



भारत सरकार - रेल मंत्रालय  
अनुसंधान अभिकल्प और मानक संगठन  
लखनऊ - 226 011  
EPBX (0522) 2451200  
Fax (0522) 2458500

Government of India-Ministry of Railways  
Research Designs & Standards Organisation  
Lucknow - 226 011  
DID (0522) 2450115  
DID (0522) 2465310



### PROVISIONAL SPEED CERTIFICATE FOR OPERATION

No.	TM/HM/11/38/WST SAN	Date	As Signed
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महाप्रबन्धक (इंजीनियरिंग),

1. मध्य रेलवे, छत्रपति शिवाजी टर्मिनस, मुम्बई- 400 001
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001
3. उत्तर रेलवे, बडौदा हाऊस, नई दिल्ली- 110 001
4. पूर्वोत्तर रेलवे, गोरखपुर- 273 001
5. पूर्वोत्तर फ्रन्टियर रेलवे, मालीगौव, गुवाहाटी- 781 011
6. दक्षिण रेलवे, एनेक्सी, पार्क टाऊन, चेन्नई- 600 003
7. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद- 500 071
8. दक्षिण पूर्व रेलवे, गार्डन रीच, कोलकाता- 700 043
9. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400 020
10. उत्तर मध्य रेलवे, प्रयागराज- 211 001
11. उत्तर पश्चिम रेलवे, जयपुर- 302 006
12. पूर्व मध्य रेलवे, हाजीपुर- 844 101
13. पूर्व तट रेलवे, रेलवे कॉम्पलेक्स, भुवनेश्वर- 751 023
14. दक्षिण पश्चिम रेलवे, हुबली- 580 023
15. पश्चिम मध्य रेलवे, जबलपुर- 482 001
16. दक्षिण पूर्व मध्य रेलवे, बिलासपुर- 495 004

<b>Sub:</b>	Provisional Speed Certificate for operation of Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore, upto maximum speed of 60kmph when running on its own power as well as when running in train formation as a dead vehicle for operation over Indian Railways.
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<b>Ref:</b>	(i) Railway Board Contract No. 2016/Track-III/MC/4 dated 01.03.2017. (ii) Provisional Speed Certificate No. TM/HM/11/38/WST SAN dated 05.03.2019.
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### 1.0 IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

Type	Final / Provisional / Oscillation Trial / COCR Movement	Provisional	Validity/ Period or Permanent	IR / Sectional	5years / Indian Railways
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<b>Stock Name</b>	Work Site Tamper Model (ALTM) PMA-1M	<b>Max. Axle Load (Empty)</b>	13t	<b>Max. Axle Load (Loaded)</b>	13t
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<b>Transportation Code</b>	WSTPMA1M	<b>GA Drg. No.</b>	M/s SAN Engg. Drg. No. SNSK-4588 Rev-2
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<b>Bogie Arrgt. Drg. No.</b>	M/s SAN Engg. Drg. No. SNSK-4594 (Sheet1-2) Rev-0 & SNSK-4595 Rev-0	<b>Suspension Arrgt. Drg. No.</b>	M/s SAN Engg. Drg. No. SNSK-4603 Rev-0, SNSK-4604 Rev-0, SNSK-4605 Rev-0
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Commodity		Coal / Ore / Steel /Bagged / Oil /etc.		NA		Gauge		BG		
Type of Bogie	Bo-Bo		Type of Coupler	Screw Coupler		Wheel Dia. (mm)	New	Worn		
							730	710		
Max. Permissible Speed			Own Power		60kmph		Train Formation		60kmph	

<b>2.0</b>	<b>INTRODUCTION</b>
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2. 1	Work Site Tamper Model (ALTM) PMA-1M supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore as per GA Drg. No. SNSK-4588 Rev-02 is a self-propelled machine which is used for lifting, lining, leveling and tamping of the track.
2. 2	The maximum axle load, wheel diameter and wheel base of machine are 13t, 730mm and 1830mm respectively. The design speed of machine is 80kmph when running on its own power and 100kmph when running in train formation as a dead vehicle. The maximum speed of the machine while hauling an 8-wheeler camping coach should not be less than 50kmph.
2. 3	The Provisional Speed Certificate of the machine to run up to maximum permissible speed of 50kmph when running on its own power and 65kmph when running in train formation as a dead vehicle was issued vide speed certificate no. TM/HM/11/38/WST SAN dated 05.03.2019 which has been expired by 04.03.2024. Therefore Provisional Speed Certificate is being revalidated.

<b>3.0</b>	Based on design features, details given in Annexure-A, Dynamic simulation results of Work Site Tamper Model (ALTM) PMA-1M supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore and Policy Circular No. 6, it is certified that the machine as per their GA Drg. No. SNSK-4588 Rev-02 may be permitted provisionally to run up to maximum permissible speed of 60kmph when running on its own power as well as when running in train formation as a dead vehicle for operation over Indian Railways, subject to the following conditions: -
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3.1	TRACK				
3.1.1	The track shall be to a minimum standard of-				
	<b>Rail Section</b>	<b>Sleeper Density</b>	<b>Ballast Cushion</b>	<b>Max. Speed (Own power)</b>	<b>Max. Speed (Train formation)</b>
	52 kg (72UTS)	1540 Nos./km PSC Sleeper	250 mm (100 mm clean & rest in caked up condition on compacted and stable formation)	Upto 60kmph	Upto 60kmph
3.1.2	Track geometry standards shall be maintained to as per provisions of Indian Railways Permanent Way Manual- 2024, containing track geometry standards under Para 522.				
3.1.3	For track maintained to lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, instructions issued by Railway Board letter no. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. When the Chief Engineer considers that the road bed is not compacted or there is improper drainage, he may suitably restrict the maximum permissible speed depending upon the local conditions.				

3.1.4	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual- 2024. Maximum cant deficiency permitted would be 75mm.
3.1.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual- 2024 and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of Indian Railways Permanent Way Manual- 2024. In addition, wherever condition warrants on account of corrosion on rail/weld collar, wear on rail, cupping of welds etc., necessary precautions shall be taken for fish plating/joggled fish plating.
3.1.6	Zonal Railways may ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per provisions of Indian Railways Permanent Way Manual- 2024, regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.

<b>3.2</b>	<b>BRIDGE STIPULATIONS</b>
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3.2.1	The clearance refers to “Standard RDSO Spans” bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG, MBG and 25t loading-2008 standard loadings.				
3.2.2	Superstructures & Bearings of “Special Spans” (designed and constructed by Zonal Railways based on site requirements), Arches and sub-structures (including foundation) of all bridges (Standard RDSO spans & Special Spans) are to be got examined by the Chief Bridge Engineer and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.				
3.2.3	The clearance is subject to the following parameters of Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore: -				
	Rolling Stock	Maximum axle load (t)	Maximum tractive effort at rail level per axle (t)	Maximum braking force at rail level per axle (t)	Maximum CG height from rail level (mm)
	Work Site Tamper	13	1.928	1.162	1140
3.2.4	All Standard RDSO spans of BGML, RBG, MBG and 25t loading-2008 standard loading are fit for proposed speed of 60kmph when running on its own power as well as when running in train formation as a dead vehicle over Indian Railways.				
3.2.5	During operation of Work Site Tamper with single/multiple locomotives and other rolling stocks the speed certificate issued by RDSO of the single/multiple locomotives/rolling stocks in empty/loaded condition shall be strictly complied with. Therefore, speed certificate of each single/multiple locomotive and rolling stocks in train formation should be examined carefully & speed restriction/strengthening/prohibition/any other restriction should be imposed according to most restrictive rolling stock/locomotive/multiple locomotives in train formation.				
3.2.6	Location of bridges on which speed restrictions are imposed should be notified by the Railways and incorporated in the working timetable.				

