Read and Save These Instructions

FORM 613100

INSTALLATION & MAINTENANCE INSTRUCTIONS
Models AFSN, AFSL, AFSI, USAN, USAL, USAI

RECEIVING AND INSPECTION

Immediately upon receipt of a shipment, carefully inspect for damage and shortage. Turn the impeller by hand to see that it turns freely and does not bind. If any damage and/or shortage is detected or suspected, the carrier must be asked to conduct an inspection. The consignee's representative should not accept a shipment without a notation on the delivery receipt indicating items not delivered or the apparent extent of damage.

When a shipment is opened and damage is found which was not evident externally (concealed damage), it is mandatory that the consignee request an immediate inspection by the carrier. Report any damage to the carrier within 15 days. Failure to report damage within the above time limit will result in rejection of a claim.

HANDLING

When handling fans and their accessories, always use equipment and methods that will not cause damage. Fans should be lifted using slings and padding or spreaders to avoid damage.

CAUTION! Always make sure that all lifting and handling equipment and techniques conform to current safety standards.

Avoid lifting fans in a way that will bend or distort fan parts. Never pass slings or timbers through the fan orifice.

CAUTION! Do not lift by the fan hood. Fans with special coatings or paints must be protected in handling to prevent damage.

STORAGE

Fans are protected against damage during shipment. If they cannot be installed and put into operation immediately upon receipt certain precautions are necessary to prevent deterioration during storage. Responsibility for integrity of fans and accessories during storage must be assumed by the user. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user, who shall make his own decision as to whether to use any or all of them.

INDOOR: The ideal storage environment for fans and accessories is indoors, above grade, in a low humidity atmosphere which is sealed to prevent the entry of blowing dust, rain, or snow. Temperatures should be evenly maintained between 70°F and 105°F (wide temperature swings may cause condensation and "sweating" of metal parts). Windows should be covered to prevent temperature variations caused by sunlight. Provide thermometers and humidity indicators at several points and maintain the atmosphere at 40% relative humidity, or lower.

It may be necessary to use trays of renewable desiccant or portable dehumidifier to remove moisture from the air in the storage enclosure.

Thermostatically controlled portable heaters (vented to outdoors) may be required to maintain even temperatures inside the enclosure.

CAUTION! Provide fire extinguishers, or fire alarms, or emergency response communication to protect building and equipment against fire damage. Be sure that building and storage practices meet all local, state and federal fire and safety codes.

The following fans or accessories must be stored indoors, in a clean dry atmosphere:

a. Propeller wall fans not in wall housings.
b. Any fan protected by a cardboard carton.
c. Motors dismounted from fans.
d. Spare wheels or propellers.
e. Belts, sheaves, bushings and other parts when not mounted on fan.
f. Boxes, bags or cartons of hardware.
g. Curbs
h. Dampers

Remove any accumulations of dirt, water, ice or snow and wipe dry before moving indoor storage. Allow cold parts to reach room temperature to avoid "sweating" of metal parts. Open boxes or cartons. Remove any accumulated moisture; if necessary use portable electric heaters to dry parts and packages. Leave coverings loose to permit air circulation and to permit periodic inspection.

Rotate wheels or propellers by hand to distribute bearing grease over the entire bearing surfaces.

Store at least 3 ½" off the floor on wooden blocks covered with moisture proof paper or polyethylene sheathing. Provide aisles between parts and along all walls, to permit air circulation and space for inspection.

OUTDOOR: Fans designed for outdoor use may be stored outdoors, if absolutely necessary. The storage area should be reasonably level and drained or ditched to prevent accumulation of water. Fencing and lighting for security are desirable. Roads or aisles for portable cranes

and hauling equipment are needed. Consider the use of drift fencing to minimize accumulation of blowing snow or dirt.

The following fans may be stored outdoors, if dry indoor storage space is not available:

a. Fans intended for outdoor use that are crated in wood.
b. Wall fans installed in wall housings.

All fans must be supported on wooden blocks or timbers above water or normal snow levels. Provide enough blocking to prevent settling into soft ground. Fans should be set in place using the directional arrow markings on the crate as a guide.

Locate pieces far enough apart to permit air circulation, sunlight, and space for periodic inspection. Place all parts on their supports so that rain water will run off, or to minimize water accumulation. **Do not** cover parts with plastic film or tarps-these cause condensation of moisture from the air passing through heating and cooling cycles.

Fan wheels and propellers should be blocked to prevent spinning caused by strong winds.

INSPECTION AND MAINTENANCE DURING STORAGE

Inspect fans and accessories at least once per month, while in storage. Log results of inspection and maintenance performed. A typical log entry should include the following:

a. Date
b. Inspector's Name
c. Name of Fan
d. Location
e. Condition of Paint or Coating
f. Is moisture present?
g. Is dirt accumulated?
h. Corrective steps taken?

If moisture or dirt accumulations are found on parts, the source should be located and eliminated. Fans should be rotated at each inspection by hand ten to fifteen revolutions to redistribute the motor and bearing lubricant.

If paint deterioration begins, consideration should be given to touch-up or repainting. Fans with special coatings may require special techniques for touch-up or repair.

Machined parts coated with rust preventive should be restored to good condition promptly if signs of rust occur. The most critical items are pulleys, shafts and bearing locking collars. At the first sign of rusting on any of the above parts, remove the original rust preventive coating with petroleum solvent and clean lint-free cloths. Polish any remaining rust from surfaces with crocus cloth or fine emery paper and oil. **Do not** destroy the continuity of the surfaces. Wipe clean with lint-free cloths and recoat surfaces evenly and thoroughly with Tectly 506 (Ashland Oil Company) or equal. For hard to reach internal surfaces or for occasional use, consider using Tectly 511M Rust Preventive or WD40 or equal.

REMOVING FROM STORAGE

As fans are removed from storage to be installed in their final location, they should be protected and maintained in similar fashion, until the fan equipment goes into operation.

