



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
EPBX (0522) 2451200
Fax : 0522 - 2452581

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



No. EL/3.2.85

Date: 22.01.2019

Principal Chief Electrical Engineer,	प्रमुख विद्युत् अभियंता
- Central Railway, Mumbai, CST-400 001. - East Central Railway, Hazipur-844 101. - East Coast Railway, Chandrashekharpur, Bhubaneswar-751 017. - Eastern Railway, Fairlie Place, Calcutta-700 001. - North Central Railway, Block-A, Subedarganj, Allahabad- 211 033. - Northern Railway, Baroda House, New Delhi-110 001. - North Western Railway, Jaipur- 302 006 - North Eastern Railway, Gorakhpur-273001 - North East Frontier Railway, Maligaon, Guwahati-781011 - South Central Railway, Secunderabad-500 071. - South East Central Railway, Bilaspur-495 004. - South Eastern Railway, Garden Reach, Kolkata-700 043. - Southern Railway, Park Town, Chennai-600 003. - South Western Railway, Hubli- 580020 - West Central Railway, Jabalpur-482 001. - Western Railway, Churchgate, Mumbai-400 020 - Chittaranjan Locomotive Works, Chittaranjan-713 331 - Diesel Locomotive Works, Varanasi-221 004.	- मध्य रेलवे, मुम्बई सीएसटी -400 001 - पूर्व मध्य रेलवे, हाजीपुर-844 101 - पूर्व तटीय रेलवे, चन्द्रशेखरपुर, भुवनेश्वर-751 017 - पूर्व रेलवे, फेयर्ली प्लेस, कोलकाता-700 001 - उत्तर मध्य रेलवे, ब्लॉक ए-2, सुबेदारगंज इलाहाबाद - 211 033 - उत्तर रेलवे, बड़ौदा हाऊस, नई दिल्ली-110 001 - उत्तर पश्चिम रेलवे जयपुर- 302006 - उत्तर पूर्व रेलवे गोरखपुर- 273001 - उत्तर पूर्व फ्रन्टीयर रेलवे मालीगाँव गुवाहाटी-781011 - दक्षिण मध्य रेलवे, रेल निलायम, सिकंदराबाद-500 371 - दक्षिण पूर्व मध्य रेलवे, बिलासपुर - 495 004 - दक्षिण पूर्व रेलवे, गार्डेनरीच, कोलकाता-700 043 - दक्षिण रेलवे, पार्क टाउन, चेन्नई-600 003 - दक्षिण पश्चिम रेलवे हुबली-580020 - पश्चिम मध्य रेलवे, जबलपुर-482 001 - पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020 - चित्तरंजन रेल इंजन कारखाना, चित्तरंजन - 713 331 - डीजल रेल इंजन कारखाना, वाराणसी-221004

Modification Sheet No. RDSO/2019/EL/MS/0476 (Rev. '0')

(This Supersedes Modification sheet no. RDSO/2009/ELRS/MS/0373 (Rev '1') amendment-3 dated 04.04.2014 & RDSO/2009/ELRS/MS/0374 (Rev '1') amendment-3 dated 04.04.2014)

Title:

Modification in Mounting arrangement of Leather Bellows of Traction Motors type 6FRA6068.

- Object :** Modification in Mounting arrangement of Leather Bellows of Traction Motor type 6FRA6068 to improve reliability.

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2. Existing arrangement :

2.1. Background:

2.1.1. Zonal Railways had reported that failures of leather bellows provided in WAG9/WAP7 locomotives are increasing.

2.1.2. The issue was examined and it is observed that bellow gets damaged mostly in top & bottom portion due to rubbing with edges of step provided in top and bottom plate (22 mm step in modified bellow top plate & 17 mm step in modified bellow bottom plate) during movement of Locos. If this step is removed, bellow failures are likely to reduce significantly.

2.1.3. To improve the reliability, CLW was advised vide letter number EL/3.2.85 dated 15.11.2017 for following:

- (i) Remove the 22 mm step in drawing no. 1209-01.418-025 Alt '1' for modified bellow top plate for leather bellow, (Modified bellow plate for body side).
- (ii) Remove the 17 mm step in drawing no. 1209-01.418-027 Alt '1' for modified bellow bottom plate for leather bellow, (Modified bellow plate for TM side)
- (iii) Increase the thickness of modified bellow top & bottom plates from existing 3 mm to 4 mm in drawings numbers 1209-01.418-025 Alt '1' & 1209-01.418-027 Alt '1'
- (iv) Inner and outer edges of Modified bellow Top & Bottom plates to be made half round with 2.0 mm radius.

2.1.4. CLW had carried out the proposed modification in the relevant drawings.

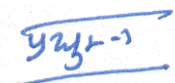
2.1.5. Following is the list of existing drawings of the related items:

SN	Description of Drawing	RDSO's Drawing	CLW's Drawing
1.	Single duct leather bellow	SKEL-4893 Alt. '1'	1209-01-018.029
2.	Modified Plate-Flange-Traction Motor Inlet for Leather Bellow (Spacer Plate)	SKEL-4892	1209-01.018-026 Alt. '1'
3.	Modified Bellow plate for TM side	SKEL-4891	1209-01.418-027 Alt.'1'
4.	Modified Bellow plate for body side	SKEL-4894	1209-01.418-025 Alt.'1'

3. Modified arrangement :

Railways are advised to use material as per following drawings

SN	Description of Drawing	CLW's Drawing
1.	Single duct leather bellow	1209-01-018.029
2.	Modified Plate-Flange-Traction Motor Inlet for Leather Bellow. (Spacer Plate)	1209-01.018-026 Alt. '1'
3.	Modified Bellow plate for TM side	1209-01.418-032 Alt.'0'
4.	Modified Bellow plate for body side	1209-01.418-031 Alt.'1'



