



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



No. SV. FIAT Spring

Date: 19.02.2020

Principal Chief Mechanical Engineer,

1. Northern Railway, Baroda House, New Delhi-110 001
2. Western Railway, Churchgate, Mumbai-400020
3. Central Railway, CSTM, Mumbai - 400 001
4. Eastern Railway, Fairly Place, Kolkata- 700 001
5. Southern Railway, Park Town, Chennai - 600 003
6. North Frontier Railway, Maligaon, Guwahati- 781 001
7. North Eastern Railway, Gorakhpur-273 001
8. South Eastern Railway, Garden Reach, Kolkata-700 043
9. South Central Railway, Secunderabad-500 071
10. West Central Railway, Jabalpur-482 001
11. South East Central Railway, Bilaspur-495 004
12. South Western Railway, Hubli-580023
13. East Coast Railway, Railway Complex, Bhubaneshwar-751 023
14. East Central Railway, Hajipur-844 101
15. North Western Railway, Jaipur-302 006
16. North Central Railway, Allahabad-211 001
17. Konkan Railway Corporation Ltd., Corporate Office, Belapur Bhawan, Navi Mumbai -400 614.

Sub: Reduction of primary spring failures in LHB coaches.

- Ref:** i) RCF's CAI No. RCF/MECH/LHB/016 dated 21-06-2019 .
ii) This office letter of even number dated 28.06.2019. (Copy enclosed).
iii) This office letter of even number dated 16.12.2019 (Copy enclosed).
iv) NWR's letter No.-M-1/C&W/POH-NPOH/JU/X dated 25.01.2020.
v) RCF letter No. MD44121 dated 14.01.2020.

Vide letters under reference (i), (ii) & (iii), necessary instructions to arrest failures of springs in primary suspension of LHB AC coaches have already been issued. For further clarity, details of primary suspension (Drawings of outer & inner springs and thickness of disc/compensation ring) of LHB AC coaches are enclosed as Annexure-I.

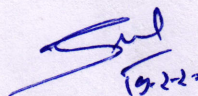
Jodhpur Depot/NWR vide letter under reference (iv) & AGC Division/NCR have reported that no disc/ compensating ring (between bottom primary rubber bump stop & bottom centering disc) are being provided by PUs in primary suspension of LHB coaches. As thickness of disc/compensating rings in drawings of primary suspension of LHB Non AC coaches has not been specified, optimum thickness of disc/compensating ring for LHB Non AC coaches has been specified in Annexure-II. Details of primary suspension (Drawings of outer & inner springs and thickness of disc/compensation ring) of LHB Non AC coaches are enclosed as Annexure II.

It is requested to ensure that suspension elements (Primary outer springs, primary spring & disc/compensating ring) are provided in primary suspension of LHB AC

Coaches & LHB Non-AC Coaches as specified in Annexure-I & II, respectively, during manufacturing, workshop attention & sick line attention.

Compliance from Zonal Railways in this regard is requested in format enclosed as Annexure – III. PUs are also requested to submit compliance.

DA: As above.



(Shobhit Pratap Singh)
Joint Director/VDG/Carriage
for Executive Director/Std./Carriage

Copy to:

1. **PCME, RCF, Kapoorthala, Punjab -144 602.**
2. **PCME, ICF, Chennai – 600 038.**
3. **PCME, MCF, RaiBareli, 229120**
4. **EDME (Chg.), Railway Board, Rail Bhawan, New Delhi-110 001. - for kind information please.**

For corrections in the drawings
please.

Primary suspension of LHB AC Coaches:

Bogie frame having top metal primary stop of 242.5 mm nominal height (from bogie frame bottom in spring pot) is provided in LHB AC coaches.

S.N.	Description of coach	Transportation code	Primary outer spring (Drg. Number)	Primary inner spring (Drg. Number)	Thickness of disc/compensating ring between Primary rubber bump stop & bottom centring disc (in mm)
1.	LHB AC Chair car with coil spring/Air Spring in secondary suspension	LWSCZAC	1267411	1267412	04
2.	LHB Executive Chair car with coil spring/Air Spring in secondary suspension	LWFCZAC	1267411	1267412	04
3.	LHB First AC coach with coil spring/Air Spring in secondary suspension	LWFAC	1267411	1267412	04
4.	#LHB AC first cum two tier coach with coil spring in secondary suspension	LWFCWAC	1267411	1267412	04
5.	#LHB AC two tier coach with coil spring in secondary suspension	LWACCW	1267411	1267412	04
6.	LHB AC pantry car with coil spring/Air Spring in secondary suspension	LWCBAC	1267411	1267412	06
7.	#LHB AC first cum two tier coach with Air Spring in secondary suspension	LWFCWACA	1267411	1277143	08
8.	#LHB AC two tier coach with Air spring in secondary suspension	LWACCW	1267411	1277143	08
9.	LHB AC Double Decker coach with coil spring/Air spring in secondary suspension	LWCZDAC	1277142	1277143	08
10.	LHB AC power car (with two on-board DA set) with coil spring/Air spring in secondary suspension.	LWLRRM	1277142	1277143	08
11.	*LHB AC three tier coach with coil spring/Air spring in secondary suspension	LWACCN	1277142	1277143	12

Primary suspensions of LHB AC two tier coaches & LHB AC first cum two tier coaches change based on type of secondary suspension (Air springs/coil springs) provided.

