

Table of Contents

Volume Contents	V
------------------------------	----------

Preface.....	VII
---------------------	------------

Acknowledgments.....	IX
-----------------------------	-----------

Table of Contents	XV
--------------------------------	-----------

Chapter 10

Aircraft Instrument Systems	10-1
--	-------------

Introduction.....	10-1
-------------------	------

Classifying Instruments	10-3
-------------------------------	------

Flight Instruments	10-3
--------------------------	------

Engine Instruments.....	10-3
-------------------------	------

Navigation Instruments	10-4
------------------------------	------

Pressure Measuring Instruments	10-5
--------------------------------------	------

Types of Pressure	10-7
-------------------------	------

Pressure Instruments.....	10-8
---------------------------	------

Engine Oil Pressure	10-8
---------------------------	------

Manifold Pressure.....	10-9
------------------------	------

Engine Pressure Ratio (EPR).....	10-9
----------------------------------	------

Fuel Pressure.....	10-10
--------------------	-------

Hydraulic Pressure.....	10-11
-------------------------	-------

Vacuum Pressure	10-11
-----------------------	-------

Pressure Switches	10-11
-------------------------	-------

Pitot-Static Systems.....	10-12
---------------------------	-------

Pitot Tubes and Static Vents.....	10-13
-----------------------------------	-------

Air Data Computers (ADC) and Digital Air	
--	--

Data Computers (DADC)	10-16
-----------------------------	-------

Pitot-Static Pressure-Sensing Flight Instruments...	10-16
---	-------

Altimeters and Altitude.....	10-16
------------------------------	-------

Vertical Speed Indicator	10-22
--------------------------------	-------

Airspeed Indicators.....	10-24
--------------------------	-------

Remote Sensing and Indication	10-26
-------------------------------------	-------

Synchro-Type Remote-Indicating Instruments	10-26
--	-------

DC Selsyn Systems.....	10-27
------------------------	-------

AC Synchro Systems	10-28
--------------------------	-------

Remote Indicating Fuel and Oil Pressure	
---	--

Gauges	10-29
--------------	-------

Mechanical Movement Indicators.....	10-29
-------------------------------------	-------

Tachometers	10-30
-------------------	-------

Mechanical Tachometers	10-30
------------------------------	-------

Electric Tachometers	10-30
----------------------------	-------

Accelerometers.....	10-33
---------------------	-------

Stall Warning and Angle of Attack (AOA)	
---	--

Indicators	10-33
------------------	-------

Temperature Measuring Instruments	10-36
---	-------

Non-Electric Temperature Indicators	10-36
---	-------

Electrical Temperature Measuring Indication	10-37
---	-------

Electrical Resistance Thermometer	10-37
---	-------

Ratiometer Electrical Resistance	
----------------------------------	--

Thermometers	10-38
--------------------	-------

Thermocouple Temperature Indicators	10-39
---	-------

Turbine Gas Temperature Indicating Systems ..	10-40
---	-------

Total Air Temperature Measurement.....	10-42
--	-------

Direction Indicating Instruments	10-43
--	-------

Magnetic Compass	10-43
------------------------	-------

Vertical Magnetic Compass	10-45
---------------------------------	-------

Remote Indicating Compass.....	10-46
--------------------------------	-------

Remote Indicating Slaved Gyro Compass	
---------------------------------------	--