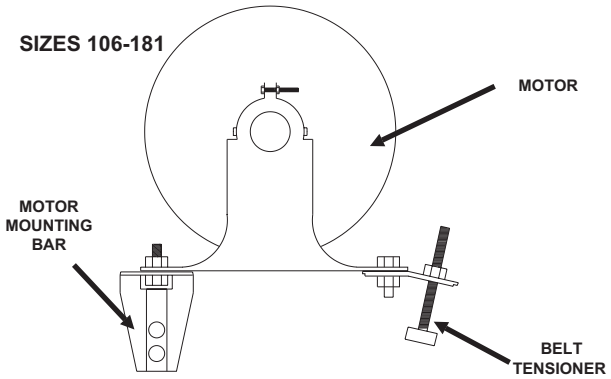
INSTALLATION

1. **CAUTION!** This unit has rotating parts and safety precautions should be exercised during installation, operation and maintenance.
2. **WARNING! Do not** use in hazardous environments where the fan's electrical system could provide ignition to combustible or flammable materials, unless the unit is specifically built for hazardous environments.
3. If the fan manufacturers prefab curb is used, a flange is provided for mounting the damper. Damper should be installed before setting exhauster.
4. Using a minimum of eight (8) lag bolts - two (2) on each side near corners, securely fasten fan to curb. Fasten all bolts securely. The fan should rest on the curb as level as possible.
5. If a damper box is being used, assemble box and mount in curb before setting exhauster. Damper may be installed at this time if desired. Damper should be fastened to the bottom of the damper box, curb flanges or nailing strips in the curb.
6. Raise the unit to roof using a sling or platform; **do not** lift by the hood.
7. See Figures 2 and 3 on pages 5 and 6 for exploded views.
8. Access to the fan/motor compartment is required at this time as follows:

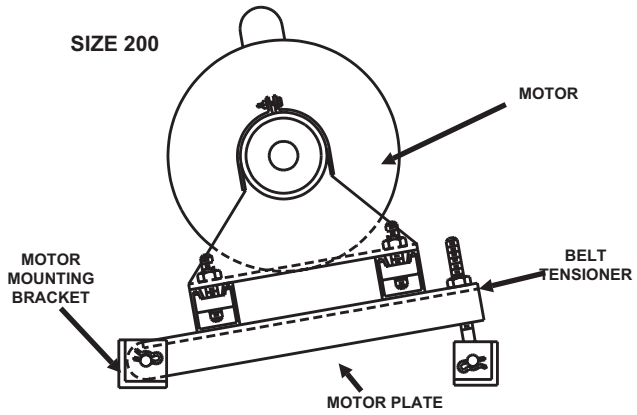
Standard Hood Filtered Air Supply	. remove corner bracket fasteners from curb panels and lift off entire hood.
Louvered Filtered Air Supply	. remove Louver Hood top with clips provided.
Side Intake Filtered Air Supply	. remove top from side panels with clips provided. The side intake duct, filters and hardware are shipped inside of the fan plenum - remove for installation. Install side intake duct, filter rack and filters with hardware provided.

9. Turn the impeller by hand to make sure it rotates freely.

10. Motors 1 HP (.7457 kW) and below are shipped mounted to the fan except for 1 HP (.7457 kW), 3 PH, 2 SPD/1 WDG motors. All other motors larger than 1 HP (.7457 kW) are not mounted for shipment - motors are shipped in a separate carton. For Sizes 106 through 181, the motor mounting bar is located on the fan housing. Size 200 units require a motor platform. See Figure 1.



NOTE: The motor is attached to the motor mounting bar with 2 bolts. The belt tensioner uses 1 bolt.



NOTE: The motor is attached to the motor plate with 4 bolts. The belt tensioner uses 1 bolt.

FIGURE 1

11. Motor sheave is in a parts box along with the belts, belt tensioner and hardware. The fan sheave is mounted on the fan shaft.

12. The motor is attached to the motor mounting bar with two (2) bolts, the belt tensioner uses one (1) bolt. By turning the belt tensioning bolt counter-clockwise, lower the motor to its lowest position (closest to the fan assembly). Install the motor sheave on the motor utilizing a straight edge to align the motor sheave with the fan sheave. Once the sheaves are tightened in place, install the drive belt over the sheaves and set the tension by turning the belt tensioning bolt clockwise. Proper belt tension is attained when the belt depresses its own width when pressed firmly inward at midway point between the sheaves. The Size 200 motor platform can be adjusted with the two (2) tensioning screws provided.

13. For optional Side Intake Filtered Air Supply Fans duct extension, assembly is as shown in Figure 4 on Page 7.

14. For Side Intake Filtered Air Supply Fans, sizes 150, 181, and 200, the filter channels must be installed at the job site. See Detail A in Figure 3.

15. Before proceeding further:
    a) Make sure the electrical service to the fan is locked in the **"OFF"** position.
    b) All wiring must be in accordance with local ordinances and the National Electric Code.
    c) **WARNING!** Check the voltage at the fan to see if it corresponds with the motor nameplate. High or low voltage can seriously damage the motor. Extra care should be taken when wiring two or three speed motors since improper connections will damage motor and void motor warranty.

16. **CAUTION!** Guards must be installed when fan is within reach of personnel or within seven (7) feet (2.134 m) of working level or when deemed advisable for safety.

17. Apply power momentarily and compare the rotation of the impeller with the directional arrow on fan. **WARNING!** Operation in the wrong direction will result deliver air but will overload the motor to the extent of blowing fuses and seriously damaging the motor. In the case of single phase motors, the reversing instructions will appear on the wiring diagram, located either in the motor wiring compartment or on the outside of the motor housing. In the case of three phase motors, the direction can be changed by interchanging any two of the three motor leads.

18. **WARNING! Do not** operate fan at a static pressure below that for which the fan was selected. If operated at a static pressure below that specified, motor overloading and burn-out will result.

    Using an ammeter, measure the amperes actually being drawn by the fan motor with the hood in place. If the amp draw is greater than the service factor amperes, reduce the fan RPM by opening the variable speed drive on the motor shaft. See drive charts on pages 8 and 9. Check the current again and repeat if necessary.

19. **WARNING! Do not** operate at speeds higher than that cataloged for this equipment. **Do not** replace motor pulley with a larger diameter pulley. **Do not** replace the fan pulley with one smaller in diameter. The pulley ratios are set so that the motor will not be overloaded.

