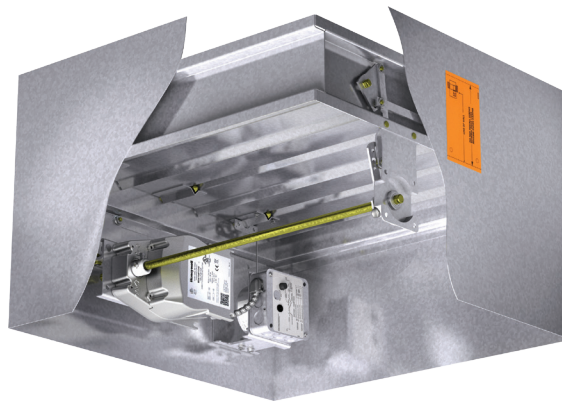
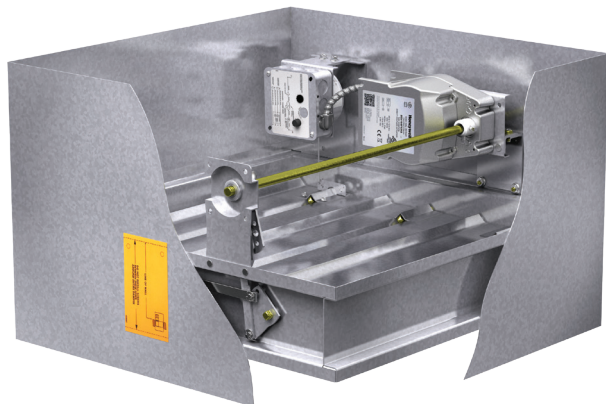


Installation, Operation and Maintenance Manual

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 cover the installation of CFSD-XXX leakage rated combination fire smoke dampers with factory installed actuators and sleeves in corridor ceiling applications. These instructions meet the requirements of UL 555 and UL 555S.

There are three different configurations available for this application. Configurations 1 and 2 apply when the fire rated ceiling is also the finished ceiling and the damper is installed behind a grille, register, or diffuser. Configuration 3 applies when the fire rated ceiling is above the finished ceiling and the grille, register or diffuser is somewhere below the corridor damper.

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.

Table of Contents

General Information	2
Installation Supplements.	2
Electrical Guidelines	2
Pre-Installation Guidelines	2
Preparation of Openings.	3
Clearances Required Between Corridor Damper Sleeves and Ceiling Openings	3
Maximum Assembly Table	3
Securing the Damper/Sleeve Assembly to Ceiling Openings.	4
Duct to Sleeve Connection	5
Actuator and Temperature Response Device Connections	7
Damper Maintenance	8
Damper Troubleshooting.	8

General Information

“UL CLASSIFIED (see complete marking on product)”

“UL CLASSIFIED to Canadian safety standards (see complete marking on product)”

Standard 555 & 555S (Listing #R13317)

Installation Supplements

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

- [Concrete Floor with Steel Deck](#)
- [Fire Resistant Ventilated Duct Assembly](#)
- [Fusible Link Replacement](#)
- [Greenheck Test Switch](#)
- [Open or Close Indicator \(OCI\)](#)
- [Resettable Link \(RRL\)](#)
- [Resettable Link with Blade Indicator \(RRL/OCI\)](#)
- [Sealant Supplement](#)
- Smoke Detector - Various Types
- [Temperature Limited Override \(TOR\)](#)
- [Tunnel Corridor](#)

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

[Corridor Ceiling Damper Instructions](#)



Electrical Guidelines

Electrical Guidelines

All wiring shall be done in accordance with the National Electrical Code ANSI/NFPA-70 latest edition, any local codes that may apply, and wiring diagrams developed in compliance with the job or project design and specifications

Important!

Electrical input may be needed for this equipment. This work should be performed by a qualified electrician. Verify power before wiring actuator. Greenheck is not responsible for any damage to, or failure of the unit caused by incorrect field wiring. To avoid causing death or serious bodily harm to building occupants, follow all instructions carefully. Dampers must close completely to preserve the integrity of the fire smoke separation.

