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R.M. & E.E. (L.M.R.)  
Nelson Street  
DERBY

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C. ELECTRIFIED LINES

This booklet contains details of various On Track Machines.

Enclosed with each drawing are the requirements as laid down by the R.M. & E.E., Derby, in respect of machine operation and machine maintenance on lines energised at 25 KV. Instructions quoted from A.C. Working Instructions of 1.12.86 are printed overleaf.

Your attention is also drawn especially to Instructions 14 and 16.

General Notes

a) Warning Notices in respect of Overhead Line Equipment

It is the responsibility of the supervisors in charge of machines to ensure that adequate Warning Notices in accordance with BR 29961 are fitted. Any discrepancies should be reported to the Senior Supervisor in charge, On Track Plant.

Each machine must have an agreed Warning Notice Schedule which can be checked against during maintenance. Special requirements for notices are issued with relevant instruction page.

b) Bonding in respect of Machines

Continuity bonds must be fitted to Chassis/Bogie/Wheel Sets and maintained as required.

c) Off-Track Machines - Stillage

Temporary bond required for a Machine Stillage (confer with AM & EE). Permanent bond will be fitted to all Permanent Stillages.

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ON TRACK MACHINES WORKING ON 25 KV A.C. ELECTRIFIED LINES

N O T E

R.M. & E.E. requirements are in accordance with the Working Instructions for A.C. Electrified Lines issued on 1.12.1986, therefore the information in this booklet must be read in conjunction with the current issue of the A.C. Working Instructions.

Details of machines are as known at 30th June, 1986, and are subject to change. A.M. & E.E.'s should consult with the A.C.E. concerned to confirm dimensions of R.C.E. machines and range of operation prior to date of work.

This booklet will be reviewed from time to time and will be re-issued if deemed necessary. It is not intended to amend any information on a day to day basis.

The R.C.E. has provided some of the On Track Machine information for use as guidelines only and does not accept responsibility for information quoted except for his own use.

It is essential that the R.C.E./A.C.E.'s representatives at the Dated Programme Meeting knows precisely what mechanical plant is to be used and the method of working, so that an agreement can be made on what O.L.E. requires to be isolated. If there is any doubt this must be cleared with the A.M. & E.E.

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ON TRACK MACHINES WORKING ON 25 KV A.C. ELECTRIFIED LINES

Extracts from the Working Instructions for A.C. Electrified Lines

Instruction - 7.1, 7.2:-

Climbing on traction units and vehicles.

Instruction - 9.1, 9.2, 9.3, 9.8:-

Work near to Overhead Line Equipment.

Instruction - 10:-

Work on open rail vehicles under Overhead Line Equipment.

Instruction - 12:-

Use of Cranes or similar extensible appliances.

Instruction - 15.1:-

Bonds.

Instruction - 15.2:-

Alterations to Permanent Way.

Instruction - 15.3:-

Interrupted continuity of running rails.

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ON TRACK MACHINES WORKING ON 25 KV A.C. ELECTRIFIED LINES

Extracts from the Working Instructions for A.C. Electrified Lines

Instruction 7: Climbing on traction units and vehicles

7.1 IT IS FORBIDDEN TO CLIMB ABOVE THE FLOOR LEVEL OF THE DRIVING COMPARTMENT ON TRACTION UNITS, except on unwired lines where there is no overhead line equipment above or adjacent to the traction unit, unless the overhead line equipment has been isolated and earthed and a Permit to Work issued.

7.2 IT IS FORBIDDEN TO CLIMB OR TO BE UPON THE ROOFS OR OPEN UPPER DECKS OF VEHICLES OR UPON THE STEPS GIVING ACCESS TO THE ROOF OF ANY VEHICLE, unless the overhead line equipment has first been isolated and earthed and a Permit to Work issued except:-

- (i) on unwired lines where there is no overhead line equipment above or adjacent to the vehicle, or,
- (ii) under the specific conditions detailed in Instruction 10.

Instruction 9 Work near to the overhead line equipment.

9.1 Work may be performed on the track and on all normal roadways, pathways, walkways and station platforms etc., including situations at which protective screening of a permanent nature is provided, without reference to the Area M. & E. Engineer, provided it is undertaken in accordance with the Working Instructions.

9.2 Work may also be performed in situations other than those referred to above, without reference to the Area M. & E. Engineer provided:-

9.2.1 the work does not require any part of a person, or any tool or materials which he has to use, to approach nearer than 9 feet (2.75 metres) to the live equipment or to the vertical space above, and to 9 feet (2.75 metres) on either side of the live equipment,

or

9.2.2 the work is to be performed by specially authorised staff.

9.3 If, however, the work is to be performed at situations, or under conditions, other than those referred to in 9.1 and 9.2 and the work will require any part of a person, or any tool or material which he has to use, to approach nearer than 9 feet (2.75 metres) to the live equipment or to the vertical space above and to 9 feet (2.75 metres) on either side of the live equipment, the person in charge of the work must advise the Area M. & E. Engineer. The latter will assess all factors involved, including nature of work, situation, tools and liquids to be used and adopt one of the following courses of action as appropriate:-

- (i) Indicate a suitable demarcation line, such as the edge of guttering, course of brickwork etc., and arrange for the placing of a rope or temporary fence and/or suitable warning notices to define the limit (which under no circumstances will be less than 2 feet (600 millimetres) from the live equipment) beyond which no part of the body, tools or materials must be allowed to project towards the live equipment.
- (ii) Require the provision of suitable temporary screening before the work commences.
- (iii) Require that the work must only be carried out with the overhead line equipment isolated and earthed.

Note: S. & T. maintenance staff may carry out their normal duties on signals without reference to the Area M. & E. Engineer. All signals have been cleared for this, or alternatively fixed protective screens have been provided. All other work (e.g. painting or re-wiring) will require consultation with the Area M. & E. Engineer.

9.8 Persons working adjacent to the overhead line equipment must take special care when carrying out work of the following nature:-

9.8.1 Attending signal lamps.

9.8.2 Oiling, washing, painting, repairing or carrying out work of any kind on lighting standards, signals, signal gantries, signal boxes, station roofs, bridges, buildings and other structures.



9.8.3 Carrying or using paint, water or other liquids in positions where they are liable to be thrown, to fall or to be projected upon the overhead line equipment or connections.

9.8.4 Carrying or using material such as rope, wire or measuring tapes.

9.8.5 Carrying or using pipes, rods, poles, brooms, mops or similar long articles. Should the article be of such length that if not carried horizontally there would be a possibility of it coming close to or in contact with the overhead line equipment, it must be carried horizontally, two or more men being used if necessary.

Shunting poles or brake sticks must not be raised in such a manner that they may be liable to come close to, or into contact with, the overhead line equipment.

9.8.6 Loading or unloading vehicles or carrying out work which involves standing upon the floor or upon the load of open wagons on unwired lines adjacent to wired lines.

Note: Notices are exhibited defining the limits of loading and unloading in certain yards and sidings.

9.8.7 Repairing and maintaining vehicles.

9.8.8 Cleaning rolling stock. Attention is drawn to separate instructions issued to carriage cleaning staff.

9.8.9 Work requiring staff to go on roofs of vehicles (See also Instruction 7).

9.8.10 Trimming or felling of trees or undergrowth where debris is liable to fall or to be projected upon or near to the overhead line equipment or connections.

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Instruction 10: Work on open rail vehicles under overhead line equipment

10.1 When loading or unloading of open wagons is to be carried out on wired lines, the Area M. & E. Engineer must always be consulted before the work is allowed to commence except that:-

10.1.1 Civil Engineering department staff may, under responsible supervision, load or unload wagons by hand methods under live overhead line equipment without reference to the Area M. & E. Engineer provided:-

- (i) the site of work is not on the Up and Down Moorgate Lines between structure F.02/66 opposite Kentish Town Track Sectioning Cabin and Moorgate (London Midland Region),
- (ii) the flooring of the wagon is not more than 4 feet 7 inches (1.4 metres) above rail level,
- (iii) no attempt is made to get into the wagon until there is clear standing space on the floor of the wagon and access is not gained by climbing over the wagon side,
- (iv) those engaged on the work do not climb or stand on any material within the wagon but at all times stand on the wagon floor,
- (v) no part of the person, or any tool or material which he may be required to use, projects higher than the top of his head,
- (vi) suitable precautions, such as provision of illumination, are taken to ensure safety of the staff when visibility of the overhead line equipment is obscured e.g. during hours of darkness or in tunnels.

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10.1.2 Staff authorised by BR may, at the designation locations, load and unload single deck carflats under live overhead line equipment provided:-

- (i) the height of the carflat floor above rail level does not exceed 4 feet 7 inches (1.4 metres).
- (ii) the overall height of the road vehicles is within the limits specified for the location and all radio aerials are retracted before loading commences. The specified limits must allow a clearance of not less than 2 feet 6 inches (750 millimetres) between the highest point of the road vehicle and the level of the contact wire,
- (iii) those engaged on the work remain at all times on the floor of the carflat, except for the purpose of getting into or out of the driving seat of the road vehicle. The road vehicle must have a roof over the driving seat, to provide a physical barrier between the person gaining access to the driving seat and the overhead line equipment,
- (iv) no part of the person, or any tool or material which he may be required to use, projects higher than the top of his head,
- (v) no straps for securing lifting roofs are passed over or removed from road vehicles whilst standing under the overhead line equipment.
- (vi) suitable precautions, such as provision of illumination, are taken to ensure safety of the staff when visibility of the overhead line equipment is obscured e.g. during hours of darkness.

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10.2 When servicing or maintenance of rail-borne plant and machinery requires access to the open decks of vehicles on wired lines, the Area M. & E. Engineer must always be consulted before the work is allowed to commence, except that persons authorised by the Regional Mechanical & Electrical Engineer or by the Regional Civil Engineer, as appropriate, may carry out such servicing or maintenance without reference to the Area M. & E. Engineer provided:-

- (i) the site of work is not on the Up and Down Moorgate lines between structure F.02/66 opposite Kentish Town Track Sectioning Cabin and Moorgate (London Midland Region),
- (ii) the decking and designated walkways of the vehicle are not more than 4 feet 7 inches (1.4 metres) above rail level,
- (iii) no attempt is made to gain access to the vehicle except by the designated access,
- (iv) those engaged on the work remain on the decking or within the designated walkways and do not climb or stand on any material or equipment cases, or the like,
- (v) no part of the person, or any tool or material which he may be required to use, projects higher than the top of his head,
- (vi) suitable precautions, such as provision of illumination, are taken to ensure safety of the staff when visibility of the overhead line equipment is obscured, e.g. during hours of darkness or in tunnels.

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Instruction 12: Use of cranes or similar extensible appliances

12.1 Whenever a crane or similar extensible appliance has to be used on or near to the electrified lines the work must not commence until the overhead line equipment has been isolated and earthed and a Permit to Work issued, except where the Area M. & E. Engineer has agreed that the work may be carried out without an isolation.

12.2 It is the responsibility of the Crane Supervisor to inform the Crane Driver of any electrical hazards which may be encountered during the crane operations.

12.3 Whenever possible, work should be carried out without interfering with the overhead line equipment, but if this equipment has to be adjusted or removed, this work must only be done by authorised staff.

12.4 Even though the electricity may have been switched off, the utmost care must be exercised to ensure that damage is not caused to the overhead line equipment, connections, or supports. Any such damage must be reported immediately to the Electrical Control Operator.

12.5 Steam cranes must not be used with the chimney extension raised under the overhead line equipment without the agreement of the Area M. & E. Engineer.

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Instruction 15: Bonds.

15.1 Any bond found to be broken or defective must be reported immediately to the appropriate department which must arrange replacement as quickly as possible.

15.2 Alterations to permanent way.

15.2.1 Work on the running rails involving the breaking of any bonds or connections fixed thereto or the continuity of the return circuit through the rails must not be carried out without reference first being made to the representatives of the M & E.E and S & T departments, except in so far as is permitted in the following specific cases:-

(i) Removal or loosening of fishplates for oiling, adjustment etc.

If the rail joint concerned is bonded, temporary bonding need not be applied unless the normal bonding has to be broken.

If the rail joint is insulated, temporary bonding must not be applied.

If the rail joint is neither bonded nor insulated a temporary bond must be applied across the joint before the fishplates are loosened.

(ii) Removal of rails

If the rail to be removed does not have an insulated joint at either end, before the joints are loosened, a temporary bond must be applied between each end of the rail to be removed and its abutting rails, sufficient to bridge the gap after the rail is removed. Alternatively, the abutting rails may first be cross-bonded to another traction return rail. The temporary bonds must be left in position until the rail has been replaced and normal bonding, if any, restored.

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If, however, any bonds other than rail joint bonds are attached to the rail to be removed, or if more than one rail is to be removed in a complicated area, and local instructions do not cover the situation, the representatives of the M & E.E and S & T departments must be informed so that they may specify what further temporary bonding shall be applied.

15.2.2 No additional bonds other than as permitted in 15.2.1 must be applied without reference to the representative of the S & T department.

15.2.3 Certain connections to the running rail such as those from Feeder Stations, Track Sectioning Cabins, return conductors, auxiliary transformers etc. are marked in red at the rail end. If disconnected this could result in a dangerous voltage arising. These connections must not be disturbed by anyone other than staff authorised by the Area M & E Engineer.

15.2.4 When track renewal or similar work involving severance of the running rails is to be carried out, temporary bonding must first be installed or other appropriate arrangements made to the satisfaction of the representatives of the M & E.E and S & T departments.

### 15.3 Interrupted continuity of running rails

If the electrical continuity of the running rail is interrupted as a result of a defect, e.g. broken and/or parted rail, this fact must be reported immediately to the representatives of the M & E.E and S & T departments. A temporary bond must be applied across the break as soon as possible. Where clamping is to be undertaken the bond must be applied first. The bond must be applied with care, since current may flow as soon as it is applied and some arcing may occur. There is, however, no danger of electric shock.

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I N D E X

Tampers

Plasser Main Liner Universal Tamper 07-16 Series 1	1.1
Plasser Main Liner Universal Tamper 07-16 Series 2	1.2
Plasser Main Liner Universal Tamper 07-16 Series 3	1.3
Plasser Main Liner Universal Tamper 07-16 Series 4	1.4
Plasser Duomatic Tamper 07-12, 07-16, 07-32 Series 5 and 6	1.5
Plasser Duomatic Tamper 07-275 Series 7	1.6
Pneumatic Ballast Injection Machine PBI'84	1.7

Ballast Cleaners

Plasser Ballast Cleaner RM 62 Series 1	2.1
Plasser Ballast Cleaner RM 62 Series 3 and 4	2.2
Plasser Ballast Cleaning Machine Type RM 74	2.3

Ballast Regulators

Plasser Ballast Regulator Type USP-4000	3.1
Plasser Ballast Regulator Type 5000C Series 1,2 and 6 (Series 1 shown)	3.2
Cowans Sheldon Ballast Regulator (NEI) Type BRM 1000	3.3



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Ballast Consolidators

Plasser Consolidating Machine VDM 800-U

4.1

Track Recording Trolleys

Matisa Track Recording Neptune Trolley

5.1

Rail Joint Straighteners

Rail Joint Straighteners RMC Pittsburg U.S.A.  
Strait (Plasser Rail Joint Straightener & Rail Grinder GWM 110)

6.1  
6.2

Rail Changing Machines

Plasser Rail Changing Machine Type RCM-100

7.1

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Rail Loaders

British Hoist and Crane End on Loader Winch Wagon (Grampus) RL16-22	8.1 SHT 1
British Hoist and Crane End on Loader Roller Wagon (Grampus) RL16-22	8.1 SHT 2
Auto Mower End on Rail Loader Winch Wagon (Grampus) RL7-11, 13 & 15	8.2 SHT 1
Auto Mower End on Rail Loader Roller Wagon (Grampus) RL7-11, 13 & 15	8.2 SHT 2
Side Rail Loader (Stumec) -SALMON & STURGEON WAGONS	8.3
Side Rail Loader (Stumec) - WAGON COVERED (SALMON)	8.4
Long Welded Rail Train	8.5 SHT 1-6

Track Relayers

Thomas Smith Track Laying Machine TRM6-8	9.1
Iron Fairy Sapphire Track Laying Machine TRM 13	9.2
Iron Fairy Tourmaline Track Laying Machine TRM 14,15	9.3
Plasser 12.5 Tonne Twin Jib Tracklayer	9.4
Clarke Chapman 12.5 Tonne Twin Jib Tracklayer	9.5

Single Line Gantries

Donelli Portal Crane PD-350	10.1
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General Purpose Trams

Geismar Track Maintenance Machine  
Plasser G.P. Tramm (O.B.W.10)

11.1

11.2

Rail Head Profiling Machines

Rail Profiling Machine RPM 100 Series 2 & Swarf Collector Unit  
Speno Switch & Crossing Grinder (U.R.R.16P)

12.1

12.2

Viaduct Inspection Units

Viaduct Inspection Unit HP3  
Universal Viaduct Inspection Unit (Armfield)  
Viaduct Inspection Unit TU37

13.1 SHT 1 & 2

13.2 SHT 1 & 2

13.3

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Drain Cleaning Units

Drain Cleaning Unit No. 1 (Molex)	14.1
Drain Cleaning Unit No. 2 (Cleaver Lea)	14.2

Off Track Machines

Ballast Packer MKIV	15.1
Permaclipper Mark II & Mark III	15.2
Permaquip Powered Canopy Trolley (PCT)	15.3
Permaquip Personnel Carrier	15.4
Permaquip Overhead Trolley	15.5
Bruff Road Rail Recovery Vehicle	15.6 SHT 1 & 2

Miscellaneous

Track Gopher (Undercutter) - Model G0-4	16.1
Bruff TW15 Road-Rail Hedger	16.2

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General Purpose Trams

Geismar Track Maintenance Machine	11.1
Plasser G.P. Tramm (O.B.W.10)	11.2

Rail Head Profiling Machines

Rail Profiling Machine RPM 100 Series 2 & Swarf Collector Unit	12.1
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Universal Viaduct Inspection Unit (Armfield)	13.2 SHT 1 & 2
Viaduct Inspection Unit IU37	13.3

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Drain Cleaning Units

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Drain Cleaning Unit No. 2 (Cleaver Lea)	14.2

Off Track Machines

Ballast Packer MKIV	15.1
Permaclipper Mark II & Mark III	15.2
Permaquip Powered Canopy Trolley (PCT)	15.3
Permaquip Personnel Carrier	15.4
Permaquip Overhead Trolley	15.5
Bruff Road Rail Recovery Vehicle	15.6 SHT 1 & 2

Miscellaneous

Track Gopher (Undercutter) - Model GO-4	16.1
Bruff TW15 Road-Rail Hedger	16.2

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ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

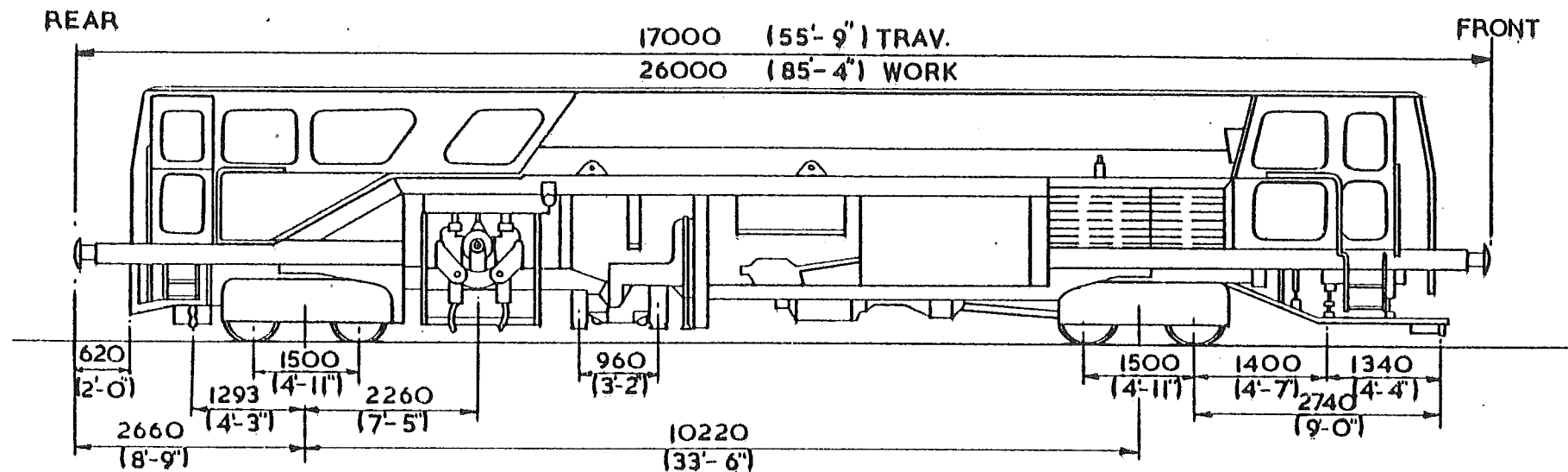
1.1 Type: Universal Tamper 07-16 Series 1

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

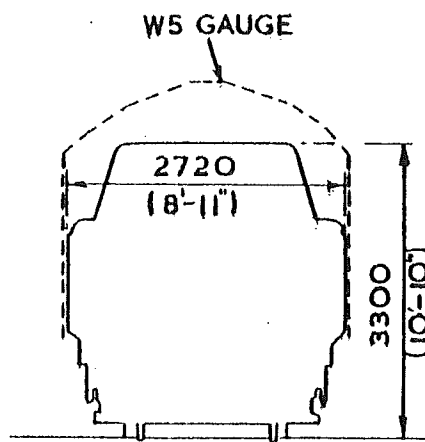
3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted Continuity of running rails) of the A.C. Working Instructions.

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## GENERAL INFORMATION



TOTAL WEIGHT-34000Kg - 33.46 tons.  
 FRONT AXLE LOAD-8000Kg - 7.87 tons.  
 REAR AXLE LOAD-9000Kg - 8.86 tons.  
 SPEED UNDER OWN POWER. PLAIN LINE - 40 Km/h - 25 mile/h.  
 SPEED UNDER OWN POWER. P & C - 40 Km/h - 25 mile/h.  
 MINIMUM CURVE - 121m, 6 CHAIN RAD. TRAV; 201m, 10 CHAIN RAD. WORK.  
 MAXIMUM SUPERELEVATION - 152mm, 6 ins.  
 ENGINE-ROLLS ROYCE DIESEL TYPE C6 TFL  
 OPERATION - LEVELS, LINES, TAMPS.

## PLASSER MAINLINER UNIVERSAL TAMPER O7-16 SERIES I.

Maintaining Dept.: -R.M. & E.E.

11  
Date: - 30-6-86



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ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

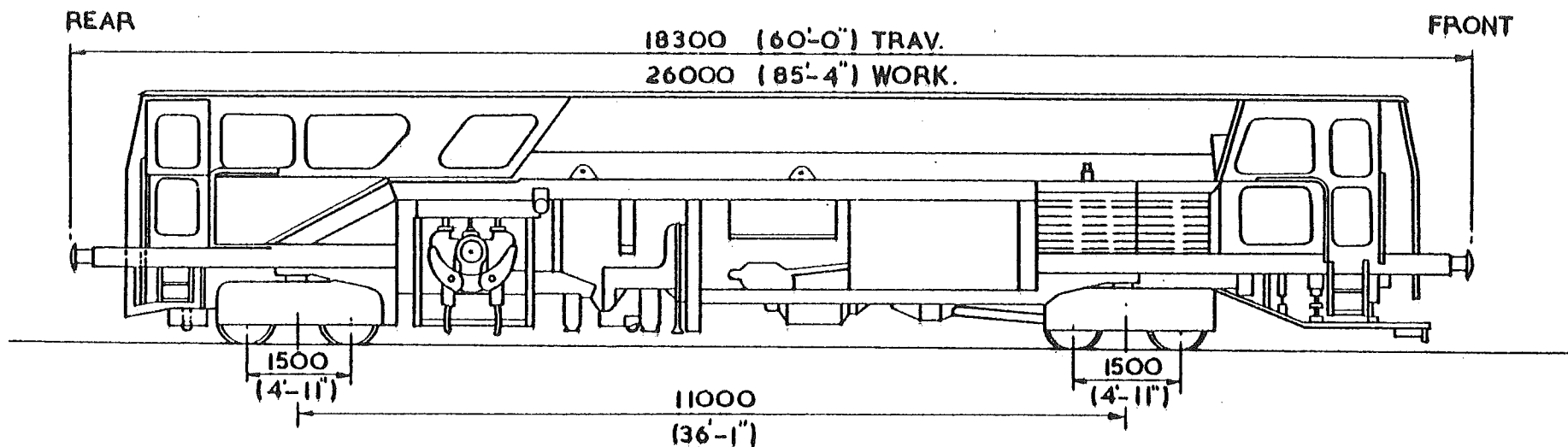
1.2 Type: Universal Tamper 07-16 Series 2

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

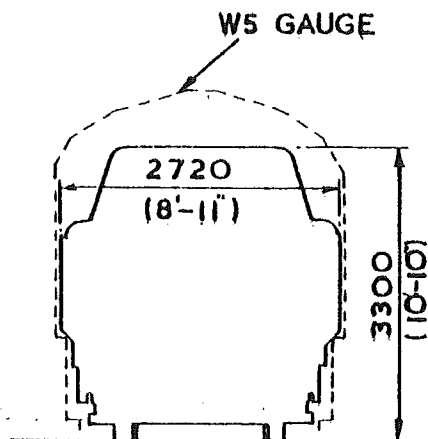
Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way), and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

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## GENERAL INFORMATION

TOTAL WEIGHT — 34000Kg — 33.46 tons.  
 FRONT AXLE LOAD — 8000Kg — 7.87 tons.  
 REAR AXLE LOAD — 9000Kg — 8.86 tons.  
 SPEED UNDER OWN POWER, PLAIN LINE — 40 Km/h — 25 m.p.h.  
 SPEED UNDER OWN POWER, P & C — 40 Km/h — 25 m.p.h.  
 MINIMUM CURVE — 121m, 6 CHAIN RAD. TRAY; 201m, 10 CHAIN RAD. WORK.  
 MAXIMUM SUPER ELEVATION — 152 mm, 6 ins.  
 ENGINE — ROLLS-ROYCE DIESEL TYPE C6 TFL.  
 OPERATION — LEVELS, LINES, TAMPS.



## PLASSER MAINLINER UNIVERSAL TAMPER 07-16 SERIES.2.

Maintaining Dept.: — R.M. & E.E.

1-2  
Date.: — 30-6-86

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ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

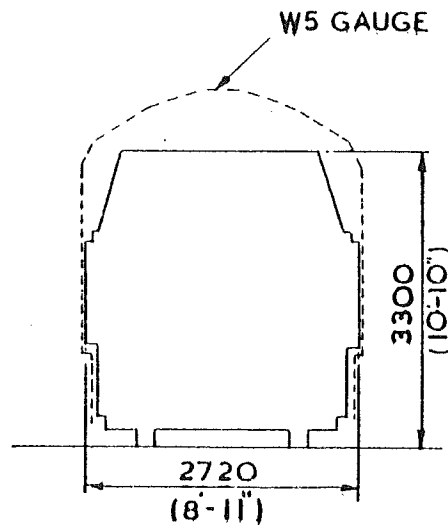
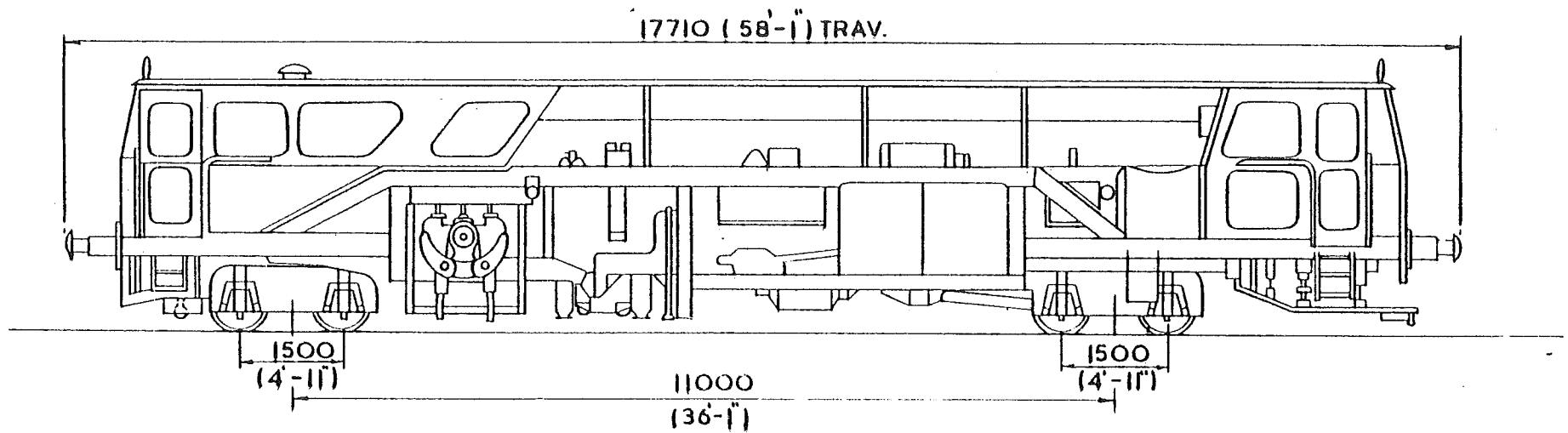
1.3 Type: Universal Tamper 07-16 Series 3

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

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**PLASSER MAINLINER UNIVERSAL TAMPER O7-16 SERIES. 3.**

Maintaining Dept.: - R.M. & E.E.

1-3

Date.: - 30-6-86

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ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

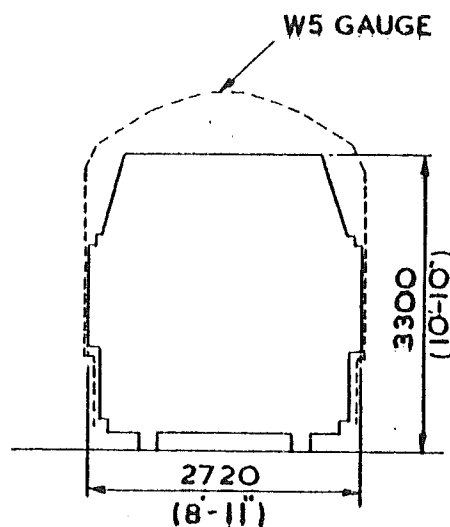
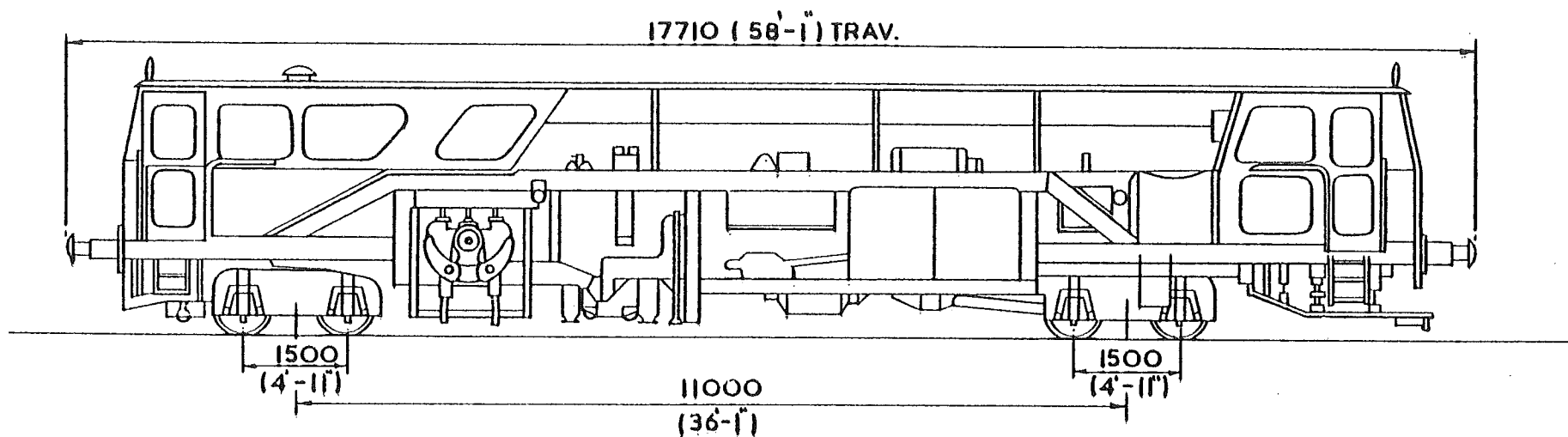
1.4 Type: Universal Tamper 07-16 Series 4

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

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**PLASSER MAINLINER UNIVERSAL TAMPER O7-16 SERIES. 4.**

Maintaining Dept.: - R.M. & E.E.

