



**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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अप्रैल २०२१

**SPECIFICATION NO.MP.0.01.00.34 (REV. - 00)  
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अनुसंधान अभिकल्प एवं मानक संगठन  
लखनऊ - २२६ ०११

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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.

- 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.

##### 4.1.1 Internal test

~~Firm shall conduct the stepwise following test on SIL make air dryer fitted with new developed overhauling kit and submit the result to RDSO:~~

- ~~• Conduct tests on Air dryer as per Annexure-3 (copy attached as Annexure-A) of RDSO spec no.MP.0.01.00.06 Rev-05.~~
- ~~• Conduct endurance test for 50 hours duration followed by tests on Air dryer as per Annexure-3 of RDSO spec no.MP.0.01.00.06 Rev-05.~~

The firm should submit the detail 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 approved QAP against respective spare parts.

Those test which are not conducted at firm premises should also be mentioned in the approved QAP. The test result certificates of these tests from recognized testing laboratory should be submitted to RDSO.

#### 4.1.2 Fitment Trial

If internal test results found satisfactory (~~acceptance criteria as given in RDSO spec no.MP.0.01.00.06 Rev-05-~~), 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 Railway, RDSO and firm.

#### 4.1.3 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-B 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.

#### 4.1.4 Field Trial

After successful completion of testing in RDSO, 10 air dryer sets of overhauling kit shall be subjected to the field trials for 12 months. ~~Field performance feedback format is given in Annexure B.~~

The overhauling kit will be supplied for field trial after inspection by RDSO. Supplier shall offer for inspection after complete checking by them. ~~The testing to be carried out in accordance with Group A & Group B tests of Annexure A of this specification.~~ The testing to be carried out in accordance with approved QAP.

**4.2** The supplier shall have adequate facilities for testing of ~~air dryer (test specified in mentioned in Annexure A & B) fitted with overhauling kit.~~ overhauling kit/spare parts of SIL make air dryer and same shall be mentioned in the approved QAP.

**4.3** In regular inspection, inspecting authority shall carry out all tests necessary, ~~covered in Annexure A of this specification. However, Group A tests of Annexure A are mandatory.~~ mentioned in the approved QAP.

#### 5. PACKING:

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

#### 6. Warranty/Guarantee:

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

#### 7. Preference To Make In India

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

**8. 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.

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FINAL DRAFT

~~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)~~

~~Annexure 3~~

~~Group A~~

- ~~.1 External and internal leakages in the unit, control piping and filters.~~
- ~~.2 Drying, pressurising, depressurising and regenerative cycle time.~~
- ~~.3 Pressure setting at the start of cycling operation of air dryer.~~
- ~~.4 Pressure drop across the unit.~~
- ~~.5 Cyclic operation of air dryer at varying voltage range given in para 3.4.3~~

~~Group B~~

- ~~.1 Dew point depression at compressor capacities given in para 4.3.~~
- ~~.2 Loss of air during purging and depressurisation.~~
- ~~.3 Any other tests considered necessary by the purchaser for the assemblies / sub-assemblies shall be included in the tests during inspection.~~

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 <sup>2</sup>
Electric locomotive	1700	2000	3400	-	8-10 kg/cm <sup>2</sup>
EMU/MEMU/DEMU	1000	1700	2000	-	6.0 - 8.0 kg/cm <sup>2</sup>

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.

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**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	