MAINTENANCE

1. Under normal usage, no spare parts are recommended for one year of operation. Recommended spare parts are shown on page 5 and 6.

   CAUTION! Before proceeding, make sure electrical service to fan is locked in **"OFF"** position.

2. Impeller shaft bearings are pre-lubricated and sealed; no service required.

   WINDMILLING Even when the power supply is locked out, fans may cause injury or damage if the impeller is subject to "windmilling" which is the turning of the impeller and drive components due to a draft in the system. To guard against this hazard, the impeller should be secured to physically restrict rotational movement.

3. Motor bearings are pre-lubricated. Consult information printed on motor for lubrication instructions.

4. Check belt tension after first 48 hours of operation and thereafter annually. Belt should depress its width when pressed firmly inward at midway point between the pulleys. Too much tension will damage bearings. Belt should be tight enough to prevent slippage. When replacing worn belt, replace motor pulley if "shoulder" is worn in groove.

5. If impeller shaft bearings need replacement, replace with bearings comparable to the original equipment. If duplex split pillow block bearings are used, install new bearings into neoprene rings, check correct position of impeller with orifice, position bearings in die-formed recess and tighten screws. Replace the die-formed bearing cap and tighten the four bolts.

   NOTE: If locking collar type bearing is used, collar must first be positioned against inner race on the bearing nearest impeller and turned in direction of impeller rotation with drift pin and hammer until it locks. Locking collars must be on inboard (facing) sides of the bearings. Secure bearing to shaft with set screws. Lock and secure other bearing to shaft in same manner.

   NOTE: If pillow block type bearings are used, slide the bearings onto the shaft to desired location and bolt bearing block securely to support base. Slide shaft back and forth in secured bearing (**do not** drive with hammer) and rotate to make certain it turns freely. Check correct position of propeller with inlet orifice. Then secure bearings to shaft by tightening set screws.

6. The washable air filters provided with this unit should be cleaned if any decrease in air flow is noted.

7. Clean the inside of the unit and blower housing as required to prevent heavy accumulations of dust and oil.

SET SCREW TIGHTENING SCHEDULE

1. Before initial operation of the fan, tighten set screws according to the procedure outlined below.

2. After 500 operating hours or three months, whichever comes first, tighten set screws to the full recommended torque.

3. At least once a year, tighten set screws to the full recommended torque.

PROCEDURE FOR TIGHTENING SET SCREWS IN BEARINGS AND HUBS

One Set Screw Application

Using a torque wrench, tighten the set screw to the torque recommended in Table 1.

Two Set Screw Application

1. Using a torque wrench, tighten one set screw to half of the torque recommended in Table 1.

2. Tighten the second set screw to the full recommended torque.

3. Tighten the first set screw to the full recommended torque.

Table 1. Recommended Tightening Torque for Set Screws

Set Screw Diameter	Torque (in-lbs)
#10	35
1/4	80
5/16	126
3/8	240
7/16	384
1/2	744
9/16	1080
5/8	1500
3/4	2580
7/8	3600
1	5400

VARIABLE FREQUENCY DRIVES AND MOTORS

There are occasions when a Variable Frequency Drive (VFD) will cause poor motor performance and possible damage. To avoid these problems, Acme recommends the following:

1. Select compatible motor and VFD converter; if possible, the motor and the converter should be from the same manufacturer or at least the converter selected should be recommended by the motor manufacturer.

2. A motor shaft grounding system should be used to prevent motor bearing damage from eddy currents.

NOTE: The Company will not honor motor warranty claims if the customer fails to follow these recommendations.

