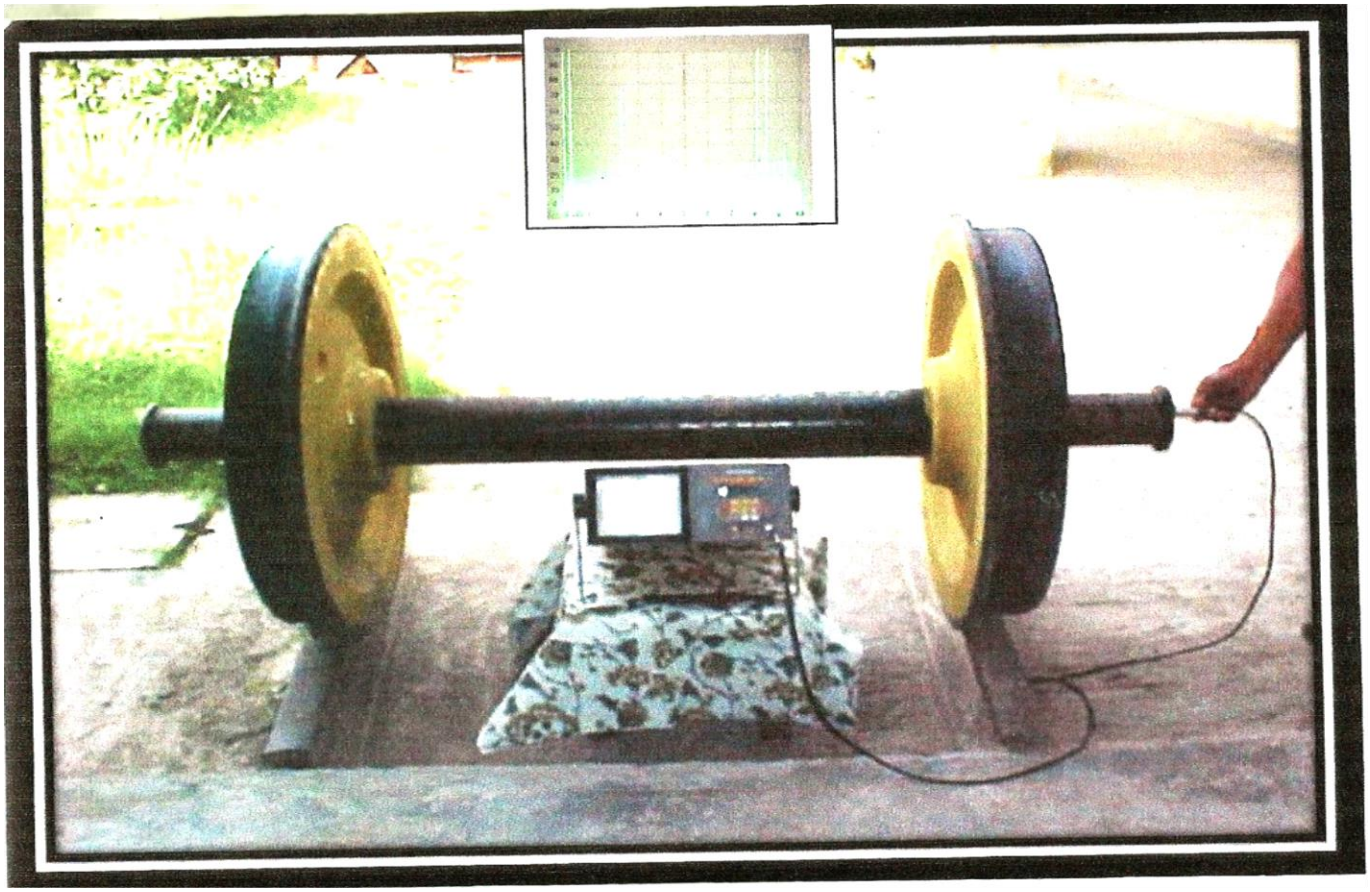
अअमासं RDSO
रेल अग्रदूत Transforming Railways
www.rdso.gov.in



TENTATIVE CODE OF PROCEDURES FOR ULTRASONIC TESTING OF AXLES OF TRACK MACHINE JANUARY-2025

REFERENCES

S.No.	Machine Model	Type of axle	Report / Drawing Referred	RDSO Letter No.	Date of Issue
1.	RGM-10 Stone (Model No. RGH/OC2-67)	POWER AXLE	5113992	TM/HM/8/USFD	January 2025
2.	RGM-10 Stone (Model No. RGH/OC2-67)	NON POWER AXLE	5114257	TM/HM/8/USFD	January 2025
3.	SRGM-20 Stone	POWER AXLE	5102351	TM/HM/8/USFD	January 2025
4.	SRGM-20 Stone	NON POWER AXLE	5099803	TM/HM/8/USFD	January 2025
5.	RIV (Model No. WRIV- 80)	POWER AXLE	459030101	TM/HM/8/USFD	January 2025
6.	RIV (Model No. WRIV- 80)	NON POWER AXLE	459030002	TM/HM/8/USFD	January 2025

CONTENTS

धातु एवं रसायन निदेशालय

एन॰ डी॰ टी॰अनुभाग

फ़ाइल सं॰: RDSO-MC0NDT(TEST)/14/2020 दिनांक: As Signed

विषय: Code of Procedure for Ultrasonic Testing of Axles of Track Machines.

संदर्भ: Your letter no. TM/HM /8/USFD दिनांक 25.07.2024.

Reference above, tentative codes of procedure for Ultrasonic Testing of Axles of Track Machines RGM-10 Stone, Drg. No 5113992 & 5114257 and SRGM-20 Stone, Drg. No 5102351 & 5099803 have been prepared on the basis of drawing provided and enclosed for your reference please. The detailed Code of Procedures (COP) will be prepared as per the availability of axles (place and date) in loose (fitted with wheel sets) and in fitted condition.

Necessary feedback regarding ultrasonic testing of axle using tentative code of procedure and availability of axles may be intimated to this office for further action please

संलग्नक : उपरोक्तानुसार

सुनीता
11/09/24

(श्रीमती सुनीता)
निदेशक / धातु एवं रसायन-II

निदेशक/ट्रैक मशीन-I

धातु एवं रसायन निदेशालय
एन॰ डी॰ टी॰अनुभाग

फ़ाइल सं॰: RDSO-MC0NDT(TEST)/14/2020 दिनांक: As Signed

विषय: Code of Procedure for Ultrasonic Testing of Axles of Track Machines.

संदर्भ: Your letter no. TM/HM /8/USFD दिनांक 23.08.2024.

Reference above, tentative code of procedures for Ultrasonic Testing of Axles of Track Machine Rail Inspection Vehicle Model No. WRIV 80 Drg. No. 459 03 00 02 and Drg. No. 459 03 01 01 have been prepared on the basis of drawing provided and enclosed for your reference please. The detailed Code of Procedures (COP) will be prepared as per the availability of axles (place and date) in loose (fitted with wheel sets) and in fitted condition.

