



**Government of India  
Ministry of Railways**

**QMS-30:2009  
(Revision 0)**

**Schedule of infrastructure Requirements for Manufacturing & testing  
facilities and Quality Control requirements**

**For**

**Brake Cylinder  
(Specn. No. 02-ABR-02)**

**Inspection & Liaison Directorate  
Research Designs & Standards Organisation  
Manak Nagar Lucknow – 226011**

**March'2009**

**(Price Rs. 300/-)**

## 1.0 SCOPE

The schedule covers the technical requirements viz. Material, dimension, inspection and tests of Brake cylinder used on air brake system.

## 2.0 GENERAL & MANUFACTURING FACILITIES

2.1 Manufacturer should have adequate covered accommodation for storing raw material, finished items awaiting despatch and arranging inspection. Manufacturer should have system to ensure that the manufacture and workmanship of Brake Cylinder conform to the requirements of Section-II of IS:2825 and as specified in the drawings.

## 3.0 MACHINERY & PLANT

3.1 Following machinery and plant of suitable capacity should be available.

3.1.1	At least one Shearing machine for cutting of plates upto 10mm.	<b>Vital</b>
3.1.2	At least one Centre lathe havey duty of suitable capacity.	<b>Vital</b>
3.1.3	At least one Drilling machine of upto 30mm capacity.	<b>Vital</b>
3.1.4	At least one Tapping machine upto 20mm capacity.	<b>Vital</b>
3.1.5	At least one Surface Grinder of minimum 20"x10" table.	<b>Vital</b>
3.1.6	At least one Hydraulic press for accommodating upto 10mm plate must be there.	<b>Vital</b>
3.1.7	At least one Shaper machine of suitable capacity for body bottom	<b>Essential</b>
3.1.8	Welding machines of suitable capacity and number. Facility for fusion welding.	<b>Essential</b>
3.1.9	At least two Portable grinder should be there.	<b>Essential</b>
3.1.10	At least one Hydraulic hacksaw of suitable capacity should be there.	<b>Essential</b>
3.1.11	At least one Rolling machine for rolling upto 10mm plate should be available.	<b>Essential</b>
3.1.12	Suitable drilling jigs for different holes sizes must be there.	<b>Essential</b>
3.1.13	Spray painting facility should be ensured.	<b>Essential</b>
3.1.14	Facilities for testing of raw materials should be available.	<b>Desirable</b>

## 4.0 QUALITY CONTROL REQUIREMENTS

4.1 The firm should have acquired ISO:9000 series certification for the product for which an approval is sought.

4.2 Quality manual of the firm for ISO:9000 should clearly indicate at any stage the control over manufacturing and testing of the railway product.

4.3 Traceability of product/parts thereof should be ensured from raw material upto finished stage.

- 4.4 Quality assurance plan for the product should be available covering different aspects like :
- (a) Organisational chart
  - (b) Flow process chart
  - (c) Stage inspection details
  - (d) Various parameters to be maintained to ensure control
  - (e) Policy of disposal of rejected product/part thereof.
- 4.5 A diploma holder must be head of the inspection/final control section with 5 years experience in the relevant field.
- 4.6 There should exist a quality manual of the firm indicating the extent of control for production and testing.
- 4.7 There should exist a system of documentation in respect of rejection at customer end, warranty replacement and in service performance.
- 4.8 System should exist for documentation of the following:
- 4.8.1 Incoming raw material with TC reference of supplier as well as internal test/audit checking from outside agency.
  - 4.8.2 The details regarding Stage inspection and test result.
  - 4.8.3 System for calibration of testing & measuring equipment.

## **5.0 TESTING FACILITIES**

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|-----|---|------------------|
| 5.1 | Testing facility for hydraulic testing at a pressure of 10 kg/cm <sup>2</sup> should be there.  | <b>Vital</b>     |
| 5.2 | Vernier callipers for measuring different dimensions and suitable gauges for dimensional accuracy calibrated regularly should be there.   | <b>Vital</b>     |
| 5.3 | Facilities for carrying out pneumatic tests at upto 10 kg/cm <sup>2</sup> should exist.   | <b>Essential</b> |
| 5.4 | Facility for mechanical tests of fusion welded seams for medium duty vessels in accordance with procedure given at para 8.5 and 8.6 of Section-III of IS:2825 (code for unfired pressure vessels) should exist. | <b>Desirable</b> |