भारत सरकार – रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ – 2226011
EPBX (0522) 2451200
Fax (0522) 2458500

Government of India – Ministry of Railways
Research Designs & Standards Organisation
Lucknow – 226011
DID (0522) 2450115
DID (0522) 2465310

PROVISIONAL SPEED CERTIFICATE FOR OPERATION

No.	TM/HM/11/S069/HOT & S-3X/KALUGA	Date	As Signed

(A) 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, मालीगॉव, 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– 400020
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) प्रबन्ध निदेशक,

डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि0 पाँचवा तल, प्रगति मैदान मेट्रो स्टेशन बिल्डिंग कॉम्पलेक्स नई दिल्ली–110 001

Sub:	Provisional Speed Certificate for operation of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” (Transportation Code **TCSPMA03**) supplied by M/s Kaluga Plant Remputmash JSCo, Russia, upto maximum speed of 60kmph when running on its own power as well as when running in train formation over Indian Railways and over routes of Eastern & Western dedicated freight corridors of DFCCIL.
Ref:	Railway Board Contract No. 2020/Track-III/MC/1(i) dated 11.06.2020

1.0 IMPORTANT PARAMETERS RELATED TO ROLLING STOCK

Type	**Final / Provisional / Oscillation Trial / COCR Movement**	Provisional	**Validity/ Period or Permanent**	**IR / Sectional/ DFCCIL**	5years / IR & Eastern & Western DFCCIL routes.

Stock Name	High Output Tamping-cum-Stabilizing Machine (HOT & S-3X) Model No. “PMA-3”	**Max. Axle Load (Empty)**	NA	**Max. Axle Load (Loaded)**	21.5t

Transportation Code	**TCSPMA03**	**GA Drg. No.**	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 1 & 2)

Bogie Arrgt. Drg. No.	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 3 & 4)	**Suspension Arrgt. Drg. No.**	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 8)

Commodity	Coal / Ore / Steel /Bagged / Oil /etc.	NA	**Gauge**	BG

Type of Bogie	Bo-Bo	**Type of Coupler**	Transition Coupler

Wheel Dia.(mm)	**New**	**Worn**
Main	950	910
Satellite	732	710

Max. Permissible Speed for IR & for routes of Eastern & Western DFCCIL	**Own Power**	60 kmph	**Train Formation**	60 kmph

2.0	**INTRODUCTION**

2. 1	High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” supplied by M/s Kaluga Plant Remputmash JSCo, Russia as per their Drawing No. 253.00.00.000 (Sheet 1 & 2) is a self-propelled machine and is used for improving the track geometry upto standards for high speed on main line and continuous tamping and stabilizing operation for high and durable output on Indian Railways.
2. 2	High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” supplied by M/s Kaluga Plant Remputmash JSCo, Russia is having maximum axle load of 21.5t and wheel diameter of main bogie and satellite bogie of 950mm and 732mm respectively. The suspension arrangement as per M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 8). The design speed of machine is 80kmph when running on its own power and 100kmph when running in train formation as a dead vehicle and as a last vehicle. The machine shall be capable of hauling an 8-wheeler camping coach at a speed not less than 50kmph. The design details are given in Annexure-A.

3.0	Based on design features, details given in Annexure-A and Dynamic simulation results of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” supplied by M/s Kaluga Plant Remputmash JSCo, Russia, it is certified that the machine as per M/s JSC RPM Drawing No. 253.00.00.000 (Sheet 1 & 2) 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 and as a last vehicle for operation over Indian Railways and over routes of Eastern & Western dedicated freight corridors of DFCCIL, subject to the following conditions: -

3.1	**TRACK**				
3.1.1	**FOR INDIAN RAILWAYS**				
3.1.1.1	**The track shall be to a minimum standard of-**				
	Rail Section	**Sleeper Density**	**Ballast Cushion**	**Max. Speed (own power)**	**Max. Speed (Train formation)**
	52 kg (72UTS)	1540 Nos./km PSC Sleeper	250mm (100mm clean & rest in caked up condition on compacted and stable formation)	Upto 50kmph	Upto 50kmph

	52kg (90UTS)	1540 Nos./km PSC Sleeper	250mm (100mm clean & rest in caked up condition on compacted and stable formation)	Upto 60kmph	Upto 60kmph
3.1.1.2	Track geometry standards shall be maintained to as per provisions of Indian Railways Permanent Way Manual, June-2020, containing track geometry standards under Para 522.				
3.1.1.3	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.				
3.1.1.4	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, June-2020. Maximum cant deficiency permitted would be 75mm.				
3.1.1.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual, June-2020 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, June-2020. 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.				
3.1.1.6	Zonal Railways shall 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, June-2020, regarding permanent way renewals and shall suitably restrict maximum speed of operation based on such examination.				

3.1.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**				
3.1.2.1	**The track structure shall be of minimum standard-**				
	Rail Section	**Sleeper Density**	**Ballast Cushion**	**Max. Speed (Own power)**	**Max. Speed (Train formation)**
	60 kg (90 UTS)	1660 Nos./km PSC sleeper	300mm (200mm clean & rest in caked up condition on compacted and stable formation)	60kmph	60kmph
3.1.2.2	Track geometry standards shall be maintained to as per provisions of Indian Railways Permanent Way Manual, June-2020, containing track geometry standards under Para 522.				
3.1.2.3	For track maintained to lower standard than that mentioned above, the GGM (Engg.) shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, instructions issued by Railway Board's letter no. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. When the GGM (Engg.) considers that the road bed is not compacted or there is improper drainage, he shall suitably restrict the maximum permissible speed depending upon the local conditions.				
3.1.2.4	The maximum permissible speed on curves shall be decided on the basis of the existing provisions of the Indian Railways Permanent Way Manual, June-2020. Maximum cant deficiency permitted would be 75mm.				

3.1.2.5	The welds shall be protected by joggled fish plates as per provisions of USFD Manual and Indian Railways Permanent Way Manual, June-2020 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, June-2020. 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.
3.1.2.6	DFCCIL shall ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per the provisions of Indian Railways Permanent Way Manual, June-2020 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.

3.2	**BRIDGE STIPULATIONS**

3.2.1	**FOR INDIAN RAILWAY**				
3.2.1.1	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-2008 standard loadings.				
3.2.1.2	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.				
3.2.1.3	The clearance is subject to the following parameters of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” supplied by M/s Kaluga Plant Remputmash JSCo, Russia:-				
	Rolling Stock	**Maximum axle load (t)**	**Maximum tractive effort per axle (t)**	**Maximum braking force at rail level per axle(t)**	**Maximum CG height from rail level (mm)**
	High Output Tamping-cum-Stabilizing Machine (HOT & S-3X)	21.5	3.6	1.9	1440
3.2.1.4	All Standard RDSO spans of BGML, RBG, MBG and 25t-2008 loading are restricted for speed of 60kmph when running on its own power as well as when running in train formation.				
3.2.1.5	During operation of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” 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.				
3.2.1.6	Location of bridges on which speed restrictions are imposed should be notified by the Railways and incorporated in the working timetable.				

