

## Ref. CMRM/1NT29925/Develp001

### BEML LIMITED

(A Govt. of India Mini Rathna Company under Ministry of Defence)  
BEML Soudha, 23/1, 4th Main Road, SR Nagar, Bangalore 560 027.  
Phone 080-22963179 email: [cmrm@beml.co.in](mailto:cmrm@beml.co.in) ; [cmrm1@beml.co.in](mailto:cmrm1@beml.co.in).

Quotation in e-mode through GeM platform is invited from primary steel mill/ manufacturers/ re-sellers for supply of steel round as per specification/STD BEML STD C1111-33 attached.

Material	Description	Qty. Mtr	Div.	Bidder remarks
1NT29925	TUBE CDS C1111-33 OD298.5 ID249.5 L4600  <b>Alternate material:</b> SAE 1026, SAE 5136 or ST52 (Bk + S - Cold Drawn Stress Relieved with Approx. Min. 420MPa Yield Strength)	25	H&P	Yes/ No

Note: 1). Bidder may confirm the technical acceptance stating remarks "Yes/No".

2). BEML STD C1111-33 attached for ref.

#### Terms & Conditions:

1 Quote : Rate to be quoted in Rs/Mtr only, excluding GST. Bidder shall submit/ confirm the quote at given below email id:

Quote to be submitted	Quote submission confirmation
<a href="mailto:cmtenderbox@beml.co.in">cmtenderbox@beml.co.in</a>	<a href="mailto:cmrm1@beml.co.in">cmrm1@beml.co.in</a>

2 Delivery : F.o.R BEML, H&P division -KGF.

3 Payment terms : 60 days on receipt & acceptance. For MSME firms, as per MSME act.

4 MOQ : Buyer may quote MOQ, however, final qty is on BEML discretion.

5 PPE, MII compliance : Bidder must comply the latest "Public procurement (Preference to make in India)" as per Ministry of Commerce and Industry.

6 Mill authorization letter : Bidder shall submit Mill authorization letter to qualify the tender. Else bid will be disqualified.

**Tender start date: 2/12/2021, closing date: 20/12/2021**

**beml**

# COMPANY STANDARDS

TITLE: **LOW CARBON SEAMLESS STEEL TUBES  
FOR HYDRAULIC CYLINDER  
APPLICATION (C1111-33)**

PAGE NO. OF  
DATE: **1989-12-12**

## INFORMATION SHEET -1

### IMPORTANT NOTES:

1. INFORMATION IN THIS SHEET SHALL BE FOR INTERNAL USE ONLY.
2. REMOVE THIS PAGE BEFORE ISSUE TO THE SUPPLIER.

### ADDITIONAL INFORMATION

1. **COLOUR :** Colour coding shall be BLACK - GREEN - YELLOW.  
**CODING** For further details, refer PR1002-C.
2. After ensuring that material is supplied in corrosion-free condition, suitable corrosion preventive coating shall be used in case the material is stocked outdoor for longer periods.
3. **EQUIVALENT SPECIFICATION(S) :**  
HST 55 of KES 07.154
4. **SPECIFICATIONS REPLACED :**  
AISI 1026  
CST 52 of KES : 07.154
5. Procurement of low carbon steel tubes for hydraulic cylinder application shall be made by quoting against this standard alone. However, any specification being offered as an equivalent will be completely evaluated and shall be procured only after coordination from inspection and product design departments.
6. Though this specification covers both CDS and HST categories, HST tubes are preferred, as they are cheaper and also because BEML is presently adopting the process of further machining.  
  
However, depending on the availability, procurement shall be made in coordination with design department, depending on cost of raw material tube and process of manufacture of cylinder.
7. The chemical composition mentioned in this specification is not met presently by any Indian Standard.

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# COMPANY STANDARDS

AMENDMENT NO.: 01

TITLE :

DATE : 2004-02-20

LOW CARBON SEAMLESS STEEL  
TUBES FOR HYDRAULIC CYLINDER

STD NO.: C1111-33

AMENDMENT SHEET - 1/1

ISSUE NO. : ---

*This document is the property of Bharat Earth Movers Limited, India. It must not be used directly or indirectly in any way detrimental to the interest of Company without written consent of the proprietors.*

In page 1 of 6 clause-3.3 shall be read as follows instead of the existing :

- 3.3 General requirements relating to the supply of steel tubes shall be as per IS: 1387 - latest issuance wherever they are not mentioned in this specification.