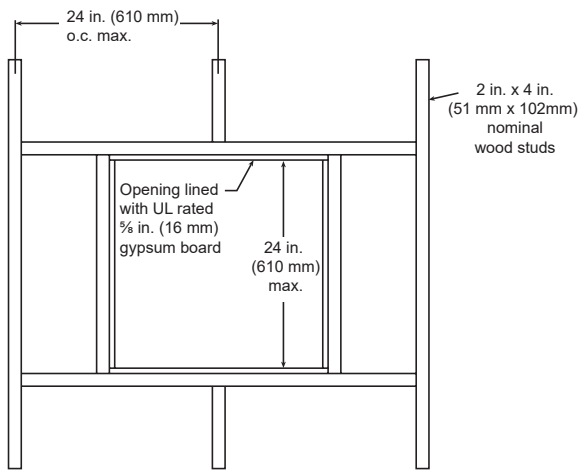
Pre-Installation Guidelines

The following items will aid in completing the damper installation in a timely and effective manner.

- 1) Check the drawings for proper damper locations within the building. Visually inspect the damper for damage and verify that the Reusable Resettable Link (RRL) is in place and has not activated if provided. These electric links have a button for resetting. Visually inspect the link to verify its not missing or broken. Replace link as necessary.
- 2) Lift or handle damper using sleeve or frame. Do not lift damper using blades or actuators.
- 3) Damper has label on outside of sleeve indicating a 'No Screw' area. Do not install screws into this area as screws may interfere with unexposed blade linkage and prevent damper blades from opening and/or closing.
- 4) Damper has label indicating position of damper and sleeve assembly in the wall. Install accordingly to comply with manufacturer's appropriate UL Classification file number.
- 5) 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/actuator design.
- 6) Damper and actuator must be kept clean and protected from dirt, dust and other 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) Wall texture
 - e) Paint overspray
- 7) Damper should be sufficiently covered as to prevent overspray if wall texturing or spray painting will be performed within 5 feet of the damper. Excessive dirt or foreign material deposits on the damper can cause excessive leakage and/or torque requirements to exceed damper/actuator design.
- 8) Caulking is not necessary, nor is it allowed, between the damper sleeve and the wall or floor opening (annular space). However, caulking may be applied to the retaining angles.
- 9) ACCESS: Suitable access (such that RRL's and actuators can be maintained, etc.) must be provided for damper inspection and servicing. Where it is not possible to achieve sufficient size access, it will be necessary to install a removable section of duct. (Refer to NFPA 90A).
- 10) The Code Authority Having Jurisdiction (AHJ) must evaluate and provide approval of final installation where variations to these instructions are necessary.

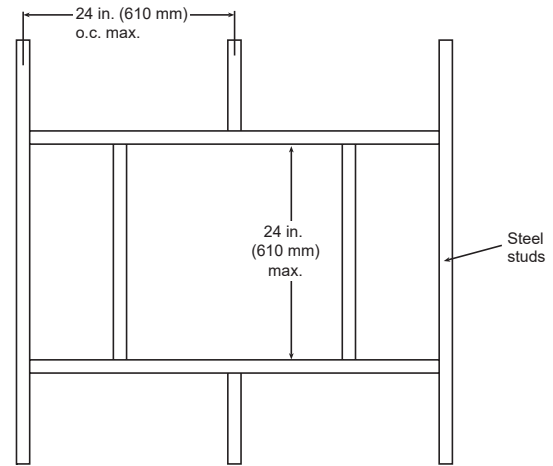
Preparation of Openings

- Corridor dampers are rated in ceiling constructions with a fire resistance rating of one hour.
- Frame corridor openings as shown below. Maximum size of opening is 24 in. x 24 in. (610 mm x 610 mm). (see Figure 1 & 2).
- Corridor ceiling must be covered with a minimum of one sheet of $\frac{5}{8}$ in. UL rated gypsum board on both sides.
- All construction and fasteners must meet the requirements of the appropriate corridor ceiling design. Gypsum panels should be attached, 12 in. (305 mm) O.C. maximum, to all stud and runner flanges surrounding opening with fasteners as designated by the appropriate corridor ceiling design. (See UL Fire Resistance Directory) and/or local codes.



Wood Stud Assembly

Figure 1



Steel Stud Assembly

Figure 2

Clearances Required Between Corridor Damper Sleeves and Ceiling Openings

The interior dimension of the prepared ceiling opening should be $\frac{1}{4}$ in. (6 mm) larger than the overall size of the damper and sleeve assembly.

These are total clearances (ignoring fastener heads) and do not need to be spaced equally around the damper.

