

AIRCRAFT HEATER COMBUSTION AIR BLOWER ASSEMBLY MAINTENANCE MANUAL

P/N 03E13-1

BLOWER MODELS:

89D22, 90D39

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Thank you for purchasing a Janitrol Aero* heater combustion air blower. We encourage you to read this manual thoroughly. It contains a wealth of information about how to properly install and maintain your combustion air blower so that it may give you many years of safe and reliable service.

Should you have a question regarding your combustion air blower that is not covered in the manual, Hartzell Engine Tech Product Support is ready to assist you. We may be reached at the following contact information:

Phone: +1.334.386.5400, option 2

E-mail: techsupport@Hartzell.aero

Fax: +1.334.386.5450

Web: www.Hartzell.aero/contact/

*Janitrol Aero is a trademark of Hartzell Engine Tech LLC

WARNING:

People who fly should recognize that there are various types of risks involved in this activity; and they should take all precautions to minimize them, since they cannot be eliminated entirely. It is essential that the combustion air blower is properly maintained according to the recommended service procedures and monitored to detect impending problems before they become serious. Any unusual operation should be investigated and corrected, as it may be a warning of impending failure.

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RECORD OF REVISIONS

Revision Level	Issue Date	Page(s) Revised	Description
Original	1/1976	ALL	Initial Release
Reissued	6/29/2011	ALL	Reissue
A	1/2/2024	ALL	Approved via PCO-110980
		ALL	Released as a full revision to the original manual

AIRWORTHINESS LIMITATIONS

**AIRWORTHINESS
LIMITATIONS**

A.1 General Information

CAUTION:



THE AIRWORTHINESS LIMITATIONS HEREIN ARE THOSE MANDATED BY HARTZELL ENGINE TECH. THESE LIMITATIONS ARE THE MINIMUM REQUIRED TO MEET CONTINUED AIRWORTHINESS BUT MAY BE SUPERSEDED BY MORE STRINGENT REQUIREMENTS AS PUBLISHED BY THE FAA, AIRCRAFT, ROTORCRAFT OR OTHER MANUFACTURERS THAT USE THESE COMPONENTS IN THEIR APPLICATIONS. FAILURE TO OBSERVE THESE LIMITATIONS MAY COMPROMISE THE COMPONENT OR THE APPLICATION IT IS USED IN.

A.2 Airworthiness Limitations Statement

- A. The Airworthiness Limitations section is FAA approved and specifies maintenance required under § 43.16 and § 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

Airworthiness Limitation Revisions Log

Revision Number	Description of Revision

A.3 Life Limits

- A. The FAA establishes specific life limits for certain component parts as well as the complete aircraft heater combustion air blower. Such limits require replacement of the identified parts after a specified number of cycles or hours of use.
- B. Additions of, or changes to, any life limit for alternator components will be noted in the Airworthiness Limitation Revision Log.
- C. Life Limits
 - (1) Aircraft heater combustion air blower models and their component parts affected by this manual currently do not have any life limited parts.
 - (2) There are no new (or additional) Airworthiness Limitation associated with this equipment and/or installation.

CHAPTER 1 - INTRODUCTION

1.1 General Information

WARNING:

IMPROPER OR UNAUTHORIZED APPLICATIONS OF THE INFORMATION CONTAINED IN THE MANUAL MAY RENDER THE AIRCRAFT OR THE COMPONENT UNAIRWORTHY AND RESULT IN LOSSES, DAMAGES, OR INJURY TO THE USER.



DO NOT USE OBSOLETE OR OUTDATED INFORMATION. PERFORM ALL INSPECTIONS OR WORK IN ACCORDANCE WITH THE MOST RECENT REVISION OF THE APPLICABLE AIRCRAFT/ENGINE SERVICE OR MAINTENANCE MANUAL. INFORMATION CONTAINED IN THESE MANUALS MAY BE SIGNIFICANTLY CHANGED FROM EARLIER REVISIONS. USE OF OBSOLETE INFORMATION MAY CREATE AN UNSAFE CONDITION THAT MAY RESULT IN DEATH, SERIOUS BODILY INJURY, AND/OR SUBSTANTIAL PROPERTY DAMAGE.

The accuracy and applicability of this manual has not been verified for any assembly, component or part not manufactured by Hartzell Engine Tech LLC (HET). Any use of the manual for other than its intended or implied purpose is prohibited. The use of the manual for the purpose of performing any installation, maintenance, replacement, adjustment, or inspection of any assembly, component or part not manufactured by HET is not approved, endorsed, or sanctioned by HET.

This manual has been approved by Hartzell Engine Tech LLC as the proper methods and procedures that FAA or other airworthiness authority Certificated Repair Stations and A/P Mechanics should use in the inspection and maintenance of Hartzell Engine Technologies LLC combustion air blowers.

No liability will be assumed by Hartzell Engine Tech LLC for actual, consequential, incidental or other types of damages directly or indirectly resulting from the unauthorized use of this manual for other than its stated purposes.

The liability for use of the authorized data herein for the maintenance, or return to service is limited to the specific terms and conditions stated under the applicable Limited Warranty in effect for each piece part, component, assembly or whole unit sold by HET.

Because of the numerous modifications, Supplemental Type Certificates (STC), Parts Manufacturing Approvals (PMA), or Form 337 Field Approvals that may apply, it is the responsibility of the repairman, mechanic or maintenance facility to determine the proper engine or aircraft application of the combustion air blower assemblies contained herein. Please refer to the appropriate aircraft Type Certificate (TC), Supplemental Type Certificate (STC), aircraft equipment list, maintenance manuals, and/or Log Book entries for determination.

When performing installation, maintenance, replacement, adjustment, or inspection of any HET assembly, component or part, it is imperative that the latest revision of this HET manual or other product support document be referenced. Reference the HET website to be sure you have the latest revision before performing any work. (<http://www.hartzell.aero/maintenance-manuals/>)

All reasonable attempts were made to make this manual as complete and accurate as possible. If you have any questions, comments, corrections or require clarification of any information contained herein, please write to Hartzell Engine Technologies LLC, 2900 Selma Highway, Montgomery, Alabama, 36108 USA. TEL +1.334.386.5400, FAX +1.334.386.5410, or <http://hartzell.aero/contact/>.

1.2 General Specification

- A. This manual follows general GAMA guidelines using ATA 100 identification as required. Principle units of measure used in the manual are U.S. units with International System of Units (SI) in parentheses.
- B. The 89D22-1, -2, -3, -4, and 90D39-1, -2, -3, -4 combustion air blower models are considered herein.
- C. All aircraft, rotorcraft, or engine applications are limited to the holder of the TC, STC, PMA or TSO and only at the date of that document publication or revision.
- D. Only approved, competent persons with the necessary skills may do maintenance tasks described in the manual. This may include a certified pilot doing “preventative maintenance” as defined in FAR 43, Appendix A, paragraph C with guidance from AC 43.12A of latest change.
- E. The manual describes maintenance on components as they are installed on aircraft and tasks that should be accomplished in a properly equipped service facility.
- F. Maintenance tasks and subtasks are referenced in the manual but will have no specific identification numbers.
- G. The manual contains: Description and operation, Troubleshooting, Instruction for Continued Airworthiness (ICA) and Maintenance information along with part numbers required for basic maintenance tasks.
- H. Changes and updates to this manual can be found at www.janitrol.aero. Revisions will be tracked and recorded in the Record of Revisions section of this document.

