

# INDUSTRIAL PROCESS FANS

*Offered with wheels suitable for conveying or exhausting:*

- Dust •Fibrous Materials •Granular Material
- Paper Trim •Fumes •High Temperatures
- High Pressure Applications



**GREENHECK**  
*The Solution Company.*

August 2002

## Table of Contents

- Standard Construction ..... pg. 4
- Optional Construction ..... pg. 5
- Application of Arrangements ..... pg. 6
- Diagram of Arrangements ..... pg. 7
- Accessories ..... pg. 8-9
- Material Specifications ..... pg. 10
- Typical Specifications ..... pg. 11
- Specification Checklist ..... pg. 12

## Refer to the Sound and Air Data Supplement for:

- Engineering Data
- Air Performance
- Fan Curves
- Sound Performance
- Dimensional Data



AMCA licensed air performance can be found in Greenheck's supplement: Industrial Process Fan PM October 2002

Greenheck, a leader in the air movement industry for over 50 years, offers industrial process fans in both standard duty and heavy duty construction. Three wheel designs span the range of applications from industrial process ventilation to material handling.

Greenheck industrial process fans are designed and constructed for long reliable service life. Premium quality bearings are selected for a basic rating fatigue life (L-10) per AFBMA standards in excess of 80,000 hours at maximum operating speed. Every fan wheel is balanced and vibration is checked at the customer's specified speed. Maximum vibration allowed is 0.15 in/sec peak vibration velocity.





### IPO Wheel

Open material handling wheels are suitable for most industrial requirements. Applications include: abrasive dust exhaust (as in grinding and buffing), conveying granular materials (including sawdust and wood chips), fume exhaust and high temperature air handling.



### IPW Wheel

The wool wheel or backplate material handling wheel is designed for handling long, fibrous, stringy material. Applications include: conveying wood shavings, yarns and paper trimmings. It also offers higher efficiency than the open wheel in handling granular materials.



### IPA Wheel

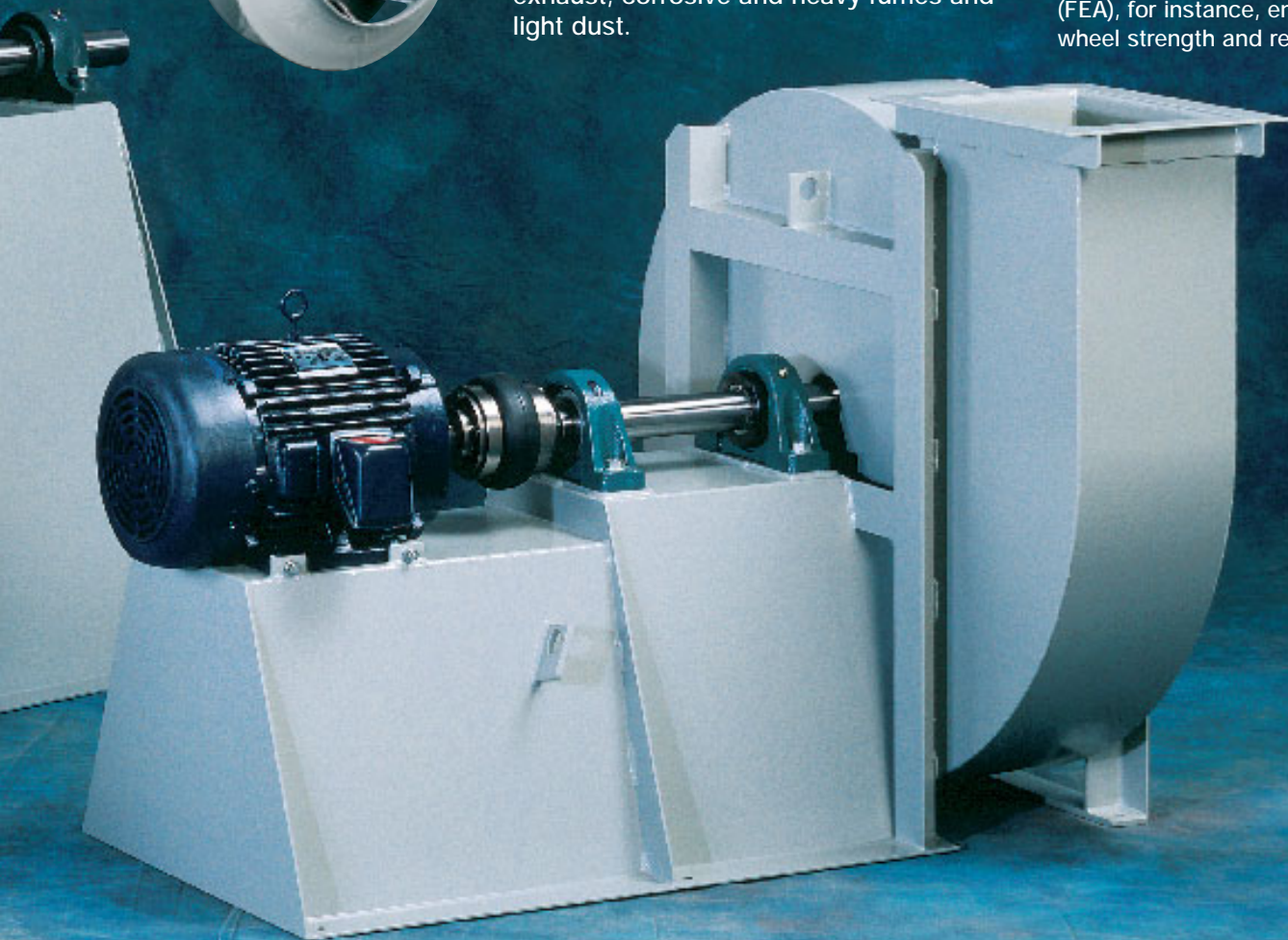
Air handling wheels are designed for applications ranging from clean air exhaust to light material handling. Applications include smoke and heat exhaust, corrosive and heavy fumes and light dust.



