INCH-POUND
MIL-STD-3035 (USAF)
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DEPARTMENT OF DEFENSE
DESIGN CRITERIA STANDARD

USAF AIRCRAFT ARRESTING SYSTEMS

AMSC N/A FSC 1710

FOREWORD

1. This standard is approved for use by the Department of the Air Force and is available for use by all Departments and Agencies of the Department of Defense.

2. This standard is dedicated to land-based aircraft arresting systems (AASs) designed for use with United States Air Force (USAF) tail hook equipped fighter aircraft.

3. Comments, suggestions, or questions on this document should be addressed to AF-99 (agent for AF-84), AFSC/LOEP (WPAFB, OH), 5215 Thurlow St, Bldg 70-C, Suite 5, Wright-Patterson AFB, OH 45433-5750. or emailed to spec99@wpafb.af.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at https://assist.dla.mil/ .

CONTENTS

1. SCOPE

1.1 Scope. This standard establishes the minimum military-unique functional requirements for design and development of United States Air Force (USAF) land-based Aircraft Arresting Systems (AASs).

1.2 Classification. AASs are of the following types, as specified (see 6.2).

1.2.1 Types. The types of AASs are as follows:

Type I – Operational (runway) AASs (see 3.2)

Type II – Emergency (overrun/underrun) AASs (see 3.3)

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL STANDARDS

FED-STD-595/24052	Green, Semigloss

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-53030	Primer Coating, Epoxy, Water Reducible, Lead and Chromate Free
MIL-DTL-5541	Chemical Conversion Coatings on Aluminum and Aluminum Alloys
MIL-PRF-81322	Grease, Aircraft, General Purpose, Wide Temperature Range, NATO code G-395
MIL-PRF-23377	Primer Coatings: Epoxy, High-Solids
MIL-PRF-26915	Primer Coating, for Steel Surfaces
MIL-PRF-32014	Grease, Aircraft and Instrument

MIL-PRF-83282	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Metric, NATO code H-537
MIL-PRF-85285	Coating: Polyurethane, Aircraft and Support Equipment
MIL-W-38461	Webbing, Nylon, Aircraft Arresting (Inactive for New Design)

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-810	Environmental Engineering Considerations and Laboratory Tests
MIL-STD-882	System Safety
MIL-STD-889	Dissimilar Metals

(Copies of these documents are available online at https://assist.dla.mil/quicksearch/ or from the standardization document order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

NAVAL AIR WARFARE CENTER (CAGE 80020)

NAVAIR DRAWING 515053	1 1/4 Dia. Non-rotating Wire Rope

(Copies of this document are available from the Naval Air Systems Command, Code 4.1.4, Lakehurst, NJ 08733-5100.)

U.S. AIR FORCE (CAGE 98752)

USAF DRAWING 66D1751	Connector, 8 1/2-in Tape-BAK-12 Arresting Barrier, 1 1/4-in Runway Pendant Cable, Assy of
USAF DRAWING 7545764	Support, Donut Type-Wire Cable

(Copies of these documents are available from Robins AFB GA, (AFLCMC/WNZEC, 460 Richard Ray Blvd Ste 200, Robins AFB, GA 31098-1813) or emailed to 642CBSG.Workflow@robins.af.mil.)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract. GULF & WESTERN (CAGE 24139)

DRAWING 152-A-1370	Earth Stake Anchor Assy
DRAWING 52-W-2295-201	Arresting Gear Fairlead Unit Assembly

(Copies of these documents are available from Robins AFB GA, (AFLCMC/WNZEC, 460 Richard Ray Blvd Ste 200, Robins AFB, GA 31098-1813) or emailed to 642CBSG.Workflow@robins.af.mil.)

SOCIETY OF AUTOMATIVE ENGINEERS (SAE)

ARP1247	General Requirements for Aerospace Ground Support Equipment, Motorized and Nonmotorized

(Application for copies should be addressed to SAE, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.)

2.4 Order of precedence. Unless otherwise noted herein or in the contact, in the event of a conflict between the text of this document and the references cited herein (except for related specification sheets), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 AASs. Unless otherwise specified, AASs defined in this standard must consist of the following:

a. Energy absorber units (see 3.4)

b. Fairlead unit assemblies [fairlead beams (see 4.3b)]

c. A hook cable (see 4.3d)

d. Interconnect devices including:

i. Purchase tapes (see 4.3g), and

ii. Purchase element connectors [tape connectors (see 4.3h)]

3.2 Operational AASs. An Operational AAS (see 5.1) must have a minimum kinetic energy absorbing capacity of 100 million foot-pounds (ft-lbs) while allowing aircraft runout up to 1,200-feet.