1.4  
Date.: - 30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

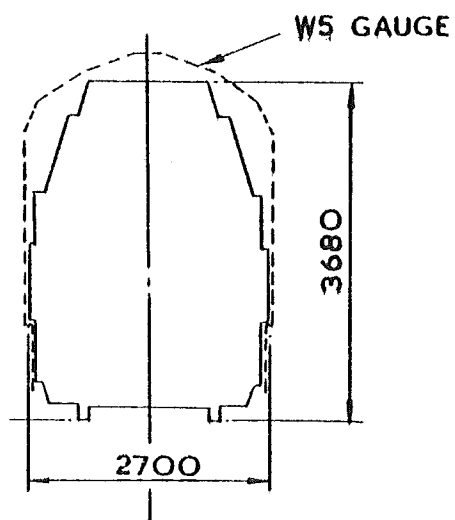
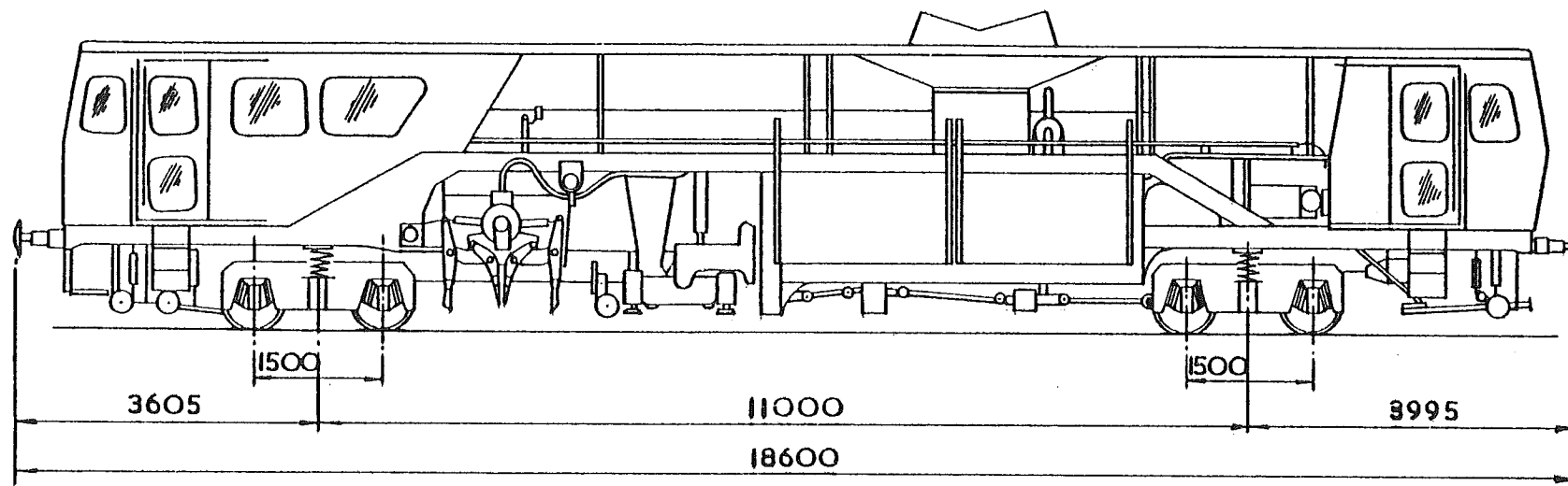
1.5 Type: Duomatic Tamper 07-12, 07-16, 07-32  
Series 5 & 6

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DRB/RCE25KV/JL

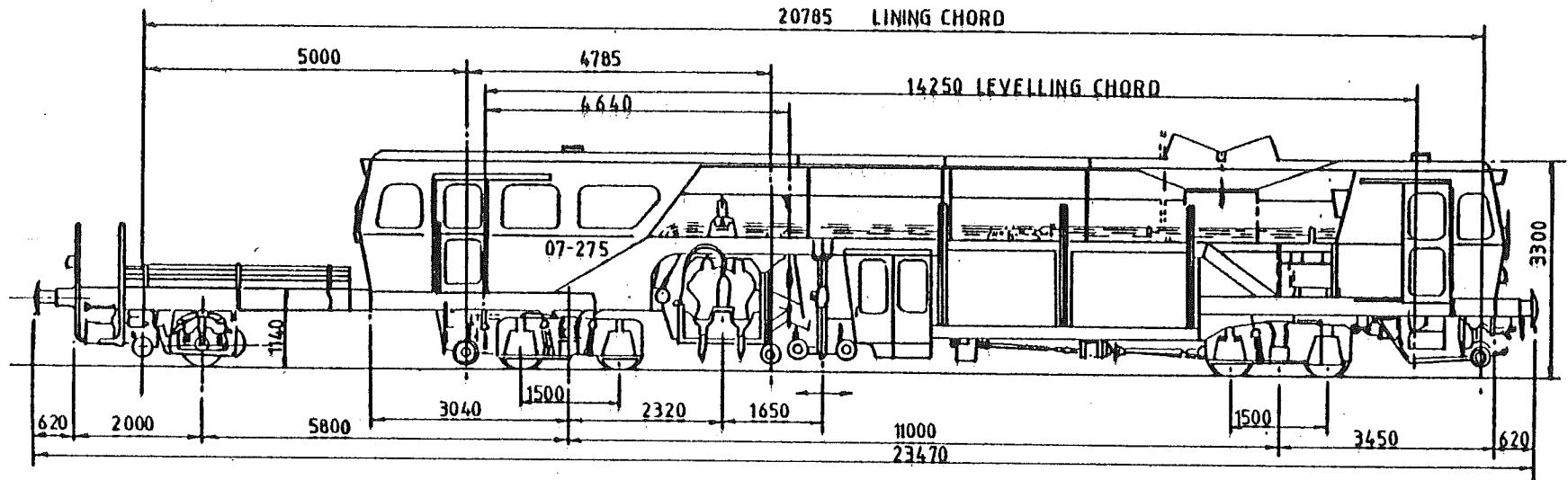


**PLASSER DUOMATIC TAMPER 07-12, 07-16, 07-32 SERIES 5 & 6**  
 Maintaining Dept.: -R.M. & E.E.

1.5  
 Date.: -30-6-86

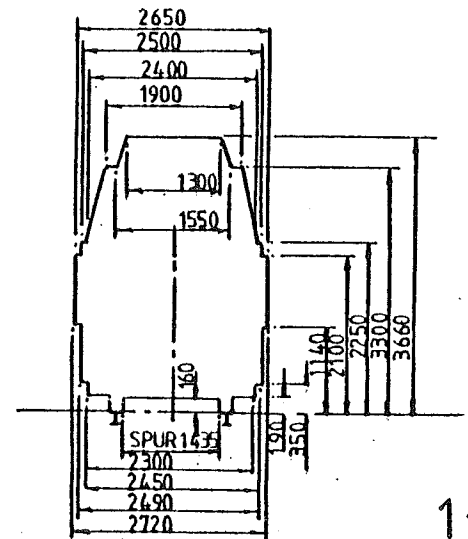


07 - 275



TOTAL WEIGHT	48,200 kg
FRONT BOGIE LOAD	22,400 kg
REAR BOGIE LOAD	20,400 kg
TRAILER	5,400 kg

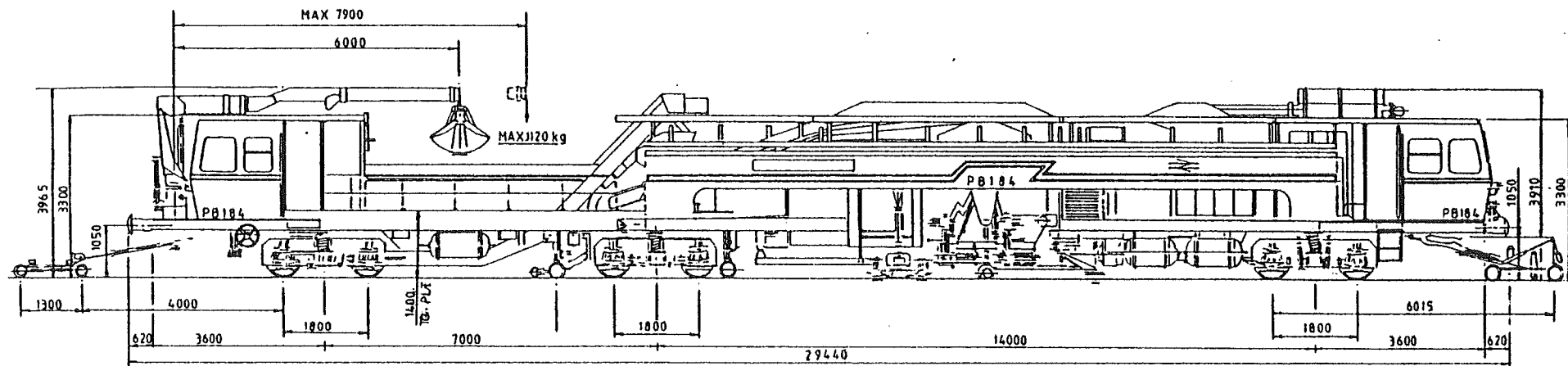
MAX. SPEED OWN POWER 15mph. P & C 25mph PLAIN LINE  
MIN. CURVE 50m RADIUS TRAVELLING. 100m RADIUS  
WORKING. WHEEL DIAMETER 710mm.



PLASSER POINTS & CROSSING TAMPER 07-275  
SERIES 7

Maintaining Dept.: - R. M. & E. E.

Date.: - 30-6-86



#### TECHNICAL DATA

WEIGHT 80 tonnes  
 LENGTH 29.24m  
 ENGINE OUTPUT 420hp at 1800rpm  
 COMPRESSOR OUTPUT 2m³/min at 7 bar  
 HOPPER CAPACITY 10 tonne - 7.5m³  
 TRAVELLING SPEED 60 mph IN TRAIN  
 60mph OWN POWER  
 BRAKE SYSTEM PNEUMATIC  
 COMPUTERS DEC. POP 11/21 AND POP 11/23

PNEUMATIC BALLAST INJECTION MACHINE-PBI.84 (PLASSER)

Maintaining Dept.: -PLASSER

1.7  
Date.: -30-6-86

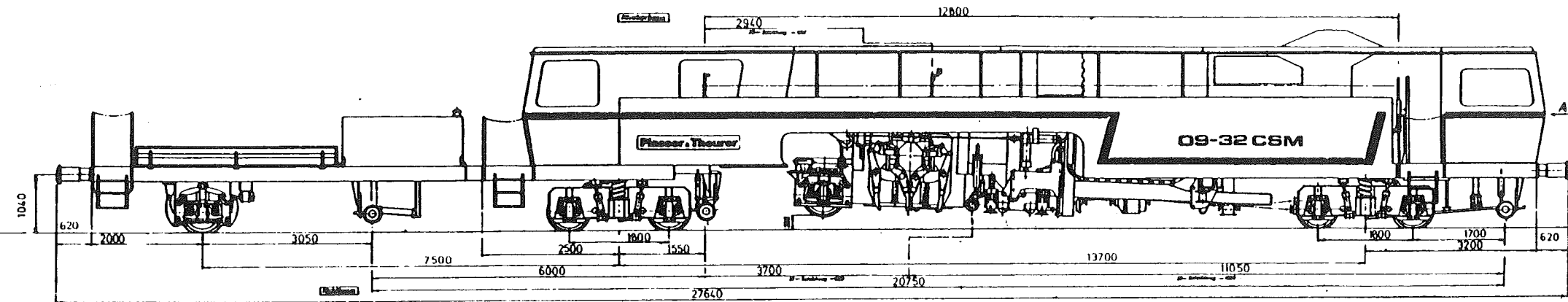
1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C.  
ELECTRIFIED LINES

1.7. TYPE: PNEUMATIC BALLAST INJECTION MACHINE P.B.I. '84.

1. Isolation of overhead equipment is not necessary on the track the machine is working provided that the minimum contact wire height is not less than 14' - 3".
2. For work in tunnels and overbridges, where track is to be lifted details of the lifting scheme must be sent to the A.M. & E.E. Where no lift is required, track is to be maintained within agreed tolerances.
3. Grab not to be used under live overhead equipment; (unwired sidings only) and to be locked/secured. Security key to be held by Supervisor. Reminder notice to be fixed near the key switch in the cab.
4. Instructions 7.1, 7.2 and 9.1, 9.2, 9.3, 9.8 and 10 apply. ) A.C. Working Instructions
5. Bonding - Instructions 15.1 and 15.2, 15.3 apply )

DRB/ONTRACK/JWL



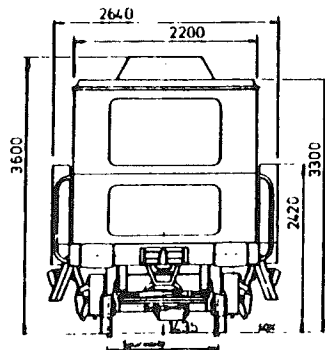
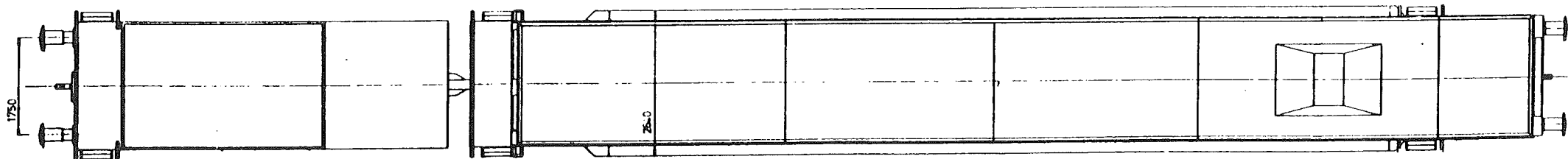
LRB 420N 1000  
L 420N 1000

525 kW  
700 HP

120 kW  
160 HP

25 kW  
34 HP

25 kW  
34 HP



Ansicht „A“

WHEEL DIA.  
Raddurchmesser  
NEW Neu  $\phi$  730 mm  
Benutzungsgrenze  $\phi$  680 mm  
WHEEL DIA.  
Höchstgeschwindigkeit  
SELF PROPELLED Eigenfahrt 95 km/h

TOTAL WEIGHT  
Gesamtgewicht  
UNLOADED leer 640 kN  
LOADED beladen 730 kN

pi.	UD 00 694
Typenblatt	09-32 CSM GB



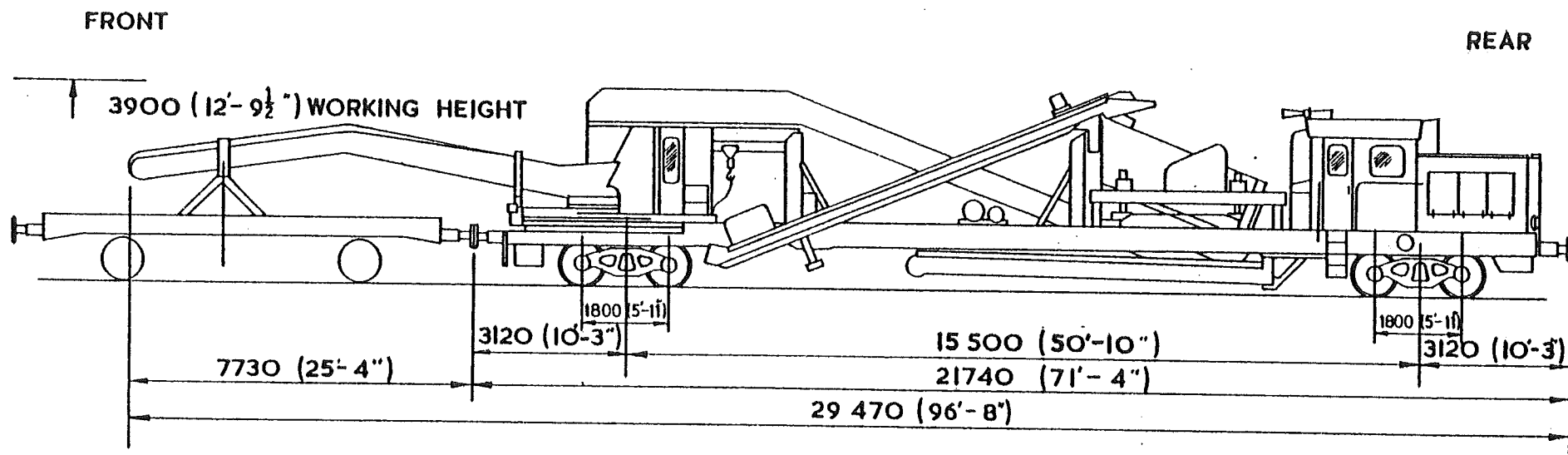
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

2.1 Type: Ballast Cleaner RM62 Series 1

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.

DRB/RCE25KV/JL



## GENERAL INFORMATION

TOTAL WEIGHT - 72150 Kg. - 72 tons.

FRONT AXLE LOAD -

REAR AXLE LOAD -

SPEED UNDER OWN POWER. PLAIN LINE - 56 Km/h - 35 mile/h.

SPEED UNDER OWN POWER. P & C - 48 Km/h - 30 mile/h.

MINIMUM CURVE - 60m, 3 CHAIN RAD.

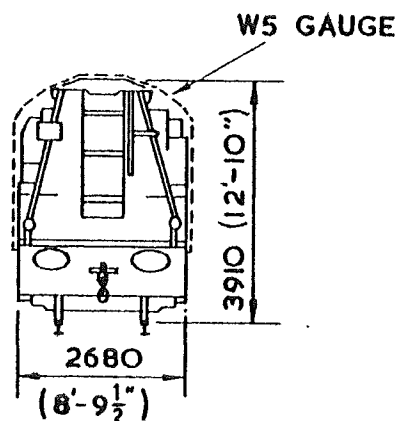
MAXIMUM SUPERELEVATION - 152mm - 6 ins.

ENGINE - ROLLS ROYCE DIESEL TYPE C6 TFL.

SPEED IN TRAIN FORMATION - 56 Km/h - 35 mile/h.

OPERATION - COLLECTS, CLEANS, REDEPOSITS BALLAST

DEPTH OF CUT - MIN. 254 mm (10 ins) MAX 533 mm (19 ins.) BELOW SLEEPER.



## PLASSER BALLAST CLEANER RM 62 SERIES I

Maintaining Dept.: - R.M. & E.E.

2.1  
Date.: - 30-6-86

1st December 1986

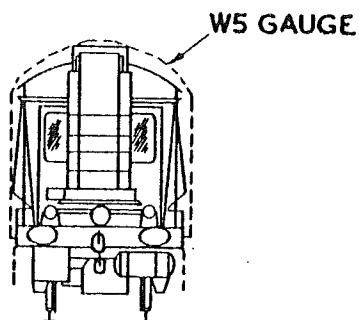
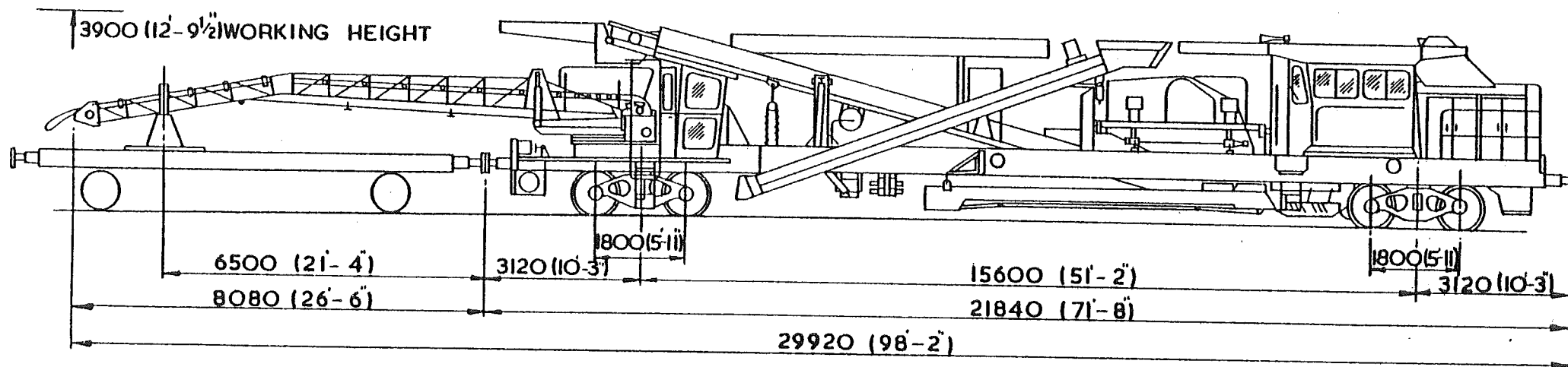
ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

2.2 Type: Ballast Cleaner RM62 Series 3 and 4

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.

DRB/RCE25KV/JL





## PLASSER BALLAST CLEANER RM62. SERIES 3 & 4

Maintaining Dept.: -R.M. & E. E.

22  
Date.: -30-6-86

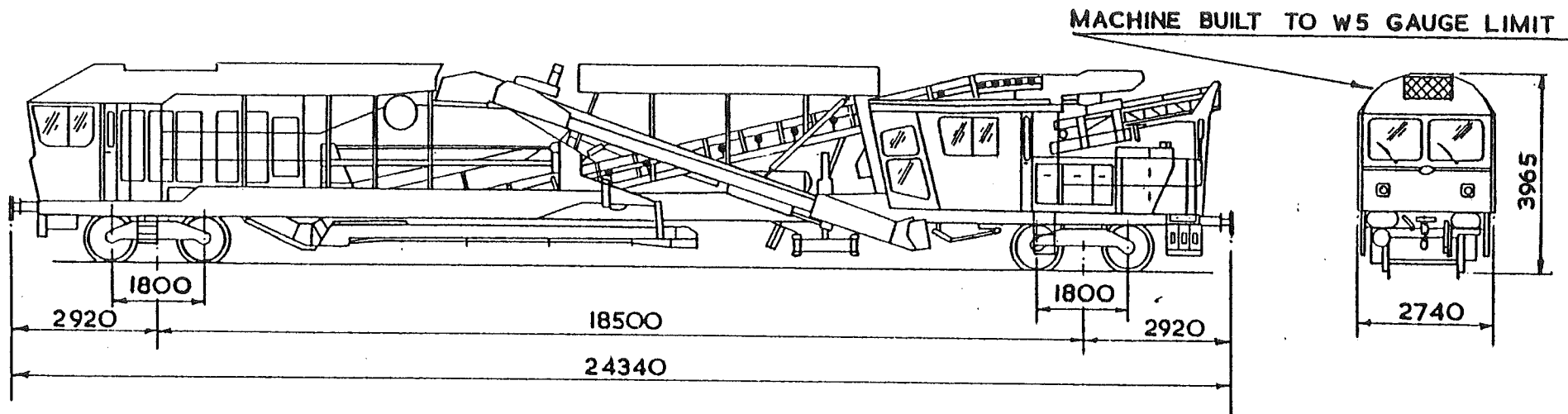
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

2.3 Type: Ballast Cleaner RM74

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.

DRB/RCE25KV/JL



## PLASSER BALLAST CLEANING MACHINE TYPE R.M. 74

Maintaining Dept.: -R.M. & E.E.

2.3  
Date.: -30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

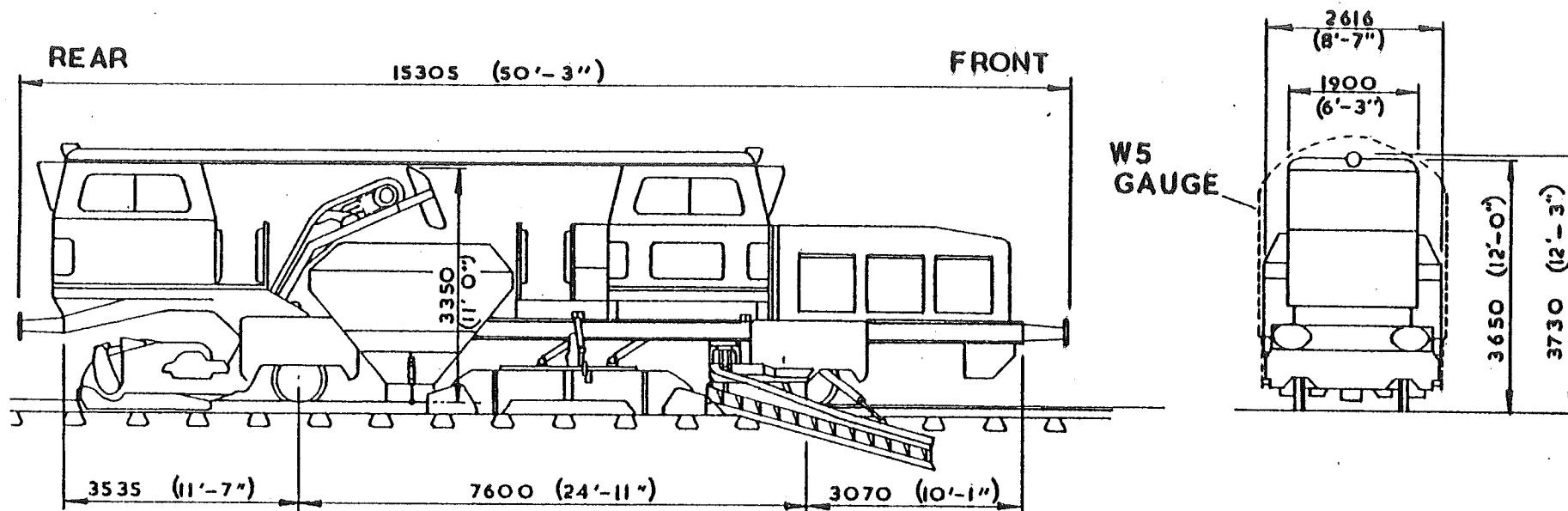
3.1 Type: Ballast Regulator USP 4000

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DRB/RCE25KV/JL



## GENERAL INFORMATION

TOTAL WEIGHT — 33100Kg — 32.58 TONS + HOPPER CAPACITY — 12190Kg — 12 TONS.

FRONT AXLE LOAD — 16400Kg — 16.14 TONS.

REAR AXLE LOAD — 16700Kg — 16.44 TONS.

SPEED UNDER OWN POWER, PLAIN LINE —

SPEED UNDER OWN POWER, P & C —

PLOUGHING SPEED —

SWEEPING SPEED —

MINIMUM CURVE — 60m. 3 CHAIN RADIUS

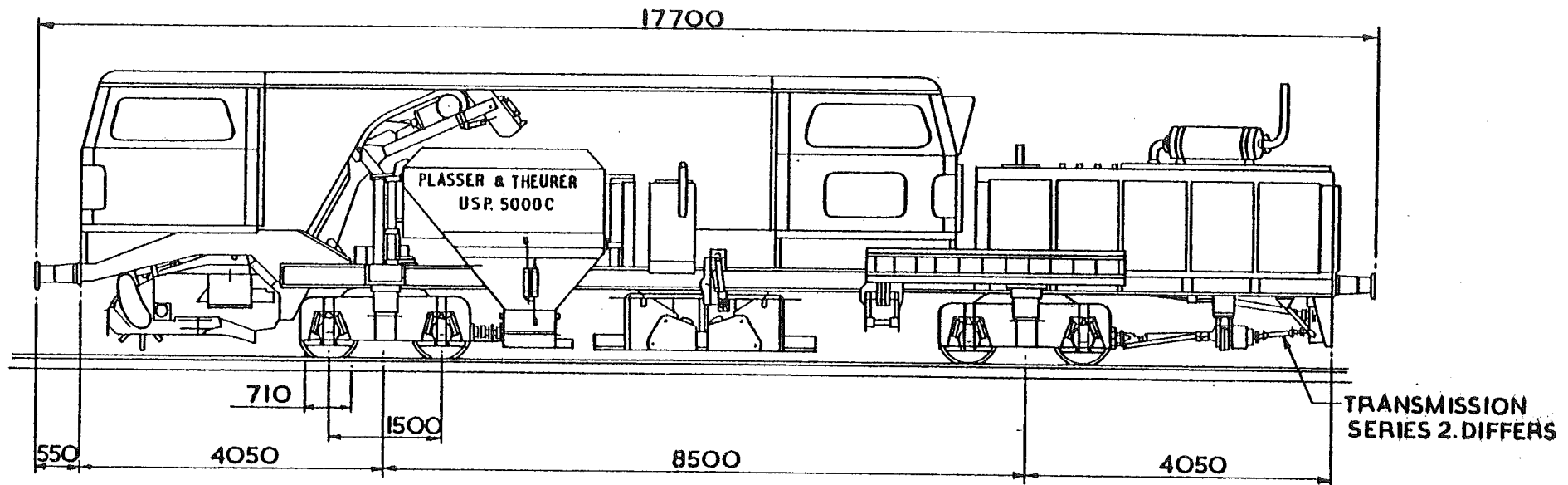
MAXIMUM SUPER ELEVATION — 152mm — 6ins.

ENGINE — ROLLS ROYCE DIESEL TYPE C6 NFL

OPERATION — REGULATES, EQUALIZES, PROFILES, PLOUGHS, BRUSHES.

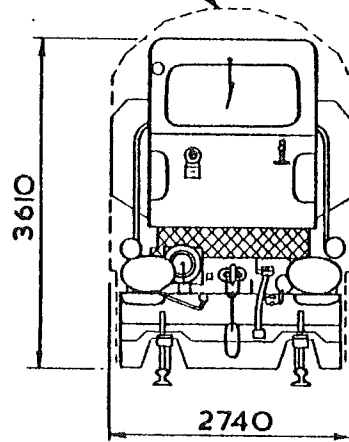
## PLASSER BALLAST REGULATOR TYPE USP 4000

Maintaining Dept.: — R.M. & E.E.



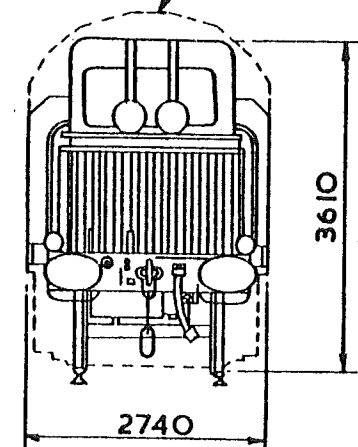
### GENERAL INFORMATION

W5 GAUGE



TOTAL WEIGHT — 42.5t  
 FRONT AXLE LOAD —  
 REAR AXLE LOAD —  
 SPEED UNDER OWN POWER, PLAIN LINE  
 SPEED UNDER OWN POWER, P&C —  
 PLOUGHING SPEED —  
 SWEEPING SPEED —  
 MINIMUM CURVE —  
 MAXIMUM SUPER ELEVATION —  
 ENGINE —  
 OPERATION — REGULATES, EQUALIZES,  
 PROFILES, PLOUGHS, BRUSHES.

W5 GAUGE



### PLASSER BALLAST REGULATOR TYPE USP 500C SERIES 1 2 & 6 (SERIES 1 SHOWN)

Maintaining Dept.: -R.M. & E.E.

