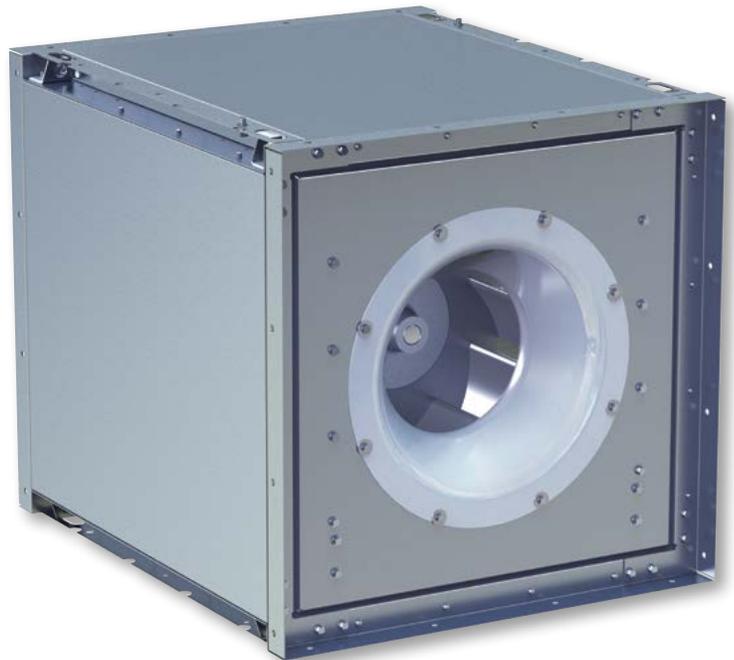




INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

MODULAR PLENUM FANS

MPLFN | MPLFS | MPLQN | MPLQS

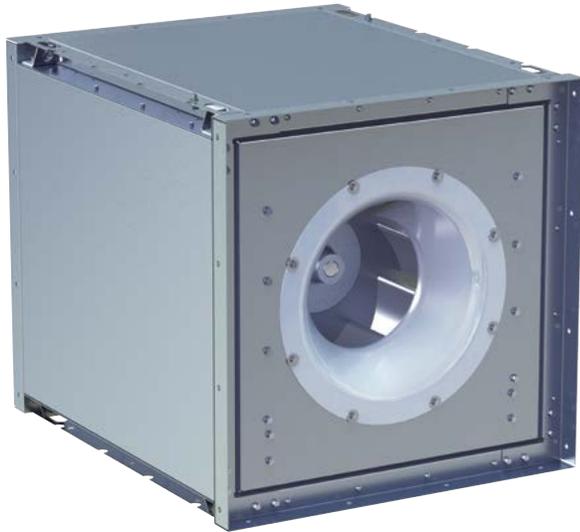


PLENUM FANS



Overview

MPLFN | MPLFS | MPLQN | MPLQS



Inlet View



Drive End View

Twin City Fan & Blower offers its newest line of modular plenum fans with the MPLFN, MPLFS, MPLQN and MPLQS. The new modular plenum fans are AMCA licensed for sound and air.

Twin City Fan & Blower's Models MPLFN, MPLFS, MPLQN and MPLQS incorporate a plenum fan mounted inside a newly designed housing. These models offer many of the same performance and quality characteristics of the E-Series plenum, MPQN and MPQS modular plenum fans, but in a reduced weight, yet rigid design. The MPLFN, MPLFS, MPLQN and MPLQS fans are suited for light to Class III medium duty applications with static pressures of up to 12" w.g.

The compact, arrangement 4 configuration offers space savings with a reduced fan footprint. The internally isolated fan units (impeller, inlet cone, motor and pedestal) allow for units to be bolted together directly without the need for further isolation. Different performance points can be achieved either through impeller width reduction or varying motor speeds.

Configurations

Vertical and Horizontal

Impeller Type

Airfoil

Standard Construction

Class I & II available in sizes 122 to 365.
Class III available in sizes 165 to 365.

