



**ENQUIRY**  
TWO PART BID  
BPC 0007  
E-TENDER

**भारत हेवी इलेक्ट्रिकल्स लिमिटेड, पिपलानी, भोपाल- ४६२०२२ (भारत)**  
**सामग्री प्रबंधन विभाग**  
**BHARAT HEAVY ELECTRICALS LIMITED, PIPLANI, BHOPAL-462022 (INDIA)**  
**MATERIALS MANAGEMENT DIVISION**

<b>TIN NO- 23573000001</b>	<b>ECC NO- AAACB4146PXM009</b>	<b>MPCT NO- HEL/05/01/0001/S15/11/79</b>
<b>PHONE NO : 91-755-2500100</b>		<b>FAX : 91-755-2500023</b>
<b>www.bhel.com</b>		

ENQUIRY NO  
E5153175

ENQUIRY DATE  
11/09/25

ENQUIRY DUE DATE  
22/09/25

SUPP NAME AND ADDRESS	SUPP CODE	REV CD	REV NO	REV DATE	NO OF CATY2	NO OF CATY3	ENQ NO OF ITEMS	INDENT NO
	0	1	0	NA	1	5	1	120553014
	GUARANTEE CERTIFICATE		Y	SUPPLY CONDITION IDENTIFICATION MUST				
	TEST CERTIFICATE		Y					
	INSTRUCTION BOOKLET		N	TECHNICAL CONDITION AS PER PI				
	SAMPLE		N	INSPECTION CONDITION AT BHEL BHOPAL				
	GATE PASS		Y					

NOTE: QUOTE PRICE BOTH IN FIGURES & WORDS.IN CASE OF MISMATCH PRICE IN WORDS WILL BE VALID,QUOTATIONS NOT BEARING ENQUIRY NO AND DUE DATE LIABLE TO BE REJECTED.

SL NO	MATERIAL CODE	DESC	UNIT	ITEM QTY	QTY VR%	LOT NO	LOT QTY	DEST	DELIVERY DATE
1	BP9094877694	FLEX METALLIC LUBRICATOR PIPE WITH CONNECTOR AS PER DRG NO.34454405061 REV.02.	NO	1024.000	30	1	200.000	205	06/11/25
						2	200.000	205	06/12/25
						3	200.000	205	06/01/26
						4	200.000	205	06/02/26
						5	224.000	205	06/03/26

REMARK REFER NIC E- TENDER PORTAL FOR DETAILS.

DRAWING	Y	PURCH SPEC	Y	CATALOUGE	N	Quality Surveillance Plan	N	TWO PART BID	Y
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NOTE:BHEL,BHOPAL'S Standard Terms & Conditions BP200102 (Latest Revision) form a part of this Enquiry. Bidders may obtain from us copies of these terms and conditions if not already available.

**Note:** During Bid Evaluation, No loading of price with regard to preferential payment of within 45 days will be made on vendore falling under MSMED ACT - OCT 06

Please submit your lowest quotation in sealed envelop essentially superscribed with ENQUIRY NO, DUE DATE AND PARTY'S NAME so as to reach at TENDER ROOM, GROUND FLOOR, ADM BUILDING, BHEL, PIPLANI BHOPAL-462022 by 11.00 am of due date.

1.This is only a request for Quotation & not an order.

2.Small Scale industries should indicate SSI Regn. No. in Quotation/invoice.

3.In case you are not making an offer against this Enquiry, we request you to post a regret letter.

4.Indian vendors to please indicate GSTIN on their quotation.

SPECIAL REMARK: Bid to be submitted through e-procurement. Refer eproc link on BHEL Bhopal B2B site.

Documents Enclosed

1.Drawing. 3.Purchase specification.

2.Catalogue. 4.Quality Surveillance Plan.

