भारत सरकार–रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगन
लखनऊ– 226011
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सत्यमेवजयते

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

No. EL/ 3.1.35/12 (SB)

Date: 08.07.2022

Principal Chief Electrical Engineer,

1. Central Railway, Mumbai, CST-400 001.
2. East Central Railway, Hazipur-844 101.
3. East Coast Railway, Chandrashekharpur, Bhubaneshwar-751 016.
4. Eastern Railway, Fairlie Place, Calcutta-700 001.
5. North Central Railway, Block-A, Subedarganj, Allahabad- 211 033.
6. Northern Railway, Baroda House, New Delhi-110 001.
7. North Western Railway, Jaipur- 302 006
8. North Eastern Railway, Gorakhpur-273001
9. North East Frontier Railway, Maligaon, Guwahati-781011
10. South Central Railway, Secunderabad-500 071.
11. South East Central Railway, Bilaspur-495 004.
12. South Eastern Railway, Garden Reach, Kolkata-700 043.
13. Southern Railway, Park Town, Chennai-600 003.
14. South Western Railway, Hubli- 580020
15. West Central Railway, Jabalpur-482 001.
16. Western Railway, Churchgate, Mumbai-400 020
17. Chittaranjan Locomotive Works, Chittaranjan-713 331
18. Diesel Locomotive Works, Varanasi-221 004
19. Diesel Loco modernization Works (DMW), Focal Point, Patiyala, Punjab – 147 003

प्रधान मुख्य विद्युत अभियंता,

1. मध्य रेलवे, मुम्बई सीएसटी –400 001
2. पूर्व मध्य रेलवे, हाजीपुर–844 101
3. पूर्व तटीय रेलवे, चन्द्रषेखरपुर, भुबनेश्वर–751 023
4. पूर्व रेलवे, फेयर्ली प्लेस, कोलकाता–700 001
5. उत्तर मध्य रेलवे, ब्लाक ए–2, सुबेदारगंज इलाहाबाद – 211 033
6. उत्तर रेलवे, बड़ौदा हाऊस, नई दिल्ली–110 001
7. उत्तर पश्चिम रेलवे जयपुर– 302006
8. उत्तर पूर्व रेलवे गोरखपुर– 273001
9. उत्तर पूर्व फ्रेन्टीयर रेलवे मालीगॉव गुवाहाटी–781011
10. दक्षिण मध्य रेलवे, रेल निलायम, सिकंदराबाद–500 371
11. दक्षिण पूर्व मध्य रेलवे, बिलासपुर – 495 004
12. दक्षिण पूर्व रेलवे, गार्डेनरीच, कोलकाता–700 043
13. दक्षिण रेलवे, पार्क टाउन, चेन्नई–600 003
14. दक्षिण पश्चिम रेलवे हुबली–580020
15. पश्चिम मध्य रेलवे, जबलपुर–482 001
16. पश्चिम रेलवे, चर्चगेट, मुम्बई– 400 020
17. चित्तरंजन रेल इंजन कारखाना, चित्तरंजन – 713331
18. डीजल रेल इंजन कारखाना, वाराणसी–221004
19. डीजल लोको माडर्नाइजेसन वर्क्स (डी.एम.डब्लू),फोकल प्वाइंट, पटियाला, पंजाब –147003

SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2021/EL/SMI/0330, Rev. '0' Date:07.07.2022

1. **Title:** Special maintenance instruction for Mounting/dismounting of spheriblocs on components used in three phase Electric Locomotives.

2. **Brief History:** As per ABB drawings, three types of Spheriblocs are fitted on axle guide rod & Torque Arm in WAG9/WAP7 Locos and on Gearcase Suspenssion arm, axle guide rod, Traction Motor support arm and Traction motor in WAP5 locos. While overhauling, Spheriblocs are to be taken out from the above components as per respective Maintenance & Repair Manual. During mounting of Spheriblocs in the above components eye, proper alignment is required for its better performance.

Generally most of the Zonal Railways are mounting spheribloc in components eye manually by press machine without any zig/fixture due to which there is possibility of poor alignment of spheribloc to the component. This may cause failure of spheribloc.

Zonal Railways had also expressed that the design of Zig/fixture is required to achieve better alignment of spheribloc to the components on fitment.

