

Dayton® Direct Drive Reversible Exhaust/Supply Fans

Performance

Model	Propeller Dia. (in.)	Exhaust/Intake CFM @ SP Shown				Operating Amps	RPM	HP
		0.0" S.P.	0.125" S.P.	0.250" S.P.	0.375" S.P.			
5M188	12	1570/1260	1385/1195	1135/1095	755/770	3.9	1725	1/4
5M189	16	1885/1605	1640/1435	1370/1325	1020/1150	3.9	1725	1/4
5M190	16	2630/2200	2430/2010	2215/1880	1725/1730	4.4	1725	1/3
5M191	18	3255/2930	2990/2690	2705/2545	2375/2370	4.5	1725	1/3
5M192	20	3960/3440	3680/3170	3305/2970	2880/2645	5.0	1725	1/3
5M193	24	4495/4290	4130/3925	3720/3570	3285/3180	5.6	1725	1/2

Unpacking (Continued)

Indoor Storage. The ideal storage environment for fans and accessories is indoors, above grade, in a low humidity atmosphere which is sealed to prevent the entry of blowing dust, rain, or snow. Temperatures should be evenly maintained at between 70°F and 105°F (wide temperature swings may cause condensation and "sweating" of metal parts). Windows should be covered to prevent temperature variations caused by sunlight. Provide thermometers and humidity indicators at several points and maintain the atmosphere at 40% relative humidity, or lower.

It may be necessary to use desiccant or a portable dehumidifier to remove moisture from the air in the storage enclosure.

Thermostatically controlled portable heaters (vented to outdoors) may be required to maintain even temperatures inside the enclosure.

▲ CAUTION *Provide fire extinguishers, fire alarms, or emergency response communication to protect building and equipment against fire damage. Be sure that building and storage practices meet all local, state and federal fire and safety codes.*

The following fans or accessories must be stored indoors, in a clean dry atmosphere:

- Propeller wall fans not in wall housings.
- Any fan protected by a cardboard carton.
- Motors dismantled from fans.
- Spare wheels or propellers.
- Belts, sheaves, bushings and other parts when not mounted on fan.
- Boxes, bags or cartons of hardware.
- Curbs
- Shutters

Remove any accumulations of dirt, water, ice or snow and wipe dry before moving to indoor storage. Allow cold parts to reach room temperature to avoid "sweating" of metal parts. Open boxes or cartons. Remove any accumulated moisture; if necessary use portable electric heaters to dry parts and packages. Leave coverings loose to permit air circulation and to permit periodic inspection.

Rotate impeller by hand to distribute bearing grease over the entire bearing surfaces.

Store at least 3 1/2" above the floor on wooden blocks covered with moisture proof paper or polyethylene sheathing. Provide aisles between parts and along all walls to permit air circulation and space for inspection.

Outdoor Storage. Fans designed for outdoor use may be stored outdoors, if absolutely necessary. The storage area should be reasonably level and drained or ditched to prevent accumulation of water. Fencing and lighting for security are desirable. Roads or aisles for portable cranes and hauling equipment are needed. Consider the use of drift fencing to minimize accumulation of blowing snow or dirt.

The following fans may be stored outdoors, if dry indoor storage space is not available:

- Fans intended for outdoor use that are crated in wood.
- Wall fans installed in wall housings.

All fans must be supported on wooden blocks or timbers above water or normal snow levels. Provide enough blocking to prevent settling into soft ground. Fans should be set in place using the directional arrow markings on the crate as a guide.

Locate pieces far enough apart to permit air circulation, sunlight, and space for periodic inspection. Place all parts on their supports so that rain water will run off, or to minimize water accumulation.

IMPORTANT: Do not cover parts with plastic film or tarps — these cause condensation of moisture from the air passing through heating and cooling cycles.

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.

Dayton® Direct Drive Reversible Exhaust/Supply Fans

Description

NOTE: Manufacturer assumes no obligation or liability on account of any unauthorized recommendations, opinions, or advice as to the choice, installation or use of products.

The Dayton direct drive supply/exhaust fan is for wall mounted applications. Each fan is equipped with a ball bearing, totally enclosed motor. Unit is furnished with steel venturi and stamped aluminum propeller.

