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BRITISH RAILWAYS

**INSTRUCTIONS TO STAFF
USING MECHANICAL
APPLIANCES**

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**British Transport Commission,
Railway Clearing House,
203 Eversholt Street,
LONDON, N.W.1**

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SCOPE OF INSTRUCTIONS

These instructions relate to appliances in general use by the Traffic Department at stations, warehouses, yards, wharves and depots, and to some appliances not in common use. With regard to the latter, in many instances additional instructions are issued and these will be supplied by Agents and Station Masters to staff concerned.

INSTRUCTIONS

OVERHEAD ELECTRIFICATION

1. **Mobile cranes, fork lift trucks and other mobile or portable appliances must NOT be used ON OR NEAR lines or sidings equipped with overhead traction wires unless the overhead line equipment has first been isolated and earthed, and permission of the Goods Agent, Station Master or other authorised person has been obtained.**

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.

REGISTER OF APPLIANCES

2. The Station Master, Goods Agent or other person in charge, must keep a register, in approved form, of all mechanical appliances (movable or fixed) under his control.

The person in charge must see that the register is kept posted up-to-date by the entry of any additional appliances provided and by marking-off any that are sent away.

The Station Master, Goods Agent or other person in charge, must see each individual appliance, as shown on the register, at least once every three months. He should, as a rule, be accompanied on this inspection by the member of his staff appointed to make a weekly examination. He should also satisfy himself that the following instructions are properly understood and carried out.

MAINTENANCE AND CARE

3. Between the Maintaining Department's periodical examinations, the appliances must be kept clean and all easily accessible parts oiled or greased as necessary. This work must be performed by the staff of the Traffic Department except at those stations and depots where it is undertaken by the staff of the Maintaining Department.
4. **Machinery must not be cleaned or oiled whilst in motion.**
5. The driving cabins, access platforms, etc., and the areas in the vicinity of the appliances must be kept clean and free from obstruction.

Maintenance and Care—Continued

6. In case of undue wear or defect, failure or breakdown, collision, or other accident, details must be reported at once to the Station Master, Goods Agent or other person in charge, who will inform the local staff of the Maintaining Department and the appropriate District Officer (Traffic). At the same time, the matter must be recorded in the log book, defect sheet, work note or other appropriate form.
7. Any fraying of wire ropes must be reported at once to the Maintaining Department.
8. If breakage of any part occurs, the broken article (link, shackle, pin, etc.) must be kept in safe custody in a dry place until examined by the Maintaining Department.
9. Appliances must not be repaired or altered, other than by the staff of the Maintaining Department.
10. **Appliances having defects which appear to be such as may lead to mishap must not be used.**
11. **WHEN IN DOUBT CONSULT THE MAINTAINING DEPARTMENT.**

TYRES

12. It is important that pneumatic tyres should be maintained at correct pressure. Incorrect inflation has a serious effect on the stability of the appliance. At stations where drivers are responsible for this work, the drivers should check and correct the pressure of each tyre on their appliances each day with the tyre gauge kept at the station.
13. Tyres must not be under or over-inflated. Under-inflation causes the inner casing of the outer cover to break. Appliances fitted with over-inflated tyres will bounce and slip resulting in damaged tyre treads and loose chassis bolts.
14. If an appliance has a flat tyre, it must not be moved at all until it is put right unless it causes an obstruction, when it may be moved at dead slow speed for the minimum distance necessary to prevent it being a serious obstruction.
15. Leakage from the tyre valve should be investigated at once. If the "valve" is not air-tight it must be replaced with new valve core. Any leakage of air causing a drop in pressure in the tyre is a serious matter.
16. Signs of undue wear or damage to solid rubber or cushion tyres must be reported to the Maintaining Department.
17. If a tyre or wheel receives a bump, the wheel alignment must be checked. Misalignment causes very rapid tyre wear.
18. Grease, oil and paraffin are very injurious to rubber and must be cleaned off with a rag.
19. Any material (stones, pieces of metal, wood, etc.) trapped between twin tyres must be removed.

OPERATION

ALL APPLIANCES

20. APPLIANCES MUST ONLY BE USED BY AUTHORISED PERSONS, AFTER ENSURING THAT THE EQUIPMENT IS IN GOOD ORDER. Unauthorised persons are NOT allowed to use them nor enter drivers' cabins.
21. The authorised person must ascertain the safe working load of the appliance to be used and take care that it is never exceeded.
22. The public must not be allowed to use railway cranes or other mechanical appliances (including loose lifting tackle) except under specially agreed circumstances and under the supervision of authorised railway staff where necessary: in the case of railway cranes, these may be hired provided the appropriate form of application (BR.20129) is completed.
23. Equipment or fittings provided with an appliance must not be modified, interfered with in any unauthorised manner, nor used except for their legitimate purposes; any loss or damage must be reported.

Unauthorised equipment, fittings, etc., must not be used.

Operators are responsible for tool kits, fire extinguishers, etc., where provided, and must see that they are in proper order and know how to use them.

24. When an appliance is not in use, it must be left out of gear and power cut off after being placed clear of the lines or other structures and, at waterside premises, clear of the water area. The appliance and its chains, ropes or other gear must be secured to prevent them being moved by wind or other force, and brakes or other fastenings applied; cabin windows and doors must be closed and locked.

ALL MOBILE APPLIANCES

25. AUTHORITY TO DRIVE: No person may:—
 - (i) drive a mobile appliance until he has been specially authorised to do so;
 - (ii) drive a mobile appliance on the public highway, unless he is in possession of a current driving licence and the Cartage Handbook (B.R. 20107), and has been certified as competent to drive that type of appliance;
 - (iii) steer a towed appliance at more than 5 miles per hour on the public highway unless he is in possession of a current driving licence and is capable of manoeuvring that type of appliance and has been instructed to do so by the person in charge;
 - (iv) give driving instruction (except to an approved learner whose name has been supplied by the person in charge).
26. Appliances must not be started in high gear and reverse gear must not be engaged before coming to rest.
27. Only authorised persons are permitted to ride on an appliance, unless it is necessary, when travelling with a load, for a member of the gang to do so to steady the load.

