



भारत सरकार —रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ — 226011
EPBX (0522) 2451200
FAX (0522) 2458500

Government of India - Ministry of Railways
Research Designs & Standards Organisation
Lucknow – 226011
DID (0522) 2450115
DID (0522) 2465310



No. MW. PLNG.CSNB.Pt.1

Date: As Signed

The PCMEs

All Zonal Railways

Sub: Maintenance of Center Pivot (CP) Assembly During ROH / POH

Ref: RDSO letter No. MW/PLNG/CSNB dated 07.03.2025

1. The Centre Pivot Assembly is the primary vertical load-transmitting and guidance interface between the wagon body bolster and the bogie bolster. It is also a key component in the transmission of longitudinal forces, as both tractive and braking forces applied to the wagon act through the Centre Pivot Top and Bottom. Proper overhaul of this assembly is, therefore, essential for effective load equalization, reliable transfer of vertical and longitudinal forces, and smooth bogie rotation.
2. Zonal Railways shall ensure correct fitment of the Centre Pivot Assembly in accordance with the applicable CP-SB arrangement drawing of the wagon. The centre pivot must invariably be provided with a shackle lock, washer, lock pin, split pins, and liners as prescribed in the latest drawings.
3. In continuation of this office letter under reference, a detailed and consolidated guideline for maintenance of the CP Assembly and its components in CASNUB Bogies and its variants during ROH/POH is enclosed. These instructions aim to standardize maintenance practices and enhance reliability of CP assembly. On similar lines, the maintenance practices for the CP assembly and its components fitted in LWLH and LCCF bogies shall also be followed.
4. During ROH/POH of freight wagons, the CP Assembly is to be subjected to systematic cleaning, inspection, repair and reassembly to ensure safe and efficient transfer of loads between the wagon body and bogie. After the wagon is lifted and the bogie rolled out, the CP top and bottom castings and associated components must be attended as detailed in **Annexures I to VII**. The maintenance guidelines for Spherical and Flat Type CP Assemblies fitted in CASNUB bogies and their variants are detailed in **Annexure-I to Annexure-IV**. The recommended welding practices for the CP Assembly, the gauges along with their application drawings, and the CP Assembly and Bolster drawings are provided in **Annexure-V, Annexure-VI, and Annexure-VII** respectively.
5. A summary of different variants of CP assembly fitted in various freight bogies, its relevant drawings, gauge drawings and maintenance standards is appended below for ready reference please.

Bogie Type	CASNUB Bogies				LCCF Bogie		LWLH Bogie	
Type of CP	Spherical		Flat		Flat		Flat	
Top/Bottom	Top	Bottom	Top	Bottom	Top	Bottom (integral)	Top	Bottom (integral)
Drawing No.	WD-85079-S/2	WD-85079-S/2	WD-97049-S/3	WD-97049-S/3	CONTR-9404-S/8	CONTR-9404-S/5	WD-15013-S/1	WD-13012-S/5
Gauge No.	WD-25094-S/2	WD-25094 – S/1	WD-25094-S/3	WD-25094 – S/4	WD-25094 – S/7	WD-25094 – S/8	WD-25094 – S/5	WD-25094 – S/6
Vertical/Profile Wear Limit	3 mm (Both in bowl and vertical side)	4mm (Both in bowl and vertical side)	2.0 mm	3.0 mm	2.0 mm	2.0 mm	2.0 mm	2.0 mm
Horizontal Wear Limit	NA	NA	2.0 mm	3.0 mm	2.0 mm	2.0mm	2.0 mm	2.0mm
ROH	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners to be replaced if exceeding the wear limit)
POH	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners are to be renewed)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners are to be renewed)	100 % Gauging (CP to be replaced if exceeding the wear limit)	100 % Gauging (Liners are to be renewed)

6. The wear limits shall be ensured during bogie maintenance. These limits have been prescribed on the premise that, when complied with during ROH/POH, the CP performance shall remain satisfactory, taking into account the normal wear expected in service up to the next scheduled maintenance. These wear limits are maintenance limits only and shall not be construed as safety limits.
7. These instructions are also under incorporation in the CASNUB Bogie Maintenance Manual, Technical Pamphlet no. G-95, and will subsequently be adopted in the revisions of the LWLW25T and LCCF Bogie Maintenance Manual, G-112.

DA: As above

(A.K. Gautam)
Director/Wagon (Bogie)
for Executive Director/Wagon

Copy to: EDME (Freight)/ Railway Board -for kind information please.

Maintenance of Spherical Center Pivot Assembly during ROH**1. Maintenance of center pivot top and bottom castings to Drg no. WD-85079-S/2.****1.1. Cleaning & Examination of center pivot top and bottom castings**

The center pivot top and bottom castings must be thoroughly cleaned before inspection, as shown in **Figures 1 & 2**. During cleaning of CP bottom assembly, special attention shall be paid to remove any lump of metal chips/graphite powder formed, particularly near the CP pin hole area. Post cleaning, bare metal must be visible on the entire surface of top & bottom CP and no residue of rust, graphite powder etc. should left behind. Once thoroughly cleaned, both castings shall be visually examined for any cracks, fractures, or structural failures. Suspected area shall be verified using an appropriate non-destructive crack detection method such as Dye Penetrant Testing (DPT) or Magnetic Particle Inspection (MPI). In case any crack is detected in CP top or bottom casting, the respective casting shall be replaced. **No weld repair on CP top or bottom casting shall be undertaken.**



Figure 1 Spherical CP bottom cleaning

(for hard lump removal near CP pin hole area, wire brush & chisel should be used)



Figure 2 Spherical CP Top cleaning

1.2. Examination of welding condition of CP bottom

The welding of the center pivot bottom to the bogie bolster shall be thoroughly cleaned using wire brush & visually inspected for any signs of crack, separation, or weld failures. In case of suspected crack, DPT or MPT can be used for verification. If such defects are detected, the affected weld area should be groused properly using a grinder or other suitable tools to remove damaged or weak weld material. After preparation, the joint must be re-welded strictly in accordance with the procedure and specifications provided in the relevant bogie bolster drawing. *[Enclosed welding drawing (Annexure -VII) and Final Welded CP Bottom Photographs below in Figure-6]*

1.3. Attention to center pivot top and bottom castings

(i) Spherical type center pivot bottom:

Wear limit seat/ bowl : 4 mm

Wear limit Vertical side : 4 mm

The wear of the center pivot shall be checked using RDSO Gauge drawing no. WD-25094 – S/1. To measure wear on the pivot seat, the gauge should be placed as shown in **Figure-3**.

- (i) **Checking wear of the Centre Pivot:** If the pivot surface touches the surface marked ' * ' on the gauge at any point, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting to assess the full extent of wear.
- (ii) **Checking wear of the Centre Pivot Profile:** If a 4 mm thick feeler gauge can be inserted between the pivot bowl surface and the gauge surface marked ' # ' on the gauge at any point, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting to assess the full extent of wear.
- (iii) **Checking wear of the Vertical Wall:** If a 7 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked ' ● ' with the gauge in position, the bottom centre pivot must be replaced.

Before fitting a new bottom center pivot, its surface shall be checked using the same gauge with two 3 mm thick shims inserted 180 degree apart between the gauge and the vertical face of the casting as marked ' ● '. This is required for proper clearance between top and bottom castings and shall be checked at two locations, 90 degree apart. **Figure-4** illustrates the physical gauging of the bottom centre pivot before fitment.

Figures 5–8 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Bottom. These figures provide step-by-step visual guidance on the

correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

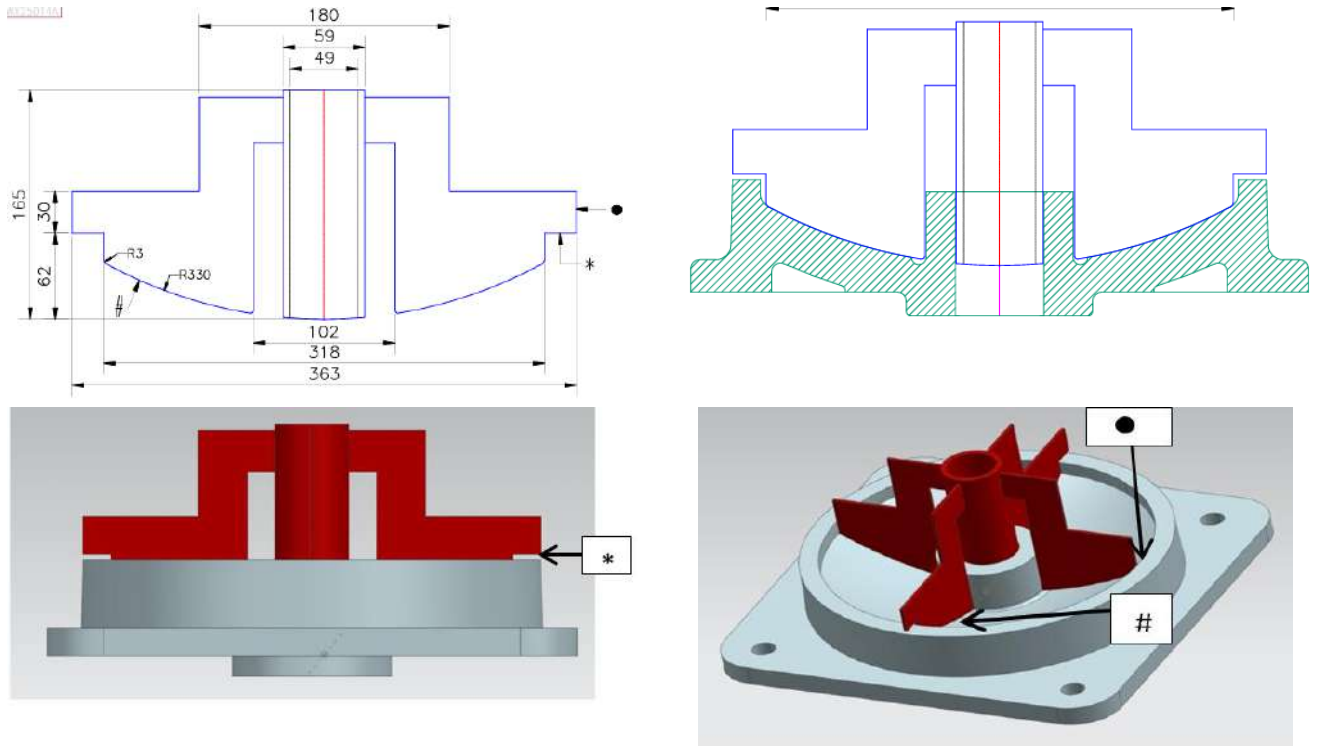


Figure 3 Placement of Centre Pivot Bottom Gauge WD-25094-S/1 for the measurement of wear in the Centre Pivot Bottom

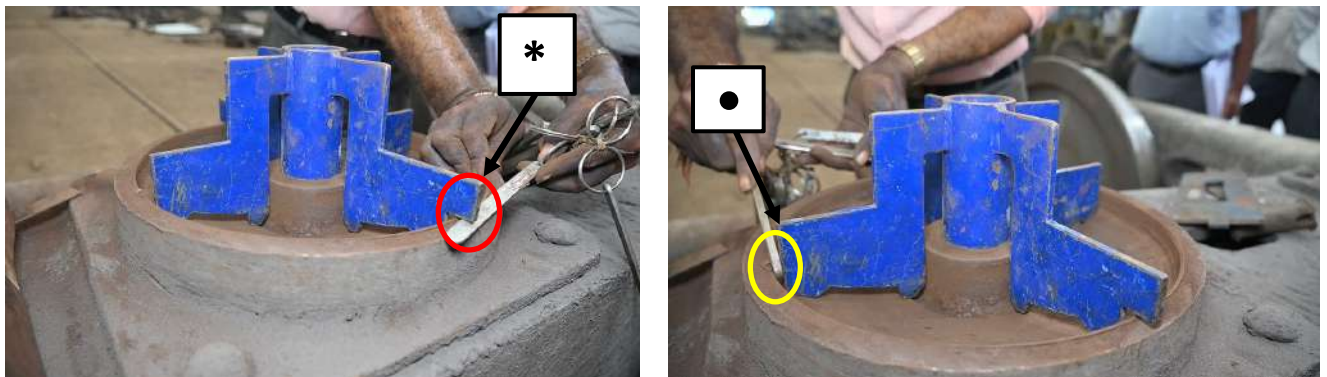


Figure 4 Measurement of Wear in the CP Bottom



**Figure 5 Spherical CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bogie bolster)**



Figure 6 New Spherical CP bottom fitment

(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, subsequent removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)



Figure 7 Welding of CP bottom with bogie bolster

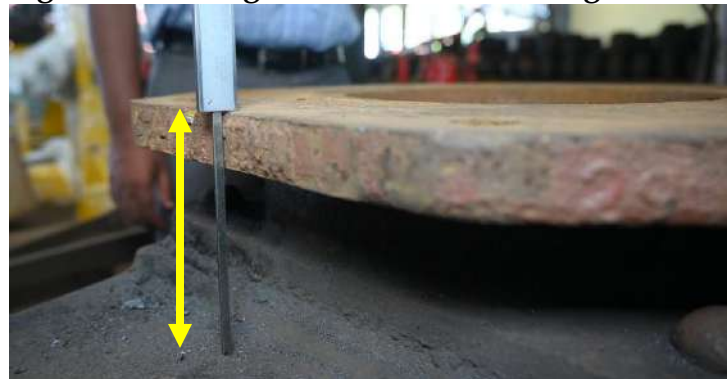


Figure 8 CP Assembly height measurement

(ii) Spherical type center pivot top:

Wear limit seat : 3 mm

Wear limit Vertical side : 3 mm

The wear of the top center pivot shall be measured using RDSO gauge drawing no. WD-25094-S/2. To determine wear on the pivot seat, the gauge should be placed as shown in **Figure-9**.

- (i) **Checking wear of the Centre Pivot Profile:** If a 3 mm thick feeler gauge can be inserted between the pivot bowl surface and the gauge surface marked '*' on the gauge at any point, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface to assess the full extent of wear.
- (ii) **Checking wear on the vertical wall of the Centre Pivot:** If a 3 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked

' * ' with the gauge in position, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface of top casting.

Figure-10 illustrates the physical gauging of the top centre pivot.

Before fitting a new top center pivot, its surface should be checked by using the same gauge, moving the gauge around the surface without any obstruction to ensure proper fitment as shown in **Figure-11**.

Figures 12 - 16 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

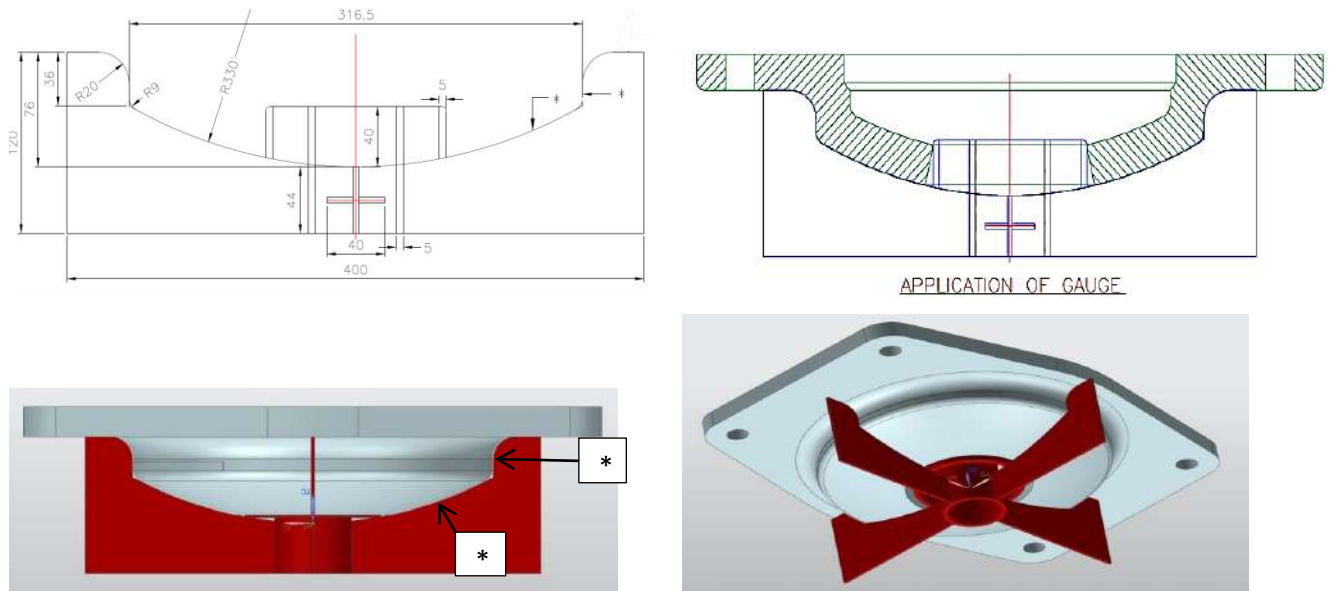


Figure 9 Placement of Centre Pivot Bottom Gauge WD-25094-S/2 for the measurement of wear in the Centre Pivot Top

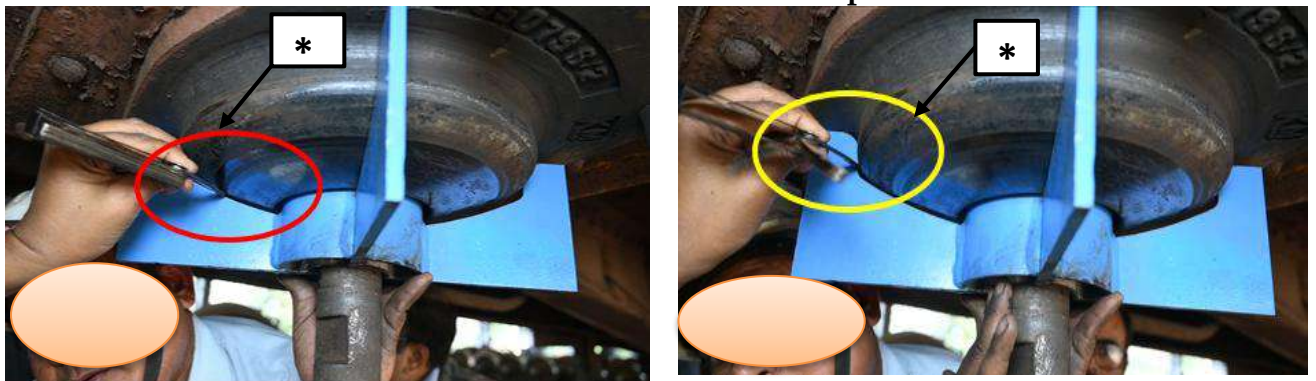


Figure 10 Measurement of Wear in the CP Top



**Figure 11 New Spherical CP top gauging before fitment
(3 mm filler gauge must not pass at time of fitment)**



Figure 12 Spherical CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall also be taken to avoid any injury, due to falling top CP)



Figure 13 Spherical CP top examination (gauge no. WD-25094-S/2 should rotate freely over CP top)



Figure 14 Spherical CP top mounting location examination-Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for the respective wagon



Figure 15 Spherical CP top locating at mounting face



Figure 16 Spherical CP top fitment (two diagonal holding bolts shall be fitted, followed by lock bolting in two holes, subsequent removal of holding bolt and lock bolting in these two holes)

2. Examination and Attention of fasteners of CP top & bottom

The condition of the center pivot top and bottom fasteners—such as rivets or lock bolts—that connect the assembly to the bogie bolster and the underframe shall be visually checked. Any fastener found to be loose, missing, worn, or broken shall be replaced with prescribed fastener in accordance to relevant CP-SB drawing of the wagon.

3. Examination Attention of condition of center pivot assembly items

The condition of the center pivot pin, CP washer, retainer (for spherical CP), shackle lock, and lock pin shall be visually examined during routine overhaul. Any component showing signs of excessive wear, bending, deformation, or other damage must be replaced with new parts. The Center Pivot Pin must be replaced if its diameter is found to be 43 mm or less at any point along the length. **The CP washer is to be replaced during every ROH, irrespective of its condition.** The CP Washer is a rubber to metal bonded component having one face of rubber and other face of metal. **It shall always be ensured that while placing the CP washer in the center pivot pin the rubber face shall remain upside. Split pin/Spring Cotter Pin shall invariably be renewed.** Besides condition based change, all these components—center pivot pin, CP washer, retainer for spherical CP, shackle lock, lock pin and split Pin/Spring Cotter Pin—must strictly comply with the requirements of the latest drawing **WD-85079-S-02**.

Centre pivot pin, CP washer, shackle lock, lock pin and Split Pin/Spring Cotter Pin (R-Clip) are shown in **Figure-17** and Lock Pin with Spring Cotter Pin (R-Clip) is shown in **Figure-18**.



Figure 17 CP pin assembly

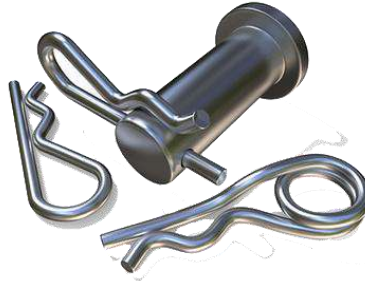


Figure 18 Spring cotter pin (R clip) assembly

4. Procedure for replacement of Spherical Center Pivot:

4.1. Replacement & Fitment of Bottom center pivot:

Rivets and welding of bottom pivot shall be removed by gas cutting. Bolster top surface (pivot area) shall be properly cleaned/dressed through grinding.

New bottom pivot shall be placed on bolster and located with two nut & bolts diagonally opposite. First, rivets shall be fastened in two holes, followed by removal of one bolt at a time and subsequent riveting to cover all four holes. Rivets shall be selected strictly as per concerned CP-SB drawing of the wagon. After riveting, CP bottom shall be welded with bogie bolster all along the periphery.

Figures 19 - 21 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Bottom. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.



Figure 19 Spherical CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bolster)



Figure 20 New Spherical CP bottom fitment

(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)



Figure 21 Welding of CP bottom with bogie bolster

4.2. Replacement & Fitment of top center pivot:

Rivets/lock bolts of top pivot shall be removed by gas cut. Care shall be taken to avoid damage to body bolster and injury due to falling of CP top. Mounting face of underframe shall be properly cleaned/dressed with grinding. CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks, condition of retaining ring & weld failures etc. Any damage/ crack etc. shall be attended using repair procedure applicable for a particular type of the wagon. New CP Top pivot shall be mounted on underframe and located with two nut & bolts diagonally opposite. Lock bolts shall be fastened in two holes followed by removal of one bolt at a time and subsequent lock bolting to cover all four holes. Size of the selected lock bolts shall be strictly as per concerned CP-SB drawing of the wagon.

Figures 22 - 26 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component



Figure 22 Spherical CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall also be taken to avoid any injury, due to falling of top CP)



Figure 23 Spherical CP top examination (gauge no. WD-25094-S/2 should rotate freely over CP top)



Figure 24 Spherical CP top mounting location examination - Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for the respective wagon

Figure 25 Spherical CP top locating at mounting face



Figure 26 Spherical CP top fitment (two diagonal holding bolts shall be fitted, followed by lock bolting in two holes, removal of holding bolt and lock bolting, one at a time in the remaining two holes)

5. Lowering of wagon on overhauled bogie:

- 5.1. Prior to lowering of wagon on overhauled bogie, the bottom Spherical type center pivots of the bogie shall be lubricated with, either Graphite powder conforming to IS: 495-1967 (Re-affirmed-2018) or Molybdenum Disulphide grease grade – 3 conforming to IS: 12203-1999 (Re-affirmed 2019). Graphite powder of about 200-300 grams per assembly, whereas in case of Molybdenum Disulphide grease a layer of about 1.5 mm, shall be uniformly applied on the contact surface of bottom pivot. This will help reduce wear and enhance the service life of the center pivots. **Use of Molybdenum Disulphide grease grade – 3 conforming to IS: 12203-1999 (Re-affirmed 2019) is recommended over Graphite powder due to its superior lubricating properties and less chances of lump formation.**
- 5.2. The top and bottom pivots must be properly assembled and connected with a CP pin. The assembly should then be secured with a CP washer, shackle lock, lock pin, and split pin/ Spring cotter pin (R clip), as shown in the relevant drawings and **Figure - 17**.
- 5.3. The CP washer and split pin/ Spring cotter pin (R clip) shall be replaced with new ones during every ROH.
- 5.4. The CP washer shall be placed in the center pivot pin in such way that the rubber face of the washer is facing upside.
- 5.5. In place of a split pin (dia. 3.5 – 3.7) x 50 mm, a dia. 3.6 X 64 mm spring cotter pin (R clip), made of steel conforming to DIN 11024, may be used as an alternative for easier assembly/disassembly, as illustrated in the Figure 18. (refer to Annexure-VII).
- 5.6. Ensure the correct size of the CP pin is fitted as per the RDSO drawing no. WD-85079-S/2.
- 5.7. Under no circumstances mixing of flat and spherical design centre pivot is permitted on the same wagon.

Maintenance of Spherical Center Pivot Assembly during POH**1. Maintenance of center pivot top and bottom castings to Drg no. WD-85079-S/2.****1.1. Examination of center pivot top and bottom castings**

The center pivot top and bottom castings must be thoroughly cleaned before inspection, as shown in **Figures 1 & 2**. The top center pivot should be removed from the wagon body to allow a complete examination of both the pivot and the wagon body bolster interface. During cleaning of CP bottom assembly, special attention shall be paid to remove any lump of metal chips/graphite powder formed, particularly near the CP pin hole area. Post cleaning, bare metal must be visible on the entire surface of top & bottom CP and no residue of rust, graphite powder etc. should left behind. Once thoroughly cleaned, both castings shall be visually examined for any cracks, fractures, or structural failures. Suspected area shall be verified using an appropriate non-destructive crack detection method such as Dye Penetrant Testing (DPT) or Magnetic Particle Inspection (MPI). In case any crack is detected in CP top or bottom casting, the concerned casting shall be replaced. No weld repair on CP top or bottom casting shall be undertaken.



Figure 1 Spherical CP bottom cleaning

(for hard lump removal near CP pin hole area, wire brush & chisel should be used)



Figure 2 Spherical CP Top shall be removed for examination of body bolster area

1.2. Examination of welding condition of CP bottom

The welding of the center pivot bottom to the bogie bolster shall be thoroughly cleaned using wire brush & visually inspected for any signs of cracks, separation, or weld failures. In case of suspected crack, DPT or MPT can be used for verification. If such defects are detected, the affected weld area should be groused properly using a grinder or other suitable tools to remove damaged or weak weld material. After preparation, the joint must be re-welded strictly in accordance with the procedure and specifications provided in the relevant bogie bolster drawing. *[Enclosed welding drawing (Annexure -VII) and Final Welded CP Bottom Photographs below in Figure-6]*

1.3. Attention to center pivot top and bottom castings

(i) Spherical type center pivot bottom:

Wear limit seat/ bowl : 4 mm

Wear limit Vertical side : 4 mm

The wear of the center pivot shall be checked using RDSO Gauge drawing no. WD-25094 – S/1. To measure wear on the pivot seat, the gauge should be placed as shown in **Figure-3**.

- (i) **Checking wear of the Centre Pivot:** If the pivot surface touches the surface marked '*' on the gauge at any point, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting to assess the full extent of wear.
- (ii) **Checking wear of the Centre Pivot Profile:** If a 4 mm thick feeler gauge can be inserted between the pivot bowl surface and the gauge surface marked '#' on the gauge at any point, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting to assess the full extent of wear.
- (iii) **Checking wear of the Vertical Wall:** If a 7 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked '●' with the gauge in position, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting.

