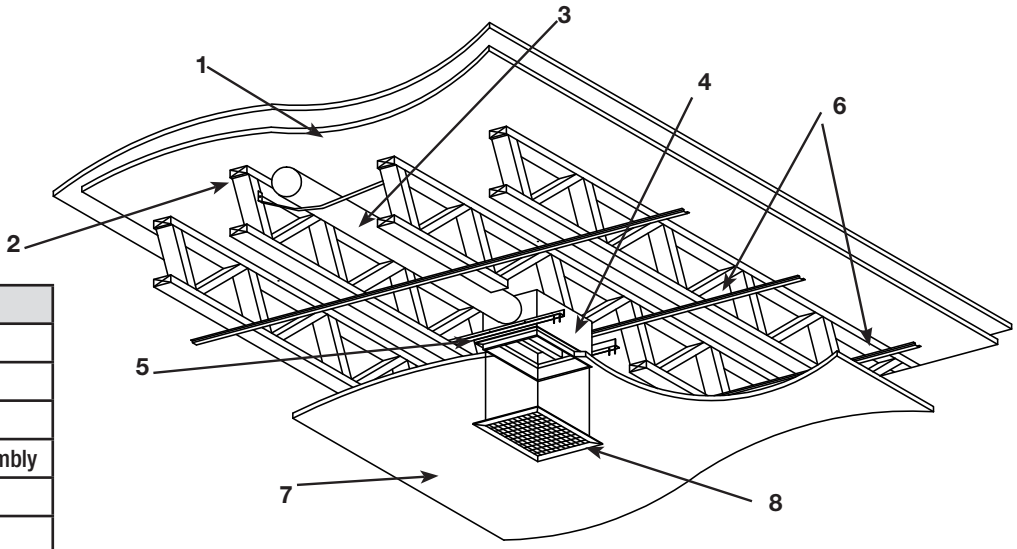
GREENHECK
Building Value in Air.

# Installation, Operation and Maintenance Manual

Please read and save these instructions for future reference. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with these instructions will result in voiding of the product warranty and may result in personal injury and/or property damage.

These instructions describe the installation of a CRD-1WT or CRD-2WT in designs: L528, L546, L558, L562, L574, L576, L581, L583, L585, L592, M501, M503, M508, P533, P538, P545, P547, P548, P554, and P580 as detailed in the UL Fire Resistance Directory.




| Number | Description |
|---|---|
| 1 | Flooring Systems |
| 2 | Wood Truss |
| 3 | Air Ducts |
| 4 | CRD-1WT or CRD-2WT assembly |
| 5 | Mounting Angle |
| 6 | Resilient Channel |
| 7 | Gypsum Board |
| 8 | Grille (not supplied) |
| 9 | Finishing System (not shown) |

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### Receiving and Handling

Upon receiving dampers, check for both obvious and hidden damage. If damage is found, record all necessary information on the bill of lading and file a claim with the final carrier. Check to be sure that all parts of the shipment, including accessories, are accounted for.

Dampers must be kept dry and clean. Indoor storage and protection from dirt, dust and the weather is highly recommended. Do not store at temperatures in excess of 100°F (38°C).

### Safety Warning

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

## General Information

**"UL CLASSIFIED (see complete marking on product)"**

**"UL CLASSIFIED to Canadian safety standards** (see complete marking on product)"

Standard 555C (Listing #R13446)

## Installation Supplements

Refer to the appropriate Greenheck installation supplements for special requirements (www.greenheck.com links are underline):

- Fusible Link Replacement for Volume Controller

Online version of this installation is available at www.greenheck.com.

