



400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE RECOMMENDED PRACTICE



ARP1836

REV.
A

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AIRCRAFT CARGO CONVEYOR - BATTERY POWERED

1. SCOPE:

This SAE Aerospace Recommended Practice (ARP) outlines the functional and design requirements for a battery powered, self-propelled belt conveyor for handling baggage and cargo at aircraft bulk cargo holds.

2. APPLICABLE DOCUMENTS:

The following documents shall become a part of this document.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

- ARP1247 General Requirements for Aerospace Powered Mobile Ground Support Equipment
- ARP1328 Aircraft Ground Support Equipment Vehicle Stability Analysis
- AIR1375 Minimum Safety Requirements for Special Purpose Airline Ground Support Equipment
- AIR1558 Interface Protective Devices - Ground Equipment to Aircraft.
- ARP1816 Charger for Battery Powered Ground Support Equipment
- ARP1817 Batteries for Battery Powered Ground Support Equipment
- AIR1838 Pictograms for Ground Support Equipment
- ARP1892 Electrical Connectors for Use In Battery Powered Ground Support Equipment

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Documents

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2.2 AHM Publications:

Available from AHM, 942 International Air Transport Association, 2000 Peel Street, Montreal, Quebec, Canada H3A 2R4.

IATA Airport Handling Manual, Section 9

3. DESIGN REQUIREMENTS:

Design, systems, hardware, and material used in the manufacture of the conveyor must meet automotive standards and good industry practices. The loader shall be designed for easy access to those areas that require frequent checks for servicing.

3.1 Physical Characteristics:

- 3.1.1 Overall dimensions of the aircraft cargo conveyor shall be within 347 in (8.81 m) long and 80 in (2.03 m) wide. The vehicle shall have a minimum front to rear wheelbase of 110 in (2.8 m).

Overall height should be kept as low as possible consistent with good operation, safety, and ground clearance.

- 3.1.2 The loader must be capable of servicing all commercial aircraft cargo compartments. This requires a range of travel of the forward end of the conveyor of a minimum of 38 in (0.97 m), from the ground in the conveyor full down position, to a minimum of 150 in (3.8 m) in the full up position. The rear end of the conveyor must maintain 20 in (0.51 m) to 24 in (0.58 m) through the entire height range of the forward end and extend to a minimum height of 50 in (1.27 m).

- 3.1.3 The turning radius as measured from the outside corner of the vehicle shall not be greater than 25 ft (7.6 m).

- 3.1.4 The following characteristics shall be met under normal operating conditions and loads:

- a. Approach angle: 16° (0.28 rad) minimum
- b. Ramp breakover angle: 10° (0.18 rad) minimum
- c. Departure angle: 10° (0.18 rad) minimum

- 3.1.5 The conveying belt shall be 24 in (0.61 m) wide. Usable conveyor bed width shall be a minimum of 32 in (0.81 m) with guides and a maximum of 40 in (1.02 m) overall.

- 3.1.6 The belt conveyor shall have tire tread suitable for outdoor use and all performance requirements as specified in this document.

- 3.1.7 The minimum ground clearance shall be at least 5 in (0.13 m).

- 3.1.8 The loader chassis shall have rub rails on both sides for protection against damage.

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3.1.9 To minimize aircraft damage the forward end of the conveyor support structure shall be protected with a type of rubber bumper.

3.1.9.1 First Bumper Alternative: Bumper does not extend across the front of the conveyor bed, but is mounted to the support structure on either side of the conveyor bed, reducing finger pinching hazard.

3.1.9.2 Second Bumper Alternative: Bumper is full width, 5 in (0.13 m) ID x 7 in (0.18 m) OD.

CAUTION: The gap width between the bumper support and belt at the front of the conveyor should be chosen with great care. If too small, the risk of getting fingers caught exists. If too large, packages can get stuck or fall through the gap.

3.1.10 The operator's control area shall have adequate room to safely and efficiently operate the loader. Recommended dimensions to accomplish this are shown in Figure 1 and Table 1.

TABLE 1 - Operator Station Interior Dimensions

TABLE 1A - Dimensions A through N

Dimension	Inches	Centimeters	Description
A	18.0 min 22.0 max	45.72 min 55.88 max	Seat width
B	15.0 min	38.1 min	Seat position-lateral
C	5.0 min	12.7 min	Elbow room
D	14.5 min	36.83 min	Knee room
E	6.5 min	16.51 min	Side room
F	16 min 18 max	40.64 min 45.72 max	Steering wheel diameter
G	2.5 max	6.35 max	Brake-accel. separation
H	2.5 max	6.35 max	Steering Column - Brake Separation
I			Not used
J	27.0	68.58	Small man eye level
K			Not used
L	31.5	80	Average man eye level
M	18 min 20 max	45.72 min 50.8 max	Seat backrest height
N	29 min	73.66 min	Knee room

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TABLE 1B - Dimensions 0 through Z

Dimension	Inches	Centimeters	Description
0			Not used
P	18 min (± 3)	45.72 min (± 7.62)	Seat position-fore-aft
Q	13 min 17 max	33.02 min 43.18 max	Seat length
R	10 min 17 max	25.4 min 43.18 max	Seat cushion height
S	25 min	63.5 min	Steer height
T			Not used
U	3.0 max	7.62 max	Shift lever
V	26 min	66.04 min	Leg room
W	11 min 14 max	27.94 min 35.56 max	Braking
X	14.5 min	36.83 min	Foot room
Y	4.0 max	10.16 max	Brake pedal travel
Z	8.0 max	20.32 max	Brake pedal height
Angle	Degrees	Description	
β	15.0 min	Downward visibility	
γ	28.0 min	Accelerator pedal down angle	