

**F.No. IV-21011/01/2015-Prov-I 270**  
**Bharat Sarkar/Government of India**  
**Griha Mantralaya/Ministry of Home Affairs**  
**PM Division**

26, Man Singh Road, Jaisalmer House  
New Delhi, Dated 5<sup>th</sup> February, 2015

To,

DsG: AR (through LOAR), BSF, CISF, CRPF, ITBP, SSB, NSG & BPR&D.

**Subject: QRs and Trial Directive for Out Board Motors (OBMs).**

*in(s)*  
The QRs and Trial Directives in respect of **Out Board Motors (OBMs)** as per Annexures have been accepted by the Competent Authority in MHA:

- (i) 90 HP, 2 Stroke and 4 Stroke OBM
- (ii) 75 HP, 2 Stroke and 4 Stroke OBM
- (iii) 70 HP, 2 Stroke and 4 Stroke OBM
- (iv) 50 HP, 2 Stroke and 4 Stroke OBM
- (v) 40 HP, 2 Stroke and 4 Stroke OBM
- (vi) 25 HP, 2 Stroke and 4 Stroke OBM

2. The CAPFs concerned will be accountable for correctness of the QRs/Trial Directives

3. Henceforth, all the CAPFs should procure the above item required by them strictly as per the laid down Technical Specifications/QRs.

Yours faithfully,


Encl: As above

  
5/2/15  
(M.K. Chahar)

Under Secretary to the Govt of India  
Tel: 23381278

Copy forwarded for necessary action to :-

The Section Officer (IT), MHA: It is requested to host the QRs and Trial Directives (soft copy attached) on the MHA website (under the page of Organizational Set up- Police Modernization Division- Qualitative Requirement under Vehicle Equipments.

  
( R.K. Soni)  
Section Officer (Prov-I)

Copy to: DDG (Procurement), MHA.

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 90 HP, TWO STROKE OBM

74.

APPX - 'A'

S.No.	Qualitative Requirement/Technical Specification
1	Engine Capacity 90 HP
2	Number of cylinder 3
3	Stroke Two stroke
4	Total engines displacement 1300 to 1500 CC
5	Engine Rpm (Range) 5000 to 6500
6	Fuel supply system Loop-charged (3 carburettor )
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	weight Below 155 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]  
 M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]  
 M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

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S.No.	Qualitative Requirement/Technical Specification
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R)
15	Steering system Rack and pinion type, remote steering system with 18 feet cable.
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control
17	Propeller Suit to the Boat having length up to 6.5 mtr and cable length 18 feet. Aluminium blade propeller, pitch suit to achieve 25 to 29 knots speed with twin engine, for the boat having length up to 6.5 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adppter
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit - 01 No
20	On board spare a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Spark plug wrench - 01 No f) Water pump repair kit-01 No g) Water pump impeller - 01 No h) Gear Housing seal kit - 01 No i) Gear oil drain screw washer - 09 Nos j) Thermostat - 01 No k) Throttle & Gear shift cable - 01 set l) Steering cable - 01 No m) Fuse of all system complete, 02 Sets


PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]

M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]


M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

ACCESSORIES FOR TWIN ENGINE APPLICATIONS


01	Steering system for twin engine speed boats.	Adjustable steering the bar system, to joint both OBMs. The centre to centre distance will be according to the twin engine speed boats for which the tie bar is required. ( Requirement 01 tie bar for two OBMs)
02	Remote control system for twin engine speed boats to operate gear and accelerator cable	Dual mount remote control system. (Requirement 01 kit for two OBMs)


PO  
  
 (Kunal Mazumdar) DIG, BSF

M-3  
  
 (Hardeep Singh, AC) ITBP

M-7  
  
 (Inspr Raviender Prasad) NSG

M-1  
  
 (Ravindra Singh Kushwah), AC/INDRF

M-4  
  
 (J K Sharma) AC/SSB


M-8  
  
 (Dr. M M Gosal, JyS), BPR&D

M-2  
  
 (SANTEEV SINGH) DC/CRPF


M-5  
  
 (S K Thakur) DC/AR

M-9  
  
 (G B Pathak, AC), BSF  
 WW Madhopur

M-6  
  
 (Inspr Rakesh Kumar) CISF

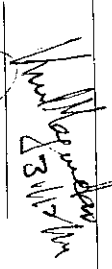








Co-opted Member  
  
 (Dr K K Dhawan)  
 Principal Surveyor IRS

Approved / Not approved

  
 Director General  
 Border Security Force

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 75 HP, TWO STROKE OBM

S.No.	Qualitative Requirement/ Technical Specification
1.	Engine Capacity 75 HP
2	Number of cylinder 3
3	Stroke Two stroke
4	Total engine displacement 1300 to 1500 CC
5	Engine Rpm (Range) 5000 to 6500
6	Fuel supply system Loop-charged (3 carburettor)
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHc to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight Below 145 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R)
15	Steering system Rack and pinion type, remote steering system with 15 feet cable.
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control
17	Propeller Suit to the Boat having length up to 6 Mtr & Cable length 15 feet. Aluminium blade propeller, pitch suit to achieve 20 to 25 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.

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 M-4  M-5   
 M-8  M-9   
 M-6  M-7   
 Co-opted Member 

70

S.No.	Qualitative Requirement/ Technical Specification
18	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit- 01 No
20	On board spare a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller -- 01 No g) Gear Housing seal kit -- 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets

PO Kunal Mazumdar 31/10/14 M-1 (Kunal Mazumdar) DIG, BSF (Ravindra Singh Kushwah), AC/NDRF M-2 (Sandeep Singh) DC/CRPF

M-3 Hardeep Singh, AC ITBP M-4 (J K Sharma) AC/SSB M-5 (S K Thakur), DC/AR M-6 (Inspr Rakesh Kumar) CISF

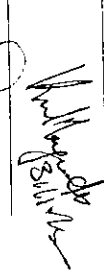
M-7 Inspr Rajender Prasad NSG M-8 (Dr. M M Gosal), BPR&D M-9 (G B Pathak, AC), BSF WW Madhopur Co-opted Member (Dr K K Dhawan) Principal Surveyor IRS

Approved / Not approved


Director General  
Border Security Force

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 70 HP, TWO-STROKE OBM

S.No.	Qualitative Requirement/ Technical Specification
1.	Engine capacity 70 HP
2	Number of cylinder 3
3	Stroke Two stroke
4	Total engine displacement 1300 to 1500 CC
5	Engine Rpm (Range) 5000 to 6000
6	Fuel supply system Loop-charged (3 carburetor)
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight Below 135 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R)
15	Steering system Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the boat having length up to 6 mtr & Cable length 15 feet.
17	Propeller Aluminium blade propeller, pitch suit to achieve 18 to 22 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.


PO 

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M-2 

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M-4 

M-5 

M-6 

M-7 

M-8 

M-9 

Co-opted Member 

S.No.	Qualitative Requirement/ Technical Specification
18	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mir PVC/Nylon fuel line, primer valve, male & female adaptor
19	Flushing unit
20	On board spare Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets

PO [Signature] (Kunal Mazumdar) DIG, BSF M-1 [Signature] (Ravindra Singh Kushwah), AC/NDRF M-2 [Signature] (SANJEEV SINGH) DC/ CRPF

M-3 [Signature] (Hardeep Singh, AC) ITBP M-4 [Signature] (J K Sharma) AC/SSB M-5 [Signature] (S K Thakur), DC/AR M-6 [Signature] (Inspr Rakesh Kumar) CISF

M-7 [Signature] (Inspr Rajender Prasad) NSG M-8 [Signature] (Dr. M. M. Gosal), BPR&D (G B Patil, AC), BSF WW Madhopur M-9 [Signature] Co-opted Member [Signature] (Dr K K Dhawan) Principal Surveyor IRS

[Signature] Approved / Not approved

[Signature] Director General Border Security Force.

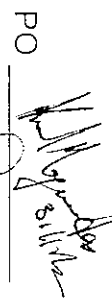


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QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 50 HP, TWO STROKE OBM

APPX - 'D'

S.No.	Qualitative Requirement/ Technical Specification	
1.	Engine power Power	50 HP
2	Number of cylinder	3
3	Stroke	Two stroke
4	Total engine displacement	850 to 1000 CC
5	Engine Rpm (Range)	5000 to 6000
6	Fuel Supply system	Loop-charged (3 carburettor)
7	Fuel	Petrol Indian type
8	Lubrication	Lubrication oil Indian type
9	Alternator out put	03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHc to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight	Below 100 KG
11	Starting system	Electric powered
12	Trim and tilt	Electric powered
13	Meter and Gauges	One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift	Forward/Neutral/ Reverse (F.N.R)
15	Steering system	Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable	Through remote control Suit to the Boat having length up to 5.5 mtr, Cable length 15 feet.

