

# STANDARD SPECIFICATIONS FOR RIGID POLYVINYL CHLORIDE DUCT

All Leatherwood Plastics Systems are designed in accordance with the recommended practice of the American conference of Governmental Industrial Hygienists and fabricated in accordance with (SMACNA) Sheet Metal and Air Conditioning Contractors National Association manual for Thermoplastic Construction.

All ventilation duct to be fabricated of Type I, grade 1, normal impact PVC. Extruded Type 1 PVC duct 6" diameter to 18" diameter will be acceptable where applicable.

All PVC used in fabrication is unplasticized and conforms to U.S. Commercial Standard CS-201-55. All PVC conforms to ASTM standard D-635 and has flame spread rating of 20.

## 1. MATERIAL REQUIREMENTS

- A. Ductwork and hoods shall be constructed of virgin unplasticized polyvinyl chloride extruded Sheet Type I (6200) conforming with the U.S. Department of Commerce, Commercial Standard CS-201-55.
- B. Flanges, damper rods, and special attachments shall be fabricated from standard rigid unplasticized polyvinyl chloride material utilizing sheets, rods, angles, flats, or other standard available sections. Rigid PVC shall be Type I (6200) as previously specified.

## 2. DUCT CONSTRUCTION – POLYVINYL CHLORIDE

- A. Round Duct
 

Duct Diameter (Inches)	Wall Thickness (Inches)
up to 18	Extruded 3/16"
19 to 30	1/8"
31 and up	1/4"

Round ductwork shall be cold rolled with longitudinal seams butt welded. Elbows and bevels shall have minimum centerline radius of 1½ times duct diameter when possible. Elbows shall have at least three (3) sections and bevels shall be pieced proportionately. Molded or formed elbows and bevels with 1¼ centerline radius will be acceptable. Transition pieces in mains and submains shall be tapered. A taper of 5 inches in length for each 1 inch change in diameter shall be held whenever possible. Branches or tees shall enter the main at the large end of the transition and at an angle not exceeding 45 degrees. Branches shall not be positioned so as to enter the main diametrically opposite.

- B. Rectangular Ductwork
 

Max Duct Dimensions (Inches)	Wall Thickness (Inches)
up to 18	1/8"
19 to 30	3/16"
31 and up	1/4"

Straight duct sections shall have formed corner construction for maximum strength. Transitions and tapers shall have formed corners wherever practical. Elbows shall have welded corner construction and shall be fabricated with a center line radius equal to at least 1 ½ times the dimension of the elbow side. Branches and tees shall be positioned to enter the main close to the large end of the transition at an angle not to exceed 45 degrees. Branches shall be positioned to avoid entering the main diametrically opposite.

## 3. FLANGES, GASKETS AND DUCT CONNECTIONS

- A. Flanges
 

	a. up to 40"	b. 41" and up
Flange thickness	3/16"	1/4"
Flange width	1 ½"	2"
Bolt hole centers	3"	3"
Bolt hole diameters	5/16"	7/16"
Bolts	1/4"	3/8"

Flanges may be thermal formed from Type I, II, Rigid PVC or may be fabricated from flat rigid PVC sheet cut to size and attached to the duct sections. Flanges shall be continuously welded as described under Paragraph 4 entitled "Welding". Flange faces shall be continuously back welded and ground smooth. Rectangular ductwork exceeding 30 inches in either dimension shall be reinforced with a standing edge or girth band of same thickness and width as the flanges or with extruded or formed PVC angles 2" x 2" x 1/4" attached by continuous welding to the exterior surface around the full perimeter, spaced not less than 4'0" on center. Bolts and nuts shall be stainless with stainless washers placed beneath the head of bolt and nut.

- B. Gasket material shall be fabricated from flexible, plasticized PVC material and shall be of sufficient thickness to properly seal the joint. In no case shall gasket material be less than 1/8" inch thick. Gasket shall be fabricated with unbroken circumference or perimeter, with bolt holes punched the same diameter as bolts.

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DIVISION OF LEATHERWOOD, INC.

**DESIGN, PLASTIC FABRICATION AND PROCESS EQUIPMENT FOR THE SEMICONDUCTOR, PRINTED CIRCUIT BOARD AND PLATING INDUSTRIES**

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4. WELDING

Welding shall be done by the hot gas fusion welding method utilizing PVC filler rod as manufactured for this purpose. Welding shall be performed by workmen adequately trained in the art of PVC welding based on the standards for welding as established by the Society of the Plastics Industry, Inc. of 250 Park Avenue, New York, New York. Ductwork, hoods and similar air passage enclosures must be finished, completely air and water tight with smooth interior surfaces. Ductwork shall be completely free from cracks, distortions or other imperfections. The table following outlines the minimum number of welding passes required:

5. HANGERS AND SUPPORTS

- A. Ducts shall be supported at intervals not exceeding 8'0" on center. Bolts, washers, hangers and other attaching hardware fabricated from stainless steel where required.
- B. Hangers are to be securely fastened to avoid vibration and care shall be taken to install hangers so as to avoid creating conditions of stress in the finished installation.

B. Flexible connections shall be fabricated from flexible plasticized PVC using material not less than 1/8" inch thick. Connections shall be fabricated with the longitudinal seam lapped not less than 1 1/2 inches and fusion welded.

6. FLEXIBLE CONNECTIONS

- A. Flexible connections shall be furnished and installed in accordance with this specification at equipment locations and at expansion joints where required.

C. Plasticized flexible connections shall be welded to ducts or equipment collars. In cases where flexible connections are installed as expansion joints, a suitable support or hanger shall be provided at each end of the flexible connection. In cases where flexible connections are provided for connections to fans or equipment, a support or hanger shall be provided at the unsupported location.

D. In general, ductwork is to be supported independently of hoods, fans, tanks or other equipment.

	Wall Thickness (Inches)	Rod Diam. (Inches)	Min. Number of Welding Passes
Longitudinal Seams	1/8"	5/32"	One & One
	3/16"	5/32"	Three & One
	1/4"	5/32"	Three & Three
Circumferential Seams	6" Dia. – 12" Dia. (3) welds outside		
	13" Dia. – 60" Dia. (3) welds outside and (1) weld inside		
	61" Dia. And up – (3) welds inside and outside		
Flanges and Couplings	(3) welds outside and (1) weld inside		

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