---IT---

(Reason : Revision of Indian Standards)

APPROVED BY :

411010

**beml****COMPANY STANDARDS**

C1111-33

TITLE: **LOW CARBON SEAMLESS STEEL TUBES  
FOR HYDRAULIC CYLINDER  
APPLICATION**PAGE NO. **1** OF **6**DATE: **1989-12-12****0. GENERAL :**

This 7-digit specification is meant for Seamless Steel Tubes/Pipes meant for hydraulic cylinder application. As the material is typical for this category alone, a separate 5-digit material specification does not exist.

Since the terms pipes and tubes are used synonymously, only the term 'tube' will be referred to in this standard.

**1. SCOPE :**

This specification covers the chemical composition, mechanical properties, recommended sizes, tests needed for acceptance, supply conditions, designations for different sizes, and marking of low carbon seamless steel tubes meant for general hydraulic cylinder application.

**2. MANUFACTURE :**

The tubes shall be manufactured seamless cold drawn or hot drawn to the required size. Cold drawn tubes shall be suitably annealed to meet the requirements of this specification.

**3. SUPPLY CONDITION :**

- 3.1 The tubes shall be supplied in straight lengths as specified in drawing/purchase order.
- 3.2 The inner and outer surfaces shall be suitably coated with rust preventive.
- 3.3 General requirements relating to the supply of steel tubes shall be as per IS:1387 - 1967, wherever they are not mentioned in this specification.

**4. REQUIREMENTS :****4.1 CHEMICAL COMPOSITION :**

The chemical composition of steel used shall

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PREPARED BY: **CSD/  
METALLURGICAL  
COMMITTEE/USD P'DVN .**

ISSUE NO: -

REPLACEMENT FOR: -

REF: -

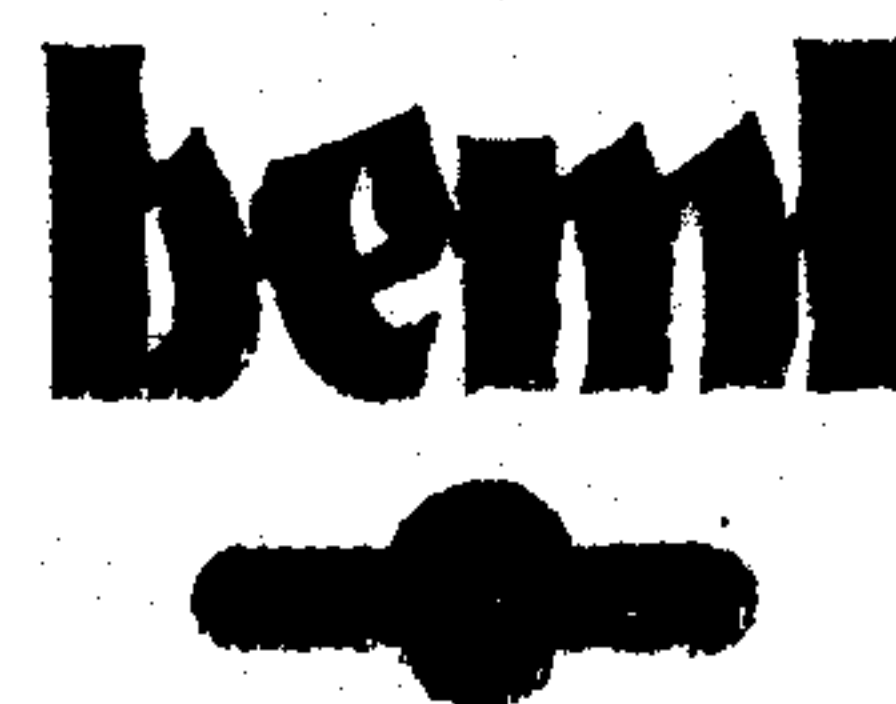
APPROVED BY:

ALTERED BY: -

*[Signature]*  
1989-12-12

C1111-33

# COMPANY STANDARDS



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TITLE: LOW CARBON SEAMLESS STEEL TUBES  
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conform to the following :

<u>ELEMENT</u>	<u>WEIGHT %</u> <u>MAX.</u>
Carbon	0.25
Silicon	0.60
Manganese	1.50
Sulphur	0.040
Phosphorus	0.035

Elements not specified may be added to meet the mechanical property requirements of this standard. However, carbon equivalent calculated from :

$$CE = C + Mn/6 + (Cr + Mo)/5,$$

shall not exceed 0.5 %.