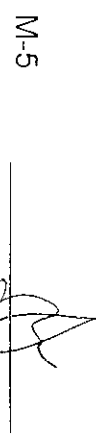
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M-2 

M-3 

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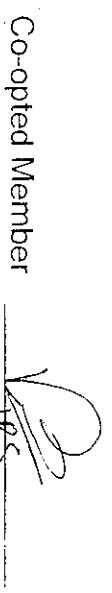
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Co-opted Member 

Contd . P/2

S.No.	Qualitative Requirement/ Technical Specification
17	Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adppter
19	Flushing Unit
20	Flushing device for flushing by fresh water to clean salinity and salt deposit - 01 No a) Fuel filter-06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets

PO (Kunal Mazumdar) DIG, BSF (Kunal Mazumdar) M-1 (Ravindra Singh Kushwah), AC/NDRF (SANJEEV SINGH) DC/ CRPF

M-3 (Hardeep Singh, AC) ITBP (J K Sharma) AC/SSB M-4 (S K Thakur), DC/AR M-5 (Inspr Rakesh Kumar) CISF M-6

M-7 (Inspr Rajender Prasad) N'SG M-8 (Inspr K K Dhawan) Co-opted Member Principal Surveyor IRS  
 Approved/Not approved

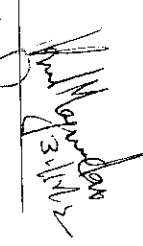






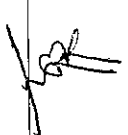



Director General  
 Coastal Security Force

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APPX - 'E'

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 40 HP, TWO STROKE OBM

S.No.	Qualitative Requirement/ Technical Specification
1.	Engine Capacity 40 HP
2	Number of cylinder 3
3	Stroke Two stroke
4	Total engine displacement 750 to 900 CC
5	Engine RPM (Range) 5000 to 6000
6	Fuel supply system Loop-charged (3 carburettor)
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHc to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight Below 100 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R)
15	Steering system Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5.5 mtr Aluminium Boat, Cable length 15 feet.

PO  M-1   
 M-4  M-5   
 M-8  M-9   
 M-2  M-3   
 M-6  M-7   
 Co-opted Member 

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S.No.	Qualitative Requirement/ Technical Specification
17	Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 06 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adpopter
19	Flushing Unit
20	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No On board spare a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets

PO (Kunal Mazumdar) DIG, BSF (M-1) (Ravindra Singh Kushwah), AC/NDRF (M-2) (SANJEEV SINGH) DC/ CRPF

M-3 (Hardeep Singh, AC) ITBP (M-4) (J K Sharma) AC/SSB (M-5) (S K Thakur), DC/AR (M-6) (Inspr Rakesh Kumar) CISF

M-7 (Insp Rajender Prasad) NSG (M-8) (Dr. MM Gosal), BPR&D (M-9) (G B Pathak, AC), BSF (Co-opted Member) (Dr K K Dhawan) (Approved/Not Approved) Principal Surveyor IRS



Director General  
National Security Council


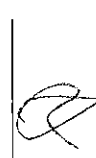
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QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 25 HP, TWO STROKE OBM


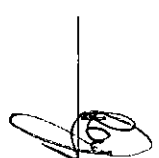
APPX - 'F'



S.No.	Qualitative Requirement/ Technical Specification	
1.	Engine Capacity	25 HP
2	Number of cylinder	2
3	Stroke	Two strokes
4	Total engine displacement	550 to 650 CC
5	Engine RPM (Range)	5000 to 6000
6	Fuel supply system	Loop-charged (2 carburettor)
7	Fuel	Petrol Indian type
8	Lubrication	Lubrication oil Indian type
9	Weight	Below 80 KG
10	Gear shift	Forward/Neutral/ Reverse (F.N.R)
11	Propeller	Aluminium blade propeller, pitch suit to achieve 12 to 15 knots speed with the boat having length up to 5 mtr Aluminium Boat with 05 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.


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M-6  M-7 

M-2  M-3 

Co-opted Member 

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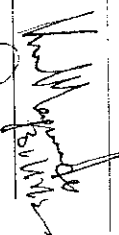





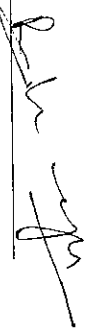




S.No.	Qualitative Requirement/ Technical Specification
12	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter
13	a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-04 Nos e) Water pump repair kit- 01 No f) Water pump impeller – 01 No g) Gear Housing seal kit – 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Fuse - 02 Sets

PO  M-1 (Kunal Mazumdar) DIG, BSF M-2 (SANGEEV SINGH) DC/CRPF  
 M-3  (Hardeep Singh, AC) ITBP M-4 (J K Sharma) AC/SSB M-5  (S K Thakur), DC/AR M-6  (Inspr Rakesh Kumar) CISF  
 M-7  (Inspr Rajender Prasad) NSG M-8 (Dr. M.M. Gosel), BPR&D (G B Pathak, AC), BSF WW Madhopur Co-opted Member  (Dr K K Dhawan) Principal Surveyor IRS  
 Approved / Not approved  
  
 Director General  
 Border Security Force

QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 90 HP, FOUR STROKE OBM

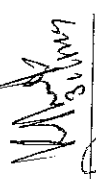



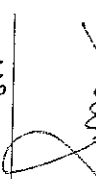







S.No	Qualitative Requirement/Technical Specification
1	Engine capacity 90 HP
2	Number of cylinder 4
3	Stroke Four stroke
4	Total engines displacement 1550 to 1750 CC
5	Engine Rpm (Range) 5000 to 6500
6	Fuel supply system Electronic Fuel Injection
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 06 Amps at Min RPM and 25 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	weight below 180 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed ,amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R.)
15	Steering system Rack and pinion type remote steering system with 18 feet cable
16	Harness for parameter, Gear shift & accelerator cable Through remote control
17	Propeller Suit to the Boat having length up to 6.5 mtr

Aluminium blade propeller, pitch suit to achieve 25 to 29 knots speed with twin engine, for the boat having length up to 6.5 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

**S.No. Qualitative Requirement/Technical Specification**

18	Fuel tank	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adapter
19	Flushing Unit	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	On board spare	<ul style="list-style-type: none"> <li>a) Engine oil filter- 03 Nos</li> <li>b) Fuel filter- 06 Nos</li> <li>c) Air filter - 02 Nos</li> <li>d) Fuel line - 01 No</li> <li>e) Propeller -01 No</li> <li>f) Spark plug- 04 Nos</li> <li>g) Spark plug wrench – 01 No</li> <li>h) Water pump repair kit-01 No</li> <li>i) Water pump impeller – 01 No</li> <li>j) Gear housing seal kit – 01 Set</li> <li>k) Gear oil drain screw washer -09 Nos</li> <li>l) Lubrication oil drain plug washer -03 Nos</li> <li>m) Thermostat -01 No</li> <li>n) Alternator belt for separate Alternator– 01 No</li> <li>o) Sensor air control valve - 01 No</li> <li>p) Throttle &amp; Gear shift cable -01 Set</li> <li>q) Steering cable - 01 No</li> <li>r) Fuses of all system complete - 02 sets</li> <li>s) Injector – 01 No</li> <li>t) Automatic Voltage Regulator (A V R) -01 No</li> <li>u) Pencil coil/Spark plug coil assembly -01 No</li> <li>v) Main relay -01 No</li> <li>w) Stator solenoid/Relay-01 No</li> </ul>

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			



54

ACCESSORIES REQUIRED FOR TWIN ENGINE APPLICATIONS

01	Steering system for twin engine speed boats.	Adjustable steering tie bar system, to join both OBMs. The centre to centre distance will be according to the twin engine speed boats for which the tie bar is required. ( Requirement 01 tie bar for two OBMs)
02	Remote control system for twin engine speed boats to operate gear and accelerator cable.	Dual mount remote control system. ( Requirement 01 kit for two OBMs)

PO [Signature]  
 (Kunal Mazumdar) DIG, BSF

M-1 [Signature]  
 (Ravindra Singh Kushwah), AC/INDRF

M-2 [Signature]  
 (SANJEEV SINGH) DC/ CRPF

M-3 [Signature]  
 (Hardeep Singh, AC) ITBP

M-4 [Signature]  
 (J K Sharma) AC/SSB

M-5 [Signature]  
 (S K Thakur), DC/AR

M-6 [Signature]  
 (Insp. Rakesh Kumar) CISF

M-7 [Signature]  
 (Insp. Rajender Prasad) NSG

M-8 [Signature]  
 (Dr. M M Goyal) PYS, BPR&D

M-9 [Signature]  
 (G B Pathak, AC), BSF  
 WWV Madhopur

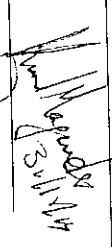


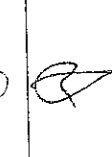





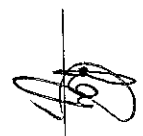

Co-opted Member [Signature]  
 (Dr. K K Dhawan)  
 Principal Surveyor IRS

Approved / ~~Not approved~~




[Signature]  
 Director General  
 Border Security Force





**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 75 HP, FOUR STROKE OBM**





S.No.	Qualitative Requirement/ Technical Specification
1.	Engine capacity 75 HP
2	Number of Cylinder 4
3	Stroke four stroke
4	Total engines displacement 1500 to 1700 CC
5	Engine Rpm (Range) 5000 to 6500
6	Fuel supply system Electronic Fuel Injection
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 06 Amps at Min RPM and 25 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose.
10	weight Below 180 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/ Reverse (F.N.R)
15	Steering System Rack and pinion type remote steering system with 15 feet cable.
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control
17	Propeller Suit to the Boat having length up to 6 Mtr & Cable length 15 feet. Aluminium blade propeller, pitch suit to achieve 20 to 25 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Fuel tank Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter

