

## **LOCO PARAMETERS TO BE RECORDED AFTER ACCIDENT**

### **1. Performa for Motive Power ( Diesel & Electric ) in case of Accident Derailment**

INFORMATION TO BE FURNISHED BY THE LOCO DEPT.

- ▶ Basic information:
- ▶ Date of Accident:
- ▶ Train No.:
- ▶ Loco Class:
- ▶ Loco Number:
- ▶ Loco manufacture year and place :
- ▶ Base Shed of Loco :
- ▶ Date & Place last POH :
- ▶ Kilometers earned after last POH :
- ▶ Date & place of last major inspection :
- ▶ Date & place of last schedule inspection :
- ▶ Whether any schedule is overdue? :

### **2. Give brief particulars of the safety items not provided or provided but missing / not working Whether Loco is provided with;**

<b>Safety fittings</b>	<b>Provided/ Not provided</b>	<b>Working</b>	<b>Missing</b>
Headlight			
Speedometer			
Speed Recorder			
Flasher light			
Horn			

### **3. Check & record the observations as follows:**

1. Position of control handles, cutout cocks etc.
2. Functioning of brake synchronizing valve.
3. Position of brake blocks whether applied or not
4. Condition of cattle guard.
5. Any sign of seizure of roller bearing in axle box (Relevant in case of derailed axle).
6. Comments if any coil spring is broken or displaced.
7. Condition of pivot of bogie.
8. Any mechanical defect of the locomotive, which might endanger safe running of loco.

Note: Defective or broken material should be sent to CMT for testing, if necessary

#### 4. Measurements for Wheels for all Classes Locomotives with wheel gauge ( tyre defect gauge) Locations applicable for BO-BO Loco.

Sl No	Description
1	Particulars of axle (ID No.)
2	Diameter of wheel at tread
3	Wheel Flange thickness Wear limit 3mm
4	Wheel Root wear Wear limit 6mm
5	Tread wear Wear limit 6.5mm
6	UST of axle: Give the date of last UST test done

#### Performa for Measurement of Locomotive after Accident

Sl No	Description
1	<b>Buffer /coupler height!</b> Measurement of parameters such as buffer length etc may also be done to check possibility of buffer entanglement.
2	<b>Lateral clearances End Axles (1,3,4 &amp; 6)</b> <b>Middle Axles (2&amp;5)</b>
3	<b>Lateral clearances End Axles (1,2.3 &amp; 4)</b>
4	<b>Longitudinal clearances between axle box &amp; bogie pedestal liner (for all axles)</b>
5	<b>Longitudinal clearances between axle box &amp; bogie pedestal liner (for middle axles)</b>
6	<b>Height of Rail Guard from rail level</b>
7	<b>Condition of suspension springs i.e. normal/ broken fresh and old fracture or deformities occurred after derailment due to sudden impact.</b>

