



SALES BROCHURE



NFPA 251 COMPLIANT



INTEGRATED STRUCTURE

FR-PANEL SOLUTIONS

1HR & 2HR FIRE-RATED PANEL

In the event of a fire, occupants should be moved quickly to safety and critical information should be protected. FläktGroup® SEMCO® fire-rated panel system is the industry's only certified fire protection panel that's also building code-compliant for use in structural, acoustical, and thermal applications. The industry's thinnest fire-rated panel offers up to two hours of fire protection, integrated structure and superior transmission loss in an easy-to-install, tongue-and-groove design.

The fire-panel system has endured rigorous professional third party testing under UL-263 "Standard for Fire Tests of Building Construction and Materials" using ASTM E119 test criteria and has been proven to comply with the National Fire Protection Association's® (NFPA) Code 251. The FR-PANEL'S significantly low thermal transfer rate offers one or two hours of added protection during fire a event, providing first-responders the valuable time they need to arrive.

FläktGroup SEMCO's panels are inherently easy to assemble due to their quick-installing tongue-and-groove design. All of FläktGroup SEMCO's panels have precision roll-formed connections that do not require fasteners through the vertical panel joint. Competing panel brands require excessive field-applied fasteners. Adding to the ease of installation, all panels are delivered to job sites neatly stacked and palletized with individual labels.

FläktGroup SEMCO provides project specific connection details with each panel job's complete 1/4" scale "D Size" assembly drawings. The computer aided design will optimize your layout, lower structural steel costs, and allow for the use of the fewest panels necessary for your assembly. FläktGroup SEMCO's engineered fire-rated panels will save you time in the field, reduce overall project costs, and eliminate countless hours of planning and logistical contacts while satisfying your project's specific performance.

Performance and quality are more than just words at FläktGroup SEMCO; they are an integral part of every product we make and the service we provide. Our products are backed not only with a history of satisfied customers, but also with a continuing commitment to quality and service.