Certifications

AMCA Sound/Air and FEI



Twin City Fan & Blower certifies that the Models MPLFN, MPLFS, MPLQN AND MPLQS Modular Plenum Fans shown herein are licensed to bear the AMCA Seal. Certified performance data may be found in Twin City Fan & Blower's Fan Selector software.



Scan the QR code to search Twin City Fan & Blower's AMCA-certified products.



For complete product performance, drawings and available accessories, download our Fan Selector software at tcf.com.

Application

MPLFN | MPLFS | MPLQN | MPLQS

Plenum fans are designed to operate inside of field-fabricated or factory-built air handling units. The fan pressurizes the surrounding air plenum in which the fan is installed, allowing air ducts from any direction to be directly connected to the air handling unit enclosure. This design generally saves space by eliminating the transitions and diffusers within the air handling unit.

Modular plenum fans have found acceptance in the air handling industry due to the versatility, adaptability, and simple, compact design. The modular plenum fan is ideal for retrofitting existing air handling units as well as new applications.

The Model MPLFN, MPLFS, MPLQN and MPLQS fans can be used as individual fans or in parallel to construct a multi-fan system. When using the modular fans in parallel, the system provides a more uniform airflow throughout the plenum with less axial length than a larger individual plenum fan. Modular plenum fans operating in parallel may also provide redundancy on critical applications.

The Model MPLFN, MPLFS, MPLQN and MPLQS fans, when used in parallel, can offer further advantages over a single, larger plenum fan. The use of multiple modular fans in parallel, operating at higher speeds, can reduce low-frequency sound levels as compared to larger fans.



Six Fan Array Air Handler Installation

MPLFN and MPLFS

The Model MPLFN utilizes an acoustically insulated housing assembly. The MPLFS is a non-insulated, structure only version of the MPLFN fan. Both fans are offered in standard and compact size housings to provide the best blend of performance and overall size for sizes 182 to 365.

Sizes and Performance

12.25" to 36.5" impeller diameters
Airflow to 44,000 CFM
Static pressure to 12" w.g.



MPLQN and MPLQS

The Model MPLQN utilizes an insulated housing assembly. The MPLQS is a non-insulated, structure only version of the MPLQN fan. Both fans are offered in standard and compact size housings for sizes 182 to 365.

Sizes and Performance

12.25" to 36.5" impeller diameters
Airflow to 44,000 CFM
Static pressure to 12" w.g.





The Models MPLFN, MPLFS, MPLQN and MPLQS are comprised of a bare fan, consisting of a impeller, motor pedestal, inlet funnel and inlet plate mounted inside a structural housing. The fan assembly and housing structure are constructed of heavy-gauge, corrosion-resistant galvanized material for strength and rigidity where available. Enamel coated mild steel is supplied on components where galvanized material is not available.

Impellers

High efficiency, non-overloading airfoil aluminum impellers using extruded aluminum blades are standard.

The Models MPLFN and MPLFS feature a highly efficient and cost-effective, 9-bladed airfoil impeller design.

The Models MPLQN and MPLQS feature a 12-bladed airfoil impeller design that flattens the sound spectrum and reduces the dominance of pure tones.

Inlet Cones

Heavy-gauge, spun steel inlet cones are closely matched to the impeller intake rim to ensure efficient and quiet operation.

Housings

Each model includes a structural housing that allows the fans to be bolted together in several different configurations. All models receive an outer skin that directs the sound and air axially through the fan.

