

AEROSPACE HYDRAULIC AND PNEUMATIC
SPECIFICATIONS AND STANDARDS

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1. SCOPE:

- 1.1 This report lists military and industry specifications and standards which are used in Aero/Space Hydraulic and Pneumatic Systems. It is intended as a supplement to Specifications MIL-H-5440 and MIL-P-5518. Only those hardware standards which have been specifically designed for hydraulic or pneumatic use are listed. Revisions and amendments which are current for these specifications and standards are not listed.
- 1.2 Listing Documents: - Attention is called to the following documents which list specifications and standards and are used as a basis for this report.
- 1.2.1 Military Standards: - Department of Defense, Index of Specifications and Standards; prepared by the Standardization Division, Armed Forces Supply Support Center, Washington 25, D.C. This document is published semi-annually, with monthly cumulative supplements.
- 1.2.2 Society of Automotive Engineers, Inc. Standards - SAE Aerospace Standards, Recommended Practices, Information Reports (AS, ARP, AIR Index). This document is published annually by the Society of Automotive Engineers, Inc., 485 Lexington Ave., New York 17, N. Y.

2. SPECIFICATIONS:

2.1 Federal Specifications:

C-F-206 Felt, Sheet, Wool, Pressed
VV-P-236 Petrolatum, Technical
WW-T-787 Tube, Aluminum Alloy, Round, Square, Rectangular, and Other
Shapes, Drawn, Seamless, 5052

2.2 Military Specifications:

2.2.1 System and Subsystem Specifications:

MIL-H-5440 Hydraulic Systems, Aircraft, Types I and II, Design, Installation, and Data Requirements for
MIL-P-5518 Pneumatic Systems; Design, Installation and Tests in Aircraft
MIL-S-6644 Specifications, Equipment, Contractor Prepared, Instructions for the Preparation of
MIL-B-8075 Brake Control Systems, Anti-Skid, Aircraft Wheels, and Instructions for Preparation of Specification for
MIL-B-8584 Brake Systems, Wheel, Aircraft, Design of
MIL-S-8812 Steering System; Aircraft, General Specification for
MIL-F-9490 Flight Control Systems, Design, Installation, and Test of, General Specification for
MIL-F-18372 Flight Control Systems; Design, Installations and Tests of, Aircraft, (General Specification for)
MIL-D-18717 Design; Airplane Arresting Hook Installations
MIL-H-25475 Hydraulic Systems, Design, Installation and Tests of, Missile (General Specification for)
MIL-D-25922 Data for Evaluation and Development of Air Vehicle Secondary Power Systems

2.2.2 Design Details and Test Specifications:

MIL-B-5087 Bonding; Electrical (for Aircraft)
MIL-E-5272 Environmental Testing, Aeronautical and Associated Equipment, General Specification for
MIL-P-5514 Packings; Installation and Gland Design, Hydraulic, General Specification for
MIL-P-5517 Plastic Parts in Aircraft Hydraulic Equipment; General Specification for
MIL-T-5522 Test Procedure for Aircraft Hydraulic and Pneumatic Systems, General
MIL-C-6021 Castings, Classification and Inspection of (for Aeronautical Applications)
MIL-T-6053 Tests, Impact, Shock Absorber, Landing Gear, Aircraft
MIL-I-6866 Inspection, Penetrant Method of
MIL-I-6868 Inspection Process, Magnetic Particle
MIL-P-7105 Pipe Threads, Taper, Aeronautical National Form, Symbol ANPT
MIL-S-7742 Screw Threads, Standard, Optimum Selected Series, General Specification for
MIL-T-7935 Towing Requirements and Provisions for Land and Carrier Type Military Aircraft
MIL-T-9107 Test Reports, Preparation of
MIL-R-26674 Reliability Requirements for Weapon Systems