CRD-1 and CRD-2WT instructions

| GA File No. | UL Design No. |
|---|---|
| FC 5012 | M508 |
| FC 5078 | L558 |
| FC 5101 | L574, M508 |
| FC 5119 | L592 |
| FC 5121 | L528, L546, L574, M508 |
| FC 5514.4 | L585 |
| FC 5515 | L528 |
| FC 5515.3 | M503 |
| FC 5516 | L528 |
| FC 5519 | L574 |
| FC 5521 | L562 |
| FC 5528 | L528 |
| RC 2603 | P533 |
| RC 2604 | P554 |
| RC 2606 | P545 |
| RC 2609 | P538 |
| RC 2612 | P545, P554 |
| GA = Gypsum Association Fire Resistance Manual 22nd Edition | |

## Pre-Installation Guidelines

1) CRD's are shipped from the factory with the blades in the closed position. The fusible link must be installed at the time of installation such that the blades are held open as shown in **Figure 2**.
2) Fasteners (screws, bolts, rivets, etc. ) used for installation must not interfere with blade operation.
3) Flexible duct must be class 1 or 0 type, bearing the UL listed mark. Steel duct must be a minimum 28 ga. (.5 mm) and maximum of 20 ga. (1 mm).
4) Ceiling damper must be installed as described in these installations.
5) Ceiling penetrations shall be located between floor/ceiling trusses.
6) The CRD-1WT's supplied without a factory supplied plenum box require a steel or ductboard plenum to be field installed (see pages 4 - 6). The CRD-2WT's are always provided with a factory supplied plenum box.
7) Dampers shipped with factory attached plenums MUST be installed prior to sheetrock ceiling installation.
8) Damper must be installed into duct or opening square and free of twist or other misalignment. Out of square, racked, twisted, or misaligned installations can cause excessive leakage and/or torque requirements to exceed damper design.
9) Damper must be kept clean and protected from dirt, dust, and foreign materials prior to and after installation. Examples of such foreign materials include but are not limited to:
    a) mortar dust
    b) drywall dust
    c) firesafing materials
    d) ceiling/wall texture
    e) paint overspray.

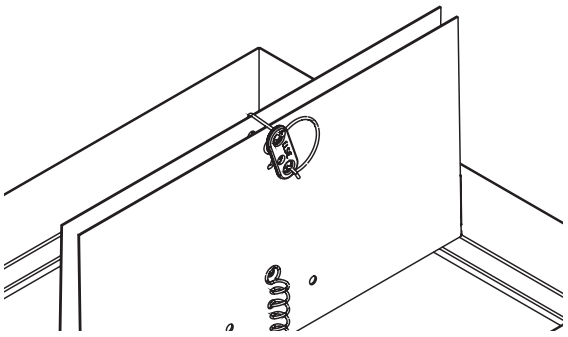


**Figure 2**

## Installation

**Important note for CRD-1WT's:** For grille mount installations the damper blades shall be a maximum of 3¼ in. (83 mm) above the top of the ceiling plane. For duct mount installations the damper blades shall be a maximum of ⅛ in. (6 mm) above the top of the ceiling plane.

## Hanger Method

The hanger method is the standard mounting method for CRD-1WT's. It may also be used in lieu of the base mount method (see below) with the CRD-2WT. However, the hanging wire or straps would have to be field supplied.

1) Dampers shall be supported in a minimum of two places on opposite sides of the damper with a minimum 1½ in. x 24 gauge ( 38 mm x .61 mm) steel strip, 18 swg vertical hanger wire or ¾ in. x ¾ in. x 26 gauge (19 mm x 19 mm x .46 mm) vertical angle. The vertical angle, steel strip, or hanger wire shall in turn be supported by a minimum ¾ in. x ¾ in. x 26 gauge (19 mm x 19 mm x .46 mm) steel angle or nominal 2 in. x 4 in. (51 mm x 102 mm) wood support studs. The horizontal support angles or studs shall be fastened at each end to adjacent trusses with minimum 16d nails, No. 8 screws or bolts. Only one connection per end is required (see **Figures 3 - 5**).

