PROCEDURE FOR IR & HV TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

Following are the Procedure for the Insulation and High Voltage Testing

1. General:-

1.1. Before conducting Di-electric test, the circuits should be prepared and insulation resistance measured by a Megger for the Di-electric test, the circuit should be grouped and prepared as given in this chapter. After the di-electric test the insulation resistance of the circuit should be again measured.

1.2. It is important to disconnect the following equipments before conducting the di-electric tests:-

a) Armature windings and field winding of all rotating machines

b) Measuring instruments

c) Transformer windings

d) Rectifiers

e) Connections which are permanently connected to earth

f) All lamps to be removed

1.3. All lamps to be removed.

1.4. The cables of the locomotive are divided in five groups for testing purposes and should be tested at voltage given below:-

Sl. No.	Group	Nominal operating voltage.	Megger voltage for insulation test.	Di-electric test voltage.
1.	Power circuit a) A.C.	 865 volts.	 1,000 volts.	 3.6 KV
2.	Power circuit a) D.C. (Group-A) b) D.C. (Group-B)	 750 (Max) volts. -do-	 1,000 volts. 1,000 volts.	 3.3 KV 3.3 KV
3.	Auxiliary power circuit.	400 Volts.	500 volts.	2.5 KV
4.	Battery and control circuit.	110 volts.	500 volts.	1.0 KV

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2. POWER CIRCUIT – AC

2.1. PREPARATION FOR TEST

	Preparation	Location
1.	Disconnect all cables G12, G13, G23, G24 from terminals a6, a5, a4 & a3 respectively and short them together and insulate from earth.	Power transformer.
2.	Disconnect cables of ETTFP1-2, CAFTFP 3, 4, 5, & 6 from the terminals.	BA panels
3.	Disconnect cables G22, G13, & G25 from ATFEX and short them together and insulate, jump C145 so as to include cable G25. Disconnect cables G25 from ELM insulate from earth.	Power Excitation transformer.
4.	Disconnect secondary cable nos. 227 & 228 of ELM. Also short the secondary terminals of ELM.	Ba-3
5.	Disconnect secondary cable nos. 223, 224 225 & 226 of RSILM 1&2 and short circuit the secondary terminals of RSILM1&2.	RSI-1 & 2
6.	Disconnect cables AG12, BG12, CG12 & DG12 from RSI-2 and join them together, disconnect cables AG22, BG22, CG22 & DG22 from RSI-2 and join them together and short circuit G12 cables with G22 cables of RSI-2 and insulate.	Rectifier panel-2
7.	Disconnect cables AG23, BG23, CG23 & DG23 and AG24, BG24, CG24 & DG24 from RSI-1 and join them together and insulate.	Rectifier panel-1
8.	Disconnect the external cables of RCAPTFP1-2, CAPTFP1&2. Insulate the cables from earth.	Damping network.
9.	Connect the testing lead on cable No. G12 at transformer.	Main transformer.

2.2. TEST

Carry out insulation test with a 1000 volt megger. Record the insulation resistance value, it should not be less than 1 megohm. Prepare the circuit for dielectric test and apply a voltage of 3.6 KV. r.m.s. 50 c/s. A. C. between cable G12 and earth, increasing the value progressively to the maximum value, maintain this voltage for one minute.

After test gradually decrease the voltage to zero. Carry out insulation test again. record the insulation resistance value in the format attached CQX/786-1. It should

not be less than the insulation resistance recorded before dielectric test. Remove all short circuit links and reconnect cables.

3. POWER CIRCUIT – DC GROUP-A (TRACTION MOTOR GROUP 1, 2 & 3)

3.1. Preparation for test

	Preparation for test.	Location
1.	Disconnect cables AH01, BH01, CH01 & DH01 from the terminals 'N' of RSI-1 and short them together and insulate.	RSI-1
2.	Disconnect cables No. AA11, BA11, CA11 & DA11 from the RSI-1 terminals 'P' and short them together and insulate.	RSI-1
3.	Disconnect cables AA11, BA11, AA15 & BA15 from SL-1-1 & CA11, DA11, CA15 & DA15 SL1-2, short them together and insulate.	SL1-1 & SL1-2
4.	Short circuit line contactors L1, L2, & L3	BA-1
5.	- Disconnect all cables of motor M1, short them together and insulate. - Disconnect all cables of motor M2, short them together and insulate. - Disconnect all cables of motor M3, short them together and insulate.	Bogie No.1 Bogie No.1 Bogie No.1
6.	Disconnect cable nos. C206 and C207 from ammeter A-3 and insulate	P C 1
7.	Disconnect cable nos. A29 and H21 from U1, short them together and insulate.	P C 1
8.	Disconnect cable nos. A37 & H22 from U2, short them together and insulate.	P C 1
9.	Disconnect A31 and H21 from RF1, short them together and insulate.	RF1
10.	Disconnect CU BAR 1X4X30 AF27 and GF21 from SJ1 short them and insulate.	SJ1
11.	Disconnect cables A32, H22 from RF2 short them and insulate.	RF2
12.	Disconnect CU BAR 1X4X30 AF28 and GF22 from SJ2 short the cables and insulate.	SJ2
13.	Disconnect cables A33 and H44 from RF3, short the cables and insulate.	RF3

14.	Disconnect cables F29 and F23 from SJ3, short them and insulate.	SJ3
15.	Disconnect JH01 from HQOP1 and insulate.	BA1

3.2. TEST

Carry out insulation test with a 1000V Megger. Record the insulation resistance value. It should not be less than one megaohm. Prepare the circuit for dielectric test and apply voltage of 3.3 KV r.m.s. 50 C/S AC between cable and earth. Increase the value to maximum value and apply this voltage for 1 min.

After test gradually decrease the voltage to zero. Carry out insulation test again. record the insulation resistance value in the format attached CQX/786-1. It should not be less than the insulation resistance recorded before dielectric test. Remove all short circuit links and reconnect cables.

4. POWER CIRCUIT – DC GROUP-B (TRACTION MOTOR GROUP 4, 5 & 6)

4.1. Preparation for test

	Preparation	Location
1.	Disconnect cables AH02, BH02, CH02 & DH02 from the terminals 'N' of RSI-2 and short them together and insulate.	RSI-2
2.	Disconnect cables No. AA12, BA12, CA12 & DA12 from the RSI-2 terminals 'P' and short them together and insulate.	RSI-2
3.	Disconnect cables AA16, BA16, CA16 & DA16 from SL-2-1 & SL2-2, short them together and insulate.	SL2-1 & SL2-2
4.	Short circuit line contactors L4, L5, & L6	BA-2
5.	Disconnect all cables of M4, M5 and M6. Short them for individual motor and insulate from earth.	Bogie No.2
6.	Disconnect cable D214, D215 from Ammeter A-4.	PC2
7.	Disconnect cables BA-38 and KH25 from U5, BA30 & GH26 from U6, short them and insulate from earth.	PC2
8.	Disconnect cables A34 & H27; A35 & H25; A36 & H26 from RF4, RF5 and RF6 respectively. short them and insulate from earth.	RF

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9.	Disconnect CU BAR 1X4X30 AF31 and cable GF 25 from SJ5. Short them and insulate from earth.	SJ5
10.	Disconnect cables AF30 and GF24 from SJ4.	SJ4
11.	Disconnect CU BAR 1X4X30 AF32 and GF26 from SJ6.	SJ6

4.2. TEST

Carry out insulation test with a 1000V Megger. Record the insulation resistance value. It should not be less than one megaohm. Prepare the circuit for dielectric test and apply voltage of 3.3 KV r.m.s. 50 C/S AC between cable and earth. Increase the value to maximum value and apply this voltage for 1 min.

After test gradually decrease the voltage to zero. Carry out insulation test again. record the insulation resistance value in the format attached CQX/786-1. It should not be less than the insulation resistance recorded before dielectric test. Remove all short circuit links and reconnect cables

5. Auxiliary Power Circuit

5.1. Preparation for test

	Preparation	Location
1.	Disconnect all cables of 965, 966 and 967 potential from static converter. Short these cables for individual motor and insulate from earth.	Static Converter
2.	Disconnect all cables A991 and A992 from a0 and a_8 bushing of transformer. Disconnect cable A993 from a_1 Bushing of TFP.	TFP
3.	Disconnect cables E991 and C993, from UA-1-2. Short them and insulate from earth.	PC 1 & 2
4.	Disconnect cables 965, 966 & 967 from RSI-1 & 2; Short them and insulate from earth.	RSI –1&2
5.	Disconnect cables 532, 533 &534 from MVRH and 480, 481 & 482 from MPH. Short them and insulate from earth.	MVRH & MPH
6.	Disconnect cables 535, 536, 537 from MVSL1 and 546, 547 & 548 from MVSL2. Short them and insulate from earth.	SL
7.	Disconnect cables 443, 444 & 445 from MCP1; cables 446, 447 & 448 from MCP2 and cables 456, 457 & 458 from MCP3. Short them and insulate from earth.	Compressors.