2.2.3 Component Specifications:

2.2.3.1 General Component Specifications

MIL-W-5013 Wheel and Brake Assemblies; Aircraft
MIL-C-5503 Cylinders; Aircraft, Hydraulic Actuating, General Specification for
MIL-J-5513 Joints, Hydraulic Swivel
MIL-R-5520 Reservoirs, Hydraulic
MIL-V-5525 Valves; Aircraft Power Brake
MIL-P-5954 Pump Unit, Hydraulic, Electric Motor Driven, Fixed Displacement
MIL-P-5994 Pump, Hydraulic, Electric-Motor-Driven, Variable Delivery
MIL-C-6026 Control Unit, Pressure Generating, Manually Operated, Aircraft Hydraulic Brake System
MIL-C-6388 Compressor Unit, Air, Aircraft, Shaft Power Driven, General Specification for
MIL-C-6591 Compressor Unit, Aircraft, Electric Motor Driven, General Specification for
MIL-W-6624 Wiper, Aircraft Windshield, Hydraulic, General Specification for
MIL-T-7101 Transmission, Power, Constant Speed, General Specification (Aircraft Use)
MIL-V-7909 Valves, Hydraulic, Pressure Reducer
MIL-V-7915 Valves, Hydraulic, Directional Control, Slide Selector
MIL-C-7979 Cylinders; Hydraulic Brake, Master, Power Assisted
MIL-M-7997 Motors, Aircraft Hydraulic, Constant Displacement
MIL-C-8215 Compressor Unit, Air, Aircraft, Hydraulic Motor Driven, General Specification for
MIL-C-8216 Compressor Unit, Air, Aircraft, Hydraulic Motor Driven, Model Specification for, Outline and Instructions for Preparation of
MIL-G-8402 Gages, Pressure, Dial Indicating, General Specification for
MIL-S-8552 Strut; Aircraft Shock Absorber (Air and Oil Type)
MIL-P-8564 Pneumatic Components, Aeronautical, General Specification for
MIL-R-8573 Reservoirs, Air, Nonshatterable Steel
MIL-H-8775 Hydraulic System Components, Aircraft, General Specification for
MIL-C-8838 Cylinder, Pneumatic Actuating, Aircraft Utility System, General Specification for
MIL-V-19593 Valve - Control, Aircraft Pneumatic 28 Volt D-C Solenoid Operated
MIL-P-19692 Pumps, Hydraulic, Variable Delivery, General Specification for
MIL-S-19893 Switch-Pressure, Aircraft Pneumatic (Type II)
MIL-T-25363 Tank, Pneumatic Pressure, Aircraft, Glass Fiber
MIL-P-25868 Pump, Hydraulic, Power-Driven, Variable Delivery
MIL-V-27162 Valves, Servo Control, Electric-Hydraulic, General Specification for