**For Grille Mount Installations**

1) The grille/diffuser frame shall be steel. The grille/diffuser shall be attached with a minimum 4 - 1 in. (25 mm) long #6 screws run through the gypsum wall board into the plaster flange (**Figure 3 & 4**).

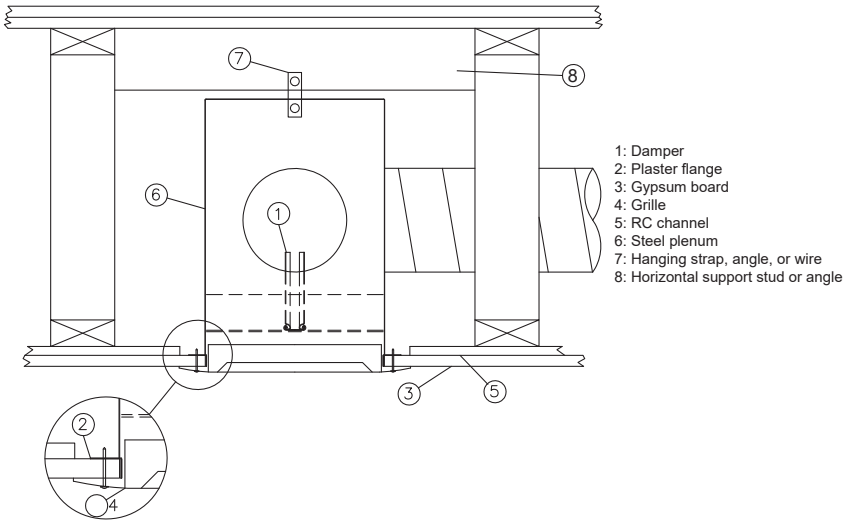



**Figure 3: Hanger Method: Grille Mount with Steel Plenum**

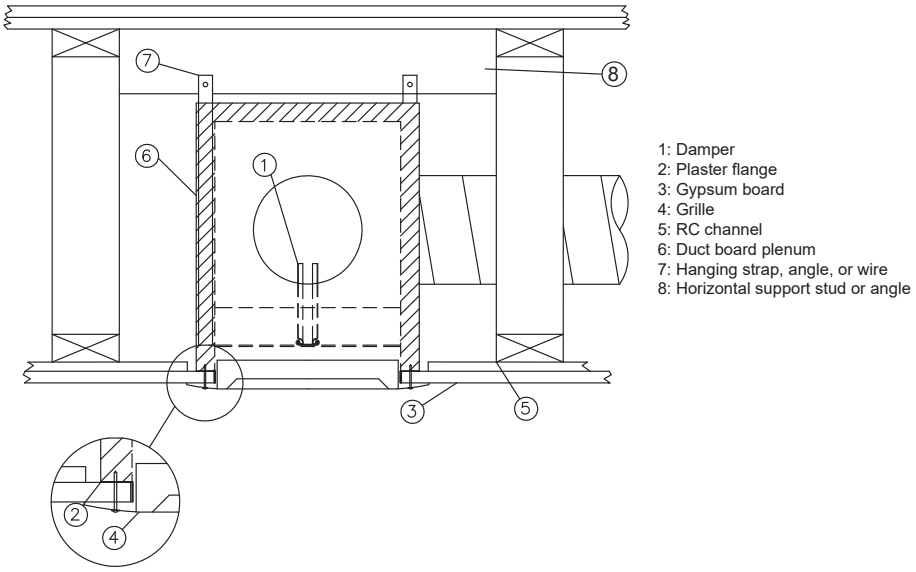



**Figure 4: Hanger Method: Grille Mount with Duct Board Plenum**

**For Duct Mount Installations**

1) The duct retaining angles, 1 in. x 1 in. x 24 gauge (25 mm x 25 mm x .61 mm), shall be installed on all four sides and shall be attached with a minimum of 4 - 1 in. long #6 screws run through the gypsum wall board into the plaster flange (**Figure 5**).