1.3 How to use the manual

- A. Make sure the manual contains information applicable to your aircraft, engine, or replacement combustion air blower. Look for the model number on the Title Page and if applicable, the part number of the replacement or superseded component.
- B. It is imperative that you read, understand, and observe all the applicable WARNINGS and CAUTIONS before you do any work on this component.
- C. Use only the sections needed, use the check section to determine what actions may be needed periodically and the maintenance sections for servicing the combustion air blower.
- D. If you need to identify a part or find a part number, refer to illustrations herein or the applicable aircraft or engine service or maintenance manual.
- E. Refer to the troubleshooting section to assure that the observed or reported condition lies with the combustion air blower.
- F. Fully test the combustion air blower per the instructions in this manual when running the aircraft. Utilize the aircraft and/or engine manufacturer’s service manuals and publications before returning the aircraft to service. Use the AFM or POH for aircraft operations.
- G. Some sections in this manual apply to all combustion air blowers considered herein. Other sections will contain information specific to a particular combustion air blower model or variation of a model.

1.4 Measurements

The measurements given in this manual are taken from original manufacturing drawings.

1.5 Units of Measure

A. SI Units

A	Ampere
A · h	Ampere hours
g	Gram
N	Newton
N · m	Newton meter
V	Volt
°C	Degree Celsius
Ω	Ohm
W	Watt
Hz	Hertz
m	Meter
cm	Centimeter
kg	Kilogram

B. U.S. Units

ft	Foot
in	Inch
lb	Pound
lbf	Pound-force
lbf · in	Pound-force inch
lbf · ft	Pound-force foot
°F	Degree Fahrenheit

C. Multiplying Prefixes

μ	Micro
m	Milli
k	Kilo
M	Mega
p	Pico

1.6 Abbreviations

A. The abbreviations given below are used in the manual: (upper or lower case)

AFM	Aircraft Flight Manual
ATA	Air Transport Association of America
DIA	Diameter
FAA	Federal Aviation Administration (USA)
FIG.	Figure
GAMA	General Aviation Manufacturers Association
ID	Inside Diameter
HET	Hartzell Engine Tech LLC
MAX	Maximum
MFR	Manufacturer
MIN	Minimum
NO.	Number
N/A	Not Applicable
OD	Outside Diameter
P/N	Part Number
PARA.	Paragraph
PCB	Printed Circuit Board
POH	Pilots Operating Handbook
REF.	Refer To
S/A	Subassembly
S/N	Serial Number

1.7 Disposal

A. The combustion air blower assembly is designed to allow for re-use of many subassemblies and components. Disposal of unairworthy parts and assemblies as well as required replacement parts should be as follows: Rejected parts should be tagged and scrapped per FAA requirements. Any part deemed unairworthy must be rendered unusable prior to discard. Rectifiers and PCB components may be considered hazardous waste and should be discarded whole through your local hazardous waste management system.

1.8 Model Identification

89D22-1 (24V)	90D39-1 (12V)
89D22-2 (24V)	90D39-2 (24V)
89D22-3 (12V)	90D39-3 (12V)
89D22-4 (24V)	90D39-4 (24V)

1.9 Warranties

- A. Hartzell Engine Tech LLC (HET) offers a Limited warranty with each new, overhauled, or rebuilt combustion air blower assembly or component (parts) it sells through its distribution system. **NO expressed or implied warranty exists** when repairing, overhauling, or rebuilding any assembly or component using this manual except as it may apply to any new HET replacement part purchased. If you suspect that any warranty applies to the combustion air blower assembly, it must be returned through an authorized HET distributor in a manner prescribed by that specific distributor. The affected combustion air blower must be received by the factory fully assembled and not altered in any way for disposition by the HET warranty department. **(Warranty shall be denied for any combustion air blower received altered, modified, or disassembled.)**
- B. The HET Limited warranty policy in effect for your combustion air blower was delivered with the unit at the time of purchase. (As the Warranty policy is revised from time to time, you must check the policy delivered with your unit for specific terms and conditions should a warranty condition occur. If needed for reference, obtain the most current policy from the authorized HET distributor nearest you -or- visit our website at www.hartzell.aero.)

1.10 Storage and Shelf Life

A. Storage

When storing a new or repaired combustion air blower assembly, there are several categories to consider. Short term storage or long term storage on or off the aircraft. Short term storage will be considered as storage up to but not exceeding twenty-four (24) calendar months. Long term storage will be considered as storage up to but not exceeding twelve (12) calendar years. There are different methods for each type of storage.

- (1) Short term, if on the shelf, requires only that the unit be kept inside in the original packaging. If unit is on the aircraft (or unmounted engine) no additional action other than that required for the aircraft is needed.
- (2) At the expiration of twelve (12) calendar years from date of manufacture, regardless of storage or usage, the unit must be replaced.

B. Shelf Life

- (1) All combustion air blower assemblies have a shelf life of up to, but not to exceed, twelve (12) calendar years at which time the unit must be replaced. Shelf life time applies only if storage requirements are observed.

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CHAPTER 2 - DESCRIPTION OF OPERATION

2.1 Description

A. General

- (1) The combustion air blower, Figure 2-1, is normally mounted separately from the heater to permit a more flexible installation. It supplies combustion air to the combustion chamber of the heater typically from outside air. Performance of the combustion air blower is assisted by the use of ram air during flight. The type of blower and mounting location are typically controlled by the aircraft/rotorcraft design holder.

B. Dimensions

- (1) The basic combustion air blower dimensions are shown in Fig. 2.2 thru 2.5.