2.2.3.2 Detail Component Specifications:

MIL-A-5498 Accumulators, Aircraft Hydropneumatic Pressure
MIL-F-5504 Filters and Filter Elements, Fluid Pressure, Hydraulic
Micronic Type
MIL-F-5508 Fuses; Aircraft, Automatic Quantity Measuring, Hydraulic
MIL-P-5515 Pump, Hydraulic Ram, Hand Driven
MIL-V-5519 Valves; Aircraft Hydraulic Unloading
MIL-V-5523 Valve; Relief, Hydraulic Pressure
MIL-V-5524 Valves, Check, Hydraulic, Aircraft, Type I Systems
MIL-V-5527 Valves; Aircraft, Hydraulic Thermal Expansion Relief
MIL-V-5528 Valves; Hydraulic Controllable Check
MIL-V-5529 Valves; Hydraulic Directional Control, Rotary Selector
MIL-V-5530 Valves; Aircraft Hydraulic Shuttle
MIL-I-6839 Indicator, Position, Landing Gear
MIL-I-7084 Indicator, Pressure, Hydraulic, 0-4000 PSI
MIL-T-7113 Transmitter, Pressure, Hydraulic, 0-4000 PSI
MIL-G-7734 Gages, Pressure, Engine and Utility, Aircraft
MIL-P-7858 Pump, Hydraulic, Power Driven, Fixed Displacement
MIL-C-7905 Cylinders, Compressed Gas, Nonshatterable
MIL-D-8278 Dehydrator Unit, High Pressure Air, Non-reactivating,
Type A-4
MIL-G-8348 Gage Assemblies, Air Testing, High Pressure, Chuck Type,
Self Contained, Aircraft
MIL-V-8566 Valves, Aircraft Hydraulic Flow Regulator
MIL-R-8572 Reducers, Pneumatic Pressure, Aircraft
MIL-V-8628 Valve, Pneumatic Check
MIL-V-8813 Valves; Aircraft, Hydraulic Pressure Relief, Type II Systems
MIL-F-8815 Filter and Filter Elements, Fluid Pressure, Hydraulic Line,
15 Micron Absolute, Type II Systems
MIL-V-19067 Valves, Check, Controllable, Hydraulic, Aircraft, Type II
Systems
MIL-V-19068 Valves, Shuttle, Hydraulic, Aircraft, Type II Systems
MIL-V-19069 Valves, Check, Hydraulic, Aircraft, Type II Systems
MIL-T-25307 Transmitter, Pressure, Hydraulic, Type MJ1
MIL-G-25308 Gages, Pressure, Dial Indicating, Hydraulic, Type ME-1
MIL-C-25427 Couplings, Aircraft Hydraulic Self-Sealing Quick-Disconnect
MIL-V-25517 Valve, Aircraft Hydraulic Restrictor
MIL-I-25540 Indicator, Pressure, Hydraulic, 0-4000 PSI, Type MT1
MIL-V-25675 Valves, Check, Hydraulic, Aircraft, Type III Systems
MIL-G-25867 Gage, Pressure, Direct Indicating, Pneumatic

2.2.4 Part Specifications:

MIL-S-4040	Solenoid, Electrical, General Specification for
MIL-O-4861	"O" Rings, Rubber, Preformed Packing; Packaging of
MIL-S-5049	Scrapers; Hydraulic Piston Rod
MIL-A-5070	Adapter, Hose to Tube, Pipe and Flange, Reuseable, Hydraulic, Pneumatic, Fuel and Oil Lines
MIL-C-5499	Cores, Aircraft High Pressure Air Valve
MIL-C-5500	Caps; Aircraft High Pressure Air Valve
MIL-C-5501	Caps and Plugs, Protective, Dust and Moisture Seal
MIL-F-5506	Fittings; Method of Testing, Tube
MIL-F-5509	Fittings; Fluid Connection
MIL-G-5510	Gasket; Straight Thread Tube Fitting, Boss
MIL-P-5516	Packings and Gaskets, Preformed, Petroleum Hydraulic Fluid Resistant
MIL-R-5521	Rings; Aircraft Hydraulic Packing Back-Up
MIL-H-5593	Hose, Aircraft, Low Pressure Flexible
MIL-V-6164	Valve; Aircraft, Air, High Pressure
MIL-C-8603	Clamps, Tube Support, Loop Type
MIL-H-8788	Hose, Aircraft Hydraulic and Pneumatic, High Pressure
MIL-H-8789	Fitting End, Attachable, Hydraulic and Pneumatic, High Pressure Hose
MIL-H-8790	Hose Assemblies, Aircraft, Hydraulic and Pneumatic, High Pressure (3000 PSI)
MIL-R-8791	Retainer, Packing, Hydraulic and Pneumatic, Tetrafluoroethylene
MIL-H-8794	Hose, Rubber, Aircraft, Hydraulic and Pneumatic, Fuel and Oil Resistant
MIL-H-8795	Hose Assemblies, Rubber, Aircraft, Hydraulic, Pneumatic, Fuel and Oil Resistant
MIL-F-18280	Fittings, Flareless, Fluid Connection
MIL-H-25579	Hose Assembly, Tetrafluoroethylene, High Temperature, Power Plant, Aircraft
MIL-P-25732	Packing, Preformed, Petroleum Hydraulic Fluid Resistant, 275°F

