ICC-ES PMG Product Certificate

PMG-1171

Effective Date: November 2021

This listing is subject to re-examination in one year.

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CSI: DIVISION: 23 00 00—HEATING, VENTILATION AND AIR CONDITIONING (HVAC)
Section: 23 31 00—HVAC Ducts and Casings

Product certification system:

The ICC-ES product certification system includes testing samples taken from the market or supplier's stock, or a combination of both, to verify compliance with applicable codes and standards. The system also involves factory inspections, and assessment and surveillance of the supplier's quality system.

Product: Underground Single Wall & Double Wall Insulated Duct for HVAC Direct Burial Applications
Underground Single Wall Duct for Under Ground Vehicle Exhaust Direct Burial Applications

Listee: Monoxivent
1306 Mill Street
Rock Island, IL 61201
www.monoxivent.com

Additional Listee:

Appalachian Plastics Inc.
34001 Glove Road
Glade Spring, VA 24340

Compliance with the following codes:

2021, 2018, 2015, 2012 and 2009 *International Mechanical Code*® (IMC)
2021, 2018, 2015, 2012 and 2009 *International Residential Code*® (IRC)
2021, 2018, 2015, 2012 and 2009 *Uniform Mechanical Code*® (UMC)*
2019, 2016, 2013, 2010 and 2007 *California Mechanical Code*® (CMC)
2015, 2010 National Building Code of Canada® (NBC)**

**Uniform Mechanical Code is a copyrighted publication of the International Association of Plumbing and Mechanical Officials.*
*** National Building Code of Canada is a copyrighted publication of the National Research Council Canada*

Compliance with the following standards:

ICC-ES LC1014-2016, PMG Listing Criteria for Underground Plastic Air Ducts
ICC-ES EG290, Evaluation Guideline for Underground Plastic Air Ducts
ASTM D2412-2021, Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
ASTM E84-2021a, Standard Test Method for Surface Burning Characteristics of Building Materials
UL 723 11th Edition Sept 2018, Test for Surface Burning Characteristics of Building Materials
ASTM C518-2021, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
NSF Protocol P374-2010, Air Duct Thermal Efficiency Performance

Identification:

The Monoxivent underground duct and fittings described in this listing are identified by a permanent label bearing the manufacturer's name (Monoxivent) and/or trademark, the product name, model number and the ICC-ES PMG listing mark.

Installation:

Installation of Monoxivent underground HVAC Duct and fittings must comply with the manufacturer's published installation instructions and the applicable codes.

Flood Plain Elevation: Product was tested to withstand a pressure equivalent to 12 feet water column pressure for 7 days with no leakage. Product may be installed right on the sub-grade of excavation without any further sub material being required except when it is bedrock then a sub soil such as sand or construction grade fill or pea gravel may be used under the duct.

Models:

Underground HVAC Duct and Fittings:
The Monoxivent underground HVAC duct and fittings are an underground air duct and fitting system for use in forced-air heating and cooling systems in accordance with Section 603.8 of the IMC, Section M1601.1.2 of the IRC, or Section 602.0 of both the CMC and the UMC, as applicable. See Table 1, below.

Single wall ducts and fittings are made of fiberglass reinforced thermoset resin. Double wall ducts and fittings are made of fiberglass reinforced thermoset resin as inner and outer layers, with closed cell polyurethane foam inserted in-between as the insulation material. Both single wall and double wall straight ducts have a minimum pipe stiffness of 8 psi (55kPa) at 5 percent deflection when tested in accordance with ASTM D2412. See Table 2, below.

Surface Burning Characteristics: Fiberglass reinforced thermoset resin has a flame spread index of 25 or less and a smoke development index of 50 or less when tested in accordance with ASTM E84. Closed cell polyurethane foam complies with section 2603.3 of the *International Building Code*® and has a flame spread index of 25 or less and a smoke development index of 450 or less when tested in accordance with ASTM E84.

