MAGNETA

MASTER CLOCK

Model M.37 -

Standard Commercial Model.

In light oak case with compartment for three dry cells. Standard models are normally fitted with half minute or one minute contacts.

Height...	...	63 ins.
Width ..	...	12 ins.
Depth ...	...	6 ins.

Weight (excluding dry cells) ... 56 lbs.

Cases in Teak or Mahogany supplied at extra cost.

The Magneta Master Clock is electrically driven, independent of spring mechanism, and is one of the simplest and most accurate types of clock. It is very flexible, and is able to operate secondary dials in either series or parallel circuit; it can also control many other types of equipment, such as Time Recorders, Job Costers, Programme Instruments and Time Stamps. The two models illustrated here are the M.37, Standard Commercial Model (on left) and the M.36, to British General Post Office Specification.

All models are operated on the well known "Hipp Toggle" system, which feeds the "Invar" Steel Full Second Pendulum with impulses as required to maintain a steady beat, the current for which is provided by three dry cells. Magneta Master Clocks are fitted with an advance/retard device for time setting of circuits. The Magneta Impulse System is normally operated by accumulators, and is thus independent of any breakdown of the Mains Supply.

Up to five different sets of contacts can be fitted in Magneta Master Clocks, controlling different circuits.

The design of the Magneta Master Clock is such that it will maintain accurate time to within less than two seconds per week.

Model M.36

British G.P.O. Model.

In oak case or in timber suitable for tropical conditions with glass door, without dial. Fitted with half minute, six seconds and one second contacts with controlled time synchroniser.

Height...	...	55 ins.
Width ...	...	14½ ins.
Depth ...	...	7 ins.

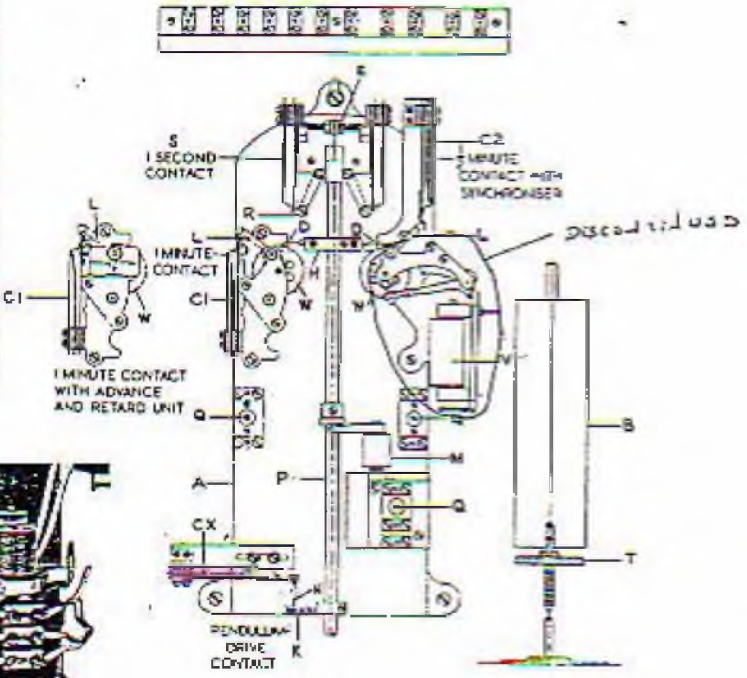
Weight (excluding dry cells) ... 56 lbs.

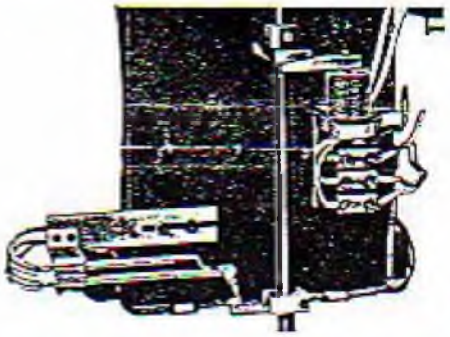
MAGNETA

MASTER CLOCK

The Magneta Master Clock can be fitted with five different types of Contact to transmit electrical impulses at regular intervals of 1-minute, 30 seconds, 10 seconds, 6 seconds and 1 second. Two, three or four different sets of contacts can be operated if necessary on the same master clock for different circuits or purposes.

