



**BEML LIMITED**  
**BANGALORE**  
**R & D CENTER**

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**MRS1 Project**  
**Procurement Technical Specification**  
**of Fire Extinguishers (6kg & 9kg)**

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## 1. Introduction

### 1.1. General

This Procurement technical specification (PTS) specifies the requirements of Fire Extinguishers of 6 kg capacity & 9 Kg Capacity to be supplied for 'MRS1' contract for Mumbai Metro Line-2 & 7 Project.

BEML will carry out all required works and activities as Contractor to the Employer for MRS1 project, while the sub contractor shall be responsible for all works required in this PTS with regard to Fire Extinguishers and shall be responsible for supporting the BEML activities as contractor for MRS1 project.

The scope of work includes all items of work which may be required to meet the performance requirements, reliable and efficient operation of trains and meeting the best international practices even if not specifically mentioned in this PTS.

The trains will be operated in GoA2/GoA3 modes with driver/ attendant during initial phase of the project and shall finally be upgraded to GoA4 (UTO).

### 1.2. Train Composition

The rake formation shall generally be as follows:

3 Car unit formation : \*DM – T – M –

6 Car Train formation: \*DM –T–M – M – T – DM\*

In case of 8-car formation (if required):

2 Car train formation : – T – M –

8 Car Train formation: \* DM – T – M – T – M – M – T – DM\*

where,

DM : Driving Motor Car

T : Trailer Car with pantograph

M : Non -Driving Motor Car.

\*: The 6 kg capacity Fire extinguisher is mounted on all driver's cabins of DM cars

The 9 kg capacity fire extinguishers are mounted in DM, T & M cars.

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### 1.3. Climatic & Environmental Conditions

The Metro cars shall operate reliably and safely under the climatic and environmental conditions of Mumbai. Accordingly, the Fire extinguishers shall be designed to operate with satisfactory performance under the following conditions.

Description	Limiting Values
Maximum ambient temperature (See note below)	36°C
Minimum temperature	14.3°C
Humidity	≥ 95% RH
Rainfall	The annual precipitation is 2,078 mm with 34%(709mm) falling in the month of July.
Atmosphere during hot season	Extremely dusty including bird feathers
Maximum wind speed	150 km/h
Vibration and Shocks	The sub-systems & their mounting arrangements shall be designed to withstand satisfactorily the vibration and shocks encountered in service as specified in IEC 61373 and IEC 60571.
SO <sub>2</sub> level in atmosphere	80 – 120 mg/m <sup>3</sup>
Suspended particulate matter in atmosphere (TSPM)	360 – 540 mg/m <sup>3</sup>
Flood Proofing	The traction sub-systems mounted on the under-frame will be designed to permit propulsion of the train at 10 kmph through water up to a depth of 50mm above rail level. Traction sub-systems shall be made splash proof in accordance with International Standards
Life	The Metro car is designed for min. 35 years of life. Accordingly, the subject items & accessories shall also not deteriorate in their performance for 35 years

Note:

- 1) The temperature of the metal surfaces of the vehicles when exposed directly to the sun, for long periods of time, may be assumed to rise to 70°C.
- 2) Any moisture condensation shall not lead to any malfunction or failure.
- 3) Adequate margin shall specially be built into the design particularly to take care of the higher ambient temperatures, high humidity, dusty and corrosive conditions, etc. prevailing in Mumbai area.



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#### 1.4. Vehicle Performance Requirements

The vehicle performance requirements with fully loaded train and tangent track are as per the following table.

Item		All Corridors
Safe speed	With inflated secondary suspension	90 kmph
	With deflated secondary suspension	80 kmph
Maximum operational speed	With inflated secondary suspension	80 kmph
	With deflated secondary suspension	70 kmph
Minimum Design Average Acceleration rate for fully loaded (AW3) train on level tangent track shall be as under:		
0 kmph to 40 kmph		1.0 m/s <sup>2</sup>
0 kmph to 60 kmph		0.75 m/s <sup>2</sup>
0 kmph to 80 kmph		0.40 m/s <sup>2</sup>
Minimum Operational Average Acceleration rate for AW2 loaded train on level tangent track shall be as under:		
0 kmph to 35 kmph		1.20 m/s <sup>2</sup>
0 kmph to 60 kmph		0.80 m/s <sup>2</sup>
0 kmph to 80 kmph		0.45 m/s <sup>2</sup>
Average Service braking rate from 80 kmph to standstill for fully loaded(AW3) train on level tangent track.		1.0 m/s <sup>2</sup>
Average Service braking rate from 80 kmph to standstill for AW2 train on level tangent track.		1.1 m/s <sup>2</sup>
Average Emergency braking rate from 80 kmph to 0 kmph for fully loaded trains on level tangent track		1.3 m/s <sup>2</sup>
Jerk rate (Maximum)		0.75 m/s <sup>3</sup>
Annual running distance of one train (for design purpose)		150,000 km
Note : The specified average minimum acceleration shall be the finally achieved values inclusive of the specified jerk rate.		

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### 1.5. Track structure Parameters

The MRS1 cars will operate with the track parameters as specified in the following table:

Description	Elevated and At-grade Corridor		Underground Corridor
	Ballasted	Ballast less (DFF)	Ballast less (DFF)
Track Laying Gauge	1435 mm		
Rail Type (Main Line & Depot)	60 EI (UIC 60) 880/HH	60 EI (UIC 60) 1080/HH	60 EI (UIC 60) 1080/HH
Rail Profile	UIC 861-3		
Inclination Of Rail	1 in 20		
Sleeper Spacing (Main line)	600 mm ± 10mm	600 mm ± 10mm	700 mm ± 10mm
Sleeper Spacing (Depot)	650 mm ± 10mm	Not applicable	
Ballast Cushion Depth(Main line)	300mm	Not applicable	
Ballast Cushion Depth (Depot)	250mm	Not applicable	
Standard Rail Length	13m and 18m	18m	
Rail Panel Lengths	Longer than 200m		
Minimum Radius of Curvature	200m-Underground 110m-Elevated 100m-Depot		
Minimum Turn out Radius.- (Main line)	1 in 9 - 300m radius 1 in 7- 190m radius		
Minimum Turn Out Radius Depot	1 in 7 - 190m radius		
Maximum Cant Permissible	110 mm		
Maximum Cant Desirable	110 mm		
Maximum Cant Deficiency Permissible	85mm		
Maximum Cant Deficiency Desirable	85 mm		
Maximum Permissible Cant Gradient	1 in 440		
Maximum Desirable Cant Gradient	1 in 720		
Turn-out Speed : Turnout (1 in 9) R-300	45 km/h	45 km/h	40 km/h
Turn-out Speed : Scissors (1 in 9) R-300	45 km/h	45 km/h	40 km/h



