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# PRODUCT SPECIFICATION GUIDE

## MODEL CONTROL DAMPERS

# FACILITY SERVICE SUBGROUP: DIVISION 23 HVAC (PREVIOUSLY DIVISION 15)

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Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) Format - 2004 Edition.

The section must be carefully reviewed and edited by the Engineer to meet the requirements of the project and local building code. Coordinate with other specification sections and the drawings.

Delete all unnecessary "Specifier Notes" when editing this section.

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## PART 1 GENERAL

* 1. **WORK INCLUDED**
1. Galvanized steel control dampers which lock together without bolts, screws, or rivets and suitable for application in HVAC systems with velocities to 3000 feet per minute
(15.2 m/s)
	1. **RELATED WORK**

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Specifier Notes: Edit the following list as required for the project. List other sections with work directly related to the dampers. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1. Section 15810 – Ducts.
2. Section 15900 – HVAC Instrumentation and Controls: Connections to actuators.

**1.3 REFERENCES**

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Specifier Notes: List standards referenced in this section, complete with designations and titles. This article does not require compliance with standards, but is merely a listing of those used. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1. AMCA 500-D – Laboratory Methods for Testing Dampers for Ratings.
2. AMCA 511 – Certified Ratings Program for Air Control Devices.
3. IECC - International Energy Conservation Code
4. ASHRAE Standard 62 – Ventilation for Acceptable Indoor Air Quality

**1.4 SUBMITTALS**

1. Comply with requirements of Section 01330 – Submittal Procedures.
2. Product Data: Submit manufacturer’s product data.
3. Include leakage, velocity, pressure drop and maximum pressure data
4. Indicate materials, construction, and dimensions.
5. Include pressure drop data for all damper sizes in accordance with AMCA 500-D test figures 5.2 (Ducted Inlet, Free Outlet), 5.3 (Ducted Inlet, Ducted Outlet) and 5.5 (Free Inlet, Free Outlet).
6. Include a copy of Installation Instructions.
	1. **QUALITY ASSURANCE**
7. Dampers shall bear the AMCA Certified Ratings Seal for Air Performance in accordance with AMCA 511 (VCD-20).
8. Dampers shall bear the AMCA Certified Ratings Seal for Air Performance Air Leakage in accordance with AMCA 511 (VCD-23).
	1. **DELIVERY, STORAGE, AND HANDLING**
9. Delivery: Deliver Materials to site in manufacturer’s original, unopened containers and packaging, with labels clearly indicating manufacturer, material, and location of installation.
10. Storage: Store materials in a dry area indoor, protected from damage, and in accordance with manufacturer’s instructions.
11. Handling: Handle and lift dampers in accordance with manufacturer’s instructions. Protect materials and finishes during handling and installation to prevent damage.

## PART 2 PRODUCTS

**2.1 MANUFACTURER**

1. Greenheck India Private Limited, Off No.: 541-542, Tower B3, Spaze I-Tech Park, Sector-49, Sohna Road, Gurgaon – 122018, Haryana, India. Phone 011-91-124-4272494. Fax 011-91-124-4711263. Web Site [www.greenheck.co.in](file:///C%3A%5CUsers%5Cloeffel%5CAppData%5CLocal%5CMicrosoft%5CWindows%5CTemporary%20Internet%20Files%5CContent.Outlook%5CAppData%5CLocal%5CMicrosoft%5CWindows%5CTemporary%20Internet%20Files%5CContent.Outlook%5CIQ1U5XD0%5Cwww.greenheck.co.in).
	1. **HVAC Control Damper**
2. Model: VCD-20and VCD-23
3. Ratings
4. Leakage: VCD-23

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* Dampers shall have a maximum leakage of Class 1 @ 4 in. wg or Class 1A @ 1 in. wg as defined by AMCA (Leakage class 1 is defined as 8 cfm/ sq. ft. @ 4 in. wg and class 1A is defined as 3 cfm/ sq. ft. @ 1 in. wg. at -40°F). Tested in accordance with AMCA standard 500-D.
* Damper shall meet or exceed the IECC (International Energy Conservation Code) requirements for damper leakage ratings of 3 cfm/ sq. ft @ 1 in. wg or 8 cfm/sq. ft. @ 4in. wg or less when integral to the building envelope.
1. Differential Pressure:

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1. Dampers shall have a maximum differential pressure rating of 5 in. wg.
2. Velocity:

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1. Dampers shall have a maximum velocity rating of 3000 fpm (15.2m/s).
2. Construction:
3. Frame:

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Specifier Note: The following requirements for frame construction provide for specific corner reinforcement. A major problem with dampers is light or flimsy construction resulting in damper operating problems because they are installed out of square or racked. Corner reinforcement required by the following specification will significantly minimize these problems.

