No.IV-17012/34/2009-Prov.I – 1791
Government of India
Ministry of Home Affairs
Police Modernization Division
Prov-I Desk
Jaisalmer House, 26 Mansingh Road
New Delhi, Dated : 3rd November, 2016

To

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

Subject:- Revised QRs/Specifications and Trial Directives for Kerosene oil fired Bukhari Complete with Exhaust Pipes.

The Revised QRs/Specifications and TDs in respect of Kerosene oil fired Bukhari complete with exhaust pipes as per Annexure have been approved by the Competent Authority in MHA.

2. This supersedes the existing QRs for the same, notified by this Ministry's letter No.IV-17012/34/2009/Prov-(S)-503 dated 06.08.2013.

3. Henceforth, all the CAPFs should procure the above items required by them strictly as per revised laid down QRs/TDs.

4. The Concerned CAPF will be accountable for correctness of the QRs/TDs

Encl: As above

Yours faithfully,

03/11/16

(Ritesh Kumar)
Under Secretary to the Govt. of India
Tel : 2338 1278

Copy to : -

1. SO (IT), MHA: It is requested to replace the Existing QRs/ and TDs of Kerosene oil fired Bukhari complete with exhaust pipes with the instant QRs and TDs(soft copy attached) on the MHA website (under the page of Organisational Set up-Police Modernisation Division-Qualitative Requirements under Training Equipment list).

2. DDG (Procurement),MHA

(V. Devadas)
Section officer (Prov.I)

BOARD PROCEEDINGS

Proceedings of	:	Board proceeding regarding "Kerosene Oil fired Bukhari Complete with exhaust pipes."
Assembled at	:	SHQ (L&C), Dte Gen, ITB Police, Chhawla Camp, Najfgarh Road, New Delhi-71.
On	:	22.01.2016
By the order of	:	DIG (Prov), Dte Gen, ITBP Office Order No. iv-17012/44/2015-Prov (CTS)-2146 dated 30.11.2015
For the purpose of	:	To revision & formulation of QRs/Specification of Kerosene Oil fired Bukhari Complete with exhaust pipes .

Composition of the Board:-

Presiding Officer : Sh O. P. Yadav, DIG (L&C), ITBP

Member-1: Anil Singhroha, Lt. Col, Assam Rifles

Member-2: Sh Pawan Kumar, Dy. Comdt. SSB

Member-3: Sh Arvind Singh Bisht, Dy. Comdt, CRPF

Member-4: Sh. Vijay Kumar Pathak, (Inspector/ATI) ,BSF

Co-Opted member- Sh. Manish Katariya, Commandant ITBP SS Bn

2. In pursuance to the order, the Board of officers assembled at SHQ (L&C) on dtd 22.01.16 and proceeds to examine the suitability of "Kerosene Oil fired Bukhari Complete with exhaust pipes".

3. The board has deliberately discussed from the angle of the problems projected by the field formations and has came to conclusion that some desirable changes is required.

4. Keeping in view of all the above aspects fresh QRs/Specifications prepared by the sub group members is enclosed at Appendix "A"

Enclosed-(a.a.)

5. Submitted for further action please.

Member-1 _____

Member-2 _____

Member-3 _____

Member-4 _____

Co-Opted Member _____

Presiding Officer

APPROVED/NOT APPROVED

(KRISHNA CHAUDHARY), IPS

DG, ITBP

Appendix "A"

Specification for Kerosene Oil fired Bukhari Complete with exhaust pipes

This specification covers the complete details of the following -

1. Parts used in the manufacture of Kerosene fired oil bukhari along with Their quantity
2. Applicable reference documents
3. Materials Used for the manufacture of the parts along With the relevant is Specifications
4. Manufacture and functionality Of each part per bukhari set
5. Dimensions and weight
6. fuel consumption
7. Tolerances.
8. Painting / coatings.
9. Workmanship and quality control
10. Tests.
11. Proper Packaging for safe transportation
12. Sampling plan and criteria of conformity
13. Operation manual

1. Parts used in the manufacture of kerosene fired oil bukhari

1. Fuel Tank to hold the kerosene oil.
2. Kerosene oil control valve (regulator) to control the flow of oil from the fuel tank into the burning chamber.
3. Burning chamber in which the oil burns to give heat output.
4. Metallic outer body to enclose the fuel tank and the burning Chamber.
5. Exhaust pipes to take the gases of combustion out of the room into the open air.
6. Lighter to ignite the kerosene oil in the burning chamber.
7. Scrapper rod to clean the burning chamber as and when required.