During meeting held at RDSO on 21.08.2019 on reliability issues of spheribloc, it was pointed out that ELS/TKD has already developed fixture for fitment/removal of spheriblocs used in WAG9/WAP7 Electric locomotives. RDSO has visited ELS/TKD to study the design details of the same. During visit a demonstration of fitment/removal of spheribloc on torque arm & axle guide link was observed and working of fixture has been found satisfactory. This fixture works automatically by a power pack of 70ton.

3. **Object:** Objective of this SMI is to standarize zig/fixture of Spheribloc to ensure proper mounting/dismounting of spheriblocs on components eye which improve reliability of the Spheriblocs.

4. **Procedure for Dismounting/Mounting of Spheriblocs on fixture:**

Fixture with power pack (oil circulating pump) of 70t and accessories of fixture are shown in Fig-1, 2 & 3.

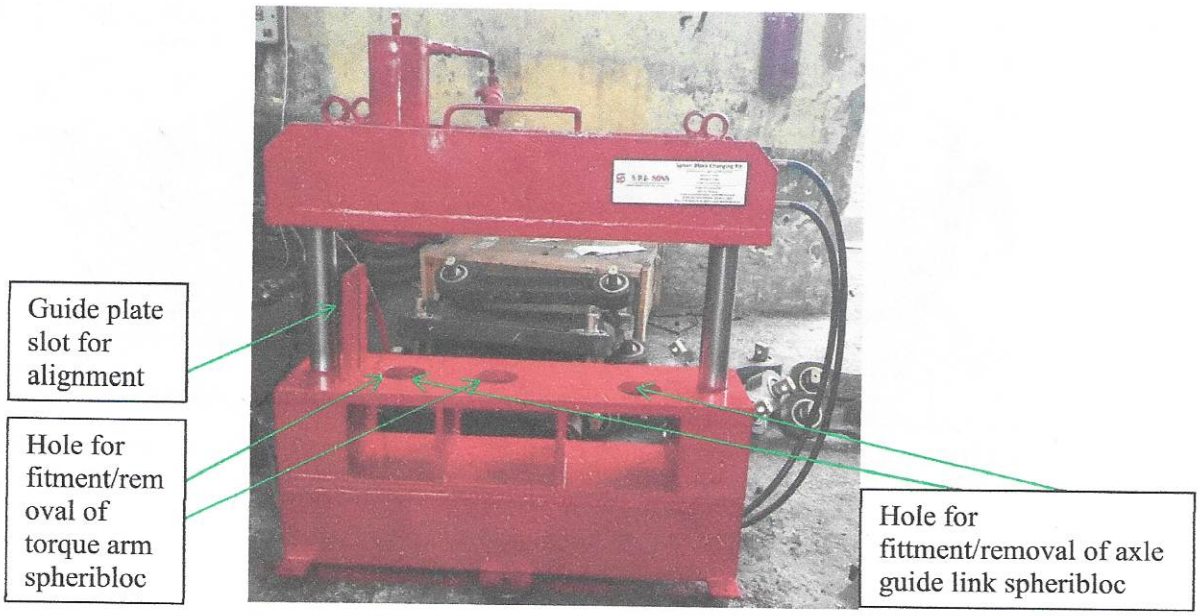


Fig1: Fixture

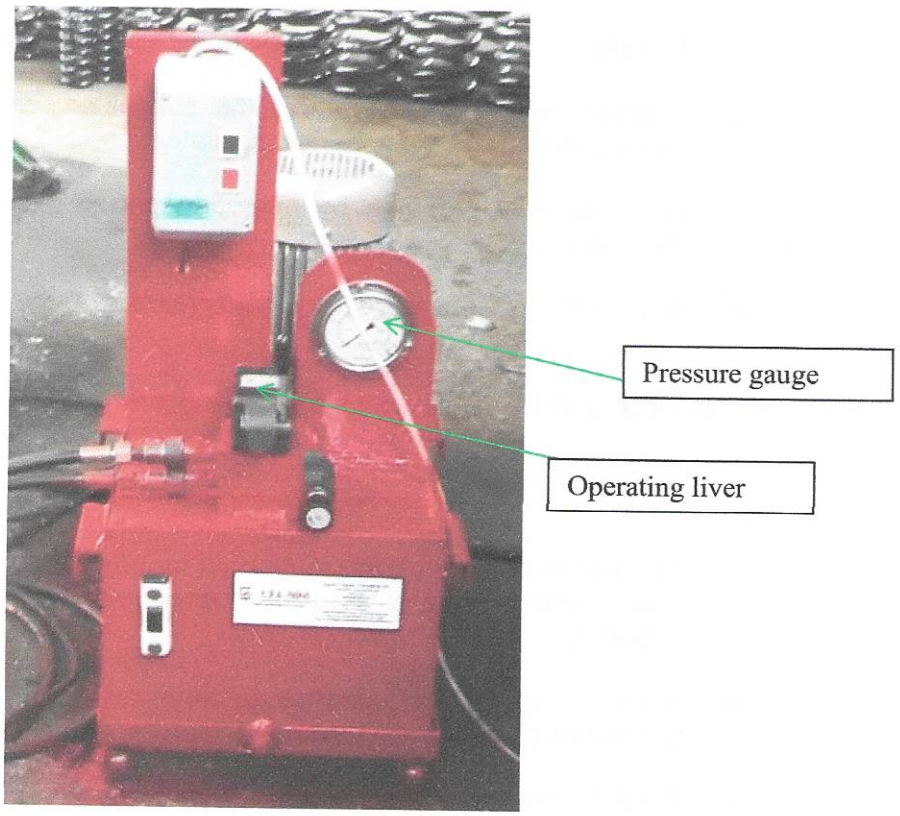


Fig2: Power Pack (oil circulating pump)

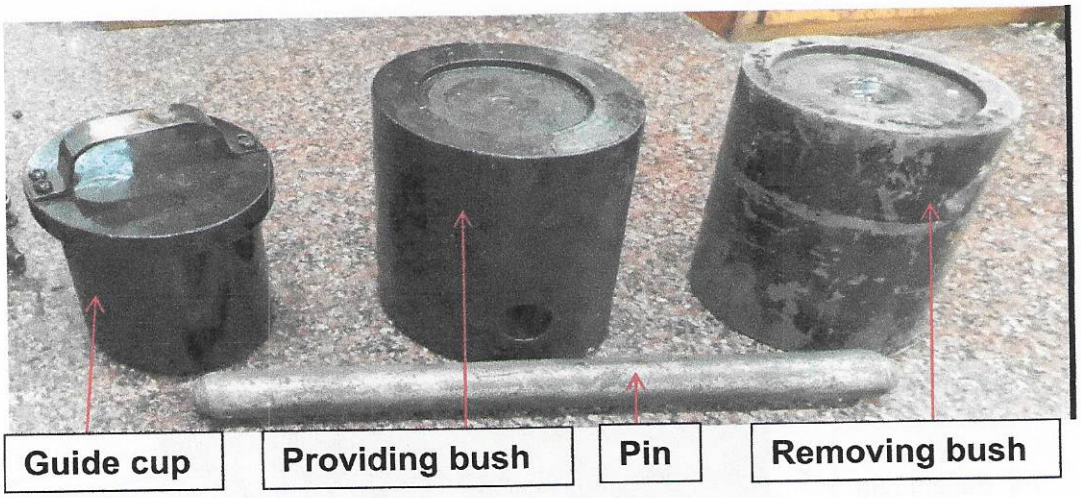


Fig3: Accessories for fixture

A. Dismounting of Spheribloc:

i. Position the component fitted with spheribloc on respected hole made on the fixture.

ii. Ensure that spheribloc collar is on hole by touching with hand from bellow side.

iii. Position removing bush above the spheribloc, ensuring contact around the entire perimeter of the spheribloc collar.

iv. Apply suitable pressure by operating power pack liver until the spheribloc removed.

vi. Repeat the procedure for the other spheribloc

B. Mounting of Spheribloc:

i. Position the component fitted with spheribloc on respected hole made on the fixture.

ii. Support the other end of component by position the guide cup in eye. If other end of component is fitted with spheribloc, no positioning of guide cup is required.

iii. In case of axle guide link it should be placed on respected hole such that face of the axle guide link may parallel to the face of fixture.

iv. Position the spheribloc on the eye of component, align the center line of the cross-pin bolt hole by inserting a pin through spheribloc cross-pin bolt hole to guide plate slot built on fixture.

v. Position providing cup above the spheribloc, ensuring contact around the entire perimeter of the spheribloc collar.

vi. Ensure the spheribloc is square with the component eye.

vii. Insert pin through hole made in providing cup to guide plate

viii. Apply suitable pressure on providing cup by operating power pack lever to press the spheribloc into the eye.

ix. Repeat the procedure for the other spheribloc.

