

[®]
Dayton



Direct- Drive Utility Exhaust Blowers

Models 488V85 and 488V87

®
Dayton

**PLEASE READ AND SAVE
THESE INSTRUCTIONS.**

**READ CAREFULLY
BEFORE ATTEMPTING
TO ASSEMBLE, INSTALL,
OPERATE OR MAINTAIN THE
PRODUCT DESCRIBED.**

**PROTECT YOURSELF AND
OTHERS BY OBSERVING ALL
SAFETY INFORMATION. FAILURE
TO COMPLY WITH INSTRUCTIONS
COULD RESULT IN PERSONAL
INJURY AND/OR PROPERTY
DAMAGE! RETAIN INSTRUCTIONS
FOR FUTURE REFERENCE.**

**PLEASE REFER TO BACK COVER
FOR INFORMATION REGARDING
DAYTON'S WARRANTY AND OTHER
IMPORTANT INFORMATION.**

Model #: _____

Serial #: _____

Purch. Date: _____

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BEFORE YOU BEGIN

⚠ WARNING *Installation, troubleshooting and parts replacement are to be performed only by qualified personnel.*



Electrical Requirements:

- The motor voltage and ampere rating must be checked for compatibility with the electrical supply prior to final electrical connection. Supply wiring to the fan must be properly fused, and conform to local and national electrical codes.



Tools Needed:

- Drill
- Level
- Multimeter
- Tape Measure
- Lock-Out Tag-Out
- Hex Keys/Wrench

UNPACKING



Contents:

- Dayton® Direct-Drive Utility Exhaust Blower (1)
- Operating Instructions and Parts Manual (1)



Inspect:

- After unpacking unit, inspect carefully for any damage that may have occurred during transit. Check for loose, missing, or damaged parts. Shipping damage claim must be filed with carrier.
- Check all bolts, screws, set-screws, etc. for looseness that may have occurred during transit. Retighten as required. Rotate blower wheel by hand to be sure it turns freely.



- See General Safety Instructions on page 2, and Cautions and Warnings as shown.



GENERAL SAFETY INSTRUCTIONS

Utility Exhaust Blowers are designed for industrial spark resistant applications requiring high volumes of air at high static pressures. Units are suitable for ducted exhaust, supply and return-air applications. All blowers are UL/cUL Listed Subject 705.

Only qualified personnel should install this fan. Personnel should have a clear understanding of these instructions and should be aware of general safety precautions. Improper installation can result in electric shock, possible injury due to coming in contact with moving parts, as well as other potential hazards. If more information is needed, contact a licensed professional engineer before moving forward.

⚠ DANGER *Do not depend on any switch as the sole means of disconnecting power when installing or servicing the blower. Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury.*

⚠ CAUTION *When servicing the fan, motor may be hot enough to cause pain or injury. Allow motor to cool before servicing. Do not place any body parts or objects in blower, motor openings or drives while motor is connected to power source.*

⚠ WARNING *Do not use this equipment in explosive atmospheres.*

1. Read and follow all instructions and cautionary markings. Make sure electrical power source conforms to requirements of equipment and local codes.
2. Blowers should be assembled, installed and serviced by a qualified technician. Have all electrical work performed by a qualified electrician.
3. Follow all local electrical and safety codes in the United States, as well as the National Electrical Code (NEC) and National Fire Protection Agency (NFPA) where applicable. Follow the Canadian Electric Code (CEC) in Canada.
4. The rotation of the wheel is critical. It must be free to rotate without striking or rubbing any stationary objects.
5. Unit must be securely and adequately grounded.
6. Do not spin blower wheel faster than max cataloged fan RPM. Adjustments to fan speed significantly affects motor load. If the blower RPM is changed, the motor current should be checked to make sure it is not exceeding the motor nameplate amps.
7. Do not kink power cable or allow it to come in contact with sharp objects, oil, grease, hot surfaces or chemicals. Replace damaged cords immediately.
8. Make certain that the power source conforms to the requirements for the equipment.
9. Never open access door to a duct with the blower running.