3.2.1.7	The above clauses 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.
3.2.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**
3.2.2.1	The clearance refers to “Standard RDSO Spans” bridges with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for “DFC loading (32.5t axle load)”.
3.2.2.2	Superstructures & Bearings of “Special Spans” (designed and constructed by DFCCIL based on site requirements), Arches and sub-structures (including foundation) of all bridges (Standard RDSO spans & Special Spans) are to be examined by DFCCIL and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.
3.2.2.3	The clearance is subject to the following parameters of High Output Tamping-cum-Stabilizing Machine (HOT& S-3X), Model No.“PMA-3” supplied by M/s Kaluga Plant Remputmash JSCo, Russia:-

Rolling Stock	**Maximum axle load (t)**	**Maximum tractive effort per axle (t)**	**Maximum braking force at rail level per axle(t)**	**Maximum CG height from rail level(mm)**
High Output Tamping-cum-Stabilizing Machine(HOT& S-3X)	21.5	3.6	1.9	1440

3.2.2.4	All Standard RDSO spans of DFC loading are restricted for speed of 60kmph when running on its own power as well as when running in train formation.
3.2.2.5	During operation of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. “PMA-3” 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.
3.2.2.6	Location of bridges on which speed restrictions are imposed should be notified by DFCCIL and incorporated in the working timetable.
3.2.2.7	The above clauses 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 DFCCIL on condition basis.

3.3	**SIGNALLING STIPULATIONS**

3.3.1	Provisions of GR, SR, IRSOD, DFC-SSOD, 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.

3.4	**ROLLING STOCK STIPULATIONS**

3.4.1	Before initiating the operation of the High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. "PMA-3" supplied by M/s Kaluga Plant Remputmash JSCo, Russia, the Chief Engineer/Track Machine of the concerned Railway/GGM (Mech.) of the DFCCIL 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 High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. "PMA-3" supplied by M/s Kaluga Plant Remputmash JSCo, Russia shall be in perfect working condition during the operation.

3.5	**TRACTION INSTALLATION**

3.5.1	**FOR INDIAN RAILWAYS**
3.5.1.1	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.
3.5.1.2	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.
3.5.1.3	When the High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. "PMA-3" 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.
3.5.2	**FOR EASTERN & WESTERN DEDICATED FREIGHT CORRIDORS OF DFCCIL**
3.5.2.1	In 25 KV AC traction area, the GGM (Electrical) of the DFCCIL shall have to ensure that the minimum height of contact wire and electrical clearances as stipulated in provisions of Chapter VII of Eastern Corridor & Chapter XIV of Western Corridor, Electric Traction 'Standard Schedule of Dimensions' for dedicated freight corridors with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
3.5.2.2	In addition to above, the GGM (Electrical) of DFCCIL 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.
3.5.2.3	When the High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. "PMA-3" 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.

3.6	**GENERAL STIPULATIONS**

3.6.1	The working of Maintenance Machine shall be as per provision of Indian Railways Permanent Way Manual, June-2020.
3.6.2	The profile of High Output Tamping-cum-Stabilizing Machine (HOT & S-3X), Model No. "PMA-3" supplied by M/s Kaluga Plant Remputmash JSCo, Russia, infringes to clauses 17, 18(b) and 19(b) of Chapter IV (D) of Indian Railways Schedule of Dimensions (BG) Revised, 2022 and infringes to clauses 4.1.2(ii), 4.1.2(iii) & 4.4.4 of chapter IV of Eastern Dedicated Freight Corridor and clauses 11.1.2(ii), 11.1.2(iii) & 11.4.4 of chapter XI of Western Dedicated Freight Corridor for BG 'Standard Schedule of Dimension of Indian Railways, January-2013'. Railway Board has condoned these infringements vide their letter No. 2023/CEDO/SD/RS/07/HOT & S-3X-IR-DFCCIL dated 21.08.2023.
3.6.3	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 3.1.1.4 for Indian Railway Track and para 3.1.2.4 for DFCCIL track of this speed certificate.
3.6.4	The machine when running in train formation as well as when running on its own power, a speed restriction of 15kmph 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, June 2020.
3.6.5	In case of emergency, the machine shall be attached with passenger /goods trains and operation speed of passenger/goods trains shall not be more than 60kmph.
3.6.6	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.
3.6.7	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.
3.6.8	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.

ENCLOSURES:/ संलग्नक:

i)	Annexure-A
ii)	M/s JSC RPM GA Drg. No. 253.00.00.000 (Sheet 1 & 2).
iii)	Bogie arrangement: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 3 & 4).
iv)	Suspension arrangement: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 8).
v)	Railway Board's letter No. 2023/CEDO/SD/RS/07/HOT & S-3X-IR-DFCCIL dated 21.08.2023.
vi)	Railway Board's letter No. 2020/M(C)/202/6 (MTM) dated 30.09.2022.
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.

Digitally Signed by Nitin Mehrotra
Date: 20-10-2023 18:20:58
Reason: Approved

(नितिन मेहरोत्रा)
कार्यकारी निदेशक, मानक / चालन शक्ति

प्रतिलिपिः

1. सचिव, {यांत्रिक/विद्युत/इंजीनियरिंग(जी)}, रेलवे बोर्ड, रेल भवन, नई दिल्ली– 110001
2. मुख्य रेल संरक्षा आयुक्त, अशोक मार्ग, लखनऊ–226001
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, मालीगॉव ,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 कॉम्पलेक्स, 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.
5. जी.जी.एम (मेकैनिकल/इंजी/यातायात/संकेत एवं दूर संचार) डेडीकेटेड फ्रेट कोरीडोर कॉर्पोरेशन ऑफ इण्डिया लि0 नई दिल्ली–110001.