The Complete part detail chart is Tabulated below:-

S N	Nomenclatures	Rart No-	Qty / Bukhari
1.	Fuel Tank of 10 litre Capacity	00010	1.
	1.1 Kerosene Oil Filter	00011	1.
	1.2. Filter Lid	00012	1.
	1.3. Fuel gauge Meter	00013	1
	1.4. Open / Close metal knob	00014	1
	1.5. Fuel Control Rod	00015	1
	1.6. fuel Control Pin	00016	1
	1.7. Brass nipple For fuel Outlet	00017	1
2.	Copper Pipe (short) With both ends flared	00020	1
	2.1. Hexagonal nut 14X19	00021	1
	2.2. Hexagonal Nut 14X19	00022	1
	2.3. O Ring Chambered	00023	1
	2.4. O Ring non- Chambered	00024	1
3.	Copper Pipe long With Both Ends flared	00030	1
	3.1. Hexagonal Nut 14 x 19	00031	1
	3.2. Hexagonal Nut 14 x 33	00032	1
	3.3. O Ring Chambered	00033	1
	3.4. O Ring non Chambered	00034	1

Co-Opted Member M-IV M-III M-II M-I PO

4.	Oil Control Valve /Regulator	00040	1
5.	Regulator Plate	00050	1
	5.1. M 8 x12 Screws	00051	3
	5.2. Regulator Control Rod	00052	1
	5.3. Numbering Plate	00053	1
	5.4. Metal Regulator Control Knob	00054	1
6.	Heating Cylinder/Burning chamber	00060	1
	6.1. Cast Iron lid and Frame	00061	1
	6.2. Kerosene oil burner	00062	1
	6.3. Burner Inlet Nipple	00063	1
	6.4. Burner Rings	00064	2
	6.5. Burner Rivets	00065	6
	6.6. Damming Plate	00066	1
	6.7. Damming Plate base support	00067	1
	6.8. Asbestos Washer 3 mm dia	00068	1
	6.9. Asbestos washer 6mm dia	00069	1
7	Lower Support for Heating Cylinder	00070	1
8	Reflector Plate	00080	1
9	Outer Frame Connection Brackets	00090	2
10	Side Walls with handle 6 mm dia	00100	2
11	Base Plate Tray	00110	1
12	Cover Hood	00120	1+1
13	Front Panel	00130	1
14	Front Panel Bottom Hooks	00140	2
15	Back Wall	00150	1
16	Fuel Tank Partition Plate	00160	1
17	Cover Hood Hinges	00170	2
18	Scrapper Rod	00180	1
19	Lighter Rod	00190	1
20	120 mm dia exhaust bend	00200	3
21	120 mm dia and 900 mm long exhaust pipe	00210	4
22	Exhaust cap cover	00220	1
23	Labels		
	23.1 Heat Output Label	00231	1
	23.2 Brand Label	00232	1
	23.2 Operating Instruction Label	00233	1
24	Operation Manual Booklet	00240	1
25	Hardware-Screw Lock Patti	00250	40
26	Hardware-Screws	00260	40
27	Hardware-Split Pin	00270	2
28	Packing Box	00280	1
	28.1 Packing straps	00282	2
	28.2 Metal Clamps for polypropylene straps	00282	2
29	Breather Bo	00290	1

When an order is placed for the supply of kerosene fired bukharis. it shall be supplied complete with all the items mentioned in the above table.

Contd..3..

Co-Opted Member M-IV M-III M-II M-I PO

1. Applicable reference Documents

Reference is made in this specification to the following documents:-

IS: 158 -1981 (Reaffirmed 2010) with Amendment No. 1 &2 (3rd Revision) - Ready mixed paint. black and heat resistant up to 400 degree C

IS: 277-2003 (Sixth Revision) (Reaffirmed 2013) with Amendment no.1 to 4- Galvanized steel sheet (Plain)

IS: 2062-2011 (Seventh Revision) Reaffirmed 2011 with Amendment No. 01- Mild steel wire for general engineering purpose

SWR-14 Bolts, Nuts, Rivets, Machine Screws etc.

IS: 1079-2009 (Sixth Revision) Reaffirmed 2009)- Hot rolled carbon steel sheets and strips

IS: 319 -2007 (Fifth Revision) (Reaffirmed 2012)- Free cutting brass bars, rods and section

IS: 513-2008 (Reaffirmed 2013) with amendment no -1 (fifth revision) - cold rolled carbon steel sheets and strips

IS: 2102 (Pt-I) 1993 (reaffirmed 2014) (third revision)-General Tolerance for dimensions, form and position)

IS: 2500 (Pt-II)1965 (reaffirmed 2011) with Amendment No.1- Inspection by attributes and by count of defects

IS: 4905-1968 (reaffirmed 2011) with Amendment No. 1 - Methods for random Sampling

CIGS/US/239	Labels carton
IND/GS/1683	Polypropylene Strapping
IND/TC/2246	Asbestos Yarn
JSS: 8115-1	Rigid collapsible boxes

Note: Latest IS specification / Defence specification / JSS as applicable should be prevalent

Contd..4..

Co-Opted Member M-IV M-III M-II M-I PO

3. Material used for the manufacture of the parts along with the relevant IS specification

The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.

