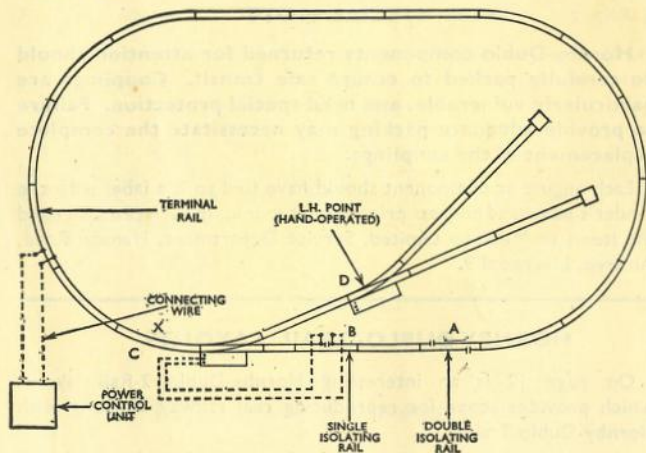


HORNBY-DUBLO 2-RAIL LAYOUTS (contd.)

When the Point at C is set for the straight, the Locomotive will travel round the main line of the layout. When the Point at C is set for the curve, the Locomotive will run in either siding according to the setting of Point D, and also round the main line, but NOT in the section A—B. Hence, a locomotive travelling round the oval in a clockwise direction from X would come to a stop automatically in the section A—B if Point C remained set for the siding.

This layout represents the minimum equipment for the person who wishes to operate two Locomotives. The sidings provide the means of isolating one Locomotive while the other runs round the main track.



- | | | | |
|------|---|------|---------------------------|
| 2739 | 1 Straight Two-Thirds Double Isolating Rail | 2710 | 11 Curved Rails |
| 2738 | 1 Straight Two-Thirds Single Isolating Rail | 2713 | 1 Curved Terminal Rail |
| 2729 | 2 Left-hand Points | 2701 | 8 Straight Rails |
| 2450 | 2 Buffer Stops
1 Control Unit | 2703 | 1 Straight One-Third Rail |

★ Follow these directions carefully to obtain the best results

INSTRUCTIONS

for
Operating and Maintaining

HORNBY DUBLO

12-VOLT ELECTRIC

Co-Co Type
DIESEL-ELECTRIC
LOCOMOTIVE

SALES No. 2232

(For 2-Rail Track)

CURRENT SUPPLIES

Hornby-Dublo electric trains use direct current only and require a track voltage of 12. This may be obtained in one of three ways.

1. From an alternating current mains supply through a standard Power Unit.
2. From an alternating current mains supply through a standard Transformer and separate Controller.
3. From three 4.5-volt dry batteries using a Battery Control Unit.

The first way is strongly recommended and should be used if at all possible. Instructions for the three methods outlined above are as follows:—

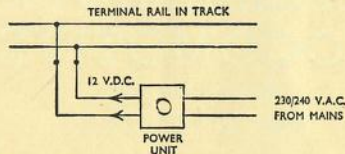
MAINS SUPPLY. The best source of current for a Hornby-Dublo electric train is of course the alternating current mains supply. A suitable transformer must be used to ensure that the voltage is reduced to 12, and at the same time the current must be rectified, that is, converted into direct current. This direct current is in turn passed through the Controller and hence the speed and direction of the locomotive can be varied.

The Transformer and Controller-rectifier may be completely separate units, or ideally they may be combined into a single Power Control Unit. A suitable Power Control Unit can be obtained which will also conveniently provide an additional output to allow for running a second locomotive on a separate track.

In all cases when connections have been made to the track the Locomotive should for convenience of control, travel from left to right when the control knob is moved to the normal position, and reverse when the control knob is moved to the reverse position. If the Locomotive travels in the opposite direction to that shown by the position of the knob, the output connections must be changed over at the Terminal Connecting Rail.

If a combined Power Unit is being used which has a separate isolated output providing alternating current, then this output must be connected to a standard Controller when it is required to make use of this output for controlling a second locomotive on a separate track. The standard Controller will of course rectify the alternating current as well as provide a means of control.