Before fitting a new bottom center pivot, its surface shall be checked using the same gauge with two 3 mm thick shims inserted 180 degree apart between the gauge and the vertical face of the casting as marked '●'. This is required for proper clearance between top and bottom castings and shall be checked at two locations, 90 degree apart. **Figure-4** illustrates the physical gauging of the bottom centre pivot before fitment.

Figures 5–8 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Bottom. These figures provide step-by-step visual guidance on the

correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

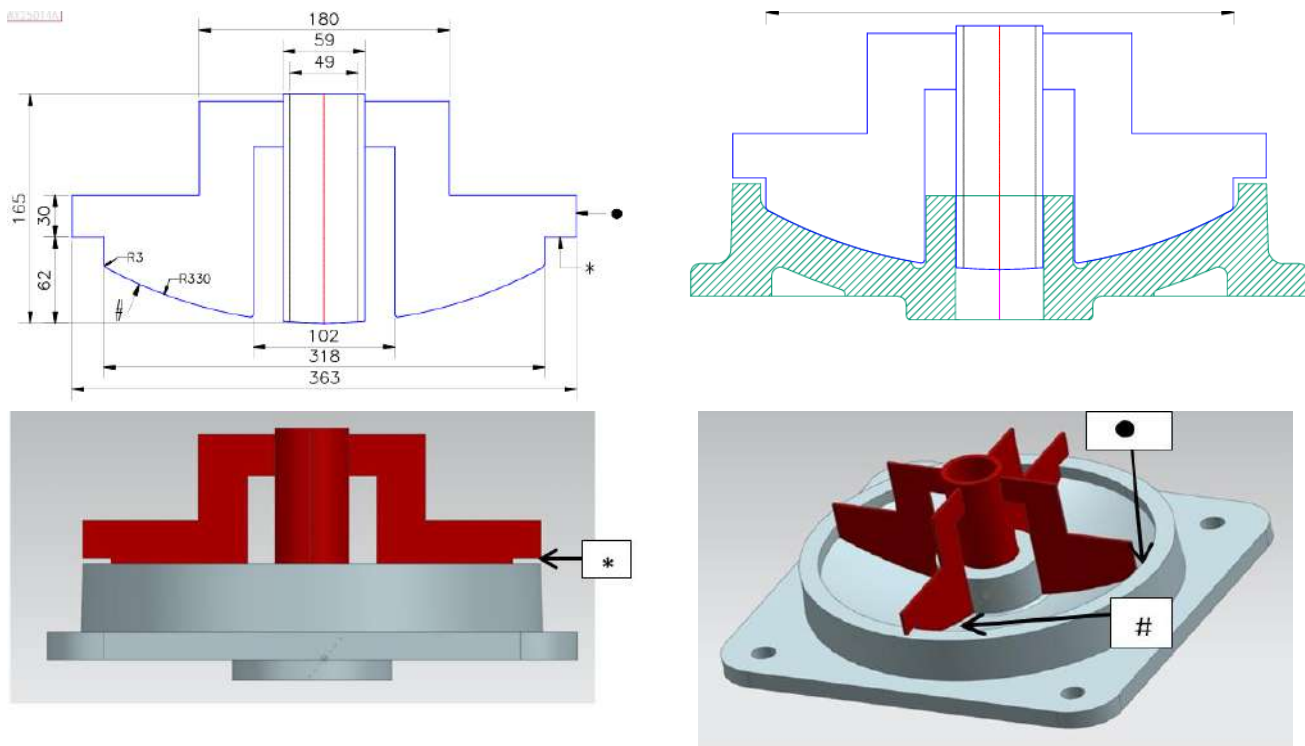


Figure 3 Placement of Centre Pivot Bottom Gauge WD-25094-S/1 for the measurement of wear in the Centre Pivot Bottom

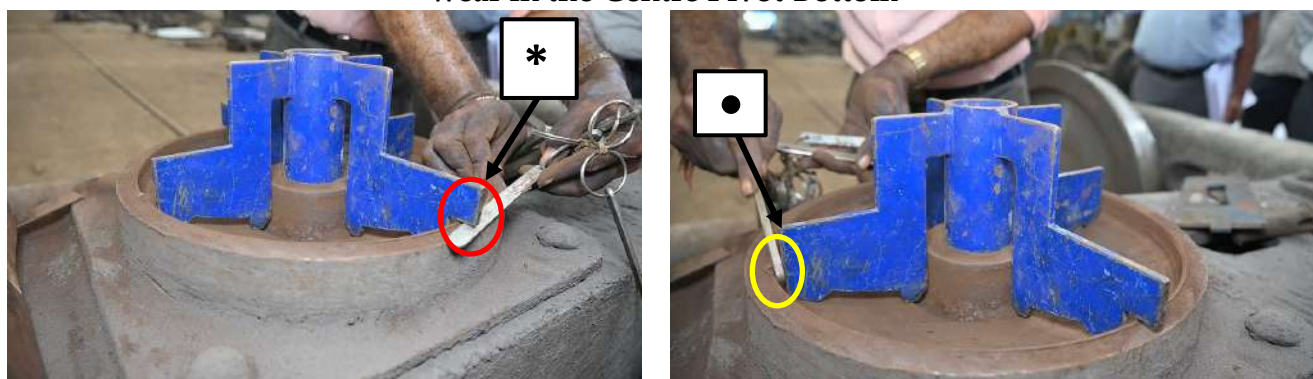


Figure 4 Measurement of Wear in the CP Bottom



**Figure 5 Spherical CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bolster)**



Figure 6 New Spherical CP bottom fitment

(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, subsequent removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)

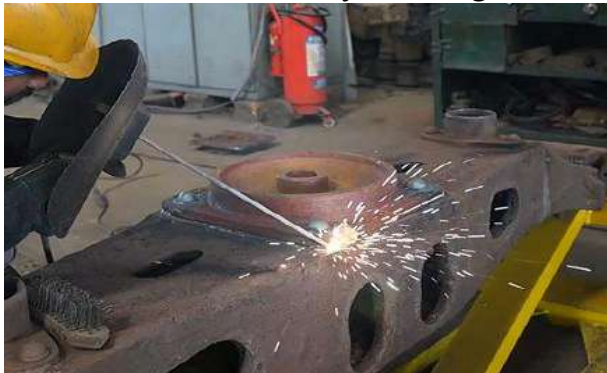


Figure 7 Welding of CP bottom with bogie bolster

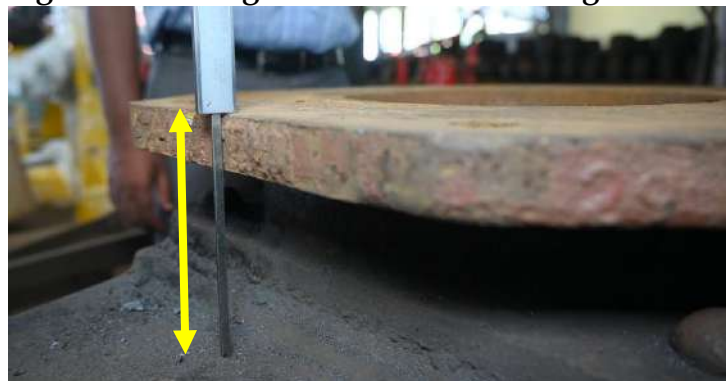


Figure 8 CP Assembly height measurement

(ii) Spherical type center pivot top:

Wear limit seat : 3 mm

Wear limit Vertical side : 3 mm

CP top shall be dismantled by cutting off the rivet/lock bolt using gas torch, damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of CP top. After dismantling CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks, condition of retaining ring & weld failures etc.

The wear of the top center pivot shall be measured using RDSO gauge drawing no. WD-25094-S/2. To determine wear on the pivot seat, the gauge should be placed as shown in **Figure-9**.

- (i) **Checking wear of the Centre Pivot Profile:** If a 3 mm thick feeler gauge can be inserted between the pivot bowl surface and the gauge surface marked '*' on the gauge at any point, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface to assess the full extent of wear.
- (ii) **Checking wear on the vertical wall of the Centre Pivot:** If a 3 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked ' * ' with the gauge in position, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface of top casting.

Figure-10 illustrates the physical gauging of the top centre pivot.

Before fitting a new top center pivot, its surface should be checked by using the same gauge, moving the gauge around the surface without any obstruction to ensure proper fitment as shown in **Figure-11**.

Figures 12 - 16 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

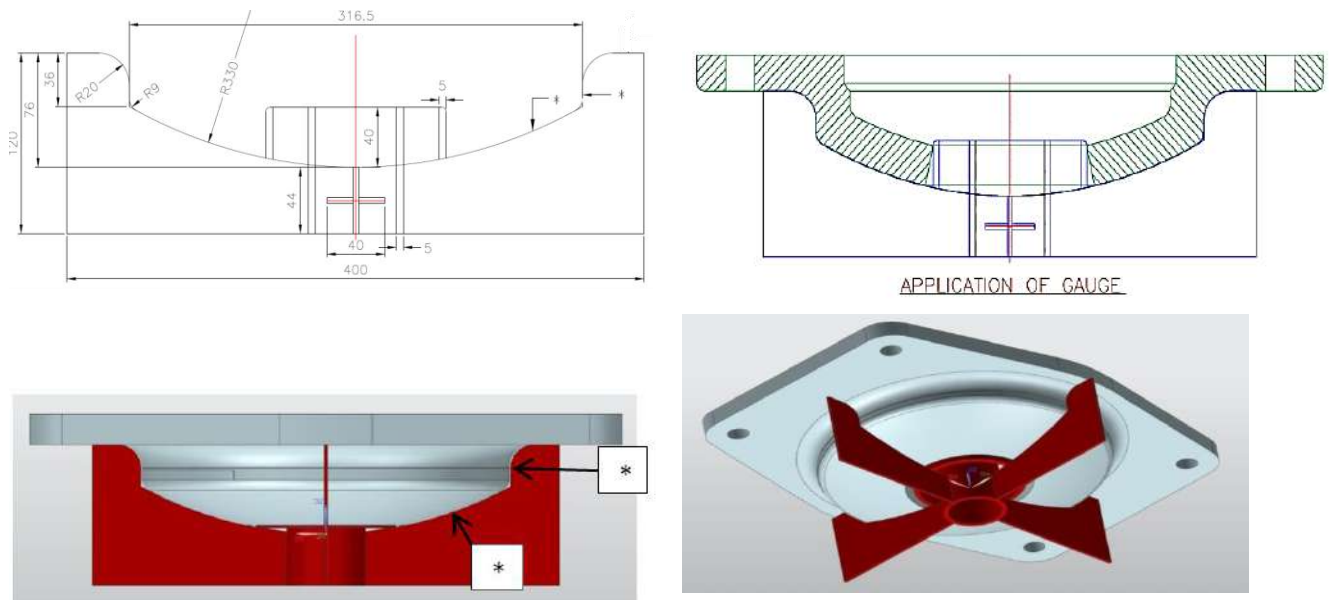


Figure 9 Placement of Centre Pivot top Gauge WD-25094-S/2 for the measurement of wear in the Centre Pivot Top

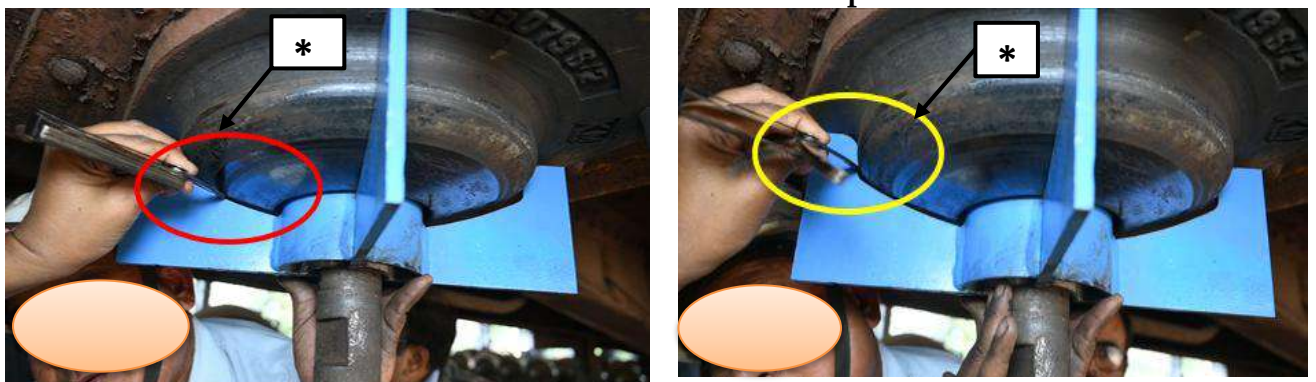


Figure 10 Measurement of Wear in the CP Top



**Figure 11 New Spherical CP top gauging before fitment
(3 mm filler gauge must not pass at the time of fitment)**



Figure 12 Spherical CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)



Figure 13 Spherical CP top examination (Gauge no. WD-25094-S/2 should rotate freely over CP top)



Figure 14 Spherical CP top mounting location examination - Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for the respective wagon

Figure 15 Spherical CP top locating at mounting face



Figure 16 Spherical CP top fitment (two diagonal holding bolts shall be fitted, followed by lock bolting in two holes, subsequent removal of holding bolt and lock bolting in these two holes)

2. Examination and Attention of fasteners of CP top & bottom

The condition of the center pivot bottom fasteners—rivets—that connect the assembly to the bogie bolster shall be visually checked. Any fastener found to be loose, missing, worn, or broken shall be replaced with prescribed fastener in accordance to relevant CP-SB drawing of the wagon.

Centre pivot top fasteners- such as rivets or lock bolts shall be renewed during POH. Size of rivet/lock bolt for fitment of CP top shall be in accordance to the relevant CP-SB drawing of the wagon.

3. Examination Attention of condition of center pivot assembly items

The condition of the center pivot pin, CP washer, retainer (for spherical CP), shackle lock, and lock pin shall be visually examined during periodic overhaul. Any component showing signs of excessive wear, bending, deformation, or other damage must be replaced with new parts. The Center Pivot Pin must be replaced if its diameter is found to be 43 mm or less at any point along the length. The CP washer is to be replaced during every POH, irrespective of its condition. The CP Washer is a rubber to metal bonded component having one face of rubber and other face of metal. It shall always be ensured that while placing the CP washer in the center pivot pin the rubber face shall remain upside. Split pin/Spring Cotter Pin shall invariably be renewed. Besides condition based change, all these components—center pivot pin, CP washer, retainer for spherical CP, shackle lock, lock pin and split Pin/Spring Cotter Pin—must also be as per the latest relevant drawings WD 97049-S-03, WD-85079-S-02, CONTR-9404-S-08, and WD-15013-S-01.

Centre pivot pin, CP washer, shackle lock, lock pin and Split Pin/Spring Cotter Pin (R-Clip) are shown in **Figure-17** and Lock Pin with Spring Cotter Pin (R-Clip) is shown in **Figure-18**.



Figure 17 CP pin assembly

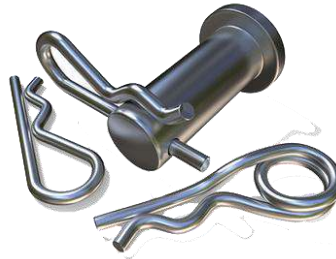


Figure 18 Spring cotter pin (R clip) assembly

4. Procedure for replacement of Spherical Center Pivot:

4.1. Replacement & Fitment of Bottom center pivot:

Rivets and welding of bottom pivot shall be removed by gas cutting. Bolster top surface (pivot area) shall be properly cleaned/dressed through grinding.

New bottom pivot shall be placed on bolster and located with two nut & bolts diagonally opposite. First, rivets shall be fastened in two holes, followed by removal of one bolt at a time and subsequent riveting to cover all four holes. Rivets shall be selected strictly as per concerned CP-SB drawing of the wagon. After riveting, CP bottom shall be welded with bogie bolster all along the periphery.

Figures 19 - 21 illustrate the procedure for removal and fitment of a new Spherical Center Pivot Bottom. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.



Figure 19 Spherical CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bolster)



Figure 20 New Spherical CP bottom fitment

(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, subsequent removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)



Figure 21 Welding of CP bottom with bogie bolster

4.2. Replacement & Fitment of top center pivot:

Rivets/lock bolts of top pivot shall be removed by gas cut. Care shall be taken to avoid damage to body bolster and injury due to falling of the CP top. Mounting face of underframe shall be properly cleaned/dressed with grinding. CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks, condition of retaining ring & weld failures etc. Any damage/ crack etc. shall be attended using repair procedure applicable for a particular type of the wagon. New/serviceable CP Top pivot shall be mounted on underframe and located with two nut & bolts diagonally opposite. Lock bolts shall be fastened in two holes followed by removal of one bolt at a time and subsequent lock bolting to cover all four holes. Size of the selected lock bolts shall be strictly as per concerned CP-SB drawing of the wagon.

Figures 22 - 26 illustrate the procedure for removal and fitment of a new/serviceable Spherical Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component



Figure 22 Spherical CP top removal (Rivet/lock bolt shall be cut using gas torch, damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)



Figure 23 Spherical CP top examination (gauge no. WD-25094-S/2 should rotate freely over CP top)



Figure 24 Spherical CP top mounting location examination- Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for the respective wagon



Figure 25 Spherical CP top locating at mounting face



Figure 26 Spherical CP top fitment (two diagonal holding bolts shall be fitted, followed by lock bolting in two holes, removal of holding bolt and lock bolting, one at a time in the remaining two holes)

5. Lowering of wagon on overhauled bogie:

- 5.1. Prior to lowering of wagon on overhauled bogie, the bottom Spherical type center pivots of the bogie shall be lubricated with, either Graphite powder conforming to IS: 495-1967 (Re-affirmed-2018) or Molybdenum Disulphide grease grade – 3 conforming to IS: 12203-1999 (Re-affirmed 2019). Graphite powder of about 200-300 grams per assembly, whereas in case of Molybdenum Disulphide grease a layer of about 1.5mm, shall be uniformly applied on the contact surface of bottom pivot. This will help reduce wear and enhance the service life of the center pivots. **Use of Molybdenum Disulphide grease grade – 3 conforming to IS: 12203-1999 (Re-affirmed 2019) is recommended over graphite powder due to its superior lubricating properties and less chances of lump formation.**
- 5.2. The top and bottom pivots must be properly assembled and connected with a CP pin. The assembly should then be secured with a CP washer, shackle lock, lock pin, and split pin, as shown in the relevant drawings and **Figure - 17**.
- 5.3. The CP washer and split pin shall be replaced with new ones during every ROH.
- 5.4. The CP washer shall be placed in the center pivot pin in such way that the rubber face of the washer is facing upside.
- 5.5. In place of a split pin (dia. 3.5 – 3.7) x 50 mm, a dia. 4 mm spring cotter pin (R clip), made of steel conforming to DIN 11024, may be used as an alternative for easier assembly/disassembly, as illustrated in the Figure 18. (refer to Annexure-VII). This shall also be renewed during ROH.
- 5.6. Ensure the correct size of the CP pin is fitted as per the RDSO drawing no. WD-85079-S/2.
- 5.7. Under no circumstances mixing of flat and spherical design centre pivot is permitted on same wagon.

Maintenance of Flat Center Pivot Assembly during ROH**1. Maintenance of center pivot top and bottom castings to Drg no. WD-97049-S/3.****1.1. Examination of center pivot top and bottom castings**

The center pivot top and bottom castings must be thoroughly cleaned before inspection, as shown in **Figures 1 & 2**. During cleaning of CP bottom assembly, special attention shall be paid to remove any lump of metal chips etc. Post cleaning, bare metal must be visible on the entire surface of top & bottom CP and no residue of rust etc. should left behind. Once thoroughly cleaned, both castings shall be visually examined for any cracks, fractures, or structural failures. Suspected area shall be verified using an appropriate non-destructive crack detection method such as Dye Penetrant Testing (DPT) or Magnetic Particle Inspection (MPI). In case any crack is detected in CP top or bottom casting, the concerned casting shall be replaced. No weld repair on CP top or bottom casting shall be undertaken.



Figure 1 Flat CP bottom cleaning using wire brush etc.



Figure 2 Flat CP Top cleaning

1.2. Examination of welding condition of CP bottom

The welding of the center pivot bottom to the bogie bolster shall be thoroughly cleaned using wire brush & visually inspected for any signs of cracks, separation, or weld failures. In case of suspected crack, DPT or MPT can be used for verification. If such defects are detected, the affected weld area should be groused properly using a grinder or other suitable tools to remove damaged or weak weld material. After preparation, the joint must be re-welded strictly in accordance with the procedure and specifications

provided in the relevant bogie bolster drawing. [Enclosed welding drawing. (Annexure - VII) and Final Welded CP Bottom Photographs below in Figure-6]

1.3. Attention of center pivot top and bottom castings

(i) Flat type center pivot bottom horizontal and vertical liner:

Wear limit horizontal liner : 3 mm

Wear limit vertical liner : 3 mm

The wear of the horizontal and vertical liners of the center pivot bottom shall be checked using RDSO Gauge drawing no. WD-25094 – S/4. To measure wear on the horizontal liner, place the gauge as shown in **Figure-5**.

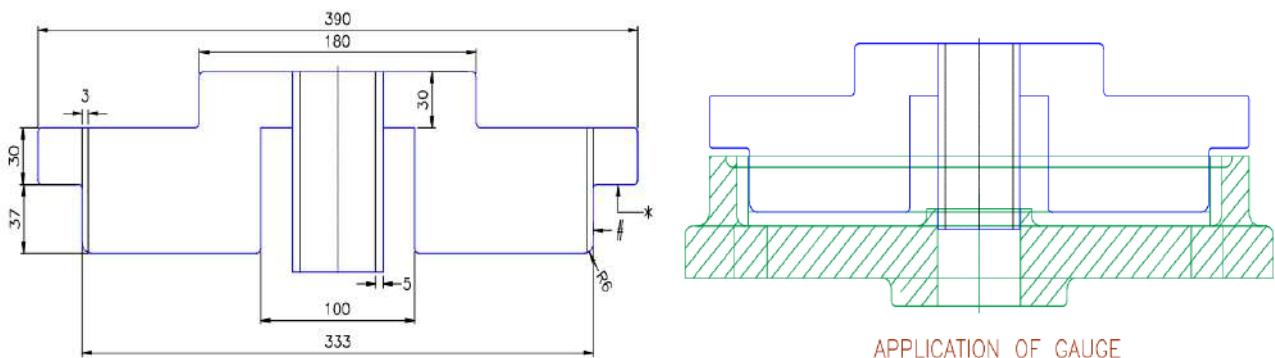
- (i) **Checking of wear on the Horizontal Liner:** If the pivot surface starts touching OR the gap is less than 2 mm at the surface marked '*' on the gauge at any point, the horizontal liner must be replaced. The gauge should be rotated across the entire horizontal liner surface to measure the wear accurately.
- (ii) **Checking of wear on the Vertical Liner:** If a 3 mm thick feeler gauge can be inserted between the pivot surface and the gauge marked '#', the vertical liner must be replaced. The gauge should be rotated to cover the entire surface of the vertical liner.

The worn liner should be carefully removed using a suitable method, and the casting surface inspected for cracks or other damage. If the casting is found satisfactory, a new liner with proper markings shall be installed, ensuring the markings face opposite to the wearing surface. The liner must be properly welded to the bottom pivot as per drawing WD-97049-S/3, following the welding procedure in **Annexure-V**.

Figure-4-5 illustrate the gauging of the bottom centre pivot.

Figures 6–17 illustrate the procedure for removal and fitment of a new vertical and horizontal liners. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

After fitment of the liners, the pivot surface should be checked using the same (**Figure-15**), moving the gauge around the surface to confirm proper fitment.



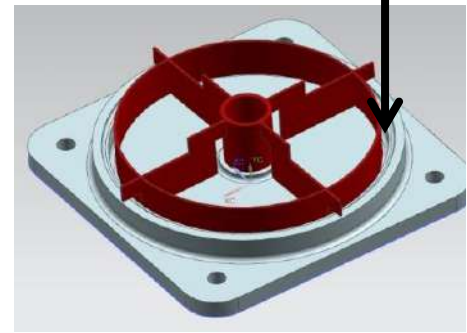
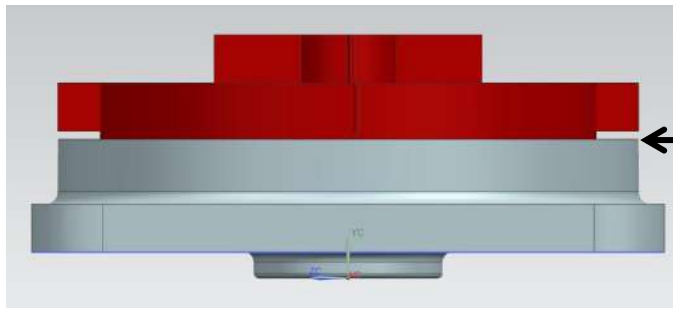


Figure 3 Placement of Centre Pivot Bottom Gauge for the measurement of wear in the Centre Pivot Bottom



**Figure 4 Checking of Vertical wear
(Wear on Horizontal Liner)**

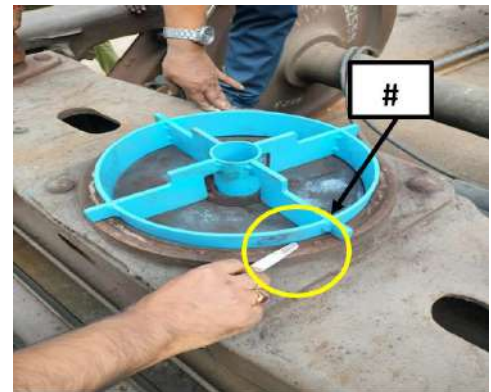


**Figure 5 Checking of Horizontal wear
(Wear on Vertical Liner)**



Figure 6 Flat CP liner removal(Damage to CP should be avoided)



Figure 7 Flat CP- cleaning after liner removal



**Figure 8 Flat CP- new liner fitment
(marking shall be on non-wearing surface)**



**Figure 9 Flat CP- vertical liner complete
welding all along the periphery as per the
drawing**



Figure 10 Flat CP- new liner welding



Figure11 Flat CP- grinding after liner welding



Figure12 Flat CP- horizontal liner complete welding all along the periphery as per the drawing. Post welding top surface of liner should be free from any burrs, weld projection etc. which shall be grinded



Figure 13 Flat CP- vertical gauging after liner fitment (gauge should rotate without any obstruction to ensure proper fitment)



Figure 14 Flat CP- after liner fitment

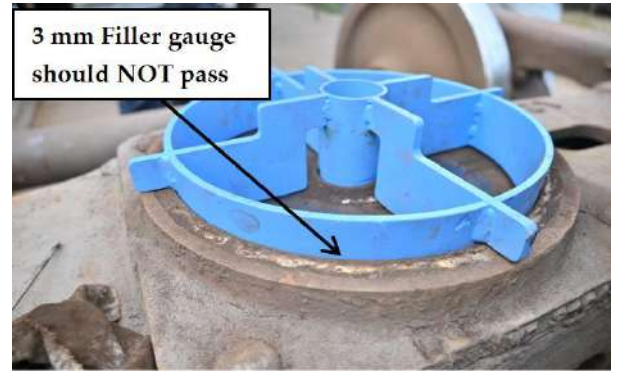


Figure 15 Flat CP- horizontal gauging after liner fitment (gauge should rotate without any obstruction to ensure proper fitment)



Figure16 Flat CP-after liner fitting & welding



Figure 17 CP Assembly height measurement

(ii) Flat type center pivot top:

Wear limit seat : 2 mm

Wear limit Vertical side: 2 mm

The wear of the top center pivot seat shall be checked using RDSO gauge to the drawing no. WD-25094-S/3, placed as shown in Figure-18.