S. No.	Items/components	Part No.	Material
1.	Fuel Tank of 10 Litre capacity with open lid	00010	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No-1 (Fifth revision)** Tanks should be enclosed within 25 mm fibre glass each side around the tank.
	1.1 Kerosene oil filter	00011	Brass
	1.2 Filter lid	00012	Polycarbonate IS
	1.3 Fuel gauge meter	00013	Polycarbonate
	1.4 Open/Close metal knob	00014	Brass
	1.5 Fuel control rod	00015	2 mm M.S Wire conforming to **IS 280:2006 (Reaffirmed 2010) with Amend No-1 (Forth revision)**
	1.6 Fuel control pin	00016	Free cutting steel conforming to SWR 14
	1.7 brass nipple for fuel outlet	00017	Free cutting brass conforming to **IS 319:2007 (Reaffirmed 2012) (Fifth revision)**
2.	Copper pipe (short) with both ends flared	00020	1.2 mm dia Flexible copper tube coil (alloy and temper 1050 F)
	2.1 Hexagonal Nut (14x19)	00021	Free cutting conforming to SWR 14
	2.2 Hexagonal Nut (14x19)	00022	Free cutting conforming to SWR 14
	2.3 O-Ring chambered	00023	Free cutting conforming to SWR 14
	2.4 O-Ring non-chambered	00024	Free cutting conforming to SWR 14
3.	Copper pipe (long) with both ends flared	00030	1.2 mm dia Flexible copper tube coil (alloy and temper 1050 F)
	3.1 Hexagonal Nut (14x19)	00031	Free cutting conforming to SWR 14
	3.2 Hexagonal Nut 14 x 33	00032	Free cutting conforming to SWR 14
	3.3 O-Ring chambered	00033	Free cutting conforming to SWR 14
	3.4 O-Ring non-chambered	00034	Free cutting conforming to SWR 14
4.	Oil Control Value / Regulator	00040	Simple, user Friendly and made of Brass
5.	Regulator Plate	00050	Cold rolled SS sheets 1.2 mm thick
	5.1 M 8 x 12 screws	00051	Free cutting conforming to SWR 14
	5.2Regulator Control Rod	00052	Mild steel wire 5.0 mm thick conforming to IS **280-2006(Reaffirmed 2010) with Amend no-1 (fifth revision)**
	5.3Numbering Plate	00053	Anodized aluminum 0.8 mm thick
	5.4 Metal Regulator Control Knob	00054	Brass

Contd..5..

Co-Opted Member M-IV M-III M-II M-I PO

S. No	Items/components	Part No	Material
6	Heating Cylinder/Burning chamber	00060	Cold rolled carbon steel sheets 0.8 mm thick conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
	6.1 Cast Iron Lid and Frame	00061	Grey Cast Iron
	6.2Kerosene oil burner	00062	Cold rolled carbon steel sheets 0.8mm thick conforming to IS **513:2008(Reaffirmed 2013)with Amend no-1(fifth revision)**
	6.3 Burner Inlet Nipple	00063	Free cutting conforming to SWR 14
	6.4 Burner Rings	00064	Hot rolled carbon steel sheets and strip 3.0mm thick conforming **to IS 1079:2009 (Sixth revision) (Reaffirmed 2009) with Amend no-1**
	6.5 Burner Rivets	00065	Free cutting steel conforming to SWR 14
	6.6 Damming Plate	00066	Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
	6.7 Damming plate base support	00067	Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
	6.8 Asbestos washer 3mm dia	00068	Asbestos Yarn conforming to IND/TC/2246
	6.9 Asbestos washer 6mm dia	00069	Asbestos Yarn conforming to IND/TC/2246
7.	Lower Support for Heating Cylinder	00070	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**
8.	Reflector Plate	00080	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**
9.	Outer Frame Connecting Brackets	00090	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**
10.	Side Walls with handle rod dia 6 mm	00100	Cold rolled carbon steel sheets conforming to **IS 513:2008 ((Reaffirmed 2013) with Amend no-1(fifth revision)**
11.	Base Plate Tray	00110	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
12.	Cover Hood	00120	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision). It should have two partitions one to cover the burning chamber and other to cover to the fuel tank. These two partitions should be able to open separately.**
13.	Front Panel	00130	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
14.	Front Panel Bottom Hooks	00140	9.0mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**
15.	Back Wall	00150	Galvanized sheet 1.2mm thick conforming to **IS 277-2003 with Amen No 1to 4(Reaffirmed 2013) (Sixth revision)**
16.	Fuel Tank Partition Plate	00160	20 mm asbestos sheet
17	Cover Hood Hinges	00170	3.0 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**
18	Scrapper Rod	00180	Mild steel wire 5.0 mm thick conforming **to IS 280:2006 (Reaffirmed 2010) with Amend No- 1 (forth revision)**

Contd..6..

