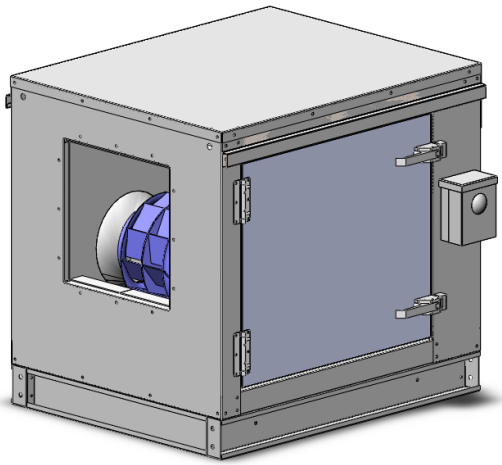
PCU and Inline Exhaust Fan

Installation, Operation, and Maintenance Manual



RECEIVING AND INSPECTION

Upon receiving unit, check for any interior and exterior damage, and if found, report it immediately to the carrier. Check that all accessory items are accounted for and free of damage. Turn the blower wheel by hand to verify free rotation and check the damper (if supplied) for free operation.

WARNING!!

Installation of this ventilator should only be performed by a qualified professional who has read and understands these instructions and is familiar with proper safety precautions. Improper installation poses serious risk of injury due to electric shock, contact with rotating equipment, and other potential hazards. Read this manual thoroughly before installing or servicing this equipment. ALWAYS disconnect power prior to working on fan.

Save these instructions. This document is the property of the owner of this equipment and is required for future maintenance. Leave this document with the owner when installation or service is complete.

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WARRANTY

This equipment is warranted to be free from defects in materials and workmanship, under normal use and service, for a period of 24-months from date of shipment. This warranty shall not apply if:

1. The equipment is not installed by a qualified installer per the MANUFACTURER'S installation instructions shipped with the product.
2. The equipment is not installed in accordance with federal, state and local codes and regulations.
3. The equipment is misused or neglected, or not maintained per the MANUFACTURER'S maintenance instructions.
4. The equipment is not operated within its published capacity.
5. The invoice is not paid within the terms of the sales agreement.

The MANUFACTURER shall not be liable for incidental and consequential losses and damages potentially attributable to malfunctioning equipment. Should any part of the equipment prove to be defective in material or workmanship within the 24-month warranty period, upon examination by the MANUFACTURER, such part will be repaired or replaced by MANUFACTURER at no charge. The BUYER shall pay all labor costs incurred in connection with such repair or replacement. Equipment shall not be returned without MANUFACTURER'S prior authorization and all returned equipment shall be shipped by the BUYER, freight prepaid to a destination determined by the MANUFACTURER.

LISTINGS

The KB fan is ETL listed to standard UL-705 (electrical). The KB fan complies with UL-762 and CSA Std C22.2, No.113 listing when attached to a multi-pass air cleaning unit and installed in accordance with National Fire Protection Association Standard "NFPA 96, Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations".

KB-INLINE is ETL listed and complies with UL705 (electrical) and UL762 and CSA Std C22.2, No 113.

INSTALLATION

It is imperative that this unit is installed and operated with the designed airflow and electrical supply in accordance with this manual. If there are any questions about any items, please call the service department at **1-866-784-6900** for warranty and technical support issues.

Mechanical

WARNING: DO NOT RAISE VENTILATOR BY THE HOOD, BLOWER OR MOTOR SHAFT, OR BEARINGS – USE LIFTING LUGS PROVIDED OR A SLING

Site Preparation

1. Provide clearance around installation site to safely rig and lift equipment into its final position. Supports must adequately support equipment. Refer to manufacturer's estimated weights.
2. Consider general service and installation space when locating unit. Recommended clearance on all sides of the ventilator is 18 inches.
3. Locate unit close to the space it will serve to reduce long, twisted duct runs.
4. The fan discharge must be located at least 10 feet away from any supply intakes. The fan discharge shall be in accordance with the applicable building code provisions.
5. The PCU is designed to operate in a negative pressure environment. Be sure to install the KB unit after a PCU. This will also keep the fan cleaner during operation.
6. The KB drains must be connected to the building grease interceptor or an approved building drain. Black Iron, Stainless Steel, or Copper Pipe must be used for this connection. If PCU assembly has Multiple Modules, the drain line must be 2.5 inch NPT pipe minimum.

Roof Mounting

1. Ventilators are designed for installation atop a prefabricated or factory built roof curb. Follow manufacturer's instructions for proper curb installation.
2. Secure ventilator curb through vertical portion of the ventilator base assembly flange using a minimum of eight (8) lug screws, anchor bolts, or other suitable fasteners (not furnished).
3. Before connecting fan motor to power source verify power line wiring is de-energized.
4. Connect power supply wiring to the motor as indicated on the motor nameplate or terminal box cover. Make certain that the power source is compatible with the requirements of your equipment.
5. Before powering up fan check ventilator wheel for free rotation.
6. Check all fasteners for tightness.

Indoor Mounting

1. Ventilators are designed for installation in indoor or inline installations.
2. Optional uni-strut bars can be ordered to suspend the unit from a roof structure.
3. 18 inches of clearance are required on all sides of the ventilator or the unit must be wrapped with clearance reducing grease rated insulation.
4. Before connecting fan motor to power source verify power line wiring is de-energized.
5. Connect power supply wiring to the motor as indicated on the motor nameplate or terminal box cover. Make certain that the power source is compatible with the requirements of your equipment.
6. Before powering up fan check ventilator wheel for free rotation.
7. Check all fasteners for tightness.

Curb and Ductwork

This fan was specified for a specific CFM and static pressure. The ductwork attached to this unit will significantly affect the airflow performance. Flexible ductwork and square elbows should not be used. Also, transitions and turns in ductwork near the fan inlet will cause system effect and will drastically increase the static pressure and reduce airflow. **Follow SMACNA guides and recommendations for the remaining duct run.** Fans designed for rooftop installation should be installed on a prefabricated or factory built roof curb. Follow curb manufacturer's instructions for proper curb installation. Curbs should be connected to structural roof members with at least four (3) lug screws, anchor bolts, or other suitable fasteners (not furnished) per curb flange. Curb flanges should be caulked to roof.