Thermal Resistance: When tested in accordance with ASTM C518, single wall with a total thickness of 0.125 inch has a thermal resistance value of R1; double wall with a total thickness of 1.25 inches (1 inch polyurethane foam enclosed by a 0.125 inch of fiberglass inner and a 0.125-inch fiberglass outer layer) has a thermal resistance value of R6.

Thermal Distribution Efficiency (TDE): When tested to NSF Protocol P374, the Monoxivent Underground HVAC single wall non-insulated duct, in 10 inches in diameter and greater, exhibited equivalent TDE to a spiral steel reference duct surrounded on all sides with R-10 rated insulation.

The Monoxivent underground HVAC duct and fittings are designed for use in systems with a maximum rated positive pressure equivalent to 10-inch water column and a maximum rated negative pressure of 5-inch water column in accordance with Section 603.3 of the IMC.

Underground Vehicle Exhaust Duct and Fittings
Single wall ducts and fittings made of fiberglass reinforced thermoset resin having a flame spread index of 25 or less and a smoke development index of 50 or less when tested in accordance with ASTM E84, and having a stiffness that exceeds the requirements in ICC-ES LC1014 when tested to ASTM D2412 at elevated temperatures (See Table 3 for test result.), are suitable for use to convey vehicle exhaust gases in accordance with section 510.8 of IMC. Material compatibility and suitability are subject to evaluation and approval by authority having jurisdiction.

The Monoxivent underground Vehicle Exhaust duct and fittings are designed for use in systems with a maximum rated negative pressure of 10-inch water column.

Conditions of Listing:

1. Designs using Monoxivent underground HVAC duct and fittings must be limited to systems with a maximum air temperature of 150˚F (66˚C) at the discharge of the unit entering the duct system. Sizing must be in accordance with Section 603.2 of the IMC, Section M1601.1 of the IRC, or Section 601.2 of both the CMC and the UMC.
2. For the purposes of this evaluation, Monoxivent underground HVAC and Vehicle Exhaust duct and fittings must be installed underground or embedded. Above ground applications are outside scope of this report.
3. The design of concrete slabs with an embedded air duct is beyond the scope of this evaluation.
4. Underground air duct pipes located below the design flood elevation must be designed and installed to resist hydrostatic and hydrodynamic loads and stresses, including the effects of buoyancy, during the occurrence of flooding to the design flood elevation, in accordance with Section 603.13 of the IMC, Section M1601.3.8 of the IRC, or Section 604.6 of both the CMC and the UMC, as applicable.
5. The maximum depth below Base Flood Elevation (BFE) in which the duct can be installed flat on grade based on testing per LC1014 Section 4.3.2 is 6 feet (1829 mm). For installation beyond 6 feet below BFE, Monoxivent underground HVAC Duct shall have a minimum slope of 1/8 inch per foot (10.4mm/m) to allow drainage to a point provided with access.
6. The Monoxivent underground HVAC and Vehicle Exhaust duct and fittings are under a quality control program with annual surveillance inspections by ICC-ES.