#### Notes:

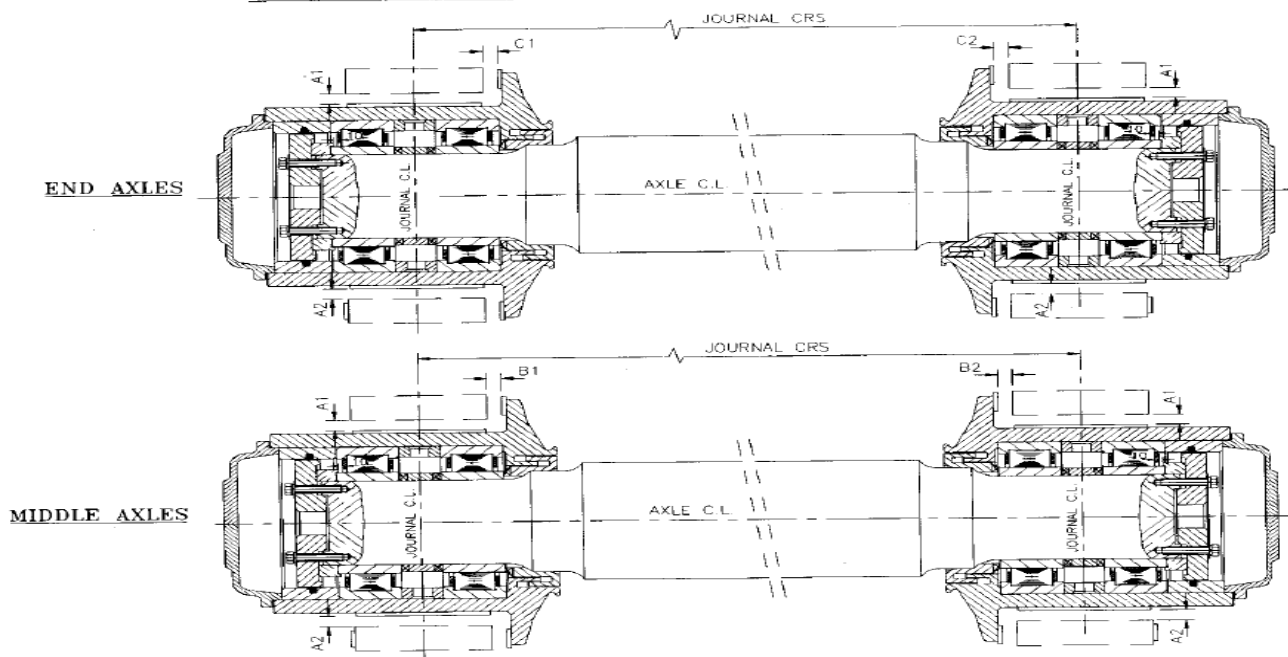
- ▶ Wheel number one is the outer end axle of truck under the short hood and wheel count increases towards the Long hood on diesel loco, where as for Electric Loco, wheel number one is the outer end axle under Cab-1(Cab-1 is that side of the loco which has the compressors) and wheel count increases towards the Cab-2.
  - All measurements are to be taken in shed on a level, un-canted track.

**\*Service limits given in the Maintenance Manual are for good maintenance practice and these are:**

SI.	Description	Remarks
1	<p>Wheel gauge For checking wheel gauge, average of three measurements at equal spacing on the inner periphery of the two wheels on the same axle is to be recorded. Check for bent axle, if any.</p>	<p>All measurements shall be taken on a level tangent un-canted track. These measurements are for unloaded wheels, should be taken in workshop after dismantling. Information is relevant in case of wheel disc shifting /bent axle only. For safety, similar limits as applicable for track gauge are relevant for wheel gauge also.</p>

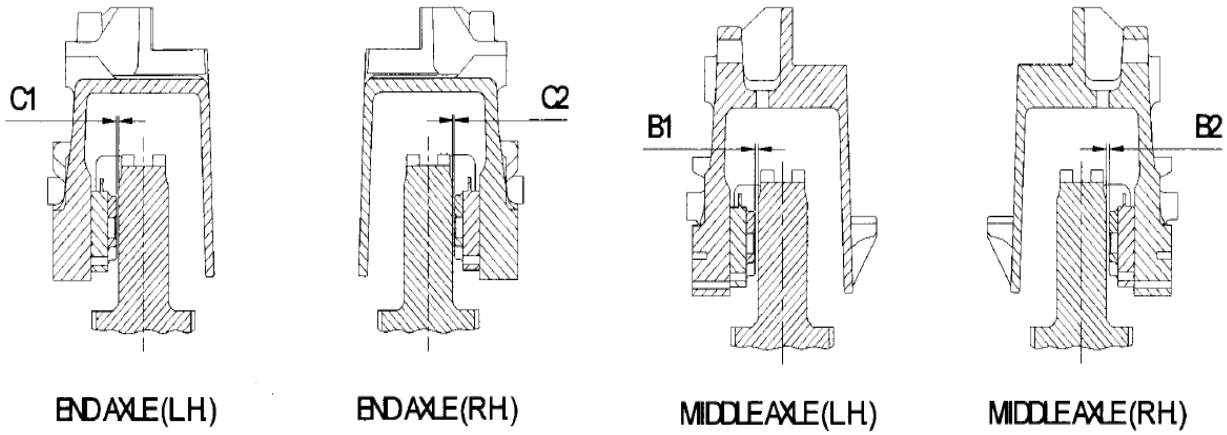
### LATERAL CLEARANCE- ALCO

**SCHMATIC DIAGRAM SHOWING LERAL AND LONGITUDINAL CLEARANCES OF LOCOMOTIVES WITH AXLE BOXES HAVING WITH OUT CONICAL THRUST PAD**

