



INDUSTRIAL PROCESS AND
COMMERCIAL VENTILATION SYSTEMS

LOUVERED PENTHOUSE FILTERED SUPPLY FANS

Model LPSF



LOUVERED SUPPLY FANS



Sizes

Available in 10 sizes from 12" to 36"

Performance

Airflow to 47,000 CFM
Static pressure to 5¹/₂" w.g.

Energy Regulations

Twin City Fan & Blower supports energy efficiency regulations enacted by the U.S. Department of Energy (DOE) and specific states. The selection and application of fan products is a significant part of these regulations. Engineers and specifiers must understand how to apply TCF products to their specific applications to meet applicable DOE and state regulatory requirements. Twin City Fan & Blower has made significant investments in product testing and development to provide efficient products. Developments in Twin City Fan & Blower's Fan Selector software are in place to aid your decision in product selection to assist with meeting the efficiency requirements as stipulated in the applicable regulations.

Model LPSF

The Twin City Fan & Blower LPSF Louvered Penthouse Supply Fan is a roof mounted centrifugal supply fan designed to provide filtered outside air to buildings such as manufacturing plants, warehouses and auditoriums. The louvered penthouse fan supplies fresh make-up air to replace the air lost through industrial processes, fume hood exhaust or general building ventilation.

The Twin City Fan & Blower penthouse unit is a self-contained, completely weatherproof filtered supply fan package. This package includes an arrangement 3F double width backward curved fan, common fan/motor base, V-belt drive and filters all enclosed in a louvered aluminum hood with aluminum top cap. A reinforcing rib in every louver extrusion gives additional strength to each louver.

Typical Applications Include

Filtered Roof Supply, Clean Air Environments, Stairwell/
Elevator Shaft Pressurization

Impeller Types

Backward Curved

Standard Construction

Galvanized Steel



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

Model

LPSF

1 Impeller

The unique design of the single thickness backward inclined impeller provides efficiencies and sound power levels equal to or better than many other manufacturers' airfoil impellers. The aerodynamic blade profile and wider impeller combine to create a more efficient fan design, which significantly improves efficiency and reduces sound power levels, especially in the lower frequencies, which are the hardest to control.

2 Bearings and Bearing Supports

Fans are designed with regreasable pillow block bearings, which provide a minimum life of 200,000 hours (L-50) at maximum cataloged speed. These bearings are mounted to a heavy-duty steel support structure to ensure strength and rigidity.

3 Drives

Cast iron drives are sized for at least 120% of motor horsepower with optional 150% available. Drives are set to the required RPM before shipping from our factory.

4 Lifting Lugs

For ease of installation and handling, lifting lugs are provided on all LPSF units.

5 Filters

Filters are 2" aluminum mesh and are easily removed for washing.

6 Filter Channels

Formed filter channels securely hold filters in place and provide easy removal from inside.

7 Motors

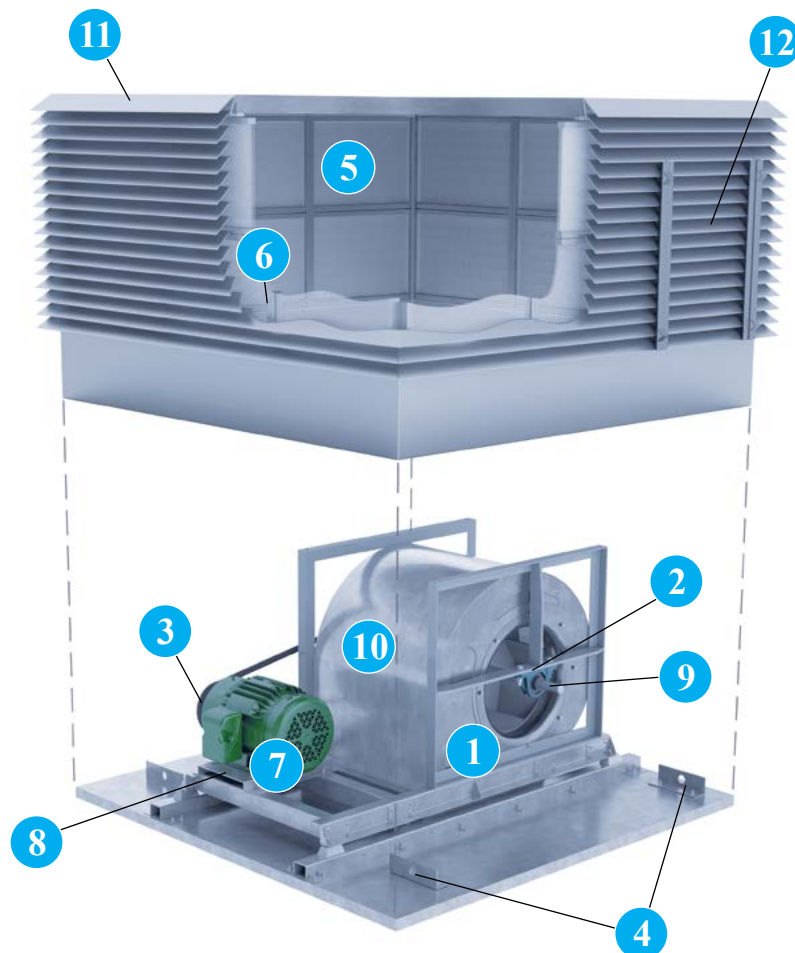
A variety of single and three phase motors are available in open drip (ODP) and totally enclosed fan cooled (TEFC) enclosures. High efficiency models are also available.

