

MINUTES OF THE 17th MEETING OF BEARINGS SECTIONAL COMMITTEE, PGD 13

DATE & TIME	VENUE (Hybrid)
11:00 AM – 04:00 PM Thursday, 14 December 2023	Eastern Regional Office (EROL), P-230, C.I.T Scheme VII M, VIP Road, Kankurgachi, Kolkata-700054 Hybrid link : https://bismanak.webex.com/bismanak/j.php?MTID=m1a3336a7 be5e4f72e0b646f4406ff6f6
11:00 AM – 04:00 PM Friday, 15 December 2023	INDUSTRY VISIT Venue: M/s Tata Steel Bearings Division, Kharagpur

MEMBERS PRESENT

CHAIRMAN: Dr Manish Roy, Scientist-G, Defence Metallurgical Research Laboratory, Hyderabad

Co-Chairman: Dr Soumendu Jana, Chief Scientist & Head, Propulsion Division, CSIR-NAL, Bengaluru

MEMBER SECRETARY: Shri Kundan Giri, Scientist-C/Deputy Director (PGD), BIS, New Delhi

S. No	Name of representative	Name of the Organization	Contact details
3.	Manish Aggarwal	Bharat Heavy Electrical Limited, New Delhi	manishagrawal@bhel.in
4.	Raveendra HS	Bimetal Bearing Limited, Coimbatore	raveendra@bimite.co.in
5.	M. Solairaju	Combat Vehicles Research and Development Establishment, Ministry Of Defence, Chennai	solairaju.m.cvrde@gov.in
6.	Vijay Kumar Goel	Defence Research and Development Organization, Research Centre Imarat, Hyderabad	mo.directorem@gmail.com
7.	T. H. Gonsalves	Hindustan Aeronautics Limited, Bengaluru	rd.aerdc@hal-india.co.in
8.	Prof. Harish Hirani	Indian Institute of Technology Delhi, New Delhi	hirani@mech.iitd.ac.in
9.	Prof. Rajiv Tiwari	Indian Institute of Technology Guwahati, Guwahati	rtiwari@iitg.ac.in
10.	Arun Bisht	Maruti Suzuki India Limited, Gurugram	arun.bisht@maruti.co.in
11.	Milind Ghan	NRB Bearings Limited, Thane	milind.ghan@nrb.co.in
12.	Avinash Sharma	National Engineering Industries Limited, Jaipur	avinash.sharma@nbcbearings.in
13.	Dr. Eapen P Joseph	Nuclear Power Corporation of India Limited, Mumbai	jeapen@npcil.co.in
14.	Vijay Kumar Goel	Research Designs and Standards Organization (RDSO), Lucknow	mp.directorbrake@gmail.com
15.	Sandeep D Singh	SKF India Limited, Pune	sandeep.d.singh@skf.com
16.	Gururaj Gaddi	SKF India Limited, Pune	gururaj.gaddi@skf.com
17.	Trilochan Singh Bhatia	Schaeffler India Limited, Vadodara	bhatitil@schaeffler.com
18.	Biswanath Nandi	Schaeffler India Limited, Vadodara	biswanath.nandi@schaeffler.com
19.	R. R. Kulkarni	Tata Motors Limited, Pune	ramesh1.kulkarni@tatamotors.com
20.	Anoop Toby	Tata Motors Limited, Pune	att531197@tatamotors.com
21.	Pravin Dixit	Tata Steel Limited - Bearing Division, Kharagpur	pravin.dixit@tatasteel.com
22.	Arindam Ghosh	Tata Steel Limited - Bearing Division, Kharagpur	arindam.ghosh@tatasteel.com
23.	K. Shreenath Upadhya	Timken India Limited, Bangalore	shreenath.upadhya@timken.com