Necessary feedback regarding ultrasonic testing of axle using tentative code of procedure and availability of axles may be intimated to this office for further action please

संलग्नक : उपरोक्तानुसार

वि भट्टाचार्य 13.12.24

(विश्वजीत भट्टाचार्य)
उप निदेशक / धातु एवं रसायन-VII

निदेशक / धातु एवं रसायन-II सुनीता 13.12.24

निदेशक/ट्रैक मशीन-I

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011

M&C Directorate

September 2024

Theoretical calculation and relative positions of signals during UST of Power Axle of RGM-10 Stone Model RGH/OC2-67 , Drg. 5113992 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 250 mm (Compression wave)

(i) From Gear End

S.No	Details	Distance	Division
1	Delayed-2 Reflection from Journal Fillet (Fillet B)	2435	9.7
2	Delayed-2 Reflection from Wheel Seat Outer Fillet (Fillet A)	2426	9.7
3	Direct Reflection from axle end	2387	9.5
4	Delayed-1 Reflection from Journal Fillet (Fillet B)	2315	9.3
5	Delayed-1 Reflection from Wheel Seat Outer Fillet (Fillet A)	2285	9.1
6	Direct Reflection from Journal Fillet (Fillet B)	2167	8.7
7	Direct Reflection from Wheel Seat Outer Fillet (Fillet A)	2114	8.5
8	Delayed-2 Reflection from Fillet C	1529	6.1
9	Delayed-1 Reflection from Fillet C	1379	5.5
10	Direct Reflection from Fillet C	1197	4.8
11	Direct Reflection from location D	1096	4.4

(ii) From Free End

S.No	Details	Distance	Division
1	Delayed-2 Reflection from Journal Fillet (Fillet B)	2435	9.7
2	Delayed-2 Reflection from Wheel Seat Outer Fillet (Fillet A)	2426	9.7
3	Direct Reflection from axle end	2387	9.5
4	Delayed-1 Reflection from Journal Fillet (Fillet B)	2315	9.3
5	Delayed-1 Reflection from Wheel Seat Outer Fillet (Fillet A)	2285	9.1
6	Direct Reflection from Journal Fillet (Fillet B)	2167	8.7
7	Direct Reflection from Wheel Seat Outer Fillet (Fillet A)	2114	8.5
8	Delayed-2 Reflection from Wheel Seat Outer Fillet (Fillet G)	2104	8.4
9	Delayed-1 Reflection from Wheel Seat Outer Fillet (Fillet G)	1954	7.8
10	Direct Reflection from Wheel Seat Outer Fillet (Fillet G)	1772	7.1
11	Direct Reflection from Wheel Seat Outer Fillet (Fillet F)	1671	6.7
12	Direct Reflection from Wheel Seat Outer Fillet (Fillet E)	1446	5.8

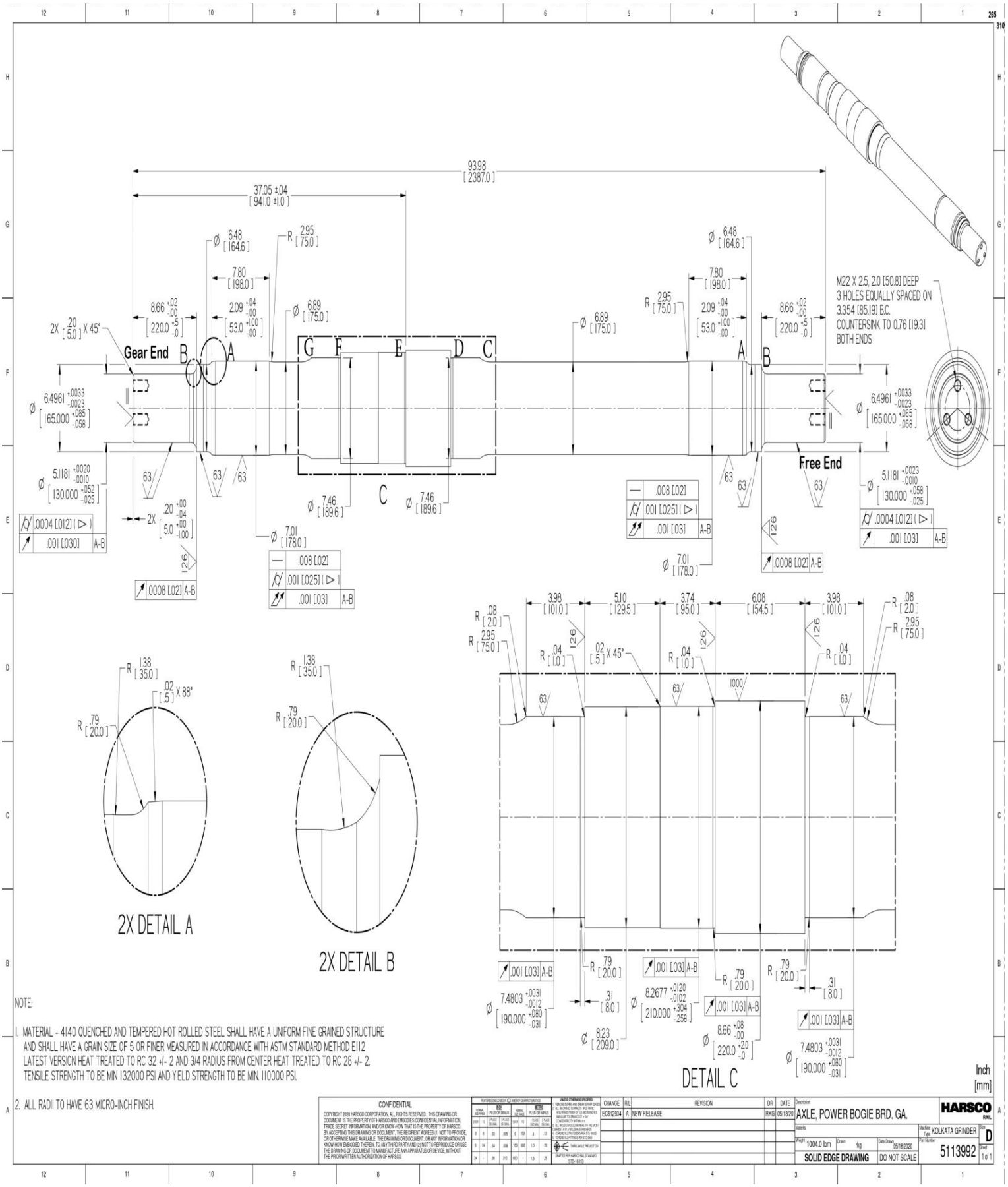
(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)

Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss : (Both Ends)

S.No	Details	Distance	Division
1	Direct reflection from wheel boss, probe position on axle end face at a distance 37 mm from center, probe angle 15° *-Signal may shift slightly due to perspex correction.	488	4.9*

Axle Drawing for fillet and axle end identification is attached herewith



TENTATIVE CODE OF PROCEDURES FOR ULTRASONIC TESTING OF AXLES OF TRACK MACHINES, January - 2025

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011

M&C Directorate

September 2024

Theoretical calculation and relative positions of signals during UST of Non Power Axle of RGM-10 Stone Model RGH/OC2-67 , Drg. 5114257 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 250 mm (Compression wave)

