AVIATION MECHANIC HANDBOOK

Based on the original text by

DALE CRANE

Edited by

TERRY MICHMERHUIZEN

7TH EDITION

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AVIATION SUPPLIES & ACADEMICS, INC.
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(Original text by Dale Crane)
Edited by Terry Michmerhuizen

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Introduction

Even though ways to look up mechanics reference information via the internet are widely available today, there is still significant benefit to keeping a printed "quick reference" guide handy in a toolbox or workbench drawer. Your time as an aviation mechanic is too valuable to be spent looking through stacks and pages of reference books to find a particular chart, formula or diagram you need on a particular job. The editorial staff at ASA has done this job for you and compiled this *Aviation Mechanic Handbook* to be a handy toolbox source of useful information.

For your convenience, this handbook is arranged in 18 sections with a table of contents at the beginning of each section, as well as complete contents at the front of the book and index at the back.

This information has been compiled from a large number of industry and government publications, and every effort has been made to ensure its applicability and accuracy.

The *ASA Aviation Mechanic Handbook* is a companion volume to the *ASA Dictionary of Aeronautical Terms*. The two books are the core of ASA's training materials for aircraft mechanics.

ASA is dedicated to providing quality training materials for the aviation industry. Your feedback regarding our books will help us to continue to produce the materials you need. Visit the ASA website often (www.asa2fly.com) to find updates to operations and procedures due to FAA changes that may affect this publication, downloadable from ASA's Product Update pages.

ASA and the author wish to thank Greg Mellema of Abaris Training for his contribution of the material for Section 17, "Composites" for the Third Edition of the *Aviation Mechanic Handbook*.

Dale Crane, Editor (original text)
Terry Michmerhuizen, Editor

Contents

Section 1: General Information

1.1 Fraction, Decimal, and Metric Equivalents

Fraction	Decimal	MM	Fraction	Decimal	MM
1/64	0.0156	0.397	33/64	0.5156	13.097
1/32	0.0313	0.794	17/32	0.5313	13.494
3/64	0.0469	1.191	35/64	0.5469	13.891
1/16	0.0625	1.588	9/16	0.5625	14.287
5/64	0.0781	1.984	37/64	0.5781	14.684
3/32	0.0938	2.381	19/32	0.5938	15.081
7/64	0.1094	2.778	39/64	0.6094	15.478
1/8	**0.1250**	**3.175**	**5/8**	**0.6250**	**15.875**
9/64	0.1406	3.572	41/64	0.6406	16.272
5/32	0.1563	3.969	21/32	0.6563	16.669
11/64	0.1719	4.366	43/64	0.6719	17.066
3/16	0.1875	4.762	11/16	0.6875	17.463
13/64	0.2031	5.159	45/64	0.7031	17.860
7/32	0.2188	5.556	23/32	0.7188	18.256
15/64	0.2344	5.953	47/64	0.7344	18.653
1/4	**0.2500**	**6.350**	**3/4**	**0.7500**	**19.049**
17/64	0.2656	6.747	49/64	0.7656	19.447
9/32	0.2813	7.144	25/32	0.7813	19.844
19/64	0.2969	7.541	51/64	0.7968	20.239
5/16	0.3125	7.937	13/16	0.8125	20.638
21/64	0.3281	8.334	53/64	0.8281	21.034
11/32	0.3438	8.731	27/32	0.8438	21.431
23/64	0.3594	9.128	55/64	0.8594	21.828
3/8	**0.3750**	**9.525**	**7/8**	**0.8750**	**22.225**
25/64	0.3906	9.922	57/64	0.8906	22.622
13/32	0.4063	10.319	29/32	0.9063	23.018
27/64	0.4219	10.716	59/64	0.9219	23.416
7/16	0.4375	11.112	15/16	0.9375	23.812
29/64	0.4531	11.509	61/64	0.9531	24.209
15/32	0.4688	11.906	31/32	0.9688	24.606
31/64	0.4844	12.303	63/64	0.9844	25.003
1/2	**0.5000**	**12.700**	**1**	**1.0000**	**25.400**

