अनुसंधान अभिकल्प और मानक संगठन
लखनऊ– 226011
Tele/Fax : 0522-2452581
E-mail:dirpnloco@gmail.com

सत्यमेव जयते

Government of India
Ministry of Railways
Research, Designs & Standards
Organization,
LUCKNOW - 226011

No. EL/3.2.15/3-phase Dated: As Signed

Principal Chief Electrical Engineer,
- Central Railway, Mumbai CST – 400 001.
- Northern Railway, Baroda House, New Delhi 110 001.
- North Central Railway, Hastings Road, Allahabad- 211001
- North Eastern Railway, Gorakhpur-273001
- Eastern Railway, Fairlie Place, Kolkata -700 001.
- East Central Railway, Hazipur-844101.
- East Coast Railway, Chandrashekharpur, Bhubaneshwar-751016.
- Southern Railway, Park Town, Chennai-600 003.
- South Central Railway, Secunderabad-500 371.
- South Eastern Railway, Garden Reach, Kolkata -700 043.
- South Western Railway, 4th Floor, Laxmi Balakrishna Square Complex, Railway Station Road, Hubli- 580 020 (Karnataka).
- South East Central Railway, Bilaspur-495004
- Western Railway, Churchgate, Mumbai-400 020.
- West Central Railway, Jabalpur-482001.
- Chittaranjan Locomotive Works, Chittaranjan-713 331 (WB)
- Banaras Locomotive Works, Varanasi-221 004.
- Patiala Locomotive Works, Patiala-147001

SPECIAL MAINTENANCE INSTRUCTION No.
RDSO /2006 /EL/SMI/0242, REV. 3 Dated 02.02.2023

1. Title:

Maintenance Practices of Under slung Compressor mounted on WAP-5, WAP-7 & WAG-9/WAG 9H/HC class of Electric Locomotive to avoid falling down of the compressor unit on line. Standardization of safety wire rope arrangement of under slung compressor mounted on WAP-5, WAP-7 & WAG-9/WAG 9H/HC class of Electric Locomotive.

2. Brief History :

The original motor compressor set of 3-phase imported Electric Locomotives Type WAP-5 and WAG-9 was D & M make type 2A 320D two stage 3 cylinder compressor. The total weight of the compressor unit was 535 kg. Each Compressor is provided with two fixing mounts towards motor end and the third mount was provided towards compressor end.

2.1 There was high temperature rise observed during normal operation in service and the compressor motor was drawing high current. To rectify the problem, M/s. Bombardier Transport have modified the compressor unit by installing a fan on the compressor unit, with the addition of fan, the total weight of motor compressor unit have increased to 560 kgs. approximately.

RAJESH KUMAR
Digitally signed by RAJESH KUMAR
Date: 2023.02.02 17:56:25 +05'30'

After the indigenisation of the 2A320D compressor, the overall weight of the compressor motor set along with KEC make motor have increased to 660 kgs. approximately. The center of gravity of the motor compressor assembly is on the flange joints between the motor and compressor unit.

2.2 The motor compressor unit is mounted on the anti-vibration mount. The Anti Vibration Mounts (AVM) are specially designed for under slung compressor to take various dynamic loads and reduce the vibration of compressor to attenuate the vibration that develops due to the moving mass in the compressor type 2A320D, the soft type flexible mount of hardness IRHD 40 to 44 is provided on compressor end mounting bracket and two centre mount of having higher hardness of AVM of hardness IRHD 70 to 74 are provided.

The periodicity of replacement of resilient mount for Compressor type 2A 320D is 6 years as per Clause 5 of Devies & Metcalfe maintenance catalogue No. A666/6.

2.3 M/s. Elgi have developed the indigenized compressor model RR 20100 and RR20100 CGM for 3-phase Electric Locomotive in the year 1998 with 1745 LPM capacity, the total weight of the RR 20100 and RR 20100CG(M) was initially 680 kgs and 675 kgs. After modification to overcome the failure of breakage of their brackets, the total weight of the Motor compressor unit along with modified bracket assembly gone up to 700 kgs. The mounting arrangements are three points similar to D&M make compressors. M/s. Elgi has provided soft AVM of 60 Shore 'A' hardness towards compressor end bracket and two numbers harder AVM of 80 Shore 'A' hardness towards motor end brackets to reduce the vibration.

For M/s. Elgi Type RR 20100 and RR200CG(M) Compressors the average working life of resilient mount is expected not to be less than 18 months .The self-life of mounts declared by M/S Elgi is 24 months.

2.4 M/s. Elgi have developed the indigenized compressor model RR RR20100 CC for 3-phase Electric Locomotives in the year 2011 with 1745 LPM capacity and the total weight is 470 kgs. M/s ELGI has provided wire rope isolator, the Wire rope isolators are used in place of AVMs. The mounting arrangement is kept three points. Wire rope isolators is expected to reduce vibration transfer to mounting. Use of wire rope isolators & taper lock arrangement between compressor & motor will reduce maintenance requirement.

2.5 M/s AIMPL have developed the indigenized compressor model RR1750 for 3-Phase electric locomotives in the year of 2018 with 1745 LPM capacity, the total weight is 596 approx. The mounting arrangements are three points similar to D&M make compressors. M/s. AIMPL has provided AVM of 70 Shore 'A' hardness towards compressor end bracket and two number AVMs of same hardness i.e. 70 Shore 'A' hardness towards motor end brackets to reduce the vibration. For M/s. AIMPL Compressors the average working life of resilient mount is expected not to be less than 18 months. The self-life of mounts declared by M/S AIMPL is 24 months.

2.6 Compressor Mounting Legs original Designs:

a) For WAG-9 Locomotives:

i) Compressor End mounting Leg as per ABB Drg. No. IB021-00452 – 1 No.
ii) Motor End Mounting Leg Assembly (R.H.) as per ABB Drg. No. IB-026-00910.
iii) Motor End Mounting Leg. Assembly (L.H.) as per ABB Drg. No. IB 026-00909.

b) For WAP-5 Locomotives:

i) Compressor End Mounting leg with beam assembly Drg. No. IA 026-00425
ii) Motor End Mounting leg assembly ABB Drg. No. IA 026 – 00424.

M/s. ABB vide their report No. IA 06.01.01 dated 20.01.95., have carried out finite element Analysis of compressor mounting legs with software package COSMOS / M, taking a weight of motor compressor units 535 kgs.

2.7 Failure of compressor brackets

There were few cases of failure of compressor bracket, leading to falling of the motor compressors unit on run due to non-replacement of AVM in time and poor workmanship by CLW.

2.8 During interaction with Railways, it has been informed that fitment of safety sling cannot be ensured as per routing mentioned in Annexure-III of SMI 242 Rev 2. Owing to problem of routing of the safety sling, most of the PUs/Railways are using wire rope arrangement in place of safety sling. Therefore, it has been decided that the safety sling shall be replaced with wire rope & wire rope clip arrangement as per CLW drawing no. 1209-02-427-420 Alt 0(or latest) and 1209-02-427-419 Alt 0 (or latest) and thus, same has been incorporated in SMI 242 Rev 3.
The drawing no. 1209-02.427-424 Alt 0 (or latest) for modified Bracket Assembly for safety sling and drawing no. 1209-02.327-423 Alt 0 (or latest) for Modified layout with new location dimension of safety sling Brackets for under slung compressor.

3. Object:

To avoid such type of failure in future, the design of the loco mounting bracket (original imported ABB Locomotives both WAP-5, WAG-9 and indigenously developed locomotives type WAP-5, WAP-7 and WAG-9 class of three phase AC Loco) was strengthened as per SMI No. RDSO/2006/EL/SMI/0242, Rev. '2' 31.12.2018 and regular maintenance practice were also reiterated. Safety wire rope were also provided as per SMI 0242, Rev '2' to prevent the compressor from falling on track due to breakage of brackets. However, it has been reported by Zonal Rlys/CLW that different Railways are following different practices for the use of slings (Wire rope). The object of this SMI 0242 Rev. '3' is to

(1) To standardize the provision of safety wire rope for under slung compressors of three phase locomotives.

(2) To reiterate the instructions given by SMI No. RDSO/2006/EL/SMI/0242, Rev '2' 31.12.2018.

4. Modified Instructions:

The following instructions are to be followed:-

4.1 Action to be taken by CLW, BLW & PLW:

For existing Locomotives under production: -

(a) For WAP 5 locomotives

Mounting legs for Compressor Motor set should be strictly manufactured as per CLW's Drgs. No. –

i) 1210-02.227 – 003 – for compressor end leg.
ii) 1210-02.327-011 – for motor end leg.

(b) For WAP-7 & WAG-9/WAG 9H/HC

Mounting legs should be manufactured strictly as per CLW's Drgs. No.

i) 1209-02.327 – 056 Alt 5 (or latest) – for compressor end leg.
ii) 1209-02.327-063 Alt 2 (or latest) -for motor end leg LHS.
iii) 1209-00.327-441 Alt 0 (or latest)- for motor end leg RHS.
iv) 1209-00.327-437 Alt 0 (or latest)- Strengthening bracket Assembly.
v) 1209-00.327-433 Alt. 0 (or latest)- Modified Base Support Bracket Assembly

There are few cases, where the clearance between the compressor end mounting leg of WAP-7 & WAG-9/WAG 9H/HC class locomotive with the bogie frame was only 70 mm. This is causing breakage of mounting leg due to hitting by bogie frame while negotiating curve.

The clearance between compressor end leg with bogie frame was 170 mm in imported WAG-9 locomotives On modified compressor end mounting leg, the 44 mm ribs and the angle plate of 10 mm have been provided with base plate. The total space occupied by ribs and angle plate are 54 mm (44 + 10 = 54 mm). Therefore, the clearance of compressor end mounting leg with Bogie frame should be 116mm (170-54 = 116mm) available with modified leg arrangement. Therefore, JIG and fixtures should be used to maintain the geometry of the compressor mounting hole distance.

(c) Welding:

i) All brackets of under slung equipment shall be treated, as critical and adequate care should be taken for welding.

ii) Remove all the burrs and sharp edges and corners.

iii) Edge preparation of the plates to be made for proper welding.

iv) Welding should be done as per AS: 1554.1 with ER70-S4 electrodes.

v) All critical welding locations should be inspected for proper welding.

vi) Sample base Radiographic test of welded joints should be carried out.

vii) Dye penetration test should be done on all the mounting legs of under frame welding location before dispatch of the locomotive from CLW/BLW/PLW.

(d) Mounting of Compressor:

- Before mounting of the compressor on mounting leg geometry of the hole distance to be checked.
- The distance between mounting holes of motor end brackets, between centerlines of holes = 550 ±1 mm.
- The distance between middle line of centre hole of motor end bracket and compressor end bracket =1210 ±1 mm.
- Also ensure the compressors bracket mounting hole geometry.
- In case hole geometry of mounting legs and compressors bracket are not matched, there will be undue stress due to inclination of M-16 securing bolts.
- To mount the compressor on locomotive, the compressor Motor unit should be supported on a pallet or cradle by fork lift and then raised to the appropriate height close the loco bracket of compressors and then moved horizontally to get its mounting point above the mounting hole of the bracket, then finally lowered into its operational position.
- Ensure the M-16 bolting holes of compressor brackets as well as loco brackets hole coincide with the centre of the AVM.
- Ensure the scribe lines on the mount carrier coincide with 'V' groves on the central tube of AVM before fitting the re-bound nut.
- Ensure position of rebound/nylock nut, short side face of the re-bound nut towards rubber faced and the two flat edges should be perpendicular to the scribed two lines on mount carrier.
- Tighten the M-16 bolt through the mount to hold the rebound/nylock nut in position with torque wrench with a torque of 80 N-m.
- Tighten the M-12 bolt of AVM by toque wrench with a torque value of 87 N-m.