3.1. Work to be carried out:

- 3.1.1. Tighten the modified plate flange traction motor inlet as per CLW's drawing number 1209-01.018-26 alt. '1'. The modified plate is having 8 numbers of counter sunk holes for fixing base plate of end shield. The modified plate to be fixed with Hex. Socket CSK Head Screws as per RDSO's Modification sheet number RDSO/2018/EL/MS/0472 (rev '0') dated 20.08.2018. This modified spacer plates can be welded on end shields.
- 3.1.2. Use single duct leather bellow as per CLW's drawing number 1209-01.018-029 Alt. '0' along with modified bellow bottom plate (TM side) as per CLW's drawing number 1209-01.418-032 Alt. '0' to secure the bellow at traction motor end with the help of 12 mm size bolt.
- 3.1.3. Provide modified top plate (body side) as per CLW's drawing number 1209-01.418-031 Alt. '1' to secure the bellow properly with locomotives body.

4. Application to Class of Locomotives :

All existing three phase traction motors type 6FRA6068 used in WAG9/WAP7 Locomotives

5. Material Required:

- 5.1 Single duct leather bellow as per CLW's drawing number 1209-01-018.029 Alt. '0'
- 5.2 Modified Plate-Flange-Traction Motor Inlet for Leather Bellow as per CLW's drawing number 1209-01.018-26 alt. '1'.
- 5.3 Modified Bellow plate for TM side as per CLW's drawing number 1209-01.418-032 Alt. '0'.
- 5.4 Modified Bellow plate for body side as per CLW's drawing number 1209-01.418-031 Alt. '1'.

6. Material rendered surplus :

SN	Description of Drawing	RDSO's Drawing	CLW's Drawing
1.	Modified Bellow plate for TM side	SKEL-4891	1209-01.418-027 Alt.'1'
2.	Modified Bellow plate for body side	SKEL-4894	1209-01.418-025 Alt.'1'

7. Modification Drawing Numbers. :

- 7.1. CLW's drawing number 1209-01.018-029 Alt. '0' for Single duct leather bellow.
- 7.2. CLW's drawing number 1209-01.418-026 Alt. '1' for Modified Plate-Flange-Traction Motor Inlet for Leather Bellow.
- 7.3. CLW's drawing number 1209-01.418-031 Alt. '1' for Modified Bellow plate for body side.
- 7.4. CLW's drawing number 1209-01.418-032 Alt. '0' for Modified Bellow plate for TM side.

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8. Periodicity of Implementation :

During assembly of Traction motors with locomotives during manufacturing and major overhauls (TOH, IOH & POH) of the Locomotives.

9. Agency of Implementation :

All Sheds, workshops and Production Units.

