

SEI-187



*GE Aircraft Engines*

---

# **CF700**

## **TURBOFAN ENGINE**

### **CF700-2C**

### **CF700-2D**

### **CF700-2D-2**

## **MAINTENANCE MANUAL**

---

### **NOTICE TO AIRCRAFT OWNER**

If you sell your aircraft, the new owner will require the material in this manual to maintain and service the engines. Please forward this manual to the new owner as soon as possible after the sale is completed.

---

**APRIL 1, 1967**  
**REVISION 20 — JULY 15, 1999**



## RECORD OF REVISIONS

Rev. No.	Revision Date	Date of Approval	Insertion Date	By
Basic Issue	Apr 1/67	Mar 14/67		
1	Nov 15/67	Dec 11/67		
2	May 1/68	Apr 3/68		
3	Jul 15/68	Jul 22/68		
4	Feb 1/69	Jan 20/69		
5	Oct 1/69	Sep 18/69		
6	Jun 1/70	May 22/70		
7	Nov 1/70	Oct 22/70		
8	Jun 15/71	May 10/71		
9	Dec 1/72	Oct 17/72		
10	Dec 1/73	Oct 5/73		
11	Sep 15/75	Jul 15/75		
12	Sep 15/76	Jul 20/76		
13	Dec 15/77	Oct 11/77		
14	Dec 30/78	Nov 14/78		
15	Dec 1/79	Oct 5/79		
16	Jun 1/84	Jul 16/84		
17	Oct 1/89	Dec 12/89		
18	Dec 31/95	Nov 15/96		
19	May 31/98	Apr 15/98		

**Retain this record in the front of the manual. On receipt of revisions, insert revised pages in the manual, enter revision number, date inserted, and name.**



**GE Aircraft Engines**

# CF700 TURBOFAN ENGINES

MAINTENANCE MANUAL

## RECORD OF REVISIONS

Rev. No.	Revision Date	Date of Approval	Insertion Date	By
20	Jul 15/99	Jun 8/99	10/28/99	ATP/ZS

Retain this record in the front of the manual. On receipt of revisions, insert revised pages in the manual, enter revision number, date inserted, and name.



---

General Electric Company  
1000 Western Ave., Lynn, MA 01910

June 8, 1999

**SUBJECT: Revision 20, dated July 15, 1999, to the CF700 Maintenance Manual SEI-187**

Highlights of this revision are included in the front of every Chapter that is affected by this Revision.

Insert Revision 20 pages and remove the deleted pages in accordance with the List of Effective Pages included with Revision 20. Make sure that all the previous revisions have been inserted. After you insert the pages of Revision 20, note the necessary information on the Record of Revisions page, which contains the FAA approval date.

To help improve our manuals, please report any deficiencies or submit any suggestions to the undersigned.

**Please direct any questions concerning distribution (changes in address, incorrect quantities, addressee changes, etc.) to:**

Technical Services  
10525 Chester Road  
Cincinnati, Ohio 45215  
USA

ATTENTION: Diane Piening

Telephone: (513) 672-8400, Ext. 130  
Fax: (513) 672-8422

**THE INFORMATION (INCLUDING TECHNICAL DATA) CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF GE. IT IS DISCLOSED IN CONFIDENCE AND THE TECHNICAL DATA THEREIN IS EXPORTED UNDER U.S. GOVERNMENT LICENSE. THEREFORE, NONE OF THE INFORMATION MAY BE DISCLOSED TO ANYONE OTHER THAN THE RECIPIENT, OR USED FOR PURPOSES OTHER THAN TO RENDER SERVICES TO GE, WITHOUT THE EXPRESS PRIOR WRITTEN AUTHORIZATION OF GE. IN ADDITION, THE TECHNICAL DATA THEREIN, AND THE DIRECT PRODUCT OF THE DATA, MAY NOT BE DIVERTED, TRANSFERRED, RE-EXPORTED OR DISCLOSED IN ANY MANNER NOT PROVIDED FOR BY THE LICENSE WITHOUT THE PRIOR WRITTEN APPROVAL OF THE UNITED STATES GOVERNMENT.**

L.C. Swart  
Mail Zone 340M2  
Technical Information Operation  
Telephone: (781) 594-2994  
Fax: (781) 594-0600