(e) Resilient Mount:

(i) Ensure the hardness of rubber mounts before mounting.

Mount	Type 2A320D	Type RR20100	Type RR 20100CG(M)	Type RR1750
Motor End – 2 nos.	70-74 HRD	80 HRD	80 HRD	70HRD
Compressor End- 1 No.	40-44 HRD	60 HRD	60 HRD	70HRD

(ii) Wire rope isolators are used in place of AVMs for Compressor model type RR 20100 CC. Use of Wire rope isolators is expected to reduce maintenance requirement. Wire rope isolators shall be replaced on

condition basis (for any physical damages). Replacement periodicity of wire rope isolator will be decided after gaining adequate field performance.

4.2 Action to be taken by Electric Loco Sheds/Loco workshops:

Whenever the Loco touches Shed ensure the following: -

i) Condition of AVM for any surface crack or deformation of rubber resilient.

ii) Check & ensure no gap between rubber mount and re-bound nut, in case gap exist between rubber mount and re-bound/nylock nut, it indicates that rubber is permanently set replace the mount.

iii) Replace the anti vibration mount within a specified period of time as mentioned in the maintenance manual.
Average working life of mount –
18 months for indigenous AVMs & 3 Years for Imported AVMs.

iv) For replacement of resilient mount in position, follow the following procedures: -

For motor end bracket- 2 Nos.

a) Unscrew the M-16 main securing bolt and rebound/nylock nut from both the AVM. This will disable the mechanical link between the loco bracket and motor end compressor unit bracket.

b) Unscrew the M-12 mounting bolts of AVM holding with bracket.

c) Support the motor end of the compressor by wooden block.

d) Lift the motor end about 25 to 30 mm maximum. Don't lift more than 30 mm otherwise the motor end will collide with loco bracket. The compressor unit will pivot about the compressor end M-16 bolt of AVM, which is not removed.

e) Slide out the old mounts and replace them with new ones. Ensure that the mounts are located in centre line of 17mm dia. hole loco bracket and the fixing 12mm dia holes of AVM are aligned with motor end bracket of compressor unit.

f) Identification mark of the date of fitment to be marked with paint or write on the AVMs itself with permanent marker pen. Record the date of replacement of AVM to be maintained.

g) Insert the M 12 bolts from the under side of the mount and fit the nut by hand tight.

h) Insert the M-16 bolts from the under side and coincide and torque the M-16 nut with top washers.

For compressor End Bracket :

a) Unscrew the M-16 main securing bolt and rebound/nylock nut from the soft AVM. This will disable the mechanical link between the loco bracket and compressor bracket.

b) Unscrew the M-12 mounting bolts of AVM holding the compressor bracket.

c) Lift the compressor end by about 25-30 mm. The compressor will pivot about two motor ends M-16 bolts of AVM.

d) Slide out the old mount and replace it with new one.

e) The new resilient mount to be mounted and marked with paint.

f) Ensure the new mount centrally located with centerline of 17dia. hole and the M-12 fixing holes are lined up with 12 dia holes.

g) Before fitting the rebound/nylock nut, ensure scribe two lines on the mount carrier coincide with V grooves on the central tube of mount.

h) Position the rebound/nylock nut, short side should be towards rubber faced, such that the two flat edges are perpendicular the scribed two lines of the mount carrier. This will ensure that peaks on the nut edge engage with the grooves. Torque the M-16 bolt to 80 N-m keeping the rebound/nylock nut hold in position.

v) For Strengthening of the Unmodified Legs:

a) For strengthening of the mounting leg after increased weight of compressor was already circulated to Railways. The copy of the modified Drgs. for WAP-5 Locomotives, compressor end bracket Drg. No. IA 026-00425 for Motor end brackets Drg. No. IA 02600424 is enclosed herewith.

b) To strengthen the original mounting legs for WAG-9/WAG 9H/HC and WAP-7 class of locomotives are also to be done as per CLW's Drg. No. 1209-02-327056 Alt 5 (or latest) for compressor end leg and Drg. No. 1209-02-327.063 Alt 2 (or latest), 1209-00.327-441 Alt.0 (or latest), 1209-00.327-433 Alt. 0 (or latest)- Modified Base Support Bracket Assembly,1209-00.327-437 Alt .0 (or latest) for motor end. Fitment to be done as per next Assembly drawing No. 1209-02.027-125 or latest. The following points are to be checked: -

c) After welding angle plate on the mounting base, proper clearance to be ensured between angle plate of compressor mounting leg and compressor bracket, after mounting the compressor on the locomotive mounting

legs. In case the clearance is not available grind the vertical surface of the angle plate. Otherwise due to dynamic loading the compressor bracket rubes with angle plate may cause undue stress.

5. Provision of Safety Wire rope:

Safety Wire rope length for under slung compressor as 17 meter per locomotive and 42 nos. wire rope clip per locomotive have been specified in CLW drawing.

CLW drawing no. 1209-02.427-420 Alt 0 (or latest) for Wire rope and drg no. 1309-02.427-419 Alt 0 (or latest) for Wire rope clip (Bull dog Grip FXGX8) for underslung compressor are attached as annexure I & II respectively.

The Sketch for the provision of safety Wire rope is attached as Annexure –III
Following precautions must be taken while providing the wire rope

i) Safety Wire rope is free from any tendency to kink.

ii) The safety wire rope should not bend around any sharp corners that might damage the rope or reduce its effective strength.

iii) The length of the safety wire rope should be so adjusted to avoid the weight of the motor compressor unit coming on the safety wire rope directly.

iv) Whenever locomotive touches the shed the sling must be checked for its proper condition

6. Application to:

3-Phase Electric Locomotives Type WAP-5, WAP-7 & WAG-9/WAG 9H/HC class of locomotives.

7. Agency of Implementation:

Production unit (CLW, BLW & PLW), Electric Loco, Sheds/POH/MTR Workshops:

8. Periodicity of Implementation:

Anti Vibration Mount *(AVM)* shall replace as under:-

18 months for indigenous AVMs &

3 Years for Imported AVMs.

The tightness torque of the M16 bolts of the AVM mount shall be 80 Nm. This should be checked by torque wrench during every schedule.

Welding-

Cyclic checking of all the welded joints of mounting arrangement should be carried out by RDPT in every schedule.

9. The list of attached Drawings are as under:

i) 1210-02.227-003
ii) 1210-02.327-001
iii) 1209-02.327-056 Alt .5
iv) 1209-02.327-063 Alt. 2
v) 1209.00.327-441 Alt 0
vi) 1209-00.327-433 Alt 0
vii) 1209-00.327-437 Alt 0
viii) IA 026-00425
ix) IA 026-00424
x) 1209-02.427-424
xi) 1209-02.327-423
xii) 1209-02.427-420
xiii) 1209-02.427-419

RAJESH KUMAR Digitally signed by RAJESH KUMAR Date: 2023.02.02 17:54:33 +05'30'

(Rajesh Kumar)
for Director General Std./Electrical.

Encl: Annexure I, II & III.

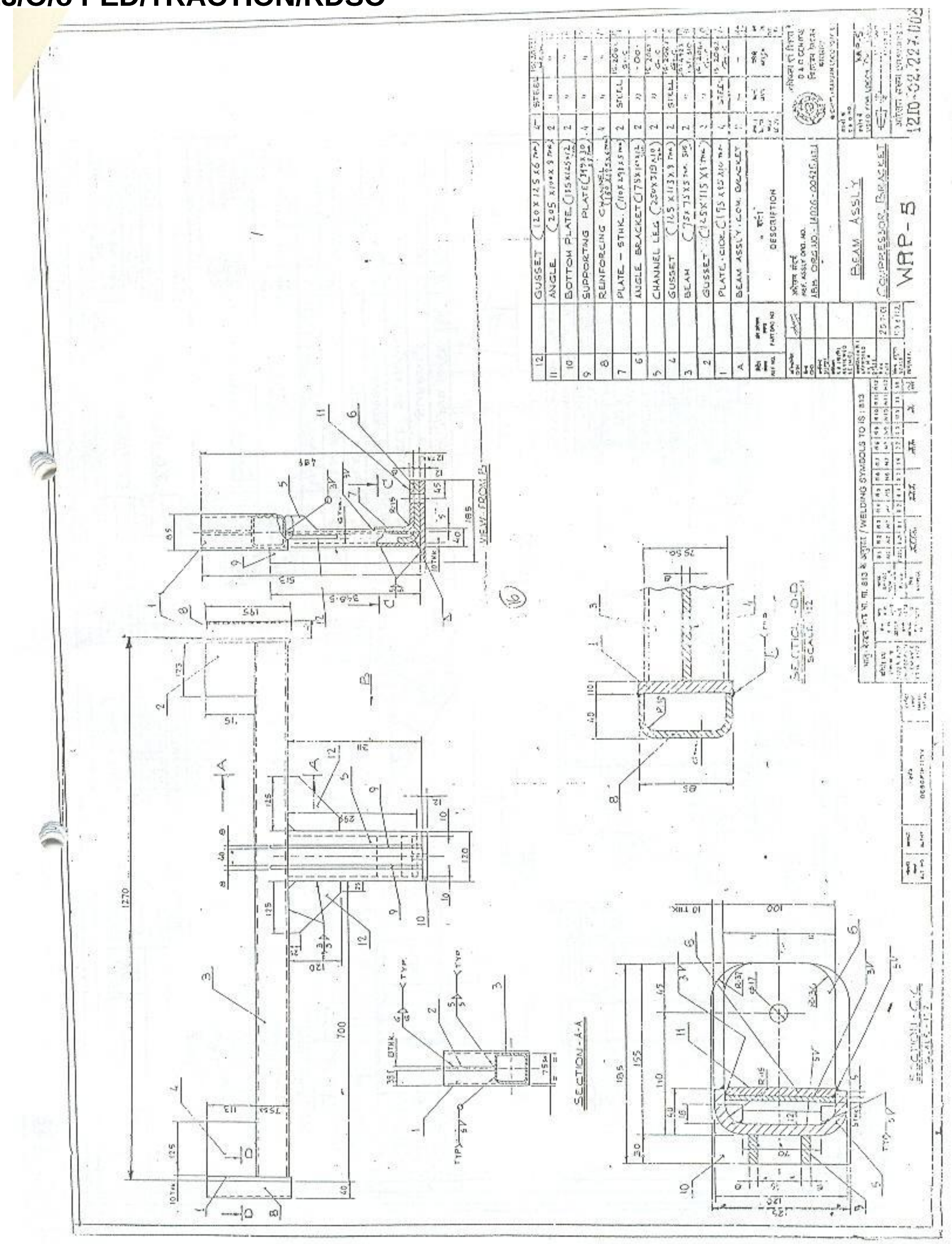
Copy to : As per Standard Mailing List No. EL/M/0019