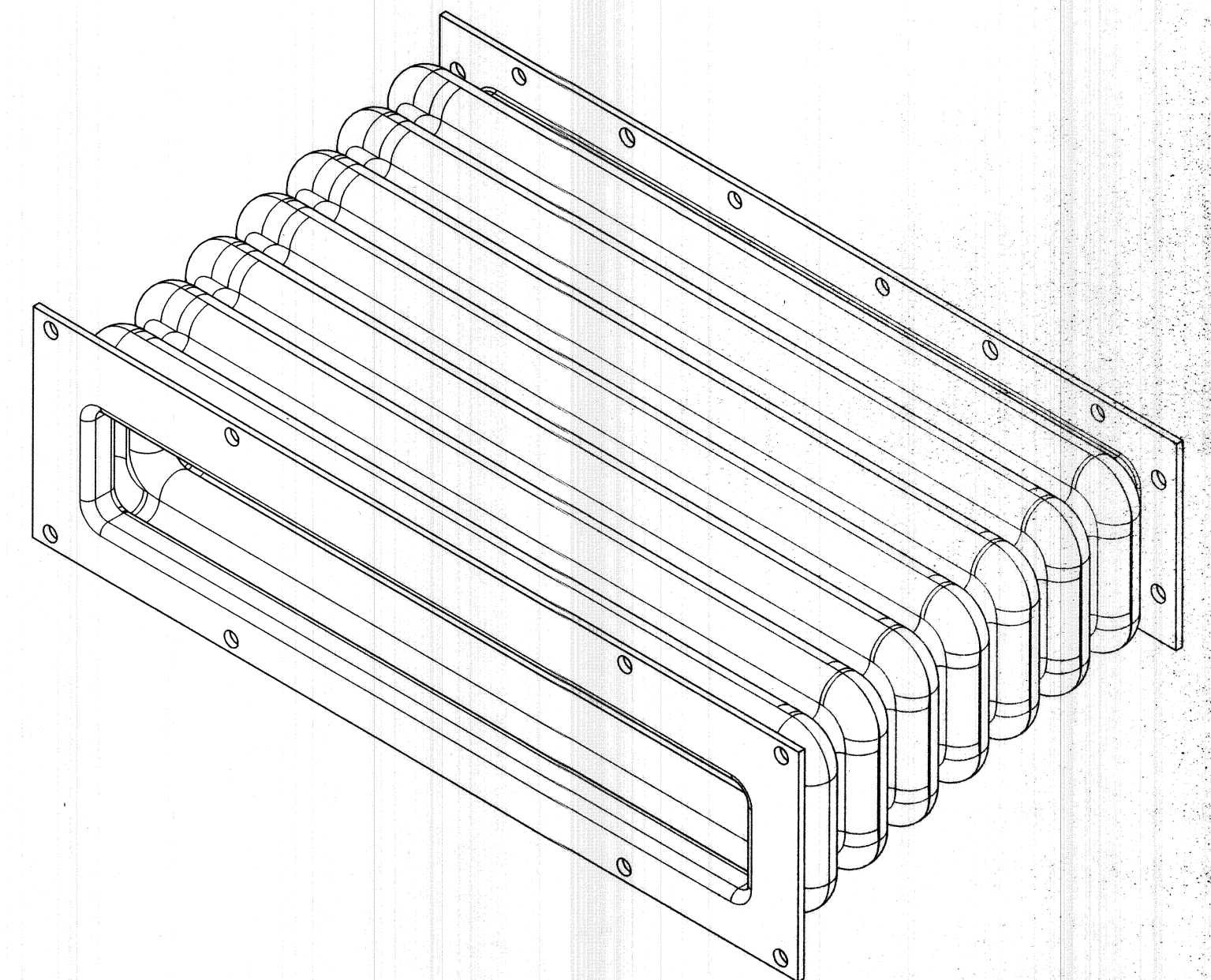
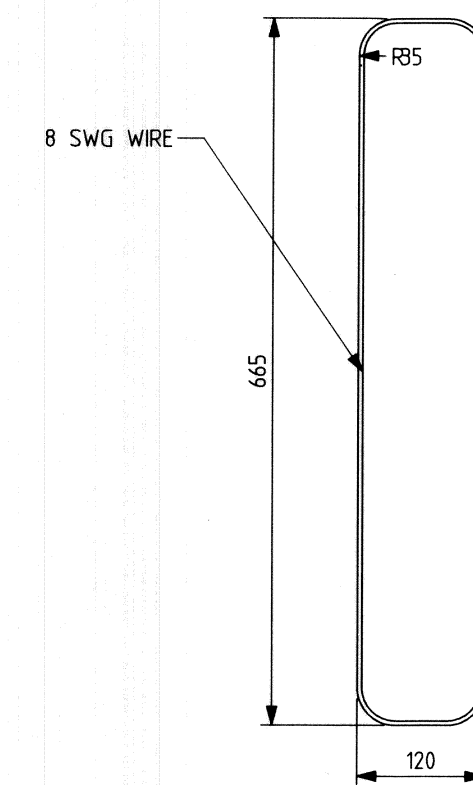
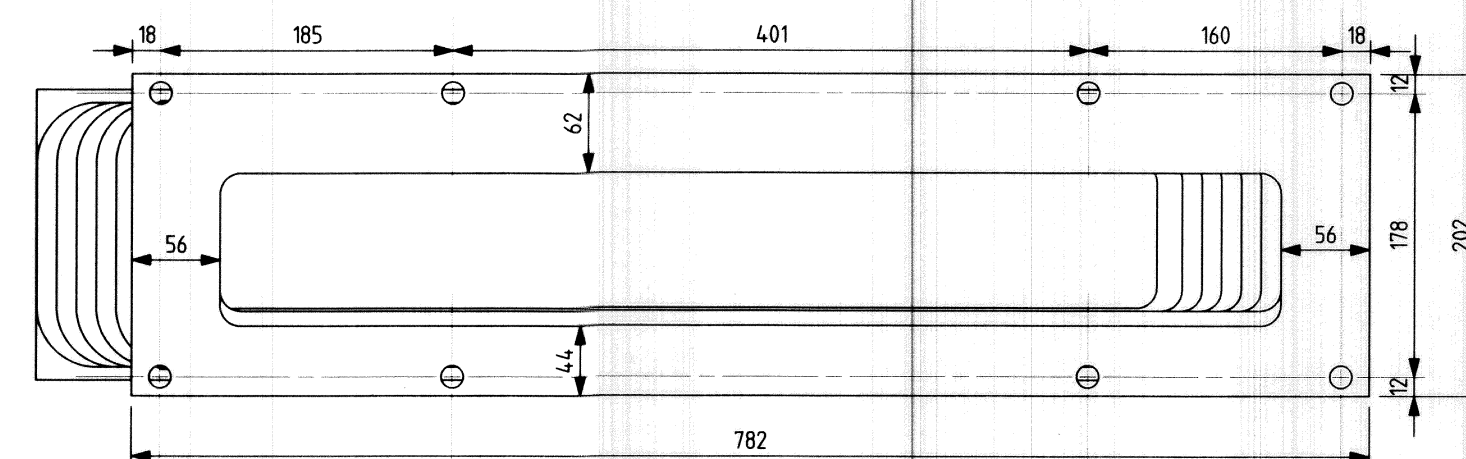
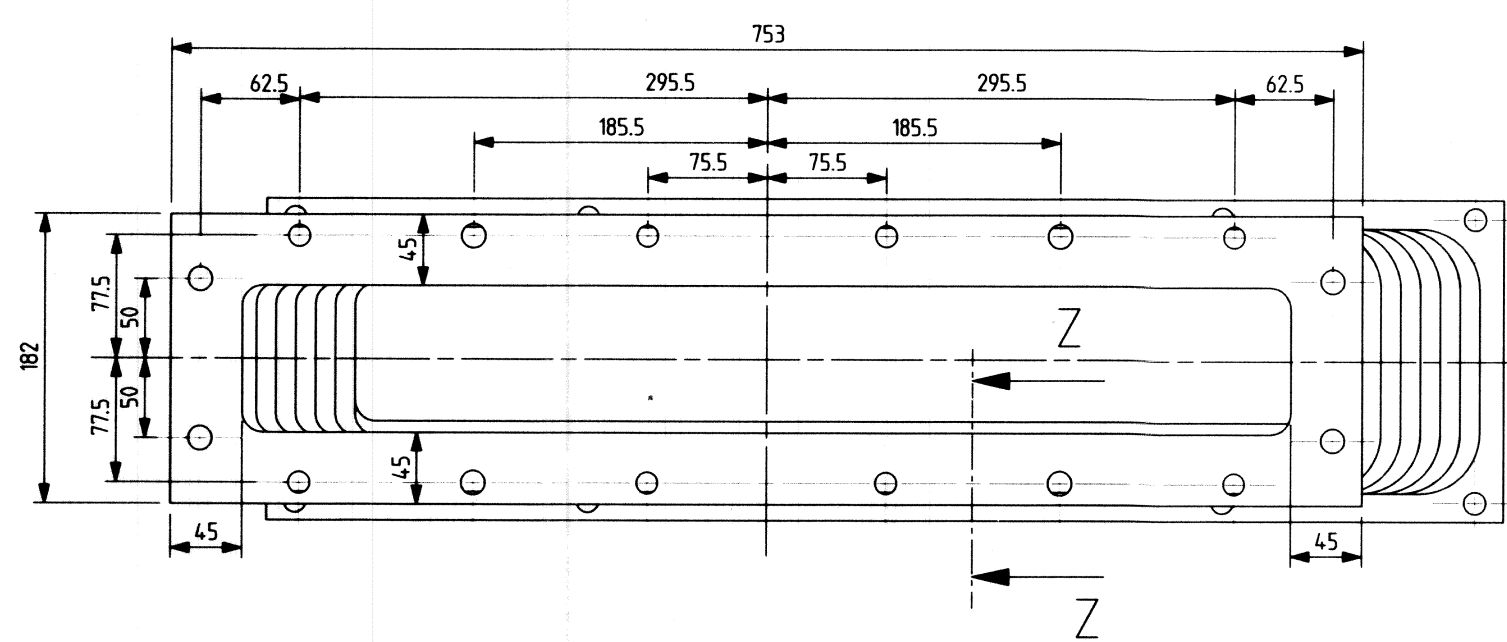
10. Distribution:

As per standard mailing list.

ENCL: as above

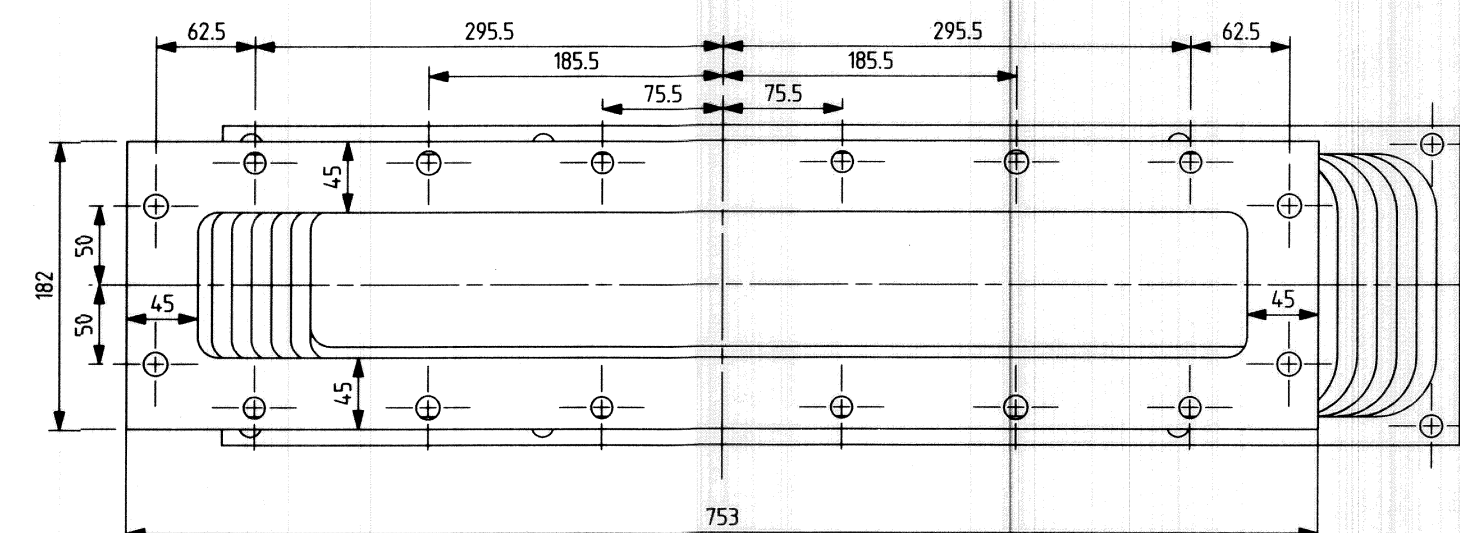
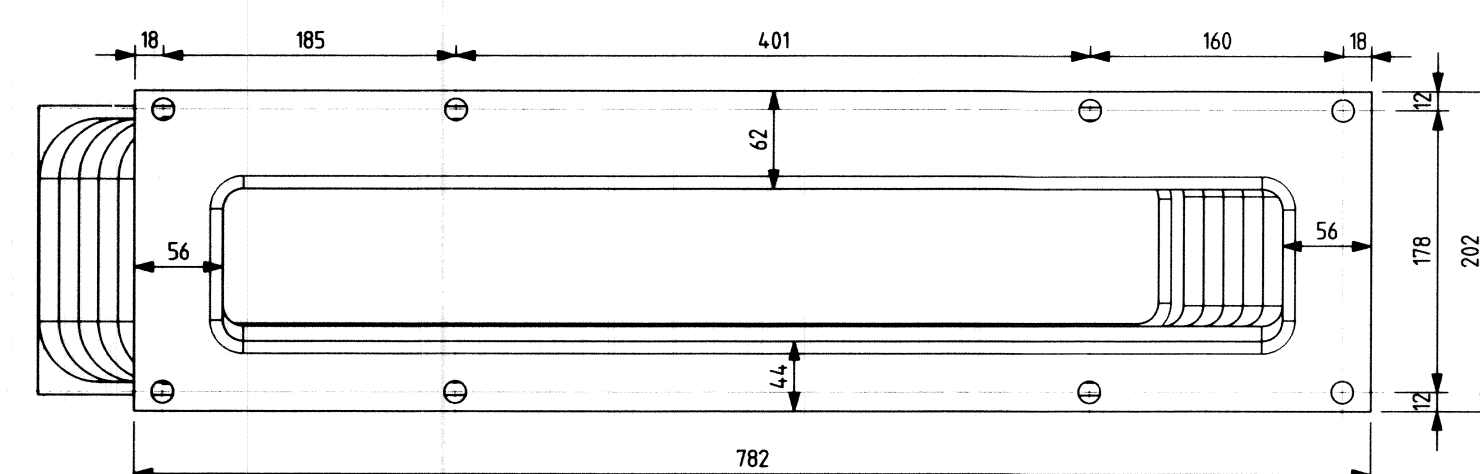