Fig. 1a and 1b show the wiring connections when using either a Power Unit or Transformer and Controller.



CURRENT SUPPLIES (contd.)

Fig. 2 shows the wiring arrangement when using a Power Control Unit and separate Controller for working two Locomotives independently on separate tracks.

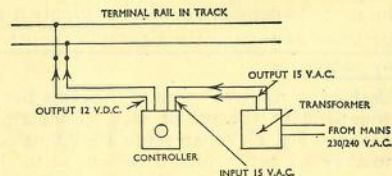
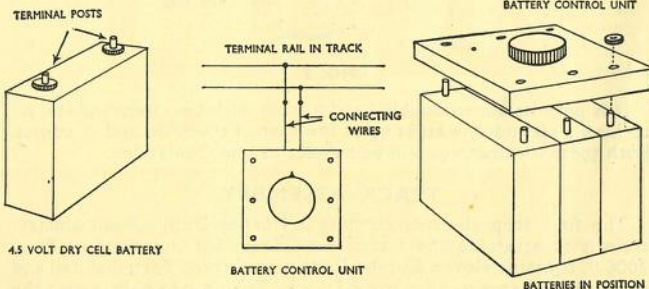


FIG. 1b

DRY BATTERIES. Hornby-Dublo Locomotives can be worked quite efficiently from dry batteries having a 12-volt output. This can be obtained by using three Ever-Ready No. 126 or three Drydex H30 or three Vidor V0008 dry cell batteries. A special Battery Control Unit will be required.

The average time that a Hornby-Dublo Locomotive can be run from one set of three batteries is nine hours. When the Locomotive fails to respond or to run satisfactorily the batteries must be replaced by new ones.



ACCUMULATOR. An accumulator has an advantage over dry batteries in that when it runs down it can be recharged. Due however to the relatively heavy current which an accumulator will deliver when subjected to a short circuit, it is always advisable to have some protective device in the circuit which will function if a derailment occurs.

Advice on the use of accumulators with a particular Hornby-

DOUBLE TRACK WORKING

The Battery Control Unit, the Power Control Units, and the standard Controller are each designed to control one Locomotive only. Where it is desired to run two Locomotives independently controlled, a convenient way is to use a Power Control Unit for the first one, the same Unit being connected to a standard Controller for running the second Locomotive. Where supply is taken from an accumulator or from batteries each Controller must have its own separate supply source.

When it is desired to run two trains at the same time on different tracks, with independent control of each, connections should be made as illustrated in Fig. 2. When there are Points connecting the two tracks and they are set in such a manner as to allow trains to cross from one track to the other, either Controller can be used, or if both are used at the same time it will be necessary to have their control knobs set to approximately the same positions. This is necessary to avoid interference between one current and the other.

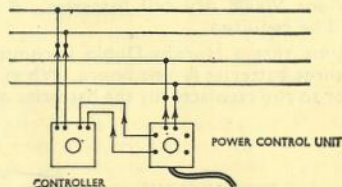


FIG. 2

It is permissible to double-head a train with two locomotives, or to have a second one assisting at the rear of the train and of course both these locomotives will be subject to one Controller.

TRACK ASSEMBLY

The first step towards running a Hornby-Dublo 2-rail electric train is to assemble the track. Each Train Set, except Sets Nos. 2006-9, contains eleven Curved Rails, one Curved Terminal Rail and sufficient straights to form an oval track. To join two Rails, insert the end of each into the opposite fishplate of the other and push together on a flat surface. Do not twist or bend the rails and keep them flat when pushing them together or pulling them apart. Otherwise the fishplates or chairs may get damaged. For best results the track should be fixed to a board, table or some other support, which must be flat and level. Holes are provided in the rail bases to allow for fixing by pins, $\frac{3}{16}$ " x No. 20 gauge escutcheon pins being suitable. As an alternative Securing Plates, with woodscrews, suitable for fixing

TRACK ASSEMBLY (contd.)

