

[®]
Dayton



Hazardous Location Direct-Drive Exhaust Fans

Models 10D996 thru 10D999,
10E001 thru 10E007, 10E009 thru 10E020,
32ZN53 and 32ZN54

®
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 and troubleshooting 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:

- Corrosion Resistant Fasteners
- Tape Measure
- Lock-Out Tag-Out
- Multimeter

UNPACKING



Contents:

- Dayton® Hazardous Location Direct-Drive Exhaust Fan (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 propeller by hand to be sure it turns freely.



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



GENERAL SAFETY INSTRUCTIONS

Hazardous location exhaust fans are designed for ventilating spaces containing flammable or explosive vapors, gases, or dusts as defined under Article 500 of the National Electrical Code (NEC). Motor is explosion-proof, fan-cooled enclosure with Class B insulation (if marked on motor). All fans are UL/cUL Listed Standard 1203, NEC Class I, Division I, Groups C and D; NEC Class II, Division I, Groups F and G (Model 10E020 Groups E, F and G).

⚠ DANGER *Do not depend on any switch as the sole means of disconnecting power when installing or servicing the fan. Always disconnect, lock and tag power source before installing or servicing. Failure to disconnect power source can result in fire, shock or serious injury. Units with thermally protected motors, motor will restart without warning after thermal protector trips. Do not touch operating motor, it may be hot enough to cause injury.*

⚠ DANGER *Do not place any body parts or objects in fan while motor is connected to power source.*

1. Read and follow all instructions and cautionary markings. Make sure electrical power source conforms to requirements of equipment and local codes.
2. Fans 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 and Canada, as well as the National Electrical Code (NEC), and the Occupational Safety and Health Act (OSHA) in the United States. Ground motor in accordance with NEC Article 250 (grounding). Follow the Canadian Electric Code (CEC) in Canada.
4. All moving parts should be guarded.

⚠ CAUTION *To reduce the risk of injury to persons, observe the following:*

OSHA requires OSHA complying guards when fan is installed within 7 feet (2.1 meters) of floor or working level.

UL/cUL Standards require OSHA complying guards when fan is installed within 8 feet (2.5 meters) of floor or working level.

SPECIFICATIONS

Max. Ambient Temp.	104°F (if marked on motor)
Mounting Position	Vertical or Horizontal
Propeller Material	Aluminum
Frame Material	Galvanized
Agency Compliance	UL/cUL 1203, AMCA Sound & Air

Panel Fan Dimensions (inches)

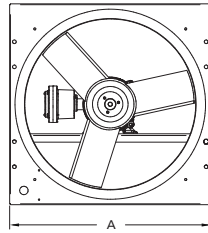
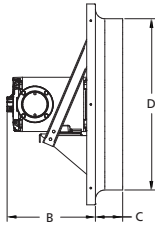


Figure 1

	32ZN53 10D996	10D997 10D998	10D999	10E001	10E002 10E003	10E004 10E006	10E005	10E007
A	16	20	22	22	24	28	28	28
B	9-1/2	9-1/2	9-1/2	11	11-1/2	11-1/2	11-1/2	12
C	2-1/2	3-1/4	3-1/8	3-1/8	3-3/4	3-7/8	3-7/8	3-7/8
D	12-1/4	16-1/2	1-1/2	18-1/2	20-1/2	24-1/2	24-1/2	24-1/2
Prop. Dia.	12	16	18	18	20	24	24	24
Shaft Dia.	5/8	5/8	5/8	5/8	5/8	5/8	5/8	5/8
Recommended Opening (Sq.)	14-1/2	18-1/2	20-1/2	20-1/2	22-1/2	26-1/2	26-1/2	26-1/2
Number of Blades	5	3	3	3	3	2	3	3

Ring Fan Dimensions (inches)

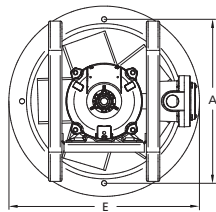
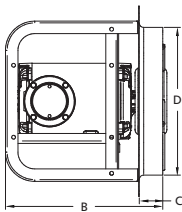