The fan should be installed on a curb and/or rail elevated not less than 14" above any surface when installed outdoors. Be sure duct connection and fan outlet are properly aligned and sealed. Secure fan to curb through vertical portion of the ventilator base assembly flange using a minimum of eight (8) lug screws, anchor bolts, or other suitable fasteners (not furnished). Shims may be required depending upon curb installation and roofing material. Check all fasteners for tightness. The diagrams below show different mechanical installation configurations.

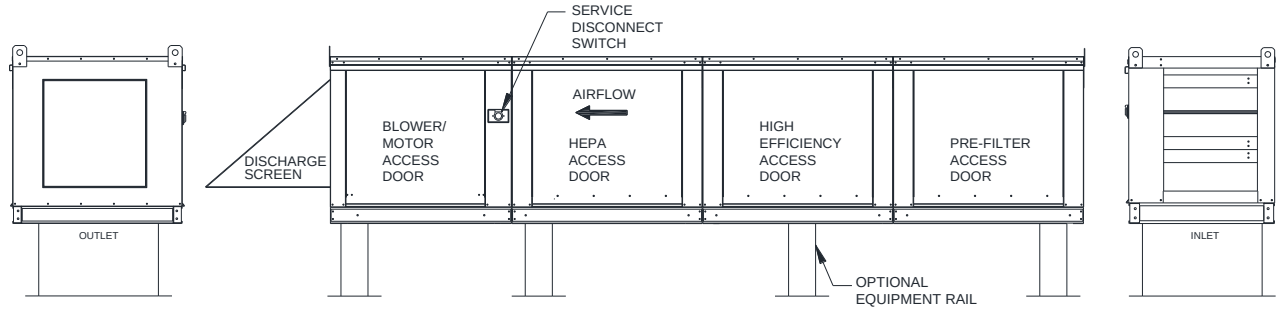
Ensure duct connections are properly aligned and sealed. When this fan unit is used in commercial grease ductwork, the ductwork connections must be **FULLY WELDED** to the fan. Clearance ratings of ductwork connected to the unit apply to the fan as well. Ductwork must be listed or installed in accordance with the IMC.

Table 1 - Recommended Discharge Ductwork Size

Blower Size	Min. Rectangular Duct Size	Min. Round Duct Diameter	Min. Straight Duct Length
10	14 in. x 14 in.	19 in.	48 in.
14	20 in. x 20 in.	26 in.	72 in.
18	24 in. x 24 in.	33 in.	86 in.
20	26 in. x 26 in.	37 in.	108 in.
25	32 in. x 32 in.	46 in.	168 in.
32	40 in. x 40 in.	57 in.	208 in.

Typical Roof Mount KB Installation with PCU

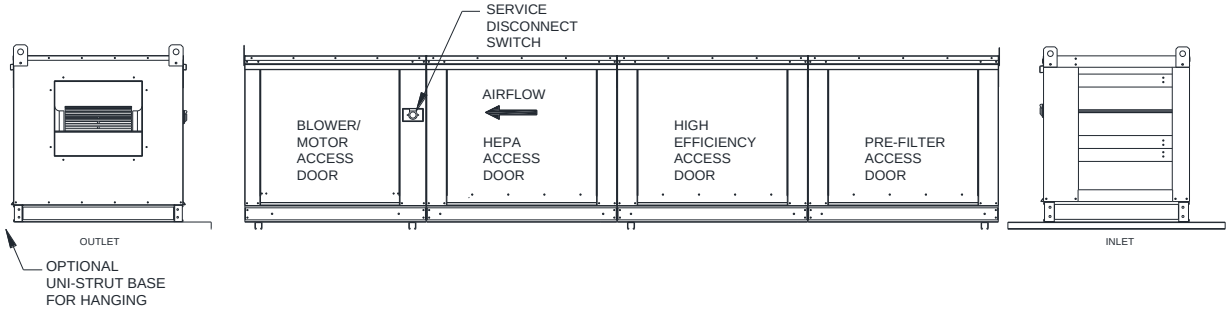
Figure 1



NOTE: For size 7 PCU, use the Auto Draw submittal for rail placement and dimensions.

Typical Indoor KB Installation with PCU

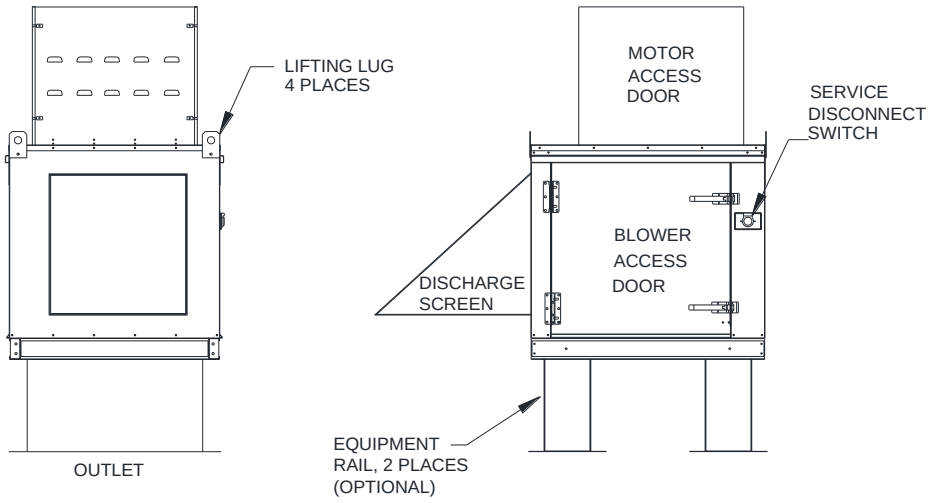
Figure 2



NOTE: For size 7 PCU, use the Auto Draw submittal for placement of uni-strut and dimensions.