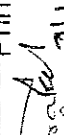
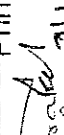
PO  M-1   
 M-4  M-5   
 M-8  M-9   
 M-2  M-3   
 M-6  M-7   
 Co-opted Member  Contd.. P/2

S.No.	Qualitative Requirement/ Technical Specification
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	On board spare a) Engine oil filter- 03 Nos b) Fuel filter- 06 Nos c) Air filter - 02 Nos d) Fuel line - 01 No e) Propeller -01 No f) Spark plug- 04 Nos g) Spark plug wrench - 01 No h) Water pump repair kit- 01 No i) Water pump impeller - 01 No j) Gear housing seal kit - 01 Set k) Gear oil drain screw washer -09 Nos l) Lubrication oil drain plug washer -03 Nos m) Thermostat -01 No n) Alternator belt for separate Alternator- 01 No o) Sensor air control valve - 01 No p) Throttle & Gear shift cable -01 Set q) Steering cable - 01 No r) Fuses of all system complete - 02 sets s) Injector - 01 No t) Automatic Voltage Regulator (A V R) -01 No u) Pencil coil/Spark plug coil assembly -01 No v) Main relay -01 No w) Stator solenoid/Relay-01 No

PO  M-1  M-2  DC/ CRPF  
 (Kunal Mazumdar) DIG, BSF (Ravindra Singh Kushwah), AC/NDRF (Sanjeev Singh) DC/ CRPF

M-3  M-4  M-5  M-6   
 (Hardeep Singh, AC) ITBP (J K Sharma) AC/SSB (S K Thakur), DC/AR (Inspr Rakesh Kumar) CISF

M-7  M-8  M-9  Co-opted Member   
 (Inspr Ramesh Prasad) NSG (Dr. M.M. Gosal), BPR&D (G B Pathak, AC), BSF WW Madhopur Approved (Not approved) (K K Dhawan) Principal Surveyor IRS

 Director General  
 Member

**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 70 HP, FOUR STROKE OBM**

(56)

APPX - 1'





S.No.	Qualitative Requirement/ Technical Specification	Technical Specification
1.	Engine Capacity	70 HP
2	Number of cylinder	4
3	Stroke	Four stroke
4	Total Engine displacement	985 to 1200 CC
5	Engine Rpm (Range)	5000 to 6500
6	Fuel supply system	Electronic Fuel Injection
7	Fuel	Petrol Indian type
8	Lubrication	Lubrication oil Indian type
9	Alternator out put	06 Amps at Min RPM and 25 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight	Below 165 KG
11	Starting system	Electric powered
12	Trim and tilt	Electric powered
13	Meter and Gauges	One set of digital meter for monitoring all parameters of the engine like RPM, speed , amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift	Forward/Neutral/ Reverse (F.N.R)
15	Steering system	Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable	Through remote control
17	Propeller	Suit to the boat having length up to 6 mtr & Cable length 15 feet. Aluminium blade propeller, pitch suit to achieve 18 to 22 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Fuel tank	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter




PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]




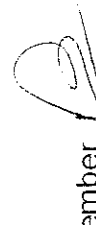
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M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

S.No.	Qualitative Requirement/ Technical Specification
19	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	On board spare a) Engine oil filter- 03 Nos b) Fuel filter- 06 Nos c) Air filter - 02 Nos d) Fuel line - 01 No e) Propeller - 01 No f) Spark plug- 04 Nos g) Spark plug wrench - 01 No h) Water pump repair kit- 01 No i) Water pump impeller - 01 No j) Gear housing seal kit - 01 Set k) Gear oil drain screw washer - 09 Nos l) Lubrication oil drain plug washer - 03 Nos m) Thermostat - 01 No n) Sensor air control valve - 01 No o) Throttle & Gear shift cable - 01 Set p) Steering cable - 01 No q) Fuses of all system complete - 02 sets r) Injector - 01 No s) Automatic Voltage Regulator (A V R) - 01 No t) Pencil coil/Spark plug coil assembly - 01 No u) Main relay - 01 No v) Stator solenoid/Relay- 01 No

PO  M-1  M-2  M-6  CRPF  
 (Kunal Mazumdar) DIG, BSF (Ravindra Singh Kushwah), AC/NDRF (SANJEEV SINGH) DC/CRPF  
 (Inspr Rakesh Kumar) CISF

M-3  M-4  M-5  M-6  
 (Hardeep Singh, AC) ITBP (J K Sharma) AC/SSB (S K Thakur), DC/AR (Inspr Rakesh Kumar) CISF


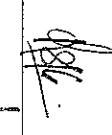
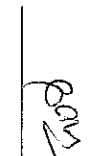








M-7  M-8  M-9  M-10   
 (Inspr Rajender Prasad) NSG (Dr. M M Gosal), BPR&D (G B Pathak, AC), BSF Co-opted Member  
 WW Madhopur Approved (not approved) Principal Surveyor IRS  
 Director General Border Security Force

**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 50 HP, FOUR STROKE OBM**

(54)

APPX - 'J'

S.No.	Qualitative Requirement/ Technical Specification	
1.	Engine Capacity	50 HP
2	Number of cylinder	4
3	Stroke	Four strokes
4	Total engine displacement	870 to 1070 CC
5	Engine Rpm (Range)	5000 to 6000
6	Fuel supply system	Electronic Fuel Injection
7	Fuel	Petrol Indian type
8	Lubrication	Lubrication oil Indian type
9	Alternator out put	05 Amps at Min RPM and 20 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight	Below 115 KG
11	Starting system	Electric powered
12	Trim and tilt	Electric powered
13	Meter and Gauges	One set of digital meter for monitoring all parameters of the engine like RPM, speed , amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift	Forward/Neutral/ Reverse (F.N.R)
15	Steering system	Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift accelerator cable	Through remote control Suit to the Boat having length up to 5.5 mtr. Cable length 15 feet.
17	Propeller	Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Fuel tank	Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member 			

53

S.No.	Qualitative Requirement/ Technical Specification
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	On board spare a) Engine oil filter- 03 Nos b) Fuel filter- 06 Nos c) Air filter - 02 Nos d) Fuel line - 01 No e) Propeller - 01 No f) Spark plug- 004 Nos g) Spark plug wrench - 01 No h) Water pump repair kit- 01 No i) Water pump impeller - 01 No j) Gear housing seal kit - 01 Set k) Gear oil drain screw washer - 09 Nos l) Lubrication oil drain plug washer - 03 Nos m) Thermostat - 01 No n) Sensor air control valve - 01 No o) Throttle & Gear shift cable - 01 Set p) Steering cable - 01 No q) Fuses of all system complete - 02 sets r) Injector - 01 No s) Automatic Voltage Regulator (A V R) - 01 No t) Pencil coil/Spark plug coil assembly - 01 No u) Main relay - 01 No v) Stator solenoid/Relay- 01 No

PO  
 (Kunal Mazumdar) DIG, BSF  
 (SANJEEV SINGH ) DC/ CRPF

M-1  
 (Ravindra Singh Kushwah), AC/INDRF

M-2  
 (S K Thakur), DC/AR

M-3  
 (Hardeep Singh, AC) ITBP  
 (J K Sharma) AC/SSB  
 (Inspr Rakesh Kumar) CISF

M-4  
 (Inspr Rajender Prasad) NSG  
 (G B Pathak, AC), BSF

M-5  
 WW Madhopur

M-6  
 Co-opted Member  
 (Pr K K Dhawan)  
 Principal Surveyor IRS

M-7  
 (Inspr Rajender Prasad) NSG  
 WW Madhopur

M-8  
 (G B Pathak, AC), BSF  
 WW Madhopur

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 (G B Pathak, AC), BSF  
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 (G B Pathak, AC), BSF  
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 WW Madhopur

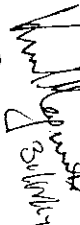



M-100  
 (G B Pathak, AC), BSF  
 WW Madhopur





**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 40 HP, FOUR STROKE OBM**


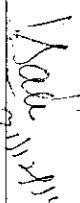

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APPX - 'K'