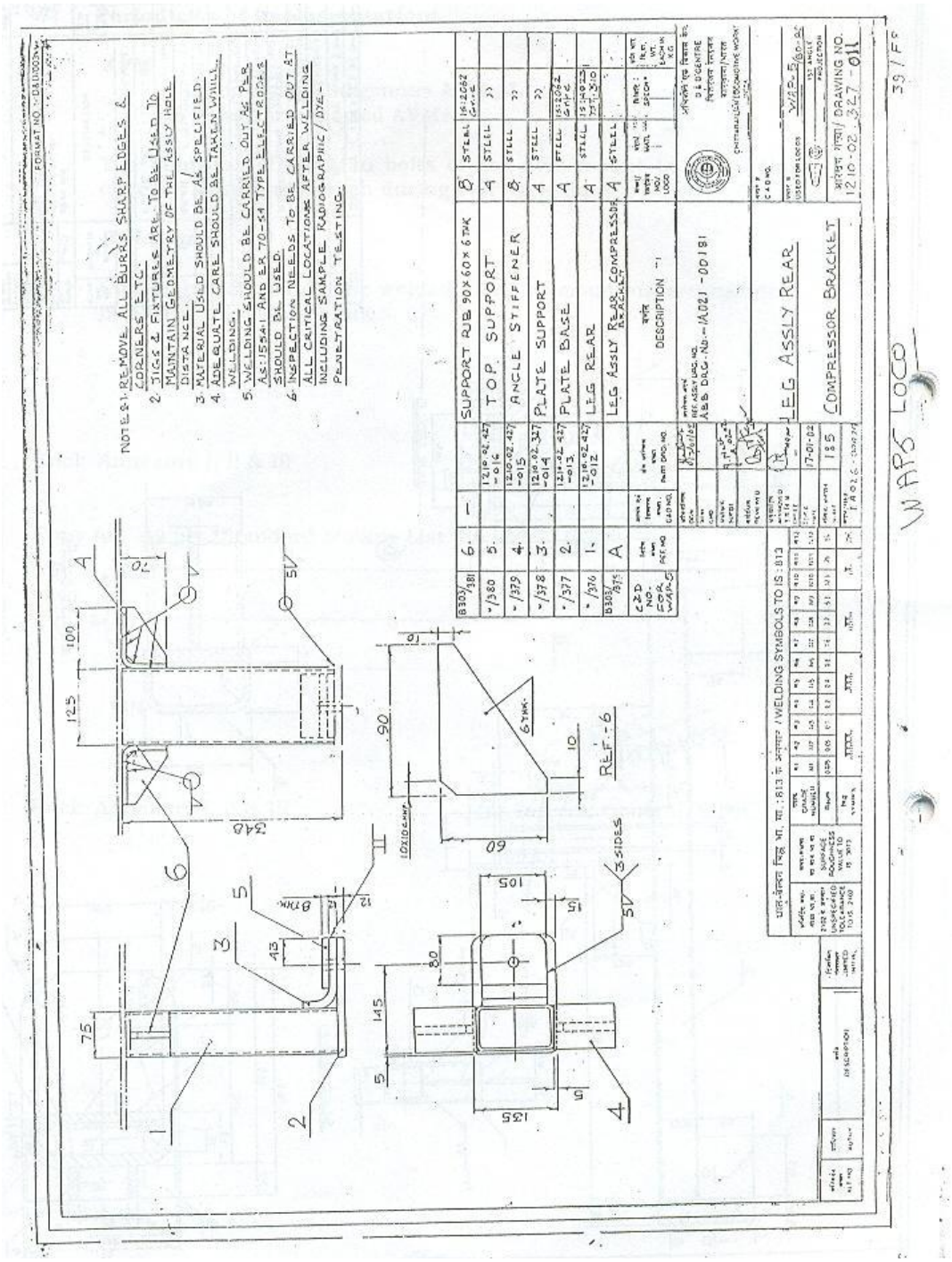
PIN-

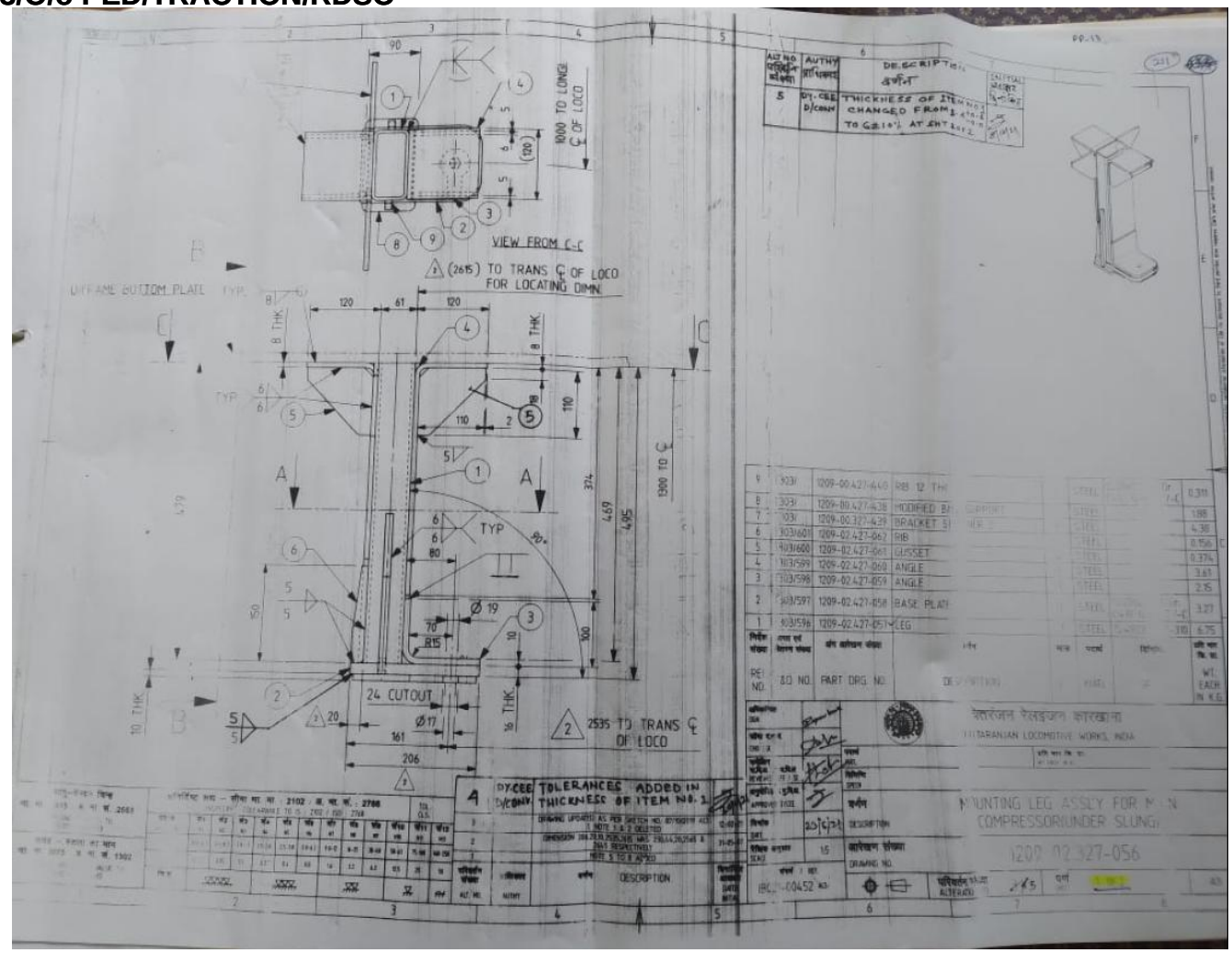
RAJESH KUMAR Digitally signed by RAJESH KUMAR Date: 2023.02.02 17:55:32 +05'30'

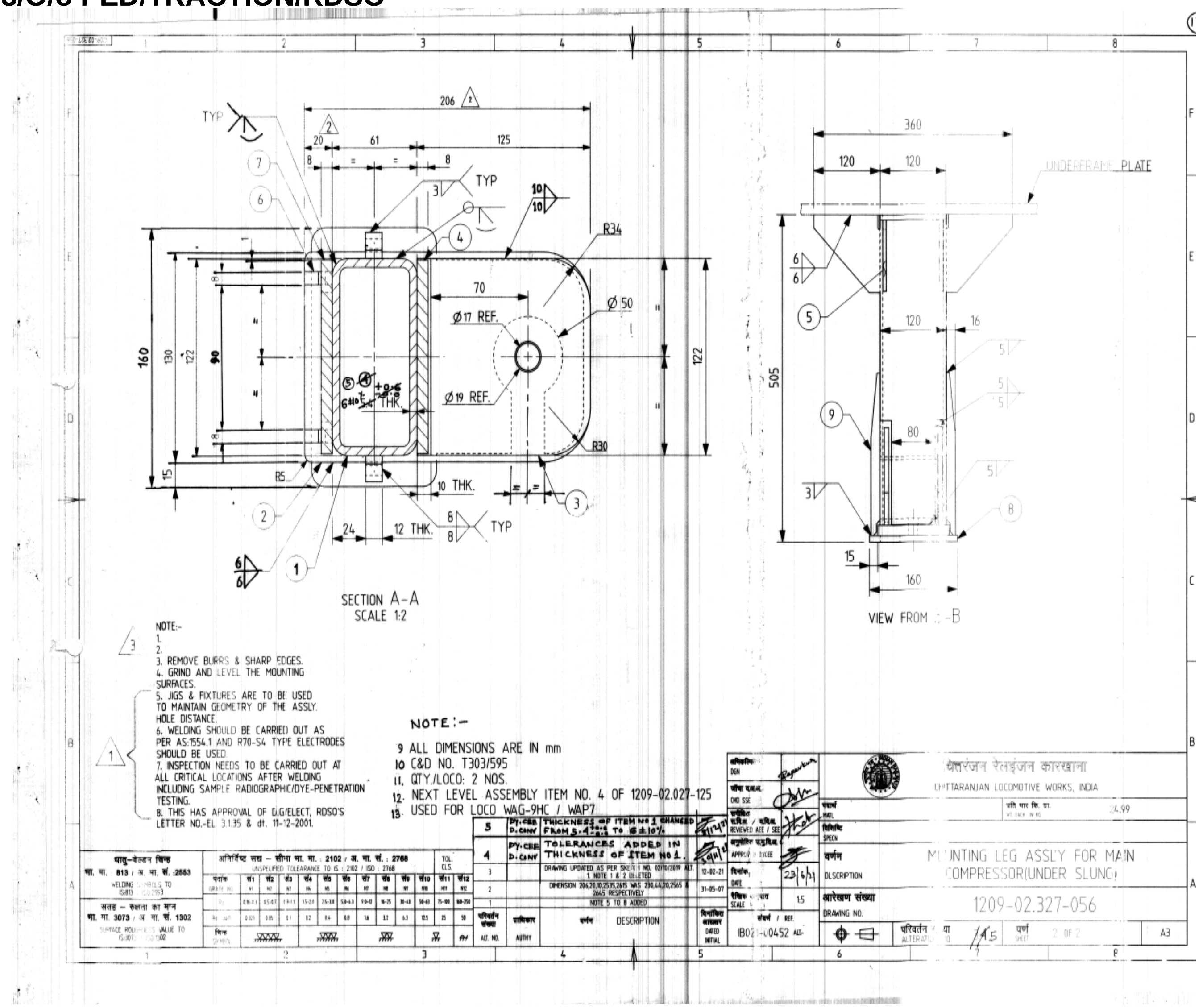
(Rajesh Kumar)
for Director General Std./Electrical.

