



PEERLESS BLOWERS

Installation & Maintenance Instructions

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RECEIPT AND INSPECTION

Your Peerless Unit has been carefully designed so that with proper installation and maintenance, many years of satisfactory, trouble-free service will be attained.

Upon receipt of the Peerless Unit, check the Packing List to insure all items shipped have been received.

If a shortage is noticed, immediately call this to the trucker's attention, so that it can be noted on the delivery receipt. Also call to his attention any damaged containers so that proper notation can be made and on site inspection arranged.

The above also applies to skidded units too large to package.

STORAGE

If installation of the unit is delayed the unit should be stored in a finished building or a heated warehouse. Storage in this type of facility requires no special preservation of the equipment. If stored out-of-doors special care must be taken to protect against dirt, moisture, corrosion, etc. Cover the entire unit with tarpaulin, and inspect periodically to make sure that no damage is developing.

Fill the bearing completely with grease to prevent rust formation in the bearing housing and corrosion of the balls, rolls and races. Use a good grade of bearing grease and apply with a handgun opposed to a pneumatic gun to avoid bearing seal damage. Clean grease fitting and gun before lubricating to avoid forcing foreign particles into the bearings. Add grease slowly until a slight bead is noticed around the bearing seal. Avoid storage in temperature below -10°F, which could cause a breakdown of the lubricant. Cover all bearings with water repellent, lint-free material and seal with tape. Block the wheel to prevent wheel rotation (over spin) from the wind.

If units are stored for more than 60 days, the wheel must be rotated every 30 to 45 days to prevent false brinelling of the fan bearings. False brinelling is caused by vibration of the balls or rolls between the races in a stationary bearing. This vibration may be either axial or oscillating. As the ball or rolls vibrates between the races, the lubricant is forced out of the

contact area between the ball and race, causing metal-to-metal contact and localized wear of ball and races, which result in a rough and noisy bearing operation.

It is strongly recommended that records be kept on wheel rotation and inspections while in storage.

After the units are installed, follow the bearing lubrication instruction attached to each unit.

Upon start-up of the equipment caution should be taken to run-in the bearings for a short period of time so excessive bearing temperatures are not encountered. This should be repeated until the bearings hit a normal temperature range "cool to warm" up to a point "too hot to touch" for more than a few seconds," depending on bearing size and speed

and surrounding conditions. If the fans are not put in service prior to one year after shipment, the lubricant should be change, Grease has a tendency to become hard and deteriorate, losing its lubricating qualities.

NOTE: Storage surface must be level to prevent distortion.

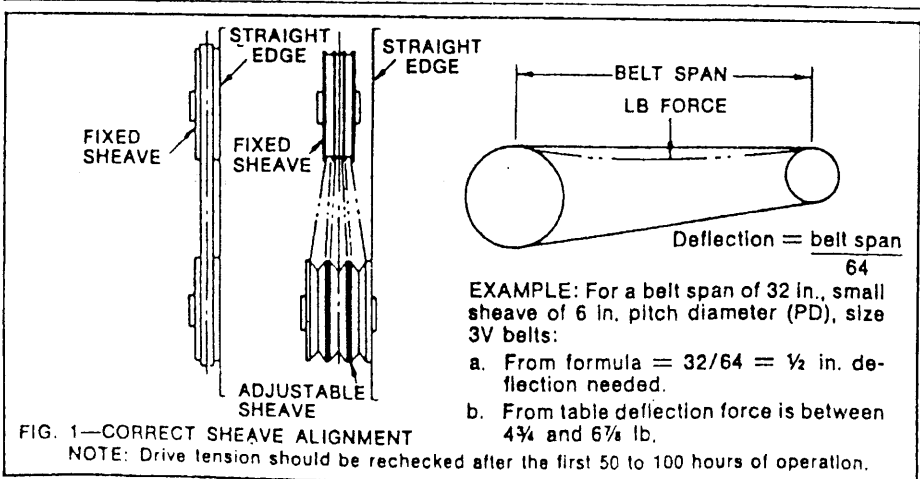
INSTALLATION

CENTRIFUGAL FANS: The fan should be mounted on a rigid, flat, level foundation. Vibration isolators are recommended, they should be installed in position and leveled, using large surface shims if necessary, before positioning the fan. The fan should be checked to be sure ALL bolts are tightened. The fan can then be lifted into position on the vibration base. Be sure the air flow is correct

V-BELT DRIVE

After the wheel is determined to rotate freely, align the v-belt drive. Refer to FIG. 1 and tighten the set screws or bolts in the case of sheaves with bushings, and adjust the belt tension using the following table and deflection formula below.