All mobile appliances—Continued

28. Operators must see that the steering gear, all braking systems and other vital parts, are in good condition and if any of these are found to be faulty the appliance must not be used until repairs have been carried out.
29. Should the overload warning device fail, the appliance must be taken out of service until the defect has been rectified or until authority has been given by the Maintaining Department to temporary use of the appliance while the warning device is out of order and a notice to the effect that the warning device is out of order placed on the appliance.
30. The driver must keep full control of the appliance. IF THE DRIVER HAS NOT A CLEAR VIEW IN THE DIRECTION OF TRAVEL, HE MUST BE GUIDED BY A RESPONSIBLE MEMBER OF THE STAFF. Before changing direction of travel the driver must be satisfied that it is safe to do so and give ample warning of his intention.
31. Mobile appliances must be driven carefully and at slow speed over rough or uneven surfaces. All corners and crossings must be negotiated at moderate speed and, when trailers are being drawn, as wide a sweep as possible must be taken.
32. Appliances must not be driven in such a manner as to be likely to cause injury to the public or staff, or damage to equipment, structures or goods. Violent acceleration or braking must be avoided.
33. Before descending steep gradients, drivers must engage bottom gear, where provided, and proceed slowly.
34. Mobile appliances must not be used on docks, platforms, warehouse floors or roadways unless it is known that the strength of construction is sufficient to bear the weight of the appliance with maximum permissive load. In all cases authority must be obtained from the District Engineer.
35. When working on platforms, quays or docks, care must be taken to keep as far from the edge as practicable. Turning movements must always be made away from the edge, not towards it.
36. Operators of pedestrian-controlled appliances must not ride or attempt to ride on the machines.
37. Unless specially fitted for the purpose, appliances must not be used for the movement of rail or other vehicles.
38. ON COMPLETION OF A DAY'S WORK OR OF A JOB:—
 - (i) the driver must park the appliance in an approved position;
 - (ii) all controls must be left in the " off " (or " neutral ") position and brakes or other fastenings applied;
 - (iii) if ignition or switch key is provided this must be removed and kept in an approved place.

APPLIANCES DRIVEN BY INTERNAL COMBUSTION ENGINE, e.g., PETROL, HEAVY OIL, Etc.

39. **ON COMMENCING WORK.** The driver must see that (i) all controls are in the “ off ” (or “ neutral ”) position and the hand brake applied; (ii) there is sufficient water or coolant in the engine cooling system; (iii) there is an adequate supply of fuel and lubricating oil in the tanks; and (iv) the engine sump is topped up to the correct level with the proper grade of oil.
40. Fuel and lubricating oils must only be used for legitimate purposes. Care must be taken to keep them clean and avoid waste.
41. **It is essential that lubricating oil pressure be maintained when the engine is running.** If the pressure falls below that given in the instructions, the engine must be stopped **AT ONCE** and the defect reported.
42. When starting an internal combustion engine, the starting handle must always be pulled up, with the fingers and thumb all on one side of the handle. If the engine is fitted with a self-starter, the driver should free the engine by means of the starting handle before using the self-starter.

When the engine is fitted with an ignition lever, the lever must be well retarded when starting, to avoid risk of accident, and advanced immediately after starting.

The engine must be allowed to warm up at slow speed for a short time, so as to circulate the oil through the bearings, before it is put to work.
43. The engine must never be run for any length of time with the carburettor strangler or choke closed.
44. When the appliance is not operating, the engine must not be run unnecessarily nor at high speed.
45. The appliance must not be operated with the bonnet removed.
46. Where coil ignition is used, the battery must not be allowed to run down by leaving the switch in the “ on ” position with the engine stopped, nor by leaving the electric lights burning unnecessarily. Batteries must be examined during hours of daylight only, unless authorised safety lamps are used.
47. **ON COMPLETION OF A DAY'S WORK OR OF A JOB:—**
 - (i) heavy oil engines must be stopped by means of a governor control bar after which the fuel must be turned off at the tank;
 - (ii) petrol engines must be stopped by removal of the ignition key or the operation of the “ on ”/“ off ” switch; if this action does not also turn off the fuel at the tank this must be done;
 - (iii) jibs of cranes must be derricked to an approved position and the hooks drawn up fully unless a special anchorage is provided;
 - (iv) the forks of fork-lift trucks must be lowered to floor level.

Appliances driven by internal combustion engine, e.g., petrol, heavy oil, etc.—Continued

48. PETROL OR OTHER HIGHLY INFLAMMABLE FUELS.

Before dipping or refuelling the fuel tank of an appliance driven by petrol or other similar fuel:—

- (i) the engine must be stopped;
- (ii) portable (other than approved electric) lights extinguished.

Oil lamps or other naked lights must not be used within 30 feet of any store for such fuels, whilst refuelling or when examining appliances.

Fuel tanks must be filled only at approved places.

Smoking is prohibited during these operations.

Spare fuel must not be carried on an appliance unless specially authorised.

49. DURING FROSTY WEATHER. The normal period when frost precautions are to be put in operation corresponds with that for road motor vehicles and is subject to local variations. Drivers must comply with the local instructions.

During this period, before appliances are left standing overnight or for a long time, the driver must take care to see that the water is completely drained from the radiator and cylinder blocks at an approved part of the depot. It is not sufficient to open the drain cock, but the engine must also be run for a few seconds. A "Radiator Empty" label must be put into position.

The appliance should be parked in the least exposed position possible without interfering with the yard working.

These instructions do not apply to any appliance with a radiator containing anti-freezing solution. In these cases, the cooling system must NOT be drained. Topping up must be carried out only with a solution of the correct strength.

A blanking-off plate, where provided, should be fitted over the radiator in cold weather.

50. IN CASE OF FIRE. The driver must:—

- (i) turn off the fuel;
- (ii) switch off the engine;
- (iii) apply extinguisher.

If the extinguisher fails to put out the fire sand may be used, but it should be remembered that, if any gets into the engine, it may cause serious damage. In no case should water be used.

ALL ELECTRICAL APPLIANCES

51. ON COMMENCING WORK. The operator must know the position of the main switch controlling each appliance and must satisfy himself, before switching on the current, that all control levers and handles are in the "neutral" or "off" position and also that tools or other articles liable to cause damage are not lying about.

All electrical appliances—*Continued*

52. Should electric shocks be experienced the appliance is defective. The main switch must be placed in the “ off ” position and the matter reported IMMEDIATELY.
53. The controls must be operated slowly to avoid a sudden rush of current through the motors, also damage to equipment and snatching or jerking of loads.

