



INSTALLATION & MAINTENANCE INSTRUCTION MODEL DCA

INSTALLATION

1. This unit has rotating parts and safety precautions should be exercised during installation, operation and maintenance.
2. **WARNING!** Do not use fans in hazardous environments where the fan's electrical system could provide ignition to combustible or flammable materials, unless built specifically for that environment.
3. Guards must be installed when fan is within reach of personnel or within eight (8) feet of working level or when deemed advisable for safety.
4. A distance of at least one and one-half times the diameter of the fan should be allowed between the fan inlet or discharge opening and any adjacent wall or large obstruction.

Installation With Slant Wall Housing

5. To install a fan mounted in a galvanized steel slant wall housing when the wall thickness is 4" or less, provide a rectangular opening in the wall equal to dimension in Fig. 1. It is preferable to frame the opening with 2 X 4 material or a metal frame in metal building or greenhouses. When the wall thickness is more than 4", the height of the rectangular opening should be 1 inch less than the height shown in the table below and the opening should be slanted approximately 15° as shown in Fig. 1. **Note:** If wall thickness is less than 4", framed opening height can be reduced 1/4" for each inch less than 4" thick.
6. Slide the fan wall housing through the inside of the framed opening in the wall. Fasten with bolts or screws provided by the installer. Position the box so the top panel slants down from horizontal. Caulk between the top flanges and the wall (see Fig. 1). Fan wall housing can also be attached to outside of framed opening utilizing the mounting flanges.

FAN SIZE	WALL HOUSING MODEL	WT	FRAMED OPENING	
			WIDTH	HEIGHT
24"	WS24DCA	35	28 3/4"	30 3/4"
30"	WS30DCA	42	34 3/4"	36 3/4"
36"	WS36DCA	46	40 3/4"	42 3/4"
42"	WS42DCA	53	46 3/4"	49 3/4"
48"	WS48DCA	78	54 3/4"	57 3/4"
54"	WS54DCA	106	60 3/4"	63 3/4"

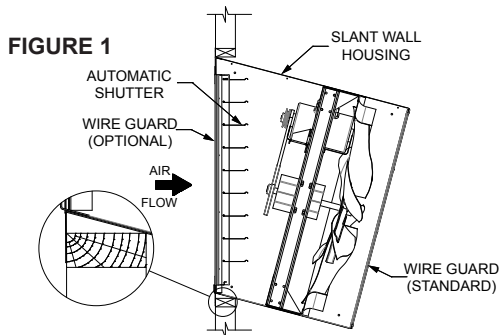
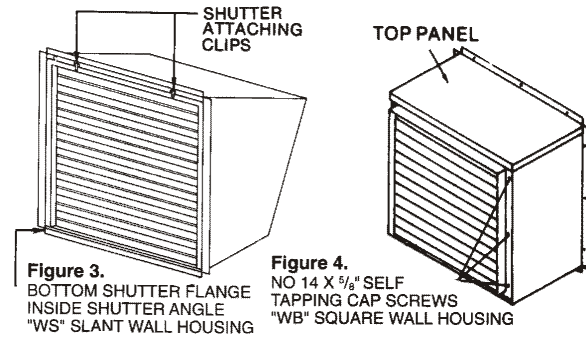


FIGURE 2

SIZES SHOWN ARE 36 THROUGH 54



7. Mount automatic shutter to inside of fan wall housing by inserting bottom edge of shutter behind the bottom shutter angle with the top edge of shutter in front of the top shutter angle (see Fig. 2) and then securing with the snap clips on the top shutter angle. An optional inside guard can be mounted with the shutter in the same manner.