3.2.7	The final speed on bridges shall also be governed by the track structure on the bridges. Therefore, the lower of the two speeds i.e. speed on particular bridges and speed for track structure over those particular bridges shall prevail as the running speed.
3.2.8	The above para have been arrived at considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be imposed by Chief Bridge Engineer of Zonal Railway on condition basis.

<b>3.3</b>	<b>SIGNALLING STIPULATIONS</b>
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3.3.1	Provisions of GR, SR, IRSOD, SEM & all extant instructions issued from time to time as applicable shall be complied with.
3.3.2	In case of locomotive/rolling stocks /train (having this machine in its composition) having EBD of more than 1 km and non-provision of second distant signal/4 Aspect Automatic signalling in the section, action as per para 7.8.9 of IRSEM (issue July 2021) shall be taken.
3.3.3	While running through a station yard, speed of the Rolling stock shall be restricted to the maximum permissible speed as per standard of interlocking provided at the station or any other speed restriction whichever is severe.

<b>3.4</b>	<b>ROLLING STOCK STIPULATIONS</b>
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3.4.1	Before initiating the operation of the Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore, the Chief Engineer/Track Machine of the concerned Railway shall ensure the safety of the rolling stock and certify the track worthiness. He shall ensure the proper maintenance of the rolling stock.
3.4.2	Brake of the Work Site Tamper Model (ALTM) PMA-1M shall be in perfect working condition during the operation.

<b>3.5</b>	<b>TRACTION INSTALLATION</b>
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3.5.1	In 25KV AC traction area, the Principal Chief Electrical Engineer of the concerned Railway shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provisions of Chapter-V and V-A, Electric Traction 'Schedule of Dimensions of 1676mm Gauge (BG) revised 2022' with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
3.5.2	In addition to above, the Principal Chief Electrical Engineer of the concerned Railway may impose any temporary speed restriction on the basis of personal knowledge, experience of the sectional OHE and the field conditions prevailing on the particular section.
3.5.3	When the Work Site Tamper is being moved, it shall be ensured that all the protruding parts are withdrawn and suitably locked, so that during the run there is no possibility of any infringement occurring to the standard moving dimensions.

<b>3.6</b>	<b>GENERAL STIPULATIONS</b>
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3.6.1	The working of Maintenance Machine shall be as per provision of Indian Railways Permanent Way Manual- 2024.
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3.6.2	The profile of Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore, infringes clause 2(ii) of Chapter IV (A) of Indian Railways Schedule of Dimensions (BG) Revised, 2004. Railway Board has condoned these infringements vide their letter No. 2018/CEDO/SD/RS/13 dated 18.01.2019. The profile of Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore does not infringe any clause of Chapter IV (D) of Indian Railways Schedule of Dimensions (BG) Revised, 2022.
3.6.3	The machine when running in train formation as well as when running on its own power, a speed restriction of 15 kmph shall be imposed on Diamond crossings. No speed restriction on main line route at points and crossing is required. Speed restriction on turnout side of points and crossing (on geometrical consideration and not due to wheel diameter of 730mm/710mm) shall be applicable as per provision in Indian Railways Permanent Way Manual- 2024.
3.6.4	All the permanent and temporary speed restrictions in force and those that shall be imposed from time to time due to track, bridges, curves, signalling and interlocking etc. shall also be observed. In this connection, the speed on curve shall be in accordance with para 3.1.4 of this speed certificate.
3.6.5	For the movement of the machine, in case of failure of the machine in block sections, the instructions of the para 708(4) of Indian Railways Track Machine Manual, September -2019 shall be followed.
3.6.6	Competent track machine staff who can apply the machine brakes in case of train parting shall escort the machine while running in train formation as a dead vehicle.
3.6.7	This speed certificate is provisional and shall be valid up to 5 years from date of issue or before date of issuance of relevant final speed certificate, whichever is earlier. This Speed Certificate is valid only for Work Site Tamper Model (ALTM) PMA-1M coming under Railway Board Contract No. 2016/Track-III/MC/4 dated 01.03.2017.

**ENCLOSURES: / संलग्नक:**

i)	Annexure-A
ii)	M/s. SAN Engg. GA Drg. No. SNSK-4588 Rev-02
iii)	Bogie arrangement: M/s SAN Engg. Drg. No. SNSK-4594 (Sheet1-2) Rev-0 & SNSK-4595 Rev-0
iv)	Suspension arrangement: M/s SAN Engg. Drg. No. SNSK-4603 Rev-0, SNSK-4604 Rev-0, SNSK-4605 Rev-0
v)	Railway Board's letter No. 2018/CEDO/SD/RS/13 dated 18.01.2019
vi)	Railway Board's letter No. 2020/M(C)/202/6(MTM) dated 12.07.2023
vii)	Railway Board's letter No. 65/WDO/SR/26 dated 19/20.10.1966
viii)	Para 708(4) of Indian Railways Track Machine Manual, September -2019
ix)	Para 704 of Indian Railways Track Machine Manual, September -2019.

Digitally Signed by Nitin

Mehrotra

Date: 28-02-2025 16:37:30

(नितिन मेहरोत्रा)

कार्यकारी निदेशक मानक / चालन शक्ति

## प्रतिलिपि:

1. सचिव, {यांत्रिक/विद्युत/इंजीनियरिंग(जी)}, रेलवे बोर्ड, रेल भवन, नई दिल्ली- 110001
2. मुख्य रेल संरक्षा आयुक्त, तीसरी मंजिल, ट्रैफिक अकाउंट बिल्डिंग, स्टेट एंट्री रोड, नई दिल्ली- 110055
3. महाप्रबन्धक (यांत्रिक/विद्युत/संचालन/संकेत एवं दूर संचार)
  - i) मध्य रेलवे, छत्रपति शिवाजी टर्मिनस मुम्बई- 400 001
  - ii) पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001
  - iii) उत्तर रेलवे, बडौदा हाऊस, नई दिल्ली- 110001
  - iv) पूर्वोत्तर रेलवे, गोरखपुर- 273001
  - v) पूर्वोत्तर फ्रन्टियर रेलवे, मालीगौव ,गुवाहाटी- 781 011
  - vi) दक्षिण रेलवे, एनेक्सी, पार्क टाऊन, चेन्नई- 600 003
  - vii) दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद- 500 071
  - viii) दक्षिण पूर्व रेलवे, गार्डन रीच, कोलकाता- 700 043
  - ix) पश्चिम रेलवे, चर्चगेट, मुम्बई- 400020
  - x) उत्तर मध्य रेलवे, प्रयागराज- 211 001
  - xi) उत्तर पश्चिम रेलवे, जयपुर- 302 006
  - xii) पूर्व मध्य रेलवे, हाजीपुर- 844 101
  - xiii) पूर्व तट रेलवे, रेलवे कॉम्प्लेक्स, भुवनेश्वर- 751 023
  - xiv) दक्षिण पश्चिम रेलवे, हुबली- 580 023
  - xv) पश्चिम मध्य रेलवे, जबलपुर- 482 001
  - xvi) दक्षिण पूर्व मध्य रेलवे, बिलासपुर- 495 004
4. अध्यक्ष एवं प्रबन्ध निदेशक, कोंकण रेलवे कारपोरेशन लिमिटेड, बेलापुर भवन, सेक्टर-11, सी.बी.डी.बेलापुर नवी मुम्बई-400 614.

## ENCLOSURES: / संलग्नक:

i)	Annexure-A
ii)	M/s. SAN Engg. GA Drg. No. SNSK-4588 Rev-02
iii)	Bogie arrangement: M/s SAN Engg. Drg. No. SNSK-4594 (Sheet1-2) Rev-0 & SNSK-4595 Rev-0
iv)	Suspension arrangement: M/s SAN Engg. Drg. No. SNSK-4603 Rev-0, SNSK-4604 Rev-0, SNSK-4605 Rev-0
v)	Railway Board's letter No. 2018/CEDO/SD/RS/13 dated 18.01.2019
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viii)	Para 708(4) of Indian Railways Track Machine Manual, September -2019
ix)	Para 704 of Indian Railways Track Machine Manual, September -2019.