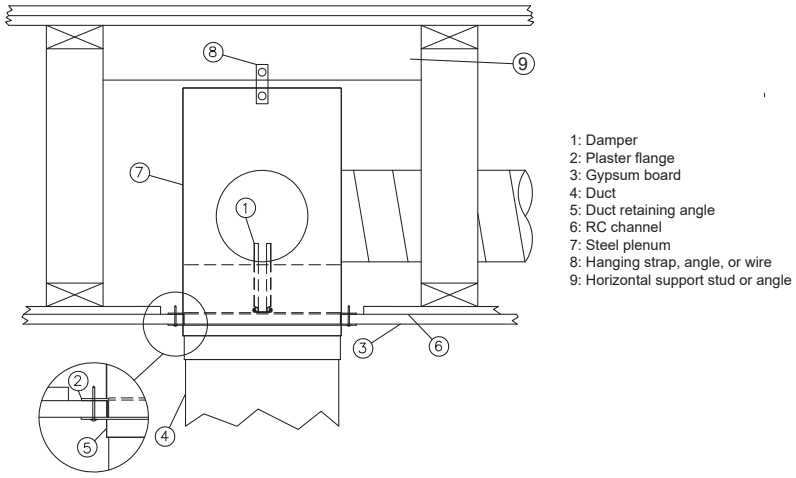



**Figure 5: Hanger Method: Duct Mount with Steel Plenum**

## Base Mount Method

The base mount method is the standard mounting method for CRD-2WT's. It may also be used on CRD-1WT's with steel plenums that either have an insulation band or are duct mounted. An insulation band is used on units with steel plenums that have a width or height greater than 12 inches [305 mm] (see **Figure 7A or 7B** for reference).

1) The damper assembly is to be attached to the trusses using 2 -1 in. x 1 in. x 16 ga. or 2 -1¼ in. x 1 in. x 20 ga. (25 mm x 25 mm x 1.5 mm or 32 mm x 25 mm x 1 mm) mounting angles. See **Figure 6** for alternate mounting angle detail. Attach each mounting angles to the damper with a minimum of 2 - #8 screws or 5⁄32 in. (8 mm) diameter steel rivets.

**Note:** Make sure the fasteners do not interfere with the damper operation.

2) Install the damper assembly with attached mounting angles between the trusses as shown in **Figures 7 & 8.** Attach mounting angles to the trusses using 4 - 1¼ in. (32 mm) long steel screws per mounting angle.

**For Grille Mount Installations**

The grille/diffuser frame shall be steel. The grille/diffuser shall be attached with a minimum of 4 - 1 in. (25 mm) long #6 screws run through the gypsum wall board into the plaster flange (**Figures 7A and 7B**).

**For Duct Mount Installations**

For duct mount installations a minimum 1 in. x 1 in. x 24 ga. (25 mm x 25 mm x 0.7 mm) retaining angle shall be installed on all four sides and shall be attached with a minimum of 4 - 1 in. (25 mm) long #6 screws run through the gypsum wall board into the plaster flange (**Figures 8A and 8B**).