NAME : SHRI MANENDRA SINGH

DESG : DY.MANAGER

0755-2505880

manendra1@bhel.in

SIGN & SEAL



## MATERIAL MANAGEMENT - TRACTION MACHINES

HEAVY ELECTRICAL PLANT, BHOPAL

BHARAT HEAVY ELECTRICALS LIMITED

BHEL ENQUIRY NO. E5153175

DUE ON 22-09-2025

# NIT TERMS & CONDITIONS:

SL. NO.	DESCRIPTION	DETAILS
1.	RATE CONTRACT TERMS	We intend to enter into a Rate Contract (RC) for ordering up to 12 months from RC freeze date, i.e. RC is to be kept valid for ordering up to 12 months from RC freeze date. Purchase Ordering shall be done as per BHEL requirement against the finalised rate contract & within its validity. Dispatches to be made against our purchase order (computerized) only, which will be issued against this Rate Contract. BHEL reserves the right to cancel/ short close the Rate Contract for unordered qty at any point of time even before the expiry of RC validity without assigning any reason whatsoever it may be.
2.	ITEM DESCRIPTION	Item01: - FLEX METALLIC LUBRICATOR PIPE WITH CONNECTOR AS PER DRG NO.34454405061 REV.02
3.	TECHNICAL CONDITION	As per attached list of attached Drawings & Spec.
4.	QUANTITY	1024 nos
5.	QUANTITY VARIATION	± 30%.
6.	SPLITTING OF ORDER	Not Applicable
7.	DELIVERY SCHEDULE REQUIREMENT	For the first lot of 200 Nos. scheduled delivery date shall be within 60 days from the PO date & thereafter for each subsequent lot of 200 Nos. scheduled delivery date shall be within 30 days from the scheduled delivery date of the previous lot. Early delivery acceptable.
8.	DELIVERY TERMS	FOR Destination (BHEL Bhopal)
9.	DELIVERY INSTRUCTION	Supplier identification (viz. Vendor code, PO number, sn etc) is must.
10.	QAP	Not Applicable.
11.	INSPECTION CONDITION	Inspection at BHEL
12.	SAMPLE	As per attached Drg, Spec (As applicable)
13.	TEST CERTIFICATE	All Material TC to be supplied along with material as per drg Spec. and TC should incorporate Spec.
14.	GUARANTEE / WARRANTY	As per BHEL GTC of ENQUIRY (BP200102B, Cl. No. 18)
15.	GUARANTEE/ WARRANTEE CERTIFICATE	GUARANTEE/ WARRANTEE Certificate to be supplied along with each lot of the material.
16.	INVOICE & DOCUMENTS SUBMISSION FOR PAYMENT.	For supply orders placed on Indian Suppliers: Irrespective of the value of the invoice amount, the bidder / vendor should necessarily upload the despatch & invoice details on BHEL SUVIDHA portal at <a href="https://suvidha.bhel.in/suvidha/">https://suvidha.bhel.in/suvidha/</a> , prior to despatch. All documents as per PO checklist, along with additional documents (if any), must be uploaded on the portal. It is mandatory that tax invoices with a net amount (including



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		taxes) exceeding Rs five lakhs uploaded on the portal are digitally signed using a Class 3 Digital Signature Certificate (DSC) issued by a licensed Certifying Authority. Submission of invoice document in hard copy is allowed for invoices with a net amount (including taxes) equal to and upto Rs five lakhs, in case they were not digitally signed and uploaded on the portal. The material will not be accepted inside BHEL in absence of the above.
17.	PAYMENT TERMS	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 16)  i.e. 100% payment in 90 days of receipt ( <b>45 days for Micro &amp; Small and 60 days for Medium enterprises as registered in Udyam Certificate as per relevant MSME act in force</b> ) and subject to acceptance of material and relevant documents at BHEL. Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate + 6% for the purpose of bid evaluation.
18.	TECHNICAL PQR (T-PQR)	Technical Pre-Qualification Requirements (T-PQR) for procurement of the items is attached with the NIT. Compliance of all the points in T-PQR is mandatory. In absence of compliance of above and non-submission of documents required against the T-PQR, the Vendor's offer is liable to be rejected. <b>Duly filled T-PQR with desired documents shall be submitted by the Vendor along with the offer.</b> <i>Information/ compliance/ documents submitted by vendor shall be authentic in all aspects. In case any deviation/ false information/ forged documents are observed / revealed later on, BHEL is free to initiate appropriate punitive proceeding against the Vendor as per Prevalent Processes and Guidelines of Company.</i>
19.	FINANCIAL PQR (F-PQR)	<i>Not Applicable.</i>
20.	BID PARTS	Offer shall be submitted by the bidders in Two Parts, i.e. <b>Part-I Technical cum Commercial bid &amp; Part-II Price bid.</b>
21.	PENALTY / LD	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 9) i.e. <b>0.5% of the undelivered portion per week of delay or part thereof, subject to a maximum of 10% of the undelivered order value owing to delayed delivery.</b>
22.	PRICE BASIS	Firm Price basis
23.	PRICING TERMS	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 12)
24.	PRICE VALIDITY	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 13) i.e. <b>Offer shall be valid for a period of 90 days from the date of Techno- commercial (Part-I) bid opening date.</b>
25.	TAXES & DUTIES	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 14)
26.	EVALUATION CRITERIA	Overall L1 basis.
27.	EVALUATION IN CASE OF MORE THAN ONE L-1 BIDDER	In the course of evaluation, if more than one bidder happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 bidders. In case more than one bidder happens to occupy the L-1 status even after soliciting discounts, the L-1 bidder shall be decided by a toss/draw of lots, in the presence of the respective L-1 bidder(s) or their representative(s).