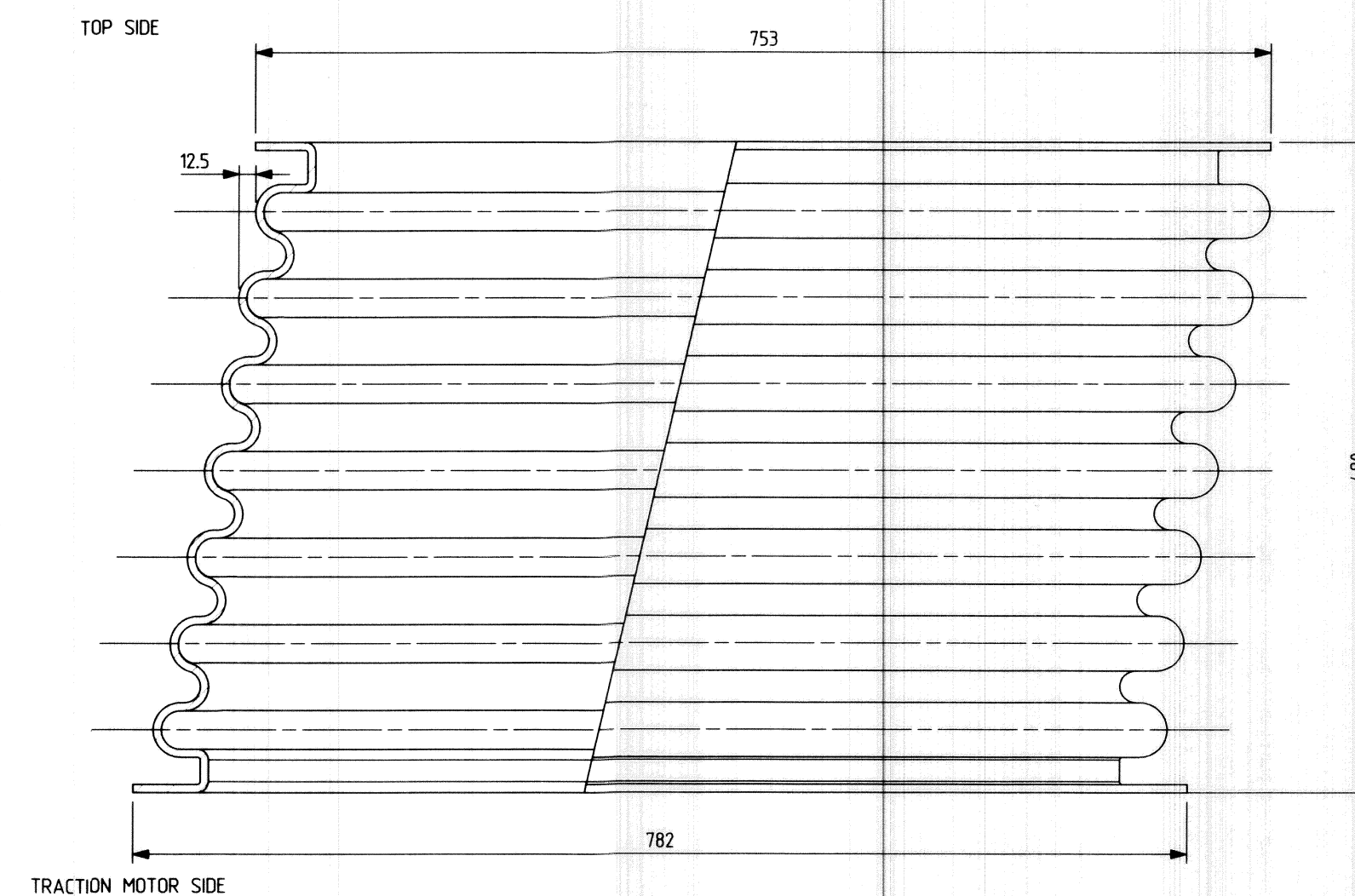
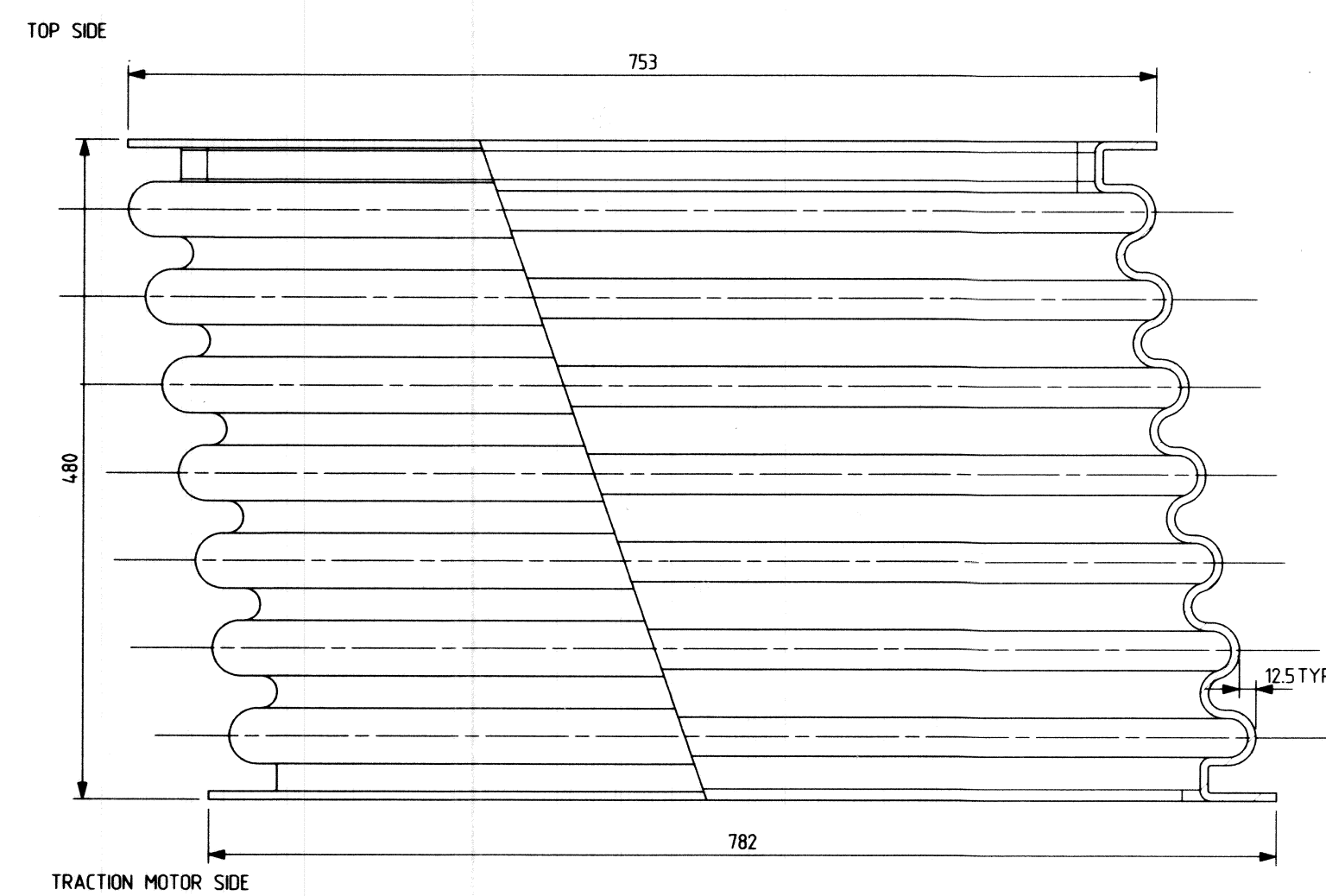
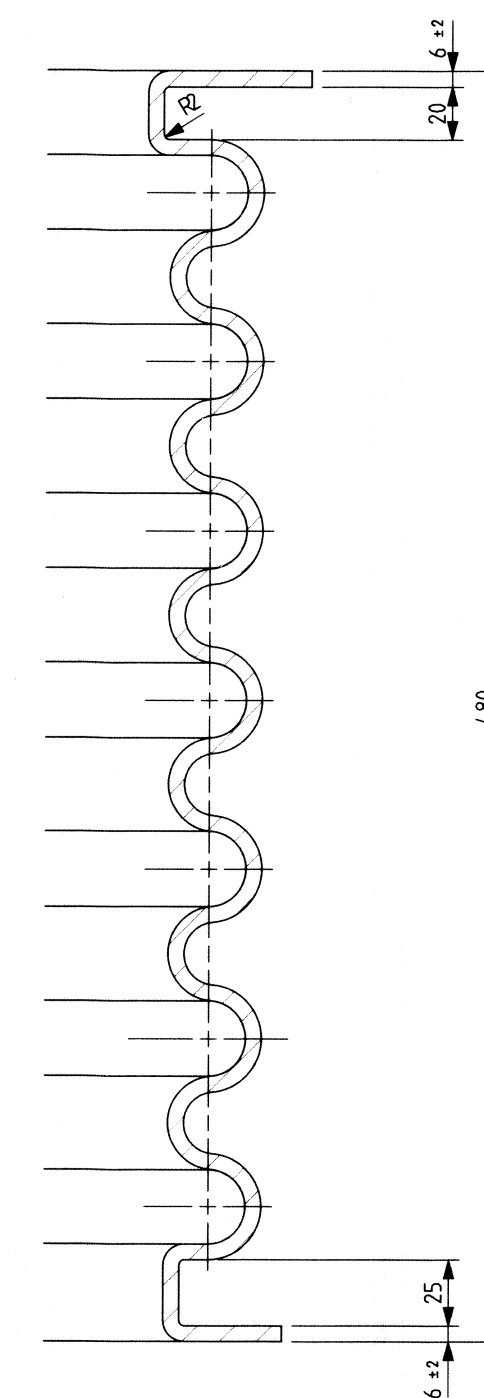
