

BULLETIN 4800

July 2004

# Twin City Fan & Blower

## *DIRECT DRIVE EXHAUST & SUPPLY PANEL FANS*

**TYPE TCPE**



# TCPE Direct Drive Panel Fans

## General Information

Series TCPE panel fans are direct drive panel fans designed for low static pressures. They can be mounted in a wall vertically or in a ceiling horizontally. All units come standard with a spun galvanized panel (except explosion proof which is aluminum), zinc plated motor mount/guard, custom engineered motor and an aluminum blade that is statically and dynamically balanced. They are manufactured under strict ISO 9001 quality standards and performance is certified by AMCA.

## Sizes and Capacities

- Available in 8 base sizes with blade diameters of 8", 10", 12", 14", 16", 18", 20" and 24".
- Motor and blade pitch combinations make up a total of 24 unique performing model sizes.
- The addition of speed control adds flexibility to the performance capabilities of all size models.
- Capacities from 100 to 7600 CFM.
- Static pressures to 5/8" w.g.
- Exhaust and supply configurations available.

## Construction Features

- All TCPE spun panels are constructed of 16 gauge G90 galvanized steel.
- The standard motor mount also serves as a motor side guard that complies with OSHA standards.
- All steel guards are zinc plated to inhibit corrosion.
- The motor mount/guard is secured to the fan panel with captivated nut inserts that allow for easy servicing without the removal of the full panel after installation.
- All ODP and TE motors are custom engineered and come in a variety of standard voltages. All single phase 115V ODP motors can be used with a variable speed controller.
- Fixed pitch aluminum fan blades.
- Prepunched panel holes for easy mounting.



## Stock Program

All 24 TCPE model sizes and many accessories are available on the Twin City Fan & Blower QuickShip Program. The stock program provides rapid delivery of standard products so that tight project deadlines can be met and downtime on replacement work can be held to a minimum. Delivery options include 48-Hour, 5-Day and 10-Day shipments.

See Bulletin 4900 or contact your local representative for further information on the Twin City Fan & Blower QuickShip Program.

## Contents

General Information . . . . .	2
Sizes and Capacities . . . . .	2
Construction Features . . . . .	2
Stock Program . . . . .	2
Accessories . . . . .	3
Performance Data . . . . .	4
Performance Curves . . . . .	5
Dimensional Data . . . . .	7
Typical Specifications . . . . .	7



Twin City Fan & Blower certifies that the TCPE Series shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

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Bulletin illustrations cover the general appearance of Twin City Fan & Blower products at the time of publication and we reserve the right to make changes in design and construction at any time without notice.

# Accessories

## Wall Collar

The wall collar is used to mount the TCPE fan and accessories cleanly into a wall. The collar will give the fan package a finished look when fully installed and looks good in most styles of architecture. They are constructed of 16 gauge G90 galvanized steel and can be ordered fully assembled or as a kit (field assembly required) to reduce shipping costs. Twin City Fan & Blower manufactures a wall collar for all TCPE sizes.

## Backdraft Damper

The backdraft damper is used to help keep the elements and unwanted air out of the building when the fan is not in use and works automatically with gravity. It is constructed so that it will easily fasten to a Twin City Fan & Blower wall collar and so that a Twin City Fan & Blower weatherhood or damper guard can easily fit over it. The frame is constructed of 20 gauge galvanized steel and the blades are 26 gauge mill finished aluminum with a vinyl seal along the leading edge for quiet closing. The leading edge of the blade is also flanged to result in more effective weather protection. An actuator motor is available as an option to allow the damper to be powered.

## Damper Guard Screen

The damper guard screen is used to protect the backdraft damper when a weatherhood is not being used in conjunction with the fan. Its base is constructed of 18 gauge G90 galvanized steel and comes with 1/4" square galvanized screening attached as standard. The screening complies with OSHA standards and will also help keep birds or other animals out of the fan and building.