Customers can be assured of accurate sound and air performance from all Greenheck fans as a result of thorough testing in our Laboratory.



The latest computer aided design techniques were used to develop critical components. Finite Element Analysis (FEA), for instance, ensures maximum wheel strength and reliability.



# STANDARD CONSTRUCTION

Greenheck industrial fans are engineered and built for reliable operation in harsh environments where high temperatures, high static pressures and material handling requirements are encountered.

## Three wheel types are offered:

Model IPO - Open Radial  
Model IPW - Wool (Backplated)  
Model IPA - Air Handling

## Two Construction Levels are offered:

Standard Construction - Capacities to 60,000 CFM and 22 in. static pressure  
Heavy Duty Construction - Capacities to 84,000 CFM and 32 in. static pressure  
Fans are offered in inlet sizes 5-41 and are available in belt drive arrangements 1, 9 and 10 and direct drive arrangements 4 and 8. All sizes and models are available in either clockwise or counterclockwise rotation and are offered in all eight standard discharge positions.

**Housings** are constructed of steel plate continuously welded.

**Wheels** are fully welded heavy gauge construction. All wheels are both statically and dynamically balanced, keyed to the fan shaft and secured with a minimum of two set screws.

All fans feature a **standard coating** consisting of a powder based thermosetting polyester urethane applied over a pressure washed and phosphatized surface. A wide variety of special coatings are available as options.

**Bearings** are premium grease lubricated, self-aligning ball or roller pillow block type. They are selected for a basic rating fatigue life (L-10) per AFBMA Standards in excess of 80,000 hours at maximum operating speed and horsepower.

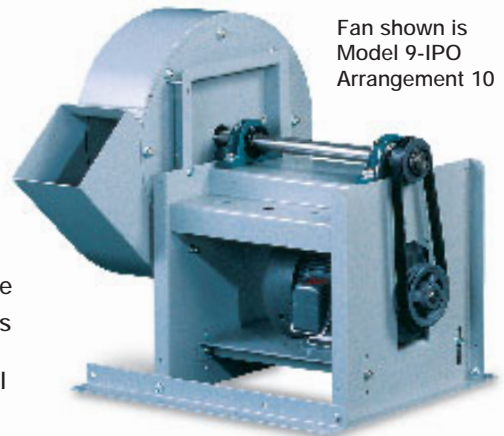
**Outlet flanges** are optional on fan sizes 5-19 and standard on fan sizes 21-41.

**Inlet collars** are standard on all fans.

**Fan shafts** are turned, precision ground, polished and sized so that the first critical speed is at least 25% over the maximum operating speed and horsepower.

The **drive frame** support structure for fan sizes 5 through 19 in arrangement 10 features an open sided box design to accept large motor frames. All arrangement 1 and 9 fans feature a fully welded A-frame design.

**Motor mounting plates** on arrangements 9 and 10 are provided with convenient jack-screws for belt tensioning.



Fan shown is  
Model 9-IPO  
Arrangement 10

## Rotatable and Reversible Housings

Fan housings for fan sizes 5-19 can be rotated to any of the eight standard discharge positions. Fans with IPO wheels in sizes 5-19 can be reversed in the field to obtain either clockwise or counterclockwise rotation.



Fan shown is  
Model 21-IPO  
Arrangement 1

# OPTIONAL CONSTRUCTION

## Spark Resistant Construction

The following standards apply to fan applications which may involve the handling of potentially explosive or flammable particles, fumes or vapors.

Type A - All parts in contact with the airstream are constructed of nonferrous material (aluminum). Type A construction is available on fans with IPA (air handling) wheels only in sizes 5 through 19.