3.2  
 Date.: -30-6-86

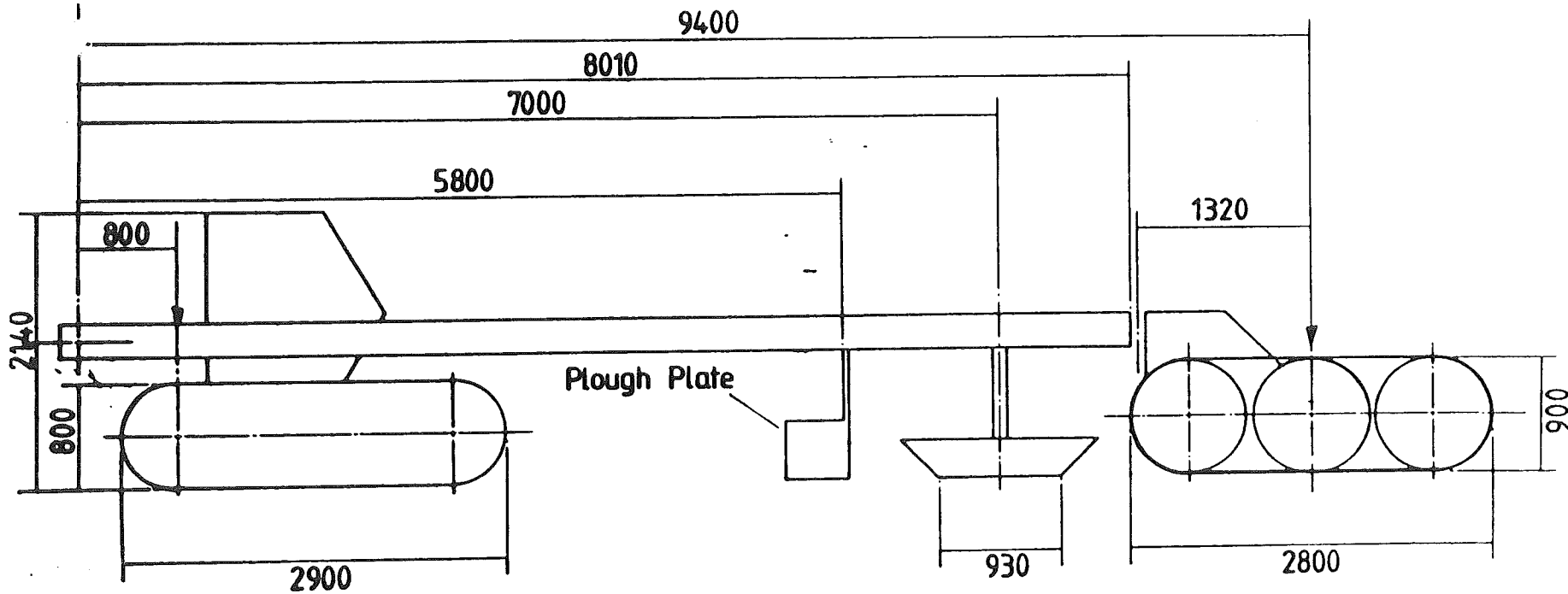
1st December 1986

ON TRACK MACHINES WORKING ON 25KV AC ELECTRIFIED LINES

3.3 Type: Cowans Sheldon Regulator (N.E.I.) Type B.R.M. 1000

1. No isolation required during track work.
2. For machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) of the A.C. Working Instructions.
3. Instructions - 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions apply. Platform height (exterior) No. 1 end 1360.
4. Bonding  
  
Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to permanent way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



## BRUFF PROFILER AND GRADER

ZETCAT PROFILE

Scale		1:25			
Drawing No.		GL 605 A			
Drawn	Traced	Checked	Date		



1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

5.1 Type: Track Recording Trolley

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.

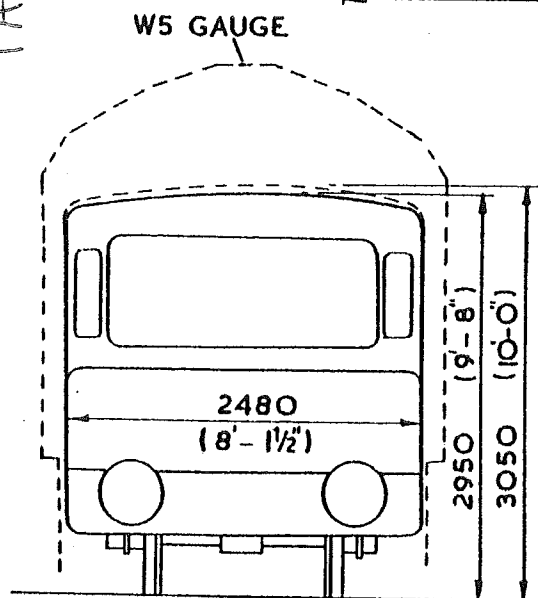
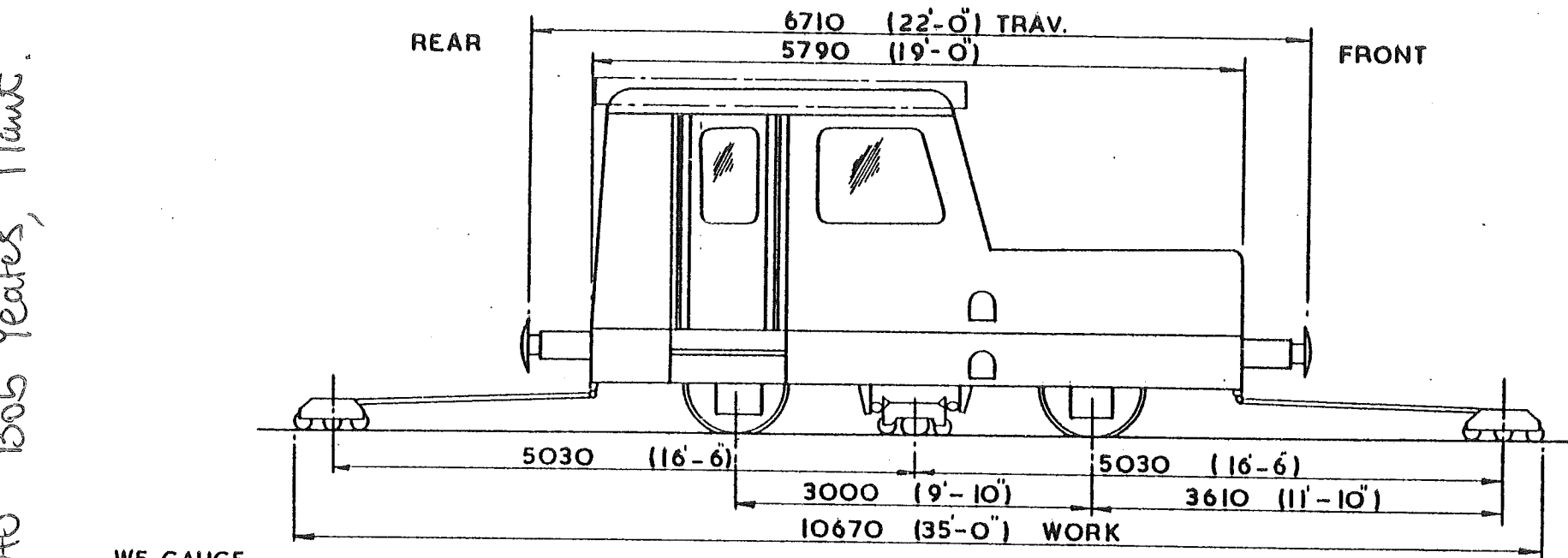
NOT AFFECTED.

DRB/RCE25KV/JL

FAX TO 0024396

BRIS HQ

FAO Bob Yeates, Plant.



## GENERAL INFORMATION

TOTAL WEIGHT—10160 Kg—10 tons  
FRONT AXLE LOAD—5080 Kg—5 tons  
REAR AXLE LOAD—5080 Kg—5 tons  
SPEED UNDER OWN POWER PLAIN LINE } 64 Km/h 40 mile/h  
SPEED UNDER OWN POWER, P&C. } 32 Km/h 20 mile/h WITH OUTRIGGERS  
MINIMUM CURVE—121 m, 6 CHAIN RAD.  
MAXIMUM SUPER ELEVATION—152 mm—6 ins.  
ENGINE—LEYLAND 6 CYLINDER DIESEL  
OPERATION—MEASURES & RECORDS TRACK GEOMETRIC CHARACTERISTICS.

## MATISA TRACK RECORDING NEPTUNE TROLLEY

Maintaining Dept.:—R.C.E.

5.1  
Date.:—30-6-86

1st December 1986

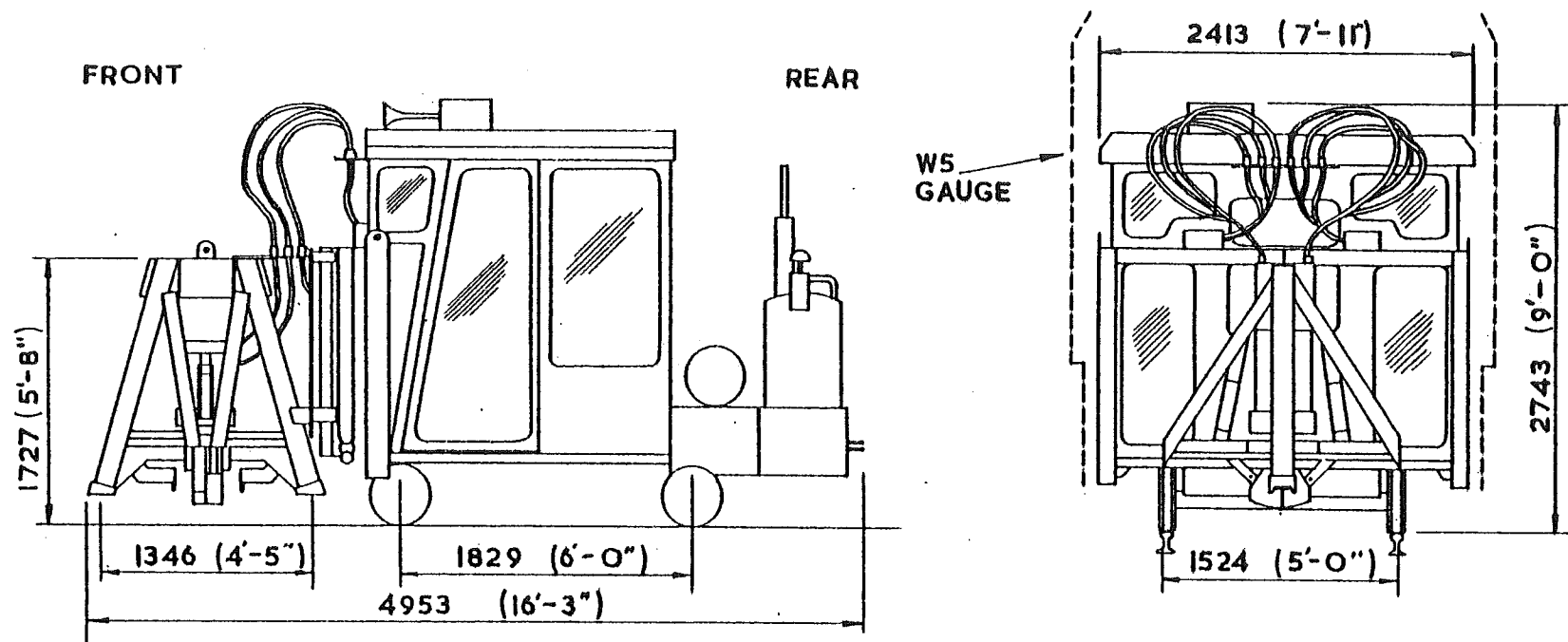
ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

6.1 Type: Rail Joint Straightener R.M.C.

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.

NOT AFFECTED.

DRB/RCE25KV/JL



### GENERAL INFORMATION

TOTAL WEIGHT- 5670Kg - 5.58 tons.

FRONT AXLE LOAD - 2835Kg - 2.79 tons.

REAR AXLE LOAD - 2835Kg - 2.79 tons.

SPEED UNDER OWN POWER. PLAIN LINE - 16Km/h - 10 mile/h

SPEED UNDER OWN POWER. P & C - 8Km/h - 5 mile/h.

MINIMUM CURVE - 121m, 6 CHAIN RADIUS.

MAXIMUM SUPERELEVATION - 152mm - 6ins.

ENGINE - GENERAL MOTORS 2-53 DIESEL.

OPERATION - STRAIGHTENS DIPPED FISHPLATED JOINTS.

LIFT - 304mm DIA. 152mm STROKE 17225 KPa (KN/m<sup>2</sup>) CYLINDER → 127000 Kg.  
12ins DIA. 6ins STROKE 2-500 lbs/in<sup>2</sup> CYLINDER → 125 tons.

### RAIL JOINT STRAIGHTENER R.M.C. PITTSBURG U.S.A.

Maintaining Dept.: -R.M. & E.E.

6.1  
Date.: -30-6-86

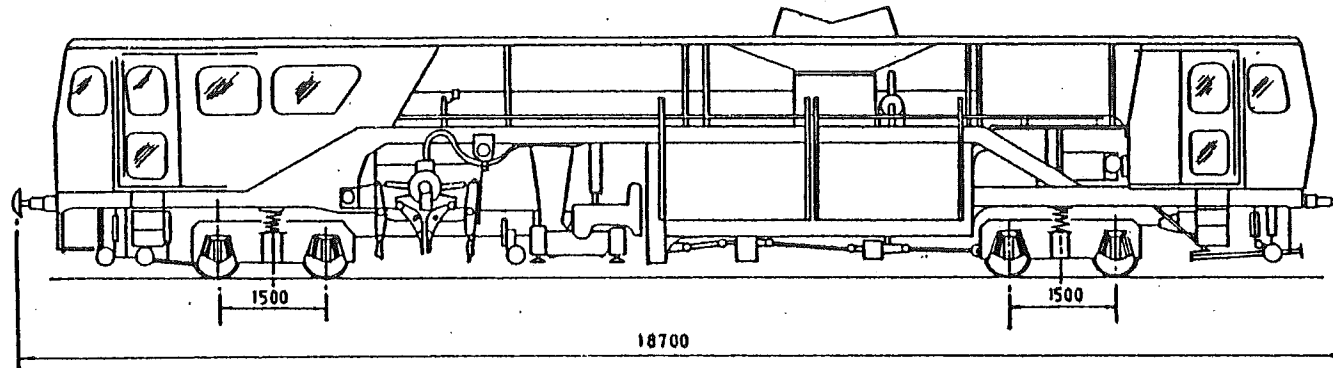
1st December 1986

ON TRACK MACHINES WORKING ON 25KV AC ELECTRIFIED LINES

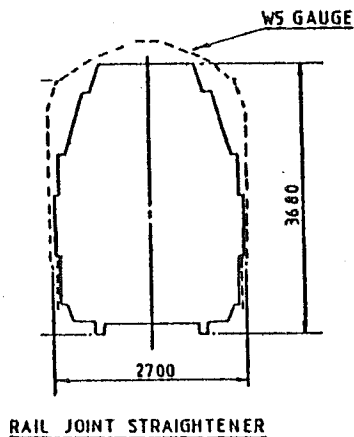
6.2 Type: Strait (Plasser Rail Joint Straightener and Rail Grinder GWM110)

- (1) No isolation required during trackwork.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding. Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to permanent way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.
- (4) Rail Grinder GWM-110. Gate to be fitted to access at hydraulic tank end and to be padlocked. Key to be held by Supervisor.

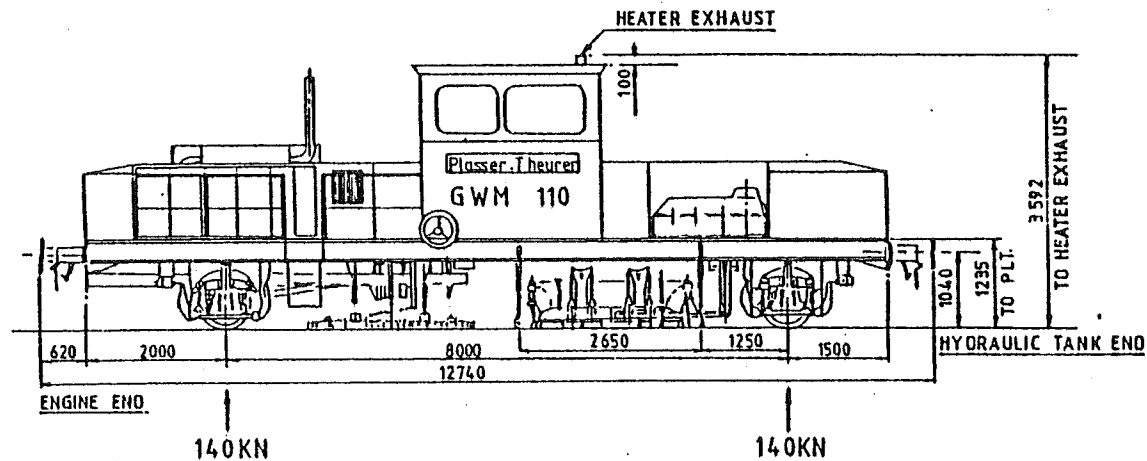
DrB/ONTRACK/JDS/MR



RAIL JOINT STRAIGHTENER



RAIL GRINDER GWM-10



NOTE

RAIL JOINT STRAIGHTENER AND RAIL GRINDER GWM-110 WORK AS A COMBINED UNIT BUT CAN BE WORKED INDEPENDENTLY IF REQUIRED.

TOTAL WEIGHT  
AXLE LOAD

28500kg  
14250kg

MAX SPEED OWN POWER 25mph P & C 25mph. PLAIN LINE  
MAX SPEED TRAIN FORM P & C PLAIN LINE  
MIN CURVE 50m RADIUS TRAVELLING. 100m RADIUS  
WORKING WHEEL DIAMETER 710mm.

'STRAIT'(PLASSER RAIL JOINT STRAIGHTENER AND RAIL GRINDER GWM 110)

Maintaining Dept.: -R. M. & E. E.

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

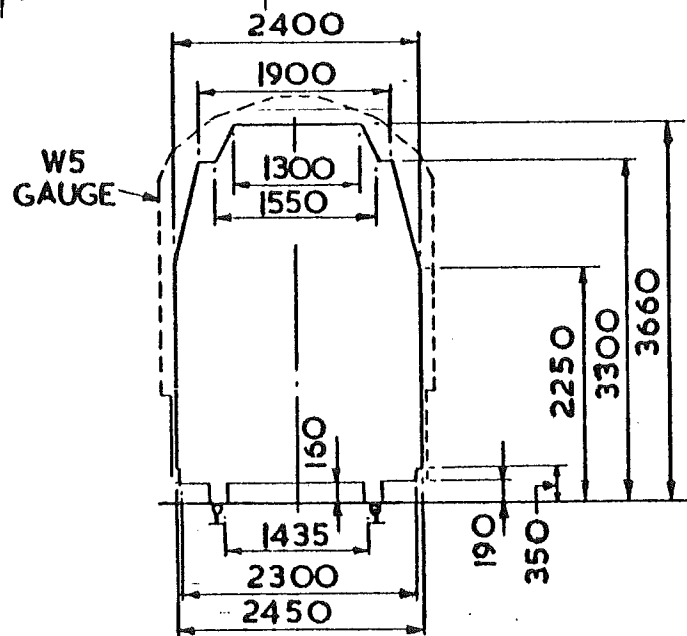
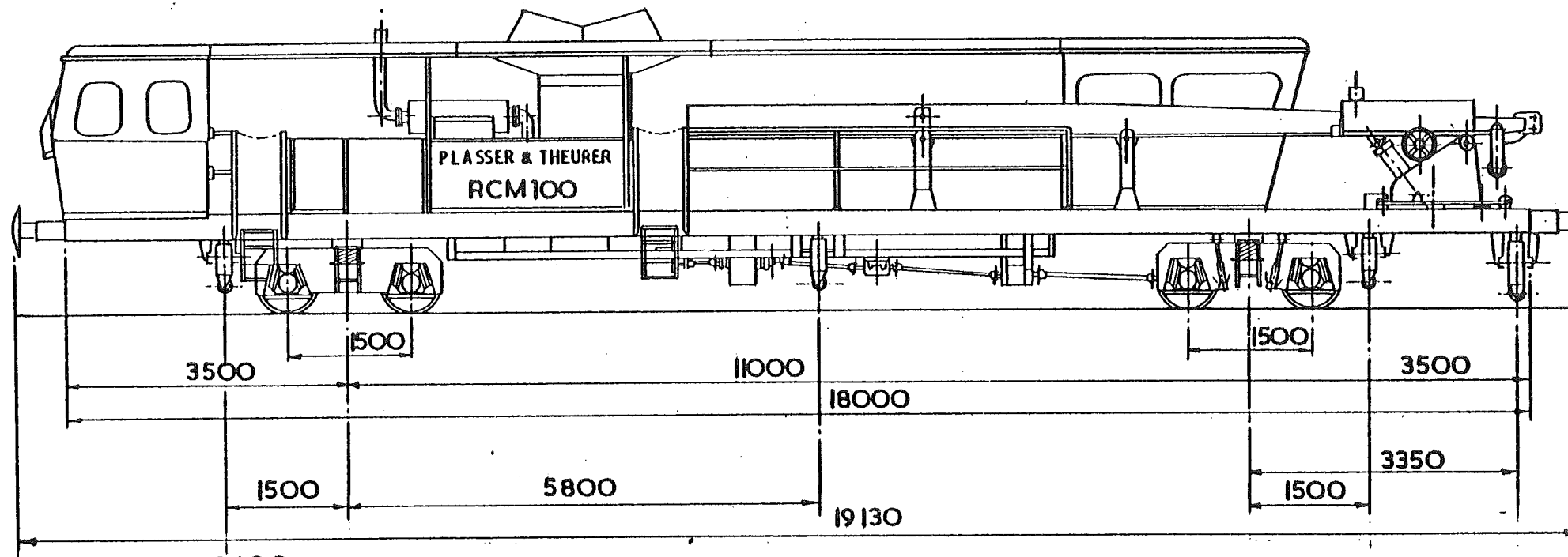
7.1 Type: Rail Changing Machine RCM.100

1. No isolation required during track work.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DRB/RCE25KV/JL



## PLASSER RAIL CHANGING MACHINE TYPE RCM.100.

Maintaining Dept - R M & F F

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Date -- 30-6-86

7.1



1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

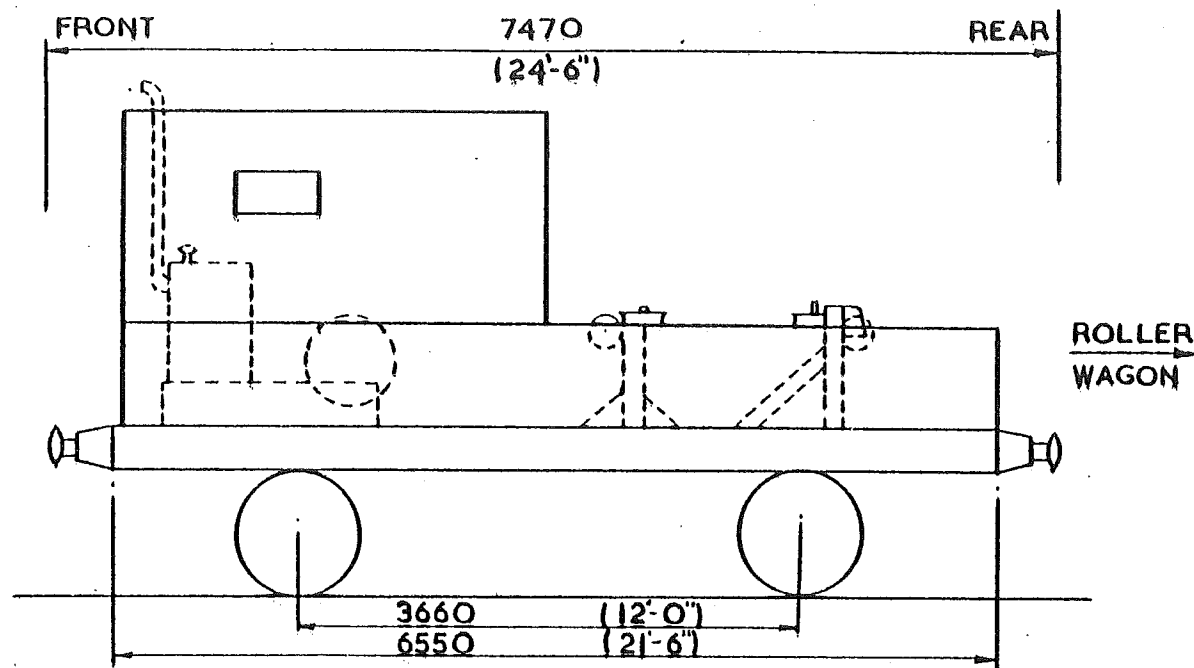
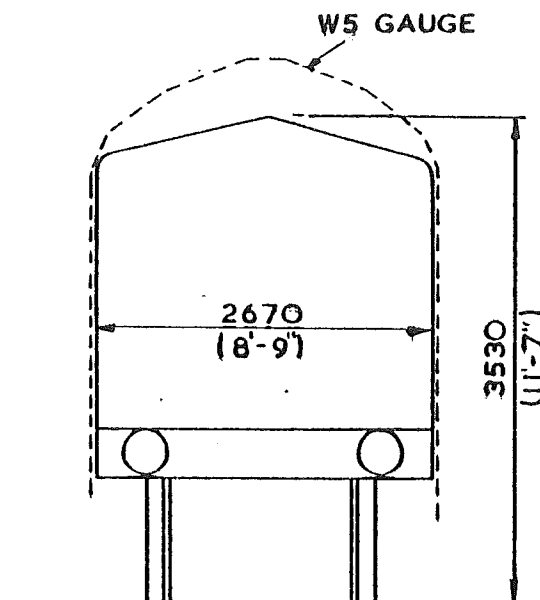
8.1 Shts 1 & 2 Type: Rail Loader Winch & Roller  
Wagons RL16-22

1. Isolation of O.H.L.E. is necessary on track where machine is working.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DRB/RCE25KV/JWL



### GENERAL INFORMATION

TOTAL WEIGHT - 9144 Kg - 9 tons  
 FRONT AXLE LOAD - 5080 Kg - 5 tons  
 REAR AXLE LOAD - 4064 Kg - 4 tons  
 SPEED UNDER OWN POWER - NIL  
 MIN. CURVE - 121m. 6 CHAIN RAD.  
 ENGINE - LISTER TYPE HA3. FOR WINCH ONLY  
 SPEED IN TRAIN FORMATION - 72 Km / h 45 mile / h  
 MAX. SAFE WORKING LOAD - 2540 Kg - 2.5 tons  
 MAX. SAFE WORKING SUPERELEVATION - 152 mm - 6 ins.  
 OPERATION - END ON WINCHING OF RAILS ON TO WAGONS.

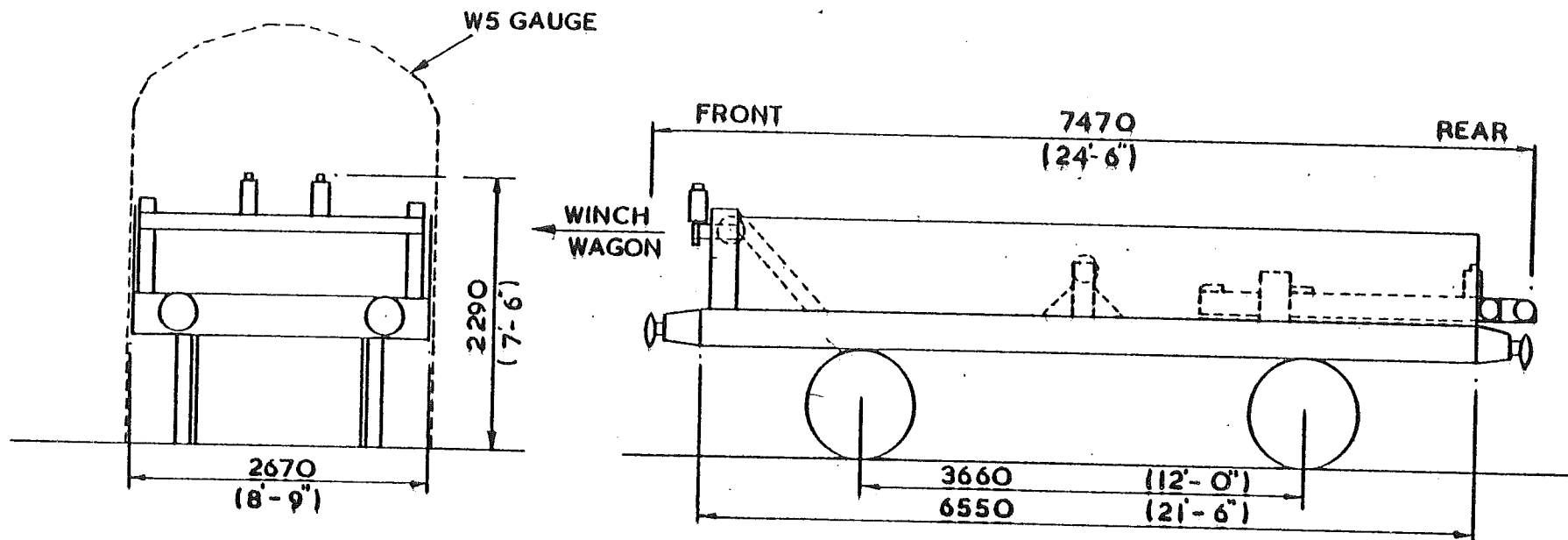
SEE NEXT PAGE FOR ROLLER WAGON.

8.1 SHT 1

BRITISH HOIST & CRANE END ON RAIL LOADER WINCH WAGON (GRAMPUS) RL16-22

Maintaining Dept.: -R. M. & E. E.

Date.: -30-6-86



### GENERAL INFORMATION

TOTAL WEIGHT — 9144 Kg — 9 tons  
 FRONT AXLE LOAD — 4572 Kg — 4.5 tons  
 REAR AXLE LOAD — 4572 Kg — 4.5 tons  
 SPEED UNDER OWN POWER — NIL  
 MIN. CURVE — 121m, 6 CHAIN RAD.  
 ENGINE — NONE  
 SPEED IN TRAIN FORMATION — 72 Km/h — 45 mile / h  
 OPERATION — SUPPORT & GUIDE RAILS DURING END ON LOADING.

SEE PREVIOUS PAGE FOR WINCH WAGON.

**BRITISH HOIST & CRANE END ON RAIL LOADER ROLLER WAGON (GRAMPUS) RL16-22**

Maintaining Dept.—R.M. & E.E.