S.No.	Qualitative Requirement/ Technical Specification
1	Engine capacity 40 HP
2	Number of cylinder 3
3	Stroke Four stroke
4	Total engine displacement 700 to 900 CC
5	Engine RPM (Range) 5000 to 6000
6	Fuel supply system Electronic Fuel Injection
7	Fuel Petrol Indian type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 05 Amps at Min RPM and 20 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight Below 110 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/Reverse (F.N.R)
15	Steering system Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5.5 mtr Aluminium Boat, Cable length 15 feet.
17	Propeller Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 06 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.
18	Fuel tank Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adpoter

PO  M-1  M-2  M-3 




M-4  M-5  M-6  M-7 





M-8  M-9  Co-opted Member  Contd ... P/2






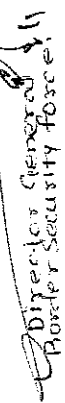
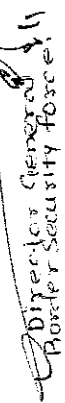
51

S.No.	Qualitative Requirement/ Technical Specification
19	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	On board spare a) Engine oil filter-03 Nos b) Fuel filter-06Nos c) Air filter - 02 Nos d) Fuel line - 01 No e) Propeller -01 No f) Spark plug- 03 Nos g) Spark plug wrench -- 01 No h) Water pump repair kit- 01 No i) Water pump impeller - 01 No j) Gear housing seal kit - 01 Set k) Gear oil drain screw washer -06 Nos l) Lubrication oil drain plug washer -02 Nos m) Thermostat -01 No n) Sensor air control valve - 01 No o) Throttle & Gear shift cable -01 Set p) Steering cable - 01 No q) Fuses of all system complete - 02 set r) Injector -- 01 No s) Automatic Voltage Regulator (A V R)-01No t) Pencil Coil/Spark plug coil Assembly - 01 No u) Main Relay - 01 No v) Stator Solenoid/Relay - 01 No

PO  M-1  M-2  M-2 (SANJEEV SINGH) DC/ CRPF (Kunal Mazumdar) DIG, BSF (Ravindra Singh Kushwah), AC/NDRF

M-3  M-4  M-5  M-6  (Hardeep Singh, AC) ITBP (J K Sharma) AC/SSB (S K Thakur), DC/AR (Inspr Rakesh Kumar) CISF

M-7  M-8  M-9  Co-opted Member (Inspr Rajender Prasad) NSG (G B Pathak, AC), BSF (V V Madhopur) Approved / Not approved (Dr. A M Gosal), BPR&D (G B Pathak, AC), BSF (V V Madhopur) Approved / Not approved (Dr K K Dhawan) Principal Surveyor IRS




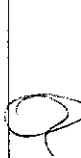

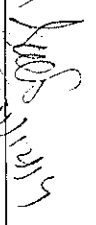





 Director General  
 Principal Surveyor  
 Director General  
 Principal Surveyor

**QUALITATIVE REQUIREMENT/TECHNICAL SPECIFICATION OF 25 HP, FOUR STROKE OBM**

50

APPX - 'L'

S.No.	Qualitative Requirement/ Technical Specification
1	Engine capacity 25 HP
2	Number of cylinder 3
3	Stroke Four stroke
4	Total engine displacement 490 to 690 CC
5	Engine RPM (Range) 5000 to 6000
6	Fuel Supply system Electronic Fuel Injection
7	Fuel Petrol Indian Type
8	Lubrication Lubrication oil Indian type
9	Alternator out put 05 Amps at Min RPM and 15 Amps at Max RPM with charging capacity of 100 AHc to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight Below 100 KG
11	Starting system Electric powered
12	Trim and tilt Electric powered
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.
14	Gear shift Forward/Neutral/Reverse (F N R)
15	Steering system Rack and pinion type remote steering system with 15 feet cable
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5 mtr Aluminium Boat, Cable length 15 feet.
17	Propeller Aluminium blade propeller, pitch suit to achieve 12 to 15 knots speed with the boat having length up to 5 mtr Aluminium Boat with 05 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine. Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter
18	Fuel tank

PO		M-1	
M-4		M-5	
M-8		M-9	
M-2		M-3	
M-6		M-7	
Co-opted Member			

**S. No. Qualitative Requirement/ Technical Specification**

19	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No
20	<p>On board spare</p> <p>a) Engine oil filter-03 Nos                  b) Fuel filter-06Nos                  c) Air filter - 02 Nos                  d) Fuel line - 01 No                  e) Propeller -01 No                  f) Spark plug- 03 Nos                  g) Spark plug wrench – 01 No                  h) Water pump repair kit- 01 No                  i) Water pump impeller – 01 No                  j) Gear housing seal kit – 01 Set                  k) Gear oil drain screw washer -06 Nos                  l) Lubrication oil drain plug washer -02 Nos                  m) Thermostat -01 No                  n) Sensor air control valve - 01 No                  o) Throttle &amp; Gear shift cable -01 Set                  p) Steering cable - 01 No                  q) Fuses of all system complete - 02 set                  r) Injector – 01 No                  s) Automatic Voltage Regulator (A V R)-01No                  t) Pencil Coil/Spark plug coil Assembly – 01 No                  u) Main Relay – 01 No                  v) Stator Solenoid/Relay – 01 No</p>

PO  
 (Kunal Mazumdar) DIG, BSF

M-1

*[Signature]*

(Ravindra Singh Kushwah), AC/NDRF

M-2

*[Signature]*

(SANJEEV SINGH) DC/CRPF

M-3

(Hardeep Singh, AC) ITBP

*[Signature]*

M-4  
 (J K Sharma) AC/SSB

*[Signature]*

M-5  
 (S K Thakur), DC/AR

*[Signature]*

M-6  
 (Inspr Rakesh Kumar) CISF

*[Signature]*

M-7

(Insp Rajender Prasad) NSG

*[Signature]*

M-9

(G B Pathak, AC), BSF

*[Signature]*

Co-opted Member

*[Signature]*

(Mr K K Dhawan)

Principal Surveyor IRS

*[Signature]*  
 Director General  
 Border Security Force

48

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 90 HP, TWO STROKE OBM

S.N.	Qualitative Requirement/Technical Specification	Trial Directive
1	Engine Capacity 90 HP	Documents / certificate of manufacturer/ regulating authority to be checked physically. visual check and inspection
2	Number of cylinder 3	Documents / certificate of manufacturer/ regulating authority to be checked physically.
3	Stroke Two stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engines 1300 to 1500 CC	Check by RPM meter.
5	Engine Rpm (Range) 5000 to 6500	Check and operate practically. visual inspection
6	Fuel supply system Loop-charged (3 carburettor)	Check physically during water trial
7	Fuel Petrol Indian type	Check physically during water trial
8	Lubrication Lubrication oil Indian type	Check practically with ampere gauge
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose	
10	weight Below 155 KG	Check on physical measurement by weighing machine
11	Starting system Electric powered	check by starting with key and visual inspection
12	Trim and tilt Electric powered	Check and operate practically and visual inspection

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M-2 [Signature]

M-3 [Signature]

M-4 [Signature]

M-5 [Signature]

M-6 [Signature]

M-7 [Signature]

M-8 [Signature]

M-9 [Signature]

Co-opted Member [Signature]

S.No.	Qualitative Requirement/Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type, remote steering system with 18 feet cable.	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 6.5 mtr and cable length 18 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 25 to 29 knots speed with twin engine, for the boat having length up to 6.5 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adapter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit - 01 No	Check practically
20	On board spare a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Spark plug wrench - 01 No f) Water pump repair kit- 01 No g) Water pump impeller - 01 No h) Gear Housing seal kit - 01 No i) Gear oil drain screw washer - 09 Nos j) Thermostat - 01 No k) Throttle & Gear shift cable - 01 set l) Steering cable - 01 No m) Fuse of all system complete - 02 Sets	Check physically

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]


M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]

M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

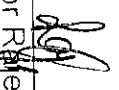
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ACCESSORIES FOR TWIN ENGINE APPLICATIONS


01	Steering system for twin engine speed boats.	Adjustable steering tie bar system, to joint both OBMs. The centre to centre distance will be according to the twin engine speed boats for which the tie bar is required. ( Requirement 01 the bar for two OBMs)	Check simultaneous movement of both the OBM , left and right by applying steering wheel during open trial run on River/Sea water.
02	Remote control system for twin engine speed boats to operate gear and accelerator cable	Dual mount remote control system. (Requirement 01 kit for two OBMs)	Operate clutch / Throttle lever of both the OBM separately and check the operation during open trial run on River/ Sea water.