ENCLOSURES:/ संलग्नकः

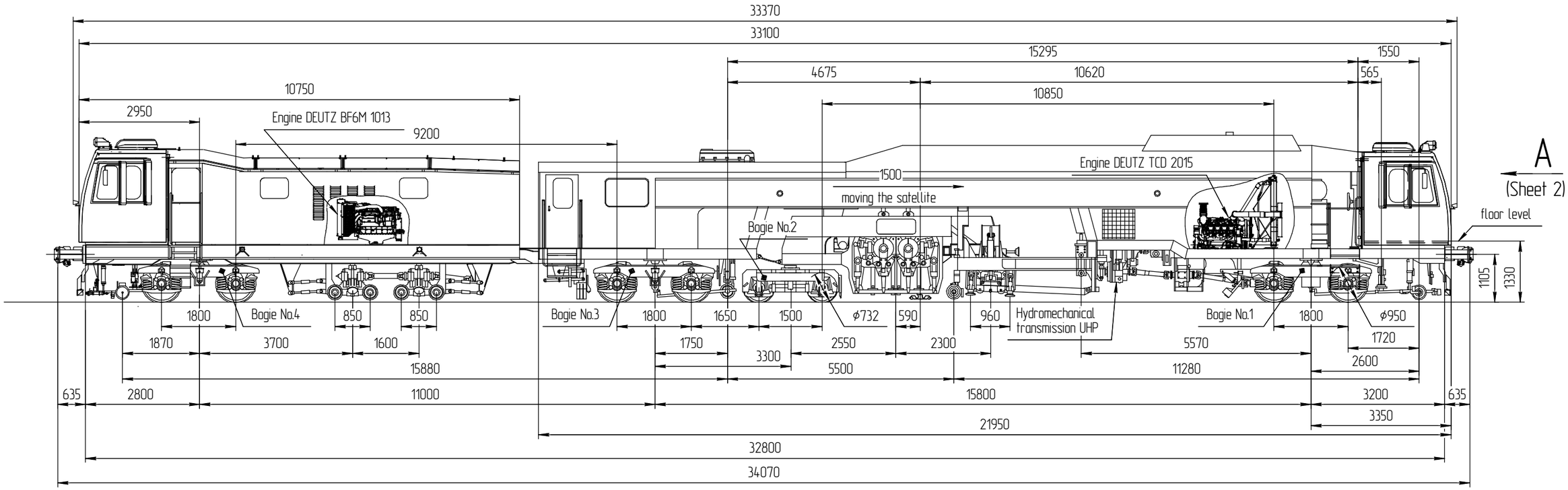
i)	Annexure-A
ii)	M/s JSC RPM GA Drg. No. 253.00.00.000 (Sheet 1 & 2).
iii)	Bogie arrangement: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 3 & 4).
iv)	Suspension arrangement: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 8).
v)	Railway Board's letter No. 2023/CEDO/SD/RS/07/HOT & S-3X-IR-DFCCIL dated 21.08.2023.
vi)	Railway Board's letter No. 2020/M(C)/202/6 (MTM) dated 30.09.2022.
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.

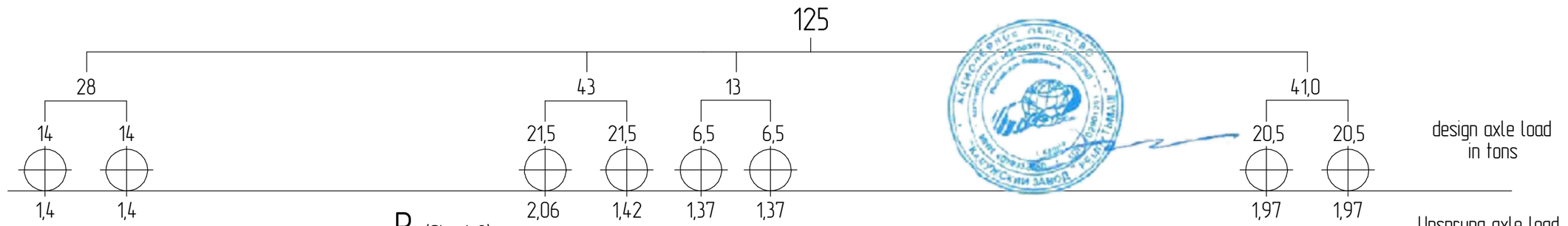
(**Signed**)
(नितिन मेहरोत्रा)
कार्यकारी निदेशक मानक/चालन शक्ति

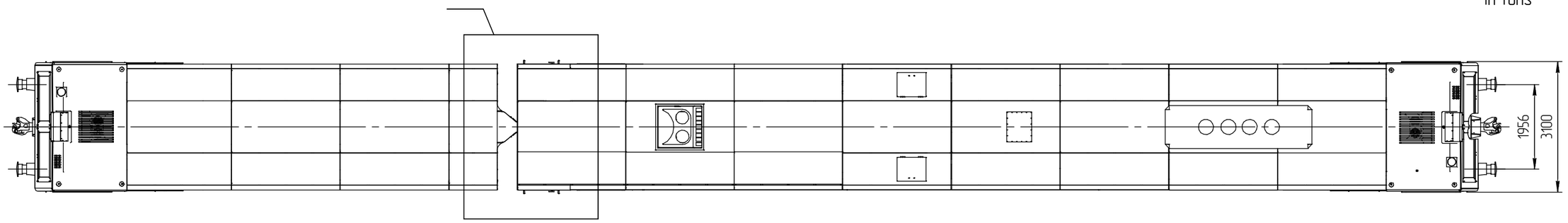
Annexure-A

Salient features of High Output Tamping cum Stabilizing Machine (HOT& S-3X), Model No. "PMA-3" supplied by M/s Kaluga Plant Remputmash JSCo, Russia.

SN	Description	Details
1.	Principal dimensions of rolling stock	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 1 & 2). a. Length over buffers : 34070 mm b. Bogie centre distance : 15800/11000mm c. Wheel base : 1800 mm, 1500 mm d. Max. axle load : 21.5 t e. Max. design speed- i) Own power : 80 kmph ii) train formation : 100 kmph f. Weight i) Tare weight : 119 t ii) Gross weight : 125 t
2.	Bogie details and wheel	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 3 & 4). Wheel dia : - (i) Main bogie:- New : 950mm Worn : 910mm (ii) Satellite bogie:- New : 732mm Worn : 710mm
3.	Suspension arrangement	M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 8).
4.	Brake system details	Pnuematic Brake: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 11).
5.	Details of Coupler and Buffer	Transition Coupler: M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 9.2). Buffer : M/s JSC RPM Drg. No. 253.00.00.000 (Sheet 9.1).
6.	Transmission	(i) Engine Model DEUTZ TCD 2015 V8 Rated Power 500kW @2100 (ii) Engine Model DEUTZ BF6M 1013 Rated Power 150kW @2000
7.	Safety Items	a) Fire extinguisher : one b) Hooter (manual) : two c) Jack (10t) : two d) Wooden Blocks : four e) Crow bars : four f) Hydraulic hand pump : one g) Emergency pneumatic/Hydraulic hose with end fittings : one







Maximum self-propelled speed, km/h	80
Maximum speed in the rest of the train, km/h	100
Maximum speed in the measuring trip , km/h	10
Machine weight in running order, kg	125000
Machine weight without loading, kg	119000
Maximum axle load, t	21,5

