Side Booms—Tractor Mounted—SAE J743b

SAE Recommended Practice
Editorial Change March 1979

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LAND SEA AIR SPACE

PREPRINT

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1. Purpose and Scope—This SAE Recommended Practice provides definitions, testing procedure, and specifications applicable to side booms mounted on tractors—crawler and wheel—as defined in SAE J1057a (June, 1975).

2. Definitions—Definitions listed herein are applicable to this type of machine and are most commonly used to describe said machine. The test results must be based on said machine equipped with boom, track shoe type and width, or the tire type, size, and ply as specified.

2.1 Operating Weight—The weight of a complete tractor and side boom with specified attachments, completely serviced, full fuel tank, and 79.4 kg (175 lb) operator. The use of a wheel ballast, when used, must be specified.

2.2 Boom—The structural member that supports the load.

2.3 Length of Boom—The straight line distance, (E) measured between the centerline of the boom foot pivot and the centerline of the top load block pivot.

2.4 Counterweight—Any additional removable weight and its removable support added to increase tipping load. There are two types of counterweights:

2.4.1 AJUSTABLE—That portion of counterweight that is movable.

2.4.2 NONADJUSTABLE—Counterweight fixed in one location on the vehicle.

2.5 Tractor Tread (Gage)—The transverse centerline distance, (F) of drive sprockets on track type tractors or tires on wheel tractors; where front and rear treads are different both must be specified.

2.6 Track Bearing Length (Crawler Tractor)—The horizontal distance between centerline of front idler and centerline of drive sprocket.

2.7 Wheel Base (Wheel Tractor)—The horizontal distance between centerline of front axle and centerline of rear axle when tractor is steered straight ahead.

2.8 Track Bearing Area (Track Type Tractor)—The product of track shoe width multiplied by track bearing length, for each track.

2.9 Ground Pressure (Crawler Tractor—Each Track)—(Counterweights and Boom In Fully Retracted Position)—The operating weight carried by each track divided by track bearing area.

2.10 Load Overhang Distance (Crawler Tractor) See Fig. 1—The horizontal distance, (H) from the center of the load hook measured perpendicular to the outer edge of the outer track rail on the boom side.

2.11 Load Overhang Distance (Wheel Tractor) See Figs. 2, 3, and 4—The horizontal distance, (H) from the center of the load hook measured perpendicular to the centerline of the tires on the boom side.

2.12 Static Tipping Load (Crawler Tractor)—The load on the hook that the machine will lift at a given load overhang distance without causing any track roller of the track opposite the boom side to lift more than 6 mm (1/4 in) from a track link at point G.

2.13 Static Tipping Load (Wheel Tractor)—The load on the hook that the machine will lift at a given load overhang distance without causing a tire on the side opposite the boom to lift more than 1.6 mm (1/16 in) from the test surface.

2.14 Static Tipping Load—As defined above, is not intended to be a measure of the structural integrity or the working capacity of the machine.

3. Dimensions (Less Boom)—Refer to Figs. 1 and 2 and SAE Standard J894.

3.1 Overall Width Less Counterweights (A)—The overall width of the machine with boom, counterweights, and counterweight rack removed.

3.2 Overall Width with Counterweights (B)—The overall width of the machine with boom removed and the adjustable counterweight in the retracted position.

3.3 Overall Width with Counterweights Extended (C)—The overall width of the machine with boom removed and the adjustable counterweights fully extended.