C. Precautions:

During fitment/removal process on fixture following precautions should be ensured.

i. Remove any burrs or scratches from the spheribloc collar and the eyes as necessary.

ii. Apply a thin film of machine oil, or other suitable lubricant, to the spheribloc collar.

iii. If there is no movement in spheribloc after applying initial pressure, please check position of spheribloc on hole.

5. **Application to Class of Locomotive:** WAP5/WAP7/WAG9.

6. **Agency of Implementation:** All sheds holding WAP5/WAP7/WAG9 Locomotives.

7. **Periodicity of Implementation:** Every overhauling schedules.

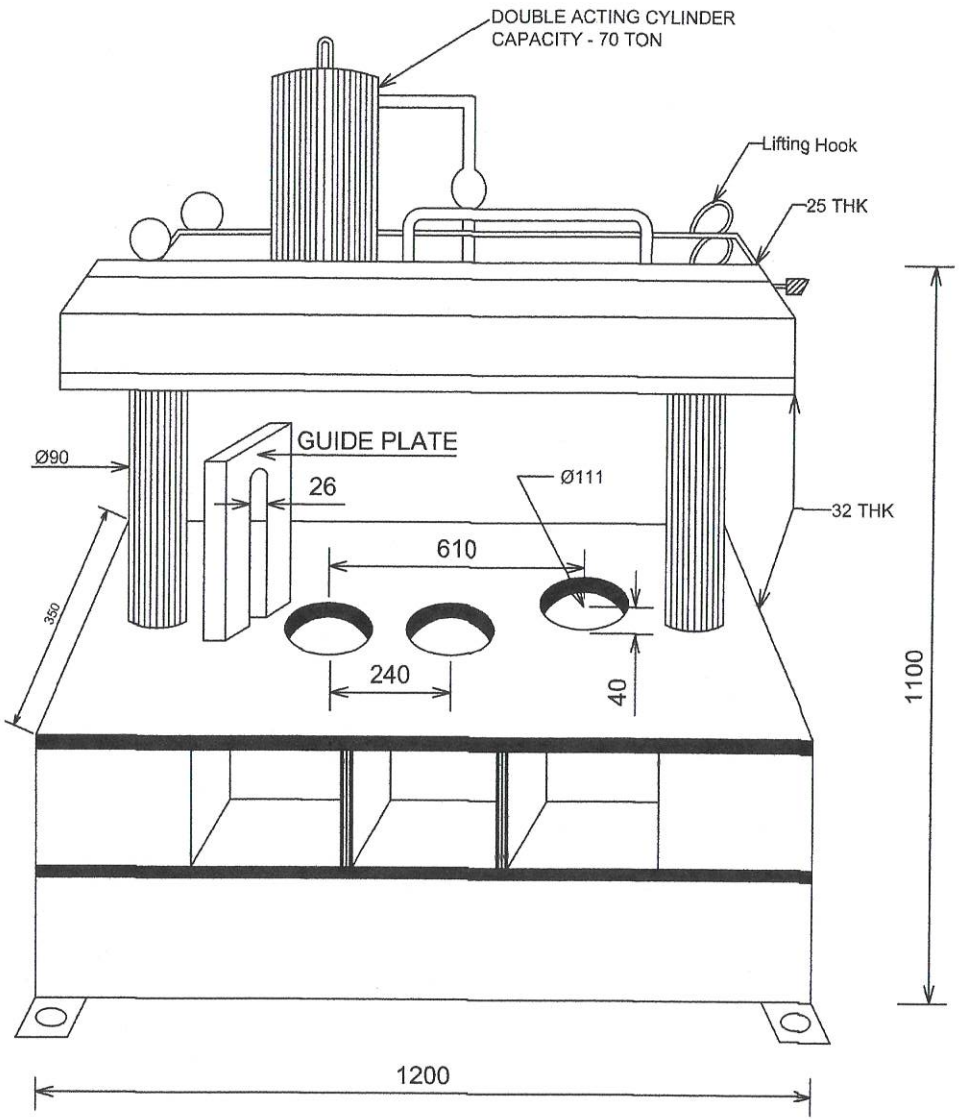
8. **Reference:** 39th MSG held at ELS/AQ on 14th & 15th Oct '2019 and MoM of dated 21.08.2019 issued vide RDSO letter of even no. dated 26.08.2019.