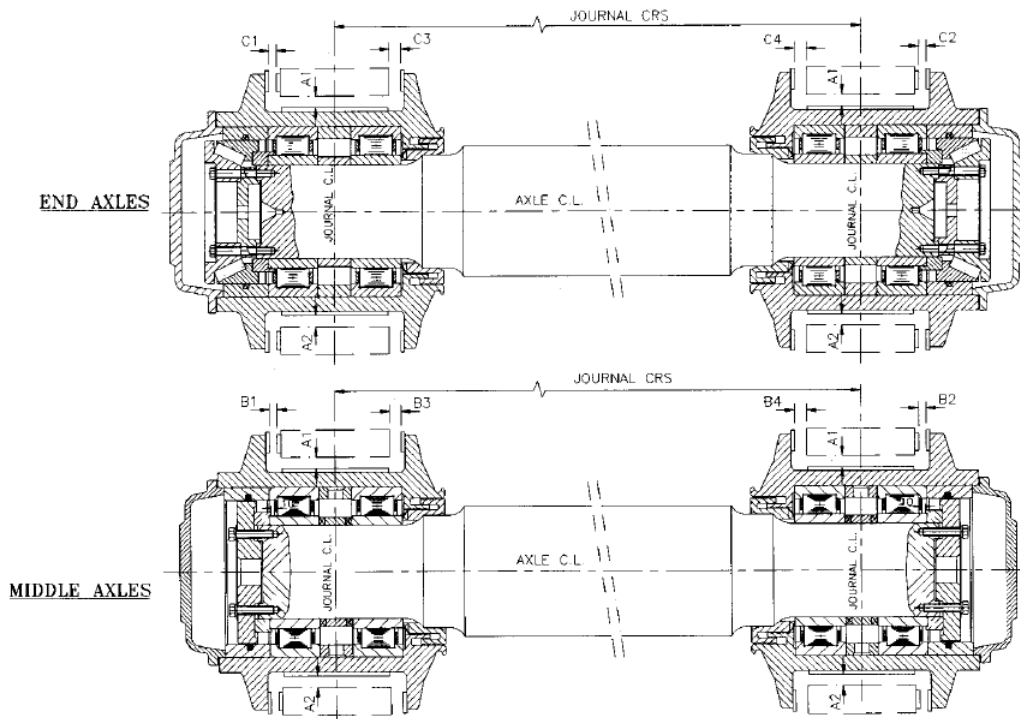


# LATERAL CLEARANCE FOR EMD LOCOMOTIVES

Lateral Clearances for EMD locomotives



SCHEMATIC DIAGRAM SHOWING LATERAL AND LONGITUDINAL CLEARANCES OF LOCOMOTIVES WITH AXLE BOXES HAVING CONICAL THRUST PADS



SKETCH NO. 2009-30

**CLEARANCES FOR DIESEL LOCOMOTIVES**  
(All Dimensions are in mm)

Loco	New Wheel diameter	Root wear limit	Flange Wear	Total tread wear	Lateral & Longitudinal clearances			Difference in Wheel diameter		
					Measurement	New Condition	Service Limit	Location	Diff. In Dia.	Permissible limit
WDM2 (Co-Co Trimount Bogies without conical thrust pad)	1092+5/-0.0	6.0	3.0	6.5	As per MP.MI 71/78			As per MP.IB.BD- 01.01.05 dt. 01/02/05		
					Lateral clearances End Axle (C1+C2) per axle	6.0	12.0	On same Axle	0.5	-
					Lateral clearances Middle Axle (B1+B2) per axle	25.0	31.0	On same Bogie	2.0	8.0
					Longitudinal Clearances for Middle & End axles (A1+A2) per axle box	0.363-1.9	5.0	On same Loco	15.0	25.0
WDM3A & WDM3C (Co-Co Trimount Bogies with conical thrust pad)	1092+5/-0.0	6.0	3.0	6.5	As per MP.IB.VL-03.04.06 (Rev.01) dt.28.11.08			As per MP.IB.BD- 01.01.05 dt. 01/02/05		
					Lateral clearances End Axle (C1+C2+C3+C4) per axle	22.4-24.8	30.0	On same Axle	0.5	-
					Lateral clearances Middle Axle (B1+B2+B3+B4) per axle	4.0-6.6	12.0	On same Bogie	2.0	8.0
					Longitudinal Clearances for Middle & End axles (A1+A2) per axle box	0.4-1.9	3.5	On same Loco	15.0	25.0