2.2 Basic Component Description

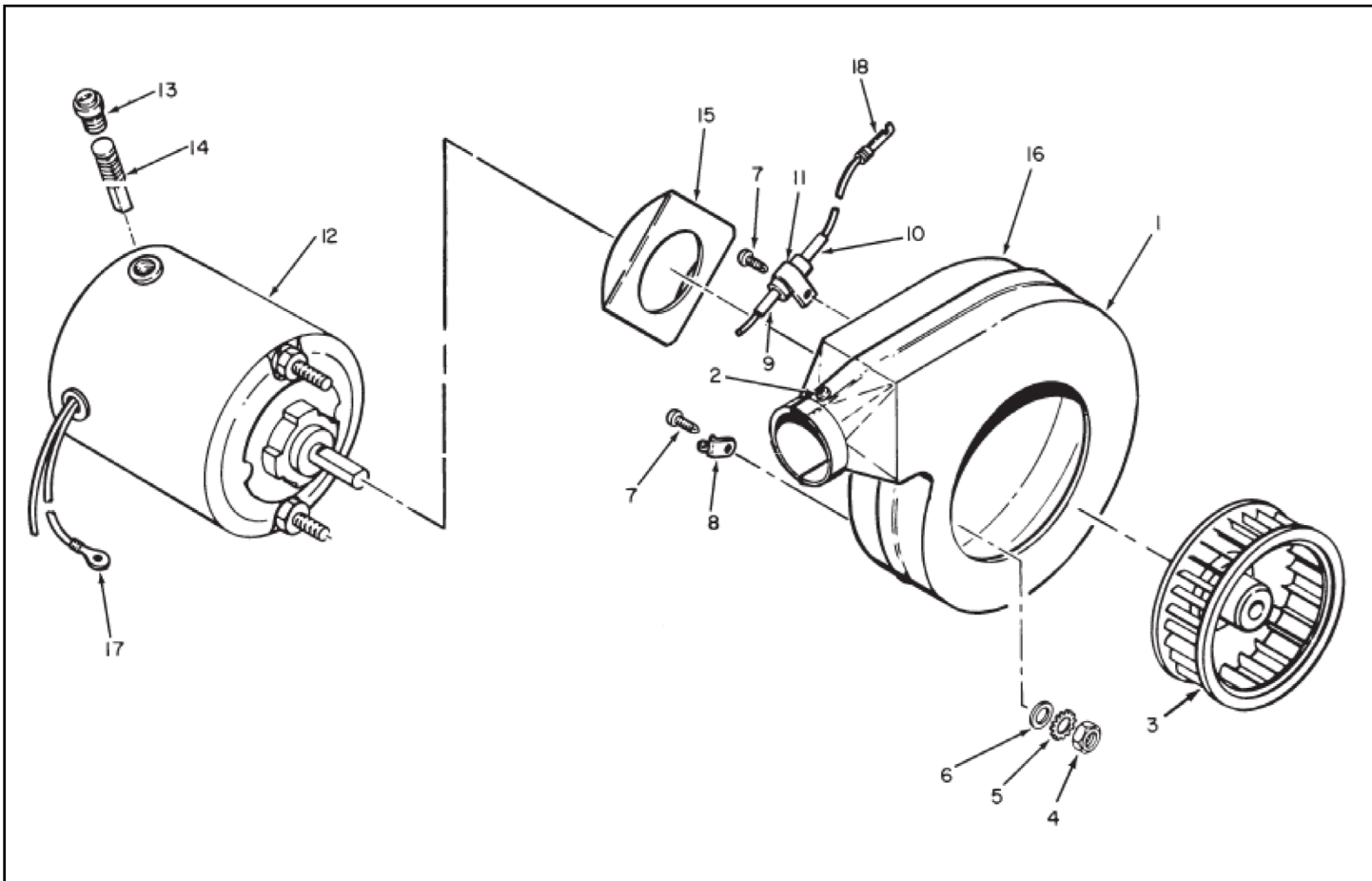
- A. The principle components of the combustion air blower assembly are an electrical motor (12), blower wheel (3), and blower housing (1). See figure 2-1 for details.

2.3 Purpose

- A. The Combustion air blower assembly provides means of forcing ventilating air into the heater combustion chamber. It operates continuously when the heater is operating.

2.4 Theory of Operation

- A. Operation of the blower assembly is controlled by a remotely located switch, which supplies power to the motor when air is required in the heater combustion chamber.



1	Blower Housing	7	Screw	13	Brush Cap *
2	Screw	8	Cable Tie	14	Brush and Spring Assy. *
3	Wheel	9	Sleeve	15	Spacer
4	Nut	10	Sleeve	16	Blower Housing
5	Washer	11	Capacitor *	17	Terminal
6	Washer	12	Motor	18	Terminal