(Signed)

(नितिन मेहरोत्रा)

कार्यकारी निदेशक मानक/चालन शक्ति

**Salient features of Work Site Tamper Model (ALTM) PMA-1M, supplied by M/s San Engineering & Locomotive Company Ltd., Bangalore**

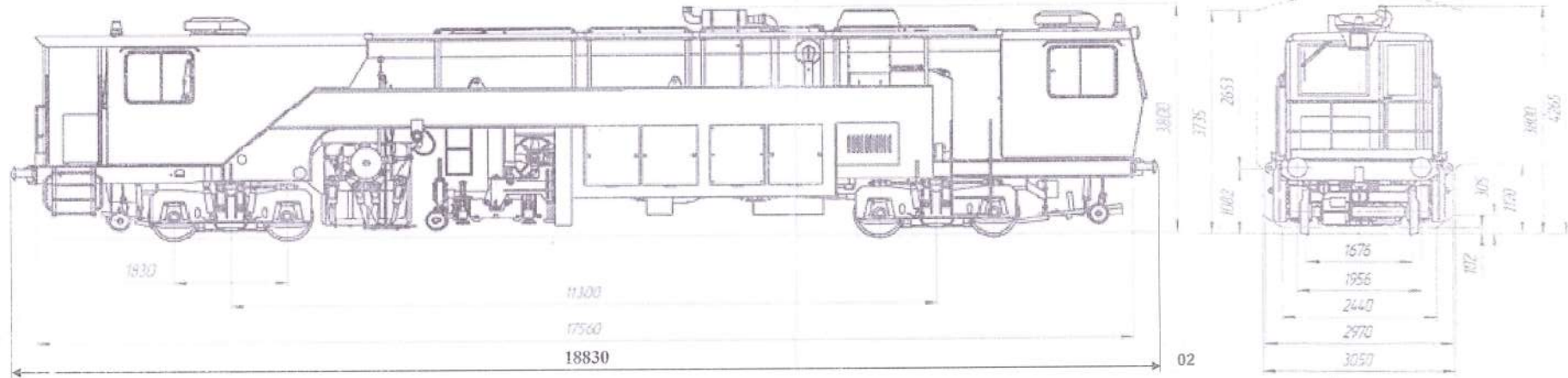
S.No.	Description	Details
1.	Principal dimensions of rolling stock	M/s SAN Engg. GA Drg. No. SNSK-4588 Rev-02 a) Length over buffers : 18830 mm b) Wheel base : 1830 mm c) Max. axle load : 13 t d) Max. design speed- i) Own power : 80kmph ii) In train formation : 100kmph
2.	Bogie and wheel details	M/s SAN Engg. Drg. No. SNSK-4594 (Sheet1-2) Rev-0 & SNSK-4595 Rev-0  Wheel dia:- New : 730 mm Worn out : 710 mm
3.	Suspension arrangement	M/s SAN Engg. Drg. No. SNSK-4603 Rev-0, SNSK-4604 Rev-0, SNSK-4605 Rev-0
4.	Brake system details	Pneumatic Brake as per M/s SAN Engg. Drg. No. SNSK-5022 Rev-0
5.	Coupler and buffer details	M/s SAN Engg. Drg. No. SNSK-4629 Rev-0
6.	Engine details	Make-Cummins Model- QSM11 Power –268kW at 2100 RPM
7.	Safety Items	As per Para 704 of Indian Railways Track Machine Manual, September -2019.

- 1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- 2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.
- 3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
- 4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.

DRG. NO. SNSK-4588

1 (ALTM) PMA-1M Worksite Tamper, general view, principal data and dimensions (mm)



Axle load, tons



### Principal technical data

Weight overall, t	52
Wheel Diameter, mm	730
Standard Output, sleepers per hour	1500
Travel speed, km/ h	80
- self-propelled	100
- in formation	

As submitted by firm

15.03.2023  
ARE/HM

सहायक अनुसंधान अभियन्ता  
Assistant Research Engineer  
अभियन्ता लखनऊ  
P. O. Lucknow

S. K. SINGH  
Executive Director  
Track Machine  
Research Designs and Standards Organisation  
Ministry of Railways, Lucknow

02	MMD No.	1D (EDO/T-2202)
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02	DETAILS OF ENGINE			
	Make	Model	Power	Speed
	Cummins	QSM11	268kW	2100 RPM

11061	01	NAME CHANGED FROM RTM-32 WORKSITE TAMPER TO (ALTM) PMA-1M WORKSITE TAMPER	16/05/2022	SK	11134	02	DETAILS OF ENGINE ADDED, MMD No. ADDED AND DM 18830 ADDED	23/08/2022	M.H
ECN. NO.	REV.	DESCRIPTION	DATE	INTL.	ECN. NO.	REV.	DESCRIPTION	DATE	INTL.

DRN.	
TRCD.	
CHKD.	
APPD.	

**SAN WST**  
(GENERAL VIEW  
PRINCIPAL DATA)

SCALE	NTS
DATE	12-08-2017

**SAN**  
SAN ENGG. AND LOCOMOTIVE  
COMPANY LTD.  
BANGALORE - 560 048

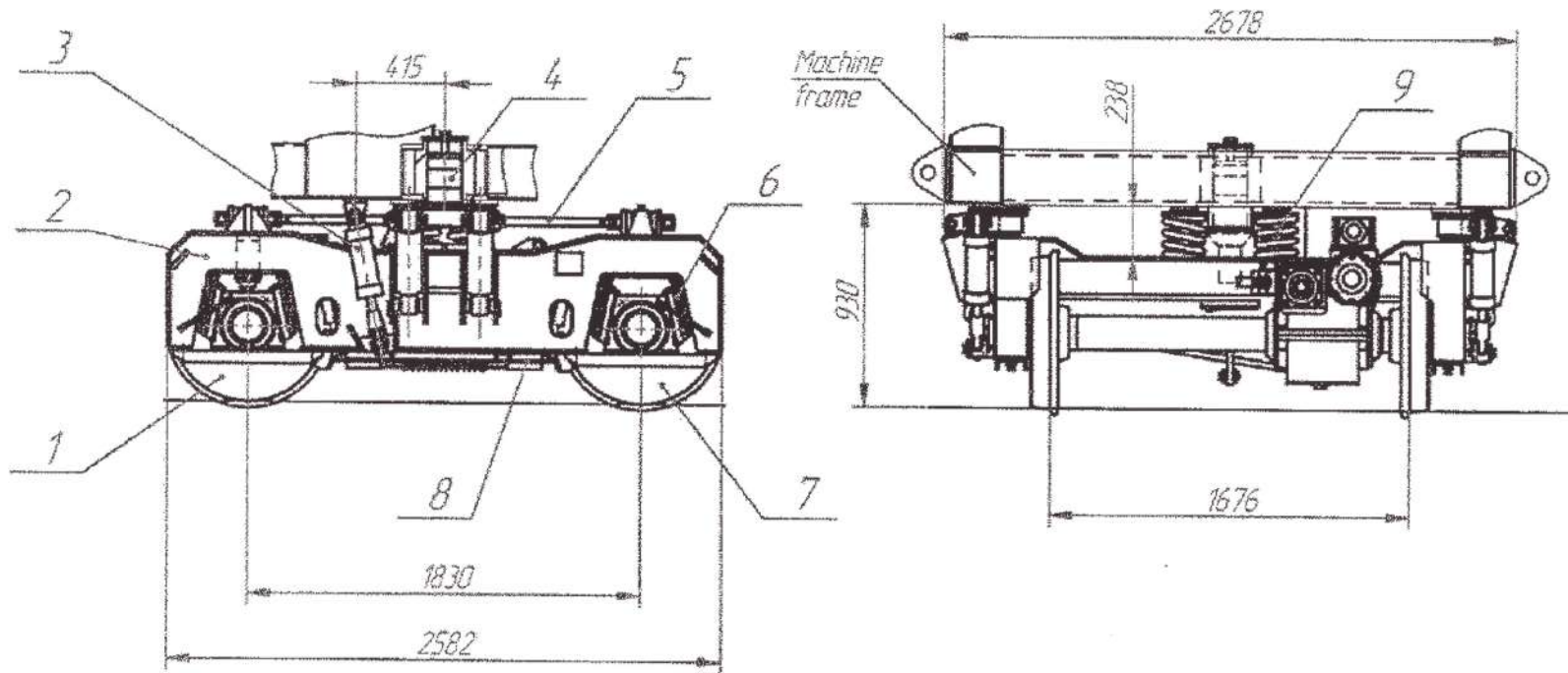
DRG. NO. SNSK-4588

REV  
02



- 1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- 2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 638.
- 3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
- 4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.