To prevent excessive pressure loss across small dampers it is desirable to require a low profile frame to maximize the damper free area and minimize pressure loss. The following requirements address this issue be requiring a low profile frame on dampers less than 17” high.

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Damper frame shall be 1.5mm galvanized steel formed into a 5” x 1” structural hat channel. Top and bottom frame members on dampers less than 17” high shall be low profile design to maximize the free area of these smaller dampers. Frame shall be 4-piece construction with 1 ½” (minimum) integral overlapping gusset reinforcements in each corner to assure square corners and provide maximum resistance to racking.

1. Blades:

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Specifier Notes: The following requirements for blade construction incorporate a design concept known as VSB (Variable Symmetrical Blades). Many damper manufacturers utilize only one size of blade, which requires trimming one or more blades to accommodate varying damper heights. When blades are trimmed one or more of the blades become non-symmetrical resulting in operating torque that will vary significantly depending on airflow direction through the damper. Alternatively larger blade stops (top and bottom of damper) are required. This reduces damper free area and results in higher pressure loss across the damper.

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Blades: Damper blades shall be 1.5mm galvanized steel strengthened by three longitudinal 1” deep Vee grooves running the entire length of each blade. Each blade shall be symmetrical relative to its axle pivot point, presenting identical performance characteristics with air flowing in either direction through the damper. Provide symmetrical blades of varying size as required to completely fill the damper opening. Blade orientation is horizontal. Blade operation is parallel or opposed.

1. Blade Stops:

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Specifier Notes: The following requirement for blade stop construction minimizes blade stop height. Large blade stops reduce damper free area and results in higher pressure loss across the damper.

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Each blade stop (at top and bottom of damper frame) shall occupy no more than ½” of the damper opening area to allow for maximum free area and to minimize pressure loss across the damper.

1. Seals: VCD-23
2. Blade Edge: Blade seals shall be TPE comes standard which are mechanically fastened to each blade. Silicone blade seal is optional.
3. Jamb: Flexible stainless steel compression type
4. Linkage: Concealed in jamb, plated steel material.

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Specifier Notes: Linkage concealed in the jamb of the damper reduces pressure drop across the damper and results in less maintenance than on-blade-linkage.

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6. Axles: Minimum ½ inch dia. plated steel.

7. Bearings: Axle bearings shall be synthetic (acetal) sleeve rotating in polished extruded holes in the damper frame. Bronze bearings are optional.

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Specifier Notes: Extruded bearing holes in frame provide more axle to bearing surface area. As a result, bearings will last longer and add to the life of the damper.

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8. Finish: Mill Galvanized finish is standard.

* 1. **ACCESSORIES**

A. Actuators:

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Specifier Notes: Specify electric actuators. Specify external or internal mounting. Electric actuators and components are to be factory grounded to single point junction box in accordance with Part 1 of the Canadian Electrical Code, section 12-1xxx (Rigid and Flexible Metal Conduit Rules). External mounting is recommended for ease of accessing for inspection and to minimize blockage that will result in higher pressure drop across the damper. Specifier selects the required actuator type and mounting location:

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1. Type:
2. Electric, 24V AC, 2-position
3. Electric, 230V AC, 2-position
4. Mounting:
5. External
6. Internal

B. OCI Switch

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 Two position indicator switch directly linked to damper blade to remotely indicate damper blade position.

C. Flange Frame

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 1½ inches, formed as part of frame.

D. Sleeve

 Damper sleeve supplied as a single assembly with a factory sleeve.

E. Duct Transition

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 Duct transition connections available are round, or rectangular.

* 1. **SOURCE QUALITY CONTROL**
1. Factory Tests: Factory cycle damper and actuator assemblies to assure proper operation.

## PART 3 EXECUTION

**3.1 EXAMINATION**

1. Examine areas to receive dampers. Notify the Engineer of conditions that would adversely affect installation or subsequent utilization of dampers. Do not proceed with installation until unsatisfactory conditions are corrected.

**3.2 INSTALLATION**

1. Install dampers in accordance with manufacturer’s Installation Instructions.
2. Dampers must be accessible to allow inspection, adjustment, and replacement of components. The sheet metal contractor shall furnish any access doors in ductwork or plenums required to provide this access. The general contractor shall furnish any access doors required in walls, ceilings, or other general building construction.
3. Install dampers square and free from racking.
4. The installing contractor shall provide and install bracing for multiple section assemblies to support assembly weight and to hold against system pressure.
5. Do not compress or stretch the damper frame into the duct or opening.
6. Attach multiple damper section assemblies together in accordance with manufacturer’s instructions. Install support mullions as reinforcement between assemblies as required.
7. Handle dampers using the frame or sleeve. Do not lift or move dampers using blades, actuator or jackshaft.
8. Install connections to [electric] actuators as specified in section 15900.

# END OF SECTION