Loco	New Wheel diameter	Root wear limit	Flange Wear	Total tread wear	Lateral & Longitudinal clearances			Difference in Wheel diameter		
					Measurement	New Condition	Service Limit	Location	Diff. In Dia.	Permissible limit
WDG3A/ WDM3D	1092+5/-0.0	6.0	3.0	6.5	As per MP.IB.VL-01.02.06 (Rev.0.00) dated 27.01.0-2006			As per MI. VL-02/96		
					Lateral clearances End Axle (C1+C2+C3+C4) per axle	22.0-25.2	30.7	On same Axle	0.5	2.5
					Lateral clearances Middle Axle (B1+B2+B3+B4) per axle	2.4-6.0	11.5	On same Bogie	2.0	8.0
					Longitudinal Clearances for Middle & End axles (A1+A2) per axle box	2.0-4.0 (SV.WDG2 dt. 19.02.99)	6.0	On same Loco	15.0	25.0
WDP1	1092+5/-0.0	6.0	3.0	6.5	As per MP.IB.VL-05.06.06 (Rev.0.00) dated 03.08.2006			As per DLW MI – CHS-009		
					Lateral clearances All Axles (C1+C2+C3+C4) per axle	22.0-25.0	31.0	On same Axle	0.5	1.5
					Longitudinal Clearances for Middle & End axles (A1+A2) per axle box	0.6-2.2	5.0	On same Bogie	2.0	5.0
							On same Loco	15	20	
WDP3A	1092+5/-0.0	6.0	3.0	6.5	As per MI. VL-04/98					
					Lateral clearances Middle Axle (C1+C2) per axle box	1.2-3.0	6.0	On same Axle	0.5	2.5
					Longitudinal Clearances (Middle axle) (A1+A2) per axle box	2.0-4.0	6.0	On same Bogie	2.0	8.0
							On same Loco	15	25	

## CLEARANCES FOR ELECTRIC LOCOMOTIVES

(All Dimensions are in mm)

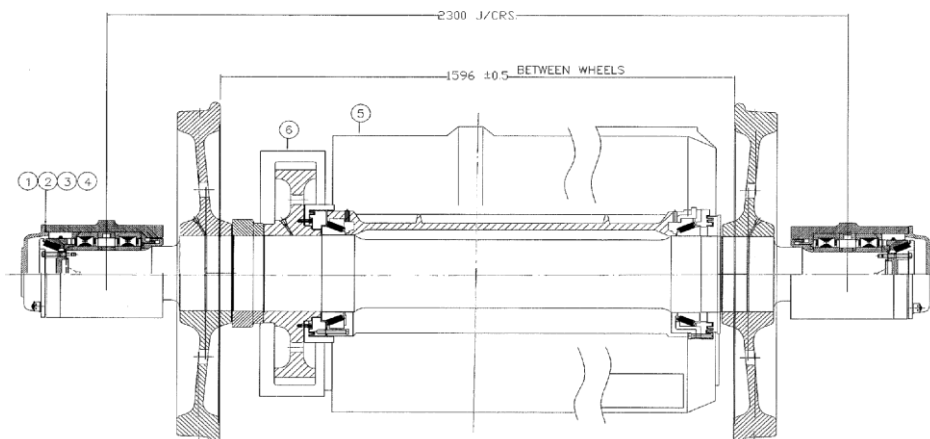
Loco	New Wheel Diameter	Wear Limits			Axle Box Clearances				Difference in Wheel Diameter		
		Root	Flange	Tread	Measurements	New Condition		Service Limit	Location	As Turned/ New	Service Limit
						Min.	Max.				
WAM4	1092 (+ 5/-0)	6	3	6.5	<b>As per MP.IB.VL - 03.04.06 (Rev0.0) dated 28.11.08</b>				<b>As per MP.MI 71/ 78 Jul 92</b>		
					Lateral Clearances End Axle per axle (C1+C2+C3+C4)	22.4	24.8	30.0	Same Axle	0.5	2.5
					Lateral Clearances Middle Axle per axle (B1+B2+B3+B4)	4.0	6.6	12.0	Same Bogie	2.0	8.0
					Longitudinal Clearances Middle & End Axle per axle box	0.4	1.9	3.5	Same loco	15.0	25.0
WAP1/ WAP4	1092 (+ 5/-0)	4	2.5	6.5	<b>As per MP.IB.VL.04.05.06 (Rev.00) dt. 03.08.06</b>				<b>No. SD. WA1 dated 10.10.2003</b>		
					Lateral Clearances End Axle per axle (C1+C2+C3+C4)	15.4	18.2	24.0	Same Axle	0.5	1.5
					Lateral Clearances Middle Axle per axle (B1+B2+B3+B4)	3.6	7.2	12.0	Same Bogie	2.0	5.0
					Longitudinal Clearances Middle & End Axle per axle box	0.4	2.0	4.0	Same Loco	15.0	20.0