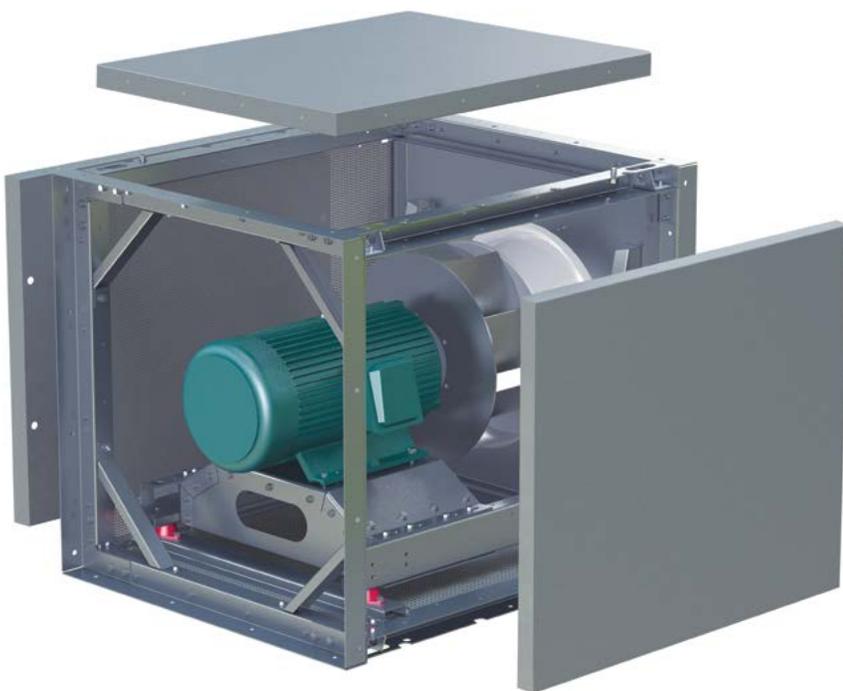
Two different housings sizes are available for the modular plenum fans. Sizes 182 and larger are available in compact configurations. The compact housings reduce the impeller-to-wall spacing for applications with space constraints. The standard housings are available on all sizes and closely track un-housed plenum fan performance and efficiencies.

Sound Insulation (MPLFN and MPLQN)

Models MPLFN and MPLQN housings are insulated to reduce sound power levels. The sheet metal module encloses insulation for sound attenuation. The insulation is protected with a vapor barrier for IAQ (indoor air quality) preventing insulation shedding on the air path side. Galvanized, perforated steel is located on the airstream side of the vapor barrier provides added protection without sacrificing air performance. The perforated steel is optimized for sound transmissibility, allowing the most sound energy to reach the sound absorbing fiberglass.

Isolation

Internal fan assemblies are isolated from the housings to achieve the least amount of transmitted vibration to the customer's air handling unit. Additionally, internal isolation allows for a more versatile installation with no required isolating accessories to mount on the air handling unit.



Exploded View
(Panels are not removeable)



9-Bladed Airfoil
Impeller Design



12-Bladed Airfoil
Impeller Design

Piezometer Ring (Airflow Measuring System)

A piezometer ring is available on plenum fans, as well as other Twin City Fan & Blower housed fans, as part of an airflow measuring system, based on the principle of a flow nozzle. The inlet cone of the fan is used as the flow nozzle. The flow can be calculated by measuring the pressure drop through the inlet cone. No tubes or sensors are inserted in the high velocity airstream, which could obstruct airflow.

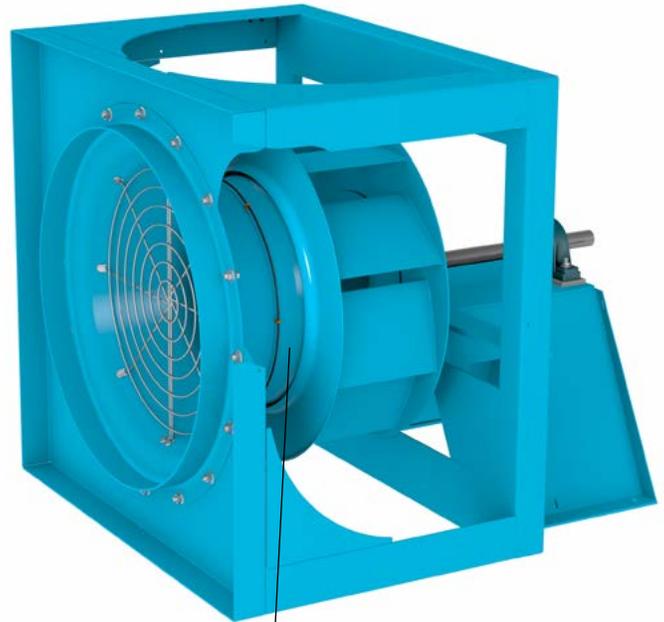
The system consists of a piezometer ring mounted at the throat and a static pressure tap mounted on the face of the inlet cone. A differential pressure transducer and digital display can also be provided.