8-1 SHT. 2

Date.: -30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

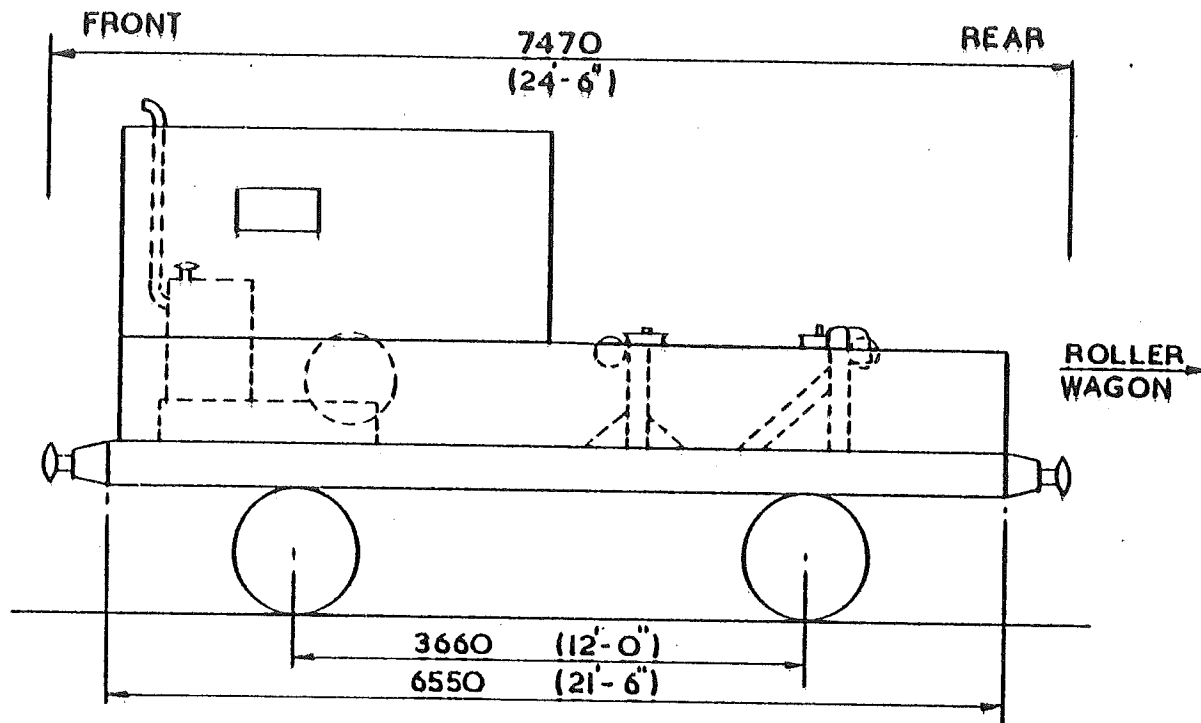
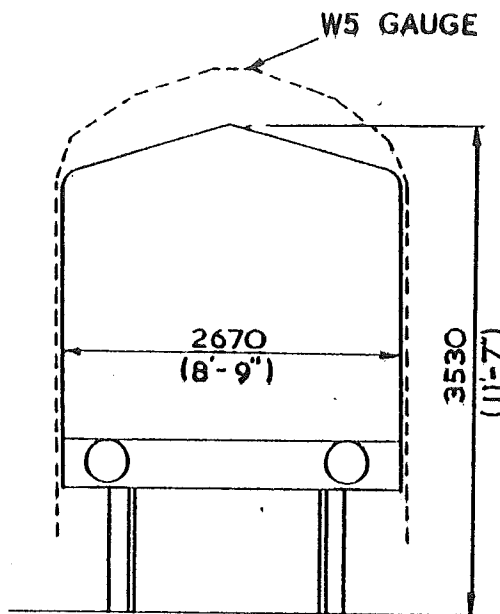
8.2 Shts 1 & 2 Type: Rail Loader Winch & Roller  
Wagons RL7-11, 13 & 15

1. Isolation of O.H.L.E. is necessary on track where machine is working.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DRB/RCE25KV/JWL



### GENERAL INFORMATION

TOTAL WEIGHT - 9144Kg - 9 tons

FRONT AXLE LOAD - 5080Kg - 5 tons

REAR AXLE LOAD - 4064Kg - 4 tons

SPEED UNDER OWN POWER - NIL.

MIN. CURVE - 121m, 6 CHAIN RAD.

ENGINE - LISTER TYPE HA3 FOR WINCH ONLY, HAND LEVER CONTROL.

SPEED IN TRAIN FORMATION - 72 Km/h - 45 mile/h

MAX SAFE WORKING LOAD - 2030Kg - 2 tons

MAX SAFE WORKING SUPERELEVATION - 152mm - 6ins

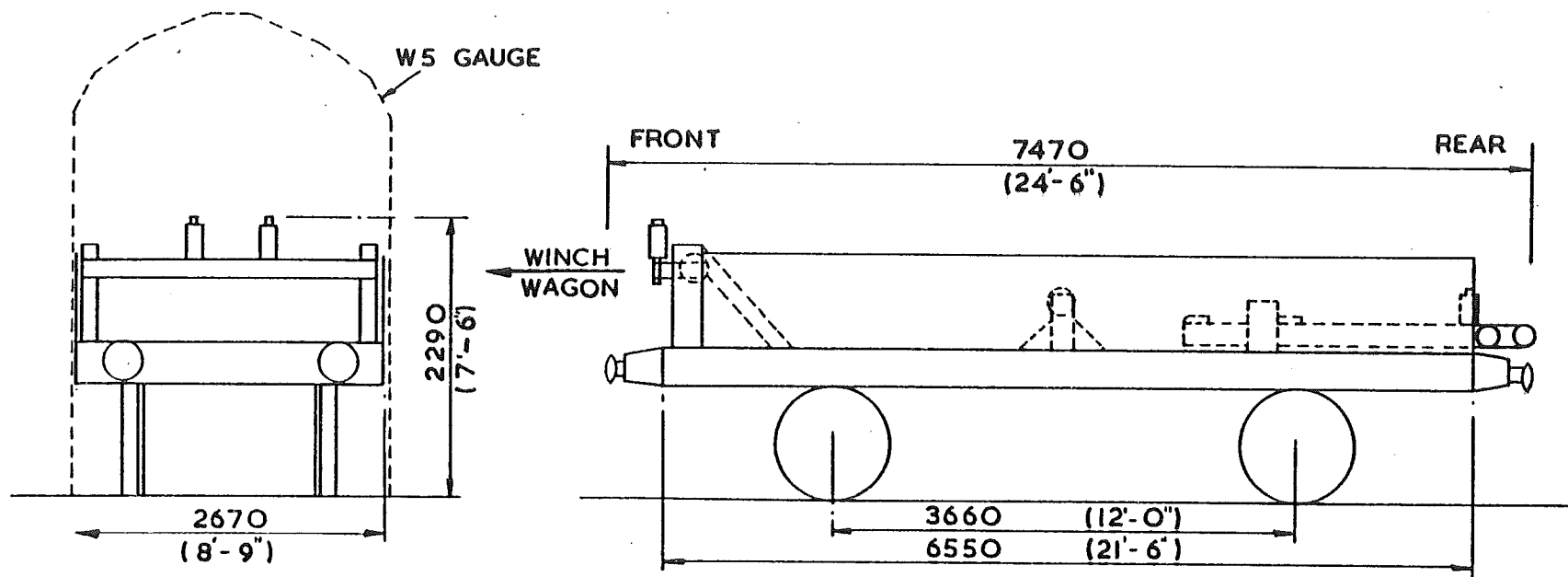
OPERATION - END ON WINCHING OF RAILS ON TO WAGONS

SEE NEXT PAGE FOR ROLLER WAGON.

AUTO MOWER. END ON RAIL LOADER WINCH WAGON GRAMPUS RL7-11, 13 & 15

Maintaining Dept.: - R. M. & E. E.

8.2 SHT. 1  
Date: - 30-6-86



### GENERAL INFORMATION

TOTAL WEIGHT — 9144Kg — 9 tons.  
 FRONT AXLE LOAD — 4572Kg — 4.5 tons.  
 REAR AXLE LOAD — 4572Kg — 4.5 tons.  
 SPEED UNDER OWN POWER — NIL.  
 MIN. CURVE — 121m, 6 CHAIN RAD.  
 ENGINE — NONE  
 SPEED IN TRAIN FORMATION — 72Km/h — 45 mllc/h  
 OPERATION — SUPPORT & GUIDE RAILS DURING END ON LOADING.

SEE PREVIOUS PAGE FOR WINCH WAGON.

8.2 SHT 2

AUTO MOWER END ON RAIL LOADER ROLLER WAGON (GRAMPUS) RL7-II, 13 & 15

Maintaining Dept.: -R. M. & E. E.

Date.: -30-6-86

1st December 1986

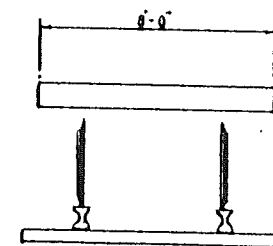
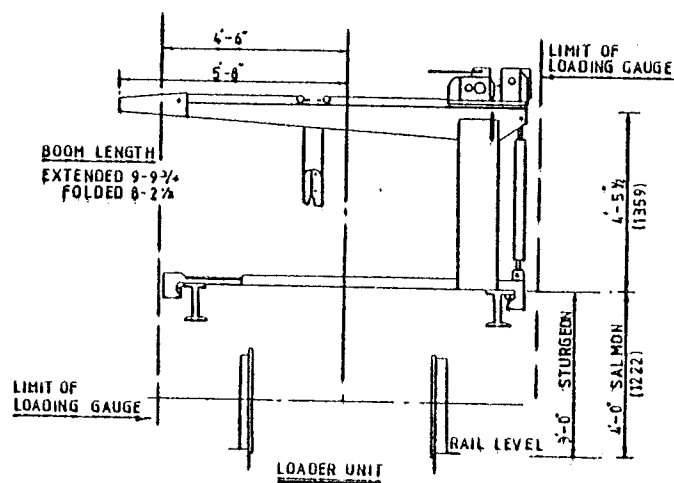
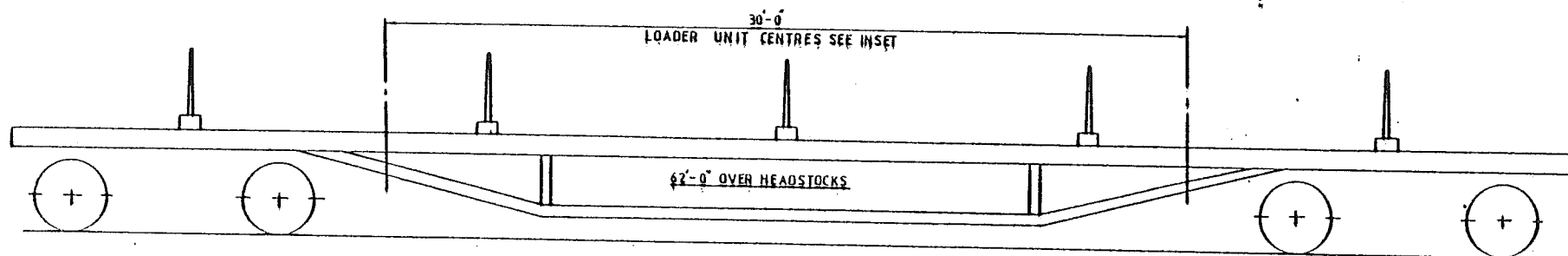
ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

8.3 Type: Side Rail Loader (Stumec)-SALMON & STURGEON WAGONS.

1. Isolation of the O.H.L.E. is necessary on the track that the machine is working. A.C.E. representative must refer to Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions for adjacent track/s. If there is any doubt, he must contact the A.M. & E.E. prior to the day of work to establish a safe method of working.
2. For servicing and maintenance Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and 10 apply.
3. Bonding.

Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



SIDE RAIL LOADER (STUMEC)-SALMON & STURGEON WAGONS

Maintaining Dept.: -R. C. E.

8.3  
Date: -30-6-86



1st December 1986

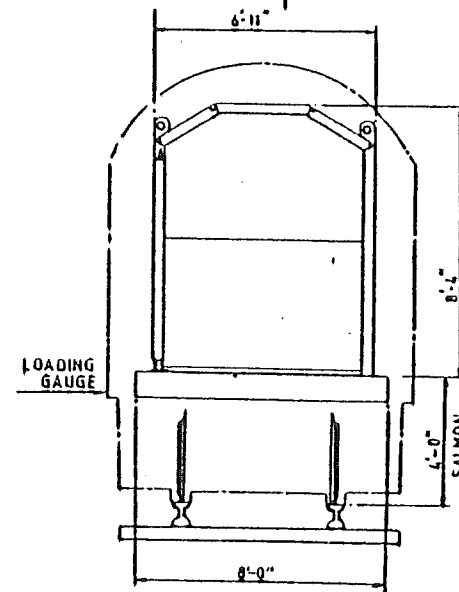
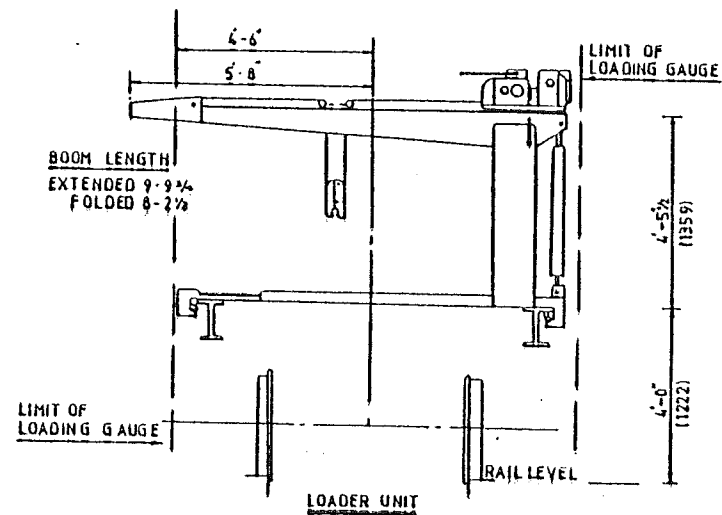
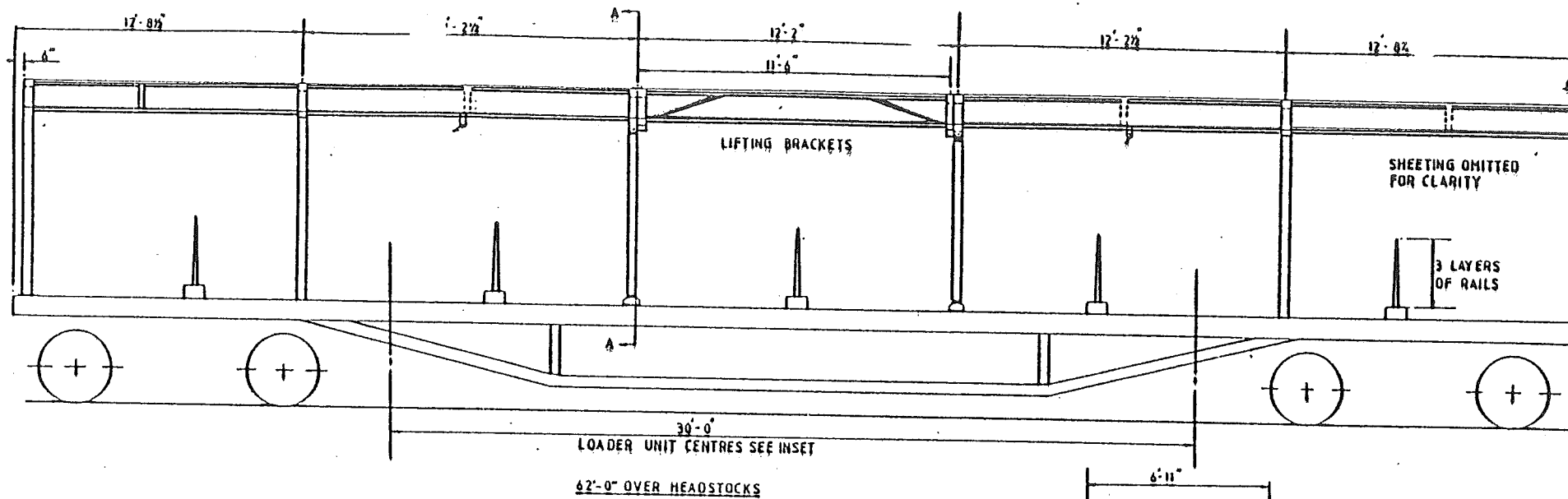
ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

8.4 Type: Side Rail Loader (Stumec) - Wagon Covered (SALMON).

The following conditions apply for the operation of this machine under Live O.H.L.E.

1. Roof and both end panels of the wagon to be completely covered with 1/2" mesh screening.
2. All work associated with the stacking of the rails must be under and within the confines of the protective roof screen.
3. Vehicle must be within the W5 Loading Gauge.
4. Platform height of the wagon is 4'-2". This level must be maintained outside the roof area and where both operators stand.
5. Instructions 7.1, 7.2, 9.1, 9.2, 9.3, 9.8 and 10 apply, especially with reference to adjacent tracks.
6. Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



SECTION A-A SHOWN WAGON  
CONSTRUCTION WITHIN STANDARD

SIDE RAIL LOADER (STUMEC)-WAGON COVERED (SALMON)

Maintaining Dept.: -R. C. E.

8.4  
Date.: -30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C.  
ELECTRIFIED LINES

8.5 SHTS 1-6 TYPE: LONG WELDED RAIL TRAIN

1. Isolation of O.H.L.E. is necessary on the track where the machine is working. A.C.E. representative must refer to Instructions 9.1, 9.2, 9.3, 9.8 and 12 of the A.C. Working Instructions for adjacent track/s. If there is any doubt he must contact the A.M. & E.E. prior to the day of work to establish a safe method of working.
- 2 For machine Maintenance or Servicing Instruction 10 of the A.C. Working Instructions applies.
3. Bonding  
Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to the Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.
- 4 The following Warning Notices, in accordance with B.R. 29961 must be fitted:

Type (BR 29961)

- |  |              |
|--|--------------|
| a. Adjacent to or above each access step on each vehicle.  | 808A or 809A |
| b. One on the outside above each cab end window where there is an access door.   | 808A         |
| c. One on and one above each cab door on the inside of the chute and stabling wagon cabs.  | 808A         |
| d. One at the top of each stanchion facing to the outside on each intermediate vehicle.  | 809A         |
| e. One on the inside face of each new wire mesh to be fitted to the hand rails on the stabling wagon. (A notice must be visible above the work bench). | 808A         |

Travelling Crane (Exterior)

- |   |      |
|---|------|
| f. One on both sides of each jib.       | 808A |
| g. One on each cab side at the jib end. | 808A |

1st December 1986

- 2 -

- |    |  |      |
|----|--|------|
| h. | Above each cab front window (beneath canopy).      | 808A |
| i. | One each side of the side entrances at high level. | 808A |

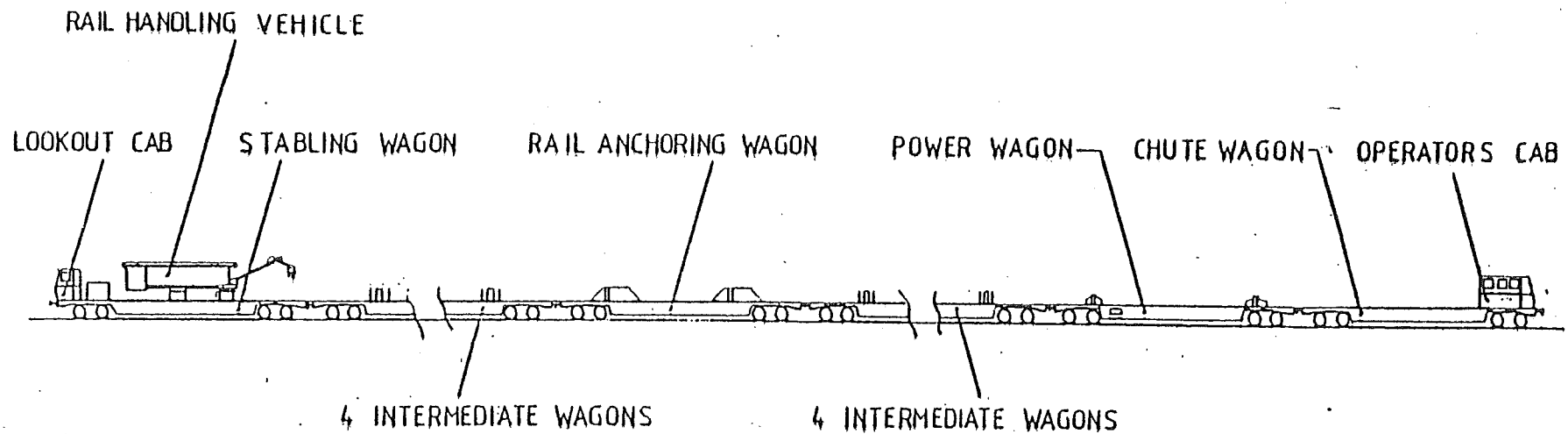
Interior

- |    |  |      |
|----|--|------|
| j. | One above and one each side of the rear cab access canopy. | 808A |
| k. | One above each side exit.                                  | 808A |
| l. | One above each cab front window.                           | 808A |

NOTE : The Long Welded Rail Train must not be moved under 25KV AC energised lines until the Electrification Warning Notices are fitted to all cabs and access points.

DrB/ONTRACK/HFS

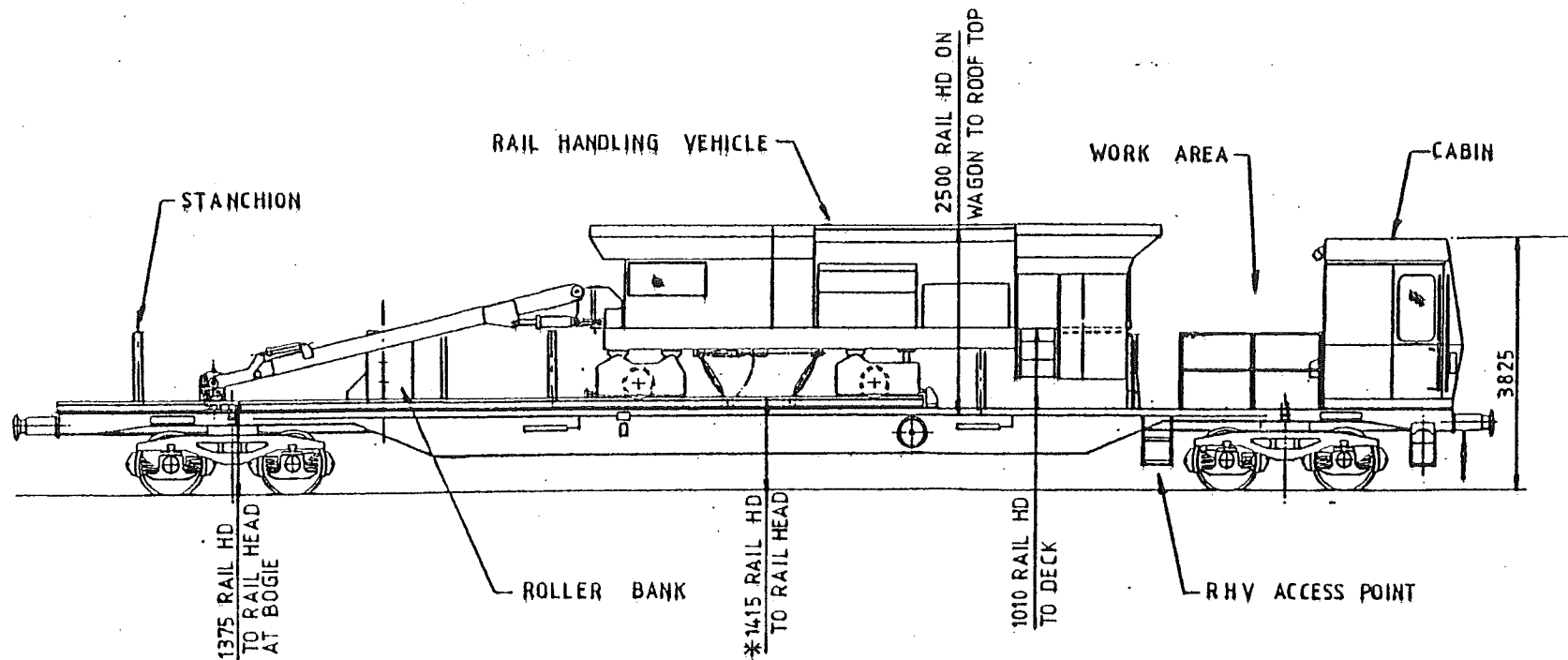
LONGWELDED RAIL TRAIN  
CAPACITY 24 x 183M (600ft) LONGWELDED RAIL (113 lbs/yd)



TOTAL LENGTH OF LONGWELDED RAIL TRAIN 266.88M

Maintaining Dept.: - R. C. E. / Site repair  
R. M. & E. E. Servicing (Castleton & Wigan)

8.5 SHT 1  
Date: - 30-6-86



## STABLING WAGON

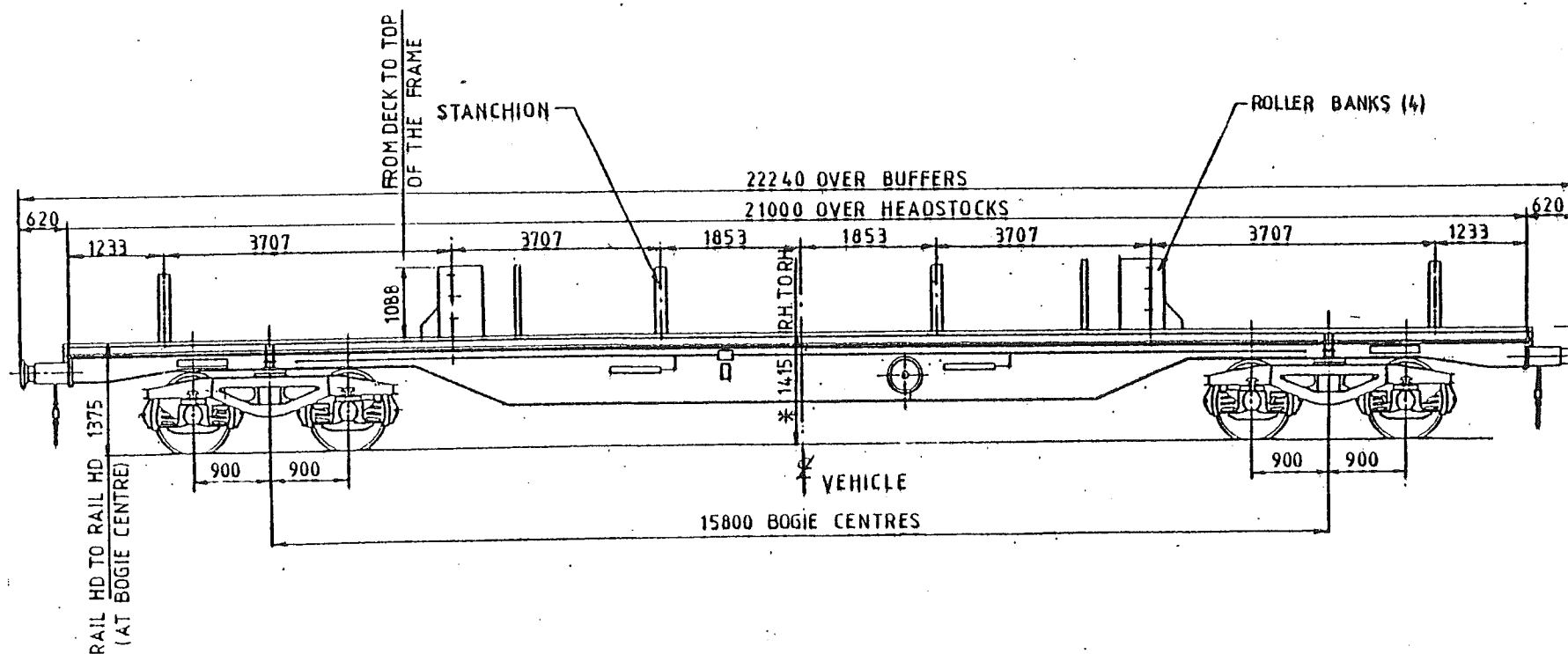
\* NOTE

DIMENSION INDICATED IS FOR A NEW VEHICLE IN THE UNLOADED CONDITION. THE LOADED CONDITION IS 1375

Maintaining Dept.:--R.C. E./Site repair

R.M. & E. E. Servicing (Castleton & Wigan)

8.5 SHT 2  
Date:--30-6-86

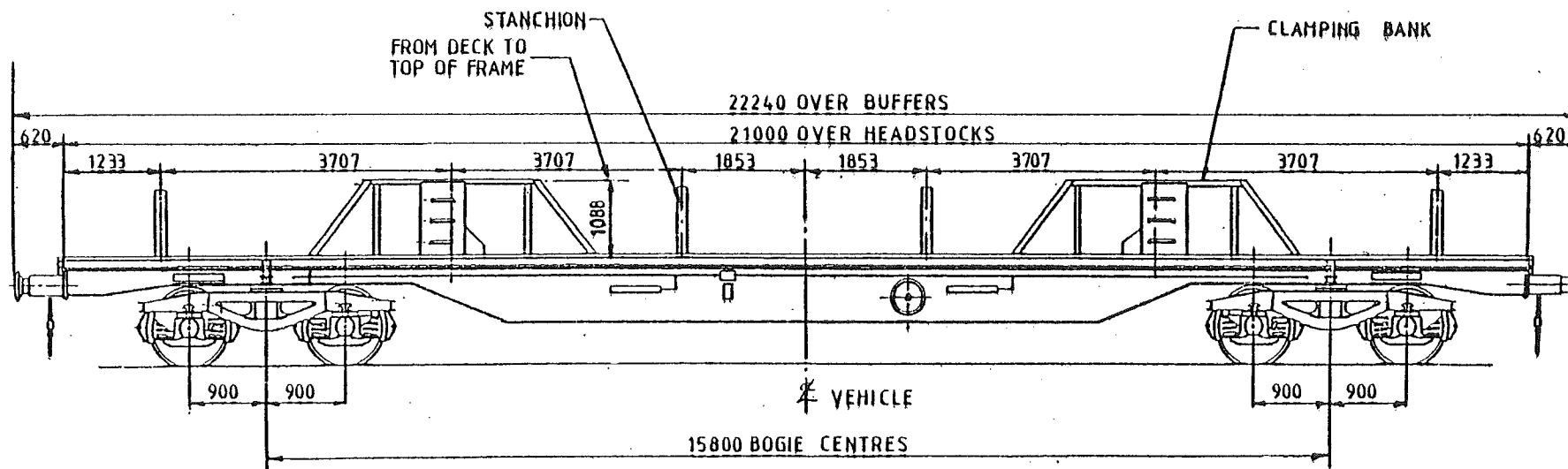


\* NOTE  
 DIMENSION INDICATED IS FOR A NEW  
 VEHICLE IN THE UNLOADED CONDITION.  
 THE LOADED CONDITION IS 1375

## INTERMEDIATE WAGON

Maintaining Dept.-R.C.E./Site repair  
R.M. & E. E. Servicing (Castleton & Wigan)

