SAE Aerospace
An SAE International Group

AEROSPACE RECOMMENDED PRACTICE

SAE ARP863 REV. B

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Superseding ARP863A

Universal Turnover Build-Up Stand for Small Propulsion Units Requiring Vertical Assembly

RATIONALE

This document has been determined to contain basic and stable technology which is not dynamic in nature.

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE AGE-2D Packaging, Handling and Transportability Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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FOREWORD

Changes in this revision are format/editorial only.

1. SCOPE:

This recommended practice covers a stand that may be used for assembly, disassembly, and maintenance. The stand incorporates the following design criteria: complete interchangeability of any and all components, collapsible frame construction, envelope dimensions (marked with an asterisk on the attached drawings), attachment pad configuration, and gearbox and caster specifications.

1.1 Purpose:

The purpose of this ARP is to provide a recommended practice for the design of a build-up stand which will be adaptable to small propulsion units (requiring vertical assembly) and/or all propulsion unit components.

2. REFERENCES:

The following standards may be applicable and provide useful information:

2.1 Military Standards:

MIL-S-8512	Design; Special Support Equipment
MIL-D-8513	Drawings and Data Lists: Preparation of, for Special Support Equipment
MIL-C-4751	(USAF) Casters, Rigid and Swivel, Precision, Shock Absorber
MIL-C-7474	(USAF) Casters, Industrial
MIL-M-8090	Mobility Requirements, Ground Support Equipment, General Specifications for

2.2 SAE Standards:

ARP680 Universal Turnover Build-Up Stand Series for Propulsion Units and/or Components

3. GENERAL REQUIREMENTS:

3.1 Material and Workmanship:

3.1.1 Material: Material specified for use in fabrication should be of the best commercial quality and suitable for the purpose.

3.1.2 Workmanship: All details of workmanship specified on the drawings should be in accordance with high-grade commercial practices. Instructions should provide that the article produced shall be free of defects which might affect its serviceability.

4. DETAIL REQUIREMENTS:

4.1 Design configuration should consist of two (2) "A frame assemblies, two (2) like base members, and one (1) connecting member.

4.1.1 Stand Assembly:

4.1.1.1 The stand assembly should support a 1350 lb static load equally distributed through the attachment shear pads.

Design stress should be one-third the yield stress or one-fourth the ultimate stress if no yield stress is given.

4.1.1.2 The stand assembly should withstand static proofloads of 200% without failure or permanent deformation.

4.1.1.3 The stand assembly should be designed to provide a minimum floor clearance of 5.00 inches. Exception: 4.00 inch minimum floor clearance within a 12.00 inch radius from center (swivel point) of caster.

4.1.1.4 Components and attachment pads should conform to requirements specified in the attached drawings to insure complete interchangeability of any and all components and supporting equipment (adapters, cradles, etc.).

4.1.2 "A Frame Assemblies:

4.1.2.1 The "A" frame assemblies should be of two (2) designs as follows:

One (1) frame assembly should consist of an "A" type structure, a gearbox, a trunnion block, an attachment shear pad, and connecting member attaching flanges.

The second frame assembly should consist of an "A type structure, a trunnion block, an attachment pad, and connecting member attaching flanges.

4.1.2.2 Connecting member attaching flanges should conform to the requirements of the attached drawings to insure complete interchangeability of like components.

4.1.2.3 All physical dimensions of the "A" frame assemblies should be such that they will allow an unobstructed 36 inch envelope between the attachment pads.

4.1.3 Attachment Pads:

4.1.3.1 The attachment pads should be of two (2) designs as follows:

One (1) pad is to be rotating, non-adjustable and attached to a gearbox.

The second pad is to be rotating, adjustable (1.00 inch minimum axial travel for loading components) and supported in a trunnion block.

4.1.3.2 The attachment pads should be designed such that the pilot diameters, pilot lengths, flange diameters, thread size, and key slots will conform to dimensions shown on the attached drawings.

4.1.4 Gearbox and Associated Hardware:

4.1.4.1 The gearbox should have a minimum ratio of 60 to 1, have non locking gear set(s), be set for a minimum of backlash, and be capable of resisting a minimum torque of 4400 pounds inches when applied at the output shaft without shaft rotation.

4.1.4.2 The gearbox, or associated hardware, should be equipped with a retractable mechanical safety locking feature that is spring loaded to the safety position.

4.1.5 Trunnion Block: The trunnion block should be equipped with a self-aligning, spherical bearing. The indexing trunnion should be coupled to the gearbox with a double universal joint.