As submitted by *for*  
*B*  
 15-03-2023

सहायक अनुसंधान अभियन्ता  
 Assistant Research Engineer

S. K. SINGH  
 Executive Director  
 Track Machine  
 Research Designs and Standards Organisation  
 Ministry of Railways, Lucknow

- 1 - Wheel pair with reduction gear
- 2 - Frame
- 3 - Supporting hydraulic cylinder
- 4 - Swivel unit (pivot)
- 5 - Mounting of wheel pairs

- 6 - Rubber-metal shock absorber
- 7 - Wheel pair
- 8 - Brake rigging
- 9 - Spring suspension

ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
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DRN.	
TRCD.	
CHKD.	
APPD.	<i>H/A</i>

## TRACTION BOGIE

(Sheet 1 of 2)

SCALE
NTS
DATE
12-08-2017

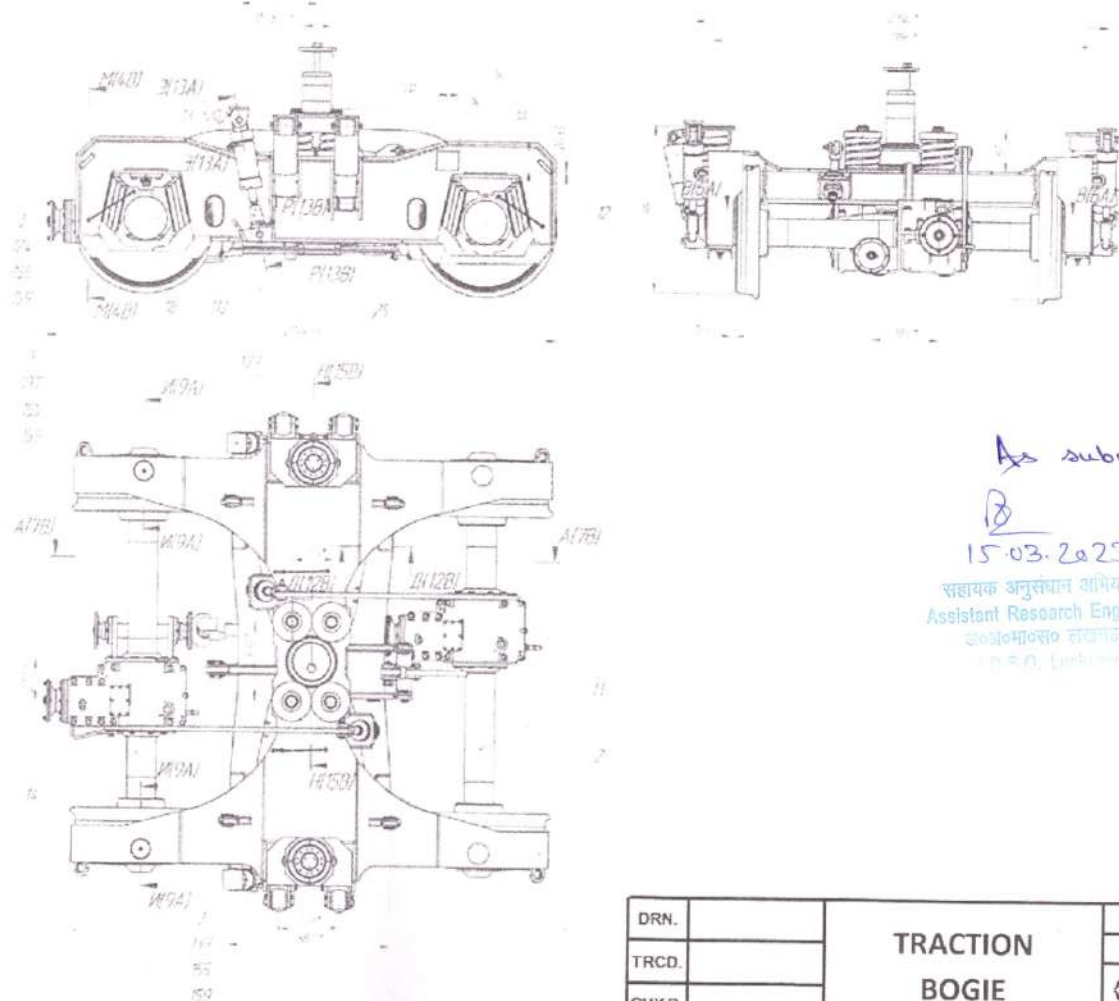
**SAN**  
 SAN ENGG. AND LOCOMOTIVE  
 COMPANY LTD.  
 BANGALORE - 560 048

DRG NO: SNSK-4594

REV  
0

- 1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- 2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.
- 3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
- 4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.



As submitted by firm

15.03.2023


  
**S. K. SINGH**  
Executive Director  
Track Machine  
Research Designs and Standards Organisation  
Ministry of Railways, Lucknow

ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
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DRN.	
TRCD.	
CHKD.	
APPD.	<i>[Signature]</i>

TRACTION  
BOGIE

(Sheet 2 of 2)