Avoid placing the track directly on carpet or like material, since fluff or pile can be drawn into the locomotive motor and cause failure. Where a track must be used in this manner, paper placed between the track and the carpet will help to prevent fluff rising, but to provide a reasonably satisfactory base, strips of more rigid material, say cardboard or linoleum are better.

To assist in wiring your layout correctly it is recommended that you obtain one of the Hornby-Dublo 2-rail booklets. If a siding is required off the main line it will bring in the use of Points. When using Hornby-Dublo 2-rail hand or Electrically-Operated Points, certain rules must be observed.

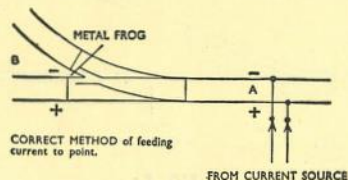


FIG. 3

First it must be made certain that current from the Control Unit is fed only into the toe of the Point, as shown in Fig. 3, and consequently the current must be prevented from feeding into the heel. This is because a 'live' frog (made of metal) is used in all Hornby-Dublo Points and the feeding of current into the heel of the Point would cause a short-circuit, as indicated in Fig. 4.

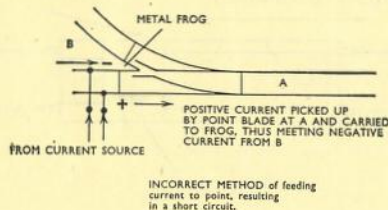


FIG. 4

In any layout where current could flow from the Control Unit into the heel of a Point, and thus cause a short-circuit, this situation can be prevented by using a Double Isolating Rail, as shown in Fig. 5.

TRACK ASSEMBLY (contd.)

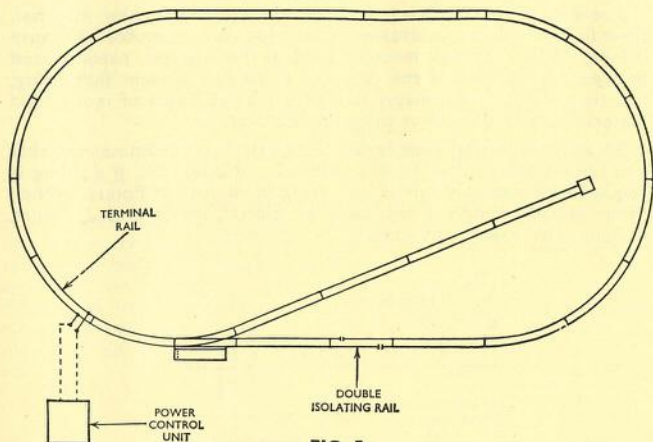
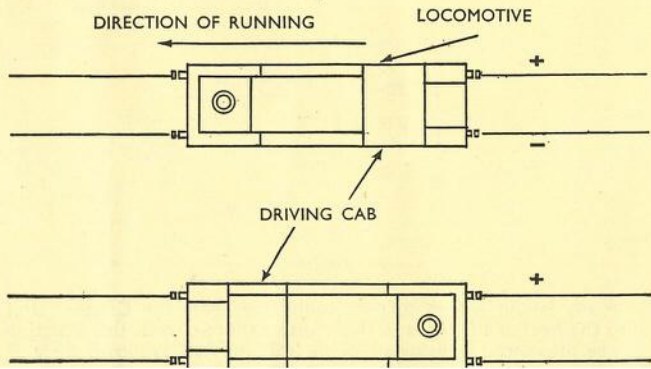


FIG. 5.

Another interesting feature of 2-rail working is that no matter what direction a Locomotive faces, it will always travel in the direction indicated by the knob of the Controller. The position of the control knob governs whether the Locomotive moves to the left or to the right. This is illustrated in Fig. 6. It will be seen that the Locomotive will move to the left, no matter which way it faces, when the control knob is moved in one direction. The Locomotive will move to the right when the control knob is moved in the opposite direction.



OILING POINTS

Before placing the Locomotive on the track for the first time oil LIGHTLY at oiling points as shown in the illustrations. Those on the Co-Co type Diesel-Electric Locomotive are shown in Fig. 7. In each case the point is indicated by a line ending in a small circle. Where a figure is shown inside the circle it denotes the approximate period in running hours between oiling.