Except where instructions are given to the contrary, as in the case of capstans or shafting-driven equipment, motors must not be run at top speed before the load is taken, nor must they be run with a brake on.

Except in cases of extreme emergency, staff must not operate the controller to reverse a motor whilst it is running.
54. Where automatic cut-out switches are provided, these may be reset by the operator but if, at the second resetting, the cut-out continues to operate, the main switch must be put into the “ off ” position and the matter reported.
55. The operator must not interfere with electrical gear. All electrical defects, including “ blown ” fuses, must be reported to and remedied by the staff of the Maintaining Department.
56. While cleaning or oiling an appliance, the main switch must be in the “ off ” position.
57. Oil must not be allowed to get on to such parts of electrical machinery as the motor windings, commutators and field coils or cables and switches connected thereto.
58. Drivers of cranes must at all times have the various motions under control and must not rely upon the limit switches cutting out; they must be able to stop the movement before limit switches are reached.
59. Crane movements must be so controlled as to prevent anything coming into contact with the collector wires.
60. Where a lifting magnet is provided, the crane driver must comply with the official notice exhibited in the cab giving the types of materials permitted to be handled and the maximum weight to be lifted. Care must be taken to ensure that the magnet is making good surface contact with the load before lifting commences and staff must keep well clear whilst a load is suspended from the magnet as there is always a danger of the load or part thereof falling.
61. **DURING FROSTY WEATHER.** Drivers of cranes fitted with collector wires and gear (*e.g.*, goliath and overhead travelling) must, when starting work, operate the appliance through all motions before making a lift to ensure that the crane is working satisfactorily.

If ice has formed on the collector wires and cannot be cleared by these means, or if the crane or magnet is not operating satisfactorily, the matter must be reported.

All Electrical Appliances—Continued

62. ON COMPLETION OF A DAY'S WORK OR OF A JOB:—
- (i) the operator must put all controls, circuit breakers and main switch in the "off" (or "neutral") position;
 - (ii) jibs of cranes must have been derricked previously to an approved position and hooks raised to their maximum height, unless an anchorage is provided;
 - (iii) the forks of fork-lift trucks must be lowered to floor level.

BATTERY-DRIVEN APPLIANCES

63. Instructions regarding charging and changing of batteries vary according to local conditions. These local instructions must be adhered to.
64. Before driving an appliance from the charging position, ascertain that there is nothing fouling any part of it and that all electrical leads to the charger are disconnected.
65. Appliances must not be used when the speed of operation is reduced; when this occurs the battery must be changed or recharged.

HYDRAULIC APPLIANCES

66. *ON COMMENCING WORK. Care must be taken to ensure that, where provided, the return stop valve of each appliance is open.
67. *When charging the cylinders after the appliance has been standing for some time, the air cocks must be opened and kept open until water appears.
68. Control levers must always be moved slowly to avoid surging, jerking or snatching.
69. DURING FROSTY WEATHER:—
- (i) the mechanism of all appliances must be set in motion at frequent intervals until it is decided to drain them of all water;
 - * (ii) where gas burners are provided, the operator, or other responsible person, must see that these are lit or extinguished as necessary;
 - (iii) if an appliance freezes up, it must be reported IMMEDIATELY.
70. Any leakage of water or trouble with control gear must be reported.
71. *ON COMPLETION OF A DAY'S WORK OR OF A JOB:—
- (i) crane jibs must be fully derricked out and hooks raised or lowered;
 - (ii) control levers must be put in the exhaust position and detachable operating levers removed and safely stowed;
 - (iii) the main stop valve to each appliance must be closed.
- * *Note.*—The responsibility for carrying out Instructions Nos. 66, 67, 69/(ii) and 71 in certain Regions rests with the Maintaining Department.

LIFTING APPLIANCES

CRANES, FORK-LIFT TRUCKS AND WINCHES

Manual or power-operated

72. Each appliance has its registered maximum lifting capacity (safe working load) clearly shown upon it. Should any such indication become defaced or detached, the local representative of the Maintaining Department must be informed.

The weight of the load to be lifted must be ascertained before lifting commences, the weight of any loose lifting tackle to be used being included with that of the load.

THE SAFE WORKING LOAD MARKED ON AN APPLIANCE MUST NEVER BE EXCEEDED.

If any inadvertent overloading is discovered it must be reported and the department responsible for maintenance advised.

73. Cranes with jibs having variable radii with corresponding varying loads, or with ropes or chains arranged to be used in single or multiple purchase with corresponding varying loads, are fitted with indicators or notices showing the safe working loads with the varying radii or purchase.

Similarly, with portable cranes and cranes designed to travel on rail tracks, the variable load indicators or notices show the maximum permissible load at various radii with the cranes "free on rails," and with outriggers (extension girders) in use where provided, and/or clipped to rails.

74. The safe working load of a fork-lift truck is dependent upon certain factors:—

- (a) whether used with the mast vertical or tilted;
- (b) height of lift;
- (c) the out-reach of the centre of gravity of the load, measured from the face of the mast or the heel of the forks;
- (d) the type of lifting attachment used, which may be forks, extension sleeves, crane jib, container lifting frame, squeeze clamps, etc.;
- (e) the conditions under which the fork-truck is working, which are termed either "good" or "normal."

"Good" conditions are such as may be found in warehouses and shed platforms where the surface is hard, level and in good condition.

"Normal" conditions include roadways (cambered or otherwise), platforms or warehouse floors where some degree of unevenness of surface is likely to occur, or where gradients have to be negotiated.

Note.—Special instructions apply when fork-lift trucks are to work on unmade or "soft" ground.

The capacity of the fork-lift truck when working under particular conditions as outlined above is indicated by a plate

Cranes, fork-lift trucks and winches—Continued
Manual or power-operated—Continued

on the fork truck or by appropriate marking on the attachments.

THE DRIVER MUST MAKE CERTAIN WHAT SAFE WORKING LOAD APPLIES TO THE CONDITIONS UNDER WHICH HE IS WORKING.