PO  
  
 (Kunal Mazumdar) DIG, BSF


M-3  
  
 (Hardeep Singh, AC) ITBP


M-7  
  
 (Inspr Ramesh Prasad) NSG


M-1  
  
 (Ravindra Singh Kushwah), AC/NDRF

M-4  
  
 (J K Sharma) AC/SSB


M-8  
  
 (Dr. M. M. Gosal, Pw) BPR&D

M-5  
  
 (S K Thakur), DC/AR

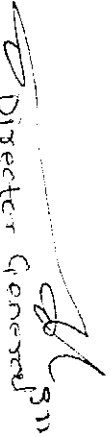
M-9  
  
 (G B Pathak, AC), BSF  
 Ww Madhopur

M-2  
  
 (SANTEEV SINGH) DC/CRPF

M-6  
  
 (Inspr Rakesh Kumar) CISF

Co-opted Member  
  
 (K K K Dhawan)  
 Principal Surveyor IRS

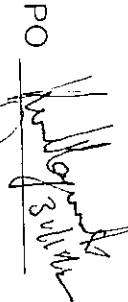



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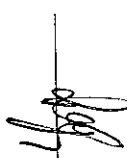
  
 Director General  
 Border Security Force.




QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 75 HP, TWO STROKE OBM

MS

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine Capacity 75 HP	Trial Directive Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder 3	visual check and inspection Documents / certificate of manufacturer/ regulating authority to be checked physically.
3	Stroke Two stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement 1300 to 1500 CC	check by RPM meter
5	Engine Rpm (Range) 5000 to 6500	Check and operate practically and visual inspection
6	Fuel supply system Loop-charged (3 carburettor)	Check physically during water trial
7	Fuel Petrol Indian type	Check physically during water trial
8	Lubrication Lubrication oil Indian type	Check practically with ampere gauge
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose	Check on physical measurement by weighing machine check by starting with key and visual inspection
10	Weight Below 145 KG	Check and operate practically and visual inspection
11	Starting system Electric powered	
12	Trim and tilt Electric powered	


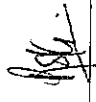

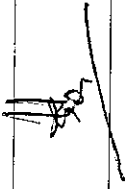
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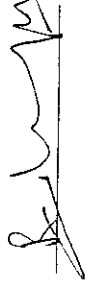
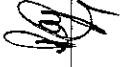
M-4  M-5  M-6  M-7 




M-8  M-9  Co-opted Member  Contd..... P/2

55

Qualitative Requirement/ Technical Specification		Trial Directive
S.No. 13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type, remote steering system with 15 feet cable.	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 6 Mtr & Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 20 to 25 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adapter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit- 01 No	Check practically

PO  M-1  M-2  M-3 


M-4  M-5  M-6  M-7 

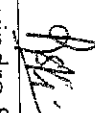
M-8  M-9  Co-opted Member 

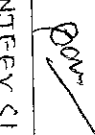



43


S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare  a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets	Check physically

PO  
 (Kunal Mazumdar) DIG, BSF  


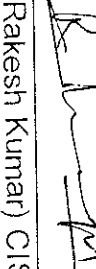
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 (Ravindra Singh Kushwah), AC/INDRF  


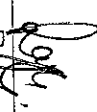
M-2  
 (SANJEEV SINGH) DC/CRPF  



M-3  
 (Hardeep Singh, AC) ITBP  


M-4  
 (J K Sharma) AC/SSB  


M-5  
 (S K Thakur), DC/AR  


M-6  
 (Insp Rakesh Kumar) CISF  


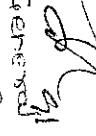
M-7  
 (Insp Rajeender Prasad) NSG  


M-8  
 (Dr. M M Goswami), BPR&D  


M-9  
 (G B Pathak, AC), BSF  
 WW Madhopur  


Co-opted Member  
 (Dr K K Dhawan)  
 Principal Surveyor IRS  


Approved / Not approved

Director General  
 Border Security Force.  


QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 70 HP, TWO STROKE OBM

12

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine capacity	70 HP
2	Number of cylinder	3
3	Stroke	Two stroke
4	Total engine displacement	1300 to 1500 CC
5	Engine Rpm (Range)	5000 to 6000
6	Fuel supply system	Loop-charged (3 carburettor)
7	Fuel	Petrol Indian type
8	Lubrication	Lubrication oil Indian type
9	Alternator out put	03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight	Below 135 KG
11	Starting system	Electric powered
12	Trim and tilt	Electric powered

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]  
 M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]  
 M-8 [Signature] M-9 [Signature] Co-opted Member [Signature] Contd .... P/2

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the boat having length up to 6 mtr & Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 18 to 22 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter	Check physically/visual inspection
19	Flushing unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically

PO *[Signature]* M-1 *[Signature]* M-2 *[Signature]* M-3 *[Signature]*

M-4 *[Signature]* M-5 *[Signature]* M-6 *[Signature]* M-7 *[Signature]*

M-8 *[Signature]* M-9 *[Signature]* Co-opted Member *[Signature]* Contd.... P/3

42

S.No.	Quantitative Requirement/ Technical Specification	On board spare	Trial Directive
20		a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller – 01 No g) Gear Housing seal kit – 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets	Check physically

PO

(Kunal Mazumdar) DIG, BSF

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(Ravindra Singh Kushwah), AC/NDRF

*[Signature]*

M-2

(Sandeep Singh) Dy/ CRPF

*[Signature]*

M-3

(Hardeep Singh, AC) ITBP

*[Signature]*

M-4

(J K Sharma) AC/SSB

*[Signature]*

M-5

(S K Thakur), DC/AR

*[Signature]*

M-6

(Inspr Rakesh Kumar) CISF

*[Signature]*

M-7

(Inspr Rajender Prasad) NSG

*[Signature]*

M-8

(Dr. M. Prasad), BPR&D

*[Signature]*

M-9

(G B Pathak, AC), BSF  
WV Madhopur

*[Signature]*

Co-opted Member

(Br K K Dhawan)  
Principal Surveyor IRS

Approved / Not approved

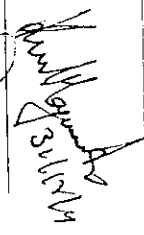
Co-Director (Operations)  
Border Security Force

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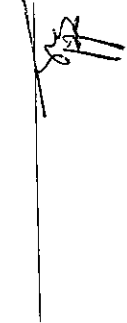
QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 50 HP, TWO STROKE OBM

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine power Power 50 HP	Trial Directive Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder 3	visual check and inspection Documents / certificate of manufacturer/ regulating authority to be checked physically.
3	Stroke Two stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement 850 to 1000 CC	Check by RPM meter Check and operate practically. Visual inspection
5	Engine Rpm (Range) 5000 to 6000	Check physically during water trial
6	Fuel Supply system Loop-charged (3 carburettor)	Check physically during water trial
7	Fuel Petrol Indian type	Check practically with ampere gauge
8	Lubrication Lubrication oil Indian type	Check on physical measurement by weighing machine
9	Alternator out put 03 Amps at Min RPM and 16 Amps at Max RPM with charging capacity of 100 AHG to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose	check by starting with key and visual inspection
10	Weight Below 100 KG	Check and operate practically and visual inspection
11	Starting system Electric powered	
12	Trim and tilt Electric powered	

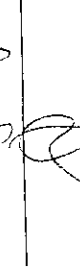
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M-1 

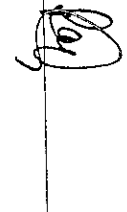
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M-3 

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M-6 



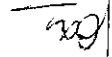
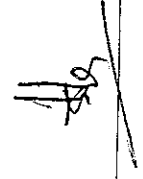
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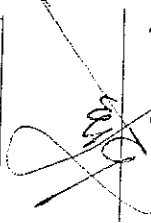



M-8 




M-9 

Co-opted Member 

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5.5 mtr, Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adpoter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit - 01 No	Check practically

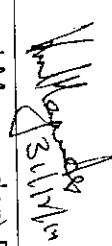
PO  M-1  M-2  M-3 

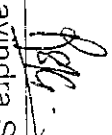
M-4  M-5  M-6  M-7 

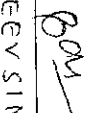
M-8  M-9  Co-opted Member 

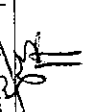
39

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare  a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets	Check physically

PO  
  
 (Kunal Mazumdar) DIG, BSF


M-1  
  
 (Ravindra Singh Kushwah), AC/NDRF

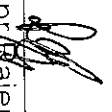
M-2  
  
 (SANJEEV SINGH) DC/CRPF

M-3  
  
 (Hardeep Singh, AC) ITBP


M-4  
  
 (J K Sharma) AC/SSB


M-5  
  
 (S K Thakur), DC/AR

M-6  
  
 (Inspr Rakesh Kumar) CISF

M-7  
  
 (Inspr Rajender Prasad) NSG

M-8  
  
 (Dr. M M Gosal), BPR&D  
 WVV Madhopur

Co-opted Member  
  
 (K K Dhawan)  
 Principal Surveyor IRS

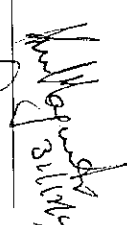


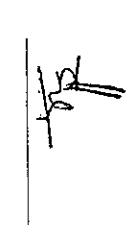

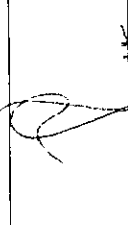

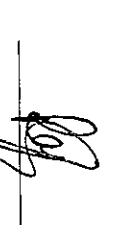



Approved / ~~Not approved~~  
  
 Director General  
 Border Security Force

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 40 HP, TWO STROKE OBM

26

APPX - 'Q'