Type B - The fan wheel is constructed of nonferrous material (aluminum). A nonferrous (aluminum) rub ring surrounds the fan shaft where it passes through the fan housing. Type B construction is available on fans with IPA (air handling) wheels only in sizes 5 through 19.

Type C - The inlet cone is constructed of nonferrous material (aluminum). A nonferrous (aluminum) rub ring surrounds the fan shaft where it passes through the fan housing. Type C construction is available on fans with IPO, IPW and IPA wheels in sizes 5 through 41.

The above constructions do not guarantee against the potential of producing sparks. The fan manufacturer can only use materials and manufacturing techniques to minimize the potential of two or more ferrous components making contact that may produce sparks. The installer must electrically ground all fan and system components.

## Aluminum Construction

Fans constructed with all components in the airstream manufactured of aluminum are an excellent choice for applications involving moisture. Greenheck offers model IPA (air wheel only) in sizes 5 through 19 for this application.

Important: Aluminum fans or components are limited to a maximum temperature of 250°F. Fan speed limitations and required options and accessories must be considered prior to ordering. See the Engineering Data section of Greenheck's Industrial Process Fan Catalog Supplement to this catalog for fan RPM limitations.

## High Temperature Fans

Greenheck industrial process fans are available for high temperature applications in all sizes and wheel types. The following heat fan packages are offered.

- 251-500°F - for belt drive arr. 1, 9 and 10. Direct drive arr. 8.
- 501-800°F - for belt drive arr. 1. Direct drive arr. 8.
- Consult the factory for applications over 800°F.

The following table shows the temperature limits for specific materials.

Material	Maximum Temperature
Aluminum	250°F
Steel	800°F
316 Stainless Steel	1000°F

Fan speed limitations and required options and accessories must be considered prior to ordering. See the Engineering Data section of Greenheck's Industrial Process Fan Catalog Supplement to this catalog for fan RPM limitations.

## Stainless Steel Construction

Greenheck industrial process fans are available in type 316 stainless steel for the entire unit or the airstream parts only. Stainless steel is suited for environments subject to heat and corrosive fumes. Fans specified of stainless construction also include stainless steel shafts, shaft keys, wheel hubs and hardware. Stainless construction is available on fan models IPO, IPW and IPA in sizes 5 through 19. Consult the factory when stainless steel construction is required on larger fans, for heat fan packages up to 1000 °F and for other special applications.

# ARRANGEMENTS

## **ARRANGEMENT 10** *MODELS IPO, IPW, IPA* *SIZES 5-19* *STANDARD DUTY*

Compact design providing space savings.  
Bearings are located out of the airstream.  
Motor is mounted beneath the drive frame.  
The only arrangement available with a weatherhood.  
Available with heat fan package to 500°F.  
Available with special coatings.

## **ARRANGEMENT 9** *MODELS IPO, IPW, IPA* *SIZES 5-41* *STANDARD AND HEAVY DUTY*

Bearings are mounted out of the airstream.  
Easy access to motors mounted on drive frame.  
Available with larger motors than arr. 10.  
Standard motor position is on the right side of the drive frame.  
Optional motor position is on the left side of the drive frame.  
A weatherhood is not available on this arrangement.  
Available with heat fan packages to 500°F.  
Available with special coatings.

## **ARRANGEMENT 1** *MODELS IPO, IPW, IPA* *SIZES 5-41* *STANDARD AND HEAVY DUTY*

Bearings are mounted out of the airstream.  
Recommended for large frame motors - easiest motor access.  
Motor is mounted on a common isolation base with the fan.  
Choice of motor positions W, X, Y or Z.  
Weatherhood is not available on this arrangement.  
Recommended for high temperatures or contaminated air.  
Available heat fan packages to 800°F.  
Available with special coatings.

## **ARRANGEMENT 4** *MODELS IPW, IPA* *SIZES 5-19* *STANDARD AND HEAVY DUTY*

Direct drive.  
Available wheel and housing modifications for specific performance.  
Compact design.  
Low maintenance.  
Limited to standard motor speeds.  
Heat packages are not available.  
Available with special coatings.

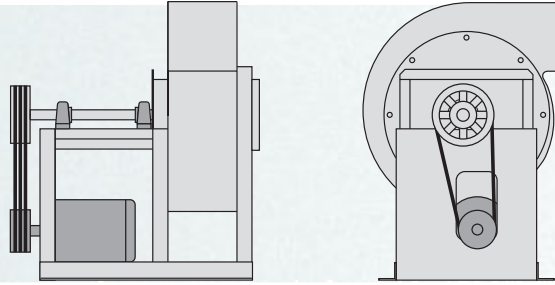
## **ARRANGEMENT 8** *MODELS IPO, IPW, IPA* *SIZES 5-41* *STANDARD AND HEAVY DUTY*

Direct drive motor coupled to fan shaft.  
Available wheel and housing modifications for specific performance.  
Limited to standard motor speeds.  
Bearings are located out of the airstream.  
Available heat fan packages to 800°F.  
Available with special coatings.