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Turn-out Speed : In Depots (1 in 7) R-190	35 km/h	35 km/h	25 km/h
Turn-out Speed : Turnout (1 in 7) R-190	35 km/h	35 km/h	25 km/h
Turn-out Speed : Turnout(1 in 12) R-410	50 km/h	50 km/h	50 km/h
Turn-out Speed : Turnout(1 in 12) R-410	50 km/h	50 km/h	50 km/h
Turn-out Speed : Turnout (1 in 8.5) R-218	30 km/h	30 km/h	30 km/h
Turn-out Speed : Turnout(1 in 8.5) R-218	30 km/h	30 km/h	30 km/h
Maximum Gradient Main Line	4%		
Maximum Gradient Depot Connection	4%		
Minimum vertical curve radius of curvature	1500m		

**1.6. Current Collection System**

System Particulars	For all sections and depot
Supply Voltage System	25kV AC single phase 50Hz
Current Collection	Through Pantograph

**1.7. Signalling System**

Item	Description
Train Control System	CBTC based On board Continuous Automatic Train Control system (CATC) consisting of i) Automatic Train Protection ii) Automatic Train Operation (ATO) iii) Automatic Train Super-vision (ATS) iv) Attended/Unattended train operation (GoA2/GoA3/GoA4)
Train Control mode	i) Automatic mode ii) Coded Manual modes iii) Restricted Manual mode iv) Run on Sight mode v) Cut-out mode vi) UTO vii) Standby

**1.8. Principal Notional Vehicle Dimensions/ Leading Particulars**

Description		Dimension
Gauge		1,435 mm
Maximum Length over body(including end-fairings)	DM car	22,010 mm
	T and M cars	22,010 mm
Maximum Length over couplers for all cars		23,000 mm



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Maximum Width over Body		3,200 mm
Minimum Passenger Saloon Headroom		2,050 mm
Locked down pantograph height for 25kV AC cars from rail level at Car Centre Line		4,048 mm
Maximum Floor height above rail level of any unloaded vehicle		1,130 mm
Minimum Floor height above rail level of fully loaded vehicle		1,100 mm
Maximum height of coupler above rail level for unloaded vehicle		815 mm
Minimum height of coupler above rail level for fully loaded vehicle		740 mm
Bogie Wheel Base	Maximum	2400 mm
	Minimum	2200 mm
Distance between bogie centres	Maximum	15,100 mm
	Minimum	14,400 mm
Wheel diameters	New	860 mm
	Fully worn	780 mm
Maximum axle load		17 Tonne (including all tolerances as per IEC 1133-1992)

## 2. Definitions

The following definitions are applicable to the PTS.

- i) "**Employer**" means Delhi Metro Rail Corporation Limited (DMRC), its legal successors and assignees.
- ii) "**Subcontractor**" means the Supplier who supplies the required Fire Extinguishers to BEML for MRS1 project.
- iii) "**Contractor**" means the persons or person appointed by the Employer to undertake the execution of the works for MRS1 project.
- iv) "**Contract**" means the contract between Subcontractor and BEML in relation to the supply of Fire extinguishers for MRS1 project.
- v) "**Engineer**" means any person nominated or appointed from time to time by the Employer to act as the Engineer for the purposes of the Contract and notified as such in writing to the Contractor.
- vi) "**Engineer's Representative**" means any Assistant of the Employer appointed from time to time by the Employer.
- vii) "**BEML**" means the Contractor to procure the Fire extinguishers for MRS1 project cars.

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### 3. Qualification Criteria for Sub contractor

- i) Firm should be a reputed OEM of Fire Extinguishers and should have design, manufacture and testing capability. Company profile and the infrastructure details shall be submitted by the firm along with the technical offer.
- ii) The firm should have manufactured and supplied the ABC dry powder stored pressure type 6 kg & 9 Kg fire extinguishers and such supplies should have been in use and have established their satisfactory performance and reliability on at least three Mass Rapid Transit Systems in revenue service over a period of three years or more (in each MRTS) either outside the country of origin in three different countries or in an MRTS in India. Satisfactory Revenue service performance certificates for a period of 3 years or more from end users / Metro Operators for the above shall be submitted along with the technical offer.
- iii) The Firm should have valid BIS (Bureau Indian standard) certification IS: 15683(latest revision) for production of fire extinguishers, the copy of the certificate shall be submitted along with the technical offer.
- iv) Along with the technical offer, the subcontractor shall submit the filled Vendor approval form along with all the required supporting documents for obtaining the vendor approval for Fire Extinguishers from DMRC. Selection of Vendor is subject to DMRC approval.
- v) The firm should give an undertaking to supply required spares for a minimum period of 2 years(24 months) from the date of last car supplied by BEML under this contract.
- vi) After complete supply of fire extinguishers, the firm shall provide two days training with demonstration of operation, maintenance and refilling of fire extinguishers at MRS1 dedicated depots for the concern staff.

### 4. Standards

The design, testing and manufacturing of the Fire extinguishers shall conform to the latest editions of IS: 15683(Latest revision as on bid due date).

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## 5. Technical Requirements

The Fire extinguishers shall comply to drawings 525-18089 & 525-19370 and this PTS.

### Technical requirements of fire extinguishers.

S.No	Items/Parameters	Requirements	
		6 Kg capacity Fire Extinguisher	9 Kg capacity Fire Extinguisher
<b>1</b>	<b>General</b>		
1.1	Standard code	IS: 15683 (Latest revision as on bid due date)	
1.2	Marking	As per IS: 15683 (Latest Revision)	
1.3	Type	Stored pressure Type	
1.4	Fire Rating	4A 144B	6A 233B
1.5	Classification	Class A, Class B & Class C	
1.6	Total Weight (kg)	Max. 10	Max. 15
<b>2</b>	<b>Operating parameters</b>		
2.1	Operating/Service Pressure(bar)	15	
2.2	Test Pressure(bar)	35	
2.3	Burst Pressure(bar)	Min. 55	
2.4	Operating Temperature (°C)	-10 to +55	
2.5	Filling Tolerance	± 2% by Mass	
2.6	Pressure gauge/Indicator	0-28 bar, as per IS:15683 (Latest Revision)	
<b>3</b>	<b>Discharge Performance:</b>		
3.1	Discharge Time(Sec.)	15 – 25	
3.4	Minimum Throw (m)	4	
3.5	Quantity discharged (%)	> 85	
<b>4</b>	<b>Material of Construction</b>		
4.1	Body	Carbon steel as per IS : 513 Deep Drawn, EDD grade with no vertical weld joint on the body.	
4.2	Neck Ring	Seamless Mild steel (or Stainless steel) tube confirming to IS: 1239(Part-1) Latest Revision.	
4.3	Bottom Ring	Carbon steel as per IS : 513	
4.4	Valve Assembly	SS-316 or Forged Brass as per IS: 6912 grade FLB.	
4.5	Siphon tube	Brass as per IS:407 or SS-316.	
4.6	Discharge Nozzle	Plastic as per IS:7328 or SS-316 or Forged Brass as per IS: 6912 grade FLB.	
4.7	Discharge Hose	Thermo plastic hose as per IS: 12492 or EPDM rubber (Length 500mm).	