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8.	Disconnect cables 540, 541 & 542 from MVMT1 and Cables 543, 544 & 545 from MVMT2. Short them and insulate from earth.	T. M. Blowers.
9.	Disconnect cables from input of DC-DC CONVERTER, Short them and insulate from earth.	DC-DC CONVERTER
10.	Put Pacco switch HVSL, HPH as 'ZERO'	TB
11.	Disconnect cables from AIR Conditioner. Short and insulate from earth.	Cab 1 & 2
12.	Short the terminals 965, 966, 967, 443, 444, 445, 446, 447, 448, 456, 457, 458, 436, 437, 438, 480, 481, 482, 535, 536, 537, 546, 547, 548, 540, 541, 542, 543, 544, 575, 532, 533 & 534 in TK/TB.	TK Panel.
13.	Short the terminals 965, 966, 967, 535, 536, 537, 480, 481, 482, 546, 547, 548, in TK/SB.	TK Panel.
14.	Remove the fuse CCBA, CCRA1-2 short the fuse terminals.	AC2 Panel.
15.	Short the terminals a0, a1, a2, a8, a4, a5, a6, & A0 with earth.	TFP

5.2. TEST

Carry out insulation test with 500V megger. Record the insulation resistance value, it should not be less than 1 megohm. Prepare the circuit for dielectric test and apply a voltage of 2.5 KV. R.M.S. 50 c/s. A. C. between cables 965 on Static Converter and earth, increasing the value progressively to the maximum value, maintain this voltage for one minute.

After the test gradually decrease voltage to zero. Carryout value. It should test again, record the insulation resistance value in the format attached CQX/786-1. It should not be less than the insulation resistance value. It should not be less than the insulation resistance value recorded before the dielectric test. Remove all short circuit links and reconnect the cables

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6. Battery and control circuit

6.1. Preparation for test

Note: - For this tests remove connections to battery terminals and insulate negative from earth by HOBA switch and disconnect LTBA.

	Preparation	Location
1.	Disconnect cables 003 and 003/1, 973 and B-ve cables from Static Battery Charger.	
2.	Disconnect cables from UBA and Short them together and insulate from earth.	
3.	Remove all the fuses.	
4.	Remove all signaling lamps.	
5.	Short all the blocking diodes.	
6.	Short all control SB in BD, TB, Cabs/SB, BA/SB etc.	
7.	Disconnect cables from speedometer.	
8.	Disconnect cables from Head light.	
9.	Disconnect cables from output of TFVT short them and insulate.	

6.2. TEST

Carry out insulation test with a 500V megger. Record the insulation resistance value, it should not be less than 0.5 megohm. Prepare the circuit for dielectric test and apply a voltage of 16 KV. R.M.S. 50 c/s. A. C. between cables 003 and earth. voltage should be increasing the value progressively to the maximum value, maintain this voltage for one minute.

After the test gradually decrease voltage to zero. Carryout value. It should test again, record the insulation resistance value in the format attached CQX/786-1. It should not be less than the insulation resistance value. It should not be less than the insulation resistance value recorded before the dielectric test. Remove all short circuit links and reconnect the cables

JS 107	**Bharat Heavy Electricals Limited, Jhansi** **Central Quality Services** **(Locomotive Testing Department)**
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Test Result for IR & HV Test on WAG7 Crew Friendly Loco

Loco Sr. No.:-		**Date of Testing:-**	

Sr. no.	TEST			RESULT ACHIEVED	
1.	**INSULATION AND DIELECTRIC TEST:-**				
1.1.	**INSULATION TEST:-**				
Sl. No.	**Group**	**Megger Voltage**	**Insulation resistance Before Dielectric**	**Insulation Resistance After Dielectric**	**Remarks**
1.1.1.	Power Circuit AC	1000 V			
1.1.2.	Power Circuit DC (Group-A)	1000 V			
1.1.3.	Power Circuit DC (Group-B)	1000 V			
1.1.4.	Auxiliary Power Circuit	500 V			
1.1.5.	Battery and Control Circuit	500V			
1.2.	**DIELECTRIC TEST**:-				
	Group	**Nominal operating voltage**	**Dielectric test voltage**	**Remarks**	
1.2.1.	**Power circuit A.C**	**865 V**	**3.6 K.V**		
1.2.2.	**Power circuit D.C Group-A**	**750 V**	**3.3 K.V**		
1.2.3.	**Power circuit D.C Group-B**	**750 V**	**3.3 K.V**		
1.2.4.	**Auxiliary power circuit**	**400 V**	**2.5 KV**		
1.2.5.	**Battery control voltage**	**110 V**			

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

Following are the Procedure for the Continuity Testing on WAG7 Crew Friendly locomotives being manufactured by BHEL, Jhansi

1. CONTINUITY TEST OF 750 V Power CABLES

1.1. All 750 volt circuit cables given below should be tested individually. For this purpose, cables to be test should be disconnected from the terminals wherever necessary and after test should be reconnected to the correct terminal and properly tightened. For cable reference CLW circuit diagram No.CLW.3W.15000.004 and cabling index CLW.4W.15000.042 and 47199005031 Rev00 shall be referred.

1.2. The continuity test should be tested by a low voltage ball or series test lamp at a voltage not more than 24 V D.C.

Sr. No.	Cable No.	Cable Size in mm^2	From	To
1.	AG23 BG23 CG23 DG23	4 X 300^2	TFP (a4)	RSI-1 (b2)
2.	AG-24 BG-24 CG-24 DG-24	4 X 300^2	TFP(a3)	RSI-1(b1)
3.	AG-12 BG-12 CG-12 DG-12	4 X 300^2	TFP(a6)	RSI-2(b1)
4.	AG-13 BG-13 CG-13 DG-13	4 X 300^2	TFP(a5)	Ba-3(PT)
5.	AG-22 BG-22 CG-22 DG-22	3 X 300^2 1 X 300^2	Ba-3(PT) Ba-3(PT)	RSI-2(b1) RSI-2(b2)
6.	AA-11 BA-11	2 X 240^2	RSI-1(P)	SL-1-1
7.	CA-11 DA-11	2 X 240^2	RSI-1(P)	SL-1-2

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8.	AA-12 BA-12	2 X 240^2	RSI-2(P)	SL-2-2
9.	CA-12 DA-12	2 X 240^2	RSI-2(P)	SL-2-1
10.	AH-01 BH-01 CH-01 DH-01	4 X 240^2	RSI-1(N)	Ba-(H01)
11.	AH-02 BH-02 CH-02 DH-02	4 X 240^2	RSI-2(N)	Ba-2(PT)
12.	AA-15 BA-15	2 X 240^2	SL-1-1	Ba-1 (PT)
13.	CA-15 DA-15	2 X 240^2	SL-1-2	Ba-1(PT)
14.	AA-16 BA-16	2 X 240^2	SL-2-1	Ba-2(PT)
15.	CA-16 DA-16	2 X 240^2	SL-2-2	Ba-2(PT)
16.	AA-21	1 X 300^2	TM/JB-1	TM-1(A)
17.	AH-21/1	1 X 300^2	TM/JB-1	TM-1(AA)
18.	AF-21	1 X 300^2	TM/JB-1	TM-1(F)
19.	AE-21	1 X 300^2	TM/JB-1	TM-1(FF)
20.	AA-22	1 X 300^2	TM/JB-2	TM-2(A)
21.	AH-22/1	1 X 300^2	TM/JB-2	TM-2(AA)
22.	AF-22	1 X 300^2	TM/JB-2	TM-2(F)
23.	AE22	1 X 300^2	TM/JB-2	TM-2(FF)
24.	AA-23	1 X 300^2	TM/JB-3	TM-3(A)
25.	AH-23	1 X 300^2	TM/JB-3	TM-3(AA)
26.	AE-23	1 X 300^2	TM/JB-3	TM-3(F)
27.	AF-23	1 X 300^2	TM/JB-3	TM-3(FF)
28.	AA-24	1 X 300^2	TM/JB-4	TM-4(A)
29.	AH-24	1 X 300^2	TM/JB-4	TM-4(AA)
30.	AF-24	1 X 300^2	TM/JB-4	TM-4(F)
31.	AE-24	1 X 300^2	TM/JB-4	TM-4(FF)
32.	AA-23	1 X 300^2	TM/JB-5	TM-5(A)
33.	AH-25/1	1 X 300^2	TM/JB-5	TM-5(AA)
34.	AE-25	1 X 300^2	TM/JB-5	TM-5(F)
35.	AF-25	1 X 300^2	TM/JB-5	TM-5(FF)
36.	AA-26	1 X 300^2	TM/JB-6	TM-6(A)

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37.	AH-26/1	1 X 300^2	TM/JB-6	TM-6(AA)
38.	AE-26	1 X 300^2	TM/JB-6	TM-6(F)
39.	AF-26	1 X 300^2	TM/JB-6	TM-6(FF)
40.	GH-21 HH-21	2X185^2	Ba-1(PT)	SHTM-1
41.	GH-27 HH-27	2X185^2	Ba-2(PT)	SHTM-4
42.	EG-12 FG-12	2X185^2	Ba-3 (PT)	RSI-2 (b1)
43.	EA-16 FA-16	2X185^2	Ba-2(PT)	Ba-3(PT)
44.	DH-21 EH-21	2X185^2	Ba-1(PT)	Ba-3(PT)
45.	JH-26 KH-26 BH-37 CH-37 JH-02 KH-02	6X185^2	Ba-2(PT)	Ba-3(PT)
46.	BA-21 CA-21	2X185^2	Ba-1(PT)	TM(JB-1)
47.	BH-21/1 CH-21/1	2X185^2	SHTM-1 (Ba1)	TM(JB-1)
48.	BF-21 CF-21	2X185^2	Ba-1(PT)	TM(JB-1)
49.	BE-21 CE-21	2X185^2	Ba-1(PT)	TM(JB-1)
50.	BA-22 CA-22	2X185^2	Ba-1(PT)	TM(JB-2)
51.	BH-22/1 CH-22/1	2X185^2	SHTM-2 (Ba1)	TM(JB-2)
52.	BF-22 CF-22 BE-22 CE-22	4X185^2	Ba-1(PT)	TM(JB-2)
53.	BF-23 CF-23 BE-23 CE-23	4X185^2	Ba-1(PT)	TM(JB-3)
54.	BH-23 CH-23	2X185^2	SHTM-3	TM(JB-3)