**MATERIAL MANAGEMENT - TRACTION MACHINES**  
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**BHEL ENQUIRY NO. E5153175**  
**DUE ON 22-09-2025**

		Ranking will be done accordingly. Decision of BHEL in such situations shall be final and binding.
28.	<b>BID SECURITY/ Earnest Money Deposit (EMD)</b>	Not Applicable
29.	<b>PERFORMANCE SECURITY (PBG)</b>	<b>Not Applicable.</b>
30.	<b>REVERSE AUCTION</b>	<b>Not Applicable.</b>
31.	<b>MSE PREFERENCE</b>	Applicable as per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 29)
32.	<b>PUBLIC PROCUREMENT (PREFERENCE TO MAKE IN INDIA)</b>	<b>Not Applicable.</b>
33.	<b>INTEGRITY PACT (IP)</b>	<b>Not Applicable.</b>
34.	<b>RESTRICTION UNDER RULE 144 (xi) GFR</b>	As per attached BHEL GTC of ENQUIRY (BP200102B, Cl. No. 34)
35.	<b>CONFLICT OF INTEREST AMONG BIDDERS/ AGENTS AND THEIR DECLARATION</b>	<p>A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. <b>Bidders having a conflict of interest shall not be eligible to participate in the tender process.</b></p> <p><b>Treatment of cases regarding conflict of interest: -</b> The bidder notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:</p> <p>-</p> <ul style="list-style-type: none"><li>i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly;</li><li>ii) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating;</li><li>iii) Procurement of goods directly from the manufacturers /suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM) from quoting</li></ul>



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**BHEL ENQUIRY NO. E5153175**

**DUE ON 22-09-2025**

		<p>equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.</p> <p>iv) A bidder participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as a partner/ JV member or sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-contractor in more than one bid if he is not bidding independently in his own name or as a member of a JV.</p> <p>The Bidder declares that they have read and understood the above aspects, and the bidder confirms that such conflict of interest does not exist and undertakes that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. <b>In case, the Bidder is found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.</b></p>
36.	ANNEXURE-IX	<p>The Bidder/Supplier/Contractor will, when presenting his bid, declare whether other Family Firms or Sister Concern Affiliates/Subsidiary firms are participating in the same tender, so as to eliminate the possibility of cartel formation. Format for declaration is available in the NIT documents for this enquiry (Annexure-IX). <b>Same is to be submitted with the offer.</b></p>
37.	SPECIAL CONDITIONS	<p>Bidders who fall under MSE (Micro &amp; Small Enterprises only) and <b>fail to upload 'UDYAM Registration Certificate (URC)' shall automatically be considered as Non-MSE supplier for this tender.</b></p> <p>Further, it is to be noted that <b>MSE benefits are not being extended to Agent/ Dealer/ Trader/ Distributor (i.e. Other than manufacturer).</b> Supplier has to also provide supporting document(s) such as Agreement Between OEM &amp; Bidder(s) etc.</p> <p>Identification must. Soon after rejection of material, it is to be ensured by supplier that material should be taken back maximum within two weeks after communication for rectification/ replacement &amp; supply back the rectified/ fresh material to BHEL Bhopal within 30 days from rejection. In the event of non-lifting of rejected material by supplier, BHEL will not be responsible for loss of such items to the supplier in any case.</p> <p><b>Offers of suppliers who are in 'HOLD/BANNED' status in BHEL Bhopal PMD shall not be considered.</b></p> <p>Unregistered vendors to submit documents required for registration to BHEL Portal Online (<a href="https://bhel.com/supplier-registration">https://bhel.com/supplier-registration</a>).</p>
38.	OTHER TERMS & CONDITIONS	<p>Other Terms &amp; Conditions as per attached BHEL GTC of ENQUIRY (BP200102B).</p> <p>Any deviation of NIT, BHEL GTC of ENQUIRY (BP200102B) and BHEL PO Terms, where vendor response is not affirmative to be clearly indicated, else BHEL will consider that all above Terms &amp; Conditions are acceptable to vendors.</p>
39.	GEM REGISTRATION	<p>As you are kindly aware that Government e-Marketplace (GeM) is a one stop portal to facilitate Online Procurement of Goods &amp; Services required by various Government Departments/ Organizations/ PSUs.</p>