**GE Aircraft Engines**

# CF700 TURBOFAN ENGINES

MAINTENANCE MANUAL

REVISION NO. 20, DATED JUL 15/99

<u>CHAPTER/SECTION</u>	<u>DESCRIPTION OF CHANGE</u>	<u>PAGE (S)</u>
INTRODUCTION	Added step F (precautions to prevent unwanted objects or materials from going into the engine, controls, or accessories)	2

International AeroTech Academy For Training Purposes Only

**GENERAL ELECTRIC**  
**CF700 TURBOFAN**

SEI-187

MAINTENANCE MANUAL

GENERAL TABLE OF CONTENTS

INTRODUCTION

CHAPTER

72	ENGINE
73	FUEL AND CONTROL SYSTEM
75	AIR
77	ENGINE INDICATING SYSTEM
78	EXHAUST
79	LUBRICATION SYSTEM
80	STARTING SYSTEM



**GE Aircraft Engines**

# CF700 TURBOFAN ENGINES

## MAINTENANCE MANUAL

### INTRODUCTION

#### LIST OF EFFECTIVE PAGES

<u>CHAPTER/ SECTION</u>	<u>PAGE</u>	<u>DATE</u>	<u>CHAPTER/ SECTION</u>	<u>PAGE</u>	<u>DATE</u>
List of Effective Pages	*I	Jul 15/99			
INTRO	1	Dec 31/95			
	*2	Jul 15/99			
	*2A thru 2B	Jul 15/99			
	3 thru 5	Sep 15/75			
	6	Dec 31/95			

\* Asterisk denotes pages added, changed, or deleted by this revision.



GE Aircraft Engines

# CF700 TURBOFAN ENGINES

MAINTENANCE MANUAL

SEI-187

## TEMPORARY REVISION INTRO 001

### Filing

**Instructions:** Put this Temporary Revision (TR) in the CF700 TURBOFAN ENGINES Maintenance Manual SEI-187, adjacent to page 1, dated Dec 31/95, in Chapter INTRODUCTION.

Record this TR number in the Record of Temporary Revisions.

**Subject:** Replacement Parts and Life-Limited Low Cycle Fatigue (LCF) Parts

**Reason:** Revised the CAUTION stating to use only genuine GEAE parts for the maintenance of GEAE engines.

**Change:** Revised the CAUTION before step E.

### GE PROPRIETARY INFORMATION

The information contained in this document is GE proprietary information and is disclosed in confidence. It is the property of GE and shall not be used, disclosed to others or reproduced without the express written consent of GE, including, but without limitation, it is not to be used in the creation, manufacture, development, or derivation of any repairs, modifications, spare parts, designs, or configuration changes or to obtain FAA or any other government or regulatory approval to do so. If consent is given for reproduction in whole or in part, this notice and the notice set forth on each page of this document shall appear in any such reproduction in whole or in part. The information contained in this document may also be controlled by U.S. export control laws. Unauthorized export or re-export is prohibited.

Copyright (1967) General Electric Company, U.S.A.

FAA APPROVED DECEMBER 3, 2001

## INTRODUCTION

Page 1 of 2  
Dec 3/01





GE Aircraft Engines

# CF700 TURBOFAN ENGINES

MAINTENANCE MANUAL

SEI-187

## TEMPORARY REVISION INTRO 001 (continued)

- CAUTION:
- GEAE RECOMMENDS THAT GENUINE GEAE PARTS BE USED IN MAINTAINING YOUR GEAE ENGINES. GEAE'S MANUALS, SERVICE BULLETINS AND OTHER MAINTENANCE DOCUMENTS RELATING TO INSPECTION LIMITS, REPAIR METHODS, OPERATIONAL LIMITS, LIFE LIMITS, AND THE LIKE ARE DEVELOPED AND APPROVED FOR USE WITH GENUINE GEAE PARTS. GEAE DOES NOT TEST, CERTIFY FOR ASSEMBLY OR USE, NOR ADDRESS IN ITS TECHNICAL DOCUMENTS NON-GEAE PARTS.
  - GEAE CUSTOMER CONTRACTS CONTAIN IMPORTANT WARRANTY AND GUARANTEE BENEFITS, WHICH, UNDER CERTAIN CIRCUMSTANCES, MAY BE IMPACTED BY THE USE OF NON-GEAE PARTS OR NON-GEAE-SUBSTANTIATED REPAIRS. FOR EXAMPLE, NON-GEAE PARTS OR REPAIRS NOT PERFORMED BY GE GENERALLY ARE NOT COVERED BY THE GEAE WARRANTY. FURTHERMORE, ANY ENGINE DAMAGE CAUSED IN WHOLE OR IN PART BY THE FAILURE OR MALFUNCTION OF A NON-GEAE PART OR A REPAIR PROVIDED BY OTHERS MAY NOT BE COVERED UNDER WARRANTY. THE SPECIFIC CONDITIONS AND QUALIFICATIONS FOR WARRANTY/GUARANTEE COVERAGE ARE DELINEATED IN THE PRODUCT SUPPORT PLAN PROVISIONS OF THE APPLICABLE CUSTOMER CONTRACT.
  - IF ANY DOUBT EXISTS ON THE FLIGHTWORTHINESS OF A PART, GEAE MUST BE CONTACTED FOR A RECOMMENDED COURSE OF ACTION.