Maximum Assembly Table

Horizontal Mount

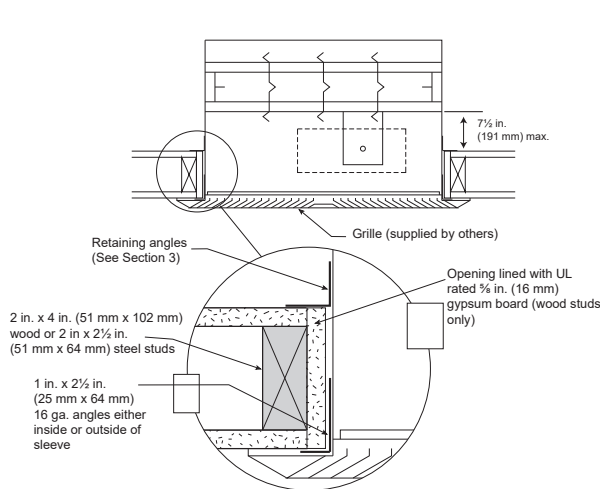
Damper Model	Maximum Single Section Size (inches)
CFSD-211, -212	24 x 24

Securing the Damper/Sleeve Assembly to Ceiling Openings

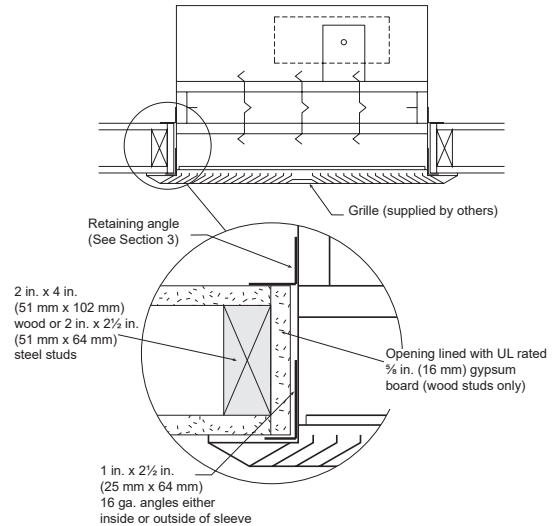
Corridor damper and sleeve assemblies must be installed in fire rated ceiling openings using retaining angles on each side of the ceiling as described below:

Installation of Configurations 1 & 2.

- Retaining angles must be a minimum of 20 ga. (1 mm) steel and have a minimum of 1½ in. x 1¼ in. (38 mm x 32 mm) legs on the ducted side of the installation and 1 in. x 2½ in. (25 mm x 64 mm) legs on the diffuser, grille or register side.
- The 1 in. x 2½ in. (25 mm x 64 mm) angle may be mounted with the 2½ in. (64 mm) leg inside or outside the sleeve.



Configuration 1
Actuator in airstream only
Allows access to the actuator through the grille or diffuser



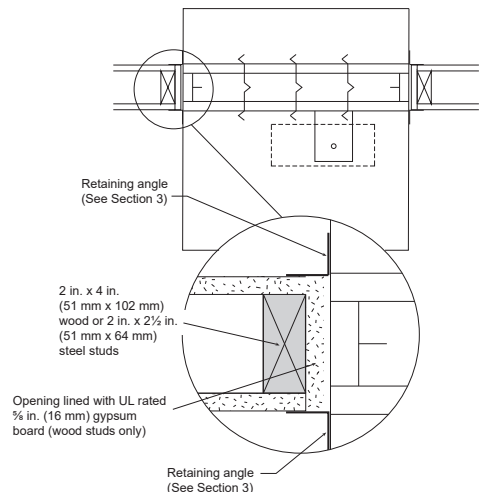
Configuration 2
Actuator in airstream or out of airstream

Installation Configuration 3

- Retaining angles must be a minimum of 20 ga. (1 mm) steel with 1½ in. x 1¼ in. (38 mm x 32 mm) legs.
- Retaining angle must be attached to the sleeve using:
 - Tack or spot welds
 - #10 sheet metal screws
 - ¼ in. (6 mm) bolts and nuts
 - ⅜ in. (5 mm) steel pop rivets

The angles must be attached to all four sides of the sleeve with butt joints at each corner. A minimum of two attachments are required on each side, top and bottom. The angles may be attached to each other at the corners.

- Retaining angles must cover the clearance space between the sleeve and the ceiling opening.



Configuration 3
Actuator in airstream or out of airstream
Actuator can be installed either above or below ceiling construction

Duct to Sleeve Connection

Sleeve Gauge and Connection Type Requirements

Dampers are supplied with sleeves and actuators from the factory and can be installed without the need for additional field installed sleeves. Damper sleeves should be a minimum of 24 ga. (0.6 mm). The sleeve thickness must also not be less than the gauge of the connecting duct. If duct gauge is 16 ga. (1.5 mm) or greater, the breakaway connection is rigid.

