\*\* NOTE TO SPECIFIER \*\* This document is subject to copyright protection and is property of Ruskin Company. Ruskin authorizes the Specifier a limited non-exclusive license to use this document (in whole or in part) for the purpose of preparing written product specifications for the above CSI MasterFormat category. Ruskin Company is providing the information contained in this document for informational use, and is provided without representation or warranty of any kind as to the user or any other party, including, without limitation, any implied warranty of merchantability, and fitness for particular purpose, application, or non-infringement. To the greatest extent permitted by applicable law, Ruskin Company assumes no liability, and User assumes all liability and risk, for the use or results from the use of this document or the information contained herein, whether modified by the user or not. Any user of this document should consult www.ruskin.com to verify that the information contained herein is the most current representation of the specified product.

SECTION 23 33 00.19

SMOKE CONTROL DAMPERS

Specifier Notes are hidden. Reveal hidden text to read notes.

\*\* NOTE TO SPECIFIER \*\* This section is based on the products of Ruskin Company, which is located at:

 3900 Dr. Greaves Road

 Kansas City, Missouri 64030

 Tel: (816) 761-7476

 Fax: (816) 765-8955

 Email: ruskin@ruskin.com

 Web: <http://www.ruskin.com>

Ruskin Manufacturing has been the leading manufacturer of dampers and louvers for 50 years. Ruskin has pioneered advanced products for the HVAC Industry and continues to be an industry leader with modern manufacturing equipment, computer-aided design capabilities and an AMCA registered air performance testing laboratory for research and development. All of these are backed by our experienced engineers and professional staff and reflects Ruskin's commitment to high quality product standards.

Ruskin Industrial Dampers are designed to provide construction features that meet the needs of the customers, ambient to extreme temperatures, pressures and challenging atmospheres. Ruskin can provide ultra-low leakage, high temp and pressure relief dampers for process control. When required non-standard materials can be used to meet or exceed project requirements. Post applied coatings and finishes are also to be considered based on system conditions.

SECTION 23 33 00, Copyright 2016, Ruskin Company.

1. GENERAL
	1. SECTION INCLUDES
		1. Smoke damper with triple-V groove blades meeting the requirements of the latest edition of UL Standard 555S, Model SD36 and SD36SS.
	2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Edit the following list as required for the project. List other sections with work directly related to the dampers.

* + 1. Section 23 31 00 – HVAC Ducts and Casings.
		2. Section 23 09 00 – Instrumentation and Control for HVAC.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references not required.

* + 1. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.
		2. AMCA 500-D - Laboratory Methods for Testing Dampers for Ratings.
		3. AMCA 511 - Certified Ratings Program for Air Control Devices.
		4. BOCA – Building Officials and Code Administrators.
		5. ICBO – International Conference of Building Officials.
		6. SBCCI – Southern Building Code Congress International.
		7. ICC – International Code Council.
		8. CSFM - California State Fire Marshall Listing for Fire Damper and Smoke Damper.
		9. MEA – City of New York, Department of Buildings, Material and Acceptance Division.
		10. NFPA 90A - Installation of Air Conditioning and Ventilating Systems.
		11. NFPA 92A - Smoke-Control Systems.
		12. NFPA 92B – Smoke Control Systems in Atria, Covered Malls, and Large Areas.
		13. NFPA 101 – Life Safety Code.
		14. NFPA 105 – Standard for Smoke Door Assemblies and Other Opening Protectives.
		15. UL 555S - Standard for Safety; Leakage Rated Dampers for Use in Smoke Control Systems.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. USGBC: U.S. Green Building Council LEED® Rating System.
	1. DEFINITIONS

\*\* NOTE TO SPECIFIER \*\* Retain definitions remaining after this Section has been edited.