## Weatherhood with Guard Screen

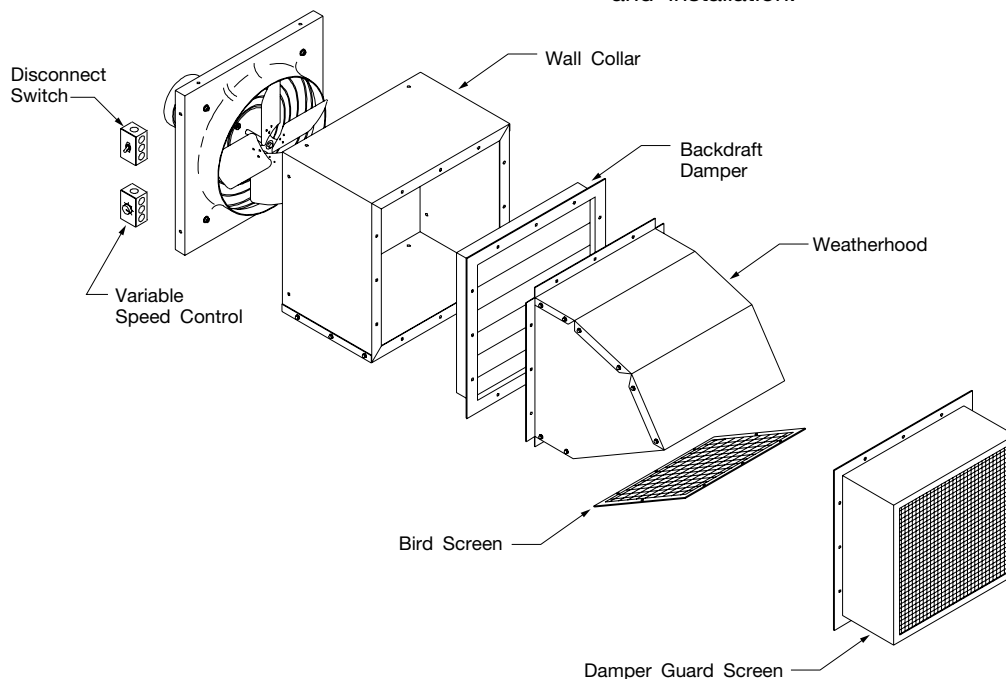
The weatherhood is used to keep the elements from entering the building through the damper and fan and prevents the wind from affecting the performance of the fan and backdraft damper. The weatherhood comes standard with a removable bird screen. It easily fits over the backdraft damper and can be installed to a Twin City Fan & Blower wall collar through the prepunched holes. It is recommended that the weatherhood and wall collar be used with all TCPE fan assemblies so that unwanted material will not enter the building through the fan. The weatherhood is constructed of 18 gauge G90 galvanized steel and can be ordered fully assembled or as a kit (field assembly required) to reduce shipping costs. Twin City Fan & Blower has a weatherhood for all TCPE sizes.

## Variable Speed Controller

Variable speed control is an optional accessory on all TCPE models with 115V, ODP type motors. Variable speed controllers are solid-state (Tri-ac) design. Speed control features include RFI filter, minimum speed trim adjustment capability, and built-in on/off line switch. The speed controller is designed to start the motor on high speed for better startup characteristics. Variable speed controllers are shipped loose. (It is recommended that the speed controller be placed within 10 feet of the fan for maximum performance. If placing farther away than 10 feet, however, shielded wire is recommended to reduce electrical noise and interference.)

## Disconnect Switch

A NEMA-1 disconnect switch is available. The switch is shipped loose from the factory for field assembly and installation.