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4.8	Safety Pin	SS-316	
4.10	'O'-Ring	As Per IS: 5382 (Latest Revision)	
4.9	Spring	As Per IS: 4454 (Part-1) (Latest Revision)	
<b>5</b>	<b>Extinguishing Media</b>		
5.1	Dry Chemical powder(DCP)	ABC Dry chemical powder(Mono Ammonium Phosphate (MAP) with more than 90% concentration conforming to IS 14609).	
5.2	DCP quality	The DCP shall not form lumps in the fire extinguisher up to its shelf life. The firm shall furnish the details along with technical bid.	
<b>6</b>	<b>Propellants</b>		
6.1	Expellant gas	High grade Dry Nitrogen gas as per IS:15683 & IS :1747 (Latest Revisions)	
<b>7</b>	<b>Dimensions</b>		
7.1	Diameter of the Body(mm)	160	175
7.2	Over all Height (mm)	500±5	570±10
7.3	Shell thickness (mm)	Min. 1.6	Min. 2
<b>8</b>	<b>Painting/Marking</b>		
8.1	Anticorrosive Treatment	Phosphating by hot dipping process to thickness not less than 0.012 mm. both Internally & externally.	
8.2	Painting	Epoxy polyester powder coating of minimum 50 micron thickness to all metallic external parts.	
8.3	Fluorescent Tape	Two bands of yellow coloured fluorescent adhesive tape of minimum 20 mm Width on the body.	
8.4	Marking	As per IS: 15683 (latest revision as on bid due date)	
8.5	Finish	Post Office red as per Shade 538 of IS:5	
<b>9</b>	<b>Installation &amp; maintenance</b>	As per IS:2190 (The firm shall maintain the fire extinguishers upto warranty period, and the firm shall keep ready the required spares upto warranty period in the designated depots)	
<b>10</b>	<b>Inspection/Testing</b>		
10.1	Type test & Routine tests	As per IS: 15683 (latest revision as on bid due date) and This PTS. The firm shall submit the type and routing test reports.	

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## 6. Quality Assurance Program

### 6.1. General

The sub contactor shall hold ISO 9001/ IRIS certification and shall manufacture the product accordingly. The sub contactor shall submit a copy of valid ISO 9001 / IRIS certification along with the offer. The sub contactor shall monitor and control the Quality systems as per ISO 9001/IRIS guidelines. BEML and/or DMRC's representative may periodically conduct compliance audits of the Sub contactor's Quality management system.

### 6.2. Quality assurance plan(QAP)

The sub contactor shall develop and submit a Quality assurance plan (QAP) to BEML for review and approval based on ISO 9001 / IRIS guidelines.

## 7. Scope of Supply

The sub contactor shall be responsible for the scope of supply of the Fire extinguishers, which shall comprise, unless specifically excluded, the design, manufacture, testing, delivery, commissioning and rectification of defects during the Warranty Period.

The Sub contactor shall meet the system requirements for Fire extinguishers in accordance with this PTS, as a minimum.

The design of Fire Extinguishers shall be rugged and shall ensure a durable life of min. 10 years as per IS: 2190 in the Mumbai environment and the operating conditions.

The firm should depute Engineer/Technician for periodic inspection & maintenance of fire extinguishers upto warranty period without any additional cost.

### 7.1. Hardware

The sub contactor shall supply the complete Fire extinguisher in filled condition including all sub-assemblies and accessories in ready to install and operate condition.

### 7.2. Submission of Documents

The Sub contactor shall submit the following documents, as a minimum.

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- The GA drawings for the proposed Fire extinguishers, with OEM part nos in the Bill of material (BOM).
- OEM complete catalogue giving detailed specification of the proposed fire extinguishers (including accessories and fittings).
- Complete 3D Models of the proposed Fire extinguishers (6 Kg & 9 Kg models).
- Technical Description document of proposed Fire Extinguisher including detail description of all the parts in the Fire Extinguisher.
- Technical data sheets of Proposed Fire extinguishers.
- Material data sheet of ABC dry chemical powder confirming to IS: 14609(Latest revisions).
- Technical data sheet & material data sheet of Dry chemical powder to be used in the proposed Fire extinguishers along with IS certified test certificate.
- Copy of valid BIS certificate for IS: 15683(Latest for proposed fire extinguishers).
- Copy of valid UL certificate for the dry chemical powder along with warranty certificate for the shelf life of the powder for min. 5 years.
- Operation & Maintenance manual.
- Installation instructions manual.
- Type test reports of Fire Extinguishers.
- The Sub contractor shall submit the following documents conforming to the Technical Specification along with every batch of supplies.
  - Material test certificates
  - Dimensional check sheets

### 7.3. Guarantee/Warranty

The sub contractor shall guarantee the material, workmanship and the performance of the fire extinguishers for a period of **24 months** from the date of last car supplied by BEML under this contract. Any defects, faulty workmanship or operational defects found during this period shall be rectified/replace with new item by sub contractor without any additional cost.

The sub contractor shall submit undertaking for the guarantee/warranty as above along with technical offer.

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The Firm should set up min. 2 nos of Nitrogen gas Refilling units (Complete set-up) for refilling 6kg and 9kg capacity Fire extinguishers at MRS1 designated depot for free of cost and train the concern staff to use the setup.

#### 7.4. Packing

The Fire Extinguishers shall be properly packed and due care shall be taken to ensure that no damage occurs during transit. Damages, if any, shall be replaced free of cost by the sub contractor. The sub contractor should ensure, all the components/parts are packed as per the BOM before dispatch.

### 8. Type Test & Routine Tests

The Fire extinguishers shall be type and routine tested in accordance with relevant standards and specifications.