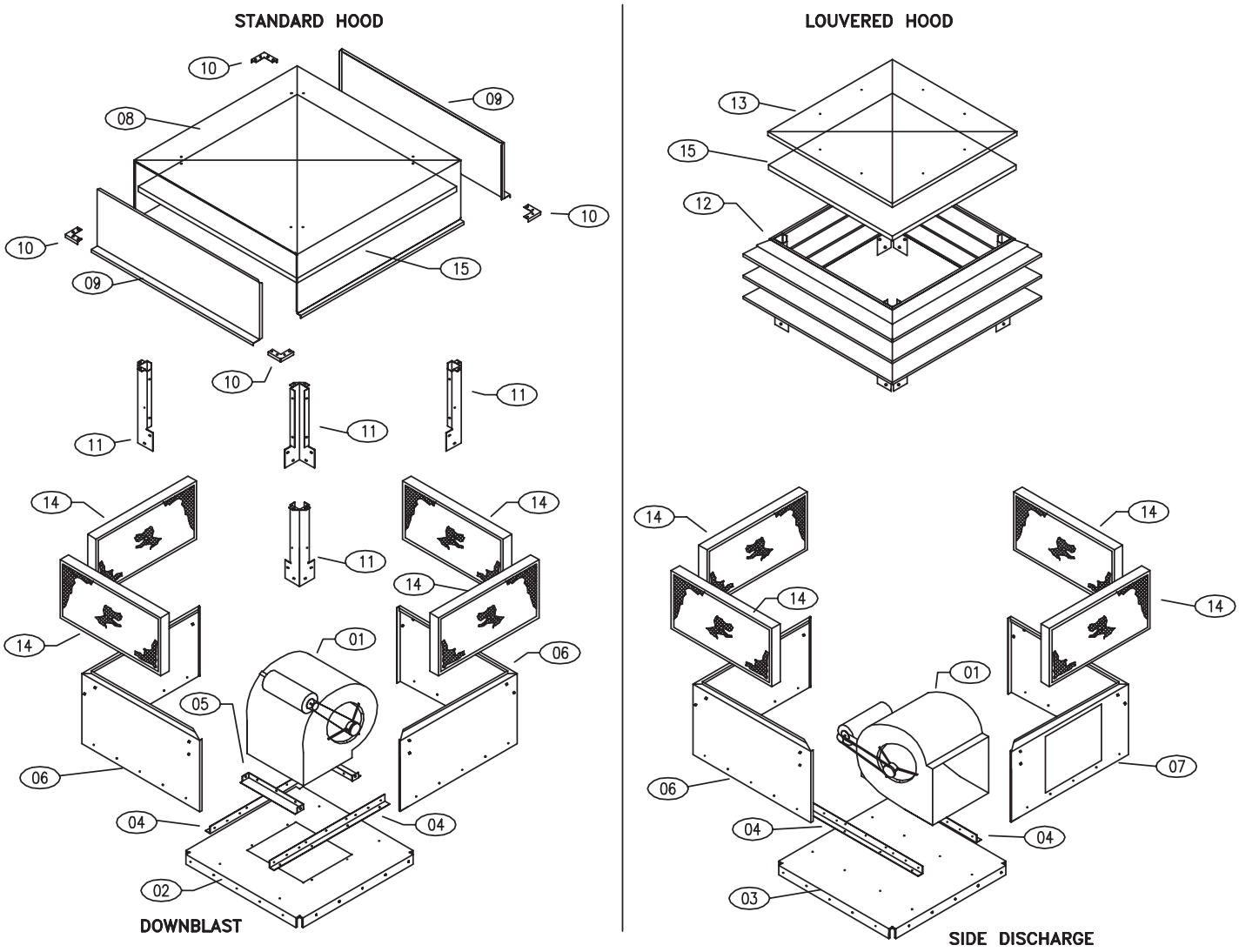


Figure 2
Standard Hood Filtered Air Supply
Louvered Filtered Air Supply

Standard Hood, Louvered Filtered Air Supply PARTS LIST LEGEND		
No.	**Description**	**Qty.**
01	Blower**	1
02	Blower Base (downblast)	1
03	Blower Base (side discharge)	1
04	Support Angle	2
05	Rain Dam (downblast louvered hood ONLY)	2
06	Curb Panel	2
07	Curb Panel (side discharge)	1
08	Hood Top and Sides	1
09	Hood End	2
10	Corner Piece	4
11	Corner Bracket	4
12	Louvered Hood	1
13	Louvered Hood Top	1
14	Filter**	*
15	Insulation	1
* Varies with fan size. See catalog.		

**Recommended Spare Parts

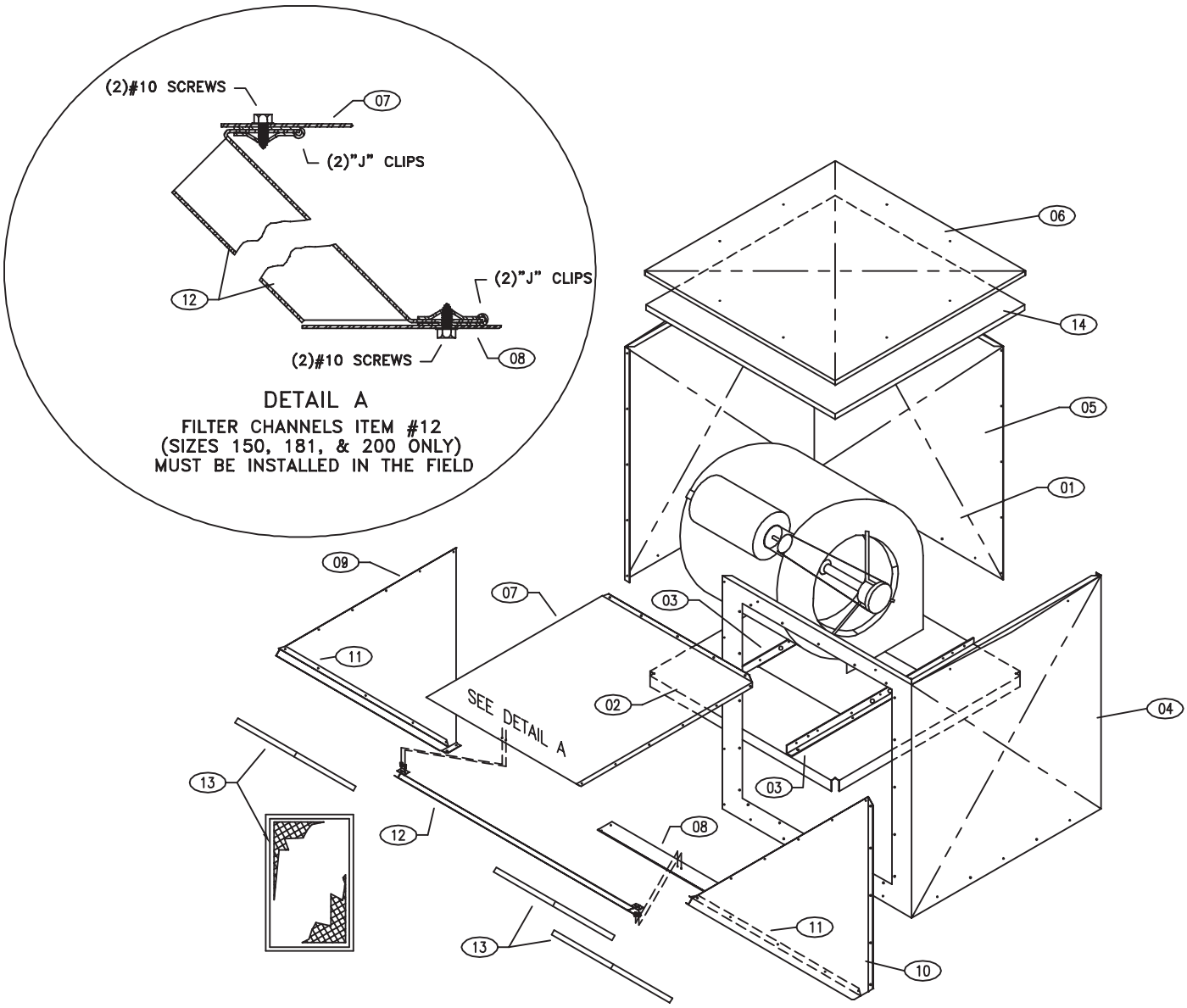


Figure 3 - Side Intake Filtered Air Supply Exploded View

Side Intake Filtered Air Supply PARTS LIST LEGEND		
No.	**Description**	**Qty.**
01	Blower**	1
02	Blower Base	1
03	Support Angle	2
04	Side Panel (Inlet)	1
05	Side Panel	1
06	Top	1
07	Duct Top	1
08	Duct Bottom	1
09	Duct Side (Left)	1
10	Duct Side (Right)	1
11	Filter Angle	2
12	Filter Channel	1
13	Filter**	*
14	Insulation	1
* Varies with fan size. See catalog.		

