

5
VICTORIAN RAILWAYS.

INSTRUCTIONS

GOVERNING THE

WORKING, MAINTENANCE OF, AND REPAIRS

TO

SPEED RECORDERS.

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Chief Mechanical Engineer.

Melbourne, 1st July, 1918.

2290.5.18

1. Where a Speed Recorder is attached to a locomotive, its function is to register automatically on a band of paper, commonly called the chart, the time occupied on a given journey, the rate of speed of the locomotive at any part of that journey, the time the locomotive is standing at a station, the time occupied in shunting operations, and the total mileage run.

The large semicircular dial and moving hand indicate, without reference to the chart, the rate of speed at which the locomotive is travelling. The small circular dial indicates the number of minutes occupied in passing over any section of the road.

2. The maintenance of and repairs to Speed Recorders are under the supervision of the Workshops Manager, Newport, and the operation and use of Speed Recorders on running engines are under the supervision of the Supt. of Loco. Running.

3. (a) Every Speed Recorder that leaves the Repair Shop should be fit for two (2) years' service. Any Recorder that has not passed through the Repair Shop for a period of two (2) years or over shall be withdrawn from service, on receipt of instructions to that effect from the office of the Chief Mechanical Engineer, and sent to the Speed Recorder Repair Shop for examination.

(b) A proper record of every Speed Recorder issued from and returned to stock will be maintained in the office of the Chief Mechanical Engineer, showing the individual number of every Speed Recorder, and the number and class of locomotive to which it is fitted.

(c) Whenever a Speed Recorder is removed from one locomotive to another for any reason, or is sent to Newport for repairs, it must be reported to the office of the Chief Mechanical Engineer on Form RS 211*.

- (d) Speed Recorders requiring repairs are to be sent to the Workshops Manager, Newport, and on receipt of the necessary advice on Form RS 211* the Chief Mechanical Engineer will arrange for the Workshops Manager, Newport, to supply another machine to replace the spare Recorder which has been placed in service.
- (e) When a locomotive is taken into any Workshop or Depôt for overhaul, the number of the Speed Recorder upon the engine must be forwarded to the office of the Chief Mechanical Engineer. Should the Recorder not have passed through the Repair Shop for a period of about two (2) years or over, instructions will be given for it to be forwarded to the Repair Shop, Newport. If the Recorder is not required for examination, it must be kept in a locked cupboard in an upright position until the overhaul to the locomotive is completed, and then replaced upon the engine.

4. Every Depôt Foreman, Fitter-in-Charge, Fitter, Driver-in-Charge, and Driver must make himself conversant with these instructions, so that he may be able to properly carry out his duties in connexion with the use, care, and working of the Speed Recorder and the Transmission Gear, and every District Rolling Stock Inspector, Special Officer, and Travelling Foreman must take every opportunity of inspecting the Recorders and Speed Charts on engines and instructing the Enginemen in their use, and should they discover any defects they must take prompt steps to have any repairs effected, and any case of misuse is to be at once reported to the office of the Superintendent of Loco. Running.

5. In addition to the ordinary examination of the Speed Recorder Charts and Mechanism, the Charts

will be checked in the Chief Mechanical Engineer's Office to ascertain if any adjustments in the Speed and Time Mechanism are required, and where slight adjustments are found necessary, an Officer will travel on the engine and make the corrections.

6. The following are the various types of charts in use:—

E—3 for use on A2, AA, C, D, D_D, and V Engines and Rail Motor Cars.

E—5 for use on D_D Engines.

E—6 for use on Narrow Gauge Engines.

Foremen and Officers-in-Charge must see that the correct designation, as above, is given when requisitioning for supplies.

7. Every Depôt Foreman, Fitter-in-Charge, or Driver-in-Charge must—

(a) see that every Driver at his Depôt is instructed how to properly mark and remove charts, and also to affix new charts in the machine, and that all charts must be kept as clean as possible. It will be the duty of the District Rolling Stock Inspectors, Special Officers, and Road Foremen, to instruct Engine-drivers at out-stations, and where transfers are made of other Drivers to out-stations the Driver being relieved must instruct the relieving Driver how to mark, remove, and fix charts. Drivers not properly understanding how to perform this duty must immediately apply to their Foreman for instructions.

(b) see that a reasonable supply of spare Recorders, charts, pencils, lubricating oil, dial glasses and other requisites are on hand. Such supply should not exceed three months' requirements.

- (c) arrange for the examination once every half year of the Speed Recording Gear fitted to every engine stationed at his Depôt, devoting special attention to the interior of the gear-boxes in order to make sure that the gears, spindles, and bushes are in good condition, and that the oil passages are not obstructed; and that all such examinations are properly recorded in the Examination Book.
- (d) see that prompt attention is paid to any necessary repairs to the Speed Recorder Gear, an entry of which is made in the Drivers' Repair Report Book, and he must further see that all repairs so booked are efficiently executed.
- (e) see that the Recorders are examined and the charts are removed once each week or more often if required, and that all charts are waybilled and forwarded to the Supt. of Loco. Running, and new charts affixed when necessary, and that all tubes from used charts are forwarded to the Supt. of Loco. Running for further use on cleaned charts.

When a new chart has been fixed in a machine the Time and Speed metallic pencils must both be gently placed in contact with the chart, with the Speed pencil resting on the zero line. It is occasionally necessary to give the clock winding handle one or two turns to bring the pencil to Zero. The "Time" pencil should agree with the pointer on the small dial.

- (f) if there be no chart in the machine at the weekly examination, forward a report to the Supt. of Loco. Running, explaining the reason.