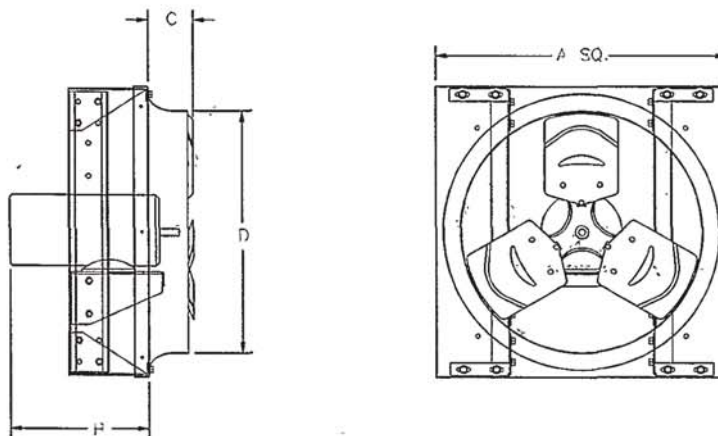


Figure 1 - Dimensions

Model	Propeller Dia.	A Sq.	B	C	D
5M188F	12"	16"	12 7/8"	1 15/16"	12 1/4"
5M189F	16	20	10 1/4	2 7/16	16 5/16
5M190F	16	20	10 7/8	2 7/16	16 5/16
5M191F	18	22	10 7/16	3	18 5/16
5M192F	20	24	10 3/4	3 1/2	20 3/8
5M193F	24	28	10 15/16	3 15/16	24 7/16

Unpacking

Receiving and Inspection. Immediately upon receipt of shipment, carefully inspect for damage and/or shortage. Turn the impeller by hand to see that it turns freely and does not bind. If any damage and/or shortage is detected or suspected, the carrier must be notified to conduct an inspection. The customer should not accept shipment without a notation on the delivery receipt indicating items not delivered or the apparent extent of damage.

When shipment is opened and damage is found which was not evident externally (concealed damage), it is mandatory that the customer request an immediate inspection by the carrier. Report any damage to the carrier within 15 days. Failure to report damage within the above time limit could result in rejection of claim.

Handling. When handling fans and their accessories, always use equipment and methods that will not cause damage. To avoid damage fans should be lifted using slings and padding or spreaders.

CAUTION Always make sure that all lifting and handling equipment and techniques conform to current safety standards.

Avoid lifting fans in a way that will bend or distort fan parts. Never pass slings or timbers through the fan orifice.

CAUTION Fans with special coatings or paints must be protected in handling to prevent damage.

Storage. Fans are protected against damage during shipment. If they cannot be installed and put into operation immediately upon receipt, certain precautions are necessary to prevent deterioration during storage. Responsibility for integrity of fans and accessories during storage must be assumed by the user. The manufacturer will not be responsible for damage during storage. These suggestions are provided solely as a convenience to the user, who shall make his own decision as to whether to use any or all of them.

Dayton® Direct Drive Reversible Exhaust/Supply Fans

Installation (Continued)

1. The fan should be securely mounted within a rigid framework to prevent flexing or movement of the fan frame during operation. The fan frame should be equally supported on all sides within the framework and caution should be taken to avoid twisting or cocking of the fan frame during installation.

▲ CAUTION *Allowing the fan frame to flex or move during operation will create harmful vibrations which may damage the unit.*

2. Fans should be mounted in opening within 1/4" clearance around perimeter. Venturi framing should be secured to building structure utilizing corrosion resistant fasteners.

NOTE: Propeller is protruding from front of panel and special precautions must be taken during installation to prevent bending the propeller.

Check rotation after wiring of ventilator to be sure airflow direction corresponds to information as listed on the switch.

Dampers, if used, must be mechanically operated and clear propeller by at least 2". Fan motor could overheat if operated with damper in closed position.

3. With air system in full operation, measure correct input (amps) to motor in both directions and compare with nameplate rating to determine if motor is operating under safe load conditions.

When reversing directions, switch should go to the OFF position FIRST, then after prop stops, change switch to other direction.

Fan should not be used in hazardous location. Refer to the National Electrical Code Para 500 for definition of hazardous locations.

Maintenance

▲ CAUTION *Make certain that the power source is disconnected before attempting to service or disassemble any components! If the power disconnect is out-of-sight, lock it in the OFF position and tag to prevent application of power.*

1. Periodically clean any guards, dampers, motors, and propeller to prevent decrease in airflow and overheating motor, and make sure all bolts are tight.

