

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AERONAUTICAL RECOMMENDED PRACTICE

ARP 458

UNIVERSAL MAINTENANCE AND OVERHAUL STAND FOR TURBO-JET
(10,000 lbs. THRUST CLASS) AND TURBO-PROP ENGINES

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Revised

1. **PURPOSE:** To provide a recommended practice for the design of maintenance and overhaul stands which will be adaptable to all engines of the specified class.
2. **SCOPE:** This recommended practice covers stands that may be used for limited horizontal assembly and minor repair incorporating certain design features which are defined herein. These consist of frame construction, size and type of roll-over rings, casters and floor locks.
3. **GENERAL REQUIREMENTS:**
 - 3.1 **Reference Standards:** The following Air Force-Navy Aeronautical Design Standards may be applicable and provide useful information:
 - AND10151 Drive Square Tang and Socket
 - MIL-D-8512 Design; Special Support Equipment
 - MIL-D-8513 Drawings and Data Lists; Preparation of, For Special Support Equipment
 - MIL-C-7474 (USAF) Casters, Industrial
 - 3.2 **Material and Workmanship:**
 - 3.2.1 Material specified for use in fabrication shall be of best commercial quality and suitable for the purpose.
 - 3.2.2 **Workmanship:** All details of workmanship specified on the drawings shall be in accordance with high-grade commercial practices. Instructions shall provide that the article produced shall be free of defects which might affect its serviceability.
4. **DETAIL REQUIREMENTS:**
 - 4.1 Design configuration shall consist of a main frame and two interchangeable and removable roll-over rings.
 - 4.1.1 **Frame:**
 - 4.1.1.1 Length of frame shall be such that 126 inch center to center dimension between rings can be obtained.
 - 4.1.1.2 The main frame assembly shall be designed to support a load of 5000 lbs. with a safety factor of approximately 3:1. This load shall be applied through the ring mount at the longitudinal center of the stand.

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- 4.1.1.3 Ring mounting adapters shall be one (1) semi-fixed (bolted) and one (1) movable. The semi-fixed mount adapter shall have a hold-down provision and lock feature using the ring holes (see paragraph 4.1.2.2). The movable mount adapter shall contain a mechanical drive incorporating a 1/2 inch female square drive conforming to AND10151 and capable of being driven from either side. The rings, when mounted in the rollers, shall have a total longitudinal free motion of 1 inch minimum to assure satisfactory operation under probable usage conditions of ring distortion.
- 4.1.1.4 Caster mount pads shall be located so that the stand will not unset if tilted up to 20° in any direction with engine in position and casters swiveled inward.
- 4.1.2 Rings:
- 4.1.2.1 Rings shall be 2½ x 4-3/8 inch tee section .370 inch thick. The sides of the web section must be parallel within 1/32 inch and flat within 1/8 inch.
- 4.1.2.2 Outside diameter shall be 72 + 3/16 inch. Web section shall contain thirty-six (36) 13/16 diameter holes, equally spaced, on a 66½ inch bolt circle. The tolerance on the position of the holes shall be within 1/64 inch of true location.
- 4.1.3 Casters: Wheel size shall be 8 inch diameter, single or dual, shock absorbing, non sparking, (laminated phenolic resin or equivalent). Wheels should have a 2 inch minimum tread with a full swivel and four (4) position lock. The rated load for each wheel should be 2000 pounds minimum.
- 4.1.4 Floor Lock: The floor lock should be foot operated, movable on frame, and have a minimum floor clearance, in retracted position, of 2 inches. A minimum of two floor locks required per stand; one on each side.
- 4.2 Inspection:
- 4.2.1 Mechanical Drive: No slipping shall occur in the stop position when a torque of 15,000 pounds-inches is applied with a test weight of 2500 pounds on the ring.

PREPARED BY SAE COMMITTEE E-21, GENERAL STANDARDS FOR AIRCRAFT ENGINES