75. Visible and audible warning devices are provided on certain cranes and fork trucks to draw attention to the fact that the limits of the safe working loads have been or are about to be reached. Lifts must not be attempted when overloading is indicated.
76. When handling timber or other traffic—the weight of which can only be computed or estimated—great care and judgment must be exercised and allowance made for any probable difference between the computed or estimated weight and the actual weight. (For example, with round timber, the weight may vary widely and actual weight may exceed the weight estimated by measurement by 50 per cent for dry well-seasoned timber, to 100 per cent for recently cut trees.)
77. If, in the opinion of the supervisor in charge of the operation, there is any doubt as to the weight of a load being within the marked lifting capacity of an appliance, the load must not be lifted. In such cases the supervisor in charge must consult the Maintaining Department to ascertain whether the load can be lifted safely.
78. When lifting traffic by means of grabs or tubs, care must be taken to ensure that they are of the right type and capacity for both the lifting appliance and the traffic.
79. The use of two lifting appliances to make one lift may only be resorted to when absolutely necessary, and then only under technical supervision.
80. **Lifts are only to be made when the load can be raised vertically: loads must not be dragged.**

When making a lift from a vehicle or stack, care must be taken to see that the load is quite free and not pinned down or jammed in any way.
81. Care must be taken to avoid surging and sudden checks during lifting and lowering or when starting and stopping. The load must be prevented from swinging.
82. Chains and ropes must not be allowed to rub against stationary objects or other gear.
83. Except as provided in Rule 29 of the British Railways Rule Book (1950), care must be taken to prevent any part of a lifting appliance or its load fouling the running lines, sidings where shunting may take place, or roadways over which other traffic may pass.

Cranes, fork-lift trucks and winches—Continued
Manual or power-operated—Continued

84. Precaution must be taken to see that each lifting chain remains free from kinks whilst it is in use, as such kinks could cause jamming of the apparatus or sudden dropping of the load. To remove a kink on a loaded chain, the load must first be lowered until the chain is slack.
85. A load must never be allowed to remain suspended from the crane hook or elevated on the forks beyond the time necessary for purely operational purposes.
86. Great care must be taken in using brakes, particularly in damp or frosty weather. The appliance must be operated without load, or with a light load until the brakes function satisfactorily.
87. When loads are to be lowered by means of a hand or foot brake, the brake must be applied and kept on until the loads are in a position for lowering. Sufficient brake power must be applied and maintained to lower slowly. The lowering must not be stopped suddenly. The operator must not release control of the brake until the operation is completed. (See also Instruction No. 103.)
88. In the case of cranes of 5-tons capacity and over, no weight nearing the capacity of such cranes should be dealt with until the holding capacity of the brake has been tested: this should be done by raising the “ lift ” a few inches and then allowing the brake to take the full weight of the load.
89. Staff must see that they do not expose themselves to danger during lifting operations, by standing where the load may fall or be lowered on to them or strike them during motion or by risking injury from moving parts of the machine.
90. Some loads are of such a nature that when being raised they tend to turn over, twist, or tilt. Staff must stand clear of the load and also of the slewing handle of a manual crane if this cannot be removed or disengaged. (See also Instruction No. 100.)
91. When withdrawing chains or slings clear of loads, care must be taken to ensure that they do not catch in the load and cause it to overturn.
92. Staff must not ride on an appliance or on a hook, fork or load. Staff must not touch a load except to guide or prevent it swinging.
93. Jiggers and cranes must not be used for moving wagons (except certain mobile appliances as provided for in Instruction No. 128, and such overhead cranes as are equipped with proper ground snatch blocks for the purpose).
94. When working ships, etc., the crane jib must be positioned so that loads will not foul hatch coamings, the sides or tops of openings, rigging, etc.

Cranes, fork-lift trucks and winches—Continued
Manual or power-operated—Continued

95. When traffic is being lifted or lowered by jigger between floors of warehouses, there must be close co-operation between the operator and the hooker-on to ensure that the tackle is securely attached to the load and that all is clear before lifting or lowering starts.

The load must not make contact with the sides of hatchways or drop holes and the hook must be returned smoothly to avoid displacement of lifting tackle.

96. Operators working through hatchways in positions which necessitate them leaning over the edge to maintain control of the load must wear the safety belts provided.

The protective fencing provided around hatchways must be kept in position round every opening, except on the particular floor where traffic is being taken into or out of stock.

Manually operated

97. Only those detachable handles supplied with the appliance may be used. They must be firmly secured to the appropriate spindles when operating.
98. When a safety pawl is provided, this must be engaged with the ratchet wheel before lifting commences.
Loads must not be lifted to such a height as to cause the splice of the lifting rope to be wound over the jib head pulley, nor the lifting hook or bob weight to come into contact with the pulley.
99. Where more than one man is required to operate the crane their efforts must be properly co-ordinated in order to ensure safe working.
100. When a load is suspended from a crane, neither the load nor jib must foul any structure, as this may cause the crane to slew, resulting in the handles rotating and possibly striking the operator. There is also a risk of damage to load, structure or crane.
101. Where provided, the slewing gear must be used. If slewing gear is not fitted, pushing of the load must be discouraged especially where there is a risk of the lifting tackle becoming detached. In such cases slewing should be performed by pushing on the jib or pulling on a rope properly attached to the jib head.
102. **BEFORE LOWERING COMMENCES.** The pawl, where fitted, must be disengaged from the ratchet wheel and placed in a position where it cannot accidentally drop into the wheel.
THE PAWL MUST NEVER BE USED TO STOP THE APPLIANCE WHILST A LOAD IS BEING LOWERED.
103. When lowering, the load should be controlled by the brake alone with the lifting handles removed or put out of gear, first

Cranes, fork-lift trucks and winches—Continued
Manually operated—Continued

of all carrying out the necessary preparations in the following order:—

- (i) raise load slightly by lifting handles in order to remove the pressure on the pawl;
- (ii) brakeman to apply brake and report “load held on brake”;
- (iii) remove lifting handles;
- (iv) disengage pawl from ratchet wheel;
- (v) lower load under control of brake.

CRANES

Manual mobile (or lorry)

104. **BEFORE USE.** The crane must be set up in a level position and the steering (front wheels) must be in line with the back wheels.
105. **BEFORE LIFTING IS COMMENCED.** All the road wheels must be suitably scotched and, when brakes are fitted, they must be applied.