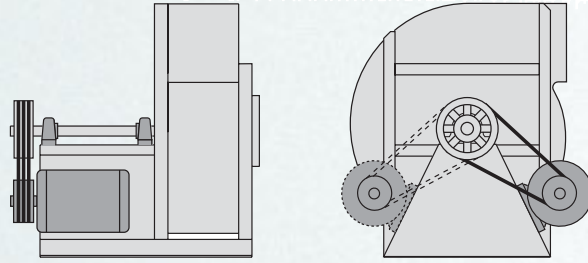
## **DISCHARGE POSITIONS AND ROTATABLE/REVERSIBLE HOUSINGS**

All industrial process fans are available with CW or CCW rotation in all standard discharge positions. Fan sizes 5 thru 19 have rotatable housings as standard. Fans with IPO wheels in sizes 5-19 can also be reversed in the field to obtain either clockwise or counterclockwise rotation.

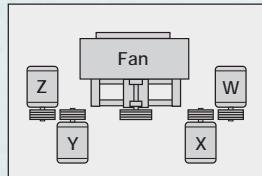
# ARRANGEMENTS



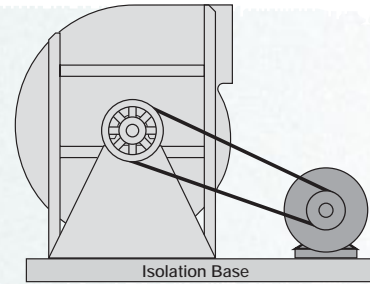
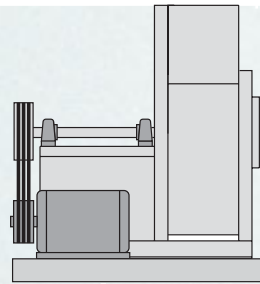
ARR. 10



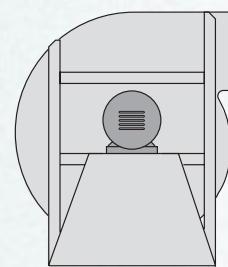
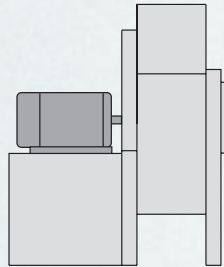
ARR. 9



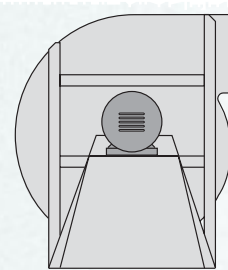
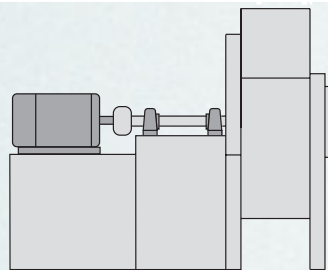
Motor position and fan rotation are determined from drive side



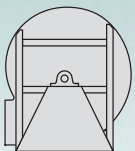
ARR. 1



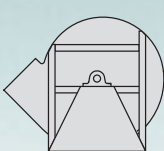
ARR. 4



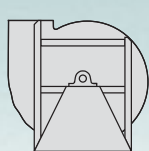
ARR. 8



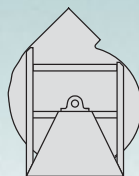
BH



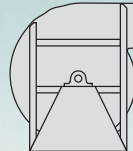
BAU



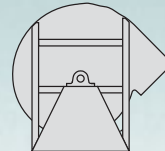
UB



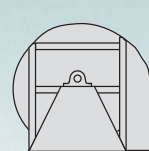
TAU



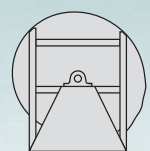
TH



TAD



DB



BAD

Discharges shown are for CW rotation. CCW rotation discharges are a mirror image.

# ACCESSORIES

## Weatherhoods for Arr. 10\*

Vented steel weatherhoods protect the motor and drive components from rain, moisture, dust, and dirt. Weatherhoods are easily removed for service access.

## Inlet and Outlet Guards \*

Removable inlet and outlet guards provide protection for personnel and equipment in non-ducted installations. Inlet and outlet guards meet OSHA standards.

## Inlet and Outlet Flanges \*

For applications where tight bolted duct connections are required, flanges are available with or without prepunched holes. Punched flanges are required for attachment of control dampers, inlet bells or inlet boxes.

## Belt Guards and Shaft Guards

Totally enclosed belt guards cover both the fan and motor pulleys. Shaft guards completely cover both the shaft and bearings. All belt and shaft guards are constructed to meet OSHA requirements and are easily removed for maintenance.

## Inlet Bells with Guards

Inlet bells minimize entry losses and are recommended for non-ducted applications. All inlet bells include an inlet guard for personnel protection.