 **COST REDUCTION**

 **TIME SAVING**

 **ENGINEERED PERFORMANCE**

 **SIMPLIFIED PROJECT MANAGEMENT**

FEATURES & BENEFITS

APPLICATIONS & CONSTRUCTION

MATERIALS

- Galvanized steel
- Galvannealed steel
- Stainless steel

FINISHES

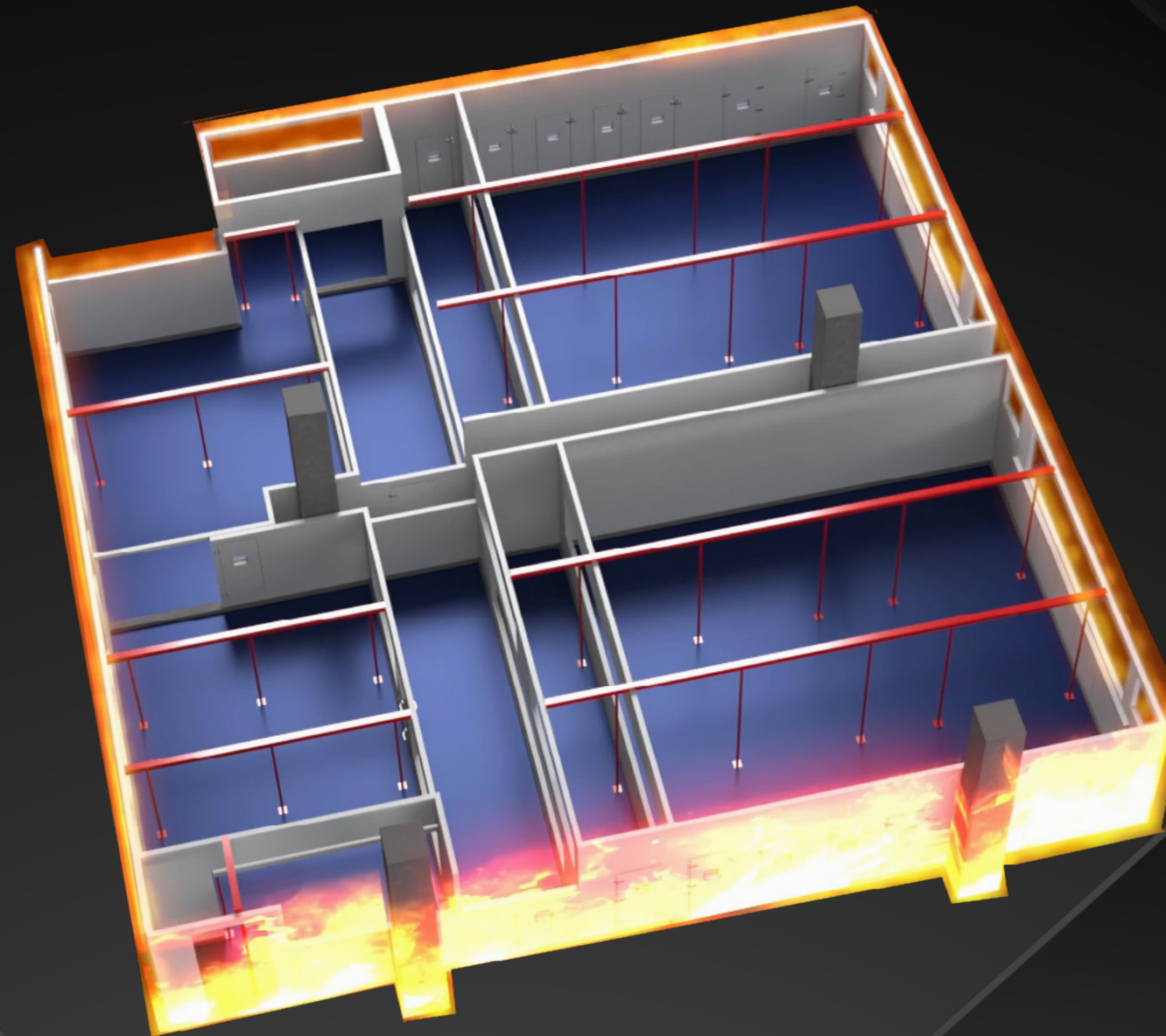
- Mill finish
- Suitable for field painting

DIMENSIONS

- 4" thickness
- Up to 12' maximum length
- Up to 45½" maximum width

CONSTRUCTION & INSTALLATION

- Roll formed tongue-and-groove construction, fully enclosed and insulated joint gives better fit with closer tolerance.
- No screws through vertical panel joints reduces install cost and eliminates the possibility of air and noise leaks that may occur with screws.
- Tongue-and-groove panel is fully insulated at the male-female joint eliminates field insulation of joints and the need for screws at the joints.
- No thru-metal panel. Designed to perform in all temperatures and to prevent condensation problems, unlike the competition.
- Internal media provides excellent sound transmission loss, in addition to fire protection.
- Panels up to 12' in length add strength, rigidity, making installation easier.
- Factory interior cuts, notches, and sloped ends as required reduces install costs and accommodates equipment



PROJECT MANAGEMENT

- Complete ¼" scale "D" size assembly drawings.
- Computer aided design prevents the use of excessive structural steel, while providing a calculated safety factor and reducing installation costs by as much as 15%.
- AutoCAD drawings shorten the approval process and reduces field labor. The drawings include: panel layout, installation details, and individual panel markings.
- Flexible design options to meet special requirements.
- Individually piece marked panels

PERFORMANCE

- Significantly low thermal transfer rate. The 1HR FR-PANEL exceeds one hour of fire-protection during and event, while the 2HR FR-PANEL exceeds two hours.
- High sound transmission loss. Meets critical noise levels.

