



उत्पाद मैनुअल
शॉर्ट पिच ट्रांसमिशन प्रिसिज़न रोलर और बुश चेन, अटैचमेंट और एसोसिएटेड चेन स्प्रोकेट
आईएस 2403: 2024 / आईएसओ 606: 2015 के अनुसार

PRODUCT MANUAL FOR
Short-Pitch Transmission Precision Roller and Bush Chains, Attachments and Associated Chain Sprockets
as per IS 2403: 2024 / ISO 606: 2015

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity 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.

1.	मानक संख्या IS No.	: IS 2403: 2024 / ISO 606: 2015
	शीर्षक Title	: Short-Pitch Transmission Precision Roller and Bush Chains, Attachments and Associated Chain Sprockets
	संशोधनों की संख्या No. of amendments	: None
2.	नमूना दिशानिर्देश Sampling Guidelines	
a)	कच्चा माल Raw material	: -
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	: Please refer ANNEX – A
c)	नमूने का परिमाण Sample Quantity	: 2 Nos (One lubricated, One without lubrication for length validation test)
3.	परीक्षण उपकरणों की सूची List of Test Equipment	: Please refer ANNEX – B
4.	निरीक्षण और परीक्षण की स्कीम	: Please refer ANNEX – C

	Scheme of Inspection and Testing		
5.	एक दिन में संभावित परीक्षण Possible tests in a day	:	<ul style="list-style-type: none"> • Dimension including attachments (Cl. 3, 4 & 5) • Tensile Testing (Cl.3.4.2) • Preloading (Cl.3.4.3) • Length Validation (Cl.3.4.4)
6.	लाइसेंस का दायरा /Scope of the Licence:		
“License is granted to use Standard Mark as per <i>IS 2403: 2024 / ISO 606: 2015</i> with the following scope:			
Name of the product		Short-Pitch Transmission Precision Roller and Bush Chains, Attachments and Associated 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

- i. Designated by ISO Chain Number
 - a. Table 1
 - b. Table 2 (ANSI heavy and extra heavy series)
- ii. Type of Roller Chain Assembly
 - a. Simplex
 - b. Duplex
 - c. Triplex

B. Attachments

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

C. Chain sprocket

- i. Even number of teeth
- ii. Odd number of teeth

2. For considering Grant of Licence/ Change in Scope of Licence, the following guidelines shall be considered:

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.
3. Firm shall declare the varieties of Roller and Bush Chains, Attachments and Associated Chain Sprockets that they intend to be covered in the Licence. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
 4. During the operation of the Licence, BO shall ensure that all the model(s) covered in the Scope of the Licence are tested in rotation to the extent possible.

ANNEX- B
LIST OF TEST EQUIPMENTS
(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
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)	Universal Testing Machine with Suitable arrangement as per IS 15790

ANNEX C
SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

- 1.1. It is expected that manufacturers (licensees/applicants) will implement a Quality Assurance Plan i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.
- 1.2 The manufacturers shall define a Quality Assurance Plan defining the control unit (i.e. lot/batch etc.) and the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and submit the same to BIS Branch Office for information. The manufacturer shall comply with the same and maintain test records in accordance with para 2.4.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

- 1.3.1 For the guidance of manufacturers, the recommended definition of control unit is: *Roller and Bush Chains, Attachments and Associated Chain Sprockets of same ISO Chain Number and type manufactured in a day from the same heat treated batch of raw material* shall constitute a control unit.
- 1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in Table 1.
- 1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan. Alternatively, the manufacturer has the option of adherence to the quality plan as per levels of control recommended in column 3 of Table 1.
- 1.4 However, all manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard.

- 2. ENSURING COMPLIANCE THROUGH TESTING-** It is expected that manufacturers (licensees/applicants) will establish a suitably equipped and staffed in house laboratory (In house testing facility) for testing at least those parameters of the Indian Standard which require routine testing for ensuring quality of the product. This includes in-process controls as may be defined and put in place by the manufacturer and testing parameters/requirements which can only be performed in the factory.