**Recommended Spare Parts

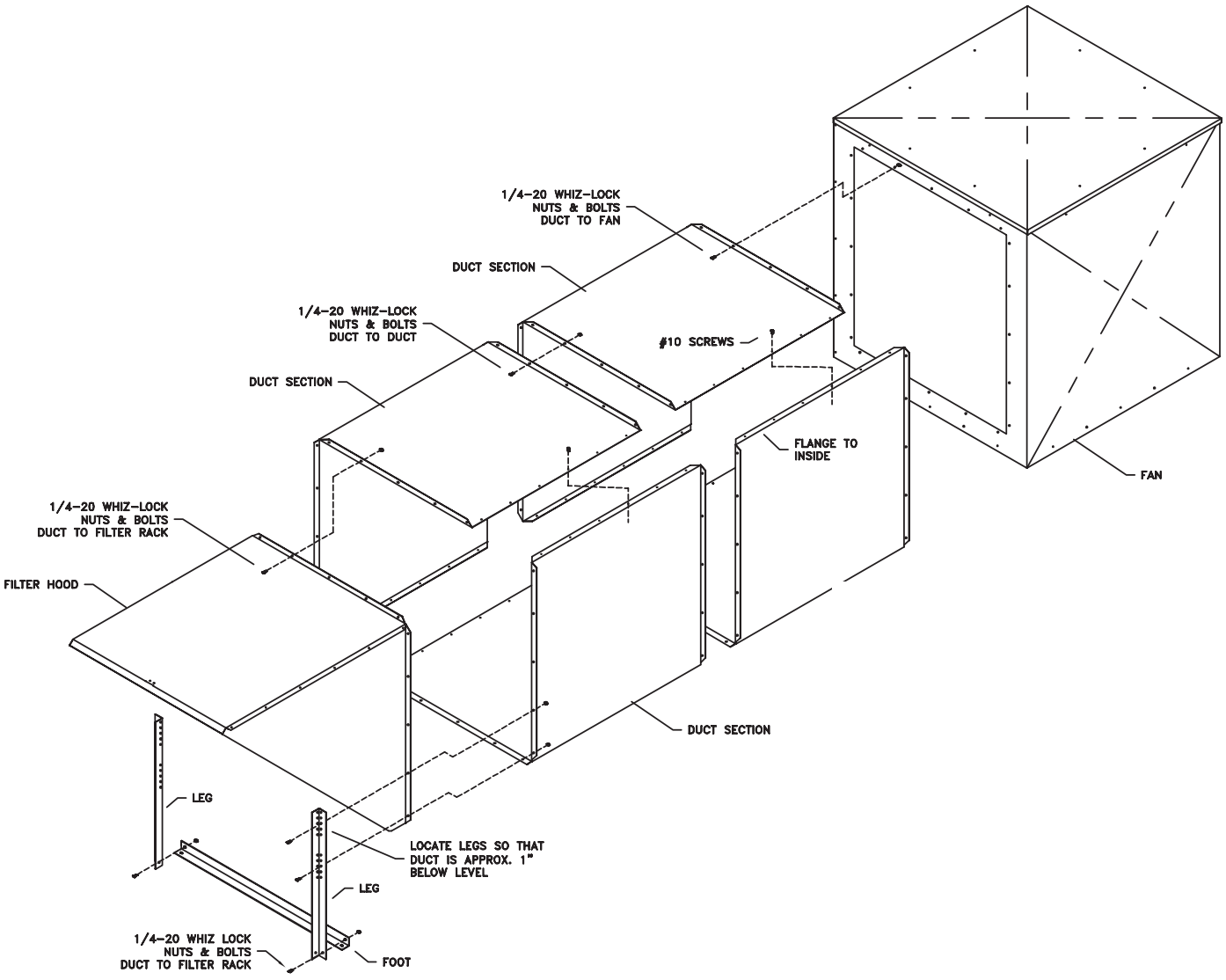


Figure 4 - Optional Side Intake Filtered Air Supply Duct Extension

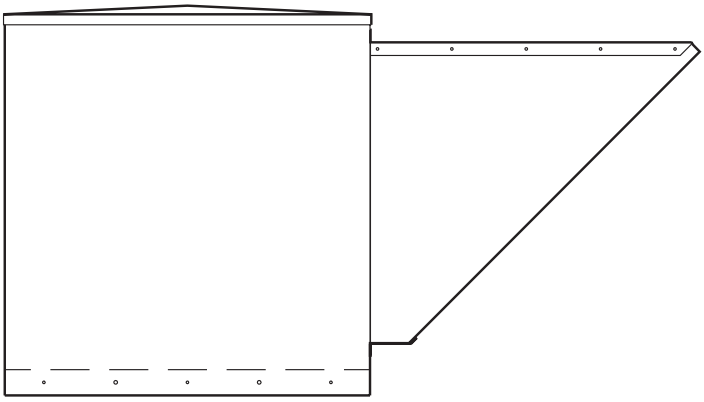
STANDARD HOOD/LOUVERED FILTERED AIR SUPPLY DRIVE CHART