TABLE 1—SYSTEM COMPONENTS

Item Description	Model Number	I.D. (inches)	Thickness (inches)	Item Description	Model Number	I.D. (inches)	Overall Thickness (inches)
Single-Wall 45º Elbow	S064	6	0.125	Double-Wall 45º Elbow	D064	6	1.25
Single-Wall 45º Elbow	S084	8	0.125	Double-Wall 45º Elbow	D084	8	1.25
Single-Wall 45º Elbow	S104	10	0.125	Double-Wall 45º Elbow	D104	10	1.25
Single-Wall 45º Elbow	S124	12	0.125	Double-Wall 45º Elbow	D124	12	1.25
Single-Wall 45º Elbow	S144	14	0.125	Double-Wall 45º Elbow	D144	14	1.25
Single-Wall 45º Elbow	S164	16	0.125	Double-Wall 45º Elbow	D164	16	1.25
Single-Wall 45º Elbow	S184	18	0.125	Double-Wall 45º Elbow	D184	18	1.25
Single-Wall 45º Elbow	S204	20	0.1875	Double-Wall 45º Elbow	D204	20	1.25
Single-Wall 45º Elbow	S224	22	0.1875	Double-Wall 45º Elbow	D224	22	1.375
Single-Wall 45º Elbow	S244	24	0.1875	Double-Wall 45º Elbow	D244	24	1.375
Single-Wall 45º Elbow	S264	26	0.1875	Double-Wall 45º Elbow	D264	26	1.375
Single-Wall 45º Elbow	S284	28	0.1875	Double-Wall 45º Elbow	D284	28	1.375
Single-Wall 45º Elbow	S304	30	0.1875	Double-Wall 45º Elbow	D304	30	1.375
Single-Wall 45º Elbow	S324	32	0.1875	Double-Wall 45º Elbow	D324	32	1.375
Single-Wall 45º Elbow	S344	34	0.1875	Double-Wall 45º Elbow	D344	34	1.375
Single-Wall 45º Elbow	S364	36	0.1875	Double-Wall 45º Elbow	D364	36	1.375
Single-Wall 45º Elbow	S384	38	0.25	Double-Wall 45º Elbow	D384	38	1.5
Single-Wall 45º Elbow	S404	40	0.25	Double-Wall 45º Elbow	D404	40	1.5
Single-Wall 45º Elbow	S424	42	0.25	Double-Wall 45º Elbow	D424	42	1.5
Single-Wall 45º Elbow	S444	44	0.25	Double-Wall 45º Elbow	D444	44	1.5
Single-Wall 45º Elbow	S464	46	0.25	Double-Wall 45º Elbow	D464	46	1.5
Single-Wall 45º Elbow	S484	48	0.25	Double-Wall 45º Elbow	D484	48	1.5
Single-Wall 45º Elbow	S504	50	0.25	Double-Wall 45º Elbow	D504	50	1.5
Single-Wall 45º Elbow	S524	52	0.25	Double-Wall 45º Elbow	D524	52	1.5
Single-Wall 45º Elbow	S544	54	0.25	Double-Wall 45º Elbow	D544	54	1.5
Single-Wall 45º Elbow	S564	56	0.25	Double-Wall 45º Elbow	D564	56	1.5
Single-Wall 45º Elbow	S584	58	0.25	Double-Wall 45º Elbow	D584	58	1.5
Single-Wall 45º Elbow	S604	60	0.25	Double-Wall 45º Elbow	D604	60	1.5
Single-Wall 90º Elbow	S069	6	0.125	Double-Wall 90º Elbow	D069	6	1.25
Single-Wall 90º Elbow	S089	8	0.125	Double-Wall 90º Elbow	D089	8	1.25
Single-Wall 90º Elbow	S109	10	0.125	Double-Wall 90º Elbow	D109	10	1.25