FAN SIZE	WALL HOUSING MODEL	NOMINAL DIMENSIONS		WT
		A	B	
24"	WB24DCA	28 3/4"	24"	30
30"	WB30DCA	34 3/4"	24"	36
36"	WB36DCA	40 3/4"	24"	38
42"	WB42DCA	46 3/4"	26"	40
48"	WB48DCA	54 3/4"	27"	70
54"	WB54DCA	60 3/4"	31"	96

8. Continue with Step 13.

Installation With Square Wall Housing

9. To install a fan mounted in a galvanized steel wall housing, provide a square opening in the wall equal to the dimensions in the table below. It is preferable to frame in the opening with 2 X 4 material or a metal frame in metal buildings or greenhouses.

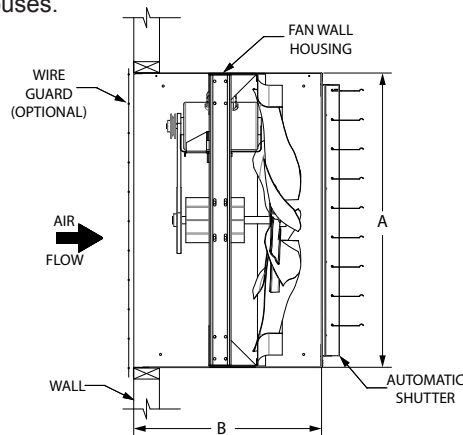


FIGURE 6

10. Slide the fan wall housing through the inside of the framed opening in the wall. Fasten with bolts or screws provided by the installer. Position the box so the top panel, having both sides turned down, is on top. Caulk between the top flanges and the wall (see Fig. 4). Fan wall housing can also be attached to outside of framed opening utilizing the mounting flanges.
11. Mount automatic shutter to outside of fan wall housing with number 14 x 5/8" self tapping hex headed cap screws furnished. Insert top edge of shutter frame under top flange of fan box (see Fig. 4).
12. Continue with Step 13.
13. **CAUTION:** Before proceeding, make sure electrical service to fan is locked in "OFF" position.
14. All wiring should be in accordance with local ordinances and the National Electric code.
15. Before starting, check all fasteners for tightness particularly in the propeller hub. Turn the propeller by hand to make sure it rotates freely and that the blades do not strike the orifice.
16. **WARNING!** Check voltage being supplied to the fan to see that it corresponds with the motor nameplate voltage; high or low voltage can seriously damage the motor. On multi-voltage motors, check motor terminal connections to make sure motor is internally connected for voltage being supplied. Motor wiring diagram is located on the side of the motor or in the motor wiring compartment. Extra care should be taken when wiring two speed motors since improper connections will damage motor and void motor warranty. Leave enough slack in wiring to allow for motor movement when adjusting belt tension.
17. Operate under power and compare propeller rotation with directional arrow on fan. In the case of three phase motors, the direction can be changed by inter-changing any two of the three motor leads. In the case of single phase motors, the reversing instructions will appear on the wiring diagram in the motor wiring compartment.

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 Company recommends the following:

1. Select compatible motor and VFD inverter; if possible, the motor and the inverter should be from the same manufacturer or at least the inverter selected should be recommended by the motor manufacturer.
2. A motor certified for VFD operation must be used. Operation of the fan should be allowed between the fan inlet or discharge opening and any adjacent wall or large obstruction.

