

**INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS  
CENTRIFUGAL SPUN ALUMINUM UPBLAST FANS  
MODEL VU - BELT and DIRECT DRIVE**

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**CAUTION! DO NOT INSTALL, USE OR OPERATE THIS EQUIPMENT UNTIL THIS  
MANUAL HAS BEEN READ AND UNDERSTOOD. READ AND SAVE THESE INSTRUCTIONS FOR  
FUTURE USE.**

**RECEIVING, HANDLING AND STORAGE**

1. Handle the fan with care. Avoid severe jarring or dropping of the unit.
2. Carefully inspect the unit for damage upon delivery. If the unit has been damaged in transit it is the responsibility of the recipient to make all claims against the carrier.
3. Provide adequate, protected storage prior to installation.

**INSTALLATION**

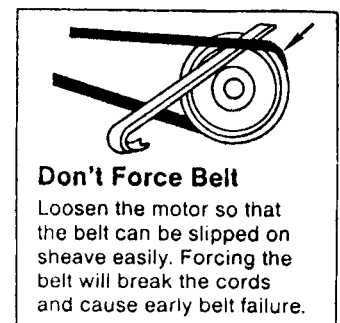
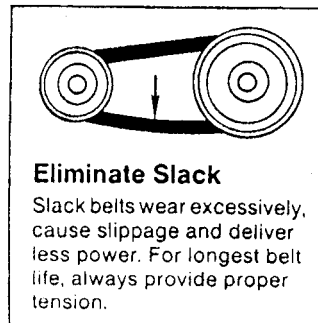
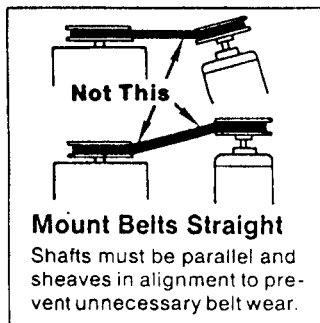
1. Upon unpacking, inspect the unit for any damage that may have occurred in transit. Check also for loose or missing parts.
2. **CAUTION!** This fan contains rotating parts and requires electrical service. Appropriate safety precautions should be taken during installation, operation and maintenance.
3. **WARNING!** Do not install or operate this fan in environment or atmosphere where combustible or flammable materials, gasses or fumes are present, unless it has been specifically designed and manufactured for use in that environment. **Explosion or Fire** could result!
4. This ventilator requires a minimum of four (4) mounting fasteners, of the appropriate size and type in order to be securely fastened to the roof curb. Be sure to use an approved sealant between the fan and curb to prevent leaking.
5. A damper, if used, should be securely mounted within the ductwork in a manner which allows free and unobstructed operation. Fan wiring should not interfere with damper blades.
6. **CAUTION!** All electrical work must be done in accordance with local and/or national electrical code as applicable. If you are unfamiliar with methods of installing electrical wiring, secure the services of a qualified electrician.
7. **WARNING!** This product must be grounded.
8. **DANGER!** Make sure power is turned off and locked in the **OFF** position at the service entrance before installing, wiring or servicing fan.
9. **CAUTION!** Before wiring the motor, check the supply voltage against the motor nameplate voltage. High or low voltage can damage the motor and void the motor warranty.
10. Power should be routed through the conduit openings provided.
11. Access to the motor compartment is possible by either removing the motor cover or motor tube/motor cover assembly.
12. **WARNING!** Be sure to keep all wiring clear of rotating or moving parts.
13. **WARNING!** Before starting the fan, turn the wheel to assure it rotates freely. If needed, adjust the wheel/shaft/bearing/motor position as required to achieve necessary clearances.
14. **CAUTION!** On belt drive units assure belts are tensioned and aligned properly. (See Maintenance section.)
15. **WARNING!** Check all set screws and keys. Tighten as necessary prior to fan startup. Do not over torque
16. Remount motor cover/motor tube, do not over torque fasteners (30 in. - lb. maximum)

## OPERATION

1. **CAUTION!** Check that the fan inlet/ductwork/exhaust openings are clean and free of obstructions. Poor inlet conditions will result in seriously reduced fan performance.
2. **WARNING!** This fan contains rotating parts. Appropriate safety precautions should be taken during operation.
3. Operate under power and check for correct wheel rotation direction (clockwise when looking at top of the wheel).
4. **CAUTION!** Incorrect rotation can damage the fan motor and seriously impede fan operation.