Loco	New Wheel diameter	Root wear limit	Flange Wear	Total tread wear	Lateral & Longitudinal clearances					Difference in Wheel diameter		
					Measurement	New Condition		Service Limit		Location	Diff. In Dia.	Permissible limit
WDG4	1092+5/-0.0	6.0	3.0	6.5	IB No. MP.IB.VL-03.28.08 (Rev 00) dated 30.09.08					EMD Maintenance Instruction no. 1517 (Rev. A)		
					For End Axle Lateral clearances between thrust pad & bearing adapter (A1+A2) per axle	Nominal Inch/ mm	Min. Inch/ mm	Max Inch/ mm	Service limit Inch/ mm	On same Axle	0.5	1.6
						0.38/ 9.6	0.3/ 7.6	0.5/ 12.7	0.62/ 15.7			
					For Middle Axle Lateral clearances between thrust pad & bearing adapter (B1+B2) per axle	0.62/ 15.7	0.54/ 13.7	0.74/ 18.8	1.0/ 25.4	On same Bogie	3.2	6.4
On same Loco	14.2	31.8										
WDP4	1092+5/-0.0	6.0	3.0	6.5	IB No. MP.IB.VL-03.28.08 (Rev 00) dated 30.09.08					EMD Maintenance Instruction no. 1517 (Rev. A)		
					For End Axle Lateral clearances between thrust pad & bearing adapter (A1+A2) per axle	Nominal Inch/ mm	Min. Inch/ mm	Max Inch/ mm	Service limit Inch/ mm	On same Axle	0.5	1.6
						0.24/ 6.1	0.16/ 4.1	0.36/ 9.1	0.5/ 12.7			
					For Middle Axle Lateral clearances between thrust pad & bearing adapter (B1+B2) per axle	0.62/ 15.7	0.54/ 13.7	0.74/ 18.8	1.0/ 25.4	On same Bogie	3.2	6.4
On same Loco	14.2	31.8										