2.2.5 Materials, Processes and Miscellaneous Specifications:

MIL-L-4343 Lubricating Grease, Pneumatic System
MIL-F-5602 Fluid, Reference, Shear Stability
MIL-H-5606 Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance
MIL-H-6002 Marking; Standard Hose, Aircraft
MIL-H-6083 Hydraulic Fluid, Petroleum Base, Preservative
MIL-T-6845 Tubing; Steel, Corrosion-Resisting (18-8), Aircraft, Hydraulic System
MIL-I-6869 Impregnants for Aluminum Alloy and Magnesium Alloy Castings
MIL-T-7081 Tube, Aluminum Alloy, Seamless, Round, 6061 and 6062, Aircraft Hydraulic Quality
MIL-H-7083 Fluid; Hydraulic Nonflammable, Hydrolube, Aircraft
MIL-F-7179 Finishes and Coatings, General Specification for Protection of Aircraft and Aircraft Parts
MIL-H-7644 Hydraulic Fluid (Castor Oil Base)
MIL-H-8446 Hydraulic Fluid, Nonpetroleum Base, Aircraft
MIL-T-8504 Tubing, Steel, Corrosion-Resistant (18-8) Annealed, Aircraft Hydraulic System
MIL-A-8625 Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-T-8808 Tubing, Steel, Corrosion-Resistant (18-8 Stabilized) Aircraft Hydraulic Quality
MIL-M-14077 Molding Plastic, Polytetrafluoroethylene (TFE - Fluorocarbon Resin)
MIL-H-19457 Hydraulic Fluid, Fire Resistant
MIL-G-22050 Gasket and Packing Material, Synthetic Rubber, Nonflammable Hydraulic Fluid Resistant
MIL-T-25456 Tester, Hose Assemblies, Hydraulic, Pneumatic, Fuel, and Oil, Aircraft
MIL-R-25897 Rubber, High Temperature, Fluid Resistant
MIL-R-25988 Rubber, Silicone, Oil and Fuel Resistant

2.3 Industry Specifications:

2.3.1 Society of Automotive Engineers Specifications.

AS 408 Pressure Instruments - Fuel, Oil, and Hydraulic
ARP 483 Anti-Skid Equipment
ARP 490 Electric Input Hydraulic Servovalve
ARP 560 Missile Hydraulic Pumps
ARP 575 Procedure and Method, Evaluation of Filter Patch Testing for Aircraft Hydraulic Pumps
ARP 576 Outline and Instructions for Preparation of Model Specifications for Hydraulic System Equipment
AS 595 Aircraft Variable Delivery Hydraulic Pumps
ARP 598 Procedure for the Determination of Particulate Contamination of Hydraulic Fluids by the Particulate Count Method
ARP 599 A Dynamic Test Method for Determining the Degree of Cleanliness of the Downstream Side of Filter Elements
ARP 600 Torque Determination, Method of, for Tube or Hose End Fitting Connections, Flared, Flareless or Miscellaneous Screw Thread Style
ARP 602 Hose Assemblies, Flexible Metal, Aeronautical, Medium Pressure
ARP 603 Impulse Test Equipment for Testing Hydraulic System Components
ARP 604 Hose Assemblies; Aircraft and Missiles, High Temperature, High Pressure (250,000 Cycles)
AS 608 High Pressure Compressed Gas Hose Assemblies for Aircraft and Missile Ground Support Equipment
ARP 610 Synthetic or Natural Rubber Lined Pneumatic Hose Assemblies, Aircraft

2.3.2 National Aircraft Standards Committee Specifications:

NAS 810 Protection of Fluid Lines and Equipment
NAS 1613 Packing, O-Ring, Phosphate Ester Resistant
NAS 1629 O-Ring Elongation Modulus Test

3. DESIGN STANDARDS:

3.1 Military Standards (MIL-STD):

MIL-STD-10 Surface Roughness Waviness and Lay
MIL-STD-17 Mechanical Symbols
MIL-STD-29 Springs, Mechanical, Drawing Requirements for
MIL-STD-105 Sampling Procedure and Tables for Inspection by Attributes
MIL-STD-177 Rubber Products, Terms for Visible Defects of
MIL-STD-190 Identification Marking of Rubber Products
MIL-STD-276 Impregnation of Porous Nonferrous Metal Castings
MIL-STD-407 Visual Inspection Guide for Rubber Molded Items
MIL-STD-413 Visual Inspection Guide for Rubber O-Rings