8-5 SHT 3  
 Date:-30-6-86



NOTE

ALL VERTICAL DIMENSIONS AS PER  
INTERMEDIATE WAGON SHT. 3

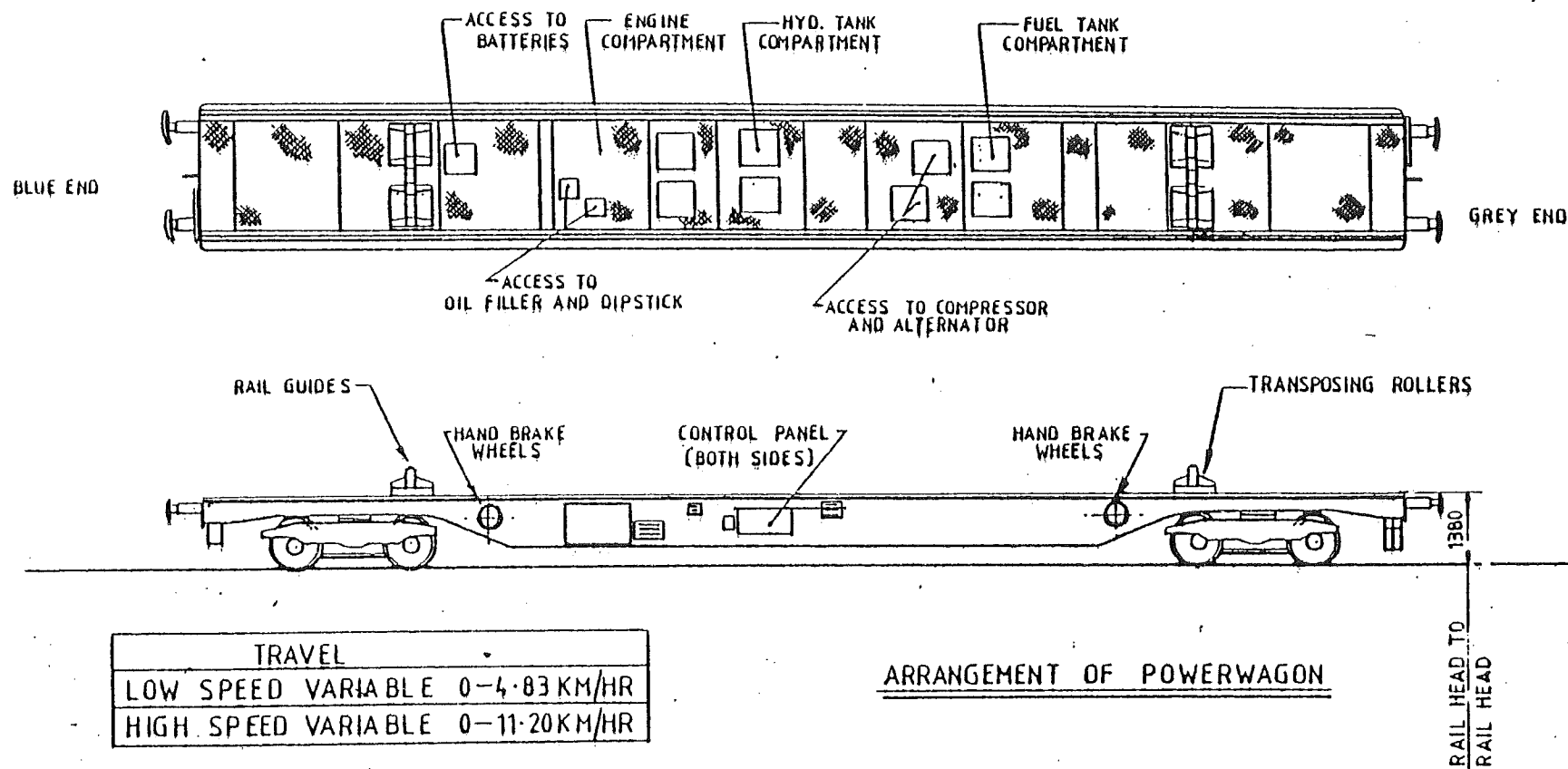
CLAMPING WAGON

Maintaining Dept.: - R. C. E. / Site repair

R. M. & E. E. Servicing (Castleton & Wigan)

8.5 SHT. 4  
Date.: - 30-6-86

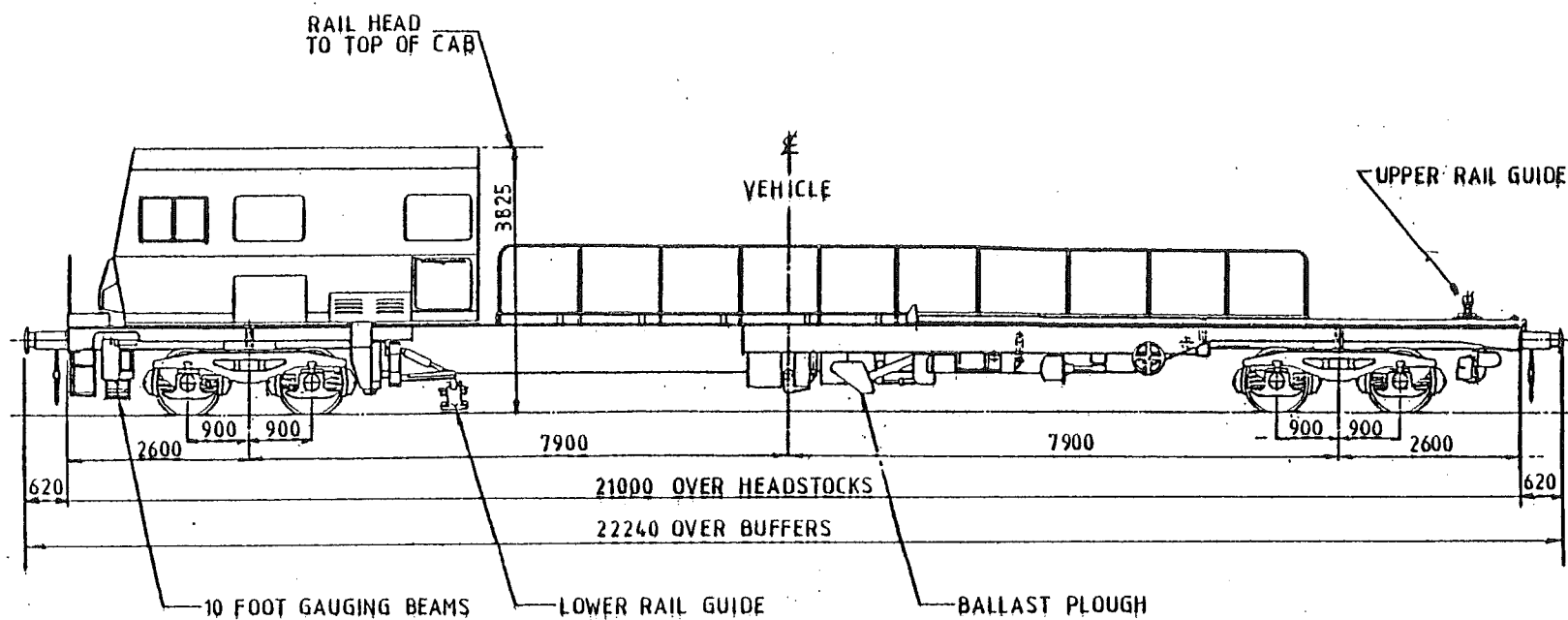




Maintaining Dept. R. C. E. / Site repair

R. M. & E. E. Servicing (Castleton & Wigan.)

8.5 SHT 5  
Date 30-6-86



NOTE

ALL VERTICAL DIMENSIONS AS PER  
INTERMEDIATE WAGON SHT.3

CHUTE WAGON

Maintaining Dept.: R. C. E / Site repair

R. M. & E. E. Servicing (Castleton & Wigan)

8.5 SHT. 6

Date: 30-6-86

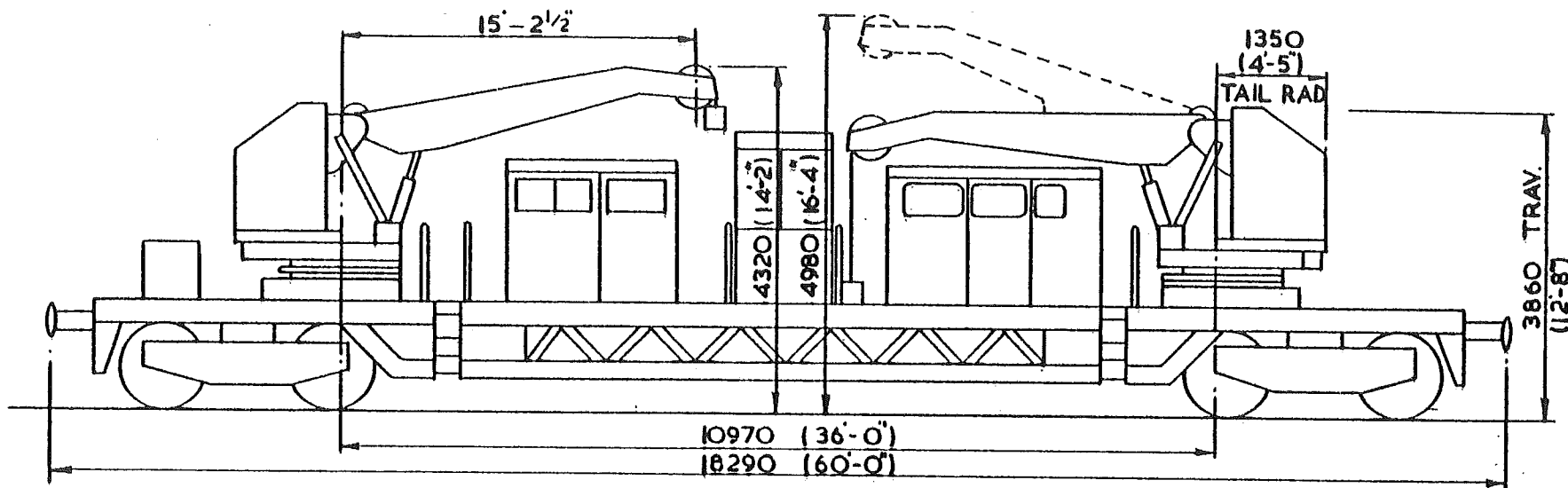
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

9.1 Type: Track Relayer TRM 6 & 8

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Care must be taken so that the jib height is limited so as not to foul the O.L.E.

DRB/RCE25KV/JL



## GENERAL INFORMATION

TOTAL WEIGHT—81890Kg—80.6 tons

FRONT AXLE LOAD—OUTER, 20930Kg (20.6 tons)—INNER, 20015Kg. (19.7 tons)

REAR AXLE LOAD—OUTER 20930Kg (20.6 tons)—INNER, 20015 Kg. (19.7 tons)

SPEED UNDER OWN POWER—10Km/h—6 mile / h

MIN. CURVE—121m, 6 CHAIN RAD.

ENGINE—ROLLS ROYCE FALCON 5652. 6 CYLINDER VERT DIESEL.

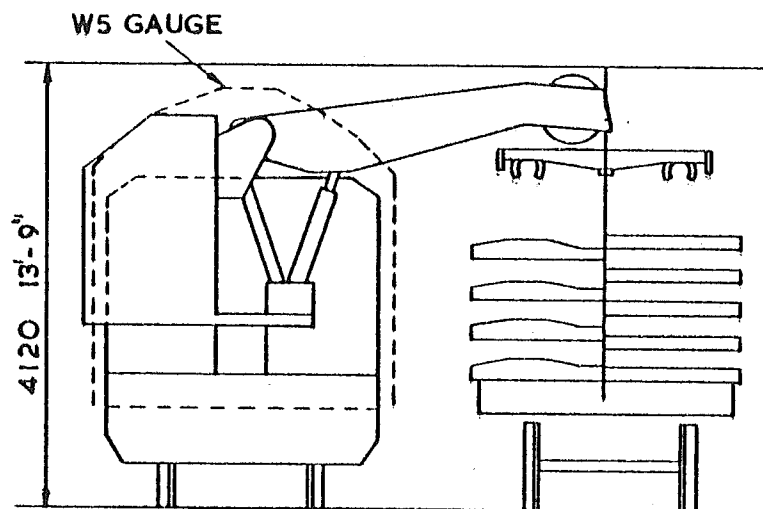
SPEED IN TRAIN FORMATION—72Km/h—45 mlie / h

MAX SAFE WORKING LOAD—5640 Kg (5.55 tons) / JIB—11280Kg (11.1 tons)  
TOTAL AT 4635mm (15'-2 1/2") RAD.

MAX SAFE WORKING SUPER ELEVATION—127mm (5")

OPERATING—RELAYING OF TRACK SECTIONS.

WAGON—PURPOSE BUILT.



Maintaining Dept.:—R. M. & E. E.

## THOMAS SMITH TRACK LAYING MACHINE

TRM 6 & 8

9.1

Date.:—30-6-86

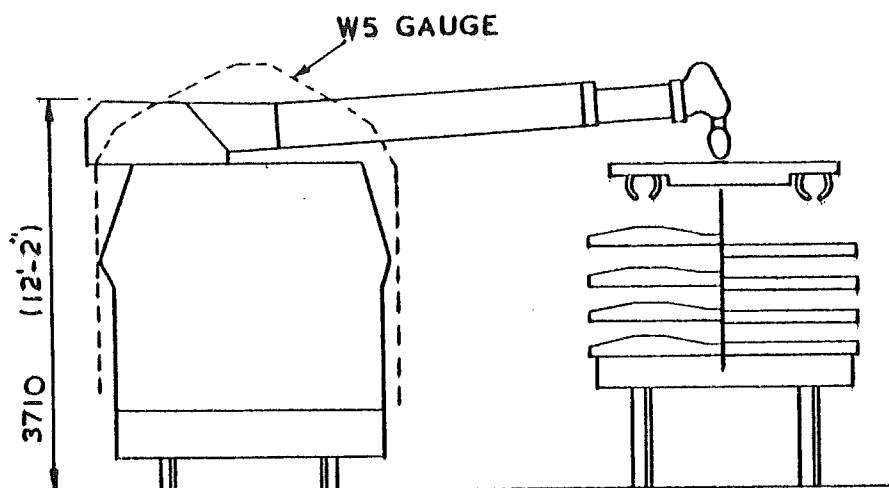
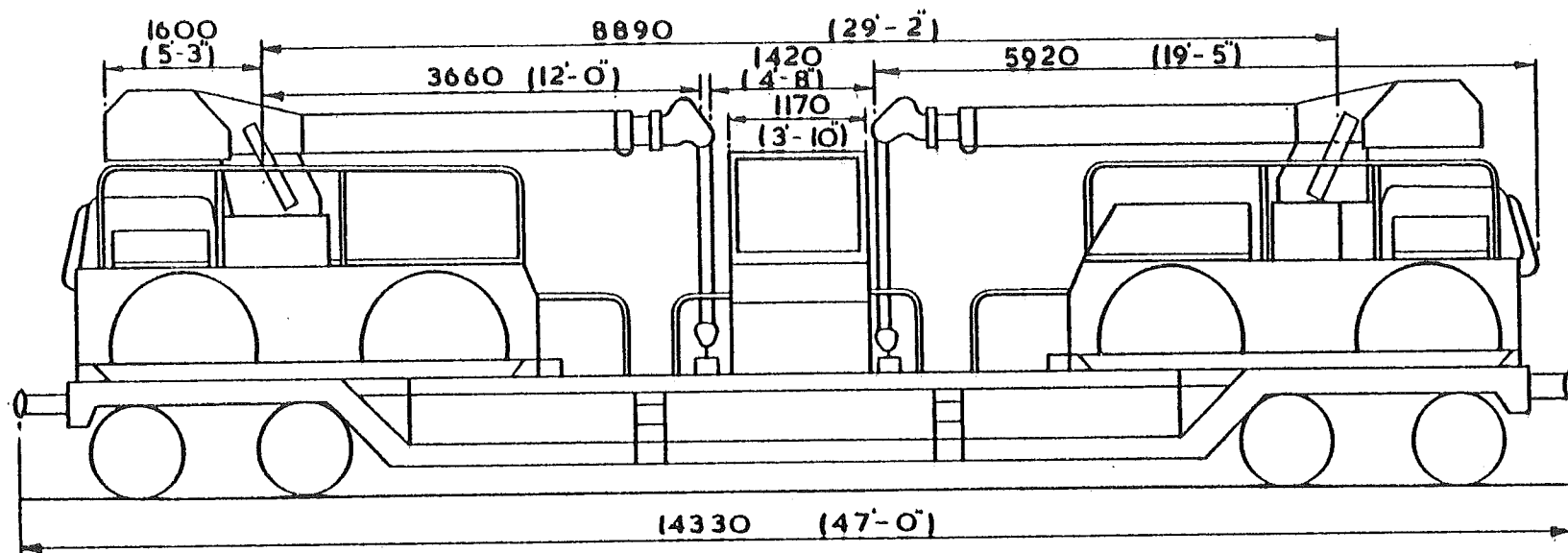
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

9.2 Type: Track Relayer TRM 13

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Care must be taken so that the jib height is limited so as not to foul the O.L.E.

DRB/RCE25KV/JL



TOTAL WEIGHT—81280Kg—80tons.  
 FRONT AXLE LOAD—2032Kg—20tons.  
 REAR AXLE LOAD—20320Kg—20 tons.  
 SPEED UNDER OWN POWER—NIL  
 MIN CURVE—40m.2 CHAIN RAD.  
 ENGINE—2 OFF FORD 6 CYL DIESEL 2703E  
 SPEED IN TRAIN FORMATION—72Km/h—45 mile/h  
 MAX SAFE WORKING LOAD 11890Kg(11.7tons)at 3650(12'-0")  
 MAX SAFE WORKING SUPER ELEVATION—152mm—6" RAD.  
 OPERATION—RELAYING OF TRACK SECTIONS  
 WAGON—WARWELL.

## IRON FAIRY SAPPHIRE TRACK LAYING MACHINE TRM.13.

Maintaining Dept.:—R. M. & E. E.

9.2

Date.:—30-6-86

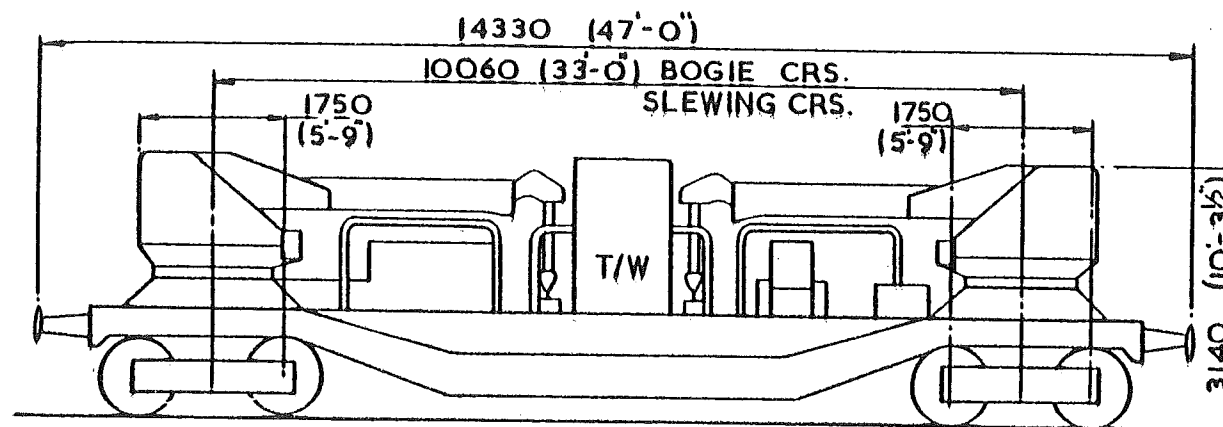
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

9.3 Type: Track Laying Machine TRM.14, 15

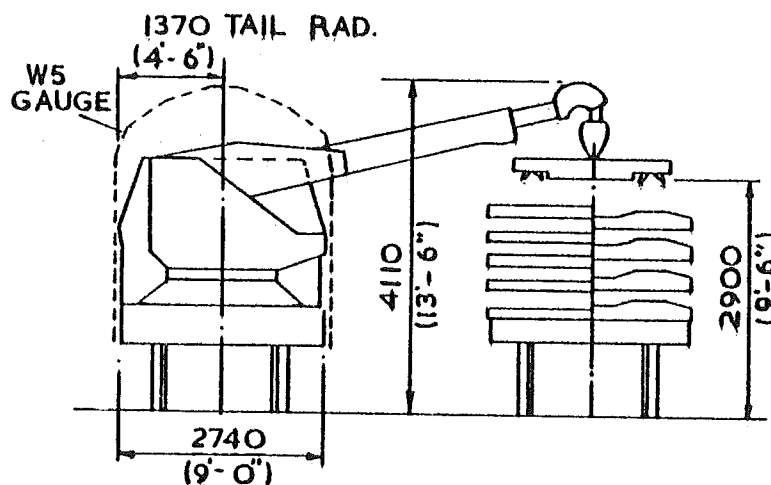
1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Care must be taken so that the jib height is limited so as not to foul the O.L.E.

DRB/RCE25KV/JL



### GENERAL INFORMATION

TOTAL WEIGHT — 81280 Kg — 80 tons.  
 FRONT AXLE LOAD — 20320 Kg — 20 tons.  
 REAR AXLE LOAD — 20320 Kg — 20 tons.  
 SPEED UNDER OWN POWER — NIL.  
 MIN CURVE — 40m. 2 CHAIN RAD.  
 ENGINE FORD 6 CYL DIESEL 2704E TURBO CHARGED  
 SPEED IN TRAIN FORMATION — 72 Km/h — 45 mile/h  
 MAX SAFE WORKING LOAD — 24220 Kg (14 tons) at 3050mm  
 (10'-0") RAD.  
 MAX SAFE WORKING SUPER ELEVATION — 152mm  
 (6") — 11180 Kg (11 tons) at 3050mm. (10'-0") RAD.  
 OPERATION — RELAYING OF TRACK SECTIONS.  
 WAGON — WARWELL.



## IRON FAIRY TOURMALINE TRACK LAYING MACHINE TRM.14, 15

Maintaining Dept. R. M. & E. E.

Date: - 30-6-86



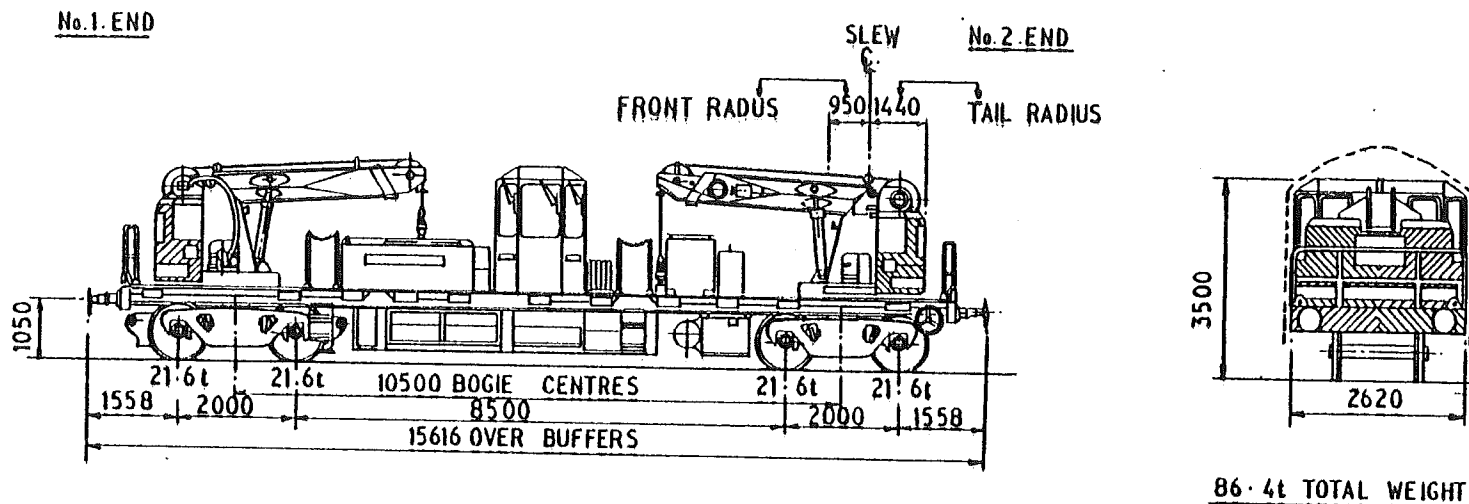
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

9.4 Type: Plasser 12.5 Tonne Twin Jib Tracklayer

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Care must be taken so that the jib height is limited so as not to foul the O.L.E.

DRB/RCE25KV/JL



### GENERAL INFORMATION

MAX. SPEED IN TRAIN	:	65 M.P.H.
ROUTE AVAILABILITY	:	7
BREAKING	{	TYPE { CRANE : STRAIGHT AIR
		{ IN TRAIN : AUTO AIR THROUGH VAC. PIPE FITTED
		{ BRAKE FORCE : 24 TONNES
MIN. RADIUS CURVE	:	80 METRES
TRAVEL PERFORMANCE	{	UNLADEN
		LEVEL TRACK. : 20 M.P.H.
		MAX. SWL.
		LEVEL TRACK. : 10 M.P.H.
		MAX SWL
		1.40 GRADENT : 3 M.P.H.
		SHUNTING 140t
		1.40 GRADENT : 2.25 M.P.H.

### PLASSER 12.5 TONNE TWIN JIB TRACKLAYER

Maintaining Dept.: - R. M. & E. E.

9.4  
Date.: -30-6-86

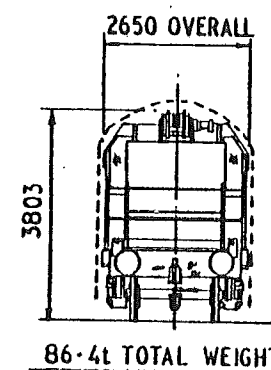
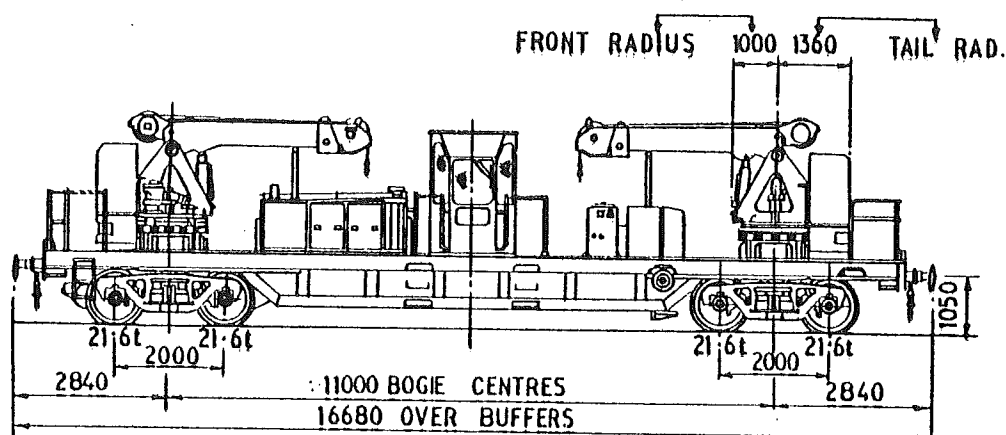
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

9.5 Type: Clarke Chapman 12.5 Tonne Twin Jib  
Tracklayer

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit. Inter-departmental site meetings must be held prior to day of work to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Care must be taken so that the jib height is limited so as not to foul the O.L.E.

DRB/RCE25KV/JL



### GENERAL INFORMATION

MAX. SPEED IN TRAIN	:	65 M.P.H.
ROUTE AVAILABILITY	:	7
BREAKING	{ TYPE { CRANE	: STRAIGHT AIR
	{ IN TRAIN	: AUTO AIR THROUGH VAC. PIPE FITTED
	{ BRAKE FORCE	: 24 TONNES
MIN. RADIUS CURVE	:	80 METRES
TRAVEL PERFORMANCE	{ UNLADEN	
	{ LEVEL TRACK	: 15 M.P.H.
	{ MAX SWL	
	{ LEVEL TRACK	: 10 M.P.H.
	{ MAX SWL	
	{ 1:40 GRADIENT	: 5.9 M.P.H.
	{ SHUNTING 140t	
	{ 1:40 GRADIENT	: 1 M.P.H.

### CLARKE-CHAPMAN 12.5 TONNE TWIN JIB TRACKLAYER

Maintaining Dept. R. M & E. E

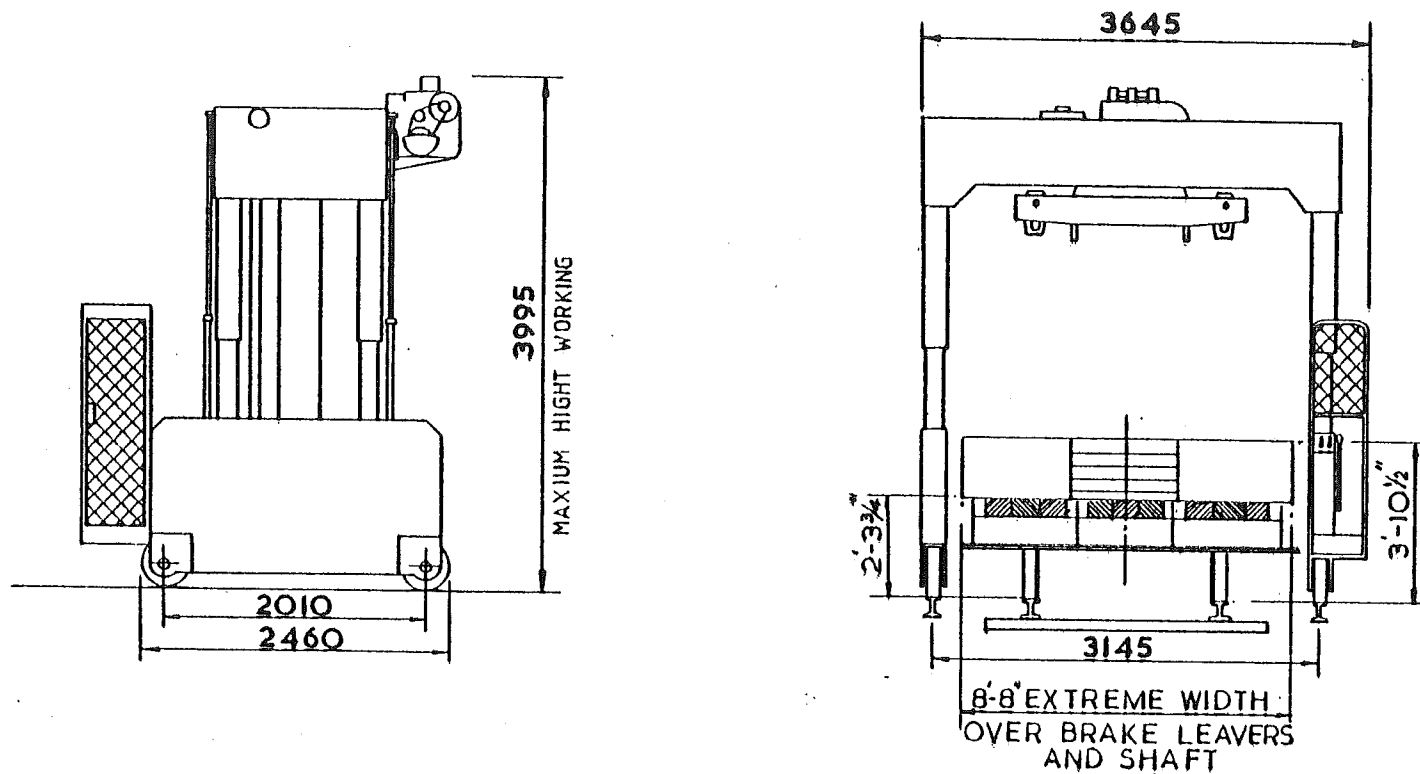
9.5  
Date: -30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

10.1 Type: Single Line Gantry Donelli Portal  
Crane PD-350

1. Isolation of O.H.L.E. is necessary on track where machine is working, also adjacent track to suit.  
Inter-departmental site meetings must be held prior to day of work to determine method of working to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
  
To be physically removed from area of work and alternative route provided by A.M. & E.E.
4. Temporary rails to be bonded throughout area of work.



**DONELLI PORTAL CRANE**  
**PD - 350**

Maintaining Dept.: - R. C. E.