APPLICATIONS

- Interior walls
- Stairwell chase
- Elevator Shafts
- Equipment rooms
- Penthouse construction
- Building cladding
- Rectangular ductwork
- Custom fire protection

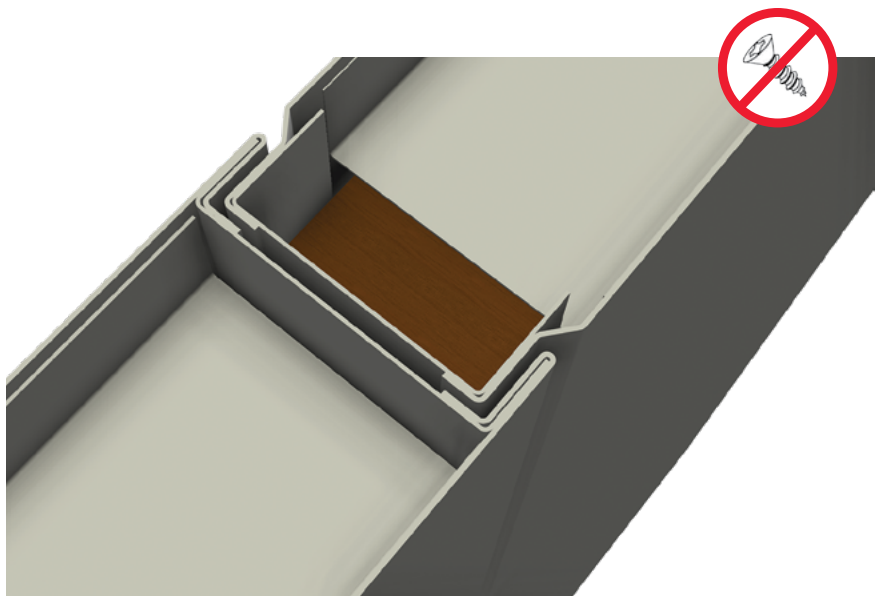
EASE OF INSTALLATION

FläktGroup SEMCO's drafters and designers use the latest computer-aided design (CAD) technology to create accurate fire-rated panel system layouts for each and every customer. The automated CAD panel layout program that Fläktgroup SEMCO's designers and drafters use, utilizes factory-supplied cutouts to design the strongest structure possible. This system layout helps eliminate the use of unnecessary panels saving money and time during installation.

Unlike competitor's fire-rated panel systems, the FR-PANEL does not require fasteners to secure panel joints during installation. The FR-PANEL system instead uses a state of the art, roll-formed connection, eliminating hardware at the joint. The tongue-and-groove panel is fully insulated throughout the joint, creating a precise tolerance. Adding a bead of LEED certified caulk to the joint, after installation, reduces leakage rates to less than 0.01 cfm/ft² at 20 psf.

FläktGroup SEMCO's design team will provide a full library of standard and customized connection details, to simplify the installation process. In addition to connection details, 1/4" scale full "D size" detailed assembly drawings will be provided with each system.

All FläktGroup SEMCO panels arrive on site in a custom built full size skid, organized and individually labeled , simplifying the receiving and assembly process.



A close-up of a fully insulated tongue-and-groove panel at the male-female joint.

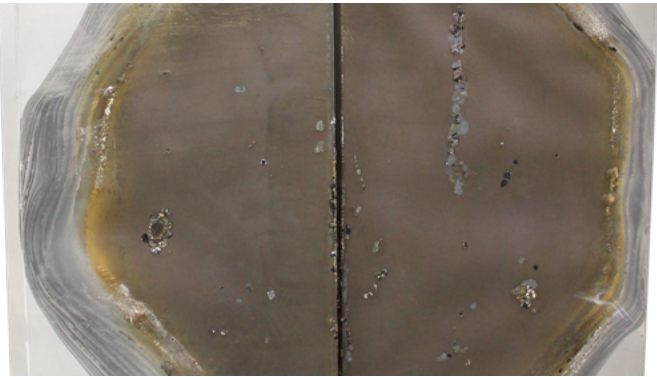


PERFORMANCE

TESTING & CERTIFICATION



SAFE SIDE
Two sides of the same panel after a two-hour, 1800°F flame test.



