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GOVERNMENT OF INDIA - MINISTRY OF RAILWAYS
RESEARCH, DESIGNS & STANDARDS ORGANIZATION,
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No. EL/3.2.1

Dt. 20.01.2015

All Chief Electrical Engineers,

***SPECIAL MAINTENANCE INSTRUCTION NO. RDSO/2015/EL/SMI/ 0283
(REV. '0') - dated 20.01.2015***

1.0 Title:

Use of increased capacity silica gel breathers in N-32 tap changers and transformers of conventional electric locomotives to meet the requirement of increased periodicity of schedule maintenance.

2.0 Brief History:

- 2.1 Railway Board vide their letter No. 92/Elect(TRS)/138/5 pt III dt. 16.08.2012 has accepted the RDSO's recommendation for increasing the periodicity of minor schedule inspections of WAG5H locos from 45±3 days to 60±3 days initially for 02 years and performance review after 02 years for regular implementation.
- 2.2 Railway Board vide their letter No. 92/Elect(TRS)/138/5 pt III dt. 16.08.2012 has also accepted that capacity of GR & transformer silica gel pot has to be increased for implementing the increased periodicity of maintenance of conventional locomotives.
- 2.3 RDSO has prepared a drawing no. SKEL - 4895 of improved silica gel breather on conventional loco transformer based on the current national/international practices. The improved breather assembly has a provision of two way valve which works on the differential pressure. It is expected that the improved breather assembly will check the unwanted breathing and will give increased replacement periodicity of silica gel granule to match the increased periodicity of maintenance of WAG5H conventional locomotives.

- 2.4 This improved design transformer breather will also maintain insulating oil condition of transformers fitted on conventional locomotives by restricting the moisture entry into the transformer.
- 2.5 Capacity of silica gel pot for tap changer has also been increased from existing 1/2 Kg to 1 Kg capacity to match the increased periodicity of WAG5H locomotives. One Kg capacity silica gel pot will restrict moisture entry into tap changer oil up to larger extent resulting improved maintainability of tap changers and their performance.
- 2.6 RDSO vide their letter no. EL/3.2.1 dtd. 25.06.2013 has already introduced improved design silica gel breather in all 5400 KVA transformer to be supplied by manufacturers. Also, both the tap changer manufacturers have been advised to cut in 01 Kg capacity silica gel breather in new tap changer to be supplied by manufacturers.

3.0 Object:

Increase capacity of silica gel breathers on transformer and tap changers to match the increased periodicity of maintenance of conventional locomotives as well as to improve the condition of insulating oil in the transformer & tap changers provided in 25 KV AC conventional electric locomotives.

4.0 Modified Instructions:

- 4.1 Provide improved design silica gel breather as per RDSO's drawing no. SKEL - 4895(copy enclosed) in the transformer of conventional locomotives to match the increased periodicity of maintenance of these locomotives. Therefore existing breather shall be replaced with this improved design breather to increase the periodicity of maintenance of conventional locos including WAG5H as per Railway Board/RDSO's instructions for maintenance of conventional locomotives issued from time to time.
- 4.2 Provide 1 Kg capacity silica gel breather as per RDSO approved drawings for tap changer, OEMs Drg. Nos. 9980646236862 & SWT -335230- R1 (copies attached) of conventional locomotives to match the increased periodicity of maintenance of conventional locos including WAG5H as per Railway Board/RDSO's instructions for maintenance of conventional locomotives issued from time to time.

5.0 Application to the Class of Locomotives:

25 KV AC conventional electric locomotives.

6.0 Agency of Implementation:

All Electric Loco Sheds and POH Workshops.

7.0 Periodicity of Implementation:

Minor schedule inspections/AOH/IOH and POH overhauling schedules/any other unscheduled maintenance

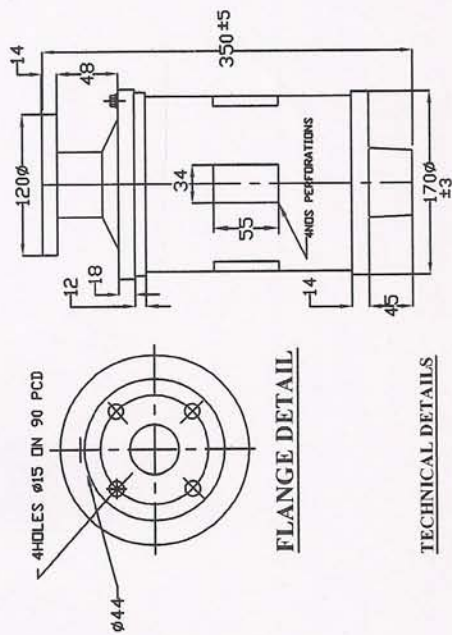
8.0 Distribution:

As per mailing list


(A.K. Singhal) 20/1/2015 -
for Director General (Elect.)