The pressure drop is measured from the tap located on the face of the inlet cone to the piezometer ring in the throat. The inlet tap is connected to the high-pressure side of the transducer and the piezometer ring is connected to the low-pressure side. See diagram on right.

Based on Twin City Fan & Blower laboratory tests, the system was determined to be accurate within +/-5%.

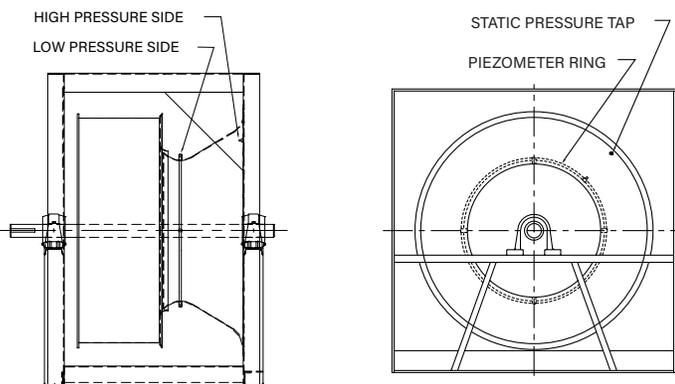
Refer to Twin City Fan & Blower Installation, Operation and Maintenance Manual IM-105.

NOTE: Twin City Fan & Blower does not recommend placement of flow measuring probes inside the fan inlet cone in the path of airflow. These devices create disturbances and unpredictable performance losses. Twin City Fan & Blower will not be responsible for loss of performance due to such devices.



Piezometer Ring Mounted at Throat of Inlet Cone

(Shown on Model EPFN for detail purposes only.)





Partial Width Impellers

Available from 50% to 105% width.

Inlet Screen

Heavy-gauge barbecue grill style inlet screen that nests in the inlet funnel for personnel protection.

Outlet Guard

Removable outlet guard is mounted on the outlet of the fan housing for personnel protection.

Inlet Damper

Backdraft damper mounted on the inlet of the fan to minimize airflow through the fan when a fan is shut down. Available for up to 5" w.g.

Outlet Damper

Backdraft damper mounted on the outlet of the fan to minimize airflow through the fan when a fan is shut down. Standard duty available for up to 5" w.g. Heavy-duty available to 10" w.g.

Shaft Grounding Ring (SGR)

Recommended for all modular fans, a shaft grounding ring is mounted to the motor providing motor bearing protection. By diverting variable frequency drive (VFD) induced stray voltages to ground through the shaft grounding ring instead of the motor bearings, motor life is extended.

CONFIGURATIONS

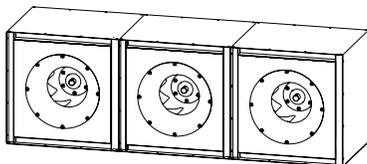
Model MPLFN, MPLFS, MPLQN and MPLQS fans can be configured in many different ways. All fans can be stacked on top of one another and bolted together side-by-side to build a multi-fan system. Multi-fan layouts can be described by defining the quantity of fans stacked up by the the quantity of fans bolted together horizontally. See chart below for stacking height available for the modular plenum fans.