#### 4.2 MECHANICAL PROPERTIES :

These shall be determined from tensile test conducted on test specimens as specified in clause 5.1 of this standard and shall conform to following :

Yield strength, N/mm <sup>2</sup>	-	390 Min.
Tensile strength, N/mm <sup>2</sup>	-	540 Min.
% Elongation	-	20 Min.

#### 5. TESTS :

##### 5.1 TENSILE TEST :

Wherever possible, tubes shall be tested in full section and dimensions of test specimen shall conform to Figure-1.

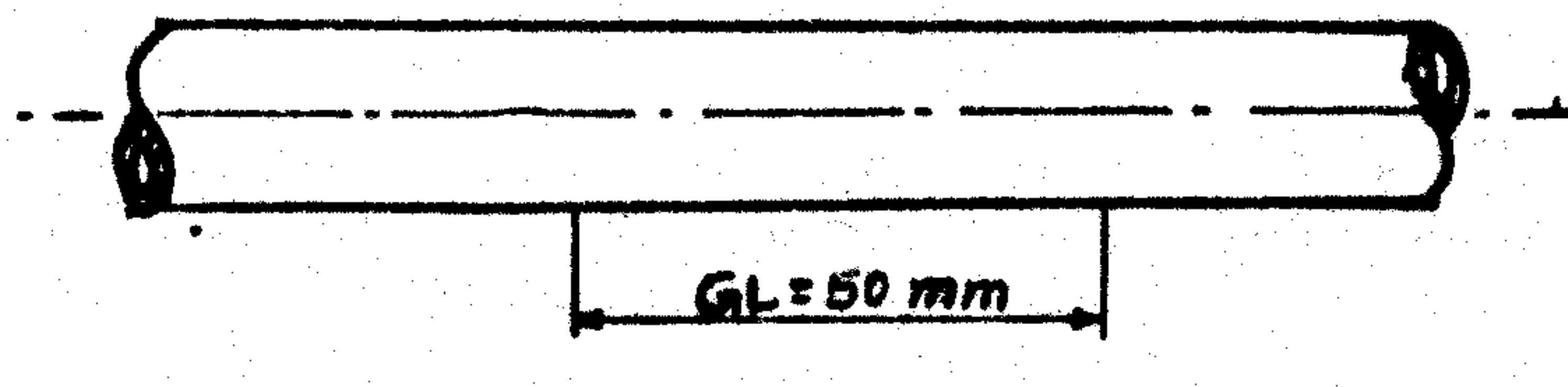
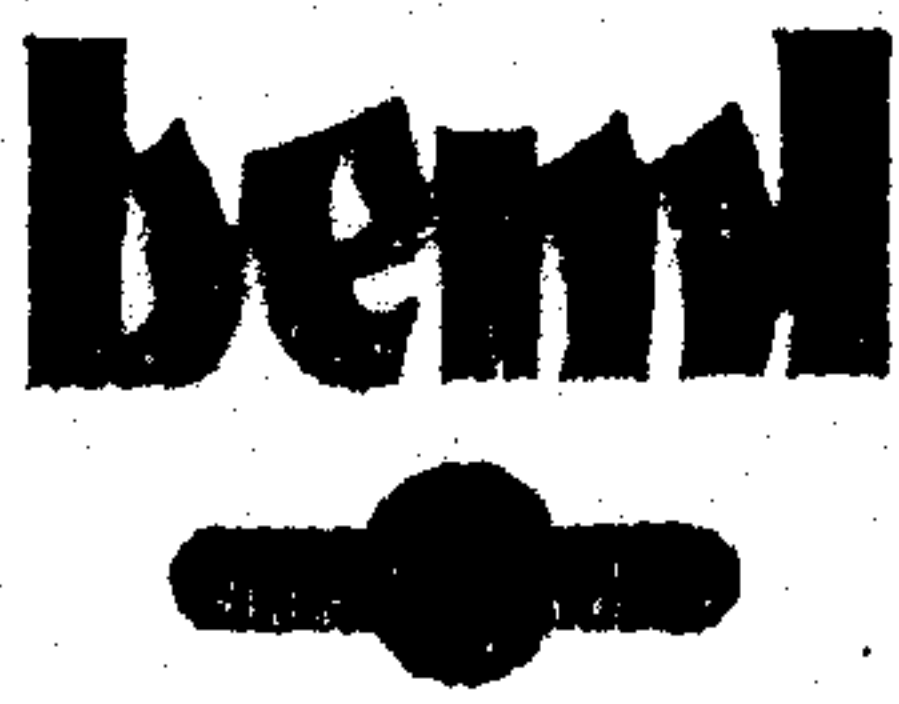


FIGURE - 1

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The gripped end shall be inserted with metal plugs so that specimen is gripped without crushing. Also the plugs shall not extend into the gauge length of the specimen.

