



ROMLAIR

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**MODEL VBO-HV & VBO
UPBLAST PROPELLER ROOF FANS**

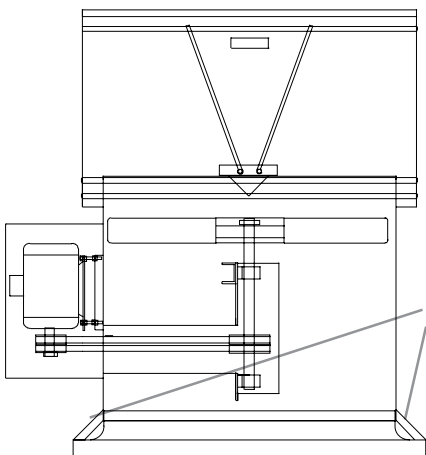
INSTALLATION AND MAINTENANCE INSTRUCTIONS

SHIPPING INSPECTION

Romlair Model VBO-HV & VBO fans are thoroughly inspected and test run at the factory. However, damage may occur during handling and shipping. Upon receiving unit, check for any damage and report it immediately to the shipper. Also check to see that all accessory items are accounted for.

INSTALLATION

When lifting the fans into place, attach an acceptable chain or strap to the four welded corner supports. It is important not to lift the fan by the motor, windband, or accessories.



Welded Corner
Supports
(4 Corners)

Carefully move the fan to the desired location and fasten securely to the roof curb. Use fasteners to suit construction and material. Fasteners are not supplied by Romla Ventilator Company.

SERVICE ACCESS

Removable Windband - The windband can easily be removed by removing the bolts from the windband mounting brackets. Access to the fan bearings, fan shaft, driven pulley, and propeller can be gained through the butterfly dampers. The dampers can also be easily removed to allow more open access to the interior parts of the fan.

Motor Cover - A removable motor cover provides easy access to the motor, belt, and drives from the roof.



ELECTRICAL CONNECTIONS

The motor's amperage and voltage rating must be checked for compatibility to the supply voltage prior to final electrical connection. Consult local and national electrical codes regarding supply wiring requirements.

Emergency Smoke Removal Installation - Electrical supply must be out of the airstream. Isolated power supply may be required so that if power is cut to the building in a fire, the fans will be able to operate. Consult the local and national electrical codes regarding emergency smoke removal fan applications.

PRE START-UP CHECKS

Check all fasteners for tightness. Movement may occur during shipment and it is very important that all fasteners are secure. This is very important on the bearings and propellers. Manually rotate the propeller by hand to make sure it turns freely and does not make contact with the fan housing.

Direction of propeller rotation is critical. Reversed rotation will result in poor air performance, motor overloading and possible burnout. Rotation should correspond to the rotation arrow located on the fan propeller.

WARNING

Disconnect and secure to the “off” position all electrical power to the fan prior to inspection or servicing. Use Extreme caution when working around the fusible link damper lifter. The lifters could release accidentally. The fans have extra heavy duty damper lifters under very high spring tension. Because of safety concerns, lifters must be secured to prevent accidental release. See Figure 2 for details on securing the lifter arms.

**FAILURE TO COMPLY WITH THESE SAFETY PRECAUTIONS MAY
RESULT IN SERIOUS INJURY OR DEATH**

Model VBO-HV with high temperature option - UL Listed For “Power Ventilators For Smoke Control Systems.

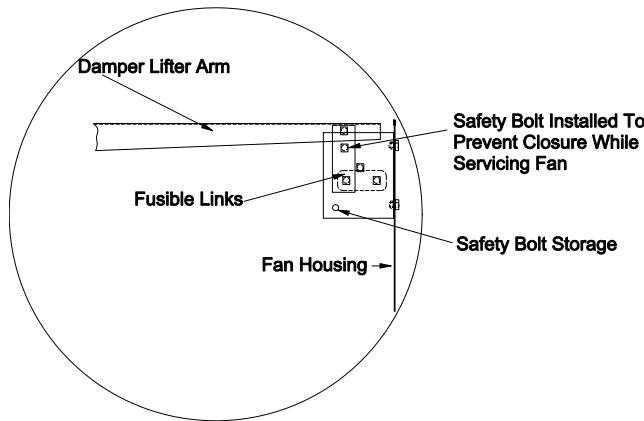


Figure 2

WARNING!