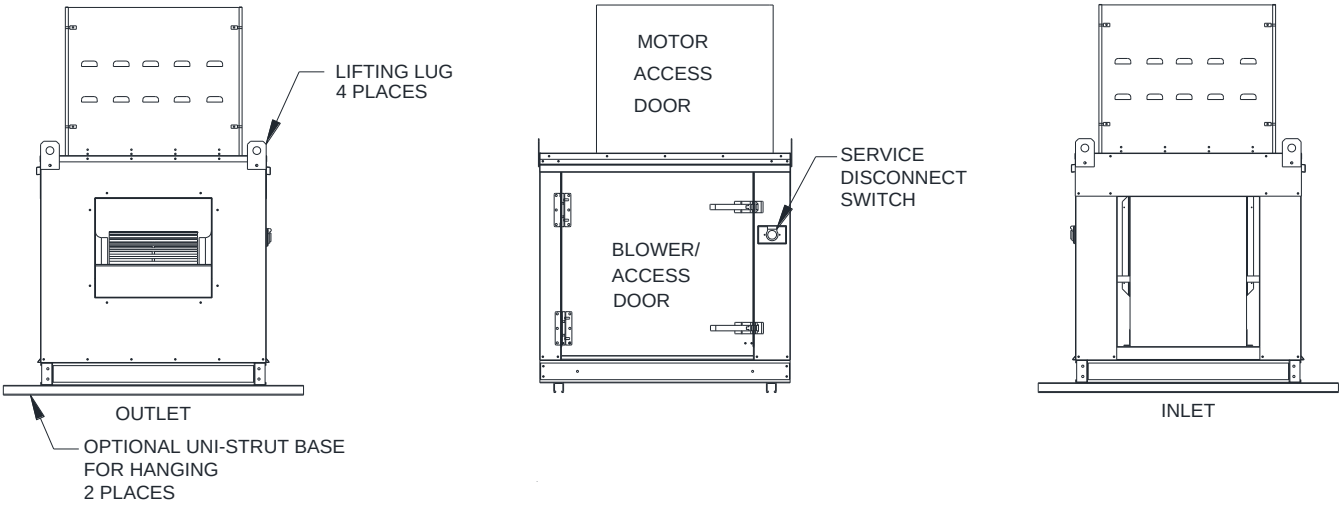
Typical Roof Mount KB-INLINE Installation

Figure 3



Typical Indoor KB-INLINE Installation

Figure 4



Electrical

Before connecting power to the fan, read and understand this entire section of this document. As-built wiring diagrams are available with each fan by the factory.

Electrical wiring and connections should be done in accordance with local ordinances and the National Electric Code, ANSI/NFPA70. Be sure the voltage and phase of the power supply and the wire amperage capacity is in accordance with the motor nameplate. For additional safety information refer to AMCA publication 410-96, *Recommended Safety Practices for Users and Installers of Industrial and Commercial Fans.*

WARNING!!

Disconnect power before installing or servicing fan. High voltage electrical input is needed for this equipment. This work should be performed by a qualified electrician.

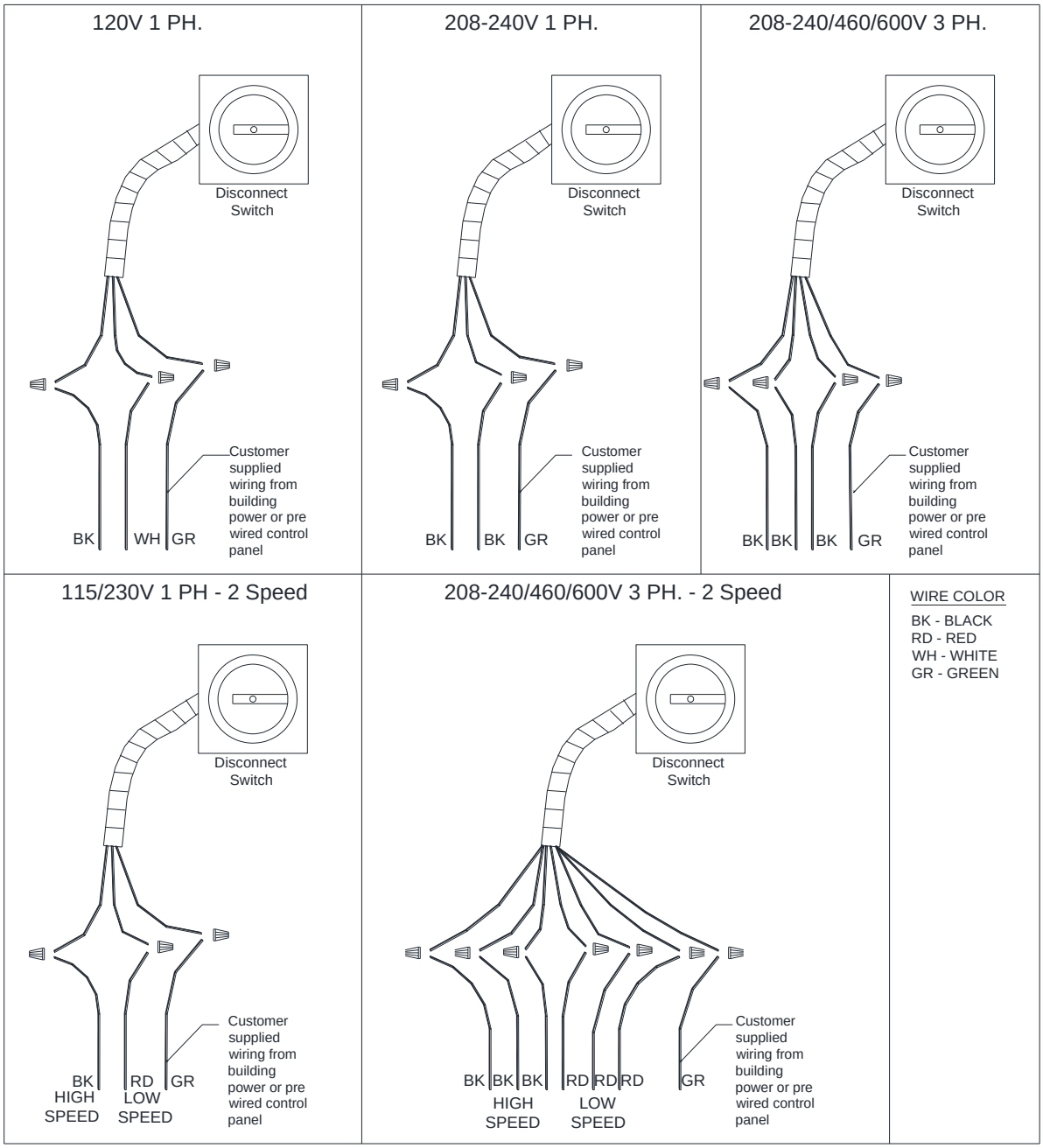
1. Always **disconnect power** before working on or near a fan. Lock and tag the disconnect switch or breaker to prevent accidental power up.
2. A disconnect switch is shipped with every fan. The switch is located on the exterior of up-blast fans and in the interior of down-blast fans. On down-blast direct drive fans, the disconnect function is built into the speed controller.
3. A dedicated branch circuit should supply the motor circuit with short circuit protection according to the National Electric Code. This dedicated branch should be run to the junction box mentioned above and connected as shown in a following illustration labeled “Fan to Building Wiring Connection”.
4. Make certain that the power source is compatible with the requirements of your equipment. The fan nameplate identifies the **proper phase and voltage** of the motor.
5. Before connecting fan to building power source, verify power line wiring is de-energized.
6. Secure the power cable to prevent contact with sharp objects.
7. Do not kink power cable and never allow the cable to encounter oil, grease, hot surfaces or chemicals.
8. Before powering up fan check fan wheel for free rotation and make sure that the interior of the fan is free of loose debris or shipping materials.
9. If any of the original wire supplied with the fan must be replaced, it must be replaced with type TW wire or equivalent.