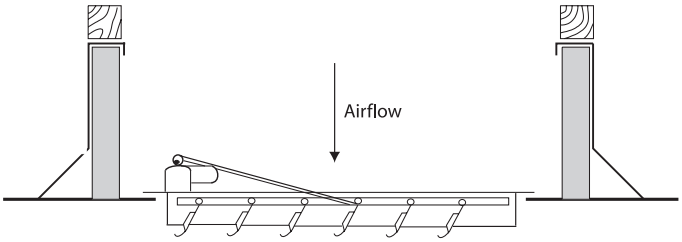
Model	HP	kW	RPM Range	Belt Type	Fan pulley	Motor Pulley	Number Of Turns Open												
							0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
106K	1.50	1.119	1400 - 1017	B36	BK52	1VL40	1400	1362	1323	1285	1247	1209	1170	1132	1094	1055	1017		
106K	1.50	1.119	1400 - 1017	A40	AK54	1VP44	1400	1362	1323	1285	1247	1209	1170	1132	1094	1055	1017		
106K	1.50	1.119	1150 - 890	B41	BK67	1VP44			1150	1124	1098	1072	1046	1020	994	968	942	916	890
106H J	.75 1.00	.5593 .7457	1150 - 757	B38	BK55	1VL34			1150	1111	1071	1032	993	954	914	875	836	796	757
106H	.75	.5593	1025 - 781	B38	BK60	1VL34	1025	1001	976	952	927	903	879	854	830	805	781		
106G H J	.50 .75 1.00	.3729 .5593 .7457	845 - 574	A38	AK64	1VL34	845	818	791	764	737	710	682	655	628	601	574		
106E F G	.25 .33 .50	.1864 .2237 .3729	790 - 531	A39	AK69	1VL34	790	764	738	712	686	661	635	609	583	557	531		
106E F	.25 .33	.1864 .2461	625 - 454	A46	AK104	1VL40	625	608	591	574	557	540	522	505	488	471	454		
106E F	.25 .33	.1864 .2461	490 - 333	A46	AK109	1VL34	490	474	459	443	427	412	396	380	364	349	333		
126L	2.00	1.491	1255 - 980	B43	BK72	1VM50			1255	1228	1200	1173	1145	1118	1090	1063	1035	1008	980
126K	1.50	1.119	1165 - 890	B41	BK67	1VL44			1165	1138	1110	1083	1055	1028	1000	973	945	918	890
126L	2.00	1.491	1050 - 825	A44	AK69	1VP44	1050	1028	1005	983	960	938	915	893	870	848	825		
126L	2.00	1.491	1050 - 825	B45	BK85	1VM50			1050	1028	1005	983	960	938	915	893	870	848	825
126J K	1.00 1.50	1.119 1.119	1025 - 746	A41	AK64	1VL40			1025	997	969	941	913	886	858	830	802	774	746
126H J	.75 1.00	.5593 .7457	900 - 695	B41	BK67	1VL34			900	880	859	839	818	798	777	757	736	716	695
126G H	.50 .75	.3729 .5593	800 - 531	A41	AK69	1VL34	800	773	746	719	692	666	639	612	585	558	531		
126F	.33	.2461	710 - 543	B44	BK85	1VL34	710	693	677	660	643	627	610	593	576	560	543		
126F	.33	.2461	650 - 494	B45	BK95	1VL34			650	634	619	603	588	572	556	541	525	510	494
150M	3.00	2.237	955 - 737	A55	AK89	1VP50	955	933	911	890	868	846	824	802	781	759	737		
150L	2.00	1.491	800 - 628	A57	AK104	1VP50	800	783	766	748	731	714	697	680	662	645	628		
150L	2.00	1.491	800 - 601	BX48	BK77	1VP34	800	780	760	740	720	701	681	661	641	621	601		
150K	1.50	1.119	720 - 558	B56	BK105	1VP44			720	704	688	671	655	639	623	607	590	574	558
150K	1.50	1.119	720 - 543	BX48	BK85	1VP34	720	702	685	667	649	632	614	596	578	561	543		
150J	1.00	.7457	630 - 455	A52	AK104	1VL40	630	613	595	578	560	543	525	508	490	473	455		
150H	.75	.5593	580 - 387	A51	AK94	1VL34	580	561	541	522	503	484	464	445	426	406	387		
150G	.50	.3729	500 - 330	A52	AK109	1VL34	500	483	466	449	432	415	398	381	364	347	330		
181N	5.00	3.729	935 - 745	B66	BK115	1VP60	940	921	901	882	862	843	823	804	784	765	745		
181N	5.00	3.729	800 - 642	A64	AK124	1VP60	800	784	768	753	737	721	705	689	674	658	642		
181M	3.00	2.237	800 - 628	A60	AK104	1VP50	800	783	766	748	731	714	697	680	662	645	628		
181L	2.00	1.491	690 - 462	A49	AK79	1VP34	690	667	644	622	599	576	553	530	508	485	462		
181L	2.00	1.491	690 - 524	A52	AK104	1VP44	690	673	657	640	624	607	590	574	557	541	524		
181K	1.50	1.119	620 - 480	A64	AK134	1VP50	620	606	592	578	564	550	536	522	508	494	480		
181K	1.50	1.119	620 - 454	A56	AK99	1VL40	650	633	615	598	581	564	546	529	512	494	477		
181J	1.00	.7457	550 - 367	A58	AK99	1VL34	550	532	513	495	477	459	440	422	404	385	367		
200P	7.50	5.593	910 - 750	BX90	BK140	1VP71	910	894	878	862	846	830	814	798	782	766	750		
200P	7.50	5.593	825 - 703	B89	BK160H	1VP75	825	813	801	788	776	764	752	740	727	715	703		
200N	5.00	3.729	800 - 661	A88	AK134	1VP65	800	786	772	758	744	731	717	703	689	675	661		
200N	5.00	3.729	800 - 632	BX80	BK110H	1VP50			800	783	766	750	733	716	699	682	666	649	632
200M	3.00	.2237	675 - 525	A83	AK124	1VP50	675	660	645	630	615	600	585	570	555	540	525		
200N	5.00	3.729	650 - 541	A86	1B5V16	1VP60	650	639	628	617	606	596	585	574	563	552	541		
200N	5.00	3.729	650 - 526	A81	2AK144	2VP56	650	638	625	613	600	588	576	563	551	538	526		
200L	2.00	1.491	590 - 387	A76	AK124	1VP44	590	570	549	529	509	489	468	448	428	407	387		
200L	2.00	1.491	590 - 387	AX68	AK94	1VP34	590	570	549	529	509	489	468	448	428	407	387		
200K	1.50	1.119	470 - 351	A87	AK154	1VP44	470	458	446	434	422	411	399	387	375	363	351		
200K	1.50	1.119	470 - 318	AX78	AK114	1VL34	470	455	440	424	409	394	379	364	348	333	318		