Approved Breakaway Connections

All breakaway connections described below may utilize the following duct sealants: PA2084T duct sealant adhesive manufactured by Precision, DP1010 water base duct sealant manufactured by Design Polymeric, Grey Pookie, Ductmate PROseal®, or CL Ward S Seal in accordance with SMACNA recommendations.

Transverse Joints

The transverse joints shown below are approved as breakaway connections.

- A maximum of two #10 (19 mm) sheet metal screws on each side and on the bottom may be used. The screws should be located in the center of the slip pocket and penetrating both sides of the slip pocket.
- Dampers up to 20 inches (508 mm) high may use transverse joints on the top and bottom and Drive Slip joints (see Figure 6) on the sides.

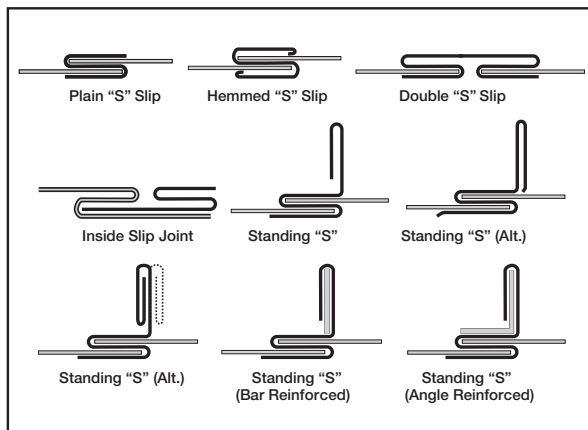


Figure 6



Figure 7

Round and Oval Duct Breakaway Connections

Round or flat oval ducts connected to Type R or O damper collars shall be attached with #10 (19 mm) sheet metal screws as follows:

- Ducts to 22 in. (558 mm) wide (or dia.) and smaller shall have three screws.
- Ducts larger than 22 in. (558 mm) wide (or dia.) up to and including 36 in. (914 mm) wide (or dia.) shall have five screws.

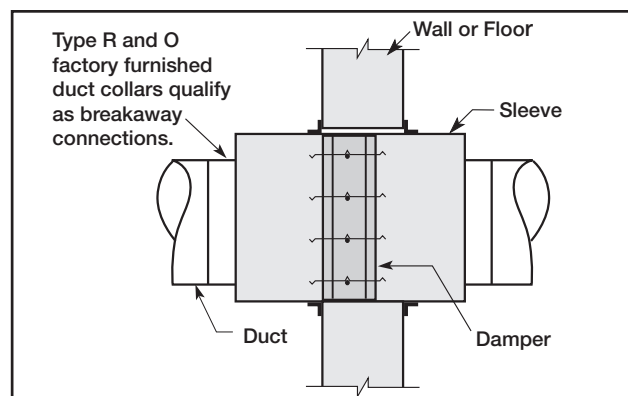


Figure 8: Type R and O Transition

Manufactured Flanged System Breakaway Connections

Flanged connection systems manufactured by Ductmate, Durodyne, Ward, MEZ, and Nexus are approved as breakaway connections when installed as illustrated (see Figure 9).

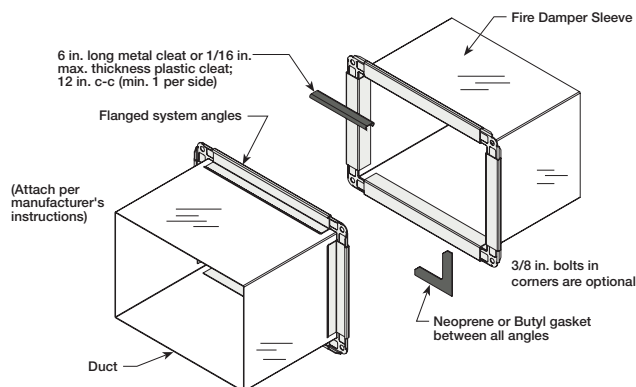


Figure 9

Proprietary Flange System Breakaway Connections

(TDC by Lockformer, TDF by Engle)

TDC and TDF systems are approved as breakaway connections when installed as described in the TDC or TDF addendum to the SMACNA Duct Construction. Standard 6 in. (152 mm) metal clip may be used with spacing as shown in diagram (see Figure 10 & 11). A 3/8 in. (9.5 mm) metal bolts and nuts may be used to fasten together corner pieces (see Figure 12).