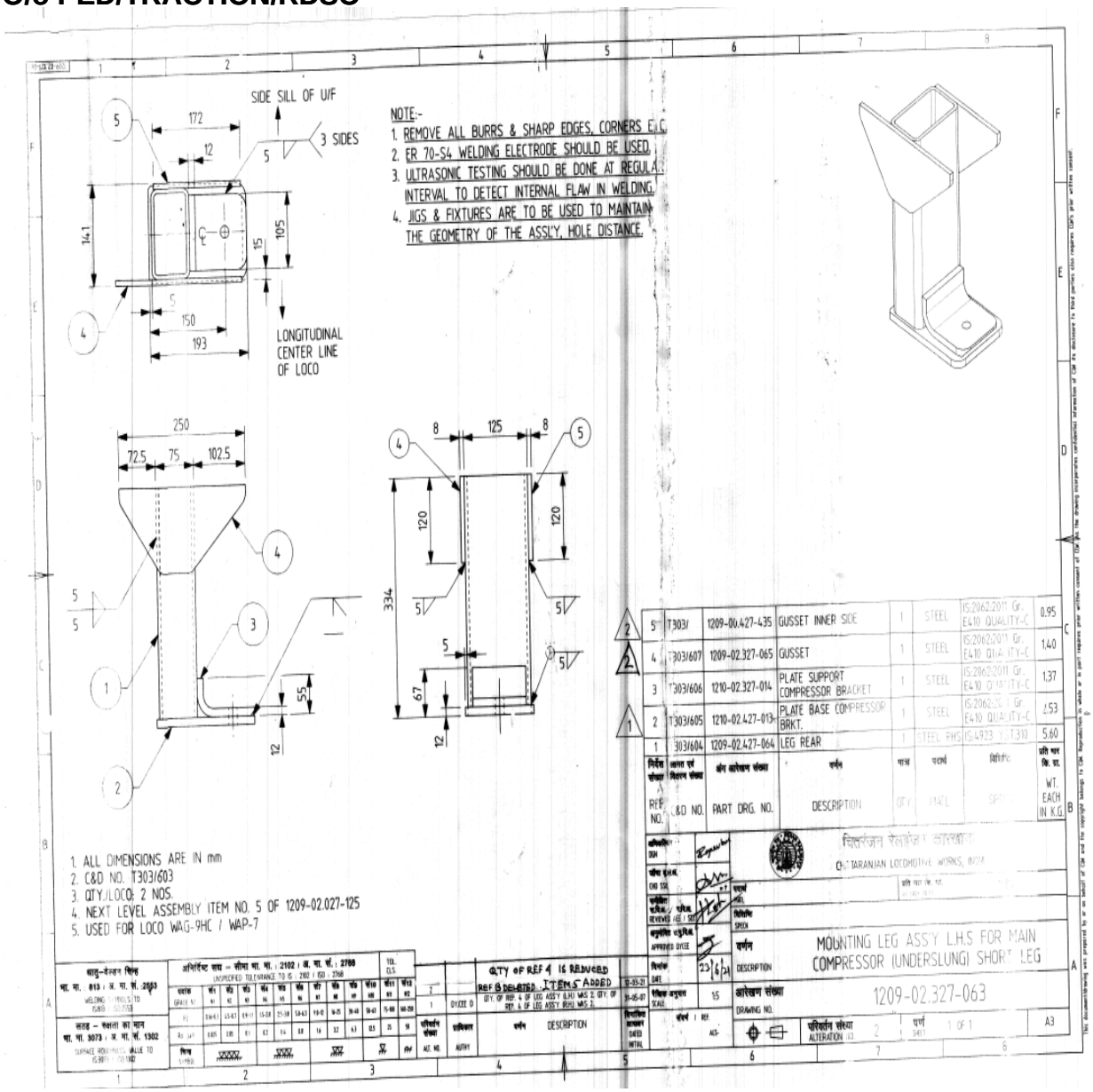
Encl: Annexure I II & III


BEAM ASSLY
COMPRESSOR BRACKET
WRP-5
SECTION-A-A
SECTION-D-D
VIEW FROM B


NOTES:
1. REMOVE ALL BURRS SHARP EDGES & CORNERS ETC.
2. JIGS & FIXTURES ARE TO BE USED TO MAINTAIN GEOMETRY OF THE ASSLY WITHIN DISTANCE.
3. MATERIAL USED SHOULD BE AS SPECIFIED.
4. ADEQUATE CARE SHOULD BE TAKEN WHILE WELDING.
5. WELDING SHOULD BE CARRIED OUT AS PER IS:15541 AND IS:7310-1 TYPE ELECTRODES SHOULD BE USED.
6. INSPECTION NEEDS TO BE CARRIED OUT AT ALL CRITICAL LOCATIONS AFTER WELDING INCLUDING SAMPLE RADIOGRAPHIC / DYE-PENETRATION TESTING.
SUPPORT RIB 90X60X6 THK
TOP SUPPORT
ANGLE STIFFENER
PLATE SUPPORT
PLATE BASE
LEG REAR
LEG ASSLY REAR COMPRESSOR BRACKET
LEG ASSLY REAR
COMPRESSOR BRACKET
WAP5 LOCO
REF-6
3 SIDES
10X10 CHAMF
6 THK
B308/381
B308/375
C&D NO. FOR WAP-5

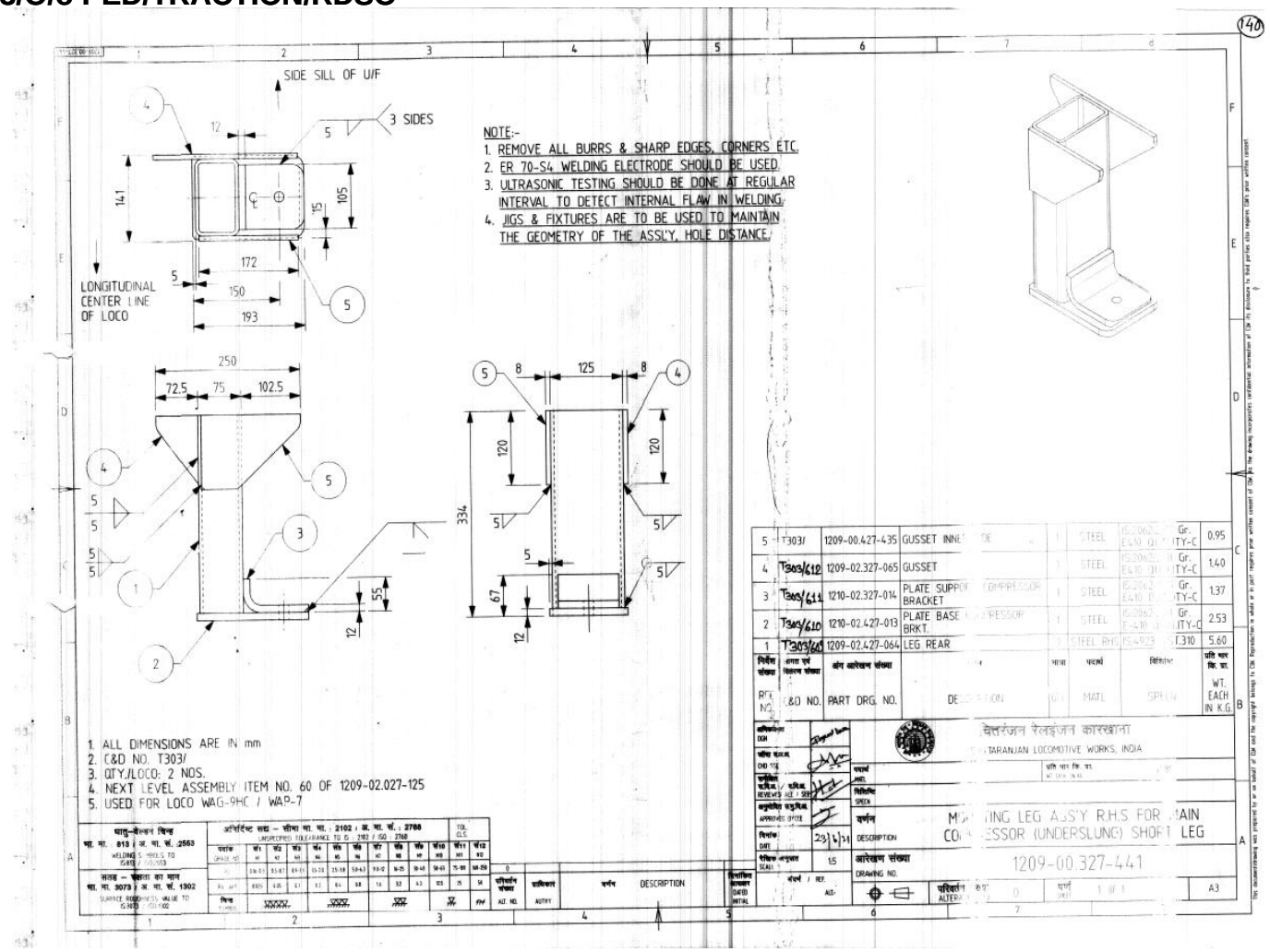

VIEW FROM C-C
(2615) TO TRANS ℄ OF LOCO FOR LOCATING DIMN.
24 CUTOUT
2535 TO TRANS ℄ OF LOCO
DY.CEE D/CONV. TOLERANCES ADDED IN THICKNESS OF ITEM NO. 1
MOUNTING LEG ASSLY FOR M-N COMPRESSOR UNDER SLUNG
1209-02.327-056