* + 1. Damper Terminology: Definitions of terms for metal louvers contained in AMCA 500 apply to this Section unless otherwise defined in this Section or in referenced standards.
		2. Horizontal Damper: Damper with horizontal blades; i.e., the axes of the blades are horizontal.
		3. Vertical Damper: Damper with vertical blades; i.e., the axes of the blades are vertical.
		4. SS: Damper with stainless steel construction.
	1. ACTION SUBMITTALS
		1. Comply with requirements of Section 01 33 00 - Submittal Procedures.
		2. Product Data: Submit manufacturer's product data.
			1. Submit manufacturer's product data, including leakage, pressure drop, and maximum pressure data in accordance with AMCA 500 testing. Submit data for full range of damper sizes.
			2. Indicate materials, construction, and dimensions.
			3. Damper to meet or exceed published leakage information when tested in accordance to AMCA 500-D.
			4. Damper to be tested specifically to project specifications in an AMCA approved laboratory when applicable.
			5. Include a copy of the UL Installation Instructions.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Verify conformance to UL, MEA, CSFM, and applicable building code as applicable.
		1. Shop Drawings:
			1. Submit shop drawings indicating materials, construction, dimensions, accessories, and installation details.
		2. Product Schedule: For dampers. Use same designations indicated on Drawings.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if not required.

* + 1. Samples: Submit sample of damper to show frame, blades, actuator, accessories, finish, and color.
	1. INFORMATIONAL SUBMITTALS

\*\* NOTE TO SPECIFIER \*\* Coordinate "Qualification Data" Paragraph below with qualification requirements in Division 01 Section "Quality Requirements" and as may be supplemented in "Quality Assurance" Article.

* + 1. Qualification Data: For manufacturer and Installer.
		2. Product Test Reports: For each type of damper, for tests performed by a qualified testing agency.

\*\* NOTE TO SPECIFIER \*\* Retain "Field quality-control reports" Paragraph below if Contractor is responsible for field quality-control testing and inspecting.

* + 1. Field quality-control reports.
		2. Sample Warranties: For manufacturer's warranties.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications:
			1. The manufacturer shall have implemented the management of quality objectives, continual improvement, and monitoring of customer satisfaction to assure that customer needs and expectations are met.
			2. Manufacturer shall be International Organization for Standardization (ISO) 9001 accredited.

\*\* NOTE TO SPECIFIER \*\* Insert installer qualifications. Delete if not required.

* + 1. Installer Qualifications:
			1. USGBC LEED Compliance: The Work of this section shall be in accordance with applicable portions of the U.S. Green Building Council’s LEED Green Building Rating System. Refer to Divisions 23 and 26 Sections and other related documents bound herein for purposes of complying with this requirement.
		2. Product Qualifications:
			1. Damper pressure drop ratings shall be based on tests and procedures performed in accordance with AMCA 500 and certified by AMCA (if applicable).
			2. Dampers shall meet requirements for smoke dampers in accordance with:
				1. NFPA 80, 90A, 92B, 101 and 105.
				2. CSFM 3230 Smoke Damper Listing.
				3. New York City MEA Listing.
				4. Applicable building codes.
			3. Dampers shall be tested, rated and labeled in accordance with:
				1. UL 555S (Fourth Edition), Listing R5531.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly indicating manufacturer and material.
		2. Storage: Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.
		3. Handling: Handle and lift dampers in accordance with manufacturer's instructions. Protect materials and finishes during handling and installation to prevent damage.
	2. WARRANTY
		1. Manufacturer shall provide standard limited warranty for damper systems for a period of 5 years (60 months) from date of installation, no more than 60 months after shipment from manufacturing plant. When notified in writing from the Owner of a manufacturing defect, manufacturer shall promptly correct deficiencies without direct financial cost to the Owner.
1. PRODUCTS
	1. MANUFACTURER
		1. Ruskin Company, 3900 Dr. Greaves Road, Kansas City, Missouri 64030. Phone (816) 761-7476. Fax (816) 765-8955. Web Site http://www.ruskin.com.
		2. Substitutions: Not permitted.
	2. SMOKE DAMPERS

\*\* NOTE TO SPECIFIER \*\* Delete construction not required. Consult Ruskin for assistance in selecting from options for specific applications.