SET SCREW TIGHTENING SCHEDULE

1. Before initial operation of the fan, tighten set screws according to the procedure outlined below.
2. After 500 operating hours or three months, whichever comes first, tighten set screws to the full recommended torque.
3. At least once a year, tighten set screws to the full recommended torque.

PROCEDURE FOR TIGHTENING SET SCREWS IN BEARINGS AND HUBS

One Set Screw Application

Using a torque wrench, tighten the set screw to the torque recommended in Table 1.

Two Set Screw Application

1. Using a torque wrench, tighten one set screw to half of the torque recommended in Table 1.
2. Tighten the second set screw to the full recommended torque.
3. Tighten the first set screw to the full recommended torque.

Table 1. Recommended Tightening Torque for Set Screws

Set Screw Diameter	Torque (in-lbs)
#10	35
1/4	80
5/16	126
3/8	240
7/16	384
1/2	744
9/16	1080
5/8	1500
3/4	2580
7/8	3600
1	5400

VARIABLE FREQUENCY DRIVES AND MOTORS

There are occasions when a Variable Frequency Drive (VFD) will cause poor motor performance and possible damage. To avoid these problems, the manufacturer recommends the following:

1. Select compatible motor and VFD converter; if possible, the motor and the converter should be from the same manufacturer or at least the converter selected should be recommended by the motor manufacturer.
2. A motor shaft grounding system should be used to prevent motor bearing damage from eddy currents.

NOTE: The manufacturer will not honor motor warranty claims if the customer fails to follow these recommendations.

Models 5M188F thru 5M193F

Unpacking (Continued)

Fan impellers should be blocked to prevent spinning caused by strong winds.

Inspection and Maintenance During Storage. Inspect fans and accessories at least once per month, while in storage. Log results of inspection and maintenance performed. A typical log entry should include the following:

- a. Date
- b. Inspector's Name
- c. Name of Fan
- d. Location
- e. Condition of Paint or Coating
- f. Is moisture present?
- g. Is dirt accumulated?
- h. Corrective steps taken?

If moisture or dirt accumulations are found on parts, the source should be located and eliminated. Fan impellers should be rotated at each inspection by hand ten to fifteen revolutions to redistribute the motor and bearing lubricant.

If paint deterioration begins, consideration should be given to touch-up or repainting. Fans with special coatings may require special techniques for touch-up or repair.

Machined parts coated with rust preventive should be restored to good condition promptly if signs of rust occur. The most critical items are pulleys, shafts and bearing locking collars. At the first sign of rusting on any of the above parts, remove the original rust preventive coating with petroleum solvent and clean lint-free cloths. Polish any remaining rust from surfaces with crocus cloth or fine emery paper and oil.

IMPORTANT: Do not destroy the continuity of the surfaces. Wipe clean with lint-free cloths and recoat surfaces evenly and thoroughly with Tectly 506 (Ashland Oil Company) or equal. For hard to reach internal

surfaces or for occasional use, consider using Tectly 511M Rust Preventive or WD40 or equal.

Removing from Storage. As fans are removed from storage to be installed in their final location, they should be protected and maintained in similar fashion, until the fan equipment goes into operation.

General Safety Information

1. Follow all local electrical and safety codes, as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA) in the United States.
2. Motor must be securely and adequately grounded. This can be accomplished by wiring with a grounded, metal-clad raceway system by using a separate ground wire connected to the bare metal of the motor frame, or other suitable means.
3. Always disconnect power source before working on or near a motor or its connected load. If the power disconnect point is out-of-sight, lock it in the open position and tag to prevent unexpected application of power.
4. All moving parts should be guarded.

5. Be careful when touching the exterior of an operating motor - it may be hot enough to be painful or cause injury. With modern motors this condition is normal if rated at normal load and voltage - modern motors are built to operate at higher temperatures.
6. Make certain that the power source conforms to the requirements of your equipment.
7. Wiping or cleaning rags and other flammable waste materials must be placed in a tightly closed metal container and disposed of later in the proper fashion.
8. When cleaning electrical or electronic equipment, always use an approved cleaning agent such as dry cleaning solvent.