1.2 Conversions

Multiply	By	To Get
acres	43,560	square feet
acres	4,047	square meters
acre feet	3.259×10^{5}	gallons
amperes / sq. cm.	6.452	amperes / sq. inch
amperes / sq. inch	0.1550	amperes / sq. cm.
ampere hours	3,600	coulombs
ampere hours	0.03731	faradays
ampere turns	1.257	gilberts
ampere turns / cm	2.540	ampere turns / inch
ampere turns / cm	1.257	gilberts / cm.
ampere turns / inch	0.4950	gilberts / centimeter
ampere turns / meter	0.01257	gilberts / centimeter
atmospheres	76.0	centimeters of mercury
atmospheres	33.9	feet of water
atmospheres	29.92	inches of mercury
atmospheres	10,332	kilograms / sq. meter
atmospheres	14.69	pounds / sq. inch
barrels of oil	42	gallons
bars	0.9869	atmospheres
bars	106	dynes / sq. centimeter
bars	14.50	pounds / sq. inch
Btu	1.0550×10^{10}	ergs
Btu	778.3	foot-pounds
Btu	252.0	gram-calories
Btu	1,054.8	joules
Btu	107.5	kilogram-meters
Btu	2.928×10^{-4}	kilowatt-hours
Btu / hour	0.2162	foot-pounds / second
Btu / hour	3.929×10^{-4}	horsepower-hours
Btu / hour	0.2931	watts
Btu / minute	12.96	foot-pounds / second
Btu / minute	0.02356	horsepower
Btu / minute	17.57	watts
bushels	1.2445	cubic feet
bushels	2,150.4	cubic inches
bushels	35.24	liters
bushels	4	pecks
bushels	64	pints (dry)

Multiply	By	To Get
centimeters	3.281×10^{-2}	feet
centimeters	0.3937	inches
centimeter-dynes	1.020×10^{-3}	centimeter-grams
centimeter-dynes	7.376×10^{-8}	pound-feet
centimeter-grams	980.7	centimeter-dynes
centimeter-grams	7.233×10^{-5}	pound-feet
cm of mercury	0.01316	atmospheres
cm of mercury	0.4461	feet of water
cm of mercury	136.0	kilograms / sq. meter
cm of mercury	27.85	pounds / sq. foot
cm of mercury	0.1934	pounds / sq. inch
cm / second	1.9685	feet / minute
cm / second	0.03281	feet / second
cm / second	0.036	kilometers / hour
cm / second	0.0194	knots
cm / second / second	0.03281	feet / second / second
cm / second / second	0.02237	miles / hour / second
circular mils	5.067×10^{-6}	square centimeters
circular mils	0.7854	square mils
circular mils	7.854×10^{-7}	square inches
coulombs	1.036×10^{-5}	faradays
cubic centimeters	3.531×10^{-5}	cubic feet
cubic centimeters	0.06102	cubic inches
cubic centimeters	10^{-6}	cubic meters
cubic centimeters	1.308×10^{-6}	cubic yards
cubic centimeters	2.642×10^{-4}	gallons (U.S.)
cubic centimeters	0.001	liters
cubic centimeters	2.113×10^{-3}	pints (U.S.)
cubic feet	0.8036	bushels
cubic feet	28,320	cubic centimeters
cubic feet	1,728	cubic inches
cubic feet	0.02832	cubic meters
cubic feet	7.48052	gallons (U.S.)
cubic feet	28.32	liters
cubic feet / minute	0.1247	gallons / second
cubic feet / minute	0.4720	liters / second
cubic feet / second	448.831	gallons / minute
cubic inches	16.39	cubic centimeters
cubic inches	5.787×10^{-4}	cubic feet
cubic inches	1.639×10^{-5}	cubic meters
cubic inches	2.143×10^{-5}	cubic yards
cubic inches	4.329×10^{-3}	gallons (U.S.)

Multiply	By	To Get
cubic inches	0.01639	liters
cubic meters	28.38	bushels
cubic meters	35.31	cubic feet
cubic meters	61,023	cubic inches
cubic meters	1.308	cubic yards
cubic meters	264.2	gallons (U.S.)
cubic yards	27	cubic feet
cubic yards	46,656	cubic inches
cubic yards	0.7646	cubic meters
cubic yards	202	gallons (U.S.)
cubic yards	764.6	liters
cubic yards / minute	3.367	gallons / second
cubic yards / minute	12.74	liters / second
days	24	hours
days	1,440	minutes
days	86,400	seconds
degrees (angular)	60	minutes
degrees (angular)	0.01111	quadrants
degrees (angular)	0.01745	radians
degrees (angular)	3,600	seconds
degrees / second	0.01745	radians / second
degrees / second	0.1667	revolutions / minute
degrees / second	2.778×10^{-3}	revolutions / second
drams	1.7718	grams
drams	0.0625	ounces
dynes	1.020×10^{-3}	grams
dynes	10^{-7}	joules / centimeter
dynes	10^{-5}	joules / meter (newtons)
dynes	7.233×10^{-5}	poundals
dynes	2.248×10^{-6}	pounds
dynes / sq. centimeter	10^{-6}	bars
ergs	9.480×10^{-11}	Btu
ergs	1.0	dyne-centimeters
ergs	7.367×10^{-8}	foot-pounds
ergs	0.2389×10^{-7}	gram-calories
ergs	3.7250×10^{-14}	horsepower-hours
ergs	10^{-7}	joules
ergs	0.2778×10^{-13}	kilowatt-hours
ergs / second	5.688×10^{-9}	Btu / minute

