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भारत सरकार रेल मंत्रालय
GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS

भारतीय रेलवे के रोलिंग स्टॉक में उपयोग हो रहे मैसर्स स्टोन इंडिया लिमिटेड मेक के एयर ड्रायर की मेंटीनेंस के लिए स्पेयर पार्ट किट्स की विशिष्टि

Specification of Spare Part Kits for maintenance of M/s Stone India Ltd. make Air Dryer used in rolling stock of Indian Railways.

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**SPECIFICATION NO.MP.0.01.00.34 (REV. - 00)
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अनुसंधान अभिकल्प एवं मानक संगठन
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1. OBJECTIVE

Air dryer is used in ALCo, HHP & Electric Locomotives and EMUs/MEMUs/DEMUs. M/s Stone India Limited/Kolkata was one of the approved source of air dryer who has supplied appx. 3000 Air dryers to Zonal Railways. Now, SIL is not being supply Air dryers and has been deleted from RDSO vendor directory. Hence, IR facing the acute problem of maintenance of SIL makes Air dryers working in field.

The objective is to develop specification of spare part kits for M/s SIL makes Air dryers for maintenance, used in rolling stock on Indian Railways

2. SCOPE

This specification covers the desired characteristics and requirements of the spare kits for maintenance of SIL makes Air dryers used in rolling stock on Indian Railways.

3. Desired Characteristics:

- 3.1 The firm shall develop spare part kit for maintenance of M/s SIL makes Air dryers used in rolling stock on IR. The details of overhauling kits are as under:

| S.N | Item | Qty/Air dryer |
|-----|--------------------------------|---------------|
| 1. | Filter Coalescing | 1 |
| 2. | Nut 3/8" 16 Hex Lock | 1 |
| 3. | Washer 3/8" lock Self Sealing | 1 |
| 4. | O Ring 4.237 I.D | 1 |
| 5. | Kit Humidity Indicator Rebuild | 2 |
| 6. | O Ring 2" OD | 4 |
| 7. | O Ring 1/2" OD | 8 |
| 8. | Check Valve Seal | 4 |
| 9. | O Ring 1.739 I D | 4 |
| 10. | Gasket Flange 1" | 6 |
| 11. | Gasket Flange 3/8" | 3 |
| 12. | O Ring 4.487 I.D | 2 |
| 13. | O Ring 6" O.D | 4 |
| 14. | Desiccant Element | 2 |
| 15. | Solenoid Valve | 2 |
| 16. | Repair Kit Drain Valve | 1 |
| 17. | Repair Kit Purge Valve | 2 |

- 3.2 The firm shall also submit their drawings and specifications for the spare Kits developed for SIL make Air dryers to Consignee/User Railway.

- 3.3 The life of spare kit of should not be less than as per their respective replacement schedule as given in RDSO air dryer maintenance instruction MP.MI-18, Rev.-02.
- 3.4 Firm may also offer Electronic control Module (PCB) for SIL make air dryer This PCB shall be tested in accordance with IEC-60571. These tests as per relevant clause of IEC-60571 shall be carried out for prototype only. A certificate from recognised testing laboratory shall be considered satisfactory for this purpose. The tests required to be conducted as per the para 5.1.2.3 of RDSO spec no.MP.0.01.00.06 Rev-06.
- 3.5 Firm may also offer other parts of SIL make air dryer (which are not part of overhauling kit but required of condition basis) like Purge valve, Drain valve, Inlet check valve, outlet check valve etc. The firm shall submit their drawings and specifications.
- 3.6 The overhauling kit shall have markings for identification (subject to availability of space for marking on item) in respect of make, date of manufacturing etc. for facilitating failure investigation and compilation of life cycle data.

4. Requirement

- 4.1 SIL make air dryer fitted with above developed kit shall work satisfactory on ALCo, HHP & Electric Locomotives and EMUs/MEMUs/DEMUs as applicable.

5. Internal test

The firm should submit the detail to Consignee/User Railway of internal test result which is conducted on spare parts like dimension, hardness, chemical testing etc. as applicable. The detail of test procedure, acceptance criteria, equipment used etc, should be clearly mentioned in the Firm`s QAP against respective spare parts.

Those test which are not conducted at firm premises should also be mentioned in the Firm`s QAP. The test result certificates of these tests from recognized testing laboratory should be submitted to Consignee/User Railway.