(Flux Gate Compass).....	10-46
--------------------------	-------

Solid State Magnetometers.....	10-47
--------------------------------	-------

Sources of Power for Gyroscopic Instruments	10-47
---	-------

Vacuum Systems	10-48
----------------------	-------

Venturi Tube Systems.....	10-48
---------------------------	-------

Engine-Driven Vacuum Pump.....	10-49
--------------------------------	-------

Typical Pump-Driven System.....	10-50
---------------------------------	-------

Twin-Engine Aircraft Vacuum System	
------------------------------------	--

Operation	10-51
-----------------	-------

Pressure-Driven Gyroscopic Instrument Systems ..	10-52
--	-------

Electrically-Driven Gyroscopic Instrument	
---	--

Systems.....	10-52
--------------	-------

Principles of Gyroscopic Instruments	10-53
--	-------

Mechanical Gyros.....	10-53
-----------------------	-------

Solid State Gyros and Related Systems	10-54
---	-------

Ring Laser Gyros (RLG)	10-55
------------------------------	-------

Microelectromechanical Based Attitude and	
---	--

Directional Systems	10-56
---------------------------	-------

Other Attitude and Directional Systems	10-56
--	-------

Common Gyroscopic Instruments	10-56
Vacuum-Driven Attitude Gyros	10-56
Electric Attitude Indicators	10-58
Gyroscopic Direction Indicator or Directional Gyro (DG)	10-58
Turn Coordinators	10-59
Turn-and-Slip Indicator	10-59
Autopilot Systems	10-61
Basis for Autopilot Operation	10-61
Autopilot Components	10-62
Sensing Elements	10-62
Computer and Amplifier	10-62
Output Elements	10-63
Command Elements	10-64
Feedback or Follow-up Element	10-64
Autopilot Functions	10-65
Yaw Dampening	10-66
Automatic Flight Control System (AFCS)	10-66
Flight Director Systems	10-66
Electronic Instruments	10-68
Electronic Attitude Director Indicator (EADI)	10-68
Electronic Horizontal Situation Indicators (EHSI)	10-69
Electronic Flight Information Systems	10-69
Electronic Flight Instrument System (EFIS)	10-70
Electronic Centralized Aircraft Monitor (ECAM)	10-71
Engine Indicating and Crew Alerting System (EICAS)	10-72
Flight Management System (FMS)	10-74
Warnings and Cautions	10-75
Annunciator Systems	10-75
Aural Warning Systems	10-77
Clocks	10-77
Instrument Housings and Handling	10-78
Instrument Installations and Markings	10-80
Instrument Panels	10-80
Instrument Mounting	10-81
Instrument Power Requirements	10-82
Instrument Range Markings	10-82
Maintenance of Instruments and Instrument Systems	10-83
Altimeter Tests	10-83
Pitot-Static System Maintenance and Tests	10-84
Tachometer Maintenance	10-85
Magnetic Compass Maintenance and Compensation	10-85
Vacuum System Maintenance	10-86
Autopilot System Maintenance	10-86
LCD Display Screens	10-87

Chapter 11	
Communication and Navigation.....	11-1
Introduction.....	11-1
Avionics in Aviation Maintenance.....	11-2
History of Avionics	11-2
Fundamentals of Electronics.....	11-3
Analog Versus Digital Electronics	11-3
Noise	11-4
Analog Electronics	11-4
Electron Control Valves	11-4
Basic Analog Circuits	11-19
Digital Electronics	11-26
Radio Communication	11-30
Radio Waves.....	11-31
Types of Radio Waves.....	11-32
Loading Information onto a Radio Wave.....	11-34
Amplitude Modulation (AM)	11-35
Frequency Modulation (FM)	11-36
Single Side Band (SSB).....	11-36
Radio Transmitters and Receivers.....	11-37
Transmitters	11-37
Receivers.....	11-37
Transceivers.....	11-38
Antennas.....	11-38
Length.....	11-38
Polarization, Directivity, and Field Pattern	11-39
Types.....	11-40
Transmission Lines	11-42
Radio Navigation	11-42
VOR Navigation System.....	11-43
Automatic Direction Finder (ADF).....	11-46
Radio Magnetic Indicator (RMI).....	11-49
Instrument Landing Systems (ILS)	11-49
Localizer	11-49
Glideslope	11-50
Compass Locators.....	11-51
Marker Beacons	11-52
Distance Measuring Equipment (DME).....	11-52
Area Navigation (RNAV)	11-54
Radar Beacon Transponder	11-54
Transponder Tests and Inspections.....	11-56
Altitude Encoders	11-58
Collision Avoidance Systems.....	11-58
Traffic Collision Avoidance Systems (TCAS) ...	11-58
ADS-B	11-60
Radio Altimeter	11-62
Weather Radar	11-62