3.2 Military Standards (MS):

MS-21931	Fitting Installation, Cluster
MS-21932	Fitting End, Bolt Cluster Fitting End, Bolt Cluster Fitting, Single Port
MS-21933	Fitting End, Bolt Cluster Fitting, Single Port Through, Flareless
MS-21934	Fitting End, Bolt Cluster Fitting, Double Port
MS-21935	Fitting End, Bolt Cluster Fitting, Double Port, Through, Flareless
MS-21936	Contour and Mounting End, Cluster Fitting Body, Semi-Finished
MS-21947	Fitting End - Bolt Cluster Fitting Single Port Through Flare
MS-21948	Fitting End - Bolt Cluster Fitting Double Port Through - Flare
MS-24385	Fitting End, Flared Tube Connection and Gasket Seal, Precision Type, Standard Dimensions
MS-24386	Fitting End, Bulkhead Flared Tube Connection and Gasket Seal, Precision Type, Standard Dimensions
MS-33514	Fitting End, Standard Dimensions for Flareless Tube Connection and Gasket Seal
MS-33515	Fitting End, Standard Dimensions for Bulkhead Flareless Tube Connections
MS-33524	Recommended Port Sizes for Hydraulic Pumps, Aircraft
MS-33566	Fittings, Installation of Flareless Tube, Straight-Threaded Connectors
MS-33583	Tubing End, Double Flare, Standard Dimensions for
MS-33584	Tubing End, Standard Dimensions for Flared
MS-33586	Metals, Definition of Dissimilar
MS-33611	Tube Bend Radii
MS-33620	Chart, Hose Selection
MS-33656	Fitting End, Standard Dimensions for Flared Tube Connection and Gasket Seal
MS-33657	Fitting End, Standard Dimensions for Bulkhead Flared Tube Connections
MS-33675	Scraper, Installation, Packing Gland Ring
MS-33786	Fitting Installation, Flared Tube and Hose, Swivel
MS-33790	Bend Data, Minimum, Hydraulic, Pneumatic, Fuel and Oil Hose

3.3 Air Force/Navy Design Standards (AND):

AND 10050 Bosses, Standard Dimensions for Gasket Seal Straight Thread
AND 10059 Fittings - Styles of Pipe Threaded, Flared Tube and Hose
AND 10064 Fittings - Installation of Flared Tube, Straight Threaded Connectors
AND 10067 Valve Installation - Hydraulic Bleeder, Standard Dimensions for
AND 10071 Boss and Installation - Air Connection
AND 10074 Boss - Spacing - Hydraulic
AND 10080 Fittings - Installation of Universal Elbow
AND 10104 Tubing, Steel, Corrosion-Resistant, Round, Standard Dimensions for
AND 10106 Tubing - Standard Sizes for Aluminum Alloy (52S0) Round
AND 10230 Reference Chart, Aircraft Engine Accessory Drive
AND 10260 Flange - Type X Accessory Mounting
AND 10261 Flange - Type XI Accessory Mounting
AND 10262 Flange - Type XII Accessory Mounting
AND 10302 Installation Clearance - IX Drive
AND 10313 Relief Valve Installation Clearance - Hydraulic
AND 10331 Installation Clearance - Type XII-J Drive (Fluid Power Pump)
AND 10338 Installation Clearance - Type XII-K (Fluid Power Pump)
AND 10375 Colors - Fluid Line Identification
AND 20000 Drive - Type X Engine Accessory
AND 20001 Drive - Type XI Engine Accessory
AND 20002 Drive - Type XII Engine Accessory

