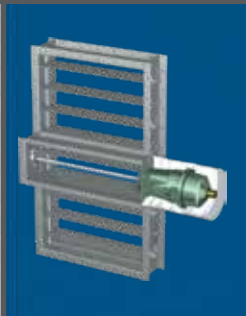
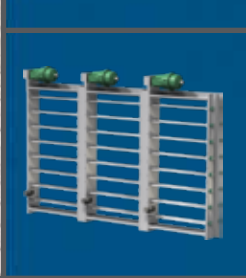
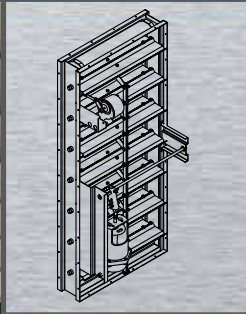


Tunnel Transit Dampers

HTD Series



 **GREENHECK**
Building Value in Air.

May
2021

Quick Reference Chart

Underground road and metro tunnels are some of the most challenging environments in the world. High humidity, dust-laden air, and limited access can make the installation and operation of ventilation systems problematic. However, these issues become insignificant in an emergency – the dampers and fans that make up the ventilation system must operate when lives are on the line. Greenheck's HTD series dampers for tunnel specific applications are designed to meet these challenges.

		HTD-621	HTD-630	HTD-636	HTD-640
Maximum Pressure in. wg (kPa)		24 (6)	24 (6)	24 (6)	24 (6)
Maximum Velocity ft./min. (m/s)		4000 (20.3)	4000 (20.3)	4000 (20.3)	4000 (20.3)
Leakage cfm/ft ² (cmh/m ²)		4 @ 12 in. wg (Less than 73 @ 3 kPa)	8 @ 4 in. wg (146 @ 1 kPa)	8 @ 4 in. wg (146 @ 1 kPa)	Meets UL Class I @ 12 in. wg (3 kPa)
Blade Deflection		L/180 standard; L/360 optional			
Frame	Galvanized Steel	●	●	●	●
	304SS	○	○	○	○
	316SS	○	○	○	○
	9.5 in (0.4mm) Extruded Aluminum	-	-	-	○
Frame Gauge	14 ga. (2mm)	○	○	○	○
	12 ga. (2.7mm)	●	●	●	●
	10 ga. (3.5mm)	○	○	○	○
	1/4 in. (6mm)	○	○	○	○
	7 ga./188 in (4.8mm)	○	○	○	○
Frame Depth	8 in. (203mm)	○	○	-	○
	10 in. (254mm)	○	○	-	○
	12 in. (305mm)	●	●	●	●
Blade Profile	Airfoil	Double Skin w/ Perimeter Seal	Double Skin	Fire Rated	Extruded
Blade Material	Galvanized Steel	●	●	●	-
	Aluminum	-	-	-	●
	304SS	○	○	○	-
	316SS	○	○	○	-
Blade Thickness	16 ga. (1.5mm)	○	○	-	-
	0.081 in. (2mm)	-	-	-	●
	14 ga. (2mm)	○	○	●	-
	12 ga. (2.7mm)	●	●	○	-
	10 ga. (3.5mm)	○	○	○	-
Blade Seals	Silicone	●	●	●	●
	Stainless Steel	-	○	-	-
	None	○	○	-	○
Jamb Seals	Stainless Steel	-	●	●	●
Certifications	Operation	250°F (121°C) Continuous; 482°F (250°C) for 2 hours		752°F (400°C) for 2 hours	250°F (121°C) Continuous; 482°F (250°C) for 1 hour
	Standards	NFPA 130, 502; UL 555S		NFPA 130, 502; UL 555S; BS476	NFPA 130, 502; UL 555S
	Fatigue Cycles	8 million reverse cycles at 24 in. wg (6 kPa)			-

● = Standard ○ = Optional

Heavy Duty/Industrial Tunnel Dampers

Applications

Dampers in subway tunnels and transit systems serve three primary functions, depending on the design of the ventilation system.

- **Pressure Equalization** - Dampers mounted in the side of the tunnel, vent pressurized air in front of a train and reintroduce air as it passes. In single trackways, this air movement can be substantial.
- **Portal Intake and Exhaust** - Dampers at tunnel ends control air intake and emergency smoke exhaust in long tunnels without intermediate air supplies.
- **Emergency Fire/Smoke Control** - Dampers are spaced along the tunnel and can be controlled remotely to pressurize a tunnel section. This pressurization allows the safe egress of train/automobile passengers to an escape tunnel while blowing fire and smoke away from the area. The damper also creates negative pressure in the area of the fire to vent smoke and gases.