08.07.2022

(Pratibha Gupta)
for Director General Electrical

Encl: SKEL-5059, SKEL-5060 & SKEL-5061

Copy to: As per standard mailing list no. EL-M-7.5.3-19 Latest Revision.



NOTE :-

1 ALL DIMENSIONS ARE IN MM.

2 MATERIAL : STEEL TO IS : 2062

Ref.No.	Description	Qty / Assly.	Material	Unit Weight Kg.	Total Weight Kg.	Remarks

BILL OF MATERIAL

REF : RDSO / 2021 / EL / SMI / 330 REV. '0'

SPHERIBLOC MOUNTING / DISMOUNTING FIXTURE FOR WAG 9 / WAP 7 LOCO

FIRST ISSUED 08.07.2022

SUPERSEDES

SUPERSEDED BY

RDSO.ELECT.DTE.

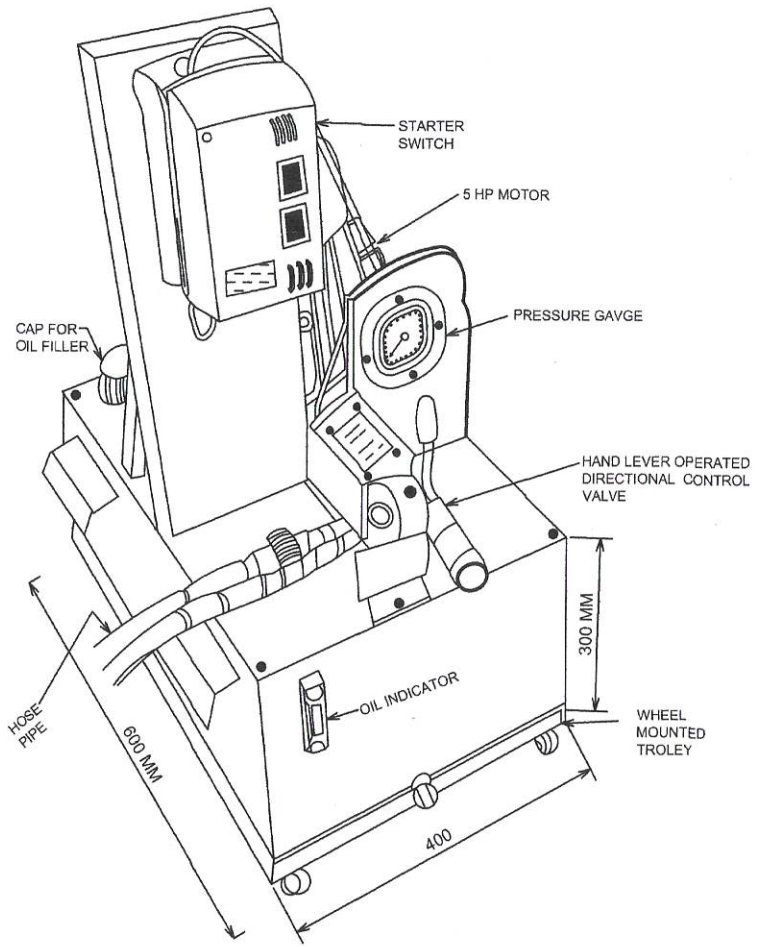
Drawing No. SKEL - 5060 alt - '0'

STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE

Dt.	05.05.2022
D	U. B. YADAV
C	Rajiv Kumar
T	--

NOTE :-

1 MATERIAL : STEEL TO IS : 2062



Ref.No.	Description	Qty / Assly.	Material	Unit Weight Kg.	Total Weight Kg.	Remarks

BILL OF MATERIAL

REF : RDSO / 2021 / EL / SMI / 330 REV. '0'