Co-Opted Member M-IV M-III M-II M-I PO

S. No	Items/ components	Part No	Material
19	Lighter Rod	00190	Mild steel wire 3.0 mm thick conforming to **IS 280-2006 (Reaffirmed 2010) with Amend No- 1 (forth revision)**
20	120 mm dia exhaust bend	00200	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**
21	120 mm dia and 900 mm long exhaust pipe	00210	1.2mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**
22	Exhaust cap cover	00220	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**
23	Labels		
	23.1 Heat Out put label	00231	Anodized aluminum 1.0 mm thick
	23.2 Branch Label	00232	Plastic
	23.3 Operating Instruction Label	00233	On the side wall of tank side, indelible printing.
24	Operating manual booklet	00240	Paper booklet
25	Hardware- Screw Lock Patti	00250	
26	Hardware- Screw	00260	Free cutting steel
27	Hardware- Split Pin	00270	
28	Packing Box	00280	19 mm Ply Board with thermacol protection all around the kerosene oiled fired bukhari
	28.1 Packing straps	00281	Polypropylene strips 11.5 mm wide and 0.9 mm thick conforming to IND/GS/1683
	28.2 Metal Clamps for Polypropylene straps	00282	Hot rolled carbon steel sheets and strip 0.5 mm thick conforming to IS **1079:2009 (sixth revision) (reaffirmed 2009) with Amend. No 1.**
29	Breather Box	00290	Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**

Note: Specific dimension related to the bukhari needs to specify against each items /component mentioned above wherever is not specified .

Contd..7..

Co-Opted Member M-IV M-III M-II M-I PO

4. Manufacture and functionality of each part of Bukhari

S.N	Part Number	Manufacture	Functionality
1	00010	Fuel tank must be made of 1.2 mm CRC sheets and properly painted. The edges should be round and the welds joint be leak proof.	To store kerosene oil. Its capacity should be at least 10 liters so as store allow the Bukhari to run for at least 10 hours without refueling
2	00011	Injection moulded with stainless steel mesh	To filter the kerosene
3	00013	Injection moulded and then assembled	To display the amount of fuel left in the tank
4	00014	Injection moulded	To allow fuel to leave or shut off from the fuel tank
5	00015	Extruded	Connects the open/close knob to the fuel control pin
6	00017	Turning item	To open /close the brass nipple
7	00017	Turning item	To act as connection between the fuel tank and Copper pipe
8	00020	Ends flared	Transfer fuel from fuel tank to the oil control valve/regulator
9	00021	Turning item	To tighten the Copper pipe to the brass nipple
10	00022	Turning item	To tighten the Copper pipe with the regulator inlet
11	00023	Turning item	To prevent oil leaks at the flares of the Copper pipe
12	00024	Turning item	To prevent oil leaks at the flares of the Copper pipe
13	00030	Ends flared	Transfer fuel from regulator to the burner
14	00031	Turning item	To tighten the Copper pipe to the burner nipple inlet
15	00032	Turning item	To tighten the Copper pipe with the regulator outlet
16	00033	Turning item	To prevent oil leaks at the flares of the Copper pipe
17	00034	Turning item	To prevent oil leaks at the flares of the Copper pipe

Contd..8..

Co-Opted Member M-IV M-III M-II M-I PO

S. No.	Part Number	Manufacture	Functionality
19	00040	Bought out item	To control the flow of oil from the fuel tank into the burner and hence control the heat output of the Bukhari
20	00050	Drawn from sheet metal	Oil control valve is to be mounted on this item
21	00051	Turning items (Hardware)	To fasten the oil control valve
22	00052	Extruded	To connect the oil control valve / regulator to the regulator control knob
23	00053	Aluminum (Anodized/ Printed)	To display the regulator setting
24	00054	Injection molded	To turn the regulator on / off and high / low
25	00060	Drawn from sheet metal	To enclose the flame
26	00061	Casting	To emit the heat into the room
27	00062	Drawn from sheet metal	Fuel combustion takes place
28	00063	Turning item	Connects the Copper pipe to the burner for fuel transfer
29	00064	Drawn from sheet metal	Helps to heat up the burner
30	00065	Turning rivets	Support for the burner rings
31	00066	Drawn from sheet metal	Prevents flames and sparks from escaping into the exhaust pipes
32	00067	Drawn from sheet metal	Provides support to the damming plate
33	00068	Asbestos yarn	Makes the cast iron frame leak proof to smoke
34	00069	Asbestos yarn	Makes the cast iron lid leak proof to smoke
35	00070	Drawn from sheet metal	Provides support to the heating cylinder
36	00080	Drawn from sheet metal	Reflects the heat up from the burner bottom
37	00090	Drawn from sheet metal	Part of the outer frame and supports the cast iron and side walls
38	00100	Drawn from sheet metal	Provides the sides to the outer frame
39	00110	Drawn from sheet metal	Provides base support to the outer frame
40	00120	Drawn from sheet metal	Provides top cover to the outer frame

Contd..9..

