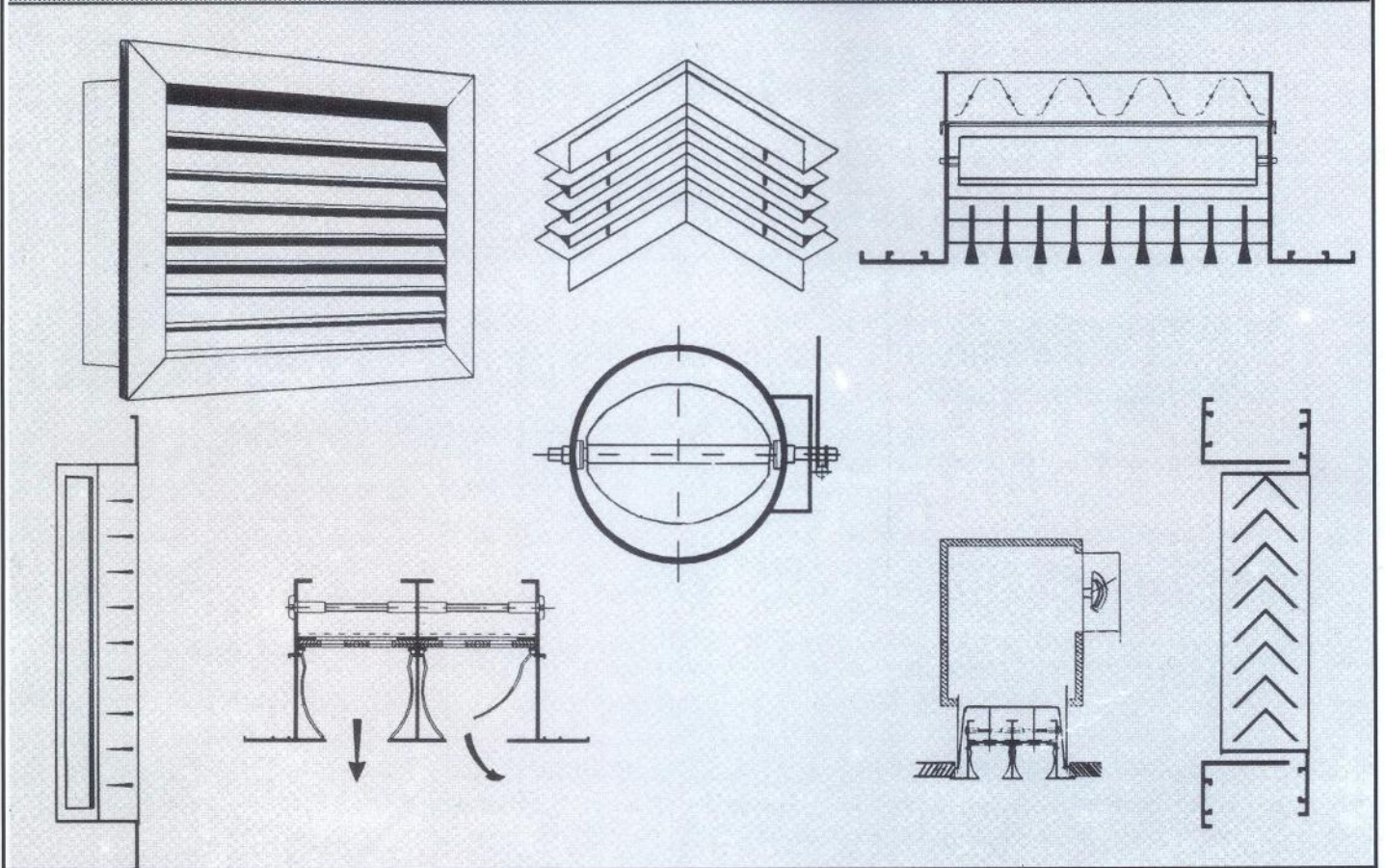


AIRTRON



CHAPTER - 00 TECHNICAL TERMS



AIRTRON L.L.C.
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As Airtron are continuously improving the products, they reserve the right to make changes without notice.

Air distribution

The transportation of a specified air volume to or from the conditioned space or spaces generally by means of ducts.

Air diffusion

Distribution of the air in a space, called the conditioned space, by means of devices, called AIR TERMINAL DEVICES, in a manner so as to meet certain specified conditions, such as air change rate, pressure, cleanliness, temperature, humidity, air velocity and noise level.

Supply

The air flow entering the conditioned spaces.

Return (recirculation)

The air volume leaving the conditioned space and returned to air treatment system.

Exhaust

Exhaust may be implemented by one or more of the following methods:

- a. *Extraction:* exhaust in such a manner that the air is discharged in to the atmosphere.
- b. *Relief:* exhaust in such a manner that the air is allowed to escape from the conditioned space if the pressure in that space rises above a specified level.
- c. *Transfer:* exhaust in which air passes from the conditioned space to another conditioned space.

Volume control dampers.

Components installed in to air ducts or used in conjunction with air terminal devices which permit modification of the air resistance of the system and consequently a change in the air flow rate, and control of air volume in addition, complete shut-off of the air flow

Type of dampers:

Multi leaf dampers, comprising a number of blades or shutters of parallel or opposed leaf type.

Single leaf dampers, commonly called splitter damper, the flap being mounted at one end.

Hit-and-miss dampers, having two or more slotted slides.

Butterfly dampers, with two flaps in "V" arrangement.