10.1  
 Date.: - 30-6-86

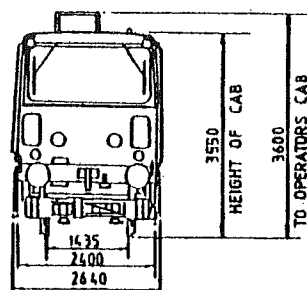
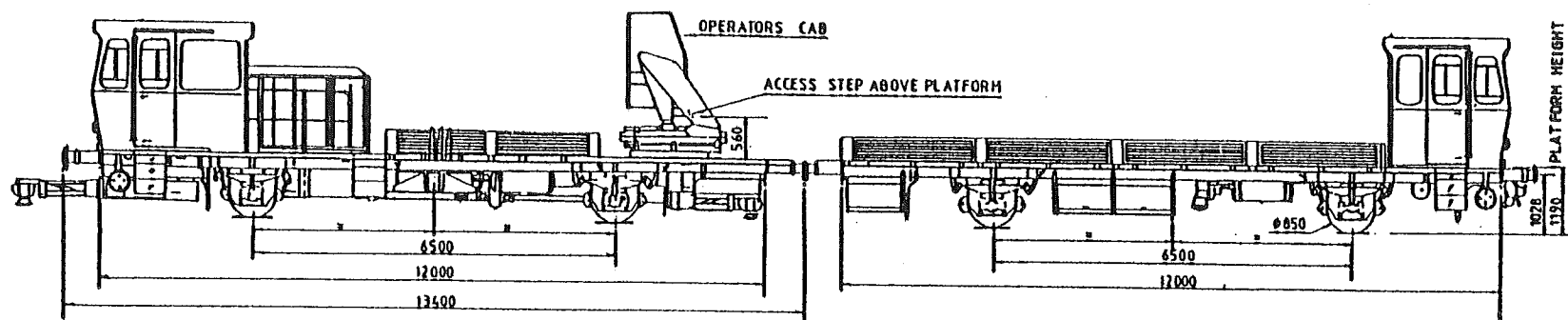
1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

11.1 Type: Geismar Track Maintenance Machine

- (1) The Overhead Equipment above the line where the vehicle will be working must be isolated and in addition the overhead equipment on adjacent lines which the jib will swing must also be isolated. Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the Working Instructions for A.C. Electrified Lines must be complied with under these circumstances.
- (2) In order to prevent the jib rotating under adjacent energised lines, it is recommended that a "slew Limit" be fitted to the jib.
- (3) If in doubt, a site meeting must be held with the relevant AM & EE to discuss requirements.
- (4) For servicing and machine maintenance under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 and 10 of the A.C. Working Instructions.
- (5) Bonding. Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



**NOTE**  
 DIMENSIONS OF JIB SAME AS  
 PLASSER G.P. TRAMM (D.B.W. 10) SHEET 11-2

GEISMAR TRACK MAINTENANCE MACHINE

Maintaining Dept.: - R. C. E.

11-1  
 Date.: - 30-6-86



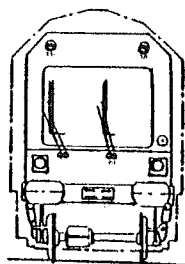
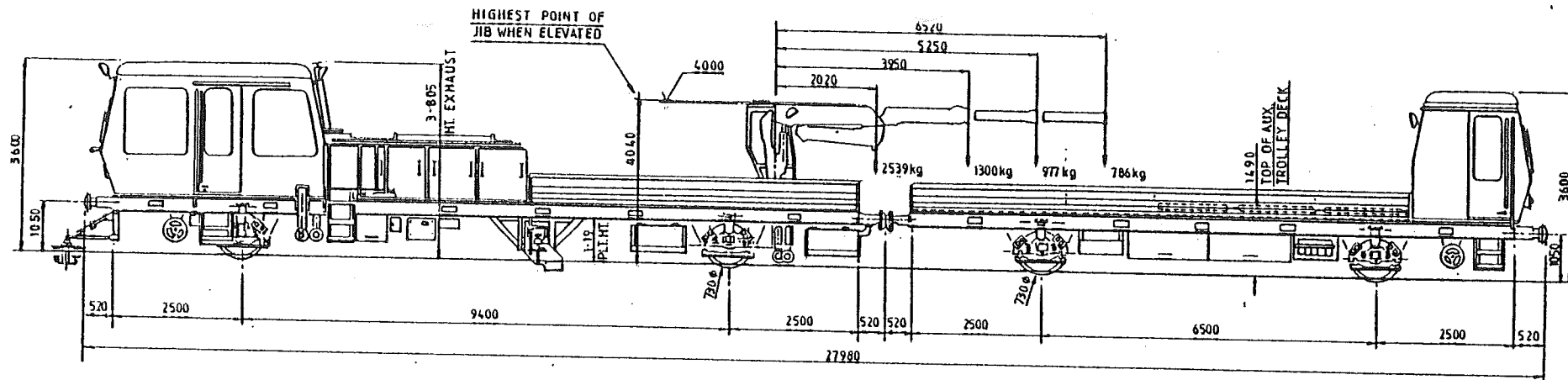
1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

11.2 Type: Plasser G.P. Tramm (O.B.W.10)

- (1) The overhead equipment above the line where the vehicle will be working must be isolated and in addition the overhead equipment on adjacent lines under which the jib will swing must also be isolated. Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the Working Instructions for A.C. Electrified Lines must be complied with under these circumstances.
- (2) In order to prevent the jib rotating under adjacent energised overhead lines it is recommended that a "slew limit" be fitted to the jib.
- (3) If in doubt, a site meeting must be held with the relevant AM & EE to discuss requirements.
- (4) For servicing and machine maintenance under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 and 10 of the A.C. Working Instructions.
- (5) Bonding. Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



PLASSER G. P. TRAMM (O. B. W.10)

Maintaining Dept.: - R. C. E.

11-2  
Date.: - 30-6-86

1st December 1986

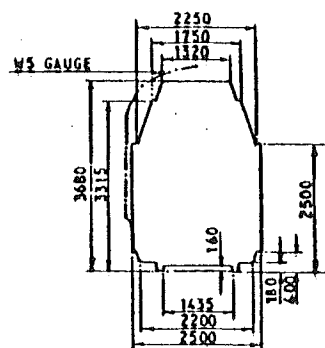
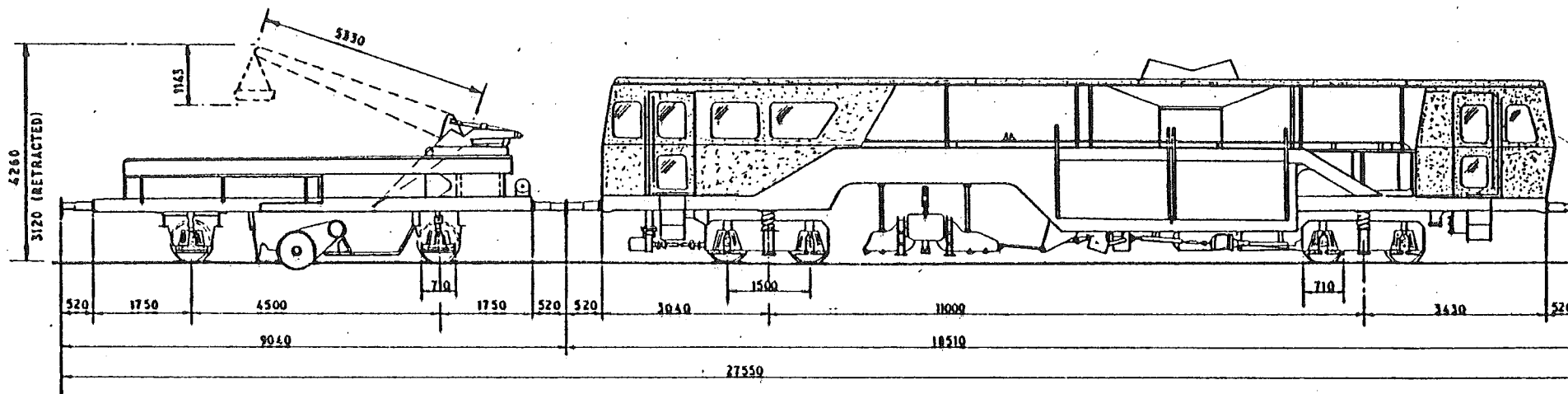
ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

12.1 Type : Rail Profiling Machine R.P.M. 100 Series 2 & Swarf Collector Unit.

Listed below are the conditions which must be met for the operation of this machine under energised OLE:-

1. Each machine must be fitted with a suitable key operated security switch to ensure that the operator cannot use the swarf collection mechanism in Manual mode, the key to be held by the machine supervisor during work under energised O.L.E. The supervisor must be informed as to his responsibility for ensuring that the jib is NEVER extended under these working conditions.
2. The mechanical locking pin must be fitted with a suitable limit switch to ensure that if it is not engaged then the machine cannot be operated, thus ensuring that no sluing of the jib out of W5 gauge can occur.
3. The attention of all staff engaged in operating the machine also for the servicing and maintenance must be drawn to the requirements of the Working Instructions for A.C. Electrified Lines (BR.29987) particularly to Instructions 7.1, 7.2, 9.1, 9.2, 9.3, 9.8,10 and 12.
4. The swarf container must be empty at the beginning of every shift of work under energised OLE and the process of emptying it must NEVER be carried out in the vicinity of such energised equipment.
- (5) A reminder notice must be permanently fixed as near to the key switch in the cab as possible to the effect that the machine must not be used in manual mode under energised OLE.
- (6) The Supervisor should familiarise himself with the location of all bonds in the Section of work to ensure that no damage is inflicted on them. If such damage does occur, then it should be reported in accordance with Instruction 15.1 of BR.29987.
- (7) Coils of swarf must not be left on the track as this could constitute a temptation for vandals to throw onto the OLE.
- (8) This machine is not to be used on the Moorgate Line or on any third or fourth rail D.C. Electrified Line.

DrB/ONTRACK/JDS/MR



#### GENERAL INFORMATION

TOTAL WEIGHT - BOTH UNITS	64,300kg
GROSS WEIGHT - RAIL PLANER	48,000kg
GROSS WEIGHT - SWARF COLLECTOR	16,000kg
AXLE LOAD - 1	12,000kg
2	12,000kg
3	12,000kg
4	12,000kg
5	7,800kg
6	8,500kg

SPEED UNDER OWN POWER. PLAIN LINE - 40KMH-25MPH  
 SPEED UNDER OWN POWER P & C - 40KMH-25MPH  
 MINIMUM CURVE - 121M. 6 CHAIN RAD. TRAV; 201M. 10 CHAIN RAD WORK  
 MAXIMUM SUPERELEVATION - 152MM 6INS  
 ENGINE - ROLLS ROYCE DIESEL TYPE C6 TFL  
 OPERATION - REPROFILES RAIL HEAD & COLLECTS SWARF

#### RAIL PROFILING MACHINE R.P.M. 100 SERIES II & SWARF COLLECTOR UNIT

Maintaining Dept. R.M. & E.E.

12.1  
 Date: - 30-6-86

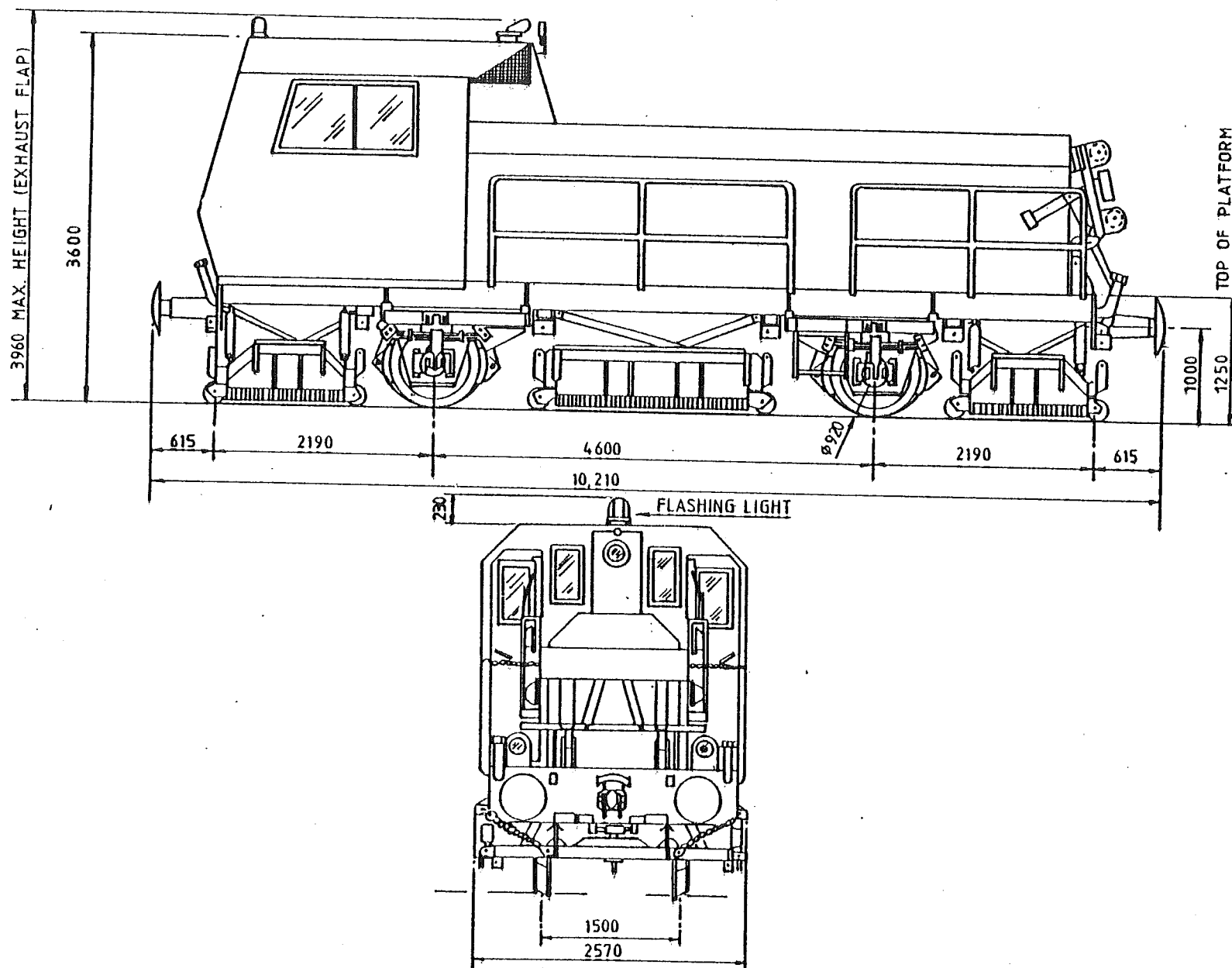
1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

12.2 Type: Speno Switch and Crossing Grinder (URR16P)

- (1) No isolation required during trackwork.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instruction 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding. Operators must comply with Instruction 15.1 (Bonds) and Instruction 15.2 (Alterations to Permanent Way) and 15.3 (Interrupted continuity of running rails) of the A.C. Working Instructions.

DrB/ONTRACK/JDS/MR



SPENO SWITCH AND CROSSING GRINDER (URR 16P)

Maintaining Dept.: - R. C. E.

12:2  
Date.: -30-6-86

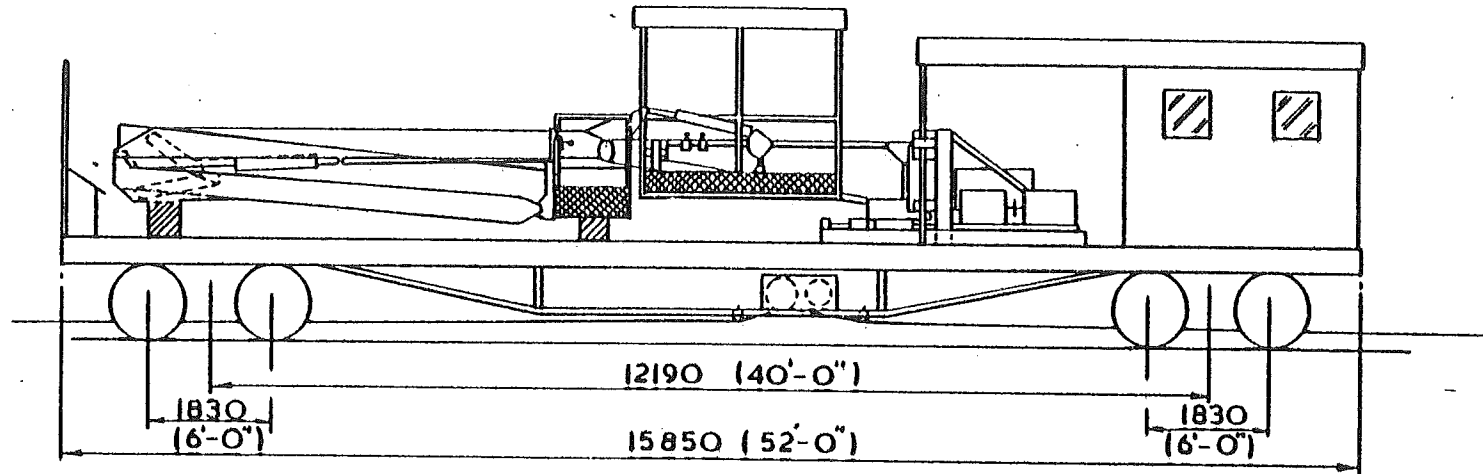
1st December 1986

ON TRACK MACHINES WORKING ON 25 KV A.C.  
ELECTRIFIED LINES

13.1 Shts 1 & 2 Type: Viaduct Inspection Unit HP3

1. Isolation of O.H.L.E. is necessary on track where machine is working.  
Inter-departmental site meetings must be held prior to day of work to determine method of working to obtain maximum safe working conditions.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding not affected.
4. Where inspection under viaduct infringes O.H.L.E. on lower track, isolation and wire slew will be required.

DRB/RCE25KV/JL



### GENERAL INFORMATION

TOTAL WEIGHT — 45870Kg — 45.15 tons

FRONT AXLE LOAD —

REAR AXLE LOAD —

SPEED UNDER OWN POWER — 0.0363 Km/h — 0.0227 mile/h (20 ft/min)

MIN CURVE — 40m. 2 CHAIN RAD.

ENGINE — AUTO MOWER WINCH FOR TRAVEL.

SPEED IN TRAIN FORMATION — 56 Km/h — 35 mile/h

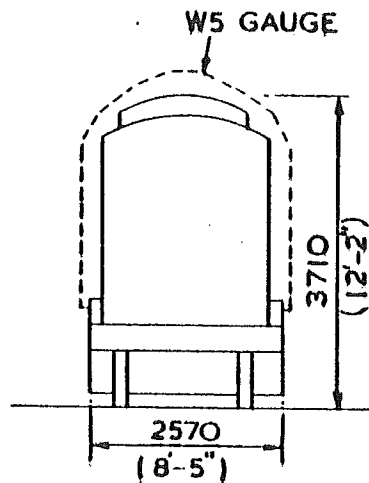
MAX. SAFE WORKING LOAD — 272 Kg — 0.268 tons (600 lb)

MAX. SAFE WORKING SUPER ELEVATION — 102mm — 4 ins.

OPERATION — INSPECTION OF VIADUCTS ETC. UNDER THE TRACK.

WAGON — LMS. 40 TON BOGIE BOLSTER

PLATFORM — SIMON HYDRAULIC.

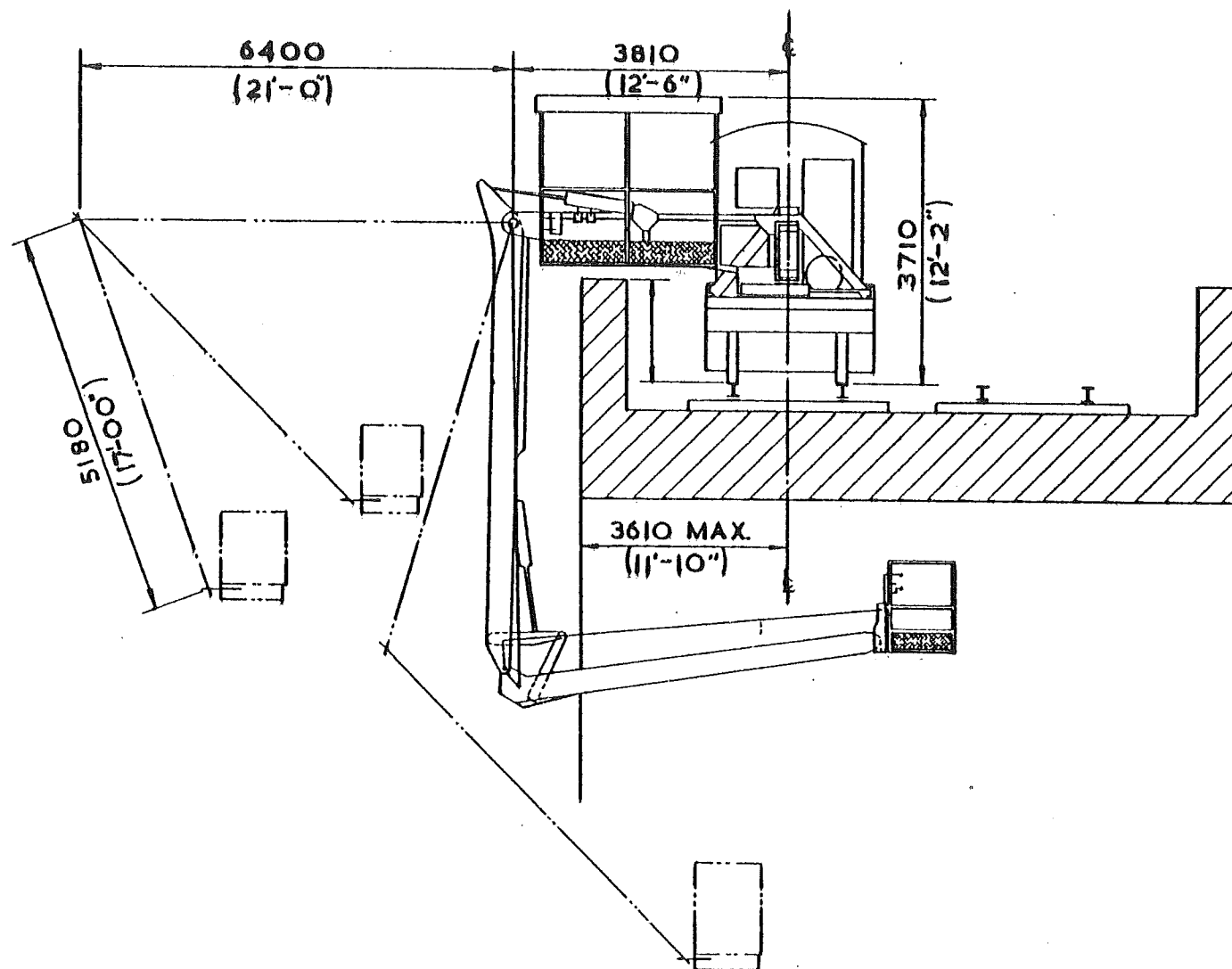


### VIADUCT INSPECTION UNIT HP.3.

Maintaining Dept.: — R.C.E.

13.1 SHT 1  
Date: — 30-6-86





SEE ALSO PREVIOUS PAGE

# VIADUCT INSPECTION UNIT HP3

Maintaining Dept. R. C. E.

13.1 SHT. 2  
Date :- 30-6-86

1st December 1986

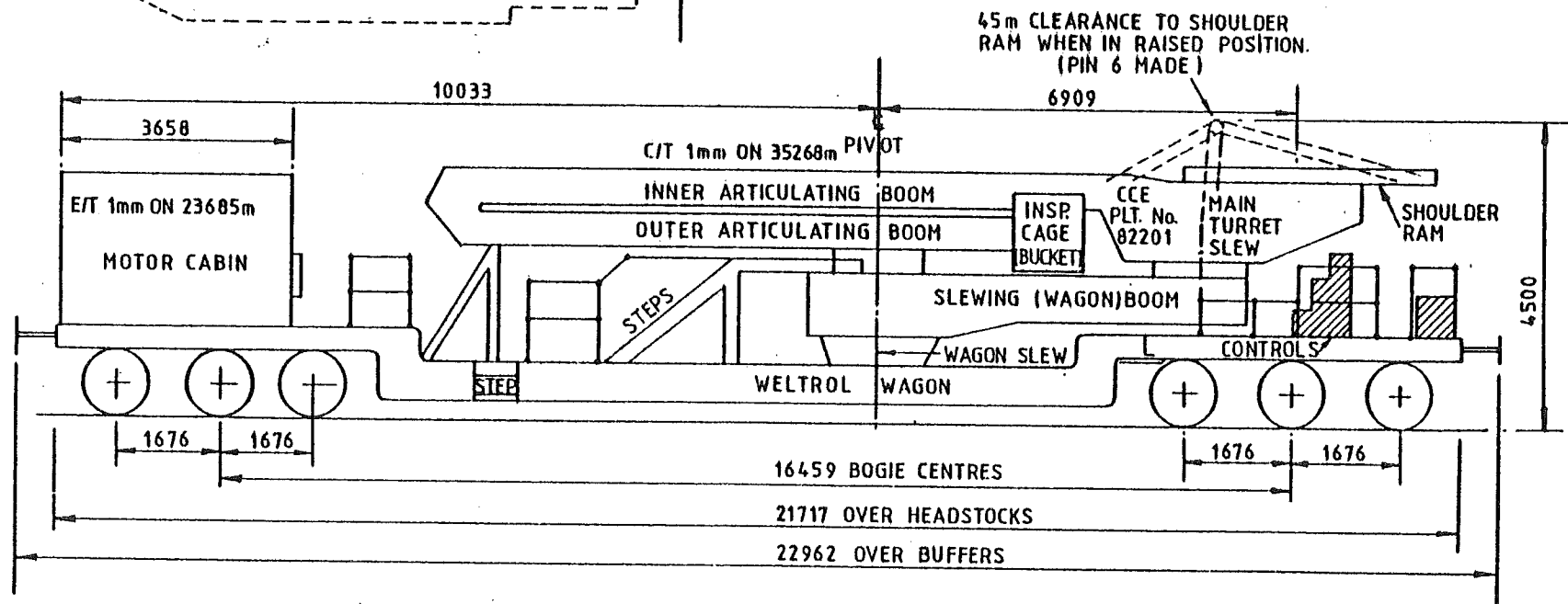
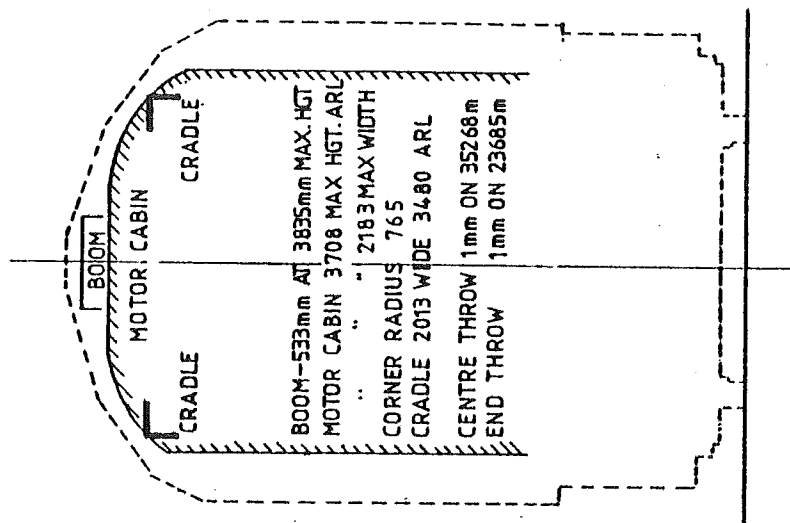
ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

13.2 SHEETS 1 & 2

TYPE ; UNIVERSAL VIADUCT INSPECTION UNIT (ARMFIELD)

- (1) Isolation of O.H.L.E. is necessary on track where machine is working. Inter-departmental site meeting must be held prior to day of work to determine method of working to obtain maximum safe working conditions.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding not affected.
- (4) Where inspection under viaduct infringes O.H.L.E. on lower track, isolation and wire slew will be required.

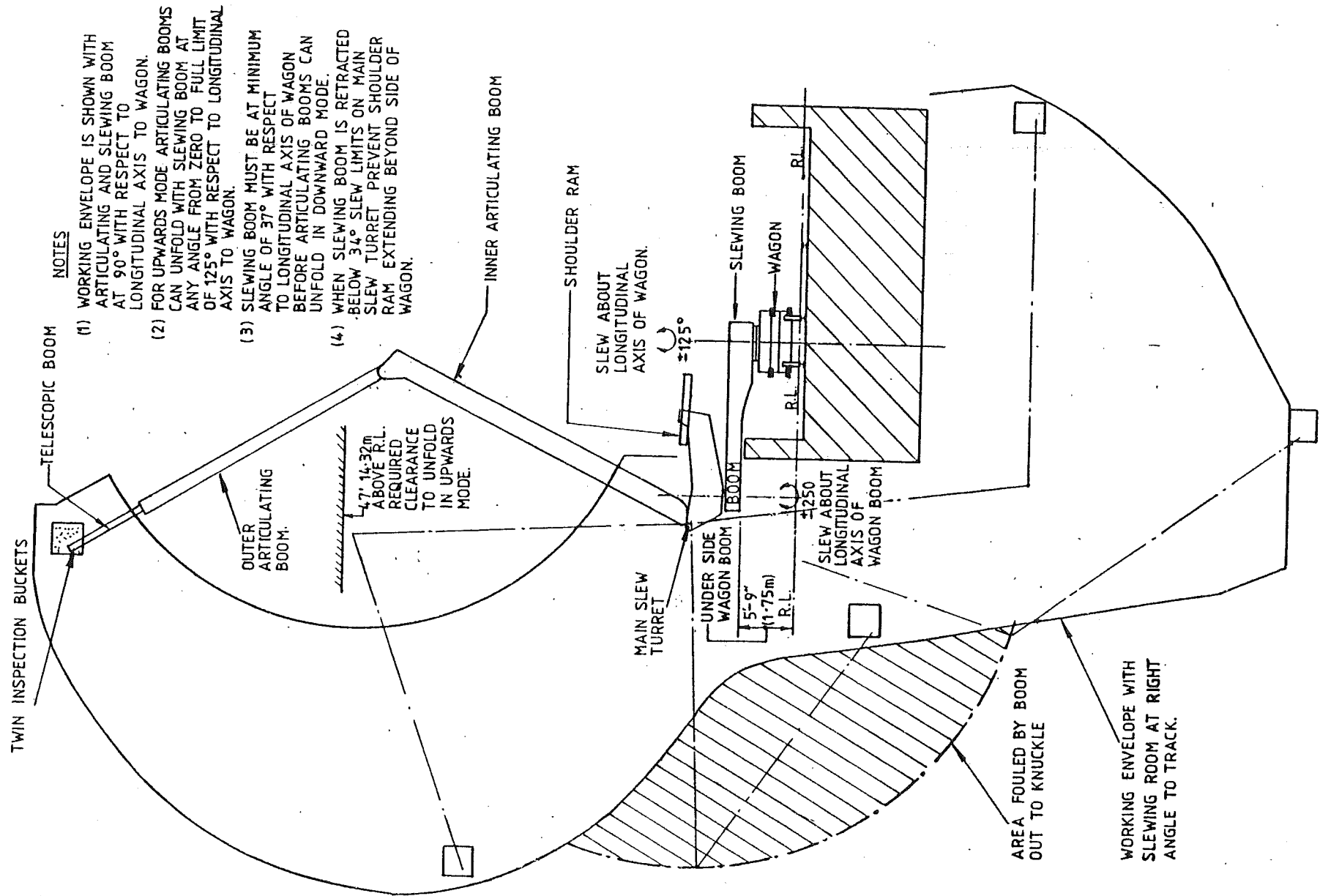
DrB/ONTRACK/JDS/MR



UNIVERSAL VIADUCT INSPECTION UNIT (U.V.I.U.) (ARMFIELD)

Maintaining Dept.: -R.C. E. (Contractor -Bywater Platforms)

13.2 SHT. 1  
Date: -30-6-86



Maintaining Dept.: - R.C.E. (Contractor - Bywater Platforms)

13-2 SHT. 2  
Date: -30-6-86

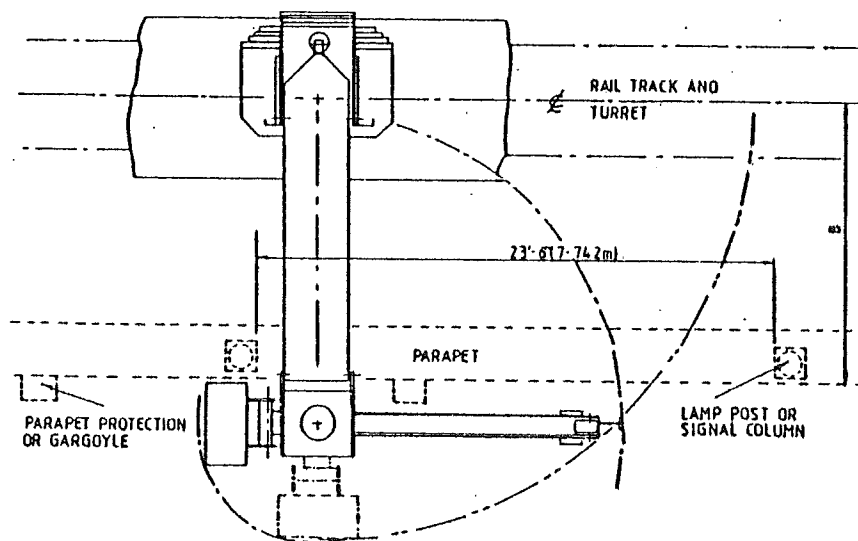
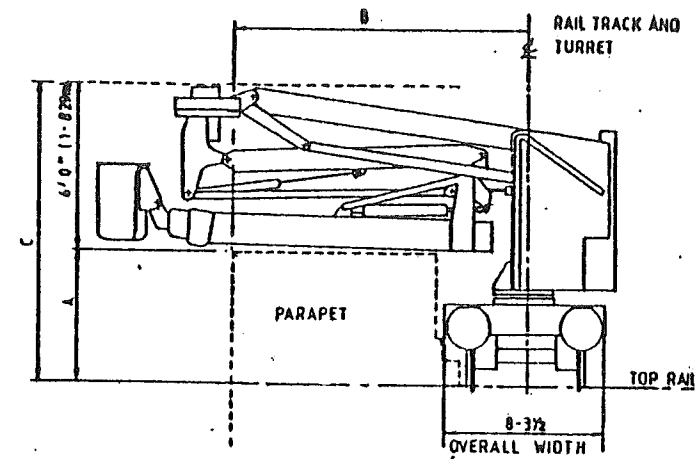
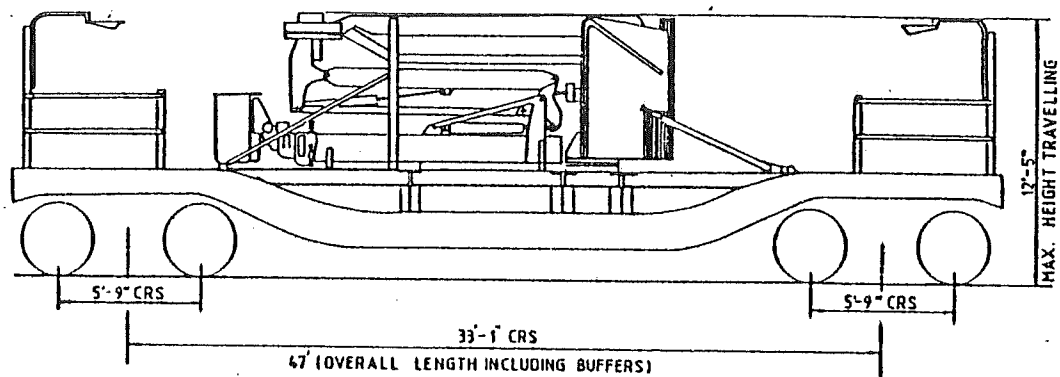
1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

13.3 TYPE : VIADUCT INSPECTION UNIT T.U. 37

- (1) Isolation of O.H.L.E. is necessary on track where machine is working. Inter-departmental site meeting must be held prior to day of work to determine method of working to obtain maximum safe working conditions.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding not affected.
- (4) Where inspection under viaduct infringes O.H.L.E. on lower track, isolation and wire slew will be required.