3.3 Emergency AASs. An Emergency AAS (see 5.2) must have a minimum kinetic energy absorbing capacity of 50 million foot-pounds while allowing aircraft runout up to 905-feet. In general, it is an emergency braking system available to aircraft in case of failure of a successful engagement by the Operational AAS (or in cases where an Operational AAS is not available). Emergency AASs are generally positioned in the overrun and/or underrun area of the runway. The overrun is defined to be an area beyond the take-off runway designated by the airport authorities as able to support aircraft during an aborted take-off. This area is commonly referred to as "the underrun" when in front of the take-off runway (opposite end of the runway from the overrun).

3.4 Energy absorber units (brakes). Components designed to decelerate the forward motion of tail hooked equipped aircraft without causing damage to the airframe, airfield structures, or personnel. They absorb the forward kinetic energy of the aircraft.

3.5 Reliability. Reliability is the probability that an item can perform its intended function for a specified interval under stated conditions.

3.6 Functional span. The cross-runway distance between the two runway edge sheaves in the fairlead beam of the fairlead beam (or the lead off sheaves of energy absorber units if fairlead beams are not installed) on either side of the runway is called the functional span.

3.7 Split distance. Split distance is the distance between the runway fairlead beam and the lead-off sheave of the energy absorber unit on a given side. This distance is measured from the rear or entry point of the fairlead beam, to the edge of the energy absorber nearest to the fairlead beam. Split distances help to dampen the excessive dynamic hook loads that would otherwise be experienced during the initial stages of the arrestment.

3.8 Tape cropping. In general, tape cropping is a periodic maintenance procedure which requires the user to remove (by cutting away) the ends of purchase tapes that have been damaged or overexposed to ultraviolet light. This procedure allows the purchase tapes to be used up to a maximum of four years.

4. GENERAL REQUIREMENTS

4.1 Construction. AASs shall be built to withstand the loads, strains, vibrations, and other conditions incident to service, shipping, and storage under the environmental conditions described herein. It shall be so constructed that no parts or components will work loose in service; this includes malfunction or premature function of parts, devices, or mechanisms, which degrade system performance or cause equipment to operate improperly.

4.2 Design. AASs shall be based on the split-energy absorber concept (for example, two energy absorber units sited on opposite sides of the runway, working in conjunction to arrest troubled aircraft) with no requirement for mechanical cross-runway interconnection other than the hook cable. The energy absorbers shall provide braking force for aircraft weights ranging from 19,000 lbs to 85,000 lbs at velocities up to 200 knots (velocity limited only by the dynamic performance of the hook cable and the kinetic energy capacity of the AAS). This shall be accomplished under a single system setting for the required aircraft weight ranges and engaging speeds herein [for example, AASs shall be independent of field level adjustment(s) once programmed for a specific runout distance]. The AASs shall be designed for split distance installations up to 300-feet. Further, AASs shall withstand engagements off-center up to 50 percent of the runway semi-span with no adverse effects to the AAS, to the engaging aircraft, or to the pilot. The AAS shall be designed for:

a. concrete pad (for example, above-grade)

b. permanent-pit-type (for example, below-grade), and

c. when specified by the solicitation, soil surface (expeditionary) installations.

4.3 Configuration requirements. The energy absorber units of the AAS shall be designed to accommodate the following:

a. bidirectional aircraft engagements (for example, engagement by aircraft landing or taking off from the approach or departure runway end),

b. fairlead beams in accordance with CAGE 21439 print number 52-W-2295-201 (NSN 1710-01-098-4984) or equal,

c. grease in accordance or compatible with MIL-PRF-81322 or MIL-PRF-32014,

d. hook cables in accordance with CAGE 80020 drawing number 515053-90 through 515053-303,

e. hook cable support disks (support disks) in accordance with CAGE 98752 drawing number 7545764,

f. hydraulic fluid in accordance or compatible with MIL-PRF-83282,

g. purchase tapes in accordance with Type I of MIL-W-38461, and

h. purchase element connectors (tape connectors) for connecting the tape to the hook cable in accordance with CAGE 98752 drawing number 66D1751.