Emergency Locator Transmitter (ELT).....	11-65
Long Range Aid to Navigation System (LORAN)	11-67
Global Positioning System (GPS)	11-69
Wide Area Augmentation System (WAAS).....	11-70
Inertial Navigation System (INS)/Inertial Reference System (IRS).....	11-71
Installation of Communication and Navigation Equipment	11-72
Approval of New Avionics Equipment Installations	11-72
Considerations	11-72
Cooling and Moisture	11-73
Vibration Isolation.....	11-73
Reducing Radio Interference	11-74
Shielding.....	11-74
Isolation	11-74
Bonding	11-74
Static Discharge Wicks	11-74
Installation of Aircraft Antenna Systems.....	11-75
Transmission Lines	11-76
Maintenance Procedure	11-76

Chapter 12

Hydraulic and Pneumatic Power Systems12-1

Aircraft Hydraulic Systems.....	12-1
Hydraulic Fluid	12-2
Viscosity	12-2
Chemical Stability	12-2
Flash Point.....	12-3
Fire Point	12-3
Types of Hydraulic Fluids	12-3
Mineral-Based Fluids	12-3
Polyalphaolefin-Based Fluids.....	12-3
Phosphate Ester-Based Fluid.....	12-3
Intermixing of Fluids.....	12-3
Compatibility with Aircraft Materials.....	12-4
Hydraulic Fluid Contamination.....	12-4
Contamination Check	12-4
Contamination Control	12-5
Hydraulic System Flushing	12-5
Health and Handling.....	12-6
Basic Hydraulic Systems	12-6
Open Center Hydraulic Systems	12-6
Closed-Center Hydraulic Systems.....	12-7
Hydraulic Power Systems	12-7
Evolution of Hydraulic Systems.....	12-7
Hydraulic Power Pack System	12-7
Hydraulic System Components.....	12-8
Reservoirs	12-8

Filters.....	12-13
Micron-Type Filters.....	12-14
Maintenance of Filters	12-14
Filter Bypass Valve	12-14
Filter Differential Pressure Indicators	12-14
Pumps	12-15
Hand Pumps	12-15
Power-Driven Pumps	12-16
Classification of Pumps	12-16
Constant-Displacement Pumps	12-17
Gear-Type Power Pump	12-17
Gerotor Pump.....	12-17
Piston Pump.....	12-17
Vane Pump.....	12-20
Variable-Displacement Pump.....	12-20
Valves	12-22
Flow Control Valves.....	12-22
Pressure Control Valves	12-27
Shuttle Valves	12-30
Accumulators.....	12-31
Types of Accumulators.....	12-31
Heat Exchangers.....	12-32
Actuators	12-33
Linear Actuators	12-33
Rotary Actuators.....	12-34
Hydraulic Motor	12-34
Ram Air Turbine (RAT).....	12-34
Power Transfer Unit (PTU).....	12-35
Hydraulic Motor-Driven Generator (HMDG).....	12-35
Seals	12-35
V-Ring Packings.....	12-36
U-Ring	12-36
O-Rings.....	12-36
Backup Rings.....	12-37
Gaskets.....	12-37
Seal Materials	12-38
O-Ring Installation	12-38
Wipers.....	12-38
Large Aircraft Hydraulic Systems	12-38
Boeing 737 Next Generation Hydraulic System	12-38
Reservoirs	12-38
Pumps	12-40
Filter Units	12-40
Power Transfer Unit (PTU)	12-40
Landing Gear Transfer Unit.....	12-42
Standby Hydraulic System	12-42
Indications.....	12-42