8 Motor Slide Base

Motor slide bases provide positive slide-adjustment for proper belt tension. Turning jack screws force the motor to slide laterally in slots until proper tension is achieved.

9 Shaft

Shafts are turned, ground and polished cold rolled steel accurately sized for the proper bearing size. The shafts are extended at both ends for flexibility in mounting V-belt drives.



10 Fan Housings

Fan housings are constructed of galvanized steel. The side sheets are fastened to the scroll housing with an airtight lock seam connection.

11 Top Cap

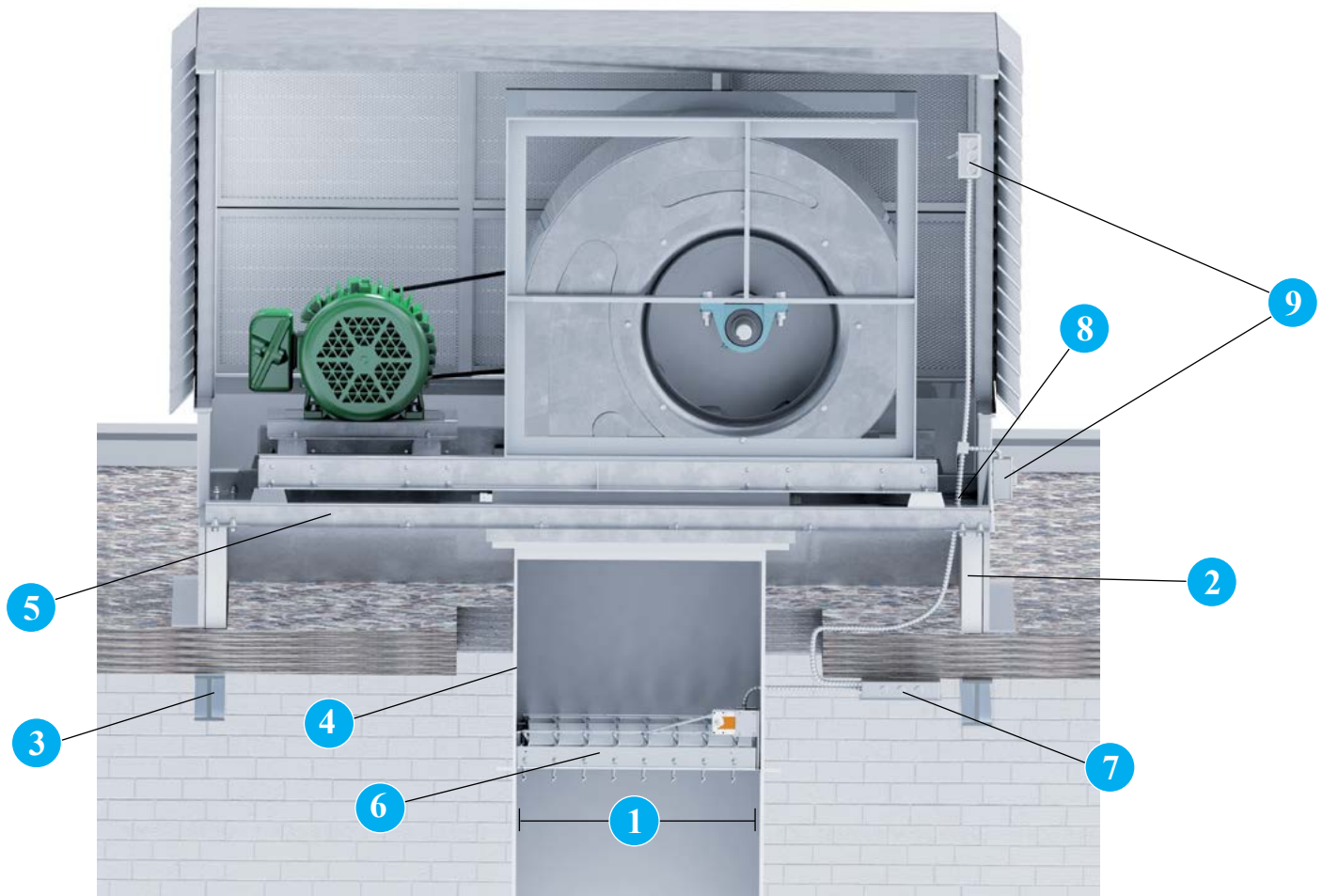
Fully weather tight top cap provides complete protection and easy removal for maintenance and service. Low profile cover is pitched to assure weather runoff. Optional 1" fiberglass insulation is available to help prevent condensation.