* + 1. Model: SD36 as manufactured by Ruskin Company. Galvanized construction.
		2. Model: SD36SS as manufactured by Ruskin Company. Stainless steel construction.
		3. Ratings:
			1. Smoke Rating: Leakage Class II Smoke Damper in accordance with UL555S. A Class ll smoke damper leaks no more than 20 cubic feet per minute (.57 m3/min) at 4 in. wg. (1 kPa) differential pressure.

\*\* NOTE TO SPECIFIER \*\* Elevated temperature ratings of 250 degree F (121 degree C) and 350 degree F (177 degree C)are allowed by UL Standard 555S. The building codes require a rating of 250°F. The highest temperature rating of 350°F is available at an increase in cost. Delete the Elevated Temperature Rating not required.

* + - 1. Elevated Temperature Rating: 250 degree F (121 degree C).
			2. Elevated Temperature Rating: 350 degree F (177 degree C). (Galvanized only).
			3. Air Flow Rating: 2000 fpm.
			4. Pressure Rating: 4 inches wg.
		1. Construction:

\*\* NOTE TO SPECIFIER \*\* A problem with dampers is flimsy construction of the damper frame. A flimsy frame makes the damper susceptible to “bad” (out of square or racked) installations and causes operating problems. Specifying a one-piece, roll-formed, hat-shaped channel, constructed from 16 gauge steel and structurally equivalent to 13 gauge (2.3 mm) U-channel type frame can significantly reduce those problems.

* + - 1. Frame: 5 inches x minimum 16 gage (127 mm x minimum 1.6 mm) roll formed press brake steel hat-shaped channel, reinforced at corners. Structurally equivalent to 13 gage (2.3 mm) U-channel type frame.

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - * 1. Material: Galvanized steel.
				2. Material: Stainless steel.
			1. Blades:

\*\* NOTE TO SPECIFIER \*\* Damper blades shall be 16 gauge galvanized steel with a minimum of 3 full length longitudinal grooves. The grooves strengthen the blade. Flat blades are not acceptable.

* + - * 1. Style: Single skin with 3 longitudinal grooves. Flat blades shall not be acceptable.
				2. Action: Opposed.
				3. Orientation: Horizontal.

\*\* NOTE TO SPECIFIER \*\* Delete material not required. Stainless steel when SS damper selected.

* + - * 1. Material: Minimum 16 gage (1.6 mm) galvanized steel.
				2. Material: Minimum 16 gage (1.6 mm) stainless steel.
				3. Width: Maximum 6 inches (152 mm).

\*\* NOTE TO SPECIFIER \*\* Extruded bearing hole provides more axle-to-bearing surface. The bearings will last longer, adding to the life of the damper. Specify stainless steel bearings for damper reliability.

* + - 1. Bearings: Self-lubricating stainless steel sleeve, turning in extruded hole in frame.

\*\* NOTE TO SPECIFIER \*\* Glue-on seals can fall off affecting the leakage rating and damper performance.

* + - 1. Seals:
				1. Blade: Inflatable silicone material to maintain smoke leakage rating to a minimum of 450°F (232°C). Mechanically attached to blade edge (glue-on or grip type seals are not acceptable).
				2. Jamb: Stainless steel, flexible metal compression type.

\*\* NOTE TO SPECIFIER \*\* Specify concealed linkage for lower pressure drop and low maintenance.

* + - 1. Linkage: Concealed in frame.

\*\* NOTE TO SPECIFIER \*\* Delete axle material not required. Stainless steel when SS damper selected.

* + - 1. Axles: Minimum 1/2 inch (13 mm) diameter plated steel, hex-shaped, mechanically attached to blade.
			2. Axles: Minimum 1/2 inch (13 mm) diameter stainless steel, hex-shaped, mechanically attached to blade.
			3. Mounting: Vertical and/or Horizontal.
			4. Actuator:

\*\* NOTE TO SPECIFIER \*\* Specify an electric or pneumatic actuator and mounting. Stall type electric actuators with external return springs are not acceptable. External mounting is recommended because the actuators are easier to access and because they do not block the air stream. Delete type not required.