Boeing 777 Hydraulic System.....	12-42	Large Aircraft.....	13-30
Left and Right System Description.....	12-43	Shimmy Dampers.....	13-32
Center Hydraulic System.....	12-45	Steering Damper.....	13-33
Aircraft Pneumatic Systems.....	12-47	Piston-Type.....	13-33
High-Pressure Systems.....	12-48	Vane-Type.....	13-33
Pneumatic System Components.....	12-48	Non-Hydraulic Shimmy Damper.....	13-34
Emergency Backup Systems.....	12-51	Aircraft Wheels.....	13-34
Medium-Pressure Systems.....	12-52	Wheel Construction.....	13-35
Low-Pressure Systems.....	12-52	Inboard Wheel Half.....	13-36
Pneumatic Power System Maintenance.....	12-52	Outboard Wheel Half.....	13-36
Chapter 13		Wheel Inspection.....	13-37
Aircraft Landing Gear Systems.....	13-1	On Aircraft Inspection.....	13-37
Landing Gear Types.....	13-1	Proper Installation.....	13-37
Landing Gear Arrangement.....	13-2	Off Aircraft Wheel Inspection.....	13-37
Tail Wheel-Type Landing Gear.....	13-3	Aircraft Brakes.....	13-42
Tandem Landing Gear.....	13-3	Types and Construction of Aircraft Brakes.....	13-43
Tricycle-Type Landing Gear.....	13-3	Single Disc Brakes.....	13-43
Fixed and Retractable Landing Gear.....	13-5	Dual-Disc Brakes.....	13-46
Shock Absorbing and Non-Shock Absorbing		Multiple-Disc Brakes.....	13-46
Landing Gear.....	13-6	Segmented Rotor-Disc Brakes.....	13-47
Leaf-Type Spring Gear.....	13-6	Carbon Brakes.....	13-51
Rigid.....	13-7	Expander Tube Brakes.....	13-51
Bungee Cord.....	13-7	Brake Actuating Systems.....	13-52
Shock Struts.....	13-8	Independent Master Cylinders.....	13-52
Shock Strut Operation.....	13-12	Boosted Brakes.....	13-54
Servicing Shock Struts.....	13-12	Power Brakes.....	13-55
Bleeding Shock Struts.....	13-13	Emergency Brake Systems.....	13-56
Landing Gear Alignment, Support, and Retraction ..	13-15	Parking Brake.....	13-58
Alignment.....	13-15	Brake Deboosters.....	13-58
Support.....	13-16	Anti-Skid.....	13-61
Small Aircraft Retraction Systems.....	13-18	System Operation.....	13-61
Large Aircraft Retraction Systems.....	13-20	Wheel Speed Sensors.....	13-62
Emergency Extension Systems.....	13-22	Control Units.....	13-62
Landing Gear Safety Devices.....	13-22	Anti-Skid Control Valves.....	13-64
Safety Switch.....	13-23	Touchdown and Lock Wheel Protection.....	13-65
Ground Locks.....	13-23	Auto Brakes.....	13-66
Landing Gear Position Indicators.....	13-24	Anti-Skid System Tests.....	13-66
Nose Wheel Centering.....	13-24	Anti-Skid System Maintenance.....	13-66
Landing Gear System Maintenance.....	13-25	Brake Inspection and Service.....	13-66
Landing Gear Rigging and Adjustment.....	13-26	On Aircraft Servicing.....	13-67
Adjusting Landing Gear Latches.....	13-27	Lining Wear.....	13-67
Gear Door Clearances.....	13-27	Air in the Brake System.....	13-68
Drag and Side Brace Adjustment.....	13-28	Bleeding Master Cylinder Brake Systems.....	13-68
Landing Gear Retraction Test.....	13-29	Bleeding Power Brake Systems.....	13-70
Nose Wheel Steering Systems.....	13-30		
Small Aircraft.....	13-30		