# Performance Data

MODEL TCPE	MOTOR HP	NOMINAL RPM	MAX. POWER (WATTS)	SONES @ 0" S.P.	CFM/STATIC PRESSURE (IN. W.G.)								AVG. SHIP WT. (LBS.)	
					0"	1/10"	1/8"	1/4"	3/10"	3/8"	1/2"	5/8"		
080A	1/8	1350	40	3.3	387	202	171							15
081A	1/8	1500	55	3.6	436	324	246	131						15
082A	1/8	1650	85	4.0	462	381	339	203	167					15
100A	1/8	1350	115	6.9	840	750	686	397	166					20
101A	1/8	1500	135	6.6	882	791	751	483	442	195				20
102A	1/8	1650	140	7.0	924	-839	805	533	499	433				20
120A	1/8	1350	120	7.0	1233	1060	999	295						26
121A	1/8	1500	155	8.6	1366	1234	1193	696	549					26
122A	1/8	1650	225	9.5	1468	1350	1315	1056	879	600				26
140A	1/8	800	145	6.6	1362	1008	788	309						28
141A	1/6	1100	225	8.8	1818	1602	1525	876	744	555				29
142A	1/3	1700	480	15.1	2678	2552	2518	2309	2192	1991	1314	1053		31
160A	1/8	800	185	6.8	2029	1662	1504	682						30
161A	1/4	1100	350	9.2	2680	2487	2427	1899	1438	1164	519			37
162A	1/2	1700	775	16.6	3947	3798	3759	3556	3470	3338	3080	2264		37
180A	1/6	800	280	8.6	2630	2293	2174	1309	1068					35
181A	1/4	1100	415	10.6	3133	2901	2834	2410	2188	1589	1049			42
182A	3/4	1700	750	21	4672	4513	4474	4278	4203	4083	3793	3572		47
200A	1/4	800	375	8.6	3684	3287	3162	2013	1683					48
201A	1/2	1100	875	14.7	5134	4894	4827	4380	4100	3683	2753	2184		50
202A	3/4	1700	725	19.7	4879	4751	4717	4542	4468	4351	4117	3819		51
240A	1/2	800	550	11.0	5754	5351	5226	3872	3315					57
241A	1/2	1100	875	16.2	6367	6093	6020	5618	5436	5125				55
242A	1	1100	1175	23	7615	7326	7248	6806	6592	6202	4836			62

## NOTES:

- Performance ratings do not include the effects of appurtenances (accessories).
  - Performance certified is for installation Type A: Free inlet, free outlet.
  - Speed (RPM) shown is nominal. Performance is based on actual speed of test.
  - The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: free inlet fan sone levels.
- \* TCPE custom engineered motors have been tested with a full load current and in some instances the amperage may be greater than the nameplate value. These motors still fall within NEMA recommended standards and will not overheat.

## Sound Power Levels

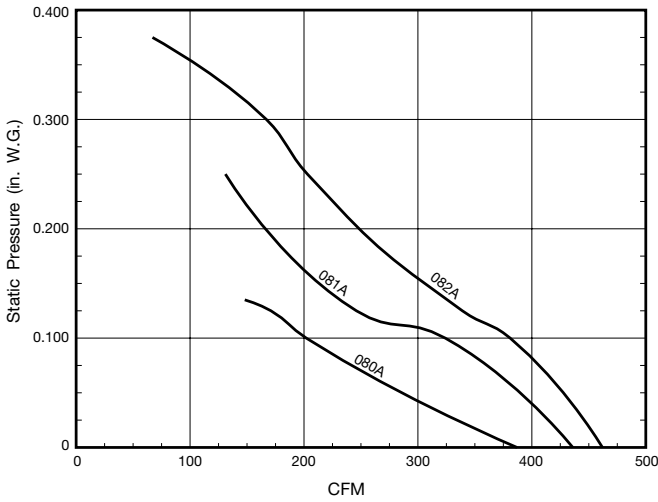
MODEL TCPE	NOMINAL RPM	CFM	SOUND POWER RE <sup>-12</sup> WATTS								LwA
			OCTAVE BAND								
			1	2	3	4	5	6	7	8	
080A	1350	387	64	60	57	49	46	43	38	39	54
081A	1500	436	63	60	56	51	49	47	42	40	55
082A	1650	462	62	60	57	53	51	49	45	40	56
100A	1350	840	65	75	62	60	58	56	50	43	64
101A	1500	882	67	72	63	60	59	57	51	44	64
102A	1650	924	66	73	65	61	60	58	52	45	65
120A	1350	1233	67	67	67	63	61	58	53	46	66
121A	1500	1366	72	72	70	66	64	61	56	50	69
122A	1650	1468	66	74	73	67	65	63	58	51	71
140A	800	1362	67	76	61	57	55	50	44	43	63
141A	1100	1818	70	78	71	64	61	58	53	45	69
142A	1700	2678	70	85	81	73	70	68	64	57	78
160A	800	2029	67	75	62	60	59	54	46	41	64
161A	1100	2680	66	73	70	67	66	63	57	52	70
162A	1700	3947	71	80	83	76	74	72	67	60	80
180A	800	2630	66	79	69	62	61	57	51	44	68
181A	1100	3133	69	78	72	68	67	65	60	54	72
182A	1700	4672	80	89	82	77	76	75	72	67	82
200A	800	3684	68	75	68	67	65	60	54	48	69
201A	1100	5134	80	81	79	75	73	69	63	58	78
202A	1700	4879	75	84	85	81	77	74	69	65	83
240A	800	5754	83	74	74	70	68	64	58	51	73
241A	1100	6367	84	81	77	75	75	71	67	61	79
242A	1100	7615	86	84	83	83	84	74	68	61	86