Table 2 - Copper Wire Ampacity

Wire Size AWG	Maximum Amps
14	20
12	25
10	30
8	40
6	55
4	70

Fan to Building Wiring Connection

Figure 5



OPERATION

Prior to starting up or operating the ventilator, check all fasteners for tightness. In particular, check the set screw in the wheel hub, bearings and the fan sheaves (pulleys). With power to the fan **OFF** or prior to connecting ventilator to power, turn the fan wheel by hand to be sure it is not striking the inlet or any obstacles. Re-center if necessary.

Start Up

Special Tools Required

- AC Voltage Meter
- Tachometer
- Amperage Meter
- Standard Hand Tools

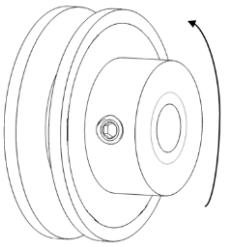
Start Up Procedure

1. Check all electrical connections for tightness and continuity.
2. Check pulley alignment and belt tension as described below for belt drive fans.
3. Inspect the condition of the damper and damper linkage, if provided.
4. Inspect the air-stream for obstructions or debris in wheel.
5. Compare the supplied **voltage** with the fan's nameplate voltage. If this does not match, correct the problem.
6. Start the fan up, by turning the external disconnect to the **ON** position, and shut it **OFF** immediately to **check rotation of the wheel** with the directional arrow on the blower scroll. Reversed rotation will result in poor air performance, motor overloading and possible burnout. For units equipped with a single-phase motor check the motor wiring diagram to change rotation. For 3-phase motors, any two power leads can be interchanged to reverse motor direction.
7. When the fan is started up, observe the operation and check for any unusual noises.
8. Switch the external disconnect back to the **ON** position and with the air system in full operation and all ducts attached, measure the system airflow. Motor sheave (pulley) is variable pitch, and allows for an increase or decrease of the fan RPM to adjust the airflow, as shown in the illustration below. For your convenience, a RPM chart is included in the following pages. If the fan is a direct drive version, it may have a speed control to adjust speed.
9. Once the proper airflow is achieved, measure and record the fan speed with a reliable tachometer. **Caution - Excessive speed will result in motor overloading or bearing failure. Do not set fan RPMs higher than specified in the maximum RPM chart.** See the troubleshooting guide for more information.
10. Measure and record the **voltage** and **amperage** to the motor and compare with the motor nameplate to determine if the motor is operating under safe load condition.
11. Once the rpm of the ventilator has been properly set, disconnect power and recheck belt tension and pulley alignment as described below.

Table 3 - Maximum RPM and HP Chart

Blower Size	Maximum RPM	Maximum HP
10"	3600	3
14"	2500	5
18"	2000	7.5
20"	1600	10
25"	1400	15

Figure 6 - Pulley Adjustment Illustration



Decrease Amperage and Blower RPM

Pulley Adjustment (Belt Drive Fans)