4.1.6 Base Member:

4.1.6.1 The base member should consist of a cross spar with mounting flanges to align and position the connecting member, an "A" frame assembly, and two (2) casters.

4.1.6.2 Mounting flanges should conform to the requirements of the attached drawings to insure complete interchangeability of mating components.

4.1.7 Casters: Casters should be chock absorbing, full swivel with four (4) position locks and equipped with an integral foot operated tread contact brake that must be effective through the full range of deflection of the caster and capable of rendering the stand completely immobilized with lock readily accessible. Wheel should be 6 inches diameter, single, 1-1/2 inch minimum tread width and non-sparking. The rated load for each caster should be 338 lb plus one-fourth the weight of the stand.

4.1.8 Connecting Member:

4.1.8.1 Connecting members should be designed to meet the specified weight requirement. The length of these members should meet all envelope dimensions called out in the attached drawings.

4.1.8.2 The attaching ends of the connecting member should conform to requirements of the attached drawings to insure interchangeability of like components.

4.1.8.3 Connecting member attachment hardware should not invade envelope dimensions shown on the attached drawings.

4.1.9 Adapters, Cradles, Stabilizers, Etc.:

4.1.9.1 All adapters, elevating pedestals, cradles, stabilizers, drip pans, etc. should be designed separately to adapt various units and/or components to the stand. Consideration should be given to positioning the center of gravity of each unit or component during its assembly or disassembly to prevent overload to gearbox. See paragraph 4.1.4.

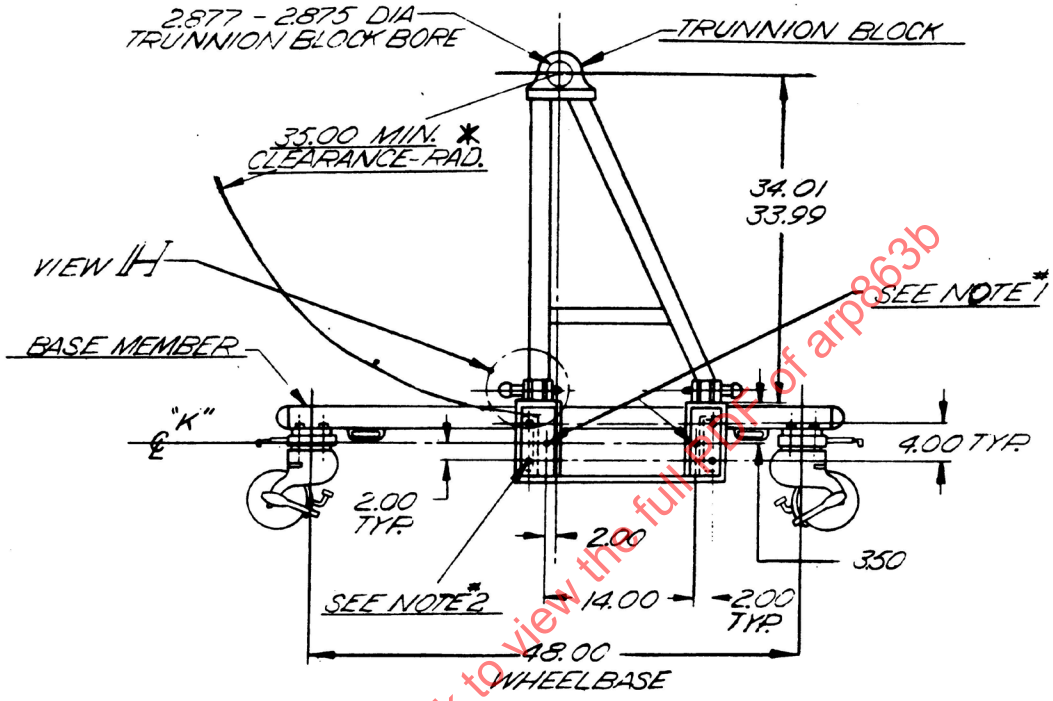
4.1.9.2 All adapters, cradles, stabilizers, drip pans, and attachment hardware should be mounted so as not to invade attachment pads and stand envelope dimensions shown on the attached drawings.

4.2 Inspection:

Dimensional requirements of all attaching pads and flanges should conform to the attached drawings to insure interchangeability of any and all components.