## NOTES:

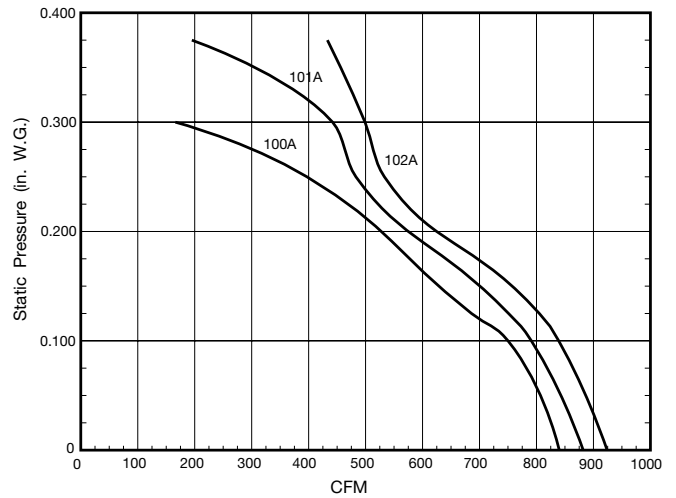
- The sound power level ratings shown are in decibels, referred to 10<sup>-12</sup> watts calculated per AMCA Standard 301. The A-weighted sound ratings show have been calculated per AMCA Standard 301.
- Values shown are for Lwi sound power levels for installation Type A: Free inlet, free outlet. Ratings do not include the effects of duct end correction.
- The AMCA Certified Ratings Seal applies to sone ratings only.