* Till material is not available for provision of suspension elements in primary suspension of LWACCN coaches as mentioned above, earlier instructions issued vide letters under reference (i) & (ii) will be followed for provision of primary outer spring as per drawing no1267411, primary inner spring as per drawing no.1277143 & 08 mm thick disc/compensating ring shall be ensured.

Primary suspension of LHB Non-AC Coaches:**Table 'A' With 140 KN Air Spring in Secondary suspension**

Bogie frame having top metal primary stop of 227.5 mm nominal height (from bogie frame bottom in spring pot) is provided in following LHB Non-AC coaches with Air springs in secondary suspension. Height of top metal primary stop was reduced by 15 mm (from 242.5 mm to 227.5 mm).

S.N.	Description of coach	Transportation code	Primary outer spring (Drg. Number)	Primary inner spring (Drg. Number)	Thickness of disc/ compensating ring between Primary rubber bump stop & bottom centring disc (in mm)
1.	LHB Non-AC unreserved second class coach	LS-5	LG01100	LG01101	08
2.	LHB Non-AC Three tier coach	LWSCNA	LG01100	LG01101	08
3.	LHB Non-AC unreserved second class coach with vestibule	LWS	LG01100	LG01101	08
4.	LHB Non-AC DSLR coach with underslung power pack & compartments for Divyangjan, second class passenger, Guard & Luggage	LDSLRA	LG01100	LG01101	08
5.	LHB Non-AC Chair car	LWSCZA	LG01100	LG01101	12
6.	LHB Non-AC SLRD coach without power pack	LSLRD	LG01100	LG01101	12
7.	LHB Non-AC power car with single onboard DG set and compartment for Divyangjan, luggage and Guard.	LWLRRMD	LG01100	LG01101	12
8.	LHB parcel van	LVPH	LG01100	LG01101	12

Table 'B' With Coil Springs in Secondary suspension

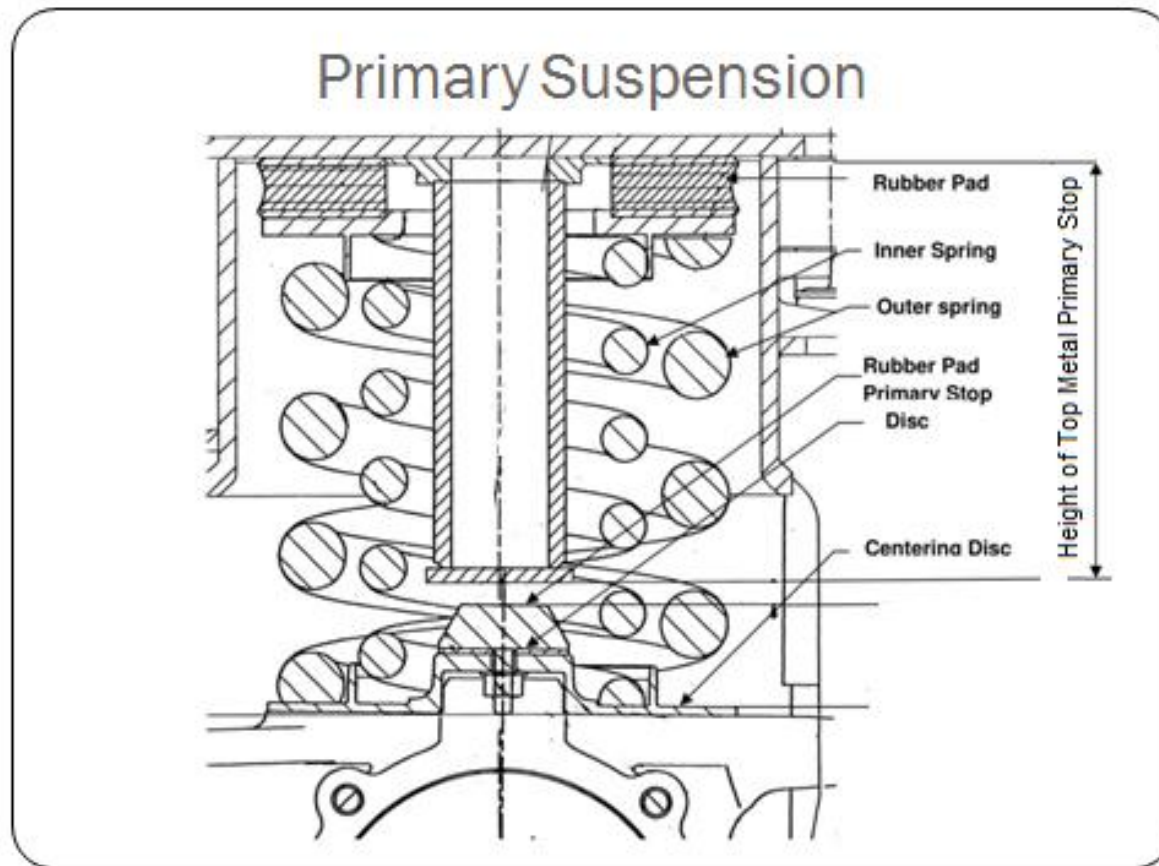
Bogie frame having top metal primary stop of 242.5 mm nominal height (from bogie frame bottom in spring pot) is provided in following LHB Non-AC coaches with Coil springs in secondary suspension:

