TB 61
Identification of ductwork

Note

The information given in this document is for the guidance of mechanical service contractors, consulting engineers, etc. The identification of duct work does not form part of the work carried out by the ductwork contractor unless called for in the job specification.

General

With the increasing complexity of ventilation and air conditioning systems, it is important to ensure the ready identification of ducts for the purposes of commissioning, operation and maintenance of these systems. The purpose of the following recommendations is to lead towards the use and standardisation of a system of identification for ducts, that will benefit designers, contractors and clients.

This updated BESA guidance revises the previously used categories and identifying colours, with enhanced definition of conditioned and extract air streams. Use of grey as a colour identifier has been removed to allow for an alternative symbol that provides greater contrast against neighbouring insulation and ductwork materials.

Scope

These recommendations deal with the identification of ducts for ventilation, air conditioning and simple industrial exhaust systems. They do not include piped gas systems (dealt with in BS 1710) nor with ductwork systems for industrial processes, although the general considerations and intentions could be extended with the agreement of the client to cover such systems.

The method is designed to identify the air being conveyed, the direction of flow, the destination of the air and/or of the plant where the air was treated. With small or simple plants, it may not be strictly necessary to provide identification because the function is apparent, but it is considered advisable to do so because this will increase familiarity with the labelling system and also because the nature and direction of airflow may not always be apparent.

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Definition of ductwork

Ductwork, or ducting, is any system of conduits that allow for the delivery, removal or air transfer within a structure or building. It enables the distribution of fresh air, exhaust air or ventilation air streams throughout a building, in order to maintain both indoor air quality and provide thermal comfort for the occupants.

Ductwork is typically formed from galvanized steel, aluminium or plastic materials and may be in the form of rigid wall or flexible (plastic) materials. A ductwork system also includes component parts or fittings such as inlets, outlets, turning vanes, dampers, hangers and supports, etc.

Ductwork is classified according to the material of construction and the air leakage limits as set out in the following BESA publications:

- DW/144 for Sheet Metal Ductwork, and
- DW/154 for Plastic Ductwork

Note that for healthcare projects, ductwork and identification should align with HTM 03-01.

Location of ductwork identification

To be effective the identification must be placed where it can be easily seen and at positions where identification will be required. To ensure that the symbols are seen, the following points should be considered:

1. the symbols should be on the surfaces which face the positions of normal access to the completed installation
2. the symbols should not be hidden from view by structural members, other ducts, plant, or other services distribution systems
3. the symbols should be placed where there is adequate natural or artificial light

Identification systems will be needed mainly in the plant room and risers. Symbols should occur frequently enough to enable easy identification and to avoid the need for ducts to be traced back. However, to ensure visibility, these would often be fitted after other services have been installed - potentially making access difficult. Therefore, they should be placed where it is feasible. Symbols should be placed at the following locations:

- at wall and floor penetrations,
- at least once in every room or void space, at intervals not exceeding 3m,
- at any service and access point to the distribution system,
- at points where the distribution system has reduced to a single duct.

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Identification colours

The choice of colours has been based on the need to provide:

1. strong contrasting colours which are recognisable even if covered with dust
2. a contrast between the symbol colour and the base colour of the duct. Typical base colours may be metallic grey for galvanised or aluminium sheet, or foil sheathing, or the white, pale grey, or buff paint on the insulation. These colours form a neutral background against which the recommended symbol colours stand out clearly and prominently.

The recommended colours are given in table 1 below. The colour coding indicates the type of air being conveyed.

Table 1 Recommended duct identification colours

Type	Colour	Colour Ref. No. (BS 4800)
Cooled air	Blue	18 E 53
Heated air	Red	04 E 53
Fresh, outside air	Green	14 E 53
General extract air	Yellow	10 E 55
Kitchen extract air	Dark Blue	20 E 56
Foul/dirty extract air	Brown	06 C 39
Conditioned air	Red/Blue	04 E 53 18 E 53
Hazardous air	Yellow/ Black	10 E 55 00 E 53

For conditioned air, two symbols (one red, 1 blue) may be used, or a single symbol coloured part red, part blue, as shown below in Fig.1.

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Fig. 1 Duct identification colours

If required, other colours may be used and should be clearly identified on an Explanatory Chart (see below). If a finer grading than that given in table 1 is required, as for instance in a laboratory with two separate contaminated air exhaust systems, it is recommended that the type colour is used with an additional identification marker e.g. a stripe of a second colour. Where the duct contents constitute a hazard, a symbol as given in BS 1710 should be added to the type colour.