Multiply	By	To Get
ergs / second	1.341×10^{-10}	horsepower
ergs / second	10^{-10}	kilowatts
faradays	26.8	ampere-hours
faradays	9.649×10^{4}	coulombs
fathoms	6	feet
feet	30.48	centimeters
feet	0.3048	meters
feet	1.645×10^{-4}	miles (nautical)
feet	1.894×10^{-4}	miles (statute)
feet of water	0.02950	atmospheres
feet of water	0.8826	inches of mercury
feet of water	62.43	pounds / square foot
feet / minute	0.5080	centimeters / second
feet / minute	0.01667	feet / second
feet / second	1.097	kilometers / hour
feet / second	0.5921	knots
feet / second	0.6818	miles / hour
feet / second / second	0.6818	miles / hour / second
foot-pounds	1.286×10^{-3}	Btu
foot-pounds	1.356	joules
foot-pounds	3.24×10^{-4}	kilogram-calories
foot-pounds	0.1383	kilogram-meters
foot-pounds / minute	3.030×10^{-5}	horsepower
foot-pounds / minute	2.260×10^{-5}	kilowatts
furlongs	660	feet
gallons	3,785	cubic centimeters
gallons	0.1337	cubic feet
gallons	231	cubic inches
gallons	3.785	liters
gallons (Imperial)	1.20095	gallons (U.S.)
gallons (U.S.)	0.83267	gallons (Imperial)
gallons / minute	2.228×10^{-3}	cubic feet / second
gausses	6.452	lines of flux / sq. inch
gausses	10^{-8}	webers / sq. centimeter
gilberts	0.7958	ampere-turns
gilberts / centimeter	2.021	ampere-turns / inch
gills	0.1183	liters
grains (troy)	0.06480	grams
grains (troy)	2.0833×10^{-3}	ounces (avoir.)
grams	980.7	dynes

Multiply	By	To Get
grams	9.807×10^{-5}	joules / centimeter
grams	0.03527	ounces (avoir.)
grams	0.07093	poundals
grams	2.205×10^{-3}	pounds
grams / cubic cm	62.43	pounds / cubic foot
grams / square cm.	2.0481	pounds / square foot
gram-calories	3.9683×10^{-3}	Btu
gram-calories	4.1868×10^{7}	ergs
gram-calories	3.0880	foot-pounds
gram-calories	1.1630×10^{-6}	kilowatt-hours
gram-centimeters	9.297×10^{-8}	Btu
gram-centimeters	980.7	ergs
gram-centimeters	9.807×10^{-5}	joules
hectares	2.471	acres
horsepower	42.44	Btu / minute
horsepower	33,000	foot-pounds / minute
horsepower	550	foot-pounds / second
horsepower (metric)	542.5	foot-pounds / second
horsepower (metric)	0.9863	horsepower
horsepower	10.68	kilogram-calories / min.
horsepower	745.7	watts
hours	3,600	seconds
inches	2.540	centimeters
inches	8.333×10^{-2}	feet
inches	2.540×10^{-2}	meters
inches	25.40	millimeters
inches	1,000	mils
inches of mercury	3.342×10^{-2}	atmospheres
inches of mercury	1.133	feet of water
inches of mercury	345.3	kilograms / sq. meter
inches of mercury	0.4912	pounds / sq. inch
inches of mercury	33.864	millibars
inches of water	7.355×10^{-2}	inches of mercury
inches of water	3.613×10^{-2}	pounds / sq. inch
joules	9.480×10^{-4}	Btu
joules	10^{7}	ergs
joules	0.7376	foot-pounds
joules	2.389×10^{-4}	kilogram-calories
joules	0.1020	kilogram-meters