BELT CROSS SECTION	SMALL PD RANGE (In.)	DEFLECTION FORCE (lb.)					
		STANDARD		SUPER		TORQUE FLEX	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
A	3.0- 3.6	2½	3½	3	4¼	3¾	5½
	3.8- 4.8	3	4¼	3½	5	4½	6¼
	5.0- 7.0	3½	4¾	4	5½	5	6¾
B	3.4- 4.2	3¼	4¾	4	5½	5¾	8
	4.4- 5.6	4¾	6	5½	7½	6½	9¾
	5.8- 8.6	5½	7¾	6¾	8¾	7¾	10½
C	7.0- 9.4	9¾	12¼	11¼	14¾	13¾	17¾
	9.6-16.0	12¾	15¾	14½	18½	15¼	20¼
D	12.0-16.0	20	25½	23¾	30¼	23¾	30½
	18.0-27.0	25¼	33¼	29¾	39½	30½	39¾
E	20.0-32.0	34	45¼				
3V	2.65-3.65	3½	5				
	4.12-6.90	4¾	6¾				
5V	7.1-10.9	10½	15¾				
	11.8-16.0	13	19½				
8V	12.5-17.0	27	40½				
	18.0-22.4	30	45				



for the duct connection.

Bolt the fan securely into position. When the motor and drive are furnished separately, they should be mounted next. If the unit is mounted on an integral, structural steel base or on a reinforced concrete inertia base, adjust the base, using the leveling bolts.

Recheck the interior of the fan housing to be sure it is free of debris. Rotate the wheel to insure that it is not rubbing or binding. Check the clearance of the wheel and the inlet cone. If rubbing exists, loosen the bolts on the cone and shift the cone until clearance is obtained. If still rubbing, loosen the set screws on the wheel and shift the wheel rearward to obtain clearance. Retighten the set screws.

CENTRIFAN: The unit should be mounted on a rigid, flat foundation on a floor or wall. A ceiling suspended unit must be rigidly supported from rods so the fan will not shake or cause undue vibration. An isolation hanger is recommended for ceiling supported units.

All units have extended lube lines for lubrication of bearings.

PROPELLER FANS: The fan panel should be mounted on a flat surface. If any type of superstructure is necessary, it should be rigid and well braced, to prevent vibration. If sponge rubber strips are used for mounting, the rubber should be supported full length in the horizontal plane.

The panel fan is mounted by anchor bolts through the panel, secured into the mounting frame. If the unit is rigidly mounted, the anchor screws should be tightened with special attention to be sure the panel does not warp. If the panel is warped, the fan may be thrown off center and cause interference with the venturi. Propeller fans with motors in the air stream carry motor overloads up to 25 to 30 percent above nameplate ratings, a common practice in the industry. Therefore, select thermal overload elements to carry this overload factor.

BEARINGS

All bearing and wheel set screws

should be checked and tightened, and rechecked after the first 50 to 100 hours of operation.

Before operating this equipment inspect and tighten the bearing set screws. After 50 to 100 hours operation reinspect and tighten if necessary.

Repeat periodically. If a torque wrench is available use the following values:

SET SCREW DIAM.	MIN. TORQUE INCH-POUNDS
1/4	70
5/16	140
3/8	228
7/16	348
1/2	516
5/8	1214

Lubricate the fan bearings while the fan is running, using a good grade ball bearing grease. Apply with a hand gun until a slight bead of grease is noticeable around the bearing. Stop lubrication when the bead is formed. **DO NOT OVERLUBE.**

It is recommended that all bearings be examined periodically for lubrication. More frequent examination should be made in case of high speed operation or heat. At the time of each examination, check alignment of the drives and tightness of the set screws and bolts.

Bearings of any unit that has been stored for any period of time MUST be lubricated before startup.

ELECTRICAL CONNECTIONS

Before connecting the motor to the electrical supply check the electrical characteristics as indicated on the motor nameplate.

Inspect for any damage resulting from shipment and turn the shaft by hand to insure free rotation. If the motor has been in storage or subject to adverse moisture conditions, dry it thoroughly before operating. After drying, run the motor not connected to the load for a short time for further drying and as a check on the bearings.

If a controller is furnished, the wiring diagram in the controller must be followed. Special attention should be given to see that a single phase motor is connected only to a single phase supply of proper voltage, and that a three phase motor is connected only to a three phase supply. Electric

motors will burn out and fail immediately if improperly connected. It is also recommended that in every motor connection, an overload device be installed between the current supply and the motor to protect the motor from under-voltage conditions and motor overloads.

If motorized shutters are supplied, care must be taken that they are connected to the correct voltage supply or have been supplied with adequate transformers.

After electrical connections are completed, apply just enough power to start the unit. Refer to Fig. 2 for wheel type and their rotation. If the unit is turning in the wrong directions, it will not deliver the rated capacity and the motor connections must be altered to make the correct rotation.