SCALE
NTS

DATE
12-08-2017



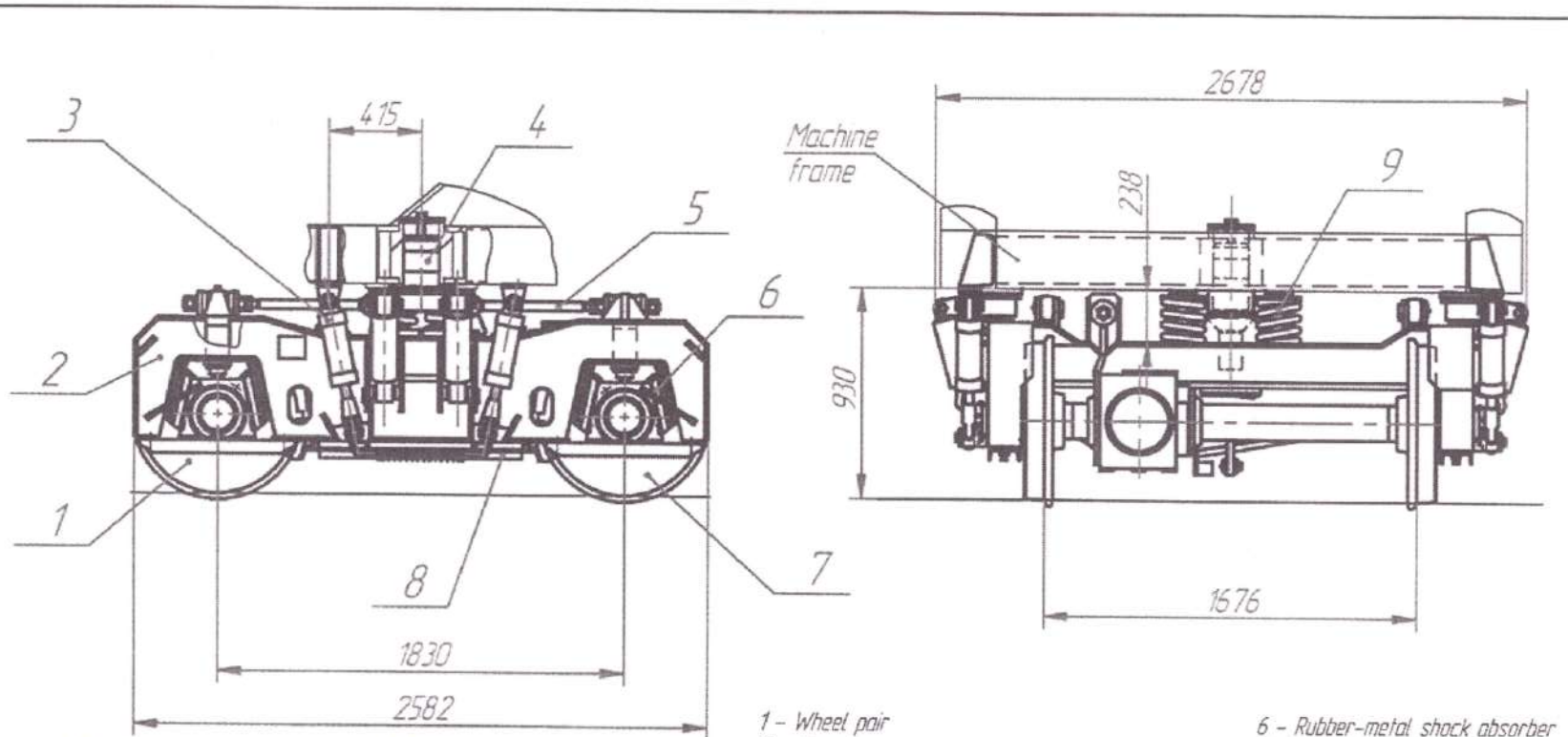
**SAN ENGG. AND LOCOMOTIVE  
COMPANY LTD.**  
BANGALORE - 560 048

DRG NO: SNSK-4594

REV

- 1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.
- 2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.
- 3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.
- 4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.



As submitted by firm

15.03.2023

सहायक अनुसंधान अभियन्ता  
Assistant Research Engineer  
रिजर्च डिजाइन्स एंड स्टैंडार्ड्स ऑर्गनाइजेशन  
लखनऊ

S. K. SINGH  
Executive Director  
Track Machine  
Research Designs and Standards Organisation  
Ministry of Railways, Lucknow

- 1 - Wheel pair
- 2 - Frame
- 3 - Supporting hydraulic cylinder
- 4 - Swivel unit (pivot)
- 5 - Mounting of wheel pairs

- 6 - Rubber-metal shock absorber
- 7 - Wheel pair with reduction gear
- 8 - Brake rigging
- 9 - Spring suspension

ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
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DRN.	
TRCD.	
CHKD.	
APPD.	

**RUNNING  
BOGIE**

SCALE	
NTS	
DATE	
12-08-2017	

**SAN**  
SAN ENGG. AND LOCOMOTIVE  
COMPANY LTD.  
BANGALORE - 560 048

DRG NO: SNSK-4595

REV  
0



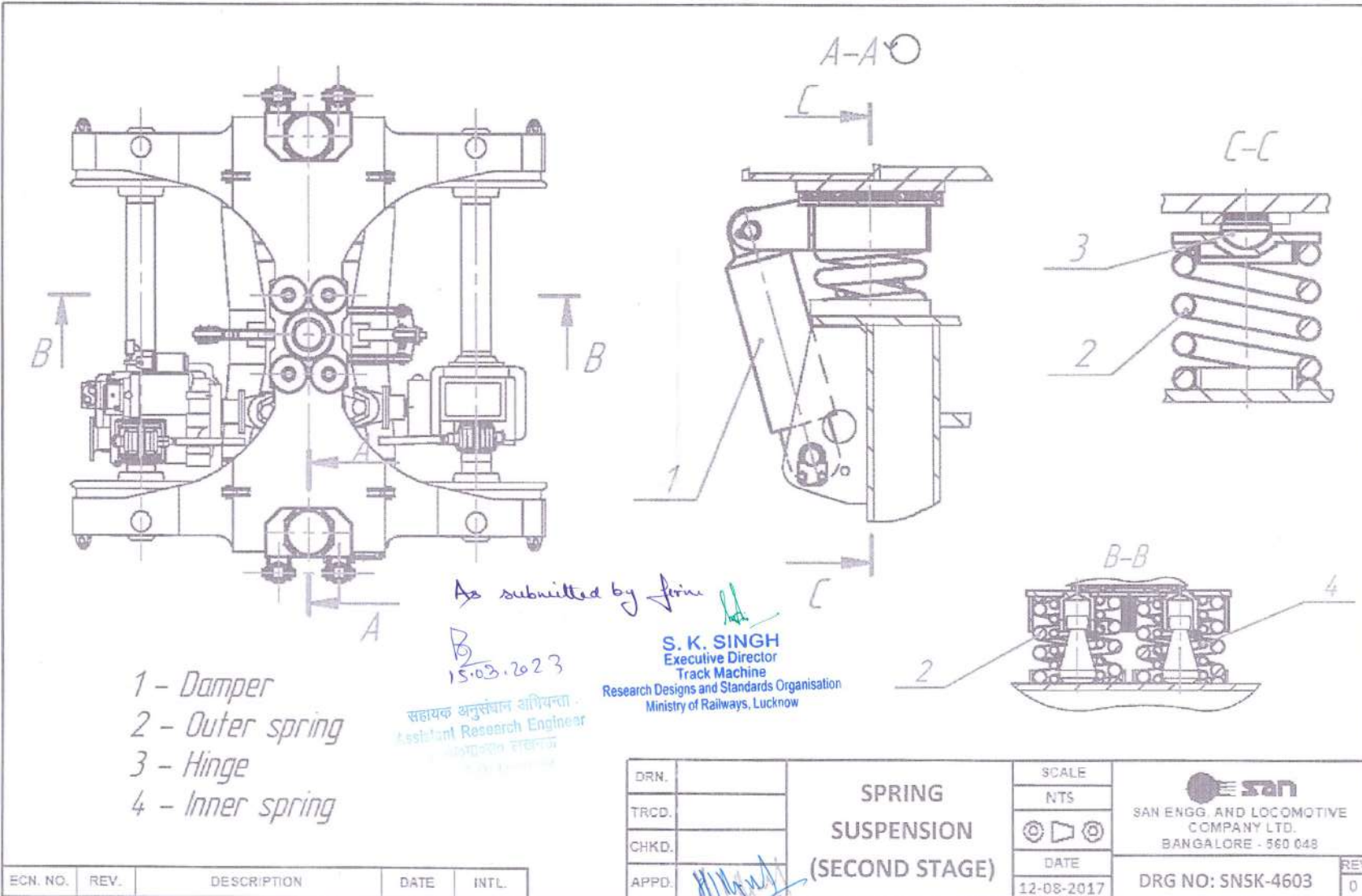
1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 696.

3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.

4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.