Actuators

Greenheck has a variety of electric and pneumatic actuators available for the HTD series. The common models used are:

- RCS
- Bray
- Siemens
- Hytork
- Promotion
- Rotork



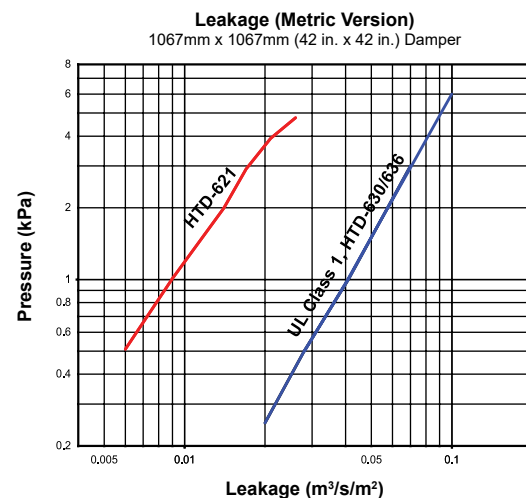
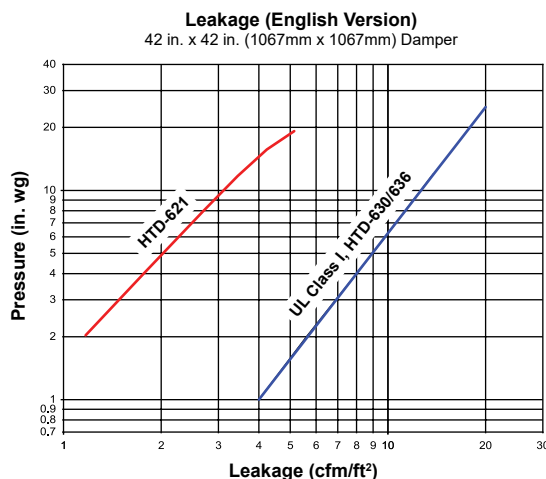
Proximity Switch

A proximity switch is mounted to the damper axle to indicate blade position on the damper. This proximity switch is NEMA-4, 4X, and 7 rated and tested to a temperature of 250°C for two hours of operation.



Leakage Data

Damper leakage (with blades fully closed) varies based on the type of low leakage seals applied. Leakage testing was conducted in accordance with AMCA Standard 500-D and expressed as CFM per sq. ft. of damper face area. All data represents a standard air at a density of .075 lb./ft³ (1.2 kg/m³).



Test Certifications & Requirements

Tunnel ventilation dampers are required to function consistently and reliably throughout their expected life in very harsh environments. Additionally, they are expected to perform with the highest levels of quality and performance. As such, tunnel ventilation dampers go through rigorous development and testing to ensure the design meets the proper codes, standards and performance required.

NFPA 130 - The National Fire Protection Agency standard covers fire protection requirements for underground, surface, and elevated fixed guideway transit and passenger rail systems. This standard includes trainways, vehicles, vehicle maintenance, storage areas, and areas regarding life safety. Greenheck tunnel transit dampers and actuators meet the rigorous requirements of NFPA 130.

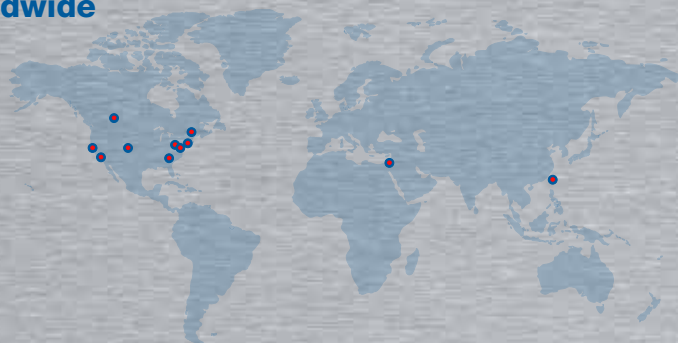
NFPA 502 - The National Fire Protection Agency standard covers fire protection and fire life safety requirements for limited access highways, road tunnels, bridges, elevated highways, depressed highways, and roadways located beneath airtight structures. This standard establishes minimum requirements for each of the identified facilities. Greenheck tunnel transit dampers and actuators meet the rigorous requirements of NFPA 502.

BS 476 Part 20 - British Standard, BS 476 Part 20, is a fire test method for building materials and structures that have been historically used throughout the world to evaluate the fire-resistant performance of dampers in the event of a fire. The damper is mounted to the fire test chamber and burned up to two hours or four hours of operation. The test report, provided by a testing authority such as Warrington Fire, signifies that the damper can resist fire up to the hours indicated.

Other Codes, Standards and Testing Requirements

- Class I leakage performance per UL 555S Classifications – verification testing per AMCA Standard 500D
- Pressure drop performance tested per AMCA Standard 500D
- High-temperature degradation to meet the most stringent specifications - typically 482°F/1hr (250°C/1hr) and included dampers, actuators, limit switches and factory-supplied conduit, wiring and junction boxes
- Reverse bending requirements against train induced pressure reversals – some requirements up to 24 in. wg (6 kPa)
- Stout construction to reduce blade deflection and assembly deflection due to train pressures and maximum fan pressures
- New York City Transit Authority (NYCTA) Approval as required.

Projects Worldwide



Our Commitment

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

Specific Greenheck product warranties are located on greenheck.com within the product area tabs and in the Library under Warranties.



Scan the QR code for more tunnel damper information