SN	Description of coach	Transportation code	Primary outer spring (Drg. Number)	Primary inner spring (Drg. Number)	Thickness of disc/ compensating ring between Primary rubber bump stop & bottom centring disc (in mm)
1.	LHB Non-AC unreserved second class coach	LS-3	LG01100	LG01101	04
2.	LHB Non-AC three tier coach	LWSCN 1	LG01100	LG01101	04

Table 'C' With 120KN Air Springs in Secondary suspension of Bogie frame

Bogie frame having top metal primary stop of 242.5 mm nominal height (from bogie frame bottom in spring pot) is provided in following coach:

SN	Description of coach	Transportation code	Primary outer spring (Drg. Number)	Primary inner spring (Drg. Number)	Thickness of disc/ compensating ring between Primary rubber bump stop & bottom centring disc (in mm)
1.	LHB power car with underslung power pack & compartments for Guard & Luggage only	LWLRRMU	1267411	1277143	04



FORMAT: FOR COMPLIANCE FROM ZONAL RAILWAYSA) COMPLIANCE FOR LHB AC COACHES:

S. N.	Type of coach	Transportation Code	Population of Coach	No. of coaches checked & ensured with provision mentioned in Annexure - I	No. of coaches remained to be checked
1.	LHB AC Chair car with coil spring/Air Spring in secondary suspension	LWSCZAC			
2.	LHB Executive Chair car with coil spring/Air Spring in secondary suspension	LWFCZAC			
3.	LHB First AC coach with coil spring/Air Spring in secondary suspension	LWFAC			
4.	#LHB AC first cum two tier coach with coil spring in secondary suspension	LWFCWAC			
5.	#LHB AC two tier coach with coil spring in secondary suspension	LWACCW			
6.	LHB AC pantry car with coil spring/Air Spring in secondary suspension	LWCBAC			
7.	#LHB AC first cum two tier coach with Air Spring in secondary suspension	LWFCWACA			
8.	#LHB AC two tier coach with Air spring in secondary suspension	LWACCW			
9.	LHB AC Double Decker coach with coil spring/Air spring in secondary suspension	LWCZDAC			
10.	LHB AC power car (with two on-board DA set) with coil spring/Air spring in secondary suspension.	LWLRRM			
11.	*LHB AC three tier coach with coil spring/Air spring in secondary suspension	LWACCN			

Primary suspensions of LHB AC two tier coaches & LHB AC first cum two tier coaches change based on type of secondary suspension (Air springs/coil springs) provided.

* Till material is not available for provision of suspension elements in primary suspension of LWACCN coaches as mentioned above, earlier instructions issued vide letters under reference (i) & (ii) will be followed for provision of primary outer spring as per drawing no1267411, primary inner spring as per drawing no.1277143 & 08 mm thick disc/compensating ring shall be ensured.

B) COMPLIANCE FOR LHB NON-AC COACHES:**Table 'A' With 140 KN Air Spring in Secondary suspension**

S. N.	Type of coach	Transportation Code	Population of Coach	No. of coaches checked & ensured with provision mentioned in Annexure - II	No. of coaches remained to be checked
1.	LHB Non-AC unreserved second class coach	LS-5			
2.	LHB Non-AC Three tier coach	LWSCNA			
3.	LHB Non-AC unreserved second class coach with vestibule	LWS			
4.	LHB Non-AC DSLR coach with underslung power pack & compartments for Divyangjan, second class passenger, Guard & Luggage	LDSLRA			
5.	LHB Non-AC Chair car	LWSCZA			
6.	LHB Non-AC SLRD coach without power pack	LSLRD			
7.	LHB Non-AC power car with single onboard DG set and compartment for Divyangjan, luggage and Guard.	LWLRRMD			
8.	LHB parcel van	LVPH			

Table 'B' With Coil Springs in Secondary suspension

S. N.	Type of coach	Transportation Code	Population of Coach	No. of coaches checked & ensured with provision mentioned in Annexure - II	No. of coaches remained to be checked
1.	LHB Non-AC unreserved second class coach	LS-3			
2.	LHB Non-AC three tier coach	LWSCN 1			

Table 'C' With 120KN Air Springs in Secondary suspension of Bogie frame

S. N.	Type of coach	Transportation Code	Population of Coach	No. of coaches checked & ensured with provision mentioned in Annexure - II	No. of coaches remained to be checked
1.	LHB power car with underslung power pack & compartments for Guard & Luggage only	LWLRRMU			



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DID (0522) 2465310



No. SV.FIAT.Spring

Date: 16.12.2019

Principal Chief Mechanical Engineers,

Central Railway, CSTM, Mumbai 400001
Eastern Railway, Fairlie Place, Kolkata - 700 001
Northern Railway, Baroda House, New Delhi - 110 001
Southern Railway, Park Town, Chennai - 600 003
South Central Railway, Rail Nilayam, Secunderabad - 500 071
South Eastern Railway, Garden Reach, Kolkata - 700 043
North Eastern Railway, Gorakhpur - 273 001
Northeast Frontier Railway, Maligaon, Guwahati - 781 011
Western Railway, Churchgate, Mumbai - 400 020
East Central Railway, Hajipur - 844 101
East Coast Railway, Chandrasekharapur, Bhubaneswar - 751 016
North Central Railway, Allahabad - 211 001
North Western Railway, Jaipur - 302 006
South Western Railway, Hubli - 580 023
West Central Railway, Jabalpur - 482 008
South East Central Railway, Bilaspur - 495 004
Konkan Railway Corp. Ltd. Corporate office Belapur Bhawan Nawi Mumbai-400 614
Integral Coach Factory, Chennai - 600 038
Modern Coach Factory, Raebareilly-229120