1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

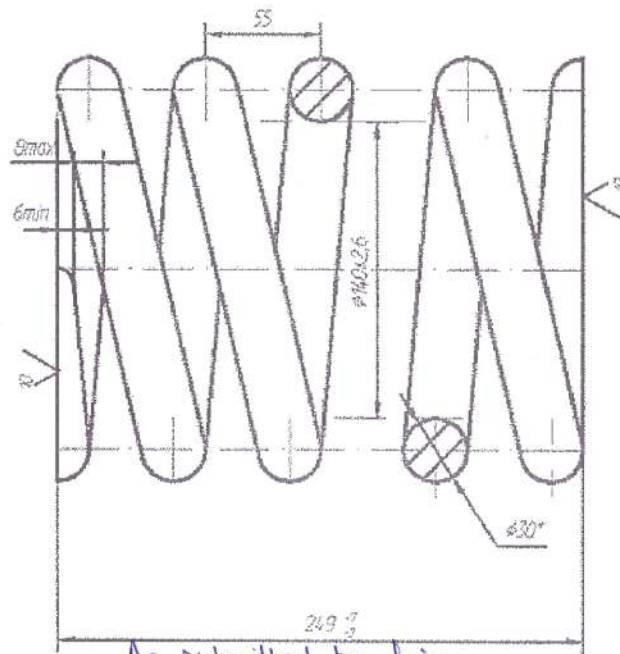
2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 686.

3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.

4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.

✓(V)



Trial load, kgf	Deflection under trial load, mm	Working load, kgf	Design deflection under working load, mm	Tolerance for deflection under working load	Active coils	Total number of turns
3660	93 <sup>+11</sup> <sub>-9</sub>	1900	48,5	+5,0 -4,0	4	5,5±0,25

1. HB 415.477

2. Right direction of coiling

3. Other technical requirements according to GOST 1452-86.

4. It is allowed making:

a) of steel brand 60C2, 60C2A with category 3A, 3B, 3T GOST 14959-79

b) of steel brand 55C2, 55C2A with category 3A, 3B, 3T GOST 14959-79;

5. Perpendicularity tolerance of generating spring to supporting surfaces maximum 8 mm

6. \*Reference dimensions.




7. On each batch workpieces one tag should be fixed with stamp of foreman and stamp of Quality Control Department.

B  
15.03.2023

सहायक अनुसंधान अभियन्ता  
Assistant Research Engineer

S. K. SINGH  
Executive Director  
Track Machine  
Research Designs and Standards Organisation  
Ministry of Railways, Lucknow

ECN. NO.	REV.	DESCRIPTION	DATE	INTL.
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DRN.		OUTER SPRING (SAN – WST)	SCALE	 SAN ENGG. AND LOCOMOTIVE COMPANY LTD. BANGALORE - 560 048	REV 0
TRCD.			NTS		
CHKD.					
APPD.			DATE 12-08-2017		
			DRG NO: SNSK-4604		

1) ALL DIMENSIONS ARE IN mm UNLESS STATED OTHERWISE.

2) CODE OF PRACTICE, ABBREVIATION ETC., TO IS : 698.

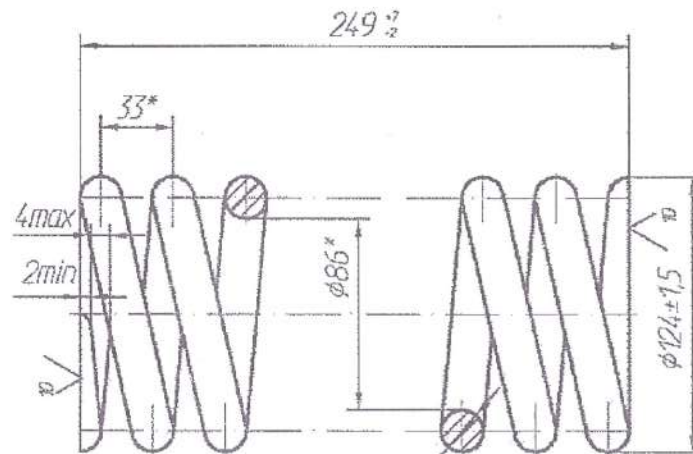
3) WORK TO COARSE/MEDIUM/FINE TOLERANCES OF IS : 2102 FOR DIMENSIONS WITHOUT TOLERANCE.

4) DO NOT SCALE, IF IN DOUBT PLEASE ASK.

5) \* INDICATES NO SEPARATE DRAWINGS.

✓(✓)

Trial load, kgf	Deflection under trial load, mm	Working load, kgf	Design deflection under working load, mm	Tolerance for deflection under working load	Active coils	Total number of turns
1580	$98^{+12}_{-8}$	800	49,6	$\begin{matrix} +6,0 \\ -4,0 \end{matrix}$	7	$8,5 \pm 0,25$



As submitted by firm

15.03.2023

सहायक अनुसंधान अभियन्ता  
Assistant Research Engineer  
रेलवे मंत्रालय, लखनऊ

S. K. SINGH  
Executive Director  
Track Machine  
Research Designs and Standards Organisation  
Ministry of Railways, Lucknow

1. HB 415...477

2. Right direction of coiling.

3. Other technical requirements according to GOST 1452-86.

4. It is allowed making:




a) of steel brand 60C2, 60C2A with category 3A, 3B, 3C GOST 14959-79;

b) of steel brand 55C2, 55C2A with category 3A, 3B, 3C GOST 14959-79;

5. Perpendicularity tolerance of generating spring to supporting surfaces maximum 8 mm.

6. \*Reference dimensions.

7. On each batch workpieces one tag should be fixed with stamp of foreman and stamp of Quality Control Department.

DRN.		INNER SPRING (SAN – WST)	SCALE	 SAN ENGG. AND LOCOMOTIVE COMPANY LTD. BANGALORE - 560 048	REV 0
TRCD.			NTS		
CHKD.					
APPD.			DATE 12-08-2017		
ECN. NO.			DRG NO: SNSK-4605		





भारत सरकार Government Of India  
रेल मंत्रालय Ministry Of Railways  
(रेलवे बोर्ड) (Railway Board)

सं.2018/CEDO/SD/RS/13

New Delhi, Dated 18.01.2019

The Director General,  
Manak Nagar, RDSO,  
Lucknow.

**विषय :** Condonation of infringements by Work Site Tamper, Model (ALTM) PMA-1M, supplied by M/s San Engineering Works & Locomotive Company Ltd., Bangalore, w.r.t. IRSOD (BG) Revised, 2004.

**संदर्भ :** (i) RDSO's letter No.CT/TMM/GENL, dated 25.05.2018.  
(ii) CCRS's letter No.Q-14011/04/2018-19-T.W., dated 08.12.2018.

With reference to your above application, dated 25.05.2018, sent through the Chief Commissioner of Railway Safety, Lucknow; the sanction of Ministry of Railways, Railway Board is hereby communicated for condonation of infringement w.r.t. Chapter-IV(A), Schedule-I of IRSOD (BG) Revised, 2004, by Work Site Tamper, Model (ALTM) PMA-1M, supplied by M/s San Engineering Works & Locomotive Company Ltd as shown in details enclosed with above mentioned letter, details of infringements as under :

**Clause 2(ii)** – Minimum diameter on the tread of new carriage of wagon wheel, measured at 63.5mm from wheel gauge face : by 184 mm.

Further, above sanction of condonation is subject to the following stipulation :

*"Instructions related to movement of the machine on Points and Crossing/Turnout and Diamond Crossing should be incorporated in the Speed Certificate of its operation, whenever being issued. In addition, issues related to movement of the machine in Train formation in case of emergency should also be considered & addressed and accordingly, instruction for movement in such cases should be clearly mentioned in the Speed Certificate."*

(अनिल कुमार)  
निदेशक/सिविल इंजीनियरिंग(जी)/रेलवे बोर्ड  
(Phone : 030-47598 (Rly.) 011-23047598 (MTNL))  
e-mail address : dcegrb@gmail.com

सं.2018/CEDO/SD/RS/13

New Delhi, Dated 18.01.2019

**Copy forwarded for information to :**

1. The Chief Commissioner of Railway Safety, Compound of DRM/NER, Ashok Marg, Lucknow-226001 w.r.t. his endorsement No. No.Q-14011/04/2018-19-T.W., dated 08.12.2018.
2. Commissioner of Railway Safety, all Circles.
3. Executive Directors - Track-1 and TM, RDSO, Lucknow.
4. EDTk(Mc) Railway Board, New Delhi.