3.4 Industry Design Standards:

3.4.1 Society of Automotive Engineers Standards:

AS 468 Drive - Accessory, 5" Bolt Circle
AS 469 Drive - Accessory, 8" Bolt Circle
AS 470 Drive - Accessory, 10" Bolt Circle
AS 471 Flange - Accessory, 5" Bolt Circle
AS 472 Flange - Accessory, 8" Bolt Circle
AS 473 Flange - Accessory, 10" Bolt Circle
ARP 568 Uniform Dash Numbering System for O-Rings
ARP 584 Coiled Tubing

3.4.2 National Aircraft Standards Committee Standards:

NAS 550 Fitting - Installation of Universal Elbow

4. STANDARD COMPONENTS:

4.1 Military Standard Components:

MS-24333 Coupling Assembly, Hydraulic, Self-Sealing, Quick Disconnect, Flared Fitting to Internal Thread Boss

MS-24334 Coupling Assembly, Hydraulic, Self-Sealing, Flareless Fitting to Internal Thread Boss

MS-24335 Flange, Bulkhead Mounting, Hydraulic Self-Sealing Coupling

MS-24337 Union Nut, Hydraulic Self-Sealing Coupling, Type A

MS-24352 Valve, Aircraft Hydraulic Restrictor, One-Way, Filtered

MS-24353 Valve, Aircraft Hydraulic Restrictor, Two-Way, Filtered

MS-24418 Valve, Aircraft Hydraulic Restrictor, One-Way, Unfiltered

MS-24419 Valve, Aircraft Hydraulic Restrictor, Two-Way, Unfiltered

MS-28005 Transmitters, Pressure, Synchro, Aircraft

MS-28016 Valve - Hydraulic Dual Thermal Expansion Relief

MS-28061 Gages, Pressure, Engine and Utility, 2-Inch, Flange Mounted, Back Ports

MS-28063 Gages, Pressure, Engine and Utility, 2-Inch, Flange or Port Mounted, Bottom Port

MS-28700 Accumulator - Cylindrical, 3000 PSI

MS-28720 Filter, Aircraft Hydraulic Line Type, 3000 PSI

MS-28764 Valve, Check, Controllable, Rotary Action, Hydraulic, 3000 PSI, Type II Systems

MS-28765 Valve, Check, Hydraulic, Internal Ports, 3000 PSI, Type II Systems

MS-28766 Valve, Shuttle, Hydraulic, Direct Mounting, 3000 PSI, Type II Systems

MS-28767 Valve, Shuttle, Hydraulic, Internal-Thread, Tube Fitting Outlet, 3000 PSI, Type II Systems

MS-28768 Valve, Check, Controllable, Plunger-Type, Hydraulic, 3000 PSI, Type II Systems

MS-28771 Valve, Check, Hydraulic, Flared, 3000 PSI, Type II Systems

MS-28797 Accumulator, Hydraulic, Cylindrical, 3000 PSI, Type II

MS-28880 Valve - Controllable Hydraulic Check, Rotating Action, 3000 PSI

MS-28881 Valve, Hydraulic, Directional Control, Slide Selector 4 Way, 3000 PSI

MS-28886 Valve, Aircraft Hydraulic Flow Regulator

MS-28887 Valve, Hydraulic Relief, Cylindrical

MS-28888 Valve, Pneumatic Check

MS-28889 Valve, Air, High-Pressure Charging

MS-28890 Valve, Hydraulic Check, 3000 PSI, Flareless, Type II Systems

MS-28891 Valve, Shuttle, Hydraulic, 3000 PSI, Direct Mounting

MS-28892 Valve, 3000 PSI Hydraulic Check, Flareless, Type II Systems

MS-28893 Valve, Hydraulic Relief, Cylindrical, Type II Systems

MS-28895 Filter, Fluid, Pressure, Hydraulic Line, 3000 PSI, Absolute 15 Micron, Style A, By Pass, 275 Deg. F.

MS-28896 Filter, Fluid, Pressure, Hydraulic Line, 3000 PSI, Absolute 15 Micron, Style B, Non By Pass, 275° F.

MS-28897 Filter Element, Fluid, Pressure, Hydraulic Line, 3000 PSI, Absolute 15 Micron, 275 Deg. F.