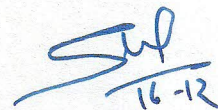
Sub:- Breakage of primary springs in LHB coaches

Ref:- i. RCF letter No MD 44121 dated 06-08-19.
ii. RDSO letter no SV.FIAT.Spring dated 28.06.2019 & RCF
CAI/RCF/MECH/LHB/016 dated 21.06.2019

1. In analysis of failures of coil springs in primary suspension of LHB AC coaches, it has been observed that failure rate of primary springs per hundred population of coaches is relatively higher in LWACCN coaches. Accordingly, CAI for providing compensating rings of specified thickness below primary bump stop in primary suspension of LHB AC coaches was issued vide letter under ref (ii).
2. Further, it is observed that LWACCN coaches are provided with primary outer spring (free height 324.5 mm) and primary inner spring (free height 337 mm). Due to difference of free heights between inner and outer spring, inner spring leads the nest & compresses first, taking more load in the suspension. Failure rate of inner spring in LWACCN coach is found to be highest in LHB coaches.
3. To balance spring nest of primary suspension of LWACCN coach, a study has been conducted by RDSO & RCF. In this study, it has been found that provision of 12 mm thick compensating ring below primary rubber bump stop with outer spring (drawing no. 1277142) and inner spring (drawing no. 1277143) in primary suspension of LWACCN coaches results in equitable load distribution between inner and outer

springs and significant increase in factor of safety of springs (upto 20%). There is no effect on load-deflection characteristics of primary suspension (within permitted tolerance range) & dynamic behavior of LWACCN coaches in dynamic simulation studies with this arrangement. Similar suspension arrangement is already in use in LHB Double Decker coaches running on IR network, which have similar tare weight as LWACCN coach & cover gross weight of LWACCN coach within its designed maximum weight, and also do not have significant failure rate of primary springs. RCF has already turned out 2 LWACCN coaches with this provision & no adverse report regarding primary suspension in these coaches has been received over the last 5 months.

4. Minimizing breakage of primary springs in LWACCN coaches is an area requiring immediate attention. Breakage of primary springs also results in higher stresses in other bogie components such as dampers, bearings etc. The issue was also deliberated in detail at 19th CMG meeting on 22nd - 24th Nov '19. In view of above, it has been decided that 12 mm thick compensating ring below primary rubber bump stop with outer spring as per drawing no. 1277142 & inner spring as per drawing no. 1277143 in primary suspension of LWACCN coaches shall be provided during manufacturing, shop schedules & sick line attentions. For LWACCN coaches only, these instructions supersede instructions issued vide letter under ref (ii). For rest of LHB AC coaches, instructions issued vide letter under ref (ii) need to be followed. However, instructions issued vide letter under ref (ii) may be followed for LWACCN coaches until material for provision of 12 mm thick compensating ring below primary rubber bump stop with outer spring as per drawing no. 1277142 & inner spring as per drawing no. 1277143 in LWACCN coaches is implemented.



(Shobhit Pratap Singh)
Joint Director (VDG)/Carriage

Copy

EDME/Coaching, Railway Board, Rail Bhawan, New Delhi – 110 001

PCME / RCF/Kapurthala, Punjab-144602 For kind information & for necessary changes in drawings of primary suspension of LWACCN coaches.



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Government of India-Ministry of Railways
Research Designs & Standards Organisation
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No. SV. FIAT Spring

Date: 28.06.2019

Principal Chief Mechanical Engineer,

1. Northern Railway, Baroda House, New Delhi-110 001.
2. Western Railway, Churchgate, Mumbai-400020.
3. Central Railway, CSTM, Mumbai - 400 001.
4. Eastern Railway, Fairly Place, Kolkata- 700 001.
5. Southern Railway, Park Town, Chennai - 600 003
6. North East Frontier Railway, Maligaon, Guwahati- 781 011.
7. North Eastern Railway, Gorakhpur-273 001.
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9. South Central Railway, Secunderabad-500 071.
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11. South East Central Railway, Bilaspur- 495 004.
12. South Western Railway, Hubli- 580023.
13. East Coast Railway, Railway Complex, Bhubaneshwar- 751 023.
14. East Central Railway, Hazipur-844 101.
15. North Western Railway, Jaipur-302 006.
16. North Central Railway, Allahabad-211 001.
17. Konkan Railway Corporation Ltd., Corporate office, BelapurBhawan, Navi Mumbai – 400 614
18. Integral Coach Factory, Chennai- 600 038.
19. Rail Coach Factory, Hussainpur, Kapurthala, Punjab – 144 602.
20. Modern Coach Factory, Rae Bareilly – 229120.


Sub: Revised drawings of primary suspension arrangement of LHB coaches.

In reference to above, a comprehensive study of primary suspension arrangement of LHB coaches was done based on data received from CR and WR. It has been found that failure rate is relatively higher in LWACCN, LWLRRM, LS & LWSCN coaches.

Based on the study, primary suspension of LHB coaches has been reviewed for adequacy in consultation with RCF/KXH. The drawings of primary suspension of LHB coaches have been modified by specifying thickness of compensating ring (disc). In this regard, RCF has circulated the CAI No. CAI/RCF/MECH/LHB/016 vide their letter No. MD21561 dated 21.06.2019 (copy enclosed).