Item 3.2 Standards Due for Review in 2023-24

SN	IS No./ Title	Status before the Meeting	Decision of Committee
1	IS 10260 (Part 3) : 2018 / ISO 4378-3 :2009 Plain bearings - Terms, definitions, classification and symbols: Part 3 lubrication (First Revision)	<p>To send the document to Dr. Manish Roy and Prof Harish Hirani for review and comments. If no comments are received in 2 months, the document may be sent to publication.</p> <p>The documents were shared with the experts on 09 August 2023 and 20 November 2023 through email. The document has been reviewed by Dr Manish Roy and Prof. Hirani.</p>	<p>Since the document was approved by the experts and no comments were received, the committee approved the publication of ISO 4373-3: 2017 as the revision of IS 10260 (Part 3) : 2018 / ISO 4378-3 :2009.</p> <p>Additionally, the committee decided to form a panel on Lubrication of bearings, the following members are currently identified for the panel:</p> <ul style="list-style-type: none"> a) Dr SAin, contact to be provided by Mr Biswanath Nandi b) IIP Dehradun, nominated by Dr Soumendu Jana c) Members from IOCL R&D Facility in Ghaziabad.
2	IS 13405 : 2018/ISO 246 : 2007 Rolling bearings - Cylindrical roller bearings, separate thrust collars - Boundary dimensions (Second Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard.	Committee noted the given information.
3	IS 13406 : 2018/ISO 8443 : 2010 Rolling bearings - Radial ball bearings with flanged outer ring - Flange dimensions (First Revision)	The document has been wide circulated for 90 days on 13/11/2023. The document may be sent to publication if no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication if no comments are received before the last date.
4	IS 13962 : 2018/ISO 10317 : 2008 Rolling bearings - Tapered roller bearings - Designation system (First Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard.	Committee noted the given information.
5	IS 14478 : 1997 Plain bearings - Thick - Walled bushes, plain and flange type, full - Round (without	Archived as recommended in the 16 th meeting since the product is going out of use and currently there are no experts in the	Committee noted the given information.

	any joint or slit) - Specification	committee willing to take up the review of this product.	
6	IS 14802 (Part 2) : 2019/ ISO 4384-2:2011 Plain Bearing — Hardness Testing of Bearing Metals Part 2 Solid Materials (First Revision)	The document has been wide circulated for 60 days on 11/09/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
7	IS 15620 : 2019/ ISO 4383 : 2012 Plain Bearings — Multilayer Materials for Thin-Walled Plain Bearing (First Revision)	The document has been wide circulated for 90 days on 11/09/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
8	IS 2399 : 2019/ ISO 5593 : 1997 Rolling Bearings — Vocabulary (Second Revision)	The document has been wide circulated for 60 days on 18/08/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
9	IS 3823 : 2014/ ISO 76 : 2006 Rolling bearings - Static load ratings (Third Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard	Committee noted the given information.
10	IS 5669 : 2019/ ISO 15 : 2017 Rolling bearings - Radial bearings - Boundary dimensions, general plan (Second Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard	Committee noted the given information.
11	IS 5692 : 2019/ ISO 492 : 2014 Rolling bearings - Radial bearings - Geometrical product specifications (GPS) and tolerance values (Second Revision)	The document has been wide circulated for 90 days on 18/08/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
12	IS 5932 : 2019/ ISO 104 Rolling bearings - Thrust bearings - Boundary dimensions, general plan (Second Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard	Committee noted the given information.
13	IS 5933 : 2019/ ISO 199 : 2014 Rolling bearings - Thrust bearings - Geometrical product specification (GPS) and tolerance values (Fourth Revision)	The document has been wide circulated for 90 days on 18/08/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
14	IS 11027 (Part 2) : 2018/ ISO 1132-2 : 2001 Rolling Bearing -	Reaffirmed as recommended in the 16 th meeting since there is no change in the base	Committee noted the given information.