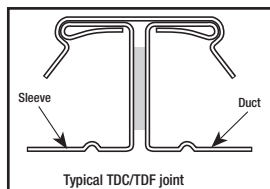


Figure 10

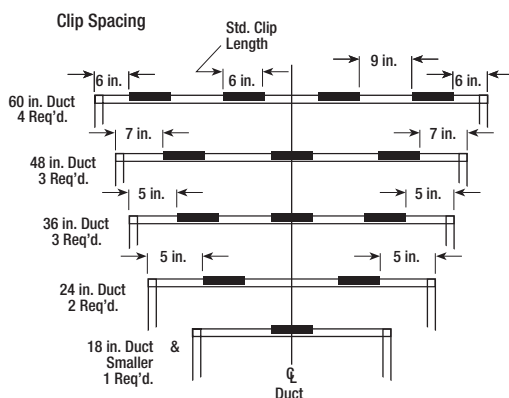


Figure 11

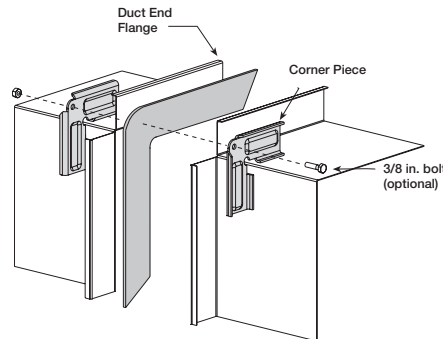


Figure 12

TDC/TDF to Manufactured Flange

Flanged connection systems manufactured by Ductmate, Durodyne, Ward, Nexus, Radiant T-35m, and MEZ can be connected to TDC and TDF system as an alternate breakaway connection. This alternate connection is covered under the UL certification of the damper. See Supplement: Duct-Sleeve Connection (IOM #468502) for more information.

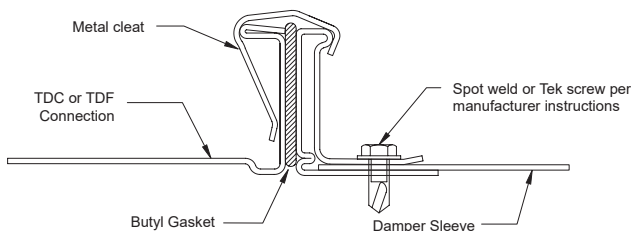


Figure 13: Metal cleat method

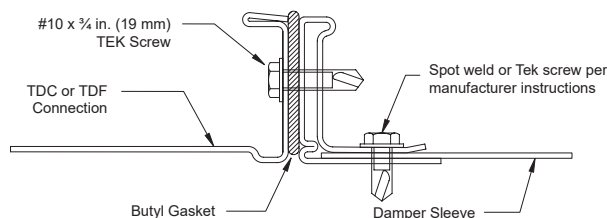


Figure 14: Screw method

Actuator and Temperature Response Device Connections

Actuator Connections

Electrical and/or pneumatic connections to damper actuators should be made in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations (see **Electrical Guidelines**). A penetration through the damper sleeve may be necessary to accommodate the required wiring and/or pneumatic tubing for the actuator. Care should be taken to make this penetration as small as possible, and all wiring and sealing should be done according to NEC guidelines.

Temperature Response Device Connections

RRL - The RRL (resettable link device) incorporates a single thermostat. When the thermostat temperature is reached the sensor interrupts power to the actuator and the actuator's spring return mechanism causes the damper to close. Refer to **Figure 13** for wiring of the RRL thermostat.

OCI - The OCI (open or closed indicator) option contains two single pole single throw switches used to indicate the damper blade position. The switches provide a positive open and closed signal and can be used in conjunction with remote indicator lights. Refer to **Figure 14** for wiring of the OCI option.

RRL /OCI - The RRL/OCI performs the function of an RRL and OCI (see description above). Refer to **Figure 15** for wiring of the RRL/OCI option.

TOR - The TOR (temperature override device) option incorporates two thermostats with fixed settings (usually 165°F [74°C] and 350°F [177°C]). The primary sensor (the sensor with the lower temperature setting) can be bypassed by an external contact closure allowing the damper to reopen until the secondary temperature is reached (the sensor with the higher temperature setting). See **Figure 16**.