Multiply	By	To Get
joules	2.778×10^{-4}	watt-hours
joules / centimeter	10^{7}	dynes
joules / centimeter	723.3	poundals
joules / centimeter	22.48	pounds
kilograms	980,665	dynes
kilograms	9.807	joules / meter (newtons)
kilograms	70.93	poundals
kilograms	2.205	pounds
kilograms	9.842×10^{-4}	tons (long)
kilograms	1.102×10^{-3}	tons (short)
kilograms / cubic meter	0.06243	pounds / cubic foot
kilograms / sq. meter	9.687×10^{-5}	atmospheres
kilograms / sq. meter	0.2048	pounds / square foot
kilogram-calories	3.968	Btu
kilogram-calories	3,088	foot-pounds
kilogram-calories	4,186	joules
kilogram-meters	9.294×10^{-3}	Btu
kilogram-meters	7.233	foot-pounds
kilometers	3,281	feet
kilometers	0.6214	miles
kilometers / hour	0.9113	feet / second
kilometers / hour	0.5396	knots
kilometers / hour	0.6214	miles / hour
kilowatts	56.92	Btu / minute
kilowatts	4.426×10^{4}	foot-pounds / minute
kilowatts	1.341	horsepower
kilowatt-hours	3,413	Btu
kilowatt-hours	2.655×10^{6}	foot-pounds
kilowatt-hours	3.6×10^{6}	joules
knots	6,080	feet / hour
knots	1.8532	kilometers / hour
knots	1.151	miles (statute) / hour
knots	1.689	feet / second
leagues	3.0	miles
lines of flux / sq. cm.	1.0	gausses
lines of flux / sq. inch	0.1550	gausses
lines of flux / sq. inch	1.550×10^{-9}	webers / sq. centimeter
liters	1,000	cubic centimeters
liters	61.02	cubic inches
liters	0.2642	gallons (U.S.)
liters / minute	5.886×10^{-4}	cubic feet / second

Multiply	By	To Get
lumens / sq. foot	1.0	foot-candles
lux	0.0929	foot-candles
maxwells	10^{-8}	webers
meters	3.281	feet
meters	39.37	inches
meters	5.396×10^{-4}	miles (nautical)
meters	6.214×10^{-4}	miles (statute)
meters	1.094	yards
meters / second	3.6	kilometers / hour
meters / second	2.237	miles / hour
meter-kilograms	9.807×10^{7}	centimeter-dynes
meter-kilograms	7.233	pound-feet
miles (nautical)	6,076.103	feet
miles (nautical)	1.852	kilometers
miles (nautical)	1.1508	miles (statute)
miles (statute)	5,280	feet
miles (statute)	1.609	kilometers
miles (statute)	0.8689	miles (nautical)
miles (statute)	1,760	yards
miles / hour	1.467	feet / second
miles / hour	1.609	kilometers / hour
miles / hour	0.8684	knots
millimeters	3.281×10^{-3}	feet
millimeters	0.03937	inches
mils	2.54×10^{-3}	centimeters
mils	0.001	inches
minutes (angular)	0.01667	degrees
minutes (angular)	1.852×10^{-4}	quadrants
minutes (angular)	2.909×10^{-4}	radians
ounces	16.0	drams
ounces	437.5	grains
ounces	28.3495	grams
ounces	0.0625	pounds
ounces (fluid)	1.805	cubic inches
ounces (fluid)	0.02957	liters
ounces (troy)	1.09714	ounces (avoir.)
pint (dry)	33.60	cubic inches
pint (liquid)	0.4732	liters
poundals	13,826	dynes
poundals	14.10	grams

Multiply	By	To Get
poundals	0.1383	joules / meter (newtons)
poundals	0.01410	kilograms
poundals	0.03108	pounds
pounds	453.5924	grams
pounds	4.448	joules / meter (newtons)
pounds	0.4536	kilograms
pounds	16	ounces
pounds	32.17	poundals
pounds	0.0005	tons (short)
pounds of water	0.1198	gallons
pounds / cubic foot	16.02	kilograms / cubic meter
pounds / cubic inch	27.68	grams / cubic centimeter
pounds / square inch	0.06804	atmospheres
pounds / square inch	2.307	feet of water
pounds / square inch	2.036	inches of mercury
quadrants (angular)	90	degrees
quadrants (angular)	5,400	minutes
quadrants (angular)	1.571	radians
quarts (liquid)	57.75	cubic inches
quarts (liquid)	0.9463	liters
radians	57.30	degrees
radians	3,438	minutes
radians	0.6366	quadrants
radians / second	9.549	revolutions / minute
revolutions / minute	6.0	degrees / second
revolutions / minute	0.1047	radians / second
rods	16.5	feet
square centimeters	1.973×10^5	circular mils
square centimeters	0.1550	square inches
square inches	1.273×10^6	circular mils
square inches	6.452	square centimeters
square meters	10.76	square feet
square meters	1.196	square yards
square miles	640	acres
square millimeters	1,973	circular mils
square mils	1.273	circular mils
tons (long)	1,016	kilograms
tons (long)	2,240	pounds
tons (metric)	1,000	kilograms
tons (metric)	2,205	pounds