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55.	BA-23 CA-23	2X185^2	Ba-1(PT)	TM(JB-3)
56.	BA-24 CA-24	2X185^2	Ba-2(PT)	TM(JB-4)
57.	BH-24 CH-24	2X185^2	SHTM-4	TM(JB-4)
58.	BF-24 CF-24 BE-24 CE-24	2X185^2	Ba-2(PT)	TM(JB-4)
59.	BF-25 CF-25 BE-25 CE-25	4X185^2	Ba-2(PT)	TM(JB-5)
60.	BH-25/1 CH-25/1	2X185^2	SHTM-5 (Ba-2)	TM(JB-5)
61.	BA-25 CA-25	2X185^2	Ba-2(PT)	TM(JB-5)
62.	BF-26 CF-26 BE-26 CE-26	4X185^2	Ba-2(PT)	TM-(JB-6)
63.	BH-26/1 CH-26/1	2X185^2	SHTM-6	TM(JB-6)
64.	BA-26 CA-26	2X185^2	Ba-2(PT)	TM-(JB-6)
65.	HG-22 JG-22	2X185^2	Ba-3(PT)	ATFEX (U)
66.	BG-25 CG-25	2X185^2	Ba-3(PT)	ATFEX (V)
67.	BH-25 CH-25	2X185^2	SHTM-5	Ba-2 (PT)
68.	BH-38 CH-38 MH-01 NH-01	4X185^2	Ba-1(PT)	Ba-2 (PT)
69.	BH-26 CH-26	2X185^2	SHTM-6	Ba-2(PT)
70.	DH-44 EH-44	2X185^2	SHTM-3 (Ba-1)	Ba-1(PT)

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71.	BH-22 CH-22	$2X185^2$	SHTM-2 (Ba-1)	Ba-1(PT)
72.	GF-21	$1X120^2$	Ba-1 (PT)	SJ-1/Ba-1
73.	GF-22	$1X120^2$	Ba-1 (PT)	SJ-2/Ba-1
74.	GF-23	$1X120^2$	Ba-1 (PT)	SJ-3/Ba-3
75.	GF-24	$1X120^2$	Ba-2 (PT)	SJ-4/Ba-3
76.	GF-25	$1X120^2$	Ba-2 (PT)	SJ-5/Ba-2
77.	GF-26	$1X120^2$	Ba-2 (PT)	SJ-6/Ba-2
78.	AF-29	$1X120^2$	Ba-1 (PT)	SJ-3/Ba-3
79.	AF-30	$1X120^2$	Ba-2 (PT)	SJ-4/Ba-3
80.	BA34 CA34 BA35 CA35 BA36 CA36 JH27 KH27 EH25 FH25 DH26 EH26	$12X120^2$	Ba-2 (PT)	SB-DBR
81.	BH21 CH21 BA31 CA31 EH22 FH22 BA32 CA32	$8X120^2$	Ba-1 (PT)	SB-DBR
82.	BH-44 CH-44 BA-33 CA-33	$4X120^2$	Ba-1 (PT)	SB-DBR
83.	EE-21 EE-22 EE-23 FF-21 FF-22 FF-23	$6X120^2$	Ba-1 (PT)	SB-RPS

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84.	EE-24 EE-25 EE-26 FF-24 FF-25 FF-26	$6X120^2$	Ba-2 (PT)	SB-RPS
85.	A-991	$1X120^2$	TFWA (a0)	Static Inv
86.	A-992	$1X120^2$	TFWA (a8)	Static Inv
87.	E-G13	$1X35^2$	TFP (a5)	ATFEX
88.	B-206 B-207	$2X10^2$	SB (Ba-1)	SB (Cab-1) /PC-1
89.	C-214 C-215	$2X10^2$	SB (Ba-2)	SB (Cab-2) /PC-2
90.	QH-02	$1X10^2$	Ba-2 (PT)	BD/AC-2
91.	BA-17	$1X10^2$	SB/Ba-3	BD/AC-2
92.	MA16	$1X10^2$	Ba-3 (PT)	SB-16/Ba-3
93.	JG12 PG13	$2X2.5^2$	Ba-3 (PT)	SB-16/Ba-3
94.	KG12 JG13	$2X2.5^2$	TFP (a5,a6)	RC Damping Panel (Ba-2)
95.	IG24 KG23	$2X2.5^2$	SB16/BA3	SB11/BA1
96.	JH21 JH22	$2X2.5^2$	Ba1 (PT)	SB/Cab1-PC1
97.	BA29 BA37	$2X2.5^2$	SB/Ba-1	SB/Cab1-PC1
98.	B004	$1X2.5^2$	SB/Ba-1	Bd/AC2
99.	JH25 GH26	$2X2.5^2$	Ba2 (PT)	SB/Cab2-PC2
100.	BA30 BA38	$2X2.5^2$	SB/Ba-2	SB/Cab2-PC2
101.	F991	$1X2.5^2$	TFWA (a0)	CAPTFWA-1
102.	B992	$1X2.5^2$	TFWA (a8)	CAPTFWA-2
103.	B991	$1X2.5^2$	TFWA (a0)	Bd/AC2
104.	C991	$1X2.5^2$	Bd/AC-2	SB/Cab1-PC1
105.	D991	$1X2.5^2$	Bd/AC-2	SB/Cab2-PC2
106.	G991	$1X2.5^2$	TFWA (a0)	SB/Ba-3
107.	C992	$1X2.5^2$	TFWA (a8)	SB/Ba-3

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108.	L991	1X2.5^2	TFWA (a0)	PT-SPM

2. CONTINUITY TEST OF 400 VOLTS AUXILIARY POWER CABLES

2.1. All 400V cables given below should be rated individually. Cables under test should be disconnected from the terminals where necessary and after test it should be reconnected to the correct terminal and properly tightened.

For cable reference following diagrams may be referred:-

(I). Power circuit diagram CLW. 3W. 15000. 004 (sht.4 & 5)
(II). Auxiliary circuit diagram CLW.3W.15000.004 (sht.6.7 & 8).
(III). Cabling Index CLW.4W.15000.042 and 47199005031 Rev00

The continuity should be tested by a low voltage or series test lamp at a voltage not more than 24V D.C. Please follow aux. control cable cutting chart Drg No- CLW.4W.15000.033

Sr. No.	Cable No.	Cable Size in mm^2	From	To
1.	A243 A244	2 X 2.5^2	PT-SPM (On TFP)	Sig cond Box B.H.-1
2.	A245 A246	2 X 2.5^2	CT-SPM (Near TFP)	Sig cond Box B.H.-1
3.	PP965/1 C966/1 B993 B995 B996	5 X 2.5^2	Bd-4 (Top)	SB-2 (cab-1)
4.	B984 B968	2 X 2.5^2	Bd-4 (Top)	SB-2 (cab-1)
5.	V965 HH966 K967	3 X 2.5^2	Bd-4 (Top)	RSI-1/TS
6.	W965 GG966 L967	3 X 2.5^2	Bd-4 (Top)	RSI-2/TS-2
7.	K965/1 C966/2	7 X 2.5^2	Bd-4 (Top)	SB-2 (cab-1)

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

	D993 C995 C996 E968 E984			
8.	B535 B536 B537	3 X 2.5^2	SB/TB (AC2)	MVSL-1 (U,V,W)
9.	B546 B547 B548	3 X 2.5^2	SB/TB (AC2)	MVSL-2 (U,V,W)
10.	B480 B481 B482	3 X 2.5^2	SB/TB (AC2)	SB/TFA
11.	Z965/3 Z966/4 A995 A996	4 X 2.5^2	Bd-4 (Top)	TFWT-CH
12.	A993	1 X 2.5^2	Bd/AC2	TFWA (a1)
13.	B993/1	1 X 2.5^2	SB/TB (AC2)	PT-SPM (On TFP)
14.	B221	1 X 2.5^2	Bd-2 (Top)	TFVT (U/F)
15.	X967/1 A968/1	2 X 2.5^2	Bd-4 (Top)	TFVT (U/F)
16.	A984/1	1 X 2.5^2	Bd-4 (MID)	TFVT (U/F)
17.	C480 C481 C482	3 X 2.5^2	SB/TFA	MPH (U,V,W)
18.	B443 B444 B445	3 X 25^2	SB2/TK-1	MCP1 (U,V,W)
19.	B446 B447 B448	3 X 25^2	SB2/TK-1	MCP2 (U,V,W)
20.	B456 B457 B458	3 X 25^2	SB2/TK-1	MCP3 (U,V,W)
21.	B540 B541 B542	3 X 25^2	SB2/TK-1	MVMT1 (U,V,W)
22.	B543	3 X 25^2	SB2/TK-1	MVMT2

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

	B544 B545			(U,V,W)
23.	B532 B533 B534	3 X 25^2	SB2/TK-1	SB/TFA (U,V,W)
24.	C532 C533 C534	3 X 25^2	SB/TFA (U,V,W)	MVRH (U,V,W)
25.	B436 B437 B438	3 X 25^2	SB2/TK-1	MVRF (U,V,W)
26.	S965 V966 A967	3 X 95^2	SB4/TK-1	Static INV (U,V,W)

2.2. It should be ensured that cables after tests are reconnected to the terminals with their washers, spring washers, check nuts etc. and tightened properly

