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An American National Standard

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Standard Practice for HVAC Duct Shapes; Identification and Description of Design Configuration¹

This standard is issued under the fixed designation F 1005; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the identification of design configurations and descriptive nomenclature for sheetmetal HVAC ductwork shapes frequently used in shipbuilding. This practice also covers parametric dimensions of these shapes.

1.2 This practice does not cover the location of seams or joints within a shape or the method of joining shapes together.

1.3 Since this practice is not measurement sensitive, it is applicable whether inch-pound or SI metric dimensions are used.

1.4 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Terminology

2.1 Descriptions of Terms Specific to this Standard:

2.1.1 *branch*—portion of a duct system connection to a main duct.

2.1.2 *elbow*—a fitting used to change direction of air flow.

2.1.3 *flat oval*—cross-section that has flat sides and semi-circular ends.

2.1.4 *long axis* of flat oval curved so that the flat sides of the flat oval remain in a plane.

2.1.5 *offset*—fitting that changes the location of the duct with the line of the duct remaining parallel.

2.1.6 *ogee*—a smoothly curved type of offset. The inside curve of each end is tangent to the outside curve of the other end.

2.1.7 *radius corner*—Cross-section that is generally rectangular, but with the corners softened to a radius.

2.1.8 *rectangular*—rectangular or square cross-section.

2.1.9 *reducer*—a fitting that changes the size but not the cross-section type of duct.

2.1.10 *round*—circular cross-section.

2.1.11 *short axis of flat oval*, curved so that the flat sides of the flat oval correspond to the curve.

2.1.12 *splitter*—internal part of some elbows and offsets; sometimes required in diverging transitions. Used to provide more uniform velocity and distribution of air flow. The

number and location of splitters is determined by calculation or from a nomograph.

2.1.13 *straight*—duct that remains constant in cross-section and size throughout its length.

2.1.14 *throat*—wrapper around the inside of a fitting.

2.1.15 *transition*—fitting that changes the cross-section type of the duct.

2.1.16 *vane*—internal part of vaned turns. Used to provide more uniform velocity of air flow. Configuration, number, and location of vanes is determined from drawing, NAVSHIPS No. S3801-385260.² The direction of airflow must be marked on vaned turns.

2.1.17 *vaned turn*—a fitting containing vanes that is used to change the direction of air flow.

2.2 Variables Specific to This Standard:

A—Angle. Included angle of an elbow, branch, vaned turn, or slant-top fitting.

AI—Air In indicates the length of the straight portion of a vaned turn in the “air in-flow” side.

AO—Air Out indicates the length of the straight portion of a vaned turn on the “air out-flow” side.

B—Distance from the intersection of the center lines of a branch and the main duct to the end of the main duct.

CY—Distance between centers of a Y branch.

D—Depth of a part.

DB—Depth of a branch.

DIA—Diameter of a part.

DIAB—Diameter of a branch.

DIA1—Major diameter of a part.

DIA2—Minor diameter of a part.

D1—Major depth of a part.

D2—Minor depth of a part.

F—Flat section that softens the corner of a vaned turn.

L—Length of a part.

LB—Length of a branch from the end of the branch to the point where the centerline of the branch intersects the centerline of the main duct.

1.1—Major length of a Y branch.

1.2—Minor length of a Y branch.

O—Offset in one direction.

R—Radius of a bellmouth.

RC—Radius corner.

RV1—Radius of first splitter at V extension.

RV2—Radius of second splitter at V extension.

¹ This practice is under the jurisdiction of ASTM Committee F-25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery.

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² Drawing: Naval Sea Systems Command (NAVSEA) NAVSHIPS S3801-385260 Vanes Channels Ventilation Vane, available from Commander, Portsmouth Naval Shipyard, Naval Engineering Drawing Support Activity, Code 202.2, Portsmouth, NH 03804-5000.

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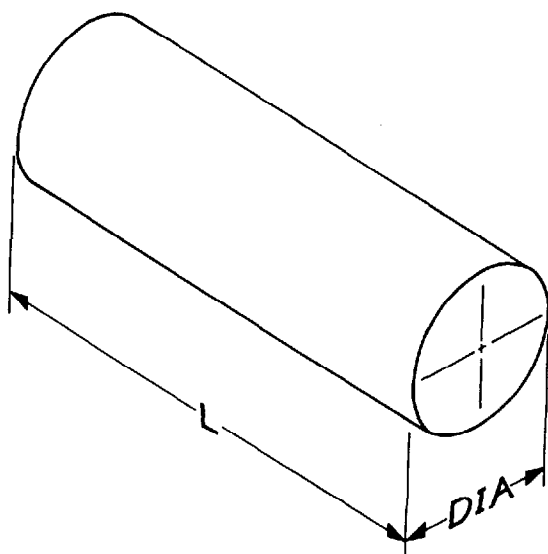