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**DUE ON 22-09-2025**

		BHEL being a PSU, would like that its suppliers/ contractors also have visibility on this portal so that GeM can be used for procurement by BHEL. Hence, you are requested to get yourselves registered on GeM.
40.	<b>TENDER FEE</b>	Not applicable
41.	<b>BID SUBMISSION WITHIN DUE DATE &amp; TIME</b>	No request for extension of tender due date will be entertained at the time of tender opening and after due date under any circumstances. Hence, all bidders are requested to submit their bid well within due date and time only. <b><i>BHEL reserves the right for extension of tender based on the situation without assigning any reason whatsoever it may be.</i></b>
42.	<b>DOCUMENTS TO BE FURNISHED ALONG WITH YOUR QUOTATION</b>	<b>Signed and Sealed copy of:</b> <ul style="list-style-type: none"><li>- NIT</li><li>- BHEL GTC of ENQUIRY (BP200102B)</li><li>- BHEL PO Terms</li></ul> <b>Duly Filled, Signed and Sealed copy of:</b> <ul style="list-style-type: none"><li>- Techno-Commercial Annexure</li><li>- T-PQR along with all supporting documents</li><li>- <b>Annexure-IX</b> in Company Letterhead</li><li>- Annexure A for OEM &amp; MSE Declaration.</li><li>-</li></ul> <b>Others:</b> <ul style="list-style-type: none"><li>- UDYAM Registration Certificate (<i>as applicable for MSME bidders only</i>)</li></ul>

**IT IS HEREBY MENTIONED THAT THIS IS E-TENDER SO OFFER SUBMITTED THROUGH E-PROCUREMENT PORTAL (www.eprocurebhel.co.in) SHALL ONLY BE CONSIDERED.**

**Techno-Commercial Annexure**  
(To be filled by supplier inline with NIT requirement and submit with offer)

Tender No.	<b>E5153175 due on 22/09/2025</b>			
Description :	<b>Item01: - FLEX METALLIC LUBRICATOR PIPE WITH CONNECTOR AS PER DRG NO.34454405061 REV.02</b> <b>TENDER QTY.:- Item01: - 1024 nos +/-30%.</b> <b>Delivery required as per NIT.</b>			
<b>Sr. No.</b>	<b>ELEMENTS</b>	<b>Standards</b>	<b>To be offered/confirmed by supplier</b>	<b>Remarks, if any</b>
1	Quotation reference no. & date	As per supplier		
2	HSN / SAC code	As per supplier		
3	Quotation currency	In INR		
4	Contact person	As per supplier		
5	Phone / Mobile	As per supplier		
6	E-Mail	As per supplier		
7	Order to be placed on (Also provide supplier code at BHEL Bhopal, If registered)	As per supplier		
8	Address	As per supplier		
9	Please specify delivery in weeks/ days (Specify item wise, lot wise as per RFQ)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
10	Rate quoted on "Firm" price basis	Yes		
11	Quoted for all the items and full quantity of tender enquiry	Yes / No. (If "No" please mention item number with Qty of regreted items)		
12	Technical specifications	Accepted as per NIT / Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
13	Inspection	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
14	Test certificate & Gurantee certificate as per NIT and specification will be submitted along with each consignment	Yes (In case of "No" your offer may be rejected).		
15	Brand name, if any.	As per supplier		
16	Supply from	As per supplier		
17	Terms of delivery ("FOR DESTINATION " means freight & insurance upto destination in supplier's scope (Destination: CRX Divn, BHEL Bhopal)	Accepted/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
18	Transit insurance (In supplier's scope)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
19	CGST RATE (IN %)	As per supplier		
20	SGST RATE (IN %)	As per supplier		
21	IGST RATE (IN %)	As per supplier		
22	UGST RATE (IN %)	As per supplier		
23	Are you manufacturer of quoted item (s).	Yes / No		
24	Are you registered under MSMED ACT 2006 as small or micro. NOTE: - Firms registered under medium scale shall not be considered eligible for MSE benefits.	Yes / No (If select Yes, please enclosed valid UDYAM certificate)		