It is requested that necessary action may be initiated for implementation of RCF CAI No. CAI/RCF/MECH/LHB/016 dated 21.06.2019 in order to avoid cases of spring failures in the field.

DA: As above.


(Shobhit Pratap Singh)
Jt. Director/VDG./Carriage
for Executive Director/Carriage



RAIL COACH FACTORY, KAPURTHALA
(Coach Alteration Instruction No. CAI/RCF/MECH/LHB/016)

MD21561

Date: 21.06.2019

Sub.: Revised drawings of Primary Suspension Arrangement of LHB coaches.

1. **CAI No. :** CAI/RCF/MECH/LHB/016
2. **Group:** FIAT Bogie primary suspension (Thickness of compensating ring specified)
3. **Description:** To use manadatory CR of specified thickness in primary suspension.
4. **Drawing No:**

#	Coach Type	Primary suspension drawing No. & alt
1	<ul style="list-style-type: none"> AC Chair Car, Exe. Chair Car, 1st class coach, Hot Buffet: with coil/air spring in secondary suspension AC-2T, and Composite (LWFCWAC) : with coil spring in secondary suspension 	1268732 alt 07R2
2	<ul style="list-style-type: none"> Power car & Double decker with coil/air spring in secondary suspension 	1272174 alt 06R1
3	<ul style="list-style-type: none"> AC-3T with coil/air spring in secondary suspension AC-2T & Composite coach (LWFCWAC) with air spring in secondary suspension 	LW01001 alt 'c'

3. **Modification:** Thickness of compensating ring has been specified and is to be provided below primary bump stop in LHB coaches as per above drawings.
4. **Reason for modification:** Spring breakage cases are being reported by Zonal Railways. A meeting was held at RDSO and it was decided jointly by RDSO and RCF to provide compensating rings of thickness specified in the above drawings below primary bump stop as safety factor and safety against stress amplitude during dynamic condition is improved.
5. **Coach type:** Above LHB coaches.
6. **Implementation stage:** SS-I/SS-II/SS-III/Sick Line.

Encls: As above

21/06/2019
 For General Manager (Mech.)

Copy to:

All Chief Mechanical Engineers of IR
All Chief workshop Engineers of IR



Chief Mechanical Engineers

1. Central Railway, Mumbai CST
2. W. Railway Churchgate, Mumbai
3. Northern Railway, Baroda House, New Delhi
4. N.E. Railway Gorakhpur
5. N.F. Railway Maligaon, Guwahati
6. S. Railway, Park Town, Chennai
7. S. C. Railway, Rail Nilayam, Secunderabad
8. S. E. Railway, Garden Reach, Calcutta
9. Eastern Railway, Fairlie Place, Calcutta
10. E. C. Railway, Bhubhaneswar
11. North Central Railway, Allahabad
12. North West Railway, Jaipur
13. S. E. Central Railway, Bilaspur
14. S.W. Railway, Hubli
15. West Central Railway, Jabalpur
16. East Central Railway, Hazipur