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine Capacity	Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	visual check and inspection
3	Stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement	Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine RPM (Range)	Check by RPM meter
6	Fuel supply system	Check and operate practically. Visual inspection
7	Fuel	Check physically during water trial
8	Lubrication	Check physically during water trial
9	Alternator out put	Check practically with ampere gauge
10	Weight	Check on physical measurement by weighing machine
11	Starting system	check by starting with key and visual inspection
12	Trim and tilt	Check and operate practically and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			



S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control	Check practically during water trial
17	Propeller Suit to the Boat having length up to 5.5 mtr Aluminium Boat, Cable length 15 feet. Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 06 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adpoter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]

M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]

M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

(34)

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare a) Fuel filter- 06 Nos b) Fuel line - 01 No c) Propeller - 01 No d) Spark plug-06 Nos e) Water pump repair kit- 01 No f) Water pump impeller - 01 No g) Gear Housing seal kit - 01 No h) Gear oil drain screw washer - 09 Nos i) Thermostat - 01 No j) Throttle & Gear shift cable - 01 set k) Steering cable - 01 No l) Fuse - 02 Sets	Check physically

PO  
 (Kunal Mazumdar) DIG, BSF

M-1  
 (Ravindra Singh Kushwan), AC/NDRF

M-2  
 (SANJEEV SINGH) DC/CRPF

M-3  
 (Hardeep Singh, AC) ITBP

M-4  
 (J K Sharma) AC/SSB

M-5  
 (S K Thakur), DC/AR

M-6  
 (Inspr Rakesh Kumar) CISF

M-7  
 (Inspr Rajender Prasad) NSG

M-8  
 (Dr M Madgal), BPR&D

M-9  
 (G B Pathak, AC), BSF  
 WW Madhopur

Co-opted Member  
 (Dr K K Dhawan)  
 Principal Surveyor IRS

Approved / Not approved  
 Director General  
 Border Security Force


133

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 25 HP, TWO STROKE OBM


S.No.	Qualitative Requirement/ Technical Specification	Trial Directive	
1.	Engine Capacity	25 HP	Documents / certificate of manufacturer/regulating authority to be checked physically.
2	Number of cylinder	2	visual check and inspection
3	Stroke	Two strokes	Documents / certificate of manufacturer/regulating authority to be checked physically.
4	Total engine displacement	550 to 650 CC	Documents / certificate of manufacturer/regulating authority to be checked physically.
5	Engine RPM (Range)	5000 to 6000	Check by RPM meter
6	Fuel supply system	Loop-charged (2 carburettor)	Check and operate practically. Visual inspection
7	Fuel	Petrol Indian type	Check physically during water trial
8	Lubrication	Lubrication oil Indian type	Check physically during water trial
9	Weight	Below 80 KG	Check on physical measurement by weighing machine
10	Gear shift	Forward/Neutral/Reverse (F.N.R)	Check practically during water trial
11	Propeller	Aluminium blade propeller, pitch suit to achieve 12 to 15 knots speed with the boat having length up to 5 mtr Aluminium Boat with 05 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water


PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]  
 M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]  
 M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]  
 Contd P/2

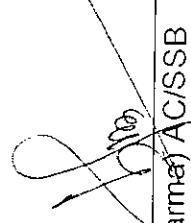
S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
12	<p>Fuel tank</p> <p>Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male &amp; female adppter</p>	Check physically/visual inspection
13	<p>On board spare</p> <p>a) Fuel filter- 06 Nos                      b) Fuel line - 01 No                      c) Propeller - 01 No                      d) Spark plug-04 Nos                      e) Water pump repair kit- 01 No                      f) Water pump impeller - 01 No                      g) Gear Housing seal kit - 01 No                      h) Gear oil drain screw washer - 09 Nos                      i) Thermostat - 01 No                      j) Fuse - 02 Sets</p>	Check physically

PO  
  
 (Kunal Mazumdar) DIG, BSF

M-1  
  
 (Ravindra Singh Kushwah), AC/NDRF


M-2  
  
 (SANJEEV SINGH) DC/ CRPF


M-3  
  
 (Hardeep Singh, AC) ITBP

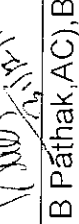
M-4  
  
 (J K Sharma) AC/SSB

M-5  
  
 (S K Thakur), DC/AR

M-6  
  
 (Inspr Rakesh Kumar) CISF

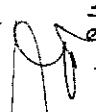
M-7  
  
 (Inspr Rajender Prasad) NSG

M-8  
  
 (Dr. M.M. Gosal), BPR&D  
 WW Madhopur

M-9  
  
 (G B Pathak, AC), BSF

Co-opted Member  
 (Dr K K Dhawan)  
 Principal Surveyor IRS






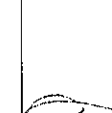
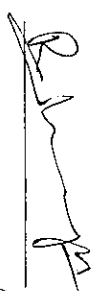




Approved / Not approved

  
 Director General  
 Border Security force



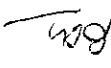

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 90 HP, FOUR STROKE OBM





21




S.No.	Qualitative Requirement/Technical Specification	Trial Directive
1	Engine capacity	Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	visual check and inspection
3	Stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engines displacement	Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine (Range) Rpm	Check by RPM meter
6	Fuel supply system	Check and operate practically. Visual inspection
7	Fuel	Check physically during water trial
8	Lubrication	Check physically during water trial
9	Alternator out put	Check practically with ampere gauge
10	weight	Check on physical measurement by weighing machine
11	Starting system	check by starting with key and visual inspection
12	Trim and tilt	Check and operate practically and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

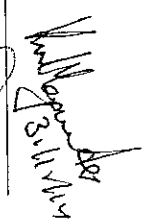




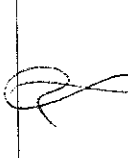





S.No.	Qualitative Requirement/Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R.)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 18 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 6.5 mtr	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 25 to 29 knots speed with twin engine, for the boat having length up to 6.5 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter	Check physically/visual inspection
19	Flushing Unit a) Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically

PO  M-1  M-2  M-3 

M-4  M-5  M-6  M-7 

M-8  M-9  Co-opted Member  P/3

S.No.	Qualitative Requirement/Technical Specification	Trial Directive
20	On board spare	Check physically
	<p>a) Engine oil filter- 03 Nos                      b) Fuel filter- 06 Nos                      c) Air filter - 02 Nos                      d) Fuel line - 01 No                      e) Propeller -01 No                      f) Spark plug- 04 Nos                      g) Spark plug wrench – 01 No                      h) Water pump repair kit- 01 No                      i) Water pump impeller – 01 No                      j) Gear housing seal kit – 01 Set                      k) Gear oil drain screw washer -09 Nos                      l) Lubrication oil drain plug washer -03 Nos                      m) Thermostat -01 No                      n) Alternator belt for separate Alternator-- 01 No                      o) Sensor air control valve - 01 No                      p) Throttle &amp; Gear shift cable -01 Set                      q) Steering cable - 01 No                      r) Fuses of all system complete - 02 sets                      s) Injector – 01 No                      t) Automatic Voltage Regulator (A V R) -01 No                      u) Pencil coil/Spark plug coil assembly -01 No                      v) Main relay -01 No                      w) Stator solenoid/Relay-01 No</p>	

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			


ACCESSORIES REQUIRED FOR TWIN ENGINE APPLICATIONS

01	Steering system for twin engine speed boats.	Adjustable steering tie bar system, to join both OBM's. The centre to centre distance will be according to the twin engine speed boats for which the tie bar is required. ( Requirement 01 tie bar for two OBMs)	Check simultaneous movement of both the OBM , left and right by applying steering wheel during open trial run on River/Sea water
02	Remote control system for twin engine speed boats to operate gear and accelerator cable .	Dual mount remote control system. ( Requirement 01 kit for two OBMs)	Operate clutch / Throttle lever of both the OBM separately and check the operation during open trial run on River/ Sea water


PO

  
 (Kunal Mazumdar) DIG, BSF


M-1

  
 (Ravindra Singh Kushwah), AC/INDRF

M-2

  
 (SANJEEV SINGH) DC/CRPF

M-3

  
 (Hardeep Singh, AC) ITBP

M-4

(J K Sharma) AC/SSB

M-5

(S K Thakur), DC/AR

M-6

(Inspr Rakesh Kumar) CISF

M-7

  
 (Inspr Rajender Prasad) NSG


M-9

(Dr. M M Gosel), BPR&D  
 WW Madhopur

Co-opted Member

(Inspr K K Dhawan)  
 Principal Surveyor IRS

Approved / Not approved

  
 Director General  
 Border Security Force.



**QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 75 HP, FOUR STROKE OBM**

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine capacity	75 HP Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of Cylinder	4 visual check and inspection
3	Stroke	four stroke Documents / certificate of manufacturer/ regulating authority to be checked physically
4	Total displacement engines	1500 to 1700 CC Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine Rpm (Range)	5000 to 6500 Check by RPM meter
6	Fuel supply system	Electronic Fuel Injection Check and operate practically. Visual inspection
7	Fuel	Petrol Indian type Check physically during water trial
8	Lubrication	Lubrication oil Indian type Check physically during water trial
9	Alternator out put	06 Amps at Min RPM and 25 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose Check practically with ampere gauge
10	weight	Below 180 KG Check on physical measurement by weighing machine
11	Starting system	Electric powered check by starting with key and visual inspection
12	Trim and tilt	Electric powered Check and operate practically and visual inspection

PO W. Srinivas M-1 W. Srinivas M-2 G. Srinivas M-3 W. Srinivas

M-4 W. Srinivas M-5 W. Srinivas M-6 W. Srinivas M-7 W. Srinivas

M-8 W. Srinivas M-9 W. Srinivas Co-opted Member W. Srinivas

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering System Rack and pinion type remote steering system with 15 feet cable.	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 6 Mtr & Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 20 to 25 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically


PO *[Signature]* M-1 *[Signature]* M-2 *[Signature]* M-3 *[Signature]*


M-4 *[Signature]* M-5 *[Signature]* M-6 *[Signature]* M-7 *[Signature]*


M-8 *[Signature]* M-9 *[Signature]* Co-opted Member *[Signature]*


25

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare	Check physically
	<ul style="list-style-type: none"> <li>a) Engine oil filter- 03 Nos</li> <li>b) Fuel filter- 06 Nos</li> <li>c) Air filter - 02 Nos</li> <li>d) Fuel line - 01 No</li> <li>e) Propeller -01 No</li> <li>f) Spark plug- 04 Nos</li> <li>g) Spark plug wrench – 01 No</li> <li>h) Water pump repair kit- 01 No</li> <li>i) Water pump impeller – 01 No</li> <li>j) Gear housing seal kit – 01 Set</li> <li>k) Gear oil drain screw washer -09 Nos</li> <li>l) Lubrication oil drain plug washer -03 Nos</li> <li>m) Thermostat -01 No</li> <li>n) Alternator belt for separate Alternator– 01 No</li> <li>o) Sensor air control valve - 01 No</li> <li>p) Throttle &amp; Gear shift cable -01 Set</li> <li>q) Steering cable - 01 No</li> <li>r) Fuses of all system complete - 02 sets</li> <li>s) Injector – 01 No</li> <li>t) Automatic Voltage Regulator (A V R) -01 No</li> <li>u) Pencil coil/Spark plug coil assembly -01 No</li> <li>v) Main relay -01 No</li> <li>w) Stator solenoid/Relay-01 No</li> </ul>	


PO  
  
 (Kunal Mazumdar) DIG, BSF

M-1  
  
 (Rayindra Singh Kushwah), AC/NDRF


M-2  
  
 (SANJEEV SINGH) DC/CRPF


M-3  
  
 (Hardeep Singh, AC) ITBP


M-4  
  
 (J K Sharma) AC/SSB


M-5  
  
 (S K Thakur), DC/AR

M-6  
  
 (Insp Rakesh Kumar) CISF

M-7  
  
 (Insp Rajender Prasad) NSG

M-8  
  
 (Dr. M M Goyal), BPR&D

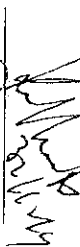










M-9  
  
 (G B Pathak, AC), BSF  
 Approved / Not approved  
 Principal Surveyor IRS

Co-opted Member  
  
 (Dr K K Dhawan)  
 Director General




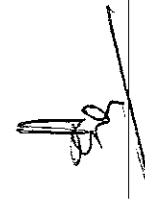
QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 70 HP, FOUR STROKE OBM

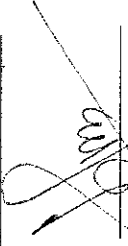

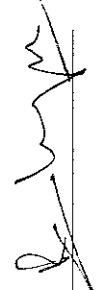

24




S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine Capacity	70 HP Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	4 visual check and inspection
3	Stroke	Four stroke Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total Engine displacement	985 to 1200 CC Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine Rpm (Range)	5000 to 6500 Check by RPM meter
6	Fuel supply system	Electronic Fuel Injection Check and operate practically. Visual inspection
7	Fuel	Petrol Indian type Check physically during water trial
8	Lubrication	Lubrication oil Indian type Check physically during water trial
9	Alternator out put	06 Amps at Min RPM and 25 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose
10	Weight	Below 165 KG Check on physical measurement by weighing machine
11	Starting system	Electric powered check by starting with key and visual inspection
12	Trim and tit	Electric powered Check and operate practically and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed ,amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the boat having length up to 6 mtr & Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 18 to 22 knots speed with the boat having length up to 6 mtr with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adppter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically


PO  M-1  M-2  M-3 


M-4  M-5  M-6  M-7 

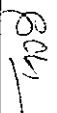
M-8  M-9  Co-opted Member 

(22)

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare	Check physically
	a) Engine oil filter- 03 Nos b) Fuel filter- 06 Nos c) Air filter -02 Nos d) Fuel line - 01 No e) Propeller -01 No f) Spark plug- 04 Nos g) Spark plug wrench – 01 No h) Water pump repair kit- 01 No i) Water pump impeller – 01 No j) Gear housing seal kit – 01 Set k) Gear oil drain screw washer -09 Nos l) Lubrication oil drain plug washer -03 Nos m) Thermostat -01 No n) Sensor air control valve - 01 No o) Throttle & Gear shift cable -01 Set p) Steering cable - 01 No q) Fuses of all system complete - 02 sets r) Injector – 01 No s) Automatic Voltage Regulator (A V R) -01 No t) Pencil coil/Spark plug coil assembly -01 No u) Main relay -01 No v) Stator solenoid/Relay-01 No	


PO  
  
 (Kunal Mazumdar) DIG, BSF


M-1  
  
 (Ravindra Singh Kushwah), AC/NDRF

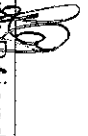
M-2  
  
 (SANJEEV SINGH) DC/CRPF


M-3  
  
 (Hardeep Singh, AC) ITBP



M-4  
  
 (J K Sharma) AC/SSB

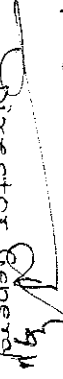
M-5  
  
 (S K Thakur), DC/IAR

M-6  
  
 (Inspr Rakesh Kumar) CISF

M-7  
  
 (Inspr Rajender Prasad) NSG

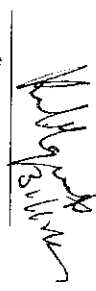

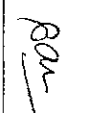






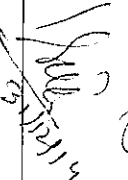

M-8  
  
 (Dr. M M Gosal), BPR&D

M-9  
  
 (G B Pathak, AC) BSF  
 Approved | Not approved  
 WW Madhopur  
 Co-opted Member  
  
 (K K Dhawan)  
 Principal Surveyor IRS

Director General  


QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 50 HP, FOUR STROKE OBM

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine Capacity	50 HP Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	4 visual check and inspection
3	Stroke	Four strokes Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement	870 to 1070 CC Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine Rpm (Range)	5000 to 6000 Check by RPM meter
6	Fuel supply system	Electronic Fuel Injection Check and operate practically. Visual inspection
7	Fuel	Petrol Indian type Check physically during water trial
8	Lubrication	Lubrication oil Indian type Check physically during water trial
9	Alternator out put	05 Amps at Min RPM and 20 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose Check practically with ampere gauge
10	Weight	Below 115 KG Check on physical measurement by weighing machine
11	Starting system	Electric powered check by starting with key and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

S.No.		Qualitative Requirement/ Technical Specification		Trial Directive
12	Trim and tilt	Electric powered		
13	Meter and Gauges	One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.		Check and operate practically and visual inspection Check physically the function during water trial
14	Gear shift	Forward/Neutral/ Reverse (F.N.R)		Check practically during water trial
15	Steering system	Rack and pinion type remote steering system with 15 feet cable		Check practically during water trial
16	Harness for engine parameter, Gear shift accelerator cable	Through remote control Suit to the Boat having length up to 5.5 mtr, Cable length 15 feet.		Check practically during water trial
17	Propeller	Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 08 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.		Check physically during trial run on open river/ sea water
18	Fuel tank	Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter		Check physically/visual inspection
19	Flushing Unit	Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No		Check practically

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]

M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]

M-8 [Signature] M-9 [Signature]

Co-opted Member [Signature]