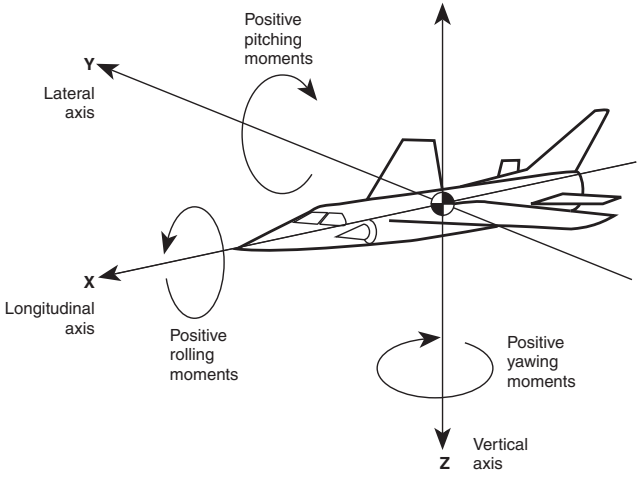
Multiply	By	To Get
tons (short)	907.185	kilograms
tons (short)	2,000	pounds
watts	3.413	Btu / hour
watts	10^{7}	ergs / second
watts	44.27	foot-pounds / minute
watts	1.341×10^{-3}	horsepower
watt-hours	3.413	Btu
watt-hours	2,656	foot-pounds
watt-hours	367.2	kilogram-meters
webers	10^{8}	maxwells
webers / sq. inch	1.55×10^{7}	gausses
yards	36	inches
yards	0.9144	meters

Notes

1.3 Aircraft Nomenclature

Axes of an Airplane

An airplane in flight is free to rotate about three axes: horizontal, longitudinal and vertical. Each axis is perpendicular to the others and each passes through the center of gravity.

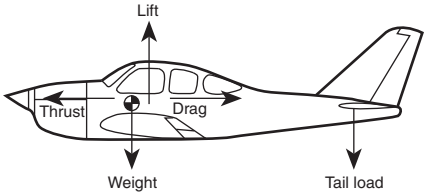


The three axes of an aircraft are mutually perpendicular, and all pass through the center of gravity of the aircraft.

Forces Acting on an Aircraft in Flight

In straight-and-level, unaccelerated flight the forces about the aircraft center of gravity are balanced. Lift acts upward and is opposed by weight and the aerodynamic tail load which act downward. Thrust acting forward is opposed by drag which acts rearward.

In straight-and-level, unaccelerated flight the forces about the center of gravity are balanced.



In straight-and-level, unaccelerated flight, the forces about the center of gravity are balanced.

Types of Aircraft Structure

Truss

A type of structure made up of longitudinal beams and cross braces. Compression loads between the main beams are carried by rigid cross braces called compression struts. Tension loads are carried by stays, or wires, that go from one main beam to the other and cross between the compression struts.

Most fabric-covered wings are constructed with a Pratt truss. The spars are the main beams and the cross braces are the compression struts or compression ribs. The stays are the drag and antidrag wires. The drag wires run from the front spar inboard to the rear spar outboard, and oppose the drag forces that try to move the wing tips backward. The antidrag wires run from the rear spar inboard to the front spar outboard. They oppose the aerodynamic forces that try to move the wing tips forward.

The Warren truss is used for the fuselage of most steel tube and fabric aircraft. The main beams are the longerons and the cross braces are steel tube diagonals which carry both compression and tension loads.

Monocoque

A single-shell that carries all of the flight loads in its outer surface. A chicken egg is a perfect example of a natural monocoque structure.

Metal monocoque aircraft fuselages have a minimum of internal structure, usually with just formers to provide the shape. Thin sheets of metal (called skins) riveted to the formers provide a rigid, strong, streamlined structure. Dents in the skins destroy the integrity of a monocoque structure.

Wooden monocoque aircraft structures are similar to those of metal. Thin sheets of aircraft plywood are glued to the formers to provide a strong, lightweight structure.

Modern composite structures are made of resins reinforced with special fabrics and formed in molds or over patterns; these provide a shell sufficiently strong to carry all the flight loads.

Semimonocoque

Most larger metal aircraft have a semimonocoque structure. This differs from the monocoque by having a series of longerons and stringers between the formers to support the skins and provide additional strength.

1.4 Joint Aircraft System/Component (JASC) Code

Based on ATA-100 and ATA-2200 Systems of Identification

The Joint Aircraft System/Component (JASC) Code table is a modified version of the Air Transport Association of America (ATA) Specification 100 code, developed by the FAA's Regulatory Support Division (AFS-600). Over the years, the JASC Code format of the ATA-100 Specifications has gained widespread industry acceptance. In a harmonized effort, the FAA's counterparts in Australia and Canada have adopted the JASC Code with only a few exceptions. Some Canadian aircraft manufacturers have also adopted this new standard.