- (i) **Checking of wear of the Centre Pivot Surface (Flat):** If a 2 mm thick feeler gauge can be inserted between the pivot flat surface and the gauge surface marked ' * ' on the gauge at any point, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface to assess the full extent of wear.
- (ii) **Checking of wear on the vertical wall of the Centre Pivot:** If a 2 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked ' * ' with the gauge in position, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting.

Figure-19 illustrates the physical gauging of the bottom centre pivot. Before fitting a new top center pivot, the pivot surface should be checked again with same gauge (**Figure-20**), moving the gauge around the surface to ensure proper fit-up.

Figures 21 - 25 illustrate the procedure for removal and fitment of a new Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

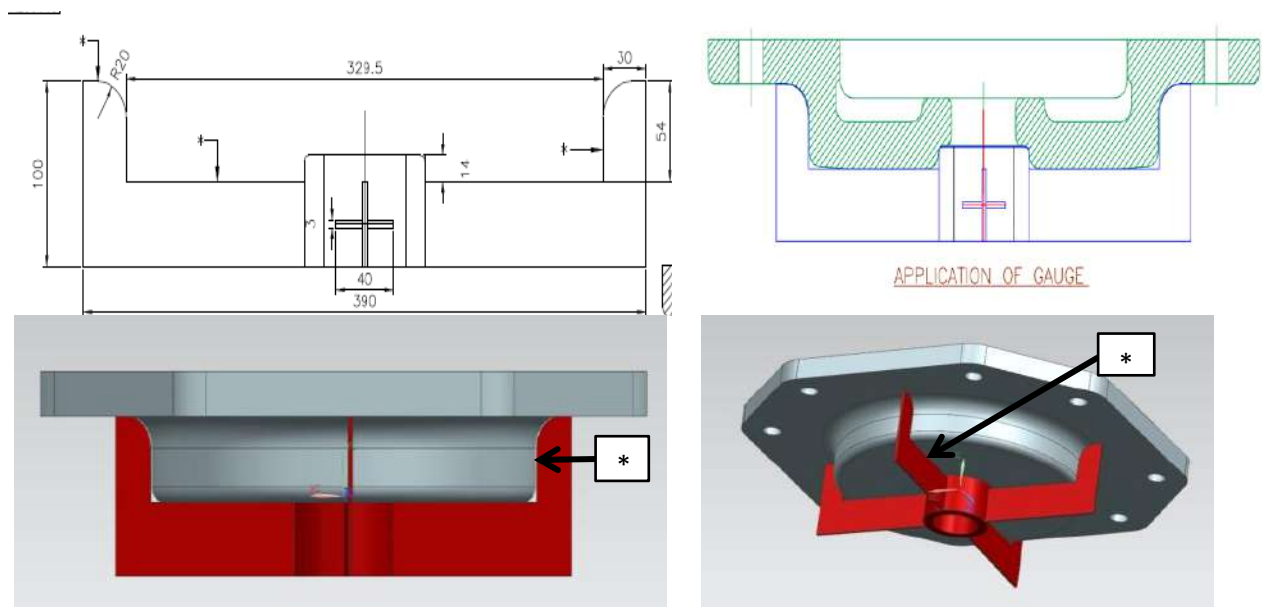


Figure 18 Placement of Centre Pivot Top Gauge for the measurement of wear in the Centre Pivot Top

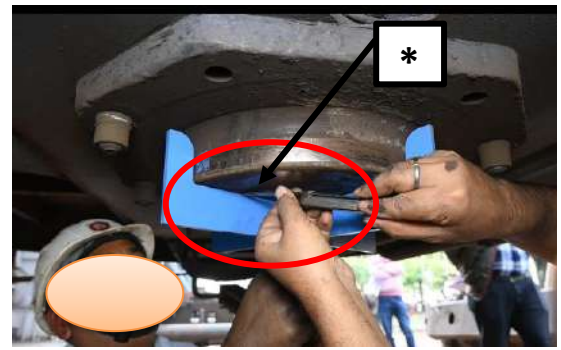
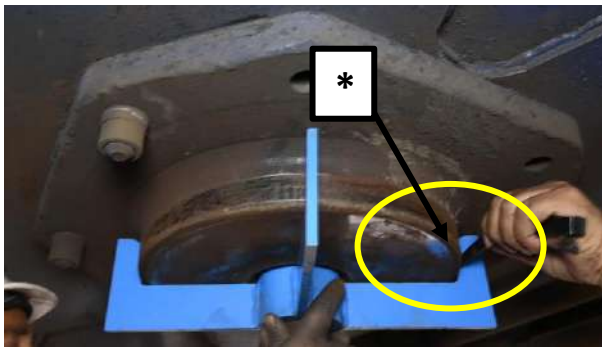


Figure 19 Checking of wear in CP Top

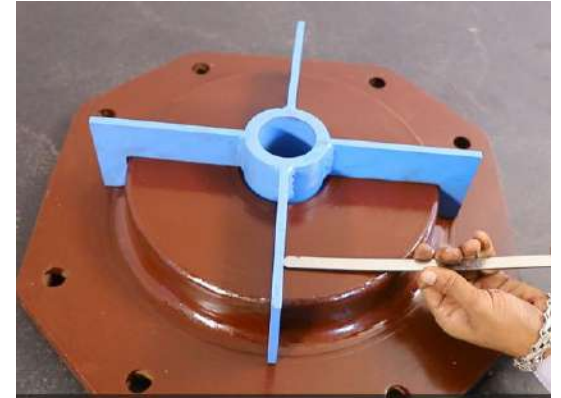
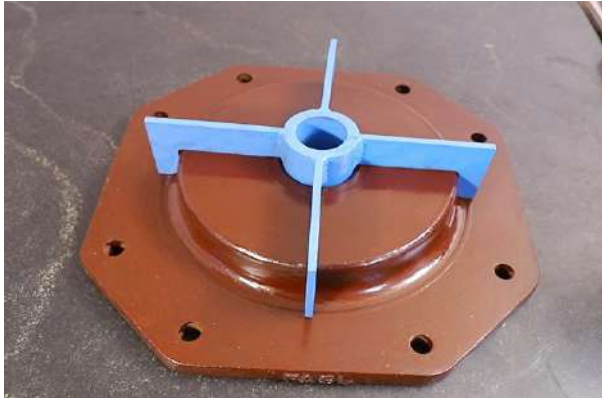


Figure 20 Flat CP top gauging before fitment (in case of replacement)
(2 mm filler gauge shall not pass between the CP and gauge in horizontal and vertical surfaces at the time of fitment)



Figure 21 Flat CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)

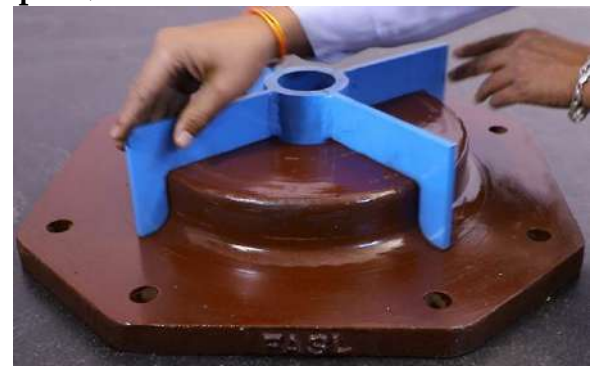


Figure 22 New Flat CP top examination
(Gauge should rotate without any obstruction and 2 mm filler gauge must not pass between gauge and CP on horizontal and vertical surfaces at the time of fitment)



Figure 23 Flat CP top mounting location examination- Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for respective wagon



Figure 24 Flat CP top locating at mounting face (02 bolts shall be fitted diagonally opposite to hold the pivot in its position)



Figure 25 New Flat CP top fitment (Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes)

2. Examination and Attention of fasteners of CP top & bottom

The condition of the center pivot top and bottom fasteners—such as rivets or lock bolts—that connect the assembly to the bogie bolster and the underframe shall be visually checked. Any fastener found to be loose, missing, worn, or broken shall be replaced with prescribed fastener in accordance to relevant CP-SB drawing of the wagon.

3. Examination Attention of condition of center pivot assembly items

The condition of the center pivot pin, CP washer, shackle lock, and lock pin shall be visually examined during routine overhaul. Any component showing signs of excessive wear, bending, deformation, or other damage must be replaced with new parts. The Center Pivot Pin must be replaced if its diameter is found to be 43 mm or less at any point along the length. **The CP washer is to be replaced during every ROH, irrespective of its condition.** The CP Washer is a rubber to metal bonded component having one face of rubber and other face of metal. **It shall always be ensured that while placing the CP washer in the center pivot pin the rubber face shall remain upside. Split pin/Spring Cotter Pin shall invariably be renewed.** Besides condition based change, all these

components—center pivot pin, CP washer, shackle lock, lock pin and split Pin/Spring Cotter Pin—must strictly comply with the requirements of the latest relevant drawings **WD 97049-S-03**.

Centre pivot pin, CP washer, shackle lock, lock pin and Split Pin/Spring Cotter Pin (R-Clip) are shown in **Figure-26** and Lock Pin with Spring Cotter Pin (R-Clip) is shown in **Figure-27**.



Figure 26 CP pin assembly

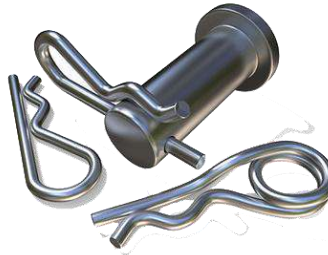


Figure 27 Spring cotter pin (R clip) assembly

4. Guidelines for replacement of Center Pivot:

4.1. Replacement of Bottom center pivot:

Rivets and welding of bottom pivot shall be removed by gas cutting. Bolster top surface (pivot area) shall be properly cleaned/dressed through grinding.

New bottom pivot shall be placed on bolster and located with two nut & bolts diagonally opposite. First, rivets shall be fastened in two holes, followed by removal of one bolt at a time and subsequent riveting to cover all four holes. Size of selected rivets shall be strictly as per concerned CP-SB drawing of the wagon. After riveting, CP bottom shall be welded with bogie bolster all along the periphery.

Figures 28 - 30 illustrate the procedure for removal and fitment of a new Flat Center Pivot Bottom. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.



Figure 28 flat CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bogie bolster)



Figure 29 New flat CP bottom fitment with liners
(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)



Figure 30 New flat CP bottom fitment with horizontal and vertical liners

4.2. Replacement and fitment of top center pivot:

Rivets/lock bolts of top pivot shall be removed by gas cut. Care shall be taken to avoid damage to body bolster and injury due to CP top falling. CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks,

condition of retaining ring & weld failures etc. Any damage/ crack etc. shall be attended using repair procedure applicable for a particular type of the wagon. New CP Top pivot shall be mounted on underframe and located with two nut & bolts diagonally opposite. Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes. Lock bolts shall be selected strictly as per concerned CP-SB drawing of the wagon.

Figures 31 - 35 illustrate the procedure for removal and fitment of a new Flat Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component



Figure 31 Flat CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)

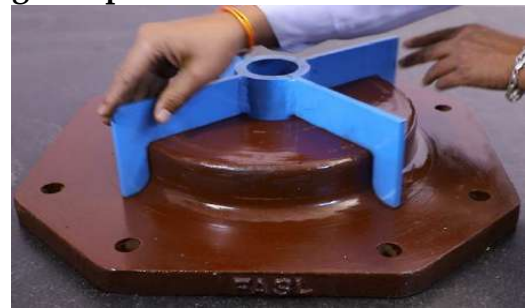


Figure 32 Flat CP top examination



Figure 33 Flat CP top mounting location examination- Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster of the respective wagon

Figure 34 Flat CP top locating at mounting face (2 bolts shall be fitted diagonally opposite to hold the pivot in its position)



Figure 35 New Flat CP top fitment (Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes)

5. Lowering of wagon on overhauled bogie

- 5.1. The top and bottom pivots must be properly assembled and connected with a CP pin. The assembly should then be secured with a CP washer, shackle lock, lock pin, and split pin, as shown in the relevant drawings and Figure - 26.
- 5.2. The CP washer and split pin shall be replaced with new ones during every ROH.
- 5.3. The CP washer shall be placed in the center pivot pin in such way that the rubber face of the washer is facing upside.
- 5.4. In place of a split pin (dia. 3.5 – 3.7) x 50 mm, a dia. 3.6 X 64 mm spring cotter pin (R clip), made of steel conforming to DIN 11024, may be used as an alternative for easier assembly/disassembly, as illustrated in the Figure 27. (refer to Annexure-VII).
- 5.5. Ensure the correct size of the CP pin is fitted as per the RDSO drawing no. WD-97049-S/3.
- 5.6. Under no circumstances mixing of flat and spherical design centre pivot is permitted on same wagon.

Maintenance of Flat Center Pivot Assembly during POH**1. Maintenance of center pivot top and bottom castings to Drg no. WD-97049-S/3.****1.1 Examination of center pivot top and bottom castings**

The center pivot top and bottom castings must be thoroughly cleaned before inspection, as shown in **Figures 1 & 2**. The top center pivot shall be removed from the wagon body to allow a complete examination of both the pivot and the wagon body interface. Any crack etc. in the interface area of body bolster shall be repaired as per applicable repair procedure for particular type of the wagon. During cleaning of CP bottom assembly, special attention shall be paid to remove any lump of metal chips etc. Post cleaning, bare metal must be visible on the entire surface of top & bottom CP and no residue of rust etc. should left behind. Once thoroughly cleaned, both castings shall be visually examined for any cracks, fractures, or structural failures. Suspected area shall be verified using an appropriate non-destructive crack detection method such as Dye Penetrant Testing (DPT) or Magnetic Particle Inspection (MPI). In case any crack is detected in CP top or bottom casting, the concerned casting shall be replaced. No weld repair on CP top or bottom casting shall be undertaken.

**Figure 1 Flat CP bottom cleaning****Figure 2 Flat CP Top cleaning (to be dismantled)**

1.2 Examination of welding condition of CP bottom

The welding of the center pivot bottom to the bogie bolster shall be thoroughly cleaned using wire brush & visually inspected for any signs of cracks, separation, or weld failures. In case of suspected crack, DPT or MPT can be used for verification. If such defects are detected, the affected weld area should be groused properly using a grinder or other suitable tools to remove damaged or weak weld material. After preparation, the joint must be re-welded strictly in accordance with the procedure and specifications provided in the relevant bogie bolster drawing. *[Enclosed welding drawing (Annexure -VII) and Final Welded CP Bottom Photographs below in Figure-6]*

1.3 Attention of center pivot top and bottom castings

(i) Flat type center pivot bottom horizontal and vertical liner:

The center pivot horizontal and vertical liners must be replaced in every POH. The worn liners should be carefully removed using a suitable method, and the casting surface inspected for cracks or other damage.

Figures 3–14 illustrate the step-by-step procedure for the removal of the center pivot horizontal and vertical liners, providing visual guidance on the correct methods for safe extraction and handling of the worn liners. Once cleaned, castings are to be visually examined for any cracks, fractures, or structural failures. Suspected crack shall be verified using an appropriate non-destructive crack detection method such as Dye Penetrant Testing (DPT) or Magnetic Particle Inspection (MPI).

If the casting is found satisfactory, a new liner with proper markings shall be applied. The bottom liner must be installed so that the markings face opposite the wearing surface and properly welded to the bottom pivot as per drawing WD-97049-S/3, following the welding procedure in **Annexure-V**. After fitting the new liners, the center pivot surface should be checked using RDSO gauge drawing No. WD-25094-S/4 (**Figure-10 & 12**), moving the gauge around the surface to ensure correct fitment.



Figure 3 Flat CP liner removal
(Damage to CP should be avoided)



Figure 4 Flat CP- cleaning after liner removal



Figure 5 Flat CP- new liner fitment (marking shall be on non-wearing surface)



Figure 6 Flat CP- vertical liner complete welding all along the periphery as per drawing



Figure 7 Flat CP- new liner welding



Figure 8 Flat CP- grinding after liner welding (Welding shall be flush ground to the top face of CP)



Figure 9 Flat CP- horizontal liner complete welding all along the periphery as per drawing. Post welding top surface of liner should be free from any burrs, weld projection etc. which shall be grinded



Figure 10 Flat CP- vertical gauging after liner fitment (gauge should rotate without any obstruction to ensure proper fitment)



Figure 11 Flat CP- after liner fitment



Figure 12 Flat CP- horizontal gauging after liner fitment (gauge should rotate without any obstruction to ensure proper fitment)



Figure 13 Flat CP- after liner fitting & welding



Figure 14 Assembly height measurement

(ii) Flat type center pivot top:

Wear limit seat : 2 mm

Wear limit Vertical side: 2 mm

CP top shall be dismantled by cutting off the rivet/lock bolt using gas torch, damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling CP top. After dismantling CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks, condition of retaining ring & weld failures etc. Any damage/ crack etc. shall be attended using repair procedure applicable for a particular type of the wagon.

The wear of the top center pivot seat shall be checked using RDSO gauge drawing no. **WD-25094-S/3**, placed as shown in **Figure-15**.

- (i) **Checking of wear of the Centre Pivot Surface (Flat):** If a 2 mm thick feeler gauge can be inserted between the pivot flat surface and the gauge surface marked ' * ' on the gauge at any point, the top centre pivot must be replaced. The gauge should be rotated to cover the entire surface to assess the full extent of wear.
- (ii) **Checking of wear on the vertical wall of the Centre Pivot:** If a 2 mm thick feeler gauge can be inserted between the centre pivot and the gauge surface marked ' * ' with the gauge in position, the bottom centre pivot must be replaced. The gauge should be rotated to cover the entire surface of bottom casting.

Figure-16 illustrates the physical gauging of the bottom centre pivot. Before fitting a new top center pivot, the pivot surface should be checked again with same gauge (**Figure-17**), moving the gauge around the surface to ensure proper fit-up.

Figures 18 - 22 illustrate the procedure for removal and fitment of a new Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.

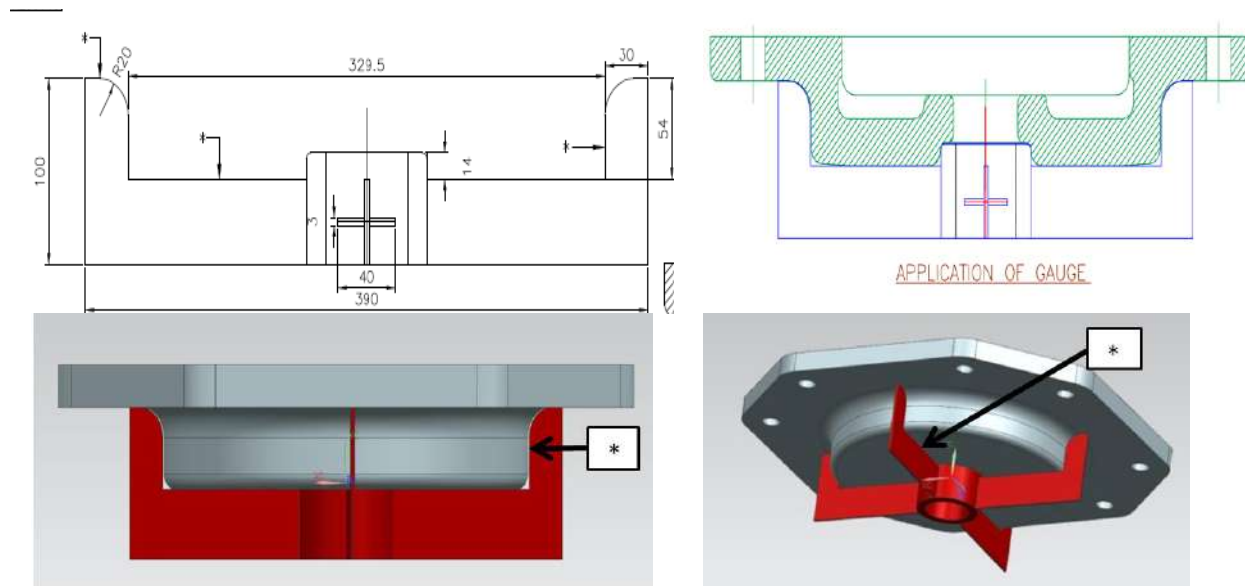


Figure 15 Placement of Centre Pivot Top Gauge for the measurement of wear in the Centre Pivot Top

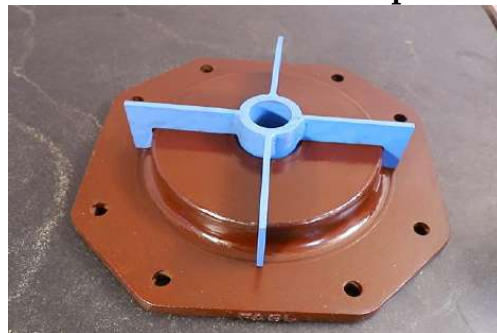


Figure 16 flat CP top gauging before fitment

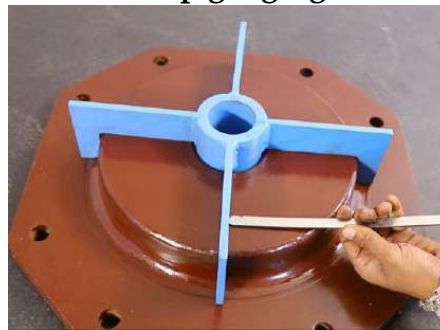


**Figure 17 flat CP top gauging before fitment
(2 mm filler gauge shall not pass between the CP and gauge in horizontal and vertical surfaces)**



**Figure 18 Flat CP top removal (Flat CP top removal
(Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)**

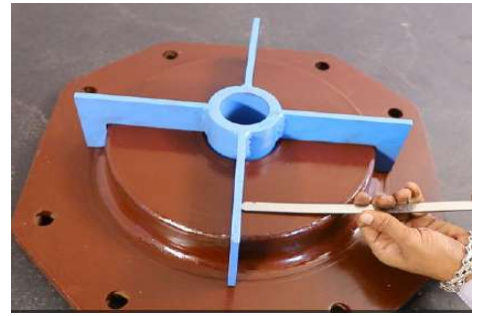


Figure 19 Flat CP top examination

(Gauge should rotate without any obstruction and 2 mm filler gauge must not pass between gauge and CP on horizontal and vertical surfaces at the time of fitment)



Figure 20 Flat CP top mounting location examination- Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster for respective wagon



Figure 21 Flat CP top locating at mounting face (02 bolts shall be fitted diagonally opposite to hold the pivot in its position)



Figure 22 New Flat CP top fitment (Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes)

2. Examination and Attention of fasteners of CP top & bottom

The condition of the **center pivot bottom fasteners—rivets**—that connect the assembly to the bogie bolster shall be visually checked. Any fastener found to be loose, missing, worn, or broken shall be replaced with prescribed fastener in accordance to relevant CP-SB drawing of the wagon.

Centre pivot top fasteners- such as rivets or lock bolts shall be renewed with lock bolt during POH. Size of lock bolt for fitment of CP top shall be in accordance to the relevant CP-SB drawing of the wagon.

3. Examination Attention of condition of center pivot assembly items

The condition of the center pivot pin, CP washer, shackle lock, and lock pin shall be visually examined during routine overhaul. Any component showing signs of excessive wear, bending, deformation, or other damage must be replaced with new parts. The Center Pivot Pin must be replaced if its diameter is found to be 43 mm or less at any point along the length. The CP washer is to be replaced during every POH, irrespective of its condition. The CP Washer is a rubber to metal bonded component having one face of rubber and other face of metal. It shall always be ensured that while placing the CP washer in the center pivot pin the rubber face shall remain upside. Split pin/Spring Cotter Pin shall invariably be renewed. Besides condition based change, all these components—center pivot pin, CP washer, shackle lock, lock pin and split Pin/Spring Cotter Pin—must strictly comply with the requirements of the latest relevant drawings **WD 97049-S-03**.

Centre pivot pin, CP washer, shackle lock, lock pin and Split Pin/Spring Cotter Pin (R-Clip) are shown in Figure-23 and Lock Pin with Spring Cotter Pin (R-Clip) is shown in Figure-24.



Figure 23 CP pin assembly

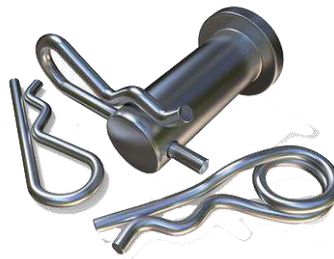


Figure 24 Spring cotter pin (R clip) assembly

4. Guidelines for replacement of Center Pivot:

4.1 Replacement of Bottom center pivot:

Rivets and welding of bottom pivot shall be removed by gas cutting. Bolster top surface (pivot area) shall be properly cleaned/dressed through grinding.

New bottom pivot shall be placed on bolster and located with two nut & bolts diagonally opposite. First, rivets shall be fastened in two holes, followed by removal of one bolt at a time and subsequent riveting to cover all four holes. Size of selected

rivets shall be strictly as per concerned CP-SB drawing of the wagon. After riveting, CP bottom shall be welded with bogie bolster all along the periphery.

Figures 25-27 illustrate the procedure for removal and fitment of a new Flat Center Pivot Bottom. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component.



Figure 25 flat CP bottom removal
(flame shall be pointed towards CP bottom to avoid damage to bolster)



Figure 26 New flat CP bottom fitment with liners
(Two bolts shall be fitted diagonally to hold the CP in position, followed by riveting in two holes, removal of bolts and riveting in remaining two holes followed by welding of CP bottom with bogie bolster)



Figure 27 New flat CP bottom fitment with horizontal and vertical liners

4.2 Replacement and fitment of top center pivot:

Rivets/lock bolts of top pivot shall be removed by gas cut. Care shall be taken to avoid damage to body bolster and injury due to CP top falling. CP top mounting location in wagon underframe shall be visually inspected for any signs of cracks, condition of retaining ring & weld failures etc. Any damage/ crack etc. shall be attended using repair procedure applicable for a particular type of the wagon. New/Serviceable CP Top pivot shall be mounted on underframe and located with two nut & bolts diagonally opposite. Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes. Lock bolts shall be selected strictly as per concerned CP-SB drawing of the wagon.

Figures 28-32 illustrate the procedure for removal and fitment of a new Flat Center Pivot Top. These figures provide step-by-step visual guidance on the correct handling, alignment, and installation to ensure proper seating and secure fitment of the component



Figure 28 Flat CP top removal (Rivet/lock bolt shall be cut using gas torch and damage to body bolster should be avoided. Care shall be also be taken to avoid any injury, due to falling of top CP)

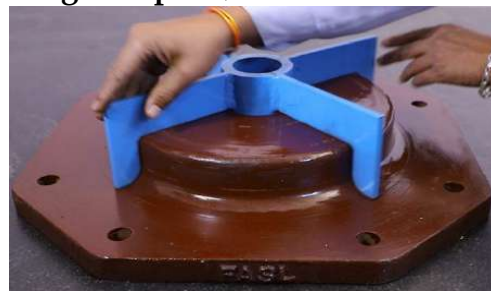


Figure 29 Flat CP top examination



Figure 30 Flat CP top mounting location examination- Surface shall be examined for any crack etc. and attended as per relevant repair procedure of body bolster of the respective wagon



Figure 31 Flat CP top locating at mounting face (2 bolts shall be fitted diagonally opposite to hold the pivot in its position)



Figure 32 New Flat CP top fitment (Lock bolting shall be done in remaining 04 holes with fitment in diagonally opposite location in sequence, removal of holding bolts and lock bolting in these two holes)

5. Lowering of wagon on overhauled bogie

- 5.1 The top and bottom pivots must be properly assembled and connected with a CP pin. The assembly should then be secured with a CP washer, shackle lock, lock pin, and split pin, as shown in the relevant drawings and **Figure - 23**.
- 5.2 The CP washer and split pin shall be replaced with new ones during every POH.
- 5.3 The CP washer shall be placed in the center pivot pin in such way that the rubber face of the washer is facing upside.
- 5.4 In place of a split pin (dia. 3.5 – 3.7) x 50 mm, a dia. 3.6 X 64 mm spring cotter pin (R clip), made of steel conforming to DIN 11024, may be used as an alternative for easier assembly/disassembly, as illustrated in the Figure 24. (refer to Annexure-VII).
- 5.5 Ensure the correct size of the CP pin is fitted as per the RDSO drawing no. WD-97049-S/3.
- 5.6 Under no circumstances mixing of flat and spherical design centre pivot is permitted on same wagon.

