Excellence Without Compromise

EWC® CONTROLS INC.

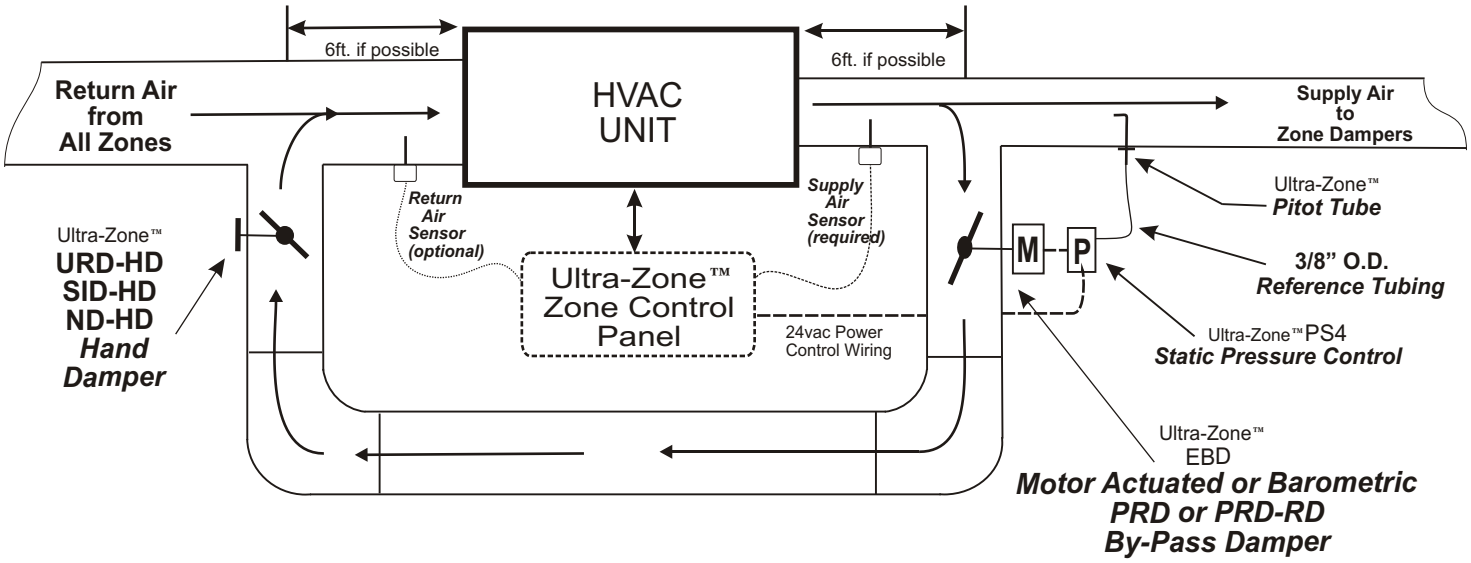
TECHNICAL BULLETIN

Model PRD-RD
Barometric By-Pass Damper

Leave this bulletin on the job site for future reference!

GENERAL DESCRIPTION

The model PRD-RD pressure regulating damper is a single blade round barometric damper with a counter balanced weighted arm. The PRD-RD is an economical way of bypassing excess air when zone dampers close. Damper adjustment is done by moving the weight up and down the arm and by off-setting the arm. See Page 2 for details. The arm on the PRD-RD can be inserted into either side of the damper for added versatility. The PRD-RD is normally installed in the ductwork to regulate excess air pressure and volume. The damper can be mounted to relieve the pressure by returning the air back to the return air duct or by dumping it into a non-critical conditioned area.
The PRD-RD is an ideal By-Pass solution for any Constant Speed or Variable Speed system up to 5 ton capacity.



Note: This drawing of the Bypass damper, Hand Damper, Static Pressure control and Related duct work is intended to serve only as a guide. Your actual duct work layout and components may differ. Use the graphic as a guide when planning or designing a Zone system regardless of the Equipment type, Duct layout and Airflow configuration.