SPECIFICATIONS

Dimensions (inches)

	488V85	488V87
A	11	15 3/4
B	9 1/2	10 1/3
C	9 1/2	9 1/2
E	25	25
F	19 1/6	20
G	11	15 4/5
H	11	15 5/6
J	19 1/3	27 1/2
K	10 2/3	13 5/9
M	18 3/4	18 3/4
N	12 1/2	12 1/2
Wheel Dia.	11 1/8	15
Agency Compliance	UL/cUL 705, AMCA Air	

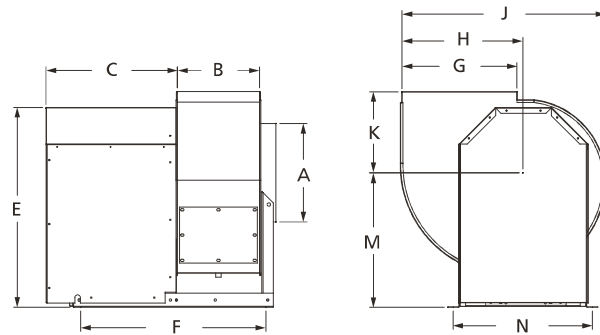


Figure 1



Dayton Electric Mfg. Co. certifies that the blowers shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.



PERFORMANCE

Model	HP	RPM	CFM Air Delivery @ RPM Shown					
			0.25"	0.50"	0.75"	1.00"	1.50"	2.00"
488V85	1/2	1050	683	443	-	-	-	-
	1/2	1400	1033	875	709	-	-	-
	1/2	1750	1358	1238	1109	979	-	-
488V87	3/4	800	1215	793	-	-	-	-
	3/4	1125	1950	1703	1434	1097	-	-
	3/4	1450	2635	2448	2257	2059	1611	-

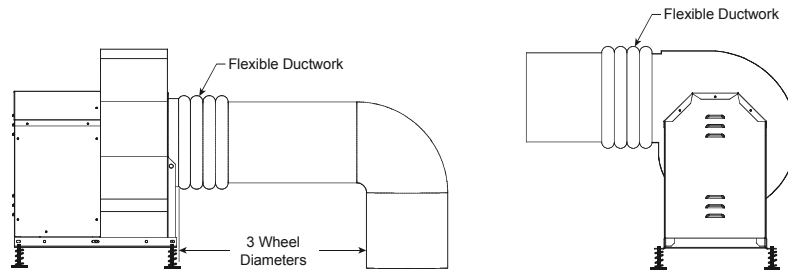
Performance certified is for installation type B: Free inlet, Ducted outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The AMCA Certified ratings Seal applies to air performance ratings only.

INSTALLATION INSTRUCTIONS

⚠ WARNING *Installation, troubleshooting and parts replacement are to be performed only by qualified personnel. Consult and follow NFPA 96 recommendations. NFPA 96 instructions supersede this document.*

Figure 2

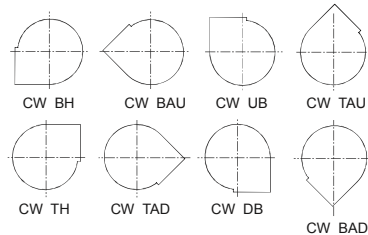
1. This Dayton blower is assembled and shipped in the upblast position. If another position is desired, refer to Figure 3 (viewed from drive side)



for optional discharge positions.

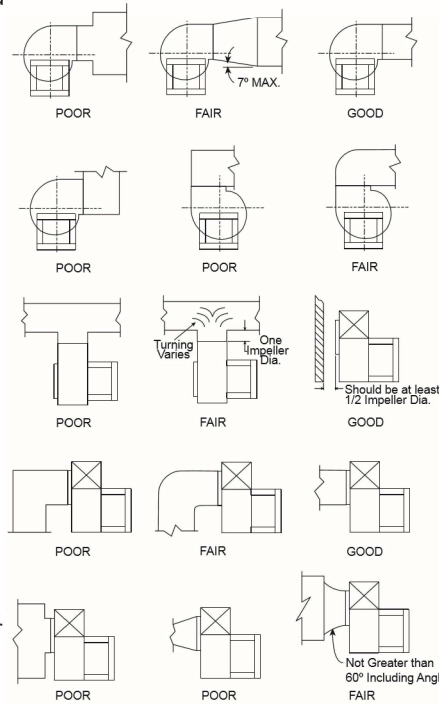
Figure 3

NOTE: For Top Angular Down, Downblast and Bottom Angular Down discharge positions, a portion of the frame angle must be removed.



- a. To rotate the scroll you will have to remove a total of sixteen fasteners. Eight fasteners are located on the intake side and the other eight are located on the tall vertical support behind the weather hood.
 - b. Position the scroll in the desired position. Line up holes and refasten with the same bolts you previously removed.
2. Locate and prepare roof area for blower. Blower should be securely fastened to the roof deck, roof joist, or equipment supports through the mounting holes provided in the base angles. If equipment supports are being used they should be fastened to the roof as well.