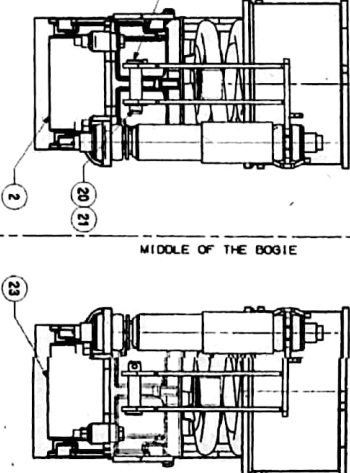
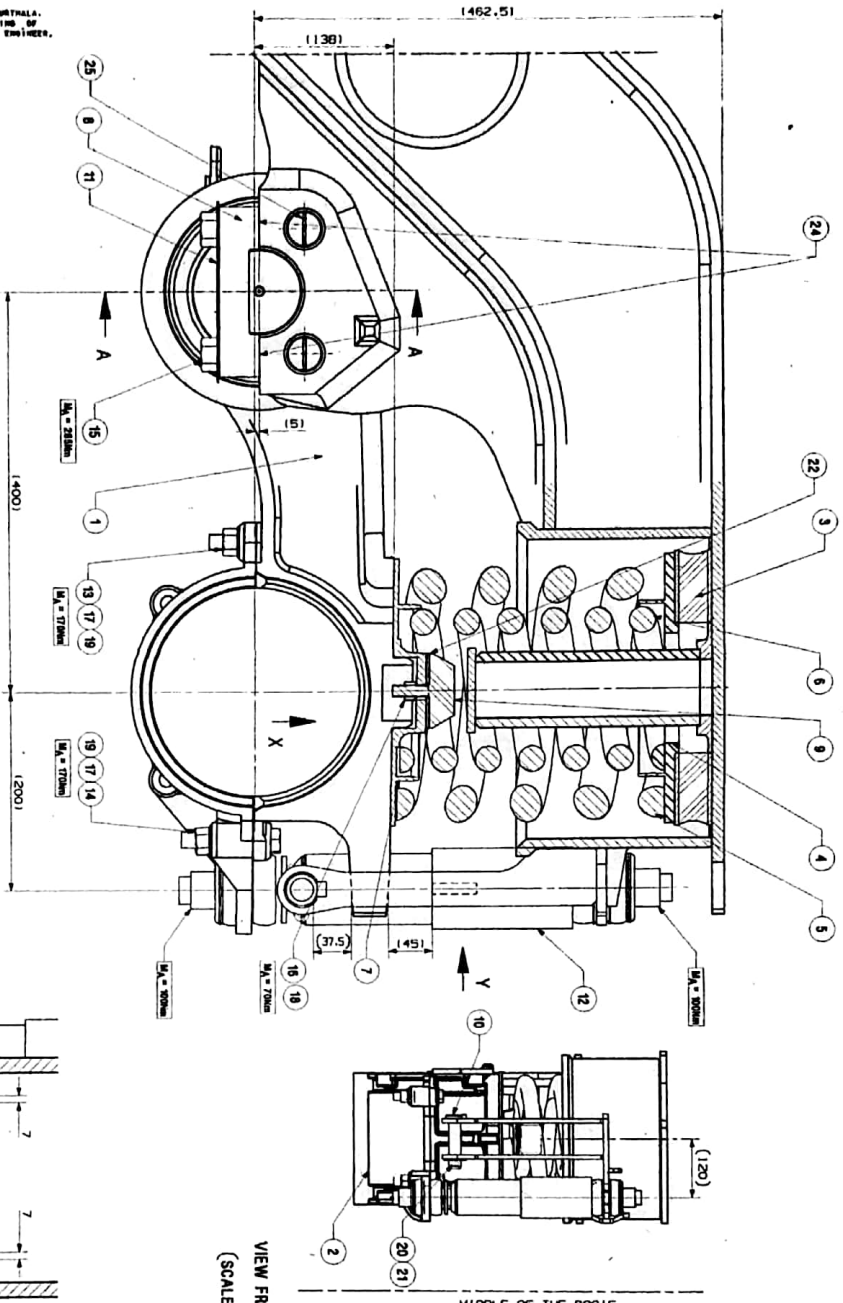
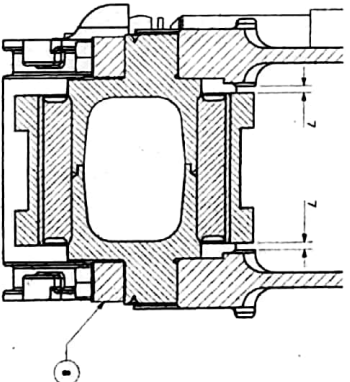
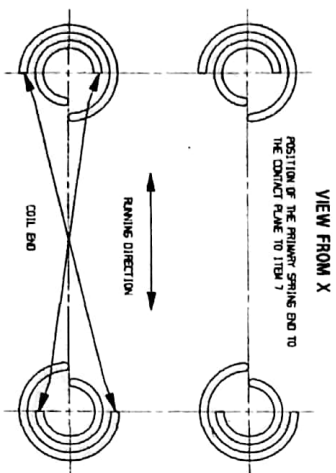
Chief Works Engineer

1. Central Railway, Matunga, Mumbai
2. Central Railway, Bhopal
3. Eastern Railway, Lilluah, Howrah
4. Northern Railway, Alambagh Lucknow
5. Northern Railway, Jagadhari
6. N. E. Railway, Gorakhpur
7. N. F. Railway, New Bongaigaon
8. S. Railway, Chennai
9. Southern Railway, Golden Rock. Trichy
10. Southern Railway, Ashokpuram, Mysore South
11. S. C. Railway Lallagudda, Secunderabad
12. S. C. Railway, Hubli
13. S. C. Railway, Tirupati
14. S. E. Railway, Mancheswar, Bhubhaneswar
15. S. E. Railway. Kharagpur
16. Western Railway, Lower Parel, Mumbai
17. Western Railway, Ajmer, Rajasthan
18. Eastern Railway, Kanchrupara, West Bengal

Copy to:

DG/Carriage, RDSO, Manak Nagar, Lucknow

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RAIL COACH FACTORY, KAPURTHALA.



NOTE:

COACH TYPE	PRODUCTION RING 1414 SPRING IN 30% REDUCED I	PRODUCTION RING 1414 SPRING IN 30% REDUCED I
LWFCZAC	4 mm	4 mm
LWFCZAC	4 mm	4 mm
LWFCAC	4 mm	4 mm
LWACDW	NA	4 mm
LWFCVAC	NA	4 mm
LWFCAC	5 mm	5 mm

DATE	NAME	REMARKS	REMARKS
07/27/2018	ALL	BILL OF MATERIAL UNPAID	DATE ON
07/04/2018	D-7	THICKNESS DERIVED FOR ITEM NO. 22	DATE ON
07/01/2018	D-18	NOTE MODIFIED	DATE ON