All such tests shall be carried out at the sub contractor's cost, wherever performed, in the presence of and to the satisfaction of BEML/DMRC, who reserves the right to witness any or all of the tests and to require submission of any or all test specifications and reports.

BEML/ DMRC reserve the right to reasonably call for additional tests, if necessary.

The sub contractor shall carryout the following type tests and routine tests as a minimum.

SI No.	Type of Test	Type Test	Routine Test	Remarks
1	Function Test	✓	✓	
2	Strength Test	✓	—	
3	Endurance Test/ Durability test of the Fire extinguisher	✓	—	
4	Material Test of Fire extinguisher and accessories	✓	✓	
5	Material Test for Dry chemical powder	✓	✓	
6	Dimensional Inspection	✓	✓	

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The type test reports shall be submitted along with first batch of supplies.

The routine test reports shall be submitted along with every batch of supplies.

## 9. Appendices

- 1) Vendor Approval form.
- 2) Technical offer Submittals Check List.
- 3) Fire Extinguisher (6 kg capacity) drawing: 525-18089
- 4) Fire Extinguisher (9 kg capacity) drawing: 525-19370

## 10. Submittals with Technical Offer

The Sub contractor shall provide as a minimum, the following along with the technical offer:

- 1) Complete Technical Offer for proposed fire extinguishers (6kg & 9 kg).
- 2) The OEM GA drawings for the proposed Fire extinguishers, with OEM part nos in the Bill of material (BOM).
- 3) Complete detailed OEM catalogue of proposed fire extinguishers.
- 4) Technical Description document of proposed Fire Extinguisher including detail description of all the parts in the Fire Extinguisher.
- 5) Technical data sheets of Proposed Fire extinguishers.
- 6) Technical data sheet & material data sheet of Dry chemical powder to be used in the proposed Fire extinguishers along with ISI certified test certificate.
- 7) Copy of valid BIS certificate for IS: 15683(Latest revision as on bid due date) for proposed fire extinguishers.
- 8) Copy of valid UL certificate for the dry chemical powder along with warranty certificate for the shelf life of the powder for min. 5 years.
- 9) Undertaking of Guarantee/warranty as per clause 7.3 of this PTS.
- 10) Clause-wise compliance against the PTS Doc No. GR/TD/5172.



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- 11) Supporting documents for qualification criteria as at Clause-3 of this PTS.
- 12) Vendor approval documents including QAP, ITP, Company profile with infrastructure facilities, product range etc.

Date:

Proforma No: MRS1/BEML/V.NNO/CAT-\_\_ /\_\_\_\_\_/M/ \_\_\_\_

<b>CHECKSHEET FOR SUBMISSION OF DOCUMENTS FOR NOTICE OF NO OBJECTION FOR SUB-CONTRACTOR/VENDOR FROM DMRC</b>			
<b>ITEMS:</b>			
<b>Category</b>	<b>A</b>	Items manufactured outside India and proposed to be used in all MRS1 trains.	<input type="checkbox"/>
	<b>B</b>	Items manufactured outside India and proposed to be used in all MRS1 trains but likely to be localised after some part quantity from OEM (shall be declared by BEML).	<input type="checkbox"/>  Equivalent Localisation Quantity : __ Trainsets
	<b>C</b>	Locally manufactured items proposed to be used in all MRS1 trains.	<input type="checkbox"/>
<b>1</b>	<b>Proforma for Submission of documents</b>		<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>2</b>	<b>Vendor Details</b>	Annexure-I	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>3</b>	<b>Sub-Vendor Detail</b>	Annexure-I	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>4</b>	<b>Certificate from BEML</b>	Annexure-II	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>5</b>	<b>Copy of technical purchase specification of BEML</b>		<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>6</b>	<b>Inspection and Test Plan</b>		<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>Note:</b>	<b>1</b>	Incomplete documents will not be reviewed by DMRC.	
	<b>2</b>	Items used in DMRC's existing rolling stock do not automatically qualify for use unless specifically approved by DMRC for this project.	
<b>(BEML Limited)</b>		_____ <b>(Proposed Vendor)</b>	

Date: \_\_\_\_\_

Proforma No: MRS1/BEML/V.NNO/CAT-\_\_\_/\_\_\_\_\_/P1/\_\_\_\_\_

<b>PROFORMA FOR SUBMISSION OF DOCUMENTS FOR NOTICE OF NO OBJECTION FOR SUB-CONTRACTOR/VENDOR FROM DMRC</b>					
<b>1</b>	Item description				
<b>2</b>	Vendor particulars along with proposed manufacturing unit submitted in Annexure-I	<input type="checkbox"/> YES	<input type="checkbox"/> NO		
<b>3</b>	Technical Specification & Inspection Plan	—			
<b>3.1</b>	Enclosed copy of Technical Purchase Specification of BEML	<input type="checkbox"/> YES	<input type="checkbox"/> NO		
<b>4</b>	<b>Details of experience/ satisfactory performance to establish compliance with ERTS 3.2.2.</b>				
The Information shall be submitted in following format:					
<b>S.No.</b>	<b>Mass Rapid Transit System where proposed sub-system/equipment/component has been used</b>	<b>Country</b>	<b>Quantity Used</b>	<b>Period in satisfactory Revenue Service [from/to] (Min 3 yrs in each MRTS)</b>	<b>Manufacturing Unit</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>1</b>	1				
	2				
	3				
<b>2</b>	1				
	2				
	3				
<b>3</b>	1				
	2				
	3				
<b>4</b>	1				
	2				
	3				
<b>4.1</b>	Based on above, is the proposed item compliant with ERTS 3.2.2				<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>4.2</b>	Is the proposed manufacturing unit compliant with ERTS 3.2.2				<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>4.3</b>	Confirmation that the subsystems used in MRS1, as proposed herein, shall have NO CHANGE in source, manufacturing unit, components, specification, material etc. from those approved unless got specifically approved from DMRC.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
<b>4.4</b>	Information submitted herein as above is certified as correct, strictly in accordance with the MRS1 contract conditions and has been verified by BEML. In case any information is found to be factually incorrect or at variance with contract conditions at any stage, BEML commits to replace the concerned 'sub-system' in complete fleet as per the instructions of engineer, which shall be final and binding. In such case, BEML shall not be eligible either for seeking any claim whatsoever or for seeking extension of contract delivery period.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
<b>4.5</b>	Confirmation that DMRC may depute a team of Engineers (around six) at Sub-contractor/vendor's office for requisite duration with a view to expedite finalization of designs in accordance with contract 'MRS1' conditions ERGS 5.11.3.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
<b>5</b>	Notwithstanding the vendor approval communicated by DMRC on the proposal of BEML, responsibility for manufacture, testing, supply, commissioning and quality control shall continue to rest solely with BEML and BEML will be solely responsible for meeting all contractual requirements.				<input type="checkbox"/> CONFIRMED <input type="checkbox"/> NOT CONFIRMED
<div style="display: flex; justify-content: space-between;"> <span>(BEML Limited)</span> <span>_____ (Proposed Vendor)</span> </div>					

