluative | | | | Essential | | | | | - | |  | | | |  |
|  | **d)** | Spark arrester in engine’s exhaust in case naturally aspirated engine | | Evaluative | | | | Essential | | | | | **-** | |  | | | |  |
|  | **e)** | Stone trap before concave | | Evaluative | | | | Essential | | | | | **-** | |  | | | |  |
|  | **f)** | Rear view mirror | | Evaluative | | | | Essential | | | | | **-** | |  | | | |  |
|  | **g)** | Fire extinguisher | | Evaluative | | | | Essential | | | | | **-** | |  | | | |  |
|  | **h)** | Slip clutch at following drives –  i) Cutting platform auger  ii) Undershot conveyor drive  iii) Grain & tailing elevator | | Evaluative  Non evaluative  Non evaluative | | | | Essential  Optional  Optional | | | | | - | |  | | | |  |
|  | **i)** | Anti slip surfaces at operator platform & ladder & proper gripping for the control levers. | | Evaluative | | | | Essential | | | | |  | | -- | | | | As per IS 12239 (Part 1) |
|  | **j)** | Working clearance around the controls | | Evaluative | | | | Essential 70mm, min | | | | | - | |  | | | | As per IS 12239 (Part 1) |
|  | **k)** | Labelling of control and gauges and operating controls | | Evaluative | | | | Essential | | | | | **-** | |  | | | | As per IS 6283(Part 1) |
| **11. Material of construction :** | | | | | | | | | | | | | | | | | | | |
|  | | Guards, knife blades and knife back | | Non evaluative | | | Conforming to IS 6024, IS 6025 and IS 10378 respectively | | | | **-** | | | **-** | | | | | **-** |
| **12.** | | Material of blades for Straw Management System (SMS) | | Non-Evaluative | | | The flail and fixed blades shall be manufactured from steel having the following chemical composition or such other composition as shall be agreed between the supplier and the purchaser:  a)Carbon : 0.70 to 0.1 %  b)Manganese : 0.6 to 0.97 %  c)Chrome : 0.1 %  d)Nickle : 0.1 % | | | | | | |  | | | | |  |
| **13.** | | Bushes for flail blades | | Non-Evaluative | | | Mild steel | | | | | | |  | | | | |  |
| **14.** | | Hardness of flail blades for Straw Management System (SMS) | | Evaluative | | | Bush section : 20 to 35 HRC  Edge section(Hardened zone) : 48 to 48 HRC  Remainder zone: 20 to 35 HRC | | | | | | |  | | | | |  |
| **15.** | | Hardness of serrated blades for Straw Management System (SMS) | | Evaluative | | | Bush section : 20 to 35 HRC  Edge section(Hardened zone) : 48 to 58 HRC  Remainder zone: 20 to 35 HRC | | | | | | |  | | | | |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **16.** | | **Safety Requirements for Straw Management System(if Fitted)** | | | | |
|  | **a)** | Guards against all moving parts/drives and hot parts | Evaluative | Essential |  |  |
|  | **b)** | RPM indicator for rotor | Evaluative | Desirable |  |  |
|  | **c)** | Overlapping of flail and fixed serrated blades | Evaluative | Essential |  | The clearance of the flail and fixed serrated blades should be adjustable |

Place: Signature------------------------------------------

Date: Name of the applicant---------------------------

Designation---------------------------------------

Address-------------------------------------------

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