GREENHECK
Building Value in Air.

Document 469134
HPR Series
Instructions For Adjusting Pressure Relief Dampers

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.

Instructions

The following instructions should be followed when attempting to modify HPR series pressure relief dampers for different damper orientations or
start-to-open pressures. Dampers shipped are set for the specified start open pressure and flow direction.

Pressure relief dampers designed for horizontal flow (vertical mounting) are equipped with two sets of arms (see **Figure 1**). The pressure set is in the direction opposite the blades and offset, or balance, the weight of the blades. The counterbalance is always positioned horizontally when the damper is closed (approximately vertical with blades open) and hold the blades closed until the start-open pressure is reached. Pressure relief dampers with vertical up flow/relief (see **Figure 2**) and vertical down flow (see **Figure 3**) only have one set of arms, as the weight of the edge pivoted blades is either added or subtracted from the weight necessary to hold blades closed.

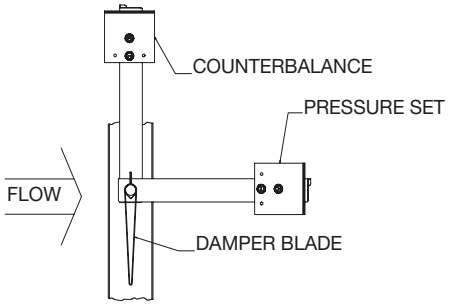


Figure 1 Horizontal Flow

Damper will respond to a positive differential pressure in the direction of blade opening.

Three different crankarms any be used, depending on the damper size and magnitude of start open pressure. (see **Figure 4**).

The blades of this type of damper exhibit a gradual “lift off” as start-open pressure is reached. The operating point is not sharply defined, as when a door suddenly opens. There is a wide flow range where pressure is approximately constant.

Counterweight Set Procedure (Horizontal Flow Only)

The counterbalance weights on a vertically mounted damper (horizontal flow), must be adjusted first, if the airflow direction is changed. This is covered by a separate procedure. Basically, the damper is adjusted for easy operation (blade weight is just counterbalanced) before the pressure set arms and weights are added.

Pressure Setting Procedure

Position the damper in the proper orientation and flow direction. If a specific relief pressure is required, install a U-tube manometer or other pressure measuring device in the duct work to monitor the static pressure.

If the damper flow direction must be changed in the field, loosen fastener in pressure set crankarm and rotate arms to correct position. See **Figures 1, 2, and 3** for correct pressure set arm orientation with damper blades closed.

Start-open pressure is adjusted by either changing weight center distance from axle center line, or by increasing or decreasing the quantity of plates mounted to the arms. In extreme cases, the arm length and quantity must be changed. See table at the end of the procedure for replacement parts.

Adjust weight center distance first. Loosen fasteners holding weight plates to arm and move inward or outward in arm slot as required. Moving plates toward axle will reduce start-open pressure; increasing the center distance will increase the pressure at which Start-open pressure is adjusted by either changing weight center distance from axle center line, or by increasing or decreasing the quantity of plates mounted to the arms. In extreme cases, the arm length and quantity must be changed. See table at the end of the procedure for replacement parts.

Adjust weight center distance first. Loosen fasteners holding weight plates to arm and move inward or outward in arm slot as required. Moving plates toward axle will reduce start-open pressure; increasing the center distance will increase the pressure at which blades start to open. If a greater range of pressure set adjustment is required, add or remove plates from arms as required to obtain the required start-open pressure.

Check all fasteners for tightness.

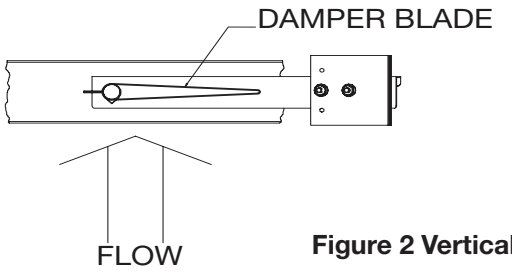


Figure 2 Vertical Up Flow

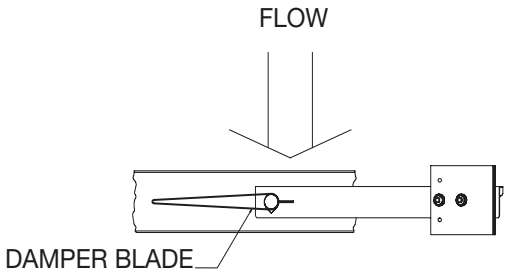
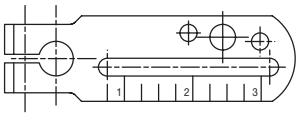
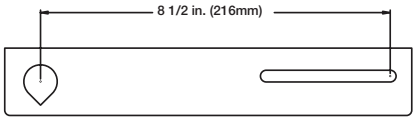


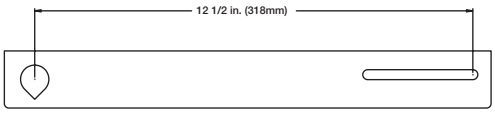
Figure 3 Vertical Down Flow



Small crankarm



Medium crankarm



Large crankarm

Figure 4: Crankarms

Table of Components

Applicable Model	Components	Galvanized Part Number	Stainless Steel Part Number
HPR-120	Axle adapter, ⅜ in. sq. to ¾ in. OD, 3 in. long	458959	NA
HPR-120	Axle adapter, short, ¾ in. OD	370120	416343
All	¾ in. crankarm	653630	687738
All	⅜ in.-16 x 2 crankarm bolt	415882	415924
All	⅜ in.-16 hex nut for crankarm	415457	416168
All	Short counterweight arm (8½ in.)	647344	689404
All	Long counterweight arm (12½ in.)	657343	683951
All	⅜ in.-16 set screw for short/long arm	415050	415763
All	⅜ in.-16 weld nut for short/long arm	415127	415928
All	Counterweight plate, 1¼ in. x 3½ in.	653144	687637
All	Counterweight plate, 2½ in. x 3½ in.	653143	687636
All	Counterweight plate, 3½ in. x 3½ in.	653142	687635
All	Bolt, ¼ in. - 20 x 1¼ in.	415973	NA
All	Bolt, ¼ in. - 20 x 1½ in.	415517	416103
All	Nut, ¼ in. - 20	415455	415575

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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