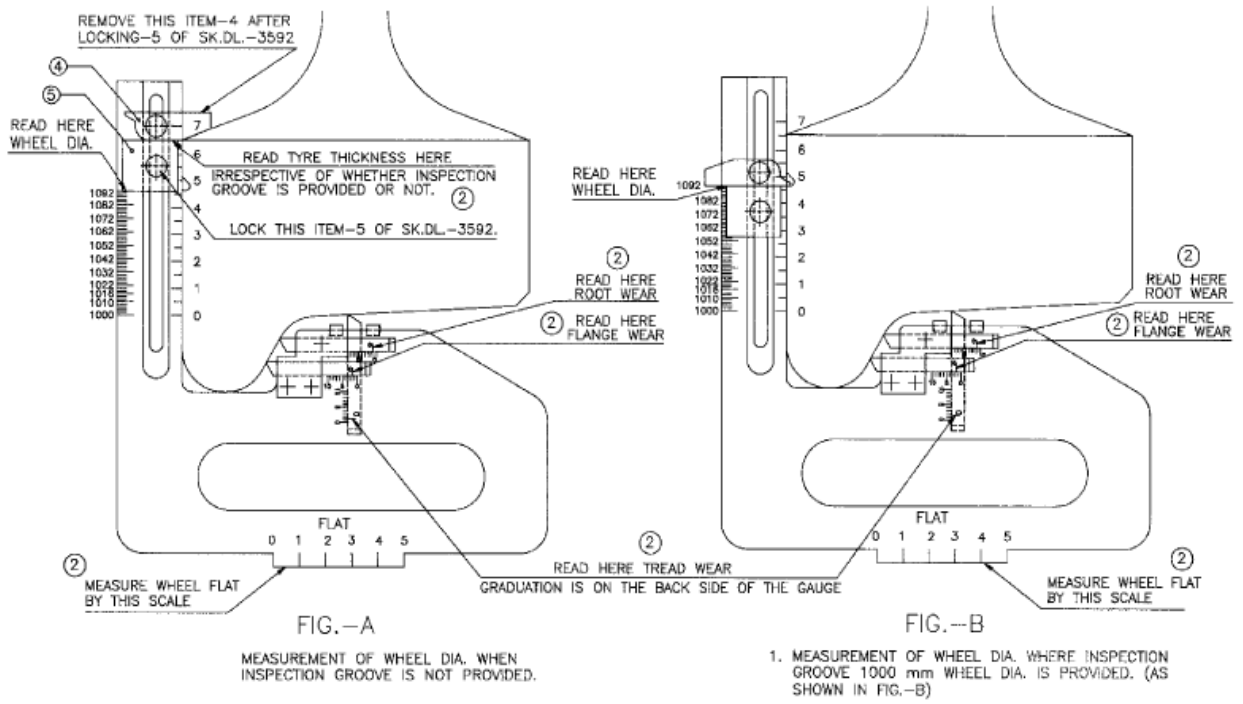
## WHEEL DIAMETER

Sri.	Type of locomotive	Condemning wheel Diameter limits	
		Existing	Revised
1.	Passenger Service Locos	1016 mm	1012 mm
2.	Goods Service Locos	1016 mm	1008 mm

## WHEEL GAUGE ( DISTANCE )



# WHEEL PROFILE GAUGE



**NOTE:**  
 ACTUAL DIA. OF WHEEL = DIA. MEASURED BY GAUGE - TWICE OF TREAD WEAR.

METHOD OF MEASUREMENT OF WHEEL DIA.



3. (a) Damage to the loco (brief description)  
 (b) Cost of damage to the loco (in Rs.)

4. Check and record the observations as follows:

- (a) Position of control handles, cut out cocks etc. after the accident  
 (b) Functioning of brake synchronizing valve – Whether working or not  
 (c) Position of brake blocks after the accident – whether applied or not  
 (d) Condition of cattle guard  
 (e) Any sign of seizure of roller bearing in axle box  
 (f) Comments if any coil spring is broken or displaced  
 (g) Any other observation in respect to mechanical defects of the locomotive, which might have any bearing on safe running of loco.

To be jointly signed by

Supervisor (Loco)

Supervisor (Traffic)

Supervisor (P.Way)

5. Measurement for wheels for all classes of locomotives.

Sl.No.	Description	Observed value (In mm)			Remarks
			Left	Right	
1.	Diameter of wheel at tread				Wheel size below condemning limit is relevant only in case of wheel breakage due to lesser rim thickness
		1			
		2			
		3			
		4			
		5			
		6			
2.	Wheel flange thickness		Left	Right	Information is normally relevant in case of two road case.
		1			
		2			
		3			
		4			
		5			
		6			
3.	Wheel root wear		Left	Right	
		1			
		2			
		3			
		4			
		5			
		6			

**CORRECTION MEMO No.3**

Substitute the following for item (B) and (C) appearing under Annexure to Chapter VIII (Page 144).

**(B) INFORMATION TO BE FURNISHED BY LOCO DEPARTMENT**

Locomotive (Diesel and Electric): Proforma to be filled in case of Derailment when loco is involved in accident.

1. Basic Information:

- (a) Date of Accident
- (b) Train number
- (c) Loco class
- (d) Loco No.
- (e) Loco manufacture year and Place
- (f) Base shed of loco
- (g) Date and place last POH
- (h) Date and place of last major Inspection
- (i) Date and Place of last schedule inspection
- (j) Whether any schedules are overdue.