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
20	PLAT PIN 8X6	2		151	5465-65		SEE NOTE
19	WOUNDED WAGER 25	2		151	2013-05-10		COILING TO
18	FLUCH WAGER 118	2		151	2013-05-10		COILING TO
17	SPRING WAGER 012	2	114903	151	3003-1554		11EV-22
16	NIL METAL, PREWINDING TROUBLE	0		151	2013-05-10		COILING TO
15	NIL METAL, PREWINDING TROUBLE	2		151	2013-05-10		COILING TO
14	THE HEX NUT M12	2		151	2013-05-10		COILING TO
13	HEX HEAD BOLT 1/2X2100	8		151	2013-05-10		COILING TO
12	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
11	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
10	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
9	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
8	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
7	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
6	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
20	PLAT PIN 8X6	2		151	5465-65		SEE NOTE
19	WOUNDED WAGER 25	2		151	2013-05-10		COILING TO
18	FLUCH WAGER 118	2		151	2013-05-10		COILING TO
17	SPRING WAGER 012	2	114903	151	3003-1554		11EV-22
16	NIL METAL, PREWINDING TROUBLE	0		151	2013-05-10		COILING TO
15	NIL METAL, PREWINDING TROUBLE	2		151	2013-05-10		COILING TO
14	THE HEX NUT M12	2		151	2013-05-10		COILING TO
13	HEX HEAD BOLT 1/2X2100	8		151	2013-05-10		COILING TO
12	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
11	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
10	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
9	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
8	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
7	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
6	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
20	PLAT PIN 8X6	2		151	5465-65		SEE NOTE
19	WOUNDED WAGER 25	2		151	2013-05-10		COILING TO
18	FLUCH WAGER 118	2		151	2013-05-10		COILING TO
17	SPRING WAGER 012	2	114903	151	3003-1554		11EV-22
16	NIL METAL, PREWINDING TROUBLE	0		151	2013-05-10		COILING TO
15	NIL METAL, PREWINDING TROUBLE	2		151	2013-05-10		COILING TO
14	THE HEX NUT M12	2		151	2013-05-10		COILING TO
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12	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
11	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
10	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
9	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
8	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
7	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
6	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
20	PLAT PIN 8X6	2		151	5465-65		SEE NOTE
19	WOUNDED WAGER 25	2		151	2013-05-10		COILING TO
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16	NIL METAL, PREWINDING TROUBLE	0		151	2013-05-10		COILING TO
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10	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
9	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
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7	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
6	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
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10	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
9	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
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7	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
6	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO

25	LOOKING PIN	8	127220	151	5875-61	NIL	NIL
24	SEALING RING 35000000	0		151	5875-61	NIL	NIL
23	PR-1 TAB-1	0		PR-2 D.A.			
22	DRUM, PAN LINES RIGHT	1	127171			NIL	NIL
21	DRUM, PAN LINES LEFT	2	127229			NIL	NIL
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16	NIL METAL, PREWINDING TROUBLE	0		151	2013-05-10		COILING TO
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5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
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5	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
4	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
3	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
2	HEX HEAD BOLT 1/2X2100	4		151	2013-05-10		COILING TO
1	HEX HEAD BOLT 1/2X2100						

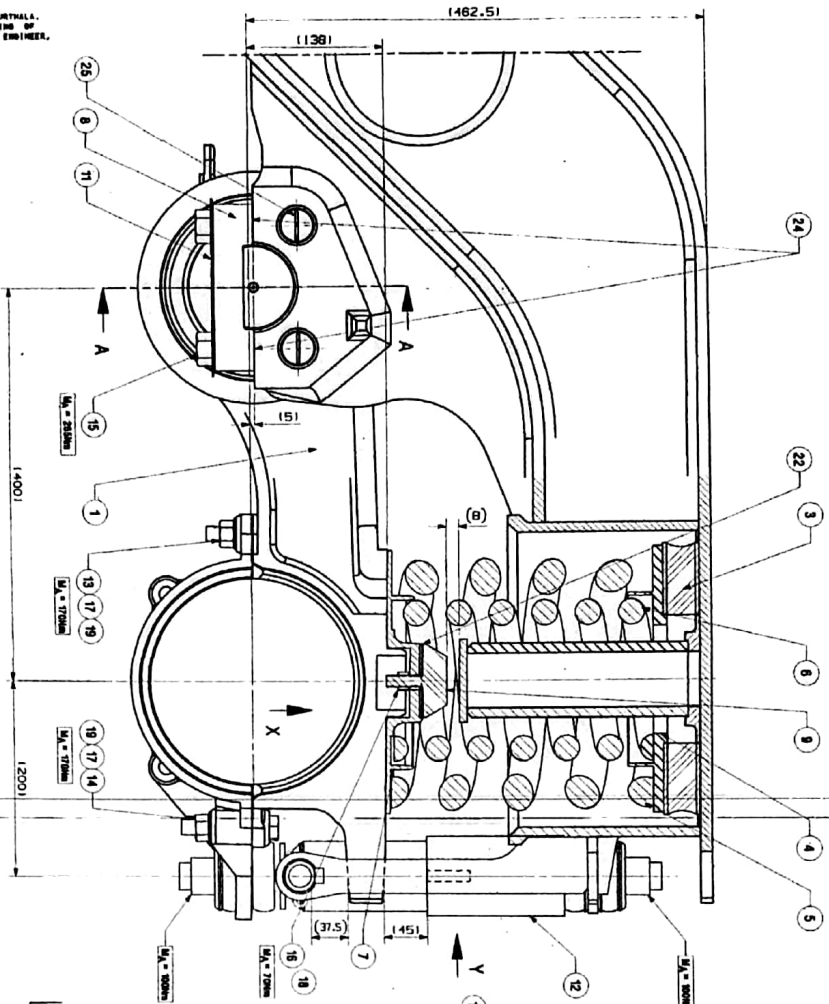
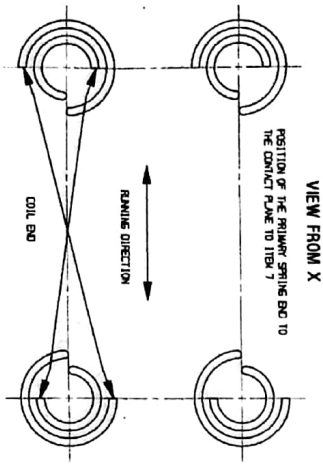
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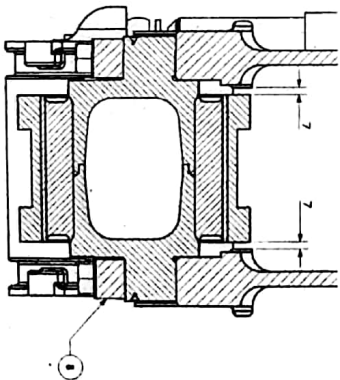
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DATE OF FIRST ISSUE 28/11/2000