Figure 2

	32ZN54 10E009	10E010 10E011	10E012 10E013	10E014 10E015	10E016 10E018	10E017 10E019	10E020
A	14-7/8	18-7/8	20-7/8	23	26-7/8	26-7/8	32
B	11-1/2	13-1/2	13-1/2	13-1/2	13-1/2	13-1/2	17-1/2
C	2	2	2	2	2	2	2
D	12-1/2	16-1/2	18-1/2	20-1/2	24-1/2	24-1/2	30-1/2
E	16-1/4	20-1/4	22-1/4	24-1/4	28-1/4	28-1/4	34-1/4
Prop. Dia.	12	16	18	20	24	24	30
Shaft Dia.	5/8	5/8	205/8	5/8	5/8	5/8	5/8
Recommended Opening (Dia.)	13-1/2	17-1/2	19-1/2	21-1/2	25-1/2	25-1/2	31-1/2
Number of Blades	5	3	3	3	3	2	6

GETTING STARTED

SAFETY /
SPECIFICATIONS

ASSEMBLY /
INSTALLATION

OPERATION

TROUBLESHOOTING

MAINTENANCE /
REPAIR

MAINTENANCE /
REPAIR

TROUBLESHOOTING

OPERATION

ASSEMBLY /
INSTALLATION

SAFETY /
SPECIFICATIONS

GETTING STARTED

4 PERFORMANCE

Model – 1-Phase 115/208-230,	Model – 3-Phase 208-230/460	HP	RPM	Sones @ 0.00" SP @ 5 Ft.	CFM Air Delivery @ Static Pressue Shown				
					0.00"	0.125"	0.25"	0.375"	0.50"
Panel Fans									
32ZN53	—	1/6	1750	13.4	1347	1262	1142	947	604
—	10D996	1/4	1750	13.4	1347	1262	1142	947	604
10D997	10D998	1/4	1750	14.1	2476	2288	2061	1769	1350
10D999	10E001	1/3	1750	19.1	3168	2912	2612	2219	1599
10E002	10E003	1/2	1750	23	4557	4254	3919	3542	3101
10E004	10E006	1/2	1750	26	5669	4946	4010	2963	1906
10E005	10E007	3/4	1750	28	6317	5851	5314	4729	4117
Ring Fans									
32ZN54	—	1/6	1725	13.6	1147	999	803	682	—
—	10E009	1/4	1725	13.6	1147	999	803	682	—
10E010	10E011	1/4	1750	17.0	2153	1943	1713	1366	1125
10E012	10E013	1/4	1750	21	2371	2089	1756	1423	1088
10E014	10E015	1/4	1750	23	2429	2074	1744	1341	1098
10E016	10E018	1/3	1750	30	3837	3305	2637	1970	—
10E017	10E019	1/2	1750	26	5669	4946	4010	2963	1906
10E020	—	3/4	1140	28	8153	7515	6804	5957	4956

Performance certified is for installation type A: Free inlet, Free outlet. Performance ratings do not include the effects of appurtenances (accessories). Speed (RPM) shown is nominal. Performance is based on actual speed of test. The sound ratings shown are loudness values in fan sones at 5 ft. (1.5 m) in a hemispherical free field calculated per AMCA Standard 301. Values shown are for installation type A: Free inlet hemispherical sone levels.



Dayton Electric Mfg. Co. certifies that the fans 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 AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.



INSTALLATION INSTRUCTIONS

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

⚠ CAUTION *If gases, other than clean air, are to be exhausted using the fan, then the user bears the responsibility of determining that the fan is appropriate and safe for the application.*

⚠ WARNING *Not for use where paint residue can accumulate on motor.*

⚠ CAUTION *To reduce the risk of ignition of hazardous atmospheres, disconnect the fan from the supply circuit before opening. Keep the motor tightly closed with in operation.*

Wall Mounting

1. Move fan to the desired location to be mounted.
2. Cut an appropriate sized hole in the wall.

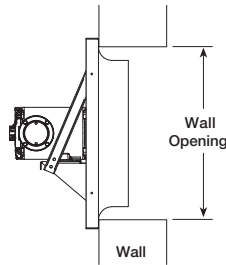


Figure 3

3. 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 of the fan frame during installation.

NOTE: Allowing the fan frame to flex or move during operation will create harmful vibrations which may damage the unit.

4. Fans should be mounted in opening with 1/4" clearance around perimeter. Framing should be secured to building structure utilizing corrosion resistant fasteners (by others). Fasteners should be used in all pre-punched mounting holes.
5. Check all fasteners and set screws for tightness.
6. Rotation direction of the propeller should be checked by momentarily turning the unit on. Rotation should be in the same direction as the rotation decal affixed to the unit. For 3-phase installations, fan rotation can be reversed by interchanging any two of the three electrical leads. For single phase installations follow the wiring diagram located on the motor.