Fire dampers

Components which are inserted in an air distribution system between two fire separating compartments, and are designed to prevent propagation of fire. they are kept open by a mechanical restraint, whose effect is nullified under specific conditions. The damper is then closed automatically.

Sound attenuators (silencers)

components which are installed in to the air distribution system and designed to reduce airborne noise which is propagated along the ducts.

Air terminal devices

A device located in an opening provided at the boundaries of the conditioned space to ensure a predetermined motion of air in this space.

Supply Air terminal devices

An air terminal device through which air enters in to a conditioned space. It usually consist of one or several deflecting members which ensure reduction of air velocity in the zone between the air terminal device and the conditioned zone as well as efficient mixing of the supply air with the air in the conditioned space.

Moreover supply air terminal device also determine the direction of air jet(s)



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Return / Exhaust air terminal devices

Air terminal device through which air leaves the conditioned space.

Air diffuser

Supply / Return air terminal device, usually installed in the ceiling, generally of square, rectangular, circular shapes and composed of divergent deflecting members.

Slot air terminal device

A device with one or several slots with an aspect ratio of 10 : 1 or more for each slot (the aspect ratio is the ratio of the length to the width of the closed rectangular opening.

A slot may or may not have an adjustable member to vary the direction of the air jet(s) or air flow rate

Grille

An air terminal device with multiple passages for the air.

Adjustable grille

A grille with louvers or blades which can be adjusted to vary the direction of the discharged air .

The louvers are normally either horizontal or vertical / horizontal as well as vertical.

Register

A combined grille and damper assembly.

Linear air terminal device

Air terminal device (grille) with an aspect ratio of 10 : 1 or more.

Nominal size of an air terminal device

The nominal size is the nominal value of the dimension of the opening which has been prepared for mounting the air terminal device in it.

Effective area (of an air terminal device)

The smallest net area of an air terminal device used by the air stream in passing through the air terminal device.

Ak value (of an air terminal device)

Quotient obtained by dividing a measured air flow rate by a measured air velocity according to a specific process and a specific instrument.

Primary air flow rate

Volume of air entering a supply air terminal device within a time unit.

Induction

Process by which the primary air sets into motion an air volume, called secondary air, in the room

Induction ratio

Ratio of the total air flow rate to the primary air flow rate

Total air flow rate

Sum of the primary and secondary air flow rates which are moved in the conditioned space.



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TECHNICAL TERMS

Return / exhaust air flow rate

Volume of air leaving an return / exhaust air terminal device within a time unit.

Envelope

The geometrical surface of the points of an air jet, corresponding to a determined value of the measured air velocity, this velocity is generally called "Terminal Velocity".

Throw (for a supply air terminal device)

The maximum distance between the center of the core and a plane which is tangent to a specified envelope and perpendicular to the intended direction of flow (fig. 1)

Under isothermal conditions, the throw is generally referred to the envelop corresponding to 0.25 m/s for zero supply air temperature differential.

Spread (Ls)

(for a supply air terminal device)

Maximum distance between two vertical planes tangent to a specified envelope and perpendicular to a plane through the core center. (fig.2)

Under isothermal conditions, the spreads are generally referred to the envelop corresponding to 0.25 m/s for zero supply air temperature differential.

Drop (Ld)

(for a supply air terminal device)

Vertical distance between the lowest horizontal plane tangent to a specified envelope and the core center.

The drop is generally referred to the envelope corresponding to 0.25 m/s for a specified negative value of supply temperature differential (fig.1)

Coanda effect

Also called ceiling or wall effect. Tendency of an air stream to follow a wall plane when the stream is in contact with the wall.

This effect increases the throw and reduces drop.

Dynamic pressure (pd)

Pressure produced by the movement of an air stream, expressed in mm H₂O or Pa (N/m²)

$$pd = 0.6 V^2 \text{ (Pa)}$$

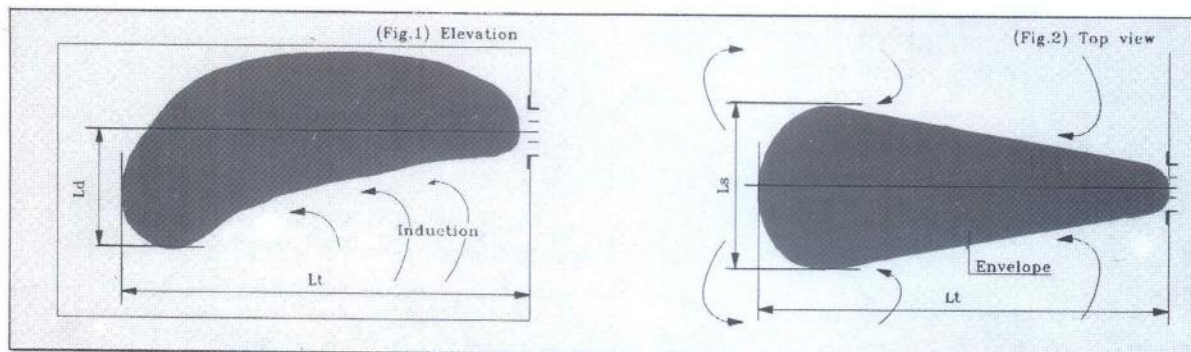
$$pd = 0.061 V^2 \text{ (mm H}_2\text{O)}$$

Static pressure (ps)

Pressure in side the duct which is necessary to overcome the friction resistance.

Total pressure (pt)

Sum of the dynamic and static pressure.



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