(अनिल कुमार)  
कृते सचिव, रेलवे बोर्ड

No. 2020/M(C)/202/6(MTM)

(E-File No.-3338970)  
New Delhi, Date: 11.07.2023  
12

ED/Carriage  
RDSO, Lucknow

Sub: Allotment of transportation code for Worksite Tamper (WST) "Model (ALTM) PMA-1M" supplied by San Engineering & Locomotive Company Ltd., Bangalore.

Ref: i. Railway Board's letter No. 2016/Track-III/MC/4(i) dated 05.06.2017.  
ii. RDSO letter no. MC/TW dated 21.03.2023.

In reference to the letter under reference ii, transportation code is being allotted.

Type of Coach	Transportation Code
Worksite Tamper (WST) "Model (ALTM) PMA-1M" supplied by San Engineering & Locomotive Company Ltd., Bangalore.	WSTPMA1M

For further necessary action please.

DA: As above.

(सुमन कुमार तांती)  
निदेशक / यांत्रिक इंजी. को.  
रेलवे बोर्ड

C/- PED/RS/RDSO, ED/TK/M&MC/RB and GM/CMM/CRIS- for kind information and necessary action please.



New Delhi, October 19/20, 1966

To

The General Managers,  
All Indian Railways.

The G.M. & Chief Engineer,  
Railway Electrification project, Calcutta.

The Chief Administrative Officer,  
B.B.K. Railway Projects, Waltair.

Sub: Use of new type of Rolling Stock.

.....

Use of new type of rolling stock on existing Railway systems is governed by the Rules laid down in Chapter VI of the Rules for opening of a Railway. In terms of para 5 of this Chapter, applications for use of new type of rolling stock are required to be accompanied by a certificate to be signed by the Chief Engineer and Chief Mechanical Engineer of a Railway in a form specified therein.

2. The Board wish to point out that this certificate by the Chief Engineer and the Chief Mechanical Engineer (and Chief Electrical Engineer in case of electrical stock) is a positive act of certification in regard to track and locomotive maintenance standards for the speed indicated and a statutory obligation. The Officers signing the certificate are required to decide, on the basis of their personal knowledge and experience of the maintenance conditions of the track, locomotives or rolling stock, with due regard to relevant information available and the maintenance requirements of the new type of rolling stock, as to whether the operation of the particular type of locomotive or rolling stock on the relevant section of the Railway is safe and practicable with the facilities available on the Railway system. The RDSO merely recommend the maximum speed at which locomotives and rolling stock could be permitted to run on standard track under average maintenance conditions and this recommendation is made only on the basis of design features of the particular type of locomotive, rolling stock and assessment of their suitability from oscillation and other tests conducted by the RDSO. These certificates for speed issued by RDSO are meant merely to assist the CEs and CMEs/CEEs in deciding on the speed at which these engines/rolling stock may be permitted to run on their Railway system for the maintenance conditions obtaining on their Rlys.

3. A note on the subject prepared by the DG/RDSO is enclosed herewith in quadruplicate for guidance of your officers.

Receipt of this letter may please be acknowledged.

DA: As above.

No. 65/WDO/SR/26

Sd/-  
(B.S.D. Baliga)  
Director, Civil Engineering,  
Railway Board  
New Delhi, October 19/20, 1966,

Copy to D.G. RDSO, Alambagh, Enclosed with reference to his letter No. MRA/573 of 16.8.1966.

Sd/-  
(B.S.D. Baliga)  
Director, Civil Engineering,  
Railway Board.



Enclosure to Board's letter No.65/WDO/SR/26 dated 19-10-66.

....

Use of new types of Rolling Stock.

The rules for use of new types of rolling stock on existing railways are laid down in Chapter VI of the Rules for Opening of a Railway. According to para 5 of this Chapter, applications for use of new type of rolling stock are required to be accompanied by a certificate to be signed by the Chief Engineer and the Chief Mechanical Engineer of the Railway in the form specified in para 5(a)(ii). It should be clearly understood that this certificate by the Chief Engineer and the Chief Mechanical Engineer (Chief Electrical Engineer in the case of Electrical Stock) is a positive act of certification and a statutory obligation.

2. The Chief Engineers and Chief Mechanical Engineers (Chief Electrical Engineers in the case of electric stock) are required to decide on the basis of their personal knowledge and experience of track, locomotives or rolling stock with due regard to relevant information available of track and rolling stock and their maintenance requirements, as to whether the operation of particular locomotive or rolling stock is safe and practicable with the facilities provided on the railway system. It may be emphasized that respective Heads of Departments are required to certify annually regarding the sound condition of the track and rolling stock in operation in terms of para 1222 of Indian Railway Code for Accounts department.

3. Prior to the setting up of testing facilities on the Indian Railways, the safety certificate for operation of locomotives and rolling stock was issued by the Chief Engineer and Chief Mechanical Engineers on the basis of their personal knowledge and experience and on the basis of the recommendation for speed limit by the consulting engineers, who were available. With the build up of increased design and testing facilities in RDSO, due recommendation is made by RDSO on the basis of design features of particular stock and assessment of their stability from oscillation tests conducted on main line track in normal state of maintenance and not subjected to speed restriction.

4. R.D.S.O. advises the Railway of the speed at which different types of locomotive and rolling stock can be permitted to run on different track structures. This is done in two stages

- (a) preliminary speed; and
- (b) final maximum speed.



The preliminary speed is based on a study of the design characteristics of the vehicle and experience of performance of similar designs in India and/or abroad. Such speed would be generally lower than the sectional maximum speed and it would not be difficult for CEs and CMs to arrive at a decision in issuing the Safety Certificate. Further, it is up to the CEs to decide whether any particular sections or routes require the imposition of a restriction on a generally sanctioned speed. Such a decision has to be based purely on the personal knowledge and experience of the engineers of the zonal railways.

5. It is, however, necessary to keep a watch on the performance of vehicles permitted on such preliminary speed limit to gather experience for guidance in determination of the final maximum speed both by RDSO and Railways the former taking this aspect into account along with the review of the oscillation test, and the latter while issuing the certificate for the final maximum speed.

The final maximum speed is determined by the RDSO on a review of the oscillation tests generally conducted for new designs and on confirmation of the suitability of the stock from the point of view of strength of track and bridges, although such investigation is made even at the initial stage of design. The oscillation trials are conducted with a view to obtaining data relating to the riding characteristics of the vehicle at the specified speeds. Such tests include aspects, such as, vertical wheel/axle load and lateral force ratio and vertical and lateral acceleration of the vehicle. The studies are aimed at assessing the possibilities of track distortion, wheel mounting, riding comforts etc. For conducting these tests, a section of main line track is selected over which there are no temporary restrictions and which is considered by the railway as being in a generally run down condition for main line standards but without speed restriction. The vehicle is tested generally for new and worn clearance conditions and also where relevant for operation in the forward or back-ward direction. The vehicle selected is one of those in average condition of normal maintenance. The tests are conducted on speeds usually 10% higher than that to which it is proposed to be certified.

On the basis of the theoretical and studies and investigations of the tests as indicated and the analysis of the test results, the RDSO recommends the maximum speeds up to which a vehicle can be permitted in normal traffic operation. The certificate of the RDSO though issued by the Director Standards (Mech.) is the final result of studies conducted by the various concerned



Directorates such as Civil Engineering, Carriage and Wagon Motive Power etc. This recommendation of the RDSO is meant to be used as guidance by the CEs and CMs of the zonal railways in formulating their own certificates to be furnished to the ACRS. It is up to Chief Engineer, Chief Mechanical Engineers and Chief Electrical Engineers to consider on the basis of their personal knowledge and experience of track locomotive and rolling stock and their maintenance requirements whether the conditions prevailing are such as to require a reduction in the speed of the vehicles in normal traffic operation.

