



**PRODUCT MANUAL FOR  
SHORT-PITCH TRANSMISSION PRECISION ROLLER AND BUSH  
CHAINS, ATTACHMENTS AND ASSOCIATED CHAIN SPROCKETS  
ACCORDING TO IS 2403:2014**

*This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.*

1.	<b>Product</b>	:	IS 2403:2014/ ISO 606: 2004
	<b>Title</b>	:	Short-Pitch Transmission Precision Roller and Bush Chains, Attachments and Associated Chain Sprockets
	<b>No. of Amendments</b>	:	Nil
2.	<b>Sampling Guidelines:</b>		
a)	<b>Raw material</b>	:	---
b)	<b>Grouping guidelines</b>	:	Please refer ANNEX - A
c)	<b>Sample Size</b>	:	2 Nos (One lubricated, One without lubrication for length validation test).
3.	<b>List of Test Equipment</b>	:	Please refer ANNEX – B
4.	<b>Scheme of Inspection and Testing</b>	:	Please refer ANNEX – C
5.	<b>Possible tests in a day:</b>	Please refer ANNEX – D	
6.	<b>Scope of the Licence:</b>		
	“Licence is granted to use Standard Mark as per IS 2403:2014/ISO 606: 2004 with the following scope:		
	Name of the product	Short-Pitch Transmission Precision Roller and Bush Chains/ Attachments/ Chain Sprockets	
	ISO Chain No.		
	Type		

ANNEX – A

Grouping Guidelines

1. Short-Pitch Transmission Precision Roller and Bush Chains, Attachments and Associated Chain Sprockets as per IS 2403/ ISO 606 are classified as follows:

a) **Chains**

- Designated by ISO Chain Number
  - Table 1
  - Table 2 (ANSI heavy series)
- Type of Roller Chain Assembly
  - Simplex
  - Duplex
  - Triplex

b) **Attachments**

- K attachments - Table 3 (designated by ISO chain number)
  - K1
  - K2
- M attachments - Table 4 (designated by ISO chain number)
  - M1
  - M2
- Extended pins - Table 5 (designated by ISO chain number)
  - Type X
  - Type Y

c) **Chain sprocket**

- Even number of teeth
- Odd number of teeth

2. Chain numbers 081, 083, 084 and 085 are normally available in simplex form only. Other chain numbers may be simplex, duplex or triplex. Further, the Minimum tensile strength of a particular chain number is highest for triplex chain.

3. Considering the above, the following guidelines shall be followed for considering GoL/CSoL:

(a) **Chain:**

(i) One sample of chain having highest tensile strength from any ISO chain number from each Table (Table 1 and Table 2) shall be tested separately to cover chains of all tensile strength for all ISO chain numbers given in that Table. For eg., if triplex chain is tested, duplex chain and simplex chain may also be covered. Similarly, if duplex chain is tested, simplex chain may also be covered.

(ii) However, for Table 1 if sample tested is with ISO chain number 081, 083, 084 or 085, GoL shall be restricted to simplex chain only.

(b) **Attachment:**

(i) One sample of attachment from each type (K/ M/ Extended pin) from any ISO chain number shall be tested to cover attachments of that type and both the sub-types (K1, K2/ M1, M2/ X,Y) for all ISO chain numbers given in that Table.

(c) **Chain sprocket:**

(i) One sample of chain sprocket (even teeth or odd teeth) shall be tested to cover all the varieties of chain sprockets.

4. The Firm shall declare the varieties they intend to cover in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure that all varieties covered in the Licence are tested in rotation, to the extent possible.

**ANNEX B****List of Test Equipment**

*Major test equipment required to test as per the Indian Standard*

<b>Sl. No.</b>	<b>Tests used in with Clause Reference</b>	<b>Test Equipment</b>
1	Dimension (Cl.3, 4 & 5)	Micrometer, Vernier Caliper, Steel Scale, Radius gauges, Pitch gauges
2	Tensile Testing (Cl.3.4.2)	Universal Testing Machine
3	Preloading (Cl.3.4.3)	Universal Testing Machine
4	Length validation (Cl. 3.4.4)	Universal Testing Machine with suitable arrangement to measure change in length
5	Dynamic testing (Cl. 3.4.5)	Suitable arrangement as per IS 15790

*The above list is indicative only and may not be treated as exhaustive.*

**ANNEX C**

**Scheme of Inspection And Testing**

**1. LABORATORY** - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

**1.1** The manufacturer shall prepare a calibration plan for the test equipment.

**2. TEST RECORDS** – The manufacturer shall maintain test records for the tests carried out to establish conformity.

**3. LABELLING AND MARKING** – As per the requirement of IS 2403:2014.

**4. CONTROL UNIT** – The entire quantity of Chains/Attachments/Sprockets of same ISO Chain Number and type manufactured in a day shall constitute a control unit.

**5. LEVELS OF CONTROL** - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

**5.1** All the production which conforms to the Indian Standards and covered by the licence should be marked with Standard Mark.

**6. REJECTIONS** – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

**TABLE 1**

(1)				(2)	(3)		
Test Details				Test equipment requirement R: required (or) S: Sub-contracting permitted	Levels of Control		
Cl.	Requirement	Test Method			No. of Sample	Frequency	Remarks
		Clause	Reference				
<b>SHORT-PITCH TRANSMISSION PRECISION ROLLER AND BUSH CHAINS</b>							
3.3	Dimensions	3.3, Table 1, Table 2 and Figure 3	IS 2403	R	Five	Every four-hour production of the components on each machine	Using Micrometer, Vernier calliper and other measuring instruments or suitable gauges. In case of failure, 5 more samples shall be tested after every hour and original frequency may be restored only if all the samples drawn for three consecutive hours meet the requirements
3.4.2	Tensile Testing	3.4.2.2, Table 1, Table 2	IS 2403	R	One	Every Heat Treatment batch	In case of failure the lot may be re-heat treated and shall retested twice the original frequency. If both the samples pass, the material may be marked.
3.4.3	Preloading	3.4.3, Table1, Table 2	IS 2403	R	All Chains		---
3.4.4	Length Validation	3.4.4	IS 2403	R	Two	One Shift (8 Hours)	In case of failure, all the chains in the lot shall be checked and only such chains which meets the requirement shall be marked.
3.4.5	Dynamic Testing	3.4.5	IS 2403, IS 15790	S	One Chain	Once a year	---

<b>ATTACHMENTS</b>							
4.4	Dimensions	4.4, Table 3, Table 4, Table 5	IS 2403	R	Five	Every four hours	In case of failure, 5 more samples shall be tested after every hour and original frequency may be restored only if only if all the samples drawn for three consecutive hours meet the requirements
<b>CHAIN SPROCKETS</b>							
5.3.2	Dimensions	5.3.2	IS 2403	R	Five	Every four hours	In case of failure, 5 more samples shall be tested after every hour and original frequency may be restored only if only if all the samples drawn for three consecutive hours meet the requirements

Note-1: Sub-contracting is permitted to a laboratory recognized by the Bureau or Government laboratories empanelled by the Bureau.

Note-2: The control unit and levels of control as decided by the Bureau are obligatory, to which the licensee shall comply with.

**ANNEX – D**

**Possible tests in a day**

- (i) Dimension including attachments (Cl.3, 4 & 5)
- (ii) Tensile Testing (Cl.3)
- (iii) Preloading (Cl.34.3)
- (iv) Length Validation (Cl.3.4.4)