PREPARED BY
SAE COMMITTEE EG-1, AEROSPACE PROPULSION SYSTEMS SUPPORT EQUIPMENT

DO NOT SCALE:
WORK TO DIM. SHOWN



NOTE:

1.—.516 DIA. THRU BASE MEMBER, CLEARANCE FOR ONE .500-.501 DIA DOWEL SECURED IN CONN. MEMBER 2 HOLES EACH SIDE, 4 HOLES TOTAL, WITHIN .004R OF TRUE POS.

2.-547 DIA THRU 4 HOLES EACH SIDE, 8 HOLES TOTAL WITHIN .010R OF TRUE POS.

3.-WEIGHT CAPICITY OF STAND 1350 LBS.

FIGURE 1

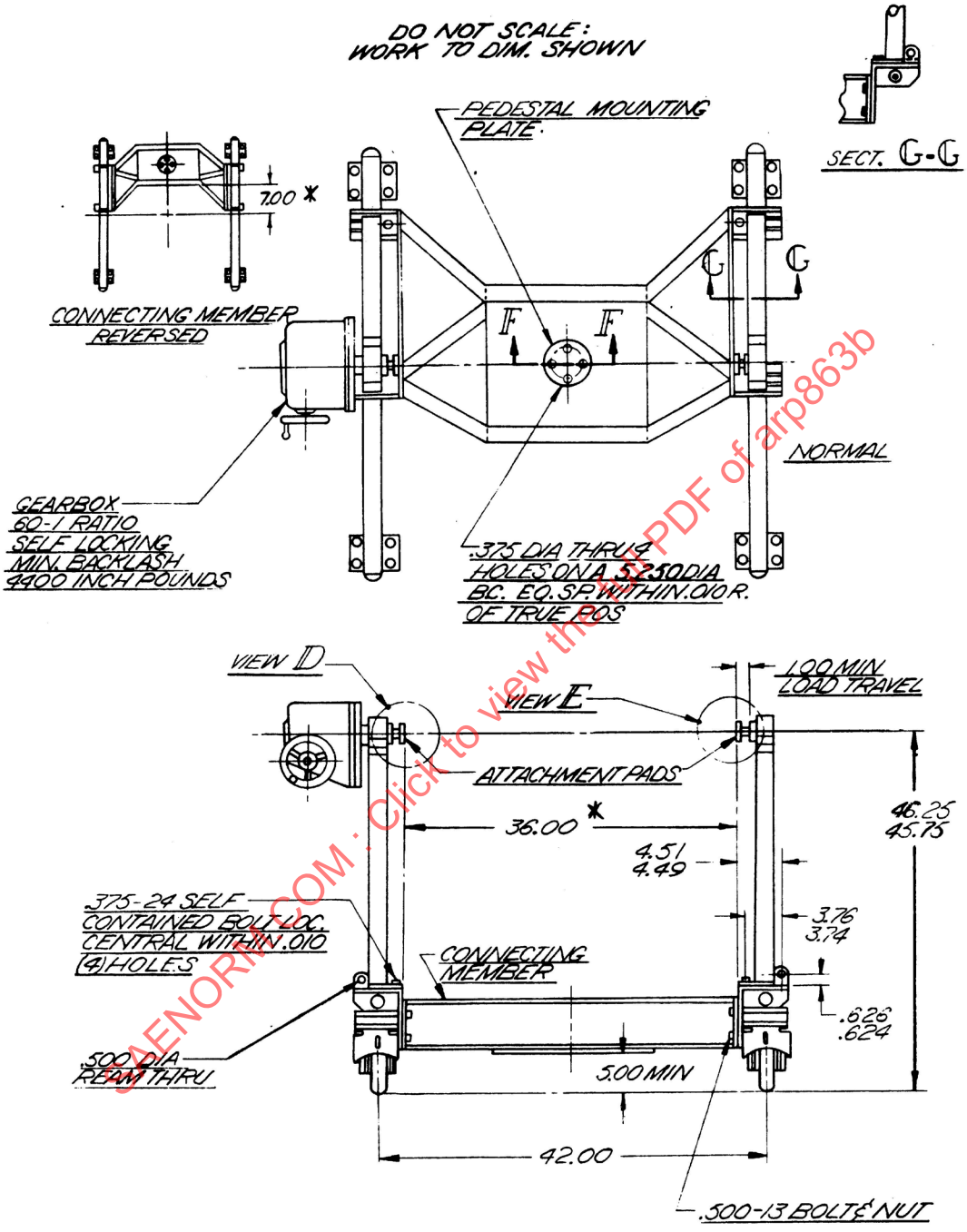


FIGURE 2