3. CONTINUITY TEST OF Control Couplers Pins

3.1. Check The Coupler Continuity of the Following Couplers

Sr. No.	Coupler No.	No. of Pins	From	To	Location
1.	K101	13 Pin	AC2 Panel	MP1	AC2 & Cab1
2.	K101	13 Pin	AC2 Panel	MP2	AC2 & Cab2
3.	K103	35 Pin	AC2 Panel	BL1	AC2 & Cab1
4.	K104	35 Pin	AC2 Panel	BL2	AC2 & Cab2
5.	K105	35 Pin	AC2 Panel	PC1	AC2 & Cab1
6.	K106	35 Pin	AC2 Panel	PC2	AC2 & Cab2
7.	K107	13 Pin	AC2 Panel	PC1	AC2 & Cab1
8.	K108	13 Pin	AC2 Panel	PC2	AC2 & Cab2
9.	K109	22 Pin	AC2 Panel	SB CAB1	AC2 & Cab1
10.	K110	22 Pin	AC2 Panel	SB CAB2	AC2 & Cab2
11.	K111	22 Pin	AC2 panel	GR+GSM	AC2 & GR
12.	K112	13 Pin	AC2 Panel	BA2	AC2 & BA2
13.	K113	13 Pin	AC2 Panel	BA1	AC2 & BA1

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

14.	K114	13 Pin	AC2 Panel	BA2	AC2 & BA2
15.	K116	22 Pin	AC2 Panel	BA3	AC2 & BA3
16.	K129	35 Pin	AC2 Panel	CUM1/A- CAB1	AC2 & CAB1
17.	K130	35 Pin	AC2 Panel	CUM1/A- CAB2	AC2 & CAB2
18.	K131	22 Pin	BA1	BA2	BA1 & BA2
19.	K132	13 Pin	AC2 Panel	SI	AC2 & SI
20.	K133	13 Pin	AC2 Panel	PN Brake Panel	AC2 & Triplate
21.	K134	13 Pin	AC2 Panel	RSI-2	AC2 & RSI-2
22.	K135	13 Pin	AC2 Panel	RSI-1	AC2 & RSI-1
23.					

3.2.

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Test Result for Continuity Test on WAG7 Crew Friendly Loco

Loco Sr. No.:-		**Date of Testing:-**	

Sr. no.	TEST	RESULT ACHIEVED
1.	**Continuity Test of 750 V Power Cables**	
2.	**Continuity Test of 400 V Auxiliary Cables**	
3.	**Coupler Continuity Test**	

PROCEDURE FOR RESISTANCE MEASUREMENT ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1. General

1.1. Measure the Following Resistances fitted on the Locomotive with suitable Measuring Instruments and record in the format as given in the . Details of the Resistances to be measured is as given below:-

Sl. No.	Resistance	Designed Value	% Tolerance	Maximum Value	Minimum Value
1.1.1.	RQOP1	9600 Ω	± 5 %	10080	9120
1.1.2.	RQOP2	9600 Ω	± 5 %	10080	9120
1.1.3.	RPQOP1	150 Ω	± 5 %	157.5	142.5
1.1.4.	RPQOP2	150 Ω	± 5 %	157.5	142.5
1.1.5.	RGR	1.62 Ω	± 5 %	1.701	1.539
1.1.6.	RPGR	100 KΩ	± 5 %	105	95
1.1.7.	RHOBA	210 Ω	± 5 %	220.5	199.5
1.1.8.	RPS1	0.285 Ω	± 5 %	0.29925	0.27075
1.1.9.	RPS2	0.285 Ω	± 5 %	0.29925	0.27075
1.1.10.	RPS3	0.285 Ω	± 5 %	0.29925	0.27075
1.1.11.	RPS4	0.285 Ω	± 5 %	0.29925	0.27075
1.1.12.	RPS5	0.285 Ω	± 5 %	0.29925	0.27075
1.1.13.	RPS6	0.285Ω	± 5 %	0.29925	0.27075
1.1.14.	RS11	76.5 mΩ	± 5 %	80.325	72.675
1.1.15.	RS21	76.5 mΩ	± 5 %	80.325	72.675
1.1.16.	RS31	76.5 mΩ	± 5 %	80.325	72.675
1.1.17.	RS41	76.5 mΩ	± 5 %	80.325	72.675
1.1.18.	RS51	76.5 mΩ	± 5 %	80.325	72.675
1.1.19.	RS61	76.5 mΩ	± 5 %	80.325	72.675
1.1.20.	RS12	46.4 mΩ	± 5 %	48.72	44.08
1.1.21.	RS22	46.4 mΩ	± 5 %	48.72	44.08
1.1.22.	RS32	46.4 mΩ	± 5 %	48.72	44.08
1.1.23.	RS42	46. 4 mΩ	± 5 %	48.72	44.08
1.1.24.	RS52	46.4 mΩ	± 5 %	48.72	44.08
1.1.25.	RS62	46.4 mΩ	± 5 %	48.72	44.08
1.1.26.	RS13	32.1 mΩ	± 5 %	33.705	30.495
1.1.27.	RS23	32.1 mΩ	± 5 %	33.705	30.495
1.1.28.	RS33	32.1 mΩ	± 5 %	33.705	30.495
1.1.29.	RS43	32.1 mΩ	± 5 %	33.705	30.495
1.1.30.	RS53	32.1 mΩ	± 5 %	33.705	30.495
1.1.31.	RS63	32.1 mΩ	± 5 %	33.705	30.495
1.1.32.	RF1	0.5 Ω	± 5 %	0.525	0.475

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1.1.33.	RF2	0.5 Ω	± 5 %	0.525	0.475
1.1.34.	RF3	0.5 Ω	± 5 %	0.525	0.475
1.1.35.	RF4	0.5 Ω	± 5 %	0.525	0.475
1.1.36.	RF5	0.5 Ω	± 5 %	0.525	0.475
1.1.37.	RF6	0.5 Ω	± 5 %	0.525	0.475
1.1.38	RQ20	13.2 KΩ	± 5 %	13.86	12.54
1.1.39.	RU-1	88 KΩ	± 5 %	92.4	83.6
1.1.40.	RU-2	88 KΩ	± 5 %	92.4	83.6
1.1.41.	RU-5	88 KΩ	± 5 %	92.4	83.6
1.1.42.	RU-6	88 KΩ	± 5 %	92.4	83.6
1.1.43.	RCAPTFP1	1.5 Ω	± 5 %	1.575	1.425
1.1.45.	RSIV	1500 Ω	± 5 %	1575	1425

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Test Result for Resistance Measurement of WAG7 Loco

Loco Sr. No.:-		**Date of Testing:-**	

Resistance Value Measured on WAG7 Crew Friendly Locos

Sl. No.	Resistance	Designed Value	% Tolerance	Measured Value
1.1.1.	RQOP1	9600 Ω	± 5 %	
1.1.2.	RQOP2	9600 Ω	± 5 %	
1.1.3.	RPQOP1	150 Ω	± 5 %	
1.1.4.	RPQOP2	150 Ω	± 5 %	
1.1.5.	RGR	1.62 Ω	± 5 %	
1.1.6.	RPGR	100 KΩ	± 5 %	
1.1.7.	RHOBA	210 Ω	± 5 %	
1.1.8.	RPS1	0.285 Ω	± 5 %	
1.1.9.	RPS2	0.285 Ω	± 5 %	
1.1.10.	RPS3	0.285 Ω	± 5 %	
1.1.11.	RPS4	0.285 Ω	± 5 %	
1.1.12.	RPS5	0.285 Ω	± 5 %	
1.1.13.	RPS6	0.285Ω	± 5 %	
1.1.14.	RS11	76.5 mΩ	± 5 %	
1.1.15.	RS21	76.5 mΩ	± 5 %	
1.1.16.	RS31	76.5 mΩ	± 5 %	
1.1.17.	RS41	76.5 mΩ	± 5 %	
1.1.18.	RS51	76.5 mΩ	± 5 %	
1.1.19.	RS61	76.5 mΩ	± 5 %	
1.1.20.	RS12	46.4 mΩ	± 5 %	
1.1.21.	RS22	46.4 mΩ	± 5 %	
1.1.22.	RS32	46.4 mΩ	± 5 %	
1.1.23.	RS42	46. 4 mΩ	± 5 %	
1.1.24.	RS52	46.4 mΩ	± 5 %	
1.1.25.	RS62	46.4 mΩ	± 5 %	
1.1.26.	RS13	32.1 mΩ	± 5 %	
1.1.27.	RS23	32.1 mΩ	± 5 %	
1.1.28.	RS33	32.1 mΩ	± 5 %	
1.1.29.	RS43	32.1 mΩ	± 5 %	
1.1.30.	RS53	32.1 mΩ	± 5 %	
1.1.31.	RS63	32.1 mΩ	± 5 %	
1.1.32.	RF1	0.5 Ω	± 5 %	
1.1.33.	RF2	0.5 Ω	± 5 %	
1.1.34.	RF3	0.5 Ω	± 5 %	
1.1.35.	RF4	0.5 Ω	± 5 %	

PROCEDURE FOR CONTINUITY TEST ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1.1.36.	RF5	0.5 Ω	± 5 %	
1.1.37.	RF6	0.5 Ω	± 5 %	
1.1.38	RQ20	13.2 KΩ	± 5 %	
1.1.39.	RU-1	88 KΩ	± 5 %	
1.1.40.	RU-2	88 KΩ	± 5 %	
1.1.41.	RU-5	88 KΩ	± 5 %	
1.1.42.	RU-6	88 KΩ	± 5 %	
1.1.43.	RCAPTFP1	1.5 Ω	± 5 %	
1.1.45.	RSIV	1500 Ω	± 5 %	

PROCEDURE FOR SAFETY RELAY SETTING ON WAG7

CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1. General

Set the Safety Relay of the WAG7 Locomotive on the Safety Relay Test Bench as per details given below and record in the format attached herewith:

Safety Relay	Value to be Set
QOP1	50V DC
QOP2	50 V DC
QE	4.5 Amps.
QRSI-1	5 Amps.
QRSI-2	5 Amps.
QLM	9 Amps.