MODEL #	SIZE	LENGTH	BYPASS CFM*
PRD-RD8	8"	9.75”	320 CFM
PRD-RD10	10"	11.75”	500 CFM
PRD-RD12	12"	13.62”	720 CFM
PRD-RD14	14"	15.62”	950 CFM
PRD-RD16	16"	19.98”	1250 CFM

* CFM value at 900fpm

P/N 090375A0229 REV. F

BY-PASS SIZING CALCULATIONS

1. Start with the system's Total C.F.M.
2. Calculate the C.F.M. for the smallest zone that can run by itself.
3. Subtract the Total C.F.M. from the Smallest Zone C.F.M.
   The left over amount is the By-Pass C.F.M. Refer the By-Pass C.F.M. to the chart on Page 1, match to the closest size. DO NOT Undersize the By-Pass Damper. The By-Pass can also be sized on a Duct Calculator at 0.3"w.c. Friction per 100ft of Duct. (For quieter By-Pass operation, size the By-Pass Damper at a lower Friction Value.)

EXAMPLE: 5 ton system @ 400 C.F.M. Per ton = 2000 C.F.M — 2000 C.F.M.
Subtract Smallest Zone = 500 C.F.M. — -500 C.F.M.
1500 C.F.M.

1500 C.F.M. @ 0.3" Friction per 100ft. of duct = PRD 20 x 8

BAROMETRIC BY-PASS SET-UP PROCEDURE

1. The PRD-RD must be installed horizontal & level between the supply duct and the return duct.
2. Position PRD-RD to open in the direction of your airflow.
3. Make the PRD-RD connection on the return so that the bypass air has a minimum 6 feet of return duct before it enters the air handler, if space permits. If not do your best.
4. Position ARM in the "IDEAL ARM LOCATION" for the direction of your air flow and tighten the THUMB SCREW. (Refer to page 4)
5. Position the WEIGHT high up on the ARM and tighten the THUMB SCREW
   Energize **ALL** Zones to operate the unit with the Fan running on the Highest speed (Usually a Cooling demand, 2nd stage if applicable).
6. Return to the PRD-RD & reposition the WEIGHT lower on the ARM until the PRD-RD *just* closes completely. (It should be closed to the point where any additional force will open the PRD-RD).
7. Turn off all Zones but the Smallest Zone & Wait about 45 seconds.
8. Monitor the airflow for the Smallest Zone. Is there to much Velocity? Proceed to **Step 9**.
   Is there insufficient Velocity? Proceed to **Step 10**.
   Is the Velocity acceptable? Proceed to **Step 11**.
9. **To Much Velocity:** Reposition the WEIGHT Higher up on the ARM until the velocity has subsided to an adequate level. If the velocity remains to high, reposition the ARM towards '0' on the scale. Proceed to **Step 11**.
   If the velocity is still an issue, double check your By-Pass size, calculations are above.
10. **Insufficient Velocity:** Reposition the WEIGHT Lower on the ARM until the velocity is at an acceptable level. If the velocity remains to low, reposition the ARM towards the '1' on the scale. Proceed to **Step 11**.
    If velocity still remains low for the Smallest zone, to much air is being forced through the PRD-RD, an Electronic By-Pass Damper (Model EBD) may need to be considered.
11. Congratulations, your PRD By-Pass damper is now properly set-up.