Single-Wall 90º Elbow	S129	12	0.125	Double-Wall 90º Elbow	D129	12	1.25
Single-Wall 90º Elbow	S149	14	0.125	Double-Wall 90º Elbow	D149	14	1.25
Single-Wall 90º Elbow	S169	16	0.125	Double-Wall 90º Elbow	D169	16	1.25
Single-Wall 90º Elbow	S189	18	0.125	Double-Wall 90º Elbow	D189	18	1.25
Single-Wall 90º Elbow	S209	20	0.125	Double-Wall 90º Elbow	D209	20	1.25
Single-Wall 90º Elbow	S229	22	0.1875	Double-Wall 90º Elbow	D229	22	1.375
Single-Wall 90º Elbow	S249	24	0.1875	Double-Wall 90º Elbow	D249	24	1.375
Single-Wall 90º Elbow	S269	26	0.1875	Double-Wall 90º Elbow	D269	26	1.375
Single-Wall 90º Elbow	S289	28	0.1875	Double-Wall 90º Elbow	D289	28	1.375
Single-Wall 90º Elbow	S309	30	0.1875	Double-Wall 90º Elbow	D309	30	1.375
Single-Wall 90º Elbow	S329	32	0.1875	Double-Wall 90º Elbow	D329	32	1.375
Single-Wall 90º Elbow	S349	34	0.1875	Double-Wall 90º Elbow	D349	34	1.375
Single-Wall 90º Elbow	S369	36	0.1875	Double-Wall 90º Elbow	D369	36	1.375
Single-Wall 90º Elbow	S389	38	0.25	Double-Wall 90º Elbow	D389	38	1.5
Single-Wall 90º Elbow	S409	40	0.25	Double-Wall 90º Elbow	D409	40	1.5
Single-Wall 90º Elbow	S429	42	0.25	Double-Wall 90º Elbow	D429	42	1.5
Single-Wall 90º Elbow	S449	44	0.25	Double-Wall 90º Elbow	D449	44	1.5
Single-Wall 90º Elbow	S469	46	0.25	Double-Wall 90º Elbow	D469	46	1.5
Single-Wall 90º Elbow	S489	48	0.25	Double-Wall 90º Elbow	D489	48	1.5
Single-Wall 90º Elbow	S509	50	0.25	Double-Wall 90º Elbow	D509	50	1.5
Single-Wall 90º Elbow	S529	52	0.25	Double-Wall 90º Elbow	D529	52	1.5
Single-Wall 90º Elbow	S549	54	0.25	Double-Wall 90º Elbow	D549	54	1.5
Single-Wall 90º Elbow	S569	56	0.25	Double-Wall 90º Elbow	D569	56	1.5
Single-Wall 90º Elbow	S589	58	0.25	Double-Wall 90º Elbow	D589	58	1.5
Single-Wall 90º Elbow	S609	60	0.25	Double-Wall 90º Elbow	D609	60	1.5
Single-Wall Endcap	S06E	6	0.125	Double-Wall Endcap	D06E	6	1.25
Single-Wall Endcap	S08E	8	0.125	Double-Wall Endcap	D08E	8	1.25
Single-Wall Endcap	S10E	10	0.125	Double-Wall Endcap	D10E	10	1.25
Single-Wall Endcap	S12E	12	0.125	Double-Wall Endcap	D12E	12	1.25
Single-Wall Endcap	S14E	14	0.125	Double-Wall Endcap	D14E	14	1.25
Single-Wall Endcap	S16E	16	0.125	Double-Wall Endcap	D16E	16	1.25
Single-Wall Endcap	S18E	18	0.125	Double-Wall Endcap	D18E	18	1.25
Single-Wall Endcap	S20E	20	0.125	Double-Wall Endcap	D20E	20	1.25
Single-Wall Endcap	S22E	22	0.1875	Double-Wall Endcap	D22E	22	1.375