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

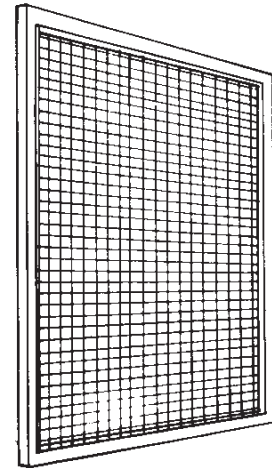
MAINTENANCE

1. Motor bearings are prelubricated. Consult information printed on motor for lubrication instructions.
2. Propeller shaft bearings are prelubricated, sealed and require no service.
3. Check belt tension after first 48 hours of operation and thereafter annually. Belt should depress its width when pressed firmly inward at midway point between the pulleys. Too much tension will damage bearings; belt should be tight enough to prevent slippage. When replacing worn belt, replace motor pulley if "shoulder" is worn in groove. **WARNING!** Do not operate at higher speeds than rated. Do not replace motor pulley with a larger diameter pulley. Do not replace the fan pulley with one smaller in diameter. The pulley ratios are set so that the motor will not be overloaded.
4. If motor requires replacement, a comparable one to the original with the same service factor and enclosure must be used.
5. If propeller shaft bearing need replacement, replace with bearings comparable to original equipment. For die formed type support housing, install new bearings into neoprene rings, check correct position of propeller with orifice position bearings in die formed recess and tighten set screws. Replace die formed bearing cap and tighten four bolts.

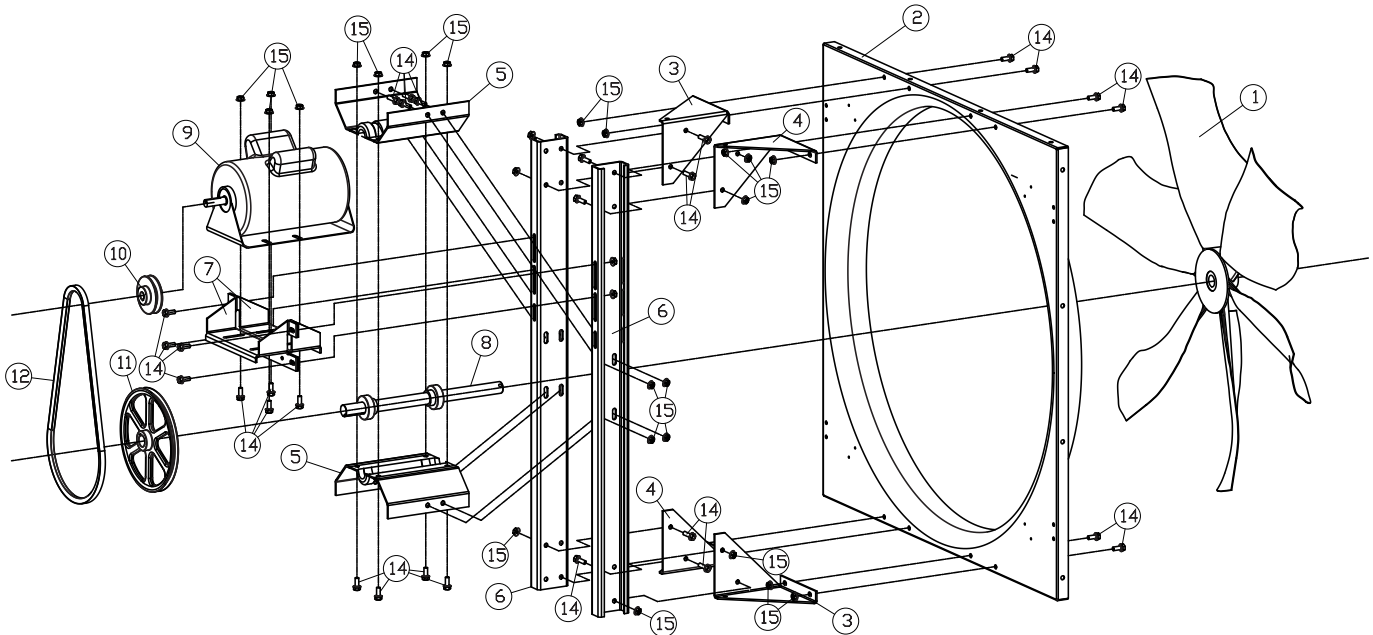
NOTE: If locking collar type bearing is used, collar must first be positioned against inner race on bearing nearest propeller and turned in direction of propeller rotation with drift pin and hammer until it locks. Locking collars must be on inboard (facing) sides of the bearing. Secure bearing to shaft with set screw. Lock and secure other bearing to shaft in the same manner.