4.4 Purchase tape tensile loading. The purchase tape tensile load imparted by each energy absorber shall not exceed 60 percent of the strength of the purchase tape (defined as 63,000 lbs).

4.5 Off-center arrestments and loading. The arrestment loading exerted, by the energy absorbers, from either side of the runway shall be balanced, even in cases of off-centered aircraft engagements. The energy absorbers shall have a moderate tendency to steer the aircraft toward the midpoint between each energy absorber during runout.

4.6 Materials, protective coatings, and finish.

4.6.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible, provided that the material meets or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

4.6.2 Protective coatings. Materials that deteriorate when exposed to sunlight, weather, or operational conditions normally encountered during the service life of the item shall not be used or shall have means of protection against such deterioration that does not prevent compliance with the performance requirements specified herein. Protective coatings that chip, crack, or scale with age or extremes of climatic conditions or when exposed to heat shall not be used. Fasteners, handles, and fittings used in the assembly of the item shall also be primed and painted.

4.6.2.1 Surface preparation and pretreatment. Surface preparation and pretreatment shall be in accordance with the respective primer and topcoat specifications. Structures shall be cleaned and degreased and scuffed or blasted prior to priming; primer shall be applied before any oxidation or rusting occurs. Aluminum surfaces shall have MIL-DTL-81706, Type II, Class 1A, and MIL-DTL-5541, Type II, Class 1A, chemical conversion coating applied in accordance with the manufacturer’s directions prior to priming.

4.6.2.2 Primer. Raw metal edges, to include fastener and drain holes, with exception to any non-ferrous metals such as stainless steel or aluminum hose ends, bolts, washers and nuts, shall be coated with primer before applying topcoat.

4.6.2.3 Ferrous surfaces. Ferrous structures and surfaces shall be primed with a water reducible zinc rich primer in accordance with MIL-PRF-26915, Type II, Class B; this shall be followed, within four hours, by a coat of MIL-DTL-0053030 intermediate primer in a wet-to-wet primer application. This two part primer system shall yield a dry-film thickness of 2.0-2.5 mils for the zinc primer and 0.9 to 1.1 mils for the intermediate primer. The two-primer system shall be allowed to dry and fully cure in accordance with the primer manufacturer's directions prior to top coating.

4.6.2.4 Aluminum and mixed aluminum and ferrous surfaces. Aluminum and mixed aluminum and ferrous structures and surfaces shall be primed with an epoxy primer, Type

II, Class N of MIL-PRF-23377. This single part primer system shall yield a dry-film thickness of 0.6 to 0.8 mils.

4.6.2.5 Topcoat. Topcoat shall be polyurethane in accordance with Type I, Class H of MIL-PRF-85285. Neither Chemical Agent Resistant Coating (CARC) nor powder coating shall be used. Topcoat shall be applied to a dry film thickness of 1.6 to 2.4 mils in all instances, regardless of the primer system utilized. The coating shall be free from runs, sags, orange peel, or other defects.

4.6.3 Dissimilar metals. Use of dissimilar metals as defined by MIL-STD-889, in contact shall be limited to applications where similar metals cannot be used due to peculiar design requirements. When it is necessary to use dissimilar metals in contact, the metals shall be protected against galvanic corrosion. Galvanic corrosion can be minimized by interposition of a material which will reduce the overall electrochemical potential of the joint or by interposition of an insulating or corrosion inhibiting material such as sealants and organic coatings.

4.6.4 Drainage. Drain holes shall be provided to prevent collection or entrapment of water or other unwanted fluid in areas where exclusion is impractical. All designs shall include considerations for the prevention of water or fluid entrapment and [ensure] that drain holes are located to effect maximum drainage of accumulated fluids. The number and location of drain holes shall be sufficient to permit drainage of all fluids when the unit is in a 10 degree incline in any plane. The minimum size of the drain holes shall be 0.25 inch.

4.6.5 Finish. The exterior finish color of the AAS shall be color 24052 in accordance with FED-STD-595.

4.6.6 Fluid traps and faying surfaces. There shall be no fluid traps on the AAS. Faying surfaces of all structural joints, except welded joints, shall be sealed to preclude fluid intrusion.