Single-Wall Endcap	S24E	24	0.1875	Double-Wall Endcap	D24E	24	1.375
Single-Wall Endcap	S26E	26	0.1875	Double-Wall Endcap	D26E	26	1.375
Single-Wall Endcap	S28E	28	0.1875	Double-Wall Endcap	D28E	28	1.375
Single-Wall Endcap	S30E	30	0.1875	Double-Wall Endcap	D30E	30	1.375
Single-Wall Endcap	S32E	32	0.1875	Double-Wall Endcap	D32E	32	1.375
Single-Wall Endcap	S34E	34	0.1875	Double-Wall Endcap	D34E	34	1.375
Single-Wall Endcap	S36E	36	0.1875	Double-Wall Endcap	D36E	36	1.375
Single-Wall Endcap	S38E	38	0.25	Double-Wall Endcap	D38E	38	1.5
Single-Wall Endcap	S40E	40	0.25	Double-Wall Endcap	D40E	40	1.5
Single-Wall Endcap	S42E	42	0.25	Double-Wall Endcap	D42E	42	1.5
Single-Wall Endcap	S44E	44	0.25	Double-Wall Endcap	D44E	44	1.5
Single-Wall Endcap	S46E	46	0.25	Double-Wall Endcap	D46E	46	1.5
Single-Wall Endcap	S48E	48	0.25	Double-Wall Endcap	D48E	48	1.5
Single-Wall Endcap	S50E	50	0.25	Double-Wall Endcap	D50E	50	1.5
Single-Wall Endcap	S52E	52	0.25	Double-Wall Endcap	D52E	52	1.5
Single-Wall Endcap	S54E	54	0.25	Double-Wall Endcap	D54E	54	1.5
Single-Wall Endcap	S56E	56	0.25	Double-Wall Endcap	D56E	56	1.5
Single-Wall Endcap	S58E	58	0.25	Double-Wall Endcap	D58E	58	1.5
Single-Wall Endcap	S60E	60	0.25	Double-Wall Endcap	D60E	60	1.5
Single-Wall Lateral	S06L	6	0.125	Double-Wall Lateral	D06L	6	1.25
Single-Wall Lateral	S08L	8	0.125	Double-Wall Lateral	D08L	8	1.25
Single-Wall Lateral	S10L	10	0.125	Double-Wall Lateral	D10L	10	1.25
Single-Wall Lateral	S12L	12	0.125	Double-Wall Lateral	D12L	12	1.25
Single-Wall Lateral	S14L	14	0.125	Double-Wall Lateral	D14L	14	1.25
Single-Wall Lateral	S16L	16	0.125	Double-Wall Lateral	D16L	16	1.25
Single-Wall Lateral	S18L	18	0.125	Double-Wall Lateral	D18L	18	1.25
Single-Wall Lateral	S20L	20	0.125	Double-Wall Lateral	D20L	20	1.25
Single-Wall Lateral	S22L	22	0.1875	Double-Wall Lateral	D22L	22	1.375
Single-Wall Lateral	S24L	24	0.1875	Double-Wall Lateral	D24L	24	1.375
Single-Wall Lateral	S26L	26	0.1875	Double-Wall Lateral	D26L	26	1.375
Single-Wall Lateral	S28L	28	0.1875	Double-Wall Lateral	D28L	28	1.375
Single-Wall Lateral	S30L	30	0.1875	Double-Wall Lateral	D30L	30	1.375
Single-Wall Lateral	S32L	32	0.1875	Double-Wall Lateral	D32L	32	1.375
Single-Wall Lateral	S34L	34	0.1875	Double-Wall Lateral	D34L	34	1.375
Single-Wall Lateral	S36L	36	0.1875	Double-Wall Lateral	D36L	36	1.375
Single-Wall Lateral	S38L	38	0.25	Double-Wall Lateral	D38L	38	1.5
Single-Wall Lateral	S40L	40	0.25	Double-Wall Lateral	D40L	40	1.5
Single-Wall Lateral	S42L	42	0.25	Double-Wall Lateral	D42L	42	1.5