(i) From both Ends

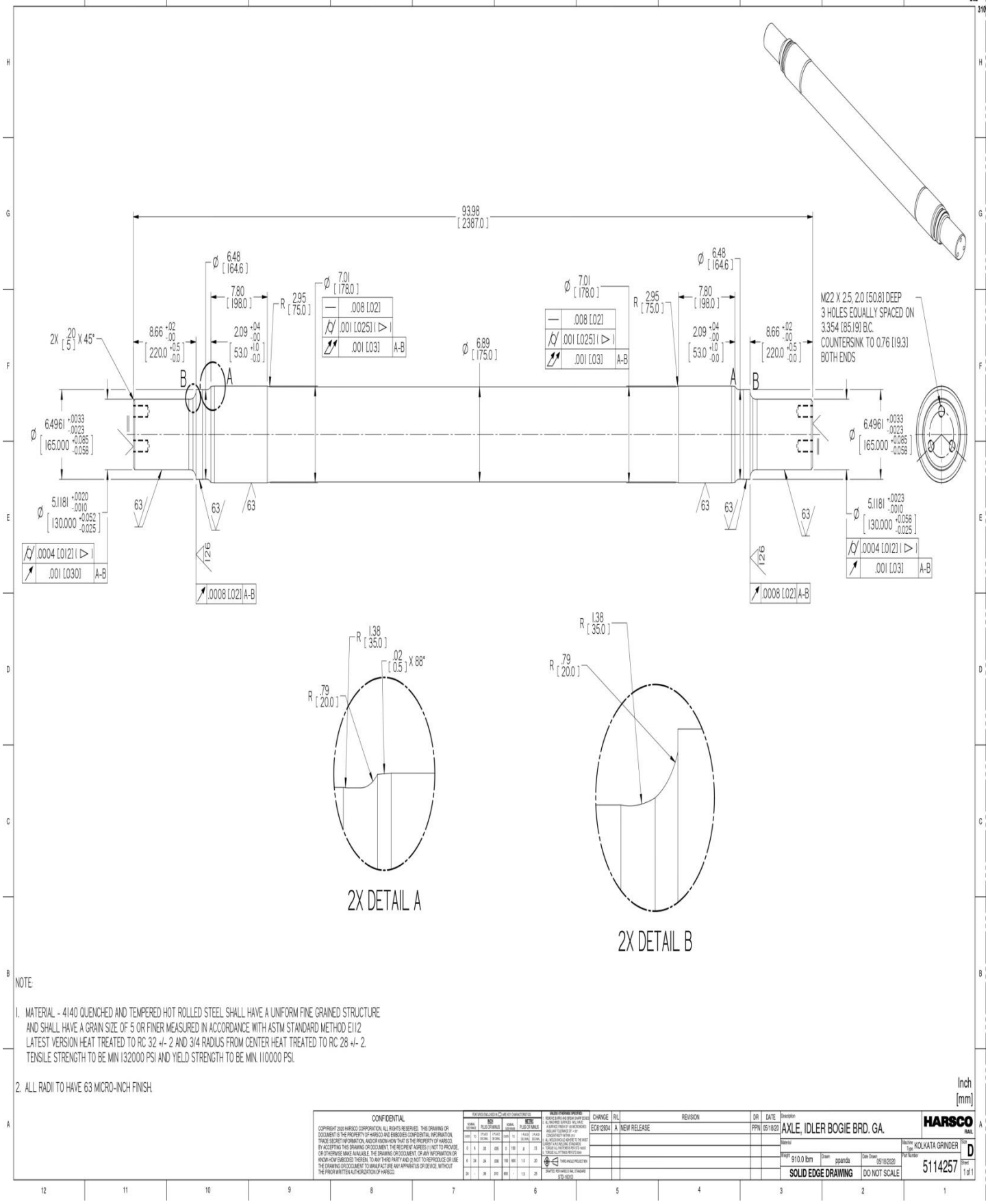
S.No	Details	Distance	Division
1	Delayed-2 Reflection from Journal Fillet (Fillet B)	2435	9.7
2	Delayed-2 Reflection from Wheel Seat Outer Fillet (Fillet A)	2426	9.7
3	Direct Reflection from axle end	2387	9.5
4	Delayed-1 Reflection from Journal Fillet (Fillet B)	2315	9.3
5	Delayed-1 Reflection from Wheel Seat Outer Fillet (Fillet A)	2285	9.1
6	Direct Reflection from Journal Fillet (Fillet B)	2167	8.7
7	Direct Reflection from Wheel Seat Outer Fillet (Fillet A)	2114	8.5

(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss : (Both Ends)

S.No	Details	Distance	Division
1	Direct reflection from wheel boss, probe position on axle end face at a distance 37 mm from center, probe angle 15° *-Signal may shift slightly due to perspex correction.	488	4.9*

Axle Drawing for fillet and axle end identification is attached herewith



NOTE:

1. MATERIAL - 4140 QUENCHED AND TEMPERED HOT ROLLED STEEL SHALL HAVE A UNIFORM FINE GRAINED STRUCTURE AND SHALL HAVE A GRAIN SIZE OF 5 OR FINER MEASURED IN ACCORDANCE WITH ASTM STANDARD METHOD E112 LATEST VERSION HEAT TREATED TO RC 32 +/- 2 AND 3/4 RADIUS FROM CENTER HEAT TREATED TO RC 28 +/- 2. TENSILE STRENGTH TO BE MIN 132000 PSI AND YIELD STRENGTH TO BE MIN. 110000 PSI.

2. ALL RADII TO HAVE 63 MICRO-INCH FINISH.

Inch [mm]

CONFIDENTIAL
COPYRIGHT 2020 HARSCO CORPORATION. ALL RIGHTS RESERVED. THIS DRAWING OR DOCUMENT IS THE PROPERTY OF HARSCO AND EMBODIES CONFIDENTIAL INFORMATION, TRADE SECRET INFORMATION, AND/OR KNOW-HOW THAT IS THE PROPERTY OF HARSCO. BY ACCEPTING THIS DRAWING OR DOCUMENT, THE RECIPIENT AGREES (1) NOT TO PROVIDE, OR OTHERWISE MAKE AVAILABLE, THE DRAWING OR DOCUMENT, OR ANY INFORMATION OR KNOW-HOW EMBODIED THEREIN, TO ANY THIRD PARTY AND (2) NOT TO REPRODUCE OR USE THE DRAWING OR DOCUMENT TO MANUFACTURE ANY APPARATUS OR DEVICE, WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF HARSCO.

CHANGE	R/L	REVISION	DR	DATE
EC012934	A	NEW RELEASE	PPN	05/18/20

Description: AXLE, IDLER BOGIE BRD. GA.