2. Give brief particulars of the safety items not provided or provided but missing/not working. Whether loco is provided with

Safety fillings	Provided	Working
Headlight		
Speedometre		
Speed recorder		
Flasher light		
Horn		
Brake system.		

Particulars of electrical protection (for electric loco in case of fire only)

Relay	Working/Not working/Isolated
Earth Fault in Auxiliary circuit (QOA)	
Over current in power circuit (QLM)	
Over current in Rectifier Block (QRSI)	
Earth fault in circuit (QOP)	
Time lag relay(Q44)	

Proforma for measurement of Electric and Diesel Locomotive after accident

(Locomotives which are not mentioned in this proforma may be measured in similar manner)

Sl.No.	Description		Observed value (mm)	Remarks
1.	Buffer heights			All measurements shall be taken on a level tangent incanted track . This measurement is required to be taken only in case of trailing stock is with buffers.
2.	Lateral clearances	End axles (1,3,4 & 6)		Applicable for WDM2 WDM2c, WDG4, WDS6, WAM4, WCG2, YDM4, WCAM 1 WCAM2, YDM4A, WDG2, WCAM3, WAG5, WAG9, WAG7, WAP1, WCAG1 and WAP4 locomotives only
		Middle Axle (2&5)		Applicable for WDM2 WDM2c, WDG4, WDS6, WAM4, WCG2, YDM4, WCAM 1 WCAM2, YDM4A, WDG2, WCAM3, WAG5, WAG9, WAG7, WAP4, WDP2, WAP3, WAP6, WAP1 and WCAG1 locomotives only
3.	Lateral clearances	End axles (1,2,3 & 4)		Applicable for WDP1 and WAP 5 locomotives only
4.	Longitudinal clearance between axle box and pedestal liner (for all axles)			Applicable for WDM2 WDM2c, WDM2c, WDM3, WDS6, WAM4 WDM 4, WCG2, WAG5, YDM4A, WDG2, WCAM3, WAG7, WAP4, WCAM3, WAG7, WAP4, WDP 1, WCAG1 and WAP1 WCAG1 and WAP1 locomotives only
5.	Longitudinal clearance between axle box and pedestal liner (for middle axles)			Applicable for WAP3, WAP6, WDP2 locomotives only.
6.	Height of Rail guard from Rail level.			

To be jointly signed by

Supervisor (Loco)

Supervisor (Traffic)

Supervisor (P.Way)

4.	Treadwear	Left	Right	Tread wear should be measured from tread at 63.5 mm from wheel gauge face from the back face of flange) in BG and at 57 mm from wheel gauge face (from the back face of flange) in MG.
		1		
		2		
		3		
		4		
		5		
		6		
5.	UST of axle	Axle	Observation	Information is relevant in case of axle breakage
	Give the date of last UST test done.	1		
		2		
		3		
		4		
		5		
		6		

**NOTE:**

1. Wheel number one is the outer end axle of truck under the short hood and wheel count increases towards the long hood on 'diesel loco, whereas for Electric Loco, wheel number one is the outer end axle under Cab - 1 (Cab - 1 is that side of the loco which has the compressors and cab - 2 is that side of the loco which has the ARNO converter) and wheel count increases towards the Cab-2.
2. The measurements of wheels are to be done using wheel gauges to RDSO drawing No.,SK DL 3592 for all BG locomotives except WAP 5 locos. For WAP 5 locos RDSO's drawing No. SKDL 4446 and SKDL 4447 may be followed.
3. All measurements are to be taken in shed on a level un-canted track.
4. Service limits given in the maintenance manual are for good maintenance practice and these are not safety items.

Sl.No.	Description	Observed value (In mm)	Remarks
6.	Wheel Gauge For checking wheel gauge average of three measurements at equal spacing on the inner periphery of the two wheels on the same side is to be recorded.	1	All measurement shall be taken on a level tangent un canted track. These measurements are for unloaded wheels should be taken in workshop after dismantling information is relevant in case of wheel disc. Shifting/ bent axle only. For safety similar limits as applicable for track gauge are relevant for wheel gauge also.
		2	
		3	
		4	
		5	
		6	

To be jointly signed by

Supervisor (Loco)

Supervisor (Traffic)

Supervisor (P.Way)