3. Restricted or unstable flow at the fan inlet can cause pre-rotation of incoming air or uneven loading of the fan wheel, yielding large system losses, increased sound levels and structural failure of the blower wheel. Free discharge or turbulent flow in the discharge ductwork will also result in system effect losses. The examples in Figure 4 show the system layout and inlet and discharge configurations which can affect blower performance.



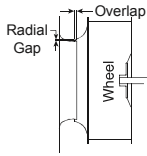
NOTE: Inlet duct should be straight for a minimum of 2-1/2 wheel diameters prior to connecting to the blower.

Figure 4

4. Attach inlet duct to the inlet collar of the blower. Refer back to Figure 2 for minimum duct and blower discharge heights.
5. Replace access door using same bolts that were removed previously.
6. Rotate the wheel by hand to ensure that it does not rub and rotates freely. Refer to Figure 5 and chart for proper overlap and radial gap dimensions.
 - a. Centering can be accomplished by loosening the inlet cone bolts to move the inlet cone or by loosening the bearings in order to move the shaft.
 - b. Wheel and inlet cone overlap can be adjusted by loosening



the wheel hub set screws and moving the wheel to the desired position. Tighten all fasteners and set screws securely.



	488V85	488V87
Overlap (inches)	3/8	1/2
Radial Gap (inches)	5/32	5/32

Figure 5 **Electrical Connection**

NOTE: Refer to motor nameplate for wiring procedures. Refer to switch manufacturer for installation and wiring procedures.

⚠ WARNING **To reduce the risk of electrical shock - do not connect to a circuit operating at more than 150V to ground.**

1. Motor and fan must be securely grounded (bare metal) to a suitable electric ground, such as a grounded water pipe or ground wire system.
2. Wire motor for desired voltage per wiring diagram on motor or refer to Figure 6 for connection wiring diagram.

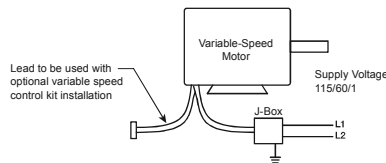


Figure 6

OPERATION

1. Before starting up or operating your new Dayton® blower, check all fasteners for tightness. In particular, check bearing set screws in wheel (and sheaves, if applicable). While in the OFF position, or before connecting the blower to power, turn the blower wheel by hand to be sure it is not striking the orifice or any obstacle.
2. Remove access door. Start the blower up and shut it off immediately to check rotation of the wheel with directional arrow in the motor compartment.

NOTE: Rotation of the wheel is critical and incorrect rotation will result in reduced air performance, increased motor loading and possible motor burnout.

4. When the blower is started, observe the operation and check for any unusual noises.
5. With the system in full operation, measure current input to the motor and compare with the nameplate rating to determine if the BHP is operating under safe load conditions.
6. Adjust RPM to desired level using a variable pitch pulley. After adjustment, motor amperage should be checked to avoid overloading of the motor.

7. Keep inlets and approaches to blower clean and free from obstruction.
8. Variable-speed electronically commutated motors (ECM) can be controlled two ways.
 - a. A motor mounted potentiometer is mounted on the case of the motor to adjust the speed manually. Turn the potentiometer using a screwdriver to adjust the speed.
 - b. The motor includes a capped motor lead that can be connected to a Dayton variable speed control kit 43Y140. The motor lead cap can be removed and connected to the nine-pin motor/transformer harness lead. Follow installation instructions provided with optional speed control kit.

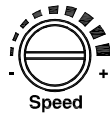


Figure 7

TROUBLESHOOTING GUIDE

Symptom	Possible Cause(s)	Corrective Action
Blower inoperative	1. Electrical Supply	1. Check fuses/circuit breakers. Check for switches off. Check for correct supply voltage.
	2. Motor	2. Assure motor is correct horsepower and not tripping overload protector.
Excessive noise or vibration	1. Wheel Rubbing Inlet	1. Adjust wheel and/or inlet cone. Tighten wheel hub or bearing collars on shaft.
	2. Wheel Unbalance	2. Clean all dirt off wheel. Check wheel balance, rebalance in place if necessary.
Insufficient airflow	1. Blower	1. Check wheel for correct rotation. Increase fan speed.*
	2. Duct System	2. See page 5, Figure 4.
Too much airflow	1. Blower	1. Re-size ductwork. Access door, filters, grills not installed.
	2. Duct System	2. Change obstructions in system. Use correction factor to adjust for temperature/altitude. Re-size ductwork. Clean filters/coils. Adjust fan speed.*
Static pressure incorrect	Duct system has more or less restriction than anticipated	Check rotation of wheel. Adjust fan speed.
Motor overloads or overheats	1. Blower	1. Check rotation of wheel. Reduce fan speed.
	2. Duct System	2. Re-size ductwork. Check proper operation of face and bypass dampers. Check filters and access doors.