M&C DIRECTORATE

RDSO-MC0WELD(CONS)/2/2021

Date:29.09.2025

Sub: Visit of Wagon repair workshop, Jhansi from 16.09.25 to 17.09.25

Ref: Wagon Dte note No. MW/PLNG/CSNB,dtd:1109.25

Vide reference above, M&C officials (Dy.Dir/M&C, CS/welding) in association with Director/Wagon, Dy.Director/Wagon, SSE/Wagon, JE/Wagon visited Wagon repair workshop, Jhansi from 16.09.25 to 17.09.25 to examine current maintenance practices of centre pivot assembly and its components and accordingly to revise welding maintenance procedure of these components.

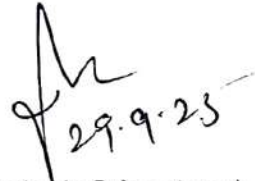
During visit, current welding maintenance practices of flat bottom centre pivot assembly and its components has been examined. The observation from M&C point of view are given below:

1. During ROH, the preparation of groove joint configuration on inner housing wall of bottom pivot were made using gas cutting which is not the proper. The required joint configuration profile may be prepared with vertical turning machine, so that all gas cut edge burnt material of housing wall can be removed for good welding practice.
2. Welding were carried without preheat of centre pivot having Gr.C material to standard AAR (specification WD-17-CASNUB-22HS-BOGIE-92 (Rev.4). This material shall be preheated between 150 to 300 °C as mentioned in AAR standard for welding due to higher carbon equivalent to ensure crack free weld.
3. Flat bottom liner shall be continuous weld in place of tack weld.
4. Welding of vertical liner with housing wall of bottom centre pivot shall be done in two pass when using 4 and 3.15 mm electrode with proper manipulation of welding arc towards the liner material for better side wall fusion of liner.
5. Liner material from IRS R-65-78 (Austenitic Mn steel) shall be used in place of IS 3885 Pt-I Gr.4 in centre pivot as mentioned in wagon directorate specification WD-17-CASNUB-22HS-BOGIE-92 (Rev.4).
6. It is noted that M5 electrode to IRSM M28/2020 were being used for welding of liner material (IS 3885, part-I Grade 4) and centre pivot having Gr. C material to specification WD-17-CASNUB-22HS-BOGIE-92 (Rev.4). However, M5

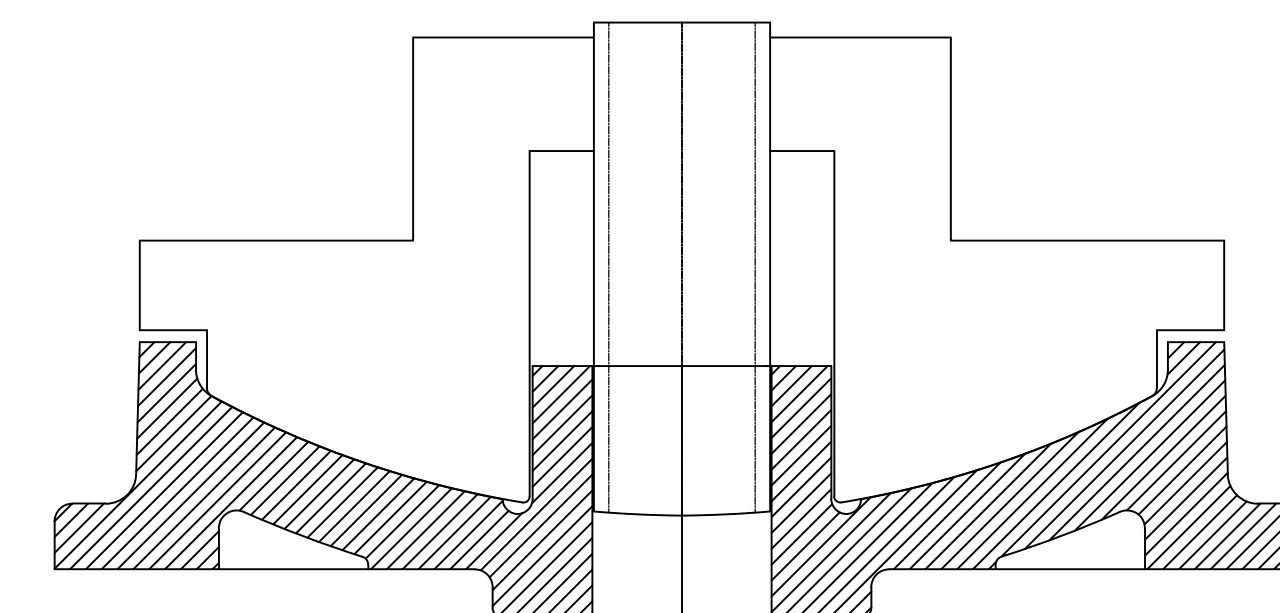
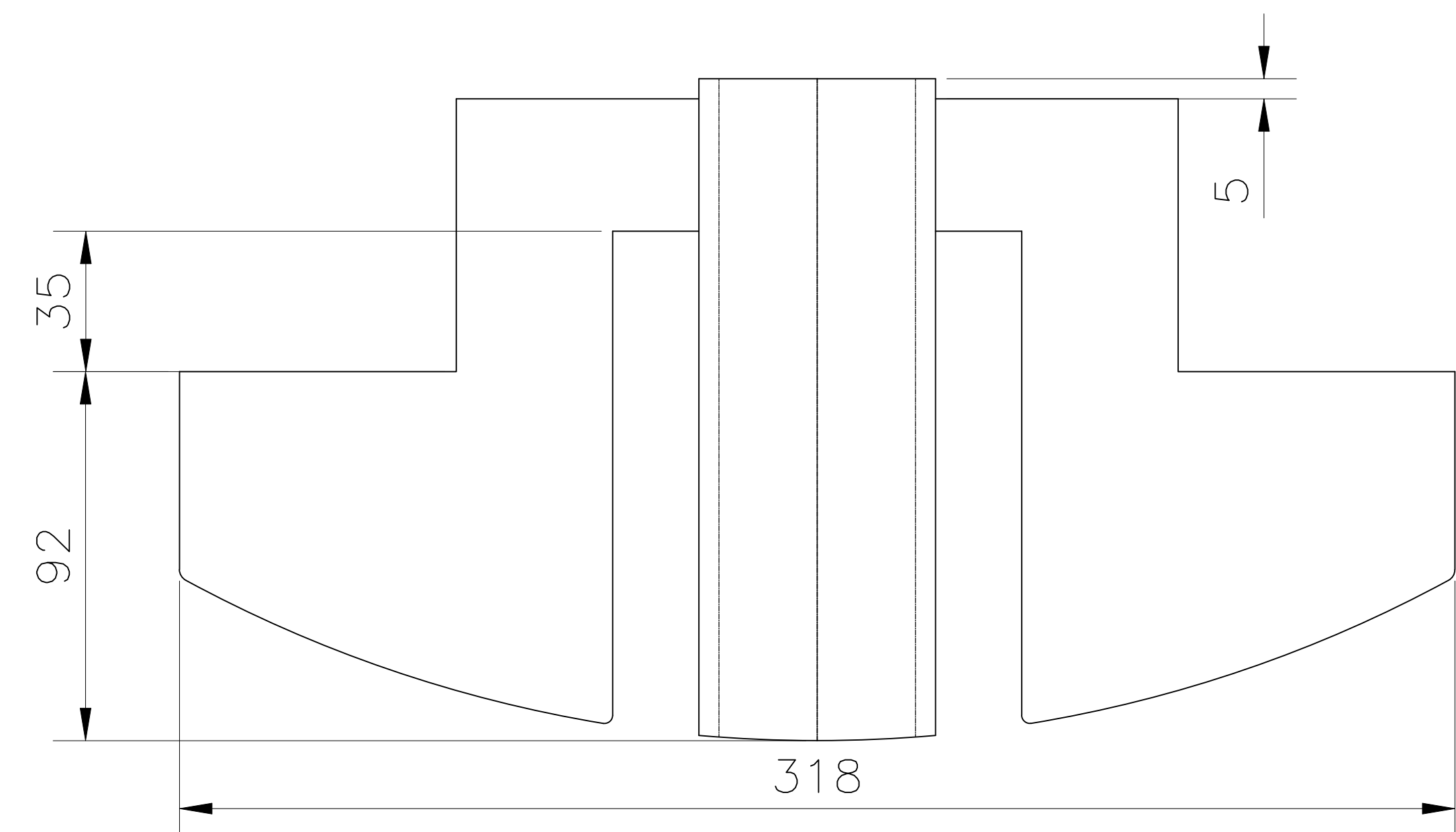
electrode is recommended for welding austenitic manganese steel liner to Gr. C material to specification WD-17-CASNUB-22HS-BOGIE-92 (Rev.4).

7. In the electrode packet, RDSO approved source was written which is not correct, this shall not be written on the packet as RDSO is not a vendor approving authority.

This is for kind information and necessary action at your end please.


(Rajesh Srivastava)
Director/M&C

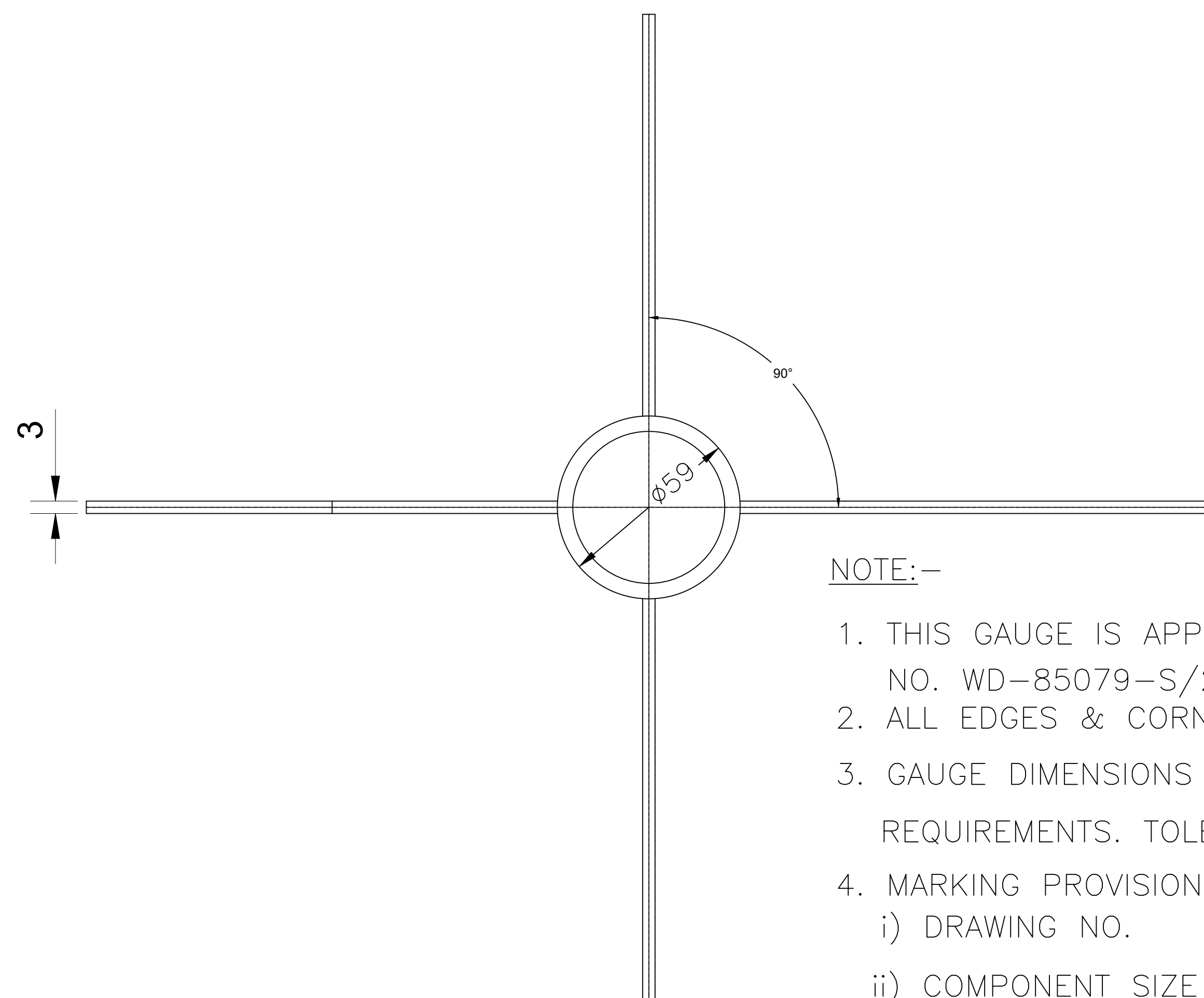
Director/Wagon



GAUGE APPLICATION PROCEDURE:-

1. TO CHECK WEAR ON BOWL SURFACE, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE. IF THE PIVOT SURFACE STARTS TOUCHING THE SURFACE MARKED '✱' ON THE GAUGE AT ANY POINT, CP BOTTOM SHOULD BE REPLACED.

IF A 4 mm THICK FEELER CAN INSERTED BETWEEN THE THE PIVOT AND GAUGE SURFACE MARKED '#', CP BOTTOM SHOULD BE REPLACED.
2. TO CHECK WEAR ON VERTICAL WALL, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE. IF A 7 mm THICK FEELER CAN INSERTED BETWEEN THE PIVOT SURFACE AND GAUGE SURFACE MARKED '●', CP BOTTOM SHOULD BE REPLACED.

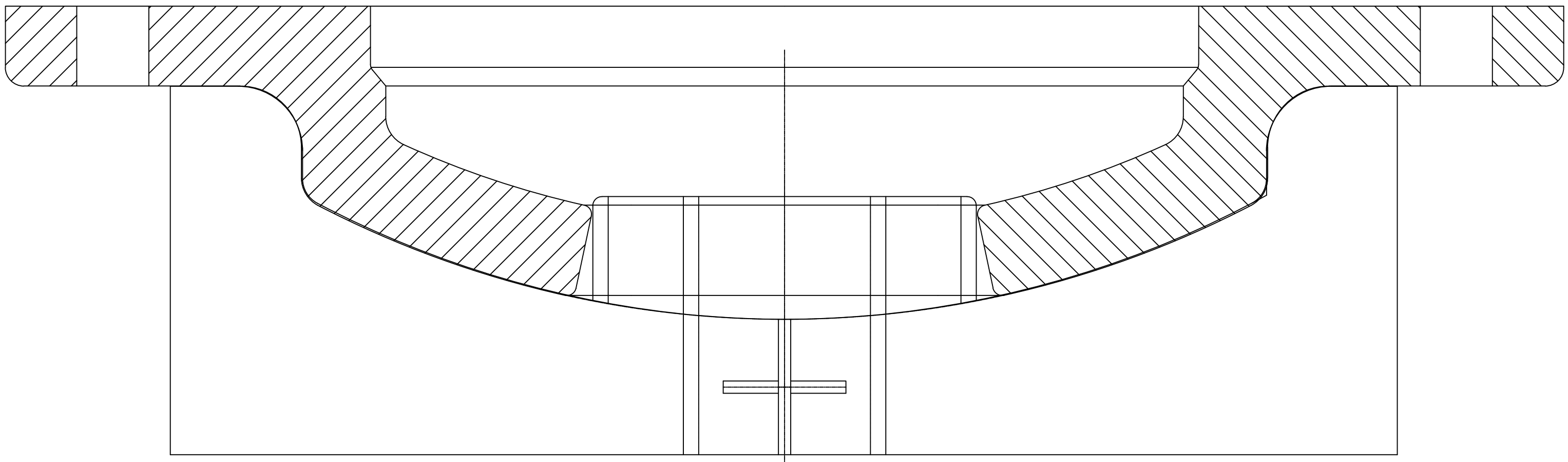
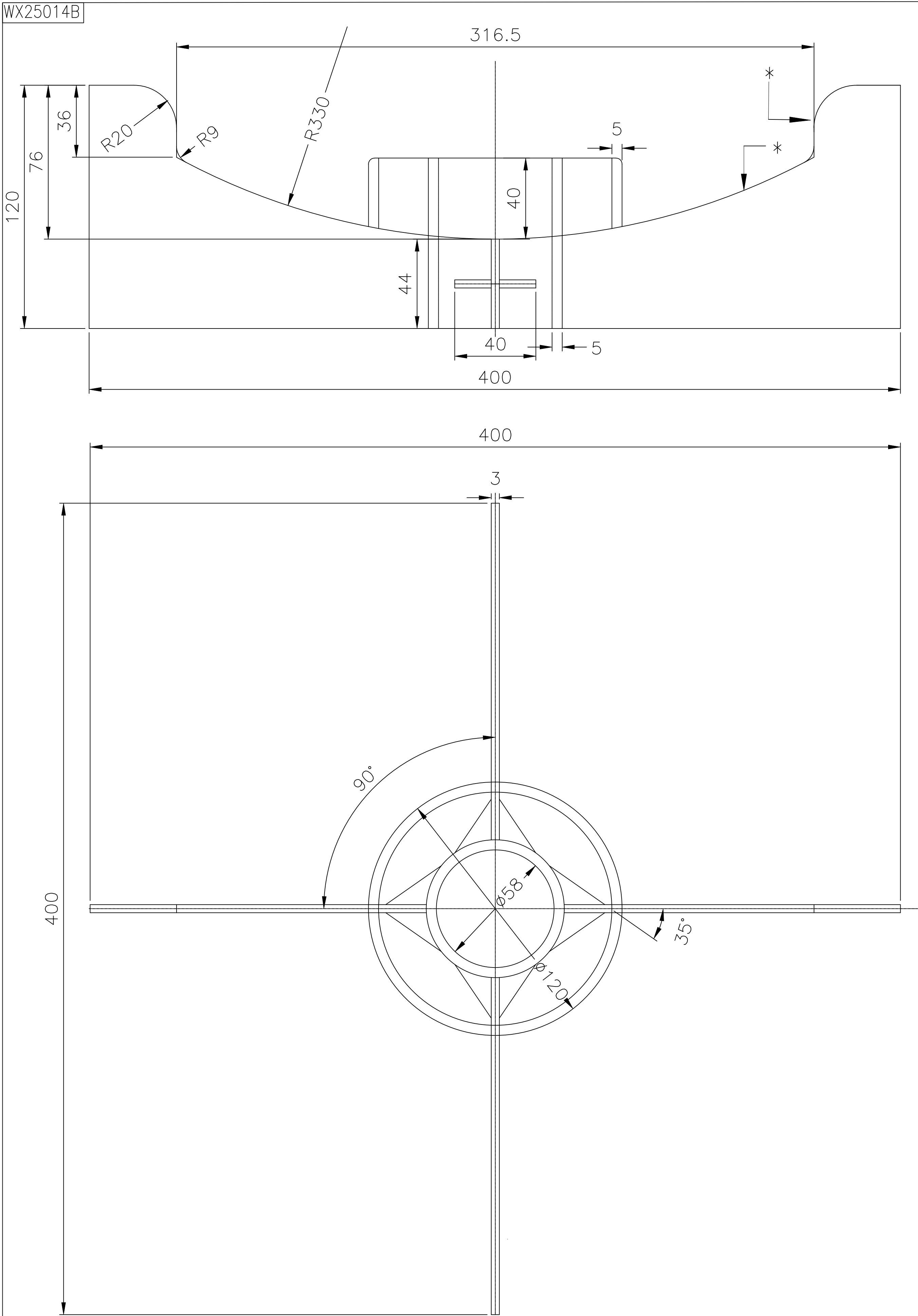


NOTE:-

1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT BOTTOM TO DRG. NO. WD-85079-S/2.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:-
 - i) DRAWING NO.
 - ii) COMPONENT SIZE

[illegible]

ALT	ITEM	AUTHY	DESCRIPTION	DATE	ASSEMBLY DRGS
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APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:—

1. TO CHECK WEAR ON SEAT SURFACE, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 3 mm THICK FEELER CAN INSERTED BETWEEN THE THE PIVOT SURFACE AND GAUGE SURFACE MARKED ‘*’ AT ANY POINT, CP TOP SHOULD BE REPLACED.

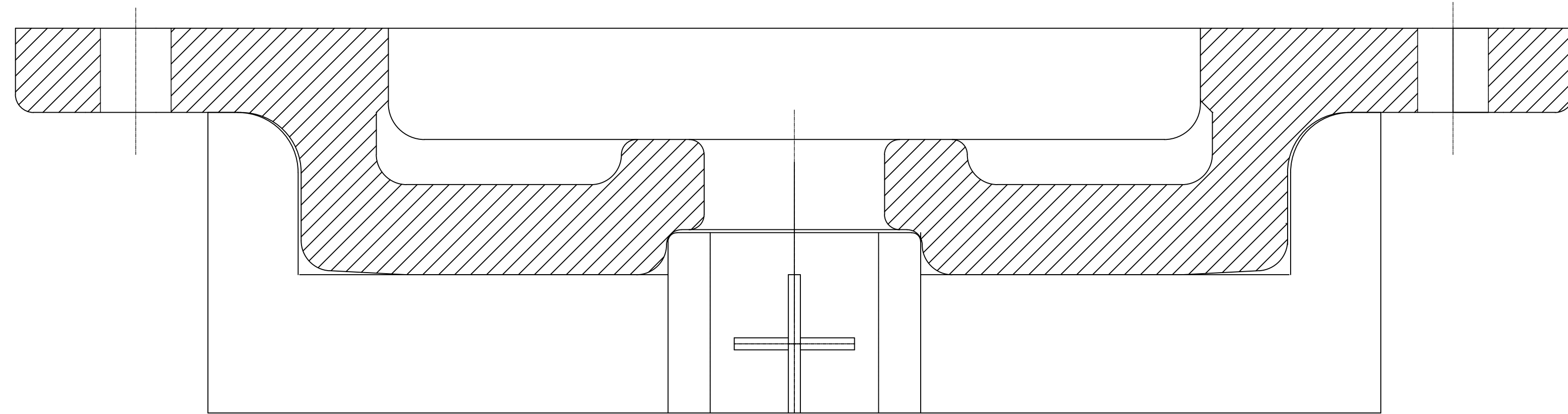
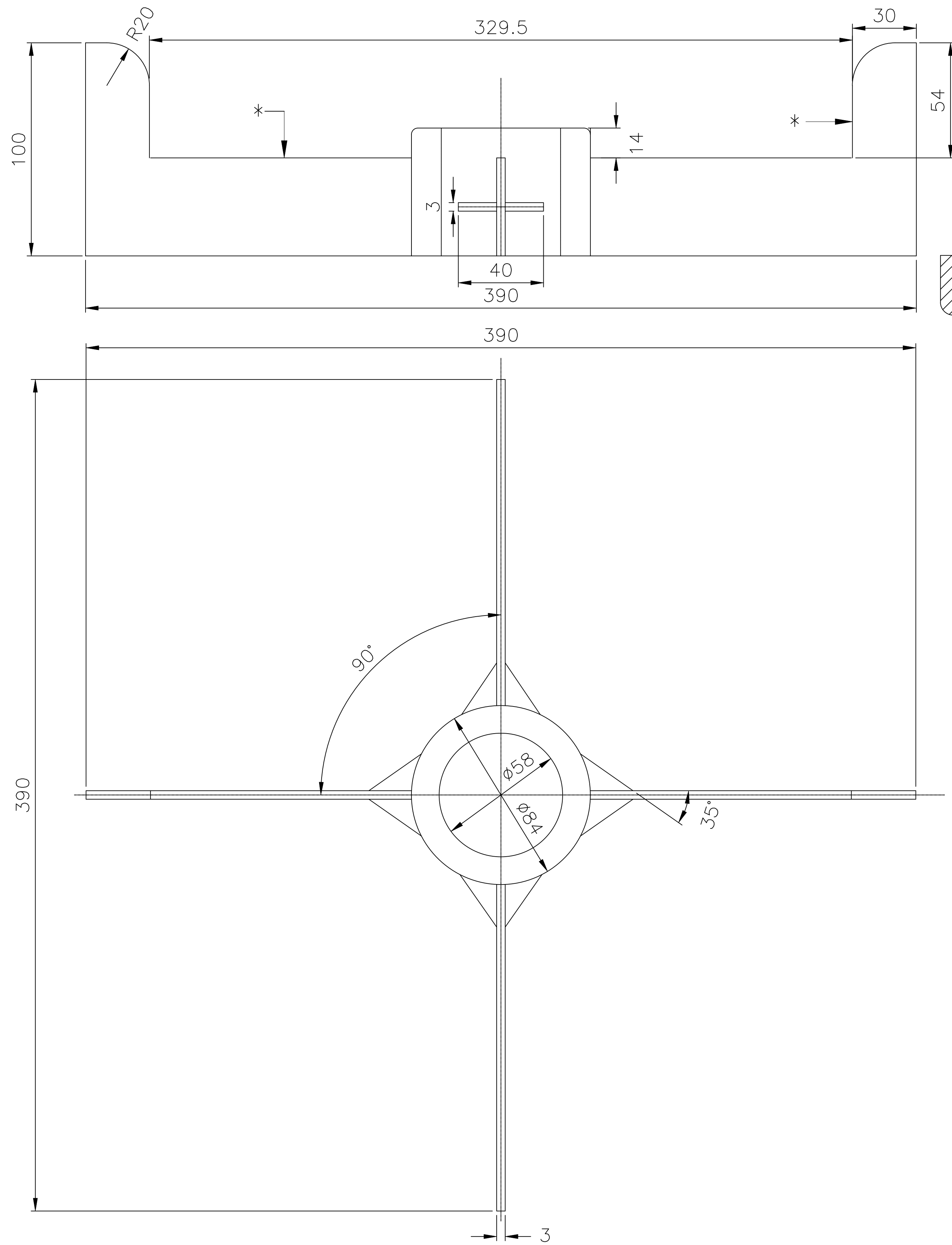
NOTE:—

1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT BOTTOM TO DRG. NO. WD-85079-S/2.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:—
 - i) DRAWING NO.
 - ii) COMPONENT SIZE

1	SPHERICAL CP TOP GAUGE		—	WD-85079-S/2	—	STEEL	HARDNESS: 45RC Min.
ITEM	DESCRIPTION & DIMENSIONS		NO OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY: SUPERSEDES			CENTRE PIVOT MAINTENANCE GAUGES				
SCALE	PASSED	A.K. GAUTAM	12/25				
/	CHECKED	A.M.TRIPATHI	12/25				
	DRAWN	UMESH	12/25				
	TRACED						
	J.SHEET	WD-25094	12/25				
B.G.		R.D.S.O	GROUP	WD-25094-S/2			
[W]							

ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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WX25014C



APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:—

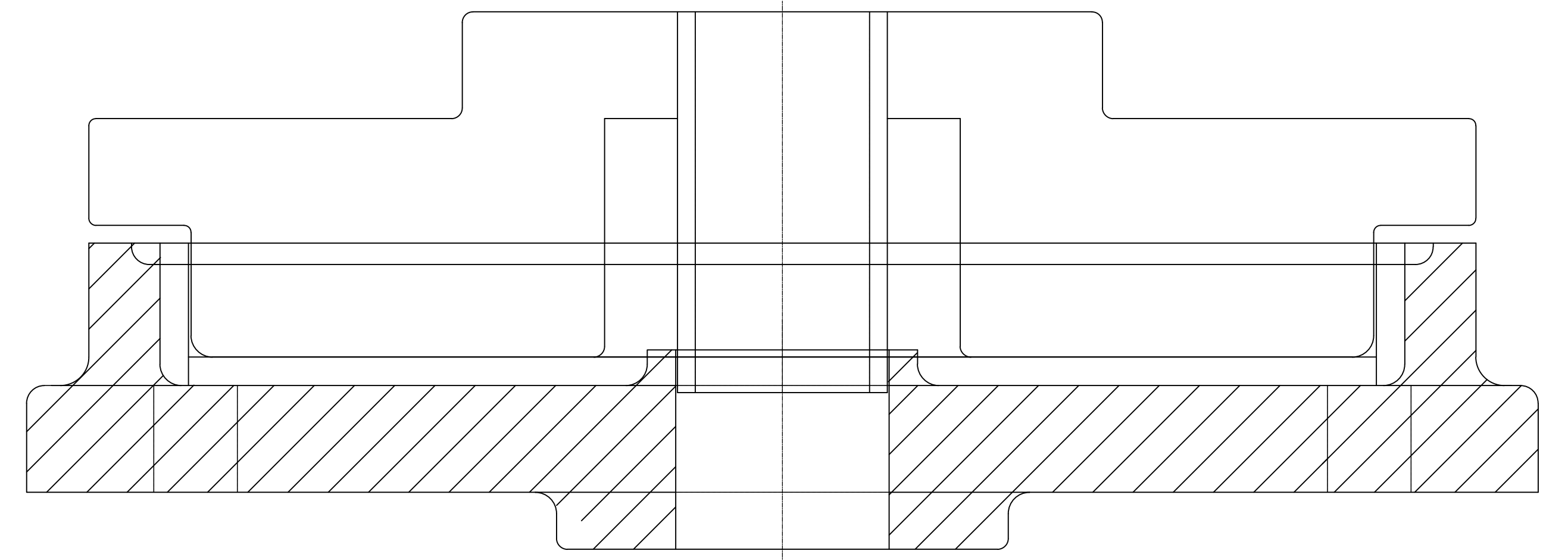
1. TO CHECK WEAR ON SEAT SURFACE, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 2 mm THICK FEELER CAN INSERTED BETWEEN THE THE PIVOT SURFACE AND GAUGE SURFACE MARKED '*' AT ANY POINT, CP TOP SHOULD BE REPLACED.