HARSCO RAIL

Material: 910.0 lbm | Drawn: ppanda | Date Drawn: 05/18/2020 | Machine Type: KOLKATA GRINDER | Size: D

SOLID EDGE DRAWING | DO NOT SCALE | Part Number: 5114257 | Sheet: 1 of 1

TENTATIVE CODE OF PROCEDURES FOR ULTRASONIC TESTING OF AXLES OF TRACK MACHINES, January - 2025

3156973/2024/DIRECTOR/M&C/RDSO

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011

M&C Directorate

September 2024

Theoretical calculation and relative positions of signals during UST of Power Axle of SRGM-20 Stone , Drg. 5102351 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 250 mm (Compression wave)

(i) From both Ends

S.No	Details	Distance	Division
1	Direct Reflection from axle end	2492	10.0
2	Delayed-2 Reflection from Journal Fillet (F1)	2509	10.0
3	Delayed-2 Reflection from Wheel Seat Outer Fillet (F2)	2507	10.0
4	Delayed-1 Reflection from Journal Fillet (F1)	2376	9.5
5	Delayed-1 Reflection from Wheel Seat Outer Fillet (F2)	2354	9.4
6	Direct Reflection from Journal Fillet (F1)	2215	8.9
7	Direct Reflection from outer Wheel Seat Outer Fillet (F2)	2168	8.7
8	Delayed-2 Reflection from Wheel Seat inner Fillet (F4)	1823	7.3
9	Delayed-2 Reflection from Wheel Seat inner Fillet (F5)	1666	6.7
10	Delayed-1 Reflection from Wheel Seat inner Fillet (F4)	1665	6.7
11	Delayed-1 Reflection from Wheel Seat inner Fillet (F5)	1497	6.0
12	Direct Reflection from Wheel Seat inner Fillet (F4)	1474	5.9
13	Direct Reflection from Wheel Seat inner Fillet (F5)	1290	5.2
14	Delayed-2 Reflection from Wheel Seat inner Fillet (F'3)	859	3.4
15	Delayed-1 Reflection from Wheel Seat inner Fillet (F'3)	705	2.8
16	Direct Reflection from Wheel Seat inner Fillet (F'3)	518	2.1

(ii) From Y End (Free End)

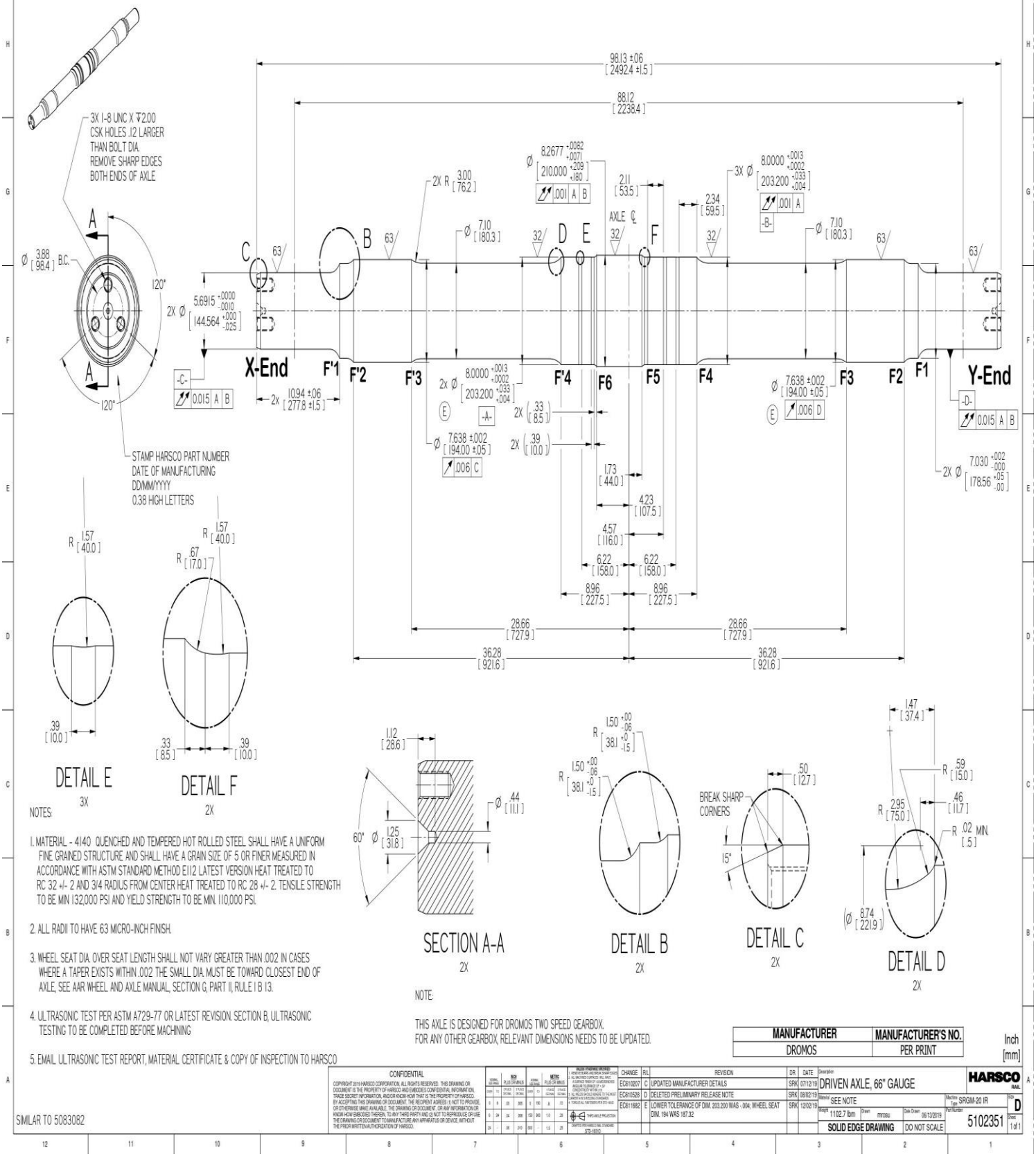
S.No	Details	Distance	Division
1	Delayed-2 Reflection from Journal Fillet (F'1)	2509	10.0
2	Delayed-2 Reflection from Wheel Seat Outer Fillet (F'2)	2507	10.0
3	Direct Reflection from axle end	2492	10.0
4	Delayed-1 Reflection from Journal Fillet (F'1)	2376	9.5
5	Delayed-1 Reflection from Wheel Seat Outer Fillet (F'2)	2354	9.4
6	Direct Reflection from Journal Fillet (F'1)	2215	8.9
7	Direct Reflection from outer Wheel Seat Outer Fillet (F'2)	2168	8.7
8	Delayed-2 Reflection from Wheel Seat inner Fillet (F'4)	1823	7.3
9	Delayed-2 Reflection from Wheel Seat inner Fillet (F6)	1730	6.9
10	Delayed-1 Reflection from Wheel Seat inner Fillet (F'4)	1665	6.7
11	Delayed-1 Reflection from Wheel Seat inner Fillet (F6)	1560	6.2
12	Direct Reflection from Wheel Seat inner Fillet (F'4)	1474	5.9
13	Direct Reflection from Wheel Seat inner Fillet (F6)	1354	5.4
14	Delayed-2 Reflection from Wheel Seat inner Fillet (F3)	859	3.4
15	Delayed-1 Reflection from Wheel Seat inner Fillet (F3)	705	2.8
16	Direct Reflection from Wheel Seat inner Fillet (F3)	518	2.1

(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss : (Both Ends)

S.No	Details	Distance	Division
1	Direct reflection from Wheel seats Inner Fillet / wheel boss, probe position on axle end face at a distance 45 mm from center, probe angle 15° *-Signal may shift slightly due to perspex correction.	537	5.4*

Axle Drawing for fillet and axle end identification is Attached herewith



NOTES:

1. MATERIAL - 4140 QUENCHED AND TEMPERED HOT ROLLED STEEL SHALL HAVE A UNIFORM FINE GRAINED STRUCTURE AND SHALL HAVE A GRAIN SIZE OF 5 OR FINER MEASURED IN ACCORDANCE WITH ASTM STANDARD METHOD E112 LATEST VERSION HEAT TREATED TO RC 32 +/- 2 AND 3/4 RADIUS FROM CENTER HEAT TREATED TO RC 28 +/- 2. TENSILE STRENGTH TO BE MIN 132,000 PSI AND YIELD STRENGTH TO BE MIN. 110,000 PSI.
2. ALL RADII TO HAVE 63 MICRO-INCH FINISH.
3. WHEEL SEAT DIA. OVER SEAT LENGTH SHALL NOT VARY GREATER THAN .002 IN CASES WHERE A TAPER EXISTS WITHIN .002 THE SMALL DIA. MUST BE TOWARD CLOSEST END OF AXLE, SEE AAR WHEEL AND AXLE MANUAL, SECTION G, PART II, RULE 1 B 13.
4. ULTRASONIC TEST PER ASTM A729-77 OR LATEST REVISION. SECTION B, ULTRASONIC TESTING TO BE COMPLETED BEFORE MACHINING
5. EMAIL ULTRASONIC TEST REPORT, MATERIAL CERTIFICATE & COPY OF INSPECTION TO HARSCO

NOTE:

THIS AXLE IS DESIGNED FOR DROMOS TWO SPEED GEARBOX.
FOR ANY OTHER GEARBOX, RELEVANT DIMENSIONS NEEDS TO BE UPDATED.

MANUFACTURER	MANUFACTURER'S NO.
DROMOS	PER PRINT

Inch [mm]

CONFIDENTIAL
COPYRIGHT 2019 HARSCO CORPORATION. ALL RIGHTS RESERVED. THIS DRAWING OR DOCUMENT IS THE PROPERTY OF HARSCO AND EMBODIES CONFIDENTIAL INFORMATION, TRADE SECRET INFORMATION, AND/OR KNOW-HOW THAT IS THE PROPERTY OF HARSCO. BY ACCEPTING THIS DRAWING OR DOCUMENT, THE RECIPIENT AGREES (1) NOT TO PROVIDE OR OTHERWISE MAKE AVAILABLE, THE DRAWING OR DOCUMENT, OR ANY INFORMATION OR KNOW-HOW EMBODIED THEREIN, TO ANY THIRD PARTY AND (2) NOT TO REPRODUCE OR USE THE DRAWING OR DOCUMENT TO MANUFACTURE ANY APPARATUS OR DEVICE, WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF HARSCO.

CHANGE	RLL	REVISION	DR	DATE
EC0102007	C	UPDATED MANUFACTURER DETAILS	SRK	07/12/19
EC0102528	D	DELETED PRELIMINARY RELEASE NOTE	SRK	08/02/19
EC0111682	E	LOWER TOLERANCE OF DIM. 203.200 WAS -.004, WHEEL SEAT DIM. 194 WAS 187.32	SRK	12/02/19

Description: DRIVEN AXLE, 66" GAUGE
HARSCO RAIL
Material: SEE NOTE
Machine Type: SRGM-20 IR
Size: D
Weight: 1102.7 lbm
Drawn: mrosu
Date Drawn: 06/13/2019
Part Number: 5102351
Sheet: 1 of 1
SOLID EDGE DRAWING
DO NOT SCALE

SIMILAR TO 5083082

3156973/2024/DIRECTOR/M&C/RDSO

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011

M&C Directorate

September 2024

Theoretical calculation and relative positions of signals during UST of Non Power Axle of SRGM-20 Stone, Drg. 5099803 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 250 mm (Compression wave)

(i) From both Ends

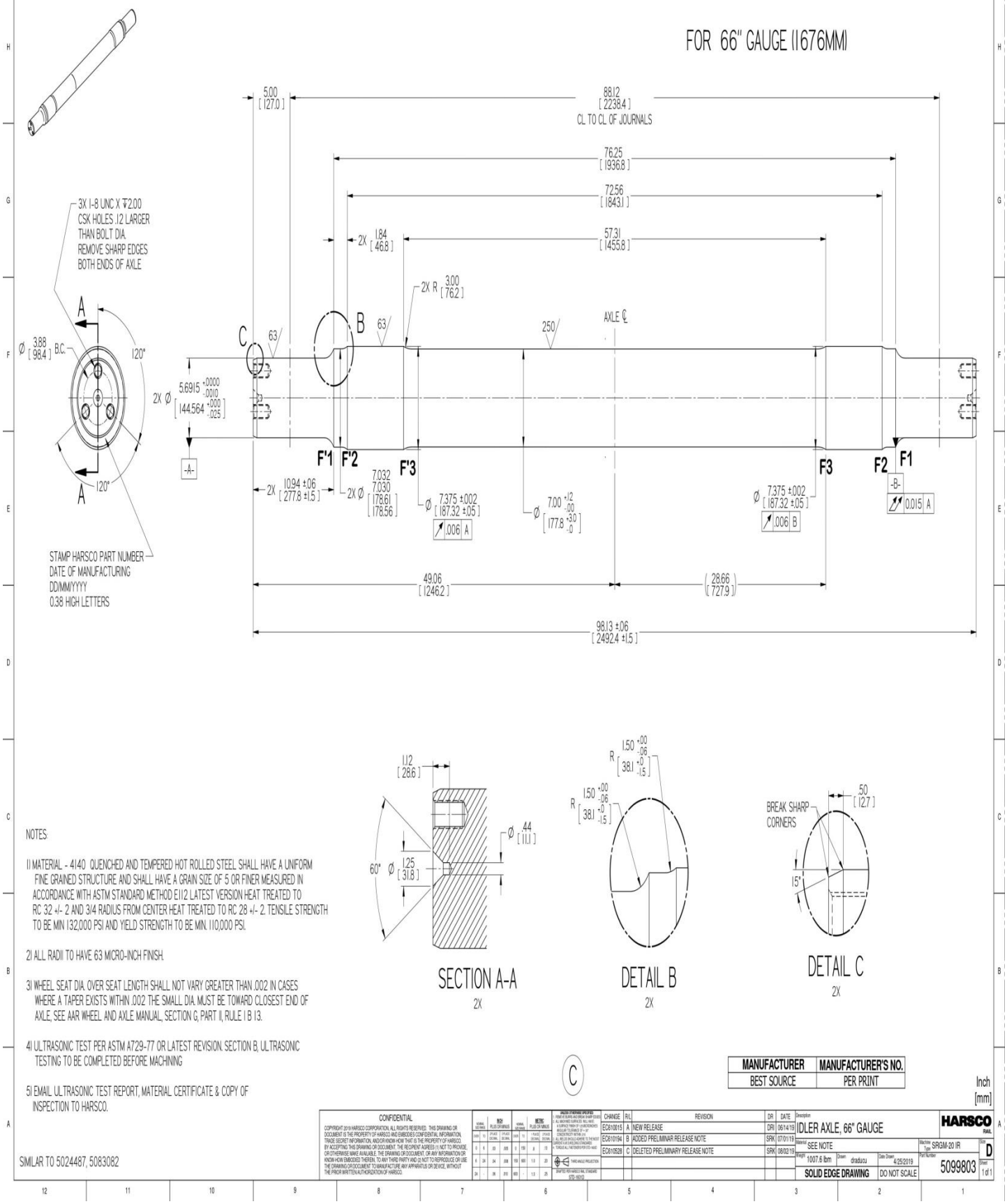
S.No	Details	Distance	Division
1	Delayed-2 Reflection from Journal Fillet (F1)	2509	10.0
2	Delayed-2 Reflection from outer Wheel Seat Outer Fillet (F2)	2501	10.0
3	Direct Reflection from axle end	2492	10.0
4	Delayed-1 Reflection from Journal Fillet (F1)	2376	9.5
5	Delayed-1 Reflection from outer Wheel Seat Outer Fillet (F2)	2351	9.4
6	Direct Reflection from Journal Fillet (F1)	2215	8.9
7	Direct Reflection from outer Wheel Seat Outer Fillet (F2)	2168	8.7
8	Delayed-2 Reflection from Wheel Seat inner Fillet (F'3)	850	3.4
9	Delayed-1 Reflection from Wheel Seat inner Fillet (F'3)	701	2.8
10	Direct Reflection from Wheel Seat inner Fillet (F'3)	518	2.1