Power Pack (70 t)
Suitable For Spheribloc
Mounting / Dismounting

FIRST ISSUED 08.07.2022

SUPERSEDES

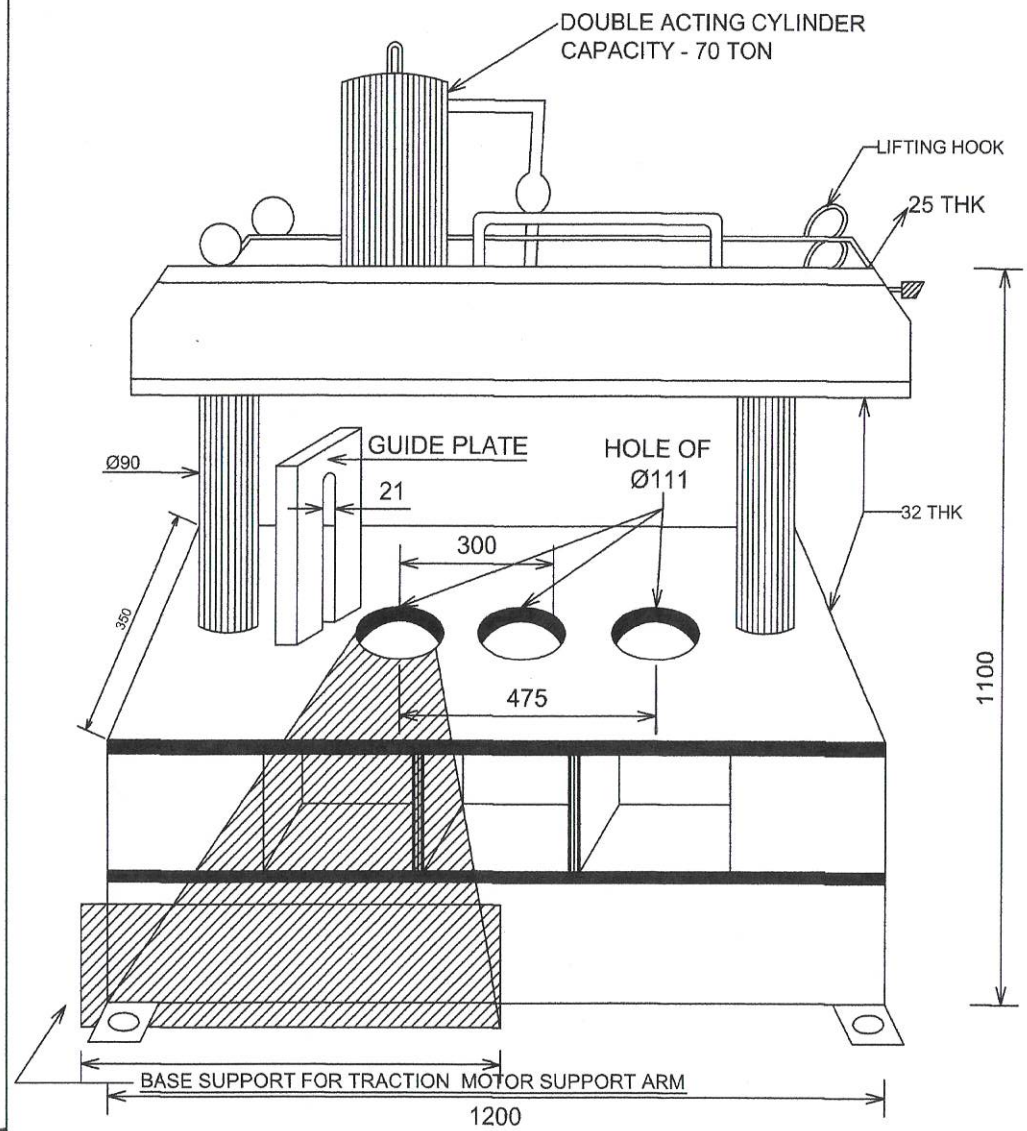
SUPERSEDED BY

RDSO.ELECT.DTE.

Drawing No.
SKEL - 5059 alt - '0'

STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE

Dt.	05.05.2022
D	U. B. YADAV
C	Rajiv Kumar
T	--



NOTE :-

1 ALL DIMENSIONS ARE IN MM.
2 MATERIAL : STEEL TO IS : 2062

Ref.No.	Description	Qty / Assly.	Material	Unit Weight Kg.	Total	Remarks

BILL OF MATERIAL

REF : RDSO / 2021 / EL / SMI / 330 REV. '0'

SPHERIBLOC MOUNTING / DISMOUNTING FIXTURE FOR WAP 5 LOCO

FIRST ISSUED 08.07.2022

SUPERSEDES

SUPERSEDED BY

RDSO.ELECT.DTE.

Drawing No. SKEL - 5061 alt - '0'

STATUS	ALT.	REF. NO.	DESCRIPTION	APPD. BY	DATE

Dt.	05.05.2022
D	U. BHADAV
C	Rajiv Kumar
T	-