4.6.7 Ventilation. Ventilation shall be sufficient to prevent moisture retention and buildup.

4.7 Purchase system rewind and tensioning. The energy absorber units shall be provided with a means to rewind the purchase system (for example, the hook cable and interconnecting devices) to the battery position (ready for engagement) directly following an arrestment. Further, the system shall have sufficient horsepower and torque to return the purchase system to the battery position in not more than three minutes; this requirement shall include installations at elevations up to 8,000-ft above standard sea level. There shall be a visible means (for example, a numerical gauge) for verifying the tension load against the purchase system while in the battery position and it shall be accurate to within six percent. The rewind engine shall be available in multi-fuel engine or electric motor design options.

In addition, the system shall be capable of applying and maintaining (for a minimum of 120 continuous hours) a 1,500-pound to 2,500-pound tension load on the purchase system while in the battery position. However, the system shall automatically disengage and allow hydraulic pressure modulation (braking) by the energy absorbers immediately following hook cable pick up by the in-need aircraft.

4.8 Safety.

4.8.1 Component protection. All space in which work is performed during operation, service, and maintenance shall be free of hazardous protrusions, sharp edges, or other features which may cause injury to personnel. All rotating and reciprocating parts and all parts subject to high operational temperatures or subject to being electrically energized, that are of such nature or so located as to be hazardous to personnel, shall be guarded or insulated to eliminate the hazard.

4.8.2 System safety. The design of the AAS shall not contain any system safety mishap risk categories greater than low as defined in Table A-IV of MIL-STD-882.

4.9 Identification of controls and instruments. Where applicable, all gages, controls, and instruments used in the operation of the AAS shall be identified by securely attached nameplates of such composition that exposure to oil, dirt, light, etc., will not cause them to fade or become eradicated. Tags shall not be used.

4.10 Identification of product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

4.11 Special service tools and kits. Unless otherwise specified, special service tools and kits for installation and maintenance of the AAS shall be supplied with the system.

4.12 Welders and welding. All welders shall be certified to weld in accordance with AWS D1.1 and AWS D1.2, as applicable. The contractor shall make available to the Government certifications for all welders being utilized on the AAS. Welding procedures and all welding on the AAS shall be in accordance with AWS D1.1 or AWS D1.2, as applicable. The surface parts to be welded shall be free from rust, scale, paint, grease, and other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the welded parts. Welds shall transmit stress without cracking or permanent distortion when the parts connected by the welds are subjected to test, proof, and service loadings.

4.13 Fastening devices. All screws, bolts, nuts, pins, and other fastening devices shall be properly designed, manufactured, and installed with adequate means of preventing loss of torque or adjustment. Cotter pins, lock washers, or nylon patches shall not be used for this purpose, except for the attachment of trim items or as provided in commercial components. Tapped aluminum threads shall have a minimum thread engagement of at least two times the nominal fastener diameter.

4.14 Hydraulic system design. If a hydraulic system is utilized, it shall be in accordance with 3.13.1.3 of SAE ARP1247 except as otherwise specified herein. O-ring face seal hydraulic fittings may be used in lieu of flared fittings (see 3.13.1.3.12 of SAE ARP1247). Hydraulic fluid shall be in accordance with MIL-PRF-83282. All hydraulic system components, including the hydraulic tank, shall comply with all corrosion resistance requirements specified herein.

4.15 Service life. The AAS shall be designed for installation in an expeditionary mode for up to one continuous year (exposed to the elements), or in a standard shelter or pit located on an active airfield for a minimum of 10 continuous years (in an environmentally protected but not climatically controlled environment). After which, the AAS shall be capable of being overhauled at two other scheduled 10 year overhaul events prior to total replacement (total of 30 years service life if maintained and overhauled correctly, and consumables adequately replaced or rebuilt).

4.16 Reliability. The AAS shall have a reliability of not less than 97 percent at a 0.90 confidence level using the binominal distribution.

4.17 Workmanship. The AAS, including all parts and accessories, shall be fabricated and finished in a workmanlike manner. Particular attention shall be given to freedom of blemishes, defects, burrs, and sharp edges, accuracy of dimensions, radii of fillets, and marking of parts and assemblies; thoroughness of soldering, welding, brazing, painting, wiring, and riveting; alignment of all parts, and tightness of assembly screws and bolts.