* Always check motor amps and compare to nameplate rating. Excessive fan speed may overload the motor and result in burnout.



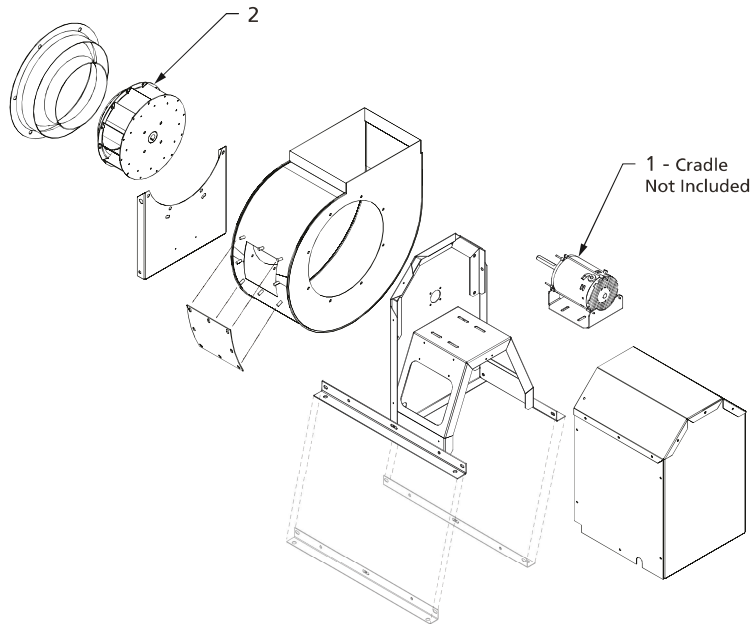
MAINTENANCE

⚠ WARNING *Disconnect and lockout power source before servicing.*

⚠ CAUTION *Uneven cleaning of the wheel will produce an out-of-balance condition that will cause vibration in the blower.*

1. Depending on the usage, a regularly scheduled inspection for cleaning the blower wheel, housing and surrounding areas should be established.
2. Check for unusual noises when blower is running.
3. Periodically inspect and tighten set screws.
4. Follow motor manufacturer's instructions for motor lubrication.
5. For critical applications, a spare motor and belts should be available.

REPAIR PARTS ILLUSTRATION FOR 488V85 AND 488V87



REPAIR PARTS LIST FOR UTILITY EXHAUST BLOWERS

Ref. No.	Description	Part Number for Models:		Quantity
		488V85	488V87	
1	Motor	493X43	493X44	1
2	Wheel	493X45	493X47	1
	Wheel Bushing	493X46	493X48	1



GETTING STARTED

SAFETY /
SPECIFICATIONS

ASSEMBLY /
INSTALLATION

OPERATION

TROUBLESHOOTING

MAINTENANCE /
REPAIR

***For Repair Parts, call 1-800-Grainger
24 hours a day – 365 days a year***

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

DAYTON ONE-YEAR LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. All Dayton® product models covered in this manual are warranted by Dayton Electric Mfg. Co. ("Dayton") to the original user against defects in workmanship or materials under normal use for one year after date of purchase. If the Dayton product is part of a set, only the portion that is defective is subject to this warranty. Any product or part which is determined to be defective in material or workmanship and returned to an authorized service location, as Dayton or Dayton's designee designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced with a new or reconditioned product or part of equal utility or a full refund given, at Dayton's or Dayton's designee's option, at no charge. For limited warranty claim procedures, see "Warranty Service" below. This warranty is void if there is evidence of misuse, mis-repair, mis-installation, abuse or alteration. This warranty does not cover normal wear and tear of Dayton products or portions of them, or products or portions of them which are consumable in normal use. This limited warranty gives purchasers specific legal rights, and you may also have other rights which vary from jurisdiction to jurisdiction.

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