SIDE INTAKE FILTERED AIR SUPPLY DRIVE CHART

Model	HP	kW	RPM Range	Belt Type	Fan Pulley	Motor Pulley	Number Of Turns Open												
							0	½	1	1½	2	2½	3	3½	4	4½	5	5½	6
106K	1.50	1.119	1420 - 1068	A38	1TA48	1VL44	1420	1385	1350	1314	1279	1244	1209	1174	1138	1103	1068		
106J	1.00	.7457	1275 - 848	A34	AK44	1VL34	1275	1232	1190	1147	1104	1062	1019	976	933	891	848		
106H	.75	.5593	1150 - 757	A35	AK44	1VL34	1150	1111	1071	1032	993	954	914	875	836	796	757		
106G	.50	.3729	1025 - 781	B38	BK60	1VL34	1025	1001	976	952	927	903	879	854	830	805	781		
106F	.33	.2461	845 - 574	A38	AK64	1VL34	845	818	791	764	737	710	682	655	628	601	574		
106E	.25	.1864	800 - 531	A38	AK69	1VL34	800	773	746	719	692	666	639	612	585	558	531		
106E	.25	.1864	600 - 409	A42	AK89	1VL34	600	581	562	543	524	505	485	466	447	428	409		
126L	2.00	1.491	1240 - 937	A41	AK59	1VL44	1240	1210	1179	1149	1119	1089	1058	1028	998	967	937		
126K	1.50	1.119	1100 - 834	A44	AK66	1VP44	1100	1073	1047	1020	994	967	940	914	887	861	834		
126K	1.50	1.119	1100 - 727	A37	AK51	1VL34	1100	1063	1025	988	951	914	876	839	802	764	727		
126J	1.00	.7457	960 - 691	A42	AK69	1VL40	960	933	906	879	852	826	799	772	745	718	691		
126H	.75	.5593	870 - 574	A40	AK64	1VL34	861	832	804	775	746	718	689	660	631	603	574		
126G	.50	.3729	760 - 516	A41	AK71	1VL34	760	736	711	687	662	638	614	589	565	540	516		
126F	.33	.2237	675 - 462	A42	AK79	1VL34	675	654	632	611	590	569	547	526	505	483	462		
150M	3.00	2.237	950 - 737	A55	AK89	1VP50	950	929	907	886	865	844	822	801	780	758	737		
150M	3.00	2.237	800 - 632	B57	BK110	1VP50			800	783	766	750	733	716	699	682	666	649	632
150L	2.00	1.491	765 - 581	B56	BK100	1VP44			765	747	729	712	694	676	658	640	623	605	587
150K	1.50	1.119	700 - 524	A56	AK104	1VP44	700	682	665	647	630	612	594	577	559	542	524		
150K	1.50	1.119	700 - 462	AX48	AK79	1VL34	700	676	652	629	605	581	557	533	510	486	462		
150J L	1.00 2.00	.7457	660 - 499	A57	AK109	1VL44	660	644	628	612	596	580	563	547	531	515	499		
150J L	1.00 2.00	.7457	660 - 499	A51	AK99	1VL40	660	644	628	612	596	580	563	547	531	515	499		
150H	.75	.5593	600 - 433	A53	AK109	1VL40	600	583	567	550	533	517	500	483	466	450	433		
150G	.50	.3729	500 - 330	A52	AK109	1VL34	500	483	466	449	432	415	398	381	364	347	330		
181N	5.00	3.729	935 - 745	B66	BK115	1VP60	935	905	874	844	814	784	753	723	693	662	632		
181N	5.00	3.729	755 - 632	A72	AK154	1VP68	755	743	730	718	706	694	681	669	657	644	632		
181M	3.00	2.237	755 - 599	A59	AK109	1VP50	755	731	708	684	661	637	613	590	566	543	519		
181L	2.00	1.491	675 - 499	A58	AK109	1VP44	675	657	640	622	605	587	569	552	534	517	499		
181L	2.00	1.491	675 - 511	BX51	BK90	1VP34	675	659	642	626	609	593	577	560	544	527	511		
181K	1.50	1.119	600 - 449	B61	BK130	1VP44			600	590	580	570	560	550	539	529	519	509	499
181K	1.50	1.119	600 - 433	A57	AK109	1VL40	600	583	567	550	533	517	500	483	466	450	433		
181J	1.00	.7457	525 - 349	A55	AK104	1VL34	525	507	490	472	455	437	419	402	384	367	349		
200P	7.50	5.593	910 - 750	BX90	BK140	1VP71	910	897	883	870	857	843	830	817	803	790	777	763	750
200P	7.50	5.593	825 - 703	B89	BK160H	1VP75	825	813	801	788	776	764	752	740	727	715	703		
200P	7.50	5.593	710 - 590	A55	AK89	1VP50	710	698	686	674	662	650	638	626	614	602	590		
200N	5.00	3.729	820 - 659	B84	BK130	1VP60	820	804	788	772	756	740	723	707	691	675	659		
200N	5.00	3.729	820 - 669	BX80	BK120	1VP56			820	805	790	775	760	745	729	714	699	684	669
200N	5.00	3.729	675 - 560	AX90	AK154	1VP62	675	664	652	641	630	619	607	596	585	573	562		
200M N	3.00 5.00	2.237	675 - 533	BX81	BK130	1VP50		675	661	647	632	618	604	590	576	561	547	533	
200L	2.00	1.491	600 - 449	B80	BK130	1VP44			600	585	570	555	540	525	509	494	479	464	449
200L	2.00	1.491	600 - 433	A75	AK109H	1VL40	600	583	567	550	533	517	500	483	466	450	433		
200K M	1.50 3.00	1.119	540 - 405	AX78	AK134	1VL44	540	527	513	500	486	473	459	446	432	419	405		

TYPICAL SUPPLY VENTILATOR





TERMS AND CONDITIONS

DESIGN CHANGES Acme reserves the right to make changes in design, improvements and additions in and to its products any time without imposing any liability or obligations to itself to apply or install the same in any product manufactured by it.

