SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP1757 REV. A

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Superseding ARP1757

Symbology for Standardization of Cargo Handling Systems

1. SCOPE:

The symbols specified in this SAE Aerospace Recommended Practice (ARP) are applicable to all aircraft cargo handling systems for lower deck as well as for upper deck systems. Utilizing the symbols the conveyance, guidance, restraint, power drive unit and the degree of automation for the total cargo handling system can be depicted.

1.1 Purpose:

This ARP specifies symbols for the pictorial standardization of aircraft cargo handling systems. This serves for a better understanding, standardization and communication between all those who deal with aircraft cargo handling systems.

2. REFERENCES:

There are no referenced publications specified herein.

3. SYMBOL SYSTEM:

Each cargo symbol consists of a basic symbol which represents basic functions like physical function, load direction, etc., with respect to maximum simplicity, intelligible geometry, optical similarity and good retainability.

The symbols are designed to be self-explanatory and are used alone or in combination to generate multiple components.

A symbol characterizes a component function, but not the detail design and manufacturing method.

The standardized symbols are suitable for the use with computer aided design.

Figure 1 shows all symbols with explanations.

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4. APPLICATION:

In Figure 2 the application of some of the symbols to a typical semi-automatic underfloor cargo system for the latching and guiding of pallets and containers is given.

PREPARED UNDER THE JURISDICTION OF
SAE SUBCOMMITTEE AGE-2A, CARGO HANDLING OF
COMMITTEE AGE-2, AIR CARGO & AIRCRAFT GROUND EQUIPMENT AND SYSTEMS

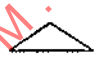
COMPONENT	SYMBOL	DESCRIPTION
1) LATCH (BLACK=LOAD CARRYING SIDE)		RETRACTABLE/RELOCATABLE RESTRAINT MECHANISM CAPABLE OF REACTING A HORIZONTAL LOAD PERPENDICULAR TO ITS EMPHASIZED SIDE
2) LATCH DOUBLE ACTING		RETRACTABLE/RELOCATABLE RESTRAINT MECHANISM CAPABLE OF REACTING A HORIZONTAL LOAD PERPENDICULAR TO BOTH OF ITS SIDES
3) STOP		FIXED RESTRAINT CAPABLE OF REACTING A HORIZONTAL LOAD PERPENDICULAR TO ITS LENGHT
4) VERTICAL RESTRAINT		HORIZONTAL PROTRUSION FROM THE UPPER PART OF A FIXED OR RETRACTABLE RESTRAINT, CAPABLE OF REACTING A VERTICAL LOAD
5) OVERRIDEABLE		DEVICE WHICH WILL CAUSE THE AUTOMATIC OVER-RIDING OF A COMPONENT IN WHICH IT IS INCORPORATED
6) FIXED GUIDE		FIXED POSITION DEVICE WHICH PROVIDES GUIDANCE ALONG ITS LENGHT AND REACTS A HORIZONTAL LOAD PERPENDICULAR TO ITS LENGHT

FIGURE 1

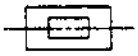
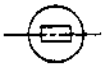
COMPONENT	SYMBOL	DESCRIPTION
7) RETRACTABLE GUIDE		RETRACTABLE/RELOCATABLE POSITION DEVICE WHICH IS CAPABLE OF GUIDING ALONG ITS LONGEST SIDE AND OF REACTING A HORIZONTAL LOAD APPLIED AGAINST ITS LONG SIDE
8) OMNI-DIRECTIONAL TRANSFER AREA		PANEL OR AREA WHICH CONTAINS A NUMBER OF OMNIDIRECTIONAL CONVEYOR UNITS FOR MULTI-DIRECTIONAL CONVEYANCE OF ULD'S
9) POWERED DRIVE UNIT RETRACTABLE		SELF-LIFTING AND/OR RETRACTABLE POWER DRIVE UNIT UTILIZED TO MOVE ULD'S ALONG A CONVEYORIZED SYSTEM
10) POWERED DRIVE UNIT FIXED HEIGHT		SPRING LOADED OR A FIXED HEIGHT POWER DRIVE UNIT UTILIZED TO MOVE ULD'S ALONG A CONVEYORIZED SYSTEM
11) POWERED DRIVE UNIT ROTATEABLE/RETRACTABLE		ROTATABLE OR TURNABLE POWER DRIVE UNIT WHICH IS ALSO SELF-LIFTING AND/OR RETRACTABLE,UTILIZED PRIMARILY IN AN OMNI-TRANSFER AREA TO MOVE ULD'S
12) POWERED DRIVE UNIT ROTATABLE FIXED HEIGHT		SYMBOL INDICATING A ROTATABLE OR TURNABLE DRIVE UNIT WHICH IS SPRING LOADED OR FIXED HEIGHT,UTILIZED PRIMARILY IN AN OMNI-TRANSFER AREA TO MOVE ULD'S

FIGURE 1 (Continued)

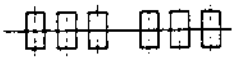
COMPONENT	SYMBOL	DESCRIPTION
13) POWERED DRIVE UNIT SHUTTLE		SYMBOL INDICATING A FIXED POSITION POWER DRIVE UNIT WHICH MOVES ULD'S BY OTHER MEANS THAN THRU FRICTION WHEELS OR ROLLERS
14) ROLLER CONVEYOR		SERIES OF TRANSPORT ROLLERS IN A COMMON CHANNEL OR SUPPORT CONTINOUS BETWEEN ROLLER SYMBOLS AS SHOWN FOR BI-DIRECTIONAL MOVEMENT OF ULD'S
15) BRAKING ROLLER		DEVICE USED IN CONJUNCTION WITH A ROLLER WHICH WILL RETARD THE MOVEMENT OF ULD'S GENERALLY IN ONE DIRECTION
16) TIE DOWN POINT (OMNIDIRECTIONAL)		TIE DOWN DEVICE OR PROVISIONS FOR A TIE DOWN DEVICE PERMANENTLY ATTACHED TO STRUCTURE OR CARGO SYSTEM COMPONENTS IN ORDER TO ALLOW USE OF SUPPLEMENTAL STRAPS
17) POWERED SYSTEM CONTROL PANEL		SEMI AUTOMATIC CARGO LOADING SYSTEM. THE CONVEYANCE OF ULD'S IS PROVIDED PER POWER DRIVE UNITS. BUT THE GUIDING AND LATCHING COMPONENTS ARE MANUALLY OPERATED
18) AUTOMATIC SYSTEM CONTROL PANEL		FULLY AUTOMATIC CARGO LOADING SYSTEM. THE CONVEYANCE OF ULD'S IS ACHIEVED BY POWER DRIVE UNITS. GUIDANCE, POSITIONING AND LATCHING IS ACTIVATED AUTOMATICALLY

FIGURE 1 (Continued)