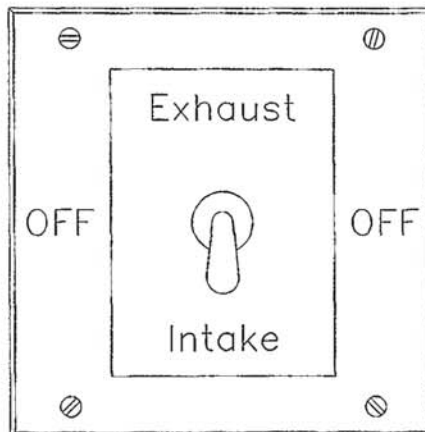
ELECTRICAL CONNECTIONS

1. Connect motor per nameplate to correct power supply.
2. Install all wiring, protection, and grounding in accordance with National Electrical Code and local requirements.
3. Follow all electrical and safety codes, as well as National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).
4. See wiring diagram supplied with reversing switch to wire motor thru switch.

Installation

▲ WARNING *Install and operate the fan so that the air surrounding the fan at any time must be free of flammable gases, vapors or liquids, combustible dust or ignitable fibers or flyings.*

▲ CAUTION *These fans have rotating propellers that require use of safety precautions during installation, operation, and maintenance.*



Dayton® Direct Drive Reversible Exhaust/Supply Fans

LIMITED WARRANTY

DAYTON ONE-YEAR LIMITED WARRANTY. DAYTON® DIRECT DRIVE REVERSIBLE EXHAUST/SUPPLY FAN 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. ANY PART WHICH IS DETERMINED TO BE DEFECTIVE IN MATERIAL OR WORKMANSHIP AND RETURNED TO AN AUTHORIZED SERVICE LOCATION, AS DAYTON DESIGNATES, SHIPPING COSTS PREPAID, WILL BE, AS THE EXCLUSIVE REMEDY, REPAIRED OR REPLACED AT DAYTON'S OPTION. FOR LIMITED WARRANTY CLAIM PROCEDURES, SEE "PROMPT DISPOSITION" BELOW. THIS LIMITED WARRANTY GIVES PURCHASERS SPECIFIC LEGAL RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION.

LIMITATION OF LIABILITY. TO THE EXTENT ALLOWABLE UNDER APPLICABLE LAW, DAYTON'S LIABILITY FOR CONSEQUENTIAL AND INCIDENTAL DAMAGES IS EXPRESSLY DISCLAIMED. DAYTON'S LIABILITY IN ALL EVENTS IS LIMITED TO AND SHALL NOT EXCEED THE PURCHASE PRICE PAID.

WARRANTY DISCLAIMER. A DILIGENT EFFORT HAS BEEN MADE TO PROVIDE PRODUCT INFORMATION AND ILLUSTRATE THE PRODUCTS IN THIS LITERATURE ACCURATELY; HOWEVER, SUCH INFORMATION AND ILLUSTRATIONS ARE FOR THE SOLE PURPOSE OF IDENTIFICATION, AND DO NOT EXPRESS OR IMPLY A WARRANTY THAT THE PRODUCTS ARE MERCHANTABILITY, OR FIT FOR A PARTICULAR PURPOSE, OR THAT THE PRODUCTS WILL NECESSARILY CONFORM TO THE ILLUSTRATIONS OR DESCRIPTIONS. EXCEPT AS PROVIDED BELOW, NO WARRANTY OR AFFIRMATION OF FACT, EXPRESSED OR IMPLIED, OTHER THAN AS STATED IN THE "LIMITED WARRANTY" ABOVE IS MADE OR AUTHORIZED BY DAYTON.

Technical Advice and Recommendations, Disclaimer. Notwithstanding any past practice or dealings or trade custom, sales shall not include the furnishing of technical advice or assistance or system design. Dayton assumes no obligations or liability on account of any unauthorized recommendations, opinions or advice as to the choice, installation or use of products.

Product Suitability. Many jurisdictions have codes and regulations governing sales, construction, installation, and/or use of products for certain purposes, which may vary from those in neighboring areas. While attempts are made to assure that Dayton products comply with such codes, Dayton cannot guarantee compliance, and cannot be responsible for how the product is installed or used. Before purchase and use of a product, review the product applications, and all applicable national and local codes and regulations, and be sure that the product, installation, and use will comply with them. Certain aspects of disclaimers are not applicable to consumer products; e.g., (a) some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you; (b) also, some jurisdictions do not allow a limitation on how long an implied warranty lasts, consequently the above limitation may not apply to you; and (c) by law, during the period of this Limited Warranty, any implied warranties of implied merchantability or fitness for a particular purpose applicable to consumer products purchased by consumers, may not be excluded or otherwise disclaimed.