Full electrical power can now be applied and special attention given to determine if the motor, bearings, etc., are working properly. At this time, with the air system in full operation and all duct attached, it is well to measure

FAN WHEEL BLADES ROTATION

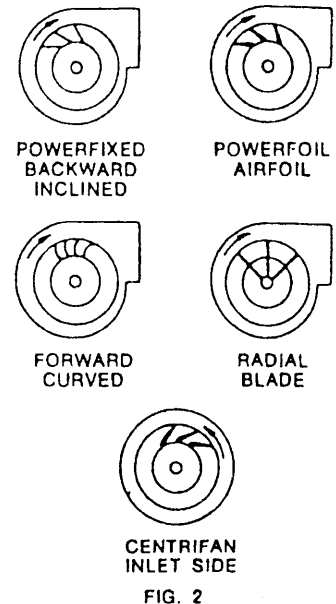


FIG. 2

current input to the motor and compare with the nameplate rating to determine if the motor is operating under safe load conditions.

If the unit is mounted outside, the drive cover should now be installed to protect the motor and drive from the elements. Fastening devices to secure this cover into position are on the frame.

AMCA Standard 410 (Safety Practice Recommended for User and

Installer of Industrial and Commercial Fans) should be followed.

ACCESSORIES

INLET VANES: Manually controlled vanes are to be adjusted to obtain the required airflow. Secure operating arm to quadrant with locking bolt.

Actuators are not furnished for automatically operated inlet vanes, whether electrically or pneumatically operated. They are normally field installed by the control manufacturer. The linkage between the actuating motor and the operating handle should be adjusted to prevent over-travel. Over-travel may cause binding or serious damage, to the control ring and vane fingers.

SHUTTERS: Discharge shutters on utility blower can be furnished for either automatic or motorized operation. Be sure that the motorized shutters are wired correctly. Both types are normally maintenance free.

Shutters for other than utility blowers are furnished for either manual or motorized operation. Motor operators are not furnished by the fan manufacturer. Manual dampers are set in the same manner as manually operated inlet vanes.

Automatic and motorized wall shutters can be furnished for use with propeller fans. When installing these shutters, be sure the opening is free of any interference and the walls are plumb. Also be sure that the voltage and phase are correct for the shutter motor.

MAINTENANCE AND REPAIR

Regular inspection and lubrication is a must for trouble free operation.

Before attempting any repair work, be certain that all power to the motor and electrical accessories is turned off and, where possible, locked in the OFF position.

BEARING REPLACEMENT: Wheel and shaft must be supported before any dismantling is attempted. Remove drives, loosen and remove bearing bolts. Next loosen the retaining set screws on the bearing collars. Remove the bearings from the

shaft *only after insuring that the shaft and wheel are securely supported.*

SHAFT REPLACEMENT: After following the steps listed for the removal of the bearings, loosen the set screws in the wheel hub. With the wheel securely blocked, pull the shaft from the wheel.

WHEEL REMOVAL: After following the steps above for bearing and shaft removal, remove the inlet cone by removing eight bolts, which then permits the wheel to be lifted out through the inlet. This can also be done with the shaft in place.

To replace any of the above, reverse the procedure.

TROUBLE SHOOTING

Upon startup of your Peerless Unit, a few minor problems may be encountered due to transporting the unit from our plant to its destination. These defects can easily be corrected in the field.

Always shut off all power to the unit before attempting any repairs.

1. **NOISE IN FAN:** Shut fan down and check for foreign objects and remove.
2. **WHEEL HITTING INLET CONE:** Turn wheel by hand to determine where wheel is hitting. Loosen bolts holding inlet cone and recenter.
3. **THUMPING NOISE:** When rotating the wheel by hand, if a sound like something dropping is present check set screws in wheel hub and tighten.
4. **BEARING NOISE:** Check for alignment. Lubricate bearing. If noise persists, contact local Peerless

representative.

5. **DRIVE NOISE:** Check sheaves for alignment. Check set screws to be sure that they are tight. Check belt tension. Check the adjustable pulley to be sure that all belts are properly seated.

6. **FAN VIBRATION:** NOTE: All fan wheels are statically and dynamically balanced at the factory, and runout is checked. After final assembly, the unit is checked to insure vibration level is within tolerance.

If excessive vibration is noted, check the following:

- a. Bearing and drive alignment.
- b. Mismatched belts.
- c. Wheel or sheaves loose on shaft.
- d. Loose or worn bearings.
- e. Loose mounting bolts.
- f. Motor out of balance.
- g. Sheaves eccentric or out of balance.
- h. Vibration noise improperly balanced.
- i. Worn or corroded wheel (replace if bad)
- j. Accumulation of material on wheel (material accumulation should be scraped off.)

IMPORTANT

Do not attempt to increase speed on any equipment before checking the catalog or consulting the Factory for brake horsepower for the particular unit so as not to overload the motor or place the fan in another class due to tip speed of the wheel, which may result in damage to the fan or cause personal injury.