These fans have extra heavy duty fusible link damper lifters designed for a 10 lb sq ft loading. These lifters are under very high spring tension and must be secured with the safety bolt so they can not be accidentally released when servicing the fan. These damper lifters are located under the damper blades. Figure 2 shows where the safety bolt must be placed when the fan is being serviced. It also shows where to store safety bolt. Extreme caution must be taken when working around these damper lifters. **FAILURE TO COMPLY WITH THESE SAFETY PRECAUTIONS MAY RESULT IN SERIOUS INJURY OR DEATH.**

CARE AND MAINTENANCE

Good fan maintenance requires regular and systematic inspection of all fan parts. Severity of the application should determine frequency of inspection.

FASTENERS AND SET SCREWS

Normal fan vibration can loosen fastens. Periodic inspection should include checking all fasteners and set screws. Check the propeller fasteners for tightness.

Recommended Torque for Setscrews/Bolts (IN/LB.)

SIZE	SETSCREWS		HOLD DOWN BOLTS	
	MIN.	MAX.	SIZE	WRENCH TORQUE
NO. 10	28	33	3/8"-16	240
1/4"	66	80	1"-13	600
5/16"	126	156	5/8"-11	1200
3/8"	228	275	3/4"-10	2100
7/16"	348	384	7/8"-9	2040
1/2"	504	600	1"-8	3000
5/8"	1104	1200	1-1/8"-7	4200
3/4"	1440	1800	1-1/4"-7	6000

LUBRICATION-PILLOW BLOCK BEARINGS

The bearings can be operated for long times without supplement of the grease. See the following Greasing Interval Table. Because the model VBO-HV is designed for high temperature emergency exhaust, it is

important to be relubricated with special high temperature grease. Romla uses SealMaster Goldplex-HT. GoldPlex-HT is classified as a NLGI Grade 2 lithium-based grease suitable for applications with temperatures up to 400° F.

LUBRICATION-PILLOW BLOCK BEARINGS (CONTINUED)

Use following table as a guide for greasing interval.

Model VBO-HV and VBO fans have extended lubrication lines as standard. The grease fittings are located on the exterior of the fan housing under the belt tube. Always clean the fitting before relubrication.

It is best to lubricate the bearings while the fan is rotating. Do not unseat the bearing seals by over lubricating. Excessive grease can burst seals thus reducing the bearing life. Use no more than three injections with a hand operated grease gun.

Operating temperature of bearing		Greasing interval		
		Environmental condition		
°C	°F	Clean	Dirty	Very dirty heavy humid
50	122	3 years	6 months	3 months
*70	158	1 year	2 months	1 month
100	212	3 months	2 weeks	1 week
120	248	6 weeks	1 week	3 days
150	302	2 weeks	3 days	Daily

*Normal bearing temperature

LUBRICATION INSTRUCTIONS FOR BALL BEARING MOTORS (WITH GREASE FITTINGS)

This is a ball bearing motor. **The bearings have been given initial lubrication at the factory, and are adequate for a long period of operation without relubrication.**

Lubrication is intended only when fittings are provided. Regreasing will vary depending on motor size, speed, and environment.

PROCEDURE FOR LUBRICATION

If motor is equipped with Alemite fitting, clean tip of fitting and apply grease gun. Use 1 to 2 full strokes on motors in NEMA 215 frame and smaller. Use 2 to 3 strokes on larger motors.

CAUTION:

Keep grease clean!

RELUBRICATION INTERVALS FOR MOTORS WITH GREASE FITTINGS

The following intervals are suggested as a guide.

HOURS OF SERVICE PER YEAR	SUGGESTED RELUBE INTERVAL
5000	Every 5 years
Continuous Normal Application	Once a year
Continuous In high ambient, or dirty or moist location: or where motor is idle for 6 months or more, and applications with high vibration or where shaft end is hot (pumps-fans)	Every 6 Months

LUBRICANT

A high grade ball or roller bearing grease should be used. Recommended grease for standard service conditions is Polyrex EM (Exxon Mobil). Equivalent and compatible grease include: Texaco Polystar, Rykon Premium #2, Pennzoil Pen 2 Lube and Chevron SRI.