**Techno-Commercial Annexure**  
(To be filled by supplier inline with NIT requirement and submit with offer)

Tender No.	<b>E5153175 due on 22/09/2025</b>			
Description :	<b>Item01: - FLEX METALLIC LUBRICATOR PIPE WITH CONNECTOR AS PER DRG NO.34454405061 REV.02</b> <b>TENDER QTY.:- Item01: - 1024 nos +/-30%.</b> <b>Delivery required as per NIT.</b>			
<b>Sr. No.</b>	<b>ELEMENTS</b>	<b>Standards</b>	<b>To be offered/confirmed by supplier</b>	<b>Remarks, if any</b>
25	Terms of Payment (100% payment in 90 days of receipt (45 days for Micro & Small and 60 days for Medium enterprises as registered in Udyam certificate as per relevant MSME act in force) and subject to acceptance of material and relevant documents at BHEL. Pl refer GTC BP200102B)	As per NIT/ Accepted with deviation (If select Accepted with deviation, please mention the deviation)		
26	SELF CERTIFICATION OF MINIMUM LOCAL CONTENT, IF MORE THAN 50% VALUE ADDITION IS IN INDIA. (Note- In case of tenders worth more than Rs. 10 crores, Suppliers shall necessarily submit certificate from statutory auditor or cost auditor or cost accountant or CA) Please also specify the amount of local content in India. EXAMPLE :if 100% INDIGENOUS (MADE IN INDIA) MARK "Y"/100%	As per supplier/not applicable		
27	Details of location of value addition / manufacturing	As per supplier/not applicable		
28	Other Charges (If any)	Applicable / Not Applicable. (If applicable please mention percentage (%) / Value (along with type of charges).		
29	Penalty for delayed performance as per BP200102B & NIT	Yes / No (In case of "No", your offer will be loaded suitably)		
30	Confirmation that documents pertaining to technical PQR has been submitted	Yes / No		
31	Acceptance to "REVERSE AUCTION" if conducted (As per BHEL's RA policy)	Not applicable		
32	Submission of Declaration format with duly sealed & signed (Annexure IX, refer attached) regarding whether other family firms or sister concern affiliates / subsidiary firms are participating in the same tender.	(Yes / No) If No please specify the reason.		
33	General terms and conditions of enquiry (Form No. BP-200102B) and BHEL PO Terms & Conditions is Acceptable.	Yes (In case of "No" your offer may be rejected).		
34	Quotation Validity will be 90 days from the date of techno-commercial bid opening.	Yes		
35	Tender fees submitted	Yes / Not Applicable	Not Applicable	



**Duly filled Technical Pre-Qualification Requirements to be submitted along with the offer by vendor***For uploading along with the enquiry*

Ref No: TME/PQR/Flexible metallic pipe/IM3004AZ rev.00

Dated: 24/08/2024

**Technical Pre-Qualification Requirements (PQR) for “Flex metallic lubricator pipe with connector”****Vendor should comply with the following clauses in order to qualify for supply of “Flex metallic lubricator pipe with connector” (duly filled PQR shall be submitted along with the offer by vendor):**