Rail travelling

106. A station or depot requiring the use of a rail travelling crane must apply to the appropriate District Officer (Traffic), giving as long notice as possible, stating the date or dates required, class of traffic to be dealt with, the heaviest lift and, if possible, approximate measurements of the largest article.
107. Immediately a crane can be released, disposal instructions must be obtained by the station from the appropriate District Officer (Traffic).
108. Cranes must be positioned on straight and level track whenever practicable. The track on which a crane is to work and to which it may be clipped must be examined and if it does not appear to be in a satisfactory condition for crane operation, the Station Master, Goods Agent or other responsible person must consult the Civil Engineer’s Department before operations are commenced.
109. Some non-derricking cranes have two capacities shown on the load plate; one is the maximum which it is permissible to lift with the crane “free on rails” and the other is the maximum with the crane firmly clipped to a reasonably level and firm track and/or with outriggers (extension girders), where provided, fully drawn out and properly packed.

Derricking cranes are fitted with variable load indicators, showing the maximum permissible load at various radii, both with the crane “free on rails,” and with outriggers extended in position, or rail clips properly secured (if provided).

Operators must bear the foregoing in mind and act accordingly.

Cranes—Continued

Rail travelling—Continued

110. When the crane is in position for working and before lifting operations are started, the following must be done:—
- (i) The wheel spring relieving blocks or screws must be correctly set and unauthorised materials must not be substituted.
 - (ii) The balance box must be placed at the extreme outer end of the frame and properly secured. Where the balance box is secured by two screws, one each side of the tail frame, care must be taken to ensure that both are screwed up tightly.
If the balance weight consists of a number of loose weights, these must ALL be placed in the balance box. The use of other material in place of, or in addition to, such loose weights is strictly prohibited.
 - (iii) The fitting provided for securing the tail in position for travelling must be released.
 - (iv) Before commencing to raise the jib, the pawl, where fitted, must be engaged.
 - (v) The jib must be raised in bottom gear from the travelling position to the proper working level. When this has been done, care must be taken to ensure that the cotter pins in the telescopic or fork end portion of the tie rods are in position before crane work commences.
 - (vi) The tie rods between the tail frame and the top of the crab and the jib tie rod links from the crab must never be disconnected.
 - (vii) To raise or lower the jib of a crane not fitted with derricking gear the hook of the crane chain must be engaged in the shackle provided for this purpose at the foot of the jib. In no circumstances should this be done with the hook or snatch block in contact with the jib head pulley.

IN NO CIRCUMSTANCES MUST THE SAFE LOAD BE EXCEEDED.

111. When in the process of moving a crane along the track or from one part of the yard to another there is any risk of fouling a structure or other object, the jib must be lowered and the crane brought within gauge and properly secured.
112. WHEN WORK IS FINISHED FOR THE DAY. The superstructure must be placed in a safe position, *i.e.*, parallel with the track and properly secured. If there is any possibility of the crane being involved in shunting operations it must be left in a condition for travelling. (See Instruction No. 114.)
113. If a crane has to be removed from the track, this must be done only under the supervision of the Maintaining Department.

Cranes—Continued
Rail travelling—Continued

114. When a travelling crane requires to be conveyed by train on its own wheels, it must be correctly unrigged and secured for travelling and the Station Master, Goods Agent or person in charge must see that it is safe to travel, *i.e.*, that:—

- (i) the necessary match or guard wagons are provided and, where practicable, so arranged that when handed over to the Operating Department the crane may travel with the jib trailing;
- (ii) the jib has been properly lowered and secured so as to pass within the loading gauge, and nose chains attached where provided;
- (iii) where the jib is not carried on the tie rods, it has been lowered in bottom gear on to the roller or trestle on the match wagon and adequately roped or chained, sufficient allowance having been made to prevent rigidity when passing round curves;
- (iv) where loose balance weights are provided, these are removed and placed in the appropriate match wagon and adjustable weight box moved to the inner position and secured; where more than one crane has been used at a station, care must be taken to see that the weights belonging to each crane are put into the correct match wagon;
- (v) railclips are unfastened from the rails and hooked in their travelling position and outriggers retracted and secured;
- (vi) the pins or other device, provided to prevent movement of the tail during transit, have been placed in their correct positions;
- (vii) the detachable handles have been taken off the spindles and stowed in the place provided;
- (viii) the hinged operating platforms, where fitted, have been folded back on to the crane floor;
- (ix) where the crane is fitted with blocks or screws for relieving the wheel springs during lifting, these have been disengaged and secured so that there may be free movement of the springs during transit;
- (x) any other loose equipment has been properly stowed and/or secured;
- (xi) in the case of power-operated cranes:—
 - (a) with Diesel/Electric type—that the main switch and the control levers are in the “neutral” or “off” position;
 - (b) with Petrol or Heavy Oil engine types—that the controls are in the “off” position;

Cranes—Continued

Rail travelling—Continued

- (xii) if there is any doubt as to the fitness of the crane or runner wagons to travel safely the Maintaining Department must be notified.

ROAD MOBILE CRANES OR FORK-LIFT TRUCKS

115. ON COMMENCING WORK, the driver must satisfy himself that:—

- (i) the various parts of the appliance have been correctly lubricated and greased, and the oil in the sumps is at the proper levels;
 - (ii) the tyres are in good condition and if pneumatic, the air pressure is correct;
 - (iii) the steering gear, all braking systems and warning devices are in proper working condition;
 - (iv) wheel nuts are tight;
 - (v) all lamps fitted to the appliance, including jib head lights, are in proper working order.
116. After starting up the engine and before commencing operations, the driver must carefully operate all motions without a load and satisfy himself that all safety devices are in good order.
117. Particulars of any defects (other than adjustments which the driver is authorised to carry out) or of damage to an appliance or any part of its equipment must be entered by the driver on his defect sheet, work note, log book, or other appropriate form, which he must hand to the person in charge before leaving duty. Defects must be re-entered daily until remedied. Instances where remedial action has not been taken within 2 days to be specially reported to the Agent, Station Master or other person in charge.
118. Running hours must be recorded by the driver on the work note, log book, or other appropriate form, at the end of each day.
119. Each driver is issued with a tool kit and is personally responsible for its custody. Any deficiencies must be reported immediately. If the driver is transferred permanently to other work, the tool kit must be returned intact to the issuing department.
120. Unless specially designed to operate on soft ground, appliances may only work on properly made up roads. Excessive wear or unevenness of road surfaces must be reported.
When used on roads which have an abnormal camber or gradient greater than 1 in 40 the capacity will be reduced to an extent to be determined by the Maintaining Department, who in cases of doubt must be consulted.
121. Due regard must be paid to the surface of the yard or road and the appliance must be kept under adequate control so as

Road mobile cranes or fork-lift trucks—*Continued*

to ensure the safety of the unit itself and other vehicles using the yard or road.