BURN SIDE

1 HR FR-PANEL			
TESTING CATEGORY		STANDARD	RESULTS
FIRE	VERTICAL (WALL) FIRE RETARDANT	ASTM E119	1 HOUR
	HORIZONTAL (ROOF) FIRE RETARDANT		1 HOUR
	SMOKE DEVELOPMENT AND FLAME SPREAD	ASTM E84	FLAME SPREAD = 0
			SMOKE DEVELOPED = 0
ACOUSTICAL	SOUND TRANSMISSION LOSS	ASTM E90	STC 42
	SOUND ADSORPTION	ASTM C430	NRC 0.25
STRUCTURAL	HORIZONTAL COMPRESSIVE ULTIMATE LOAD	ASTM E72-15	13,192 LBS.
	VERTICAL COMPRESSIVE ULTIMATE LOAD		7,254 LBS.
	12 FT TRANSVERSE ULTIMATE LOAD		39 PSF
THERMAL	THERMAL TRANSMITTANCE (U-VALUE)	ASTM C236	0.11 BTU/HRFT²F
	THERMAL TRANSMITTANCE (R-VALUE)	ASTM C1363	7.86 BTU/HRFT²F
WEATHER	AIR INFILTRATION	ASTM E283	<0.01 CFM/F² AT 20 PSF
	WATER PENETRATION	ASTM E331	0 AT 20 PSF

2 HR FR-PANEL			
TESTING CATEGORY		STANDARD	RESULTS
FIRE	VERTICAL (WALL) FIRE RETARDANT	ASTM E119	2 HOUR
	HORIZONTAL (ROOF) FIRE RETARDANT		—
	SMOKE DEVELOPMENT AND FLAME SPREAD	ASTM E84	FLAME SPREAD = 0
			SMOKE DEVELOPED = 5
ACOUSTICAL	SOUND TRANSMISSION LOSS	ASTM E90	STC 42
	SOUND ADSORPTION	ASTM C430	NRC 0.25
STRUCTURAL	HORIZONTAL COMPRESSIVE ULTIMATE LOAD	ASTM E72-15	11,129 LBS.
	VERTICAL COMPRESSIVE ULTIMATE LOAD		17,107 LBS.
	12 FT TRANSVERSE ULTIMATE LOAD		33 PSF
THERMAL	THERMAL TRANSMITTANCE (U-VALUE)	ASTM C236	0.11 BTU/HRFT²F
	THERMAL TRANSMITTANCE (R-VALUE)	ASTM C1363	7.86 BTU/HRFT²F
WEATHER	AIR INFILTRATION	ASTM E283	<0.01 CFM/F² AT 20 PSF
	WATER PENETRATION	ASTM E331	0 AT 20 PSF

DETAILED LOOK AT ACOUSTICAL TESTING DATA

The result of the ASTM E90 transmission loss testing on non-load-bearing wall assembly for both the 1HR and 2HR FR-PANEL is shown in the table below.

FREQUENCY (HZ)	63	125	250	500	1,000	2,000	4,000	8,000	STC
TRANSMISSION LOSS (dB)	20	28	42	57	63	64	74	71	42

The result of the ASTM C430 sound absorption testing on non-load-bearing wall assembly for both the 1HR and 2HR FR-PANEL is shown in the table below.

FREQUENCY (HZ)	125	250	500	1,000	2,000	4,000	NRC
TRANSMISSION LOSS (dB)	0.27	0.15	0.05	0.03	0.01	0.03	0.05

DETAILED LOOK AT STRUCTURAL TESTING DATA

1HR FR-PANEL — TRANSVERSE ULTIMATE LOAD (HORIZONTAL)				
TESTING CATEGORY	STANDARD	L/360 (PSF)	L/240 (PSF)	L/180 (PSF)
6 FT. TRANSVERSE LOAD	ASTM E72-15	34.0	42.7	50.8
12 FT. TRANSVERSE LOAD		25.9	58.5	90.1

2HR FR-PANEL — TRANSVERSE ULTIMATE LOAD (HORIZONTAL)				
TESTING CATEGORY	STANDARD	L/360 (PSF)	L/240 (PSF)	L/180 (PSF)
6 FT. TRANSVERSE LOAD	ASTM E72-15	34.0	42.7	50.8
12 FT. TRANSVERSE LOAD		4.5	5.4	6.3

1HR FR-PANEL — TRANSVERSE ULTIMATE LOAD (VERTICAL)				
TESTING CATEGORY	STANDARD	L/360 (PSF)	L/240 (PSF)	L/180 (PSF)
6 FT. TRANSVERSE LOAD	ASTM E72-15	44.9	53.6	61.7
12 FT. TRANSVERSE LOAD		25.9	58.5	90.1