6. Fitment Trial

If internal test results found satisfactory by Consignee/ User Railway, firm shall submitted one set kit of air dryer for fitment trial at Diesel loco/Electric loco/EMU/MEMU/DEMU shed and shall be jointly checked by Consignee/User Railway and firm.

7. Lab Trial

After fitment trial at shed, firm shall submit one set kit of air dryer for testing in RDSO. The air dryer fitted with above kit will be tested in Brake laboratory as per Annexure-2 of RDSO spec no.MP.0.01.00.06 Rev-06 (copy attached as Annexure- A). The above referred test scheme is a

general guideline. Slight changes if required, may be there during actual testing of prototype. The firm shall supply necessary equipment and fittings as required during testing in Brake Lab. Charges, as applicable, for testing in RDSO shall be borne by the firm, offering kit.

8. Field Trial

After successful completion of testing in RDSO, 5 air dryer sets of overhauling kit shall be subjected to the field trials for 12 months, monitored by consignee/ User Railway. Field performance feedback format is given in Annexure B.

The overhauling kit will be supplied for field trial after inspection by Consignee/ User Railway. Supplier shall offer for inspection after complete checking by them. The testing to be carried out in accordance with Firm`s QAP.

The supplier shall have adequate facilities for testing of overhauling kit/spare parts of SIL make air dryer and same shall be mentioned in the Firm`s QAP.

9. PACKING:

The spare parts kit shall be securely packed so that there is no damage during transit and handling.

10. Warranty/Guarantee:

The equipment manufacturer shall provide warranty/guarantee as per IRS Terms & Condition.

11. Preference To Make In India

The Government of India policy on 'Make in India' shall apply.

12. Vendor Changes In Approved Status

All the provisions contained RDSO's ISO procedures laid down in Document No. QO-D-8.1-11, dated 22.01.2021 (Titled "Vendor-changes in approved status") and subsequent version/amendment thereof, shall be binding and applicable on the successful vendor/vendors in the contract floated by Railways to maintain of products supplied to Railways.

Annexure –A

Specification of Twin Tower Heatless Regenerative Type Air Dryers For Diesel–Electric And Electric Locomotives (Including High HP Diesel–Electric And Electric Locomotives), Electrical Multiple Unit (EMU) & Main Line Electrical Multiple Unit (MEMU) And Diesel-Electric Multiple Unit (DEMU)

Test Scheme to test air dryer in Brake Laboratory of RDSO

Test scheme for performance testing of compressed air dryer is being given below for testing in Brake Laboratory.

1. The test shall be conducted by fitting air dryer after main reservoir tank 1.
2. Compressor capacity and Main reservoir pressure

| Application | Flow rate (litres/ min) | | | | M.R Pressure |
|---------------------|--------------------------------|------|------|------|------------------------------|
| Diesel Loco | 1700 | 3400 | 5100 | 6800 | 8-10 kg/cm ² |
| Electric locomotive | 1700 | 2000 | 3400 | - | 8-10 kg/cm ² |
| EMU/MEMU/DEMU | 1000 | 1700 | 2000 | - | 6.0 - 8.0 kg/cm ² |

3. The following parameters shall be recorded for the above conditions:
 - a) Dew point temperature at the inlet of Air Dryer
 - b) Dew point temperature at the outlet of air dryer
 - c) Dew point depression curve with varying compressor capacity.
 - d) Drying period, regeneration period
 - e) Purge loss percentage with varying compressor capacity
 - f) Pressure drop across the unit.
 - g) Variation of relative humidity, pressure, dew point temperature shall be recorded at design capacity for continuous operation of air dryer for atleast 4 - 5 hours. On higher capacity testing time of air dryer shall be reduced.

Annexure-B

Field performance feedback format

| Loco No | Make Of Air Dryer | Date Of Fitment | Performance of Air Dryer (Failure if any with date) | | | | Change Of consumable/equipment before schedule, if any (e.g. desiccant/precoalescer filter/final filter) Please indicate the periodicity also | | | Remarks If Any |
|---------|-------------------|-----------------|---|------------------------------|-------------------|------------------------------|---|----------------------|--------------|----------------|
| | | | Condition of PCB | Working of Cyclic changeover | Purging Operation | Colour of Humidity Indicator | Desiccant | Pre-Coalescer Filter | Final Filter | |
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