International AeroTech Academy For Training Purposes Only

## INTRODUCTION

Page 2 of 2  
Dec 3/01



# CF700 TURBOFAN ENGINES

## MAINTENANCE MANUAL

### 1. General.

- A. This maintenance manual is written to cover the varying degrees of maintenance that may be performed on the CF700-2C, -2D, and -2D-2 turbofan engines as used in the Falcon 20 and Sabreliner 75A and 80 aircraft.

NOTE: GE Aircraft Engines will not assume responsibility for engines that are maintained, inspected, and repaired, as instructed in this manual, which have been installed and operated in any aircraft other than those listed in step A.

- B. To overcome the variances that are involved in dealing with an installed engine, this manual is written on the premise that all areas of the engine are accessible as when the engine is removed for the aircraft.
- C. The format of the manual is based on Air Transportation Association (ATA) Specification 100. Because of this format, the continuity of the chapter numbers is broken.
- D. Standard shop practices, safety procedures, and precautionary measures should be observed at all time to avoid damage or injury to equipment and persons.

CAUTION: ONLY REPLACEMENT PARTS CERTIFIED AIRWORTHY BY GE AIRCRAFT ENGINES, AND FAA APPROVED CF700 REPAIR FACILITY, OR A REPAIR FACILITY OUTSIDE THE U.S. AUTHORIZED BY GE AIRCRAFT ENGINES AND APPROVED BY THE LOCAL CIVIL AVIATION AUTHORITY SHOULD BE USED IN THE MAINTENANCE, REPAIR, AND OVERHAUL OF CF700 ENGINES. GE AIRCRAFT ENGINES SHALL ASSUME NO LIABILITY OR RESPONSIBILITY FOR DAMAGES CAUSED BY THE USE OF PARTS WHICH ARE NOT CERTIFIED AIRWORTHY PER THE ABOVE. FURTHER, ANY USED, NON-CERTIFIED GE AIRCRAFT ENGINES PARTS SHOULD NOT BE USED AS REPLACEMENT PARTS. THESE PARTS MAY HAVE BEEN EXPOSED TO CONDITIONS WHICH COULD RESULT IN UNANTICIPATED FAILURE IF USED AS REPLACEMENT PARTS. GE AIRCRAFT ENGINES SHALL ASSUME NO LIABILITY OR RESPONSIBILITY FOR DAMAGES CAUSED BY THE USE OF USED, NON-CERTIFIED REPLACEMENT PARTS; IF ANY DOUBT EXISTS ON THE AIRWORTHINESS OF A PART, GE AIRCRAFT ENGINES SHOULD BE CONTACTED FOR A RECOMMENDED COURSE OF ACTION.

- E. These instructions are not meant to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or particular problems arise which are not covered sufficiently for purchaser's purpose, the matter should be referred to:

Manager, CJ610/CF700 Programs  
GE Aircraft Engines  
1000 Western Avenue  
Lynn, Massachusetts 01910  
USA





# CF700 TURBOFAN ENGINES

## MAINTENANCE MANUAL

- F. Precautions must be taken to prevent all unwanted objects or materials from going into the engine or controls and accessories. If at any time, you think unwanted objects or materials have gone into the engine or controls and accessories, the maintenance procedure must stop until the unwanted objects or materials are located and removed. Before you assemble or install engine parts, make sure that the part is fully cleaned to prevent unwanted objects or materials from going into the engine or controls and accessories. Suitable plugs, caps, and other coverings must be used to protect all openings from unwanted objects or materials.
  