- (g) see that every Recorder is lubricated once a week (when the charts are removed) with the special clock oil supplied for that purpose. The lubrication is effected by filling the small oil cup on top of the Recorder. In order to keep out dust and dirt, special care must be taken to see that the oil cup cover is always replaced after oiling.
- (h) see that the Speed and Time pencils (metallic) are adjusted frequently enough to insure clear and unbroken lines being made on the chart. These metallic pencils will require adjusting in length about once a month. A glance at the chart record when it is being removed will show whether any adjustment is required, as the lines will be indistinct or broken if the pencils are worn. A metallic pencil is lengthened out by slackening the check-nut, unscrewing the pencil about $\frac{1}{8}$ inch, and then resetting up the check-nut. Pliers should not be used for this purpose as the brass pencil holders are sometimes bent up or down thereby; sufficient force can be applied with the finger and thumb on the check-nut. When new pencils are fitted care should be taken that they do not stand out too far from the holder. As a rule the thread of the pencil should be just visible outside the check-nut.
- (i) see that whenever the dial glass frame is removed for any purpose such as fitting a new dial glass, the machine is covered so as to exclude dirt and dust. A clean sheet of paper will suffice. Dirty cloths or sacks are not to be used for this purpose. New dial glasses must be carefully puttied in, so that the glass will be flush with the frame.

(j) see that when sending any Speed Recorder away for repairs it is properly packed in the box provided so as to avoid damage, and that care is taken to see that the dial glasses are protected by the strips of wood supplied for that purpose, and that the clock-winding handle is removed from the machine and tied to the handle on top of the Recorder.

(k) see that any Speed Recorder requiring repairs is plainly and properly addressed, marked "with care," and waybilled per Passenger Train to the Workshops Manager, Newport, and that Form RS 211* is forwarded to the office of the Chief Mechanical Engineer showing—

(i) The date on which the Recorder is forwarded.

(ii) No. and type of Recorder.

(iii) No. of engine from which the Recorder was removed.

(iv) No. of Spare Recorder fitted to engine.

(v) Type of Recorder required to replace the Spare Recorder fitted to engine.

8. The following duties are to be performed by the driver in connection with the Speed Recorder and Transmission Gear:—

(a) He must, before leaving the shed, examine the Transmission Gear and oil the gear boxes and driving pin with ordinary bearing oil.

(b) He must see that there is sufficient length of chart in the Recorder for the journey, and wind up the Recorder clock to ascertain if it is in proper working order.

(c) If the Recorder is not in proper working order, or there is not sufficient paper to complete the chart for the round trip on which the Driver is booked to run, he must, before leaving his Depôt at the commencement of his trip, report the fact to the Depôt Foreman or Officer-in-Charge, and if the necessary repairs are not effected or a proper chart is not supplied, he must report the matter in the Drivers' Repair Report Book before commencing his trip. Drivers at out-stations must make proper provision for having sufficient charts on hand. The length of chart in the Recorder may be accurately determined from the following table:—

Diameter of chart left on spool.	Measurement taken from chart roll to edge of spool.	Number of miles chart will still run.
1" —	$1\frac{3}{32}$ "	200
$\frac{15}{16}$ "	$1\frac{1}{8}$ "	150
$\frac{7}{8}$ "	$1\frac{5}{16}$ "	100
$\frac{13}{16}$ "	$1\frac{3}{8}$ "	50
$\frac{2}{3}$ " Bare tube.	$1\frac{7}{32}$ "	0

(d) He must, just prior to commencing a journey, both up and down, write on the face of the chart the following particulars. (Indelible pencil must not be used):—

- (i) The date.
- (ii) The name of the Station at which the journey is commenced.
- (iii) The Time-table time of departure of train, and whether Passenger, Mixed, Goods, or Light engine.
- (iv) The No. and class of engine.
- (v) His name, and the destination of the train or engine.

- (e) Where a Mixed or Goods train is run without a four-wheeled vehicle attached, he must also record on the chart the words "No four-wheeled on."
- (f) Whenever engines are changed over, or a relief crew takes charge, the chart must be remarked by the relieving Driver with full particulars as shown in Sub-Clause (d) above.
- (g) When an engine fitted with a Speed Recorder is used for switching purposes only, the Driver must also mark the chart with the date, driver's name, station, and time of commencing switching.
- (h) When an engine is running tender first, or as second engine on a train, this information is also to be shown by marking the chart with the words "Tender first" or "Second engine," as the case may be.
- (i) Whenever a train is delayed at a Station for shunting or other purposes for a longer period than 30 minutes, the Driver must rewind the Recorder clock in order that the full time occupied may be recorded.
- (j) The following table will be useful when testing the accuracy of Speed Recorders:—

OVER A DISTANCE OF HALF-A-MILE.	SPEED.
Seconds.	Miles per Hour.
30	60
33	55
36	50
40	45
45	40
51	35
60	30
72	25
90	20
120	15
180	10
360	5

For testing the accuracy of the speed indications, a particular part of the road should be chosen where the speed of the engine is fairly uniform.

- (k) Before going off duty the Driver must enter in the Drivers' Repair Report Book at the Depôt or Sub-Depôt any necessary repairs required to the Recorder or Transmission Gear. If a new chart is required he must book this also.

When repairs to the gear are necessary or a new chart is required whilst the engine is at a foreign Depôt, the Driver must act as directed in Sub-Clause (c) above.

9. Tampering with any Speed Recorder or with any Speed Chart in any way is strictly forbidden, and any offender will be severely disciplined.


10. (a) Speed Recorders must (as provided for in Clause 3, Sub-Clause (d), of these instructions) be requisitioned for on the Chief Mechanical Engineer, charts required for Speed Recorders on the Supt. of Loco. Running, and all other material on the Workshops Manager, Newport.

- (b) Material urgently required may be requisitioned by telegram, but in any such case a proper covering order must be forwarded without delay.



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