This table can be used as a quick reference chart, to assist in the coding and review of aircraft structures or systems data. It uses the new JASC code four (4) digit format, in which the first two digits represent the code "chapter" title. The titles have been modified in some cases to clarify the intended use of the accompanying code.

Note: The JASC Code divides the engine-related codes into two groups to separate turbine and reciprocating engines. The codes for the turbine engines are in JASC Code Chapter 72, Turbine/Turboprop Engine. The codes for the reciprocating engines are now exclusively found in Chapter 85, Reciprocating Engine.

11 Placards And Markings

1100 Placards And Markings

12 Servicing

1210 Fuel Servicing
1220 Oil Servicing
1230 Hydraulic Fluid Servicing
1240 Coolant Servicing

14 Hardware

1400 Miscellaneous Hardware
1410 Hoses And Tubes
1420 Electrical Connectors
1430 Fasteners
1497 Miscellaneous Wiring

18 Helicopter Vibration

1800 Helicopter Vib/Noise Analysis
1810 Helicopter Vibration Analysis
1820 Helicopter Noise Analysis
1897 Helicopter Vibration System Wiring

21 Air Conditioning

2100 Air Conditioning System
2110 Cabin Compressor System
2120 Air Distribution System
2121 Air Distribution Fan
2130 Cabin Pressure Control System
2131 Cabin Pressure Controller

2132 Cabin Pressure Indicator
2133 Pressure Regul/Outflow Valve
2134 Cabin Pressure Sensor
2140 Heating System
2150 Cabin Cooling System
2160 Cabin Temperature Control System
2161 Cabin Temperature Controller
2162 Cabin Temperature Indicator
2163 Cabin Temperature Sensor
2170 Humidity Control System
2197 Air Conditioning System Wiring

22 Auto Flight

2200 Auto Flight System
2210 Autopilot System
2211 Autopilot Computer
2212 Altitude Controller
2213 Flight Controller
2214 Autopilot Trim Indicator
2215 Autopilot Main Servo
2216 Autopilot Trim Servo
2220 Speed-Attitude Correction System
2230 Auto Throttle System
2250 Aerodynamic Load Alleviating
2297 Autoflight System Wiring

23 Communications

2300 Communications System
2310 HF Communication System
2311 UHF Communication System
2312 VHF Communication System
2320 Data Transmission Auto Call
2330 Entertainment System
2340 Interphone/Passenger Pa System
2350 Audio Integrating System
2360 Static Discharge System
2370 Audio/Video Monitoring
2397 Communication System Wiring

24 Electrical Power

2400 Electrical Power System
2410 Alternator-Generator Drive
2420 AC Generation System
2421 AC Generator-Alternator
2422 AC Inverter
2423 Phase Adapter
2424 AC Regulator
2425 AC Indicating System
2430 DC Generating System
2431 Battery Overheat Warning System
2432 Battery/Charger System
2433 DC Rectifier/Converter
2434 DC Generator-Alternator
2435 Starter-Generator
2436 DC Regulator
2437 DC Indicating System
2440 External Power System
2450 AC Power Distribution System
2460 DC Power/Distribution System
2497 Electrical Power System Wiring

25 Equipment/Furnishings

2500 Cabin Equipment/ Furnishings

2510 Flight Compartment Equipment
2520 Passenger Compartment Equipment
2530 Buffet/Galleys
2540 Lavatories
2550 Cargo Compartments
2551 Agricultural Spray System
2560 Emergency Equipment
2561 Life Jacket
2562 Emergency Locator Beacon
2563 Parachute
2564 Life Raft
2565 Escape Slide
2570 Accessory Compartment
2571 Battery Box Structure
2572 Electronic Shelf Section
2597 Equip/Furnishing System Wiring

26 Fire Protection

2600 Fire Protection System
2610 Detection System
2611 Smoke Detection
2612 Fire Detection
2613 Overheat Detection
2620 Extinguishing System
2621 Fire Bottle, Fixed
2622 Fire Bottle, Portable
2697 Fire Protection System Wiring

27 Flight Controls

2700 Flight Control System
2701 Control Column Section
2710 Aileron Control System
2711 Aileron Tab Control System
2720 Rudder Control System
2721 Rudder Tab Control System
2722 Rudder Actuator
2730 Elevator Control System
2731 Elevator Tab Control System
2740 Stabilizer Control System
2741 Stabilizer Position Indicating
2742 Stabilizer Actuator
2750 TE Flap Control System
2751 TE Flap Position Ind. System
2752 TE Flap Actuator
2760 Drag Control System
2761 Drag Control Actuator
2770 Gust Lock/Damper System
2780 LE Slat Control System
2781 LE Slat Position Ind. System
2782 LE Slat Actuator
2797 Flight Control System Wiring