Single-Wall Lateral	S44L	44	0.25	Double-Wall Lateral	D44L	44	1.5
Single-Wall Lateral	S46L	46	0.25	Double-Wall Lateral	D46L	46	1.5
Single-Wall Lateral	S48L	48	0.25	Double-Wall Lateral	D48L	48	1.5
Single-Wall Lateral	S50L	50	0.25	Double-Wall Lateral	D50L	50	1.5
Single-Wall Lateral	S52L	52	0.25	Double-Wall Lateral	D52L	52	1.5
Single-Wall Lateral	S54L	54	0.25	Double-Wall Lateral	D54L	54	1.5
Single-Wall Lateral	S56L	56	0.25	Double-Wall Lateral	D56L	56	1.5
Single-Wall Lateral	S58L	58	0.25	Double-Wall Lateral	D58L	58	1.5
Single-Wall Lateral	S60L	60	0.25	Double-Wall Lateral	D60L	60	1.5
Single-Wall Reducer	S06R	6	0.125	Double-Wall Reducer	D06R	6	1.25
Single-Wall Reducer	S08R	8	0.125	Double-Wall Reducer	D08R	8	1.25
Single-Wall Reducer	S10R	10	0.125	Double-Wall Reducer	D10R	10	1.25
Single-Wall Reducer	S12R	12	0.125	Double-Wall Reducer	D12R	12	1.25
Single-Wall Reducer	S14R	14	0.125	Double-Wall Reducer	D14R	14	1.25
Single-Wall Reducer	S16R	16	0.125	Double-Wall Reducer	D16R	16	1.25
Single-Wall Reducer	S18R	18	0.125	Double-Wall Reducer	D18R	18	1.25
Single-Wall Reducer	S20R	20	0.125	Double-Wall Reducer	D20R	20	1.25
Single-Wall Reducer	S22R	22	0.1875	Double-Wall Reducer	D22R	22	1.375
Single-Wall Reducer	S24R	24	0.1875	Double-Wall Reducer	D24R	24	1.375
Single-Wall Reducer	S26R	26	0.1875	Double-Wall Reducer	D26R	26	1.375
Single-Wall Reducer	S28R	28	0.1875	Double-Wall Reducer	D28R	28	1.375
Single-Wall Reducer	S30R	30	0.1875	Double-Wall Reducer	D30R	30	1.375
Single-Wall Reducer	S32R	32	0.1875	Double-Wall Reducer	D32R	32	1.375
Single-Wall Reducer	S34R	34	0.1875	Double-Wall Reducer	D34R	34	1.375
Single-Wall Reducer	S36R	36	0.1875	Double-Wall Reducer	D36R	36	1.375
Single-Wall Reducer	S38R	38	0.25	Double-Wall Reducer	D38R	38	1.5
Single-Wall Reducer	S40R	40	0.25	Double-Wall Reducer	D40R	40	1.5
Single-Wall Reducer	S42R	42	0.25	Double-Wall Reducer	D42R	42	1.5
Single-Wall Reducer	S44R	44	0.25	Double-Wall Reducer	D44R	44	1.5
Single-Wall Reducer	S46R	46	0.25	Double-Wall Reducer	D46R	46	1.5
Single-Wall Reducer	S48R	48	0.25	Double-Wall Reducer	D48R	48	1.5
Single-Wall Reducer	S50R	50	0.25	Double-Wall Reducer	D50R	50	1.5
Single-Wall Reducer	S52R	52	0.25	Double-Wall Reducer	D52R	52	1.5
Single-Wall Reducer	S54R	54	0.25	Double-Wall Reducer	D54R	54	1.5
Single-Wall Reducer	S56R	56	0.25	Double-Wall Reducer	D56R	56	1.5
Single-Wall Reducer	S58R	58	0.25	Double-Wall Reducer	D58R	58	1.5
Single-Wall Reducer	S60R	60	0.25	Double-Wall Reducer	D60R	60	1.5