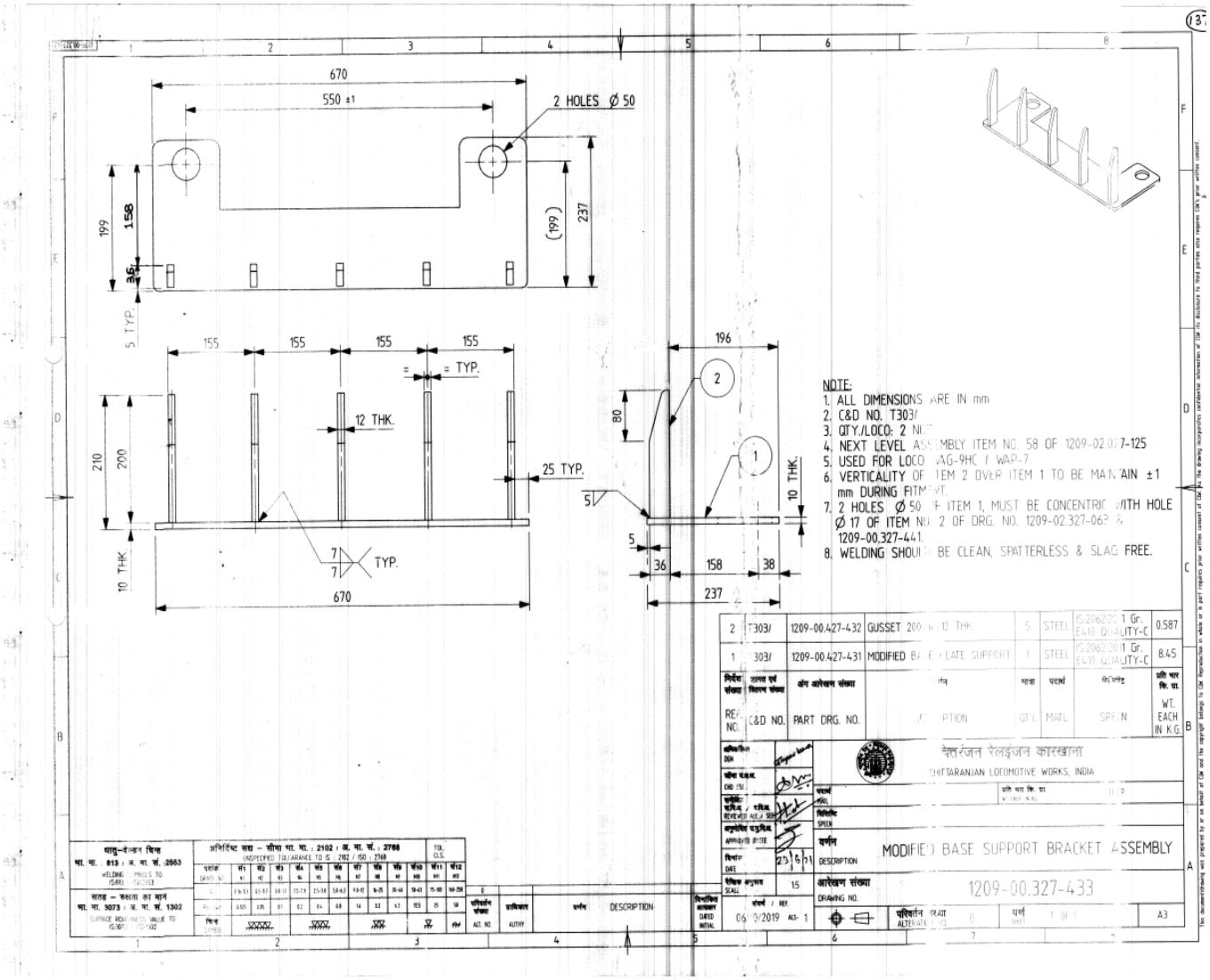

SECTION A–A
SCALE 1:2
VIEW FROM :–B
UNDERFRAME PLATE
NOTE:–
1.
2.
3. REMOVE BURRS & SHARP EDGES.
4. GRIND AND LEVEL THE MOUNTING SURFACES.
5. JIGS & FIXTURES ARE TO BE USED TO MAINTAIN GEOMETRY OF THE ASSLY. HOLE DISTANCE.
6. WELDING SHOULD BE CARRIED OUT AS PER AS:1554.1 AND R70-S4 TYPE ELECTRODES SHOULD BE USED.
7. INSPECTION NEEDS TO BE CARRIED OUT AT ALL CRITICAL LOCATIONS AFTER WELDING INCLUDING SAMPLE RADIOGRAPHIC/DYE-PENETRATION TESTING.
8. THIS HAS APPROVAL OF D.G/ELECT, RDSO'S LETTER NO.-EL 3.1.35 & dt. 11-12-2001.
NOTE:–
9 ALL DIMENSIONS ARE IN mm
10 C&D NO. T303/595
11. QTY./LOCO: 2 NOS.
12. NEXT LEVEL ASSEMBLY ITEM NO. 4 OF 1209-02.027-125
13. USED FOR LOCO WAG-9HC / WAP7
चित्तरंजन रेलइंजन कारखाना
CHITTARANJAN LOCOMOTIVE WORKS, INDIA
MOUNTING LEG ASSL'Y FOR MAIN COMPRESSOR(UNDER SLUNG)
1209-02.327-056
DESCRIPTION
DRAWING NO.
IB021-00452
A3

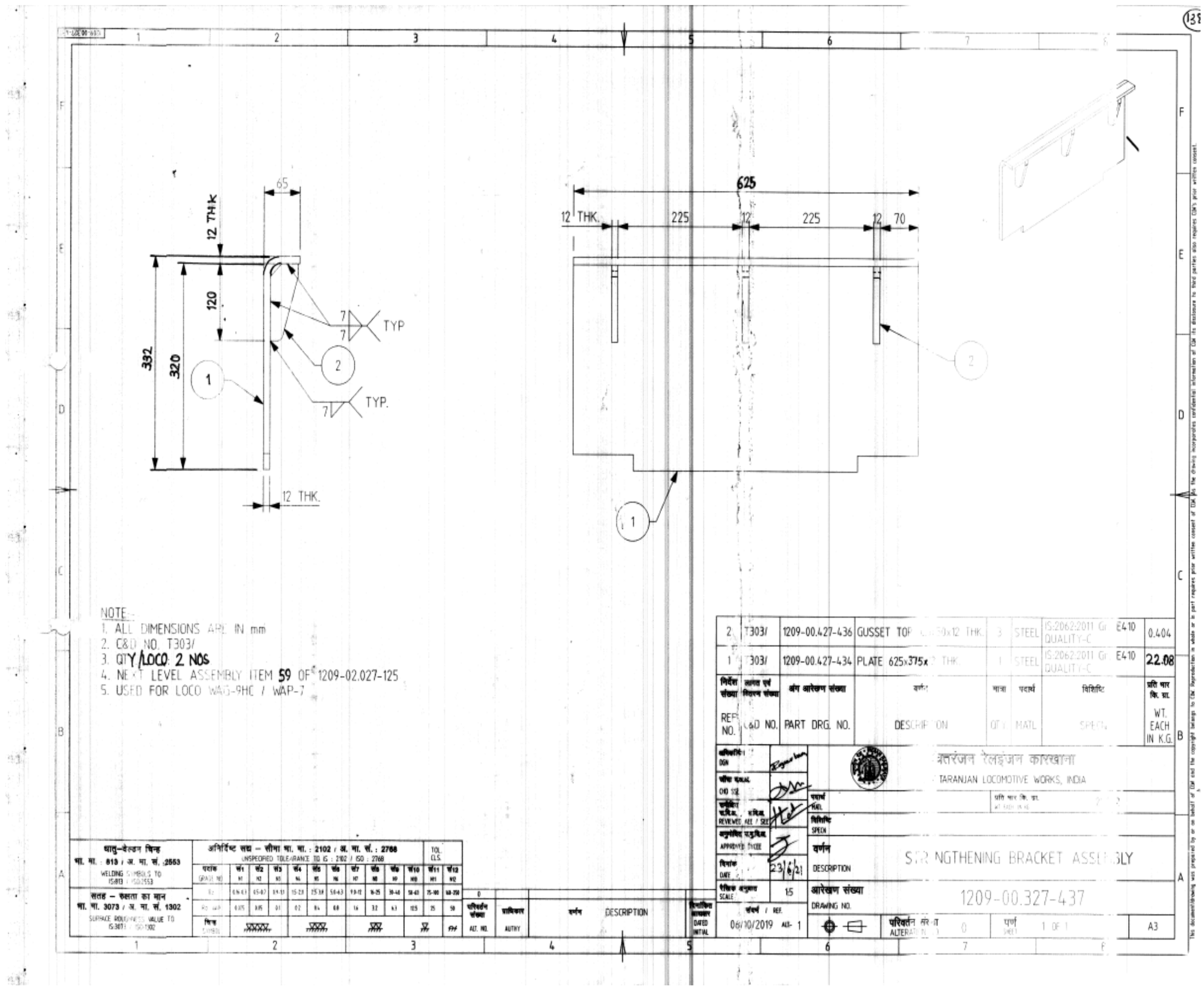


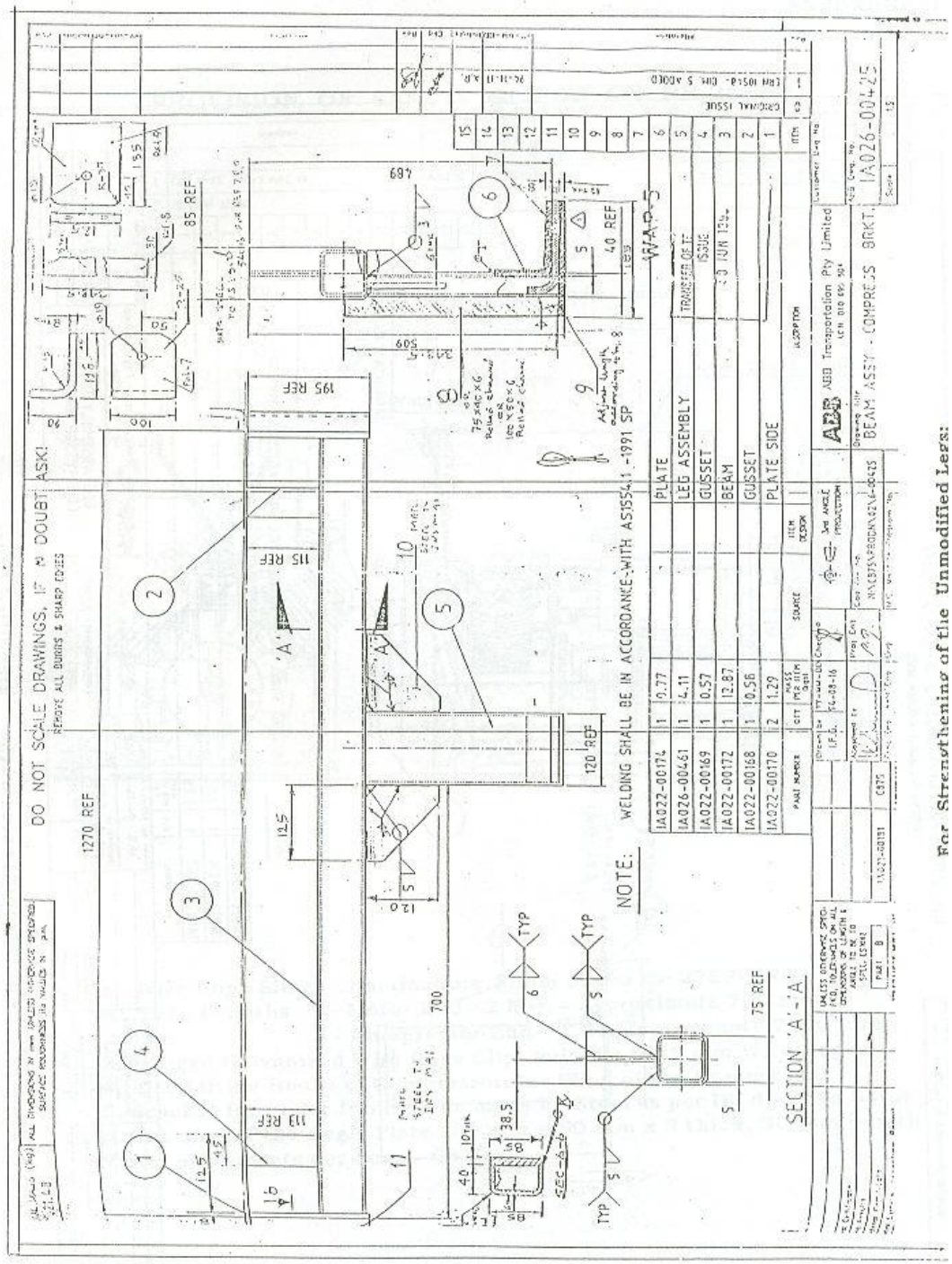
REF NO.	C&D NO.	PART DRG. NO.	DESCRIPTION	QTY.	MATL	SPEC	WT. EACH IN K.G.
5	T303/	1209-00.427-435	GUSSET INNER SIDE	1	STEEL	IS:2062:2011 Gr. E410 QUALITY-C	0.95
4	T303/607	1209-02.327-065	GUSSET	1	STEEL	IS:2062:2011 Gr. E410 QUALITY-C	1.40
3	T303/606	1210-02.327-014	PLATE SUPPORT COMPRESSOR BRACKET	1	STEEL	IS:2062:2011 Gr. E410 QUALITY-C	1.37
2	T303/605	1210-02.427-013	PLATE BASE COMPRESSOR BRKT.	1	STEEL	IS:2062:2011 Gr. E410 QUALITY-C	2.53
1	303/604	1209-02.427-064	LEG REAR	1	STEEL PHS	IS:4923 GrT310	5.60