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- \_\_\_ / \_\_\_ /P2/ \_\_\_

<b>6</b>	<b>Category B - Sourcing from facilities in India after supply of agreed quantity from approved manufacturing unit.</b>	
<b>6.1</b>	In case OEM wants to use manufacturing facilities in India (other than his own) for items for which the OEM has been approved, it shall enter into an agreement with such selected Indian equipment manufacturer and obtain prior approval from DMRC. No change in composition, rating, type, model no., manufacturing process, quality standards, design, etc. and make of the components used in assemblies/sub-assemblies of such equipment as manufactured by the approved parent vendor shall be made without specific prior approval of the Engineer.	
<b>6.2</b>	In case the vendor uses his own facilities for indigenization after part supply of equipment from the approved manufacturing unit, no change in design, component type/make, quality standards, manufacture procedure, sourcing of materials etc. shall be made without specific prior approval of the Engineer.	
<b>6.3</b>	In case OEM wishes to change/make/type specifications, etc. of any sub-components for supplies to be sourced from Indian facility, specific prior approval of the Engineer shall be obtained for changes made, model, specification, etc. Responsibility for obtaining such prior approval shall rest solely with the contractor.	
<b>6.4</b>	In case of local manufacturing of carbody or any other item(s) manufactured by BEML/OEM and used in initial trains, BEML shall be exclusively responsible for all quality assurance and inspection and their implementation and also ensure provision of physical partition as per the ERGS 1.1.7	
<b>7</b>	<b>Category C- Locally Manufactured Items</b>	
<b>7.1</b>	Does the manufacturing unit satisfy ERTS 3.2.2	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>7.2</b>	If not, basis/justification for proposal to be submitted for DMRC review	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>8</b>	<b>BEML confirms that in terms of ERTS 3.2.2, they would seek Notice of No Objection for Sub-Contractor/Vendor from DMRC notwithstanding the item(s) being used in DMRC's existing rolling stock.</b>	<input type="checkbox"/> YES <input type="checkbox"/> NO
<b>9</b>	<b>BEML shall submit Certificate as per enclosed Annexure-II confirming:</b>	
<b>9.1</b>	Compliance with Clause 6.6 of ERGS and GCC Clause 5.8 regarding supply of software tools/documents/materials etc.	
<b>9.2</b>	Compliance with Clause 8.12 of ERGS regarding supply of all drawings, specifications, patterns etc. in case the manufacture of these items is discontinued by the proposed vendor.	
<b>10</b>	<b>Commitment from the vendor that in case of any future procurement action by DMRC, he shall quote directly to DMRC.</b>	
<b>11</b>	<b>Commitment from the Vendor to provide technical support through permanent positioning of Vendor's staff at depots for meeting DLP obligations as per ERTS clause 3.2.5.</b>	
<b>12</b>	<b>BEML commits that the vendor shall be complying with all relevant contract clauses.</b>	
<p><b>(BEML Limited)</b> _____ <b>(Proposed Vendor)</b></p>		

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- \_\_\_/\_\_\_\_\_/A1/\_\_\_\_\_

<b>Annexure-I</b>					
<b>SUB-Contractor/VENDOR/SUB-SUPPLIER DETAILS</b>					
<b>1</b>	Vendor/Sub-supplier OEM Name				
<b>2</b>	Details of item proposed to be sourced				
<b>3</b>	Sourcing by: <table border="0" style="width: 100%;"> <tr> <td style="width: 80%;">(a) BEML</td> <td style="text-align: right;"><input type="checkbox"/></td> </tr> <tr> <td>(b) Proposed Main vendor</td> <td style="text-align: right;"><input type="checkbox"/></td> </tr> </table>	(a) BEML	<input type="checkbox"/>	(b) Proposed Main vendor	<input type="checkbox"/>
(a) BEML	<input type="checkbox"/>				
(b) Proposed Main vendor	<input type="checkbox"/>				
<b>4</b>	Marketing Office/Head Office				
<b>4.1</b>	Complete address (including website)				
<b>4.2</b>	Contact person details in Head Office				
	<ul style="list-style-type: none"> <li>● Name</li> <li>● Designation</li> <li>● Telephone</li> <li>● Fax</li> <li>● Mobile</li> <li>● Email</li> </ul>				
<b>5</b>	Details of proposed compliant plant/manufacturing unit from where item is proposed to be sourced				
<b>5.1</b>	Complete address (including website)				
<b>5.2</b>	Contact person details				
	<ul style="list-style-type: none"> <li>● Name</li> <li>● Designation</li> <li>● Telephone</li> <li>● Fax</li> <li>● Mobile</li> <li>● Email</li> </ul>				
<b>5.3</b>	Supply details of the manufacturing unit for the proposed item or item with similar design.				
<b>5.4</b>	It is confirmed that the proposed manufacturing unit and the vendor are fully compliant with ERTS 3.2.2				
<b>5.5</b>	We commit that in case of any future procurement action by DMRC, the proposed vendor shall quote directly to DMRC without any involvement of BEML.				
<b>5.6</b>	We confirm that we will provide technical support through permanent positioning of our staff at depots for meeting DLP obligations as per ERTS clause 3.2.5.				
<b>5.7</b>	We have carefully gone through all relevant clauses of the MRS1 Contract and shall fully abide by the contract conditions and decisions communicated by DMRC during contract execution without exception.				
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">(BEML Limited)</td> <td style="width: 50%; text-align: right;">_____ (Proposed Vendor)</td> </tr> </table>		(BEML Limited)	_____ (Proposed Vendor)		
(BEML Limited)	_____ (Proposed Vendor)				

Date:

Proforma No: MRS1/BEML/V.NNO/CAT- \_\_\_ / \_\_\_ /A2/ \_\_\_

Annexure-II

**Certificate for compliance with Contract conditions regarding  
Software requirements.**

This is certified that in the contract between BEML and \_\_\_\_\_ (proposed vendor) for supply of \_\_\_\_\_, specific conditions for confirming total compliance with the following contract condition/clauses have been included and agreed to between BEML and \_\_\_\_\_(proposed vendor):

**(a) Clause 6.6 of ERGS and GCC 5.8**

It is certified that we shall provide full access of application software(s) and any other software /hardware tools to DMRC which they may specifically require for the intended purpose specified in this specification. For all commercial software BEML shall provide all available documentation for the application and maintenance of that software.