	Tolerances Part 2 Measuring and Gauging Principles and Methods	ISO standard	
15	IS 16605 (Part 2) : 2018/ ISO 2982-2 : 2013 Rolling Bearings - Accessories Part 2 Dimensions for Locknuts and Locking Devices	Drafts were provided by M/s Schaeffler India Ltd. for revision of adapter and withdrawal sleeve in the 15 th meeting. The committee decided to withhold the preliminary draft circulation or the wide circulation of the following documents till the time the review of other documents is over. Documents are under preparation for circulation.	The committee decided to reaffirm the standard till the time the revised standards are published. Further the committee decided to circulate the drafts provided by M/s Schaeffler India Ltd. as Preliminary drafts for 3 months for review.
16	IS 16605 (Part 1) : 2018/ ISO 2982-1:2013-1 Rolling bearings Accessories Part 1 : Dimensions for adapter sleeve assemblies and withdrawal sleeves		
17	IS 2898 (Part 2) : 2019/ ISO 3290-2 : 2014 Rolling bearings - Balls: Part 2 ceramic balls	Members from National Aerospace Laboratories Volunteered to review the standard and to add test methods applicable for ceramic balls. The updates version of the standards are yet to be received.	The committee decided to allot 2 months' time to NAL to provide updated version of the standard after adding tests for balls.
18	IS 16478 (Part 1) : 2019/ ISO 4386-1 : 2012 Plain bearing - Metallic multilayer plain bearings: Part 1 non - Destructive ultrasonic testing of bond of thickness greater than or equal to 0.5 mm	The document has been wide circulated for 60 days on 11/09/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
19	IS 16478 (Part 2) : 2019/ ISO 4386-2 : 2012 Plain bearing - Metallic multilayer plain bearings: Part 2 destructive testing of bond for bearing metal layer thicknesses greater than or equal to 2 mm	The document has been wide circulated for 60 days on 11/09/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
20	IS 5935 (Part 2) : 2019/ ISO 5753-2 : 2010 Rolling bearings - Internal clearance: Part 2 axial internal clearance for four - Point - Contact ball bearings	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard	Committee noted the given information.
21	IS 5935 (Part 1) : 2019/ ISO 5753-1 : 2009 Rolling bearings - Internal clearance: Part 1 radial internal clearance for radial bearings (Second Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard	Committee noted the given information.
22	IS 2898 (Part 1) : 2019/ ISO 3290-1 : 2014 Rolling bearings - Balls: Part 1 steel balls (Second Revision)	Members from National Aerospace Laboratories Volunteered to review the standard and to add test methods applicable for ceramic balls. The updates version of the	The committee decided to allot 1 months' time to NAL to provide updated version of the standard after adding

		standards are yet to be received.	tests for balls.
23	IS 7461 : 2019/ ISO 355 : 2007 General plan of - Boundary dimensions for tapered roller bearings: Part 1 single row bearings (Second Revision)	The document has been wide circulated for 60 days on 18/08/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
24	IS 17126 : 2019 Plain bearing: lead and tin casting alloys for multilayer plain bearing	The committee noted the information given in the agenda and finalized the document for sending to publication.	The committee noted the information given in the agenda and finalized the document for sending to publication.
25	IS 17267 : 2019/ ISO 16281 : 2008 Rolling Bearings - Methods for Calculating the Modified References Rating Life for Universally Loaded Bearings	The document has been wide circulated for 90 days on 11/09/2023. The document may be sent to publication since no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication.
26	IS 11027 (Part 1) : 2019/ ISO 1132-1 : 2000 Rolling Bearing - Tolerances Part 1 Terms and Definitions (First Revision)	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard.	Committee noted the given information.
27	IS 17276 : 2019/ ISO 15243 : 2017 Rolling Bearings - Damage and Failures - Terms, Characteristics and Causes	Reaffirmed as recommended in the 16 th meeting since there is no change in the base ISO standard.	Committee noted the given information.

Item 3.5 New Work Items Under Development

S N	IS No./ Title	Status before the Meeting	Decision of Committee
1.	ISO 12297-2 : 2018 - Rolling bearings — Cylindrical rollers — Part 2: Boundary dimensions, geometrical product specifications (GPS) and tolerance values for ceramic rollers	The document has been wide circulated for 90 days on 13/11/2023. The document may be sent to publication if no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication if no comments are received before the last date.
2.	ISO 4378-4 : 2009 - Plain bearings Terms definitions classification and symbols Part 4 Basic symbols	The documents were sent to Dr. Manish Roy and Prof. Harish Hirani for review and comments. No updates have been received yet.	As requested by Dr. Manish Roy & Prof. Harish Hirani the committee allotted them 2 more months for review and comment.
3.	ISO 4378-5 : 2009 - Plain	The documents were sent to Dr.	As requested by Dr. Manish Roy & Prof.