4.17.1 Bolted connections. Bolt holes shall be accurately punched or drilled and shall be deburred. Threaded fasteners shall be tight and shall be mechanically locked so the parts will not vibrate or work loose during testing or in-service usage.

4.17.2 Riveted connections. Rivet holes shall be accurately punched or drilled and shall be deburred. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the component.

5. DETAILED REQUIREMENTS

5.1 Operational AAS.

5.1.1 Performance. The AAS shall meet or exceed the following performance requirements with regard to energy absorption in relation to speed and weight for aircraft arrestments.

When the AAS is symmetrically installed in standard runway configuration, that is to provide a system runout distance of 1,200-feet and having a 150-foot to 350-foot functional span, a split distance of 50-feet to 300-feet and using the 1.25-inch diameter hook cable; the system shall:

a. Have a minimum energy capacity of 100 million foot-pounds.

b. Without requiring system adjustments or modifications, withstand engagements on-center and off-center (up to 50 percent of the semi-span) without imparting hook loads that exceed the design limits of USAF fighter aircraft inventory. This would be 75,000 pounds for aircraft weights up to 45,000 pounds, representative of the F-16, and 80,000 pounds for aircraft weights up to 85,000 pounds, representative of the heaviest F-15.

c. Be capable of accepting 10 arrestments per hour, each at the 50 million foot-pound energy level or higher.

d. Be capable of accommodating at least 500 arrestments at the 30 to 40 million foot-pound energy level without replacement of any major assembly or component (except for consumables such as purchase tapes, tape connectors, and hook cables).

e. Have a service life of at least 76 engagements, at the 50 million foot-pounds energy level, requiring no more than 90-minutes for replacement of any major assembly or component (with exception to consumable components).

5.1.2 Control system. The braking pressures of the energy absorbers shall be modulated throughout the arrestment cycle by an 'intelligent' or computerized control system to assure that the aircraft smoothly transitions from the initial engagement speed to a complete stop before the allotted runout distance has been exceeded. This requirement assumes the engaging aircraft weight and speed does not exceed the rated energy capacity of the AAS. During the entire arrestment cycle the control system shall not impart any instantaneous hook loads in excess of the design limit of the F-16 tail hook (75,000 lbs). At the end of the arrestment cycle the control system shall assure that the energy absorbers do not impart a factored load on the aircraft in excess of 0.5 the aircraft's weight. Further, the control system shall not require adjustments during the life cycle of the purchase tapes (for example, it will automatically account for tape that has been cropped from the system) following initial system set up, and shall be totally adaptable and compatible to the mobile Operational AAS version (see 5.1.3).

5.1.2.1 Programmable aircraft runout. Operational AASs shall be designed and equipped to provide a standard system runout of 1,200-feet (this runout distance shall be maintained after four years of tape cropping). The control system shall be USAF personnel field adjustable, and shall be capable of being programmed (by USAF personnel) to accommodate runouts between 800-feet to 1,400-feet, in infinitely variable lengths. Such field level programming shall not require more than 10 minutes when implemented by USAF personnel.

5.1.2.2 Data capture. The control system shall report on the performance of the system during an aircraft engagement including but not limited to:

a. date and time of engagement,

b. aircraft speed (in knots) at initial engagement (for example, at hook cable pickup),

c. initial engagement location (feet) with respect to the runway centerline,

d. max hook load (pounds) accurate to within six percent,

e. hook cable pretension (pounds) five seconds prior to initial engagement,

f. duration of engagement (in centiseconds),

g. energy absorbed [by which the weight of the aircraft can be ascertained to within six percent] (million ft-lbs),

h. tape runout (feet) at each absorber,

i. tape tension at each absorber (pounds) versus aircraft runout (feet),

j. tape tension (pounds) versus time (centiseconds),

k. final runout distance (feet),

l. final aircraft location (end of runout) with respect to the runway center line, and

m. deceleration (G's) vs. time (centiseconds).

The control system shall be capable of storing such data relating to the immediate past fifty engagements, and shall be capable of being downloaded into Microsoft Excel.

5.1.2.3 Diagnostics. Each control system shall continuously monitor the energy absorber for malfunction. The control system shall perform self-diagnostics on any subsystem operating substandard and shall provide a clear indication of the fault(s) detected as well as direct technicians toward corrective action. At the onset of malfunction, the control system shall be capable of sending a continuous alert signal to the airfield tower and have an emergency light signal activate (to be affixed to the energy absorbers) as indication of system fault.