NOTE:—

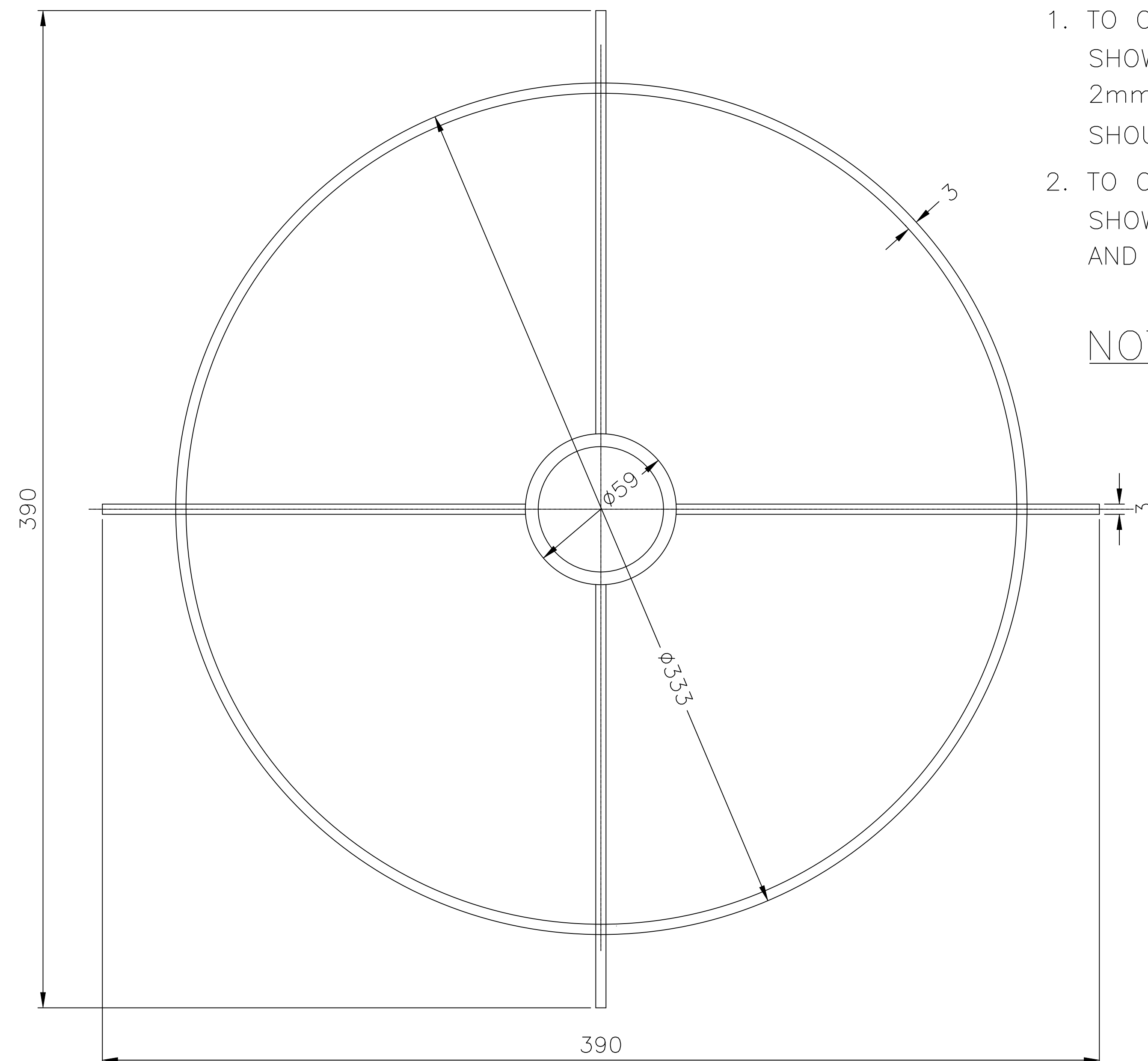
1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT TOP TO DRG. NO. WD-97049-S/3.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:—
 - i) DRAWING NO.
 - ii) COMPONENT SIZE

1	FLAT CP TOP GAUGE		—	WD-97049-S/3	—	STEEL	HARDNESS: 45RC Min.
ITEM	DESCRIPTION & DIMENSIONS		NO OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY:			CASNUB CENTRE PIVOT MAINTENANCE GAUGE				
SCALE		PASSED	A.K. GAUTAM	12/25	MAINTENANCE GAUGE FOR FLAT CENTER PIVOT TOP		
/	CHECKED	A.M.TRIPATHI	12/25				
	DRAWN	UMESH	12/25				
	TRACED						
	J.SHEET	WD-25094	12/25				
B.G.		R.D.S.O [W]	GROUP	WD-25094-S/3			

ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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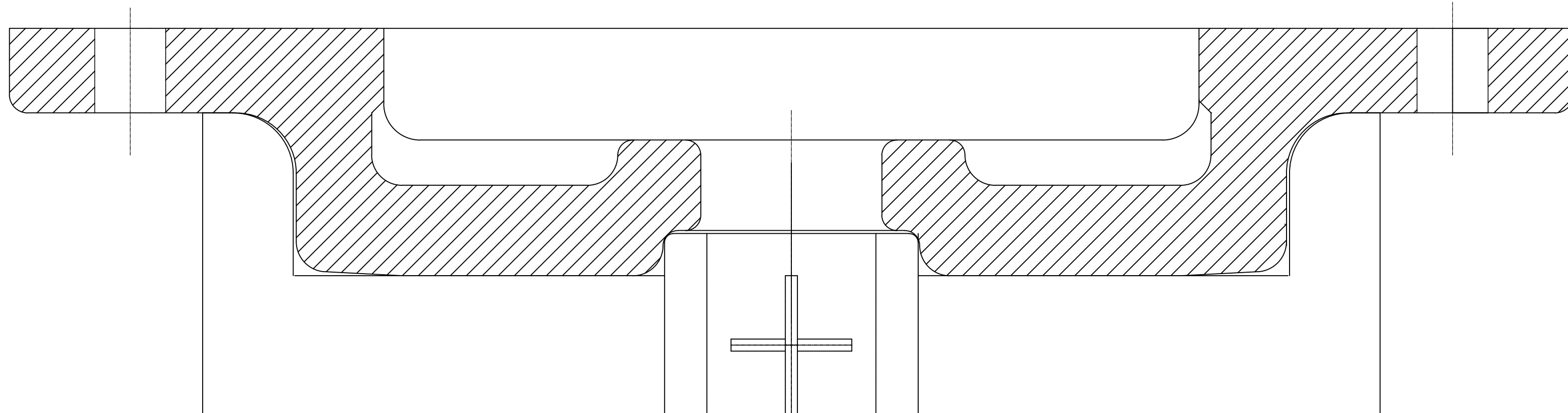
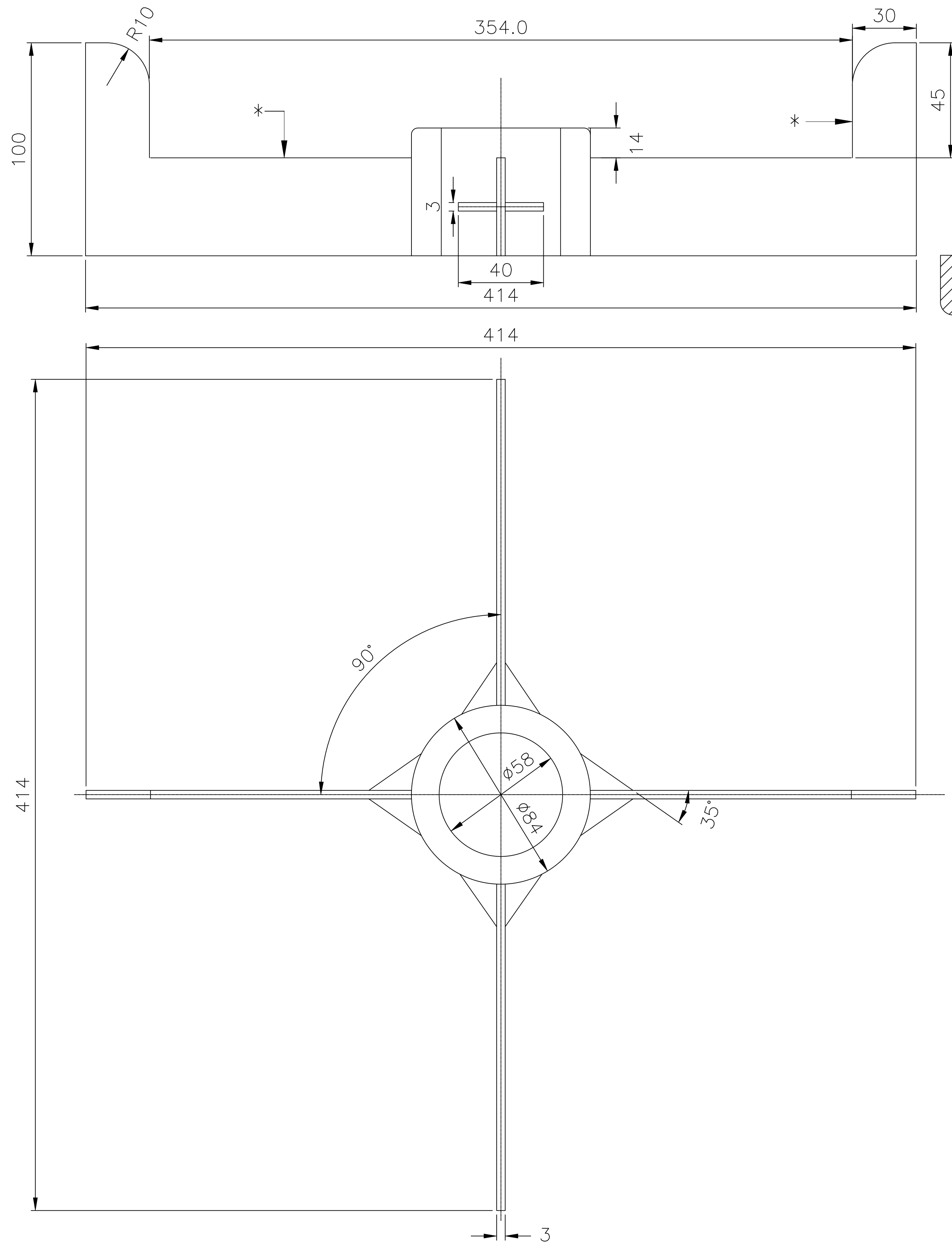
1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT BOTTOM TO DRG. NO. WD-97049-S/3.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:-
 - i) DRAWING NO.
 - ii) COMPONENT SIZE



ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.

[illegible]

WX25014E



APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:—

1. TO CHECK WEAR ON SEAT SURFACE, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 2 mm THICK FEELER CAN INSERTED BETWEEN THE THE PIVOT SURFACE AND GAUGE SURFACE MARKED '*' AT ANY POINT, CP TOP SHOULD BE REPLACED.

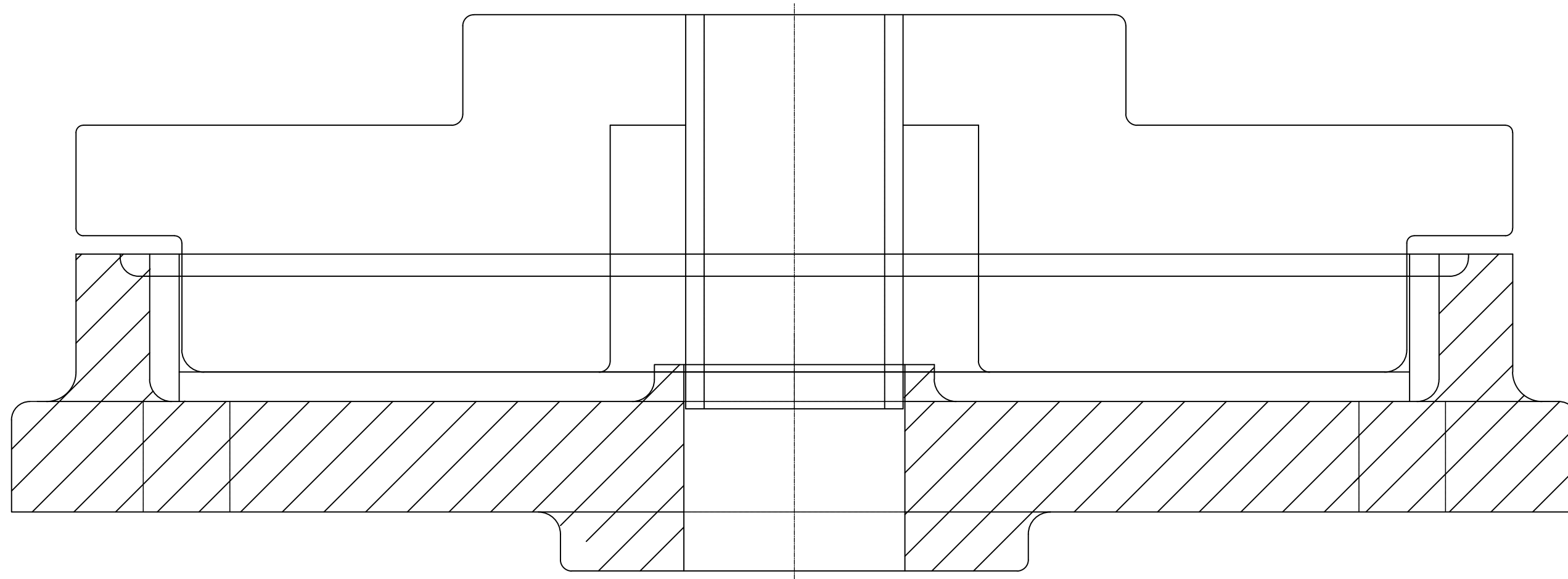
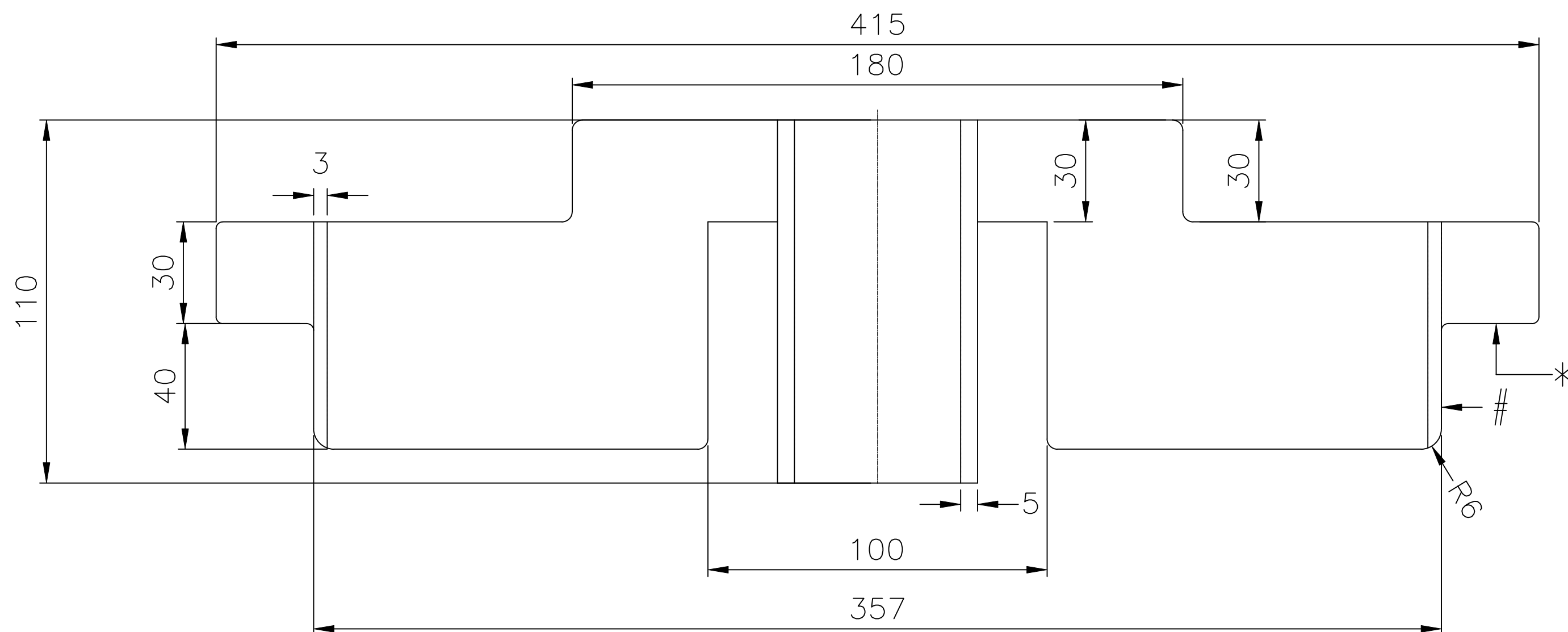
NOTE:—

1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT TOP TO DRG. NO. WD-15013-S/1.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:—
 - i) DRAWING NO.
 - ii) COMPONENT SIZE

1	LWLH CP TOP GAUGE		—	WD-15013-S/1	—	STEEL	HARDNESS: 45RC Min.
ITEM	DESCRIPTION & DIMENSIONS		NO.OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY:			LWLH CENTRE PIVOT MAINTENANCE GAUGE				
SUPERSEDES		DATE	MAINTENANCE GAUGE FOR CENTER PIVOT TOP				
SCALE	PASSED	A.K. GAUTAM 12/25					
/	CHECKED	A.M.TRIPATHI 12/25					
	DRAWN	UMESH 12/25					
	TRACED						
	J.SHEET	WD-25094 12/25					
B.G.		R.D.S.O [W]	GROUP	WD-25094-S/5			

ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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WX25014F



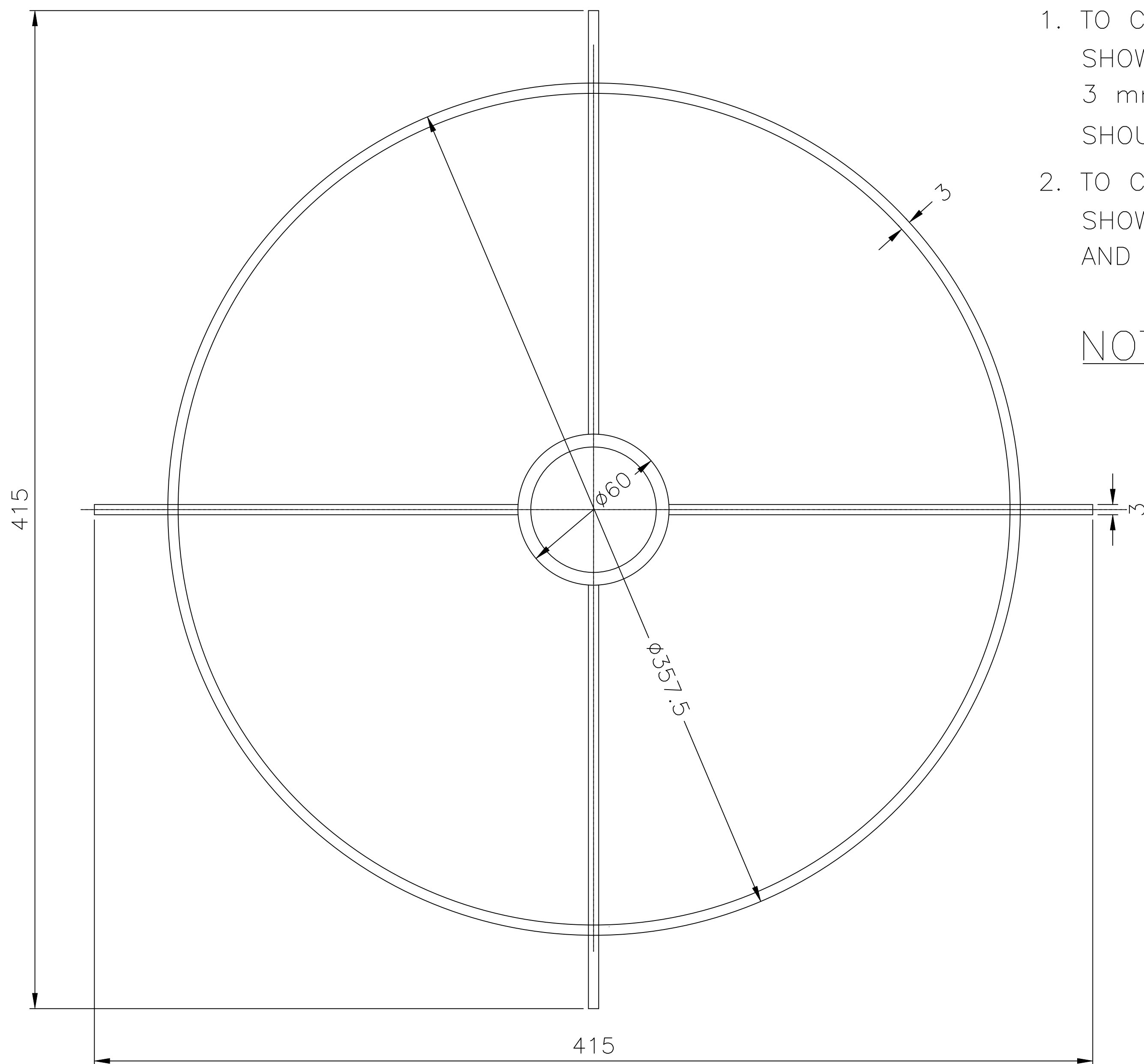
APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:-

1. TO CHECK WEAR ON HORIZONTAL LINER, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF THE PIVOT SURFACE STARTS TOUCHING OR GAP IS LESS THAN 3 mm AT THE SURFACE MARKED '*' ON THE GAUGE AT ANY POINT, HORIZONTAL LINER SHOULD BE REPLACED.
2. TO CHECK WEAR ON VERTICAL LINER, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 2 mm THICK FEELER CAN INSERTED BETWEEN THE PIVOT SURFACE AND GAUGE SURFACE MARKED '#' VERTICAL LINER SHOULD BE REPLACED.