Prepared By

Approved By

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Test Result for Safety Relay Setting of WAG7 Loco		
Loco Sr. No.:-		**Date of Testing:-**

SETTING OF FOLLOWING PROTECTIVE RELAYS:-

Safety Relay	Value to be Set	Set Value
QOP1	50V DC	
QOP2	50 V DC	
QE	4.5 Amps.	
QRSI-1	5 Amps.	
QRSI-2	5 Amps.	
QLM	9 Amps.	

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PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1. General

1.1. MU TEST PROGRAM FOR COUPLER TYPE "B" FROM CAB-2

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
1.1	Close BL2DJ	Male	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
1.2	Press BP1DJ	Male	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
1.3	Relese BP1DJ	Male	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
1.4	Close BL2SN	Male	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
1.5	Open BL2SN	Male	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
2.1	Close BL2RDJ	Male	ON	ON	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
2.2	Open BL2RDJ	Male	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
2.3	Close BP2DJ	Male	ON	ON	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
2.4	Release BP2DJ	Male	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.1	Close ZPT2-1	Male	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.2	Close BL2SN	Male	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	OFF	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	OFF	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.3	Open BL2SN	Male	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.4	Close ZPT2-2	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.5	Close BL2SN	Male	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	OFF	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	NA	NA	OFF	OFF	OFF	NA	NA	NA	NA	NA	NA	NA	NA
3.6	Open BL2SN	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
4.1	Press BPEMS2	Male	ON	OFF	ON	OFF	ON	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	ON	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
4.2	Release BPEMS2	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19
5.1	Close BL2VMT	Male	ON	OFF	ON	OFF	OFF	ON	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	ON	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
5.2	Open BL2VMT	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
6.1	Close BL2CPD	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	ON	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	ON	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
6.2	Open BL2CPD	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
7.1	Throw MPJ2 in "Rev"	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	ON	NA	NA	NA	NA	NA	NA	NA	NA
7.2	Put MPJ2 in "O"	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
7.3	Throw MPJ2 in "FOR"	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	ON	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
7.4	Put MPJ2 in "O"	Male	ON	OFF	ON	OFF	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	NA	NA	OFF	NA	OFF	NA	NA	NA	NA	NA	NA	NA	NA

1.2. MU TEST PROGRAM FOR COUPLER TYPE "C" FROM CAB-2

SR. No.	Operation details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
1.1	Close BL2 Key	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
1.2	Throw MPJ2 in "REV"	Male	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
1.3	Put MPJ2 in "O"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
1.4	Throw MPJ2 in "FOR"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.1	Put MP2 in Traction "+"	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.2	Put MP2 in Traction "N"	Male	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
2.3	Put MP2 in Braking "+"	Male	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.4	Put MP2 in Braking "N"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.5	Put ZSMS in Posiiton "1"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.6	Press BPP2	Male	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
2.7	Release BPP2	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.1	Put MP2 in Traction "-"	Male	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.2	Put MP2 in Traction "N"	Male	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
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SR. No.	Operation details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
3.3	Put MP2 in Braking "-"	Male	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.4	Put MP2 in Braking "N"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.5	Press BPR2	Male	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.6	Put ZSMS in Posiiton "0"	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
3.7	Release BPP2	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
4.1	Press BPQWC-2	Male	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
4.2	Release MPQWC-2	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
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SR. No.	Operation details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																		
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
5.1	Put MP2 in Traction "+"	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
5.2	Put MPS2 in "1" Position	Male	OFF	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
5.3	Put MPS2 in "2" Position	Male	OFF	ON	OFF	ON	OFF	ON	ON	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	ON	ON	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
5.4	Put MPS2 in "3" Position	Male	OFF	ON	OFF	ON	OFF	ON	ON	ON	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	ON	ON	ON	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
5.5	Put MPS2 in "4" Position	Male	OFF	ON	OFF	ON	OFF	ON	ON	ON	ON	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	ON	ON	ON	ON	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
5.6	Put MPS2 in 0 Position	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
6.1	Press "PVEF-2"	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	ON	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	ON	NA	OFF	NA	NA	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19
6.2	Release "PVEF-2"	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
7.1	Press PVSA2	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	ON	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	ON	NA	NA	NA	NA	NA	NA
7.2	Release PVSA2	Male	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA
		Female	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	NA	NA	NA	NA	NA	NA

1.3. MU TEST PROGRAM FOR COUPLER TYPE "D" FROM CAB-2

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19
	Close BL2 Key	Male	ON	ON	ON	ON	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	ON	ON	ON	ON	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Close DJ in LT Seq Test	Male	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	ON K5 manually in Inveter	Male	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Put MPJ in FOR/REV	Male	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Notchup upto 32 Notch	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Press BPT2	Male	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA

PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19
	Release BPT2	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Short Wire no.177 with 700	Male	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Remove Shorting	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Press QSIT Manually	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Release QSIT	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Short Wire no.256 with 700	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	ON	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Remove Shorting	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA
	Short Wire no.255 with 700	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	ON	OFF	NA	NA	NA	NA

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PROCEDURE FOR MU TESTING ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

SR. No.	Operation Details	Coupler Type	Pin no. of coupler and their corresponding LED on MU Test Box																	
			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	ON	ON	ON	NA	NA	NA	NA
	Remove Shorting	Male	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	ON	OFF	OFF	ON	OFF	OFF	NA	NA	NA	NA
		Female	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	NA	OFF	OFF	OFF	OFF	ON	ON	NA	NA	NA	NA

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JS 107	**Bharat Heavy Electricals Limited, Jhansi** **Central Quality Services** **(Locomotive Testing Department)**	
CQX/802-1		**Page no.- 1 of 1**

Test Result for MU Testing of WAG7 Loco

Loco Sr. No.:-		**Date of Testing:-**	

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Bharat Heavy Electricals Limited, Jhansi
Central Quality Services
(Locomotive Testing Departmet)

CQX-LT/805

PROCEDURE FOR ELECTRICAL TESTING PART-I ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

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PROCEDURE FOR ELECTRICAL TESTING PART-I ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

1. General

1.1. Drawings

Following circuit diagrams may be referred for checking the various circuits :-

Light, fans, signaling circuit diagram,
Traction control circuit diagram,
Auxiliary control circuit diagram.

1.2. Preliminary operation

1.2.1. Remove the covers of all relays and kept in a secured place.

1.2.2. Check that the switches HOBA is in normal operating position (closed).

1.2.3. Switch off all switches of BL box.

1.2.4. Keep the master controller in ‘O’ position in both cabs.

1.2.5. Switch ‘ON’ HBA and see that battery voltage is above 90V.

1.2.6. Put HOM switch in Panto down position.

1.2.7. Tap changer should be in ‘O’ position.

1.2.8. All Fuses are in position.

1.3. CHECK FOR BONDING FOR 110V DC CIRCUITS

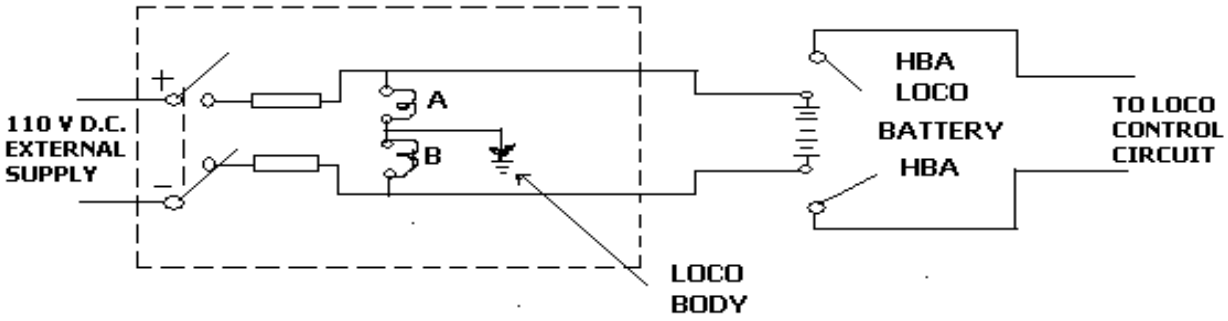
1.3.1. Open HOBA switch and disconnect wire No, CETO from ETO terminals of Bd panel.

1.3.2. Keep HBA switch on ‘I’ position

1.3.3. Put HQOP-1&2 in normal operating position.

1.3.4. Connect external L.T. supply of 110V D.C. through the Electrical Bonding Board as shown in Fig.1.

Connect -ve of the external Supply to terminal 001 on SB-3 TB (AC2 Panel) and connect –ve of the external Supply to terminal no.009 on SB-3 TB (AC2 Panel) as shown below:-



Fig–1 A and B are 110V DC Lamp

1.3.5. Close the isolating switch 'O' there are four possible ways in which lamp 'A' and 'B' will glow as indicated below:-

i) Lamps 'A' and 'B' glow dim.

ii) Lamps 'B' glow bright for bonding on +v side.

iii) Lamps 'B' glow bright for bonding on -v side.

iv) Both lamps 'A' and 'B' do not glow and fuse blow 'OFF' for positive and negative bonding

1.3.6. During Electrical testing Part-1 this bonding board shall be connected permanently and Set the circuit right as to achieve conditions indicated in Sr No.-1.3.5 (i).