5.1.2.4 Back-up power. A battery shall be provided to assure continuous operation of the control system in a situation where runway power and runway back-up power to the system has failed. The battery shall keep the system in operation for eight continuous hours (minimum) when runway power is not being provided.

5.1.2.5 Shock. Mechanical shock effects shall not cause changes in electrical performance, failures due to frictional changes, permanent deformation or low cycle fatigue.

5.1.3 Mobility requirements (when specified by the contract). The mobile Operational AAS shall be designed for towing by prime movers over unimproved surfaces [California Bearing Ratio (CBR) of seven or less] at speeds up to 10 miles per hour (mph) and over improved surfaces (CBR greater than seven) at highway speeds of 55 mph. The major components that shall comprise a unit of the mobile Operational AAS (a system requires two units) shall consist of the following:

a. Operational AAS components (for example, energy absorber, purchase tape, hook cable, support disks, tape connector, tape connector cover, etc),

b. mobility components (for example, the trailer assembly for adapting the Operational AAS, which shall be comprised of a tow bar and pintle hook, braking system, steering system, parking brake system, tires/rims, frame, etc), and

c. installation components (for example, utility lights, installation kit, installation hardware, and installation tools for concrete, soil, asphalt, and asphalt over concrete installs).

5.1.3.1 Installation. The mobile Operational AAS shall be operable within 40 minutes when being installed onto hard (CBR greater than seven) or soft (CBR seven or less) soils, concrete, and asphalt (3/4-inches to 12-inches thick) over concrete.

5.1.3.1.1 Cruciform stakes. The mobile Operational AAS shall be compatible with USAF cruciform stakes (CAGE 21439 print 152-A-1370) if the design incorporates a staked configuration. Furthermore, if stakes are used, the system shall include a stake removal tool. This tool shall remove stakes no slower than the time taken to install them, and shall not destroy any more than one stake per 100 removed. The stakes removal tool must have a mean stakes between failure of 600 stakes.

5.1.3.2 Tandem towing. The mobile AAS shall be capable of being towed, in tandem, up to 20 mph when being towed over improved surfaces.

5.2 Emergency AAS.

5.2.1 Performance. The AAS shall meet or exceed the following performance requirements with regard to energy absorption in relation to speed and weight for aircraft arrestments. When the AAS is symmetrically installed in standard overrun configuration, that is to provide a system runout distance of 905-feet and having a 150-foot to 350-foot runway span, a split distance of 50-feet to 300-feet using a 1.25-inch diameter hook cable; the system shall:

a. Have a minimum energy capacity of 50 million foot-pounds.

b. Without requiring system adjustments or modifications, withstand engagements on-center and off-center (up to 50 percent of the semi-span) without imparting hook loads that exceed the design limits of any fighter aircraft in USAF inventory. This would be 75,000 pounds for aircraft weights up to 45,000 pounds, representative of the F-16, and 80,000 pounds for aircraft weights up to 85,000 pounds, representative of the heaviest F-15.

c. Be capable of accepting one arrestment per half-hour (minimum).

d. Have a service life of at least 76 engagements, at the 50 million foot-pounds energy level, requiring no more than 90-minutes for replacement of any major assembly or component (with exception to consumable components).

5.3 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order. When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service or Defense Agency, or within the military service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory).

6.1 Intended use. This standard discusses USAF-specific AAS design requirements necessary to support fighter aircraft missions at airfields worldwide, and is to be used for acquisition purposes. AASs are designed to directly interface with fighter aircraft (via an engaging device such as the hook cable) during critical moments of operation; this situation could occur during an abortive takeoff or in the event of aircraft braking system failure during the landing roll. The fundamental function of an AAS is to safely prevent aircraft from overrunning the available runway boundary where obstructions or soft grounds are usually encountered.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this standard.

6.3 Subject term (key word) listing.

AAS
Arrestment
Energy absorber
Engagement
Fairlead beam
Hook cable
Hook load
Kinetic energy
Nylon purchase tape
Tape connector

Custodians:
Air Force – 84

Preparing Activity:
Air Force – 84

Reviewer:
Air Force – 11, 99

Agent:
Air Force – 99

(Project 1710-2011-001)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil/ .