DrB/ONTRACK/JDS/(pg11)



- A. — Max. parapet height above rail 6ft 0ins (1.829m) normal operating; and increased to Ap. 10ft 0ins (3m) when operating under special arrangements for high parapet situation.
- B. — Max. distance from rail track to continuous edge of parapet 12ft 8" (3.86m). This dimension can be increased to 13ft 3ins (4.039m) where gargoyles, piers and support columns project beyond the parapet edge.
- C. — Min. height of overhead obstructions above the rail 6ft 0ins (1.829m) + height of parapet (A). Where there are obstructions between the top of the parapet and the underside of the overhead obstructions e.g. lamp posts, signal columns, these should have a clear distance of 23ft 6ins (7.142m) between them.

VIADUCT INSPECTION UNIT TU 37

Maintaining Dept.:— R.C. E (Contractor - E. P. L.)

13.3  
Date.:—30-6-86

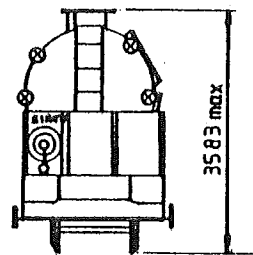
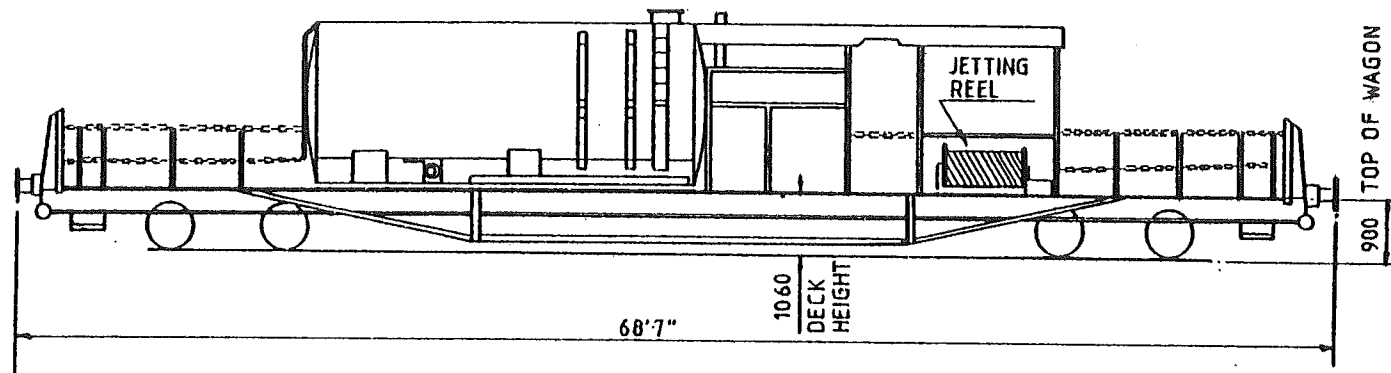
2nd February 1987

ON TRACK MACHINES WORKING ON 25KV A.C.  
ELECTRIFIED LINES.

14.1 Type: Drain Cleaning Unit No. 1 (Molex)

- (1) Isolation of the O.H.L.E. is not necessary on the track that the machine is working, provided the jet hose restraint is fitted and used.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding. Not affected.
- (4) Care to be taken not to direct water pressure jets towards live O.H.L.E.

DrB/ONTRACK/JDS/MR



#### NOTES

1. WAGON TYPE
- : 40TON RAIL SLEEPER & BALLAST WAGON: DOLPHIN
- : TARE-25TONS 2CWTS (WAGON ONLY)
- : MINIMUM CURVE- 2CHAINS
- : SCREW HAND BRAKE
- : 68'7" OVER BUFFERS
- : 8' 0" OVERALL WIDTH
- : UNFITTED

#### NOTES

2. SLUDGE TANK CAPACITY : 2000 galls
3. HEADER TANK : 1000 galls
4. JETTING HOSE : 1200 p.s.i. @ 42 galls/min. - 300ft. LONG HOSE
5. HAND JETTING GUN CAPACITY 1200 p.s.i. 6 galls/min. - 60ft. LONG HOSE
6. MAX. VACUUM LIFT HEIGHT 20ft (16ft below rail height approx)
7. THIS MACHINE IS USED IN TRAIN FORMATION (LOCO PROPELLED)  
WITH 3<sup>rd</sup> CLEAN WATER TANKER WAGONS AND A BRAKE VAN AT EACH END.

### DRAIN CLEANING UNIT No. 1 (MOLEX)

Maintaining Dept :- R.C.E.



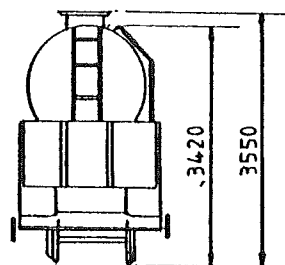
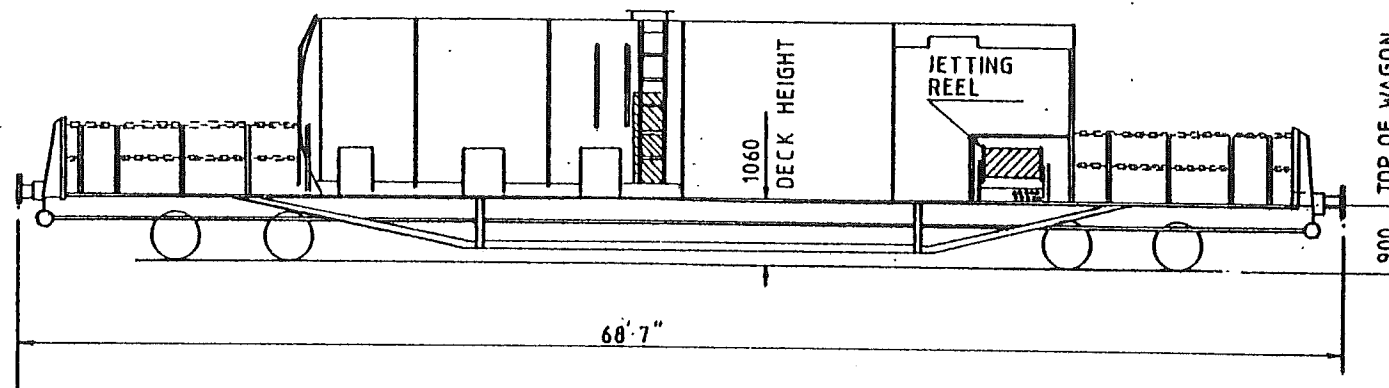
2nd February 1987

ON TRACK MACHINES WORKING ON 25KV A.C.  
ELECTRIFIED LINES.

14.2 Type: Drain Cleaning Unit No. 2 (Cleaver Lea)

- (1) Isolation of the O.H.L.E. is not necessary on the track that the machine is working, provided the jet hose restraint is fitted and used.
- (2) For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
- (3) Bonding. Not affected.
- (4) Care to be taken not to direct water pressure jets towards live O.H.L.E.

DrB/ONTRACK/JDS(pg14)



#### NOTES

##### 1. WAGON TYPE

- : 40TON RAIL SLEEPER & BALLAST WAGON: DOLPHIN
- : TARE - 25TONS 2CWTS (WAGON ONLY)
- : MINIMUM CURVE- 2CHAINS
- : SCREW HANDBRAKE
- : UNFITTED
- : 68'7" OVER BUFFERS
- : 8'0" OVERALL WIDTH

#### NOTES

- 2. SLUDGE TANK CAPACITY : 2,000galls
- 3. HEADER TANK " : 1,000galls
- 4. JETTING HOSE " : 1,200psi a 46galls/min. - 300ft. LONG HOSE.
- 5. HAND JETTING HOSE CAPACITY 1,200psi 6galls/min - 60ft. LONG HOSE.
- 6. MAX. VACUUM LIFT : 20ft. (approx. 16ft. below rail height)
- 7. THIS MACHINE IS WORKED IN TRAIN FORMATION (LOCO PROPELLED) WITH 3ND CLEAN WATER TANKER WAGONS AND A BRAKE VAN AT EACH END.

### DRAIN CLEANING UNIT No.2 (CLEAVER LEA)

Maintaining Dept.: - R.C. E.

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.1 Type: Ballast Packers Mark IV.

1. Isolation not required for machine operation provided it is carried out in accordance with Instructions 9.1, 9.2, 9.3, 9.8 and 10.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding

Operators must comply with Instruction 15.1 of the A.C. Working Instructions if bonds become damaged due to the tracking/operation of this machine.

4. Tracking of Machine.

Isolation is not necessary provided :-

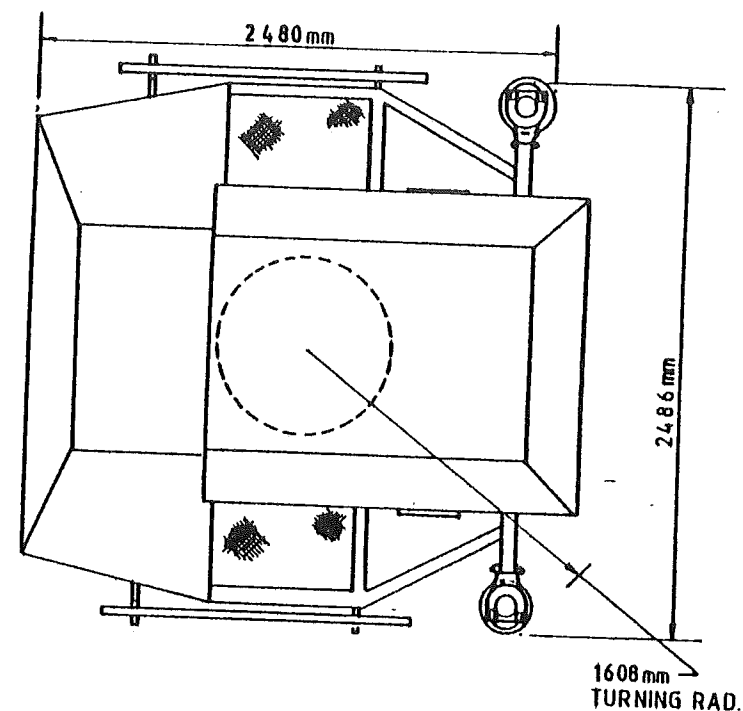
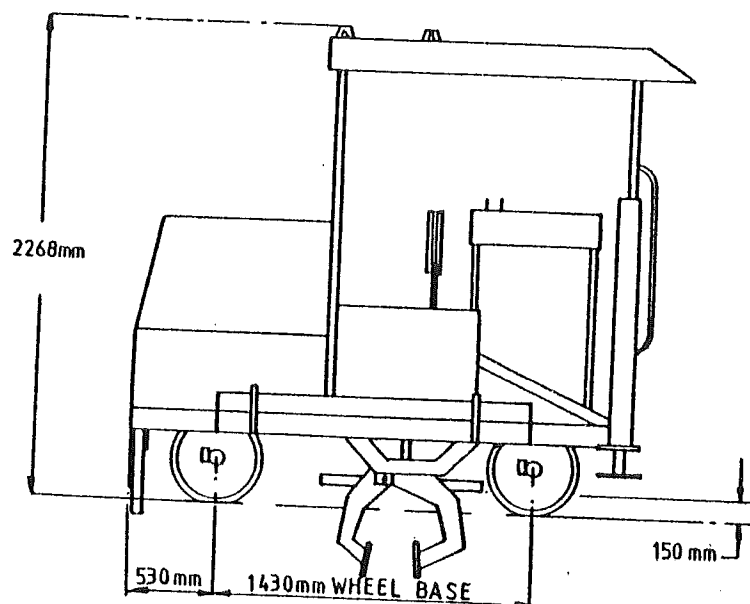
- a) The lateral clearance between the vehicle and any O/H line structure mast or support must not be less than 5.0 metres.
- b) The clearance between the top of the machine and live O.L.E. including Return Conductor must not be less than 1.0 metre.

Note. Machine ht = 2268 m/m.

- c) In accordance with the R.C.E's "Machine Operators Handbook"

Note Moorgate Line - Isolation required at all times.

DrB/ONTRACK/JDS/MR



### 1. GENERAL DESCRIPTION

- 1-1 THE MACHINE IS DESIGNED TO LIFT TRACK UP TO 120mm (5")
- 1-2 THE MACHINE CAN PACK BALLAST UNDER THE SLEEPERS WITH OR WITHOUT LIFTING THE TRACK.
- 1-3 THE MACHINE IS DESIGNED TO BE OFF TRACKED AND IS STORED WHEN OUT OF USE ON A TRACKSIDE STILLAGE. ALTHOUGH THE MACHINE IS SELF-PROPELLED TO CARRY OUT ITS OPERATIONS, IT IS TRANSPORTED FROM SITE TO SITE BY A ROAD VEHICLE SPECIALLY EQUIPPED FOR THE PURPOSE.

### 2. TECHNICAL SPECIFICATION

2-1 MODEL	BALLAST PACKER MK1V
2-2 ENGINE	LISTER DIESEL ST3
2-3 LENGTH	2480mm
2-4 HEIGHT	2268mm
2-5 TURNING RADIUS	1608mm
2-6 TRAVEL SPEED	14 MPH
2-7 PACKING SPEED	400yds. per. hr.
2-8 DRIVE SYSTEM	HYDRAULIC

## BALLAST PACKER MK1V

Maintaining Dept. R. C. E.

15.1  
Date: -30-8-86

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.2 Type: Permaclipper - Mark II & Mark III

1. Isolation not required for machine operation provided it is carried out in accordance with Instructions 9.1, 9.2, 9.3, 9.8 and 10.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding

Operators must comply with Instruction 15.1 of the A.C. Working Instructions if bonds become damaged due to the tracking/operation of this machine.

4. Tracking of Machine.

Isolation is not necessary provided :-

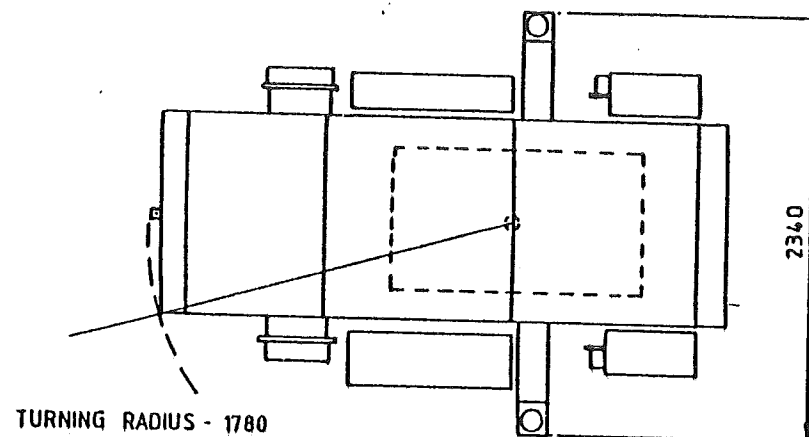
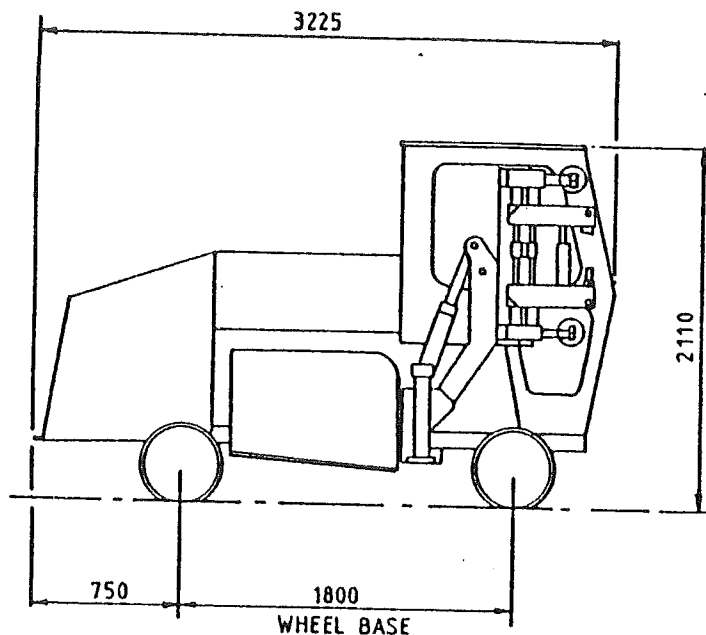
- a) The lateral clearance between the vehicle and any O/H line structure mast or support must not be less than 5.0 metres.
- b) The clearance between the top of the machine and live O.L.E. including Return Conductor must not be less than 1.0 metre.

Note. Machine ht = 2110 m/m.

- c) In accordance with the R.C.E's "Machine Operators Handbook"

Note Moorgate Line - Isolation required at all times.

DrB/ONTRACK/JDS/MR



### 1. GENERAL DESCRIPTION

- 1.1 THE MACHINE IS DESIGNED TO REMOVE 'STD. & E' TYPE PANDROL CLIPS ON CONCRETE AND WOODEN SLEEPER TRACK WITH PANS 6, 8 & 11 BASEPLATES.
- 1.2 THE MACHINE WILL DRIVE 'STD. & E' TYPE PANDROL CLIPS ON CONCRETE AND WOODEN SLEEPER TRACK WITH PANS 6, 8, 9 & 11 BASEPLATES.
- 1.3 THE MACHINE WILL LIFT TRACK TO ENABLE A JOB FUNCTION TO BE CARRIED OUT.
- 1.4 THE MACHINE IS DESIGNED TO BE OFF TRACKED AND IS STORED WHEN OUT OF USE ON A TRACK SIDE STILLAGE. ALTHOUGH THE MACHINE IS SELF PROPELLED TO CARRY OUT ITS OPERATIONS, IT IS TRANSPORTED FROM SITE TO SITE BY A ROAD VEHICLE EQUIPPED FOR THE PURPOSE.

### 2. TECHNICAL SPECIFICATION

2.1 MODEL	PERMACLIPPER MT 11
2.2 ENGINE	LISTER DIESEL ST2
2.3 LENGTH	3225 mm
2.4 HIGHT	2110 mm
2.5 TURNING RADIUS	1780 mm
2.6 MAX TRAVEL SPEED	10 MPH

### PERMACLIPPER MARK II & MARK III

Maintaining Dept.: - R. C. E.

15.2  
Date.: - 30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.3 Type: Permaquip Powered Canopy Trolley (PCT)

1. Isolation not required for machine operation provided it is carried out in accordance with Instructions 9.1, 9.2, 9.3, 9.8 and 10.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding

Operators must comply with Instruction 15.1 of the A.C. Working Instructions if bonds become damaged due to the tracking/operation of this machine.

4. Tracking of Machine.

Isolation is not necessary provided :-

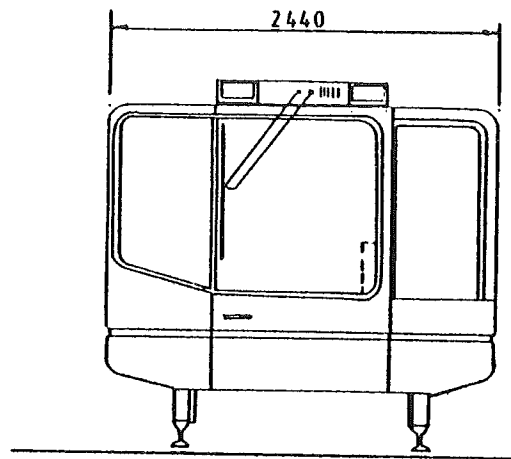
- a) The lateral clearance between the vehicle and any O/H line structure mast or support must not be less than 5.0 metres.
- b) The clearance between the top of the machine and live O.L.E. including Return Conductor must not be less than 1.0 metre.

Note. Machine ht = 2600 m/m.

- c) In accordance with the R.C.E's "Machine Operators Handbook"

Note Moorgate Line - Isolation required at all times.

DrB/ONTRACK/JDS/MR

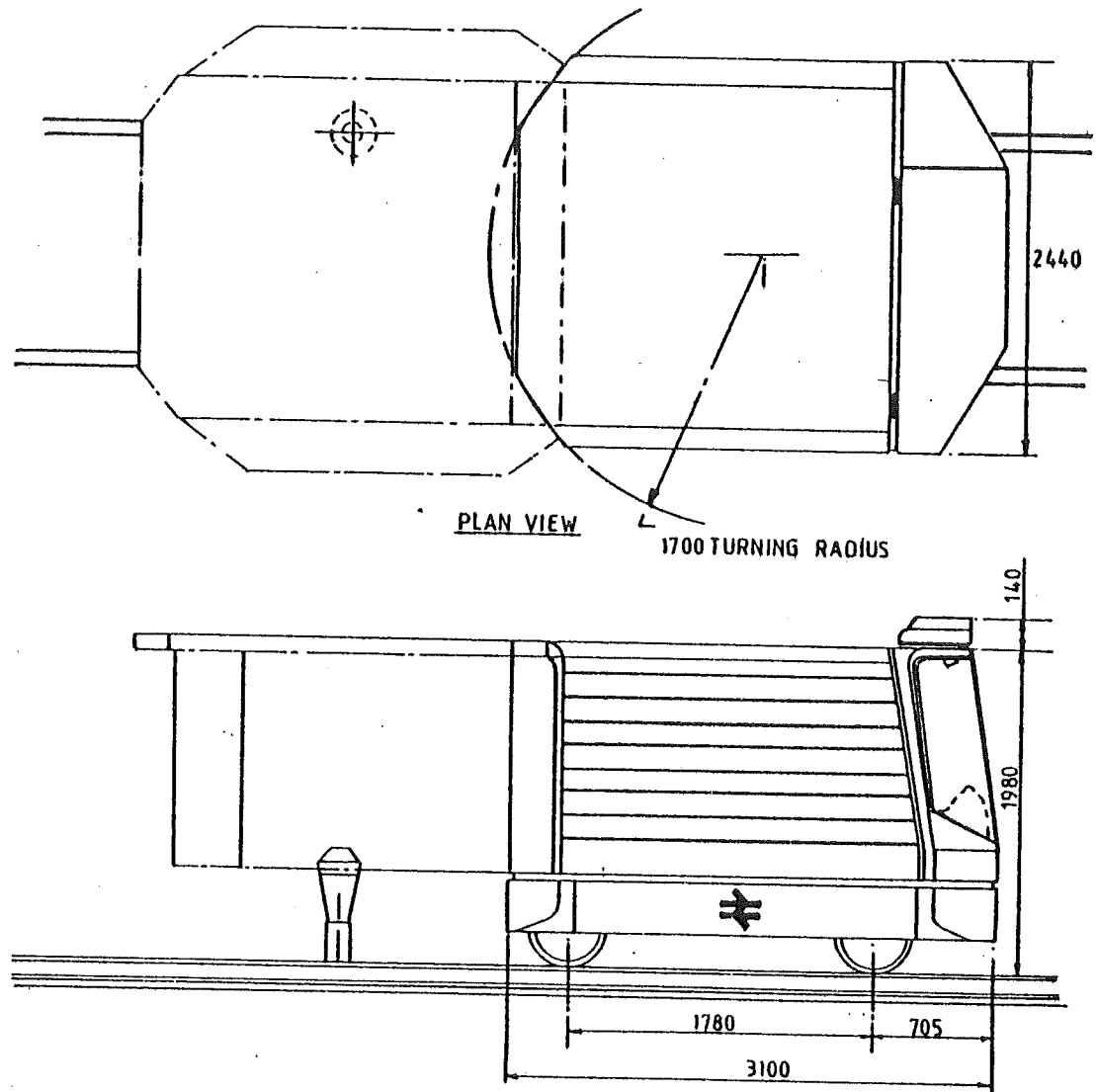


#### FUNCTION

TO PROVIDE BAD WEATHER PROTECTION FOR THERMIT WELDING AND TO CARRY ALL NECESSARY EQUIPMENT, INCLUDING STRESSING GEAR, FOR THIS FUNCTION.

#### PERFORMANCE

MACHINE WILL CARRY A 3 MAN CREW ALL NECESSARY EQUIPMENT AND WELDING MATERIALS, INCLUDING STRESSING GEAR. AN EXTENDABLE CANOPY IS PROVIDED FOR BAD WEATHER PROTECTION OF THERMIT WELD PROCESS. VEHICLE CAN BE ON AND OFF TRACKED, WITH ALL WELDING GEAR IN PLACE, USING THE PERMAQUIP TRACCESS SYSTEM. MAXIMUM TRAVEL SPEED: 30KPH (18MPH). GROSS WEIGHT: 3 STONNE.



### PERMAQUIP POWERED CANOPY TROLLEY PCT

Maintaining Dept.: -R. C. E.

15.3  
Date.: -30-6-86



1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.4 Type: Permaquip Personnel Carrier

1. Isolation not required for machine operation provided it is carried out in accordance with Instructions 9.1, 9.2, 9.3, 9.8 and 10.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.

3. Bonding

Operators must comply with Instruction 15.1 of the A.C. Working Instructions if bonds become damaged due to the tracking/operation of this machine.

4. Tracking of Machine.

Isolation is not necessary provided :-

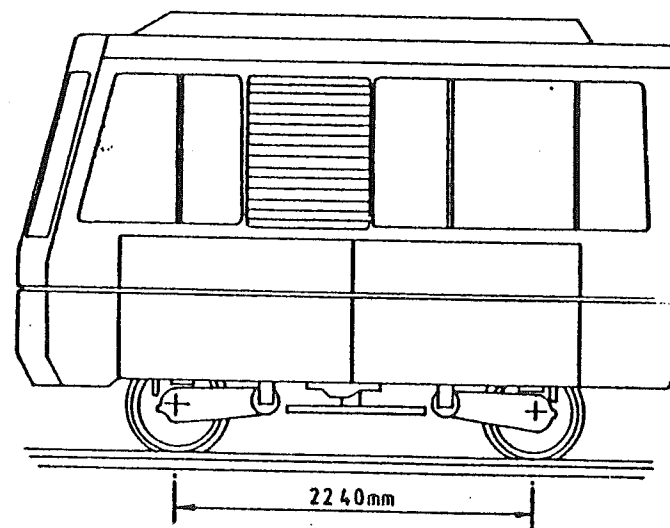
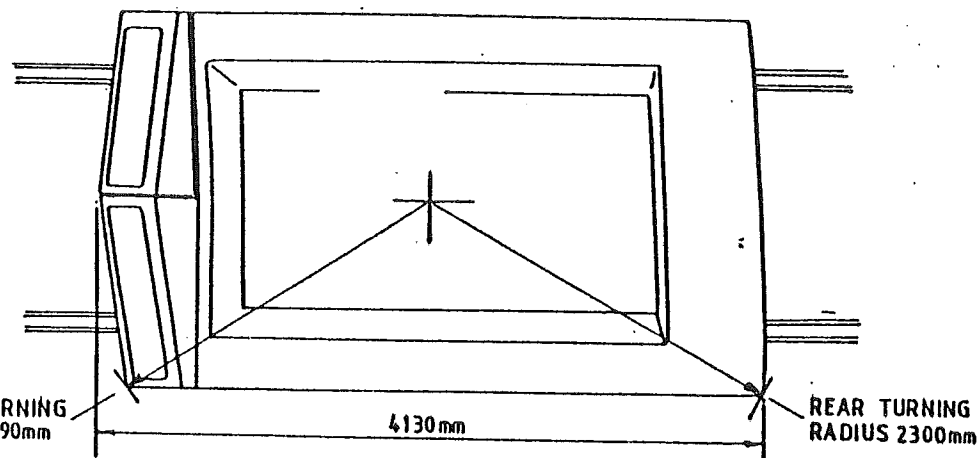
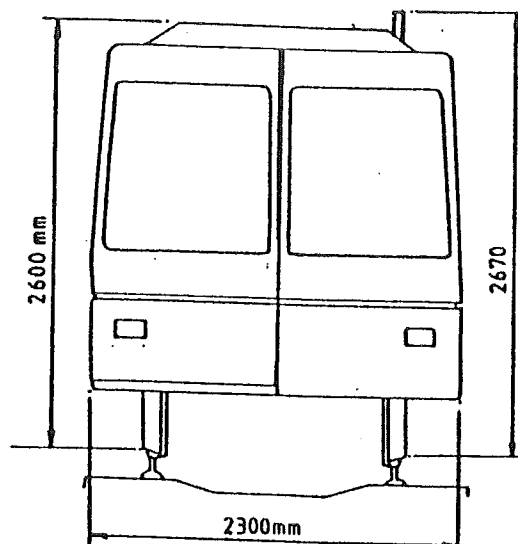
- a) The lateral clearance between the vehicle and any O/H line structure mast or support must not be less than 5.0 metres.
- b) The clearance between the top of the machine and Live O.L.E. including Return Conductor must not be less than 1.0 metre.