Complete documentation along with the software to be supplied by BEML and its Vendor(s) shall comprise of Signal flow diagram, flow charts, functional blocks, details of signals, interpretations so as to enable engineer to debug and implement vehicle/train level modifications based on DMRC's experience, operational & maintenance requirements. Full access to the application software to DMRC shall be provided for this purpose.

It shall be possible for DMRC to modify/change various parameters/logics used in the software and implement the changes on trains. Full facilities including any software/hardware tools, simulation/test bench which are essential for this purpose shall be supplied.

It is committed to supply the software/hardware etc. within the scope specified in respective clauses of ERTS relevant for the proposed item/vendor and we would be fully complying with GCC 5.8

**(b) Clause 8.12 of ERGS:**

It is certified that \_\_\_\_\_ (proposed vendor) will supply all drawings, specifications, patterns and any other information required by DMRC for arranging such items in case the manufacture of these items is discontinued within 10 years by the proposed vender.

(BEML Limited)

\_\_\_\_\_ (Proposed Vendor)

**Undertaking for Technical/Service Support**

Appendix -1  
Page 6 of 6

**To Delhi Metro Rail Corporation Ltd.**


We \_\_\_\_\_ (proposed Vendor) shall provide Technical/Service support during Commissioning and post Commissioning period, till completion of the Defect Liability Period, for Mumbai Metro Line 2 & 7, 'MRS1' Project from their local office in India.

\_\_\_\_\_  
BEML Limited

(sign, Name & designation with stamp)

\_\_\_\_\_  
Proposed Vendor

(sign, Name & designation with stamp)

	<b>SUBMITTALS CHECK SHEET</b>	Project : MRS1
Aggregate :	<b>FIRE EXTINGUISHERS</b>	PTS DOC No.: GR/TD/5172

<b>TECHNICAL</b>			
<b>SL.NO.</b>	<b>DETAILS</b>	<b>SUBMITTED</b>	<b>NOT SUBMITTED</b>
1	Complete Technical Offer for proposed fire extinguishers (6kg & 9 kg).	<input type="checkbox"/>	<input type="checkbox"/>
2	The OEM GA drawings for the proposed Fire extinguishers, with OEM part nos in the Bill of material (BOM).	<input type="checkbox"/>	<input type="checkbox"/>
3	Complete detailed OEM catalogue of proposed fire extinguishers.	<input type="checkbox"/>	<input type="checkbox"/>
4	Technical Description document of proposed Fire Extinguisher including detail description of all the parts in the Fire Extinguisher.	<input type="checkbox"/>	<input type="checkbox"/>
5	Technical data sheets of Proposed Fire extinguishers.	<input type="checkbox"/>	<input type="checkbox"/>
6	Technical data sheet & material data sheet of Dry chemical powder to be used in the proposed Fire extinguishers along with ISI certified test certificate.	<input type="checkbox"/>	<input type="checkbox"/>
7	Copy of valid BIS certificate for IS: 15683 for proposed fire extinguishers.	<input type="checkbox"/>	<input type="checkbox"/>
8	Copy of valid UL certificate for the dry chemical powder along with warranty certificate for the shelf life of the powder for min. 5 years	<input type="checkbox"/>	<input type="checkbox"/>
9	Undertaking of Guarantee/warranty as per clause 7.3 of this PTS.	<input type="checkbox"/>	<input type="checkbox"/>
10	Clause-wise compliance against the PTS Doc No. GR/TD/5172.	<input type="checkbox"/>	<input type="checkbox"/>
11	Supporting documents for qualification criteria as at Clause-3 of this PTS.	<input type="checkbox"/>	<input type="checkbox"/>
12	Duly filled Vendor approval documents including QAP, ITP, Company profile with infrastructure facilities, product range etc and satisfactory revenue service performance certificate from end user/Metro corporations for Fire Extinguishers.	<input type="checkbox"/>	<input type="checkbox"/>

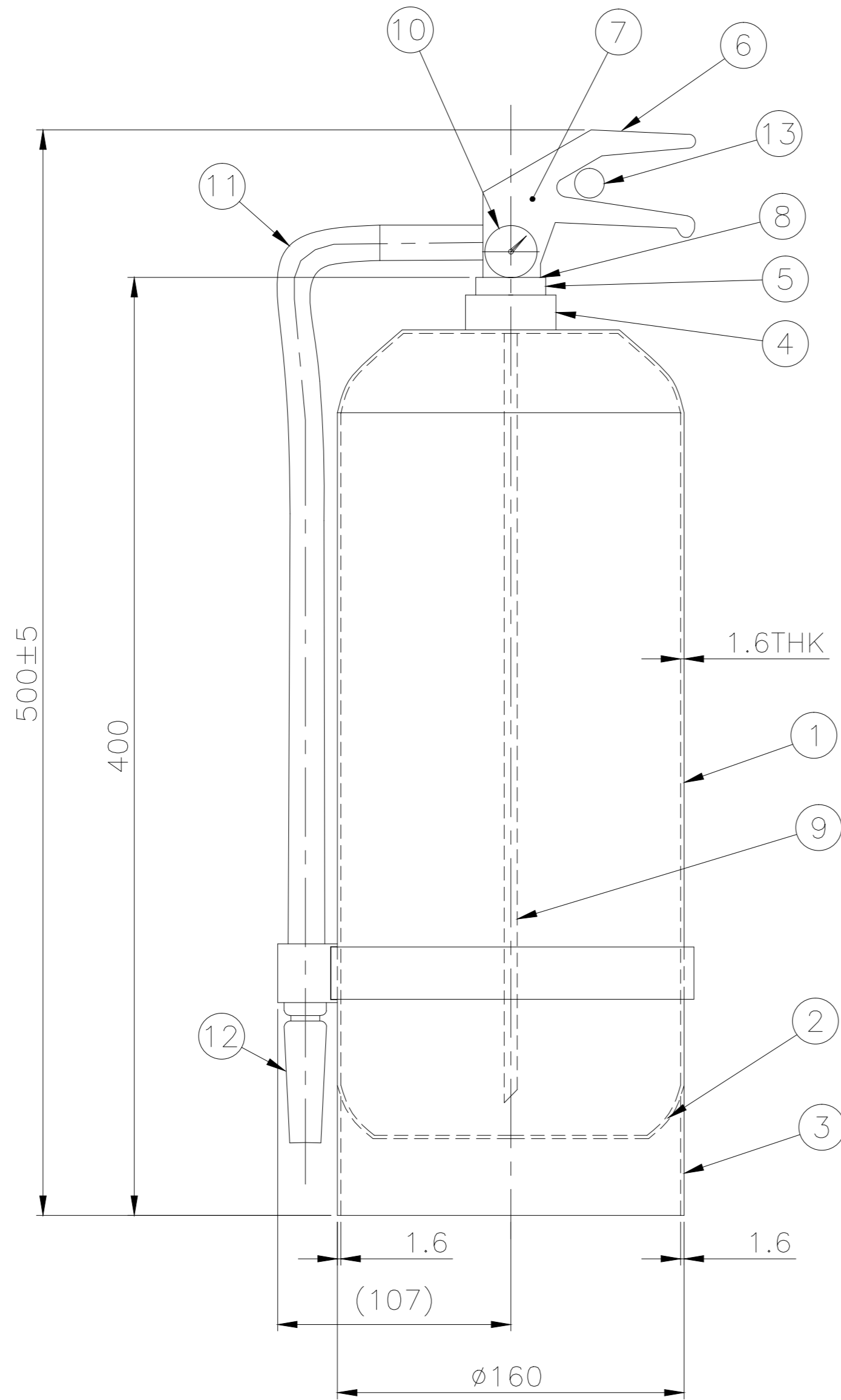
**Note: Incomplete submissions are liable to Rejection.**