Electrical Connection

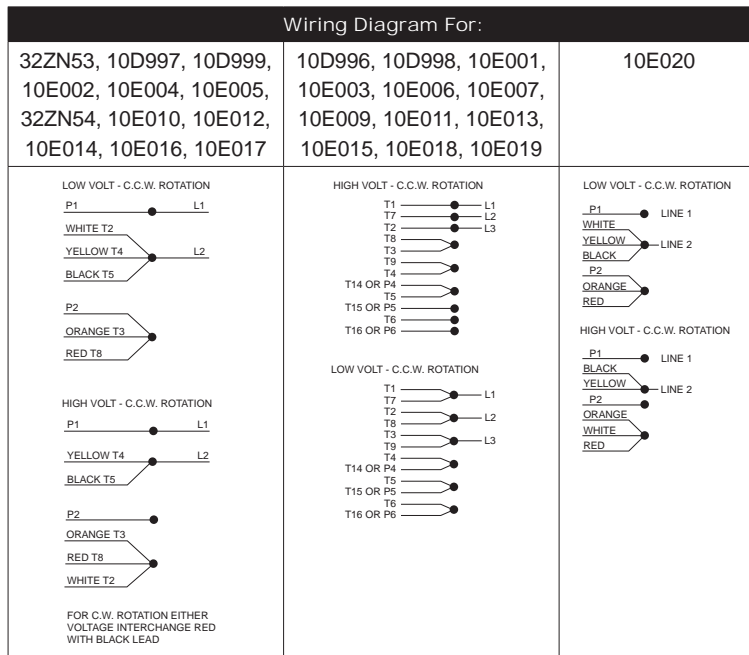
NOTE: Refer to motor nameplate for wiring procedures. Refer to switch manufacturer for installation and wiring procedures.

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.

⚠ WARNING **Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA).**

NOTE: Motor and switch must be classified as hazardous for fan to be suitable for use in hazardous environments. Installation must be performed by qualified personnel with a suitable motor and disconnect for application.

2. Wire motor for desired voltage per wiring diagram on motor.



3. Wire control switches at ground level.
4. Before activating fan, inspect to be sure that there are no obstructions or debris that would interfere with the propeller.



OPERATION

1. Before starting up or operating your new Dayton fan, check all fasteners for tightness. In particular, check set screws in propeller hub. While in the OFF position, or before connecting the fan to power, turn the fan propeller by hand to be sure it is not striking the orifice or any obstacle.
2. Start the fan up and shut it off immediately to check rotation of the propeller with directional arrow in the motor compartment.
3. When the fan is started, observe the operation and check for any unusual noises.
4. Motor amperage should be checked to avoid overloading of the motor. 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. See performance on page 4.
5. Keep inlets and approaches to fan clean and free from obstruction.

TROUBLESHOOTING GUIDE

Symptom	Possible Cause(s)	Corrective Action
Fan inoperative	<ol style="list-style-type: none"> 1. Blown fuse or breaker 2. Incorrectly wired 3. Electricity turned off 	<ol style="list-style-type: none"> 1. Replace fuse or breaker 2. Shut power OFF and check wiring for proper connections 3. Contact local power company
Airflow	<ol style="list-style-type: none"> 1. Propeller rotation reversed 2. Insufficient static pressure 	<ol style="list-style-type: none"> 1. Reverse motor rotation, rewire motor 2. Check static pressure calculation
Excessive noise or vibration	<ol style="list-style-type: none"> 1. Foreign material inside bearing 2. Loose propeller 3. Fan not securely anchored 	<ol style="list-style-type: none"> 1. Replace fan 2. Tighten set screws or taper bushing screws 3. Secure properly
Motor overloads or overheats	<ol style="list-style-type: none"> 1. Incorrect propeller rotation 2. Over/Under line voltage 	<ol style="list-style-type: none"> 1. Check motor wiring 2. Contact local power company

NOTE: No repair parts available. Replacing parts will void UL/cUL Listed Standard 1203.



MAINTENANCE

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

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

▲ WARNING *The unit should be made non-functional when cleaning and/or maintaining.*

1. Depending on the usage and severity of the contaminated air, a regularly scheduled inspection for cleaning the fan propeller, housing and surrounding areas should be established.
2. Check for unusual noises when fan is running.
3. Periodically inspect and tighten set-screws.
4. Follow motor manufacturer's instructions for motor lubrication.

NOTE: No repair parts available.

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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