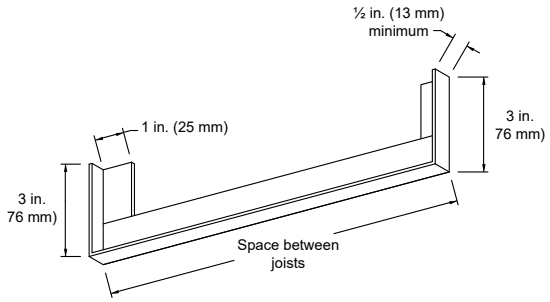



**Figure 6 - Alternate Mounting Angle (provided by Others)**

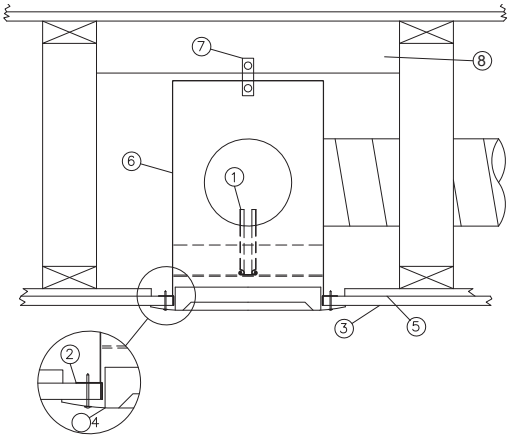



**Figure 7A: Grille Mount of CRD-1WT with Steel Plenum**

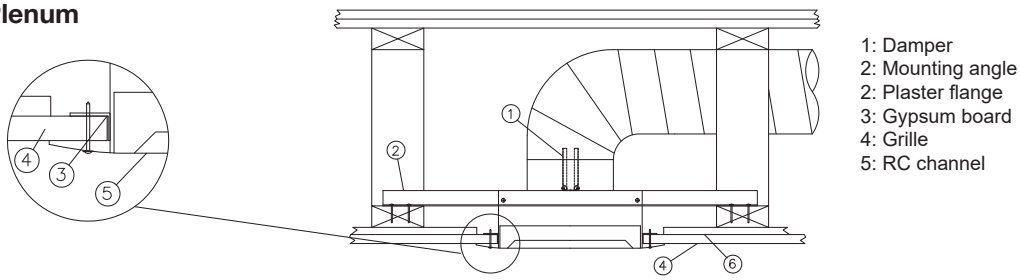



**Figure 7B: Grille Mount of CRD-2WT**

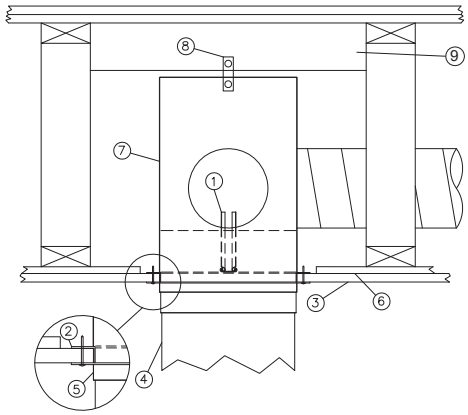



**Figure 8A: Duct Mount of CRD-1WT with Steel Plenum**

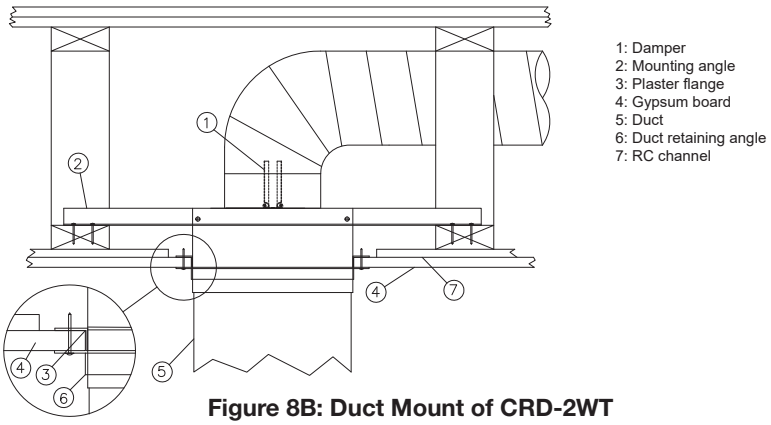
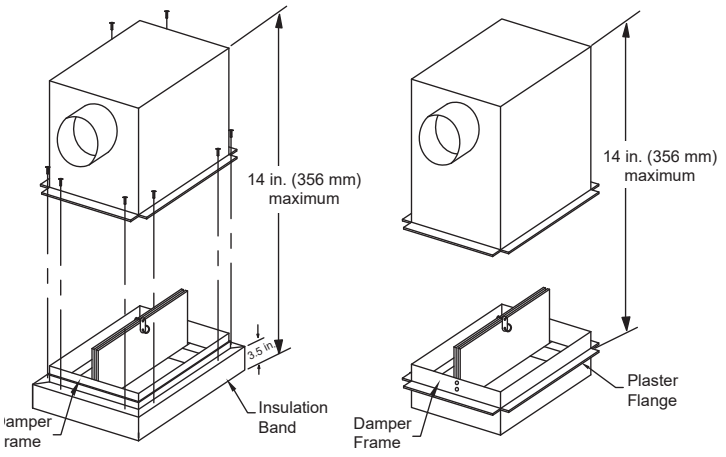