Off Aircraft Brake Servicing and Maintenance.....	13-71	Fuel Storage System	14-3
Replacement of Brake Linings	13-72	Fuel Storage Refilling or Recharging System	14-3
Brake Malfunctions and Damage	13-74	Types of Aviation Fuel	14-3
Overheating	13-74	Reciprocating Engine Fuel—AVGAS	14-3
Dragging	13-75	Volatility	14-4
Chattering or Squealing	13-75	Vapor Lock	14-4
Aircraft Tires and Tubes	13-75	Carburetor Icing.....	14-4
Tire Classification	13-75	Aromatic Fuels.....	14-4
Types.....	13-75	Detonation.....	14-5
Ply Rating	13-77	Surface Ignition and Preignition	14-5
Tube-Type or Tubeless	13-77	Octane and Performance Number Rating	14-6
Bias Ply or Radial	13-77	Fuel Identification.....	14-6
Tire Construction.....	13-77	Purity.....	14-7
Bead	13-78	Turbine Engine Fuels	14-8
Carcass Plies	13-78	Turbine Fuel Volatility	14-8
Tread	13-78	Turbine Engine Fuel Types	14-8
Sidewall	13-79	Turbine Engine Fuel Issues	14-9
Tire Inspection on the Aircraft.....	13-79	Aircraft Fuel Systems	14-10
Inflation.....	13-79	Small Single-Engine Aircraft Fuel Systems.....	14-10
Tread Condition	13-81	Gravity Feed Systems	14-10
Sidewall Condition	13-85	Pump Feed Systems.....	14-10
Tire Removal.....	13-86	High-Wing Aircraft with Fuel Injection System.....	14-11
Tire Inspection Off of the Aircraft	13-87	Small Multiengine (Reciprocating) Aircraft Fuel Systems	14-12
Tire Repair and Retreading	13-87	Low-Wing Twin	14-12
Tire Storage	13-88	High-Wing Twin.....	14-12
Aircraft Tubes.....	13-88	Large Reciprocating-Engine Aircraft Fuel Systems.....	14-12
Tube Construction and Selection.....	13-89	Jet Transport Aircraft Fuel Systems.....	14-13
Tube Storage and Inspection	13-89	Helicopter Fuel Systems.....	14-17
Tire Inspection	13-89	Fuel System Components	14-19
Tire Mounting	13-89	Fuel Tanks	14-19
Tubeless Tires	13-90	Rigid Removable Fuel Tanks	14-19
Tube-Type Tires	13-90	Bladder Fuel Tanks.....	14-20
Tire Balancing	13-92	Integral Fuel Tanks	14-22
Operation and Handling Tips.....	13-93	Fuel Lines and Fittings.....	14-22
Taxiing	13-93	Fuel Valves.....	14-24
Braking and Pivoting.....	13-93	Hand-Operated Valves.....	14-25
Landing Field and Hangar Floor Condition	13-93	Cone Valves.....	14-26
Takeoffs and Landings	13-93	Poppet Valves	14-26
Hydroplaning.....	13-94	Manually-Operated Gate Valves	14-27
		Motor-Operated Valves	14-27
		Solenoid-Operated Valves	14-27
		Fuel Pumps	14-28
		Hand-Operated Fuel Pumps.....	14-28
		Centrifugal Boost Pumps.....	14-29

Chapter 14

Aircraft Fuel System.....14-1

Basic Fuel System Requirements.....	14-1
Fuel System Independence.....	14-2
Fuel System Lightning Protection.....	14-2
Fuel Flow.....	14-3