## MAINTENANCE

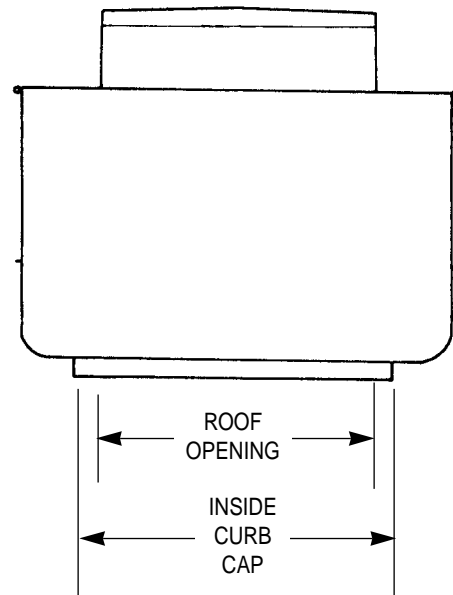
1. **DANGER!** Before performing and maintenance on the fan, be sure power is turned off and locked in the **OFF** position at the service entrance before servicing the fan.
2. Ventilators should be carefully checked at least once a year. For critical or rugged applications, a routine check every two or three months is suggested.
3. All motors supplied with CARNES ventilators carry a one year warranty from date of shipment. For repairs within the warranty period, the motor must be taken to the motor manufacturer's authorized service dealer. Contact your CARNES representative for additional warranty details.
4. Access to the motor compartment is possible by removing the motor cover or motor cover/motor tube assembly.
5. A periodic motor check should consist of spinning the motor shaft with the power off to be sure the motor turns freely and the bearings run smoothly. The belt on belt driven units should be removed from the motor sheave.
6. **CAUTION!** When removing or installing a belt, do not force the belt over the sheave. Loosen the motor mount so that the belt can be easily slipped over the sheave.
7. The belt on belt driven units should be removed and carefully checked for radial cracks, ply separation or irregular wear. A small irregularity in the contact surface of the belt will result in noisy operation. If any of these defects are apparent, the belt should be replaced. Check the sheave also for chipping, dents or rough surfaces which could damage the belt.
8. **CAUTION!** The correct belt tension is important. Too tight a belt will result in excess bearing pressure on the motor bearings and shaft pillow blocks, and may also overload the motor. Too loose a belt will result in slippage which will quickly "burn" out belts. A belt should feel "live" when thumped, approximately 1/4" belt deflection when subjected to finger pressure (3 to 5 lbs.) at midpoint between sheaves.
9. **CAUTION!** The belt alignment should also be checked to be sure the belt is running perpendicular to the rotating shafts. Motor and drive shafts must be parallel. Improper alignment will result in excessive belt wear.



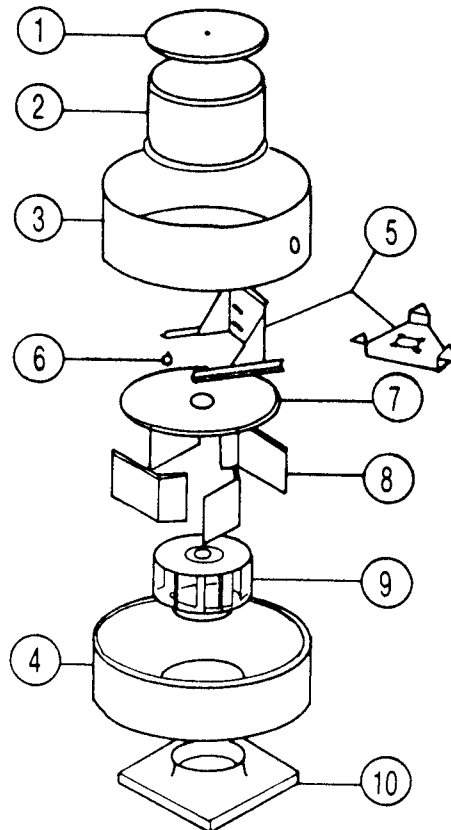
10. **CAUTION!** Check sheave set screws to ensure tightness. Proper keys must be in keyways.
11. **CAUTION!** Do not readjust variable pitch sheave without checking motor amps. Do not readjust variable pitch sheaves above the maximum catalog RPM for unit and motor. If fixed sheaves are replaced, use only sheaves of identical size and type.
12. **CAUTION!** If adjustment of two groove variable pitch sheaves is required, each sheave must be opened or closed the same number of turns. Improper adjustment can cause excessive belt wear and premature failure.