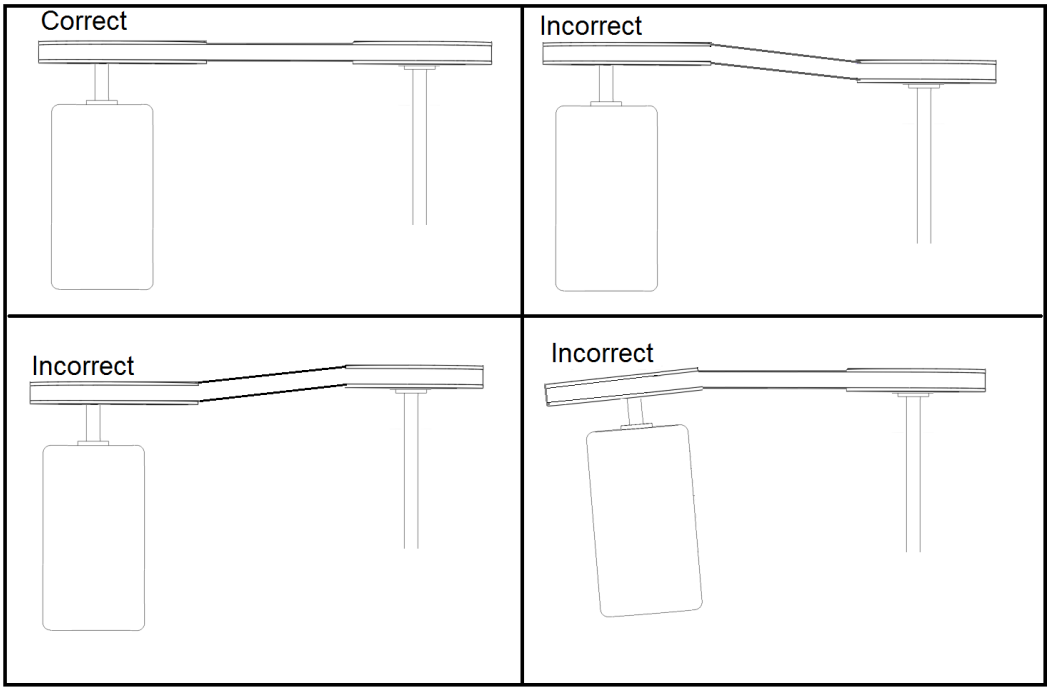
The adjustable motor pulley is factory set for the RPM specified. Speed can be increased by closing or decreased by opening the adjustable motor sheave. Two groove variable pitch pulleys must be adjusted an equal number of turns open or closed. Any increase in speed represents a substantial increase in horsepower required by the unit. Motor amperage should always be checked to avoid serious damage to the motor when the speed is varied. Always torque setscrews according to the setscrew torque chart.

Table 4 - Pulley Setscrew Torque

Thread Size	Torque (IN/Lb)
No. 10 (bushing)	32
1/4” (bushing)	72
5/16”	130

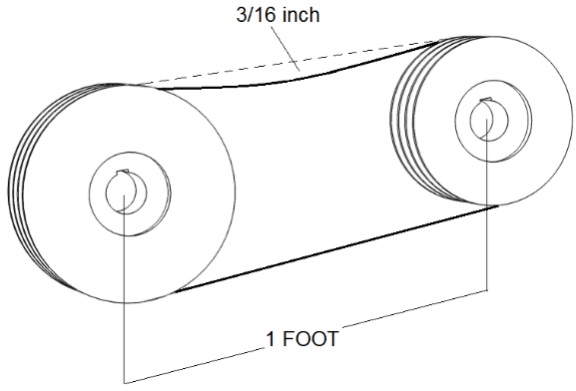
Pulley Alignment

Figure 7



Proper Belt Tension

Figure 8



Pulley Combination Chart for 3600 RPM Motors

10 - 20 IN. BLOWER**

Motor RPM		3550													
1/3 to 1-1/2 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
AX BELTS		1VL34	1.9	2.9	2	3									
			Open						TURNS ON MOTOR PULLEY						Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0		
AK114	11	11.2	634	666	697	729	761	792	824	856	888	919	951		
1/3 to 2 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
AX BELTS		1VL40	2.4	3.4	2.6	3.6									
			Open						TURNS ON MOTOR PULLEY						Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0		
AK114	11	11.2	824	856	888	919	951	983	1014	1046	1078	1109	1141		
AK94	9	9.2	1003	1042	1080	1119	1158	1196	1235	1273	1312	1351	1389		
AK79	7.5	7.7	1199	1245	1291	1337	1383	1429	1475	1521	1568	1614	1660		
AK66	6.2	6.4	1442	1498	1553	1609	1664	1720	1775	1830	1886	1941	1997		
AK54	5	5.2	1775	1843	1912	1980	2048	2116	2185	2253	2321	2389	2458		
AK46	4.2	4.4	2098	2178	2259	2340	2420	2501	2582	2663	2743	2824	2905		
AK39	3.5	3.7	2495	2591	2686	2782	2878	2974	3070	3166	3262	3358	3454		
AK32	3	3.2	2884	2995	3106	3217	3328	3439	3550	3661	3772	3883	3994		
3 to 5 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP42	2.9	3.9	3	4									
			Open							TURNS ON MOTOR PULLEY					Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2BK160H	15.4	15.7	678	697	716	735	754	773	791	810	829	848	867	886	904
2BK140H	13.4	13.7	777	799	821	842	864	885	907	929	950	972	993	1015	1036
2BK120H	11.4	11.7	910	936	961	986	1011	1037	1062	1087	1113	1138	1163	1188	1214
2BK110H	10.4	10.7	995	1023	1051	1078	1106	1134	1161	1189	1217	1244	1272	1299	1327
2BK100H	9.4	9.7	1098	1128	1159	1189	1220	1250	1281	1311	1342	1372	1403	1433	1464
2BK90H	8.4	8.7	1224	1258	1292	1326	1360	1394	1428	1462	1496	1530	1564	1598	1632
2BK80H	7.4	7.7	1383	1422	1460	1498	1537	1575	1614	1652	1690	1729	1767	1806	1844
2BK70H	6.4	6.7	1590	1634	1678	1722	1766	1810	1854	1899	1943	1987	2031	2075	2119
2BK60H	5.4	5.7	1868	1920	1972	2024	2076	2128	2180	2232	2284	2336	2387	2439	2491
2BK55H	4.9	5.2	2048	2105	2162	2219	2276	2333	2389	2446	2503	2560	2617	2674	2731
2BK50H	4.4	4.7	2266	2329	2392	2455	2518	2581	2644	2707	2770	2832	2895	2958	3021
5 to 10 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP60	4.3	5.5	4.7	5.9									
			Open							TURNS ON MOTOR PULLEY					Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2BK160H	15.4	15.7	1063	1085	1108	1131	1153	1176	1198	1221	1244	1266	1289	1311	1334
2BK140H	13.4	13.7	1218	1244	1270	1296	1322	1347	1373	1399	1425	1451	1477	1503	1529
2BK120H	11.4	11.7	1426	1456	1487	1517	1547	1578	1608	1638	1669	1699	1729	1760	1790
2BK110H	10.4	10.7	1559	1593	1626	1659	1692	1725	1758	1792	1825	1858	1891	1924	1957
2BK100H	9.4	9.7	1720	1757	1793	1830	1866	1903	1940	1976	2013	2049	2086	2123	2159
2BK90H	8.4	8.7	1918	1959	1999	2040	2081	2122	2163	2203	2244	2285	2326	2367	2407
2BK80H	7.4	7.7	2167	2213	2259	2305	2351	2397	2444	2490	2536	2582	2628	2674	2720