- G. The following warning is for asbestos parts, and must be strictly complied with:

WARNING: ASBESTOS

THIS ENGINE MAY CONTAIN SMALL AMOUNTS OF ASBESTOS. WHEN WORKING WITH THIS ENGINE, THE FOLLOWING PRECAUTIONS MUST BE RIGIDLY ADHERED TO:

BEFORE ANY MAINTENANCE ACTIVITIES ARE UNDERTAKEN, REVIEW THE ILLUSTRATED PARTS BREAKDOWN/CATALOG INDEX TO DETERMINE IF THE HARDWARE TO BE WORKED ON OR USED CONTAINS ASBESTOS.

WHENEVER MECHANICAL REMOVAL OF MATERIAL, SUCH AS MACHINING, GRINDING, BUFFING, DRILLING, SANDING OR ANY TYPE OF MATERIAL BUILD-UP ON PARTS THAT CONTAIN ASBESTOS IS NECESSARY, APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT MUST BE WORN, AND NATIONAL ENVIRONMENTAL CONTROLS REQUIRED FOR THE HANDLING OF ASBESTOS-CONTAINING MATERIAL MUST BE COMPLIED WITH.

BEFORE HANDLING, REPLACING, OR DISPOSING OF ASBESTOS-CONTAINING HARDWARE, APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT AND NATIONAL ENVIRONMENTAL CONTROLS MUST BE STRICTLY ADHERED TO FOR HANDLING ASBESTOS-CONTAINING HARDWARE.

- H. Refer to the Illustrated Parts Catalog SEI-137 for engine parts that contain asbestos.

## 2. Organization of Manual.

### A. Numbering System.

The Maintenance Manual employs a 3-element numbering system. The first element denotes the Chapter, the second element denotes the Section, and the third element denotes the Subject or item. Example: 72-42-0.



# CF700 TURBOFAN ENGINES

## MAINTENANCE MANUAL

(1) The chapters used in this manual are denoted as follows:

<u>Chapter Number</u>	<u>Chapter Designation</u>
5	Life Limits
72	Engine
73	Engine Fuel and Control
75	Air
77	Indicating
78	Exhaust
79	Lubrication
80	Starting

(2) The sections used with the above chapter designation are identified as follows:

<u>Chapter</u>	<u>Section Number</u>	<u>Section Designation</u>
5	-11	Life Limits
	-21	Maintenance Practices - Inspection/Check
72	-00	Engine General
	-01	General Assembly Information
	-02	General Inspection/Repair
	-03	General Inspection Techniques
	-30	Compressor Section
	-31 through 39	Major Components of the Compressor Section
	-40	Combustion Section
	-41 through 49	Major Components of the Combustion Section
	-50	Turbine Section
	-51 through 59	Major Components of the Turbine Section
	-60	Accessory Drives
	-61 through 69	Major Components of the Accessory Drive Section
	-70	Aft Fan Section
-71 through 79	Major Components of Aft Fan Section	



# CF700 TURBOFAN ENGINES

## MAINTENANCE MANUAL

<u>Chapter</u>	<u>Section Number</u>	<u>Section Designation</u>
73	-00	General
	-10	Distribution
	-11 through 19	Components of Distribution Section
	-20	Controlling
	-21 through 29	Components of Controlling Section
75	-00	General
	-10	Power Plant Anti-Icing
	-11 through 19	Components of Anti-Icing System
	-30	Compressor Control
	-31 through 39	Components of Compressor Control System
77	-00	General
	-10	Power
	-11 through 19	Components of Power Indicating System
	-20	Temperature
	-21 through 29	Components of Temperature Indicating System
78	-00	General
	-10	Collector
	-11 through 19	Major Components of Collector System
79	-00	General
	-10	Storage
	-11 through 19	Major Components of Storage System
	-20	Distribution
	-21 through 29	Major Components of Distribution System
	-40	Sump Pressurizing and Vent Systems
-41 through 49	Major Components of Sump Pressurizing and Vent Systems	
80	-00	General
	-10	Cranking
	-11 through 19	Components of Cranking System
	-20	Ignition
	-21 through 29	Components of Ignition System

GENERAL ELECTRIC  
CF700 TURBOFAN

SEI-187

MAINTENANCE MANUAL

- (3) Separate subjects or units are covered within the respective section of each chapter. These subjects are denoted by the third element digits. 1 and up indicates a part of the major component.

NOTE: The use of a zero (0) in the third element indicates coverage of the entire assembly or major component as defined by the second number.

B. Page Numbers.

Page number blocks are assigned to separate the subjects into topics. The following blocks have been assigned for the respective topic uses:

Description and Operation	Pages 1 through 100
Troubleshooting	Pages 101 through 200
Maintenance Practices	Pages 201 through 300

NOTE: When individual sub-topics are too lengthy to include under the above heading, they are treated as individual topics and are found within the following blocks of page numbers.