## Companion Flanges \*

Companion inlet flanges and outlet flanges with prepunched holes are available for all fan sizes.

## Access Doors \*

Bolted or quick-opening access doors provide access for cleaning or inspection. Access doors are standard on downblast discharge fans.

## Outlet Volume Dampers

Outlet volume control dampers feature vertical opposed blades for maximum performance and are supplied with a quadrant lever for manual or motorized operation. The maximum operating temperature for dampers is 400°F.

## Heat Slingers

The heat slinger is an aluminum cooling disc mounted on the fan shaft between the inboard bearing and the blower housing to dissipate heat conducted along the fan shaft. Heat slinger guards are included for personnel protection.

## Shaft Seals

A felt shaft seal with an aluminum rub ring is available for operation at high temperatures or for exhausting contaminated air. This seal is **NOT** gas-tight.

## Extended Lubrication Lines

Arrangement 10 fans are available with flexible nylon tubing extending from the bearings to conveniently located grease fittings mounted on the fan drive frame (or on the fan housing if a weatherhood is supplied).

## Drain Connection\*

A 1" threaded drain connection is located at the bottom of the fan housing for draining any fluids that may accumulate in the fan.

## Special Coatings

Special coatings for protecting the fan from corrosive environments are available. These coatings may be applied to just the airstream components or to the entire unit. For a detailed description of special coatings, see the Greenheck Engineering Bulletin "Special Coatings for Centrifugal and Industrial Fans."

## Disconnect Switches

Greenheck offers a wide selection of NEMA rated fusible or non-fusible disconnect switches.

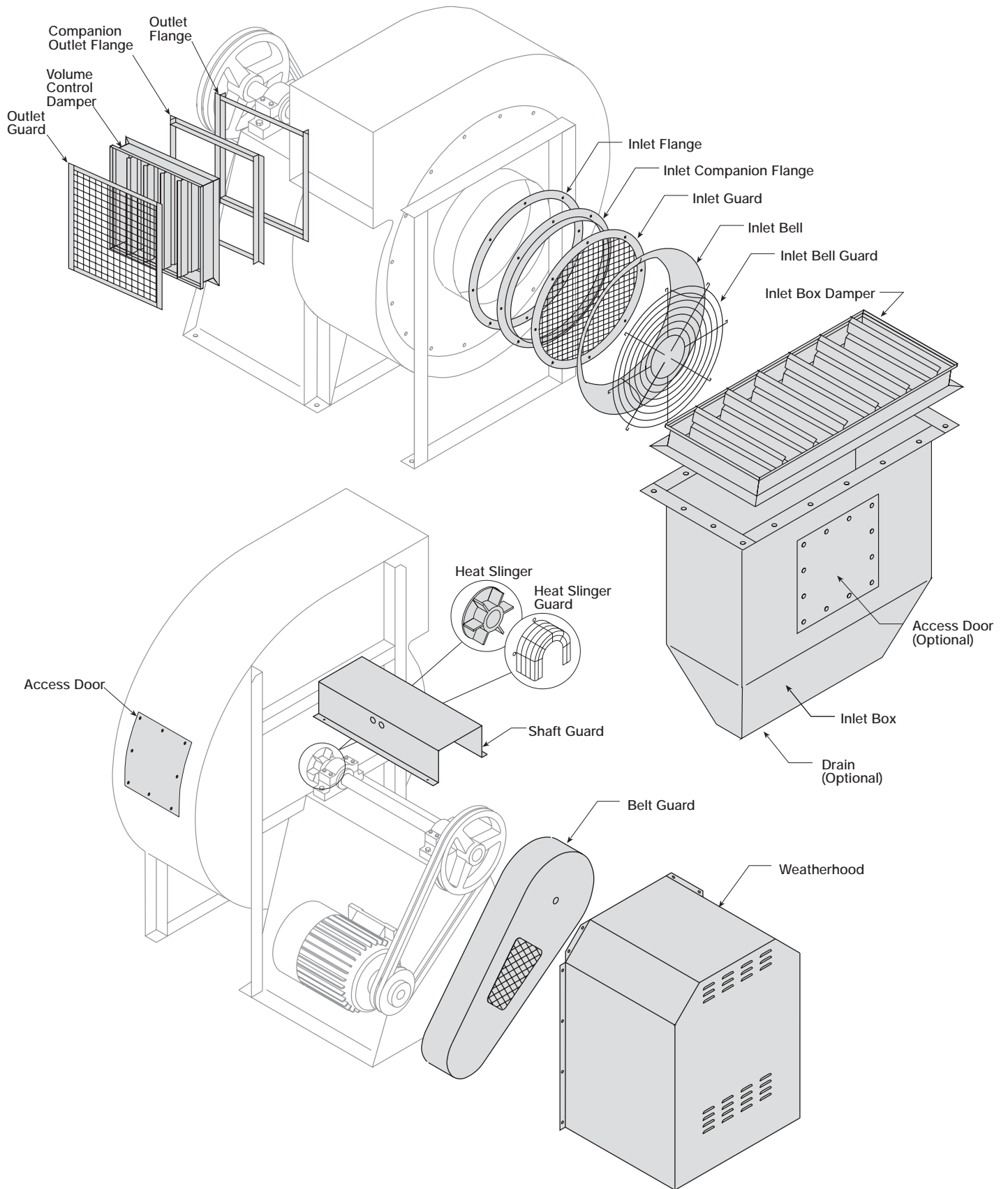
## Stainless Steel Shafts

Stainless steel fan shafts are available on fan sizes 5-41 for applications where standard carbon steel shafts may exhibit excessive corrosion or heat stress.