Co-Opted Member M-IV M-III M-II M-I PO

S. No.	Part Number	Manufacture	Functionality
41	00130	Drawn from sheet metal	Provides frontal support of the outer frame
42	00140	Drawn from sheet metal	Secures the bottom of the front penal
43	00150	Drawn from sheet metal	Provides back support to the outer frame
44	00160	Asbestos sheet	Prevents heat from going towards the fuel tank
45	00170	Drawn from sheet metal	Helps to open and close the cover hood
46	00180	Extruded / drawn from sheet metal	Cleans the heating cylinder as and when required
47	00190	Extruded	To ignite the fuel initially
48	00200	Drawn from sheet metal	To take exhaust gases out of the room
49	00220	Drawn from sheet metal	To take exhaust gases out of the room
50	00220	Drawn from sheet metal	Protects the exhaust pipe from rain
51	00231	Anodized aluminum and printed	Displays heat output of the Bukhari
52	00232	Plastic label	Displays the product name
53	00233	Plastic label	Displays ignition instructions
54	00240	Paper booklet	Gives complete installation and running details
55	00250	Drawn from sheet metal	Tightening of screws
56	00260	Turning item (hardware)	To assemble the bukhari
57	00270	Extruded (hardware)	Interlocking the regulator rod and the regulator
58	00280	Plyboard	For proper packing the bukhari
59	00281	Plastic	For tightening the packing box
60	00282	Drawn from sheet metal	To fasten the strap
61	00290	Drawn from sheet metal	To control the air inlet into the heating cylinder

Note : Part-wise drawing with dimension and detail are to be submitted by the renderer keeping in view overall dimension of the main equipment with the tender.

Contd..10..

Co-Opted Member M-IV M-III M-II M-I PO

5. Dimensions and Weight

The overall dimensions and the weight of the bukhari should consider the ease of transportation as a very important criterion. The bukhari should not be very heavy and very bulky so as to make transportation to far off places especially the high mountainous areas difficult. Keeping this in mind the overall outer dimensions and weight of the bukhari should be as under :-

Height of the bukhari	< 75 cms
Breadth of the bukhari	< 60 cms
Depth of the bukhari	< 40 cms
Net Weight of the bukhari	< Not less than 40 kg (Without Packing)

6. Fule consumption

The bukhari should have an efficient burner so that the fuel consumption at high heat output should not be more than I liter of kerosene oil per hour.

7. Tolerances

Unless otherwise specified normal engineering tolerances (coarse) shall be permitted as per IS : 2102 (Pt I) -1980.

8. Painting/ coatings

All components (except the exhaust pipes, bends and cap) of the bukhari shall be coated from outside to prevent corrosion and rusting. The paint/coating shall have to be heat resistant to at least 400* C so that the paint does not get damaged when the bukhari heats up. The exhaust pipes, bends and cap can be coated with a coating/paint that is heat resistant up to 100* C. The reason for this is being that the exhaust gases are not very hot.

9. Workmanship and Quality Control

1. The bukhari and its components shall be finished smooth all over and shall be free from burrs, sharp edges, dents and other surface defects.
2. All components edges should be either drawn using dies or presses or the edges shall be perfect corners.
3. All welding joints shall be neat, continuous and free from porosity.
4. The fit and final assembly of all the components shall be proper and perfect.
5. All screws, rivets and other hardware items shall be tightened properly so that they don't become loose due to vibration that can take place during transportation in a truck.

Contd..11..

Co-Opted Member M-IV M-III M-II M-I PO

10. Tests

The bukhari shall be subjected to the following tests :

1. Leak Test : It is absolutely critical that the bukhari should not leak at any joint. Kerosene oil leak tests have to be performed for the fuel tank, the inlet and outlet aluminum pipes and the inlet at the burner.
2. Performance Test : The bukhari complete fitted with all the exhaust pipes and bends shall be subject to burning tests consisting of 6 hours of continuous burning (minimum). During burning the bukhari shall fulfill the following conditions:-

   a) Bukhari shall not show any signs of leakage of smoke through any joints.
   b) There shall be no seepage of oil vapor from nuts, pipes etc.
   c) Flow of oil shall be controllable by the oil control value/regulator.
   d) There shall be no flash back of flame.
   e) There shall be no sparks or flames going out of the exhaust pipes.
   f) The beat flow shall be controllable from low heat to high heat.
   g) The paint of the bukhari shall not burn or change colour at maximum heat output.

3. Pressure Test : The fuel tank of bukhari need to be leak proof so that there is not smell in the room and to reduce the risk of fuel catching the fire. To prevent any leak of fuel, fuel tank is tested at 1 kg/cm3 for any potential leak.

11. Proper packing for safe transportation –

Proper packing of the bukaris is essential for its safe transportation. Each bukhari shall be packed in 19 mm plyboard box, with thermacol protection all around the bukhri and properly strapped. Polypropylene strapping 0.9 mm thick and 11.5 mm wide IND/GS/1683 .

12. Sampling plan and criteria of conformity -

1. Formation of lot –

a. The delivery shall be visually inspection by quality assurance officer at the spot in the first instance to ascertain its homogeneity in respect of nature , size, shape, source and year of manufacture . If it is homogeneous the delivery shall be treated as one lot. If not , it shell be segregated by the supplier into the separate groups so that each groups which h homogeneous with itself forms a lot .

b. The supplier shell arrange the units of the homogeneous lot in such away that all the units are easily accessible to the quality assurance officer to enable him to draw samples form any portion of the homogeneous lot.

Contd..12..