* 89D22-1, -2, -3 and 90D39-1, -2
Only

Figure 2-1 - Combustion Air Blower Assembly, Typical

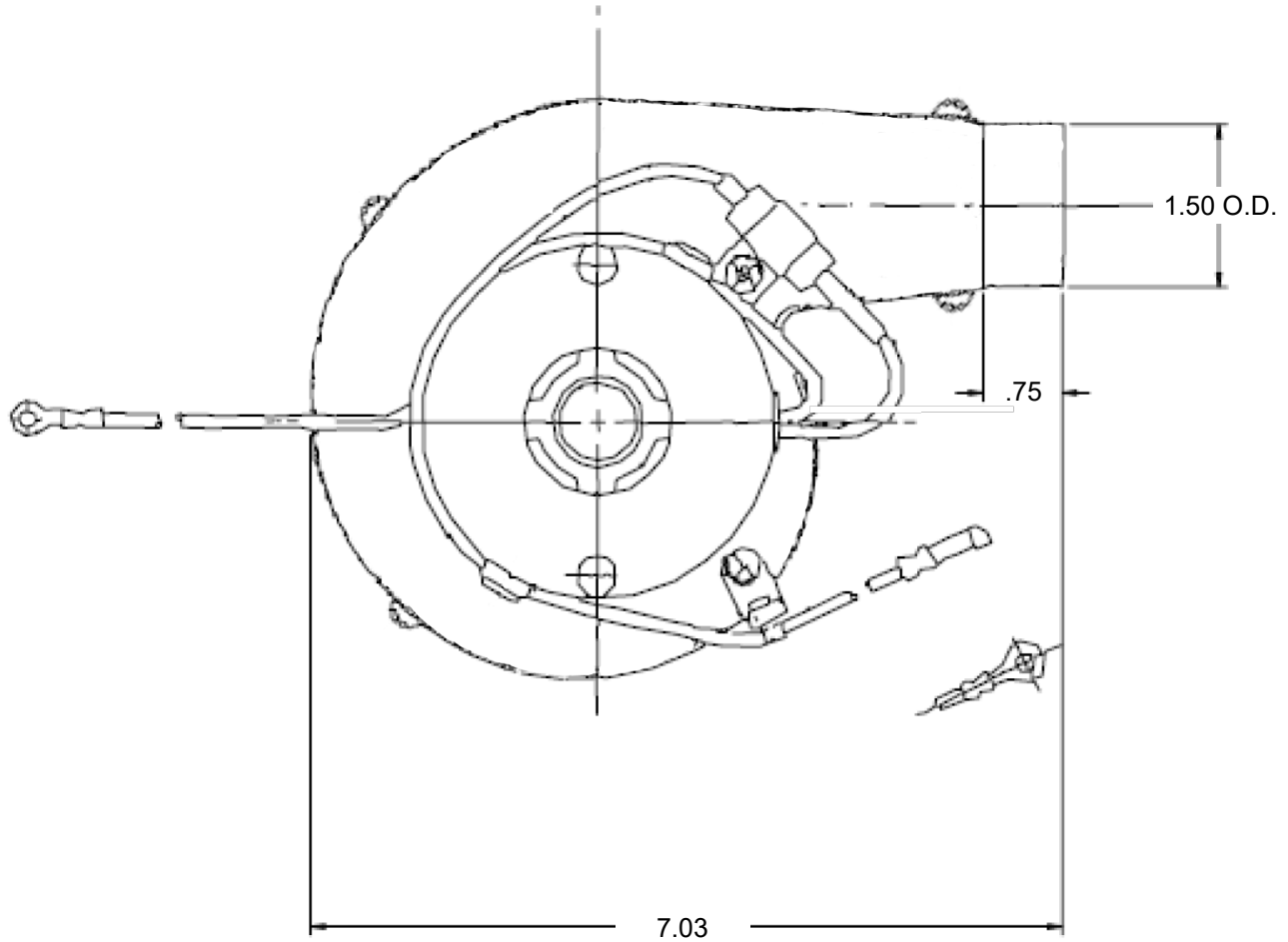


Figure 2-2 - Combustion Air Blower Dimensions
P/N 89D22-1, -2, -3, -4

Figure 2-2 - Combustion Air Blower
P/N 89D22-1, -2 & -3

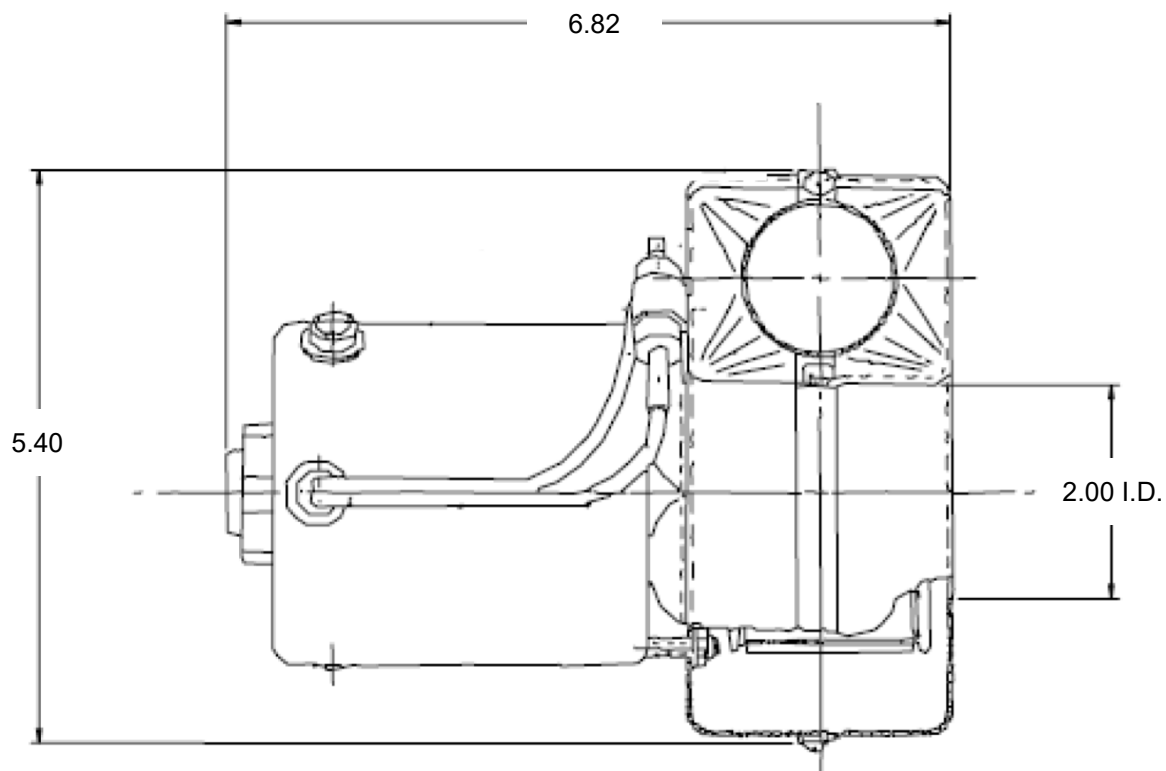


Figure 2-3 - Combustion Air Blower Dimensions
P/N 89D22-1, -2, -3, -4

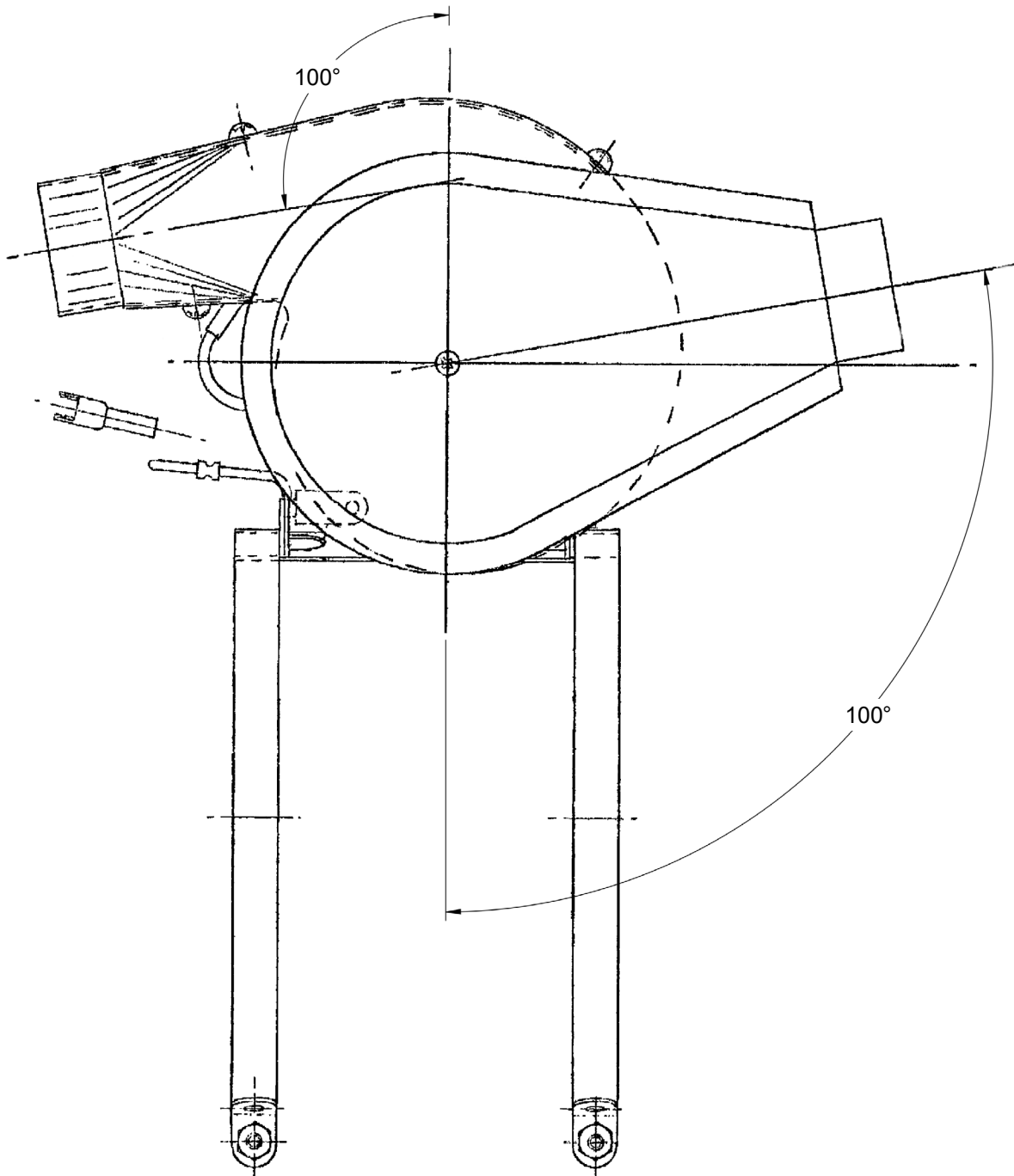
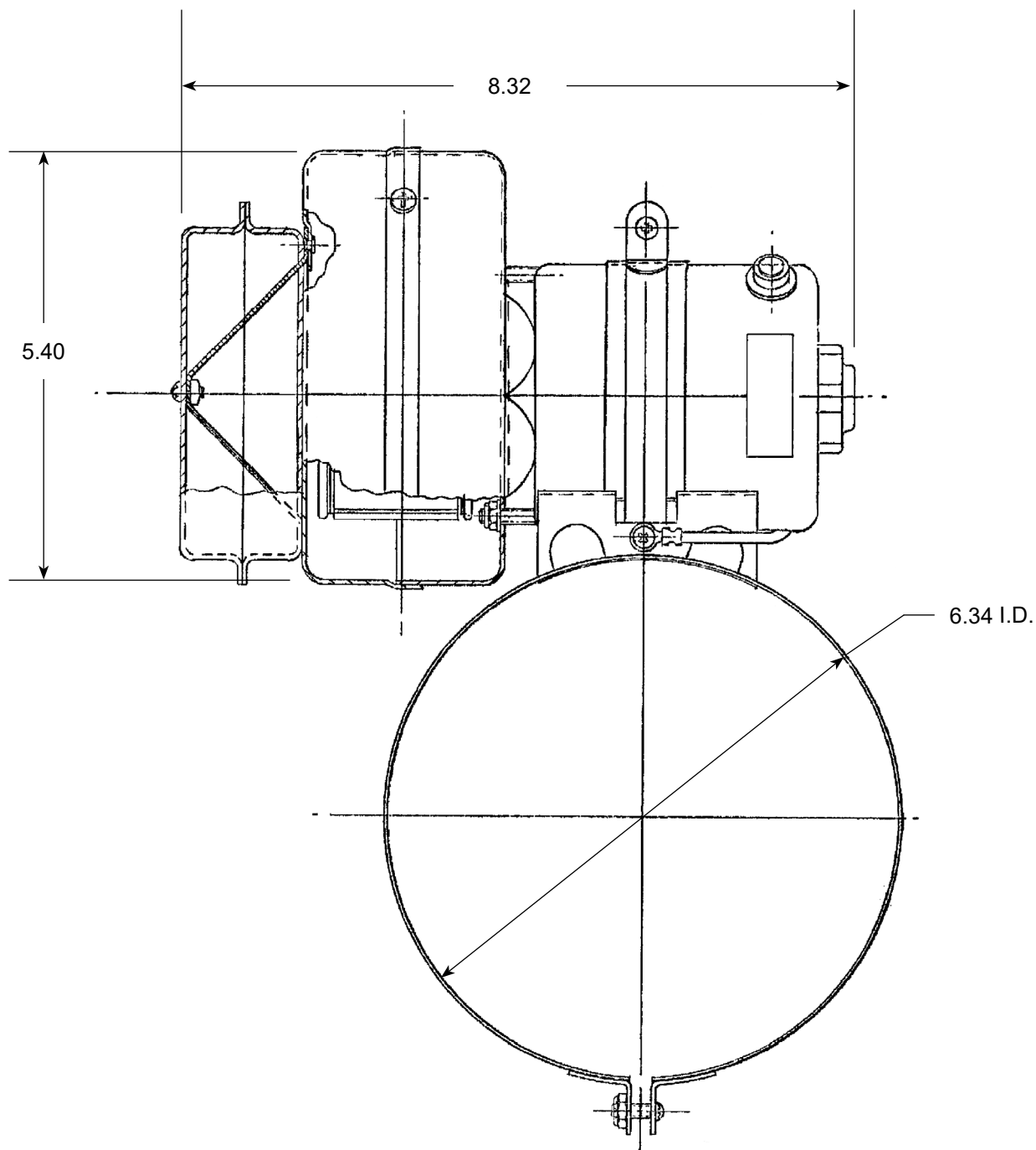


Figure 2-4 - Combustion Air Blower Dimensions
P/N 90D39-1, -2, -3, -4



**Figure 2-5 - Combustion Air Blower Dimensions
P/N 90D39-1, -2, -3, -4**

CHAPTER 3 - TROUBLESHOOTING

3.1 General

- A. This section provides general troubleshooting procedures for the combustion air blower assembly for unscheduled maintenance and for possible fault detection prior to maintenance activity. It gives procedures to follow to determine the best course of action prior to disassembly.
- B. Every heating system requires three key components to achieve proper operation: combustion air, ignition, and fuel. If your heater is not working, one or more of these elements is deficient. By finding out which is lacking, the root cause of the problem can be determined.

3.2 Procedure

NOTE:

It is required to reference the aircraft or rotorcraft AFM or POH as well as the applicable service or maintenance manual as required.

- A. An operational check should be performed while the combustion air blower is still in the airframe prior to removal for maintenance.
 - (1) Place the "MASTER SWITCH" in the "ON" (or "HEAT") position. The ventilating air blower and combustion air blower should operate and the red "HEATER FAILURE LIGHT" should not be energized. Always refer to the aircraft AFM or POH to assure proper operation.