**Figure 8B: Duct Mount of CRD-2WT**

## Field Installation of Steel Plenums for CRD-1WT

1) The steel plenum box shall be a minimum of 28 ga. (0.47 mm) of galvanized steel.
2) The inside width x length dimensions of the steel plenum shall be sized no greater than ⅛ in. (3 mm) larger than the damper frame. The maximum plenum height shall be 14 in. (356 mm) as illustrated below. The plenum should be sized to provide a snug fit over the damper frame.
3) The plenum duct collars shall be a minimum of 30 ga. (0.4 mm) galvanized steel. The total area of the plenum box duct collars shall not exceed 78.5 sq. in. (1994 sq. mm) with a maximum of two duct collars per plenum. Duct collars shall be securely fastened to the plenum surface. Any segment of the duct collar that protrudes inside the plenum wall must not interfere with the damper blade operation.
4) The steel plenum box is to be attached to the damper using a #8 screws, ⅛ in. (3 mm) rivets, spot welds, or tack welds. Minimum of two per side (**Figure 9**).
5) The attachment of the screws or rivets must not interfere with the damper operation.

## Fabrication of Fiberglass Ductboard Plenum for CRD-1WT




Damper with Insulation Band and Steel Plenum Assembly
* Note that not all dampers with a steel plenum require an insulation band.

Damper without Insulation Band and Steel Plenum Assembly

**Figure 9**

1) Fiberglass ductboard shall be a minimum of 1 inch (25 mm) thick UL 181 listed and have a minimum R-value 4.3.
2) The inside width x length dimensions on the duct board plenum shall be sized no greater than ⅛ in. (3 mm) larger than the damper frame. The maximum plenum height shall be 15 in. (381 mm) as illustrated below. The plenum should be sized to provide a snug fit over the damper frame.
3) Edge and corner preparation shall be accordance with details shown (**Figures 10 and 11**). Plenum top shall be fabricated and attached using similar method, S-AF and SF-AF (**Figures 10 and 11**).
4) Corner sealing tape shall be UL 181 listed and minimum of 2 inches (51 mm) wide.
5) The plenum duct collars shall be a minimum of 30 ga. (0.4 mm) galvanized steel. The total area of the plenum box duct collars shall not exceed 113 sq. in. (2870 sq. mm) with a maximum of two duct collars per plenum. Duct collars shall be securely fastened to the plenum duct board. Any segment of the duct collar that protrudes inside the plenum must not interfere with the damper blade operation.
6) Plenum shall be attached to ceiling damper subframe using UL 181 listed tape (**Figure 12**).
7) Refer to **Figure 4-7** for ceiling damper installation. The CRD-1WT ceiling is classified for use in specific wood truss ceiling assemblies. See UL Fire Resistance Directory for floor/ceiling and roof/ceiling design numbers listed on page 1.