For large size sections which can not be tested in full section longitudinal test specimens shall be cut to dimensions shown in fig-2.

The specimens shall be gripped with the grips having surface contour corresponding to the curvature of tubes. When such grips are not available, the ends of the specimens may be flattened without heating.

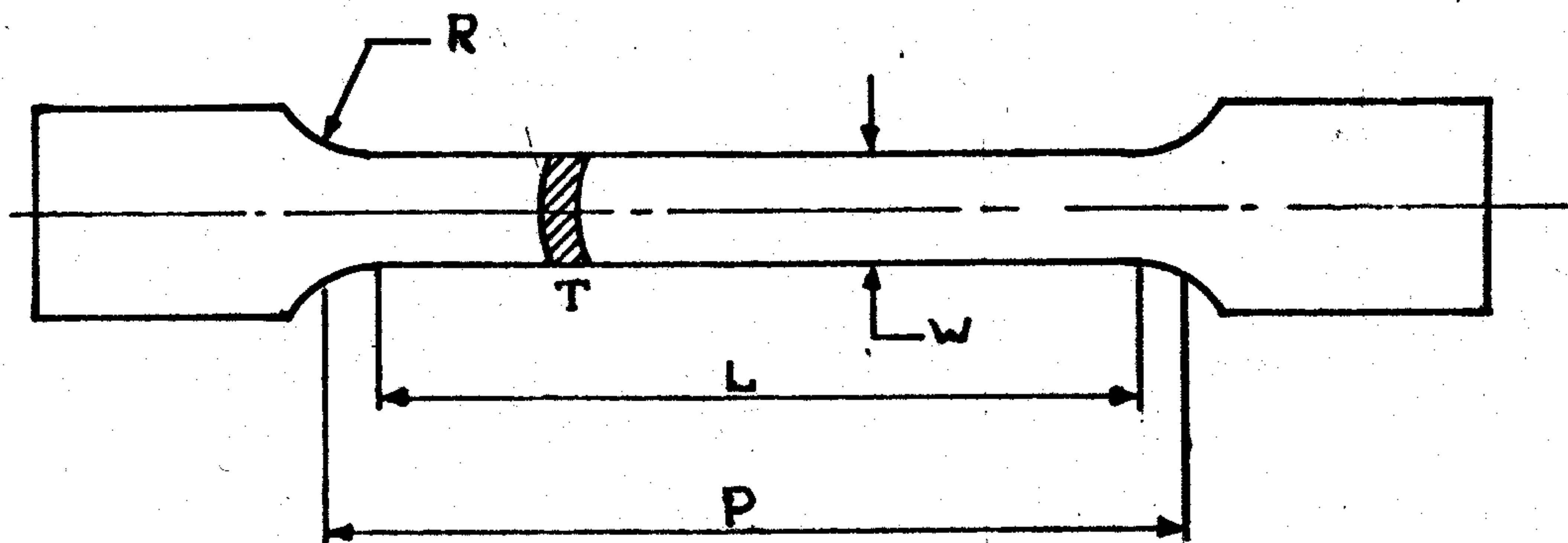


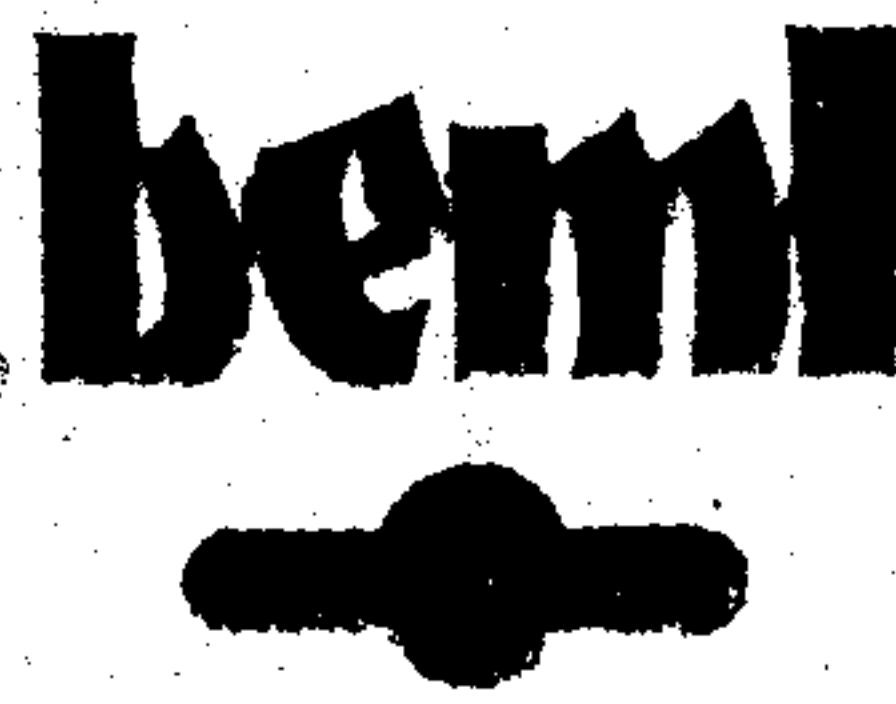
FIGURE - 2

Width  $w = 20$  mm  
Thickness  $T =$  Thickness of tube  
Gauge length  $L = 50$  mm  
Parallel Length = 60 mm min.  
Radius of fillet  $R = 15$  mm min.

## 5.2 FLATTENING TEST :

The flattening test shall be applied to tubes having more than 50 mm outside diameter.

The test piece of minimum length 50 mm cut from one end of the tube shall be flattened between two flat plates by compression until the distance between flat plates is  $7/8$  times the outside diameter of the tube. The surface of the tube shall be free from occurrence of flaws and cracks.