## Inlet Boxes and Dampers

Inlet boxes minimize entry losses when a sharp turn is required at the fan inlet. A punched inlet flange is required to attach the box to the fan. Specify the inlet box position as determined from the drive side of the fan. Parallel blade inlet box dampers are available. These dampers provide for an efficient means of reducing airflow. Other inlet box accessories include bolted access doors and drains.

\*These accessories are also available in aluminum or stainless steel construction for fan sizes 5-19.



# SPECIFICATIONS

IPO - Open Radial Wheel																
Fan Size	Scroll Gauges				Gauges		Shaft Diameter		Wheel Wgt.		Fan Weights					
	Standard		Heavy		Fan Blades				Std. Duty	Heavy Duty	Arr. 10	Arr. 9		Arr. 1		
	Side	Wrap	Side	Wrap	Std.	Heavy	Std.	Heavy				Std.	Heavy	Std.	Heavy	
5	12	12	NA	NA	10	NA	1	NA	7	NA	92	85	NA	66	NA	
7	12	12	NA	NA	10	NA	1 <sup>7</sup> / <sub>16</sub>	NA	16	NA	145	149	NA	116	NA	
9	12	12	NA	NA	10	NA	1 <sup>7</sup> / <sub>16</sub>	NA	20	NA	197	203	NA	160	NA	
11	10	10	3/16	3/16	3/16	1/4	1 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	31	49	311	306	381	268	337	
13	10	10	3/16	3/16	3/16	1/4	1 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	51	61	503	515	599	491	575	
15	10	10	3/16	3/16	1/4	1/4	2 <sup>3</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	75	75	594	607	697	583	671	
17	10	10	3/16	3/16	1/4	1/4	2 <sup>3</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	90	106	762	777	924	734	879	
19	10	10	3/16	3/16	1/4	5/16	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	107	156	968	957	1166	909	1117	
21	10	10	3/16	3/16	5/16	5/16	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	188	262	NA	1075	1340	1075	1340	
23	3/16	3/16	1/4	3/16	5/16	5/16	2 <sup>11</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	229	293	NA	1380	1600	1380	1600	
26	3/16	3/16	1/4	3/16	5/16	3/8	2 <sup>15</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	343	587	NA	1955	2325	1955	2325	
29	3/16	3/16	1/4	1/4	5/16	3/8	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	402	697	NA	2298	3016	2298	3016	
33	3/16	3/16	1/4	1/4	5/16	3/8	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	536	916	NA	2789	3623	2789	3623	
37	1/4	3/16	1/4	1/4	3/8	3/8	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	785	1251	NA	3599	4814	3599	4814	
41	1/4	3/16	1/4	1/4	3/8	3/8	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	914	1449	NA	4114	5492	4114	5492	

IPW - Wool Type Wheel																	
Fan Size	Scroll Gauges				Wheel Gauges			Shaft Diameter		Wheel Wgt.		Fan Weights					
	Standard		Heavy		Blades		Backs			Std. Duty	Heavy Duty	Arr. 10	Arr. 9		Arr. 1		
	Side	Wrap	Side	Wrap	Std.	Heavy		Std.	Heavy				Std.	Heavy	Std.	Heavy	
5	12	12	NA	NA	10	NA	3/16	1	NA	10	NA	94	88	NA	69	NA	
7	12	12	NA	NA	3/16	NA	3/16	1 <sup>7</sup> / <sub>16</sub>	NA	24	NA	152	157	NA	123	NA	
9	12	12	NA	NA	3/16	NA	3/16	1 <sup>7</sup> / <sub>16</sub>	NA	35	NA	211	217	NA	174	NA	
11	10	10	3/16	3/16	3/16	1/4	1/4	1 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	52	70	331	326	396	287	336	
13	10	10	3/16	3/16	3/16	1/4	1/4	1 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	80	90	530	542	626	518	601	
15	10	10	3/16	3/16	1/4	1/4	5/16	2 <sup>3</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	123	123	638	651	740	627	714	
17	10	10	3/16	3/16	1/4	1/4	5/16	2 <sup>3</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	152	169	820	834	980	791	936	
19	10	10	3/16	3/16	1/4	5/16	5/16	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	184	234	1040	1028	1236	981	1187	
21	10	10	3/16	3/16	5/16	5/16	3/8	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	283	360	NA	1163	1428	1163	1428	
23	3/16	3/16	1/4	3/16	5/16	5/16	3/8	2 <sup>11</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	343	409	NA	1485	1701	1485	1701	
26	3/16	3/16	1/4	3/16	5/16	3/8	3/8	2 <sup>15</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	490	579	NA	2089	2299	2089	2299	
29	3/16	3/16	1/4	1/4	5/16	3/8	3/8	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	584	684	NA	2460	2977	2460	2977	
33	3/16	3/16	1/4	1/4	3/8	1/2	1/2	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	931	1125	NA	3161	3802	3161	3802	
37	1/4	3/16	1/4	1/4	3/8	1/2	1/2	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	1186	1516	NA	3966	5026	3966	5026	
41	1/4	3/16	1/4	1/4	3/8	1/2	1/2	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	1403	1770	NA	4565	5754	4565	5754	