	bearings Terms, definitions, classification and symbols Part 5 Application of symbols	Manish Roy and Prof. Harish Hirani for review and comments. No updates have been received yet.	Harish Hirani the committee allotted them 2 more months for review and comment.
4.	ISO 21250-1 : 2020 Noise testing of rolling bearing greases Part 1: Basic principles testing assembly and test machine	This document has been Printed as IS 18379 (Part 1) : 2023/ ISO 21250-1 : 2020 Rolling bearings Noise testing of rolling bearing greases Part 1: Basic principles testing assembly and test machine The committee may please note.	The committee noted the information given in the agenda.
5.	Magnetic Bearings	<p>In the 16th meeting the PGD 13 directed the Convener to hold the meeting of Magnetic Bearings Panel, PGD 13/P3. Also to oversee the development of Magnetic Bearings Working Group in ISO/TC 123.</p> <p>The minutes of the last meeting of PGD 13/P3 were attached at Annex 7 of Agenda</p> <p>The report of the last meeting of ISO/TC 123 was attached at Annex 8 of Agenda</p>	<p>Shri Kundan Giri, Member Secretary attended the 31st Plenary meeting of ISO /TC 123 and shared the report of the meeting with the committee.</p> <p>It was discussed that a new CIB will be circulated to vote on the formulation of a working group under TC 123 on Magnetic Bearings. The Sectional Committee Unanimously agreed to vote in favor of formation of a Magnetic bearing working group under TC 123 since the subject currently cannot be addressed holistically in TC 108.</p> <p>To access the current maturity of Indian stakeholders in this sector, PGD 13 decided to form a new working group consisting of Prof. Harish Hirani as a chairman, Dr. Soumendu Jana, Dr. Rajiv Tiwari and Shri Kundan Giri. The subcommittee will provide the current status of magnetic bearing in India to the Sectional Committee before September 2024.</p> <p>As per the decision in the last meeting of Panel 3 on Magnetic Bearings the committee decided to wide circulate ISO 14839 (Part 1 to 5) for review of the committee and adoption as Indian Standards upon slight modifications as will be suggested by the experts.</p>
6.	Aerospace Bearings	The committee suggested that a new panel on aerospace bearings may be	The committee reiterated that the subject holds significant importance

	<p>formed. The members were requested to suggest organizations which may be co-opted to form this new panel on aerospace bearings. Also, HAL, NAL and IIT Guwahati were given the task to prepare a report on important standards that could be formed by this panel and list of already available standards on aerospace bearings at International, National or Industry level.</p> <p>The Report is still awaited.</p>	<p>and standardization is required in Aerospace bearings. The committee allocated 2 more months to members from HAL, NAL and IIT Guwahati to provide the report and Shri M Solairaju was appointed to coordinate with the WG members to prepare the report. The report shall contain important members who can be co-opted in the panel, important standards that could be formed by this panel and list of already available standards on aerospace bearings at International, National or Industry level.</p> <p>Shri T. H. Gonsalves was asked to give a presentation on varieties of bearings used in aerospace applications in the next meeting of PGD 13.</p>
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Item 3.6 Any Other Projects

S N	Title	Status before the Meeting	Decision of Committee
1.	ISO 3228 : 2013 - Rolling bearings — Cast and pressed housings for insert bearings — Boundary dimensions and tolerances	<p>The committee decided to circulate the draft for modification of ISO 3228 : 2013 received from Shri Shreenath Updhyaya on 29/05/2023 for review as P-draft for 3 months and call a virtual meeting of PGD 13/Panel 1 once the comments are collated and are ready for discussion.</p> <p>Committee meeting of Panel P1 Scheduled in November was postponed due to unavailability of key members on given dates. The meeting is yet to take place.</p> <p>India has taken Participating membership in ISO/TC 4/SC 6 “Insert Bearing”. The committee may please note.</p>	<p>The committee asked the convener of Panel 1 to call a meeting as soon as possible in consultation with the panel members.</p> <p>The committee decided that the modified ISO 3228 will be circulated as P-draft after finalization by the rolling Bearings Panel, PGD 13/P1.</p> <p>Further since ISO/TC 4/SC 6 ‘Insert Bearings’ has developed ISO 3228 :2013 which is being adopted as an Indian Standard, the committee decided to nominate the following members of PGD 13 as Experts from Indian in ISO/TC 4/SC 6 for representing India:</p> <ol style="list-style-type: none"> 1. Shri Gururaj Gaddi, SKF India Ltd.; 2. Shri Shreenath Updadhay, Timken India Ltd.; and 3. Shri Trilochan Singh Bhatia from Schaeffler India Ltd.
2.	IS 14802 (Part 1) :	The document has been reviewed by Dr	The committee approved the wide