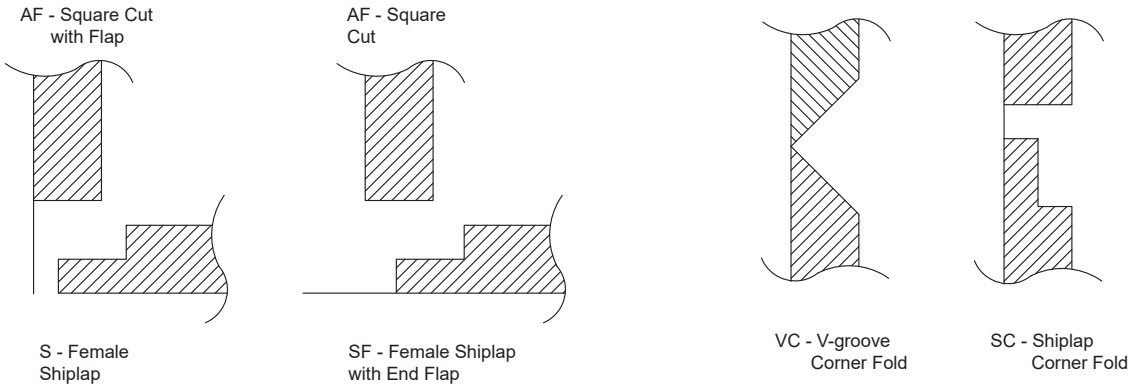



**Figure 10- Cutting Duct board**

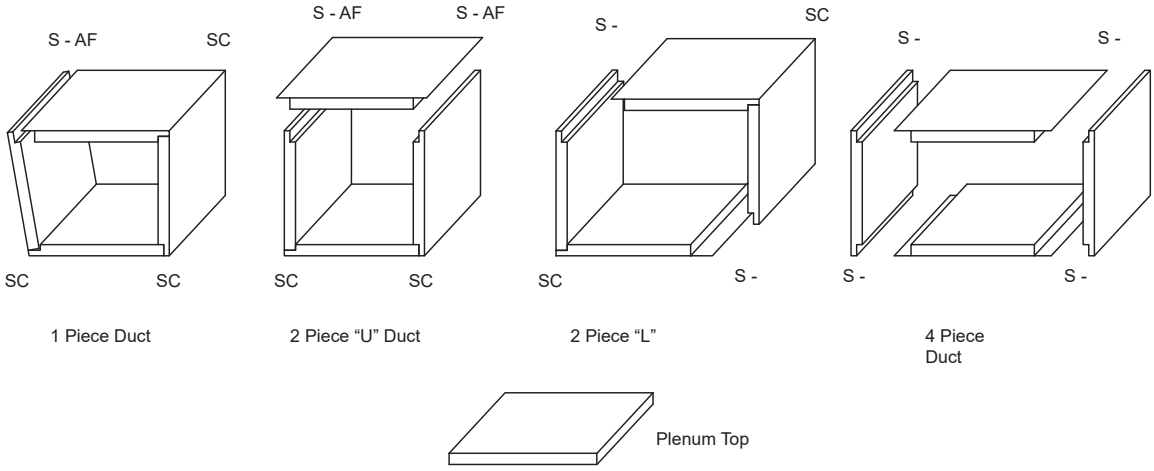
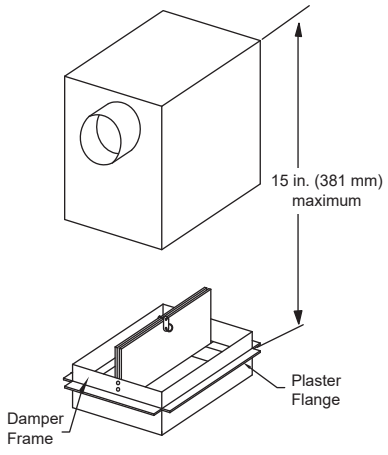



**Figure 11: Assembly of ductboard plenum**




Damper with Field Installed
Duct Board Plenum Assembly

**Figure 12**

## Notes

## Our Commitment

*As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.*

Product warranties can be found online at Greenheck.com, either on the specific product page or in the literature section of the website at Greenheck.com/Resources/Library/Literature.

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