(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss : (Both Ends)

S.No	Details	Distance	Division
1	Direct reflection from Wheel seats Inner Fillet / wheel boss, probe position on axle end face at a distance 45 mm from center, probe angle 15° *-Signal may shift slightly due to perspex correction.	537	5.4*

Axle Drawing for fillet and axle end identification is attached herewith



SECTION A-A
2X

DETAIL B
2X

DETAIL C
2X

NOTES:

1) MATERIAL - 4140 QUENCHED AND TEMPERED HOT ROLLED STEEL SHALL HAVE A UNIFORM FINE GRAINED STRUCTURE AND SHALL HAVE A GRAIN SIZE OF 5 OR FINER MEASURED IN ACCORDANCE WITH ASTM STANDARD METHOD E112 LATEST VERSION HEAT TREATED TO RC 32 +/- 2 AND 3/4 RADIUS FROM CENTER HEAT TREATED TO RC 28 +/- 2. TENSILE STRENGTH TO BE MIN 132,000 PSI AND YIELD STRENGTH TO BE MIN. 110,000 PSI.

2) ALL RADII TO HAVE 63 MICRO-INCH FINISH.

3) WHEEL SEAT DIA. OVER SEAT LENGTH SHALL NOT VARY GREATER THAN .002 IN CASES WHERE A TAPER EXISTS WITHIN .002 THE SMALL DIA. MUST BE TOWARD CLOSEST END OF AXLE, SEE AAR WHEEL AND AXLE MANUAL, SECTION G, PART II, RULE 1 B 13.

4) ULTRASONIC TEST PER ASTM A729-77 OR LATEST REVISION. SECTION B, ULTRASONIC TESTING TO BE COMPLETED BEFORE MACHINING

5) EMAIL ULTRASONIC TEST REPORT, MATERIAL CERTIFICATE & COPY OF INSPECTION TO HARSCO.

SIMILAR TO 5024487, 5083082

MANUFACTURER	MANUFACTURER'S NO.
BEST SOURCE	PER PRINT

Inch [mm]

CONFIDENTIAL
COPYRIGHT 2019 HARSCO CORPORATION, ALL RIGHTS RESERVED. THIS DRAWING OR DOCUMENT IS THE PROPERTY OF HARSCO AND EMBODIES CONFIDENTIAL INFORMATION, TRADE SECRET INFORMATION, AND/OR KNOW-HOW THAT IS THE PROPERTY OF HARSCO. BY ACCEPTING THIS DRAWING OR DOCUMENT, THE RECIPIENT AGREES (1) NOT TO PROVIDE, OR OTHERWISE MAKE AVAILABLE, THE DRAWING OR DOCUMENT, OR ANY INFORMATION OR KNOW-HOW EMBODIED THEREIN, TO ANY THIRD PARTY AND (2) NOT TO REPRODUCE OR USE THE DRAWING OR DOCUMENT TO MANUFACTURE ANY APPARATUS OR DEVICE, WITHOUT THE PRIOR WRITTEN AUTHORIZATION OF HARSCO.

CHANGE	R/L	REVISION	DR	DATE
EC610015	A	NEW RELEASE	DR	06/14/19
EC610194	B	ADDED PRELIMINAR RELEASE NOTE	SRK	07/01/19
EC610528	C	DELETED PRELIMINARY RELEASE NOTE	SRK	08/02/19

Description: IDLER AXLE, 66" GAUGE
HARSCO RAIL
Material: SEE NOTE
Machine Type: SRGM-20 IR
Size: D
Weight: 1007.6 lbm
Drawn: dradu.u
Date Drawn: 4/25/2019
SOLID EDGE DRAWING
DO NOT SCALE
Part Number: 5099803
Sheet: 1 of 1

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011
M&C Directorate

December 2024

Theoretical calculation and relative positions of signals during UST of Power Axle of Rail Inspection Vehicle Model No. WRIV 80, Drg. No. 459 03 01 01 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 150 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz freq., Normal Probe, S/C

(i) From X End (Opposite to Gear end side)

S.No	Details	Distance	Division
1	Direct Reflection from Axle end	2364	9.5
2	Delayed-1 Reflection from Journal Fillet (K)	2350	9.4
3	Delayed-1 Reflection from Wheel Seat outer Fillet (J)	2289	9.2
4	Direct Reflection from Journal Fillet (K)	2202	8.8
5	Direct Reflection from Wheel Seat outer Fillet (J)	2120	8.5
6	Delayed-2 Reflection from Gear Seat Fillet (G)	1934	7.7
7	Direct Reflection from Fillet (H)	1780	7.1
8	Delayed-1 Reflection from Gear Seat Fillet (G)	1780	7.1
9	Direct Reflection from Gear Seat Fillet (G)	1592	6.4
10	Direct Reflection from Wheel seat inner fillet (D)	414	1.7
11	Direct Reflection from Journal Fillet (A)	125	0.5

(ii) From Y End (Gear end side)

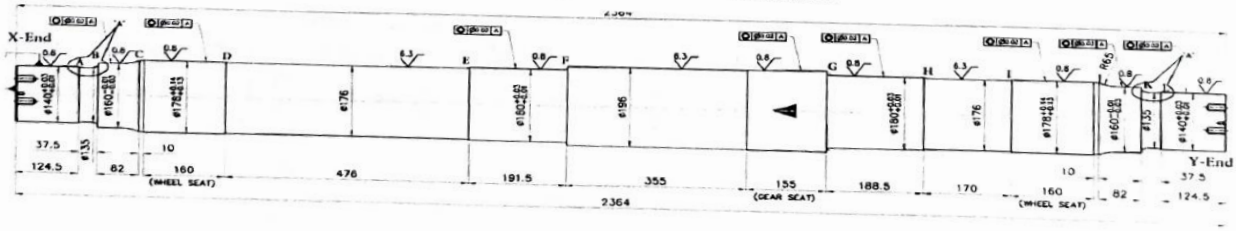
S.No	Details	Distance	Division
1	Direct Reflection from Axle end	2364	9.5
2	Delayed-1 Reflection from Journal Fillet (B)	2350	9.4
3	Delay-1 Reflection from Wheel Seat outer Fillet (C)	2289	9.2
4	Direct Reflection from Journal Fillet (B)	2202	8.8
5	Direct Reflection from Wheel Seat outer Fillet (C)	2120	8.5
6	Delayed-2 Reflection from Gear Seat Fillet (F)	1625	6.5
7	Direct Reflection from Fillet (E)	1474	5.9
8	Delayed-1 Reflection from Gear Seat Fillet (F)	1471	5.9
9	Direct Reflection from Gear Seat Fillet (F)	1283	5.1
10	Direct Reflection from Wheel seat inner fillet (I)	414	1.7
11	Direct Reflection from Journal Fillet (L)	125	0.5