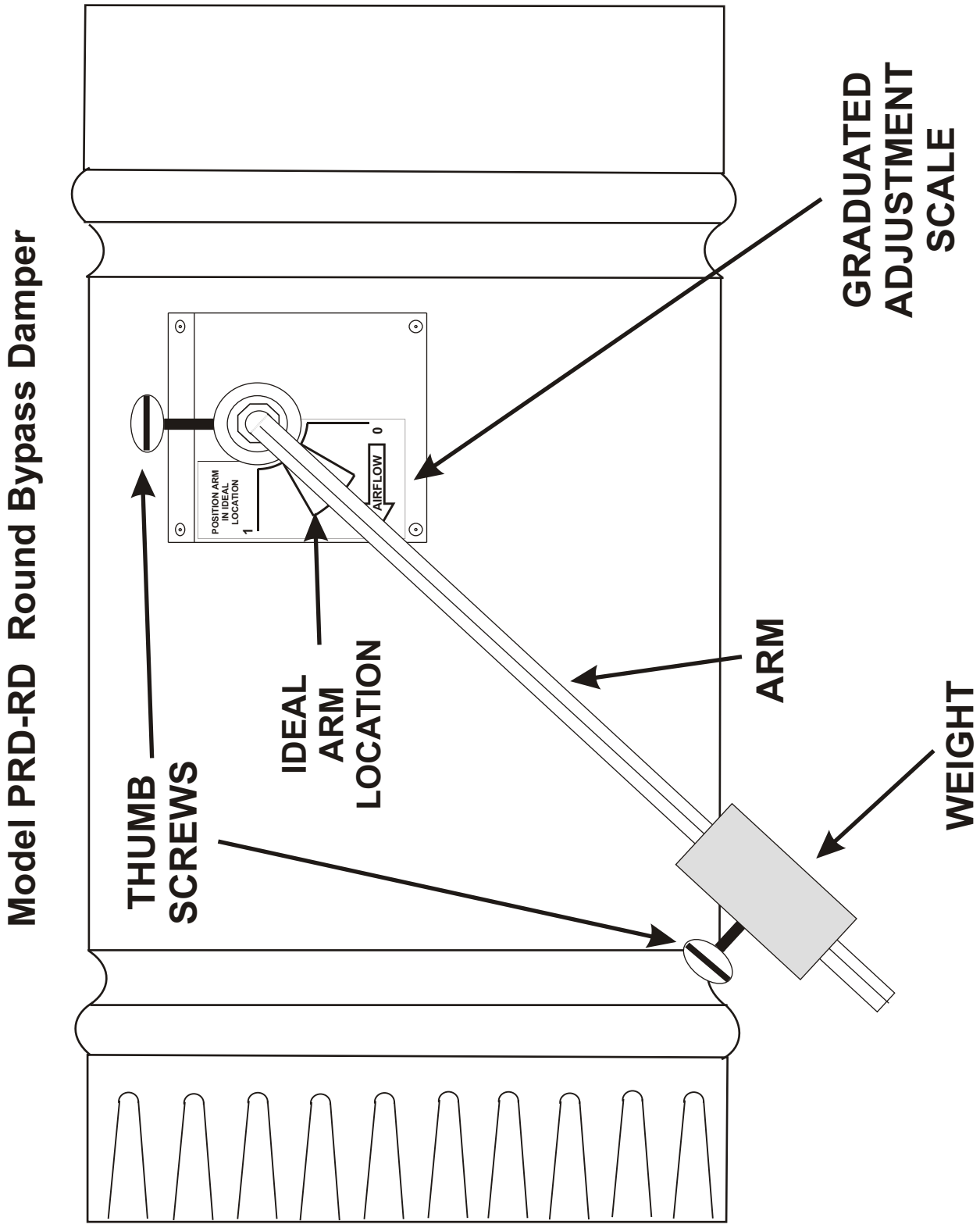

Model PRD-RD Round Bypass Damper
GRADUATED ADJUSTMENT SCALE
POSITION ARM IN IDEAL LOCATION
1
0
AIRFLOW
IDEAL ARM LOCATION
ARM
THUMB SCREWS
WEIGHT

FIGURE 2

ASSEMBLY OF PRD & PRD-RD BY-PASS DAMPER

1 - INSTALL BY-PASS DAMPER PER INSTRUCTIONS ON PAGE 2.

2 - SLIDE LOCKING-COLLAR OVER DAMPER SHAFT.

3 - INSERT HEX ARM INTO DAMPER SHAFT.