25-32 IN. BLOWER

3 to 5 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP42	2.9	3.9	3	4									
			Open							TURNS ON MOTOR PULLEY					Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V278	27.8	28.1	379	390	400	411	421	432	442	453	463	474	484	495	505
2B5V250	25	25.3	421	433	444	456	468	479	491	503	514	526	538	550	561
2B5V234	23.4	23.7	449	462	474	487	499	512	524	537	549	562	574	587	599
2B5V200	20	20.3	525	539	554	568	583	597	612	627	641	656	670	685	700
2B5V184	18.4	18.7	570	585	601	617	633	649	664	680	696	712	728	744	759
2B5V160	16	16.3	653	672	690	708	726	744	762	780	799	817	835	853	871
2B5V154	15.4	15.7	678	697	716	735	754	773	791	810	829	848	867	886	904
2B5V136	12.6	12.9	826	849	871	894	917	940	963	986	1009	1032	1055	1078	1101
2B5V124	12.4	12.7	839	862	885	908	932	955	978	1002	1025	1048	1072	1095	1118
2B5V110	11	11.3	942	969	995	1021	1047	1073	1100	1126	1152	1178	1204	1230	1257
7-1/2 to 10 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP60	4.3	5.5	4.7	5.9									
			Open							TURNS ON MOTOR PULLEY					Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V278	27.8	28.1	594	606	619	632	644	657	670	682	695	707	720	733	745
2B5V250	25	25.3	659	674	688	702	716	730	744	758	772	786	800	814	828
2B5V234	23.4	23.7	704	719	734	749	764	779	794	809	824	839	854	869	884
2B5V200	20	20.3	822	839	857	874	892	909	927	944	962	979	997	1014	1032
2B5V184	18.4	18.7	892	911	930	949	968	987	1006	1025	1044	1063	1082	1101	1120
2B5V160	16	16.3	1024	1045	1067	1089	1111	1133	1154	1176	1198	1220	1241	1263	1285
2B5V154	15.4	15.7	1063	1085	1108	1131	1153	1176	1198	1221	1244	1266	1289	1311	1334
2B5V136	12.6	12.9	1293	1321	1348	1376	1403	1431	1459	1486	1514	1541	1569	1596	1624
2B5V124	12.4	12.7	1314	1342	1370	1398	1426	1454	1481	1509	1537	1565	1593	1621	1649
2B5V110	11	11.3	1477	1508	1539	1571	1602	1634	1665	1696	1728	1759	1791	1822	1854
15 to 20 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP75	5.8	7	6.2	7.4									
			Open							TURNS ON MOTOR PULLEY					Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V278	27.8	28.1	783	796	809	821	834	846	859	872	884	897	910	922	935
2B5V250	25	25.3	870	884	898	912	926	940	954	968	982	996	1010	1024	1038
2B5V234	23.4	23.7	929	944	959	974	989	1004	1019	1034	1049	1064	1078	1093	1108
2B5V200	20	20.3	1084	1102	1119	1137	1154	1172	1189	1207	1224	1242	1259	1277	1294
2B5V184	18.4	18.7	1177	1196	1215	1234	1253	1272	1291	1310	1329	1348	1367	1386	1405
2B5V160	16	16.3	1350	1372	1394	1416	1437	1459	1481	1503	1525	1546	1568	1590	1612
2B5V154	15.4	15.7	1402	1425	1447	1470	1492	1515	1538	1560	1583	1605	1628	1651	1673
2B5V136	12.6	12.9	1706	1734	1761	1789	1816	1844	1871	1899	1926	1954	1981	2009	2036

** 2HP Motors on 20 IN Blowers use 2VP42 Pulleys

Pulley Combination Chart for 1800 RPM Motors

KB FAN PULLEY INFORMATION

Motor RPM 1725

10 - 20 IN. BLOWER**

1/3 to 1-1/2 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
AX BELTS		1VL34	1.9	2.9	2	3									
			Open	TURNS ON MOTOR PULLEY										Closed	
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0		
AK66	6.2	6.4	539	566	593	620	647	674	701	728	755	782	809		
AK54	5	5.2	663	697	730	763	796	829	863	896	929	962	995		
AK46	4.2	4.4	784	823	863	902	941	980	1019	1059	1098	1137	1176		
AK39	3.5	3.7	932	979	1026	1072	1119	1166	1212	1259	1305	1352	1399		
AK32	3	3.2	1078	1132	1186	1240	1294	1348	1402	1455	1509	1563	1617		

1/3 to 2 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2							
AX BELTS		1VP50	3.4	4.4	3.6	4.6							
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
AK32H	3	3.2	1941	1995	2048	2102	2156	2210	2264	2318	2372	2426	2480

3 to 5 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP42	2.9	3.9	3	4									
			Open	TURNS ON MOTOR PULLEY											Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2BK90H	8.4	8.7	595	611	628	644	661	677	694	710	727	744	760	777	793
2BK80H	7.4	7.7	672	691	709	728	747	765	784	803	821	840	859	877	896
2BK70H	6.4	6.7	772	794	815	837	858	880	901	923	944	965	987	1008	1030
2BK60H	5.4	5.7	908	933	958	984	1009	1034	1059	1084	1110	1135	1160	1185	1211
2BK55H	4.9	5.2	995	1023	1050	1078	1106	1133	1161	1189	1216	1244	1272	1299	1327
2BK50H	4.4	4.7	1101	1132	1162	1193	1223	1254	1285	1315	1346	1376	1407	1438	1468
2BK45H	3.9	4.2	1232	1266	1301	1335	1369	1403	1438	1472	1506	1540	1574	1609	1643
2BK40H	3.6	3.9	1327	1364	1401	1438	1474	1511	1548	1585	1622	1659	1696	1732	1769
2BK36H	3.4	3.7	1399	1438	1476	1515	1554	1593	1632	1671	1709	1748	1787	1826	1865