28 Fuel

2800 Aircraft Fuel System
2810 Fuel Storage
2820 Aircraft Fuel Distrib. System
2821 Aircraft Fuel Filter/Strainer
2822 Fuel Boost Pump
2823 Fuel Selector/Shut-Off Valve
2824 Fuel Transfer Valve
2830 Fuel Dump System
2840 Aircraft Fuel Indicating System
2841 Fuel Quantity Indicator
2842 Fuel Quantity Sensor
2843 Fuel Temperature Indicator
2844 Fuel Pressure Indicator
2897 Fuel System Wiring

29 Hydraulic Power

2900 Hydraulic Power System
2910 Hydraulic System, Main
2911 Hydraulic Power Accumulator, Main
2912 Hydraulic Filter, Main
2913 Hydraulic Pump, (Electric/ Engine, Main
2914 Hydraulic Handpump, Main
2915 Hydraulic Pressure Relief Valve, Main
2916 Hydraulic Reservoir, Main
2917 Hydraulic Pressure Regulator, Main
2920 Hydraulic System, Auxiliary
2921 Hydraulic Accumulator, Auxiliary
2922 Hydraulic Filter, Auxiliary
2923 Hydraulic Pump, Auxiliary
2925 Hydraulic Pressure Relief, Auxiliary
2926 Hydraulic Reservoir, Auxiliary
2927 Hydraulic Pressure Regulator, Auxillary
2930 Hydraulic Indicating System
2931 Hydraulic Pressure Indicator
2932 Hydraulic Pressure Sensor
2933 Hydraulic Quantity Indicator
2934 Hydraulic Quantity Sensor
2997 Hydraulic Power System Wiring

30 Ice And Rain Protection

3000 Ice/Rain Protection System
3010 Airfoil Anti/De-Ice System
3020 Air Intake Anti/De-Ice System
3030 Pitot/Static Anti-Ice System
3040 Windshield/Door Rain/Ice Removal
3050 Antenna/Radome Anti-Ice/ De-Ice System
3060 Prop/Rotor Anti-Ice/De-Ice System
3070 Water Line Anti-Ice System
3080 Ice Detection
3097 Ice/Rain Protection System Wiring

31 Instruments

3100 Indicating/Recording System
3110 Instrument Panel
3120 Independent Instruments (Clock, etc.)
3130 Data Recorders (Flt/Maint)
3140 Central Computers (EICAS)
3150 Central Warning
3160 Central Display
3170 Automatic Data
3197 Instrument System Wiring

32 Landing Gear

3200 Landing Gear System
3201 Landing Gear/Wheel Fairing
3210 Main Landing Gear
3211 Main Landing Gear Attach Section
3212 Emergency Flotation Section
3213 Main Landing Gear Strut/ Axle/Truck
3220 Nose/Tail Landing Gear
3221 Nose/Tail Landing Gear AttachSection
3222 Nose/Tail Landing Gear Strut/Axle

3230 Landing Gear Retract/ Extend System
3231 Landing Gear Door Retract Section
3232 Landing Gear Door Actuator
3233 Landing Gear Actuator
3234 Landing Gear Selector
3240 Landing Gear Brake System
3241 Brake Anti-Skid Section
3242 Brake
3243 Master Cylinder/Brake Valve
3244 Tire
3245 Tire Tube
3246 Wheel/Ski/Float
3250 Landing Gear Steering System
3251 Steering Unit
3252 Shimmy Damper
3260 Landing Gear Position And Warning
3270 Auxiliary Gear (Tail Skid)
3297 Landing Gear System Wiring

33 Lights

3300 Lighting System
3310 Flight Compartment Lighting
3320 Passenger Compartment Lighting
3330 Cargo Compartment Lighting
3340 Exterior Lighting
3350 Emergency Lighting
3397 Light System Wiring

