

Aircraft Arresting Systems. FAC: 1461

CATCODE: 116922

OPR: AFCEC/COS

OCR: WR-ALC/642 CBSG

1.1. Description. Aircraft arresting systems consist of engaging devices and energy absorbers. Engaging devices are net barriers, such as MA-1A and BAK-15; disc-supported pendants (hook cables); and cable support systems, such as BAK-14 and the Aerazur Type H, that raise the pendant to the battery position or retract it below the runway surface. Energy absorbing devices are ships' anchor chains; rotary friction brakes, such as the BAK-9 and BAK12; rotary hydraulic systems, such as the BAK-13; tearing strap modules, such as Textile Brake Systems; and soft ground systems, such as the Engineered Material Arresting System (EMAS).

1.2. Requirements Determination.

1.2.1. All Aircraft arresting systems, except the Soft Ground Arrestor System (SGAS) (also known as the Engineered Material Arrestor System), are centrally procured. Except for the SGAS, requirements for arresting systems are determined and submitted by each MAJCOM to AFCEC/COS for validation. WR-ALC budgets for, procures, and distributes arresting systems according to validated requirements. See AFI 32-1043, *Managing, Operating, and Maintaining Aircraft Arresting Systems*, for details. SGAS systems may be used to enhance safety where the standard 305 m (1,000 ft) overrun cannot be provided. In such cases, ensure the SGAS is designed, funded, and installed as part of the facility to accommodate the aircraft intended to use the runway. In most cases, the arrestor bed is designed to stop an overrunning aircraft departing the runway at 70 knots within the available distance. See FAA Advisory Circular 150/5220-22A, *Engineered Materials Arresting Systems (EMAS) for Aircraft Overruns*.

1.2.2. Required Facilities.

1.2.2.1. The energy absorber governs the facilities for the aircraft arresting system. The type and model of energy absorber determines the runout of the engaging device. The runway pavement, or the 300 m (1,000 ft) overrun pavement for runout, is designed for the loadbearing characteristics specified in **Category Group 11, Airfield Pavements Overview**.

1.2.2.2. Aircraft arresting systems installed within the shoulder area of runways or within the unpaved overrun area require a paved service road to the equipment installation site, both from the runway or overrun, as well as from another location that does not require access from operational pavements such as the runway. Construct all below-grade structures located within the shoulder area of the runway or within the overrun area to support the wheel loads for runway, taxiway, or apron shoulder areas required by UFC 3-260-01. Support ramps are constructed to lead up to exposed vertical surfaces of fairlead beams and tape tubes to allow an aircraft to roll over them smoothly.

1.2.2.3. Ensure BAK-12 arresting gear that is installed on grade has an "airfield friendly" structure built over it to protect the equipment from environmental

degradation. Design should be in compliance with typical installation drawings, the applicable 35E8-2 series TO, and the requirements detailed within UFC 3-260-01. Ensure shelters and pits contain adequate ventilation to avoid confined space permit entry requirements, and on-grade shelters have windows located so operators can see the arrestment area and directly across the runway.

1.2.2.4. Do not install any arresting system where the runout conflicts with any other arresting system or any obstacle such as elevated airfield lights or signs. In cases where these criteria cannot be met, establish a waiver according to UFC 3-260-01 and/or the applicable TO, as appropriate.

1.2.2.5. Minimum runout distances (not including the distance from the nose wheel to the aircraft tail hook) applicable to the various arresting systems are:

1.2.2.5.1. MA-1 or MA-1A with anchor chain: 260 m (850 ft).

1.2.2.5.2. BAK-12, 1.68 m (66 in) Reel: 290 m (950 ft) or 370 m (1,200 ft).

1.2.2.5.3. BAK-14 or Type H cable retraction system: These are engaging devices only; the runout is dependent upon the type of energy absorber used.

1.2.2.5.4. Mobile Aircraft Arresting System (MAAS): 300 to 370 m (1,000 to 1,200 ft).

1.2.2.5.5. BAK-15 (commercial designation, 61QSIIM), net arresting system: Runout is dependent upon type of energy absorber used.

1.2.2.5.6. Textile Brake System L A one-time use energy absorber in either a uni-directional (MB 100.10.C, 271 m [889 ft]) or bi-directional (MB 60.9.9.C, 305 m [1,000 ft]) configuration.

1.3. Scope Determination. See AFI 32-1043 and paragraphs 3-16 of UFC 3-260-01.

1.4 Dimensions. See AFI 32-1043, UFC 3-260-01, and UFC 3-535-01.

1.5. Design Considerations.

1.5.1. **Critical Areas.** The 60 m (200 ft) preceding the approach side of the engaging device is a critical area. Protruding objects and undulating surfaces are detrimental for successful engagements. No changes in pavement type are allowed in this area within the center 22.9 m (75 ft) of the runway.

1.5.2. **Siting.** Siting criteria for arresting systems depend on the type of installation and the arresting system. The 38E8 Series TOs and AFI 32-1043 provide general guidance. Typical installation drawings are available from AFCEC/COSAFCEC/COS or WR-ALC (642 CBSG/GBEB) upon request. Criteria for siting systems are as follows:

1.5.2.1. **Operational Systems.** The best location for an operational arresting system, such as BAK-12, is 450 to 540 meters (1,500 to 1,800 feet) from the threshold.

1.5.2.2. **Emergency Systems.** Locate unidirectional arresting systems and barriers (nets) in the overrun area of the runway. Do not locate unidirectional systems or net barriers closer than 11 m (35 ft) from the threshold of the runway.

1.5.3. Equipment Location. Equipment location and associated requirements conform to criteria established in AFI 32-1043.

1.5.4. Mobile Aircraft Arresting System (MAAS). The MAAS is not intended for permanent or long term installation. However, all necessary foundations, anchors, and utility support may be installed to support recurring MAAS installation in support of exercises or air shows. MAJCOMs have the responsibility to determine these requirements. Ensure equipment location and associated requirements conform to criteria established in AFI 32-1043.

1.5.5. Joint-Use Airfields. Arresting systems on joint use civil/military airfields are sited in accordance with FAA Advisory Circular 150/5220-9A, *Aircraft Arresting System on Civil Airports* and local agreements (see AFI 32-1043, Attachment 5, *Sample Letter of Agreement with the Federal Aviation Administration*). Systems are normally installed underground.