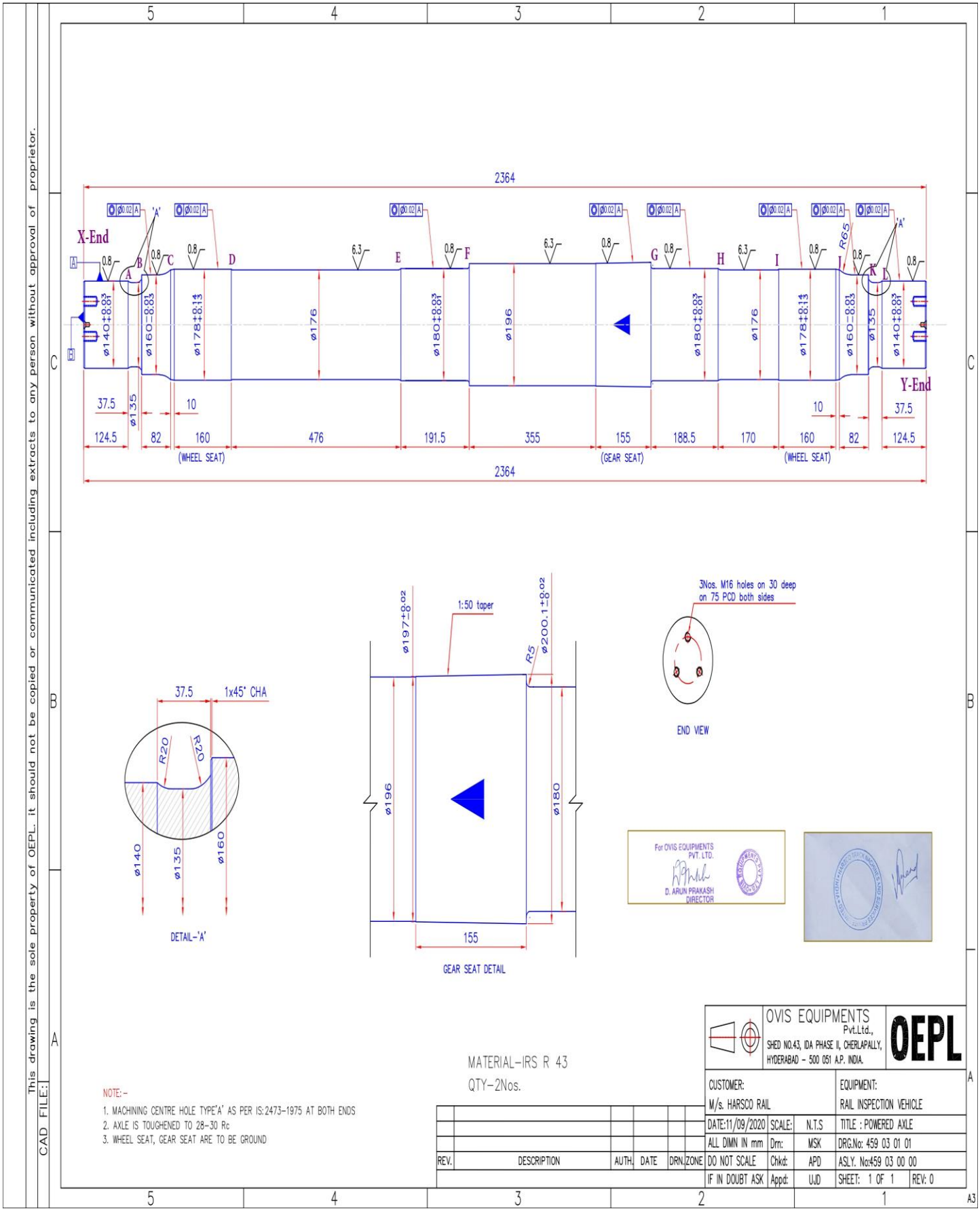
(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss (Both Ends):

S.No	Details	Distance	Division
1	Direct reflection from Wheel seats Inner Fillet / wheel boss, probe position on axle end face at a distance 41 mm from center, probe angle 17.5°	434	4.3

Axle Drawing for fillet and axle end identification is Attached herewith




This drawing is the sole property of OEPL. it should not be copied or communicated including extracts to any person without approval of proprietor.
CAD FILE:
2364
X-End
Y-End
R65
ø140±8.83
ø160−8.83
ø178±8.13
ø176
ø180±8.83
ø196
ø135
37.5
10
124.5
82
160
476
191.5
355
155
188.5
170
(WHEEL SEAT)
(GEAR SEAT)
(WHEEL SEAT)
37.5
1x45° CHA
R20
ø140
ø135
ø160
DETAIL-'A'
ø197±0.02
1:50 taper
R5
ø200.1±0.02
ø196
ø180
155
GEAR SEAT DETAIL
3Nos. M16 holes on 30 deep on 75 PCD both sides
END VIEW
For OVIS EQUIPMENTS PVT. LTD.
D. ARUN PRAKASH
DIRECTOR
MATERIAL-IRS R 43
QTY-2Nos.
NOTE:-
1. MACHINING CENTRE HOLE TYPE'A' AS PER IS:2473-1975 AT BOTH ENDS
2. AXLE IS TOUGHENED TO 28-30 Rc
3. WHEEL SEAT, GEAR SEAT ARE TO BE GROUND
REV. DESCRIPTION AUTH. DATE DRN. ZONE
OVIS EQUIPMENTS Pvt.Ltd.,
SHED NO.43, IDA PHASE II, CHERLAPALLY, HYDERABAD - 500 051 A.P. INDIA.
OEPL
CUSTOMER: M/s. HARSCO RAIL
EQUIPMENT: RAIL INSPECTION VEHICLE
DATE:11/09/2020 SCALE: N.T.S
TITLE : POWERED AXLE
ALL DIMN IN mm Drn: MSK
DRG.No: 459 03 01 01
DO NOT SCALE Chkd: APD
ASLY. No:459 03 00 00
IF IN DOUBT ASK Appd: UJD
SHEET: 1 OF 1 REV: 0
A3

Research Designs and Standards Organization
Ministry of Railways, Lucknow-226011

M&C Directorate

December 2024

Theoretical calculation and relative positions of signals during UST of Non Power Axle of Rail Inspection Vehicle Model No. WRIV 80, Drg. No. 459 03 00 02 (Tentative)

(A) FAR END SCANNING: Calibration: 1 Main Scale Div.= 250 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz freq., Normal Probe, S/C