Cl. No.	Description	Vendor to comment	
		Complied / Not complied	Supporting relevant document to be submitted along with offer
1	Vendor shall supply item “Flex metallic lubricator pipe with connector” as per drawing no. mentioned in the enquiry.	Yes/No	Not Required
2	Vendor should be a manufacturer and not a trader.	Manufacturer/ Trader	Not Required
3	Vendor should confirm having experience of successfully manufacturing & supplying any flexible metallic braided pipe with rubber hose, in preceding 5 years from enquiry opening date.  Vendor to ensure that documents submitted for b) & c) shall correlate with the submitted PO copy.	Yes/No	a. PO copies b. Drawing of supplied item c. Supply proof i.e. invoice
4	For verification of information furnished by vendor, additional documents proofs etc. may be required by BHEL. Vendor to confirm providing the same.	Yes/No	Not Required

**Notes:**

1. Compliance of all the points in above T-PQR is mandatory. In absence of compliance of above, vendor’s offer is liable to be rejected.
2. Declaration by vendors regarding information / compliance submitted by vendor shall be correct in all respect. In case any deviation/false information is revealed later on, BHEL is free to initiate appropriate punitive proceeding as per prevalent processes and guidelines of company.

**Important:** This document is to be filled and submitted along with the offer. This document must be signed by authorized representative of the vendor and should contain the name of representative & seal of the company.

Date:

GASKET

(SEE NOTE 6.a & 6.b)

175

GASKET  
(SEE NOTE 6.a & 6.b)

NOTES:-

- 1. PIPE TO BE MADE OF PURE NITRILE RUBBER FOR COMPLETE OIL/GREASE RESISTANCE & COVERED FULLY WITH G.I. WIRE BRAIDING.
- 2. INNER DIAMETER OF NITRILE RUBBER PIPE AND OPENINGS AT END CONNECTORS SHALL BE 175mm.
- 3. END CONNECTORS SHALL BE MADE OF BRASS /STAINLESS STEEL.
- 4. FLEX METALLIC LUBRICATOR PIPE WITH CONNECTORS SHALL BE IN COMPLETE ASSEMBLED CONDITION.
- 5. IN ORDER TO FIX WITH GREASE GUN ADAPTOR, CONNECTOR ON NUT-END, TO BE ROTATED 90°.
- 6. a) TEFLON/RUBBER GASKET (1 mm THICK) TO BE PROVIDED ON THE CONNECTORS JOINT TO AVOID ITS FREE FLOW OF GREASE LEAKAGE.
- b) TEFLON/RUBBER GASKET TO BE SUITABLY PASTED ON THE ENDS TO AVOID ITS FREE FLOW OF GREASE LEAKAGE.
- 7. FOR FIRST TIME SUPPLIER 2 NOS. PROTOTYPE SHALL BE SUPPLIED BEFORE START OF BULK PRODUCTION. APPROVAL SHALL NOT AFFECT THE P.O. DELIVERY REQUIREMENT.

001			001	FLEX PIPE
50	64	65	75	76 78 25 27 28
VAR.00	REMARKS	VAR	ITEM NO.	

28 -- CARD TYPE-3

ADDITIONAL INFORMATION

STATUS OF DRAWING

DISTRIBUTION OF PRINTS

TME-1

TAM-3 TNX-1

INVENTORY NO.		SIGN. & DATE																	
		H																	
1	2	3	4	5	6	7	8	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED			
								CHECKED	CHECKED	02	09.08.24	CHECKED	A.J.HARIA	CHECKED	ABSH	01	08.08.24	CHECKED	ABSH
								APPD.	APPD.	A.S.	A.S.	APPD.	A.S.	APPD.	A.S.				
								DRG. & NOTES UPDATED.			NOTE 5 ADDED FOR NUT CONNECTOR. NOTE 7 ADD NOTE 2 & 3 MODIFIED. DIMENSION 130 WAS 126								



# CORPORATE STANDARD

AA0230208

Rev. No. 01

PAGE 1 of 3

## GENERAL TOLERANCES – TOLERANCES FOR LINEAR AND ANGULAR DIMENSIONS WITHOUT INDIVIDUAL TOLERANCE INDICATIONS

### 0.0 GENERAL

When selecting the tolerance class, the respective customary workshop accuracy has to be taken into consideration. If smaller tolerances are required or larger tolerances are permissible and more economical for any individual feature, such tolerances should be indicated to the relevant nominal dimension(s).