34 Navigation

3400 Navigation System
3410 Flight Environment Data
3411 Pitot/Static System
3412 Outside Air Temperature Indicator Sensor
3413 Rate of Climb Indicator
3414 Airspeed/Mach Indicator
3415 High Speed Warning
3416 Altimeter, Barometric/ Encoder
3417 Air Data Computer
3418 Stall Warning System
3420 Attitude and Direction Data System
3421 Attitude Gyro and Indicator System
3422 Directional Gyro and Indicator System
3423 Magnetic Compass
3424 Turn and Bank/Rate of Turn Indicator
3425 Integrated Flight Director System
3430 Landing and Taxi Aids
3431 Localizer/VOR System
3432 Glide Slope System
3433 Microwave Landing System
3434 Marker Beacon System
3435 Heads Up Display System
3436 Wind Shear Detection System
3440 Independent Position Determining System
3441 Inertial Guidance System
3442 Weather Radar System
3443 Doppler System
3444 Ground Proximity System
3445 Air Collision Avoidance System (TCAS)
3446 Non Radar Weather System
3450 Dependent Position Determining System

3451 DME/TACAN System
3452 ATC Transponder System
3453 LORAN System
3454 VOR System
3455 ADF System
3456 Omega Navigation System
3457 Global Positioning System
3460 Flt Management Computing Hardware System
3461 Flight Manage. Computing Software System
3497 Navigation System Wiring

35 Oxygen

3500 Oxygen System
3510 Crew Oxygen System
3520 Passenger Oxygen System
3530 Portable Oxygen System
3597 Oxygen System Wiring

36 Pneumatic

3600 Pneumatic System
3610 Pneumatic Distribution System
3620 Pneumatic Indicating System
3697 Pneumatic System Wiring

37 Vacuum

3700 Vacuum System
3710 Vacuum Distribution System
3720 Vacuum Indicating System
3797 Vacuum System Wiring

38 Water/Waste

3800 Water And Waste System
3810 Potable Water System
3820 Wash Water System
3830 Waste Disposal System
3840 Air Supply (Water Press. System)
3897 Water/Waste System Wiring

45 Central Maint. System

4500 Central Maint. Computer
4597 Central Maint. System Wiring

49 Airborne Auxiliary Power

4900 Airborne APU System
4910 APU Cowling/Containment
4920 APU Core Engine
4930 APU Engine Fuel and Control
4940 APU Start/Ignition System
4950 APU Bleed Air System
4960 APU Controls
4970 APU Indicating System
4980 APU Exhaust System
4990 APU Oil System
4997 APU System Wiring

51 Standard Practices/ Structures

5100 Standard Practices/ Structures
5101 Aircraft Structures
5102 Balloon Reports

52 Doors

5200 Doors
5210 Passenger/Crew Doors
5220 Emergency Exits
5230 Cargo/Baggage Doors

5240 Service Doors
5241 Galley Doors
5242 E/E Compartment Doors
5243 Hydraulic Compartment Doors
5244 Accessory Compartment Doors
5245 Air Conditioning Compart. Doors
5246 Fluid Service Doors
5247 APU Doors
5248 Tail Cone Doors
5250 Fixed Inner Doors
5260 Entrance Stairs
5270 Door Warning System
5280 Landing Gear Doors
5297 Door System Wiring

53 Fuselage

5300 Fuselage Structure (General)
5301 Aerial Tow Equipment
5302 Rotorcraft Tail Boom
5310 Fuselage Main, Structure
5311 Fuselage Main, Frame
5312 Fuselage Main, Bulkhead
5313 Fuselage Main, Longeron/ Stringer
5314 Fuselage Main, Keel
5315 Fuselage Main, Floor Beam
5320 Fuselage Miscellaneous Structure
5321 Fuselage Floor Panel
5322 Fuselage Internal Mount Structure
5323 Fuselage Internal Stairs
5324 Fuselage Fixed Partitions
5330 Fuselage Main, Plate/Skin
5340 Fuselage Main, Attach Fittings
5341 Fuselage, Wing Attach Fittings
5342 Fuselage, Stabilizer Attach Fittings
5343 Landing Gear Attach Fittings
5344 Fuselage Door Hinges
5345 Fuselage Equipment Attach Fittings
5346 Powerplant Attach Fittings
5347 Seat/Cargo Attach Fittings
5350 Aerodynamic Fairings
5397 Fuselage Wiring

54 Nacelles/Pylons

5400 Nacelle/Pylon Structure
5410 Nacelle/Pylon, Main Frame
5411 Nacelle/Pylon, Frame/Spar/ Rib
5412 Nacelle/Pylon, Bulkhead/ Firewall
5413 Nacelle/Pylon, Longeron/ Stringer
5414 Nacelle/Pylon, Plate Skin
5415 Nacelle/Pylon, Attach Fittings
5420 Nacelle/Pylon Miscellaneous Structure
5497 Nacelle/Pylon System Wiring

55 Stabilizers

5500 Empennage Structure
5510 Horizontal Stabilizer Structure
5511 Horizontal Stabilizer, Spar/ Rib