122. When an appliance has to traverse a level crossing, it must travel at a slow speed.
123. The warning device must be sounded before the appliance travels in either direction. **IF THE DRIVER HAS NOT A CLEAR VIEW IN THE DIRECTION OF TRAVEL, HE MUST BE GUIDED BY A RESPONSIBLE MEMBER OF THE STAFF.**
124. **The jib or mast must be kept clear of any overhead or other obstruction.**
125. Provided that the jib is in line with the chassis, an appliance may travel with a load suspended from the jib at speeds up to 2 miles per hour.
126. A slewing crane, under exceptional circumstances, may carry loads overside for very short distances.
127. Side-loading fork-lift trucks are designed to carry loads with safety over any distance, provided that the mast is fully retracted and the load is resting on the platform of the machine.
128. Cranes or fork-lift trucks must not be used for propelling or towing wagons or other vehicles **unless specially authorised.**
The movement of wagons or other vehicles by means of crane or fork truck lifting gear is **PROHIBITED.**
129. Should part of the crane or fork truck come into contact with electric supply cables or wires it may become “alive.” The driver may be quite safe whilst seated at the controls. Should he find it necessary to get off whilst the appliance is in contact with overhead electric wires, he must jump clear so that no part of his body or clothing touches the appliance and the ground at the same time. In such circumstances any other person touching the appliance or load could receive an electric shock, whether standing on the ground or in an adjacent vehicle.
The driver must:—
 - (i) immediately warn all persons in the vicinity (and all persons approaching);
 - (ii) arrange for the electrician or other authorised person to cut off the current and, if necessary, remove the cables or wires so that the appliance may be moved;
 - (iii) never leave the appliance unguarded while it is electrically “alive”;
 - (iv) report the incident to the Station Master, Goods Agent or other person in charge.
130. With an appliance in which the speed of all motions is controlled by the engine accelerator pedal, the driver must only engage the hoisting, slewing or derricking controls when the engine is running slowly and afterwards increase the engine speed as necessary.

Road mobile cranes or fork-lift trucks—Continued

In cases where other systems of control are employed, the appropriate special instructions will apply.

131. The jib of a crane which is fitted with an indicator showing the safe working loads at various radii, should always be used at the shortest convenient radius.
132. After derricking, the gear must NEVER be left engaged.
133. Limit switches must not be interfered with. They are to be treated as emergency safety devices and movement must be stopped before the limit switch is reached.
134. The parking hand brake must be “ON” before lifting or slewing a load.
135. If it is necessary to leave an appliance unattended it must be immobilised. The ignition key, where provided, must be removed.
136. ON COMPLETION OF A DAY’S WORK OR OF A JOB, the jib of a crane must be placed in the approved position and the hook raised; the mast of a fork-lift truck must be lowered and left with the forks on the ground. The appliance must be immobilised and secured and lamps not specifically required must be extinguished.
137. The log book must be kept in the approved place and available for inspection by the staff of the Maintaining Department.
The log book must be placed in the tool box when the appliance is to be transferred from one station to another.

Movement of appliances between stations, etc.

(a) By rail.

138. When appliances are to be transferred on rail vehicles, authority will be given by the appropriate District Officer (Traffic) who will be responsible for making all the necessary arrangements in collaboration with the District Road Motor Engineer and the District Outdoor Machinery Engineer.
139. Unless it is known that a loading dock is constructed to bear the weight of an appliance, the District Engineer must be consulted before loading or unloading over the loading dock.

(b) By road.

140. When appliances are to be transferred on road vehicles, authority will be given by the appropriate District Officer (Traffic) who will be responsible for making all the necessary arrangements in collaboration with the District Road Motor Engineer and the District Outdoor Machinery Engineer.
141. Appliances which are approved for travel on their own wheels over the public highway under their own power and so licensed, must first be properly prepared for road transit in accordance with the instructions applicable to each appliance.
142. Before mobile appliances travel by road under their own power, the appropriate District Officer (Traffic) will see that any necessary permits are provided.

Road mobile cranes or fork-lift trucks—*Continued*

143. Any mobile appliance moved on the public highway must comply with the Road Vehicle Construction and Use Regulations. Particular regard should be given to efficiency of steering and brakes, registration plates, certificate of insurance, regulation lights and the provision of horn, mirrors, etc.
144. An appliance may be towed when authorised by the Road Motor Department: the words "On Tow" must be clearly marked, the registration number of the towing vehicle shown on the rear of the appliance and the proper towing gear must be used.

STEAM CRANES

145. ON COMMENCING WORK. Before lighting the fire the driver must:—
 - (i) see that an adequate supply of fuel and boiler feed water is available;
 - (ii) see that the gauge glass indicates that the water in the boiler is at a safe level, by operating the gauge cocks;
 - (iii) ensure that the control valves are closed and the reversing gear and/or clutches are in neutral position and that the cylinder cocks and dampers are open.
146. As soon as steam is generated, the water gauge, boiler injectors and/or feed pumps must be tested.
147. Blowing off steam from the boiler safety valve must be avoided, as far as possible, and the rate of firing adjusted to meet anticipated working conditions.
148. Ashes must not be allowed to accumulate up to the inside of the firebars or carriers nor around the ashpan ring.
149. Drivers of cranes must take care NOT to discharge hot water or ashes on or near men working in the vicinity.
150. Before a crane is allowed to slew or travel along its track, the driver must ensure that everything is clear.
151. Slewing whilst travelling with a load is PROHIBITED.
152. If the driver has to leave a crane whilst it is in steam, he must see that there is an adequate supply of water in the boiler and regulate the fire as necessary to prevent any undue rise in steam pressure during his absence. All control levers must be in the "off" (or "neutral") position and the brakes applied.
153. The driver must take care to keep oil cups amply supplied, but when work ceases, the "worsted" trimmings, where provided, should be removed to avoid seepage.
154. ON COMPLETION OF A DAY'S WORK OR OF A JOB. The jib and/or crane must be left in an approved position and the hook drawn up fully unless an anchorage is provided. The driver must see that the water is at working level in

Steam cranes—Continued

the gauge and either that the fire is damped down in the correct manner or properly raked out and the ashes slaked. Engine drain cocks must be opened, all controls left in the “ off ” (or “ neutral ”) position and brakes applied.