1.4. LIGHT, FANS, AND SIGNALING CIRCUIT

1.4.1. Checking of lights, fans and signaling circuit cab-1

NOTE:- For testing low voltage circuits, external 110V DC Supply can be provided, in this event, disconnect cables No. B001 and B009 of locomotive battery from SB-3 TB (AC2 Panel) and connect +ve and –ve of external Supply to terminals No.001 and 009 of SB-3 TB (AC2 Panel).

1.4.1.1. Marker and BL Box Lamp

Sl No	Operation	Check
1.	Close BL1LF switch of BL switch box.	Lamps of BL box LBL1-1, LBL1-2, LP1 (PC1) and Marker Light LAMPS LF1G (White), LF1D (White) glows.
2.	Close Marker Lamp change over switch BL1ZLF	Marker light lamps LF1G (Red) & LF1D (RED) glows and lamps LF1G (White) & LF1D (White) goes off.
3.	Close ZPR on AC2 Panel	Lamp LU1,2-(4 Nos.), LUA1 (2 Nos.), LA3 (2 Nos.), PN Gauge LAMP MRFP, BC-1 and BP glows.
4.	Remove fuse CCLF1	Lamps of BL box LBL1-1, LBL1-2, LP1 (PC1) and Marker Light LAMPS LF1G (Red), LF1D (Red) goes off.
5.	Put back fuse CCLF1 and normalize the circuit	Lamps of BL box LBL1-1, LBL1-2, LP1 (PC1) and Marker Light LAMPS LF1G (Red), LF1D (Red) comes ON.

1.4.1.2. Engine Room, Cab and Entrance Lamp

Sl No	Operation	Check
1.	Close BL1LM switch	All corridor and engine room lamps (CFL-1 to CFL-9 & CFL 12 to CFL-14) come ON.
2.	Close BL2LM switch of other cab	Above lamps go off.
3.	Open BL2LM switch of other cab	Again lamps CFL-1 to CFL-9 and CFL-12 to CFL -14 come ON.
4.	Remove Fuse CCLC	Above lamps go off.
5.	Replace the Fuse CCLC	Again lamps CFL-1 to CFL-9 and CFL-12 to CFL -14 come ON.

6.	Close ZPR on AC2 Panel and then Close ZLCS-1 switch on PC1	2 nos. Spot lights (LCS-1-1 and LCS-1-2) comes ON
7.	Close ZCFL-10 On PC1	CFL-10 in cabin comes ON.
8.	Close ZLE-3 on AC2 Panel	LE-3 and LE-4 (AC2 Panel) comes ON.
9.	Normalize the circuit	

1.4.1.3. Signaling Lamp Circuit (Using BPT)

Sl No	Operation	Check
1.	Close HBA Switch	Signal lamps LSDJ, LSCHBA, LSGR, LSB, LSOL, LSDBR and LS group glow. Note that Signal lamps Depends upon CPU.
2.	Press BPT push button	Lamp LSP and LSRSI glow along with all above lamps.
3.	Remove fuse CCPT	Above lamps go off.
4.	Replace fuse and normalize the circuit	

1.4.1.4. Signaling Lamps Circuit (Direct Testing)

Sl No	Operation	Check
1.	Close HBA switch, Place CCPT Fuse.	i. Lamps LSDJ, LSCHBA, LSGR, LSB and LS group glow.
2.	Manually move GR to Notch-1	i. Input to I-19 (GR-0) goes high to Low ii. Input to I-20 (GR-O-31) remain in high iii. Input to I-24 (ASMGR on Notch) goes Low to High iv. Lamp LSGR goes off.
3.	Supply 110 V. D C to (I-71)	Lamp LSCHBA goes off. Output at O-29 goes high to Low.
4.	Manually close DJ	i. Input to I-35 (DJ-N/O) goes Low to High. ii. Lamp LSDJ goes off iii. O-28 goes High to Low
5.	Manually Close DJ	i. Input to I-35 (DJ-N/O) goes Low to High.

	Put CTF1,2,3 in Running Position Put CTF1,2,3 in Braking Position	ii. Input to I-31 goes High. iii. Lamp LSB goes OFF and O-31 goes High to Low. iv. Input to I-31 goes High to Low v. Input to I-33 goes Low to High vi. Lamp LSB is still OFF and O-31 is High
6.	Signal Conditioning Box-2	Lamp LSP comes ON and O-32 goes Low to High.
7.	Operate micro switch of RSI box 1 & 2 one by One.	Input to I-59 goes Low to High. Lamp LSRSI glows and Output (O-33) goes Low to High.
8.	Normalize the circuit	
9.	Input at I63 goes Low to High. For this connect 110V Supply to I63 Manually Close DJ Put CTF1,2,3 in Running/Braking Position Operate micro switch of RSI box 1 & 2 one by One. Supply 110 V. D C to (I-71)	Out Put at O-40 is High Lamp LSOL glows and Output (O-37) goes Low to High. Lamp LSGROUP Off and Output (O-36) goes High to Low. When all these logic given in the Operation 9 satisfied then above conditions occurred. If any one logic doesn't satisfy then reverse condition will occurred.
10.	When Input I-73 (GR-0-5 or N/O of Pressure Switch DBR) is High and Input I-47 is Low.	i. Lamp LSDBR glows and Output (O-42) goes Low to High.

1.4.1.5. Head Light 24 V.D.C (Through 110V-24V DC-DC CONUERTER)

Sl No	Operation	Check
1.	Apply +110V DC to DC Converter through ZPR Switch (AC2 panel)	Check Output of DC DC Converter on BD Panel between wire nos.183 and 184. It should be 24V DC.
2.	Close BL-1 and Then Close BLPRF1	Front head light PR-1 comes on bright.
3.	Close BLPRD1	Front head light comes on dim.
4.	Open BLPRF1	Front head light goes off.
5.	Close BLPRF1	Front head light comes on dim.

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6.	Open BLPRD1	Front head light comes on Bright.
7.	Close BLPRR1	Rear head light comes on bright.
8.	Open BLPRR1	Rear head light goes off.

1.4.1.6. Cab Fan circuit

Sl No	Operation	Check
1.	Apply 415V 1 Phase AC Supply Between Wire Nos.- 965 and 967 on BD Panel.	Check output between Terminal Nos.- 968 and 984, it should be 110V, 1-Phase AC.
2.	Switch ON Switch for MVT1/1 and MVT1/2 on by one	Cab Fan in Cabin-1- MVT-1/1 and MVT-1/2 starts rotating. CHECK THAT Regulator is controlling the speed.
3.	Open Fuse CCVT	Both Fans should stop rotating.
4.	Normalize the circuit.	

1.4.1.7. Walkie Talkie Charger circuit

Sl No	Operation	Check
1.	Apply 415V 1 Phase AC Supply Between Wire Nos.- 965 and 966 on BD Panel.	Check output between Terminal Nos.- 995 and 996, it should be 230V, 1-Phase AC.
2.	Connect Walkie Talkie Charger between	Check that Walkie Talkie Charger is OK.

1.5. INPUT CHECKING

1.5.1. Preparation

1.5.1.1. Ensure all fuses are at their position.
1.5.1.2. Put HBA in ON Position.
1.5.1.3. There should not be any Positive or Negative Bonding.
1.5.1.4. Connect all Couplers on the Microprocessor fault Diagnostic System and ensure proper

1.5.2. PROCEDURE:-

Check the following Inputs to the FDCS at FDCS Display in CAB1 & CAB2 both as per procedure given below:-

Sr. No.	Input No.	Input Name	Procedure	Remark
1.	I0	BLDJ & BP1DJ	**i)** Switch On BL Key **ii)** Switch ON BLDJ **iii)** Press BP1DJ **iv)** Release BP1DJ	Low High Low High
2.	I1	BL1RDJ	**i)** Switch ON BLRDJ **ii)** Switch OFF BLRDJ **iii)** Press BP2DJ **iv)** Release BP2DJ	High Low High Low
3.	I2	QVMT1	**i)** Short wire No.700 with wire No. 025 at QVMT1 **ii)** Open Shorting	High Low
4.	I3	QVMT2	**i)** Short wire No.700 with wire No. 026 at QVMT2 **ii)** Open Shorting	High Low
5.	I4	QVRH	**i)** Short wire No.700 with wire No. 027 at QVRH **ii)** Open Shorting	High Low
6.	I5	ZPT1 ZPT2	**i)** Put ZPT2 in Position “1” **ii)** Put ZPT2 In Position “0” **iii)** Put ZPT2 in Position “2” **iv)** Bring ZPT2 at Position “0” **v)** Put ZPT1 in Position “2” **vi)** Put ZPT1 in Position “0” **vii)** Put ZPT1 in Position “1”	High Low Low Low High Low Low
7.	I6	ZPT1 ZPT2	**i)** Put ZPT2 in Position “1” **ii)** Put ZPT2 In Position “0” **iii)** Put ZPT2 in Position “2” **iv)** Bring ZPT2 at Position “0” **v)** Put ZPT1 in Position “2” **vi)** Put ZPT1 in Position “0”	Low Low High Low Low Low

PROCEDURE FOR ELECTRICAL TESTING PART-I ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