12 Side Access in Louver

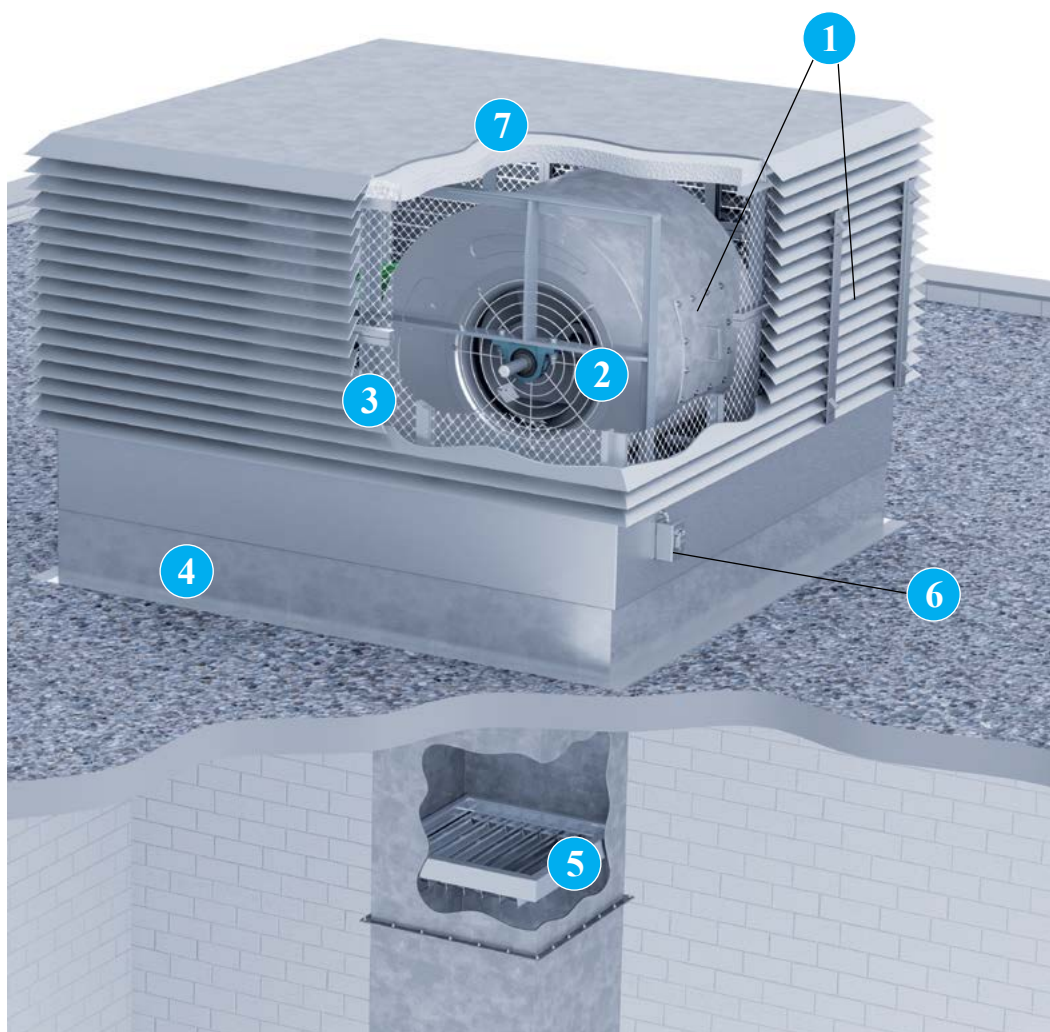
Side access panel allows for easy access to the inside of the unit without the removal of the top cap.