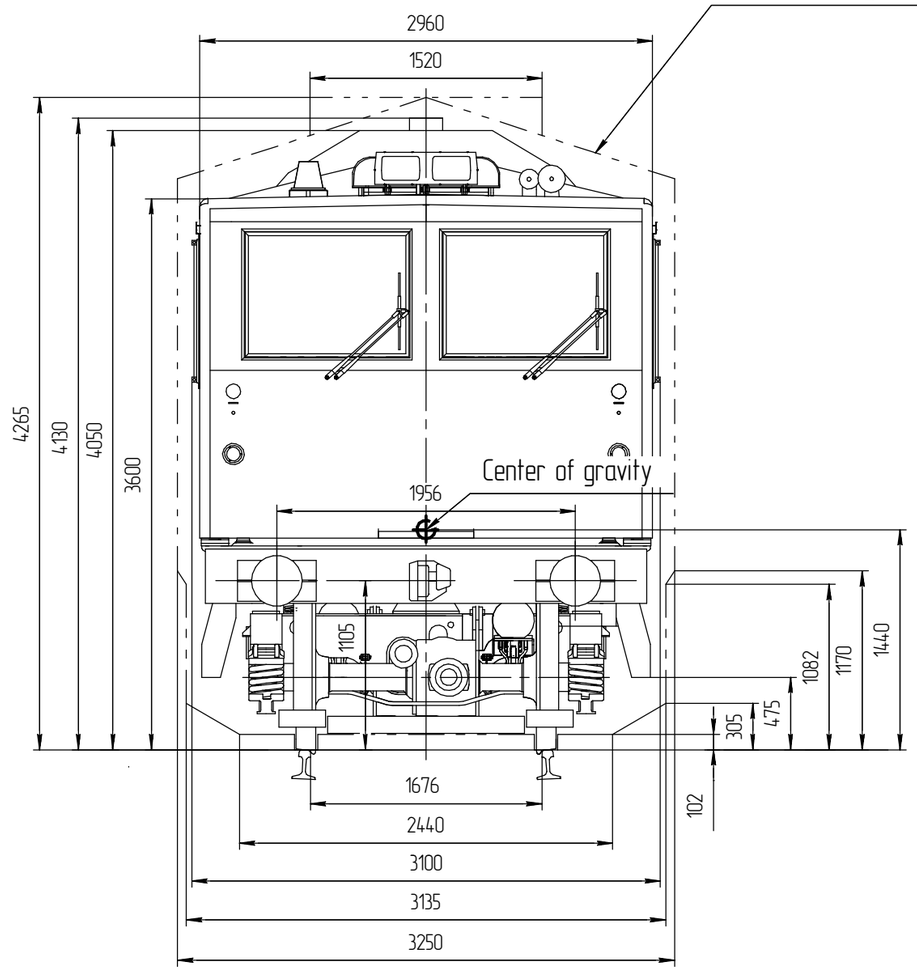
Power plant 1
Diesel model – DEUTZ TCD 2015 V8
Rated power – 500 kW
Rated shaft speed – 2100 min^{-1}

Power plant 2
Diesel model – DEUTZ BF6M 1013
Rated power – 150 kW
Rated shaft speed – 2000 min^{-1}

253.00.00.000	Sheet 1
High Output Tamping cum Stabilizing Machine (HOT & S-3X) "Model: PMA-3"	
Machine PMA-3 General View, View from Top, View to Axles	JSC "RPM"