6. In the case of certification of speeds by the CEs and CMs up to 105 Km/hr., it is neither feasible nor it is considered necessary that any more guidance than that at present being given by RDSO should be available to them in normal cases in arriving at their conclusions in the matter of formulation of their certificates to the ACRS. In the case of operation at higher speeds, it is proposed that in addition to the data at present being furnished, copies of track recording charts of the track over which the tests were conducted, would also be incorporated in the test reports and made available for reference to the CEs and CMs. It has already been accepted by the Board that in the case of high speed track (speed above 105 km/hr) track recording would be done at intervals of about 6 months. A comparison of the track recording for the test track with the track recording of the routes over which the high speeds are to be run would be an additional guidance to the CEs and CMs in the formulation of their certificates.

In conclusion, it may be pointed out that the statutory obligation of certification of speeds is that of the CEs and CMs/ and CEs of the zonal railways. In discharging these functions, the CEs and CMs/CEs are assisted by the RDSO. The extent of such assistance would normally depend on the speeds involved and the facilities available with the RDSO. The procedures, at present, followed are considered satisfactory for speeds upto 105 km/hr. For higher speeds, recording of characteristics of the test track would also be made available to the zonal railways for purpose of comparison with the actual track conditions prevailing from time to time.

....

involve large number of labour working with the machine. Hence, extra care is necessary as detailed below, to ensure safety of workers.

- (b) Hooters should be provided on the track machines. These hooters should be used to warn the staff working on/around the track machine about approaching train on adjoining track. Remote controlled hooters shall also be deployed as an added precaution by SSE/JE/P.Way so that lookout man standing around 150 m away from the track machine can also operate the hooter to warn the staff suitably. SSE/JE/TM shall also put on the flasher light on as an added precaution till the train on adjacent line has passed the site of work.
  - (c) Caution order of 30 to 50 kmph with instructions to whistle freely should be imposed on the adjacent line, during the duration of block, for the safety of workmen, depending upon the site conditions and visibility.
- (8) **Checking Infringement After Work** - The vertical and lateral clearance for OHE, signal post and any other structure should be checked and adjusted before clearing the block. It shall be ensured by SSE/JE (P.Way) working with track machine that there should be no infringement to signal post, OHE and any other structure as per schedule of dimensions.

#### 708 Failure and Accidents of Track Machines

- (1) **Protection in case of Breakdown** - In the event of breakdown, the track machines shall be protected as per GR 6.03 and SR there to by the machine staff, as directed by machine in-charge.
- (2) **Failures in Block Section** - Failures in block sections of the track machines will be treated as accident under class 'J – Equipment failure'.
- (3) **Accidents involving Track Machine** - Accidents involving track machines shall be treated as train accidents under the appropriate class and action shall be taken as per the rules in force.
- (4) **Action in case of Failure in Block** - In case of failure of track machine in block section, immediate information with details should be conveyed to the ADEN/DEN/Sr.DEN of the section and the AXEN/XEN/Dy.CE/Line/TM. SE/JE/TM should decide in consultation with SSE/JE (P. Way), the action to be taken to clear the section. They may decide to push the disabled unit to the nearest station provided the brake power is in good condition. Otherwise, intimation shall be sent to the nearest Station Master asking for a light engine to tow the unit.
- (5) **Request for ART/Breakdown** - In case, SSE/JE (P. Way) and/or SSE/JE/TM feels clearance of section is going to take long time, the assistance of Road Breakdown or Accident Relief Train shall be asked for immediately. Meanwhile SSE/JE/TM in-charge on the machine shall take necessary action to rectify the defect(s). SSE/JE (P. Way) shall provide all necessary assistance.



certificate. Machine competency certificate is to be issued to SSE/JE/TM by Dy.CE/TM Line or an officer authorized by him. This certificate will be issued as per proforma given in **Annexure 7.3** after ascertaining the successful completion of technical training, G & SR training and his medical fitness. The validity of this certificate will be up to the earliest expiry date of the three i.e. (i) Technical training (ii) G & SR training and (iii) PME.

For automatic block section, separate competency is required to be issued as per the practice in the Zonal Railway.

#### 704 Safety Equipment

- (1) **General** - SSE/JE/TM in-charge shall be responsible to ensure that the following equipment in working condition are available on the track machine:
  - (a) Two red and one green hand signal flags.
  - (b) Two tri-colour hand signal lamps /LED torch.
  - (c) Two chains with padlocks.
  - (d) One fire extinguisher in each cabin.
  - (e) Two hooters (manually controlled).
  - (f) Two jacks 10 t.
  - (g) Four wooden blocks.
  - (h) Four crow bars.
  - (i) One hydraulic hand pump.
  - (j) Emergency pneumatic/hydraulic hose of sizes suiting to different machines (Complete with end fitting).
  - (k) Wire rope with close loops at both ends 2 m and 9 m long for BCM: One of each length.
  - (l) Machine specific equipment, if any, listed in Chapter 2, 3, 4 and 5.
  - (m) Ten fog signals (detonators) in a tin case.
  - (n) A copy of the working timetable of the section where the machine is working.
  - (o) G & SR book with up to date amendment slips.
  - (p) One 4 cell flasher light LED lamp cum flasher light (rechargeable).
  - (q) Two banner flags.
  - (r) One first aid box.
  - (s) Two skids.
  - (t) Safety helmets for all machine staff.
  - (u) Protective clothing, safety shoes and safety gloves.
  - (v) Walkie talkie with frequency of SM, Guard and Loco Pilots.

- (w) Internal communication system like walkie-talkie and/or head mounted system.
  - (x) Track Machine Manual with up to date correction slips.
  - (y) Accident Manual.
  - (z) Tail lamp.
- (2) **Head and Tail Lights** – Each track machine must be equipped with prescribed head and tail lights, marker lights and flasher lights as per GR 4.14, 4.15 & 4.16 and SRs thereof. Each machine shall display LV board/tail lamp when moving alone. While moving in conveyor coupled, the LV board/tail lamp shall be fixed on the last vehicle; in the direction of movement.

## 705 Rules for Operation – General

- (1) **Stabling of Track Machines** - When the track machine(s) is/are stabled at a station, SSE/JE/TM in-charge shall ensure that it is clear of fouling marks and traps and necessary precautions against rolling down such as pinning down hand brakes, chaining and provision of skids; is taken in accordance with G&SR.
- (2) **Shunting of Track Machines** - No track machine shall be moved between a running line and the siding/stabling line without the written permission of the Station Master on duty in the form of shunting order/shunt signals.
- (3) **Machine Ready Memo** - SSE/JE/TM shall issue a written machine ready memo (as per Annexure 7.4) after necessary maintenance/repairs/schedules and Brake Power testing and other stipulated checks, if any, to on duty SM, indicating time and date, under advice to SSE/JE/P.Way deputed to work with the machine.
- (4) **Movement of Track Machines** - When the track machine is required to move from one station to another station, SSE/JE/TM shall run the machine only with proper authority to proceed and all necessary permits, notices and cautions as specified in G&SR. When track machine is to move on wrong road (against the direction of traffic), the speed of track machine shall not exceed more than 25 kmph and flasher light shall be kept "ON".
- (5) **Working in Group**
  - (a) When more than one machine is required to work within the same block section, these machines may be allowed to move into the block section in a group under one authority as detailed in this chapter. In such situation all the track machines must leave and enter the section simultaneously one after another keeping adequate distance among them and with proper authority as detailed further in the following paras.
  - (b) Total number of the machines shall be clearly mentioned in the line clear/block authority message with exchange of private numbers. For