**6. SCALE OF SAMPLING :**

- 6.1 A collection of items of one type manufactured by the same process under similar conditions of production shall constitute a lot.
- 6.2 The samples shall be selected and examined for each lot separately for ascertaining their conformity to requirements of this standard.
- 6.3 The number of samples and the acceptance number are as specified in Table-1. The samples shall be taken at random from the lot using suitable random number tables as given in IS: 4905-1968 (METHODS FOR RANDOM SAMPLING) or by using any other procedure which ensures randomness.

**TABLE-1**

Lot size	Sample Size	Acceptance Number
Upto 100	3	0
101 to 150	5	0
151 to 300	8	0
301 to 500	13	0
501 to 1000	20	1

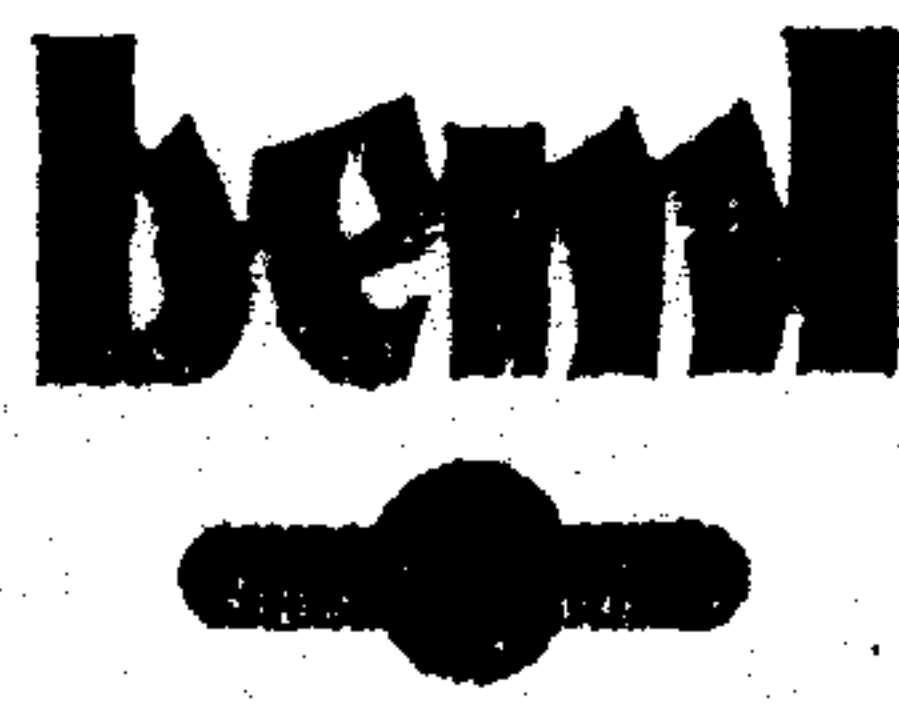
- 6.4 If the number of defectives found in the sample is less than or equal to the corresponding acceptance number, the lot shall be deemed as having met the requirements of this standard, otherwise not.