NOTE:-

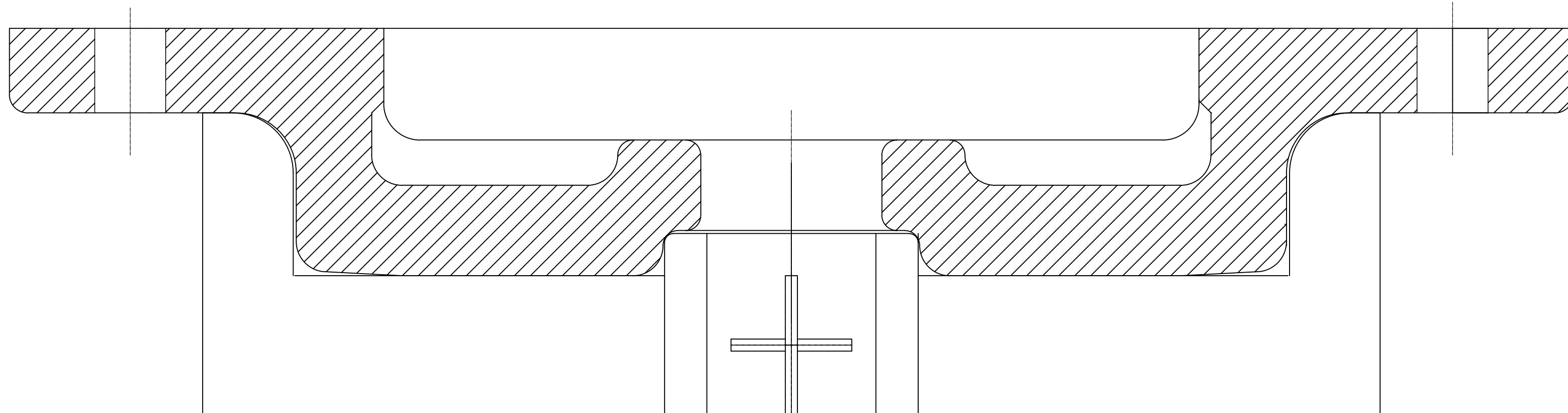
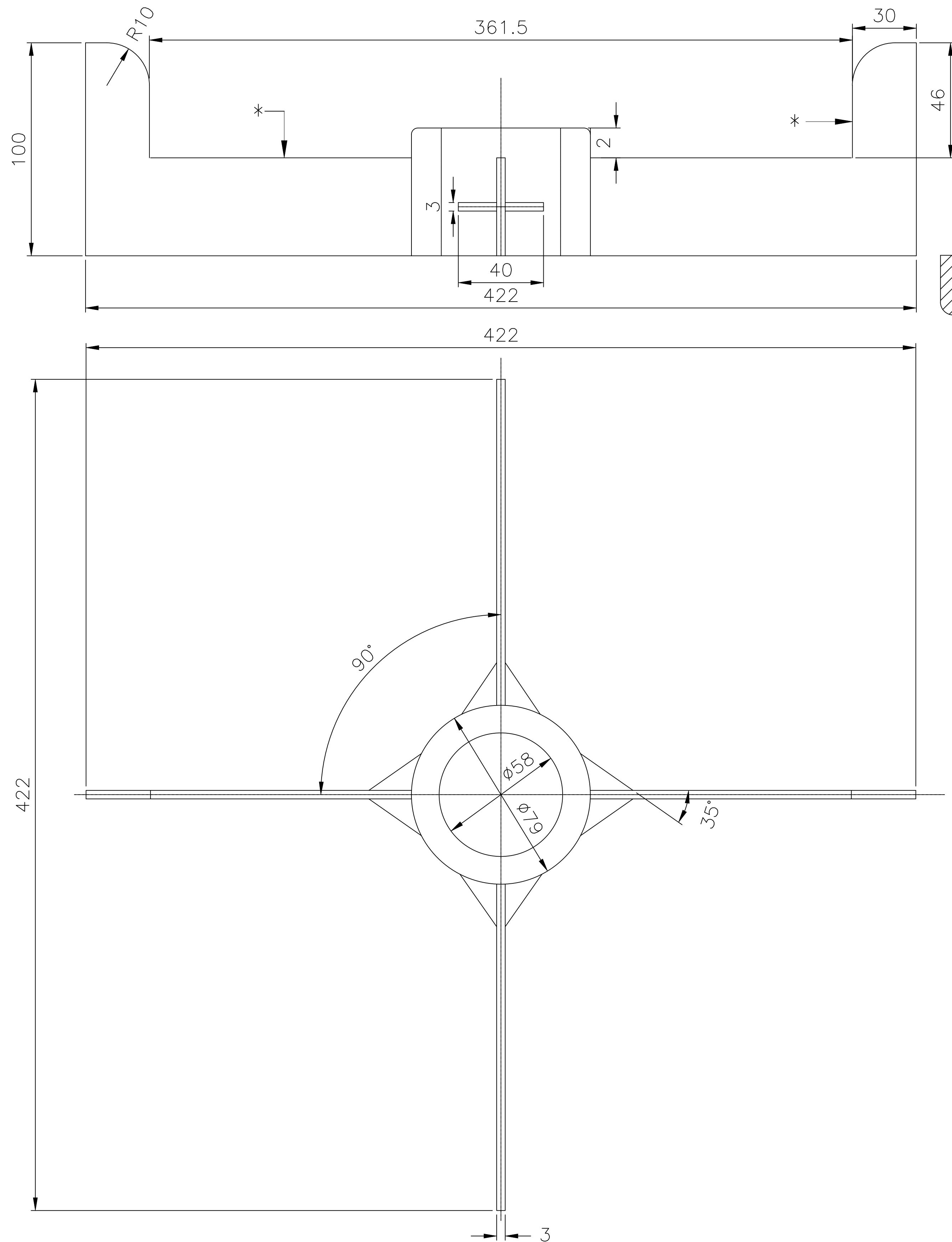
1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT BOTTOM TO DRG. NO. WD-15013-S/1.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:-
 - i) DRAWING NO.
 - ii) COMPONENT SIZE



ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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1	LWLH CP BOTTOM GAUGE		WD-15013-S/1	STEEL	HARDNESS: 45RC Min.		
ITEM	DESCRIPTION & DIMENSIONS		NO.OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY: SUPERSEDES			LWLH CENTRE PIVOT MAINTENANCE GAUGE				
SCALE	PASSED	A.K. GAUTAM	12/25	MAINTENANCE GAUGE FOR CENTER PIVOT BOTTOM			
/	CHECKED	A.M.TRIPATHI	12/25				
	DRAWN	UMESH	12/25				
	TRACED	J.SHEET	12/25				
	J.SHEET	WD-25094	12/25				
B.G.	R.D.S.O [W]		GROUP	WD-25094-S/6			

WX25014G



APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:—

1. TO CHECK WEAR ON SEAT SURFACE, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 2 mm THICK FEELER CAN INSERTED BETWEEN THE THE PIVOT SURFACE AND GAUGE SURFACE MARKED '*' AT ANY POINT, CP TOP SHOULD BE REPLACED.

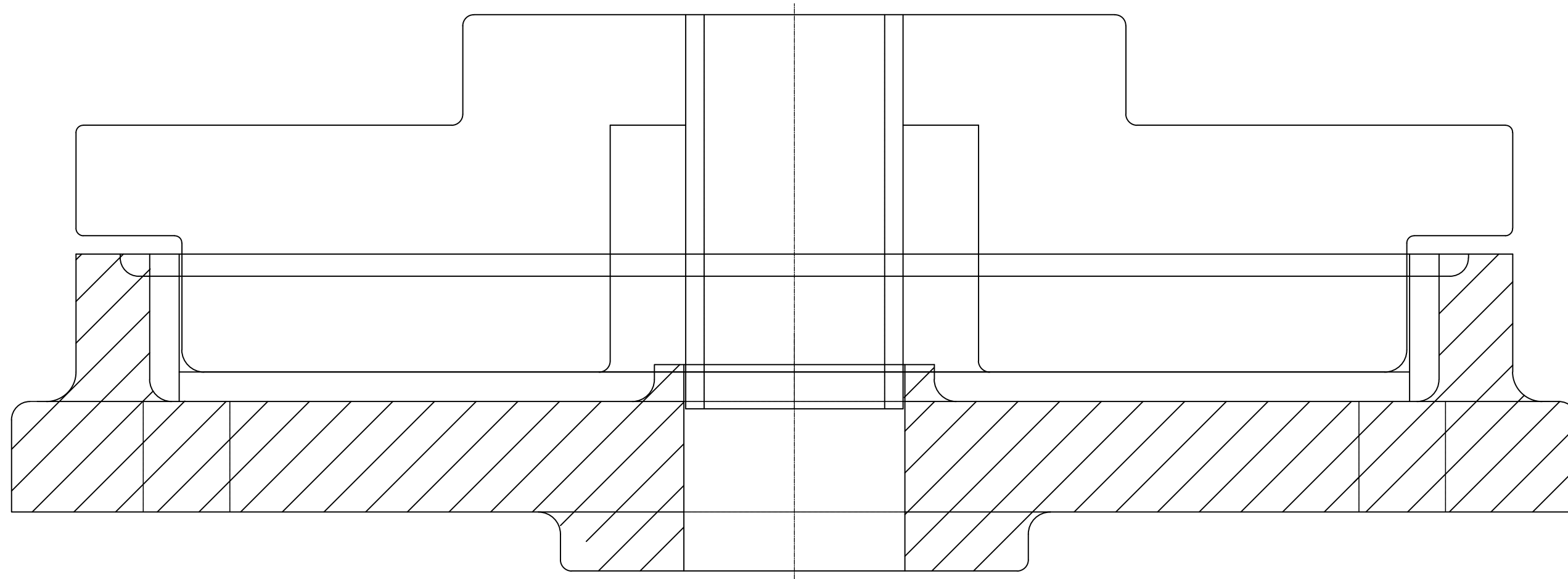
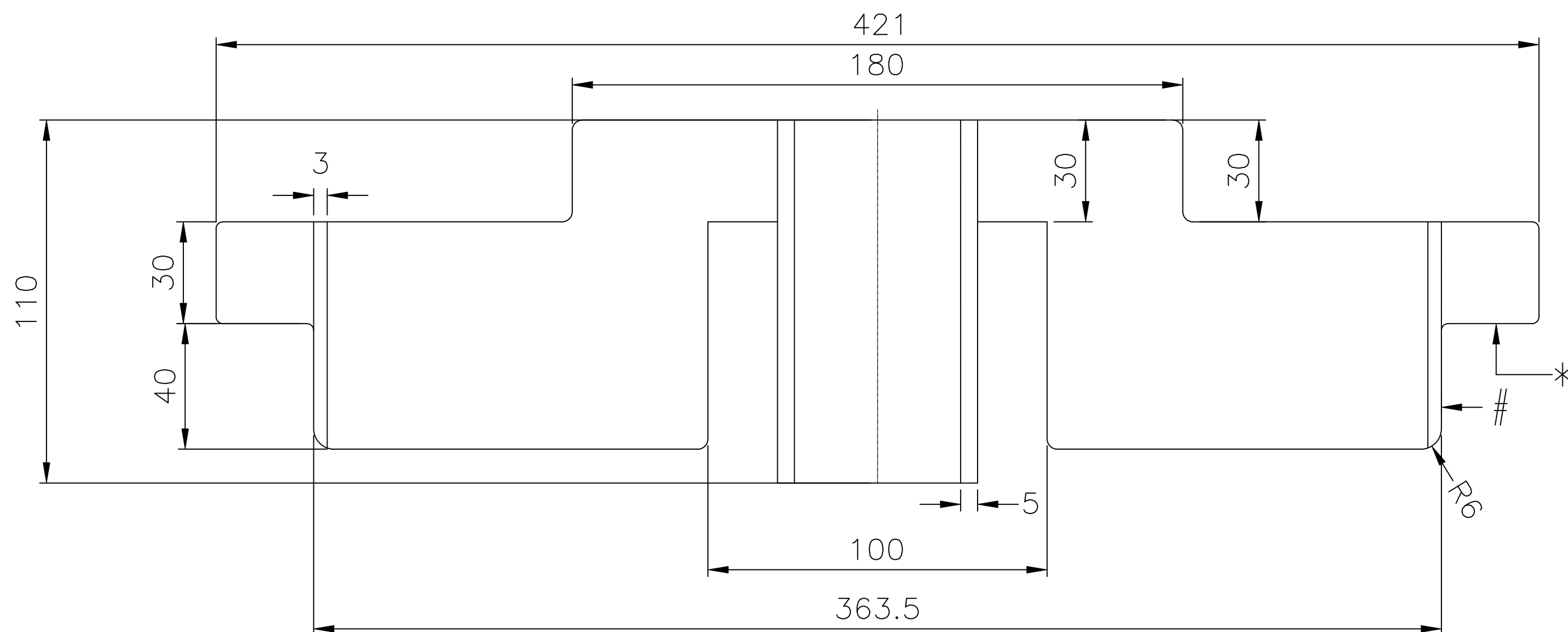
NOTE:—

1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT TOP TO DRG. NO. CONTR-9404-S/8.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART-1),CL-FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:—
 - i) DRAWING NO.
 - ii) COMPONENT SIZE

1	LCCF CP TOP GAUGE		—	WD-9404-S/8	—	STEEL	HARDNESS: 45RC Min.
ITEM	DESCRIPTION & DIMENSIONS		NO.OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY: SUPERSEDES			LCCF CENTRE PIVOT MAINTENANCE GAUGE				
SCALE	PASSED	A.K. GAUTAM	12/25				
/	CHECKED	A.M.TRIPATHI	12/25				
	DRAWN	UMESH	12/25				
	TRACED						
	J.SHEET	WD-25094	12/25				
B.G.		R.D.S.O	GROUP		WD-25094-S/7		
[W]							

ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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WX25014H



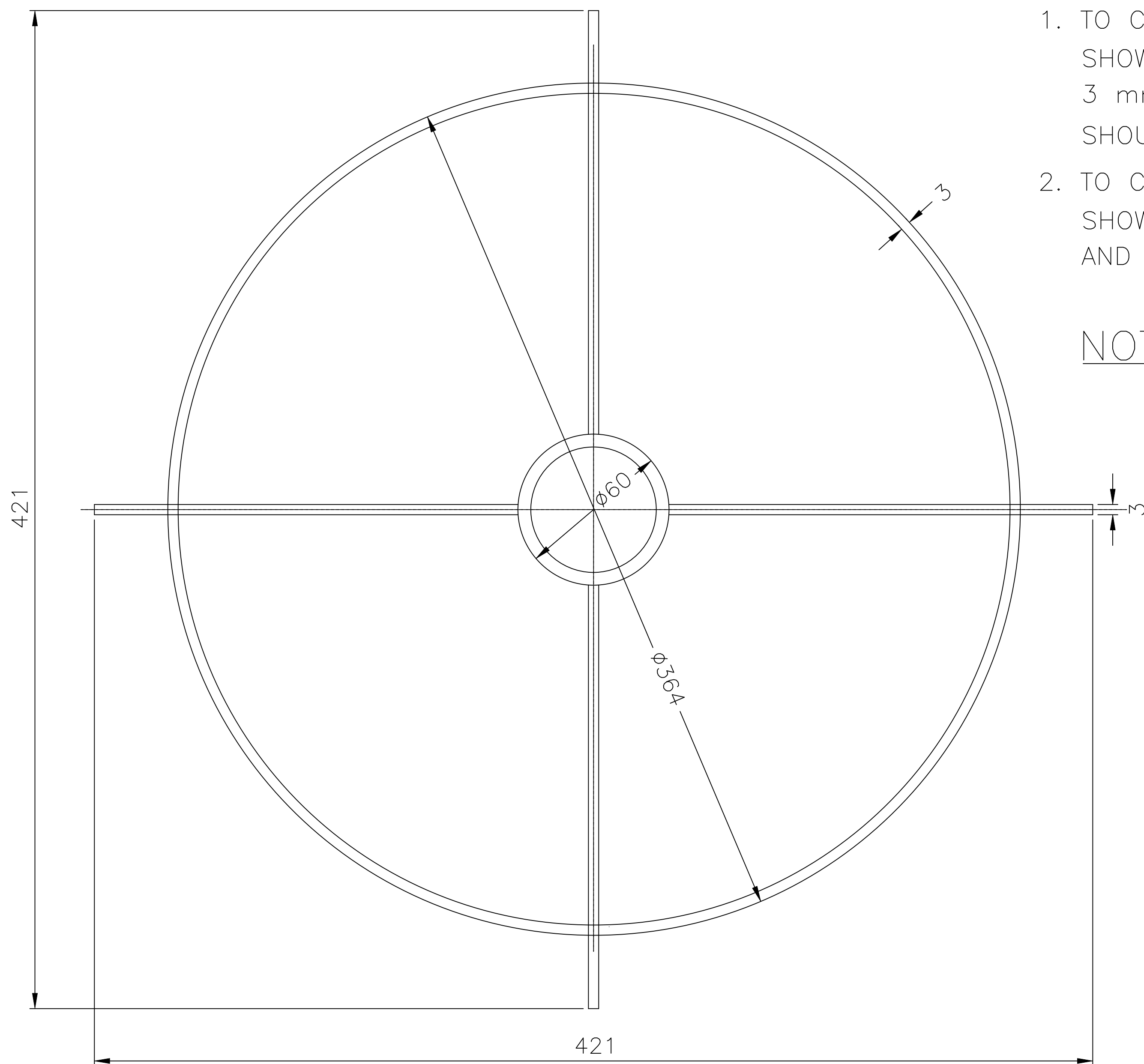
APPLICATION OF GAUGE

GAUGE APPLICATION PROCEDURE:—

1. TO CHECK WEAR ON HORIZONTAL LINER, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF THE PIVOT SURFACE STARTS TOUCHING OR GAP IS LESS THAN 3 mm AT THE SURFACE MARKED ‘*’ ON THE GAUGE AT ANY POINT, HORIZONTAL LINER SHOULD BE REPLACED.
2. TO CHECK WEAR ON VERTICAL LINER, THE GAUGE SHOULD PLACED IN POSITION AS SHOWN ABOVE, IF A 2 mm THICK FEELER CAN INSERTED BETWEEN THE PIVOT SURFACE AND GAUGE SURFACE MARKED ‘#’ VERTICAL LINER SHOULD BE REPLACED.

NOTE:—

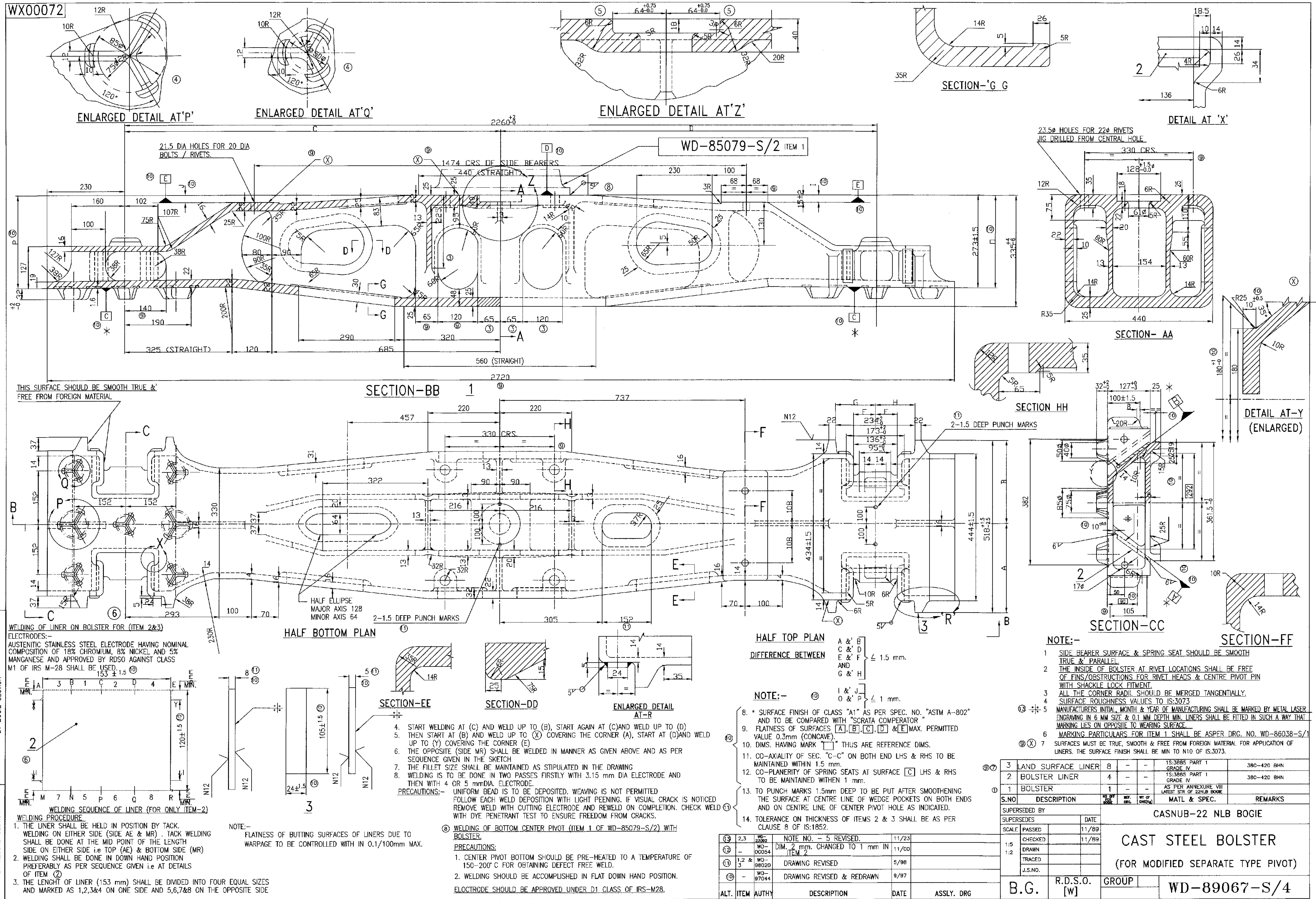
1. THIS GAUGE IS APPLICABLE FOR WEAR MEASUREMENT OF CENTER PIVOT BOTTOM TO DRG. NO. CONTR–9404–S/8.
2. ALL EDGES & CORNERS TO BE ROUNDED OFF TO A RADIUS OF 1.5mm.
3. GAUGE DIMENSIONS INDICATED ARE FOR THE FINAL PRODUCT DIMENSIONS REQUIREMENTS. TOLERANCES ON GAUGE DIMENSIONS AS PER IS:2102(PART–1),CL–FINE.
4. MARKING PROVISION FOR FOLLOWING TO BE MADE:—
 - i) DRAWING NO.
 - ii) COMPONENT SIZE



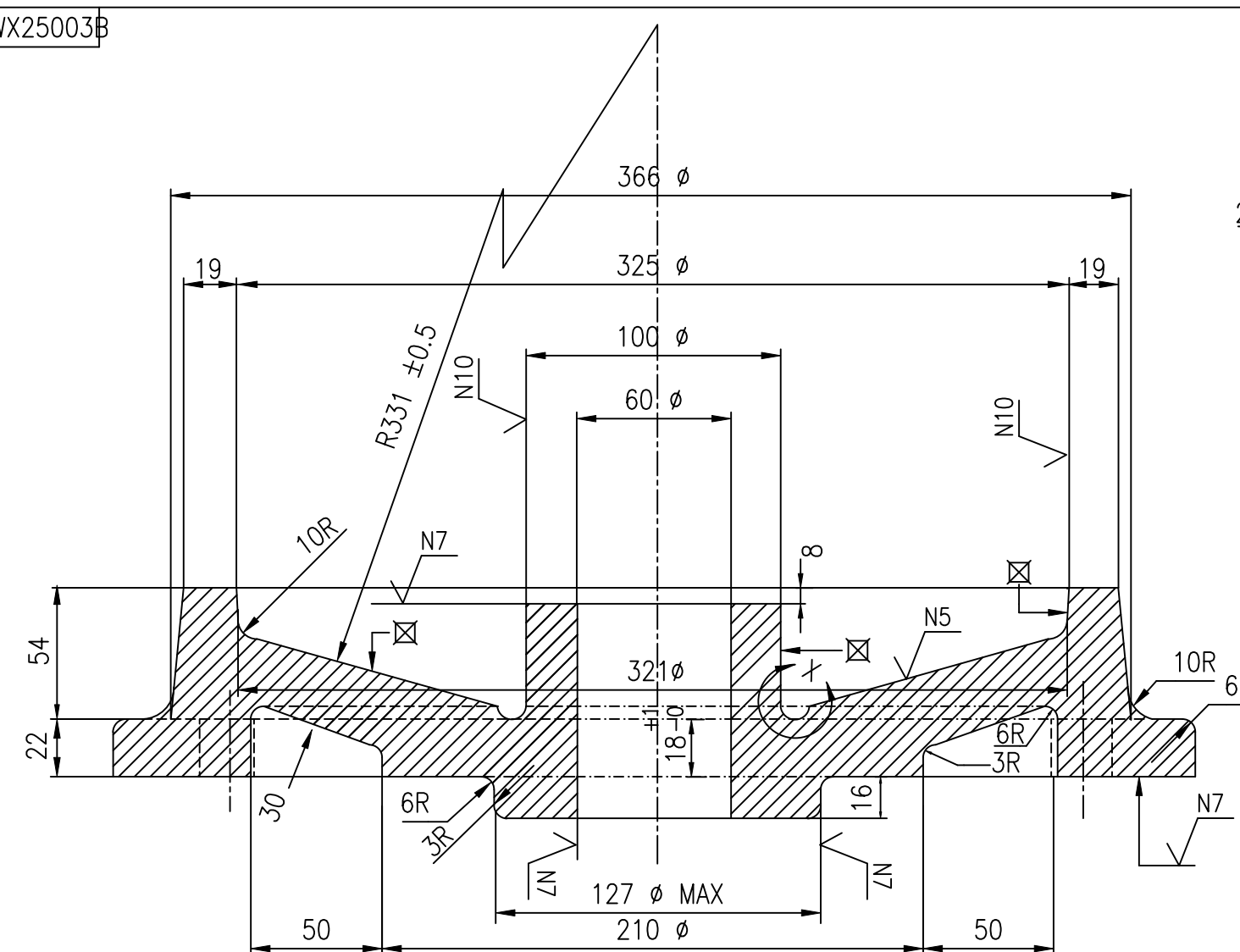
ALT	ITEM	AUTHY.	DESCRIPTION	DATE	ASSEMBLY DRGS.
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1	LCCF CP BOTTOM GAUGE	—	WD-97049-S/3	—	STEEL	HARDNESS: 45RC Min.
ITEM	DESCRIPTION & DIMENSIONS	NO.OFF PER GAUGE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPCN	REMARKS
SUPERSEDED BY:		LCCF CENTRE PIVOT MAINTENANCE GAUGE				
SCALE PASSED		A.K. GAUTAM	12/25	MAINTENANCE GAUGE FOR CENTER PIVOT BOTTOM		
/	CHECKED	A.M.TRIPATHI	12/25	WD-25094-S/8		
	DRAWN	UMESH	12/25			
	TRACED					
	J.SHEET	WD-25094	12/25			
B.G.		R.D.S.O [W]	GROUP	WD-25094-S/8		