BELTS AND PULLEYS

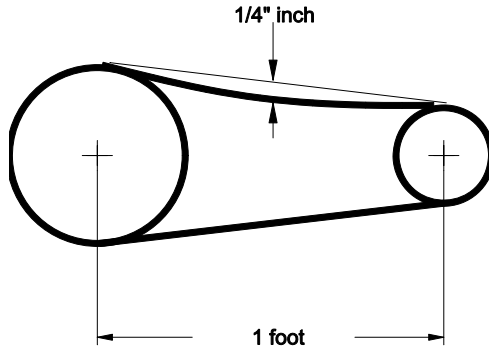


Figure 3

Improper belt tension or misaligned pulleys frequently cause premature belt failures. The V-belt tension should be at the lowest tension where the belts will not slip at peak load. For proper tension, a deflection of approximately 1/4" per foot of center distance should be obtained by firmly pressing the belt. Refer to Figure 3

Belt tension should be checked during the first 24 hours of operation and re-adjusted if required. Loosen or tighten the nuts on the threaded motor supports to make the required tension adjustments.

Drive pulleys must remain in proper alignment after adjustments are made. Figure 4 illustrates correct and incorrect pulley alignment.

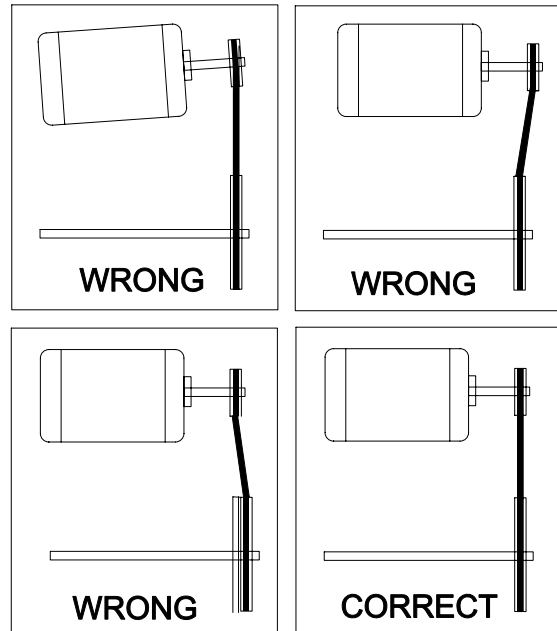


Figure 4

BEARING REPLACEMENT

1. To gain access to the fan, remove the windband and damper assembly.
2. Loosen the mounting bolts on the adjustable motor plate so that the drive belts can be removed.
3. Remove the propeller from the fan shaft. This is done by removing all three capscrews from the propeller and hub assembly. Start the capscrews into the threaded holes in the bushing flange. Tighten each bolt part of a turn successively to force the propeller off the tapered bushing. Pull the bushing off the fan shaft.
4. Remove the metal bearing cover and the bearing hold down bolts. This will allow you to remove the fan shaft, fan bearings, and the driven sheave from the fan as one assembly.
5. To aid the reassembly, measure and record the location of the bearings and sheave on the fan shaft.
6. Install the pulley in the correct location on the shaft.
7. Place the new bearings on the shaft loosely. Drop mounting bolts in place, snug them and adjust the position of shaft.
8. Center both shaft ends in housing using the clearance in the mounting holes for horizontal adjustment and shims if necessary for vertical adjustment.
9. Tighten the bearings on the propeller end first, then tighten the other bearing.
10. Tap the locking collar lightly at the end away from the propeller. The shaft should slide freely end to end.
11. The final step is to align the shaft with the motor sheave and tighten the locking collars.
12. If the fan is supplied with a lubrication line, attach it to the grease connection.
13. Install the propeller on the fan shaft and adjust bearing position to center the propeller in the fan housing.

PROPELLER AND SHAFT REPLACEMENT CAUTION.

- If the fan shaft is dropped, it may get bent and cause unbalanced operation of the fan.
- Place a support through the hub for lifting, making sure not to damage the finished bore of the propeller.
- Do not allow the propeller to rest its entire weight on the fan blades.
- Use caution if lifting the propeller by chain. Use sufficient protection to prevent the scoring of the shaft or injury to the propeller.

ADJUSTING VARIABLE PITCH SHEAVES

Many Romlair belt driven fans are furnished with variable-pitch motor sheaves. On some of these fans sheaves may be adjusted for lower fan speeds without concern of over-loading motors. When adjusting sheaves to increase fan speed, check motor current to be sure motor is not overloaded. Keep motor current within nameplate and service factor ratings.

The sheaves used are the VL, VM, and the VP Type. These sheaves are easily adjusted and come in various styles depending upon the size drive and motor shaft.