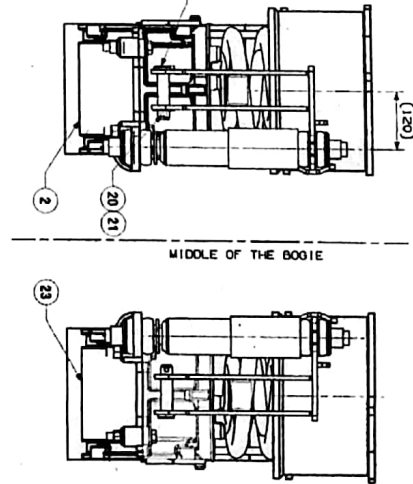
CM BY
DATE OF FIRST ISSUE 28/11/2000



SECTION A-A



VIEW FROM Y (SCALE 1:5)

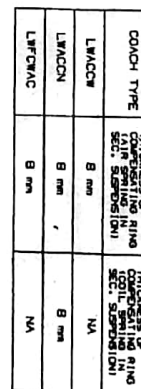


COACH TYPE	COMPENSATING RING
POWER CAR	THICKNESS (IN MM)
DOUBLE DECKER	8

PRIMARY SUSPENSION ARMGT.

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	COIL END	1	EA	
2	RAINING DIRECTION	1	EA	
3	VIEW FROM X	1	EA	
4	VIEW FROM Y	1	EA	
5	SECTION A-A	1	EA	
6	VIEW FROM Y (SCALE 1:5)	1	EA	
7	MIDDLE OF THE BOOIE	1	EA	
8	VIEW FROM Y (SCALE 1:5)	1	EA	
9	VIEW FROM Y (SCALE 1:5)	1	EA	
10	VIEW FROM Y (SCALE 1:5)	1	EA	
11	VIEW FROM Y (SCALE 1:5)	1	EA	
12	VIEW FROM Y (SCALE 1:5)	1	EA	
13	VIEW FROM Y (SCALE 1:5)	1	EA	
14	VIEW FROM Y (SCALE 1:5)	1	EA	
15	VIEW FROM Y (SCALE 1:5)	1	EA	
16	VIEW FROM Y (SCALE 1:5)	1	EA	
17	VIEW FROM Y (SCALE 1:5)	1	EA	
18	VIEW FROM Y (SCALE 1:5)	1	EA	
19	VIEW FROM Y (SCALE 1:5)	1	EA	
20	VIEW FROM Y (SCALE 1:5)	1	EA	
21	VIEW FROM Y (SCALE 1:5)	1	EA	
22	VIEW FROM Y (SCALE 1:5)	1	EA	
23	VIEW FROM Y (SCALE 1:5)	1	EA	
24	VIEW FROM Y (SCALE 1:5)	1	EA	
25	VIEW FROM Y (SCALE 1:5)	1	EA	

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	COIL END	1	EA	
2	RAINING DIRECTION	1	EA	
3	VIEW FROM X	1	EA	
4	VIEW FROM Y	1	EA	
5	SECTION A-A	1	EA	
6	VIEW FROM Y (SCALE 1:5)	1	EA	
7	MIDDLE OF THE BOOIE	1	EA	
8	VIEW FROM Y (SCALE 1:5)	1	EA	
9	VIEW FROM Y (SCALE 1:5)	1	EA	
10	VIEW FROM Y (SCALE 1:5)	1	EA	
11	VIEW FROM Y (SCALE 1:5)	1	EA	
12	VIEW FROM Y (SCALE 1:5)	1	EA	
13	VIEW FROM Y (SCALE 1:5)	1	EA	
14	VIEW FROM Y (SCALE 1:5)	1	EA	
15	VIEW FROM Y (SCALE 1:5)	1	EA	
16	VIEW FROM Y (SCALE 1:5)	1	EA	
17	VIEW FROM Y (SCALE 1:5)	1	EA	
18	VIEW FROM Y (SCALE 1:5)	1	EA	
19	VIEW FROM Y (SCALE 1:5)	1	EA	
20	VIEW FROM Y (SCALE 1:5)	1	EA	
21	VIEW FROM Y (SCALE 1:5)	1	EA	
22	VIEW FROM Y (SCALE 1:5)	1	EA	
23	VIEW FROM Y (SCALE 1:5)	1	EA	
24	VIEW FROM Y (SCALE 1:5)	1	EA	
25	VIEW FROM Y (SCALE 1:5)	1	EA	

[illegible]

PRIMARY SUSPENSION ARRGT:

RAIL COACH FACTORY, KAPURTHALA

॥ श्रीगणेशाय नमः ॥

2017/01/10

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