Ejector Pumps.....	14-29	Leading Edge Slat Anti-Ice System.....	15-6
Pulsating Electric Pumps	14-30	Thermal Electric Anti-Icing	15-10
Vane-Type Fuel Pumps	14-31	Chemical Anti-Icing	15-10
Fuel Filters.....	14-33	Wing and Stabilizer Deicing Systems.....	15-12
Fuel Heaters and Ice Prevention.....	14-36	Sources of Operating Air.....	15-13
Fuel System Indicators	14-37	Turbine Engine Bleed Air.....	15-13
Fuel Quantity Indicating Systems.....	14-37	Pneumatic Deice Boot System for GA Aircraft	15-13
Fuel Flowmeters	14-40	GA System Operation.....	15-13
Fuel Temperature Gauges.....	14-44	Deice System for Turboprop Aircraft	15-14
Fuel Pressure Gauges.....	14-44	Deicing System Components	15-16
Pressure Warning Signal.....	14-45	Wet-Type Engine-Driven Air Pump.....	15-16
Valve-In-Transit Indicator Lights.....	14-46	Dry-Type Engine-Driven Air Pump	15-17
Fuel System Repair	14-46	Oil Separator	15-17
Troubleshooting the Fuel System.....	14-46	Control Valve.....	15-17
Location of Leaks and Defects	14-46	Deflate Valve	15-18
Fuel Leak Classification	14-46	Distributor Valve	15-18
Replacement of Gaskets, Seals, and Packings....	14-47	Timer/Control Unit	15-18
Fuel Tank Repair	14-47	Regulators and Relief Valves	15-18
Welded Tanks	14-47	Manifold Assembly	15-19
Riveted Tanks	14-48	Inlet Filter	15-19
Soldered Tanks	14-48	Construction and Installation of Deice Boots.....	15-19
Bladder Tanks.....	14-48	Inspection, Maintenance, and Troubleshooting	
Integral Tanks	14-49	of Rubber Deicer Boot Systems	15-21
Fire Safety.....	14-49	Operational Checks.....	15-21
Fuel System Servicing	14-50	Adjustments	15-21
Checking for Fuel System Contaminants	14-51	Troubleshooting.....	15-22
Water.....	14-51	Inspection.....	15-22
Solid Particle Contaminants	14-52	Deice Boot Maintenance	15-22
Surfactants	14-52	Electric Deice Boots.....	15-23
Microorganisms	14-52	Propeller Deice System.....	15-23
Foreign Fuel Contamination.....	14-53	Electrothermal Propeller Deice System	15-24
Detection of Contaminants	14-53	Chemical Propeller Deice.....	15-24
Fuel Contamination Control	14-55	Ground Deicing of Aircraft.....	15-24
Fueling and Defueling Procedures.....	14-56	Frost Removal	15-25
Fueling.....	14-56	Deicing and Anti-icing of Transport Type	
Defueling.....	14-58	Aircraft.....	15-25
Fire Hazards When Fueling or Defueling	14-58	Ice and Snow Removal.....	15-26
Chapter 15		Rain Control Systems	15-27
Ice and Rain Protection.....	15-1	Windshield Wiper Systems	15-27
Ice Control Systems	15-1	Chemical Rain Repellant.....	15-28
Icing Effects	15-2	Windshield Surface Seal Coating	15-28
Ice Detector System	15-3	Pneumatic Rain Removal Systems.....	15-29
Ice Prevention.....	15-3	Windshield Frost, Fog, and Ice Control Systems	15-29
Wing and Horizontal and Vertical Stabilizer		Electric.....	15-30
Anti-Icing Systems.....	15-4	Pneumatic	15-31
Thermal Pneumatic Anti-icing	15-4	Chemical.....	15-32
Wing Anti-Ice (WAI) System.....	15-4	Water and Waste Tank Ice Prevention.....	15-32

Chapter 16

Cabin Environmental Control Systems16-1

Physiology of Flight.....	16-1
Composition of the Atmosphere.....	16-1
Human Respiration and Circulation.....	16-2
Oxygen and Hypoxia.....	16-2
Hyperventilation.....	16-3
Carbon Monoxide Poisoning.....	16-3
Aircraft Oxygen Systems.....	16-3
Forms of Oxygen and Characteristics.....	16-4
Gaseous Oxygen.....	16-4
Liquid Oxygen.....	16-4
Chemical or Solid Oxygen.....	16-5
Onboard Oxygen Generating Systems (OBOGS).....	16-5
Oxygen Systems and Components.....	16-6
Gaseous Oxygen Systems.....	16-6
Chemical Oxygen Systems.....	16-16
LOX Systems.....	16-17
Oxygen System Servicing.....	16-17
Servicing Gaseous Oxygen.....	16-17
Filling LOX Systems.....	16-19
Inspection of Masks and Hoses.....	16-20
Replacing Tubing, Valves, and Fittings.....	16-20
Prevention of Oxygen Fires or Explosions.....	16-21
Oxygen System Inspection and Maintenance.....	16-21
Aircraft Pressurization Systems.....	16-21
Pressure of the Atmosphere.....	16-21
Temperature and Altitude.....	16-22
Pressurization Terms.....	16-23
Pressurization Issues.....	16-23
Sources of Pressurized Air.....	16-24
Reciprocating Engine Aircraft.....	16-25
Turbine Engine Aircraft.....	16-26
Control of Cabin Pressure.....	16-28
Pressurization Modes.....	16-28
Cabin Pressure Controller.....	16-29
Cabin Air Pressure Regulator and Outflow Valve.....	16-31
Cabin Air Pressure Safety Valve Operation.....	16-31
Pressurization Gauges.....	16-33
Pressurization Operation.....	16-33
Air Distribution.....	16-34
Cabin Pressurization Troubleshooting.....	16-35
Air Conditioning Systems.....	16-35
Air Cycle Air Conditioning.....	16-35
System Operation.....	16-35
Pneumatic System Supply.....	16-35
Component Operation.....	16-37