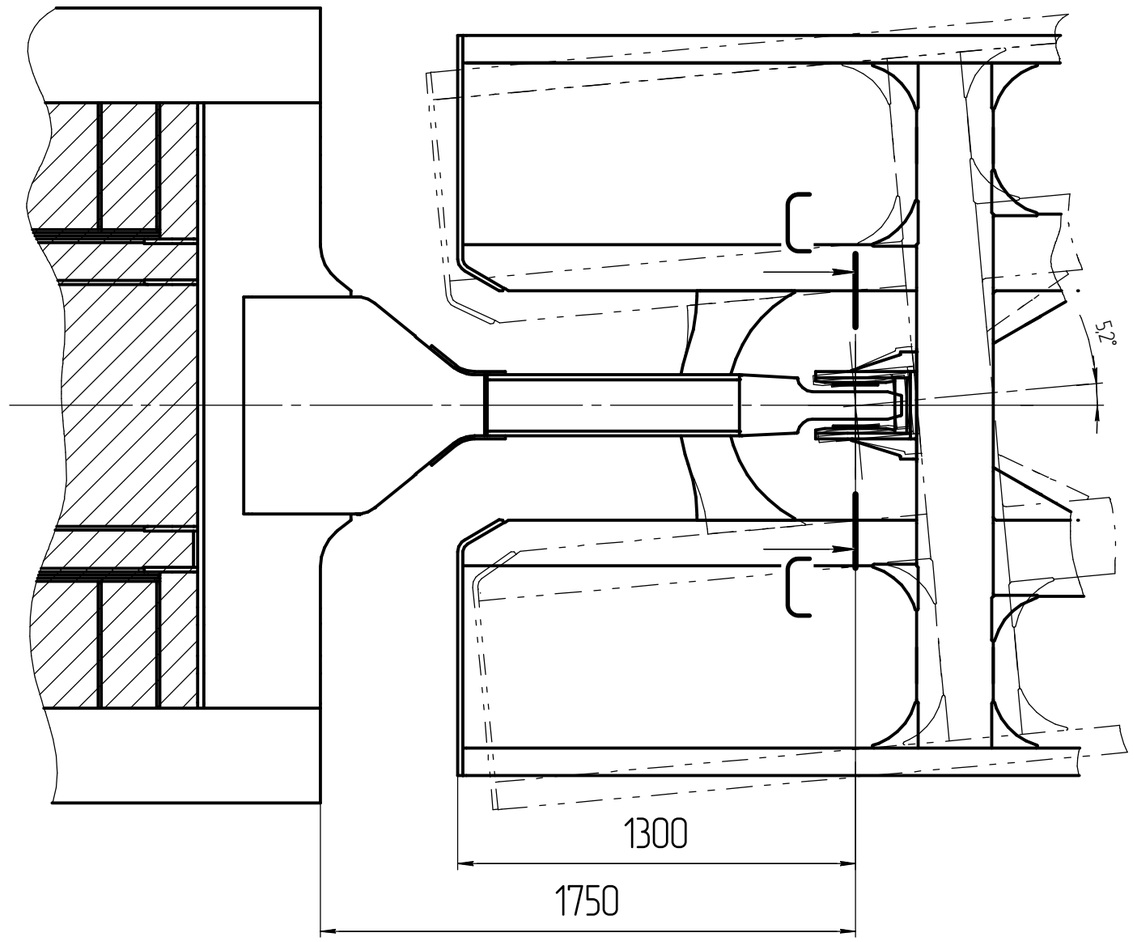
View A

Dimensions of Indian RW
Diagram No. 1D, (EDO/T-2202)
1676 mm Gauge

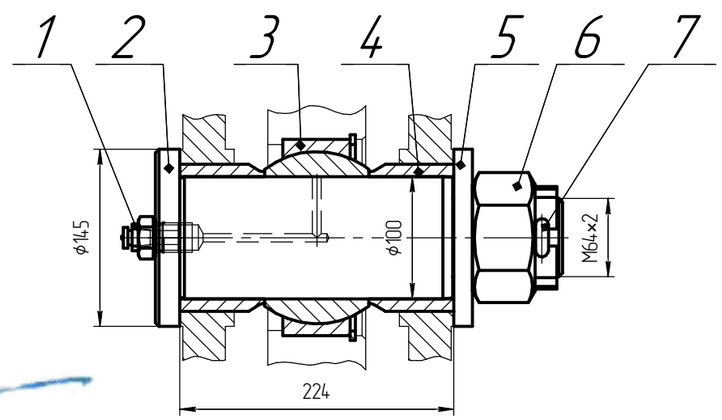


View B

swivel joint of machine components



C–C



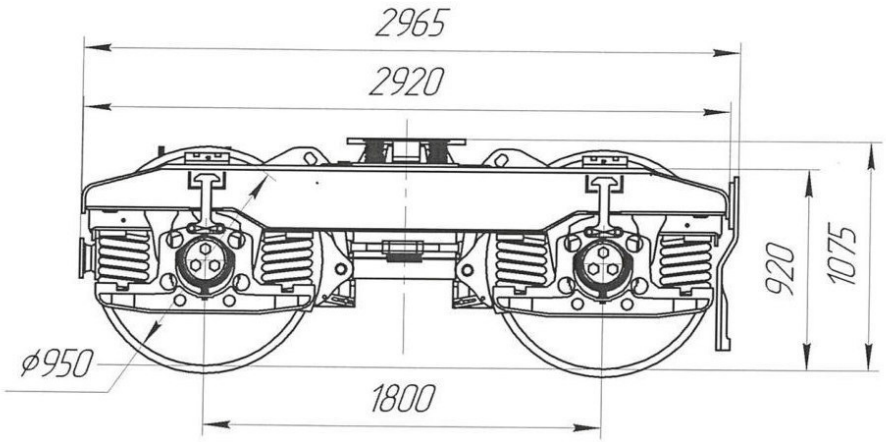
1 – lubricator
2 – Axle
3 – Bearing
4 – Sleeve
5 – Washer
6 – screw
7 – cotter pin

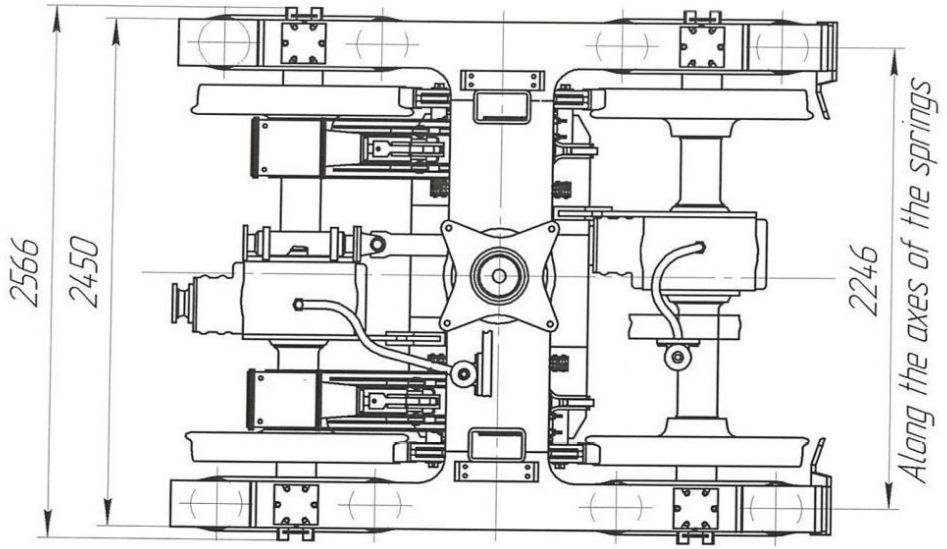
The radius of the traversable curves is not less than, m

- in transport mode – 120
- in working mode – 180

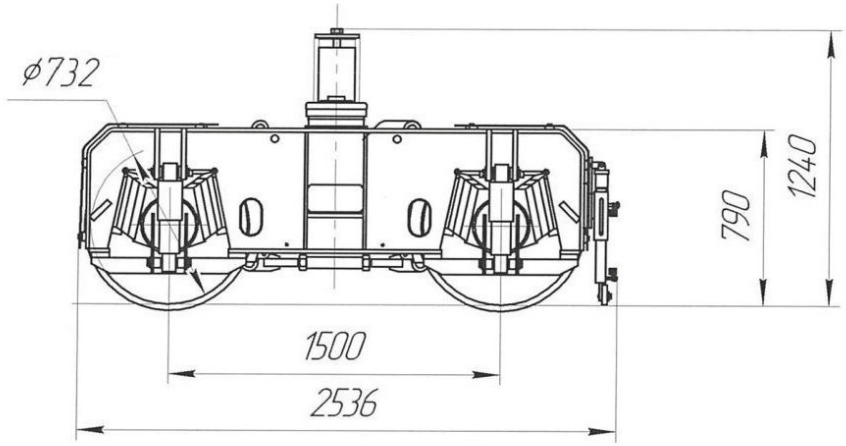
253.00.00.000	Sheet 2
High Output Tamping cum Stabilizing Machine (HOT & S-3X) "Model: PMA-3"	
Machine PMA-3 Front View, machine connection	JSC "RPM"