TYPICAL INSTALLATION

The following is a typical installation for the Model LPSF louvered penthouse supply fan showing recommended locations for accessories, options and items supplied by others. This arrangement offers easy installation, safety and accessibility for service.



- 1 Minimum Roof Opening** dimensions can be found on dimensional drawing for each fan size. Roof openings may be larger if desired, depending on roof structure.
- 2 Roof Curb** Twin City Fan roof curbs are specially designed to bear and distribute the weight of the LPSF. Curbs built by others must have equal capabilities.
- 3 Structural Supports** It may be necessary to add additional supports beneath the load-carrying sides of the fan and roof curb as shown.
- 4 Ductwork** To reduce turbulence between the fan discharge and the damper, a minimum length of ductwork is recommended from the roof curb to the roof opening. This short length of duct should be used in nonducted as well as ducted installation.
- 5 Duct Adapter** fits over the roof curb and locates the top of the duct to allow ductwork to be completed before the fan is set in place. Ductwork requires additional support.
- 6 Motorized Dampers** should be located below the roof line for ease of service.
- 7 Electrical Junction Box** should be mounted in a location that permits ease of wiring the fan motor and damper actuator.
- 8 Wiring Knockouts** are provided in the duct adapter and base pan.
- 9 Electrical Disconnects** are recommended for safety in servicing the fan. Shown for illustrative purposes only is the NEMA 1 enclosure for interior mounting and the NEMA 3R enclosure for exterior mounting on the same unit.