5 to 10 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP60	4.3	5.5	4.7	5.9									
			Open	TURNS ON MOTOR PULLEY											Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2BK120H	11.4	11.7	693	708	722	737	752	767	781	796	811	826	840	855	870
2BK110H	10.4	10.7	758	774	790	806	822	838	854	871	887	903	919	935	951
2BK100H	9.4	9.7	836	854	871	889	907	925	943	960	978	996	1014	1031	1049
2BK90H	8.4	8.7	932	952	972	991	1011	1031	1051	1071	1091	1110	1130	1150	1170
2BK80H	7.4	7.7	1053	1075	1098	1120	1143	1165	1187	1210	1232	1255	1277	1299	1322
2BK70H	6.4	6.7	1210	1236	1262	1287	1313	1339	1365	1390	1416	1442	1468	1493	1519
2BK60H	5.4	5.7	1422	1453	1483	1513	1543	1574	1604	1634	1664	1695	1725	1755	1786
2BK55H	4.9	5.2	1559	1592	1625	1659	1692	1725	1758	1791	1825	1858	1891	1924	1957
2BK45H	3.9	4.2	1930	1971	2013	2054	2095	2136	2177	2218	2259	2300	2341	2382	2423

25 IN. BLOWER

3 to 5 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP42	2.9	3.9	3	4									
			Open	TURNS ON MOTOR PULLEY											Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V160	16	16.3	317	326	335	344	353	362	370	379	388	397	406	414	423
2B5V154	15.4	15.7	330	339	348	357	366	375	385	394	403	412	421	430	439
2B5V136	12.6	12.9	401	412	423	435	446	457	468	479	490	501	513	524	535
2B5V124	12.4	12.7	407	419	430	441	453	464	475	487	498	509	521	532	543
2B5V110	11	11.3	458	471	483	496	509	522	534	547	560	572	585	598	611
2B5V94	9.4	9.7	534	548	563	578	593	608	622	637	652	667	682	697	711
2B5V74	7.4	7.7	672	691	709	728	747	765	784	803	821	840	859	877	896
2B5V62	6.2	6.5	796	818	840	863	885	907	929	951	973	995	1017	1039	1062

7-1/2 to 10 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP60	4.3	5.5	4.7	5.9									
			Open	TURNS ON MOTOR PULLEY											Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V250	25	25.3	320	327	334	341	348	355	361	368	375	382	389	395	402
2B5V234	23.4	23.7	342	349	357	364	371	378	386	393	400	408	415	422	429
2B5V200	20	20.3	399	408	416	425	433	442	450	459	467	476	484	493	501
2B5V184	18.4	18.7	434	443	452	461	470	480	489	498	507	517	526	535	544
2B5V160	16	16.3	497	508	519	529	540	550	561	571	582	593	603	614	624
2B5V154	15.4	15.7	516	527	538	549	560	571	582	593	604	615	626	637	648
2B5V136	12.6	12.9	628	642	655	669	682	695	709	722	735	749	762	776	789
2B5V124	12.4	12.7	638	652	666	679	693	706	720	733	747	761	774	788	801
2B5V110	11	11.3	717	733	748	763	779	794	809	824	840	855	870	885	901
2B5V94	9.4	9.7	836	854	871	889	907	925	943	960	978	996	1014	1031	1049
2B5V74	7.4	7.7	1053	1075	1098	1120	1143	1165	1187	1210	1232	1255	1277	1299	1322
2B5V64	6.4	6.7	1210	1236	1262	1287	1313	1339	1365	1390	1416	1442	1468	1493	1519

15 to 20 HP		MOTOR PULLEY	Dd1	Dd2	Pd1	Pd2									
BX BELTS		2VP75	5.8	7	6.2	7.4									
			Open	TURNS ON MOTOR PULLEY											Closed
BLOWER PULLEY	DATUM DIAMETER	PITCH DIAMETER	6	5 1/2	5	4 1/2	4	3 1/2	3	2 1/2	2	1 1/2	1	1/2	0
2B5V278	27.8	28.1	381	387	393	399	405	411	417	424	430	436	442	448	454
2B5V250	25	25.3	423	430	436	443	450	457	464	470	477	484	491	498	505
2B5V234	23.4	23.7	451	459	466	473	480	488	495	502	509	517	524	531	539
2B5V200	20	20.3	527	535	544	552	561	569	578	586	595	603	612	620	629
2B5V184	18.4	18.7	572	581	590	600	609	618	627	636	646	655	664	673	683
2B5V160	16	16.3	656	667	677	688	698	709	720	730	741	751	762	773	783
2B5V154	15.4	15.7	681	692	703	714	725	736	747	758	769	780	791	802	813
2B5V136	12.6	12.9	829	842	856	869	883	896	909	923	936	949	963	976	990
2B5V124	12.4	12.7	842	856	869	883	896	910	924	937	951	964	978	992	1005
2B5V110	11	11.3	946	962	977	992	1008	1023	1038	1053	1069	1084	1099	1114	1130
2B5V94	9.4	9.7	1103	1120	1138	1156	1174	1191	1209	1227	1245	1263	1280	1298	1316
2B5V74	7.4	7.7	1389	1411	1434	1456	1479	1501	1523	1546	1568	1591	1613	1635	1658

** 2HP Motors on 20 IN Blowers use 2VP42 Pulleys

Pulley Combination Chart for 25/30/40 HP Motors (Triple Groove Fixed Speed pulleys)

Table 5

Blower Pulley	Motor Pulley	RPM
3B5V184	3B5V68	628
3B5V160	3B5V68	721
3B5V154	3B5V68	748
3B5V136	3B5V68	845
3B5V124	3B5V68	925
3B5V94	3B5V68	1211
3B5V90	3B5V68	1263
3B5V86	3B5V68	1320

Troubleshooting

The following table lists causes and corrective actions for possible problems with the fan units. Review this list prior to consulting manufacturer.