During periods of severe frost, if there is a risk of damage, boiler or water fittings must be completely drained and a “ BOILER EMPTY ” notice displayed in a proper position.

GOODS LIFTS FITTED WITH COLLAPSIBLE GATES

155. Care must be taken to ensure that the car or cage is not loaded beyond its carrying capacity (as indicated) and that the load is, as far as possible, evenly distributed or centrally placed.
156. Care must be taken to ensure that both car gates, where provided, and landing gates are fully opened before loading or unloading and correctly closed after loading or unloading.
157. Before the lift is set in motion, care must be taken to see that no article in the car can cause an obstruction such as might foul lift shaft or landings.
158. When the lift has been started in either direction it must, except in case of emergency or accident, be allowed to continue its movement until reaching its destination. The car gate must not be opened until the car has come to rest.
159. If it is necessary in case of emergency to stop an electric lift between floor levels, the “ stop ” button or, where provided, the emergency handle should be used.

TRUCKS, TRACTORS (other than shunting), TRAILERS AND STILLAGES

160. Loads on trucks, trailers and stillages must be properly stowed to ensure the safety of personnel, goods and equipment.
Trucks, trailers and stillages must not be overloaded.
161. The maximum number of trailers (loaded or unloaded) which are permitted to be hauled at one time must not be exceeded.
162. The driver of a tractor is responsible for ensuring that the towing device of any trailer coupled thereto is properly secured.
163. Drivers of elevating trucks are responsible for ensuring that the elevating platform is properly engaged with the stillage.
164. In cases where a driver is provided with a defect sheet, work note or other appropriate form, he must record particulars of any defects or damage to the appliance, or any part of its equipment, and hand it to the person in charge before leaving duty. Defects must be re-entered daily until remedied. Instances where remedial action has not been taken within 2 days to be specially reported to the Agent, Station Master or other person in charge.

PALLET AND FORK TRUCKS

165. When lowering a pallet the operator must make sure that it is clear of the feet of other persons.
166. Only approved portable ramps, bridging plates and packing are to be used and these must be properly adjusted and placed firmly in position.
167. No person may ride on forks, fingers or loaded or empty pallets.
168. Operators must ensure that forks or fingers are fully inserted through the pallet, unless otherwise instructed.
169. Forks or fingers must not be placed off centre with the pallet.
170. Where pallets are too large to be handled safely by the normal forks or fingers, extension sleeves must be used.
171. The operator of a PEDESTRIAN-controlled truck, when moving along a deck or going DOWN a ramp, must lead the truck; when going UP a ramp he must follow the truck.

PALLET TRUCKS

172. Rollers in the fingers must be examined and cleaned daily and axles freed of string, straw, etc., which may have become wrapped around them.
173. As pallets vary in size and type the operator must check that the rollers in the fingers make contact with the ground through the spaces in the bottom face without fouling.

FORK TRUCKS

174. When travelling, the forks or load (whichever is the lower) should clear the ground by not more than 12 inches. Loads must not be raised or lowered while travelling, except at the end of the journey as may be necessary for stacking.
175. Operators must ensure that other persons are well clear of the machine, particularly the empty forks which may not readily be seen.
176. Wherever possible the load must be lifted with the mast vertical or tilted slightly backwards.
177. Operators must not reach through the mast to adjust a load or for any other purpose.
178. Drivers of fork trucks must always negotiate ramps with the forks pointing towards the top of the ramp.
179. Fork trucks must not be taken inside rail wagons or on cartage vehicles unless authorised.

WAGON MOVING DEVICES

(other than Locomotives)

ALL DEVICES

180. No person is to be employed in the shunting and movement of wagons, either temporarily or permanently, until he has had adequate training. A record must be kept of the training received by each man and the date on which he is passed out.
181. Care must be taken to see that fairleads, rollers, etc., revolve freely on their spindles.
182. The number of loaded or empty wagons which may be hauled at one time is a matter which must be agreed between the Traffic and Maintaining Departments and local instructions will be given to staff concerned.

CAPSTANS

GENERAL

183. Capstans are not to be worked single-handed except where specially authorised by the appropriate District Officer (Traffic).
184. Capstanmen must not wear loose clothing such as open overcoats, aprons, etc., when working a capstan.
185. Capstanmen must, at least daily before commencing operations, carefully examine capstan hook, chain, swivel and rope for defect or signs of undue wear and replace by sound tackle as necessary.
186. Capstan hooks are NOT to be detached from or attached to wire ropes by the staff of the Traffic Department.
187. Capstanmen must always stand outside the "pull of the rope" and, whenever possible, face towards the wagons to be moved, with legs protected by the capstan drum.
188. Wire ropes must not be touched by hand or other means whilst in motion.
189. Before moving wagons by capstan, the capstanman must:—
 - (i) give warning, in an approved manner, to all people in, or in the vicinity of the wagons about to be moved and satisfy himself that the warning has been heard by these people;
 - (ii) satisfy himself that there is no obstruction of the lines on which the shunting is to be performed;
 - (iii) satisfy himself that no other movement of vehicles on the same line, or fouling the line, is about to take place;
 - (iv) see that the capstan rope is clear of the running rails and cannot be run over.
190. While wagons are being hauled, capstanmen must do their utmost to ensure that all persons keep well clear of the capstan rope and no one is allowed to cross over the rope without their permission.

Capstans—Continued
General—Continued

191. The capstan hook must be attached by placing it in the “ V ” of the wagon axle guard or hole specially provided therein, at the end of the wagon farthest from the capstan. Other methods of attaching the hook may only be used when authorised by Headquarters (Traffic).
192. Care must be taken to avoid sudden tightening or snatching of capstan ropes.
193. Where fairleads are provided they must always be used to give the best directional pull on the capstan rope and to avoid rope chafage on structures, etc.
194. To avoid wastage of power, capstans must not be run for a longer time than is necessary.
195. The use of knotted ropes is PROHIBITED. This does not, however, prohibit the attachment of the capstan hook to a fibre rope by bowline or other approved knot, which must be well trimmed.
196. Should any strands of a wire rope break, care must be taken to avoid injury to the hand. (See also Instruction No. 7.)