Enclosures:

- i) Drawing No. SKEL-4895, Rev(0)
- ii) Drg. No. 9980646236862 for Ganz design tap changers
- iii) Drg. No. SWT -335230- R1 for BT design transformers



TECHNICAL DETAILS

- 1- SILICAEL CAPACITY 20 KG.
- 2- BREATHER IS SUITABLE TO WITHSTAND VIBRATIONS FROM LOCOMOTIVE.
- 3- TESTING- TESTED AT 0.35 KG/ SQ.CM (IN AIR) FOR 60 MIN.FOR LEAKPROOFNESS.
- 4- PAINTING- POWDER COATED/ POLYURETHANE PAINT SHADE--LIGHT GREY.
- 5- PROTECTION CLASS IP-67 (WATER TIGHT)
- 6- TIGHTENING TORQUE FOR M-8 SCREWS 13 NM
- 7- POLYCARBONATE TUBE IS U/V STABILISED.

OPERATION TEST PRESSURES :-

BREATHE - IN PRESSURE	-	.032 KG/CM2(Tol. ±5%)
BREATHE - OUT PRESSURE	-	.042 KG/CM2(Tol. ±5%)

001	030	INSTRUCTION PLATE	
001	029	AIR GUIDE DOWNWARD BRASS	IS - 319 GR-75GRSDSD FPM VITON
001	028	'D' RING LARGE VITON	GR-75GRSDSD FPM VITON
001	027	'D' RING SMALL VITON	CODE A2-70 BIN - 9337267
004	026	HEX. BOLT S/S M 12 X 45 LONG	GR - 70 - C
001	025	GASKET CORR SHEET 6 TKT X 130 #	IS - 4253/11
VAR. 00	REMARKS	ITEM 양호	MAIL CODE REL. SPECN

001		024	BLANKING PLATE W/S STEEL.	IS - 2062
001		023	RIP LOCK WASHER 12 MM S/S	DIN 128
001		022	WASHER BRASS 50 D/D	IS - 410
006		021	RIP LOCK WASHER 8 MM S/S	DIN 128
002		020	SPRING WASHER 12 MM S/S	DIN 128
006		019	PLAIN WASHER 8 MM S/S	DIN - 433
002		018	PLAIN WASHER 12 MM S/S	DIN - 433
001		017	NAME PLATE S/S STAINLESS STEEL.	GR - 304
006		016	SCREW M8 X 20 LG STAINLESS STEEL.	IS - 6911
001	PLATED ZPP	015	CIRCLIP SPRING STEEL	DIN - 933
2-KG		014	SILICAGEL BLUE INDICATIVE	IS - 3075 4 - 8 MESH
001		013	TIE ROD BRASS	IS - 3401
001		012	AIR FILTER-SIEVE STAINLESS STEEL.	IS - 319 GR - 304
001		011	AIR GUIDE UPWARD BRASS	IS - 6911
001		010	SPRING STAINLESS STEEL.	IS - 319 GR - 304
001		009	AIR FILTER-SIEVE STAINLESS STEEL.	DIN-17284 GR - 304
006		008	NUT M-12 STAINLESS STEEL.	GR-4528 IS - 6911
002		007	GASKET - NEOPRENE	DIN - 934 GR C-60
001		006	GASKET - NEOPRENE	IS - 2752 GR C-60
001		005	GUARD STAINLESS STEEL	IS - 2752 GR - 304
001		004	SILICAGEL CONTAINER POLY CARBONATE	IS - 6911 GR-143 R
001		003	SPACER RING PR. DIE CAST ALUMINUM	ASTM D9925-09 GR-4528
001		002	BOTTOM PART PR. DIE CAST ALUMINUM	IS-617 GR-4528
001		001	TOP PART PR. DIE CAST ALUMINUM	IS-617 GR-4528
WEL. 00	REMARKS	ITEM QTY	DESCRIPTION	WEL. CODE WEL. SPECN

	SCALE N.T.S.	REF. NO.	APPROVED BY  Order Tel./Rdsd
SILICAGEL BREATHER FOR LOCO TRANSFORMER (FOR HETT 3900-5400)FOR MAIN TRANSFORMER			FIRST ISSUED
RDSO ELECT. DTE SKEL-4895			SUPERSEDES
RDSO ELECT. DTE SKEL-4895			SUPERSEDED BY