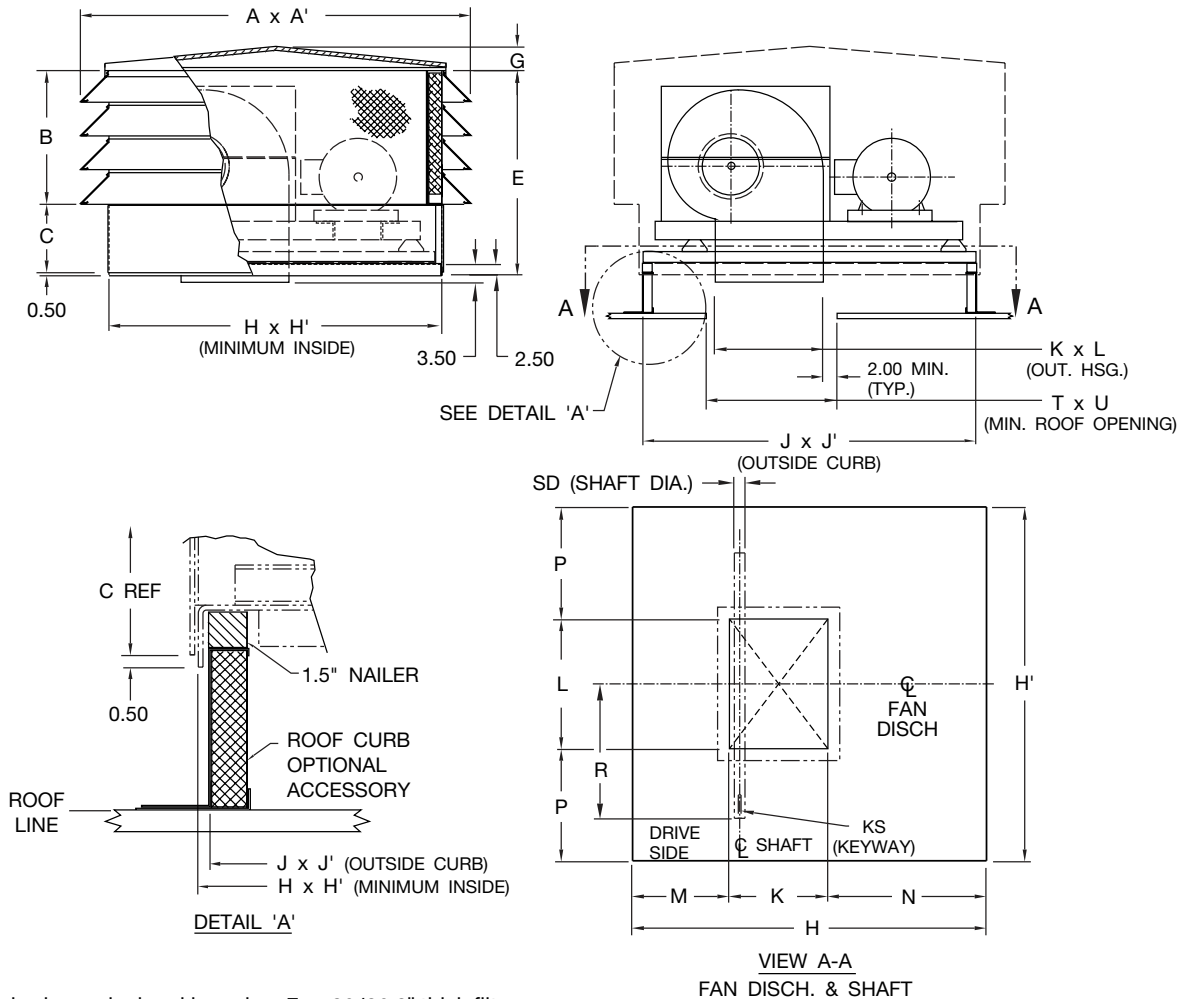


- 1 Access Doors** are available on scroll of fan housing (door is bolted and gasketed) as well as on the louvered housing.
- 2 Fan Inlet Screens** are available for mounting in the fan inlets. Screens are barbecue grill type.
- 3 Interior Bird Screens** are available for mounting inside the hood of the penthouse. They are easily removed during maintenance. Screens are manufactured from expanded aluminum.
- 4 Roof Curbs** Roof curbs are available in galvanized steel or aluminum construction. The fan roof cap mounts directly on the roof curb.
- 5 Backdraft Dampers** Backdraft dampers are available for duct mounting. Dampers are aluminum and either gravity or motor operated. The fan discharge is extended when the damper accessory is specified.
- 6 Disconnect Switches** Disconnect switches are available for single and three phase units. A NEMA 1 switch is mounted inside the hood. Exterior mounted disconnect switches are also available (NEMA 3R minimum) and shown above. Wire is run from the motor into the junction box for connection.
- 7 Insulated Top Cap** To reduce condensation 1" fiberglass insulation is mounted to the underside of the penthouse top cap.

OTHER ACCESSORIES:

- Duct Adapters
- Throw Away Filters

DIMENSIONAL DATA



Notes:

1. Filter size is nominal and based on Farr 30/30 2" thick filters.
2. Access door in louver section located at motor/drive corner of fan.
3. Sizes 32 and 36 ship in parts to be assembled on site.

FAN SIZE	A	A'	B	C	E	MAX. FR.	G	H	H'	J	J'	K x L
12	68.00	68.00	24.50	7.50	32.50	215T	2.00	61.00	61.00	59.50	59.50	15.94 x 15.94
14	70.50	70.50	24.50	11.75	36.75	215T	2.00	63.50	63.50	62.00	62.00	17.88 x 17.75
16	77.50	77.50	24.50	13.75	38.75	256T	2.00	70.50	70.50	69.00	69.00	20.00 x 20.00
18	81.00	81.00	31.50	11.88	43.88	256T	2.00	74.00	74.00	72.50	72.50	22.44 x 22.44
20	85.00	85.00	31.50	14.88	46.88	256T	2.00	78.00	78.00	76.50	76.50	25.13 x 25.13
22	91.50	91.50	35.00	18.00	53.50	286T	2.00	84.50	84.50	83.00	83.00	28.19 x 28.19
25	96.50	96.50	42.00	13.00	55.50	286T	2.00	89.50	89.50	88.00	88.00	31.56 x 31.56
28	105.50	98.50	42.00	18.25	60.75	326T	2.00	98.50	91.50	97.00	90.00	35.38 x 35.38
32	110.50	98.50	49.00	15.25	64.75	326T	2.00	103.50	91.50	102.00	90.00	39.69 x 39.69
36	126.50	118.50	49.00	21.50	71.00	365T	6.00	119.50	111.50	118.00	110.00	44.50 x 44.50