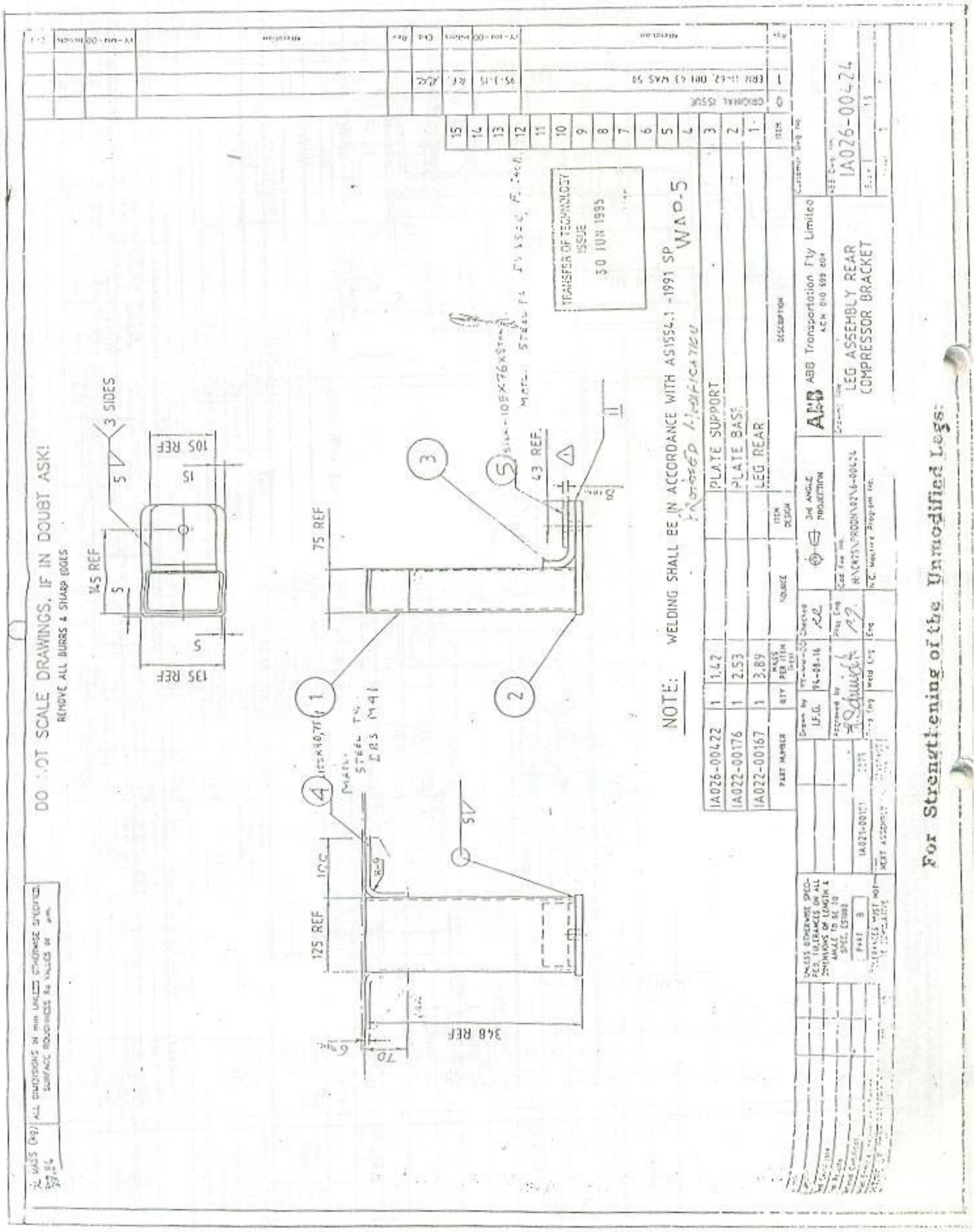
CHITTARANJAN LOCOMOTIVE WORKS, INDIA


SIDE SILL OF U/F
3 SIDES
NOTE:-
1. REMOVE ALL BURRS & SHARP EDGES, CORNERS ETC.
2. ER 70-S4 WELDING ELECTRODE SHOULD BE USED.
3. ULTRASONIC TESTING SHOULD BE DONE AT REGULAR INTERVAL TO DETECT INTERNAL FLAW IN WELDING.
4. JIGS & FIXTURES ARE TO BE USED TO MAINTAIN THE GEOMETRY OF THE ASSLY. HOLE DISTANCE.
LONGITUDINAL CENTER LINE OF LOCO
1. ALL DIMENSIONS ARE IN mm
2. C&D NO. T303/
3. QTY./LOCO: 2 NOS.
4. NEXT LEVEL ASSEMBLY ITEM NO. 60 OF 1209-02.027-125
5. USED FOR LOCO WAG-9HC / WAP-7
5 T303/ 1209-00.427-435 GUSSET INNE DE 1 STEEL IS:2062 E410 Gr. BTY-C 0.95
4 T303/612 1209-02.327-065 GUSSET 1 STEEL IS:2062 E410 Gr. BTY-C 1.40
3 T303/611 1210-02.327-014 PLATE SUPPOR BRACKET COMPRESSOR 1 STEEL IS:2062 E410 Gr. BTY-C 1.37
2 T303/610 1210-02.427-013 PLATE BASE BRKT. PRESSOR 1 STEEL IS:2062 E410 Gr. BTY-C 2.53
1 T303/60 1209-02.427-064 LEG REAR 1 STEEL RHS IS:4923 1.310 5.60
RFT NO. C&D NO. PART DRG. NO. DESCRIPTION QTY MATL SPECN. WT. EACH IN K.G.
तरंजन रेलइंजन कारखाना
TARANJAN LOCOMOTIVE WORKS, INDIA
DESCRIPTION MOUNTING LEG ASS'Y R.H.S FOR MAIN COMPRESSOR (UNDERSLUNG) SHORT LEG
1209-00.327-441
A3