 - (2) Operate both the combustion air blower and check for unusual current draw, noise, or vibrations. See Table 3-1 for symptom, probable cause, and remedy.
- B. Perform all tests with:
 - (1) Heater switch to ON
 - (2) Master switch ON
 - (3) Engine OFF

SYMPTOM	PROBABLE CAUSE	REMEDY
Heater fails to light.	Combustion air pressure switch open. (Defective switch or low combustion air blower output.)	Check for low blower output due to low voltage and correct. If switch is defective, replace with new.
Combustion air blower fails to run.	Faulty wiring to motor. Poor ground connection. Worn motor brushes Blower wheel jammed. (Usually indicated by hot motor housing.) Defective radio-noise filter. Faulty or burned-out motor.	Inspect and replace faulty wiring. Tighten ground screw. Be sure any metal preservation has been removed for good ground connection. Replace motor brushes (See Ch. 6) Repair the combustion air blower. Replace filter with new. Replace motor with new. (See Ch. 6)
Heater fires but burns unsteadily.	Combustion air blower speed fluctuates. (Can be caused by low voltage, loose blower wheel, worn brushes, or motor.)	Remove and repair the combustion air blower assembly as required or correct low voltage condition.

Table 3-1 - Combustion Air Blower Troubleshooting

CHAPTER 4 - CHECK

4.1 General

- A. This section defines the various checks and inspections needed to assure reliable and safe operation of the combustion air blower while in service. They are listed in hours time in service (TIS) or in calendar time, whichever is applicable and are the first to occur when offered a choice. Some maintenance is one time initial and others are recurring.
- B. HET recommended maintenance and checks including TIS may be superseded by the aircraft or engine manufacturer's established time limits and schedules based on experience and/or unique requirements under engine or airframe Type Certificate.