4 - ALIGN LOCKING-COLLAR THUMB SCREW WITH ONE OF THE 4 HOLES ON THE DAMPER SHAFT WHILE HOLDING ARM AT THE DESIRED ANGLE.

5 - TIGHTEN THUMB SCREW TO SECURE HEX ARM IN PLACE.

6 - POSITION WEIGHT ON HEX ARM AND TIGHTEN THUMB SCREW TO SECURE IN PLACE.

7 - REFER TO PAGE 2 FOR SET-UP PROCEDURE.

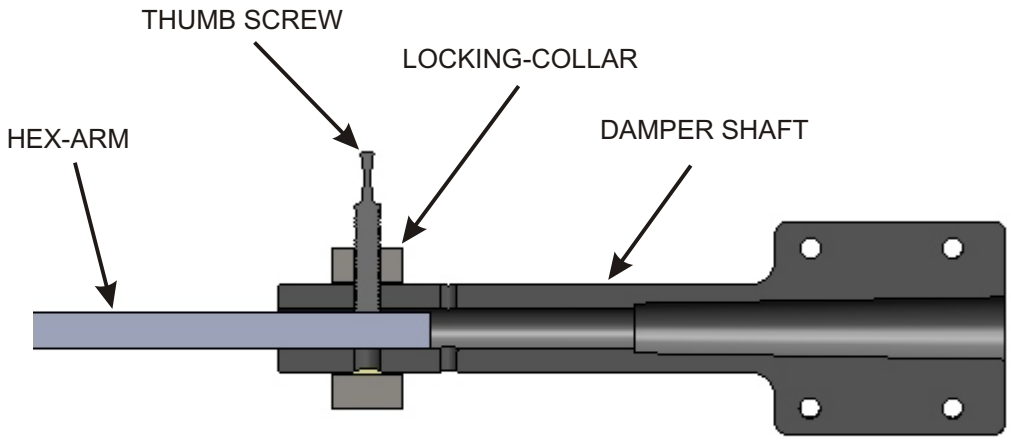


FIGURE 3 -- CUT AWAY VIEW OF ASSEMBLY

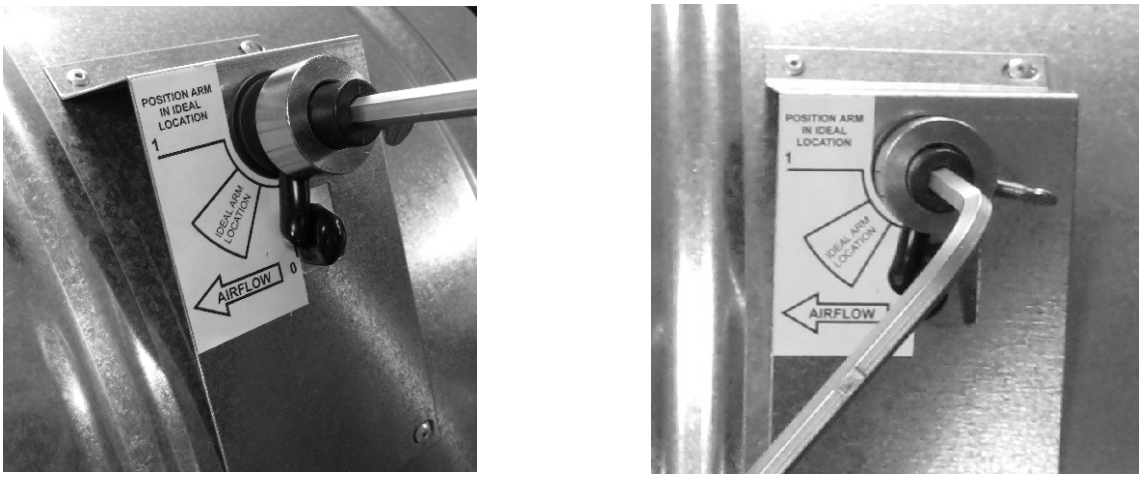


FIGURE 4 -- CLOSE-UP VIEWS OF ASSEMBLY