4.2 Air Force/Navy Standard Components:

AN 4146 Pump - 1/2GPM at 3000 PSI Power Driven Hydraulic
AN 4147 Pump - 1GPM at 3000 PSI Power Driven Hydraulic
AN 4148 Pump - 2GPM at 3000 PSI Power Driven Hydraulic
AN 4149 Pump - 3GPM at 3000 PSI Power Driven Hydraulic
AN 4150 Pump - 4GPM at 3000 PSI Power Driven Hydraulic
AN 4151 Pump - 5GPM at 3000 PSI Power Driven Hydraulic
AN 6201 Pump - Hydraulic Hand
AN 6204 Valve, Hydraulic Bleeder
AN 6206 Regulator - 10 GPM Hydraulic Pressure
AN 6207 Valve - 1500 PSI Hydraulic Check
AN 6207 Valve - Hydraulic Shuttle, Tube Fitting Outlet
AN 6235 Filter Element - Hydraulic Replaceable Micronic Line Type
AN 6236 Filter Element - Hydraulic Replaceable Micronic Reservoir Type
AN 6237 Filter Element - Hydraulic Replaceable Micronic Vent Type
AN 6238 Gasket - Hydraulic Replaceable Reservoir Type Filter Element
AN 6240 Filter - Hydraulic Replaceable Vent Type
AN 6245 Valve - Hydraulic Thermal Expansion Relief
AN 6247 Valve - Controllable Check, Rotating Action
AN 6248 Pump - Hydraulic Hand, Type 3000
AN 6249 Valve, 3000 PSI Hydraulic Check
AN 6250 Pump - 1 GPM at 1500 PSI Power Driven Hydraulic
AN 6251 Pump - 2 GPM at 1500 PSI Power Driven Hydraulic
AN 6252 Pump - 3 GPM at 1500 PSI Power Driven Hydraulic
AN 6253 Pump - 5 GPM at 1500 PSI Power Driven Hydraulic
AN 6277 Valve - Hydraulic Shuttle, 3000 PSI, Internal Thread Tube
Fitting Outlet
AN 6278 Valve - Hydraulic Shuttle, 3000 PSI, Universal and Internal Thread
Fitting Outlet
AN 6279 Valve - Hydraulic Pressure Relief - Two Port
AN 6280 Valve - 3000 PSI Hydraulic Check Internal Ports
AN 6281 Fuse - Hydraulic Quantity Measuring, Class 3000, Type 1
AN 6282 Fuse - Hydraulic Quantity Measuring, Class 3000, Type 2
AN 6293 Valve - 4-Way Rotary Selector, 3000 PSI, Non-Interflow
AN 6294 Valve - 4-Way Rotary Selector, 3000 PSI, Interflow
AN 6295 Regulator - 10 GPM Hydraulic Pressure
AN 6296 Valve, Controllable Check, Plunger Type, 3000 PSI