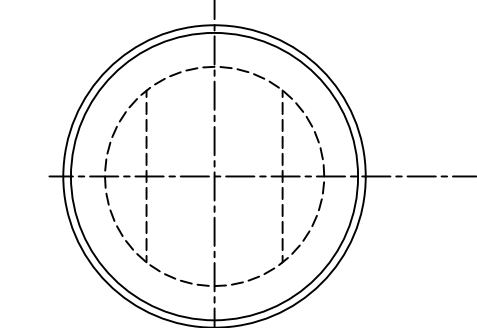
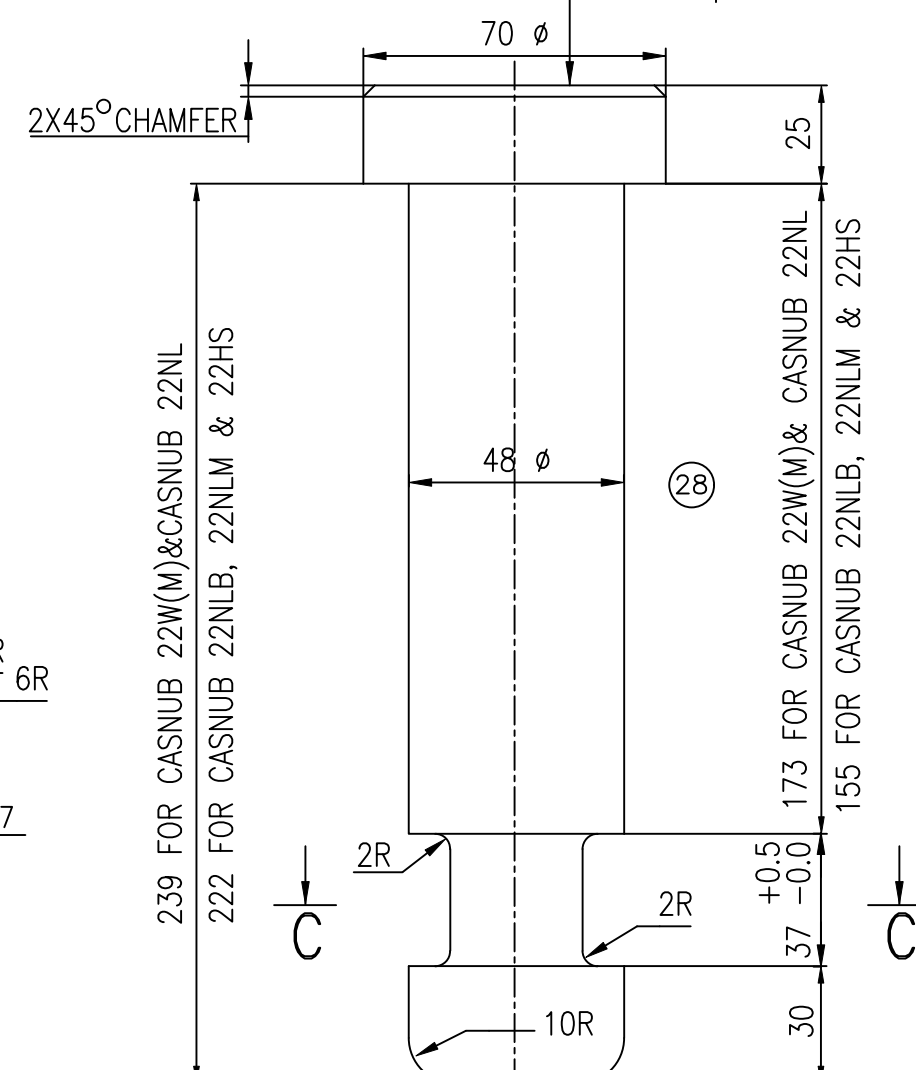
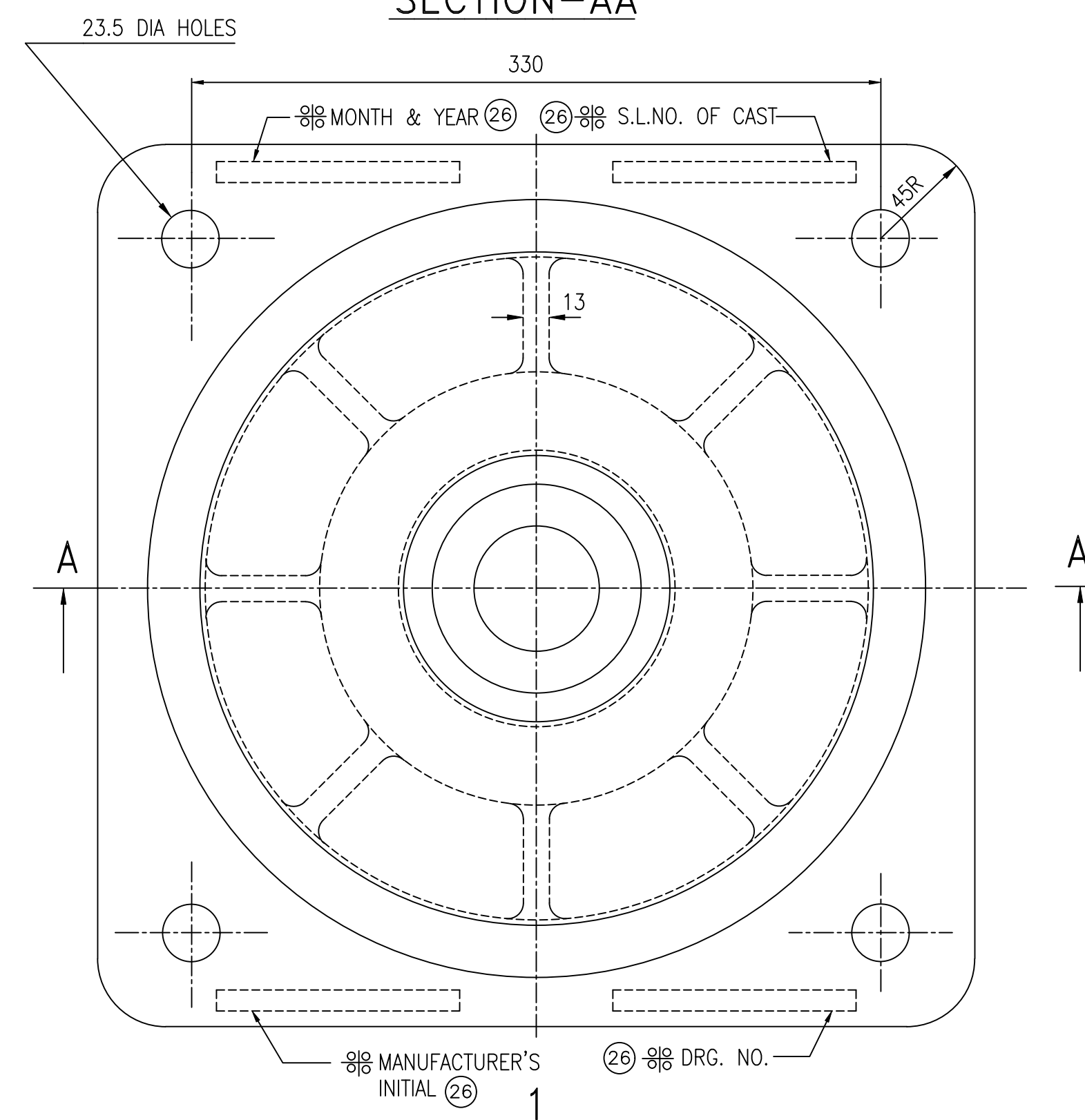
ANNEXURE-VII



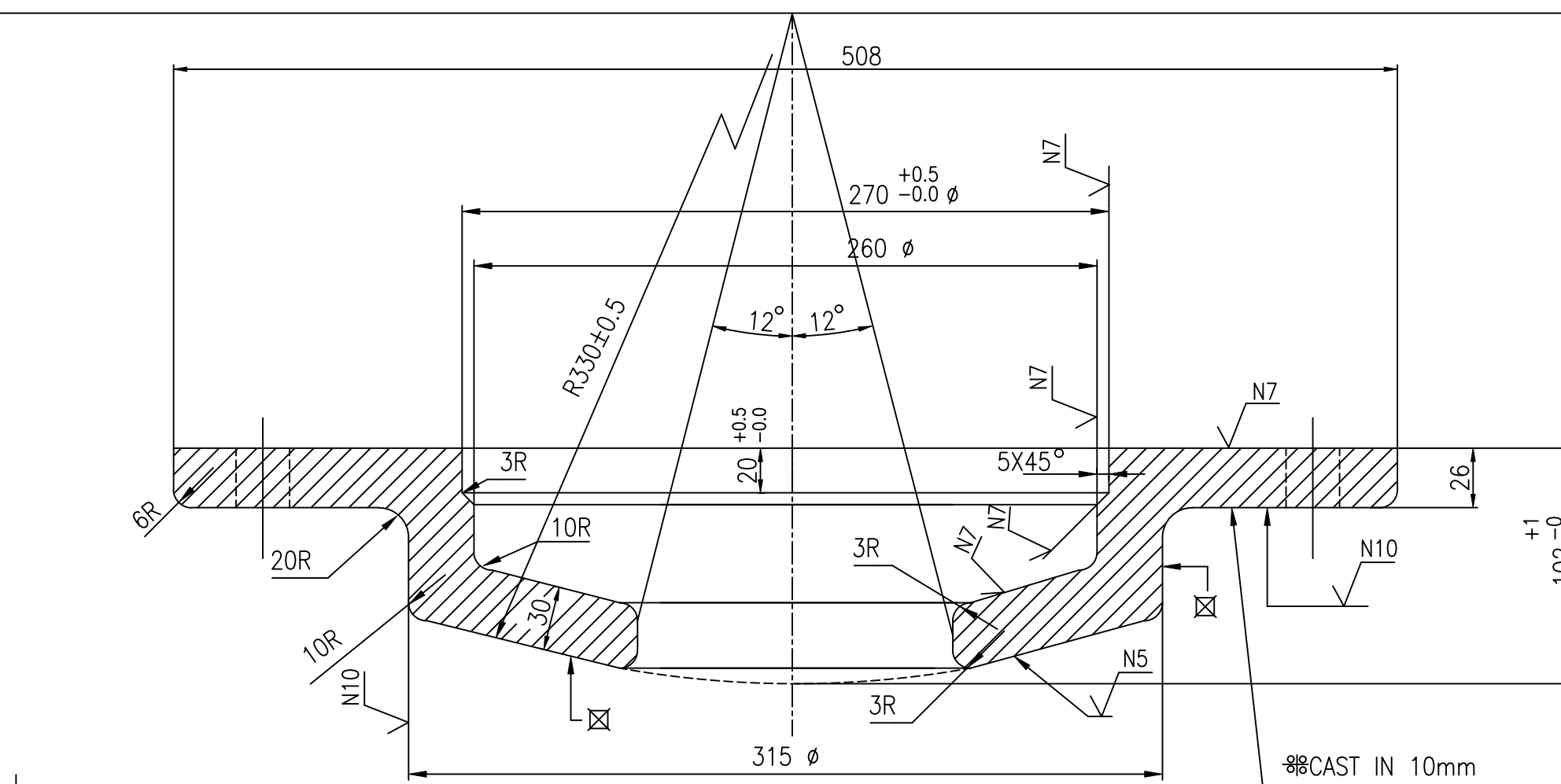
WX25003B



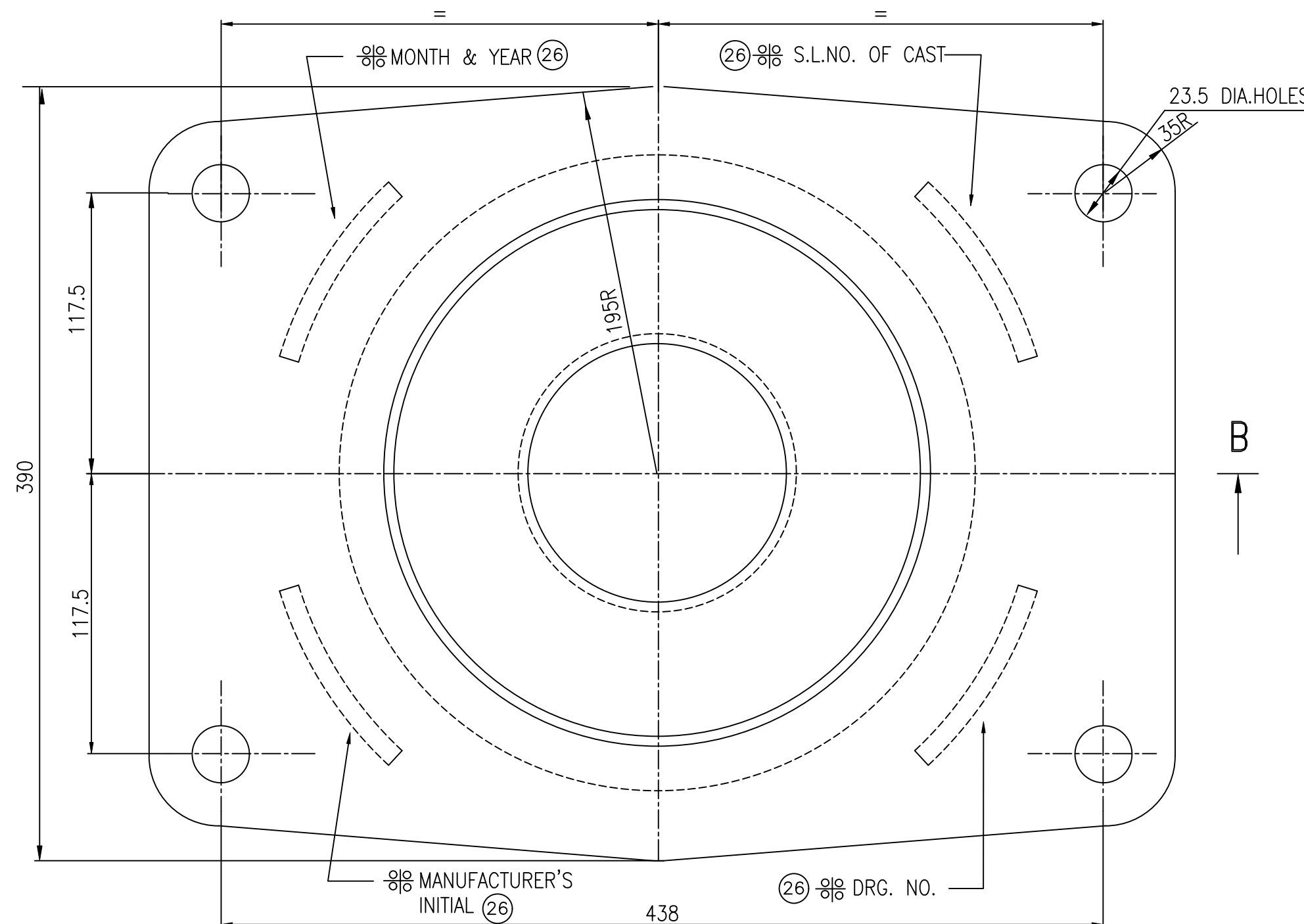
SECTION-AA



ENLARGED DETAIL AT-X



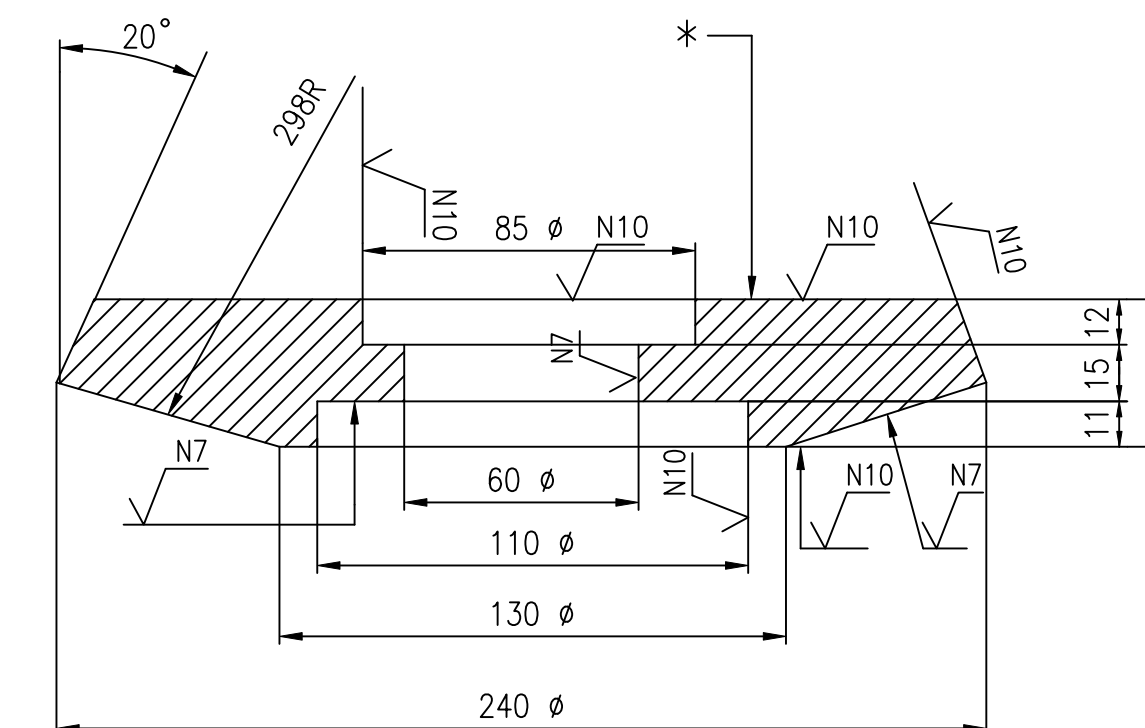
SECTION-BB



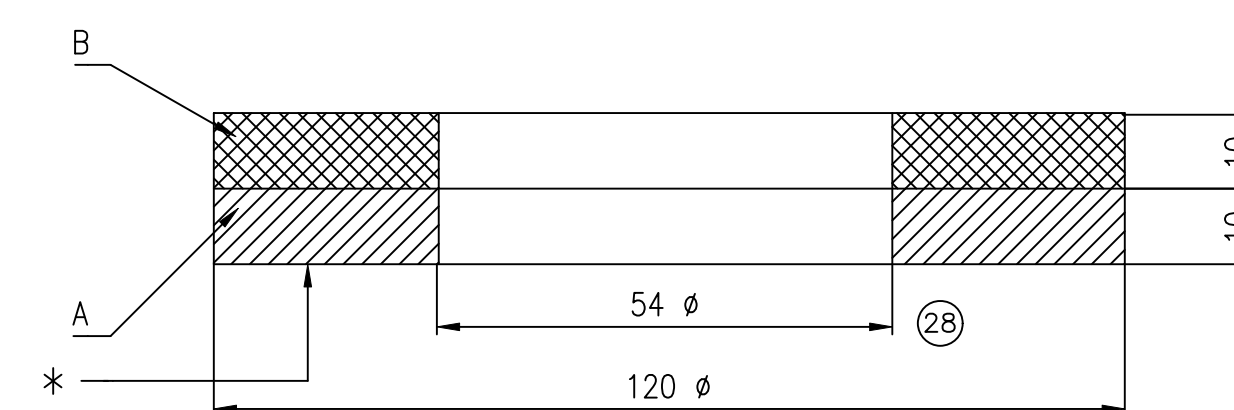
NOTE:-

1. SURFACE ROUGHNESS VALUES TO IS:3073
- (28) 2. EMBOSS DRG/ITEM NO. MANUFACTURER'S INITIAL MONTH & YEAR OF MANUFACTURE ON PART 'A' OF ITEM-4, ITEMS 3&6 IN 6mm SIZE.
3. CENTRE PIVOT BOTTOM & TOP (ITEM 1&2) ARE TO BE PROCURED FROM SOURCES APPROVED BY R.D.S.O.
4. DIMENSION MARKED AS $\bullet$ IS TO BE STRICTLY MAINTAINED
- (26) 5. $\bullet$ CAST DRG. NO, MANUFACTURER'S INITIAL, SERIAL NO. OF CAST AND MONTH & YEAR IN ITEM 1&2 OF 10mm TEXT SIZE EMBOSSED LETTERS ON DEPRESSED SURFACE. TEXT HEIGHT OF EMBOSHING SHOULD BE 2-3mm, DESCERNIBLE AFTER MACHINING.
6. SURFACE FINISH NOTE FOR ITEM NO.5:-
SURFACE FINISH OF 'N7' ALL OVER UNLESS STATED OTHER WISE
7. SURFACE MARKED AS $\boxtimes$ OF CENTRE PIVOT TOP & BOTTOM (ITEM 1 & 2) SHALL BE PROFILED BY COPY MACHINING.
- $\boxtimes$ 8. MANUFACTURERS INITIAL, MONTH & YEAR OF MANUFACTURE TO BE MARKED BY METAL LASER ENGRAVING/DOT PEEN IN 3mm SIZE & 0.1 MM DEPTH.
- $\diamond$ 10. MANUFACTURERS INITIAL, MONTH & YEAR TO BE FORGED IN 6mm SIZE & 0.5mm DEPTH, ALTERNATIVELY, MONTH & YEAR OF MANUFACTURING CAN BE MARKED BY METAL LASER ENGRAVING/DOT PEEN IN 6mm SIZE & 0.2 mm DEPTH MIN.
- (28) 11. MANUFACTURING & TESTING OF ITEM 5,7&8 SHALL BE AS PER RDSO STR-WX25001 AND FOR ITEM-4 AS PER RDSO STR-WX23008.
12. PERMISSIBLE DEVIATION ON NOMINAL DIM. OF CASTINGS SHALL BE AS PER IS:4897 CL-1 & FOR FORGINGS AS PER IS:3469 CLOSE QUALITY.

(29)	9	WD-2501	ALTERNATE PIN(COTTER PIN) ADDED	11/2
(28)	4,5,7 &8	WD-25015	DIMENSION REV. IN ITEM 4,5,7&8. NOTE-2 REVISED. NOTE-8-12 ADDED	03/2
(27)	7,8&5	WD-23008	DIMENSION REV. IN ITEM 7&8.NOTE NO.2 REVISED. MATERIAL CHANGED FOR ITEM NO.5	02/2
(26)	1&2	WD-19054	NOTE NO. 5 REVISED & LOCATIONS SHOWN	08/1
(25)	4&5	WD-18094	MATERIAL SPECIFICATION REVISED.	12/1
(24)	1&2	WD-12005	NOTE NO.5 REVISED. DRG. REPLOTTED.	02/1
ALT	ITEM	AUTHY	DESCRIPTION	DATE



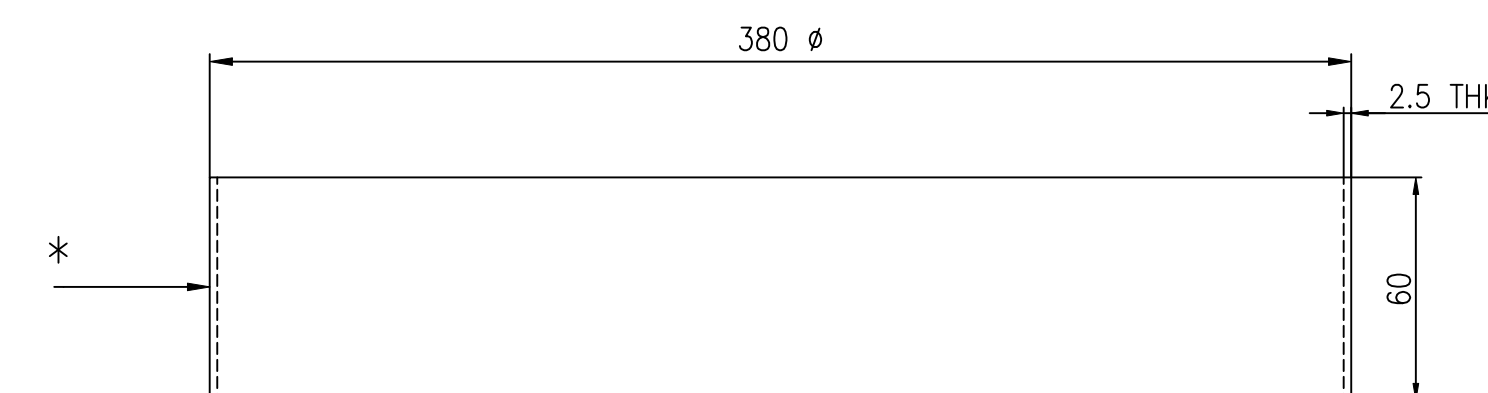
(4)

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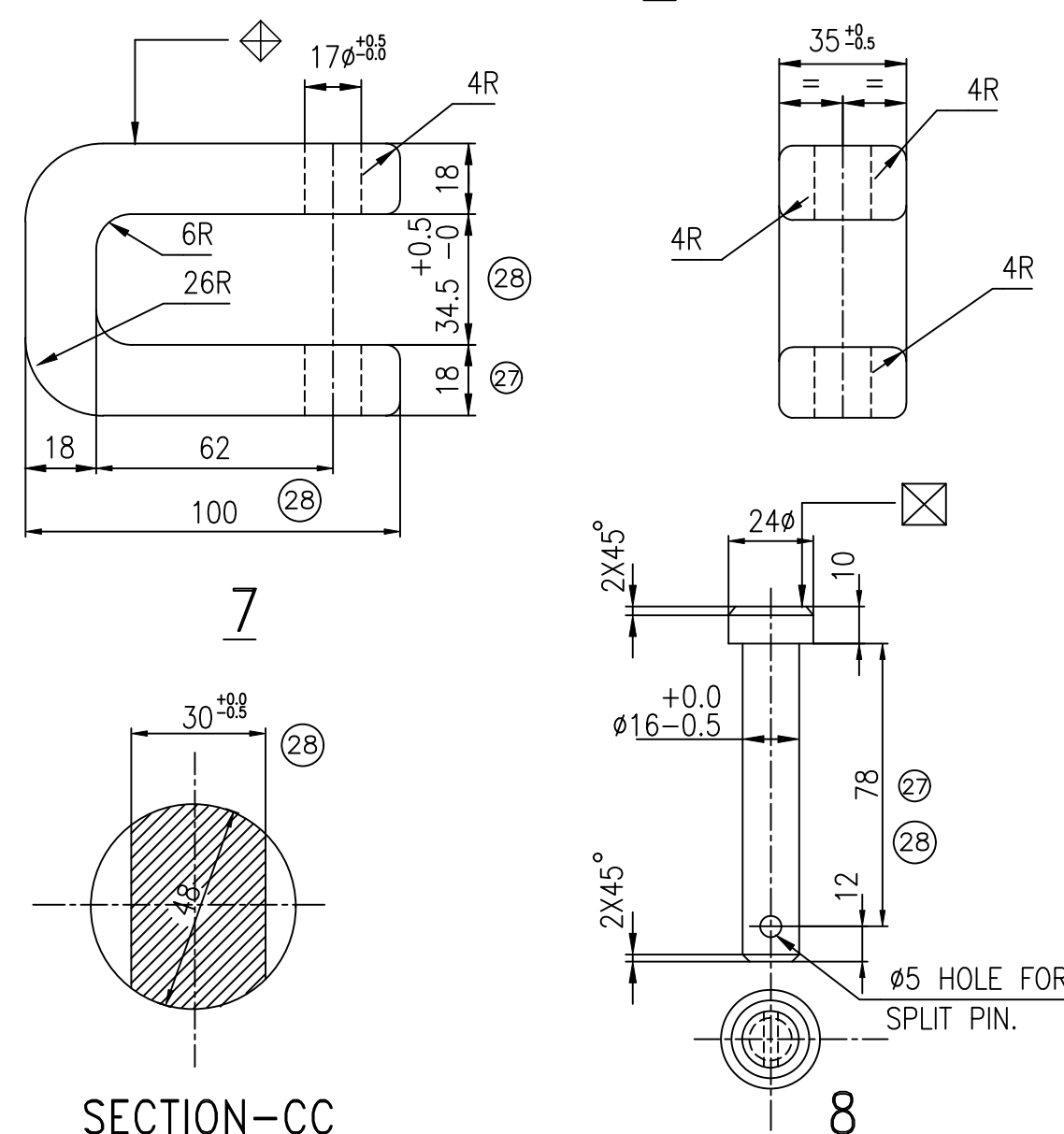
TABLE

REF. LET	MATERIAL	SPECN.	COLOUR
A	STEEL	IS:2062-2011 Gr. E250A	RED PAINT (IS-5-CODE-53)
B	VULCANIZED NATURAL RUBBER BASED BLACK COMPOUND	IS:5192 (Part-I) -1994 Gr. Z-70	—

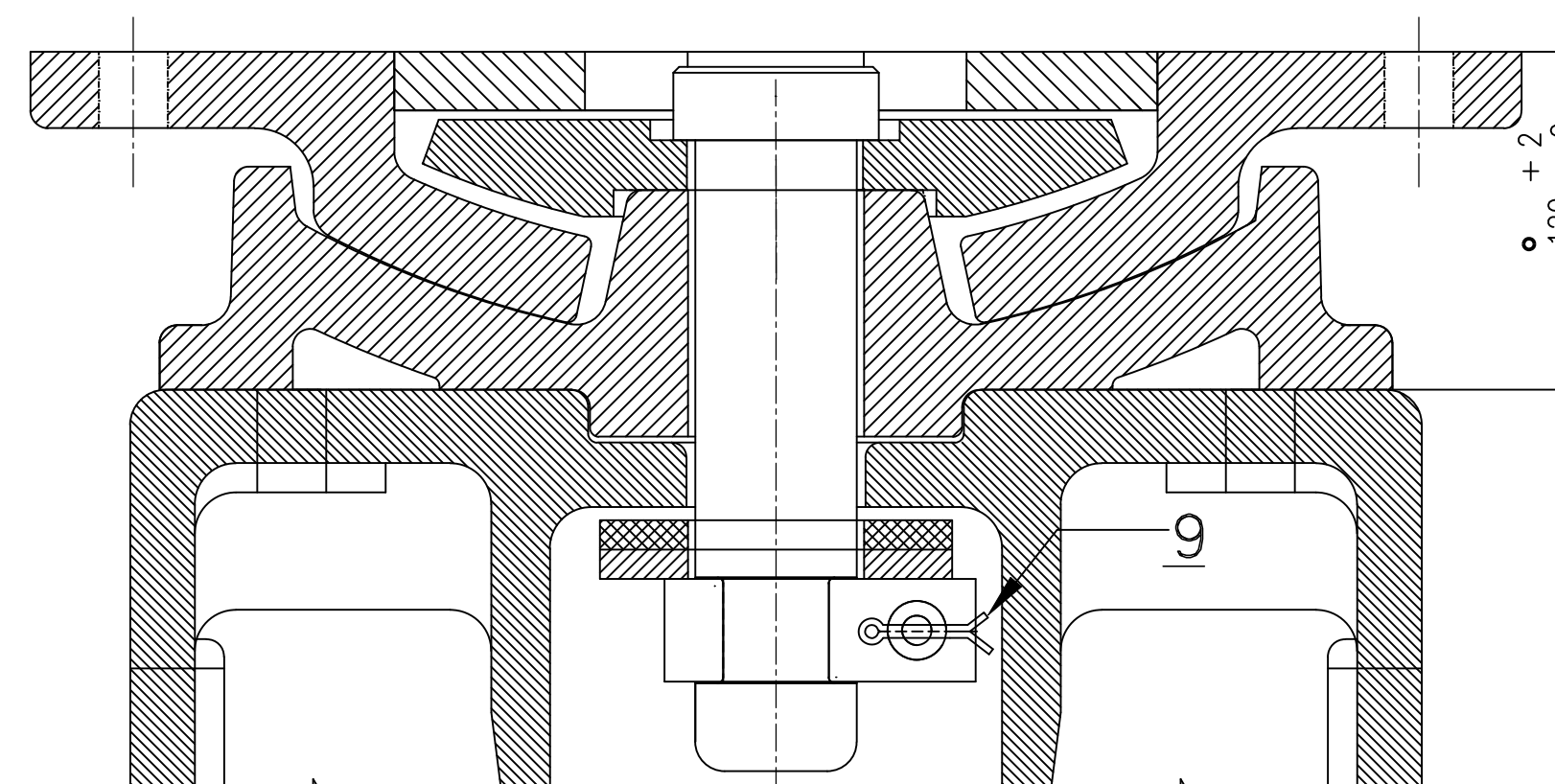
PART 'B' TO BE GLUED/BONDED TO 'A'
IN A DIE