IPA - Air Handling Wheel																		
Fan Size	Scroll Gauges				Wheel Gauges				Shaft Diameter		Wheel Wgt.		Fan Weights					
	Standard		Heavy		Blades		Backs	Cones			Std. Duty	Heavy Duty	Arr. 10	Arr. 9		Arr. 1		
	Side	Wrap	Side	Wrap	Std.	Heavy			Std.	Heavy				Std.	Heavy	Std.	Heavy	
5	12	12	NA	NA	10	NA	3/16	10	1	NA	15	NA	100	93	NA	75	NA	
7	12	12	NA	NA	10	NA	3/16	10	1 <sup>7</sup> / <sub>16</sub>	NA	22	NA	151	156	NA	122	NA	
9	12	12	NA	NA	3/16	NA	3/16	10	1 <sup>7</sup> / <sub>16</sub>	NA	35	NA	212	218	NA	175	NA	
11	10	10	3/16	3/16	3/16	3/16	1/4	10	1 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	62	64	342	337	392	298	352	
13	10	10	3/16	3/16	3/16	3/16	1/4	3/16	1 <sup>15</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	98	98	551	562	636	539	611	
15	10	10	3/16	3/16	3/16	3/16	5/16	3/16	2 <sup>3</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	131	131	649	662	751	638	725	
17	10	10	3/16	3/16	3/16	1/4	5/16	3/16	2 <sup>3</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	191	207	862	877	1022	834	977	
19	10	10	3/16	3/16	3/16	1/4	5/16	3/16	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	223	243	1083	1072	1249	1024	1200	
21	10	10	3/16	3/16	3/16	1/4	3/8	3/16	2 <sup>7</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	280	305	NA	1165	1378	1165	1378	
23	3/16	3/16	1/4	3/16	3/16	1/4	3/8	3/16	2 <sup>11</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	325	355	NA	1472	1651	1472	1651	
26	3/16	3/16	1/4	3/16	3/16	1/4	3/8	3/16	2 <sup>15</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	409	448	NA	2016	2175	2016	2175	
29	3/16	3/16	1/4	1/4	1/4	1/4	3/8	3/16	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	544	544	NA	2430	2846	2430	2846	
33	3/16	3/16	1/4	1/4	1/4	1/4	1/2	3/16	3 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	781	781	NA	3024	3469	3024	3469	
37	1/4	3/16	1/4	1/4	1/4	1/4	1/2	3/16	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	961	961	NA	3754	4480	3754	4480	
41	1/4	3/16	1/4	1/4	1/4	1/4	1/2	3/16	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	1227	1227	NA	4407	5223	4407	5223	

# SOUND AND AIR PERFORMANCE

## For Electronic Selection Use

### **CAPS** **Computer Aided Product** **Selection Software**

Greenheck's computer software for electronic fan selection is considered the best in the industry. It is designed to make fan selection fast, easy and accurate. CAPS eliminates manual calculations and allows you to compare multiple selections that meet the job requirements. Air performance is displayed in tables or fan curves. Dimensional drawings and data are shown on screen and can be printed out. Sound performance tables include eight octave band sound power, LwA, and dBA for both inlet and outlet.

Once a fan is selected, it can be saved as part of a job, and the data can be stored on a disk and printed in the form of a fan schedule. Fan schedules may also be transferred directly to drawings with design packages such as AutoCAD.

## How to Receive Your Copy of CAPS

To receive your copy of the CAPS software simply contact your nearest Greenheck representative and ask for the CAPS license agreement.

## For Manual Selection, Use the

### **Industrial Process Fan** **Catalog Supplement**

Greenheck's Sound and Air Data Supplement to this catalog contains all the technical and engineering information necessary for manual fan selection. Data provided in this supplement include:

#### **Engineering Data**

Complete engineering data, including the effects of air density and installation on performance.