FAN SIZE	KS	M	N	P	R	SD	T x U	FILTER (QTY) SIZE
12	.25 x .13	16.31	28.75	22.56	12.25	1.187	19.69 x 19.88	(12) 18 x 25
14	.38 x .19	16.88	28.75	22.88	13.50	1.437	21.81 x 21.81	(12) 20 x 25
16	.38 x .19	18.00	32.50	25.25	14.75	1.437	23.94 x 23.94	(16) 16 x 25
18	.38 x .19	18.44	33.13	25.81	16.75	1.500	26.38 x 26.38	(16) 20 x 16 & (8) 25 x 16
20	.38 x .19	20.38	32.50	26.44	18.13	1.500	29.13 x 29.13	(12) 24 x 20 & (12) 24 x 12
22	.50 x .25	21.94	34.38	28.19	21.13	1.937	32.25 x 32.13	(32) 20 x 18
25	.50 x .25	24.19	33.75	29.00	22.75	1.937	35.56 x 35.56	(16) 20 x 24 & (16) 20 x 18
28	.50 x .25	25.63	37.50	28.06	24.75	1.937	39.38 x 39.38	(8) 20 x 18, 20 x 24, 24 x 18, 24 x 24
32	.50 x .25	26.94	36.88	25.94	26.75	1.937	43.81 x 43.94	(8) 20 x 18, 25 x 18 & (16) 20 x 16, 25 x 16
36	.63 x .31	31.25	43.75	33.50	29.88	2.437	48.69 x 48.75	(20) 24 x 24 & (16) 20 x 24

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DIMENSIONS ARE NOT TO BE USED FOR CONSTRUCTION. CERTIFIED DRAWINGS AVAILABLE UPON REQUEST.



Model

LPSF

Louvered Penthouse Supply Fans shall be Model LPSF as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

PERFORMANCE — Fans shall be tested in accordance with AMCA 211 test codes for air moving devices and shall be guaranteed by the manufacturer to deliver rated published performance levels.

CONSTRUCTION — Hoods shall be louvered penthouses constructed of all aluminum welded structural framing and heavy alloy blade extrusions with mitered corners. Low profile cover is pitched to ensure water runoff. Roof curb cap shall be aluminum with support structure and fan constructed of steel. All units shall be equipped with re-usable 2 inch aluminum filters.

FAN HOUSING — Fan housings shall have galvanized lock seam construction. Housings shall be suitably braced to minimize vibration or pulsation. Fan housings shall have spun, aerodynamically designed, inlet cones or inlet venturies for smooth airflow into the impellers.

IMPELLER — All fan impellers shall have impeller cones or shrouds, providing stable flow and high rigidity. Impellers shall be of the non-overloading type. Backward curved impellers shall be single thickness plate type, continuously-welded to the rim and back plate. Blades shall be designed for maximum efficiency and quiet operation. All impellers shall be statically and dynamically balanced. The complete fan assembly shall be test balanced at the operating speed prior to shipment.

SHAFTS — Fan shafts shall be manufactured of AISI 1040 or 1045 cold rolled steel, accurately turned, ground, polished and ring-gauged for accuracy. Drive extensions shall be provided at both ends for mounting flexibility.

BEARINGS — Bearings shall be pillow block, heavy-duty, anti-friction, self-aligning, grease lubricated, ball or roller type. Each fan's bearings shall be sized with a minimum average life, per AFBMA, in excess of 200,000 hours when operating at the maximum RPM.

DRIVES — Cast-iron, fixed pitch motor sheaves are recommended for applications 15 HP and larger; variable pitch sheaves may be used for applications of less than 15 HP. Drives should be selected to provide a minimum 1.5 service factor for 30 HP and larger motors.

FINISH AND COATING — Fans shall have galvanized housings. Bearing supports shall be painted with a zinc rich coating. Hoods and structural framing shall be constructed of aluminum.

FACTORY RUN TEST — All fans prior to shipment shall be completely assembled and test run as a unit at operating speed or maximum RPM allowed for the particular construction type. Each impeller shall be statically and dynamically balanced in accordance with ANSI/AMCA 204-96 "Balance Quality and Vibration Levels for Fans" to Fan Application Category BV-3, Balance Quality Grade G6.3. 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.

ACCESSORIES — When specified, fans shall be supplied with backdraft dampers, fan inlet screens, bird screens, disconnect switches, roof curbs, etc., shall be provided by Twin City Fan & Blower to maintain one source responsibility.

SUBMITTALS — Submittals for approval of equipment shall include copies of outline drawing and performance curves showing the operating point.



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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

LABORATORY EXHAUST FANS | FILTERED SUPPLY FANS | MANCOOLERS | FIBERGLASS FANS | CUSTOM FANS



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