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WESTERN REGION

TRACTION BULLETIN FOR DRIVERS

REGIONAL HEADQUARTERS,
PADDINGTON

Since the publication of the last Bulletin, No. 2, in Dec., 1965, many drivers have been asked whether they have found the Bulletin of any use to them.

The reactions to this question have been varied; some drivers have felt that the matters discussed in the Bulletin have been too elementary and they knew all about them, anyway. Others, particularly the young men, have welcomed the information and advice contained in the Bulletin and many favourable references have been made to the kind of information such as that relating to the reduction in train pipe vacuum discussed in Bulletin No. 2.

It may be mentioned that most of the subject matter of the Bulletins is prepared by Running Inspectors, all of whom have themselves been Drivers, and the matters discussed have all arisen as a result of some incident in which they themselves have been involved in the daily working of the railway in every part of the Western Region. Information of a technical nature is prepared in conjunction with, and with the approval of, the Chief Mechanical & Electrical Engineer. The aim of the Bulletin is to give information on new developments and modifications and, it is hoped, will be particularly useful in providing a "follow up" to the driver's initial training on the various

types of Diesel locomotives and multiple units.

1. MODIFIED VOITH TRANSMISSIONS ON D.833 AND D.6306 CLASS LOCOMOTIVES.

Due to modification to the low speed step-down gears, the converter change points on these transmissions will be higher than normal.

Locomotive D.839 has two such transmissions and at maximum engine speed (i.e. 1530 rpm) the change points will be:-

	NEW	OLD
Converter I to II	46 - 48 mph	42 mph
Converter II to III	79 - 82 mph	77 mph

Locomotives D.6330, D.6356 and one other, are also to be fitted, the change points will be:-

	NEW	OLD
Converter I to II	31 - 33 mph	26 mph
Converter II to III	55 - 57 mph	51 mph

Note also that the filling pump pressure should be approximately 100 psi.

2. LOCOMOTIVES D.1930 AND D.1931.

These locomotives have a Westinghouse reducing valve and bypass solenoid fitted to the regulating air system between the engine speed valve and the diesel engine governor.

(refer to Section DE4-1 page 22 of the publication 'An Introduction to Diesel Traction' issued at the Divisional Diesel Schools.)

This valve limits the maximum regulating air pressure to approximately 36 psi until the third stage of field weakening comes in at 62 mph. Thus until this takes place maximum engine r.p.m. will be restricted to 700 and the engine output to 2240 H.P.

When the contactor (FSC3) closes to bring in this third stage, an auxiliary contact also closes and energises the bypass solenoid so that the engine governor now receives the normal maximum of 50 psi regulating air. The fuel racks will adjust accordingly, so that 2750 H.P. is now available, and the driver will both hear (change of engine note) and see (rise of 1000 amps) this take place.

Both the reducing valve and bypass solenoid are fitted beneath the regulating air gauge opposite the free end of the engine.

NOTE: D.1932 and D.1933 have these fitted but at the time of writing they are not connected to the regulating air system.

Drivers may come across this feature on locomotives allocated to other Regions, those known to be fitted are:-

D.1835 and D.1836 London Midland Region.

D.1890 and D.1891 Eastern Region

3. IDENTIFICATION OF LOCOMOTIVES.

Drivers may have noticed a small letter 'M' or 'W' stencilled in white below the running number of locomotives allocated to the London Midland Region; this indicates 'Midland Lines' or 'Western Lines' of that Region which approximate to the routes from St. Pancras to the Midlands and from Euston to the North-West respectively, and has no other significance.

4. DRIVING TECHNIQUE - DIESEL MULTIPLE UNIT TRAINS.

These units have been with us for many years and a considerable number of drivers have gained much experience in their operation However, continual developments in this field of traction have led to the introduction of higher horse-power engines and in consequence larger fluid flywheels, final drives etc. Improved battery charging at lower speeds has been obtained by the use of alternators instead of generators.

All these factors have had their influence on driving techniques in use over the years, but the present day technique has been introduced to get maximum service from the transmission components and any deviation from this will result in serious damage to one or more of these.

Changing up.

The gear change should be initiated as soon as the tachometer needle reaches the end of the yellow sector, allowing the needle to pass this point will not achieve further acceleration but will place undue strain on the engines and transmissions as well as causing discomfort to passengers.

When the needle indicates 'change up' the throttle should be closed and the engine speed allowed to fall to 1100 r.p.m. (which should take approximately 4 seconds) before selecting the next gear. Then the engine speed should be allowed to fall still further to 500 r.p.m. (taking some 2 seconds) before the throttle is opened to the 1st or 2nd notch position only; pause here until the tachometer needle has risen and settled down to a steady reading before opening the throttle further.

Changing down.

When the tachometer needle indicates 'change down' close the throttle and immediately select the next lowest gear, allow the engine speed to fall to 500 r.p.m. (taking approximately 2 seconds) and then open the throttle notch by notch.

Coasting.