REV.	DATE	DESCRIPTION
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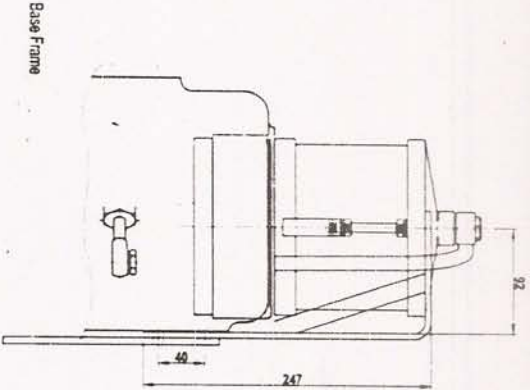
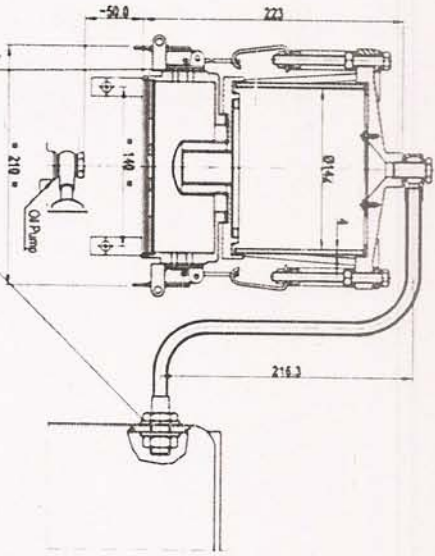
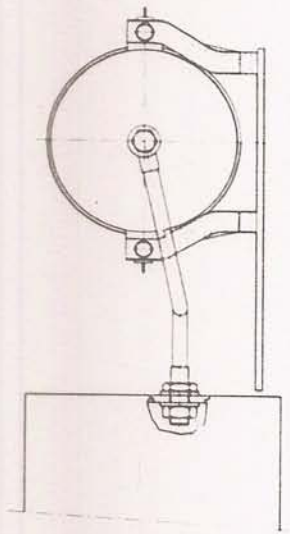
DT	11.06.13
D	YOGESH KUMAR
T	
C	RAJESH KUMAR 17.6.13

THIS DRG IS SOLE PROPERTY OF Autometers Alliance. UNAUTHORISED USE OF THIS DRG OR MAKING PRODUCT AS PER OUR DRG WITHOUT OUR PERMISSION OR ANY MISUSE IS NOT PERMITTED

U/E.D. 31/10

DRG. NO. 9980646236802

APPLICABLE STANDARD	
SURFACE ROUGHNESS SYMBOLS	IS - 3073 IS - 666



APPROVED

31/10/14

28.07.14

GA Drawing for Air Dryer Assembly (1 kg Capacity)

Note: Weight of Air Dryer Assy is 4.5kg. (With out Silica Gel)

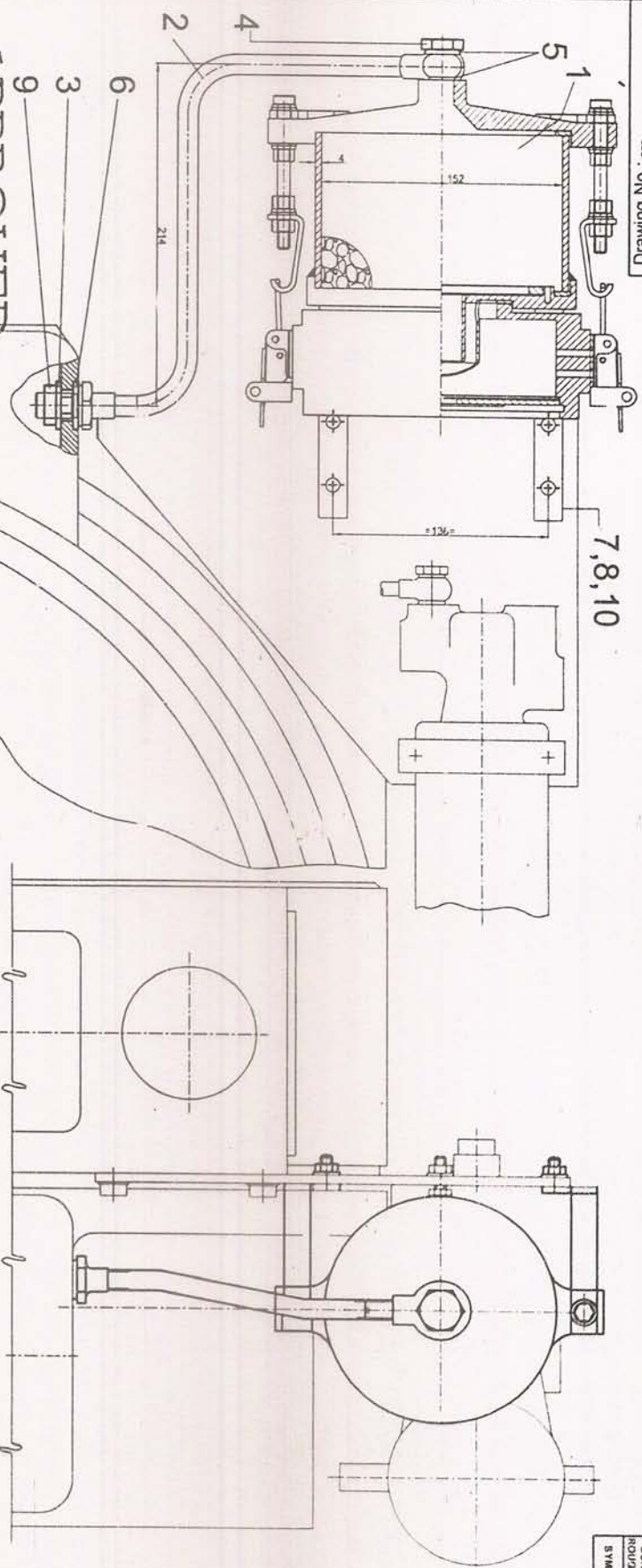
REV.	DCN NO.	CHANGES	SIGN	DATE
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S.NO.	DESCRIPTION	SCALE	DRG. NO.	QTY	SPECIFICATION	REMARKS
MATERIAL:	As Above	As Above				
FINISH:	As Above	As Above				
PROJECTION:	As per ISO 2768-1:1989	As per ISO 2768-1:1989				
REF. NO.:	9980646236802	ALL DIMENSIONS ARE IN M.M. UNLESS OTHERWISE SPECIFIED				
DESCRIPTION:	GA Drawing for Air Dryer Assembly (1 kg Capacity)					
		Autometers Alliance Ltd Noida, India				
DRAWN	CHD.	APPD.				
3/7/14	3.7.14	3.7.14				
DNO. NO.:		SHEET 1 OF 1				