FAN SIZE	MAXIMUM STACKING HEIGHT
122	4
150	4
165	4
182	3
200	3
222	3

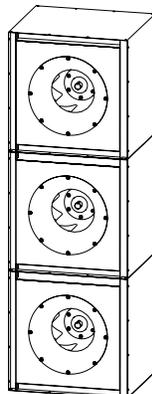
FAN SIZE	MAXIMUM STACKING HEIGHT
245	3
270	2
300	2
330	2
365	2



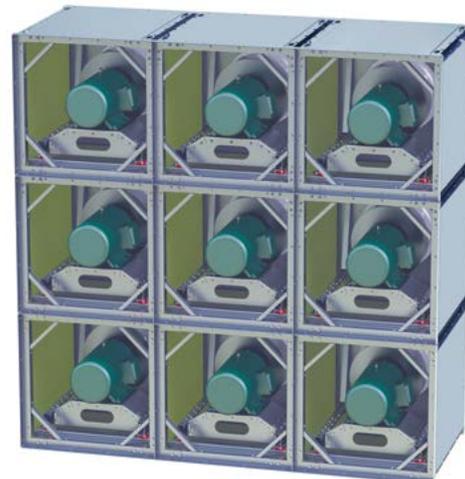
3 x 3 Layout



1 x 3 Horizontal Layout



3 x 1 Vertical Layout



**Maximum RPM, Impeller Weights & WR²
MPLFN & MPLFS**

FAN SIZE	IMPELLER DIA. (IN.)	CLASS I			CLASS II			CLASS III		
		MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)	MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)	MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)
122	12.25	3388	11	1.4	4000	11	1.4	n/a	n/a	n/a
150	15.00	3006	15	3	3909	15	3	n/a	n/a	n/a
165	16.50	2668	17	4.4	3468	17	4.4	4000	20	5.1
182 & 182C	18.25	2302	17	6.1	2930	18	6.1	3767	21	6.2
200 & 200C	20.00	2101	21	6.4	2674	21	7.4	3438	24	9.3
222 & 222C	22.25	1888	30	12	2403	30	12	3090	34	15
245 & 245C	24.50	1715	35	21	2183	35	21	2806	38	22
270 & 270C	27.00	1556	40	29	1981	40	29	2546	47	32
300 & 300C	30.00	1401	49	46	1783	54	51	2291	58	52
330 & 330C	33.00	1273	62	70	1620	67	76	2083	72	77
365 & 365C	36.50	1151	73	103	1465	79	112	1884	84	114

MPLQN & MPLQS

FAN SIZE	IMPELELR DIA. (IN.)	CLASS I			CLASS II			CLASS III		
		MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)	MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)	MAX RPM (70°F)	WT. (LB)	WR ² (LB-FT)
122	12.25	3388	12	1.6	4000	12	1.6	n/a	n/a	n/a
150	15.00	3006	17	3.5	3909	17	3.5	n/a	n/a	n/a
165	16.50	2668	20	5.3	3468	20	5.3	4000	22	5.6
182 & 182C	18.25	2302	20	7.2	2930	20	7.2	3767	23	7.4
200 & 200C	20.00	2101	24	10	2674	24	8.4	3438	27	10
222 & 222C	22.25	1888	34	14	2403	34	14	3090	38	17
245 & 245C	24.50	1715	39	24	2183	39	24	2806	43	24
270 & 270C	27.00	1556	46	35	1981	46	35	2546	53	38
300 & 300C	30.00	1401	57	55	1783	61	59	2291	65	59
330 & 330C	33.00	1273	72	81	1620	77	87	2083	82	88
365 & 365C	36.50	1151	85	120	1465	91	129	1884	96	130