(i) From Both Ends

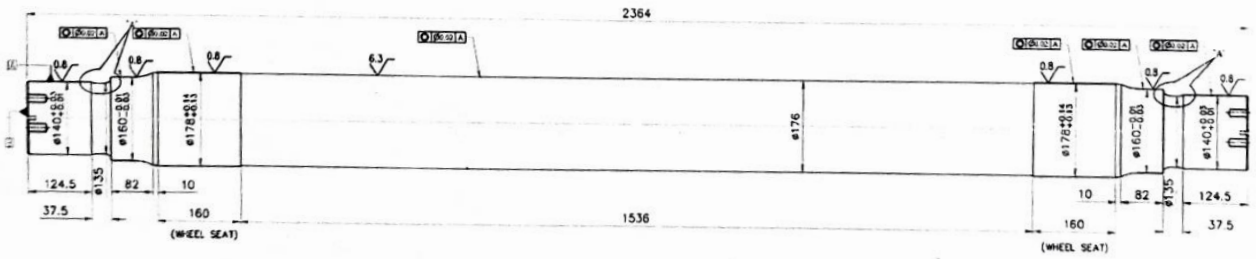
S.No	Details	Distance	Division
1	Direct Reflection from Axle end	2364	9.5
2	Delayed-1 Reflection from Journal Fillet	2350	9.4
3	Delayed-1 Reflection from Wheel Seat outer Fillet	2289	9.2
4	Direct Reflection from Journal Fillet	2202	8.8
5	Direct Reflection from Wheel Seat outer Fillet	2120	8.5
6	Direct Reflection from Wheel seat inner fillet	414	1.7
7	Direct Reflection from Journal Fillet	125	0.5

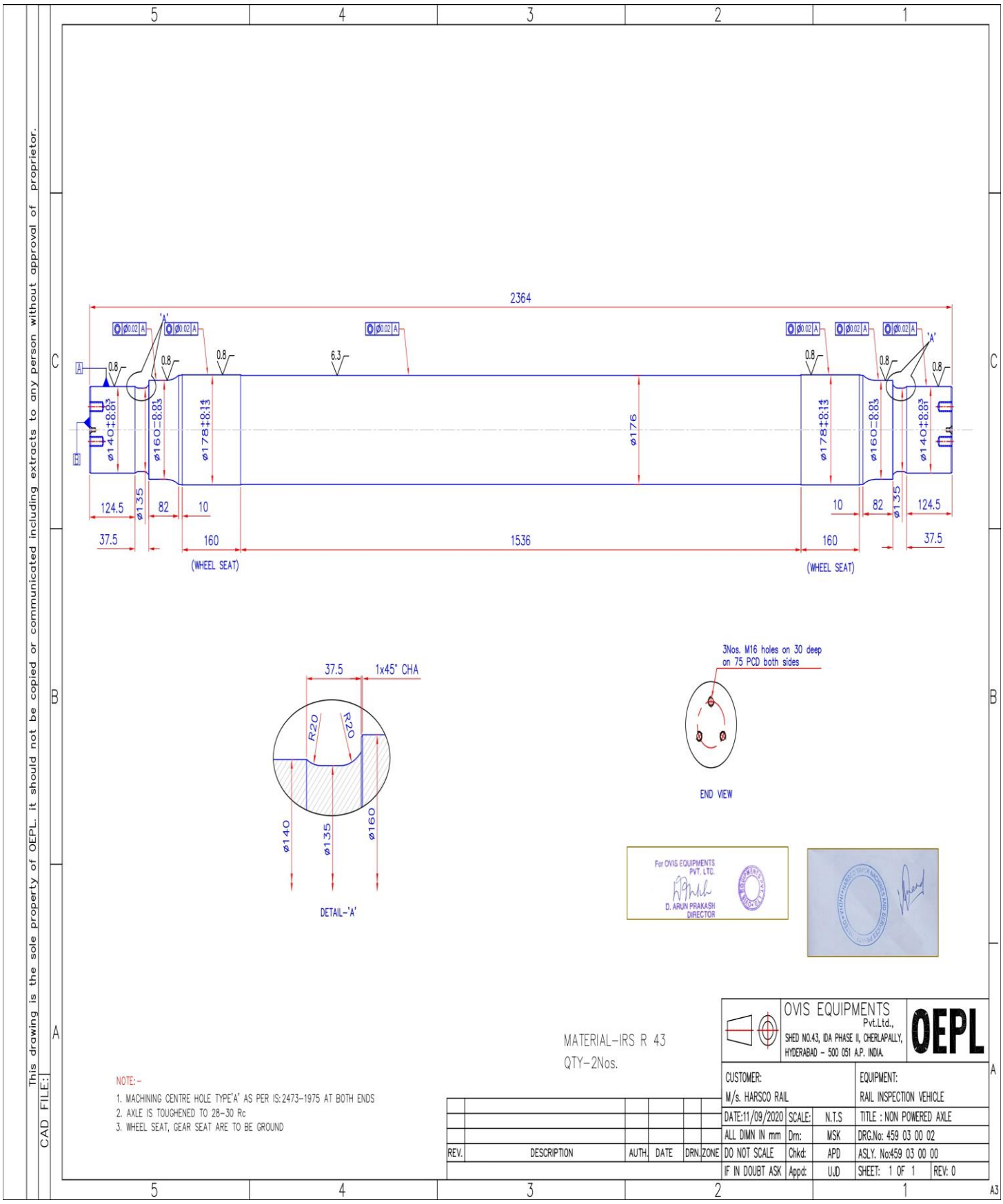
(B)Near End Low Angle Scanning: Calibration: 1 MSD. = 100 mm (Compression wave)
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal

i) Wheel seats Inner Fillet / Wheel Boss (Both Ends):

S.No	Details	Distance	Division
1	Direct reflection from Wheel seats Inner Fillet / wheel boss, probe position on axle end face at a distance 41 mm from center, probe angle 17.5°	434	4.3

Axle Drawing for fillet and axle end identification is Attached herewith




This drawing is the sole property of OEPL. it should not be copied or communicated including extracts to any person without approval of proprietor.
CAD FILE:
2364
ø140±8.85
ø160-8.85
ø178±8.13
ø176
124.5
ø135
82
10
37.5
160
1536
(WHEEL SEAT)
37.5
1x45° CHA
R20
ø140
ø135
ø160
DETAIL-'A'
3Nos. M16 holes on 30 deep on 75 PCD both sides
END VIEW
For OVIS EQUIPMENTS PVT. LTC.
D. ARUN PRAKASH
DIRECTOR
MATERIAL-IRS R 43
QTY-2Nos.
NOTE:-
1. MACHINING CENTRE HOLE TYPE'A' AS PER IS:2473-1975 AT BOTH ENDS
2. AXLE IS TOUGHENED TO 28-30 Rc
3. WHEEL SEAT, GEAR SEAT ARE TO BE GROUND
OVIS EQUIPMENTS Pvt.Ltd.,
SHED NO.43, IDA PHASE II, CHERLAPALLY, HYDERABAD - 500 051 A.P. INDIA.
OEPL
CUSTOMER: M/s. HARSCO RAIL
EQUIPMENT: RAIL INSPECTION VEHICLE
DATE:11/09/2020 SCALE: N.T.S
TITLE : NON POWERED AXLE
ALL DIMN IN mm Drn: MSK
DRG.No: 459 03 00 02
DO NOT SCALE Chkd: APD
ASLY. No:459 03 00 00
IF IN DOUBT ASK Appd: UJD
SHEET: 1 OF 1 REV: 0
REV. DESCRIPTION AUTH. DATE DRN. ZONE
A3