OPTIONAL SAFETY GUARDS FOR DCA

- Constructed of 1/2" x 1" mesh heavy gauge welded galvanized wire.
- Easily removed for servicing fan. Guards are optional but should be installed when fan is within reach of personnel.
- Model GD for WB wall housing inlet.
- Model GS for WS wall housing inlet and WB wall housing exhaust.
- Guards are galvanized heavy gauge welded wire in aluminum frames.



CAUTION! Guards must be installed when fan is within reach of personnel or within eight (8) feet of working level or when deemed advisable for safety.



PARTS LEGEND				
FAN MODEL	ITEM NO.	DESCRIPTION	ITEM NO.	DESCRIPTION
	1	Propeller (4 blades on DCA54)	8	Shaft & Bearing Assembly
DCA24	2	Orifice	9	Motor
DCA30	3	Right Gusset	10	Motor Sheave
DCA36	4	Left Gusset	11	Fan Sheave
DCA42	5	Bearing Base	12	Belt
DCA48	6	Channel Support	14	5/16 x 3/4 Whiz Lock Bolt
DCA54	7	Motor Base	15	5/16 Whiz Lock Nut

TERMS AND CONDITIONS OF SALE

ACCEPTANCE All orders and sales are subject to written approval and acceptance by an executive officer of Acme Engineering & Manufacturing Corporation at Muskogee, Oklahoma, (the "Company") and are not binding on the Company until so approved.

DELIVERY All shipping and delivery dates are estimated only. No delays in delivery will subject the Company to any costs, damages or fees for late delivery. Delivery of the products herein specified shall be made F.O.B. point of shipment, unless otherwise stated. The Company shall not be liable for delay due to causes beyond its reasonable control, such as Acts of God, acts of the purchaser, acts of civil or military authorities, priorities, fires, strikes, floods, epidemics, war, riots, delays in transportation, car shortages, and inability, due to reasons beyond its reasonable control, to obtain necessary labor, material, or manufacturing facilities. In the event of such a delay, the date of delivery shall be extended for a period equal to the time lost by reason of the delay.

TERMS OF PAYMENT If, in the judgment of the Company, the financial condition of the purchaser at any time does not justify continuation of manufacture or shipment on the terms of payment specified, the Company may require full or partial payment in advance.

Pro rata payments shall become due as shipments are made. Each shipment or delivery shall constitute a separate sale, and the default of any shipment or delivery shall constitute a separate sale, and the default of any shipment or delivery shall not vitiate the contract as to other shipments or deliveries.

SALES AND SIMILAR TAXES The Company's prices do not include sales, use, excise, or similar taxes. Consequently, in addition to the price specified herein, the amount of any present or future sales, use, excise, or other similar tax applicable to the sale of the product herein shall be paid by

the Purchaser, or in lieu thereof the Purchaser shall provide the Company with a tax exemption certificate acceptable to the taxing authorities.

CANCELLATION Any contract resulting from the Purchaser's order may be canceled by the Purchaser only by negotiations and upon payments of reasonable cancellation charges which will take into account expenses already incurred and commitments made by the Company.

DESIGN CHANGES The Company reserves the right to make changes in design, improvements and additions in and to its products any time without imposing any liability or obligations to itself to apply or install the same in any product manufactured by it.

TITLE The title and right of possession of the products sold herein shall remain with the Company and such products shall remain personal property until all payments herein (including deferred payments whether evidenced by notes or otherwise) shall have been made in full in cash and the Purchaser agrees to do all acts necessary to perfect and maintain such right and title in the Company.

PRICE ADJUSTMENTS Prices are subject to change upon notice by the Company. Prices on existing orders are subject to surcharges in the event of cost increases of metals and transportation. All complete component accessory material manufactured by others and furnished with the Company's products such as motors, drives, vibration equipment, controls or other completely assembled component structures, are subject to adjustment to the price at time of shipment regardless of the date of original order entry.