4.2 Inspection Checks

100 Hours TIS & each 100 hours thereafter. (or each annual/event, the first to occur)

Inspect the combustion air blower assembly for security of mounting, tube connections and wiring. Tighten any loose electrical terminals and air tube connections.

Operate the combustion air blower and check for unusual noise or vibrations.

Following the 100 hour inspection, perform a preflight operating check in accordance with applicable aircraft AFM or POH.

500 Hours TIS & each 500 hours thereafter. (or each two years, the first to occur)

Replace brushes in the combustion air blower motor, P/N 89D22-1 thru -3 and 90D39-1 & -2 only. Refer to Chapter 6 of this document.

2000 hours TIS or TBO of heater (whichever is less)

Replace the combustion air blower motor. When published, aircraft OEM recommendations supersede this recommendation. Refer to Chapter 6 of this document.

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CHAPTER 5 - TESTING

5.1 General

A. On-Aircraft Testing

- (1) Refer to the aircraft/engine maintenance manuals and the AFM or POH while conducting combustion air blower operational checks.

B. Bench Testing

- (1) Attach the air blower assembly to an exhaust vent equipment with 0.75 inch outlet orifice as shown in Figure 5-1.
- (2) Connect the motor source to power source capable of 12V or 24V DC output
- (3) The manometer should read a minimum of 1.5 inches of water at 12V or 24V.

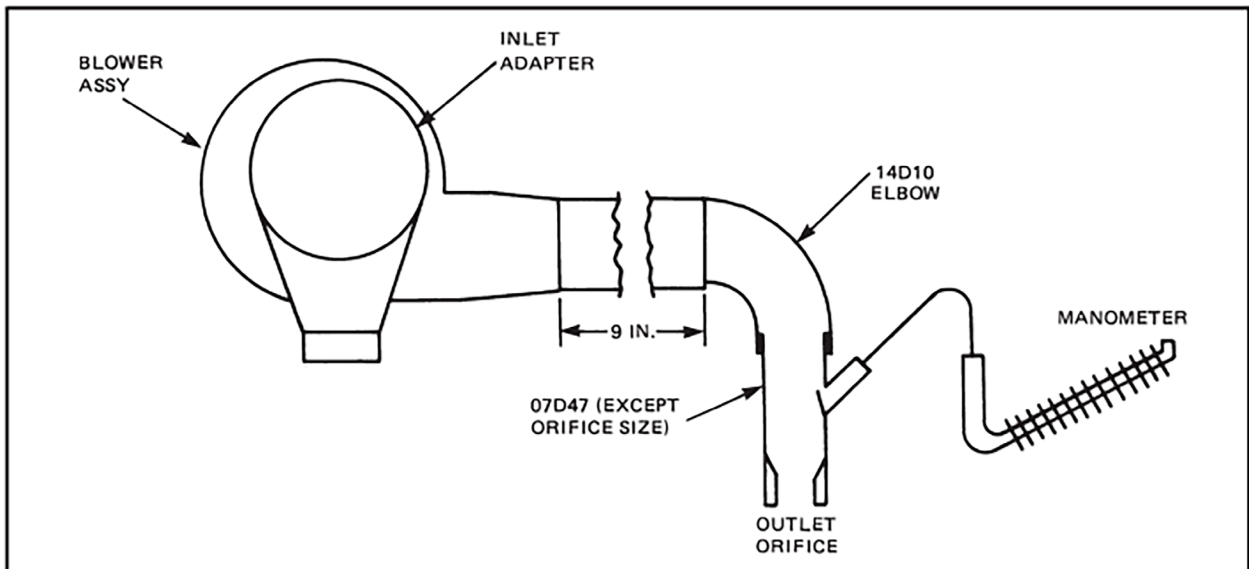


Figure 5-1 - Combustion Air Blower Test Setup

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CHAPTER 6 - Maintenance w/ IPL

6.1 Replacement Parts

A. General

- (1) With exception of sheetmetal parts which can be welded, repairs will consist of replacement of worn or damaged parts. Only the brushes are replaceable parts for the motor. Any motor fault other than the brushes requires replacement of the motor.

6.2 Brush Replacement

The following steps are to be performed with the blower assembly removed from the aircraft. Refer to applicable aircraft maintenance and service instructions to remove the blower assembly from the aircraft.

A. Brush Removal

- (1) Locate one of two brush caps (1) on the motor housing.
- (2) Using a #2 straight-slot screwdriver, remove the brush cap and set aside for installation.
- (3) Remove and discard the brush and spring assembly from the motor housing.
- (4) Repeat steps 1 thru 3 for the second brush assembly.

B. Brush Installation

- (1) Install new brush and spring assembly (2) into one of the two brush ports in the motor housing.

NOTE: Ensure the brush is installed with the curved end matching the curvature of the commutator.

- (2) Place the brush cap (1) over the brush spring and maneuver into final position.

CAUTION:

TO PREVENT DAMAGE TO THE MOTOR AND/OR BRUSHES, CARE SHOULD BE TAKEN NOT TO BEND, BUCKLE, OR DISTORT THE BRUSH ASSEMBLY WHILE MANEUVERING INTO FINAL POSITION.

- (3) Using a #2 straight-slot screwdriver, install the brush cap into the motor housing.
- (4) Repeat steps 1 thru 3 for the second brush assembly.
- (5) Slowly rotate the motor shaft by hand and inspect for smooth operation. If the rotation force is rough or sticking, the brush(s) may be installed incorrectly.

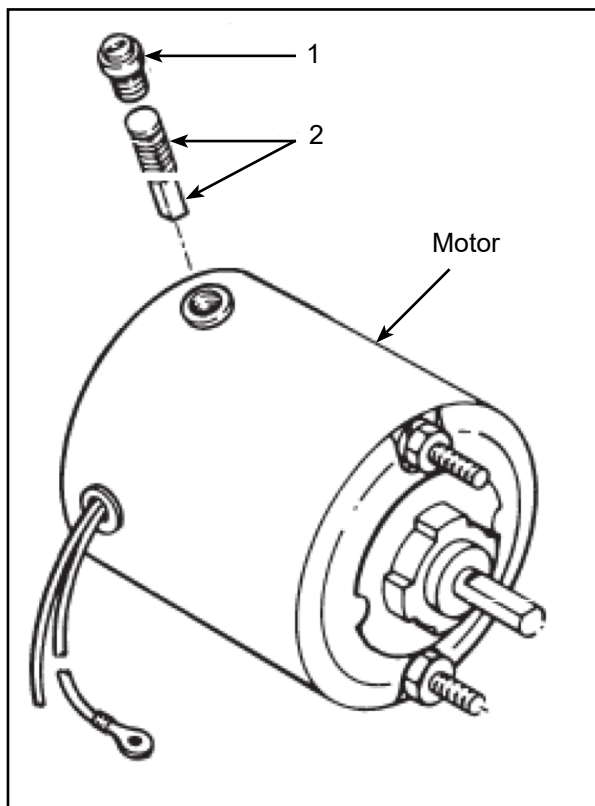


Figure 6-1 - Motor P/N 86D64-() Brush Replacement

	Part Number	Description	Motor P/N													
			86D64-1	86D64-2	86D64-4	86D64-5	86D64-9	86D64-10								
1	14A23	Cap, Brush	2	2	2	2										
2	25T57-2-2	Brush and Spring Assembly	2	2	2	2										

Table 6-1 - Brush Assembly Parts List

NOTE: Motor P/Ns 86D64-9 and 86D64-10 contain internal brush assemblies. See section 6.3 for motor replacement.