Co-Opted Member M-IV M-III M-II M-I PO

2 **Sampling procedure** - Sampling of stores shell be done adopting appropriate sampling method as per IS 4905- 1968 so that samples drawn as per table I and table II given for assessing various quality requirement , as truly representative at the lot .

3. **Scale of sampling** – The number of samples—units to be drawn for assessing the quality of the store, characteristic wise, should be in accordance with the table for dimensional/non destructive/visual inspection and table ii for detailed laboratory testing.

Table I

Sampling plan indexed by limited quality (LQ) for visual inspection (based on 12.5% LQ)

Lot Size	Sampling Size(n)	Acceptance Number(a)
Up to 50	15	0
51 to90	16	0
91 to150	18	0
151 to 280	20	0
281 to 1200	32	1
1201 to 3200	50	3
3201 to 10000	80	5

Note- When 'n' exceeds the lot size use 100% inspection testing.

Source : ISO: 2859/2-1985(f). sampling procedure for inspection by attribution part 2. sampling plan indexed by limited quality (LQ) for isolated inspection.

Table II

sampling plan indexed by AQL for laboratory tests based on AQL 4% Level S-3

Lot Size	Sampling Size(n)	Acceptance Number(a)
Up to 50	3	0
51 to 150	5	0
501 to 500	8	1
501 to 3200	13	1
3201 to 35000	20	2

Note : i) The rejection number(r) will always be one more than acceptance number(a)
ii) When the sampling size equals or exceeds lot size do 100% inspection/testing with zero acceptance number.

Source: IS:2500 (part I)- 1992 : (Sampling Inspection Table)

Contd..13..

Co-Opted Member M-IV M-III M-II M-I PO

4. **Criteria of conformity**

a) All the sample units as specified in Table I and II are required to be tested / inspected irrespective of the rejection number (=Ao+ 1) being achieved earlier.

b) The lot shall be considered conforming to the specified quality if the number of defective units observed in the sample is not more than the respective acceptance number of each class of defects.

c) When the sample size equals or exceeds lot size, do 100% quality assurance.

d) The number of sample units to be sampled for laboratory testing should be a multiple of the number of / tests which cannot be carried out simultaneously on the same sample units.

5. **Sampling Inspection**

a) The quality assurance officer shall draw samples as per the table I for dimensional / not destructive / visual inspection to assess the quality of the lot. If the quality of the lot indicates conformity to the standards as laid down in the table I. sampling for laboratory testing will be done. Otherwise the lot shall be straightway rejected.

6. **Sampling for laboratory testing**

a) If the lot is considered conforming to the quality standards as specified in table I sampling for the laboratory testing shall be carried out as per table II and the samples shall be subject to the laboratory tastings.

7. **Bulk Inspection**

a) If the laboratory test report indicates that the lot does not conform to the standard as specified in table II. the whole lot shall be rejected. Otherwise the lot shall be inspected 100% thoroughly for workmanship. finish and other critical / major and visual defects. All the items found defective shall be rejected.

13. Operation Manual

Each bukhari should be accompanied by a detailed operation manual with easy to understand diagrams on how to install it, operate it and maintain it.

14. **Accessories-** Firm will provide following equipment during supply-
1 set of tool consisting 1 spanner and 1 screw driver.
1 extra copper pipe (long) Part no- 00020
1 extra copper pipe (short) part no- 00030

Co-Opted Member M-IV M –III M –II M –I Presiding Officer

DRAFT TRIAL DIRECTIVES FOR KEROSINE OIL FIRED BUKHARI

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
1	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	1	Fuel Tank of 10 Litre capacity with open lid	00010	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No-1 (Fifth revision)** Tanks should be enclosed within 25 mm fibre glass each side around the tank.	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
		1.1 Kerosene oil filter	00011	Brass		
		1.2 Filter lid	00012	Polycarbonate IS		
		1.3 Fuel gauge meter	00013	Polycarbonate		
		1.4 Open/Close metal knob	00014	Brass		
		1.5 Fuel control rod	00015	2 mm M.S Wire conforming to **IS 280:2006 (Reaffirmed 2010) with Amend No-1 (Forth revision)**		
		1.6 Fuel control pin	00016	Free cutting steel conforming to SWR 14		
		1.7 brass nipple for fuel outlet	00017	Free cutting brass conforming to **IS 319:2007 (Reaffirmed 2012) (Fifth revision)**		
	2	Copper pipe (short) with both ends flared	00020	1.2 mm dia Flexible copper tube coil (alloy and temper 1050 F)		
		2.1 Hexagonal Nut (14x19)	00021	Free cutting conforming to SWR 14		
		2.2 Hexagonal Nut (14x19)	00022	Free cutting conforming to SWR 14		
		2.3 O-Ring chambered	00023	Free cutting conforming to SWR 14		
		2.4 O-Ring non-chambered	00024	Free cutting conforming to SWR 14		