Servicing	Pages 301 through 400
Removal/Installation	Pages 401 through 500
Adjustment/Test	Pages 501 through 600
Inspection/Check	Pages 601 through 700
Cleaning/Preservation	Pages 701 through 800
Repairs	Pages 801 through 900

A complete breakdown of pages, as shown above, is not used when the part is small and extremely simple and can be covered in from 1 to 5 pages. These subject parts are page-numbered 201 through 205.

C. Figure Numbers

Illustrations are numbered consecutively within each topic. The figure numbers within a topic use the same block of numbers as the page numbers.

Figures in Description and Operation	1 through 100
Figures in Maintenance Practices	201 through 300

D. Chapter Coverage

- (1) Complete coverage for the maintenance of a particular part is included under each subject head or is referenced in all chapters except sections 72-01, 72-02, and 72-03 on general procedures. These sections do not cover any parts, only processes and procedures.

- (2) When a process or procedure is used many times and it is a standard General Electric process or procedure, it is included in either 72-01, 72-02, or 72-03 and are referenced in the other chapters.
- (3) All special and standard torques for this engine are listed in 72-01-3. When a special torque is required for a particular application it will be given in the text as well as on the torque chart in this section. Use standard torque value when a special torque value is not specified.

E. Organization of Inspection Data.

- (1) The inspection data for individual parts in most cases is arranged in tables, which may or may not include an illustration of the part.
- (2) To use the tables, first inspect the part to determine what deviation is present. When the deviation is located in the "Inspect" column, then check the corresponding columns for "Maximum Serviceable Limit" to ascertain whether the defect is serviceable. If the defect exceeds the Maximum Serviceable Limits the part must be rejected from further service until the defect in the part or section of the part is corrected.

3. Supplementary Publication. The following is a list of CF700 publications, which directly support this maintenance publication:

A. Operating Instructions (SEI-189).

The operating instructions give operating limits and special operating procedures useful for pilots and maintenance personnel who will operate the engine while installed in the aircraft. These instructions are not to be used for testing the engines after maintenance or overhaul. Operations Engineering Bulletins are also filed with this publication and offer pertinent information.

B. Illustrated Parts Catalog (SEI-137).

- (1) The Illustrated Parts Catalog lists, describes, and illustrates assemblies, subassemblies, and detailed parts of the engine. It is intended only for requisitioning, issuing, and identifying parts and for illustrating relationships for disassembly, where applicable. It is not to be used as the authority for procedures of assembly or disassembly.
- (2) The catalog is also a historical record of parts used, superseded, and/or discontinued.

4. Other Supplementary Publications. The following list includes additional publications that support the engine but do not directly relate to the maintenance phase of this engine.

A. Overhaul Manual (SEI-133).

- (1) The Overhaul Manual defines the work that can be done at an overhaul facility. Overhaul is defined as the work necessary to restore the engine to its optimum level of performance.
- (2) The manual consists of procedures outlining the methods of disassembly, inspection, repair, and assembly of individual engine components. Engine test procedures are presented to enable the user to evaluate the success of the overhaul.

B. Accessories Overhaul Manual and Illustrated Parts Catalog (SEI-154).

- (1) The Accessories Overhaul Manual and Illustrated Parts Catalog contains detailed overhaul instructions for the accessories furnished on the engine.
- (2) The manual covers disassembly, cleaning, inspection, repairs, assembly, and testing of the accessories as listed in the Illustrated Parts Catalog (SEI-137). The manual also includes an illustrated parts catalog for each of these accessories.