6.3 Motor Replacement

The following steps are to be performed with the blower assembly removed from the aircraft. Refer to applicable aircraft maintenance and service instructions to remove the blower assembly from the aircraft.

A. Motor Replacement 89D22-() and 90D39-() blower assembly unit

The following instructions are common to the 89D22-() and 90D39-() assembly unit. The assembly unit consists of the motor, fan, and housing assembly only. See figure 6-2:

- (1) Remove the attaching hardware from the ground and power connections securing the wires to the blower assembly.
- (2) For blowers equipped with the 86D64-1 or 86D64-2 blower motors (1):
 - (a) Disconnect capacitor (12) by removing screw (7).
 - (b) Disconnect cable tie (11) by removing screw (7) and washer (10). Discard items.
- (3) Remove screws (7) joining housing halves (8) and (9). Separate housings and retain housing half (8).
- (4) Remove set screw (2) retaining blower wheel (3). Remove blower wheel and retain parts.
- (5) Motor removal:
 - (a) For blowers equipped with the 86D64-1 or 86D64-2 blower motors (1), remove nut assembly (5). Retain hardware.
 - (b) For blowers equipped with the 86D64-9 or 86D64-10 motors, remove screws (4) and washers (6). Retain hardware.
- (6) Separate motor (1) from housing (9) and spacer (13). Retain spacer (13) and discard motor (1).
- (7) Obtain new motor (1) and visually inspect for damage and free turning of shaft.

NOTE: Motor assemblies P/N 86D64-1 and 86D64-2 are not procurable and superseded by motors P/N 86D64-9 and 86D64-10. Installation of 86D64-10 requires spacer 10D64-1, screws 86D35-6 (qty. 4), and washers AN960-8L (qty.4).
- (8) Place spacer (13) on drive end of motor. Mate parts to housing half (9) and align holes in spacer (13) to housing (9). Install screws (4) and washers (6) and torque to 12-15 lbf · in (1.36-1.69 N · m).

- (9) Apply a light coat of grease to the motor shaft and install blower wheel (3) on shaft. Apply medium strength thread locker (i.e. Loctite 242) to set screw (2). Install set screw in blower wheel and torque to 75-80 lbf · in (8.5 – 9.0 N · m). Install the two supplied nut and washer assemblies (5) finger tight.
- (10) Install blower half (8) and secure with screws (7).
- (11) If not already done, install new wire terminations.