General tolerance for linear and angular dimensions apply when drawings or associated specifications refer to this standard in accordance with clauses 3 and 4. If there are general tolerances for other International standards, reference shall be made to them on the drawings or associated specifications. For a dimension between an unfinished and a finished surface, e.g. of cast or forged parts, for which no individual tolerance is directly indicated, the larger of the two general tolerances in question applies, e.g. for castings, see ISO 8062, Castings - system of Dimensional Tolerances.

### 1.0 SCOPE

The standard is intended to simplify drawing indications and it specifies general tolerances for linear and angular dimensions without individual tolerance indications in four tolerance classes.

It applies to the dimensions of parts that are produced by metal removal or parts that are formed from sheet metal.

#### NOTE:

- 1) The concepts behind the general tolerancing of linear and angular dimensions are described in Annex-A.
- 2) These tolerances may be suitable for use with materials other than metals.

This standard only applies for the following dimensions which do not have an individual tolerance indication:

- a) Linear dimensions (e.g. external sizes, internal sizes, step sizes, diameters, radii, distances, external radii and chamfer heights for broken edges).
- b) Angular dimensions, including angular dimensions usually not indicated, e.g. right angles (90°), unless reference to IS: 2102 (Part 2) is made, or angles of uniform polygons.
- c) Linear and angular dimensions produced by machining assembled parts.

It does not apply for the following dimensions:

- a) Linear and angular dimensions which are covered by reference to other standards on general tolerances.
- b) Auxiliary dimensions indicated in brackets.
- c) Theoretically exact dimensions indicated in rectangular frames.

### 2.0 COMPLIANCE WITH STANDARDS

This standard is based on IS: 2102 (Part 1)-1993 (ISO 2768-1).

### 3.0 GENERAL TOLERANCES

**3.1** Linear dimensions are given in Table 1 and 2.

**3.2** Angular dimensions: General tolerance specified in angular units control only the general orientation of lines or line elements of surfaces, but not their form deviations.

The general orientation of the line derived from the actual surface is the orientation of the contracting line of ideal geometrical form. The maximum distance between the contacting line and the actual line shall be the least possible value (see IS: 12160).

The permissible deviations of angular dimensions are given in Table 3.

Revisions: As per clause 17.7 of MOM of PGC-DOP+BES

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AA0230208

Rev. No. 01

PAGE 2 of 3

**CORPORATE STANDARD****4.0 INDICATIONS ON DRAWINGS:**

If general tolerances in accordance with this standard shall apply, the following information shall be indicated.

Example: AA0230208 m

**5.0 REJECTION**

Unless otherwise stated, work pieces exceeding the general tolerance shall not lead to automatic rejection provided that the ability of the work piece to function is not impaired (see clause A4).

**6.0 NOTE:**

**6.1** For “permissible deviations for Un-toleranced dimensions of castings” refer AA0230402.

**6.2** For “Tolerances and machining allowances for flame cutting” refer AA0621101.

**6.3** For “General tolerances for welding construction for length and angles” refer AA0621104.

**6.4** For “General tolerances for welded structures form and position” refer AA0621105.

**Table 1 – Permissible deviations for linear dimensions except for broken edges**  
(external radii and chamfer heights, see table 2)

Values in millimetres

Tolerance class		Permissible deviations for basic size range							
Designation	Description	0.5 <sup>1)</sup> Up to 3	Over 3 Up to 6	Over 6 Up to 30	Over 30 Up to 120	Over 120 Up to 400	Over 400 Up to 1000	Over 1000 Up to 2000	Over 2000 Up to 4000
f	Fine	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3	±0.5	-
m	Medium	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8	±1.2	±2
c	Coarse	±0.2	±0.3	±0.5	±0.8	±1.2	±2	±3	±4
v	Very coarse	-	±0.5	±1	±1.5	±2.5	±4	±6	±8

1) For nominal sizes below 0.5 mm, the deviations shall be indicated adjacent to the relevant nominal size(s).