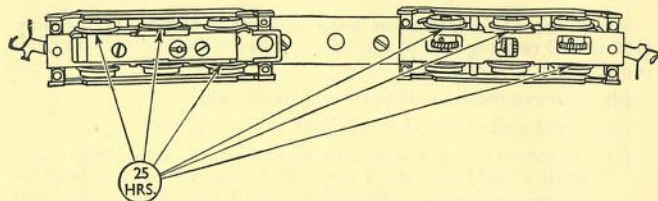


FIG. 7

A collapsible tube of oil is included with each train set, and this MUST be used, NOT an oil can. A thin film of oil on all working parts is all that is required; over oiling must be avoided.

After oiling the engine let it run steadily for a few minutes, and during this time LIGHTLY oil the axle bearings, bogie pivots and coupling pivots of coaches or goods wagons.

It is important to oil all the working parts of the mechanism on the first occasion and from time to time. For this it is advisable to remove the motor and chassis from the housing. With the Co-Co type Diesel-Electric Locomotive this is done in the following manner:—

Holding the Locomotive upside down in the left hand, remove screw in mounting plate midway between bogies. Place right hand on bogie, invert and remove housing. Lubrication of motor bogie can now proceed unhindered.

The motor in this Locomotive is mounted with the armature shaft in the vertical plane. A pair of gears drive through 90 degrees to a layshaft carrying two worms, one engaging with each of the outer axles on the bogie. The armature bearings are both visible and can be oiled with ease. The upper bearing has an oil hole which can be seen just behind the screw which fastens the bogie to the mounting plate. The lower bearing is equally accessible. The bearings of the layshaft will be found in the end plates of the motor frame. These too can be seen and oiled with ease. It is

OILING POINTS (contd.)

armature shaft; the surplus oil will run down on to the commutator itself, producing loss of power. In the illustrations there are arrows ending in small circles, giving approximate oiling times for different components.

BRUSH REPLACEMENT

When the Locomotive has been in use for a considerable time (150 to 200 running hours) the two brushes of the motor may need replacement. To effect this:—

- (a) Remove motor unit as already described.
- (b) Stand chassis on table on sheet of white paper.
- (c) As shown in Fig. 8 withdraw end cap and brush spring, worn brush should now drop out. The brush holder may now be cleaned out with a pipe cleaner, and brush dust blown from commutator housing as shown in Fig. 9. New brushes may be fitted and brush caps and springs replaced.

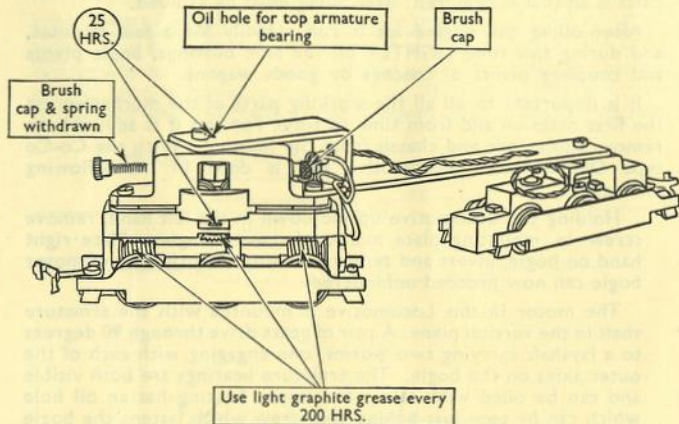


FIG. 8

OILING POINTS (contd.)