01-01-2014
New
Drawing
Treated

---: No Guvung

7,8,10



APPROVED

Signature

Ref No: E43.2.3012
Date: 22.12.2014

For Director General

RDSO, Lucknow, India-226001

WITH MACHINING ALLOWANCES : NUMBER OF TRIANGLES

ACCORDING TO SURFACE FINISH AS WELL AS MACHINING ALLOWANCES

Symbol	Finish	Symbol	Finish
▽	Finishing	▽▽	Bluing and grinding
▽▽	Medium finishing	▽▽▽	Grinding in
▽▽▽	Fine finishing	▽▽▽▽	Chamfered
▽▽▽▽	Grinding	▽▽▽▽▽	Case hardening
▽▽▽▽▽	Grinding after hardening	▽▽▽▽▽▽	Hardening
▽▽▽▽▽▽	Scraping	▽▽▽▽▽▽▽	Hot dip zinc plating

R2
R1 Mirror image of R2

R1=1 / TC (AC-MT)
R2=1 / TC (AC-DC)

Used in: AM-301671

APPLICABLE STANDARD
SURFACE ROUGHNESS
SYMBOLS

Quantity	Description	Material / Code no.	Pec.	Wt. Size	Remarks
4	Beetle spr. washer Ø 6.4 / 14	En 42 F 539 • 04	10		MT-43015-27
1	Special nut 1" B.S.P.	St 6.6	9		MT-43015-27
4	Hex. nut 0.84 x M6	St 6.6 (40) 15 u	8		MT-43015-27
4	Hex. screw M6 x 20	St 4.8 (40) 15 u	7		MT-43015-27
1	Gasket Ø 17 / 34 x 3	CU	6		MT-43015-27
2	Flat gasket		5		MT-43015-27
1	Hollow screw		4		MT-43015-27
1	Bedplate key washer Ø 18 / 75	En 12 F 539 • 04	3		MT-43015-27
1	Pump complete		2		MT-43015-27
1	Sicca gel air drier complete		1		MT-43015-27

Quantity	Description	Material / Code no.	Pec.	Wt. Size	Remarks
4	Beetle spr. washer Ø 6.4 / 14	En 42 F 539 • 04	10		MT-43015-27
1	Special nut 1" B.S.P.	St 6.6	9		MT-43015-27
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1	Hollow screw		4		MT-43015-27
1	Bedplate key washer Ø 18 / 75	En 12 F 539 • 04	3		MT-43015-27
1	Pump complete		2		MT-43015-27
1	Sicca gel air drier complete		1		MT-43015-27

Revision Details

F/Eno015 Rev-01

AIR DRIER COMPLETE (1Kg.)

DRAWING NO. SWT-335230

SHEET

RIVER
River Engineering (P) Ltd.
GREATER NOIDA, U.P.

Drawn: S. SINGH
Checked: S. SINGH
Approved: A. B. CHAKRAVARTY

03/09/2014
03/09/2014
03/09/2014