2HR FR-PANEL — TRANSVERSE ULTIMATE LOAD (VERTICAL)				
TESTING CATEGORY	STANDARD	L/360 (PSF)	L/240 (PSF)	L/180 (PSF)
6 FT. TRANSVERSE LOAD	ASTM E72-15	44.9	53.6	61.7
12 FT. TRANSVERSE LOAD		15.4	16.3	17.2

CERTIFICATIONS

Intertek ATI — an independent laboratory, has verified that the 1HR and 2HR FR-PANEL systems have achieved the certifications in the chart below:

CERTIFICATION	DESCRIPTION
ASTM E119	VERTICAL WALL FIRE RETARDANT TEST
ASTM E84	SMOKE DEVELOPMENT AND FLAME SPREAD RATINGS TEST
ASTM E283 AND ASTM E331	AIR FILTRATION AND WATER PENETRATION TEST
ASTM C236	THERMAL TRANSMITTANCE AND RESISTANCE RATING TEST
ASTM E72	COMPRESSIVE AND TRANSVERSE LOAD RATING TEST
ASTM E90 AND ASTM C430	SOUND TRANSMISSION LOSS AND ABSORPTION RATING TEST

FR-PANEL SPECIFICATIONS

1HR & 2HR FIRE-RATED PANELS

FläktGroup SEMCO's FR-PANEL system is a fire-rated panel system, which is engineered for use in interior, exterior, non-load bearing and load bearing wall usage. The panels are manufactured by FläktGroup SEMCO LLC of Columbia, Missouri or by an approved alternate manufacturer. Industrial Acoustics Company and Commercial Acoustics have been designated as the approved alternate manufacturers of the FläktGroup SEMCO designed FR-PANEL system.

MATERIALS

EXTERIOR

The enclosure or structural system shall be of FR-PANEL dual wall tongue-and-groove panel construction, finished and installed as located and sized on the contract drawings. The use of the contractor's shop constructed enclosures or structures will not be allowed.

Individual wall and roof panels shall be 4 inch thick and constructed of 18-22-gauge, G90 galvanized steel, solid exterior skin and an 18-22-gauge, G90 galvanized steel, solid interior skin. Panels shall have a maximum width of 45½ inches. Panel spans up to 12 feet shall be furnished as one piece.

INTERIOR

The FR-PANEL interior shall be filled with a minimum of 8.5 pounds per cubic foot density steel wool insulation. Insulation shall be fire retardant, corrosion, moisture resistant, vermin proof and rated noncombustible as defined by ASTM C612.

Internal longitudinal stiffeners shall be a minimum of 18-gauge galvanized steel and spaced so that the span does not exceed panel reinforcement of more than 15 inches apart. Stiffeners shall have a depth equal to the panel thickness and be connected to the skin and other stiffeners on the other side, so as to provide an integral structural reinforcement within the panel. (See **FIGURES 1 & 2**)

RECOMMENDED CONSTRUCTION MATERIALS

- 3M™ Fire Barrier Sealant 2,000+ or equivalent
- Rockwool® Conrock® 8.5 lb/ft³ mineral wool insulation or equivalent