Troubleshooting Chart

Problem	Potential Cause	Corrective Action
Fan Inoperative	Blown fuse or open circuit breaker	Replace fuse or reset circuit breaker and check amps
	Disconnect switch in “Off” position	Turn to “On” position
	Motor wired incorrectly	Check motor wiring to wiring diagram located on fan motor
	Broken fan belt	Replace belt
	Motor starter overloaded	Reset starter and check amps
Motor Overload	Fan rotating in the wrong direction	Be sure fan is rotating in the direction shown on rotation label
	Fan speed is too high	Reduce fan RPM
	Motor wired incorrectly	Check motor wiring to wiring diagram located on fan motor
	Overload in starter set too low	Set overload to motor FLA value
	Motor HP too low	Determine if HP is sufficient for job
	Duct static pressure lower than design	Reduce fan RPM
Insufficient Airflow	Fan rotating in the wrong direction	Be sure fan is rotating in the direction shown on rotation label
	Poor inlet/outlet conditions	There should be a straight clear duct at the inlet/outlet
	Damper not fully open	Inspect damper linkage and replace damper motor if needed
	Duct static pressure higher than design	Improve ductwork to eliminate or reduce duct losses
	Blower speed too low	Increase fan RPM. Do not overload motor
	Belt slippage	Adjust belt tension
Excessive Airflow	Blower speed to high	Reduce fan RPM
	Duct static pressure lower than design	Reduce fan RPM
Excessive Vibration and Noise	Misaligned pulleys	Align pulleys
	Damaged or unbalanced wheel	Replace wheel
	Fan is operating in the unstable region of the fan curve	Refer to performance curve for fan
	Bearings need lubrication or replacement	Lubricate or replace
	Fan speed is too high	Reduce fan RPM
	Belts too loose, worn or oily	Inspect and replace if needed
Smoke/Odor leaking from PCU	KB installed before PCU	Reattach KB fan to end of PCU.

MAINTENANCE

To guarantee trouble free operation of this fan, the manufacturer suggests following these guidelines. Most problems associated with fan failures are directly related to poor service and maintenance. Please record any maintenance or service performed on this fan in the documentation section located at the end of this manual.

WARNING: DO NOT ATTEMPT MAINTENANCE ON THE FAN UNTIL THE ELECTRICAL SUPPLY HAS BEEN COMPLETELY DISCONNECTED

General Maintenance

1. Fan discharge and approaches to ventilator should be kept clean and free from any obstruction.
2. Motors are normally permanently lubricated. Check bearings periodically. If there are grease fittings, lubricate each season. Use caution when lubricating bearings. Wipe the fittings clean, the unit should be rotated by hand while lubricating. When a KB-Inline fan operates above 300° F for long periods of time, bearings will require more frequent maintenance. **Caution: Use care when touching the exterior of an operating motor. Motors normally run hot and may be hot enough to cause severe burns or cause injury.**
3. All fasteners should be checked for tightness each time maintenance checks are preformed prior to restarting unit.
4. Fans require very little attention when moving clean air. Occasionally oil and dust may accumulate causing imbalance. If the fan is installed in a corrosive or dirty atmosphere, periodically inspect and clean the wheel, inlet and other moving parts to ensure smooth and safe operation.

2 weeks after startup

1. Belt tension should be checked after the first 2 weeks of fan operation. Belts tend to stretch and settle into pulleys after an initial start-up sequence. **Do not tension belts by changing the setting of the motor pulley**, this will change the fan speed and may damage the motor. To re-tension belts, turn the power to the fan motor OFF.
2. Loosen the fasteners that hold the motor to the fan. Move the motor to the left or right to adjust the belt tension. Belt tension should be adjusted to allow 1/64” of deflection per inch of belt span. Exercise extreme care when adjusting V-belts as not to misalign pulleys. Any misalignment will cause a sharp reduction in belt life and produce squeaky noises. Over-tightening will cause excessive belt and bearing wear as well as noise. Too little tension will cause slippage at startup and uneven wear. **Whenever belts are removed or installed, never force belts over pulleys without loosening motor first to relieve belt tension.** When replacing belts, use the same type as supplied by the manufacturer. On units shipped with double groove pulleys, matched belts should always be used.
3. All fasteners should be checked for tightness each time maintenance checks are preformed prior to restarting unit.

Every 3 months

1. Inspect the entire unit and exhaust system.
2. Belt tension should be checked quarterly. See instructions in the previous maintenance section. Over-tightening will cause excessive bearing wear and noise. Too little tension will cause slippage at startup and uneven wear.
3. Fans need to be cleaned quarterly, and more often in severe conditions. **Take precautionary measures when power washing the unit as this will damage the insulation**.
4. Place a tarp over blower insulation and motor to prevent damage during cleaning. Remove all tarps from the unit after cleaning is completed.

Yearly

1. Inspect bearings for wear and deterioration. Replace if necessary.
2. Inspect belt wear and replace torn or worn belts.
3. Inspect bolts and set screws for tightness. Tighten as necessary.
4. Inspect motor for cleanliness. Clean exterior surfaces only. Remove dust and grease from the motor housing to ensure proper motor cooling. Remove dirt and grease from the wheel and housing to prevent imbalance and damage.

Start-Up and Maintenance Documentation

START-UP AND MEASUREMENTS SHOULD BE PERFORMED AFTER THE SYSTEM HAS BEEN AIR BALANCED (Warranty will be void without completion of this form)

Job Information

Job Name	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Purchase Date	

Service Company	
Address	
City	
State	
Zip	
Phone Number	
Fax Number	
Contact	
Start-Up Date	

Fan Unit Information

Refer to the start-up procedure in this manual to complete this section.

Name Plate and Unit Information	
Model Number	
Serial Number	
Volts	
Hertz	
Phase	
FLA	
HP	
Blower Pulley	
Motor Pulley	
Belt Number	

Field Measured Information	
Voltage	
Amperage**	
RPM	

Blower Rotation	Correct	
	Incorrect	

**If measured amps exceed the FLA rating on the nameplate, fan RPM must be reduced to decrease the measured amps below the nameplate FLA rating.

Maintenance Record

Date	Service Performed

Factory Service Department

Phone: 1-866-784-6900
Fax: 1-919-554-9374