# Performance Curves

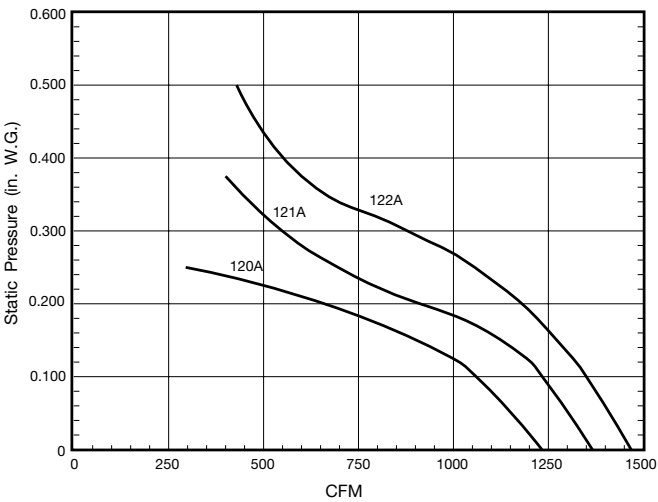
## TCPE 080A/081A/082A



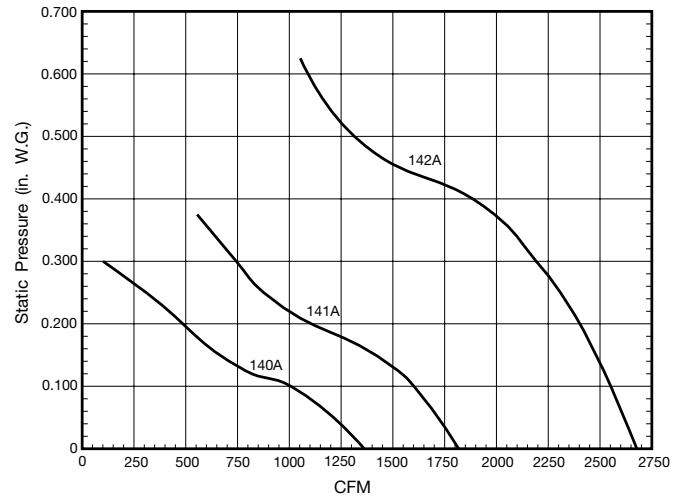
## TCPE 100A/101A/102A



## TCPE 120A/121A/122A



## TCPE 140A/141A/142A

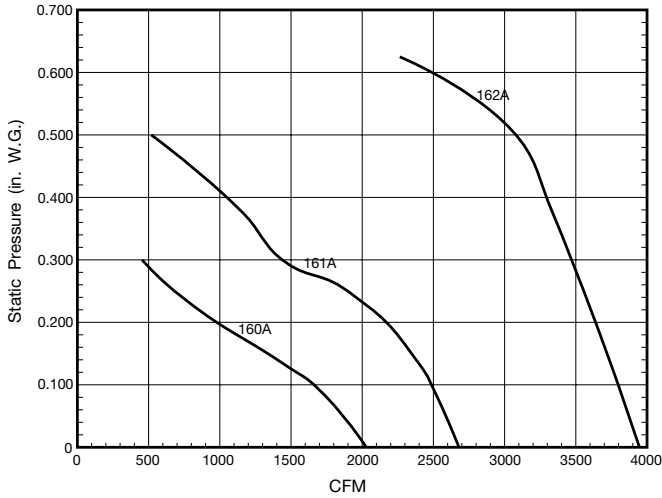


### NOTES:

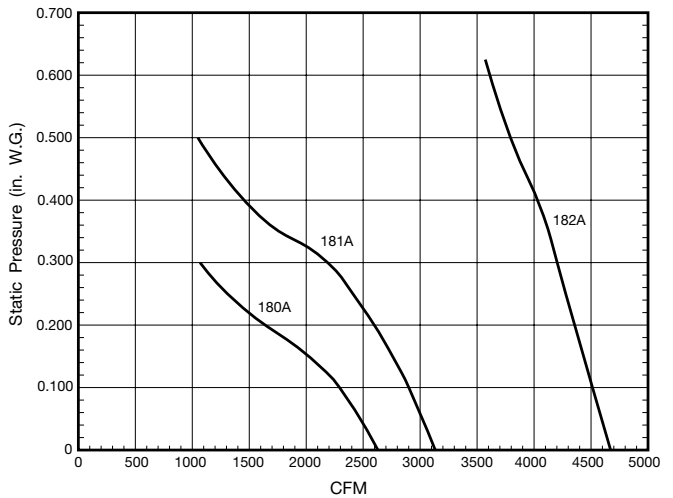
1. Performance ratings do not include the effects of appurtenances (accessories).
  2. Performance certified is for installation Type A: Free inlet, free outlet.
  3. Speed (RPM) shown is nominal. Performance is based on actual speed of test.
  4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: free inlet fan sone levels.
- \* TCPE custom engineered motors have been tested with a full load current and in some instances the amperage may be greater than the nameplate value. These motors still fall within NEMA recommended standards and will not overheat.

