SAE Aerospace
An SAE International Group

AEROSPACE INFORMATION REPORT

SAE AIR1273 REV. A

Issued 1972-08
Revised 1996-05
Reaffirmed 2006-05

Identification and Coding of Fluid and Electrical Piping System Functions

RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

1. SCOPE:

   This SAE Aerospace Information Report establishes a positive identification of the functions and, if applicable, the hazards and direction of flow of pipe, hose, tube, or electrical conduit lines.

2. REFERENCES:

   The following references contain information on specific applications, requirements, and limitations and should be consulted as applicable.

   Military and Federal Standards are obtainable from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

   AFRPL documents are obtainable from the Air Force Rocket Propulsion Laboratory, Edwards, CA 93523.

   International Standardization Organization Documents (ISO) are obtainable from the American National Standards Institute, Inc., 11 West 42nd Street, New York, NY 10036-8002.

   ASCC Air Standards are obtainable from the Naval Air Systems Command, Code AIR 52021, Washington, DC 20360 or the Aeronautical Systems Division, 4950/TZSS, Wright-Patterson AFB, OH 45433.

   NAS standards are obtainable from National Standards Association, Inc., 1321 Fourteenth Street, NW, Washington, DC 20005.

   Aerospace Standards (AS) are obtainable from the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.

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2. (Continued):

MIL-STD-161	"Identification Methods for Bulk Petroleum Products Systems Including Hydrocarbon Missile Fuels"
MIL-STD-454	"Standard General Requirements for Electronic Equipment"
MIL-STD-1247	"Markings, Functions, and Hazard Designations of Hose, Pipe, and Tube Lines for Aircraft, Missile, and Space Systems"
MIL-STD-1472	"Human Engineering Design Criteria for Military Systems, Equipment and Facilities"
MIL-T-9906	"Tape - Aircraft Tubing Identification Marker"
MIL-P-15024	"Plates, Tags, and Bands for Identification of Equipment"
FED-STD-595	"Color"
TT-P-59	"Paint, Ready Mixed, International Orange"
MS 3368	"Strap, Tiedown, Identification, Adjustable, Self-Clinching, Plastic"
MS 14100	"Tape Identification, Coaxial Cable Transmission Line Assembly"
MS 16837	"Tape, Aircraft Tubing Identification Marker"
MS 33739	"Aircraft Marking, Servicing and Precautioning"
AFRPL TI No. 2-3-2	"Technical Instruction, Color Coding of Piping Systems"
ISO Recommendation R12	"Identification of Aircraft Pipelines"
Air Standardization Co-ordinating Committee ASCC AIR STD 17/3	"Identification of Pipe Lines in Aircraft, Missile, and Space Vehicle Systems"
NAS 1411	"Band, Marker, Blank (Aluminum and CRES)"
AS478	"Identification Marking Methods"

3. DEFINITION:

As referred to herein, lines include any pipe, hose, tube, or duct used to convey liquids or gases. It also includes any conduit used to contain electrical wires or cables. Accessories such as pipe covering are considered as parts of the line.

4. GENERAL:

Properly and judiciously applied, line identification can promote safety, expedite training, lessen error in operation, and facilitate servicing. Location, temperature and environmental conditions dictate the proper identification media, if any, that can be applied. However, care must be used to prevent the selection of an identification method that will contribute to an unsafe condition. Use of tapes, tags, or bands in engine compartments or other critical system areas where they may cause trouble, should they become detached, should be avoided.

Certain features of line identification have been subject to International Agreements. In addition, the references at the end of this AIR should be consulted for information on specific applications and limitations of requirements herein specified.

5. DESIGNATION OF FUNCTION:

As applicable, the following functions of a line may be identified:

a. Contained medium (e.g., Oil, Fuel, Propellant, Electric, etc.)
b. Direction of Flow
c. Instrument Line
d. Hazard
e. Pressure
f. Fire Control
g. Temperature (e.g., Cold Lines, flowing medium is below 0 °C (32 °F) and Hot Lines, surface temperature ranges above 74 °C (165 °F))
h. Electrical characteristics (e.g., Voltage, Polarity, Frequency, etc.)
i. Supplementary Information (e.g., Drain, Nozzle Open, Flap Up, etc.)

6. IDENTIFICATION MEDIA:

a. Tapes (Ref. MIL-T-9906) of nonmetallic material which completely encircle the line may be used subject to limitations of temperature, environment, or location in the system. These tapes should incorporate colors, symbols and lettering.

b. Bands (Ref. NAS1411) which are metallic and include a tangslot or other bandlock may be used in environments where the nonmetallic tapes are not suitable. A small spot weld may be applied to the folded back tang for additional security. Bands (Ref. MS3368) which are of plastic, adjustable, and self-clinching are often used on cables or wiring harnesses for the dual purpose of identification and bundling.