TITLE The title and right of possession of the equipment sold herein shall remain with the Company and such equipment shall remain personal property until all payments herein (including deferred payments whether evidenced by notes or otherwise) shall have been made in full in cash and the Purchaser agrees to do all acts necessary to perfect and maintain such right and title in the Company.

SAFETY ACCESSORIES The Company manufactures equipment designed to serve multiple applications and offers a wide range of safety equipment, including guards and other devices, as may be required to meet customer specifications. Without exception, the Company recommends that all orders include applicable safety devices. Equipment ordered without applicable safety devices is clearly the responsibility of the Purchaser. Further, the Purchaser warrants that he has determined and acquired any and all safety devices required for equipment sold by the Company. Weather covers and guards for motor and V-belt drives, couplings, shafts and bearings, along with inlet and outlet screens, are optional accessories noted in the price list.

These instructions cover the usual installation, operation and maintenance methods for which the product(s) was designed. They do not purport to cover all details or variations in the product(s) nor to provide for every possible contingency that might be met in connection with the installation, operation and maintenance. For any departures from these instructions, or should particular problems arise which are not covered sufficiently for the purchaser's purpose, the matter should be referred to the Company.

WARNING Acme products are designed and manufactured to provide reliable performance but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failures and this possibility should be recognized by the User. If these products are used in a life support ventilation system where failure could result in loss or injury, the User should provide adequate back-up ventilation, supplementary natural ventilation or failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

WARNING DO NOT use in HAZARDOUS ENVIRONMENTS where fan's electrical system could provide ignition to combustible or flammable materials unless unit is specifically built for hazardous environments. Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA).

CAUTION Guards must be installed when fan is within reach of personnel or within seven (7) feet (2.134 m) of working level or when deemed advisable for safety.

DISCLAIMER The Company has made a diligent effort to illustrate and describe the products in this literature accurately; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the products are merchantable, or fit for a particular purpose, or that the products will necessarily conform to the illustrations or descriptions or dimension.

LIMITED WARRANTY

WARRANTY AND DISCLAIMER: Acme Engineering and Manufacturing Corporation extends this limited warranty to the original buyer and warrants that products supplied by the Company, shall be free from original defects in workmanship and materials for two years from date of shipment (except for the warranty periods noted for products listed below), provided same have been properly handled, stored, installed, serviced, maintained and operated. This warranty shall not apply to products which have been altered or repaired without the Company's express authorization, or altered or repaired in any way so as, in the Company's judgment, to affect its performance or reliability, nor which have been improperly installed or subjected to misuse, negligence, or accident, or incorrectly used in combination with other substances. The Buyer assumes all risks and liability for results of use of all products.

Evaporative cooling pads are warranted to be free of defects in materials and workmanship for a period of two years from date of shipment provided same have been properly handled, stored, installed, serviced, maintained and operated; and further, not subjected to excessive heat, corrosive agents or chemicals, or mechanical abuse that may cause tearing, crushing or undue deterioration, nor used on a system or in a manner other than that for which it was designed as explained in the product literature.

The following products are warranted to be free of defects in materials and workmanship for the periods shown from date of shipment: Acme's exclusive duplex split pillow block bearings and shaft five years, belts one year, Polyethylene tubing 90 days, AIR40 Heater warranty one year, AIR40 Emitter warranty three years and DDP fan lifetime warranty on its propeller, cone, and housing.

LIMITATION OF REMEDY AND DAMAGES: All claims under this warranty must be made in writing and delivered to P. O. Box 978, Muskogee, Oklahoma, 74402, within 15 days after discovery of the defect and prior to the expiration of two years from the date of shipment by the Company of the product claimed defective, and Buyer shall be barred from any remedy if Buyer fails to make such claim within such period.

Within 30 days after receipt of a timely claim, the Company shall have the option either to inspect the product while in Buyer's possession or to request Buyer to return the product to the Company at Buyer's expense for inspection by the Company. The Company shall replace, or at its option repair, free of charge, any product it determines to be defective, and it shall ship the repaired or replacement product to Buyer F.O.B. point of shipment; provided, however, if circumstances are such as in the Company's judgment to prohibit repair or replacement to remedy the warranted defects, the Buyer's sole and exclusive remedy shall be a refund to the Buyer of any part of the invoice price, paid to the Company, for the defective product or part.

The Company is not responsible for the cost of removal of the defective product or part, damages due to removal, or any expenses incurred in shipping the product or part to or from the Company's plant, or the installation of the repaired or replaced product or part.

Implied warranties, when applicable, shall commence upon the same date as the express warranty provided above, and shall, except for warranties of title, extend only for the duration of the express warranty. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. The only remedy provided to you under an applicable implied warranty and the express warranty shall be the remedy provided under the express warranty, subject to the terms and conditions contained therein. The Company shall not be liable for incidental and consequential losses and damages under the express warranty, any applicable implied warranty, or claims for negligence, except to the extent that this limitation is found to be unenforceable under applicable state law. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

No employee, agent, dealer, or other person is authorized to give any warranties on behalf of the Company or to assume for the Company any other liability in connection with any of its products except in writing and signed by an officer of the Company.

REPLACEMENT PARTS If replacement parts are ordered, buyer warrants that the original components in which these replacement parts will be placed are in satisfactory working condition, and when said replacement parts are installed, the resultant installation will operate in a safe manner, at speeds and temperatures for which the original equipment was purchased.

TECHNICAL ADVICE AND RECOMMENDATIONS, DISCLAIMER: Notwithstanding any past practice or dealings or any custom of the trade, sales shall not include the furnishing of technical advice or assistance or system design. Any such assistance shall be at the Company's sole option and may be subject to additional charge.

The Company assumes no obligation or liability on account of any recommendations, opinions or advice as to the choice, installation or use of products. Any such recommendations, opinions or advice are given and shall be accepted at your own risk and shall not constitute any warranty or guarantee of such products or their performance.

GENERAL In no event shall any claim for consequential damages be made by either party. The Company will comply with all applicable Federal, State, and local laws.

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