The TOR assembly contains two single pole single throw switches used to indicate damper blade position. The switches provide a positive open and closed signal and can be used in conjunction with remote indicator lights. See **Figure 25** for wiring of the TOR thermostats and indicator switches.

If either the TOR or the RRL is ordered with a pneumatic actuator, an EP switch is required with an appropriate electric power circuit to allow the electric thermostat to control the pneumatic actuator.

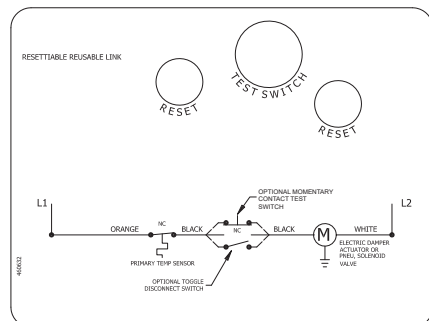


Figure 15: RRL Wiring

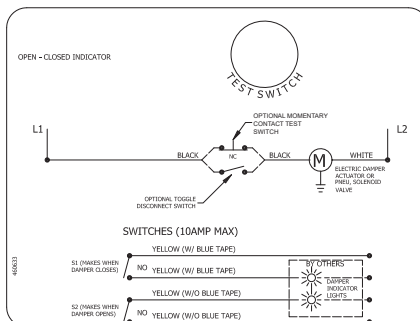


Figure 16: OCI

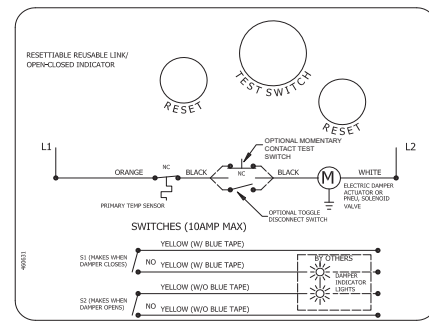


Figure 17: RRL/OCI

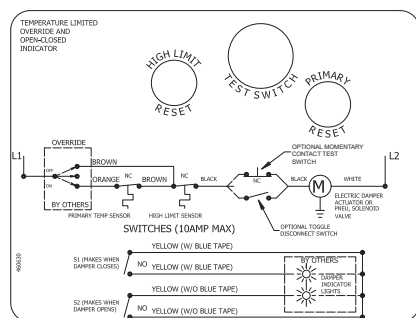


Figure 18: TOR

Ratings (Figure 15, 16, 17 & 18)

Integral Switch Type: Single Pole, double throw

Electrical Capacity: 10 Amps, 1/3 hp, 120 or 240 Vac

1/2 Amp, 125 Vdc;

1/4 Amp 250 Vdc

5 Amps, 120 Vac "L" (lamp load)

1.0 Amps, 24 Vac

1.5 Amps, 24 Vdc

Temperature Limit: 165° F (standard primary sensor)

212° F (optional primary sensor)

250° F (secondary sensor)*

350° F (secondary sensor)*

* based on actuator temperature rating

Damper Maintenance

Dampers do not typically require maintenance as long as they are kept dry and clean. If cleaning is necessary, use mild detergents or solvents. If lubrication is desired for components such as axle bearings, jackshaft bearings and jamb seals, do not use oil-based lubricants or any other lubricants that attract contaminants such as dust.

Dampers and their actuator(s) must be maintained, cycled, and tested a minimum in accordance with:

- The latest editions of NFPA 80, 90A, 92, 101, 105, UL864, AMCA 503-03 and local codes.
- Actuator manufacturer recommendations.

Damper Troubleshooting

The following is a possible cause and correction list for common concerns with the dampers.

Symptom	Possible Cause	Corrective Action
Damper does not fully open and/or close	Frame is 'racked' causing blades to bind on jamb seals	Adjust frame such that it is square and plumb
	Actuator linkage loose	Close damper, disconnect power, adjust and tighten linkage
	Defective motor	Replace
	Screws in damper linkage	Damper installed too far into wall. Move out to line as designated on damper label
	Contaminants on damper	Clean with a non-oil based solvent (see Damper Maintenance)
RRL or TOR sensor tripped	Heat	Push reset button located on backside of RRL or TOR
Damper does not operate	No power supplied to the actuator	Add power supply

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](https://www.greenheck.com), either on the specific product page or in the literature section of the website at [Greenheck.com/Resources/Library/Literature](https://www.greenheck.com/Resources/Library/Literature).