Sr. No.	Input No.	Input Name	Procedure	Remark
			vii) Put ZPT1 in Position "1" **viii)** Bring ZPT1 in Position "0"	High Low
8.	I7	HVMT1	**i)** Put HVMT1 at "0" Position **ii)** Put HVMT1 at "1" Position **iii)** Put HVMT1 at "2" Position **iv)** Put HVMT1 at "3" Position **v)** Put HVMT1 at "0" Position	Low High Low High Low
9.	I8	HVMT1	**i)** Put HVMT1 at "0" Position **ii)** Put HVMT1 at "1" Position **iii)** Put HVMT1 at "2" Position **iv)** Put HVMT1 at "3" Position **v)** Put HVMT1 at "0" Position	High Low Low High High
10.	I9	HVMT2	**i)** Put HVMT2 at "0" Position **ii)** Put HVMT2 at "1" Position **iii)** Put HVMT2 at "2" Position **iv)** Put HVMT2 at "3" Position **v)** Put HVMT2 at "0" Position	Low High Low High Low
11.	I10	HVMT2	**i)** Put HVMT2 at "0" Position **ii)** Put HVMT2 at "1" Position **iii)** Put HVMT2 at "2" Position **iv)** Put HVMT2 at "3" Position **v)** Put HVMT2 at "0" Position	High Low Low High High
12.	I11	HVRH	**i)** Put HVRH at "0" Position **ii)** Put HVRH at "1" Position **iii)** Put HVRH at "2" Position **iv)** Put HVRH at "3" Position **v)** Put HVRH at "0" Position	Low High Low High Low
13.	I12	HVRH	**i)** Put HVRH at "0" Position **ii)** Put HVRH at "1" Position **iii)** Put HVRH at "2" Position **iv)** Put HVRH at "3" Position **v)** Put HVRH at "0" Position	High Low Low High High
14.	I13	HVSI1	**i)** Put HVSI-1 at "0" Position **ii)** Put HVSI-1 at "1" Position **iii)** Put HVSI-1 at "2" Position **iv)** Put HVSI-1 at "3" Position **v)** Put HVSI-1 at "1" Position **vi)** Short Wire No.-700 with 042	High Low Low High Low High

PROCEDURE FOR ELECTRICAL TESTING PART-I ON WAG7
CREW FRIENDLY LOCOMOTIVES MANUFACTURED BY BHEL, JHANSI

Sr. No.	Input No.	Input Name	Procedure	Remark
			at QVSI-1	
			vii) Open Shorting	Low
15.	I14	HVSI2	**i)** Put HVSI-2 at "0" Position	High
			ii) Put HVSI-2 at "1" Position	Low
			iii) Put HVSI-2 at "2" Position	Low
			iv) Put HVSI-2 at "3" Position	High
			v) Put HVSI-2 at "1" Position	Low
			vi) Short Wire No.-700 with 043 at QVSI-2	High
			vii) Open Shorting	Low
16.	I15	BL1VMT	**i)** Switch ON BL Key	Low
			ii) Switch ON BLVMT	High
			iii) Switch OFF BLVMT	Low
17.	I16	Between Notches	**i)** Manually Move GR to between the Notch Position	High
			ii) Bring Back GR to "1" Position	Low
			iii) Check Manually on all Notches	Low
18.	I17	BLCP	**i)** Switch ON BLCP	High
			ii) Open Wire No.-074 on RGCP Pressure Switch	Low
			iii) Restore Wiring on RGCP	High
			iv) Switch OFF BLCP	Low
			v) Switch ON BLCPD	High
			vi) Switch OFF BLCPD	Low
19.	I18	C101 C102 C103	**i)** Press C101 Contactor Manually	High
				Low
			ii) Release C101	High
			iii) Press C102 Contactor Manually	Low
				High
			iv) Release C102	Low
			v) Press C103 Contactor Manually	
			vi) Release C103	
20.	I19	GR"0"	**i)** Check GR at "0" Position	High
			ii) Manually Move GR to "1" Position	Low
			iii) Bring GR to "0" Position	High

Sr. No.	Input No.	Input Name	Procedure	Remark
21.	I-20	GR at ”0 -31”	**i)** Manually Move GR to 1-31 one by one **ii)** Move GR to 32 **iii)** Bring Back GR to “0” Position	High Low High
22.	I21	HPH QPH	**i)** Put HPH at “0” Position **ii)** Put HPH at “1” Position **iii)** Put HPH at “2” Position **iv)** Put HPH at “3” Position **v)** Put HPH at “1” Position **vi)** Short Wire No.-700 with 078 at QPH **vii)** Open Shorting	High Low Low High Low High Low
23.	I22	HVSL1 QVSL1	**i)** Put HVSL-1 at “0” Position **ii)** Put HVSL-1 at “1” Position **iii)** Put HVSL-1 at “2” Position **iv)** Put HVSL-1 at “3” Position **v)** Put HVSL-1 at “1” Position **vi)** Short Wire No.-700 with 079 at QVSL-1 **vii)** Open Shorting	High Low Low High Low High Low
24.	I23	C105	**i)** Press C105 Contactor Manually **ii)** Release C105	High Low
25.	I24	ON Notches	**i)** Manually Move GR to 1-31 one by one	High to Low on Each Notches
26.	I25	HVSL2 QVSL2	**i)** Put HVSL-2 at “0” Position **ii)** Put HVSL-2 at “1” Position **iii)** Put HVSL-2 at “2” Position **iv)** Put HVSL-2 at “3” Position **v)** Put HVSL-2 at “1” Position **vi)** Short Wire No.-700 with 080 at QVSL-2 **vii)** Open Shorting	High Low Low High Low High Low
27.	I26	MP ”+“	**i)** Insert Reverser Key in MPJ and put MPJ either in “For” or in “Rev”. **ii)** Move MP Handle in Traction Position “-“	Low Low

Sr. No.	Input No.	Input Name	Procedure	Remark
			iii) Bring Back MP Handle to "N" Position	Low
			iv) Move MP Handle in Traction Position "+"	High
			v) Move MP Handle in Braking Position "-"	Low
			vi) Bring Back MP Handle to Braking "N" Position	Low
			vii) Move MP Handle in Braking Position "+"	High
			viii) Press BPP1	High
			ix) Release BPP1	Low
			x) Repeat all above Operation from Cab2 also	
28.	I27	MPJ1 MPJ2	**i)** Move MPJ1 in "Forward".	High
			ii) Move MPJ1 in "Neutral"	Low
			iii) Move MPJ1 in "Reverse"	Low
			iv) Remove MPJ1 Handle and put this Handle in MPJ2 in Neutral Position	Low
			v) Move MPJ2 in "Forward"	Low
			vi) Move MPJ2 in "Reverse"	High
			vii) Move MPJ2 in "Neutral" Position and Remove Handle	Low
29.	I28	J1&J2-For	**i)** Move Both Reverser J1 & J2 in Forward Direction Manually	High
			ii) Move Both Reverser J1 & J2 in Centre Manually	Low
			iii) Move Both Reverser J1 & J2 in Reverse Direction Manually	Low
30.	I29	MP "-"	**i)** Insert Reverser Key in MPJ and put MPJ either in "For" or in "Rev".	Low
			ii) Move MP Handle in Traction Position "-"	High
			iii) Bring Back MP Handle to "N" Position	Low
			iv) Move MP Handle in Traction	Low

Sr. No.	Input No.	Input Name	Procedure	Remark
			Position "+" **v)** Move MP Handle in Braking Position "-" **vi)** Bring Back MP Handle to Braking "N" Position **vii)** Move MP Handle in Braking Position "+" **viii)** Press BPR1 **ix)** Release BPR1 **x)** Repeat all above Operation from Cab2 also	 High Low Low High Low
31.	I30	MP Traction "+,N & -"	**i)** Insert Reverser Key in MPJ and put MPJ either in "For" or in "Rev". **ii)** Move MP Handle in Traction Position "-" **iii)** Bring Back MP Handle to "N" Position **iv)** Move MP Handle in Traction Position "+" **v)** Move MP Handle in Braking Position "-" **vi)** Bring Back MP Handle to Braking "N" Position **vii)** Move MP Handle in Braking Position "+" **viii)** Repeat all above Operation from Cab2 also	Low High High High Low Low Low
32.	I31	CTF1,2,3-Traction	**i)** Move CTF-1,2&3 in Traction mode Manually. **ii)** Move CTF1,2,3 in Centre Manually one by one **Note**:- After checking in Centre Mode put these CTF in Traction Mode. **iii)** Move CTF-1,2&3 in Braking mode Manually	High Low Low
33.	I32	MPJ1	**i)** Move MPJ1 in "Forward".	Low

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Sr. No.	Input No.	Input Name	Procedure	Remark
		MPJ2	**ii)** Move MPJ1 in "Neutral" **iii)** Move MPJ1 in "Reverse" **iv)** Remove MPJ1 Handle and put this Handle in MPJ2 in Neutral Position **v)** Move MPJ2 in "Forward" **vi)** Move MPJ2 in "Reverse" **vii)** Move MPJ2 in "Neutral" Position and Remove Handle	Low High Low High Low Low
34.	I33	CTF1,2,3-Braking	**i)** Move CTF-1,2&3 in Braking mode Manually. **ii)** Move CTF1,2,3 in Centre Manually one by one **Note**:- After checking in Centre Mode put these CTF in Traction Mode. **iii)** Move CTF-1,2&3 in Traction mode Manually	High Low Low
35.	I34	MP Braking "+,N & -"	**i)** Insert Reverser Key in MPJ and put MPJ either in "For" or in "Rev". **ii)** Move MP Handle in Traction Position "-" **iii)** Bring Back MP Handle to "N" Position **iv)** Move MP Handle in Traction Position "+" **v)** Move MP Handle in Braking Position "-" **vi)** Bring Back MP Handle to Braking "N" Position **vii)** Move MP Handle in Braking Position "+" **viii)** Repeat all above Operation from Cab2 also	Low Low Low Low High High High
36.	I35	DJ	**i)** Short Wire No.-105 with 700 on SB-Roof near DJ **ii)** Open Shorting	High Low