Bare Fan Weights

FAN SIZE	IMPELLER DIA. (IN.)	WEIGHT (LB) *											
		MPLFN			MPLFS			MPLQN			MPLQS		
		CLASS I	CLASS II	CLASS III	CLASS I	CLASS II	CLASS III	CLASS I	CLASS II	CLASS III	CLASS I	CLASS II	CLASS III
122	12.25	250	250	n/a	216	216	n/a	251	251	n/a	217	217	n/a
150	15.00	306	306	n/a	263	263	n/a	308	308	n/a	265	265	n/a
165	16.50	336	336	339	274	274	277	339	339	341	277	277	279
182C	18.25	322	323	326	260	261	264	325	325	328	263	263	266
182	18.25	368	369	372	293	294	297	371	371	374	296	296	299
200C	20.00	380	380	383	305	305	308	383	383	386	308	308	311
200	20.00	434	434	437	343	343	346	437	437	440	346	346	349
222C	22.25	469	469	473	378	378	382	473	473	477	382	382	386
222	22.25	557	557	561	450	450	454	561	561	565	454	454	458
245C	24.50	507	507	510	416	416	419	511	511	515	420	420	424
245	24.50	676	676	679	544	544	547	680	680	684	548	548	552
270C	27.00	614	614	621	507	507	514	620	620	627	513	513	520
270	27.00	782	782	789	627	627	634	788	788	795	633	633	640
300C	30.00	747	752	756	615	620	624	755	759	763	623	627	631
300	30.00	947	952	956	763	768	772	955	959	963	771	775	779
330C	33.00	907	912	917	752	757	762	917	922	927	762	767	772
330	33.00	1104	1109	1114	906	911	916	1114	1119	1124	916	921	926
365C	36.50	1103	1109	1114	919	925	930	1115	1121	1126	931	937	942
365	36.50	1330	1336	1341	1104	1110	1115	1342	1348	1353	1116	1122	1127

* Weight is for fan less motor weight.



Models MPLFN | MPLFS

Fans shall be Model MPLFN or MPLFS centrifugal plenum (plug) type, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE — Performance ratings shall conform to AMCA Standard 208 (fan energy index), 211 (air performance) and 311 (sound performance). Fans shall be tested in accordance with ANSI/AMCA Standard 210 (air performance) and 300 (sound performance) in an AMCA accredited laboratory. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air, and fan energy index (FEI). Sound certification shall apply to both inlet and outlet sound power levels.

Fans shall have a sharply rising pressure characteristic extending through the operating range and continuing to rise beyond the peak efficiency to ensure quiet and stable operation. Fans shall have a non-overloading design with self-limiting horsepower characteristics and shall reach a peak in the normal selection area. All fans shall be capable of operating over the minimum pressure class limits as specified in AMCA Standard 99.

CONSTRUCTION — Fans shall be designed without a scroll type housing and shall incorporate a non-overloading type backward inclined airfoil blade impeller. A housing structure consisting of low-weight, yet rigid, corrosion-resistant, galvanized steel frame and exterior panels shall house the rotating assembly. The structure shall be capable of supporting multiple fan assemblies stacked upon one another and side-by-side without isolation between the independent units.

INSULATION (MPLFN Only) — Fans shall be provided with a minimum of 2" acoustical insulation. Insulation shall be protected on the airstream side with a non-friable vapor barrier preventing insulation shedding for IAQ (indoor air quality). Galvanized, perforated steel shall be located on the airstream side of the vapor barrier providing additional protection without sacrificing air and sound performance.

ISOLATION — Rotating assemblies shall be internally isolated from the structural housing to achieve the least amount of transmitted vibration to the customer's air handling unit.

MOTOR PEDESTAL AND INLET PANEL — Motor pedestal and inlet panel shall be of reinforced, galvanized steel or enamel coated mild steel construction and integrated into a single, isolated assembly. Motor pedestal shall be designed to minimize vibration from the motor and impeller. The inlet panel incorporates a removable spun inlet cone designed for smooth airflow into the accompanying inlet retaining ring of the fan impeller. The inlet panel shall be isolated from the housing structure.

IMPELLER — Impellers shall have a non-tapered style blade retaining ring on the inlet side to allow higher efficiencies over the performance range of the fan. Impellers shall have airfoil-shaped extruded aluminum blades. Impellers shall have nine (9) blades for high efficiency. Impeller diameters shall be easily discernible by the fan size. All impellers shall be statically and dynamically balanced on precision electronic balancers to a Balance Quality Grade G6.3 per ANSI/AMCA 204 or better.

FINISH AND COATING — The entire fan assembly, excluding the shaft, shall be properly washed and pretreated before application of a rust-preventative primer, if called out on the order. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly, if called out on the order. The fan shaft shall be coated with a petroleum-based rust protectant.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at the specified operating speed or maximum RPM allowed for the particular construction type. Maximum vibration shall be within the limits of ANSI/AMCA 204 Fan Application Category BV-3. Balance readings shall be taken by electronic type equipment in the axial, vertical and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.