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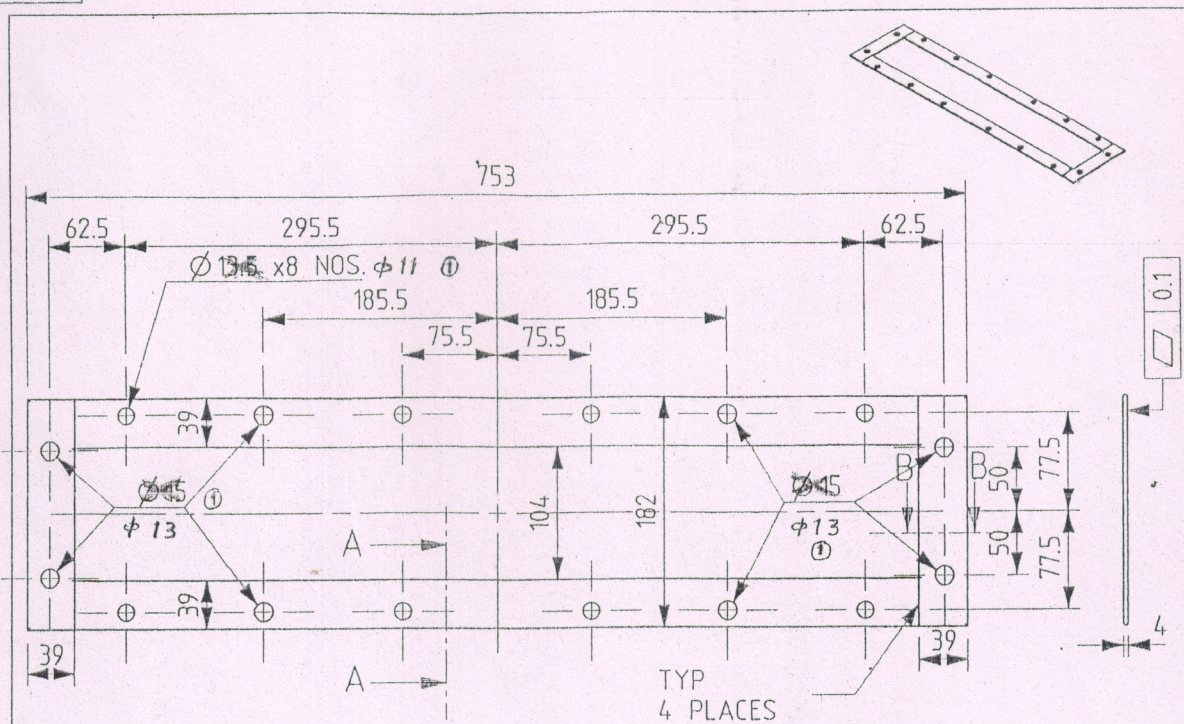
(P.K. Saraswat)
for Director General/Electrical