FIG. 1 Shape 1.1—Straight-Round

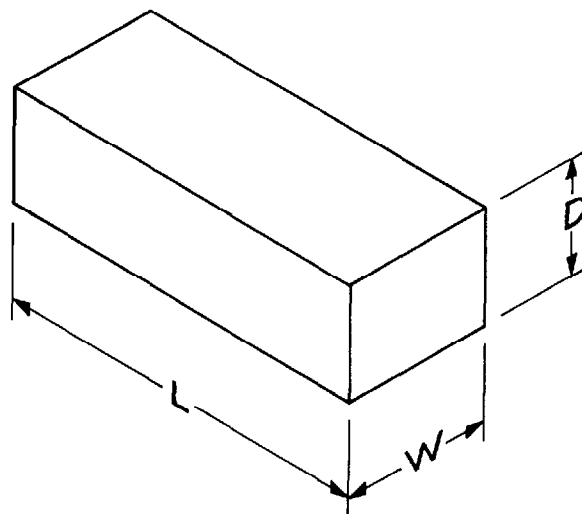


FIG. 3 Shape 1.3—Straight-Rectangular

RV3—Radius of third splitter at V extension.
RZ1—Radius of first splitter at Z extension.
RZ2—Radius of second splitter at Z extension.
RZ3—Radius of third splitter at Z extension.
R1—Radius of first splitter.
R2—Radius of second splitter.
R3—Radius of third splitter.
S1—Distance of first splitter from the outside curve of an ogee offset.
S2—Distance of second splitter from the outside curve of an ogee offset.
S3—Distance of third splitter from the outside curve of an ogee offset.

TR—Throat radius is the radius of the inside surface of an elbow or offset. Normally *TR* is equal to the width (of a rectangular elbow).

TR1—Major throat radius of a reducing offset.
TR2—Minor throat radius of a reducing offset.
V—Extension on one end of a part, opposite from *Z*.
W—Width of a part.
WB—Width of a branch.
W1—Major width of a part.
W2—Minor width of a part.
X+—Offset of a transition or reducer toward the right along the X-axis, looking down from above.
X-—Offset of a transition or reducer toward the left along the X-axis, looking down from above.

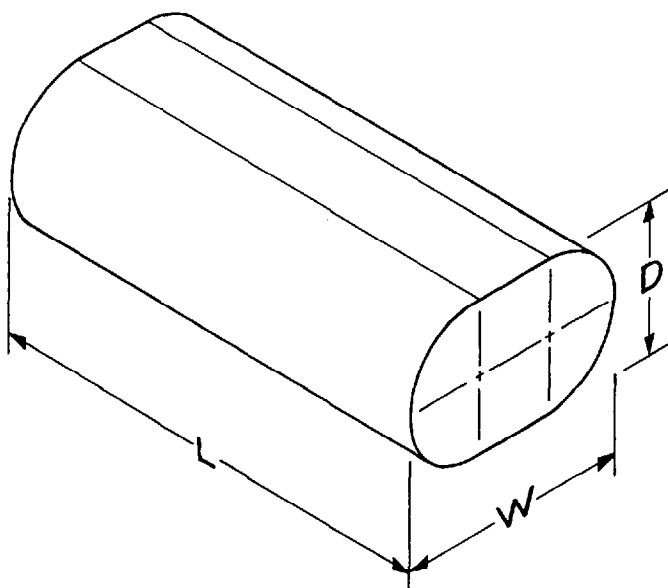


FIG. 2 Shape 1.2—Straight-Flat Oval.

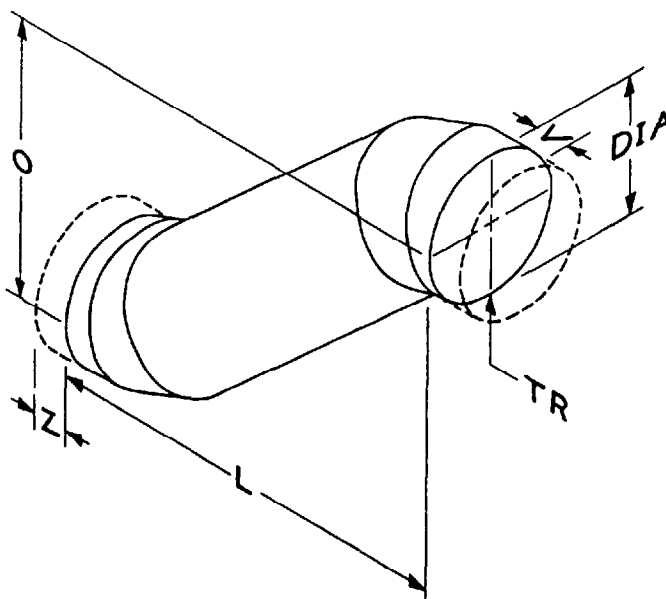


FIG. 4 Shape 2.1—Offset-Round