The illustration shows the master clock movement in detail. The clock itself which embodies the well known " Hipp " principle, is driven by a 4½ volt dry battery which keeps the pendulum in oscillation by an occasional excitation of an Electro-Magnet " M." When the Trailing Nib "N" fails to swing clear beyond the Agate Block " K " the contacts "CX" momentarily close and energise the magnet.





HIPP TOGGLE DEVICE

One of the main features of this system is that the pendulum is only energised when the amplitude of its swing is reduced to a certain degree ; therefore whether the clock is fitted with one, or more sets of contacts the clock continues to show the same degree of accuracy as the pendulum is automatically energised as required.

" A " is the cast iron base plate and " P " the pendulum rod, of suitable length to beat seconds, suspended on crutch " E " by 2 light flexible leaf springs. On the

pendulum rod is clamped a bracket " H " on which are pivoted one or two light driving clicks " D " which, at each swing of the pendulum feed forward a count wheel " W ". The count wheel has one or more of its 30 tooth space cut extra deep so that when the click falls into a deep tooth, it engages a link " L " which swings on the saddle piece of a contact spring and allows the latter to be deflected by the motion of the pendulum, closing the main contacts, thus imparting an impulse to the line circuit. A backlash panel prevents the count wheel from rotating more than one tooth at a time.

C1 and C2 are the 1-minute and ½-minute contact springs, the contact arrangement consisting of 2 pairs of platinum or silver alloy points, one being for the main line circuit, the other for the shunt circuit (Quench Coil " Q " which is a non inductive resistance). The shunt contacts are so arranged that they open and close immediately prior to the main contacts breaking and thus sparking is suppressed.

The seconds contact springs " S " have only 2 leaves and one pair of contact points which close at each swing of the pendulum by means of two Rollers " R." The contacts are quenched by a condenser with series resistor connected across the 2 sets of contacts wired in parallel so that a second impulse is transmitted at each swing of the pendulum.

All contact springs, except the pendulum drive contacts are adjusted so that the impulse transmitted has a duration of 200 milliseconds minimum and 300 milliseconds maximum, this contact duration gives the current ample time to rise to its maximum value. This is important particularly in large circuits or where fairly heavy equipment, such as time recorders are in circuit, as the current grows to its full value gradually owing to the self induction of the circuit.

The pendulum " P " is of Invar steel, a nickel steel alloy having a negligible coefficient of expansion. The pendulum bob weighs 10 lbs.: the combination of rod and bob automatically compensates for any error due to the variation of temperature. The Bob is equipped with a large Rating nut " T " graduated into 60 divisions, each division representing a gain or loss of approximately 2 seconds in 24 hours.

PENDULUM BOB WITH RATING NUT

The Master Clock can be fitted with synchronizer, usually associated with the ½-minute contacts, the function of which is to enable the clock to keep in time with an external synchronizing source. Briefly the mechanism consists of a heart shaped steel cam,

MAGNETA

MASTER CLOCK

mounted on the count wheel and is caused to rotate to its zero position by means of an armature acted upon by an electro-magnet "V" energised by impulses received at regular intervals from an outside source.

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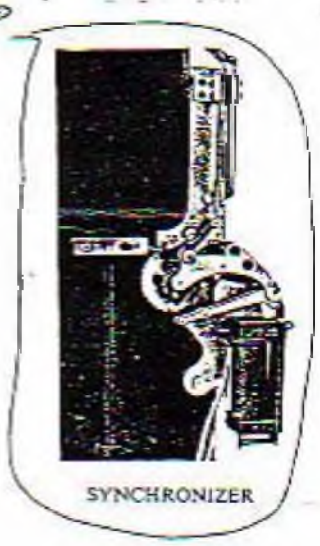

SYNCHRONIZER

ADVANCE/RETARD DEVICE

The Standard Master Clock is provided with a simple Advance/Retard device by means of which all clocks, etc., in the system can be simultaneously adjusted. If set to "Retard" it throws the link "L" out of action and no impulses are transmitted to the circuit. When set to "advance" the link operates the contacts every other second thus speedily advancing all the clocks, etc. The clock movement is mounted into a handsome Oak, Teak or Mahogany case with glass panelled door, with or without pilot dial. The M.37 Model is provided with a special compartment at the bottom of the case for housing the dry battery.