Note. Machine ht = 2670

- c) In accordance with the R.C.E's "Machine Operators Handbook"

Note Moorgate Line - Isolation required at all times.

DrB/ONTRACK/JDS/MR



#### FUNCTION

TO CARRY 9 PERSONNEL (INCLUDING DRIVER), EQUIPMENT AND HAND TOOLS FOR TRACK MAINTENANCE. A TURNABLE FITTED TO ALLOW THE MACHINE TO BE DRIVEN IN EITHER DIRECTION.

#### PERFORMANCE

MAXIMUM FORWARD SPEED	60 k.p.h. (40 m.p.h.)
MAXIMUM FORWARD SPEED	8 k.p.h. (5 m.p.h.)
MAXIMUM LADEN WEIGHT (END CREW)	5,5 tonnes.
UNLADEN WEIGHT	4,5 tonnes
MAXIMUM LOAD (END CREW)	1 tonne
RANGE	PNE FULL TANK OF FUEL ALLOWS FOR 50 MILES TRAVEL AND 6 HOURS WORKING.

#### PERMAQUIP PERSONNEL CARRIER

Maintaining Dept.: -R.C. E.

15.4  
Date: -30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.5 Type: Permaquip Overhead Trolley

1. Isolation of the O.H.L.E. is necessary on the track where the machine is working. A.C.E. representative must refer to Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions for adjacent track/s. If there is any doubt, he must contact the A.M. & E.E. prior to the day of work, to establish a safe method of working.
2. Bonding.  
Operators must comply with Instruction 15.1 of the A.C. Working Instructions if bonds become damaged due to the tracking/operation of this machine.

3. Tracking of Machine.

Isolation is not necessary provided

- a) The lateral clearance between the vehicle and any O/H Line structure mast or support must not be less than 5.0 metres.
- b) Provided the platform of the trolley is in the locked-down position and the Supervisor is in possession of the key to the raise/lower isolator switch.

Note: Overall HT IN CLOSED POSITION = 2438 m/m

- c) In accordance with the R.C.E.'s Machine Operators Handbook.

4. Travelling to site.

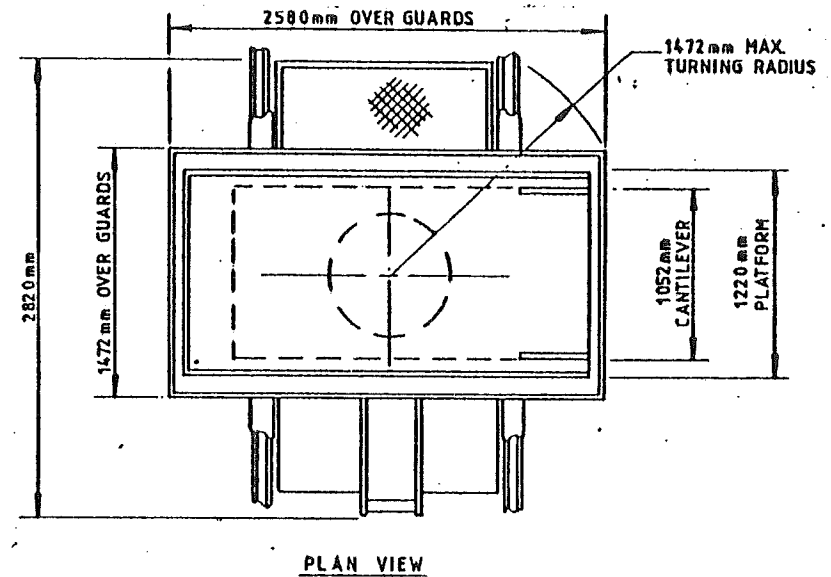
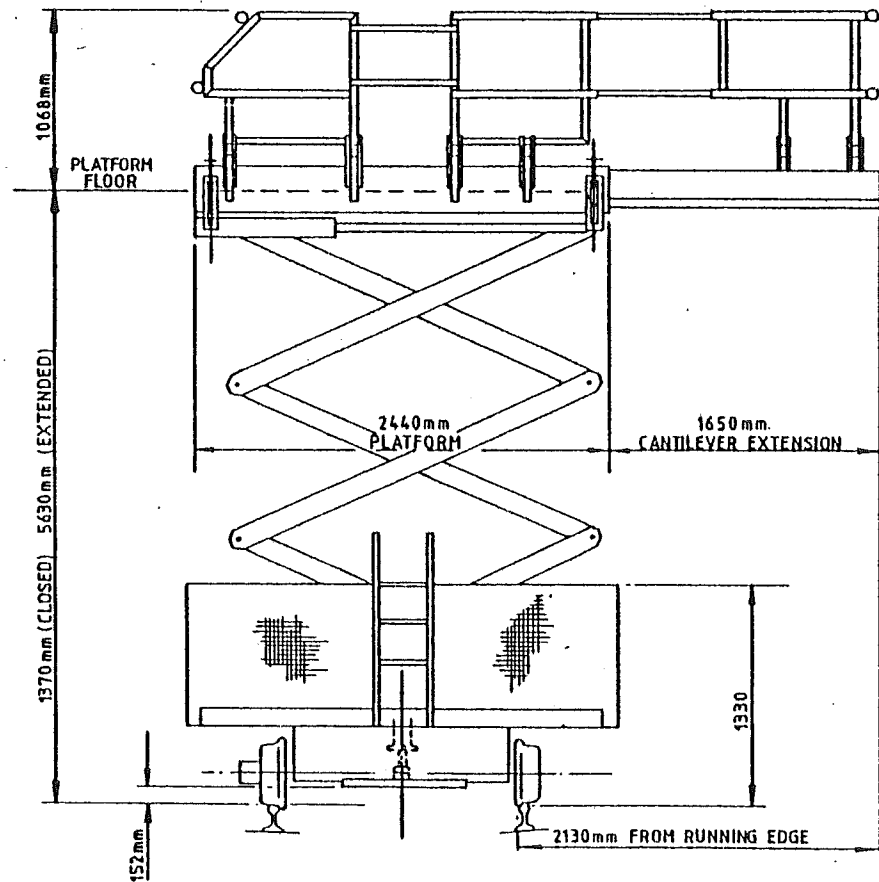
Isolation is not necessary provided it is in accordance with Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions and provided the platform of the trolley is in the locked-down position and the supervisor is in possession of the key to the raise/lower isolator switch. Supervisor must take possession of a Form 'C' (Permit to Work) before platform raised and physical work carried out

Note: PLT HT in closed position = 1370 m/m

5. Any damage to the O.H.L.E. must be reported immediately to the A.M. & E.E.
6. For servicing and maintenance of machine Instruction 10 of the A.C. Working Instructions applies.  
NOTE Moorgate line - Isolation required at all times.

DrB/ONTRACK/JDS/MR

LOADINGS: 375kg PLATFORM 225kg CANTILEVER  
UNIFORMLY DISTRIBUTED LOADS



PERMAQUIP OVERHEAD TROLLEY

Maintaining Dept.: - R.M & E. E. (R.M. & E. E. owned machines)  
(R.C. E. owned machines)

15-5  
Date: -30-6-86

30 JUNE 1986

ON TRACK MACHINES WORKING ON 25 KV AC ELECTRIFIED LINES

15.6 Type: Bruff Road Rail Recovery Vehicle

1. Stemlite - The following Working Restrictions must be adhered to:-
  - a) Stemlite must be in fully retracted position when mounting or demounting track.
  - b) Stemlite must not be raised under or adjacent to Overhead Line Equipment unless the Overhead Line Equipment has been isolated and earthed in accordance with working Instructions for AC Electrified Lines, and then must only be raised to its first stage. Stemlite MUST NOT be raised under or adjacent to Overhead Power Lines.
  - c) The mast height override switch must not be used when the vehicle is under or adjacent to any overhead obstructions.
  - d) The vehicle must not be moved with the mast extended.
  - e) The vehicle must not be raised on turntable with mast extended.

IT IS ESSENTIAL THAT THE OPERATOR MAKES HIMSELF CONVERSANT WITH SECTION 5.5 - SAFETY INSTRUCTIONS RELATIVE TO ELECTRIFIED LINES IN OPERATING MANUAL.

2. Overhead Electrified Lines

Special care must be taken by staff when working with these vehicles on or adjacent to overhead electrified lines.

The attention of staff is drawn to the Working Instructions for AC Electrified Lines (BR 29987) and to the following instructions which must also be observed when working with these vehicles on or adjacent to overhead electrified lines.

DrB/ONTRACK/MR/PG22

30 JUNE 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

15.6 Overhead Electrified Lines (Continued)

General

When working under or adjacent to live overhead line equipment:-

1. It is forbidden to climb above the floor level of the cab or goods section.
2. When using the tail lift caution must be exercised to ensure that no part of a person, or any equipment is allowed to project above the vehicle roof line.
3. When visibility of the overhead line equipment is obscured, such as during the hours of darkness, or in tunnels, suitable precautions such as illumination are to be taken to ensure safety.

Driving Onto or From the Track

Whenever the vehicle is to be driven onto or from the track, the person in charge of the vehicle must first satisfy himself that the operation can be carried out in such a manner that the minimum clearances specified below will be maintained throughout the operation.

1. The lateral clearance between the vehicle and any overhead line structure mast or support must not be less than 5.0 metres.
2. The clearance between the top of the vehicle and live overhead line equipment including return conductors must not be less than 1.0 metre.

If the minimum clearances specified above cannot be achieved then the overhead line equipment concerned must be isolated and earthed in accordance with the Working Instructions for AC Electrified Lines before the operation is carried out.

Care must be taken to ensure that damage is not caused to cables, running rail bonding or Overhead Line Structure to rails bonds. In particular bonds marked in red at their rail end must not be disturbed by anyone other than authorised staff.

It is recommended that Staff concerned should make themselves conversant with areas of low overhead line equipment.

DrB/ONTRACK/MR

30 JUNE 1986

ON TRACK MACHINE WORKING ON 25KV AC ELECTRIFIED LINES

15.6 Type: Bruff Road Rail Recovery Vehicle (Continued)

Overhead Electrified Line (Continued)

Notes:

- (i) The lateral clearance specified in 1 overleaf is necessary since if the vehicle were to be driven close up to a structure mast or support the clearance to live equipment may not necessarily be adequate should staff attempt to lean out or get into or out of the vehicle, particularly if the ground profile is higher than rail level.
- (ii) At certain locations, generally in the vicinity of tunnels and low bridges, the overhead line contact wire can be at a minimum height of 4.165 metres (but see exception below). The height of the vehicle is 3.1 metres and increases to 3.233 metres when elevated to permit rotation. The clearance between the top of the vehicle and the overhead line equipment would then be only 0.932 metres. (In the case of the section of line between overhead line structure F02/66 opposite Kentish Town TSC and Moorgate the overhead line contact wire can be as low as 3.950 metres). Hence driving on to or from the track at such locations cannot be undertaken with the overhead line equipment alive.

The return conductors may also be at low level particularly in the vicinity of tunnels and low bridges.

If it is required to drive onto or from the track with the overhead line equipment alive then it is necessary to carefully select a suitable site where the minimum clearances specified in 1 and 2 overleaf can be achieved.

Driving On Road Wheels Along the Track

The vehicle must not be driven on its road wheels in the along-track direction whilst on the track formation except as allowed for in Section 6.8 in Operating Manual.

Note: This prohibition is necessary since the vehicle could otherwise be driven close up to supporting structures bridge abutments etc on which live overhead line equipment is mounted. At low contact wire locations the clearance to this equipment may not necessarily be adequate should staff attempt to lean out or get into or out of the vehicle, particularly if the ground profile is higher than rail level.

DRB/ONTRACK/MR

30th June 1986

ON TRACK MACHINES WORKING ON 25KV AC ELECTRIFIED LINES

15.6 Type: Bruff Road Rail Recovery Vehicle

3. Conductor Rail Electrified Lines

- a) Special care must be taken by staff when working with these vehicles on or adjacent to conductor rail electrified lines.
- b) The attention of staff is drawn to the Working Instructions for the DC electrified lines concerned.
- c) In order to provide safe means of access and egress over energised conductor rails, extended steps and hand rails are provided at the front cab doors only.

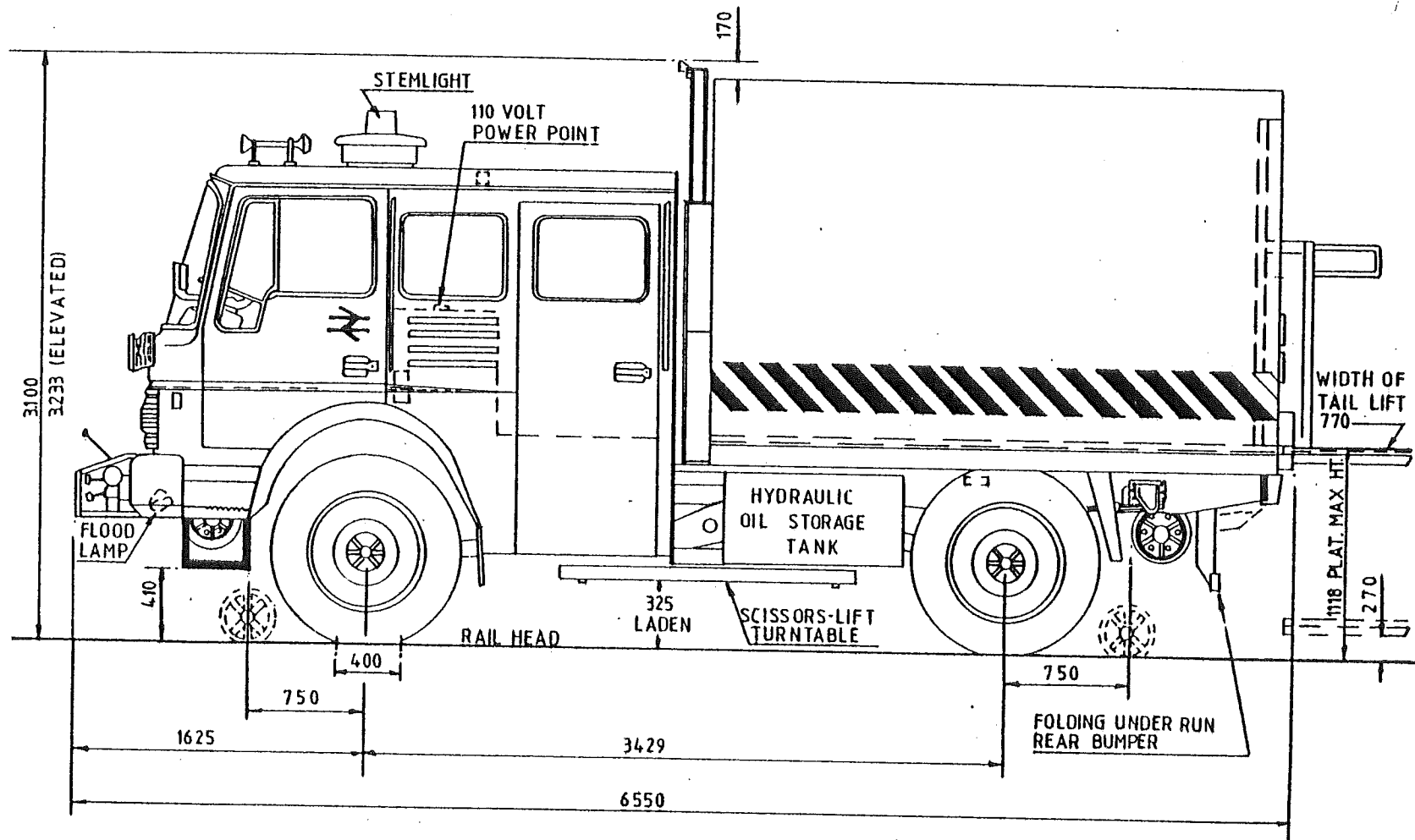
EXERCISE CAUTION WHEN IT IS ESSENTIAL TO DISMOUNT OR MOUNT THE VEHICLE WHEN ADJACENT TO THE LIVE CONDUCTOR RAILS.

- d) DO NOT ATTEMPT TO GAIN ACCESS OR EGRESS THROUGH THE REAR CAB DOOR ON THE SIDE OF THE VEHICLE ON WHICH THE LIVE CONDUCTOR RAIL IS LOCATED.

Note: This machine is not to be used under any circumstances on the Manchester/Bury 1200V DC System.

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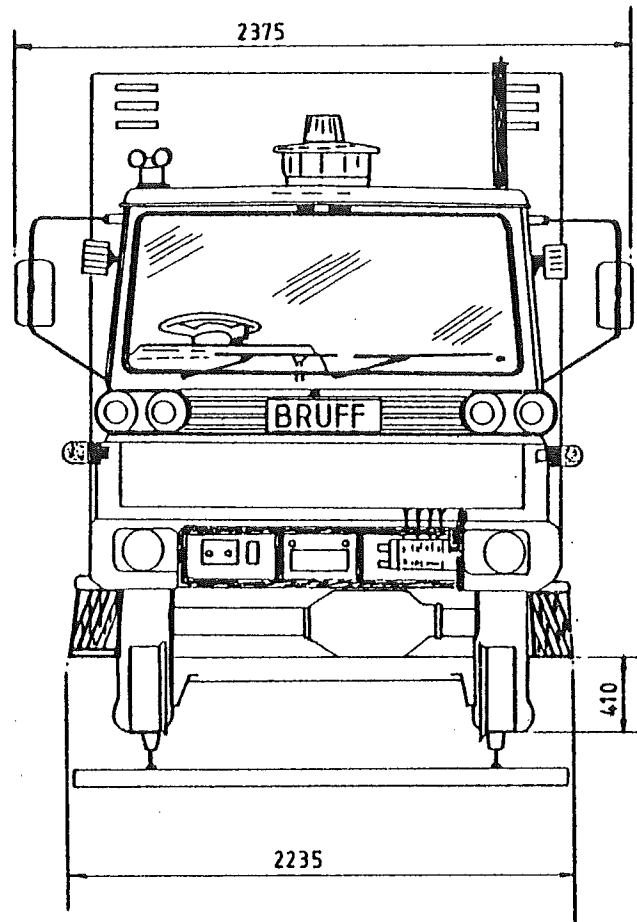




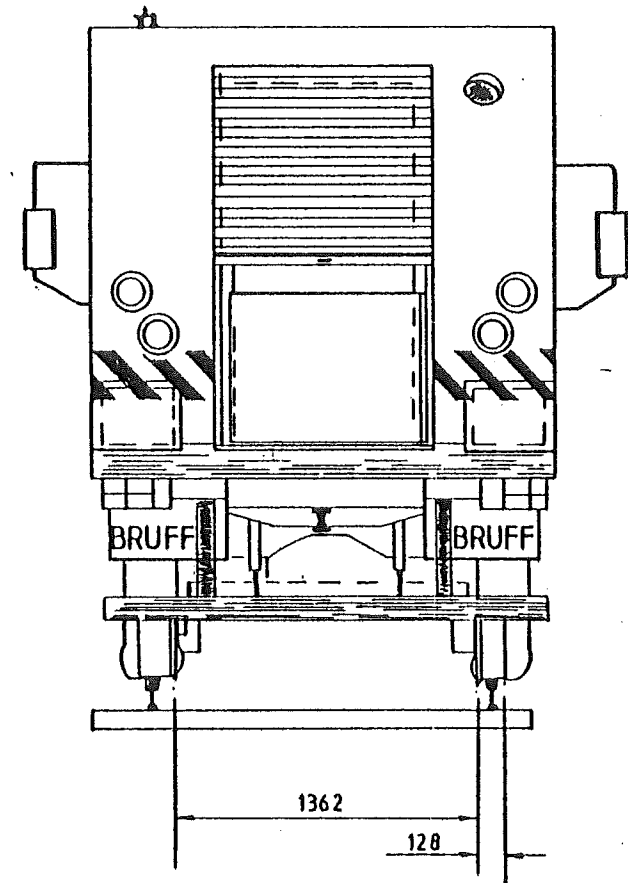
# BRUFF-ROAD/RAIL RECOVERY VEHICLE

Maintaining Dept.: - R. M. & E. E.

15.6 SHT 1  
Date: - 30-6-86



FRONT VIEW OF VEHICLE



BACK VIEW OF VEHICLE

BRUFF-ROAD/RAIL RECOVERY VEHICLE

Maintaining Dept.: - R. M. & E. E.

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15-6 SHT. 2

Date.: - 30-6-86

1st December 1986

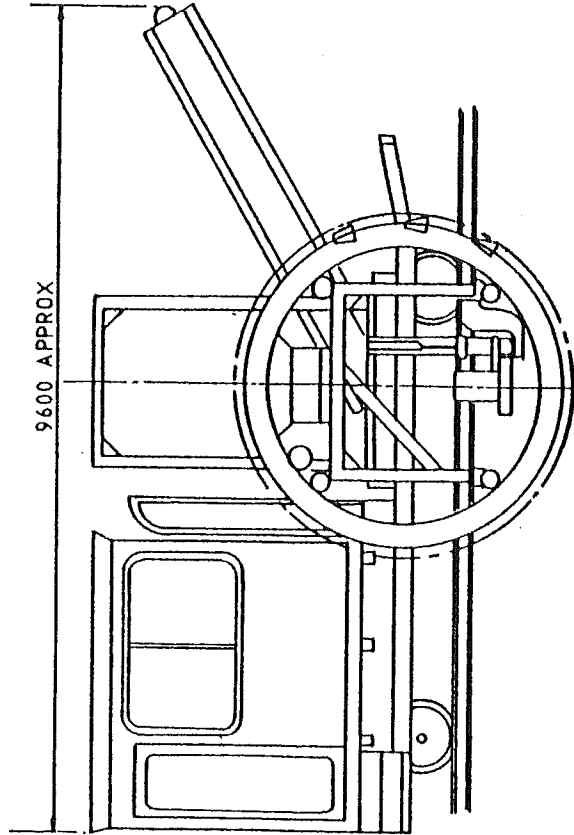
ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

16.1 Type: Trac Gopher - Model GO-4

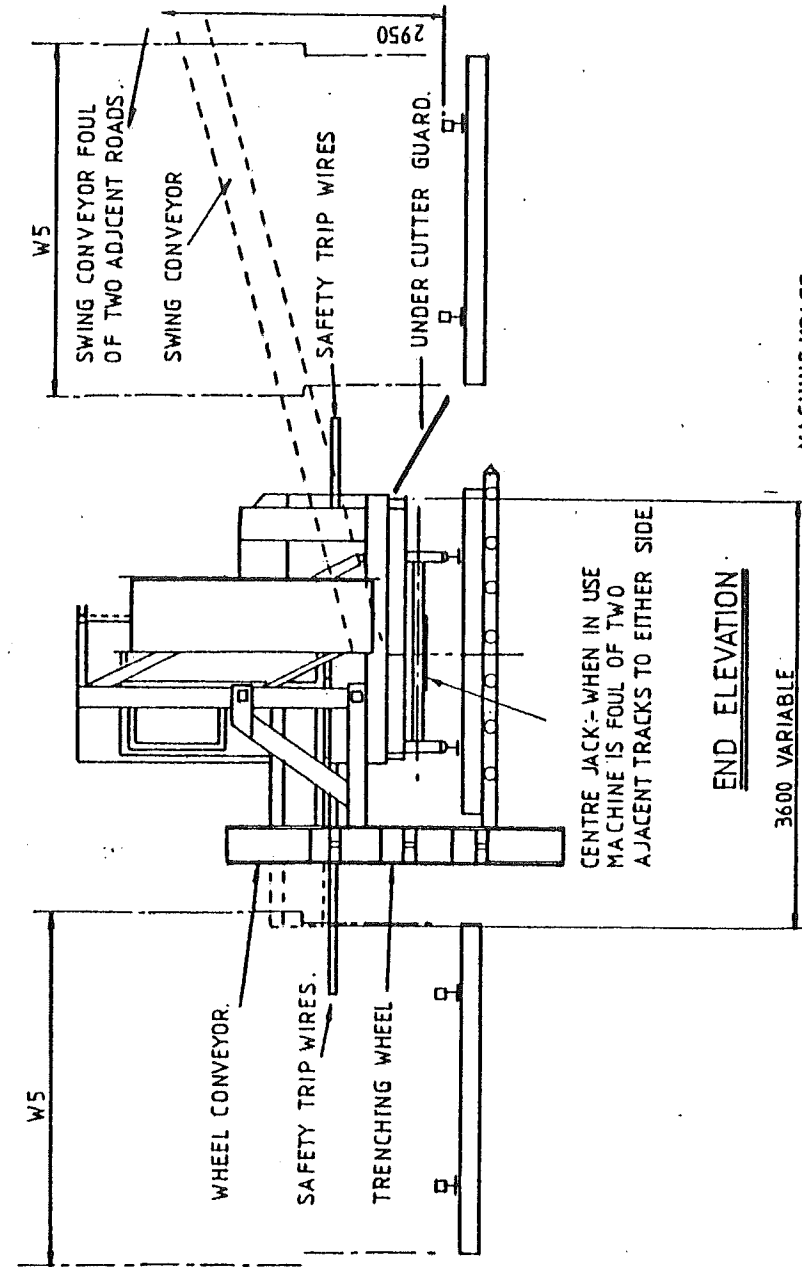
1. Isolation of O.H.L.E. is necessary on track where machine is working. A.C.E. representative must conform to Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions for adjacent track/s. If there is any doubt, he must contact the A.M. & E.E. prior to the day of work, to establish a safe method of working.
2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2, (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
3. Bonding.  
EARTH BAR & MID POINT CONNECTIONS - A.M. & E.E. to determine.  
STRUCTURE/RAIL BONDS to be removed and replaced during the period of isolation.
4. PLACING Machine on track.  
To be carried out on unwired road. Instructions 9.1, 9.2, 9.3, 9.8 and 10 of the A.C. Working Instructions apply.
5. Travelling of Machine to Site.  
  
Isolation is not necessary if in accordance with Instruction 10 of the A.C. Working Instructions and provided the A.C.E. Supervisor does not change the machine to its Working Conditions until he is in possession of Form 'C' (Permit to work).  
Note: Machine ht = 2950 m/m
6. Any damage to the O.H.L.E. must be reported immediately to the A.M. & E.E.

DrB/ONTRACK/JDS(pg20)

# TRAC GOPHER



SIDE ELEVATION  
WORKING CONDITION CONVEYOR RETRACTED



## MACHINE USAGE

MACHINE IS BASICALLY A TRACKS UNDERCUTTER AND ITS MAIN USE IS FOR DEALING WITH 'WET SPOTS', P & C WORK AND SMALL LENGTHS OF TRACK.

TRAC GOPHER MODEL GO-4

Maintaining Dept.: - R. C. E.

16.1  
Date.: - 30-6-86

1st December 1986

ON TRACK MACHINES WORKING ON 25KV A.C. ELECTRIFIED LINES.

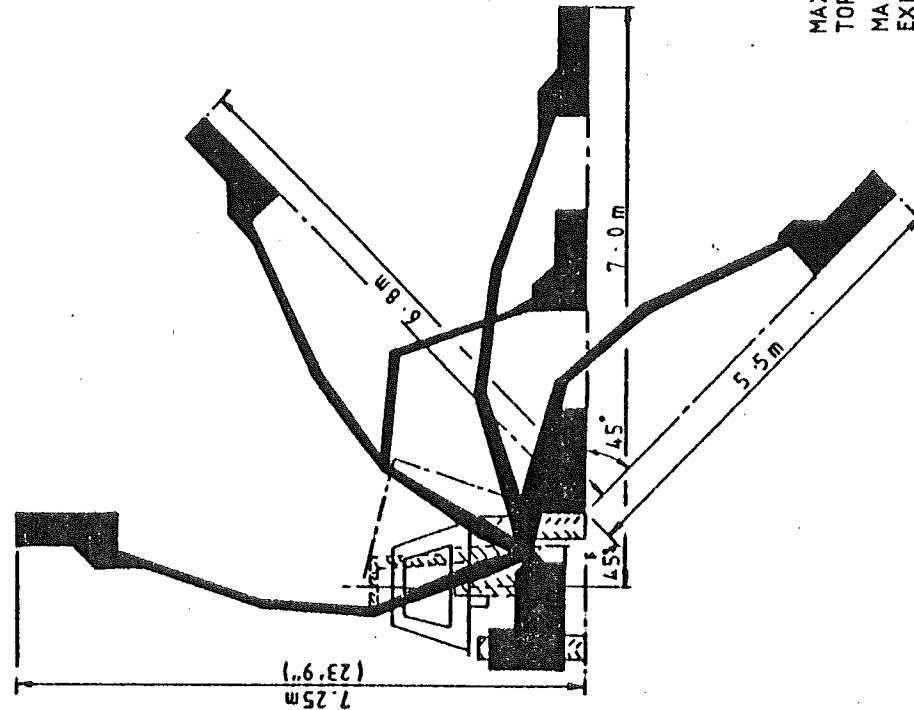
16.2 Type: Bruff TW15 Road – Rail Hedger

1. Isolation of the O.H.L.E. & earthing of the return conductor, is necessary on the track where machine is working. A.C.E. representative must refer to Instructions 9.1, 9.2, 9.3, 9.8 of the A.C. Working Instructions for adjacent track/s. If there is any doubt, he must contact the A.M. & E.E. prior to the day of work, to establish a safe method of working.
  2. For servicing and machine maintenance to superstructure under energised overhead line equipment, machine operators must comply with Instructions 7.1, 7.2 (Climbing on traction units and vehicles) and Instruction 10 of the A.C. Working Instructions.
  3. Bonding.  
  
Not affected.
  4. Hydraulic Arm to be limited to prevent movement towards adjacent line.
  5. CARE must be taken when sluing hydraulic arm not to damage O.H.L.E. DAMAGE must be reported to A.M. & E.E. immediately.
  6. Radio communication is necessary between Supervisor and Operator.
  7. Driving Machine onto Track.  
  
Isolation is necessary on the track concerned. A.C.E. Supervisor must work to Instructions 9.1, 9.2, 9.3, 9.8 of the A.C. Working Instructions for the adjacent track.
  8. Travelling of Machine to Site from Unwired Sdgs. Isolation is not necessary if in accordance with Instruction 10 of the A.C. Working Instructions and the Supervisor does not change the machine to its working condition until he is in possession of a Form 'C' (Permit to Work).
- NOTE: Max ht = 11' 2" from rail level to knuckle (Hydraulic Arm retracted).

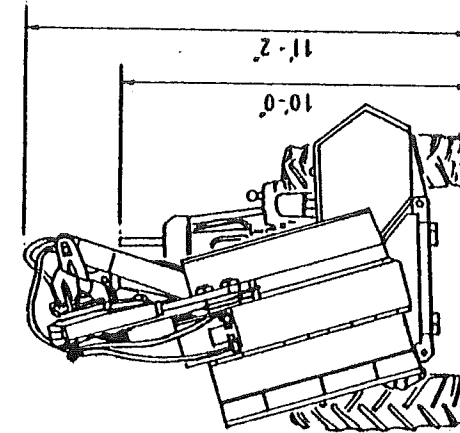
DrB/ONTRACK/JDS(pg21)

Maintaining Dept.: -R.C.E.

16.2  
Date : -30-6-86



MAX. HT. FROM RAIL TO  
TOP KNUCKLE 11'-2"  
MAX. HT. RAIL TO  
EXHAUST 10'-0"



MAXIMUM REACH			
HORIZONTAL	7.0 m	(23' - 0")	
UP 45°	6.8 m	(22' - 4")	
DOWN 45°	5.5 m	(18' - 1")	

BRUFF TW15 ROAD-RAIL HEDGER