Prompt Disposition. A good faith effort will be made for prompt correction or other adjustment with respect to any product which proves to be defective within limited warranty. For any product believed to be defective within limited warranty, first write or call dealer from whom the product was purchased. Dealer will give additional directions. If unable to resolve satisfactorily, write to Dayton at address below, giving dealer's name, address, date, and number of dealer's invoice, and describing the nature of the defect. Title and risk of loss pass to buyer on delivery to common carrier. If product was damaged in transit to you, file claim with carrier.

Manufactured for Dayton Electric Mfg. Co., 5959 W. Howard St., Niles, Illinois 60714-4014 U.S.A.

For Repair Parts, call 1-800-323-0620

24 hours a day - 365 days a year

Please provide following information:

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

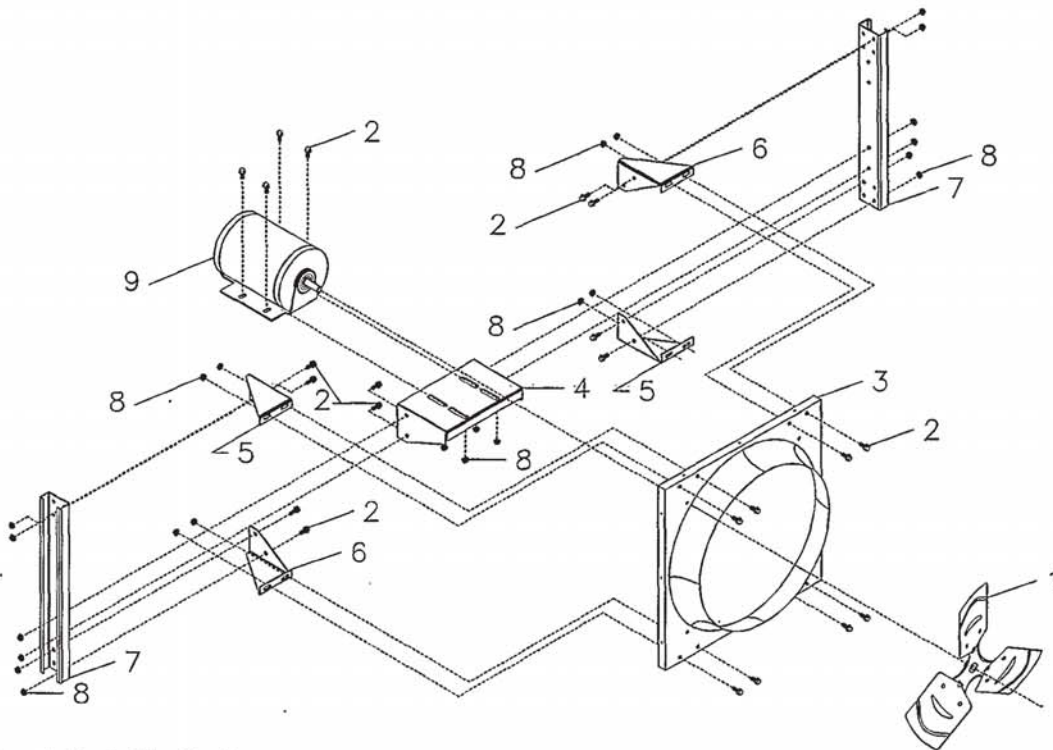


Figure 2 - Repair Parts Illustration

Ref. No.	Description	Part Numbers for Models						Qty.
		5M188F	5M189F	5M190F	5M191F	5M192F	5M193F	
1	Propeller Assembly	994074	994075	994076	994077	994078	994079	1
2	Bolt 5/16 - 18 x 3/4 Lock Whiz	*	*	*	*	*	*	8
3	18" Orifice	506000	506001	506001	506002	506003	506004	1
4	24" Motor Base	506063	506064	506064	506056	506056	506056	1
5	18" Right Bracket	**	**	**	506057	506059	171177	2
6	18" Left Bracket	**	**	**	506058	506060	171178	2
7	18" Supports	**	**	**	506061	506062	171176	2
8	Nut whiz Lock 5/16 - 18	*	*	*	*	*	*	8
9	Motor	994238	994239	994240	994241	994242	994243	1
10	Reversing Switch (not shown)	506600	506600	506600	506600	506600	506600	1

(**)Ref. Number 5, 6, 7 are not required on 5M188, 5M189 and 5M190.

(*)Standard hardware items available locally.