**7. RETEST :**

Should any one of the test pieces first selected fail to pass any of the tests specified, two further samples shall be selected for testing in respect of each failure. In case the test pieces from both of these additional samples pass, the material shall be deemed to comply with the requirements of that particular test. Should the test pieces from either of these additional samples fail, the material represented by the test samples shall be liable to rejection.

**8. DESIGNATION :**

A low carbon steel tube for hydraulic cylinder application shall be designated by 10 digit code. The first five digits pertaining to the material group. 6<sup>th</sup> and 7<sup>th</sup> signify shape/process. The last 3 digits signify the size.



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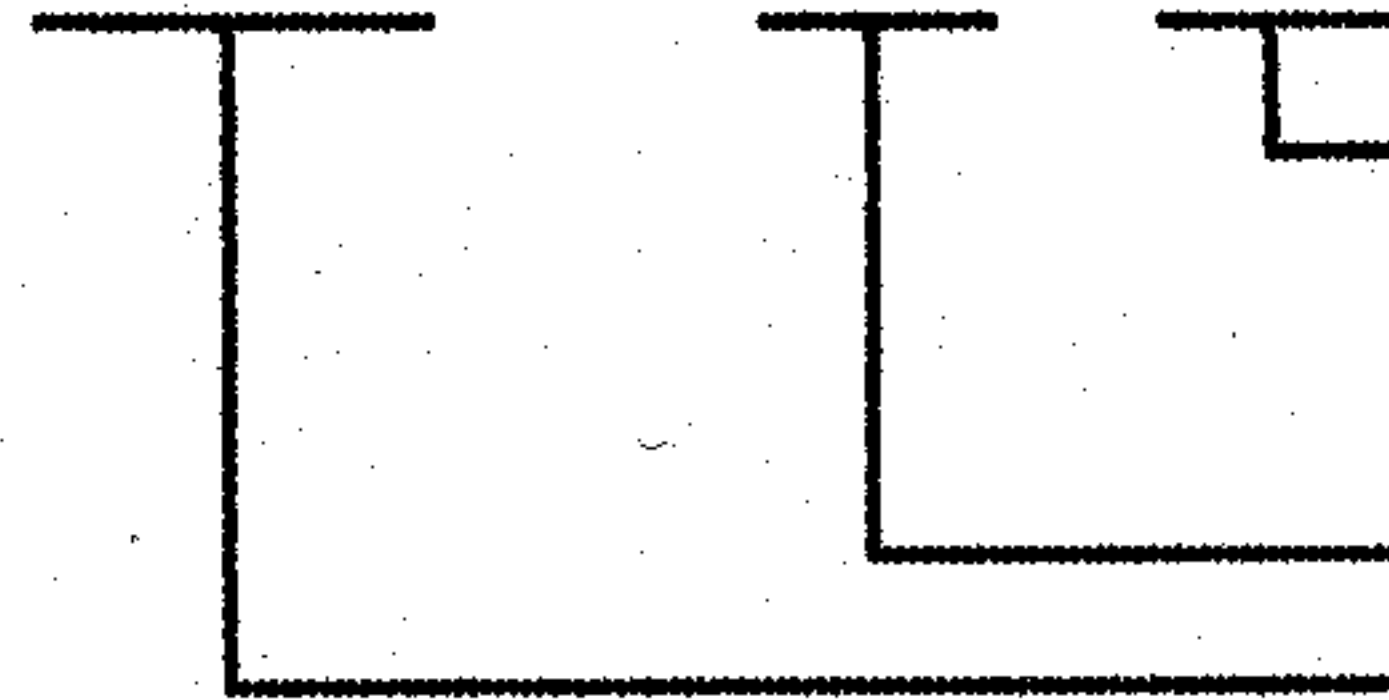
Each 3-digit size code corresponds to a particular OD and wall thickness. In case of these tubes, the size codes are allotted in serial nos.