6



SECTION-CC

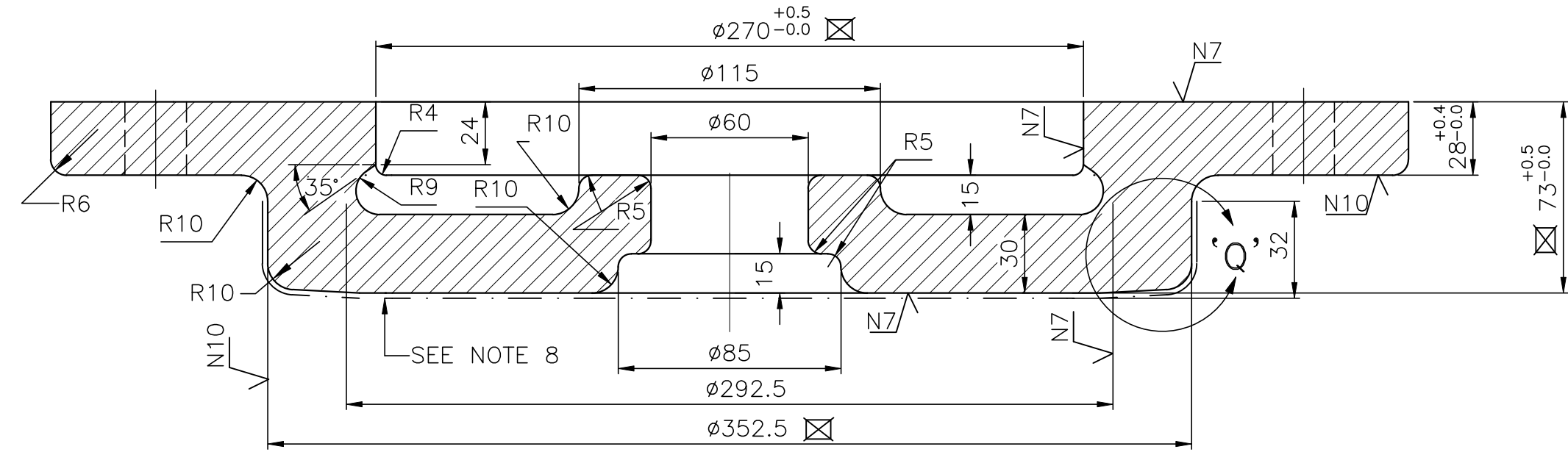


ASSEMBLED VIEW

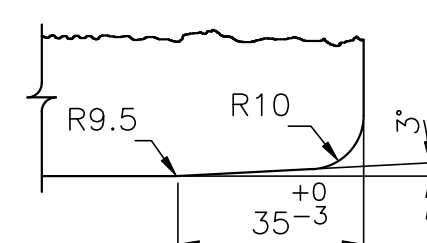
(29)	9	Ø3.6X64 SPRING COTTERS PIN(R CLIP) OR Ø (3.5-3.7)x50 SPLIT PIN	1	-		DIN:11024 OR IS:549,MAT.-STEEL	ZINC PLATE
(28)	8	LOCK PIN	1	-		IS:1875-CI.4 OR	NORMALISE
(28)	7	SHACKLE LOCK	1	-		IS:2004-CI.4	
	6	DUST SHIELD	1	-		IS:1079-Gr.HR1	
(28)	5	CENTRE PIVOT PIN	1	-		IS:1875-CI.4 OR IS:2004-CI.4	NORMALISE
	4	WASHER	1	-		SEE TABLE	
	3	CENTRE PIVOT RETAINER	1	-		IS:1875-CI.4 OR IS:2004-CI.4	NORMALISE
	2	BOGIE CENTRE PIVOT TOP	1	-		M-201 Gr.'C'	HARDNESS 179-241 BH
	1	BOGIE CENTRE PIVOT BOTTOM	1	-		M-201 Gr.'C'	HARDNESS 179-241 BH

ITEM	DESCRIPTION			NO.OF BOGIE	REF. DRG.	WT. OF ONE(Kg)	MATL & SPEC.	REMARKS
SUPERSEDED BY				CASNUB 22W(M), 22NL, 22NLM. 22NLB & 22HS BOGIE				
SUPERSEDES			DATE					
SCALE	PASSED	M.SAHEB	<u>CENTRE PIVOT ASSEMBLY</u> <u>DETAILS</u>					
1:2	CHECKED	S.C.DIXIT 8/92						
1:2.5	DRAWN	R.SAXENA 8/92						
	TRACED							
	J.S.NO.							
B.G.		R.D.S.O. [W]	GROUP	WD-85079-S/2				

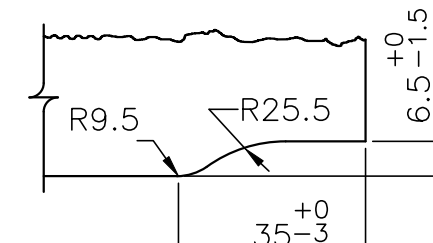
WX25003



SECTION-BB

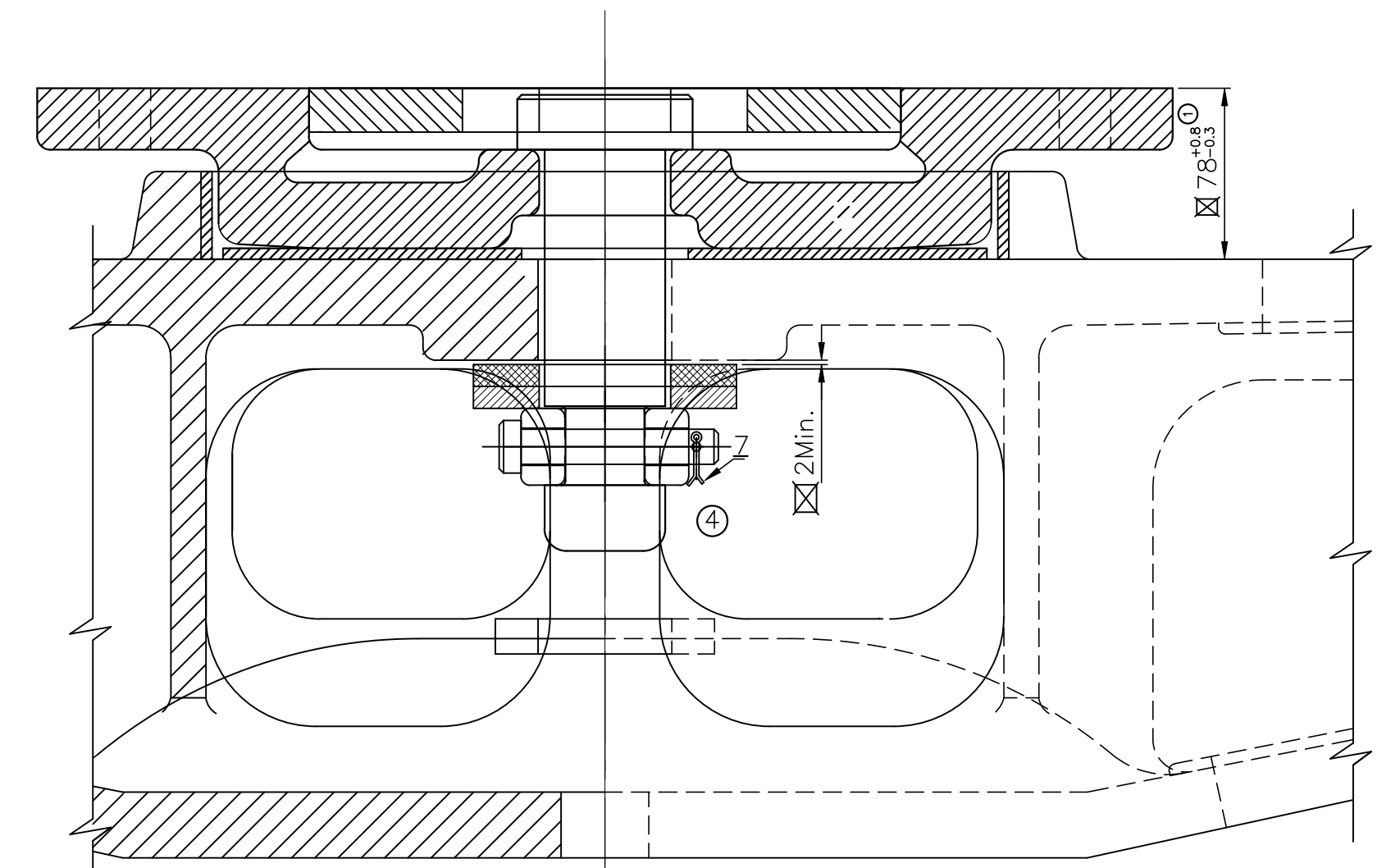


STANDARD



ALTERNATE STANDARD

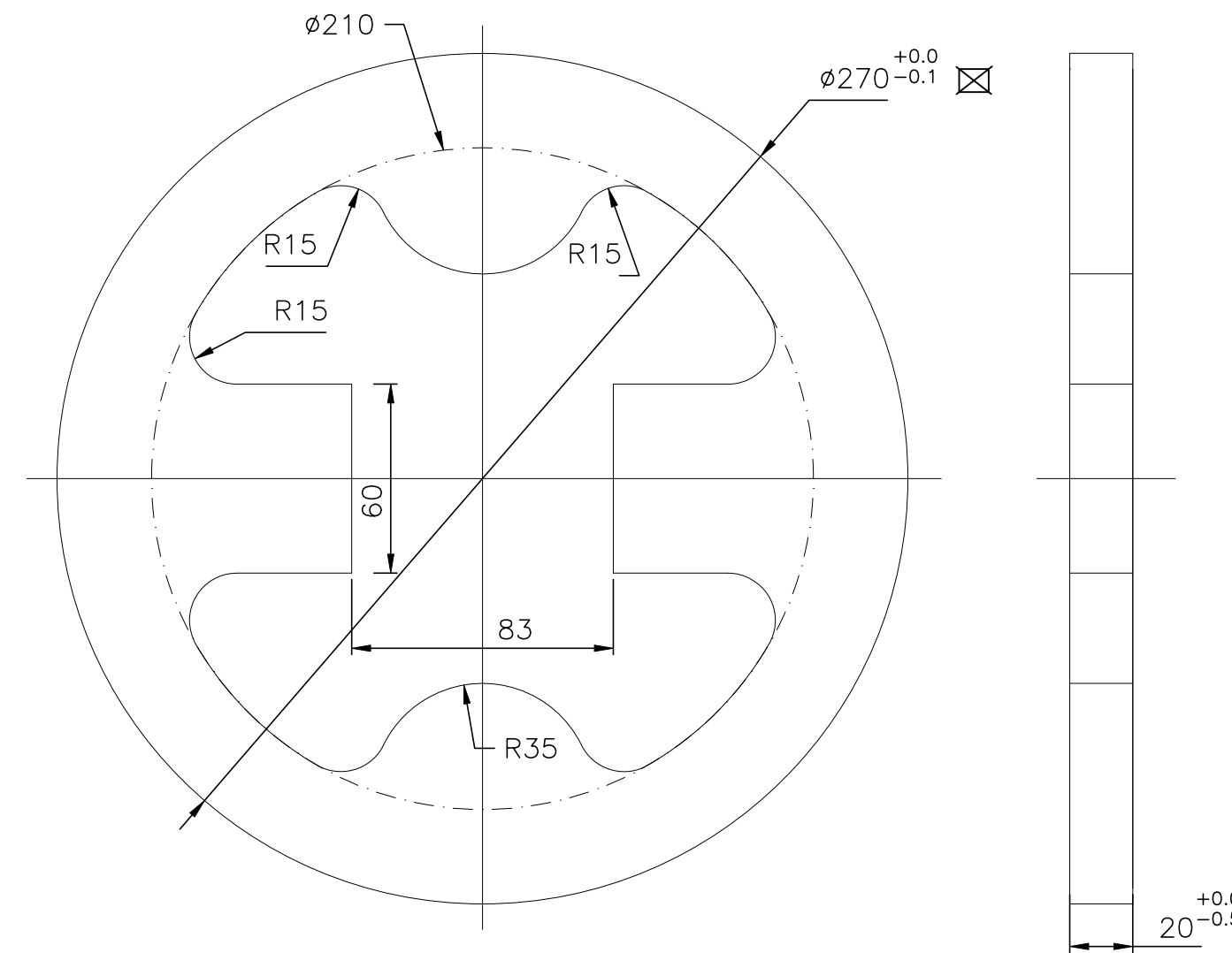
ENLARGED DETAIL AT 'Q'



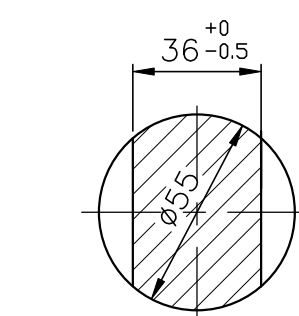
ASSEMBLED VIEW

NOTE:-

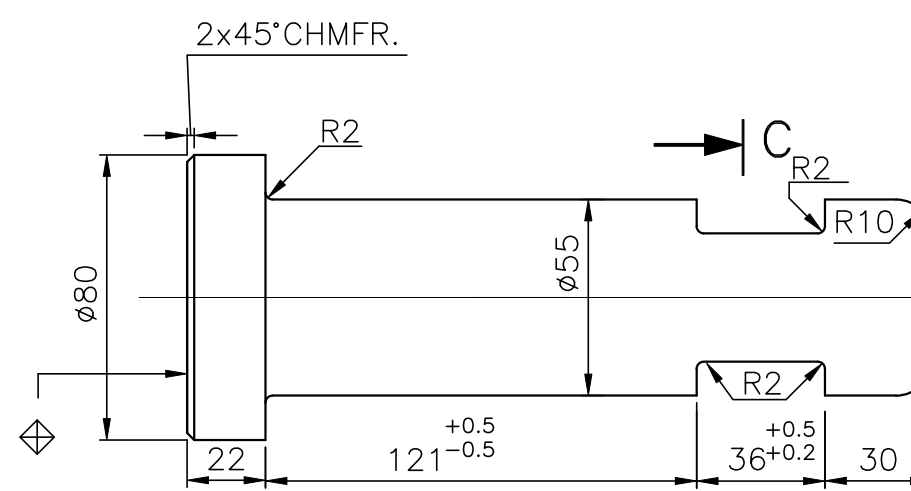
- SURFACE ROUGHNESS VALUES TO IS:3073.
- MANUFACTURER'S INITIAL,MONTH&YEAR TO BE FORGED IN 6mm SIZE & 0.5mm DEPTH, ALTERNATIVELY MONTH&YEAR OF MANUFACTURING CAN BE MARKED BY METAL LASER ENGRAVING/DOT PEEN IN 6mm SIZE & 0.2mm DEPTH. LINERS SHOULD BE FITTED IN SUCH THAT MARKING LIES AT NON-WEARING SURFACE.
- EMBOSS DRG.NO./ITEM NO.,MANUFACTURER'S INITIAL, MONTH & YEAR OF MANUFACTURE ON PART 'A' IN 6mm SIZE.
- CENTRE PIVOT TOP TO BE PROCURED FROM SOURCES APPROVED BY R.D.S.O.
- DRG.NO.,ITEM NO.,MANUFACTURER'S INITIAL,S.NO. OF CAST, MONTH & YEAR OF MANUFACTURING TO BE CAST IN 10mm RAISED LETTERS TYPE.
- DIMENSION MARKED AS $\square$ IS TO BE STRICTLY MAINTAINED. (ONLY FOR ITEM NO.3)
- SURFACE FINISH OF 'N7' ALL OVER, UNLESS OTHERWISE STATED.
- SURFACE MARKED '—' THUS OF CENTRE PIVOT TOP SHALL BE SURFACE HARDENED UPTO DEPTH OF 3mm. VALUE OF HARDNESS SHALL BE 300 BHN MINIMUM AT 3mm DEPTH.
- MANUFACTURERS INITIAL, MONTH & YEAR OF MANUFACTURE TO BE MARKED BY METAL LASER ENGRAVING/DOT PEEN IN 3mm SIZE & 0.1 MM DEPTH.
- MANUFACTURING & TESTING OF ITEM 3, 4 & 5 SHALL BE AS PER RDSO STR-WX25001 AND FOR ITEM-2 AS PER RDSO STR-WX23008.
- ITEM-2 ALWAYS BE FITTED SUCH THAT RUBBER PART REMAINS ON TOP.
- PERMISSIBLE DEVIATION ON NOMINAL DIM. OF CASTINGS SHALL BE AS PER IS:4897 CL-1 & FOR FORGINGS AS PER IS:3469 CLOSE QUALITY.



6

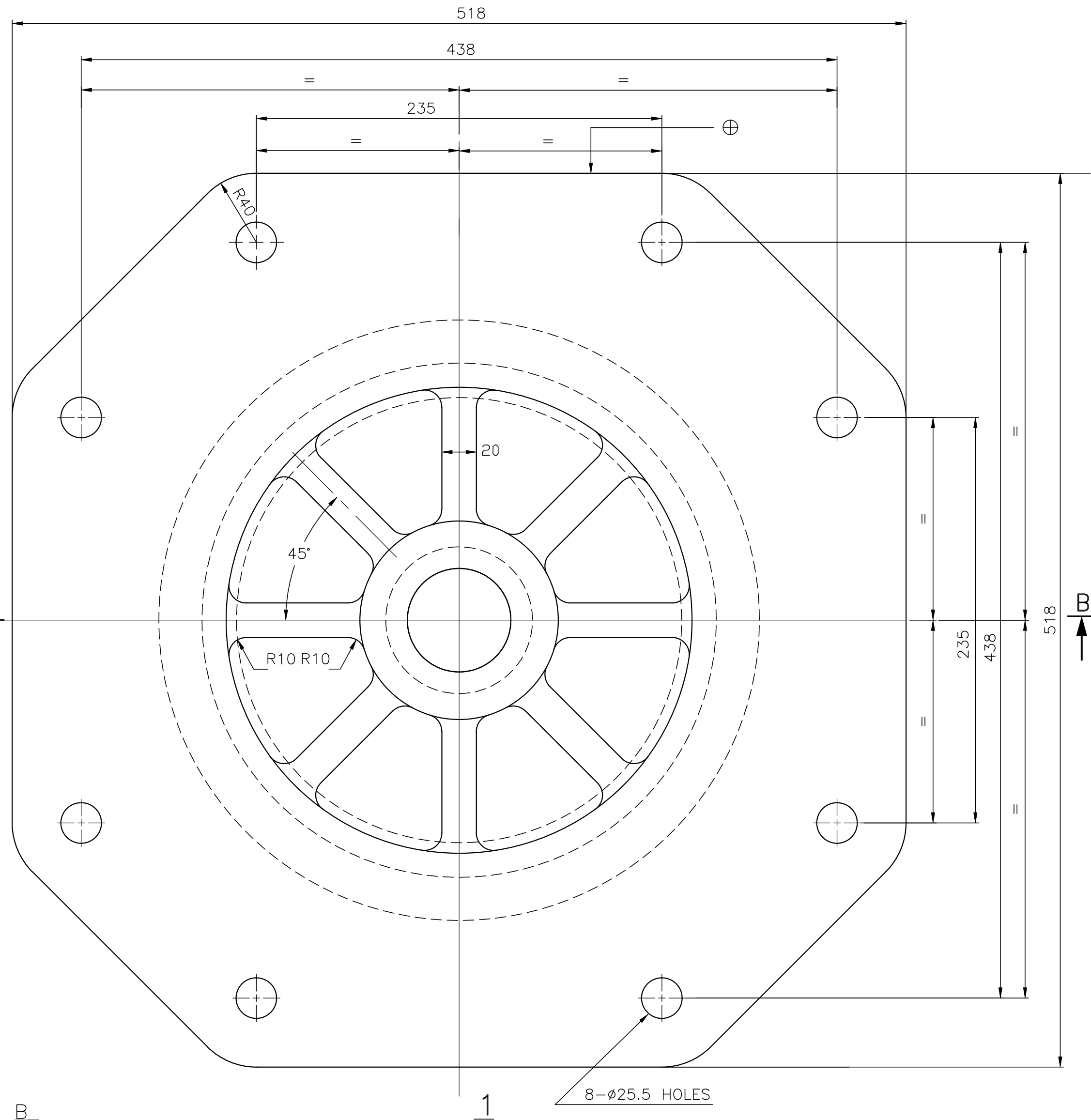


SECTION-CC



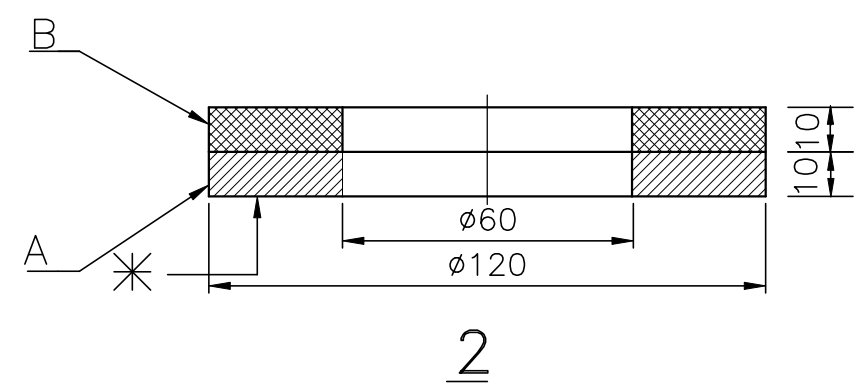
3

→ C

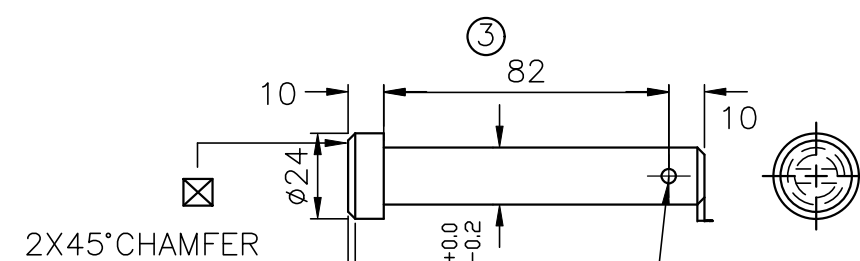


1

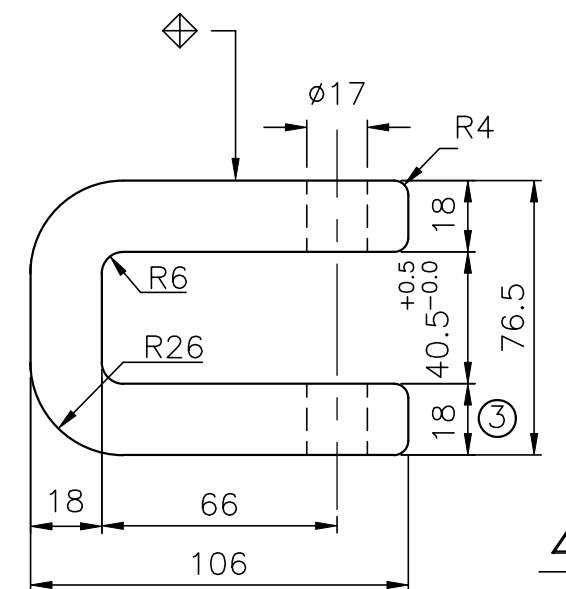
8- ϕ 25.5 HOLES



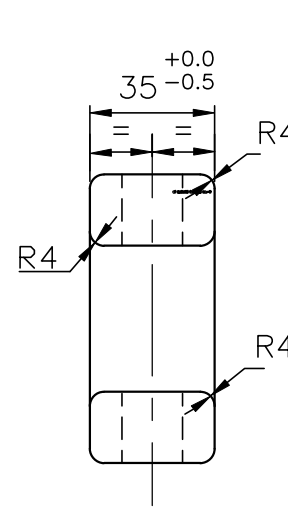
2



5



4



REF.LET	MATERIAL	SPECN.	COLOUR
A	STEEL	IS:2062 E-250A	RED PAINT (IS:5-CODE-538)
B	VULCANIZED NATURAL RUBBER BASED BLACK COMPOUND.	IS:5192	-

PART 'B' TO BE GLUED/BONDED TO 'A' IN A DIE.

⑤	7.	Ø3.6X64 SPRING COTTERS PIN(R CLIP) OR Ø(3.5-3.7)X50 SPLIT PIN	1	-	DIN:11024 OR IS:549, MAT. STEEL	ZINC PLATED	
④	6.	UNDERFRAME RETAINING RING	1	-	IS:2062, E-450②		
④	5.	LOCK PIN	1	-	IS:1875 CL-4 OR IS:2004 CL-4	NORMALISED	
	4.	SHACKLE LOCK	1	-			
④	3.	CENTER PIVOT PIN	1	-	IS:1875 CL-4 OR IS:2004 CL-4	NORMALISED	
	2.	WASHER	1	-	SEE TABLE		
	1.	BOGIE CENTRE PIVOT TOP	1	-	M-201 Gr.'C'	HARDNESS 179-241 BHN	
ITEM	DESCRIPTION & DIMENSIONS		NO.OFF PER BOGIE	REF.DRG	Wt OF (KGS)	MAT.& SPEC	REMARKS

PRELIMINARY SKETCH	ONLY FOR PROTOTYPE APPLICATION UNDER GUIDANCE OF R.D.S.O.)
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7	WD-25091	ALTERNATE PIN (COTTER PIN) ADDED	11/25	
3,4 &5	WD-25015	ITEM NO.3,4&5 MAT. REVISED NOTE 2&3 REVISED, NOTE 9-12 ADDED	03/25	
4,5 &3	WD-23008	DIMENSION REVISED IN ITEM NO.4&5,NOTE 2 REVISED,MATERIAL CHANGED FOR IT.NO.3	02/23	
6,3	WD-18053	Material spec. changed	07/18	
-	WD-16074	C.P. ASSEMBLED HT. TOLERANCE REVISED.	12/16	
ALT.	ITEM	AUTHY. DESCRIPTION	DATE	ASSEMBLY DRAWING

SUPERSEDED BY	DATE	LIGHT WEIGHT LOW HEIGHT 25T AXLE LOAD BOGIE (LWLH25)
SUPERSEDES	DATE	
SCALE	PASSED	O.P.YADAV 05/15
1:2	CHECKED	S.K.SHARMA 05/15
1:2.5	DRAWN	UMESH 05/15
	TRACED	
	J.SHEET	WD-15013 02/15
B.G.	R.D.S.O.	GROUP
[W]		WD-15013-S/01