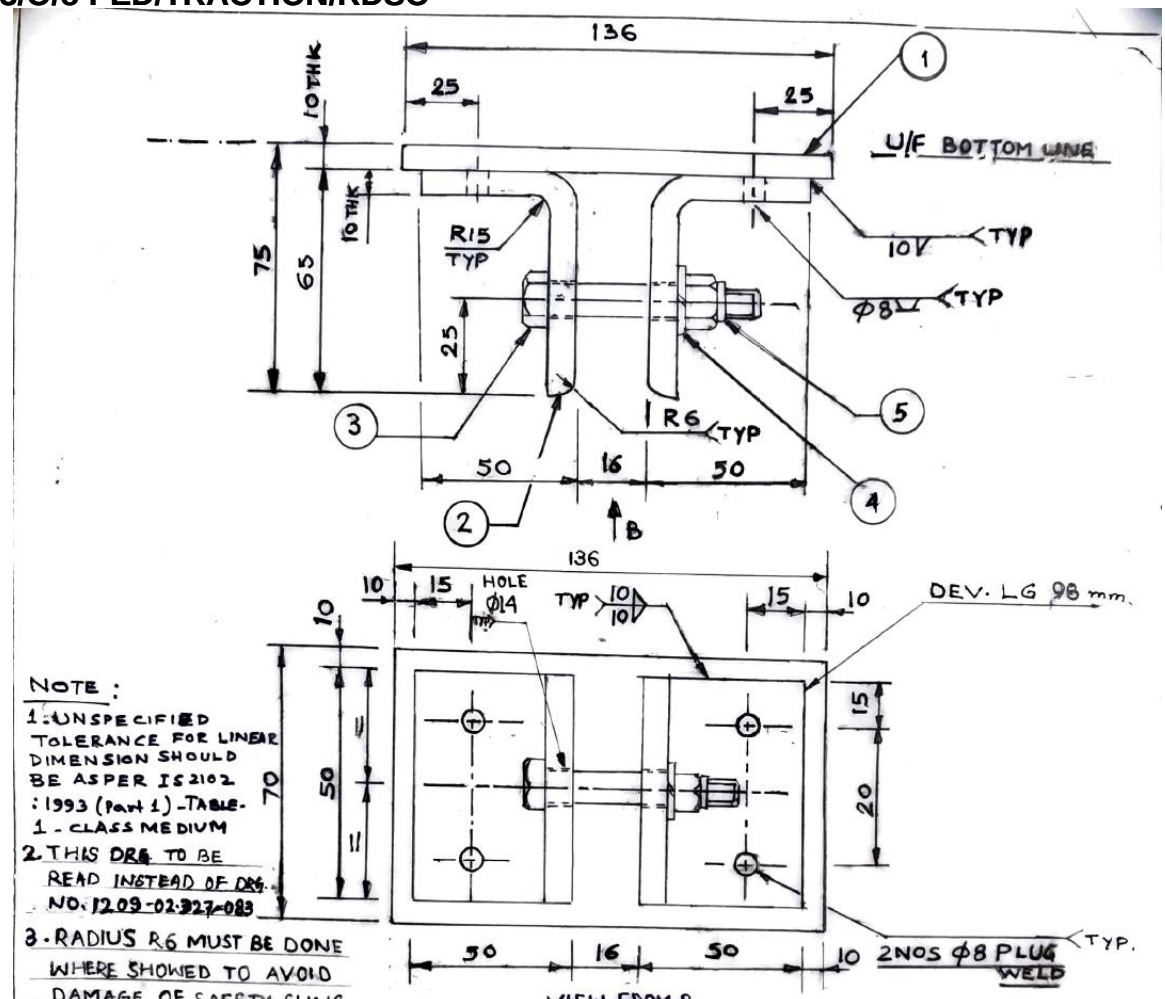

670
550 ±1
2 HOLES Ø 50
199
158
36
(199)
237
5 TYP.
155
155
155
155
= = TYP.
12 THK.
210
200
10 THK.
25 TYP.
7
7
TYP.
670
196
80
2
1
10 THK.
5
5
36
158
38
237
NOTE:
1. ALL DIMENSIONS ARE IN mm
2. C&D NO. T303/
3. QTY./LOCO: 2 NOS
4. NEXT LEVEL ASSEMBLY ITEM NO. 58 OF 1209-02.027-125
5. USED FOR LOCO WAG-9HC / WAP-7
6. VERTICALITY OF ITEM 2 OVER ITEM 1 TO BE MAINTAIN ±1 mm DURING FITMENT.
7. 2 HOLES Ø 50 OF ITEM 1, MUST BE CONCENTRIC WITH HOLE Ø 17 OF ITEM NO. 2 OF DRG. NO. 1209-02.327-062 & 1209-00.327-441.
8. WELDING SHOULD BE CLEAN, SPATTERLESS & SLAG FREE.
2 T303/ 1209-00.427-432 GUSSET 200 x 12 THK. 5 STEEL IS:2062:2011 Gr. E410 QUALITY-C 0.587
1 T303/ 1209-00.427-431 MODIFIED BASE PLATE SUPPORT 1 STEEL IS:2062:2011 Gr. E410 QUALITY-C 8.45
REF. NO. C&D NO. PART DRG. NO. DESCRIPTION QTY. MATL SPECN WT. EACH IN K.G.
चित्तरंजन रेलइंजन कारखाना
CHITTARANJAN LOCOMOTIVE WORKS, INDIA
MODIFIED BASE SUPPORT BRACKET ASSEMBLY
1209-00.327-433
DRAWING NO.
A3


65
12 THK
120
332
320
7
TYP
TYP.
12 THK.
625
12 THK.
225
12
225
12
70
NOTE:-
1. ALL DIMENSIONS ARE IN mm
2. C&D NO. T303/
3. QTY/LOCO 2 NOS
4. NEXT LEVEL ASSEMBLY ITEM 59 OF 1209-02.027-125
5. USED FOR LOCO WAG-9HC / WAP-7
2 T303/ 1209-00.427-436 GUSSET TOP
1 T303/ 1209-00.427-434 PLATE 625x375x
REF. NO. C&D NO. PART DRG. NO. DESCRIPTION QTY. MATL. SPECN. WT. EACH IN K.G.
E410 0.404
E410 22.08
चित्तरंजन रेलइंजन कारखाना
CHITTARANJAN LOCOMOTIVE WORKS, INDIA
STRENGTHENING BRACKET ASSEMBLY
आरेखण संख्या
DRAWING NO.
1209-00.327-437
DESCRIPTION
SCALE 1:5
06/10/2019
A3


DO NOT SCALE DRAWINGS, IF IN DOUBT ASK!
WELDING SHALL BE IN ACCORDANCE WITH AS1554.1 -1991 SP
NOTE:
SECTION 'A'-'A'
BEAM ASSY - COMPRESS BRKT.
IA026-00425
ABB Transportation Pty Limited
PLATE
LEG ASSEMBLY
GUSSET
BEAM
GUSSET
PLATE SIDE
IA022-00174
IA026-00461
IA022-00169
IA022-00172
IA022-00168
IA022-00170
1270 REF
700
195 REF
115 REF
113 REF
85 REF
40 REF
75 REF
120 REF
For Strengthening of the Unmodified Legs:



For Strengthening of the Unmodified Legs:



NOTE :

1. UNSPECIFIED TOLERANCE FOR LINEAR DIMENSION SHOULD BE AS PER IS 2102 : 1993 (Part 1) - TABLE-1 - CLASS MEDIUM
2. THIS DRG TO BE READ INSTEAD OF DRG. NO. 1209-02.327-083
3. RADIUS R6 MUST BE DONE WHERE SHOWED TO AVOID DAMAGE OF SAFETY SLING DUE TO RUBBING DURING LOCO RUN.
4. ASSLY-QTY/LOCO-8
5. WT. OF ASSLY-1.515KG.

REF NO	CRD NO	PART DRG NO	वर्णन DESCRIPTION	संख्या रेल इंजन NO/LOCO	पदार्थ MATL	विशिष्ट SPECN	प्रतिभार कि.ग्रा WT. EACH IN KG.
7	T303/674	1209-02 427-419	WIRE ROPE CLIP(BULL DOG GRIP)	32	STEEL	IS:2361 :2002	
6	T303/675	1209-02 427-420	WIRE ROPE	14mtr	STEEL	IS:2266 :2002	
5	T303/675		NYLOC NUT HEX. M12	8	STEEL	IS 13414 GRA IS:1367	
4	T303/628		M12 SPRING WASHER	8	SPG STEEL	IS:3063	
3	T303/626		HEX. HD. BOLT M12 x 80 LONG	8	STEEL	IS:1364 S-3-8.8-A-N	
2			PRESSED ANGLE 65 x 50 x 10 THK DEV. LENGTH = 98 mm	16	STEEL	IS:2062 2011 GR. E-250 B-C	0.384
1			PLATE 136 x 70 x 10 THK	8	STEEL	IS:2062 2011 GR. E-250 B-C	0.747

आरेखित DRAWN	26/10/22
जाँचा CHECKED	27/10
अधीक्षक SSE/DRG.	
उप.मु.नि.अ.अधि. DY CEE(D)	27/10/22
दिनांक DATE	27.10.2022
रैखिक अनुपात SCALE	N.T.S