NOTE:

1. (a) ALL DIMENSIONS ARE IN mm WITH TOLERANCE OF ± 0.5
(b) TOLERANCES FOR DISTANCE BETWEEN HOLE CENTER CONSIDER ± 0.1
2. CLW CAN NO. T205/039.
3. LEATHER BELLOW
- a). SUPPORT PIECES WILL BE GLUED AND STITCHED ALL AROUND THE BELLOW PLATES.
 - a). SWG GAUVEDEN IRON WIRE FOR REINFORCEMENT.
 - c). DOUBLE STITCH ALL AROUND (EXCEPT ON IRON WIRE REINFORCEMENT) WITH 2-3 PER cm WITH 10kg. (UTS STRENGTH) NYLONE THREAD LENGTH OF EACH WILL NOT EXCEED 10cm.
 - d). ON IRON WIRE REINFORCEMENT SINGLE 2-3 STITCHES PER cm SHALL BE PROVIDED.
 - e). TOLERANCE ON THICKNESS ± 0.5 .
 - f). RING IS PLACED ON OUT SIDE FULLY REINFORCED WITH LEATHER.
 - g). TOP OF THE FLANGE SHOULD BE SMOOTH AT JOINTS.
 - h). FULLY STRETCHED LENGTH OF BELLOW WILL BE 480mm $\pm$ 20mm.
 - i). MATERIAL FULLY CHROME TANNED BUFFALO HID LEATHER AS PER IS:578-1985, III REVISION AMEND-1, NOV-1992.
 - j). MANUFACTURER'S NAME, YEAR OF MANUFACTURING AND LOT NO. EMBOS AT TWO PLACES ON BOTTOM FLANGE.
 - k). ONE ADVANCE SAMPLE OF BACK ITEMS TO BE GET APPROVED BEFORE BULK MANUFACTURING.
 - 4. QUANTITIES OF BELLOW TYPE-I: 2 Nos/Loco AND TYPE-II: 4 Nos/Loco.
 - 6. SEE RSDO SPEC. -706 REV2 (JULY 2002) FOR OTHER DETAIL.
 - 7. USED FOR LOCO : WAG-9/WAG-9H & WAP-7 LOCOMOTIVES.