Models

MPLQN | MPLQS

Fans shall be Model MPLQN or MPLQS centrifugal plenum (plug) type, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE — Performance ratings shall conform to AMCA Standard 208 (fan energy index), 211 (air performance) and 311 (sound performance). Fans shall be tested in accordance with ANSI/AMCA Standard 210 (air performance) and 300 (sound performance) in an AMCA accredited laboratory. Fans shall be licensed to bear the AMCA certified ratings seal for both sound and air, and fan energy index (FEI). Sound certification shall apply to both inlet and outlet sound power levels.

Fans shall have a sharply rising pressure characteristic extending through the operating range and continuing to rise beyond the peak efficiency to ensure quiet and stable operation. Fans shall have a non-overloading design with self-limiting horsepower characteristics and shall reach a peak in the normal selection area. All fans shall be capable of operating over the minimum pressure class limits as specified in AMCA Standard 99.

CONSTRUCTION — Fans shall be designed without a scroll type housing and shall incorporate a non-overloading type backward inclined airfoil blade impeller. A housing structure consisting of low-weight, yet rigid, corrosion-resistant, galvanized steel frame and exterior panels shall house the rotating assembly. The structure shall be capable of supporting multiple fan assemblies stacked upon one another and side-by-side without isolation between the independent units.

INSULATION (MPLQN Only) — Fans shall be provided with a minimum of 2" acoustical insulation. Insulation shall be protected on the airstream side with a non-friable vapor barrier preventing insulation shedding for IAQ (indoor air quality). Galvanized, perforated steel shall be located on the airstream side of the vapor barrier providing additional protection without sacrificing air and sound performance.

ISOLATION — Rotating assemblies shall be internally isolated from the structural housing to achieve the least amount of transmitted vibration to the customer's air handling unit.

MOTOR PEDESTAL AND INLET PANEL — Motor pedestal and inlet panel shall be of reinforced, galvanized steel or enamel coated mild steel construction and integrated into a single, isolated assembly. Motor pedestal shall be designed to minimize vibration from the motor and impeller. The inlet panel incorporates a removable spun inlet cone designed for smooth airflow into the accompanying inlet retaining ring of the fan impeller. The inlet panel shall be isolated from the housing structure.

IMPELLER — Impellers shall have a non-tapered style blade retaining ring on the inlet side to allow higher efficiencies over the performance range of the fan. Impellers shall have airfoil-shaped extruded aluminum blades. Impellers shall have twelve (12) blades for better sound quality. Impeller diameters shall be easily discernible by the fan size. All impellers shall be statically and dynamically balanced on precision electronic balancers to a Balance Quality Grade G6.3 per ANSI/AMCA 204 or better.

FINISH AND COATING — The entire fan assembly, excluding the shaft, shall be properly washed and pretreated before application of a rust-preventative primer, if called out on the order. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly, if called out on the order. The fan shaft shall be coated with a petroleum-based rust protectant.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at the specified operating speed or maximum RPM allowed for the particular construction type. Maximum vibration shall be within the limits of ANSI/AMCA 204 Fan Application Category BV-3. Balance readings shall be taken by electronic type equipment in the axial, vertical and horizontal directions on each of the bearings. Records shall be maintained and a written copy shall be available upon request.

INDUSTRIAL PROCESS AND COMMERCIAL VENTILATION SYSTEMS

CENTRIFUGAL FANS | UTILITY SETS | PLENUM & PLUG FANS | INLINE CENTRIFUGAL FANS
MIXED FLOW FANS | TUBEAXIAL & VANEAXIAL FANS | WALL MOUNTED FANS | ROOF VENTILATORS
CENTRIFUGAL ROOF & WALL EXHAUSTERS | CEILING VENTILATORS | GRAVITY VENTILATORS | DUCT BLOWERS
RADIAL BLADED FANS | RADIAL TIP FANS | HIGH EFFICIENCY INDUSTRIAL FANS | PRESSURE BLOWERS
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