# Performance Curves

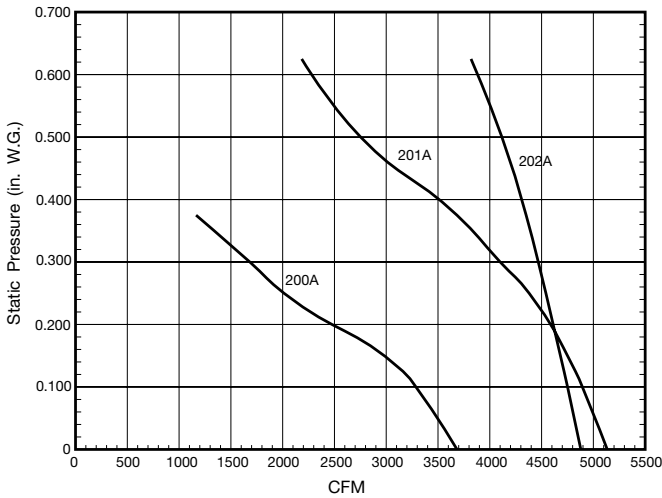
## TCPE 160A/161A/162A



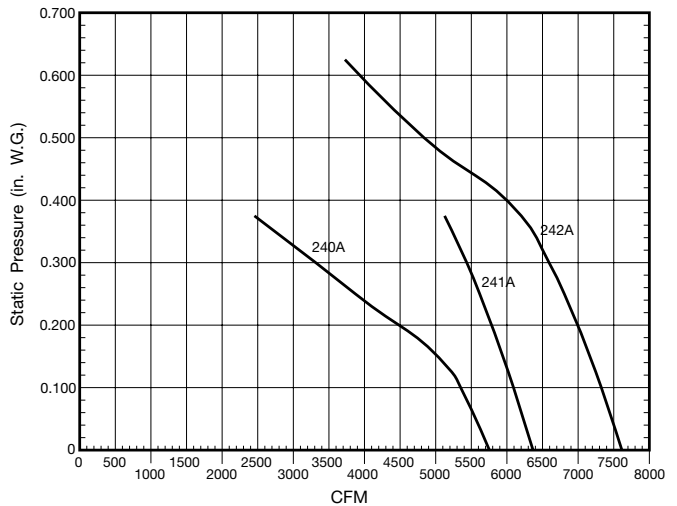
## TCPE 180A/181A/182A



## TCPE 200A/201A/202A



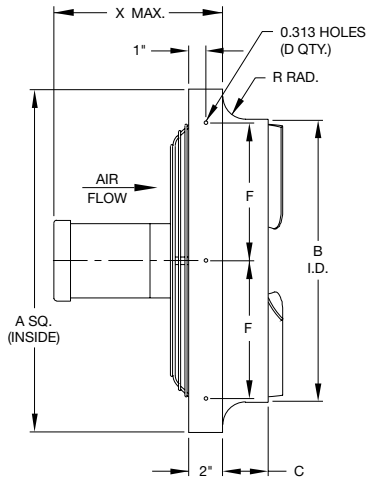
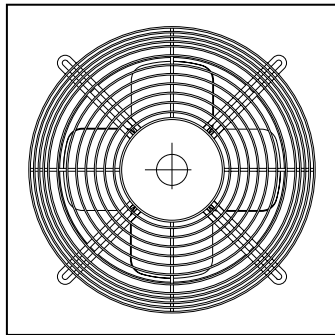
## TCPE 240A/241A/242A



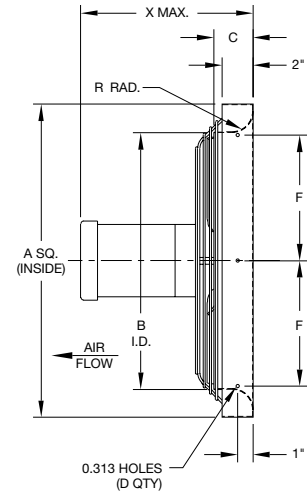
**NOTES:**

1. Performance ratings do not include the effects of appurtenances (accessories).
  2. Performance certified is for installation Type A: Free inlet, free outlet.
  3. Speed (RPM) shown is nominal. Performance is based on actual speed of test.
  4. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5m) in a hemispherical free field calculated per AMCA Standard 301. Values are for installation Type A: free inlet fan sone levels.
- \* TCPE custom engineered motors have been tested with a full load current and in some instances the amperage may be greater than the nameplate value. These motors still fall within NEMA recommended standards and will not overheat.