5. Definitions. The following terms are used in the maintenance manual and are defined as follows:

**NOTE:** Notes call attention to methods which make the job easier.

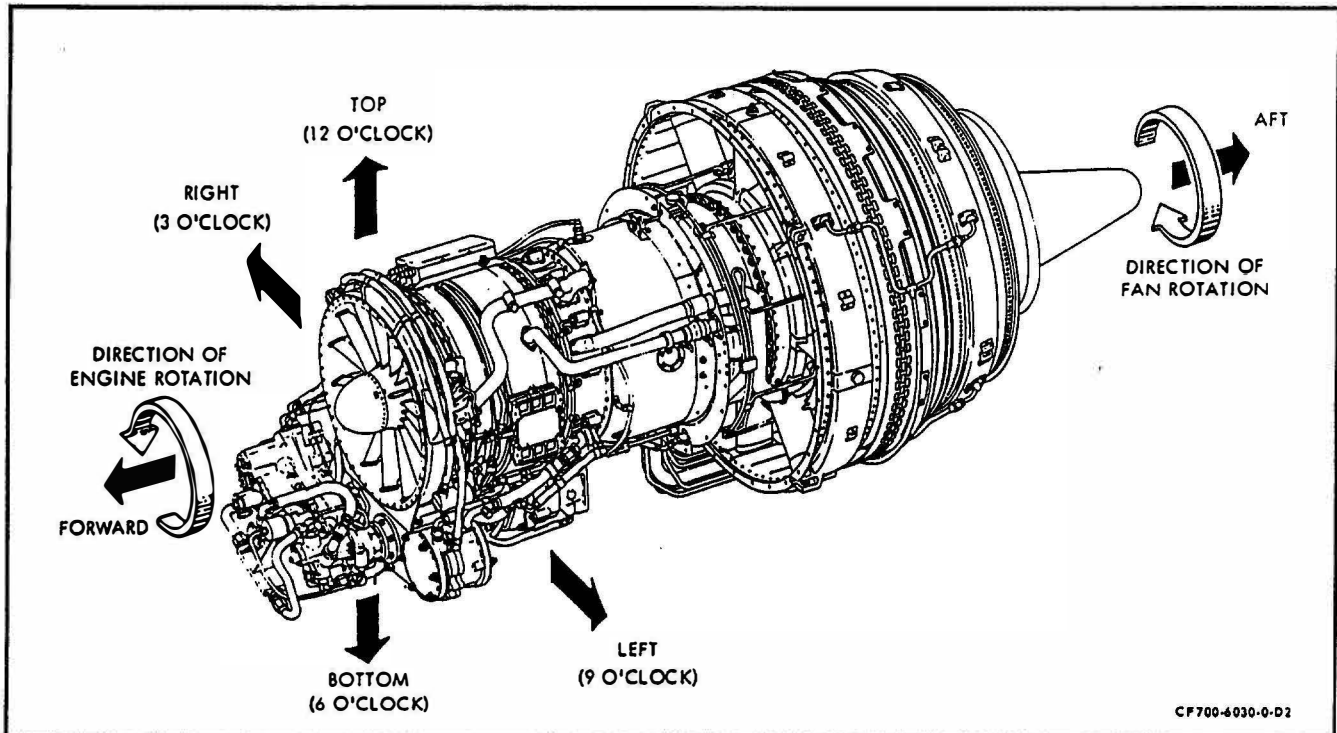
**CAUTION:** CAUTIONS CALL ATTENTION TO METHODS AND PROCEDURES WHICH, IF NOT PRECISELY FOLLOWED, POSE A PARTICULAR RISK OF EQUIPMENT DAMAGE.

**WARNING:** WARNINGS CALL ATTENTION TO METHODS, PROCEDURES OR LIMITS WHICH, IF NOT PRECISELY FOLLOWED, POSE A PARTICULAR RISK OF INJURY OR DEATH TO PERSONS.

6. Engine Directional Reference. (See figure 1.) "Clockwise" and "counterclockwise," "clock position" and other directional references apply to the engine in a horizontal position, viewed from the rear, and with the accessories section at the bottom. When components or struts are numbered in a circumferential direction the No. 1 position is at 12 o'clock, or immediately clockwise from 12 o'clock. The remaining positions increase arithmetically in a clockwise position.

7. Special Tools. The tools listed in this publication are identified by part numbers of General Electric Company. These tools, or their equivalent, may be used but are not required. Copies of the tool prints are available, or if desirable, the tools may be purchased from General Electric.





Engine Directional Reference  
Figure 1

8. **Warnings.** Warnings for hazardous substances have been developed from dated Material Safety Data Sheets (MSDS), when available. Each warning is valid as of its specific preparation date. To ensure compliance with current precautionary information:
- A. Read and follow specific instructions in MSDS for types of personal protective equipment (safety glasses, gloves, apron, etc.), for use of ventilators or respirators, for types of fire extinguishers, and for treating medical emergencies.
  - B. Read and follow the hazardous materials label posted on the container for the specific substance and the MSDS supplied by the manufacturer.
  - C. Follow established shop practices and procedures when using, handling, and storing hazardous materials.
  - D. Dispose of hazardous materials by complying with existing federal, state, or local regulations.