.....  
Signature of the Bidder with Seal



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GRADE No.	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
VALUE	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
SYMBOL												
SURFACE ROUGHNESS												



**UNCONTROLLED**

- NOTE:**
1. THE FIRE EXTINGUISHER SHALL CONFORM TO PTS DOC NO. GR/TD/5172.
  2. SAMPLE APPROVAL SHALL BE OBTAINED BEFORE BULK SUPPLY.

MACHINING DEVIATIONS FOR LINEAR DIMENSIONS	RANGE	0 - 6	6 - 30	30 - 120	120 - 315	315-1000	1000-2000	2000-4000	ABOVE 4000	RA
	TOLERANCE	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	~
FOR DIMENSIONAL TOLERANCES OF SHEET METAL PARTS AND WELDED STRUCTURES, REFER STD. RD-227										
UNSPECIFIED TOLERANCE FOR LINEAR AND ANGULAR DIMENSIONS REF. IS 2102 (PT-1) (MEDIUM)								QUALITY OF WELD JOINTS REF. RD 230 MEDIUM		
VALUES OF SURFACE TEXTURE SHALL BE AS PER COMPANY STD DS. 1012.C										
WELDING SHALL BE CARRIED OUT AS PER IS: 9595-96								STATUS: PROTO/PRODUCTION		

**SPECIFICATION:**

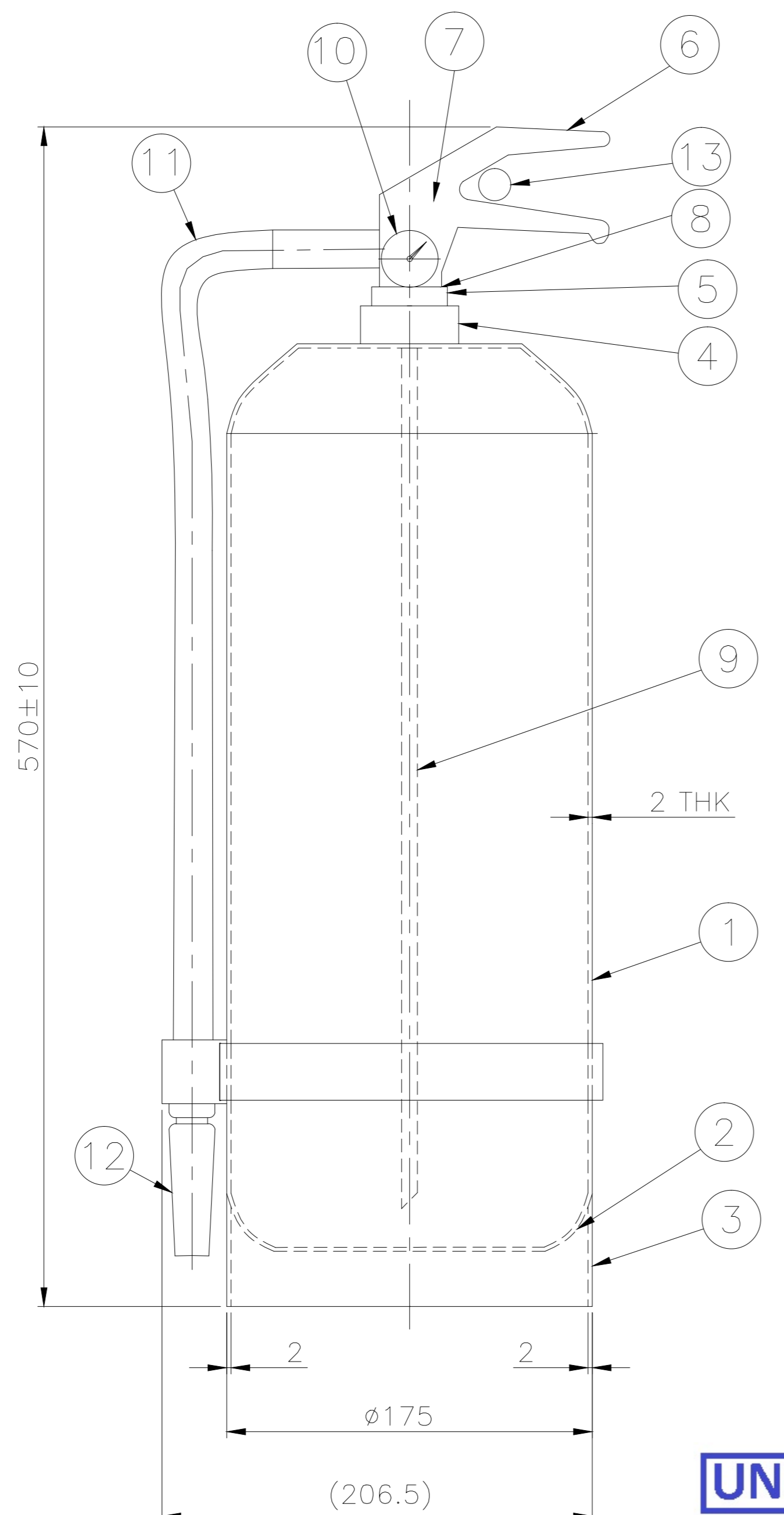
PARAMETERS	
CAPACITY (kg)	6
CLASS	ABC
EXTINGUISHING MEDIUM	ABC DRY POWDER, AS PER I.S:14609
PROPELLENT	NITROGEN
FILLING TOLERANCE	± 2% BY MASS
OPERATING/SERVICE PRESSURE (bar)	15
TEST PRESSURE (bar)	35
BURSTING PRESSURE (bar)	MIN. 55
OPERATING TEMPERATURE (°C)	-10 TO +55
<b>DISCHARGE PERFORMANCE :</b>	
A) DISCHARGE TIME (sec)	15-25
B) MINIMUM THROW (m)	4
QUANTITY DISCHARGED (%)	>85
MIN. FIRE RATING	4A 144B
CONSTRUCTION	DEEP DRAWN CYLINDER AS PER I.S:513 DD
TOTAL WEIGHT (KG)	MAX. 10
MARKING & COLOUR	AS PER I.S:15683(LATEST AS ON DATE)
INSTALLATION & MAINTENANCE	AS PER I.S:2190
TYPE TESTS & ROUTINE TESTS	AS PER I.S:15683(LATEST AS ON DATE)