**Table 2 – Permissible deviations for broken edges** (external radii and chamfer heights)

Values in millimetres

Tolerance class		Permissible deviations for basic size range		
Designation	Description	0.5 <sup>1)</sup> up to 3	Over 3 up to 6	Over 6
f	fine	±0.2	±0.5	±1
m	medium			
c	coarse	±0.4	±1	±2
v	very coarse			

1) For nominal sizes below 0.5 mm, the deviations shall be indicated adjacent to the relevant nominal size(s)

**Table 3 – Permissible deviations of angular dimensions**

Tolerance class		Permissible deviations for ranges of lengths, in millimetres, of the shorter side of the angle concerned				
Designation	Description	Up to 10	Over 10 Up to 50	Over 50 Up to 120	Over 120 Up to 400	Over 400
f	fine	±1°	±0°30'	±0°20'	±0°10'	±0.5'
m	medium					
c	coarse	±1°30'	±1°	±0°30'	±0°15'	±0°10'
v	very coarse	±3°	±2°	±1°	±0°30'	±0°20'



# CORPORATE STANDARD

AA0230208

Rev. No. 01

PAGE 3 of 3

## Annex A (informative)

### Concepts behind general tolerancing of linear and angular dimensions

A.1 General tolerances should be indicated on the drawing by reference to this standard in accordance with clause 4.

The values of general tolerances correspond to tolerance classes of customary workshop accuracy, the appropriate tolerance class being selected and indicated on the drawing according to the requirement of the components.

A.2 Above certain tolerance values, there is usually no gain in manufacturing economy by enlarging the tolerance. For example, a feature having a 35 mm diameter could be manufactured to a high level of conformance in a workshop with “customary medium accuracy”. Specifying a tolerance of  $\pm 1$  mm would be of not benefit in this particular workshop, as the general tolerance values of  $\pm 0.3$  mm would be quite adequate.

However, if, for functional reasons, a feature requires a smaller tolerance value than the general tolerance values, these should not be indicated adjacent to the dimension but should be stated on the drawing as described in clause 4. This type of tolerance allows full use of the concept of general tolerancing.

There will be “exceptions to the rule” where the function of the feature allows a larger tolerance than the general tolerances, and the larger tolerance will provide manufacturing economy. In these special cases, the larger tolerance should be indicated individually adjacent to the dimension for the particular feature, e.g. the depth of blind holes drilled at assembly.

A.3 Using general tolerances leads to the following advantages:

- drawings are easier to read and thus communication is made more effective to the user of the drawing;
- The design draughtsman saves time by avoiding detailed tolerance calculations as it is sufficient to know that the function allows a tolerance greater than or equal to the general tolerance;
- The drawing readily indicates which feature can be produced by normal process

capability, which also assists quality engineering by reducing inspection levels;

- Those dimensions remaining, which have individually indicated tolerances, will, for the most part, be those controlling features for which the function requires relatively small tolerances and which therefore may require special effort in the production – this will be helpful for production planning and will assist quality control services in their analysis of inspection requirements;
- Purchase and sub-contract supply engineers can negotiate orders more readily since the “customary workshop accuracy” is known before the contract is placed; this also avoids arguments on delivery between the buyer and supplier, since in this respect the drawing is complete.

These advantages are fully obtained only when there is sufficient reliability that the general tolerances will not be exceeded, i.e. when the customary workshop accuracy of the particular workshop is equal to or fine than the general tolerances indicated in the drawing.

The workshop should therefore

- Find out by measurements what is customary workshop accuracy is;
- Accept only those drawings having general tolerances equal to or greater than its customary workshop accuracy;
- Check by sampling that its customary workshop accuracy does not deteriorate.

Relying on underlined “good workmanship” with all its uncertainties and misunderstandings is no longer necessary with the concept of general geometrical tolerances. The general geometrical tolerances defines the required accuracy of “good workmanship”.

A.4 The tolerance the function allows is often greater than the general tolerances. The function of the part is, therefore, not always impaired when the general tolerance is (occasionally) exceeded at any feature of the work piece. Exceeding the general tolerance should lead to a rejection of the work piece only if the function is impaired.