# Dimensional Data



EXHAUST



SUPPLY

TCPE MODEL SIZE	A I.D. (IN.)	B I.D. (IN.)	C (IN.)	D QTY.	F	R RAD.	X MAX.	DAMPER SIZE	PROP DIA.	MIN. WALL OPENING SQ.	AVG. SHIP WT. (LB.)
080A, 081A, 082A	13.25	8.38	1.25	8	4.00	0.75	10.25	10 x 10	8.00	14.38	15
100A, 101A, 102A	15.25	10.38	1.50		5.00	0.75	11.25	12 x 12	10.00	16.38	20
120A, 121A, 122A	18.25	12.38	2.00		6.50	0.875	11.50	15 x 15	12.00	19.38	26
140A, 141A, 142A	21.25	14.50	2.75		8.00	1.00	19.00	18 x 18	14.00	22.38	29
160A, 161A, 162A	23.25	16.50	3.00	12	9.00	1.13	19.00	20 x 20	16.00	24.38	37
180A, 181A, 182A	25.25	18.50	3.00		10.00	1.25	19.00	22 x 22	18.00	26.38	47
200A, 201A, 202A	27.25	20.63	3.00		11.00	1.50	20.50	24 x 24	20.00	28.38	51
240A, 241A, 242A	30.25	24.63	3.00		12.00	1.50	22.00	27 x 27	24.00	31.38	62

Dimensions are not to be used for construction.

## Typical Specifications

Wall exhaust fans shall be of the propeller direct drive type TCPE, as manufactured by Twin City Fan & Blower, Minneapolis, Minnesota.

**CONSTRUCTION** — Panels shall be constructed of 16 gauge G90 galvanized steel for durability and appearance. Panels shall have a deep spun inlet venturi and prepunched holes for easy mounting.

**PROPELLERS** — Propellers shall be of fixed pitch design and constructed with fabricated aluminum blades fastened to a steel hub. The propeller assembly 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.

**MOTORS** — All motors shall be permanent split capacitor (PSC) single phase or three phase induction, permanently lubricated, heavy duty, ball bearing type, with thermal overload protection, closely matched to the fan load and provided at the voltage, phase, hertz, and enclosure as specified on the fan schedule. Motors for use with variable speed control shall be closely matched to the fan load and provide good speed controllability without any objectionable noise.

**MOTOR MOUNT/GUARD ASSEMBLY** — Motor mount/guard assembly shall be of zinc plated construction and secured to the fan panel with captivated nut inserts for easy servicing without the removal of the full panel. Propeller blades shall be protected on the air intake with a guard that is compliant to OSHA Standard 1910.212 (Machine Guarding, Exposure of Blades).

Fans shall be provided with wall collar, backdraft damper, damper guard screen, weatherhood with screen, variable speed controller and disconnect switch where required.

Fans shall bear the AMCA ratings seal for both sound and air performance. Fans shall bear a permanently attached nameplate displaying model and serial number of unit for future identification.