Single-Wall Tee	S06T	6	0.125	Double-Wall Tee	D06T	6	1.25
Single-Wall Tee	S08T	8	0.125	Double-Wall Tee	D08T	8	1.25
Single-Wall Tee	S10T	10	0.125	Double-Wall Tee	D10T	10	1.25
Single-Wall Tee	S12T	12	0.125	Double-Wall Tee	D12T	12	1.25
Single-Wall Tee	S14T	14	0.125	Double-Wall Tee	D14T	14	1.25
Single-Wall Tee	S16T	16	0.125	Double-Wall Tee	D16T	16	1.25
Single-Wall Tee	S18T	18	0.125	Double-Wall Tee	D18T	18	1.25
Single-Wall Tee	S20T	20	0.125	Double-Wall Tee	D20T	20	1.25
Single-Wall Tee	S22T	22	0.1875	Double-Wall Tee	D22T	22	1.375
Single-Wall Tee	S24T	24	0.1875	Double-Wall Tee	D24T	24	1.375
Single-Wall Tee	S26T	26	0.1875	Double-Wall Tee	D26T	26	1.375
Single-Wall Tee	S28T	28	0.1875	Double-Wall Tee	D28T	28	1.375
Single-Wall Tee	S30T	30	0.1875	Double-Wall Tee	D30T	30	1.375
Single-Wall Tee	S32T	32	0.1875	Double-Wall Tee	D32T	32	1.375
Single-Wall Tee	S34T	34	0.1875	Double-Wall Tee	D34T	34	1.375
Single-Wall Tee	S36T	36	0.1875	Double-Wall Tee	D36T	36	1.375
Single-Wall Tee	S38T	38	0.25	Double-Wall Tee	D38T	38	1.5
Single-Wall Tee	S40T	40	0.25	Double-Wall Tee	D40T	40	1.5
Single-Wall Tee	S42T	42	0.25	Double-Wall Tee	D42T	42	1.5
Single-Wall Tee	S44T	44	0.25	Double-Wall Tee	D44T	44	1.5
Single-Wall Tee	S46T	46	0.25	Double-Wall Tee	D46T	46	1.5
Single-Wall Tee	S48T	48	0.25	Double-Wall Tee	D48T	48	1.5
Single-Wall Tee	S50T	50	0.25	Double-Wall Tee	D50T	50	1.5
Single-Wall Tee	S52T	52	0.25	Double-Wall Tee	D52T	52	1.5
Single-Wall Tee	S54T	54	0.25	Double-Wall Tee	D54T	54	1.5
Single-Wall Tee	S56T	56	0.25	Double-Wall Tee	D56T	56	1.5
Single-Wall Tee	S58T	58	0.25	Double-Wall Tee	D58T	58	1.5
Single-Wall Tee	S60T	60	0.25	Double-Wall Tee	D60T	60	1.5
Single-Wall Wye	S06W	6	0.125	Double-Wall Wye	D06W	6	1.25
Single-Wall Wye	S08W	8	0.125	Double-Wall Wye	D08W	8	1.25
Single-Wall Wye	S10W	10	0.125	Double-Wall Wye	D10W	10	1.25
Single-Wall Wye	S12W	12	0.125	Double-Wall Wye	D12W	12	1.25
Single-Wall Wye	S14W	14	0.125	Double-Wall Wye	D14W	14	1.25
Single-Wall Wye	S16W	16	0.125	Double-Wall Wye	D16W	16	1.25
Single-Wall Wye	S18W	18	0.125	Double-Wall Wye	D18W	18	1.25
Single-Wall Wye	S20W	20	0.125	Double-Wall Wye	D20W	20	1.25
Single-Wall Wye	S22W	22	0.1875	Double-Wall Wye	D22W	22	1.375
Single-Wall Wye	S24W	24	0.1875	Double-Wall Wye	D24W	24	1.375
Single-Wall Wye	S26W	26	0.1875	Double-Wall Wye	D26W	26	1.375
Single-Wall Wye	S28W	28	0.1875	Double-Wall Wye	D28W	28	1.375
Single-Wall Wye	S30W	30	0.1875	Double-Wall Wye	D30W	30	1.375
Single-Wall Wye	S32W	32	0.1875	Double-Wall Wye	D32W	32	1.375
Single-Wall Wye	S34W	34	0.1875	Double-Wall Wye	D34W	34	1.375
Single-Wall Wye	S36W	36	0.1875	Double-Wall Wye	D36W	36	1.375
Single-Wall Wye	S38W	38	0.25	Double-Wall Wye	D38W	38	1.5
Single-Wall Wye	S40W	40	0.25	Double-Wall Wye	D40W	40	1.5
Single-Wall Wye	S42W	42	0.25	Double-Wall Wye	D42W	42	1.5
Single-Wall Wye	S44W	44	0.25	Double-Wall Wye	D44W	44	1.5
Single-Wall Wye	S46W	46	0.25	Double-Wall Wye	D46W	46	1.5
Single-Wall Wye	S48W	48	0.25	Double-Wall Wye	D48W	48	1.5
Single-Wall Wye	S50W	50	0.25	Double-Wall Wye	D50W	50	1.5
Single-Wall Wye	S52W	52	0.25	Double-Wall Wye	D52W	52	1.5
Single-Wall Wye	S54W	54	0.25	Double-Wall Wye	D54W	54	1.5
Single-Wall Wye	S56W	56	0.25	Double-Wall Wye	D56W	56	1.5
Single-Wall Wye	S58W	58	0.25	Double-Wall Wye	D58W	58	1.5
Single-Wall Wye	S60W	60	0.25	Double-Wall Wye	D60W	60	1.5
Single-Wall Straight	S06S	6	0.125	Double-Wall Straight	D06S	6	1.25
Single-Wall Straight	S08S	8	0.125	Double-Wall Straight	D08S	8	1.25
Single-Wall Straight	S10S	10	0.125	Double-Wall Straight	D10S	10	1.25
Single-Wall Straight	S12S	12	0.125	Double-Wall Straight	D12S	12	1.25
Single-Wall Straight	S14S	14	0.125	Double-Wall Straight	D14S	14	1.25
Single-Wall Straight	S16S	16	0.125	Double-Wall Straight	D16S	16	1.25
Single-Wall Straight	S18S	18	0.125	Double-Wall Straight	D18S	18	1.25
Single-Wall Straight	S20S	20	0.125	Double-Wall Straight	D20S	20	1.25
Single-Wall Straight	S22S	22	0.1875	Double-Wall Straight	D22S	22	1.375
Single-Wall Straight	S24S	24	0.1875	Double-Wall Straight	D24S	24	1.375
Single-Wall Straight	S26S	26	0.1875	Double-Wall Straight	D26S	26	1.375
Single-Wall Straight	S28S	28	0.1875	Double-Wall Straight	D28S	28	1.375
Single-Wall Straight	S30S	30	0.1875	Double-Wall Straight	D30S	30	1.375
Single-Wall Straight	S32S	32	0.1875	Double-Wall Straight	D32S	32	1.375
Single-Wall Straight	S34S	34	0.1875	Double-Wall Straight	D34S	34	1.375
Single-Wall Straight	S36S	36	0.1875	Double-Wall Straight	D36S	36	1.375
Single-Wall Straight	S38S	38	0.25	Double-Wall Straight	D38S	38	1.5
Single-Wall Straight	S40S	40	0.25	Double-Wall Straight	D40S	40	1.5
Single-Wall Straight	S42S	42	0.25	Double-Wall Straight	D42S	42	1.5