The following steps should be taken to adjust the pitch diameter:

1. Release the belt tension and remove belt or belts from the sheave.

2. Loosen the set screw and remove key holding adjustable half of the groove.

3. Screw adjustable half of sheave out for a smaller pitch diameter (decreased speed), or in for a larger pitch diameter (increased speed). Each one-half turn will change the pitch diameter one tenth of an inch. Adjust two-groove sheaves the same amount on each groove. 4L or A belts will operate satisfactory with the sheave fully closed to a maximum of five full turns open. 5L or B belts will operate satisfactory with the sheave one full turn open to a maximum of six full turns open.

4. Replace the key and tighten set-screw to lock sheave half in position.

5. Replace the belts and tighten to proper tension.

INSTALLATION INSTRUCTIONS FOR PROPELERS EQUIPPED WITH BROWNING MALLEABLE IRON SPLIT TAPER BUSHING

Romlair cast aluminum and steel fabricated propellers are furnished with split taper bushings for mounting the propeller to the shaft. When properly assembled, the bushings grip the hub with a positive clamping action.

A. Bushing barrel and bore of propeller are tapered- this assures concentric mounting and a true running propeller.

B. Capscrews, when tightened, lock bushing in propeller. Use plated cap-screws threaded full length.

BUSHING NO.	DIA.	LENGTH	TORQUE FT. LBS.
H	1/4 - 20	1-1/4"	7-1/2
P-1	5/16 - 18	1-1/2"	13
P-2	5/16 - 18	1-3/4"	13
Q-2	3/8 - 16	2-1/2"	24
R-2	3/8 - 16	3"	24

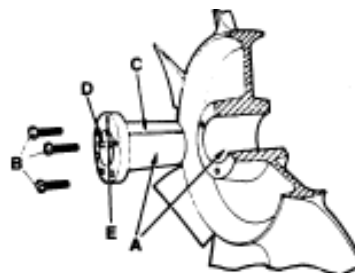
C. Bushing is split so that when the locking capscrews force the bushing into the tapered bore, the bushing grips the shaft with a positive clamping fit- this will withstand vibration and punishing loads without being loosened.

D. Propeller and bushing assembly is keyed to shaft and held in place by compression.

Put bushing loosely into propeller. Do not press or drive. Start cap-screws by hand, turning them just

enough to engage threads in tapped holes on propeller. Do not use a wrench at the time. The bushing should be loose enough in the propeller to move slightly.

Be sure shaft and keyway are clean and smooth. Check key size with both shaft and bushing.



Slide propeller and bushing assembly onto the shaft, making allowance for end play of shaft to prevent rubbing. Do not force propeller and bushing onto shaft. If it does not go on easily, check shaft, bushing and key sizes.

Tighten capscrews progressively with wrench. Do this evenly as in mounting an automobile wheel. Take a part turn on each capscrew successively until all are tight. These capscrews force the taper bushing into the hub which in turn compresses the bushing onto the shaft. This makes a positive clamping fit. The torque must not exceed that shown in table at left.

WARNING: Do not attempt to pull bushing flange flush with hub end. There should be 1/8" to 1/4" clearance when tightened.

TROUBLE SHOOTING	
PROBLEM	CAUSE
Low Capacity or Pressure	Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the propeller.
	Poor fan inlet conditions. There should be a straight clear duct at the inlet.
	Improper propeller alignment.
Excessive Vibration and Noise	Damaged or unbalanced propeller.
	Belts too loose: worn or oily belts.
	Speed too high.
	Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the propeller.
	Bearing need lubrication or replacement.
Overheated Motor	Motor improperly wired.
	Incorrect direction of rotation. Make sure the fan rotates in same direction as the arrows on the propeller.
	Cooling air diverted or blocked.
	Improper inlet clearance.
	Incorrect fan RPM's
	Incorrect voltage.
Overheated Bearings	Improper bearing lubrication.
	Excessive belt tension.

WARRANTY

The Romla Ventilator Company warrants this equipment to be free from defects in material and workmanship under normal use and service for a period of one year from date of delivery. During the warranty period if any parts prove to be defective, they will be repaired or replaced free of charge at factory option: If upon receipt of written authorization they are delivered prepaid to the factory. This guarantee does not cover any damage caused by neglect of lubrication, accident or overload, improper installation, nor does it cover the cost of repairs made or attempted outside the factory, without authorization from Romla Co. Electric motors are guaranteed only to the extent of the motor manufacturer's warranty.

Romla Co., is not responsible for the cost of removal of the defective product or part, or the installation of the repaired or replaced products or part. Correction of any verified defects by repair or replacement shall constitute fulfillment of this warranty.