Water Separator.....	16-40
Cabin Temperature Control System.....	16-43
Vapor Cycle Air Conditioning.....	16-43
Theory of Refrigeration.....	16-43
Vapor Cycle Air Conditioning System Components.....	16-46
Vapor Cycle Air Conditioning Servicing Equipment.....	16-52
System Servicing.....	16-55
Technician Certification.....	16-59
Aircraft Heaters.....	16-59
Bleed Air Systems.....	16-59
Electric Heating Systems.....	16-59
Exhaust Shroud Heaters.....	16-59
Combustion Heaters.....	16-60
Combustion Air System.....	16-61
Ventilating Air System.....	16-61
Ignition System.....	16-62
Controls.....	16-62
Safety Features.....	16-62
Maintenance and Inspection.....	16-63

Chapter 17

Fire Protection Systems17-1

Introduction.....	17-1
Classes of Fires.....	17-2
Requirements for Overheat and Fire Protection Systems.....	17-2
Fire Detection/Overheat Systems.....	17-2
Thermal Switch System.....	17-2
Thermocouple System.....	17-3
Continuous-Loop Systems.....	17-4
Fenwal System.....	17-4
Kidde System.....	17-4
Pressure Type Sensor Responder Systems.....	17-6
Pneumatic Continuous-Loop Systems.....	17-7
Fire Zones.....	17-8
Smoke, Flame, and Carbon Monoxide Detection Systems.....	17-8
Smoke Detectors.....	17-8
Light Refraction Type.....	17-8
Ionization Type.....	17-8
Flame Detectors.....	17-9
Carbon Monoxide Detectors.....	17-9
Extinguishing Agents and Portable Fire Extinguishers.....	17-10
Halogenated Hydrocarbons.....	17-10
Inert Cold Gases.....	17-10
Dry Powders.....	17-10

Water	17-10
Cockpit and Cabin Interiors	17-11
Extinguisher Types	17-11
Installed Fire Extinguishing Systems.....	17-11
CO ₂ Fire Extinguishing Systems.....	17-11
Halogenated Hydrocarbons Fire Extinguishing Systems.....	17-11
Containers.....	17-12
Discharge Valves.....	17-12
Pressure Indication	17-13
Two-Way Check Valve.....	17-13
Discharge Indicators.....	17-13
Thermal Discharge Indicator (Red Disk)	17-13
Yellow Disk Discharge Indicator	17-13
Fire Switch	17-13
Cargo Fire Detection.....	17-14
Cargo Compartment Classification	17-14
Class A.....	17-14
Class B.....	17-14
Class C.....	17-14
Class E	17-14
Cargo and Baggage Compartment Fire Detection and Extinguisher System	17-14
Smoke Detector System.....	17-15
Cargo Compartment Extinguishing System	17-16
Lavatory Smoke Detectors.....	17-16
Lavatory Smoke Detector System.....	17-17
Lavatory Fire Extinguisher System.....	17-18
Fire Detection System Maintenance	17-18
Fire Detection System Troubleshooting	17-20
Fire Extinguisher System Maintenance	17-20
Container Pressure Check	17-20
Discharge Cartridges	17-20
Agent Containers.....	17-21
Fire Prevention.....	17-21
Glossary	G-1
Index	I-1