* + - * 1. Type: Electric 120 V, 60 Hz, two-position, fail close.
				2. Type: Electric 24V, 60 Hz, two-position, fail close.
				3. Type: Pneumatic, 25 psi minimum control pressure, two-position, fail close.

\*\* NOTE TO SPECIFIER \*\* Delete actuator mounting not required.

* + - * 1. Mounting: External (out of airstream).
				2. Mounting: Internal (in air stream).

\*\* NOTE TO SPECIFIER \*\* Delete material not required. Stainless steel when SS damper selected.

* + - 1. Finish: Mill galvanized.
			2. Finish: Stainless steel.

\*\* NOTE TO SPECIFIER \*\* Consult Ruskin for assistance in specifying accessories for specific applications.

* 1. ACCESSORIES

Specifier Notes: The SP 100 Switch Package indicates actual blade position. Ruskin can also provide actuators with internal auxiliary switches if desired (consult Ruskin for actuator availability). Select one of the following switch packages, if required.

* + 1. Indicator or Auxiliary Switch Package: SP 100 Switch Package – Two position indicator switches linked directly to damper blade to remotely indicate damper blade position.
		2. Actuator with internal switches: Damper “open”, damper “closed”. Switches mounted internal to actuator.

\*\* NOTE TO SPECIFIER \*\* Ruskin factory mounts two types of duct smoke detectors: the DSDF which mounts on the outside of the sleeve and has a sensing tube that traverses the air steam or the DSDN, which mounts totally with in the air stream. Both detectors are factory mounted for “single-point” electrical connections at the job site. Factory mounting reduces smoke detector application mistakes. For correct operation, the DSDF requires a minimum air flow velocity of 300 fpm. The DSDN does not have a minimum air flow requirement. Delete model, mounting and type not reuired.

* + 1. DSD – Duct Smoke Detector:
			1. Model: DSDF (flow).
			2. Model: DSDN (no flow).

\*\* NOTE TO SPECIFIER \*\* Delete mounting not required.

* + - 1. Mounting: Factory Mounted.
			2. Mounting: Shipped Loose for Field Installation.
			3. Type: Photoelectronic.
		1. Factory Sleeve:
			1. Minimum 20 gage (1.0 mm) thickness.
			2. Minimum 12 inches (305 mm) long.
		2. DTS-SD: Damper test switch - push button.
	1. SOURCE QUALITY CONTROL
		1. Factory Tests: Factory cycle damper and actuator assembly to assure proper operation.
1. EXECUTION
	1. EXAMINATION
		1. Inspect areas to receive dampers. Notify the Architect/Engineer of conditions that would adversely affect the installation or subsequent utilization of the dampers. Do not proceed with installation until unsatisfactory conditions are corrected.
		2. If opening preparation is the responsibility of another installer, notify Architect/Engineer of unsatisfactory preparation before proceeding.
	2. INSTALLATION
		1. Handle dampers using the sleeve or frame. Do not lift or move damper using blades, actuator, jackshaft or any other accessory supplied with the damper.
		2. Install dampers in accordance with manufacturer’s UL Installation Instructions, product labeling and NFPA 90A at locations indicated on the Drawings. Any damper installation that is not in accordance with the manufacturer’s UL Installation Instructions shall be approved prior to installation.
		3. Install dampers square and free from racking with blades orientation as scheduled or required.
		4. Do not compress or stretch damper frame into duct or opening.
		5. The installing contractor shall install bracing for multiple section assemblies to support assembly weight and to hold against system pressure.
		6. Attach multiple damper section assemblies together in accordance with manufacturer’s instructions.
		7. Install connections to actuators as required by other technical specification sections.
		8. Dampers shall be accessible to facilitate code required inspection, adjustment and like for like replacement of components. Sheet metal contractor shall furnish access doors located in ductwork or plenums required to provide access. The Contractor shall furnish access doors required in walls, finished ceilings and general building construction to gain access to dampers and mechanical access panels.
		9. Contractor shall coordinate post installation inspection and cycle test of each damper as required by IFC, NFPA and local codes. Final inspection and test report shall be furnished to building Owner for its records.

END OF SECTION