Co-opted member M-IV M-III M-II M-I Presiding Officer

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	3	Copper pipe (long) with both ends flared	00030	1.2 mm dia Flexible copper tube coil (alloy and temper 1050 F)	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
		3.1 Hexagonal Nut (14x19)	00031	Free cutting conforming to SWR 14		
		3.2 Hexagonal Nut 14 x 33	00032	Free cutting conforming to SWR 14		
		3.3 O-Ring chambered	00033	Free cutting conforming to SWR 14		
		3.4 O-Ring non-chambered	00034	Free cutting conforming to SWR 14		
	4	Oil Control Volve / Regulator	00040	Simple, user Friendly and made of Brass		
	5	Regulator Plate	00050	Cold rolled SS sheets 1.2 mm thick		
		5.1 M 8 x 12 screws	00051	Free cutting conforming to SWR 14		
		5.2Regulator Control Rod	00052	Mild steel wire 5.0 mm thick conforming to IS **280-2006(Reaffirmed 2010) with Amend no-1 (fifth revision)**		
		5.3Numbering Plate	00053	Anodized aluminum 0.8 mm thick		
		5.4 Metal Regulator Control Knob	00054	Brass		
	6	Heating Cylinder/Burning chamber	00060	Cold rolled carbon steel sheets 0.8 mm thick conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
		6.1 Cast Iron Lid and Frame	00061	Grey Cast Iron		
		6.2Kerosene oil burner	00062	Cold rolled carbon steel sheets 0.8mm thick conforming to IS **513:2008(Reaffirmed 2013)with Amend no-1(fifth revision)**		

Co-opted member M-IV M-III M-II M-I Presiding Officer

152

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	6	6.3 Burner Inlet Nipple	00063	Free cutting conforming to SWR 14		
		6.4 Burner Rings	00064	Hot rolled carbon steel sheets and strip 3.0mm thick conforming **to IS 1079:2009 (Sixth revision) (Reaffirmed 2009) with Amend no-1**		
		6.5 Burner Rivets	00065	Free cutting steel conforming toSWR14	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
		6.6 Damming Plate	00066	Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
		6.7 Damming plate base support	00067	Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
		6.8 Asbestos washer 3mm dia	00068	Asbestos Yarn conforming to IND/TC/2246		
		6.9 Asbestos washer 6mm dia	00069	Asbestos Yarn conforming to IND/TC/2246		
	7	Lower Support for Heating Cylinder	00070	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**		
	8	Reflector Plate	00080	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**		
	9	Outer Frame Connecting Brackets	00090	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend no-1(fifth revision)**		

Co-opted member M-IV M-III M-II M-I Presiding Officer

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	10	Side Walls with handle rod dia 6 mm	00100	Cold rolled carbon steel sheets conforming to **IS 513:2008 ((Reaffirmed 2013) with Amend no-1(fifth revision)**	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same. in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
	11.	Base Plate Tray	00110	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
	12.	Cover Hood	00120	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
	13.	Front Panel	00130	1.2mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
	14.	Front Panel Bottom Hooks	00140	9.0mm Cold rolled carbon steel sheets conforming to IS **513:2008(Reaffirmed 2013) with Amend no-1(fifth revision)**		
	15.	Back Wall	00150	Galvanized sheet 1.2mm thick conforming to **IS 277-2003 with Amen No 1to 4(Reafirmed 2013) (Sixth revision)**		
	16.	Fuel Tank Partition Plate	00160	20 mm asbestos sheet		
	17	Cover Hood Hinges	00170	3.0 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**		
	18	Scrapper Rod	00180	Mild steel wire 5.0 mm thick conforming **to IS 280:2006 (Reeffirmed 2010) with Amend No- 1 (forth revision)**		

Co-opted member M-IV M-III M-II M-I Presiding Officer

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	19	Lighter Rod	00190	Mild steel wire 3.0 mm thick conforming to **IS 280-2006 (Reaffirmed 2010) with Amend No- 1 (forth revision)**	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
	20	120 mm dia exhaust bend	00200	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**		
	21	120 mm dia and 900 mm long exhaust pipe	00210	1.2mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**		
	22	Exhaust cap cover	00220	1.2 mm Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**		
	23	Labels				
		23.1 Heat Out put label	00231	Anodized aluminum 1.0 mm thick		
		23.2 Branch Label	00232	Plastic		
		23.3 Operating Instruction Label	00233	On the side wall of tank side, indelible printing.		
	24	Operating manual booklet	00240	Paper booklet		
	25	Hardware- Screw Lock Patti	00250			
	26	Hardware- Screw	00260	Free cutting steel		
	27	Hardware- Split Pin	00270			

Co-opted member M-IV M-III M-II M-I Presiding Officer

S. No.	QRs/Specification				Trial Methodology	Desired /expected result
	The kerosene fired oil bukhari shall be made from materials as stipulated in the table below and shall conform to the specifications quoted against each.					
	Sl/no	Items/components	Part No.	Material		
	28	Packing Box	00280	19 mm Ply Board with thermacol protection all around the kerosene oiled fired bukhari	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
		28.1 Packing straps	00281	Polypropylene strips 11.5 mm wide and 0.9 mm thick conforming to IND/GS/1683		
		28.2 Metal Clamps for Polypropylene straps	00282	Hot rolled carbon steel sheets and strip 0.5 mm thick conforming to IS **1079:2009 (sixth revision) (reaffirmed 2009) with Amend. No 1.**		
	29	Breather Box	00290	Cold rolled carbon steel sheets conforming to **IS 513:2008 (Reaffirmed 2013) with Amend No- 1 (fifth revision)**		