13. If unit is to be left idle for an extended period (especially over summer months), it is recommended that belts be removed and stored in a cool, dry place to avoid premature belt failure.
14. The standard pillow block bearings on CARNES belt driven ventilators are permanently lubricated and are supplied with an oil base corrosion preventive compound. These should not require any service, except that during the first few months of operation it is recommended the set screws holding the shaft be checked to be sure they are tight. (Proper tightness will permanently deform Allen wrench).
15. The centrifugal wheel should not require maintenance except for removing foreign materials that may accumulate on the blades. The balance weights should not be disturbed. If a wheel has to be removed from the shaft, **do not apply force** that will damage the bearings or warp the wheel. Use a wheel puller.
16. Access for wheel alignment purposes can be obtained by removing the motor lid and/or motor tube. Lateral adjustment is made with the motor mount. Vertical adjustment is made at the bears.
17. Should it be necessary to remove the wheel, access is through the fan plate. Do not remove the motor/motor mount assembly. Carefully support the motor/motor mount assembly and remove all the fan plate fasteners. Carefully remove the entire assembly from the unit base. To rebuild, assemble in reverse order.

DIMENSIONS LISTED IN INCHES		
UNIT SIZE	INSIDE CURB CAP	ROOF OPENING
06	15-1/2	11
08	15-1/2	11
10	17-5/8	13
12	17-5/8	13
15	20-1/2	16
18	25	20-1/2
21	28-1/8	23-1/2
24	31-1/8	26-1/2
30	40-1/8	35-1/2
36	46-1/8	41-1/2
42	54-1/8	49-1/2
48	58-1/8	53-1/2



# MODEL VUDK— DIRECT DRIVE - PARTS LIST



UNIT SIZES	MOTOR TYPE	UNIT CONSTRUCTION	
		STANDARD	EXTENDED
06 - 18	ODP, 1 Speed	ALL	
	OTHERS		ALL

Other motor types include:  
 2 Speed  
 Totally Enclosed  
 Explosion Proof

## STANDARD

UNIT SIZE	MOTOR COVER		OUTER SHROUD <sup>3</sup>	MOTOR <sup>4</sup> MOUNT ASSEM'Y	VIBRATION <sup>5</sup> ISOLATORS	FAN <sup>6</sup> PLATE	DIFFUSERS <sup>7</sup> (Set of 4)	WHEEL (Bore Size) <sup>8</sup>			CURB <sup>9</sup> CAP
	LID <sup>1</sup>	TUBE <sup>2</sup>						1/2	5/8	7/8	
06	384-6521	384-6503	384-6441	632-0070	(3) 998-6126	384-2511	384-2461	384-0542	384-0543	—	384-2401
08	384-6521	384-6503	384-6442	632-0070	(3) 998-6126	384-2511	384-2462	384-0546	384-0547	—	384-2401
10	384-6521	384-6503	384-6443	384-0661	(4) 998-6126	384-2512	384-2481	384-0550	384-0551	—	384-2402
12	384-6521	384-6503	384-6444	384-0661	(4) 998-6126	384-2512	384-2482	384-0553	384-0554	384-0556	384-2402
15	384-6522	384-6506	384-6445	384-0663	(4) 998-6126	384-2513	384-2483	384-0557	384-0558	384-0560	384-2403
18	384-6523	384-6509	384-6446	384-0665	(4) 998-6126	384-2514	384-2484	384-0561	384-0562	384-0564	384-2404