SAFETY ACCESSORIES The Company manufactures products designed to serve multiple applications and offers a wide range of safety equipment, including guards and other

devices, as may be required to meet customer specifications. Without exception, the Company recommends that all orders include applicable safety devices. Products ordered without applicable safety devices is clearly the responsibility of the Purchaser. Further, the Purchaser warrants that it has determined and acquired any and all safety devices required for products sold by the Company. Weather covers and guards for motor and V-belt drives, couplings, shafts and bearings, along with inlet and outlet screens, are optional accessories noted in the price list.

GOVERNING LAW The rights, obligations and remedies of Purchaser and the Company, the interpretation of these terms and conditions and the sale of products by the Company shall be governed by Oklahoma law, without regard to any principles of conflict of laws.

ARBITRATION Any dispute arising under or in connection with these terms and conditions or the sale of products shall be settled by binding arbitration administered by the American Arbitration Association under its Commercial Arbitration Rules, and judgment on the award rendered by the arbitrator may be entered in any court having jurisdiction thereof. The dispute shall be resolved by one neutral arbitrator who shall have no affiliation with either Purchaser or the Company and shall be selected by the American Arbitration Association office in Dallas, Texas. The arbitration proceedings shall be held in Muskogee, Oklahoma.

APPLICABLE DOCUMENTS The agreement between the Company and the Purchaser relating to the products includes these terms and conditions of sale, any applicable installation and maintenance instructions provided by the Company and any terms appearing on the Company's quotation, sales order acknowledgment and invoice.

WARNING Acme products are designed and manufactured to provide reliable performance but they are not guaranteed to be 100% free of defects. Even reliable products will experience occasional failures and this possibility should be recognized by the Purchaser and all End Users. If these products are used in a life support ventilation system where failure could result in loss or injury, the Purchaser and all End Users should provide adequate back-up ventilation, supplementary natural ventilation or failure alarm system, or acknowledge willingness to accept the risk of such loss or injury.

WARNING DO NOT use in HAZARDOUS ENVIRONMENTS where fan's electrical system could provide ignition to combustible or flammable materials unless unit is specifically built for hazardous environments. Comply with all local and national safety codes including the National Electrical Code (NEC) and National Fire Protection Act (NFPA).

CAUTION Guards must be installed when fan is within reach of personnel or within eight (8) feet (2.5 m) of working level or when deemed advisable for safety.

DISCLAIMER The Company has made a diligent effort to illustrate and describe the products accurately in all Company literature; however such illustrations and descriptions are for the sole purpose of identification and do not express or imply any warranty.

LIMITED WARRANTY

WARRANTY AND DISCLAIMER: The Company extends this limited warranty to the original purchaser and warrants that products supplied by the Company, shall be free from original defects in workmanship and materials for two years from date of shipment (except for the warranty periods noted for products listed below), provided same have been properly handled, stored, installed, serviced, maintained and operated. This warranty shall not apply to products which have been altered or repaired without the Company's express authorization, or altered or repaired in any way so as, in the Company's judgment, to affect its performance or reliability, nor which have been improperly installed or subjected to misuse, negligence, or accident, or incorrectly used in combination with other substances. The Purchaser assumes all risks and liability for results of use of all products.

Evaporative cooling pads are warranted to be free of defects in materials and workmanship for a period of two years from date of shipment provided same have been properly handled, stored, installed, serviced, maintained and operated; and further, not subjected to excessive heat, corrosive agents or chemicals, or mechanical abuse that may cause tearing, crushing or undue deterioration, nor used on a system or in a manner other than that for which it was designed as explained in the product literature.

The following products are warranted to be free of defects in materials and workmanship for the periods shown from date of shipment: Acme's exclusive duplex split pillow block bearings and shaft five years, belts one year, Polyethylene tubing 90 days, and DDP fan lifetime warranty on its stainless steel propeller, cone, and housing.