Direction of flow

The form of symbol chosen indicates the direction. It is an equilateral triangle {see fig. 2 below) with one apex of the triangle pointing in the direction of airflow. Where the boundaries of the duct are not visible, two triangles should be arranged in line ahead to indicate the direction of flow. The size of the symbol will depend on the size of the duct and the viewing distance. The recommended minimum size for normal use is 150mm length of side.

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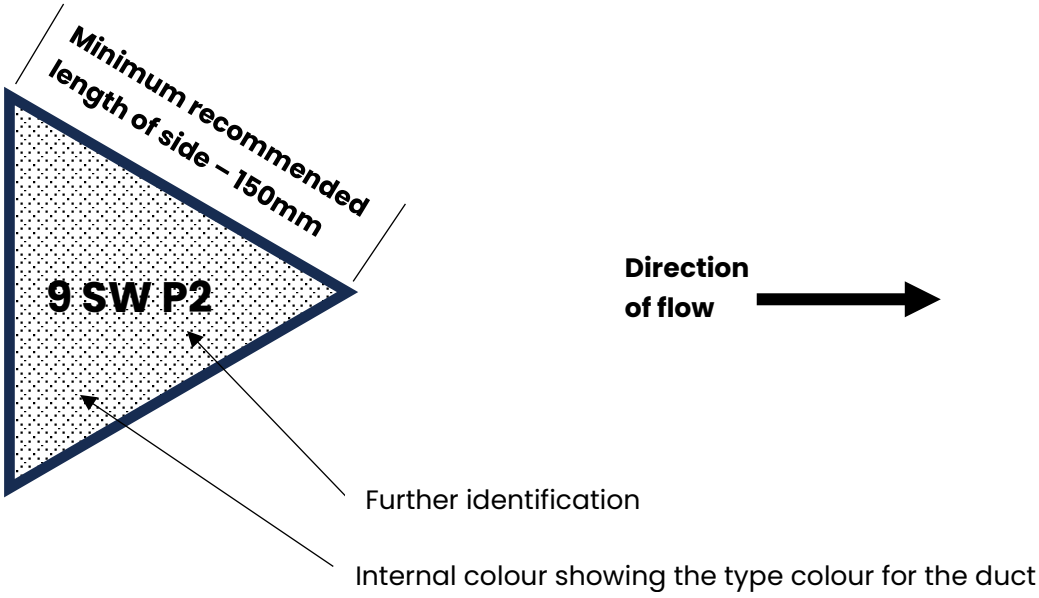
Fig. 2 Example of a duct identification symbol



Further identification

On small or simple installations where there is one plant and one or two zones and therefore little chance of confusing the ducts, it will not be necessary to provide identification other than the colour symbol. On large complex installations with many zones, widely branched distribution systems or several plants, further identification is necessary. In this connection a plant refers to the ductwork and equipment associated with one particular fan.

The further information to be given will normally be the space served by the duct and in some cases the associated plant. The information should be given as briefly as possible using commonly accepted forms such as a number indicating the floor of a building. The plant identification should always be preceded by the letter 'P' to avoid confusion between the number of the floor and the number of the plant. The plant itself must be clearly numbered to correspond. Letters to indicate Supply, Flow or Extract, etc., should not be added because identification will be clear from the colour symbol used. This avoids any potential confusion between the use of S for supply and S for South that could occur.

Where identification of the space is by room number, this must be agreed with the user who otherwise may have numbered the rooms differently. Some examples of further identification systems are given in table 2.

Table 2 Examples of further identification symbols

Code	Information given
9 SW P2	9th Floor, South West Zone, Plant 2
Comp 2 P2	Computer 2, Plant Two
3 Lab 8 P4	3rd Floor, Laboratory 8, Plant Four
2 Op Th 2P1	2nd Floor, Operating Theatre 2, Plant One
Bay 5 N P5	Bay 5, North End, Plant Five

The letters and numbers should be in either black or white, which ever gives the better contrast. They should be marked on the colour symbol or immediately adjacent to it. The size of the figures will depend on how easily they can be seen but should not be less than 25 mm high.

Explanatory chart

It is recommended that an explanatory chart should be kept in the plant room or other convenient place. The chart should show and explained the colour symbols used on the installation and where appropriate the figure and letter codes used for further identification.

Method of application of symbols

The symbol must be permanently affixed. Several methods are available for applying the symbols:

1. painting, using stencil letters and figures
2. self-adhesive plastics or transfers with a water-soluble backing. (It is important to ensure that the service is smooth and clean and that the adhesion will not deteriorate due to the surrounding atmosphere)
3. purpose made plastic or metal labels.

Post-installation checks

As part of their scope of activities, commissioning engineers should check and confirm that all applied symbols and labels are correctly emplaced and securely attached.

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