SL.No.	QTY	PART / STOCK No.	DESCRIPTION	SIZE	COMPANY STD./I.S	Wt. (Kg)
13	1	-	SAFETY PIN	-	SS-316	
12	1	-	DISCHARGE NOZZLE	-	I.S:7328/I.S:316/ I.S:6912 FLB	
11	1	-	DISCHARGE HOSE	L=500	I.S:12492	
10	1	-	PRESSURE GAUGE	0-28 bar	-	
9	1	-	SIPHON TUBE	-	I.S:407/SS-316	
8	3	-	'O'-RING	-	I.S:5382	
7	1	-	SPRING	-	I.S:4454 (P-1) GRD-1	
6	2	-	SQUEEZE LEVER	-	I.S:513	
5	1	-	VALVE ASSY	-	I.S:6912 'FLB'/ SS316	
4	1	-	NECK RING	-	I.S:1239(PART-1)	
3	1	-	BOTTOM RING	OD 160x1.6t	I.S:513	
2	1	-	END BLOCK	-	I.S:513 'DD'	
1	1	-	DEEP DRAWN CYLINDER,	OD 160x1.6t	I.S:513 'DD'	

SL.No.	QTY	PART / STOCK No.	DESCRIPTION	SIZE	COMPANY STD./I.S	Wt. (Kg)																																																								
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GRADE No.	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12
VALUE	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	12.5	25	50
SYMBOL												
SURFACE ROUGHNESS												



**UNCONTROLLED**

NOTE:  
 1. THE FIRE EXTINGUISHER SHALL CONFORM TO PTS DOC NO. GR/TD/5172.  
 2. SAMPLE APPROVAL SHALL BE OBTAINED BEFORE BULK SUPPLY.

MACHINING DEVIATIONS FOR LINEAR DIMENSIONS	RANGE	0 - 6	6 - 30	30 - 120	120 - 315	315-1000	1000-2000	2000-4000	ABOVE 4000	RA
	TOLERANCE	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	~
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UNSPECIFIED TOLERANCE FOR LINEAR AND ANGULAR DIMENSIONS REF. IS 2102 (PT-1) (MEDIUM)								QUALITY OF WELD JOINTS REF. RD 230 MEDIUM		
VALUES OF SURFACE TEXTURE SHALL BE AS PER COMPANY STD DS. 1012.C										
WELDING SHALL BE CARRIED OUT AS PER IS: 9595-96										
STATUS:										PROTO/PRODUCTION

**SPECIFICATION:**

PARAMETERS	
CAPACITY (kg)	9
CLASS	ABC
EXTINGUISHING MEDIUM	ABC DRY POWDER, AS PER I.S:14609
PROPELLENT	NITROGEN
FILLING TOLERANCE	± 2% BY MASS
OPERATING/SERVICE PRESSURE (bar)	15
TEST PRESSURE (bar)	35
BURSTING PRESSURE (bar)	MIN. 55
OPERATING TEMPERATURE (°C)	-10 TO +55
<b>DISCHARGE PERFORMANCE :</b>	
A) DISCHARGE TIME (sec)	15-25
B) MINIMUM THROW (m)	4
QUANTITY DISCHARGED (%)	>85
FIRE RATING	6A 233B
CONSTRUCTION	DEEP DRAWN CYLINDER AS PER I.S:513 DD
TOTAL WEIGHT(KG)	MAX. 15
MARKING & COLOUR	AS PER I.S:15683 (LATEST AS ON DATE)
INSTALLATION & MAINTENANCE	AS PER I.S:2190
TYPE TESTS & ROUTINE TESTS	AS PER I.S:15683 (LATEST AS ON DATE)

SL.No.	QTY	PART / STOCK No.	DESCRIPTION	SIZE	COMPANY STD./I.S	Wt. (Kg)
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10	1	-	PRESSURE GAUGE	0-28 bar	-	
9	1	-	SIPHON TUBE	-	I.S:407 / SS-316	
8	3	-	'O'-RING	-	I.S:5382	
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6	2	-	SQUEEZE LEVER	-	I.S:513	
5	1	-	VALVE ASSY	-	I.S:6912 'FLB' / SS316	
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3	1	-	BOTTOM RING	OD 175x2t	I.S:513	
2	1	-	END BLOCK	-	I.S:513 'DD'	
1	1	-	DEEP DRAWN CYLINDER,	OD 175x2t	I.S:513 'DD'	

PRODUCT		MUMBAI METRO CARS - L2 & L7			
REF DRG		-			
MATERIAL					
HEAT TREAT.		APPD		15.05.2020	
SURFACE TREAT.		REV D		15.05.2020	
TITLE		CHKD		15.05.2020	
		DRWN		15.05.2020	
SCALE		SHEET		WT.(Kg)	
NTS		1 OF 1		-	
DRG No.		ALT		-	
ALT.No.		ECN NO/CHANGES		DATE	
		BY		CHKD	
		APPD			

**FIRE EXTINGUISHER (9 KG CAPACITY)**

**BEML LIMITED**

**525-19370**