LIMITATION OF REMEDY AND DAMAGES: All claims under this warranty must be made in writing and delivered to P. O. Box 978, Muskogee, Oklahoma, 74402, within 15 days after discovery of the defect and prior to the expiration of two years from the date of shipment by the Company of the product claimed defective, and Purchaser shall be barred from any remedy if Purchaser fails to make such claim within such period.

Within 30 days after receipt of a timely claim, the Company shall have the option either to inspect the product while in Purchaser's possession or to request Purchaser to return the product to the Company at Purchaser's expense for inspection by the Company. The Company shall replace, or at its option repair, free of charge, any product it determines to be defective, and it shall ship the repaired or replacement product to Purchaser F.O.B. point of shipment; provided, however, if circumstances are such as in the Company's judgment to prohibit repair or replacement to remedy the warranted defects, the Purchaser's sole and exclusive remedy shall be a refund to the Purchaser of any part of the invoice price, paid to the Company, for the defective product or part.

The Company is not responsible for the cost of removal of the defective product or part, damages due to removal, or any expenses incurred in shipping the product or part to or from the Company's plant, or the installation of the repaired or replaced product or part.

The warranties set forth above do not apply to any components, accessories, parts or attachments manufactured by other manufacturers; such being subject to the manufacturer's warranty, if any. To the extent not prohibited by the manufacturer's warranty, the Company shall pass through to Purchaser such manufacturer's warranty.

THE COMPANY'S WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING WITHOUT LIMITATION THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY EXPRESSLY DISCLAIMED AND WAIVED. THIS WARRANTY CONSTITUTES THE COMPANY'S SOLE AND EXCLUSIVE WARRANTY FOR DEFECTIVE GOODS AND PURCHASER'S SOLE AND EXCLUSIVE REMEDY FOR DEFECTIVE PRODUCTS.

No employee, agent, dealer, or other person is authorized to give any warranties on behalf of the Company or to assume for the Company any other liability in connection with any of its products except in writing and signed by an officer of the Company.

REPLACEMENT PARTS If replacement parts are ordered, purchaser warrants that the original components in which these replacement parts will be placed are in satisfactory working condition, and when said replacement parts are installed, the resultant installation will operate in a safe

manner, at speeds and temperatures for which the original product was purchased.

TECHNICAL ADVICE AND RECOMMENDATIONS, DISCLAIMER: Notwithstanding any past practice or dealings or any custom of the trade, sales shall not include the furnishing of technical advice or assistance or system design. Any such assistance shall be at the Company's sole option and may be subject to additional charge.

The Company assumes no obligation or liability on account of any recommendations, opinions or advice as to the choice, installation or use of products. Any such recommendations, opinions or advice are given and shall be accepted at Purchaser's and End User's risk and shall not constitute any warranty or guarantee of such products or their performance.

LIMITATION OF LIABILITY The cumulative liability of the Company to the Purchaser and any other persons for all claims in any way relating to or arising out of the products, including, but not limited to, any cause of action sounding in contract, tort, or strict liability, shall not exceed the total amount of the purchase price paid for those products which are the subject of any such claim. This limitation of liability is intended to apply without regard to whether other provisions of this agreement have been breached or have proven ineffective even if the Company has been advised of the possibility of such claims or demands. In no event shall the Company be liable to the Purchaser or any other person for any loss of profits or any incidental, special, exemplary, or consequential damages for any claims or demands brought by the Purchaser or such other persons.

INDEMNITY The Company's maximum liability to Purchaser and to any end user is as set forth above. The Company makes no warranty to anyone for any products not manufactured by the Company and shall have no liability for any use or installation of any products (whether manufactured by the Company or other manufacturers) not specifically authorized by this sale. Purchaser acknowledges various warnings by the Company regarding the products and its installation and use. If the Company incurs any claims, lawsuits, settlements, or expenses (including attorney fees) for any loss, injury, death or property damage including, but not limited to, claims arising out of the Purchaser's or any end user's installation or use of the products, the Purchaser shall indemnify and hold the Company harmless.



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