The use of smaller diameter copper tubes for central heating installations

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The use of mini-bore copper tubing for central heating systems was introduced by the Copper Development Association in 1967. The many thousands of installations now in service have fully justified the claims made in the early stages of the development of Mini-bore central heating systems, proving them to be efficient in use and significantly more economical in both labour and materials than conventional small-bore systems.

Layout schemes for open-tank and sealed-tank installations are shown in Figs. 1 and 2. Whilst both methods have their individual merits, the basic principle of feeding the radiators by means of $\frac{1}{4}$ in. diameter circuits from flow and return manifolds is the same in either case. It is, however, by no means necessary to connect all the radiators to a single pair of manifolds situated near the boiler. Although this arrangement is often advantageous for a bungalow, for buildings of one or more storeys it may well be more convenient and economical to install a pair of manifolds for each floor, and by siting them in the most central and accessible position the length of the $\frac{1}{4}$ in. diameter copper circuits can be kept reasonably short, thereby saving material and reducing frictional resistance in the circuits to a minimum.

A comparison with the conventional two-pipe small-bore system will indicate that no fundamental change has been made. The conventional arrangement of pipework generally consists of a flow and return circuit extending to the index radiator with flow and return branches to intermediate radiators. In the Mini-bore system each radiator is connected directly to a manifold which is positioned to ensure maximum economy of material.

Water velocity and noise level

Where soft copper tube is used water speeds can be increased to as much as 5 ft/s without producing undue noise. It must be appreciated that when higher water velocities than this are reached there may be some danger of erosion.

Carrying capacity. To increase the carrying capacity

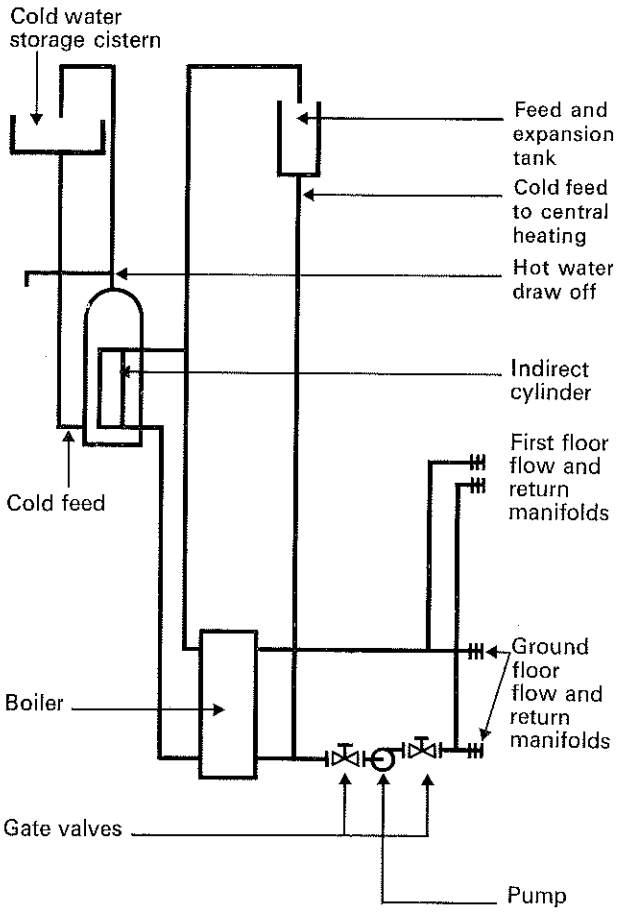


Fig. 1 Layout for a typical open-tank system.

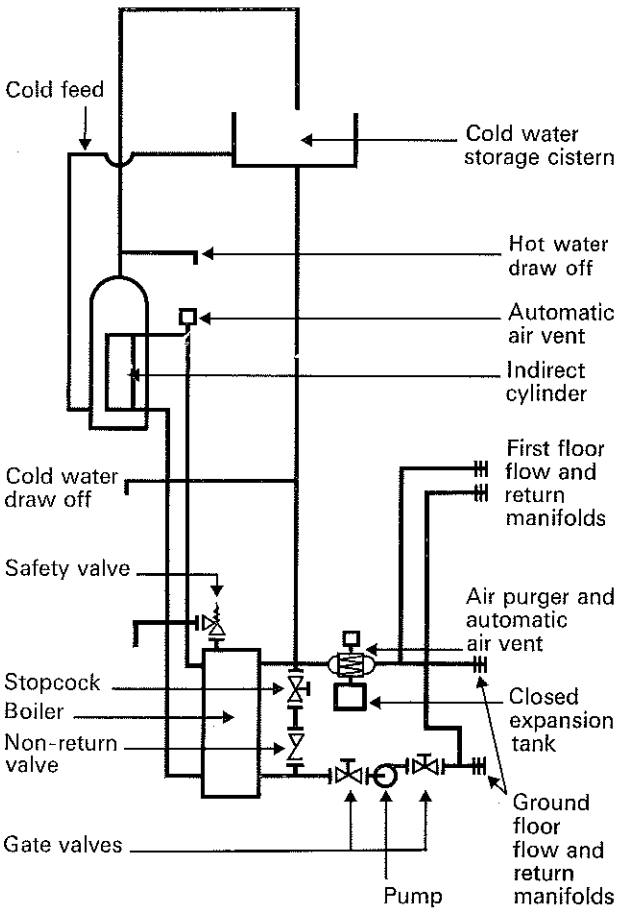


Fig. 2 Layout for a typical sealed-tank system.