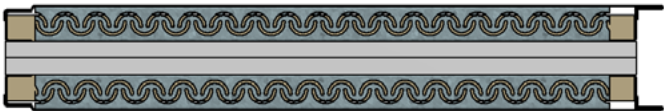


FIGURE 1. Cross-section of the 1HR FR-PANEL

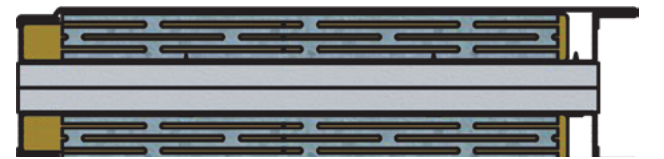


FIGURE 2. Cross-section of the 2HR FR-PANEL

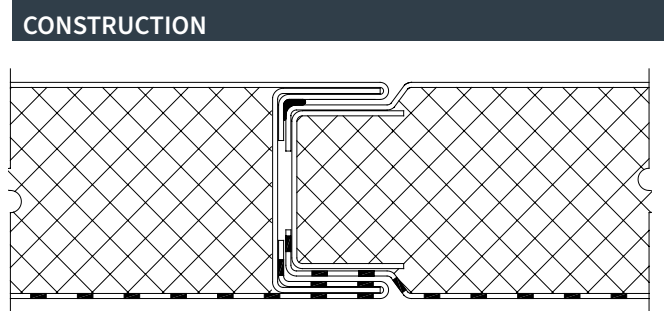


FIGURE 3. Tongue-and-groove joint example

FR-PANELS shall be constructed utilizing roll-formed tongue-and-groove joints. (See **FIGURE 3**) Male edge of the panel shall be metal enclosed and filled with insulation. Completed enclosures shall contain no insulation voids in joints between panels. Manufacturers furnishing individual panels with an open male channel, shall fill the open channel with insulation as heretofore specified shall be attached permanently to the panel.

In addition to panels, sufficient trim of a minimum of 16-gauge galvanized steel shall be provided to erect casing leaving no panel edges exposed. The base channel shall have 9/16 inch holes pre-punched 24 inches on center for securing with approved fasteners to the curb or pad. Sufficient panel sealant and self-tapping fasteners shall be provided to erect enclosure per manufacturer's instructions.

FR-PANEL joint sealant shall be tested up to 2 hours and conform to the ASTM E814 (UL 1479) standard for the penetration fire-stop systems fire test, as well as, ASTM E1966 (UL 2079) standard test method for fire-resistive joint systems.

All duct and fan openings shall be provided by the panel manufacturer. All piping and conduit penetrations shall be provided by the panel manufacturer, and sealed in accordance with manufacturer's instructions.

Structural integrity of the completed enclosure shall provide for maximum panel deflections of 1/240 of free span when enclosure is subjected to a test pressure of 10 inches of water column without the use of any fasteners or joints. Data used to determine structural performance

shall have been the result of independent testing of a representative sample of the manufacturer's regular production, which shall have been certified by the independent tester. Panels shall have been tested by subjecting them to an air pressure simulating the loading imposed under normal operation. Panel tests as a result of application to artificial loads unevenly distributed over the entire panel surface will not be accepted.

Structural steel required to limit the deflection and fire proofing ability herein specified shall be designed and furnished by the enclosure manufacturer and installed by the contractor. All equipment supports shall be designed, furnished and installed by the contractor.

RESTRICTIONS

- FR-PANELS are suitable for the purposes which they are suggested or reviewed by FläktGroup SEMCO. Any other application besides the application was originally designed for may result in failed integrity of the FR-PANEL, voiding its ASTM E119 one hour or two hour rating. FläktGroup SEMCO is not liable for the FR-PANEL under such condition.
- The FR-PANEL is not designed for field cutting. Any field cut may result in failed integrity of the FR-PANEL, voiding its ASTM E119 one or two hour rating. FläktGroup SEMCO is not liable for the FR-PANEL under such condition.
- Customer is responsible for the structural strength of the whole system and properly designed and integrated with the FR-PANELS.
- Customer is responsible for the fire resistance protection of the structural support, framing and making sure other adjacent construction is properly designed and integrated with the FR-PANEL system.
- Customer is responsible for ensuring that panel joint seals and perimeter seals are properly specified for the project's moisture and vapor control requirements.

If any one of the above limitations is violated, FR-PANEL is no longer applicable for its original design purpose. FläktGroup SEMCO is not liable for the FR-PANEL under such condition.

PERFORMANCE

See [PAGES 8-11](#).

CERTIFICATION

See [PAGE 11](#).

The manufacturer shall warrant that when panels are installed in a, workmanlike manner, in strict accordance with these specifications and instructions, panels shall meet the fire, acoustical, thermal and air pressure performance specified.

Panel components shall be furnished clean, well made and free of defects adversely affecting appearance, serviceability or performance.

SUBMITTALS

Provide certified test final report. Test data shall be for a standard product, signed by the manufacturers of the casings, certifying that the acoustical performance of factory-fabricated casings complies with requirements.