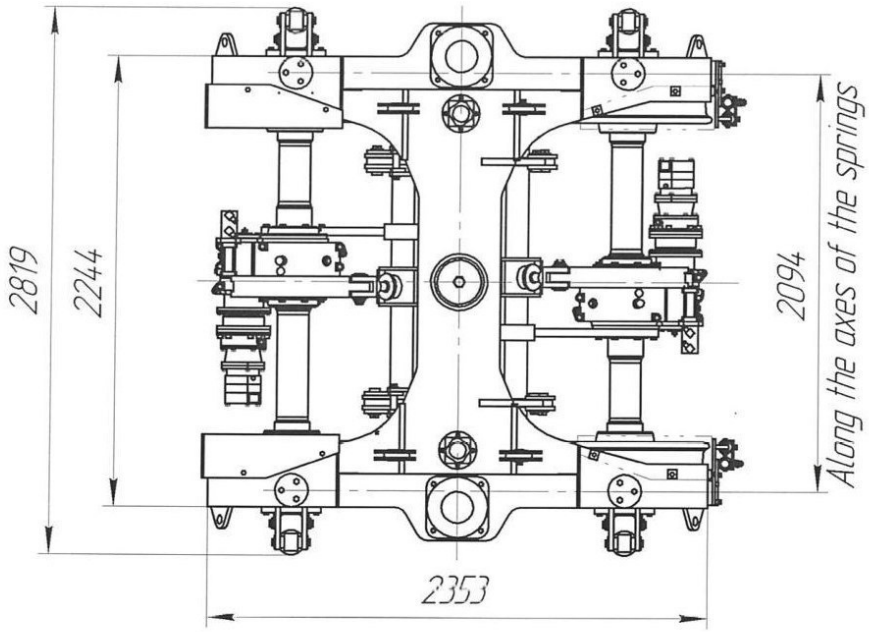
Bogie No.1 Driving





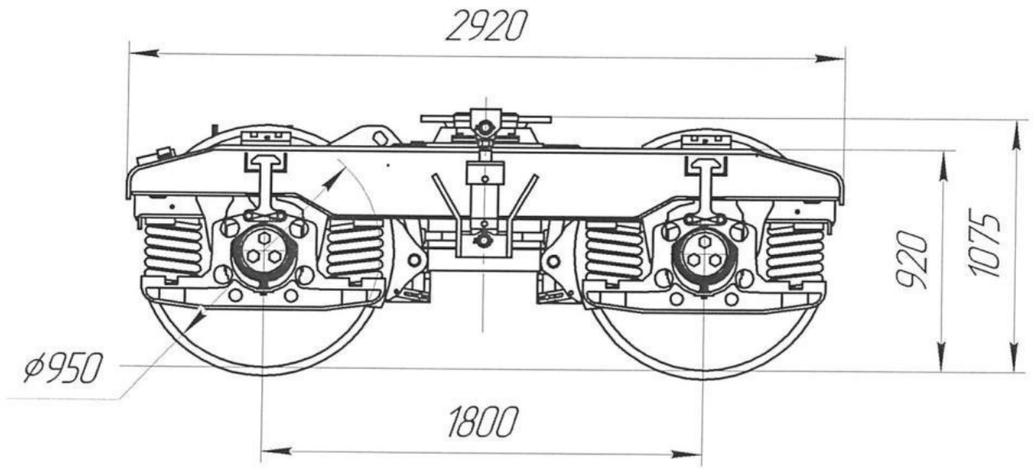
Bogie No.2 Driving Satelite

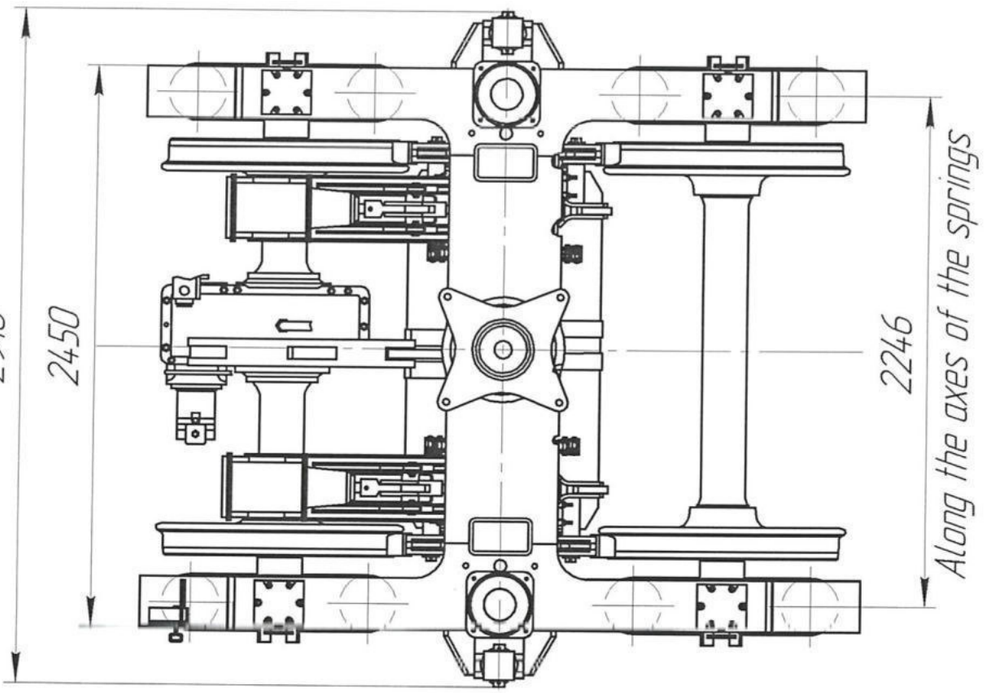




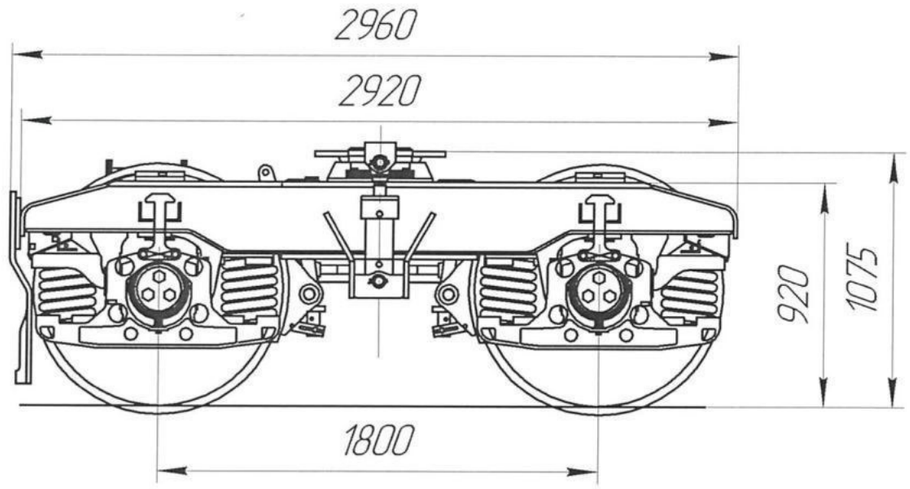
253.00.00.000	Sheet 3
High Output Tamping cum Stabilizing Machine (HOT & S-3X) "Model: PMA-3"	
Driving Bogies No.1 and No.2	JSC "RPM"