5. HYDRAULIC AND PNEUMATIC FITTINGS:

5.1 Military Standard Fittings (MS):

MS-9015 Plug - Straight Thread, "O" Ring Seal
MS-20819 Sleeve, Flared Tube Fitting
MS-21900 Adapter, Flareless Tube to AN Flared Tube
MS-21901 Adapter, Flareless Tube for 3/8 Bulkhead and Universal to AN Flared Tube
MS-21902 Union, Flareless Tube
MS-21903 Union, Flareless Tube, 3/8 Bulkhead and Universal
MS-21904 Elbow, Flareless Tube, 90 Degree
MS-21905 Tee, Flareless Tube
MS-21906 Cross, Flareless Tube
MS-21907 Elbow, Flareless Tube and Universal 45 Degree
MS-21908 Elbow, Bulkhead Universal 90 Degree, Flareless Tube
MS-21909 Tee, Bulkhead and Universal, Flareless Tube
MS-21910 Tee, Flareless Tube, Internal Thread on Run
MS-21911 Tee, Flareless Tube, Internal Thread on Side
MS-21912 Tee, Flareless Tube with Bulkhead on Run
MS-21913 Plug, Flareless Tube
MS-21914 Cap, Pressure Seal, Flareless Tube Fitting
MS-21915 Bushing, Screw-Thread Expander, Flareless Tube Connection
MS-21916 Reducer, External Thread, Flareless Tube
MS-21917 Nut-Sleeve Coupling Flareless
MS-21918 Sleeve-Coupling Flareless
MS-21921 Nut, Sleeve Coupling Flareless
MS-21922 Sleeve Coupling Flareless
MS-21923 Adapter, Flareless Tube, Bulkhead and Universal to Flared Tube
MS-21924 Union, Flareless Tube, Bulkhead and Universal
MS-21925 Elbow, 90 Degree Universal, Flareless Tube, High Profile
MS-21926 Elbow, 90 Degree Universal, Flareless Tube, Low Profile
MS-21937 Nut, Cluster Fitting, Retainer
MS-21938 Bolt, Cluster Fitting, Single Port, Flareless
MS-21939 Bolt, Cluster Fitting, Single Port, Through, Flareless
MS-21940 Bolt, Cluster Fitting, Double Port, Flareless
MS-21941 Bolt, Cluster Fitting, Double Port, Through, Flareless
MS-21942 Body, Cluster Fitting, One Way, Flareless
MS-21943 Body, Cluster Fitting, Two Way, 90 Degree, Flareless
MS-21944 Body, Cluster Fitting, Two Way, 180 Degree, Flareless
MS-21945 Body, Cluster Fitting, Three Way, Flareless
MS-21946 Body, Cluster Fitting, One Way, Internal Boss
MS-21949 Bolt - Cluster Fitting Single Port - Flare
MS-21950 Bolt - Cluster Fitting Single Port Through - Flare
MS-21951 Bolt - Cluster Fitting Double Port - Flare
MS-21952 Bolt - Cluster Fitting Double Port Through - Flare

5.1 Military Standard Fittings (MS) (Cont'd):

MS-21953 Body - Cluster Fitting One Way - Flare
MS-21954 Body - Cluster Fitting Two Way 90 Degree - Flare
MS-21955 Body - Cluster Fitting Two Way 180 Degree - Flare
MS-21956 Body - Cluster Fitting Three Way - Flare
MS-21958 Body - Cluster Fitting, One Way, Internal Boss
MS-21959 Body - Cluster Fitting, Two Way, 90 Deg., Internal Boss
MS-21960 Body - Cluster Fitting, Three Way, Internal Boss
MS-24387 Bolt, Flared Tube Fitting End Universal, Precision Type
MS-24388 Tee, Flared Tube, Internal Thread on Side, Precision Type
MS-24389 Tee, Flared Tube, Internal Thread on Run, Precision Type
MS-24390 Tee, Flared Tube, with Bulkhead on Run, Precision Type
MS-24391 Plug-Bleeder, Screw Thread, Precision Type
MS-24392 Union, Flared Tube, Precision Type
MS-24393 Union, Flared Tube 3/8 Bulkhead and Universal, Precision Type
MS-24394 Elbow, Flared Tube Bulkhead and Universal, 90 Deg., Precision Type
MS-24395 Tee, Bulkhead and Universal Flared Tube, Precision Type
MS-24396 Elbow, Flared Tube and Universal, 45 Deg., Precision Type
MS-24397 Bushing, Screw Thread Reducer, Precision Type
MS-24398 Bushing, Screw Thread Expander, Precision Type
MS-24399 Reducer, External Thread Flared Tube, Precision Type
MS-24400 Nut, Flared Tube, Bulkhead and Universal Fitting, Precision Type
MS-24401 Elbow, Flared Tube, 90 Deg., Precision Type
MS-24402 Tee, Flared Tube, Precision Type
MS-24403 Cross, Flared Tube, Precision Type
MS-24404 Plug, Flared Tube, Precision Type
MS-24405 Adapter, Flareless Tube to AN Flared Tube, Precision Type
MS-24487 Union - Tube, Flared, Universal