POTTORFF®

model **TD-93, TD-94**
tunnel transit damper
airfoil blade

Application

TD-93 and TD-94 industrial control dampers are specifically engineered and qualified for use in transit tunnel systems where tight shutoff at high velocity and/or pressure is required. The TD-93 and TD-94 meet the demanding requirements for strength, leakage, and operability in accordance with NFPA-130, NFPA-502, and UL-555S.

Standard Construction

Frame: 8" × 2" × 12 ga. (203 × 51 × 2.8) galvanized steel channel.

Blades: 14 gauge (2) 6063-T5 extruded aluminum airfoil with metal-to-metal blade overlap. Parallel (model TD-93) or opposed (model TD-94) action.

Axles: 3/4" (19) diameter stainless steel.

Linkage: 3/16" × 3/4" (5 × 19) tie bars and 3/8" (10) pivot pins concealed in frame. All components are stainless steel.

Bearings: Oil impregnated sintered stainless steel sleeve pressed into frame.

Control Shaft: 3/4" × 10" (19 × 254) round drive axle with shaft support bracket and bearing mounted to damper frame with factory mounted manual locking quadrant.

Blade Seal: Silicone, mechanically locked into blade.

Jamb Seal: Flexible stainless steel compression type.

Lifting Lugs: 7/8" (22) diameter, one on each jamb of frame.

Minimum Size: TD-93 (two blades): 12" × 12" (305 × 305)
TD-94 (two blades): 12" × 12" (305 × 305)

Maximum Size: Single section: 48" × 96" (1219 × 2438)
Multiple sections: Unlimited

Options

☐ Factory mounted electric or pneumatic actuator.

☐ Stainless steel construction: ☐ 304 ☐ 316

☐ 14 ga (2) galvanized steel blades.

☐ Vertical mounted blades with thrust washers.

☐ Bolt holes in damper frame:
☐ One side ☐ Both sides

☐ Outboard bearings.

☐ Extended perimeter mounting flange.

Ratings

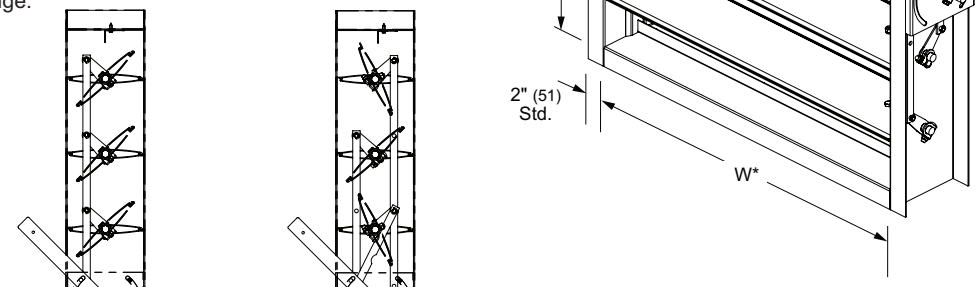
Damper Width	Maximum System Pressure	Maximum System Velocity
12" (305)	32.0 in. wg (8.0 kPa)	4000 fpm (20.3 m/s)
24" (610)	27.0 in. wg (6.7 kPa)	4000 fpm (20.3 m/s)
36" (914)	22.0 in. wg (5.5 kPa)	4000 fpm (20.3 m/s)
48" (1219)	17.0 in. wg (4.2 kPa)	4000 fpm (20.3 m/s)

** **Leakage:** 1.3 cfm/ft² @ 2.0 in. wg (0.007m³/s/ m² @ 0.5 kPa)
2.0 cfm/ft² @ 5.0 in. wg (0.01m³/s/ m² @ 1.25 kPa)
4.0 cfm/ft² @ 8.0 in. wg (0.02m³/s/ m² @ 2.0 kPa)
8.0 cfm/ft² @ 15.0 in. wg (0.04m³/s/ m² @ 3.75 kPa)
34.0 cfm/ft² @ 22.0 in. wg (0.17m³/s/ m² @ 5.5 kPa)

Temperature: 482°F (250°C) for 1 hour per NFPA -130

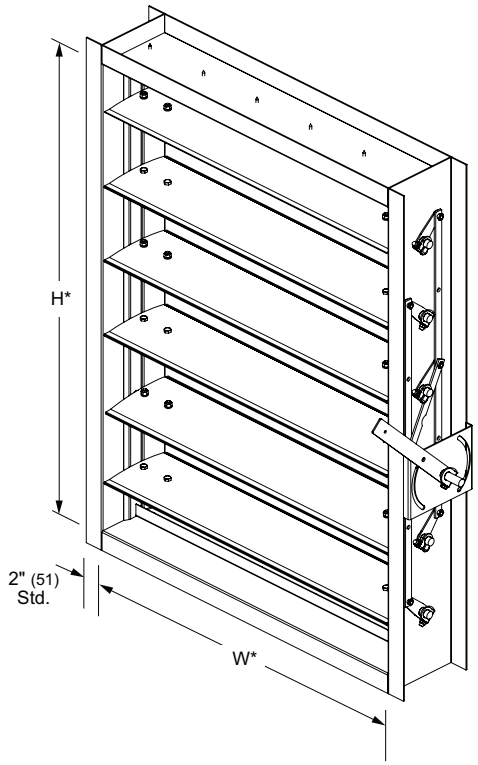
Pressure Reversal Cycles: 3,000,000 simulated train pressure reversals @ 15 in.wg (3.7 kPa) of differential pressure with the standard aluminum airfoil blade.