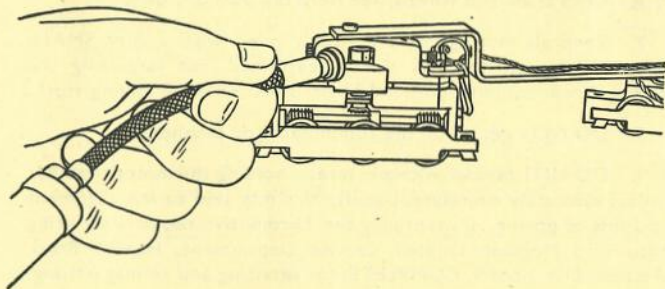
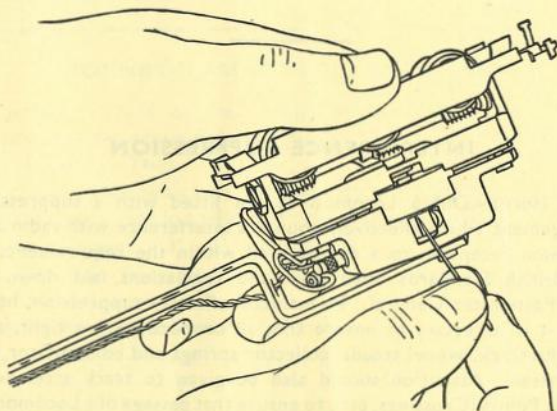


FIG. 9

Commutator slots should be free from any deposits that may form. This is done as seen in Fig. 10 using the point of a needle. Care must be taken not to touch the armature winding.



GENERAL RUNNING HINTS

1. Keep track and wheels free from oil, dust and dirt.
2. Keep all moving parts regularly oiled with a very SMALL drop of oil each time, as already explained, not forgetting the rolling stock, coupling pins and bogie pivots of bogie rolling stock.
3. DO NOT get oil on the commutator or brushes.
4. DO NOT tamper with any screws holding the motor together unless absolutely necessary, because this may lead to mis-alignment and loss of power. If eventually the Locomotive requires servicing return to Meccano Limited, Service Department, Hanson Road, Aintree, Liverpool 9, COMPLETE, for servicing and re-magnetising.
5. When brushes have been changed the locomotive will not give its maximum performance until they have "bedded in." This "bedding in" usually takes about 15 minutes.
6. When cleaning track please do not use any of the usual household grease solvents. It is perfectly safe, and quite effective, if the track is cleaned with methylated spirits applied with a non-fluffy type duster.

INTERFERENCE SUPPRESSION

All Hornby-Dublo Locomotives are fitted with a suppression arrangement which effectively counters interference with radio and television reception to a degree well within the requirements of the British Standards Institution, and regulations laid down by H.M. Postmaster General. To maintain effective suppression, however, it is necessary to ensure that all connections are tight, and that the track, wheel treads, collector springs and commutator are kept clean. Attention should also be given to track accessories such as Points, Crossings, etc., to ensure that passage of a Locomotive over them does not result in a temporary short or open circuit.

SHORT CIRCUITS

A fault in the track or an accident may cause a short circuit. Most short circuits follow derailments and these are corrected at once by lifting up the Locomotive or rolling stock that has become derailed and has contacted the live rail.

Short circuits may be caused by incorrect positioning of Isolating Rails.

In case of difficulty send us a postcard describing the trouble and we will put it right immediately. Address your postcard to Meccano Limited, Information Service, Binns Road, Liverpool 13.

SPECIAL NOTE

Hornby-Dublo components returned for attention should be carefully packed to ensure safe transit. Couplings are particularly vulnerable, and need special protection. Failure to provide adequate packing may necessitate the complete replacement of the couplings.

Each engine or component should have tied to it a label with the sender's name and address printed on it in ink. In such cases forward the items to Meccano Limited, Service Department, Hanson Road, Aintree, Liverpool 9.

HORNBY-DUBLO 2-RAIL LAYOUTS

On page 12 is an interesting Hornby-Dublo 2-Rail layout, which provides scope for reproducing real railway working with Hornby-Dublo Trains.

An oval track with one turn-out from the main line and two sidings, suitable for use with one or two Locomotives.

Space required 5' 3" x 3', 160 x 91 cm.

Connect the Terminal Rail to the Control Unit in accordance with the diagram.

Insert the Double Isolating Rail at A.

Insert the Single Isolating Rail at B, making sure that the gap in the running rail is on the same side as the Point 'frog'.

Connect the terminals on the Single Isolating Rail to the Point terminals at C, in accordance with the diagram.