When changing from 1st, 2nd or 3rd gear to coast in 4th gear allow the tachometer needle to fall to 'idling' before initiating the gear change.

Note: It will be appreciated that on certain branch lines and some portions of the main line where heavy gradients are encountered, it will be necessary to shorten the pauses between each stage of the above sequence to avoid losing too much road speed, however, it must be clearly understood that this practice must be resorted to only where absolutely necessary and it is accepted that the service life of the transmission components will be reduced in consequence. EVEN UNDER THESE ABNORMAL CONDITIONS THE 2 SECOND PAUSE BETWEEN SELECTING THE GEAR AND OPENING THE THROTTLE MUST BE OBSERVED.

5. LOCOMOTIVE OVERSPEEDS - D.1000 CLASS LOCOMOTIVES.

Some years ago many drivers experienced incorrect operation of the locomotive overspeed protection units on this class of locomotive, and it is noticed that some still do not run at the maximum of 90 m.p.h. in case the device 'trips'. All units have now been modified and are set to operate at a reasonable margin above 90 m.p.h. so drivers need no longer restrict their speed below 90 m.p.h., where permissible, for this reason.

6. DERATING OF 2750 H.P. TYPE 4 BRUSH/SULZER LOCOMOTIVES.

To overcome severe stresses which have led to fractures in the crankcases of the Sulzer 12LDA28C engines fitted to the majority of these locomotives; it has been found necessary to reduce the engine output to 2610 H.P. This has been done by altering the Governor Spring and so restrict the maximum fuel rack opening (refer to the drawing "Engine Speed Control (Basic)" as issued at the Divisional Diesel Schools.) Most locomotives allocated to the Western Region have now been derated but there should be no difficulty in maintaining the present timings of both passenger and freight trains.

7. USE OF "TRAFFIC/SHUNT" SWITCH ON D.7000 CLASS LOCOMOTIVES.

Due to unsatisfactory operation of the original arrangement, six locomotives (D.7008, D.7009, D.7074 and 3 others) are to be fitted with a mechanical 1st gear lockout assembly. This feature is still operated by the "Traffic/Shunt" switch however, and drivers should not hesitate to use it when engaged on shunting duties.

8. AUTOMATIC WARNING SYSTEM.

Following complaints of excessive noise from the A.W.S. bell, particularly on the closely signalled sections of the Eastern Region London Suburban lines, it has been decided to reduce the duration of ringing from 2 seconds, to 1 second.

This modification will be carried out as the A.W.S. equipment becomes due for overhaul.

9. LOCOMOTIVE D.1938.

This locomotive has been fitted for working "Push and Pull" trains, similar to those already in operation on the Southern Region.

Jumper cables are fitted at each end but it should be noted that these are not suitable for multiple unit working, and must not be coupled to those of any other locomotive. An additional circuit breaker CCB3, a "Normal/Propel" Switch and an Engine Start Isolating Switch have been added to the Switch and Fuse Panel within the engine room.

9. LOCOMOTIVE D.1938 Cont'd..

Drivers will also notice a valve attached to the bodyside within the Engine room, also two further valves adjacent to the Air/ Vacuum Relay Valve in the Equipment Room.

The fire extinguishing equipment has been made automatic in operation i.e. when the fire bell rings, the engine will stop and the carbon dioxide "bottles" will be set off. However note that the operation of the Fire Alarm Test Button is identical to all other locomotives of this class i.e. it will ring the fire bells only.

10. LOCOMOTIVE D.1862 - D.1999, D.1100 - D.1111.

On these locomotives traction motor weak fielding is initiated by the Speed Indicating Device attached to one of the axles, instead of by the load regulator as on earlier locomotives. This device sends a signal to an electronic "black box" within the control cubicle which, at 33, 45 and 60 m.p.h., brings in the appropriate contactors (FSC1-2-3) to weaken the traction motor fields.

10. LOCOMOTIVE D.1862 - D.1999, D.1100 - D.1111 Cont'd..

Should the speedometer needle become erratic and finally drop to zero there will most likely be a fault in the Speed Indicating Device, and it will not be possible to obtain any further stages of field weakening thus locomotive performance will be poor. It is difficult to forecast the exact effects but in the cases of failure experienced so far, the Load Reducing Solenoid (within the engine governor) has remained energised, closing the fuel racks a little, thus there is a reduction in charging air pressure. This will in its turn affect engine performance and the Driver will notice a considerable loss of power (NOT complete loss however) on his ammeter.

The locomotive may proceed but a fresh locomotive should be obtained at the first convenient point.

11. D.1000 CLASS LOCOMOTIVES.

To prevent a "cold" start being made on these locomotives there are in hand modifications to the electrical circuits which will affect the operation of the Low Water Temperature fault light.

11. D.1000 CLASS LOCOMOTIVES Cont'd..

This will now show RED even if the cooling water temperature is above 110°F until a direction is selected.

Thus to obtain a true indication the reverser must be in a direction, and then if the RED light still remains, arrangements for pre-heating must be made.