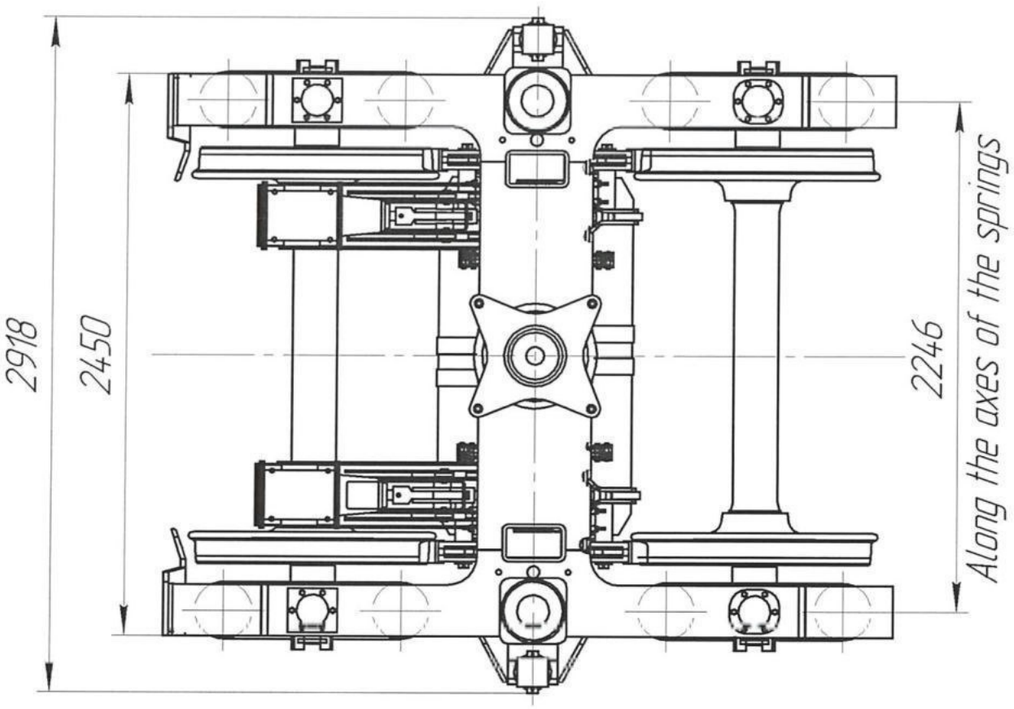
Bogie No.3 Driving



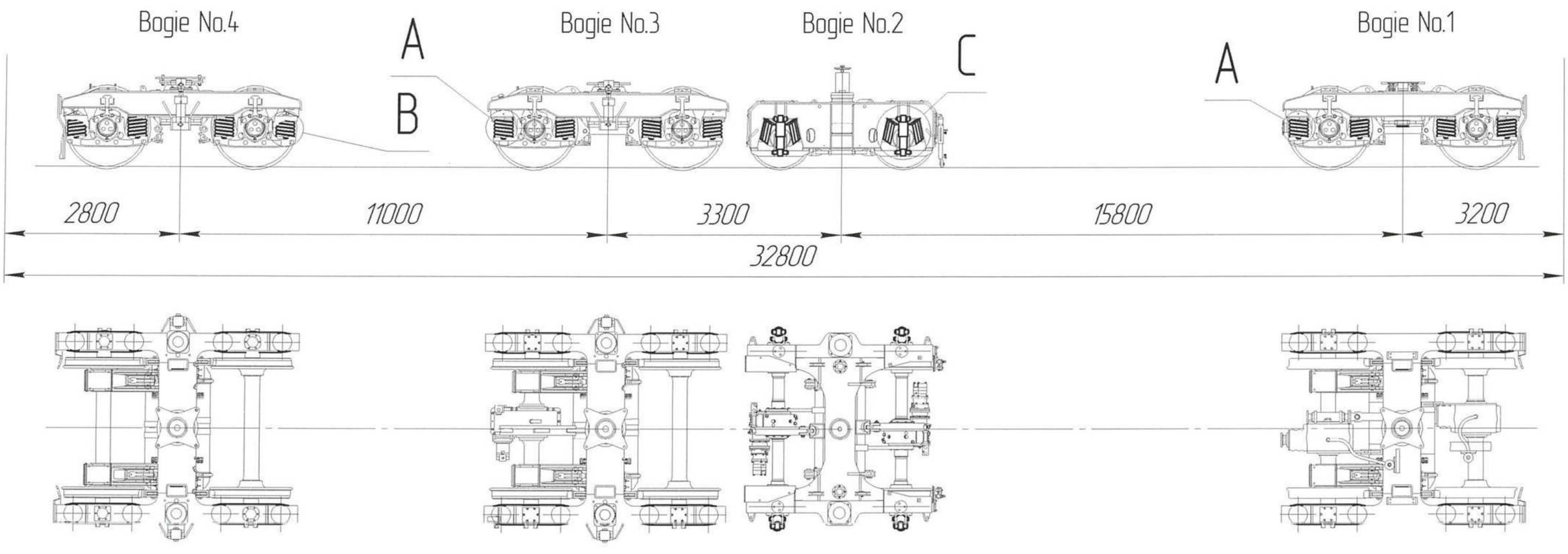


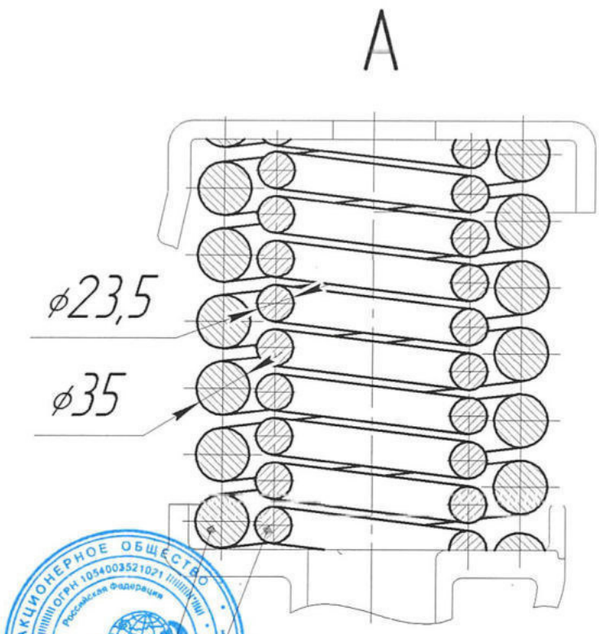
Bogie No.4 Running

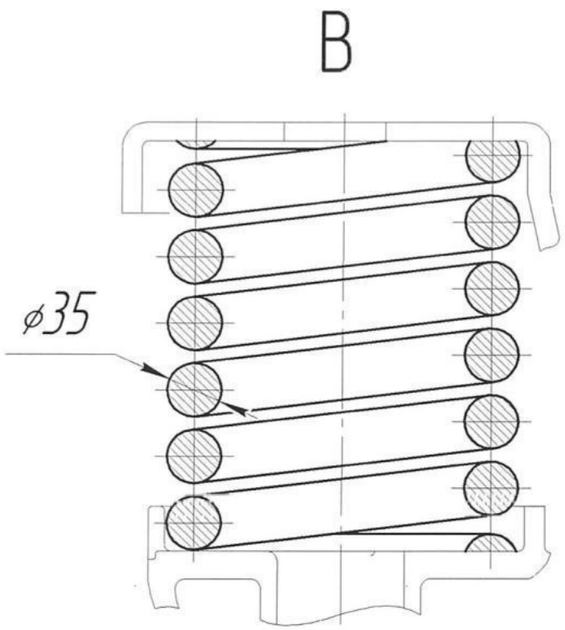


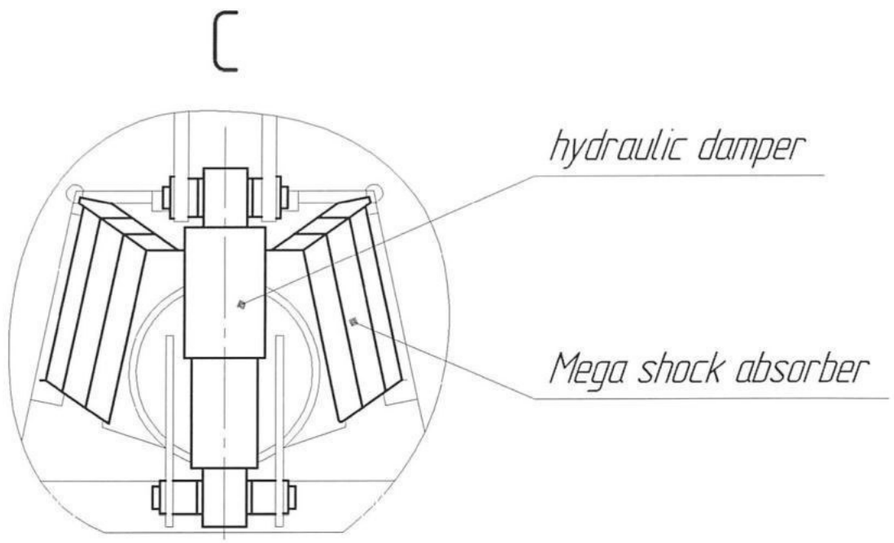


253.00.00.000	Sheet 4
High Output Tamping cum Stabilizing Machine (HOT & S-3X) "Model: PMA-3"	
Driving Bogie No.3 and Running Bogie No.4	JSC "RPM"









253.00.00.000	Sheet 8
High Output Tamping cum Stabilizing Machine (HOT & S-3X) "Model: PMA-3"	
Spring suspension of undercarriages	JSC "RPM"

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

No. 2023/CEDO/SD/RS/07/HOT & S-3X-IR-DFCCIL **New Delhi, dated 21.08.2023**

The Director General
Research Designs & Standards Organisation,
Manak Nagar, Lucknow-226011.

Sub : Condonation of infringements w.r.t. IRSOD(BG), Revised-2022 and Standard Schedule of Dimensions (BG) Eastern and Western Dedicated Freight Corridors of Indian Railways, January 2013 by High Output Tamping-cum Stabilizing Machine (HOT & S-3X) Model No. PMA-3{Transportation Code TCSPMA03} supplied by M/s Kaluga plant Remputmash JSCo, Russia as per GA Drawing No. 253.00.00.000(sheet 1-2) & Wheel Profile Drawing No. 253.00.00.000 Sheet 7

Ref : (i) CCRS office letter no. Q.14011/07/2022-23-TW, dated 04.07.2023
(ii) RDSO letter no. CT/TMM/GENERAL, dated 27.09.2022 & 16.06.2023

With reference to RDSO above applications dated 16.06.2023 {ref.(ii)}, sent through the Chief Commissioner of Railway Safety, Lucknow; the sanction of Ministry of Railways, Railway Board is hereby communicated for condonation of infringements w.r.t. IRSOD(BG), Revised-2022 and Standard Schedule of Dimensions (BG) Eastern and Western Dedicated Freight Corridors of Indian Railways, January 2013 by High Output Tamping-cum Stabilizing Machine (HOT & S-3X) Model No. PMA-3{Transportation Code TCSPMA03} supplied by M/s Kaluga plant Remputmash JSCo, Russia as per GA Drawing No. 253.00.00.000(sheet 1-2) & Wheel Profile Drawing No. 253.00.00.000 Sheet 7, as shown in detail enclosed with above mentioned application, detail of infringements are as under:

A. **Chapter-IV(D) of IRSOD**

i. **Clause 17-** Minimum rigid wheel base for bogie truck of any vehicle by 300mm for satellite bogie (i.e. 1500mm instead of 1800mm)

ii. **Clause 18(b)-** Maximum length of body or roof for bogie vehicles by 460mm (i.e. 21800mm instead of 21340mm)

iii. **Clause 19(b)-** Maximum length over centre buffers couplers or side buffers for bogie vehicles by 135mm (i.e. 22435mm instead of 22300mm)

21.08.23

i. **Clause 4.4.4/11.4.4-** Minimum rigid wheel base for bogie truck of any vehicle by 30mm for main bogie and 330mm for satellite bogie (i.e. 1800mm/1500mm instead of 1830mm)

ii. **Clause 4.1.2(ii)/11.1.2(ii)-** Minimum diameter on the tread of new wheel, measured at 63.5mm from wheel gauge face by 108mm (i.e. 732mm instead of 840mm)

iii. **Clause 4.1.2(ii)/11.1.2(iii)-** Minimum diameter on the tread of worn wheel, measured at 63.5mm from wheel gauge face by 70mm (i.e. 710mm instead of 780mm)

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