	2000/ISO 4384-1 - Plain Bearings Hardness testing of bearing metals Part 1 Multilayer bearings materials	Manish Roy and as per his comments the document is being updated for circulation as new WC draft.	circulation of the ISO 4384-1 : 2019 for a period of one month and finalized the document for sending to publication if no comments are received before the last date.
3.	IS 10260 (Part 1) : 2017/ISO 4378-1 : 2009 - Plain bearings Terms definitions classification and symbols Part 1 Design bearing materials and their properties	The documents were shared with the experts on 09 August 2023 and 20 November 2023 through email. The document has been reviewed by Dr Manish Roy and as per his comments the document is being updated for circulation as a new WC draft.	The committee approved the wide circulation of the ISO 4378-1 : 2017 for a period of one month and finalized the document for sending to publication if no comments are received before the last date.
4.	IS 16298 : 2017/ISO 6280 : 1981 - Plain bearings - Requirements on backings for thick - Walled multilayer bearings	The document has been wide circulated for 90 days on 13/11/2023. The document may be sent to publication if no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication if no comments are received before the last date.
5.	IS/ISO 12297 : 2012 - Rolling Bearings - Steel Cylindrical Rollers - Dimensions and Tolerances	The document has been wide circulated for 90 days on 13/11/2023. The document may be sent to publication if no comments are received till the last date of circulation.	The committee noted the information given in the agenda and finalized the document for sending to publication if no comments are received before the last date.

Item 4 COMPOSITION OF THE SECTIONAL COMMITTEE

4.1 The committee noted the information given in the agenda and agreed to withdraw the membership of the members who have not attended the last two meetings and have not given comments on 50 % P-draft circulated by the committee.

4.2 The committee noted the information given in the agenda.

4.3 Pending Co-option of organizations in the Sectional Committees and Subcommittees

The committee decided to follow-up with the following organizations once again for co-option in in PGD 13 after the contacts of the experts are received from the proposers:

- 1) DAE by NPCIL
- 2) Reliance Refinery by SKF
- 3) ISRO by Prof. Tiwari
- 4) IGCAR by NAL

4.4 Request for new Co-options in the Sectional Committees and Subcommittees

The committee rejected the proposal for co-option of Dr Kashinath Haribhau Munde as a member in the sectional committee for representing KES Rajarambapu Institute of Technology Pune due to lack of experience in the relevant field.

Item 5. POSITION OF WORK

5.1 The committee noted the information given in the agenda.

5.2 The committee noted the information given in the agenda.

Item 6 INTERNATIONAL ACTIVITIES

6.1 The committee noted the information given in the agenda.

6.2 Membership of PGD 13 in International Committees related to Bearings

The committee noted the information given in the agenda and decided to nominate the following experts in the given working groups for working on the upcoming standardization projects:

Technical Committee/ Sub Committee	TITLE	Membership Status/Nominated Members
TC 123/ SC5	Quality analysis and assurance	Participating
ISO/TC 123/SC 5/WG 7	Quality control techniques and inspection of geometrical and material quality characteristics	The committee decided that the project under WG 7 is important and India should participate in its development, the member secretary was asked to attend the core group meeting of WG 7 and submit a report to PGD 13 on the status of the work. The PGD nominated the following members from India as WG members: a) Dr Manish Roy, Sc G, DMRL as WG Member b) Shri Kundan Giri, Sc C & MS, PGD as WG Member
Standards Under Development	ISO/CD 12132 Plain bearings — Quality assurance of thin-walled half bearings — Design FMEA	
TC 123/ SC6	Terms and common items	Since the standards developed by ISO/TC 123/SC 6 are important and have been adopted as Indian Standards, the committee recommended to take participating membership in the Subcommittee. Further the following experts were nominated to participate from India in the work of the SC 6 : a) Dr E P Joseph, NPCIL as Member b) Shri Kundan Giri, BIS as Ballot Monitor
Standards Under Development	ISO/CD 12843 Plain bearings — Reuse, recycling and disposal of plain bearing materials	