संदर्भ REF ASSLY DRG NO. 1209-02.327-423 ITEM NO-1

MODIFIED BRACKET ASSLY. FOR SAFETY SLING FOR UNDER-SLUNG COMPRESSOR FOR 3PH. ELEC. LOCO

चितरंजन रेल इंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS

प्रयोग में USE FOR LOCOS— WAG-9HC/WAP-7 WAP-5

आरेखण संख्या DRAWING NO. 1209-02.427-424

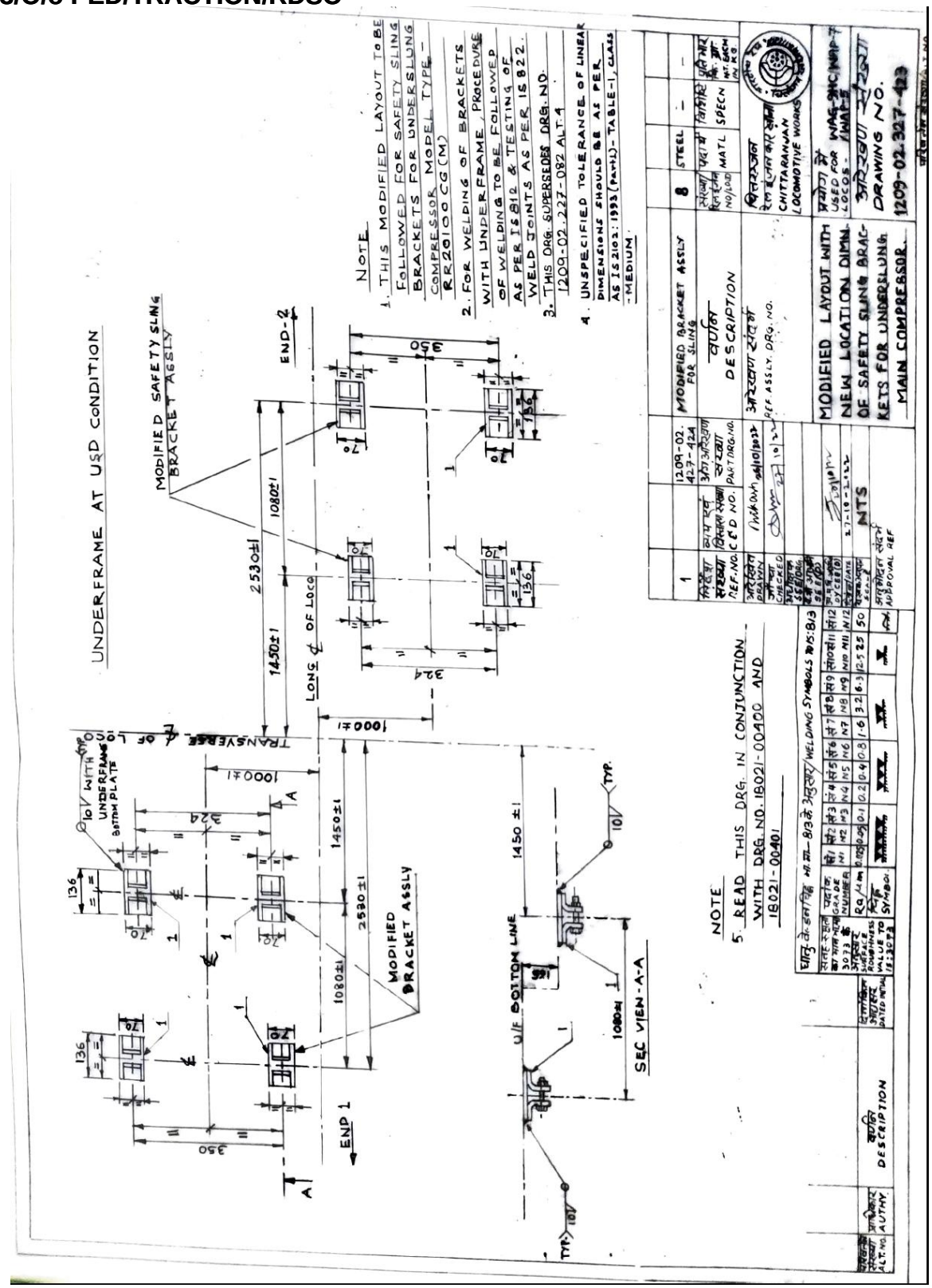
परिवर्तन संख्या

परिवर्तन संख्या ALT NO.	प्राधिकार AUTHY	दिनांकित आरेखण DATED INITIAL

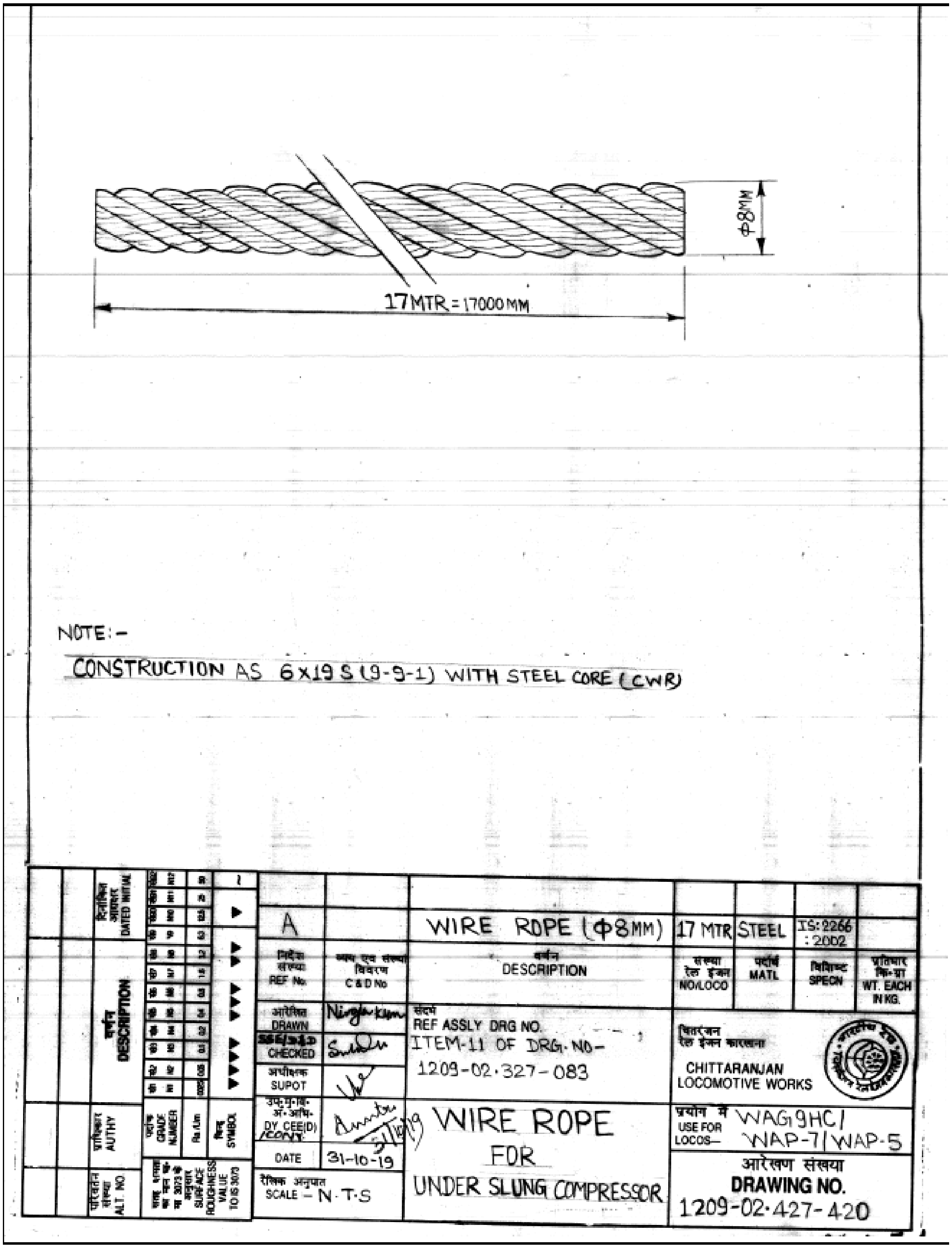
वर्णन DESCRIPTION

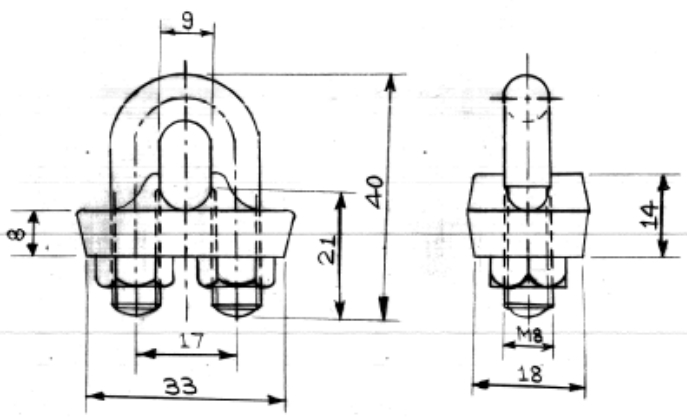
पदनाम GRADE NUMBER — Ra/Um — चिन्ह SYMBOL

संकेत दर्शाये गये अनुसार SURFACE ROUGHNESS VALUE TO IS 3073


UNDERFRAME AT USD CONDITION
MODIFIED SAFETY SLING BRACKET ASSLY
END-2
END-1
LONG ℄ OF LOCO
TRANSVERSE ℄ OF LOCO
2530±1
1450±1
1080±1
1000±1
324
350
136
70
MODIFIED BRACKET ASSLY
10V WITH UNDERFRAME BOTTOM PLATE
U/F BOTTOM LINE
SEC VIEW-A-A
TYP.
NOTE
1. THIS MODIFIED LAYOUT TO BE FOLLOWED FOR SAFETY SLING BRACKETS FOR UNDERSLUNG COMPRESSOR MODEL TYPE - RR20100 CG(M)
2. FOR WELDING OF BRACKETS WITH UNDERFRAME, PROCEDURE OF WELDING TO BE FOLLOWED AS PER IS812 & TESTING OF WELD JOINTS AS PER IS 822.
3. THIS DRG. SUPERSEDES DRG.NO. 1209-02.227-082 ALT.4
4. UNSPECIFIED TOLERANCE OF LINEAR DIMENSIONS SHOULD BE AS PER, AS IS2102:1993 (PART1)- TABLE-1, CLASS -MEDIUM
5. READ THIS DRG. IN CONJUNCTION WITH DRG. NO. 18021-00400 AND 18021-00401
MODIFIED BRACKET ASSLY FOR SLING
1209-02.427-42A
DESCRIPTION
8 STEEL
MODIFIED LAYOUT WITH NEW LOCATION DIMN. OF SAFETY SLING BRACKETS FOR UNDERSLUNG MAIN COMPRESSOR
CHITTARANJAN LOCOMOTIVE WORKS
DRAWING NO. 1209-02.327-423
NTS

Annexure- I


Φ8MM
17MTR = 17000MM
NOTE:-
CONSTRUCTION AS 6X19 S (9-9-1) WITH STEEL CORE (CWR)
A
WIRE ROPE (Φ8MM)
17 MTR
STEEL
IS:2266 : 2002
निदेश संख्या REF No.
व्यय एवं संख्या विवरण C & D No
वर्णन DESCRIPTION
संख्या रेल इंजन NO/LOCO
पदार्थ MATL
विशिष्ट SPECN
प्रतिभार कि॰ग्रा WT. EACH IN KG.
आरेखित DRAWN
CHECKED
अधीक्षक SUPDT
DY CEE(D)
DATE 31-10-19
रैखिक अनुपात SCALE – N.T.S
संदर्भ REF ASSLY DRG NO.
ITEM-11 OF DRG. NO-
1209-02.327-083
चितरंजन रेल इंजन कारखाना
CHITTARANJAN LOCOMOTIVE WORKS
WIRE ROPE
FOR
UNDER SLUNG COMPRESSOR
प्रयोग में USE FOR LOCOS–
WAG 9HC/ WAP-7/ WAP-5
आरेखण संख्या
DRAWING NO.
1209-02.427-420
दिनांकित आद्याक्षर DATED INITIAL
वर्णन DESCRIPTION
प्राधिकार AUTHY
परिवर्तन संख्या ALT. NO
ग्रेड GRADE NUMBER
SYMBOL
SURFACE ROUGHNESS VALUE TO IS 3073



NOTE:-

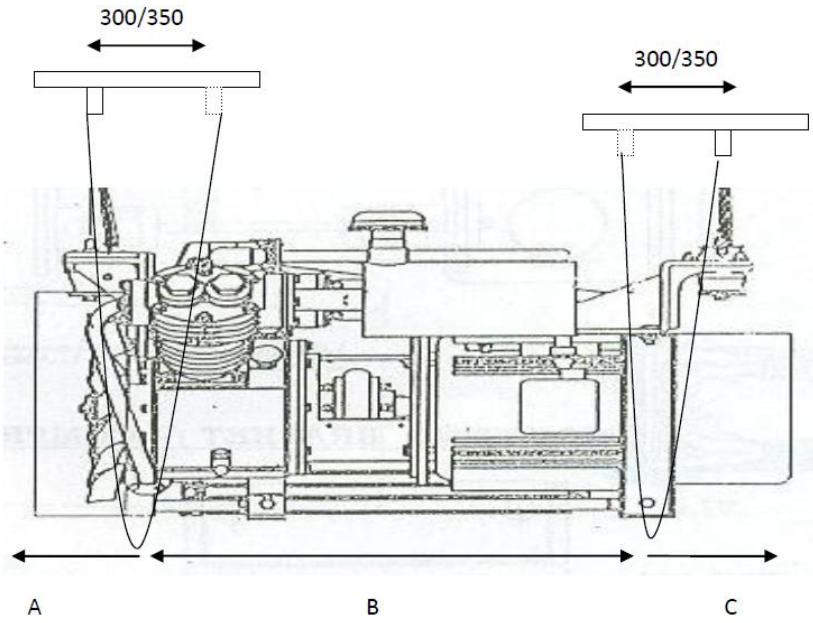
WIRE ROPE CLIP (φ8) FOR WIRE ROPE (φ8)

		A		WIRE ROPE CLIP (BULL DOG GRIP FXGX8)	42	FORGED STEEL	IS:2361 : 2002	
		निर्देश संख्या REF. No.	अथ्य एवं संख्या विवरण C & D No.	वर्णन DESCRIPTION	संख्या रेल इंजन NO/LOCO	पदार्थ MATL	विशिष्ट SPECN	प्रतिभार कि॰ग्रा WT. EACH IN KG.
		आरेखित DRAWN	Nirjan Kumar	संदर्भ REF ASSLY DRG NO. ITEM-12 OF DRG. NO- 1209-02-327-083	चितरंजन रेल इंजन कारखाना CHITTARANJAN LOCOMOTIVE WORKS			
		CHECKED						
		अधीक्षक SUPOT						
		उपमु॰वि॰ अ॰ अधि॰ DY CEE(D) /CONV		WIRE ROPE CLIP (BULL DOG GRIP FXGX8.) FOR UNDER SLUNG COMPRESSOR	प्रयोग में USE FOR LOCOS—		WAG9HC/ WAP-7/ WAP-5	
		DATE	31-10-19		आरेखण संख्या DRAWING NO.		1209-02-427-419	
		ऐरिक अनुपात SCALE –	N.T.S					

परिवर्तन संख्या

Annexure-III

SKETCH FOR THE PROVISION OF SAFETY WIRE ROPE FOR UNDERSLUNG MOUNTING OF COMPRESSOR MODEL RR20100, RR20100 CG(M), RR20100 CC , 2A320D & RR1750 OF 1745 LPM CAPACITY



S.no.	Dimension	ELGI (RR20100)	FTRTIL(2A320D)	AIMPL (RR1750)
1	A	130±5 mm	130±5mm	130±5mm
2	B	1210±10mm	1210±10mm	1210±10mm
3	C	130±5mm	130±5mm	130±5mm

1. Safety Wire Rope Nominal dia 8 mm as per IS : 2266:2002
2. The size of pressed Angle should be 65x50x10 mm thick, with bending radius- R15. Bracket Assembly should be as per drawing No. 1209-02.427-424 or latest.
3. No. of Angle plate per loco-08 Nos.