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

21.08.23

(गौरव)
निदेशक सिविल इंजीनियरिंग(जी)/रेलवे बोर्ड
[Rly No. 030-47598, MTNL No.-011-23047598]
e-mail address :dceg@rb.railnet.gov.in

No. 2023/CEDO/SD/RS/07/HOT & S-3X-IR-DFCCIL New Delhi, dated 21.08.2023

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. Q.14011/07/2022-23-TW, dated 04.07.2023
2. Commissioner of Railway Safety, All Circles
3. ED Standards (Track-1), RDSO, Manak Nagar, Lucknow
4. PEDTk(M & Mc), Railway Board, New Delhi

21.08.23

(गौरव)
निदेशक सिविल इंजीनियरिंग(जी)/रेलवे बोर्ड

आज़ादी का अमृत महोत्सव

भारत सरकार Government of India
रेल मंत्रालय Ministry of Railways
रेलवे बोर्ड Railway Board

Azadi Ka Amrit Mahotsav

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

(E-File No. 3338970)
New Delhi, Date: 30.09.2022

ED/Carriage,
RDSO, Lucknow

Sub: Allotment of transportation code for High Output Tamping-cum-Stabilizing Machine (HOT & S-3X) Model No. PMA -3 supplied by M/s Kaluga plant "Reputmash" JSCo. Russia.

Ref: i. RDSO's letter no. MC/TW dated 09.09.2022.
ii.TMM Directorate Note No. TM/HM/S069/HOT PMA-3 KALUGA/TC dated 22.08.2022

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

Type of Coach	Transportation Code
High Output Tamping-cum-Stabilizing Machine (HOT & S-3X) Model No. PMA -3 supplied by M/s Kaluga plant "Reputmash" JSCo. Russia.	TCSPMA03

For further necessary action please.

30/09/2022

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

C/-GM/CMM/CRIS - for kind information and necessary action please.

No.65/WDO/SR/26 (Railway Board) 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.

4. Receipt of this letter may please be acknowledged.

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

DA: As above.

No.65/WDO/SR/26

Copy to D.G. RDSO, Alambagh, Lucknow 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 arerequired 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 1522 of Indian Railway Code for Accounts department.

3. Prior to the setting up of testing facilties 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 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 CMEs 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 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 ~~as~~ 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 may 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 CMEs of the zonal railways in formulating their own certificates to be furnished to the ACRS. It is upto 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 CMEs 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 CMEs. 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 CMEs 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 CMEs/ and CAEs of the zonal railways. In discharging these functions, the CEs and CMEs/CAEs are assisted by the RDSO. The extent of such assistance would normally depend on the speeds involved and the facilities available with the RDSO [illegible]. 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 Break-down 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.