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Sr. No.	Input No.	Input Name	Procedure	Remark
37.	I36	J1&J2-Rev	**i)** Move Both Reverser J1 & J2 in Forward Direction Manually **ii)** Move Both Reverser J1 & J2 in Centre Manually **iii)** Move Both Reverser J1 & J2 in Reverse Direction Manually	Low Low High
38.	I37	BPQWC1&2	**i)** Press BPQWC1 **ii)** Release BPQWC1 **iii)** Press BPQWC2 **iv)** Release BPQWC2	High Low High Low
39.	I38	MPS at 1	**i)** Insert Reverser Key in MPJ and put MPJ either in “For” or in “Rev”. **ii)** Move MP Handle in Traction Position “N“. **iii)** Move MPS Handle in Position”1”. **iv)** Move MPS Handle in Position”2”. **v)** Move MPS Handle in Position”3” **vi)** Bring MPS Handle in Position “0”.	Low Low High High High Low
40.	I39	MPS at 2	**i)** Insert Reverser Key in MPJ and put MPJ either in “For” or in “Rev”. **ii)** Move MP Handle in Traction Position “N“. **iii)** Move MPS Handle in Position”1”. **iv)** Move MPS Handle in Position”2”. **v)** Move MPS Handle in Position”3” **vi)** Bring MPS Handle in Position “0”.	Low Low Low High High Low
41.	I40	MPS at 3	**i)** Insert Reverser Key in MPJ and put MPJ either in “For” or	Low

Sr. No.	Input No.	Input Name	Procedure	Remark
			in "Rev". **ii)** Move MP Handle in Traction Position "N". **iii)** Move MPS Handle in Position"1". **iv)** Move MPS Handle in Position"2". **v)** Move MPS Handle in Position"3" **vi)** Bring MPS Handle in Position "0".	 Low Low Low High Low
42.	I41	MPS at 4	**i)** Insert Reverser Key in MPJ and put MPJ either in "For" or in "Rev". **ii)** Move MP Handle in Traction Position "N". **iii)** Move MPS Handle in Position"1". **iv)** Move MPS Handle in Position"2". **v)** Move MPS Handle in Position"3" **vi)** Move MPS Handle in Position"4" **vii)** Bring MPS Handle in Position "0".	Low Low Low High High High Low
43.	I42	PVEF1&2	**i)** Short Wire No.-150 with 700 on PVEF1 or Press PVEF1 **ii)** Release PVEF1 or remove shorting **iii)** Short Wire No.-150 with 700 on PVEF2 or Press PVEF2 **iv)** Release PVEF2 or remove shorting	High Low High Low
44.	I43	PSA1&2	**i)** Short Wire No.-151 with 700 on PSA1 or Press PSA1 **ii)** Release PSA1 or remove shorting	High Low

Sr. No.	Input No.	Input Name	Procedure	Remark
			iii) Short Wire No.-151 with 700 on PSAF2 or Press PSA2 **iv)** Release PSA2 or remove shorting	High Low
45.	I44	BPQD1&2	**i)** Check Status **ii)** Press BPQD1 **iii)** Release BPQD1 **iv)** Press BPQD2 **v)** Release BPQD2	High Low High Low High
46.	I45	RGEB	**i)** Short wire No.-700 with 155 on RGEB **ii)** Remove Shorting	High Low
47.	I46	SWC	**i)** Check Status **ii)** Open Wire No.-156 from SWC **iii)** Restore Wire No.156 on SWC	High Low High
48.	I47	QE	**i)** Check Status **ii)** Remove QE Relay **iii)** Insert QE Relay Back.	High Low High
49.	I48	BL1&BL2	**i)** Insert BL1 Key and Operate **ii)** Remove BL 1Key **iii)** Insert BL2 Key and Operate **iv)** Remove BL 2Key	High Low High Low
50.	I49	QSIT	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Open Cover of QSIT Relay and Press QSIT Relay Manually **iii)** Release QSIT Relay and Fit Cover	High Low High
51.	I50	QOP1	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Remove QOP1 **iii)** Insert QOP1	High Low High
52.	I51	QOP2	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Remove QOP2 **iii)** Insert QOP2	High Low High

Sr. No.	Input No.	Input Name	Procedure	Remark
53.	I52	QRSI-1	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Remove QRSI-1 **iii)** Insert QRSI-1	High Low High
54.	I53	QRSI-2	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Remove QRSI-2 **iii)** Insert QRSI-2	High Low High
55.	I54	QLM	**i)** Short 700 with Wire no.044 at BD Panel **ii)** Remove QLM **iii)** Insert QLM	High Low High
56.	I55	BV	**i)** Short Wire No.-122 with 700 on SB-Roof near DJ **ii)** Open Shorting	High Low
57.	I56	C106	**i)** Press C106 Contactor Manually **ii)** Release C106	High Low
58.	I57	ZSMGR	**i)** Operate ZSMGR **ii)** Bring ZSMS to it's Previous Position	Low High
59.	I58	ZSMS	**i)** Operate ZSMS **ii)** Bring ZSMS to it's Previous Position	High Low
60.	I59	LSRSI	**i)** Press Micro switch on the Fuses of RSI-1 and RSI-2 one By One.	High
61.	I60	HMCS1&2	**i)** Keep HMCS1 & 2 at Position-"1" **ii)** Move HMCS1 at Position-2-4 one by One. **iii)** Bring HMCS1 to Position"1" **iv)** Move HMCS2 at Position-2-4 one by One **v)** Bring HMCS1 to Position"2"	High Low High Low High
62.	I61	L1-L6	**i)** Check Status **ii)** Operate L1 Manually **iii)** Release L1	Low High Low

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Sr. No.	Input No.	Input Name	Procedure	Remark
			iv) Operate L2 Manually **v)** Release L2 **vi)** Operate L3 Manually **vii)** Release L3 **viii)** Operate L4 Manually **ix)** Release L4 **x)** Operate L5 Manually **xi)** Release L5 **xii)** Operate L6 Manually **xiii)** Release L6	High Low High Low High Low High Low High Low
63.	I62	HMCS1&2	**i)** Keep HMCS1 at Position-"1" and HMCS2 at Position-"2". **ii)** Move HMCS1 to Position-"2" **iii)** Move HMCS1 to Position-"3" **iv)** Move HMCS1 to Position-"4" **v)** Bring HMCS2 to Position-"1" **vi)** Move HMCS2 to Position-"3" **vii)** Move HMCS2 to Position-"4"	High High Low Low High Low High
64.	I66	C107	**i)** Press C107 Contactor Manually **ii)** Release C107	High Low
65.	I68	C145 Feedback	**i)** Close C145 Manually **ii)** Release C145	High Low
66.	I70	HPAR	**i)** Move HPAR to "0" Position **ii)** Move HPAR to "1" Position	Low High
67.	I71	Battery Charger	**i)** Short 003/1 with 971 at Static Inverter TB **ii)** Remove Shorting	High Low
68.	I72	BL1	**i)** Insert BL1 Key and Operate **ii)** Remove BL Key	High Low
69.	I73	DBR Pressure Switch	**i)** Check Status when GR at "0" **ii)** Move GR upto 5th Notch manually **iii)** Move GR to 6th Notch Manually **iv)** Short Wire No.-700 with 157 at DBR Terminal Block **v)** Remove Shorting	High High Low High Low

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Sr. No.	Input No.	Input Name	Procedure	Remark
			vi) Bring GR back to "0"	High
70.	I75	RGAF	**i)** Press TSACP **ii)** Release TSACP **iii)** Short Wire No.-700 With 219 on RGAF **iv)** Remove Shorting	High Low High Low
71.	I76	P2	**i)** Check Status **ii)** Short Wire No. 700 with 216 on P2 **iii)** Remove Shorting **iv)** Press TSFL **v)** Release TSFL	Low High Low High Low
72.	I77	BPT1 &2	**i)** Press BPT1 **ii)** Release BPT1 **iii)** Press BPT2 **iv)** Release BPT2	High Low High Low
73.	I78	P1	**i)** Short Wire No.700 with 218 on P1 **ii)** Remove shorting	High Low
74.	I79	SW1&2	**i)** Press BPSW1 **ii)** Release BPSW1 **iii)** Press BPSW2 **iv)** Release BPSW2	High Low High Low
75.	I80	Loco Selection	**i)** Check Status	Low
76.	I81	Loco Selection	**i)** Check Status	Low
77.	I82	Loco Selection	**i)** Check Status	High
78.	I83	Loco Selection	**i)** Check Status	Low
79.	I84	MU	**i)** Short Wire No.700 with 256 on BD Panel **ii)** Remove shorting	High Low
80.	I85	BPEMS1&2	**i)** Press BPEMS1 **ii)** Rotate and Release BPEMS1 **iii)** Press BPEMS2 **iv)** Rotate and Release BPEMS2	High Low High Low

Sr. No.	Input No.	Input Name	Procedure	Remark
81.	I92	MU	**i)** Short Wire No.700 with 255 on BD Panel **ii)** Remove shorting	High Low

1.5.3.
1.6.

JS 107	**Bharat Heavy Electricals Limited, Jhansi** **Central Quality Services** **(Locomotive Testing Department)**

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Test Result for Electrical Bonding Test of WAG7 Loco

Loco Sr. No.:-		**Date of Testing:-**	

Electrical Bonding Test	OK / Not OK
Lights, Fans and Signalling Lamp	OK / Not OK
Input Checking	OK / Not OK

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