[illegible][illegible]



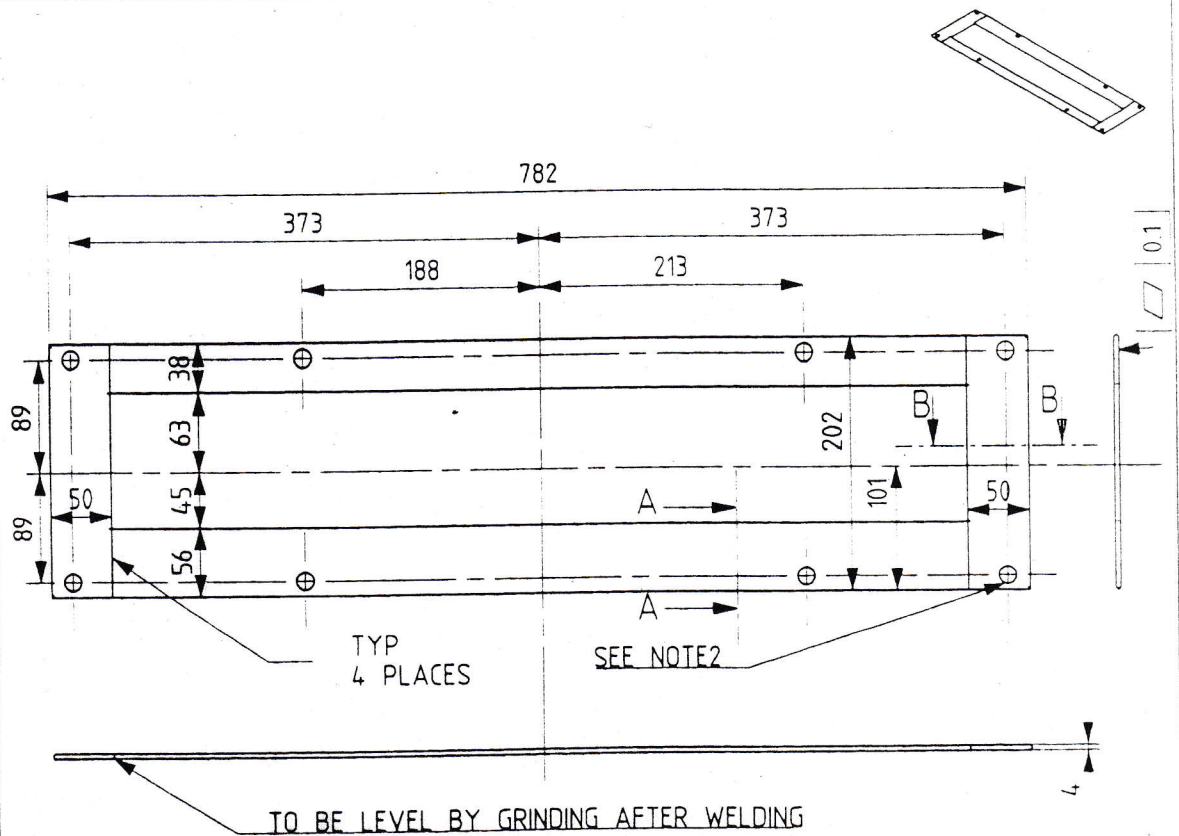
NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. PU PAINT BLACK GREY RAL7021.
3. ALL SHARP EDGES TO BE REMOVED.
4. THIS DRG. SUPERSEDE DRG. NO. 1209-01.418-025.
5. REF. ASSLY DRG. NO. 1209-01.318-024 REF.2.

SECTION B-B
SCALE 1:2

SECTION A-A
SCALE 1:2

[illegible]



NOTE:

1. ALL DIMENSIONS ARE IN MM.
2. 8 NOS. - ϕ 14 HOLE
3. ALL SHARP EDGES TO BE REMOVED.
4. PU PAINT BLACK GREY RAL7021.
5. THIS DRG. SUPERSEDE DRG. NO.1209-01.418-027.
6. REF. ASSLY DRG. NO. 1209-01.318-024 REF.4.

SECTION B-B
SCALE 1:2

SECTION A-A
SCALE 1:2

परिवर्तन संख्या ALT. NO.		वर्णन DESCRIPTION		रिवाइज REVISED	अधिकृत DGN/DRN	ANGAD	चित्ररंजन रेलइंजन कारखाना CHITARANJAN LOCOMOTIVE WORKS, INDIA	
आदेश - प्रमाण मा. नं. 0073 अ. नं. 1902		अधिकृत - मा. नं. 2100 / अ. नं. 2700 UNSPECIFIED TOLERANCE TO IS 2702 / ISO 2704		TOL CLS	समीक्षित व.अ. REVIEWED SE/SME	प्रमाण HAL	STEEL	प्रति भार कि. ग्र. W. 1400 X 10
समूह-रेलवे वि. नं. 012 / अ. नं. 12503 WELDING SYMBOLS TO IS 813 / ISO 2553		अनुमोदित व.अ. APPROVED DYCEE		दिनांक DATE	19-12-17	वर्णन DESCRIPTION		
ग्रेड नं. GRADE NO.		R2		रेलवे अनुपात SCALE		1:5		
परिचय SYMBOL		R2		संदर्भ / REF ROSO LT. NO. EL/32.85 DTD 15.11.17		आखण संख्या DRAWING NO		
परिवर्तन संख्या ALTERATION NO.		0		परिचय संख्या SYMBOL		1209-01.418-032		
पृष्ठ संख्या PAGE		1		पृष्ठ संख्या PAGE		1		