Single-Wall Straight	S44S	44	0.25	Double-Wall Straight	D44S	44	1.5
Single-Wall Straight	S46S	46	0.25	Double-Wall Straight	D46S	46	1.5
Single-Wall Straight	S48S	48	0.25	Double-Wall Straight	D48S	48	1.5
Single-Wall Straight	S50S	50	0.25	Double-Wall Straight	D50S	50	1.5
Single-Wall Straight	S52S	52	0.25	Double-Wall Straight	D52S	52	1.5
Single-Wall Straight	S54S	54	0.25	Double-Wall Straight	D54S	54	1.5
Single-Wall Straight	S56S	56	0.25	Double-Wall Straight	D56S	56	1.5
Single-Wall Straight	S58S	58	0.25	Double-Wall Straight	D58S	58	1.5
Single-Wall Straight	S60S	60	0.25	Double-Wall Straight	D60S	60	1.5

TABLE 2—LOADING[1]

DUCT DIAMETER (inches)	DUCT CONSTRUCTION	LOAD at 5% DEFLECTION (lbs.)	Stiffness at 5% Deflection (psi)
6	Single Wall	986	274
6	Double Wall	828	230
20	Single Wall	148	12.3
20	Double Wall	434	36.2

TABLE 3—LOADING AT ELEVATED TEMPERATURE OF 6 INCH SINGLE WALL DUCT[1]

DUCT TEMPERATURE	LOAD at 5% DEFLECTION (lbs.)	Stiffness at 5% Deflection (psi)
73 °F	1003	278
250 °F	892	227
500 °F	705	165

For **SI:** 1 inch = 25.4 mm, 1 lb. = 14.59 N/m.

[1] Loads are the results of ASTM 2412 testing without safety factors yielding a 5% deflection based on inside diameter. Duct specimen tested were non-ribbed or none-reinforced sections of straight duct.