Co-opted member M-IV M-III M-II M-I Presiding Officer

S. No.	QRs/Specification	Trial Methodology	Desired /expected result
2	Dimensions	To be physically checked by the Board of officers. Measure the height with the help of measuring tape.	
	(i) Height of the bukhari < 75 cms		Height of the Bukhari should not be more than 75 cms
	(ii) Breadth of the bukhari < 60 cms		Breadth of the Bukhari should not be more than 60 cms
	(iii) Depth of the bukhari < 40 cms		Depth of the Bukhari should not be more than 40 cms
3	Weight Net Weight of the bukhari < 40 kg (Without Packing)	To be physically checked by the Board of officers. Measure the weight with the help of weighing machine.	Weight of Bukhari should not be more than 40 Kg
4	**Fule consumption** The bukhari should have an efficient burner so that the fuel consumption at high heat output should not be more than 1 liter of kerosene oil per hour.	To be physically checked by the Board of officers	The Kerosine oil fired Bukhari must not consume more than 1 Ltr kerosene oil at maximum heat output.
5	**Painting/ coatings** All components (except the exhaust pipes, bends and cap) of the bukhari shall be coated from outside to prevent corrosion and rusting. The paint/coating shall have to be heat resistant to at least 400* C so that the paint does not get damaged when the bukhari heats up. The exhaust pipes, bends and cap can be coated with a coating/paint that is heat resistant up to 100* C. The reason for this is being that the exhaust gases are not very hot.	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.

Co-opted member M-IV M-III M-II M-I Presiding Officer

S/N	QRs/Specification		Trial Methodology	Desired /expected result
6	Workmanship and Quality Control		To be physically checked by the Board of officers	The Kerosine oil fired Bukhari must meet the required specification.
	1	The bukhari and its components shall be finished smooth all over and shall be free from burrs, sharp edges, dents and other surface defects.		
	2	All components edges should be either drawn using dies or presses or the edges shall be perfect corners.		
	3	All welding joints shall be neat, continuous and free from porosity.		
	4	The fit and final assembly of all the components shall be proper and perfect		
	5	All screws, rivets and other hardware items shall be tightened properly so that they don't become loose due to vibration that can take place during transportation in a truck.		
7	Tests- The bukhari shall be subjected to the following tests :		To be physically checked by the Board of officers	Bukharis must pass all the tests
	(i)	Leak Test : It is absolutely critical that the bukhari should not leak at any joint. Kerosene oil leak tests have to be performed for the fuel tank, the inlet and outlet aluminum pipes and the inlet at the burner.		
	(ii)	Performance Test : The bukhari complete fitted with all the exhaust pipes and bends shall be subject to burning tests consisting of 12 hours (minimum) of continuous burning at max output. During burning the bukhari shall fulfill the following conditions:- a) Bukhari shall not show any signs of leakage of smoke through any joints. b) There shall be no seepage of oil vapour from nuts, pipes etc. c) Flow of oil shall be controllable by the oil control volve /regulator. d) There shall be no back lash of flame. e) There shall be no sparks or flames going out of the exhaust pipes. f) The heat flow shall be controllable from low heat to high heat. g) The paint of the bukhari shall not burn or change colour at maximum heat output.		

Co-opted member M-IV M-III M-II M-I Presiding Officer

	(iii)	Pressure Test : The fuel tank of bukhari need to be leak proof so that there is not smell in the room and to reduce the risk of fuel catching the fire. To prevent any leak of fuel, fuel tank is tested at 1 kg/cm3 for any potential leak.	National/International accredited lab certificate to be provided by OEM/Firm and Should be checked physically by Board of officers.	Check the National / International accredited Lab test report/certificate submitted by the firm in r/o the same, in case of any doubt in the test report, the veracity of the same may be checked from the concerned Lab.
	iv	It should be leak proof in all respect. Where there is a fuel flow channel, fuel burner injection/nozzle, there should not be any excessive flow, resulting to any over flow or seepage/accumulation.		
8	**Proper packing for safe transportation –** Proper packing of the bukharis is essential for its safe transportation. Each bukhari shall be packed in 19 mm plyboard box, with thermacol protection all around the bukhari and properly strapped. Polypropylene strapping 0.9 mm thick and 11.5 mm wide IND/GS/1683 .		To be physically checked by the Board of officers	The packing of Kerosine oil fired Bukhari must meet the required specification.
9	**Operation Manual** Each bukhari should be accompanied by a detailed operation manual with easy to understand diagrams on how to install it, operate it and maintain it.		To be physically checked by the Board of officers	

Co-opted member M-IV M-III M-II M-I Presiding Officer