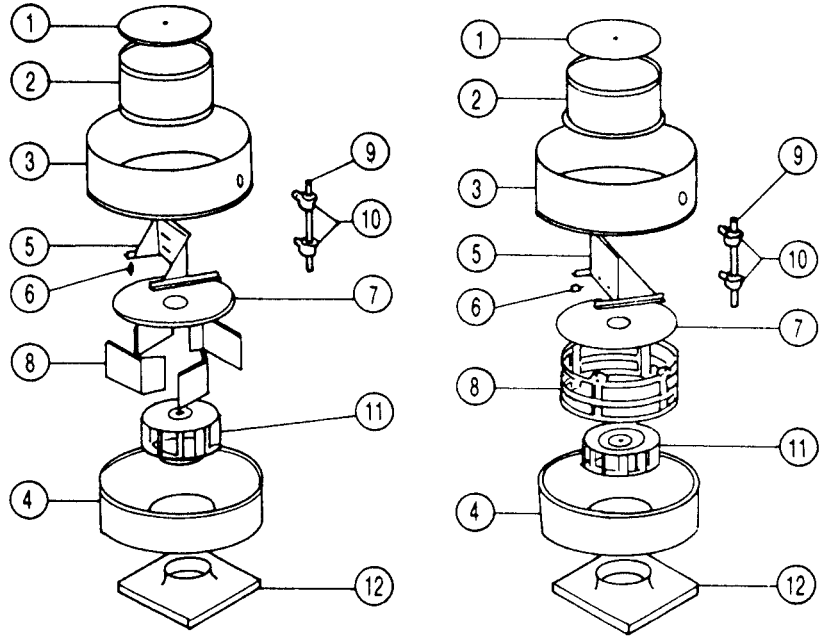
## EXTENDED

UNIT SIZE	MOTOR COVER		OUTER SHROUD <sup>3</sup>	MOTOR <sup>4</sup> MOUNT ASSEM'Y	VIBRATION <sup>5</sup> ISOLATORS (4 Required)	FAN <sup>6</sup> PLATE	DIFFUSERS <sup>7</sup> (Set of 4)	WHEEL (Bore Size) <sup>8</sup>			CURB <sup>9</sup> CAP
	LID <sup>1</sup>	TUBE <sup>2</sup>						1/2	5/8	7/8	
06	384-6521	384-6504	384-6441	384-0661	998-6126	384-2511	384-2461	384-0542	384-0543	—	384-2401
08	384-6521	384-6504	384-6442	384-0661	998-6126	384-2511	384-2462	384-0546	384-0547	—	384-2401
10	384-6521	384-6504	384-6443	384-0661	998-6126	384-2512	384-2481	384-0550	384-0551	—	384-2402
12	384-6521	384-6504	384-6444	384-0661	998-6126	384-2512	384-2482	384-0553	384-0554	384-0556	384-2402
15	384-6522	384-6507	384-6445	384-0663	998-6126	384-2513	384-2483	384-0557	384-0558	384-0560	384-2403
18	384-6523	384-6510	384-6446	384-0665	998-6126	384-2514	384-2484	384-0561	384-0562	384-0564	384-2404

# MODEL VUDK— BELT DRIVE - PARTS LIST

UNIT SIZE	MOTOR TYPE	UNIT CONSTRUCTION	
		STANDARD	EXTENDED
06 - 10	ODP, 1 Speed	ALL	
	Others		ALL
12 - 18	ODP, 1 Speed	1 HP & Lower	1½ HP Higher
	Others		ALL
21 - 24	ODP, 1 Speed	2 HP & Lower	3 HP & Higher
	Others		ALL
30	ODP, 1 Speed	ALL	
	Others		ALL
36 - 48	ODP, 1 Speed	7½ HP & Lower	10 HP
	Others		ALL