CLOSED LOOP

197. To ensure that wagons being hauled stop at the same time as the capstan, sufficient hand brakes, as determined by experience, must be applied by hand (not by brake stick) and pinned down.
198. When the hook is “ running light ” it should be stopped by means of the emergency stop button near the tension pulley, and NOT by the control on the shed deck.
199. The hook on the endless wire rope must not be attached to, or detached from, wagons whilst the hook is moving. It must be removed from wagons at the close of work.
200. A raft of wagons which is attached to a closed loop capstan must not be shunted into by engine, capstan or other means.
Detaching from the raft of wagons by fixed or free head type of capstan is only permitted under approved circumstances and care must be taken to ensure that the wagon couplings are disconnected before any movement takes place.

FIXED HEAD

201. Capstanmen must see that dirt does not interfere with the free movement of operating treadles.
202. Drums on capstans in exposed positions must not be allowed to rust; they should be wiped over with an oily rag on completion of work.
203. At the start of each turn of duty, fixed head capstans must be tested without load, to ensure the treadle returns freely to the “ OFF ” position and the drum immediately ceases to revolve.

Capstans—Continued

Fixed head—Continued

204. Hauling of slack rope by hydraulic capstan is wasteful of high pressure water and should be avoided.
205. Apart from the normal operations of putting on and taking off coils of rope from the top of a revolving drum, no attempt must be made to interfere with the capstan rope or its attachments whilst the drum is rotating.
206. If the capstan drum fails to stop on the release of the treadle, the capstanman must immediately throw off coils of rope to release the tension and advise the Maintaining Department.
207. At close of work the rope must be carefully coiled according to its "lay" and left clear of the drum and treadle, railway lines and cart roads.
208. The "lay" of a capstan rope must always correspond to the direction of turn of the capstan drum, *i.e.*, a right-hand laid rope must be used on a capstan revolving clockwise and a left-hand laid rope on one revolving anti-clockwise. When ordering capstan ropes this must be borne in mind.
209. Spare ropes and ropes not in regular use must be properly stored and not left lying about.

FREE HEAD

210. To free the capstan head, so that rope may be unwound, the gear must be disengaged.
211. At least two turns of rope must be round the capstan head before a load is hauled.
212. When not in use, the rope must be coiled round the capstan drum.

FIXED HEAD and FREE HEAD

213. The capstanman must release the tension on the rope well before the wagon to which the hook is attached reaches a point opposite the capstan or fairlead.
214. Except where specially authorised, wagons must not be checked or stopped by means of the capstan rope but by hand brakes or scotches.
215. Owing to the possibility of the capstan hook catching in sleepers, chairs, etc., the hauling of slack rope by capstan is dangerous.

SHUNTING TRACTORS

216. The hook on the draw chain or rope must be attached to the "V" of the wagon axle guard or hole specially provided therein, unless otherwise authorised by Headquarters (Traffic).

Shunting Tractors—Continued

217. **Staff must not pass in front of moving vehicles to hook or unhook draw chains or ropes.**
218. When wagons are being propelled by shunting tractor, the attendant must control the railway vehicle by the application of the brake, when necessary, and keep within sight at all times of the tractor driver.

TRAVERSERS

219. When a traverser is used to convey a wagon to another line, only that wagon must be allowed to run on to the table. Preceding wagons not required to be traversed should be run past the traverser with the table clear of the track.
220. Before moving a wagon on to or off a traverser, care must be taken to ensure that the rails on the appliance are in line with the track.
221. A wagon to be placed on the traverser must be uncoupled, drawn on carefully and stopped in a central position on the table by hand brake or scotches of approved design. In any case the efficiency of the hand brake must be tested before placing the wagon on the table. (This is particularly important where the hand brake lever on one side of the wagon applies the brake blocks to the wheels on the opposite side through a rocking shaft which may not work freely.)
222. Before any traversing movement is made with a wagon on the table, the vehicle must be properly braked or scotches placed on both sides of one wheel.

THE OPERATOR MUST MAKE SURE THAT THE TRAVERSER PATH IS CLEAR, DUE ALLOWANCE BEING MADE FOR ANY OVERHANG OF A WAGON.

223. On self-propelled traversers having two driving positions, the operator must always use the controls which permit him to have a clear view in the direction of travel.
224. Where wheel stops are provided on the siding served by a traverser to prevent wagons from moving into the traverser or its path, they normally must be placed across the line; they may only be removed by capstanmen or shunters in control of wagon movements and must be replaced immediately after such movements.
225. When traversers are not being used they must be left clear of wagon or cart roads or in an approved position.
226. There must be full collaboration between traverser operators and other shunting staff to ensure that surface type traversers are kept clear of all shunting movements performed by engine.

TURNTABLES

227. Before moving a wagon on to or off a turntable, care must be taken to ensure that the rails on the appliance are in line with the track and that the table is locked in position.

Turntables—Continued

228. A wagon to be placed on the turntable must be uncoupled, drawn on carefully and stopped in a central position on the table by hand brake or scotches of approved design.
229. Before the table is turned, care must be taken to ensure that the wagon wheels cannot scrape against the rim of the turntable pit and that no part of a wagon will foul any structure or other vehicle.
230. Turntable keys not in use must be thrown over, clear of the rim of the turntable pit, whilst the table is revolving. The key in use must also be kept clear of the turntable rim until nearing the particular slot required.
231. On completion of turntable operations the table must be locked in such a position that any shunting movement over the table may be performed with safety.

WAGON HOISTS

232. Before moving a wagon on to or off a wagon hoist, care must be taken to ensure that the rails on the hoist are at the same level as the permanent track.
233. A wagon to be hoisted or lowered must be uncoupled, placed on carefully, and stopped in a central position on the hoist by hand brake or wheel scotches provided.
234. Before the loaded hoist is raised or lowered, care must be taken to ensure that the wagon cannot foul any portion of the hoist shaft and that the local warning code is given.
235. It is the duty of the wagon hoist operator to ensure that, on completion of the movement, the wagon is drawn well clear of the hoist and there is no danger of it running back before any subsequent movement of the hoist takes place.

ON COMPLETION OF A DAY'S WORK OR OF A JOB, the wagon hoist table must be returned to the lower level.

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