Example

C1111

33

004



Size code (serial no. 004  
for OD of 91mm  
and w/t 8.5 mm).

Shape/process code

Material group code of  
Steel Tubes for Hydraulic  
Cylinder application

## 9. SIZES AND SIZE CODES :

These shall be as per Table-2.

TABLE-2

Unit : mm

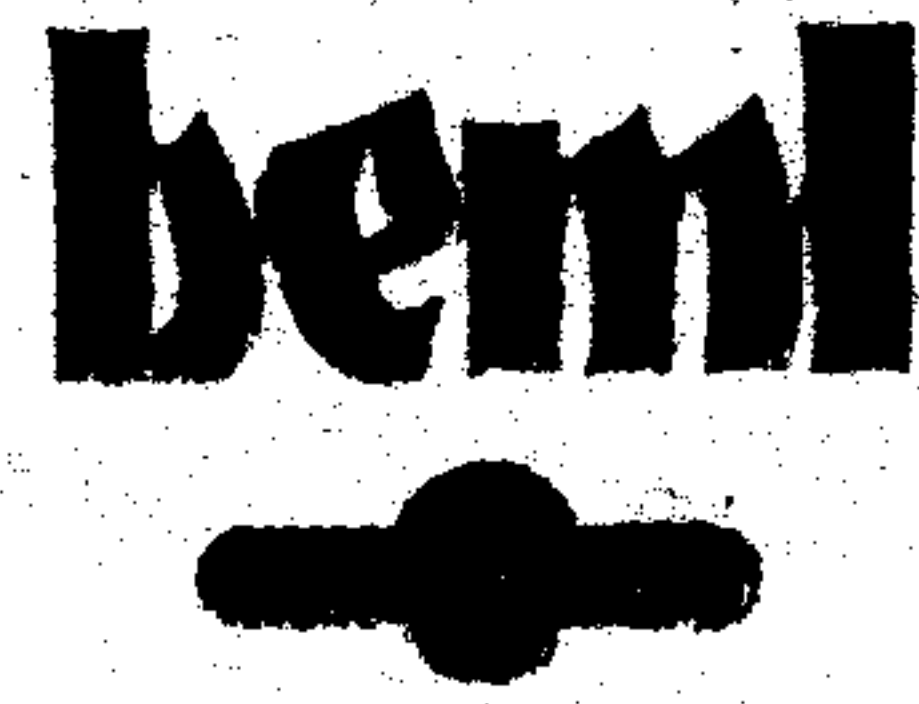
S.No.	SIZE		DESIGNATION
01	68	X 7	C111133001
02	73	X 8.5	C111133002
03	79	X 7.5	C111133003
04	91	X 8.5	C111133004
05	102	X 9	C111133005
06	116	X 11	C111133006
07	124	X 10	C111133007
08	130.5	X 11/11.25	C111133008
09	136	X 11	C111133009
10	140	X 13.25	C111133010
11	147	X 11.5	C111133011
12	153	X 14.5	C111133012
13	158	X 12	C111133013
14	164	X 15	C111133014
15	170	X 13	C111133015
16	178	X 13.25	C111133016
17	180	X 13	C111133017
18	190.7	X 18	C111133018
19	209	X 17.5	C111133019
20	213	X 13.32	C111133020
21	214	X 20	C111133021
22	225	X 10.5	C111133022
23	240	X 23	C111133023
24	244.5	X 17.5/18	C111133024
25	253	X 17	C111133025
26	267.4	X 23.2	C111133026
27	281	X 19	C111133027
28	298.5	X 27.25	C111133028

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## 10. TOLERANCES :

Tubes shall conform to the following tolerances :

Item	On O.D. D	On Wall Thickness t
<u>Hot finished Tubes</u>		
D/t 3.5 to 9.0	± 0.75 %	± 7.5 %
D/t > 9.0 to 20.0	± 1.0 %	± 10.0 %
<u>Cold finished Tubes</u>		
	± 0.50 %	± 5.0 %

## 11. TEST CERTIFICATE :

Each consignment shall be accompanied by a certificate issued by the supplier that the material conforms to the required specifications. However, BEML reserves the right to inspect the material when received at its end and its inspection will be final.

12. MARKING: Each consignment shall be suitably marked to identify the supplier, the material and size.

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