Other motor types include:  
 2 Speed  
 Totally Enclosed  
 Explosion Proof



## STANDARD

UNIT SIZE	MOTOR COVER		SHROUD		MOTOR MOUNT ASSEM'Y <sup>5</sup>	VIBRATION ISOLATOR (4 Req'd) <sup>6</sup>	FAN PLATE <sup>7</sup>	DIFFUSERS <sup>8</sup> (Set of 4)/ SUPPORT FRAME	FAN SHAFT <sup>9</sup>	PILLOW BLOCK BEARINGS (2 Req'd) <sup>10</sup>	WHEEL <sup>11</sup>	CURB CAP <sup>12</sup>
	LID <sup>1</sup>	TUBE <sup>2</sup>	UPPER <sup>3*</sup>	OUTER/ LOWER <sup>4</sup>								
06	384-6521	384-6503	—	384-6441	384-0661	998-6126	384-2511	384-2461	998-5421	999-8606	384-0544	384-2401
08	384-6521	384-6503	—	384-6442	384-0661	998-6126	384-2511	384-2462	998-5421	999-8606	384-0548	384-2401
10	384-6521	384-6503	—	384-6443	384-0661	998-6126	384-2512	384-2481	998-5421	999-8606	384-0552	384-2402
12	384-6521	384-6503	—	384-6444	384-0661	998-6126	384-2512	384-2482	998-5421	999-8606	384-0555	384-2402
15	384-6522	384-6506	—	384-6445	384-0663	998-6126	384-2513	384-2483	998-5421	999-8606	384-0559	384-2403
18	384-6523	384-6509	—	384-6446	384-0665	998-6126	384-2514	384-2484	998-5421	999-8606	384-0563	384-2404
21	384-6524	384-6511	—	384-6447	384-0667	999-9748	384-2515	384-2485	998-5423	999-8616	384-0565	384-2405
24	384-6525	384-6513	—	384-6448	384-0669	999-9748	384-2516	384-2486	998-5423	999-8616	384-0566	384-2406
30	384-6526	384-6541	384-0701	384-6461	384-0646	999-9748	384-6421	384-0521	998-5425	999-8602	384-0636	384-2421
36	384-6527	384-6543	384-0702	384-6462	384-0648	999-9748	384-6422	384-0522	998-5427	999-8604	384-0637	384-2423
42	384-6528	384-6545	384-0703	384-6466	384-0651	999-9748	384-6431	384-0526	998-5429	999-8603	384-0638	384-2431
48	384-6528	384-6545	384-0704	384-6467	384-0651	999-9748	384-6432	384-0527	998-5429	999-8603	384-0639	384-2433

## EXTENDED

\*2-3 pieces with fastening hardware

UNIT SIZE	MOTOR COVER		SHROUD		MOTOR MOUNT ASSEM'Y <sup>5</sup>	VIBRATION ISOLATOR (4 Req'd) <sup>6</sup>	FAN PLATE <sup>7</sup>	DIFFUSERS <sup>8</sup> (Set of 4)/ SUPPORT FRAME	FAN SHAFT <sup>9</sup>	PILLOW BLOCK BEARINGS (2 Req'd) <sup>10</sup>	WHEEL <sup>11</sup>	CURB CAP <sup>12</sup>
	LID <sup>1</sup>	TUBE <sup>2</sup>	UPPER <sup>3*</sup>	OUTER/ LOWER <sup>4</sup>								
06	384-6521	384-6504	—	384-6441	384-0662	998-6126	384-2511	384-2461	998-5422	999-8606	384-0544	384-2401
08	384-6521	384-6504	—	384-6442	384-0662	998-6126	384-2511	384-2462	998-5422	999-8606	384-0548	384-2401
10	384-6521	384-6504	—	384-6443	384-0662	998-6126	384-2512	384-2481	998-5422	999-8606	384-0552	384-2402
12	384-6521	384-6504	—	384-6444	384-0662	998-6126	384-2512	384-2482	998-5422	999-8606	384-0555	384-2402
15	384-6522	384-6507	—	384-6445	384-0664	998-6126	384-2513	384-2483	998-5422	999-8606	384-0559	384-2403
18	384-6523	384-6510	—	384-6446	384-0666	998-6126	384-2514	384-2484	998-5422	999-8606	384-0563	384-2404
21	384-6524	384-6512	—	384-6447	384-0668	999-9748	384-2515	384-2485	998-5424	999-8616	384-0565	384-2405
24	384-6525	384-6514	—	384-6448	384-0670	999-9748	384-2516	384-2486	998-5424	999-8616	384-0566	384-2406
30	384-6526	384-6542	384-0701	384-6461	384-0647	999-9748	384-6421	384-0521	998-5426	999-8602	384-0636	384-2421
36	384-6527	384-6544	384-0702	384-6462	384-0649	999-9748	384-6422	384-0522	998-5428	999-8604	384-0637	384-2423
42	384-6528	384-6546	384-0703	384-6466	384-0652	999-9748	384-6431	384-0526	998-5430	999-8603	384-0638	384-2431
48	384-6528	384-6546	384-0704	384-6467	384-0652	999-9748	384-6432	384-0527	998-5430	999-8603	384-0639	384-2433

\*2-3 pieces with fastening hardware