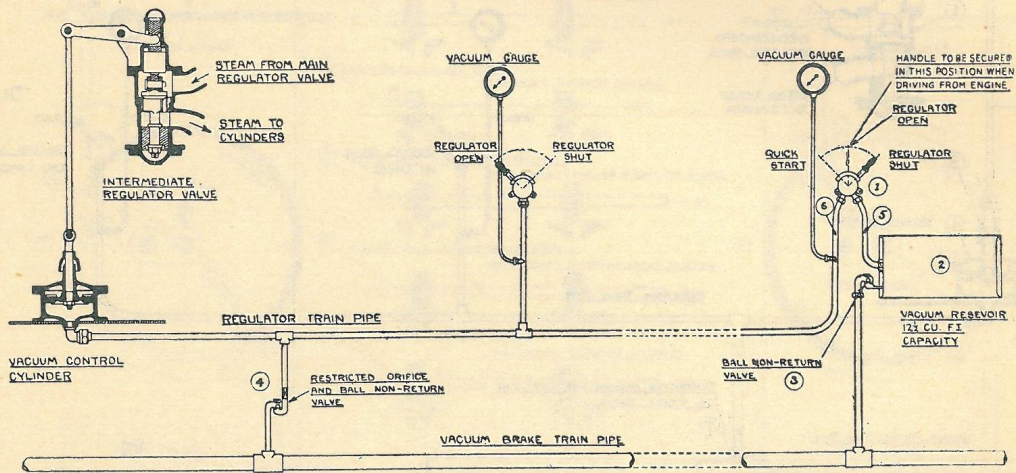


ENGINEMEN'S M.I.C. MOVEMENT

The Vacuum-Controlled Regulator, Quick Start Apparatus



THE simple type of vacuum-controlled regulator apparatus described last month is used extensively on branch lines where the service is more or less infrequent and loads are light so that trains of one or two vehicles will suffice. When trains must be made up of more vehicles, however, the simple apparatus is not so satisfactory, for due to the length and consequent larger internal volume of the regulator train pipe, the time lag when opening the regulator becomes objectionable due to the large body of air which must be extracted via the restricted connection to the vacuum brake train pipe on the engine.

With several vehicles in the train mechanical operation of the engine whistle by means of a cord passing along the carriage roofs is not reliable, and under such conditions a vacuum horn has to be employed on the driving coach. These horns cannot be used effectively with the simple apparatus, since if excessive variation of vacuum in the regulator train pipe and vacuum brake train pipe is to be avoided when the horn is sounded, a vacuum reservoir is necessary.

The quick start apparatus illustrated above was produced in order to overcome these defects, and to provide a form of control suitable for longer trains and more intense services. It will be seen that the engine fittings are substantially the same as for the simple apparatus, the only modification being the inclusion of the ball non-return valve (4) with the choke in the connecting pipe between the regulator train pipe and the vacuum brake pipe systems.

In the driving coach, however, the control valve (1) is modified so as to give three positions—SHUT, OPEN, and QUICK START. A vacuum reservoir (2) is also fitted which has an independent connection to the brake pipe, incorporated in which is a ball non-return valve (3).

The ports in this control valve are so arranged that with the handle in the "SHUT" position, air is admitted direct to the regulator train pipe destroying the vacuum therein, while at the same time the port leading to the reservoir pipe (5) remains closed. In "OPEN" position all air ports are closed so that the full working vacuum will be maintained in the control pipe, and the intermediate regulator valve will be held open by the control cylinder on the engine. When the handle is moved to "QUICK START" position the reservoir pipe (5) is placed in direct communication with the control pipe (6) so that the air in the latter is exhausted with greater rapidity into the reservoir, causing the vacuum control cylinder on the engine to respond much quicker.

When operating this apparatus to obtain the quick start effect, the control valve should be held in the quick start position only for sufficient time for the effect to be perceived, after which the handle should be moved back to the "OPEN" position, and adjusted till the required amount of regulator opening is obtained. The capacity of the reservoir is $12\frac{1}{2}$ cubic feet and is sufficient to give two or three quick starts in succession with a train of two or three vehicles.

The ball valve (3) prevents a loss of vacuum in the reservoir in the event of the brake pipe vacuum being destroyed. The vacuum horn, when fitted, is connected to the reservoir by means of a separate pipe having a spring loaded plunger valve for operating purposes.

When driving trains fitted with this apparatus from the engine end, both vacuum control handles should be chained in the "OPEN" position, and the engine driven from the main regulator handle. Under these conditions the intermediate regulator valve is prevented from closing during a brake application by means of the ball valve (4).