Submit approval for generic drawings showing the following: fabrication, assembly instruction and installation guide.



ADDITIONAL PRODUCTS

ADDITIONAL FLÄKTGROUP SEMCO OFFERINGS

ROUND & OVAL SPIRAL DUCT & FITTINGS

FEATURES	BENEFITS
ROUND DUCT	Performance that equals or exceeds the highest air leakage standard, Class 3, as recognized by SMACNA. Most efficient conveyance of air. Low pressure drop. Less fan horsepower. Lower operation costs. Better acoustic performance because the curved surfaces create less breakout noise.
FLAT OVAL DUCT	Nearly as efficient and economical as round duct with more clearance than round duct.
SPIRAL LOCK-SEAM CONSTRUCTION	Lock-seam provides added rigidity, allowing lighter gauges at reduced cost. Aesthetically pleasing in exposed applications.
VELOCITY® GASKET JOINTS	Creates an air-tight seal without the need for messy and time consuming sealants in the field.
FEWER JOINTS	Fewer joints mean less chance for leakage and reduced field labor cost.
MANIFOLDING	Dramatic reduction in field labor with fewer field joints. More aesthetically pleasing in exposed applications.
DUAL-WALL CONSTRUCTION	Thermal properties reduce chances of sweating without the need for external insulation. Acoustic properties reduce system noise.
FIELD PAINTABLE EXTERIOR	Can be field painted to enhance architectural appearance.
FLANGE JOINT OPTIONS	Simplifies field installation, reducing labor cost by as much as 50%.
AVAILABLE IN STAINLESS STEEL, ALUMINUM AND PVC COATED	For systems requiring corrosion and moisture resistance

PANEL SOLUTIONS - ENGINEERED PERFORMANCE WITH COST REDUCTION



FEATURES	BENEFITS
Roll formed tongue-and-groove construction, fully enclosed and insulated joint.	Better fit with closer tolerance.
Factory cut and framed openings.	Seals exposed insulation and reduces field labor.
Pre-formed corner panel up to 12'-0" long.	Added strength, rigidity, and easier installation.
No screws through panel joints.	Eliminates the possibility of air and noise leaks that may occur by adding screws and also reduces the installed cost.
Computer aided structural steel design.	Prevents the overkill of structural design, provides end user with calculated safety factor, and reduces installation cost by as much as 15%.
Large 24"x66" standard doors with or without 12"x12" double pane wire glass window.	Lower door cost through mass production and stocking of standard doors.
Optional single door sizes from 18"x48" to 36"x84." Double doors available to 72"x84."	Flexible design to meet special requirements.
Factory interior cuts, semicircular cuts, notches, and sloped ends as required.	Reduces installed costs and accommodates equipment retrofits.
AutoCAD drawings with panel layout, installation details, and individual panel markings.	Shortens the approval process and reduces field labor.
Removable panels up to 43.75"x140."	Easy replacement of component parts.
Paintable exterior is available as an option.	Can be field painted to match other equipment.
Factory applied powder coat for panel exterior available as an option.	Superior coating system.
High transmission loss panel systems. (HTL)	Flexibility in product selection to meet critical noise levels.
Pre-hung doors and completely insulated panel joints.	Saves 10% field labor and provides for a total acoustical and thermal barrier.
Tongue-and-groove panel is fully insulated at the male-female joint.	Eliminates field insulation of joints. Eliminates need for screws at joints. SEMCO gives you a better acoustic and thermal joint with less installation time.

FläktGroup® SEMCO® is the market leader for smart and energy efficient indoor air and critical air solutions to support every application area. We offer our customers innovative technologies, high quality and outstanding performance supported by more than a century of accumulated of industry experience. The widest product range in the market, and strong market presence in 65 countries worldwide, guarantee that we are always by your side.

FläktGroup® SEMCO®

Corporate Headquarters
1800 East Pointe Drive
Columbia, Missouri 65201 USA

573.443.1481

sales.semco@flaktgroup.com

To learn more about FläktGroup® SEMCO® offerings and to contact your nearest representative please visit

www.semcohvac.com