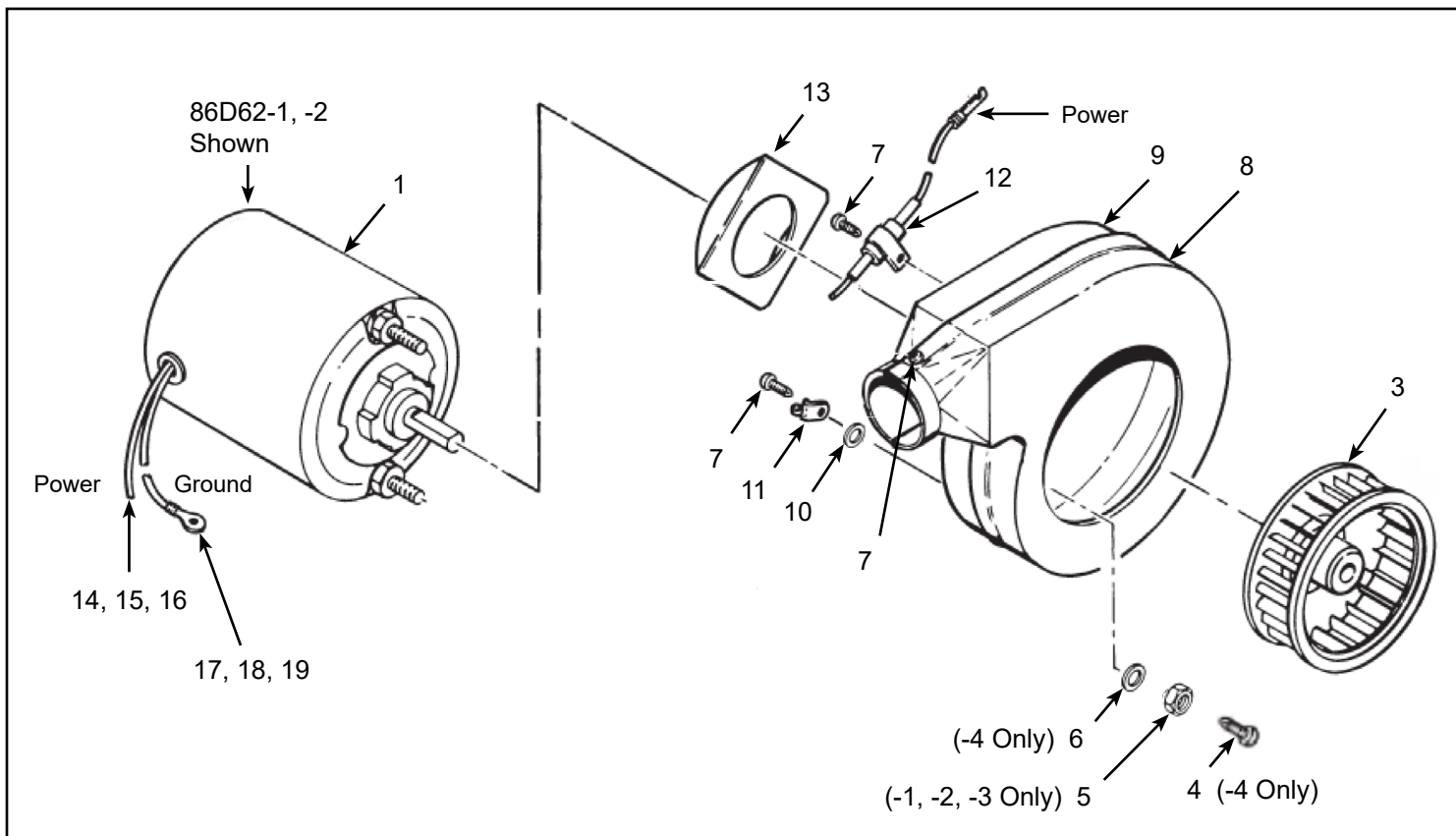


Figure 6-2 - 89D22-(), 90D39-() Blower Assembly, Typical

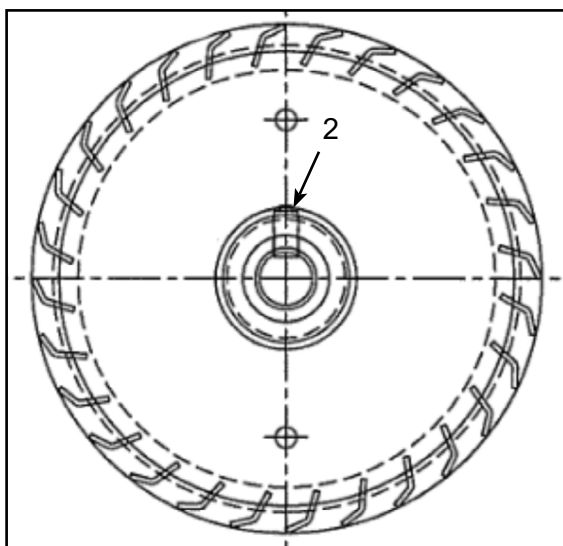


Figure 6-3 - 89D22-(), 90D39-() Blower Wheel

	Part Number	Description	Blower P/N										
			89D22-1	89D22-2	89D22-3	89D22-4	90D39-1	90D39-2	90D39-3	90D39-4			
1	86D64-1	Motor	1				1						
	86D64-2	Motor		1	1				1				
	86D64-10	Motor*				1				1			
	86D64-9	Motor*									1		
2	AN565A4284H	Set Screw, Blower Wheel	1	1	1	1	1	1	1	1	1		
3	B07D67	Wheel, Blower	1	1	1	1	1	1	1	1	1		
4	86D35-6	Screw-Mach SEMS				4				4	4		
5	98D39-1	Nut and Washer Assembly	2	2	2		2	2					
6	AN960-8L	Washer				4				4	4		
7	86D38-1	Screw	7	7	9	5	7	7	5	5			
8	89D35-1	Housing, Blower	1	1	1	1	1	1	1	1	1		
9	84D41-5	Housing, Blower	1	1	1	1	1	1	1	1	1		
10	90E31-1	Washer			1								
11	23D99	Cable Tie	1	1	1		1	1					
12	07D77	Capacitor	1	1	1		1	1					
13	10D64	Spacer	1	1	1		1	1					
14	E57A88	Terminal #6	1	1	1	1							
15	75D78	Pin					1	1	1	1			
16	80D48-1	Pn Housing					1	1	1	1			
17	B57A88	Terminal #8		1	1	1							
18	A73A54	Terminal	1										
19	C57A88	Terminal					1	1	1	1			

* Not shown

Table 6-2 - 89D22-() 90D39-() Replacement Parts List, Typical

NOTE: See Fig. 6-4 for additional items particular to the 90D39-() blower assembly only.

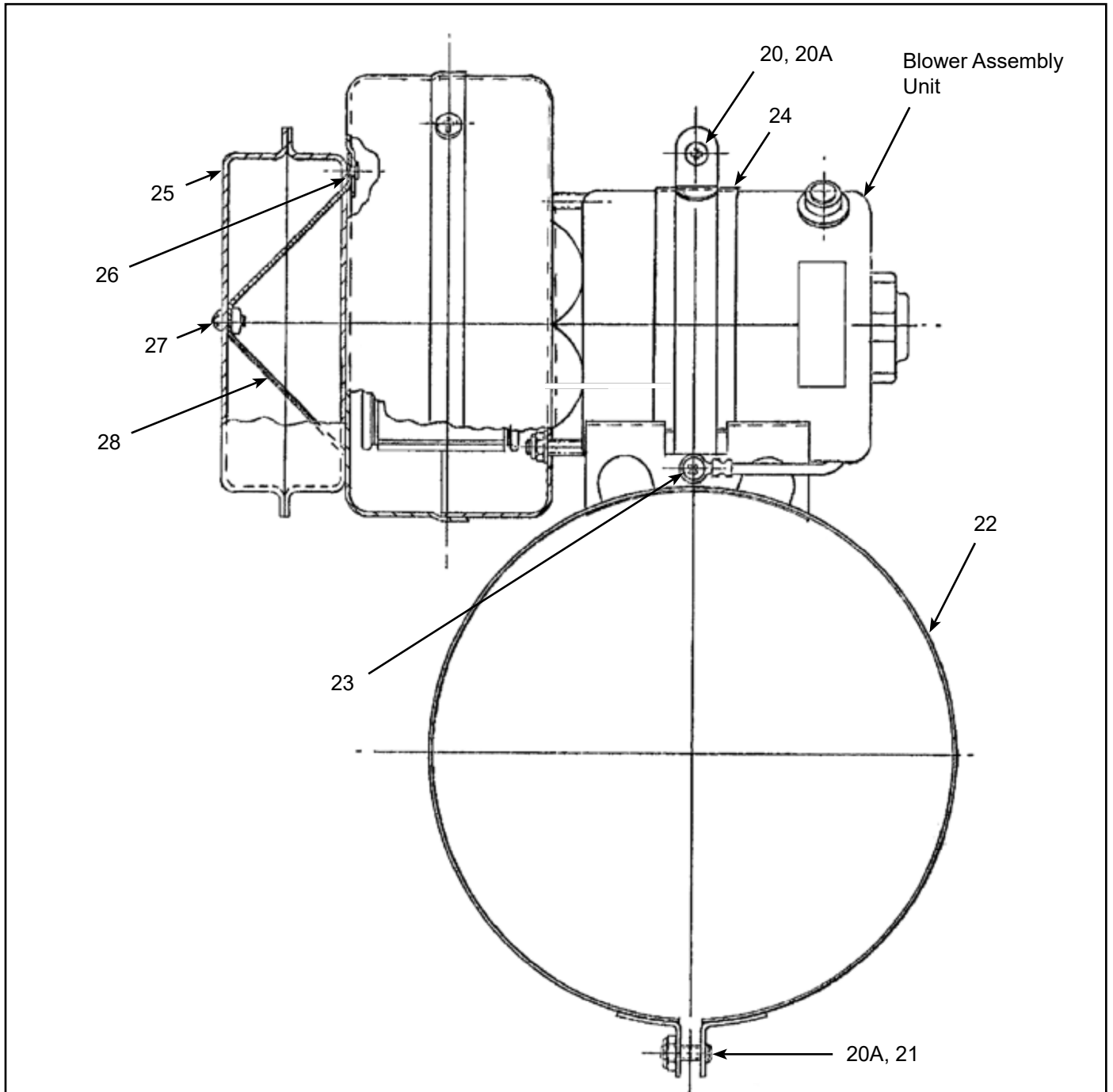


Figure 6-4 - 90D39-() Blower Assembly

NOTE: Items indexed in Fig. 6-4 are particular to the 90D39-() blower assembly only

	Part Number	Description	Blower P/N												
			90D39-1	90D39-2	90D39-3	90D39-4									
20	86D35-7	Screw (SEMS MACH)	1	1	1	1									
20A	MS21083N3	Nut	2	2	2	2									
21	86D35-6	Screw (SEMS MACH)	2	2	2	2									
22	87D01-1	Mounting Assembly	1	1	1	1									
23	86D38-1	Screw (SEMS TAP)	1	1	1	1									
24	28D19	Strip, Rubber	2	2	2	2									
25	84D38-1	Adapter	1	1	1	1									
26	MS24243/5-D402	Rivet	2	2	2	2									
27	86D35-2	Screw (SEMS MACH)	1	1	1	1									
28	84D39-3	Bracket, Adapter	1	1	1	1									

Table 6-3 - 90D39-() Motor Replacement Parts List