S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	<p>On board spare</p> <ol style="list-style-type: none"> <li>Engine oil filter- 03 Nos</li> <li>Fuel filter- 06 Nos</li> <li>Air filter - 02 Nos</li> <li>Fuel line - 01 No</li> <li>Propeller -01 No</li> <li>Spark plug- 004 Nos</li> <li>Spark plug wrench – 01 No</li> <li>Water pump repair kit- 01 No</li> <li>Water pump impeller – 01 No</li> <li>Gear housing seal kit – 01 Set</li> <li>Gear oil drain screw washer -09 Nos</li> <li>Lubrication oil drain plug washer -03 Nos</li> <li>Thermostat -01 No</li> <li>Sensor air control valve - 01 No</li> <li>Throttle &amp; Gear shift cable -01 Set</li> <li>Steering cable - 01 No</li> <li>Fuses of all system complete - 02 sets</li> <li>Injector – 01 No</li> <li>Automatic Voltage Regulator (A V R) -01 No</li> <li>Pencil coil/Spark plug coil assembly -01 No</li> <li>Main relay -01 No</li> <li>Stator solenoid/Relay-01 No</li> </ol>	<p>Check physically</p>

PO  
(Kunal Mazumdar) DIG, BSF

M-3  
(Hardeep Singh, AC) ITBP

M-7  
(Inspr Rajender Prasad) NSG

M-1  
(Ravindra Singh Kushwah), AC/NDRF

M-4  
(J K Sharma) AC/SSB

M-8  
(Dr. M. Gosal), BPR&D

M-2  
(SANJEEV SINGH) Dy CRPF

M-5  
(S K Thakur), DC/AR

M-9  
(G B Pathak, AC), BSF

M-6  
(Inspr Rakesh Kumar) CISF

Co-opted Member  
(Pr K K Dhawan)  
Principal Surveyor IRS

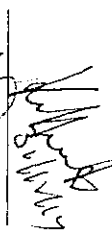










Director General

**QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 40 HP, FOUR STROKE OBM**

18

**APPX - 'W'**

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1	Engine capacity	Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	visual check and inspection
3	Stroke	Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement	Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine RPM (Range)	Check by RPM meter
6	Fuel supply system	Check and operate practically. Visual inspection
7	Fuel	Check physically during water trial
8	Lubrication	Check physically during water trial
9	Alternator out put	Check practically with ampere gauge
10	Weight	Check on physical measurement by weighing machine
11	Starting system	check by starting with key and visual inspection
12	Trim and tilt	Check and operate practically and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5.5 mtr Aluminium Boat, Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 12 to 16 knots speed with the boat having length up to 5.5 mtr Aluminium Boat with 06 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre, 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adopter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]

M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]

M-8 [Signature] M-9 [Signature] Co-opted Member [Signature]

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare	Check physically
	a) Engine oil filter-03 Nos b) Fuel filter-06Nos c) Air filter - 02 Nos d) Fuel line - 01 No e) Propeller-01 No f) Spark plug- 03 Nos g) Spark plug wrench – 01 No h) Water pump repair kit- 01 No i) Water pump impeller – 01 No j) Gear housing seal kit – 01 Set k) Gear oil drain screw washer -06 Nos l) Lubrication oil drain plug washer -02 Nos m) Thermostat -01 No n) Sensor air control valve - 01 No o) Throttle & Gear shift cable -01 Set p) Steering cable - 01 No q) Fuses of all system complete - 02 set r) Injector – 01 No s) Automatic Voltage Regulator (A V R)-01No t) Pencil Coil/Spark plug coil Assembly – 01 No u) Main Relay – 01 No v) Stator Solenoid/Relay – 01 No	

PO  
 (Kunal Mazumdar) DIG, BSF

M-3  
 (Hardeep Singh, AC) ITBP

M-7  
 (Inspr Rajender Prasad) NSG

M-1  
 (Rayindra Singh Kushwah), AC/NDRF

M-4  
 (J K Sharma) AC/SSB

M-8  
 (Dr. M M Gosal), BPR&D

M-2  
 (SANJEEV SINGH) DC/CRPF

M-5  
 (S K Thakur), DC/AR

M-9  
 (G B Pathak AC), BSF

M-6  
 (Inspr Rakesh Kumar) CISF

Co-opted Member  
 (Dr. K K Dhawan)  
 Principal Surveyor IRS












Director General

QUALITATIVE REQUIREMENT/TRIAL DIRECTIVE OF 25 HP, FOUR STROKE OBM

15

APPX - 'X'

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
1.	Engine capacity	25 HP Documents / certificate of manufacturer/ regulating authority to be checked physically.
2	Number of cylinder	3 visual check and inspection
3	Stroke	Four stroke Documents / certificate of manufacturer/ regulating authority to be checked physically.
4	Total engine displacement	490 to 690 CC Documents / certificate of manufacturer/ regulating authority to be checked physically.
5	Engine RPM (Range)	5000 to 6000 Check by RPM meter
6	Fuel Supply system	Electronic Fuel Injection Check and operate practically. Visual inspection
7	Fuel	Petrol Indian Type Check physically during water trial
8	Lubrication	Lubrication oil Indian type Check physically during water trial
9	Alternator out put	05 Amps at Min RPM and 15 Amps at Max RPM with charging capacity of 100 AHC to charge 12 volt secondary battery, to operate starter motor and provide backup for the search light, GPS and Navigational lights installed in the Boat for operational purpose Check practically with ampere gauge
10	Weight	Below 100 KG Check or physical measurement by weighing machine
11	Starting system	Electric powered check by starting with key and visual inspection
12	Trim and tilt	Electric powered Check and operate practically and visual inspection

PO		M-1		M-2		M-3	
M-4		M-5		M-6		M-7	
M-8		M-9		Co-opted Member			

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S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
13	Meter and Gauges One set of digital meter for monitoring all parameters of the engine like RPM, speed, amperage, temperature, fuel consumption, warnings on high temperature and lack of lubrication.	Check physically the function during water trial
14	Gear shift Forward/Neutral/ Reverse (F.N.R)	Check practically during water trial
15	Steering system Rack and pinion type remote steering system with 15 feet cable	Check practically during water trial
16	Harness for engine parameter, Gear shift & accelerator cable Through remote control Suit to the Boat having length up to 5 mtr Aluminium Boat. Cable length 15 feet.	Check practically during water trial
17	Propeller Aluminium blade propeller, pitch suit to achieve 12 to 15 knots speed with the boat having length up to 5 mtr Aluminium Boat with 05 Person on Board (POB), with full load capacity at 85% Maximum Continuous Rating (MCR) of the engine.	Check physically during trial run on open river/ sea water
18	Fuel tank Made of Plastic Fibre , 25 Ltrs capacity with 2 Mtr PVC/Nylon fuel line, primer valve, male & female adppter	Check physically/visual inspection
19	Flushing Unit Flushing device for flushing by fresh water to clean salinity and salt deposit. 01 No	Check practically

PO [Signature] M-1 [Signature] M-2 [Signature] M-3 [Signature]

M-4 [Signature] M-5 [Signature] M-6 [Signature] M-7 [Signature]

M-8 [Signature] M-9 [Signature] Co-opted Member [Signature] M-5

S.No.	Qualitative Requirement/ Technical Specification	Trial Directive
20	On board spare	Check physically
	<ul style="list-style-type: none"> <li>a) Engine oil filter-03 Nos</li> <li>b) Fuel filter- 06Nos</li> <li>c) Air filter - 02 Nos</li> <li>d) Fuel line - 01 No</li> <li>e) Propeller -01 No</li> <li>f) Spark plug- 03 Nos</li> <li>g) Spark plug wrench -- 01 No</li> <li>h) Water pump repair kit- 01 No</li> <li>i) Water pump impeller -- 01 No</li> <li>j) Gear housing seal kit -- 01 Set</li> <li>k) Gear oil drain screw washer -06 Nos</li> <li>l) Lubrication oil drain plug washer -02 Nos</li> <li>m) Thermostat -01 No</li> <li>n) Sensor air control valve - 01 No</li> <li>o) Throttle &amp; Gear shift cable -01 Set</li> <li>p) Steering cable - 01 No</li> <li>q) Fuses of all system complete - 02 set</li> <li>r) Injector -- 01 No</li> <li>s) Automatic Voltage Regulator (A V R)-01No</li> <li>t) Pencil Coil/Spark plug coil Assembly -- 01 No</li> <li>u) Main Relay -- 01 No</li> <li>v) Stator Solenoid/Relay -- 01 No</li> </ul>	

PO

(Kunal Mazumdar) DIG, BSF

M-1

(Ravindra Singh Kushwah), AC/NDRF

M-2

(SANJEEV SINGH) DC CRPF

M-3

(Hardeep Singh, AC) ITBP

M-4

(J K Sharma) AC/SSB

M-5

(S K Thakur), DC/AR

M-6

(Insp Rakesh Kumar) CISF

M-7

(Insp Rakesh Prasad) NSG

M-8

(Dr. M M Goyal), BPR&D

M-9

(G B Pathak, AC), BSF

Co-opted Member

(Dr K K Dhawan)

Approved / Not approved

Principal Surveyor IRS