#### **Air Performance Data**

Fan curves and tabulated air performance data are shown for each wheel type for both standard and heavy duty construction. The fan curves are shown as a family of curves, with pressure/volume curves plotted for progressive fan speeds. Horsepower curves are also plotted for a range of motors appropriate for the plotted fan speed. Standard and heavy duty speed limitations are clearly shown on the fan curves and above the tabulated data.

#### **Sound Data**

Sound power levels are shown for each of the eight octave bands for both the inlet and outlet of Greenheck Industrial Process Fans. This method of cataloging both the inlet and outlet sound power level is unique in the industry.

#### **Dimensional Data**

Dimensional information is shown for each fan size and arrangement.

## **Typical Specification**

Process or material handling fans shall be of the heavy duty type with inlet diameters and outlet areas manufactured in accordance with standards adopted by AMCA for industrial fans.

Fan housings shall be of continuously-welded plate to assure no air leakage. The housing and bearing support shall be constructed of welded structural steel members to support the shaft and bearings.

The fan wheel shall be fully welded and of either the open material handling, backplate material handling or air handling type. Wheels shall be statically and dynamically balanced to balance grade G6.3 per ANSI S2.19.

Turned, precision ground and polished steel shafts shall be sized so the first critical speed is at least 25% over the maximum operating speed for each construction class. Close tolerances shall be maintained where the shaft passes through the bearing.

Bearings shall be heavy duty grease lubricated, ball or roller pillow block type. Bearings shall be selected for a basic rating fatigue life (L-10) of 80,000 hours at maximum operating speed and horsepower for each construction level.

Each assembled fan shall be test run at the factory at the specified fan RPM and vibration signatures shall be taken on each bearing in the horizontal, vertical, and axial direction. The maximum allowable fan vibration shall be 0.15 in/sec peak velocity, filter in measured at the fan RPM.

Fans shall be licensed to bear the AMCA Seal for air performance.

Industrial process fans shall be model IPO (open material handling), IPW (wool, backplate material handling) or IPA (air handling) as manufactured by Greenheck of Schofield, Wisconsin and shall be supplied as shown on the plans and in the fan schedule.

# SPECIFICATION CHECKLIST

## 1. Fan Size

## 2. Wheel Type

(IPO, IPW or IPA)

## 3. Construction Grade

(Standard or Heavy Duty)

## 4. Arrangement:

Belt Drive (1, 9 or 10)    Direct Drive (4 or 8)

## 5. Discharge Position

## 6. Wheel Rotation

(CW or CCW)

## 7. Motor Location:

Arrangement 9 - Left or Right (Right is standard)

Arrangement 1 - W, X, Y, or Z

## 8. Fan Performance:

- Volume (CFM)
- Static Pressure
- Fan RPM
- Brake Horsepower (Bhp)
- Airstream Temperature for Start up
- Airstream Temperature for Operation
- Elevation

## 9. Motor Requirements

- Motor Horsepower, RPM, Enclosure Type
- Voltage, Hertz and Phase
- Check Minimum Starting Torque
- Check Maximum Motor Frame Size (Arrangements 9 and 10)

## 10. V-Belt Drive

- Constant or Variable Speed
- Service Factor

## 11. Accessories

- Outlet Volume Dampers
- Access Doors (Bolted or Quick Opening - Specify Location)
- Inlet Flange
- Outlet Flange (Standard on sizes 21-41)
- Companion Inlet or Outlet Flange
- Inlet or Outlet Guards
- Inlet Bell
- Belt Guard
- Shaft Guard
- Weatherhood (Arr. 10)
- Drain Connection (Not on Downblast)
- Extended Life Bearings (L10 200,000)
- Extended Lubrication Lines
- Heat Slinger
- Heat Fan Package (Specify normal start-up temperature, operating temperature and maximum design temperature)
- Shaft Seal
- Stuffing Box
- Optional Construction Material (airstream or entire unit) (Aluminum or 316 Stainless Steel)
- Special Protective Coating
- Spark Resistant Construction (Type A, B or C)
- Inlet Box (Standard or Heavy Duty)
  - Inlet Box Accessories
    - Damper
    - Drain
    - Access Door
- Isolation Equipment

## Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid.

Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

Due to continuing research, Greenheck reserves the right to change specifications without notice.



## Number one in air movement and control.



Centrifugal and Vane Axial Fans



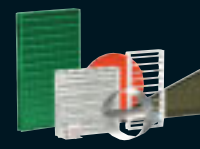
Fans and Ventilators



Energy Recovery Ventilators & Make-Up Air Units



Kitchen Ventilation Systems



Dampers and Louvers

Visit the Greenheck website for the most current information available  
[www.greenheck.com](http://www.greenheck.com)

Greenheck • P.O. Box 410 Schofield, WI 54476-0410 • Phone (715) 359-6171 • Fax (715) 355-2399 • [www.greenheck.com](http://www.greenheck.com)