# Unlimited Options...

## Commercial Fans

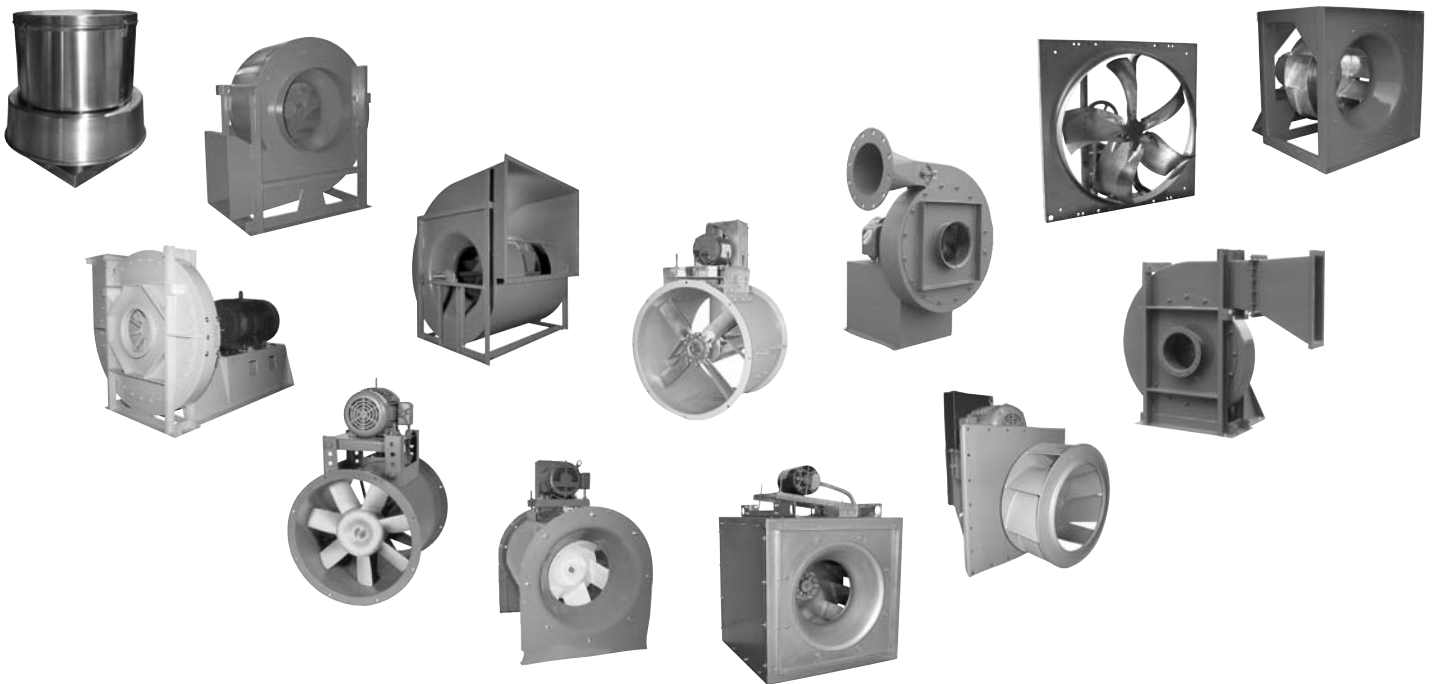
Centrifugal Fans • Utility Sets • Inline Centrifugal Fans • Plenum Fans  
Radial Bladed Fans • Centrifugal Roof & Wall Exhausters • Filtered Supply Fans  
Gravity Relief Ventilators • Ceiling & Cabinet Ventilators • Propeller Wall Fans  
Tubeaxial Fans • Vaneaxial Fans • Propeller Roof Ventilators  
Fume Hood/Smoke & Heat Exhaust Fans • Mancoolers • Fiberglass Fans

## Industrial Fans

Centrifugal Fans • Forward Curved & Air Kit Components • Inline Centrifugal Fans  
Plug Fans • Radial Bladed Fans • Radial Tip & High Efficiency Fans  
Pressure Blowers • Tubeaxial Fans • Vaneaxial Fans

## Custom Design Fans

Easy Access Fans • Insulated Fans • Inlet Boxes - Integral and Detached  
Inlet Box Dampers • Independent Bearing Pedestals • Split Housings • Bolted Housings  
Spark Resistant Construction • Ultra Fine Balancing • Modified Widths and Diameters  
Variable Frequency Drives • API Specifications • Special Materials • Anti-Rotation Devices  
Sleeve Oil Bearings • Volume Control Dampers • Inlet Vane Control with External Mechanisms



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