- 2.1 For the guidance of manufacturers, Table 1 giving the recommended levels of control is given below. Column 2 of Table 1 indicates routine tests where test equipment is required in house as “R” or other tests which can be subcontracted as “S”. Subcontracting is permitted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

- 2.2 For MSME manufacturers, the requirement of maintaining a laboratory/in-house testing facility for routine tests (indicated as “R” in Column 2 of Table 1) is also optional.**

- 2.2.1 MSME manufacturers may utilize common cluster based facilities as per guidelines for the utilization of cluster based test facilities by MSMEs or the provisions of Sharing of testing facilities or get testing done

from BIS recognized/empaneled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025.

2.3 Large Scale manufacturers shall maintain an in-house laboratory equipped at least with test facilities for routine tests (indicated as “R” in Column 2 of Table 1), where different tests given in the specification shall be carried out in accordance with the method given in the specification. They shall also implement a calibration plan for the in-house test equipment.

2.3.1 Alternatively, in lieu of an in-house laboratory, large scale manufacturers can also utilize the provisions of Sharing of testing facilities as per the Guidelines for Grant of Licence available on BIS website www.bis.gov.in. (Under Conformity Assessment>Product Certification Process). Even for subcontracted tests, provisions for sharing of testing facilities can be utilized.

2.4 TEST RECORDS- The manufacturers maintaining an in-house laboratory or utilizing common cluster based facilities or shared test facilities shall maintain test records for the tests carried out to establish conformity. For the tests being subcontracted to BIS recognized/empanelled laboratory or any other laboratory having valid NABL accreditation as per IS/ISO/IEC 17025, test reports issued by the laboratories shall be available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be incorporated legibly and indelibly on the packing of each Roller and Bush Chains, Attachments and Associated Chain Sprockets provided always that the chains / attachments / sprockets so marked conforms to each requirement of the specification.

3.1. (a) Marking on Chains shall be done as per Cl. 3.5 of IS 2403:2024 / ISO 606: 2015.

3.1. (b) Marking on Sprockets shall be done as per Cl. 5.12 of IS 2403:2024 / ISO 606: 2015

3.2 Additional Marking requirements: The Chains / Attachments / Sprockets shall also be marked with the following additional requirement on each packing:

a) “For BIS certification details please visit www.bis.gov.in”

3.3 All the production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark.

4. HYGIENIC CONDITIONS (if applicable) – NA.

5. REJECTION - 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 Methods			No. of Sample	Frequency	Remarks
		Clause	Reference				
Short-Pitch Transmission Precision Roller and Bush Chains							
3.3	Dimensions	3.3, Table 1, Table 2 and Figure 3	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.4.2	Tensile Testing	3.4.2.2, Table 1, Table 2	IS 2403	R	One	Each control Unit	
3.4.3	Preloading	3.4.3, Table1, Table 2	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
3.4.4	Length Validation	3.4.4	IS 2403	R	One	Each control Unit	
3.4.5	Dynamic Testing	3.4.5	IS 2403	S	One	Once in a year	For each ISO Chain number and type of manufactured during that period
Attachments							
4.4	Dimensions	4.4, Table 3, Table 4, Table 5	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity		
Chain Sprockets							
5.3.2	Dimensions	Pitch-circle diameter	5.3.2.1	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity	
		Measuring-pin diameter	5.3.2.2				
		Root diameter	5.3.2.3				
		Measurement over pins	5.3.2.4				
5.4	Sprocket tooth gap forms						
5.4.2	Dimensions	Minimum form	5.4.2.2	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However,	

		Maximum form	5.4.2.3	IS 2403	R	appropriate records shall be maintained by the manufacturer for evidence of conformity	
5.5	Tooth heights and tip diameters						
5.5.2	Dimensions		5.5.2	IS 2403	R	Firm to have adequate in-process controls to check compliance of this parameter as per the tolerances given in the Indian Standard. However, appropriate records shall be maintained by the manufacturer for evidence of conformity	
5.6	Sprocket rim profiles						
5.6.2	Dimensions	Tooth Width	5.6.2.1	IS 2403	R		
		Other dimensions	5.6.2.2	IS 2403	R		
5.7	Radial run-out		5.7	IS 2403	R		
5.8	Axial run-out (wobble)		5.8	IS 2403	R		
5.9	Pitch accuracy of sprocket teeth		5.9	IS 2403	R		
5.10	Number of teeth		5.10	IS 2403	R		
5.11	Bore tolerances		5.11	IS 2403	R		