Pressure Reversal Cycles: 8,000,000 simulated train pressure reversals @ 15 in.wg (3.7 kPa) of differential pressure with the optional steel airfoil blade.



TD-93

TD-94



Model **TD-94**
* Damper dimensions furnished approximately net I.D.

** Results based upon a 36" × 48" (914 × 1219) damper.

NOTE: Dimensions in parentheses ( ) are millimeters.

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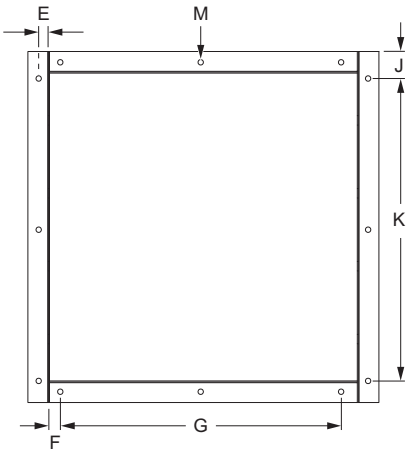
TD-93 and TD-94 Bolt Hole Dimensions

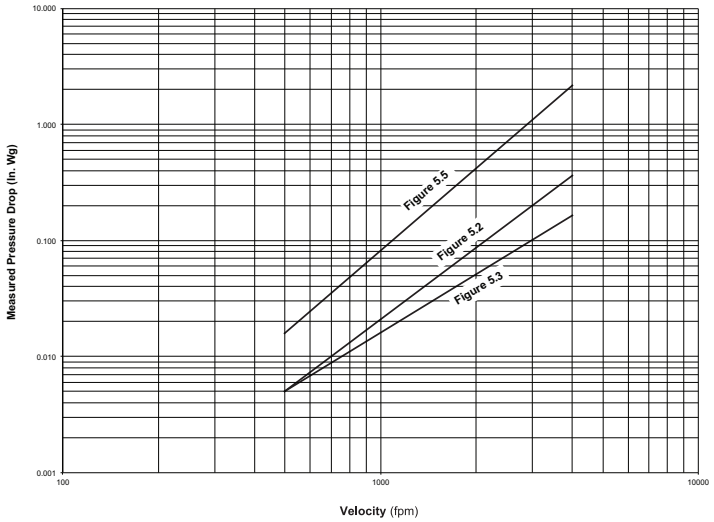


Dimension	Description
M _____ inches	Hole Diameter
E _____ inches	Centerline of Bolt Hole From Inside Edge of Frame
F _____ inches	First/Last Hole in Head/Sill
G ___ @ ___(x) inches	Number of Holes/Spacing in Head/Sill
J _____ inches	First/Last Hole in Jamb
K ___ @ ___(z) inches	Number of Holes/Spacing in Jamb

Airflow Performance Data

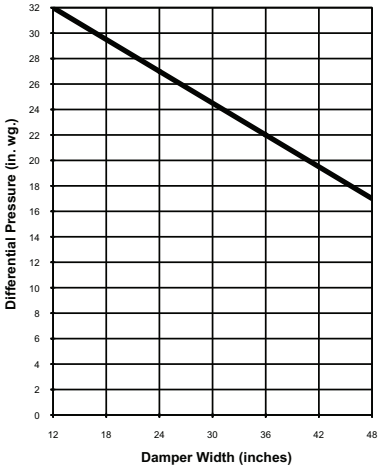
Pressure Loss vs. Velocity

Ducted Inlet and Outlet

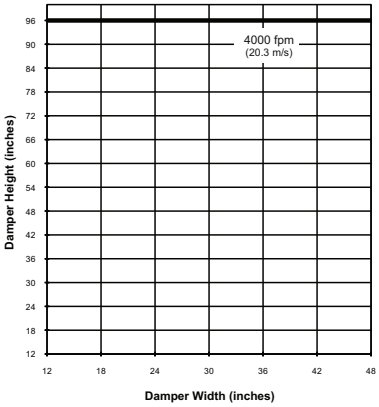


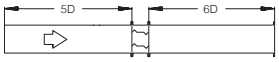
36" x 36" (914 x 914)

Pressure Limitations

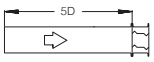


Velocity Limitations





Ducted Inlet and Outlet
AMCA Figure 5.3 Illustrates a fully ducted damper. This configuration represents the lowest pressure drop of the three test configurations because entrance and exit losses are minimized by straight duct runs upstream and downstream of the damper.



Ducted Inlet
AMCA Figure 5.2 Illustrates a ducted damper exhausting air into an open area. This configuration has a lower pressure drop than Figure 5.5 because entrance losses are minimized by a straight duct run upstream of the damper.

Plenum Mount
AMCA Figure 5.5 Illustrates a plenum mounted damper. This configuration has the highest pressure drop because of extremely high entrance and exit losses due to the sudden changes of area in the system.

Pressure drop testing was performed in accordance with AMCA Standard 500-D using Figure 5.3, 5.2 and 5.5 — Ducted Inlet and Outlet. All data has been corrected to represent air density of 0.075 lb/ft. Actual pressure drop in any ducted HVAC system is a combination of many elements. This information, along with analysis of other system influences, should be used to estimate actual pressure losses for a damper installed in a given HVAC system.

NOTE: Dimensions in parentheses ( ) are millimeters.