3.4 Overall Height (D)—The overall height from the reference line to

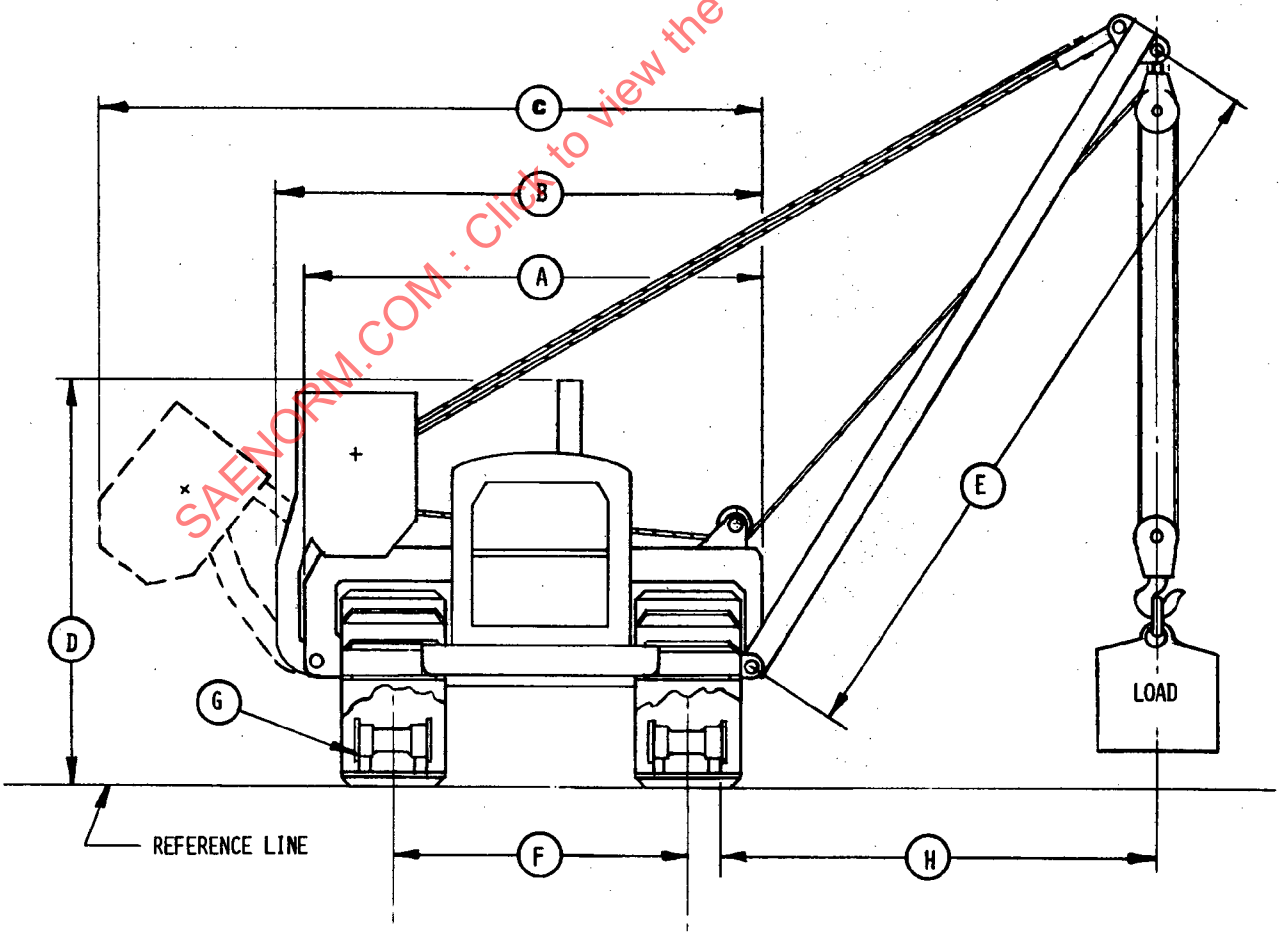

FIG. 1—CRAWLER TRACTOR

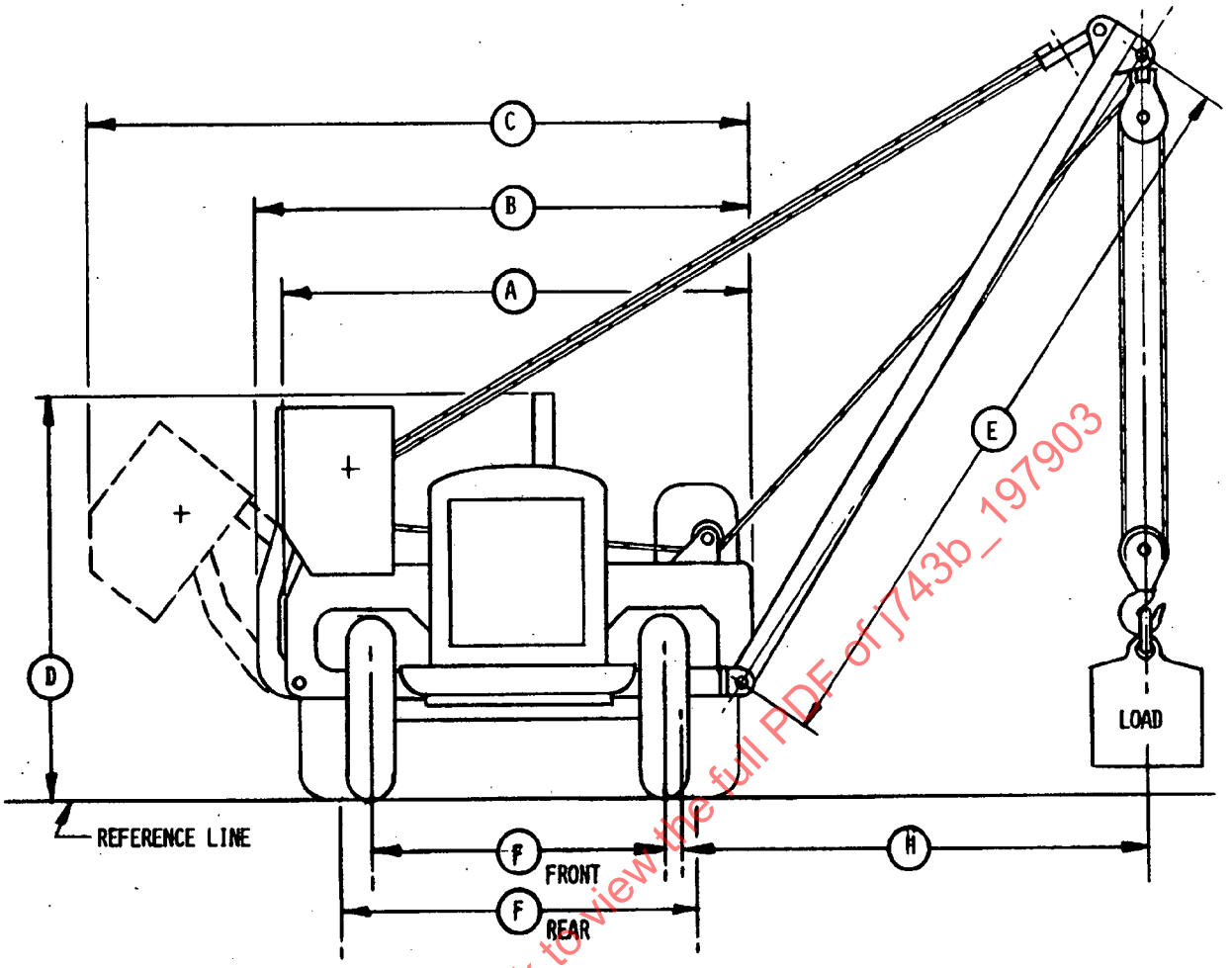

FIG. 2—WHEEL TRACTOR STEERED STRAIGHT

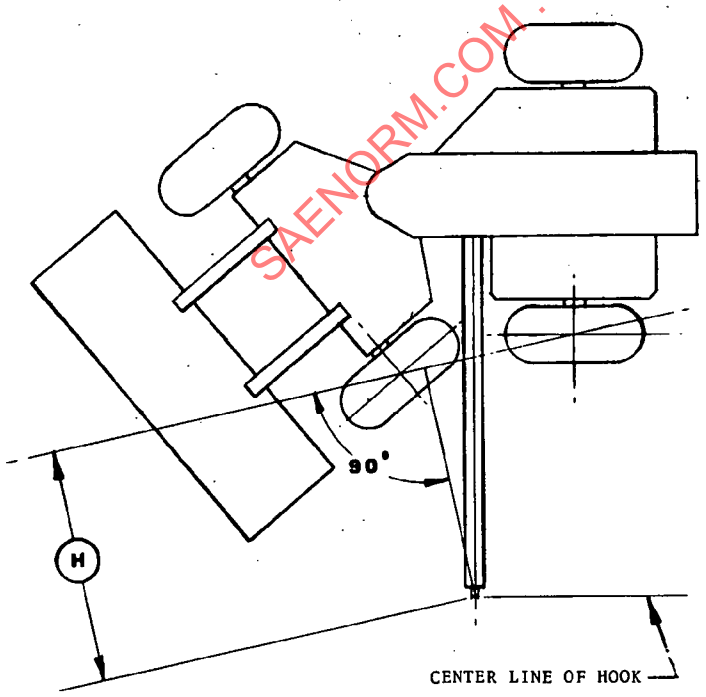

FIG. 3—ARTICULATED WHEEL TRACTOR STEERED LEFT LOAD OVERHANG DISTANCE

the highest point on the machine with the boom removed and the adjustable counterweight in the retracted position.

3.5 **Overall Length**—The overall length of the machine including drawbar or rear track arc.

4. Test Procedure

4.1 **Facilities for Testing**

4.1.1 Tests to establish a static tipping load for any tractor mounted side boom combination should be conducted on smooth, level concrete or other firm supporting surface level with ±1% of grade and sufficiently large to provide for unobstructed accomplishment of the test.

4.1.2 Unit to be tested must be a standard machine with standard operating weights, cleaned, and properly adjusted. On wheel tractors, tires are to be inflated to equipment manufacturer's recommendation. Other attachments (*loaders, dozer, backhoe, etc.*) must be placed in the carry position. Attachments must not be allowed to touch the ground during the test. The use of outriggers or stabilizers is not permitted in these tests.

4.1.3 Weights and measuring devices commensurate with obtaining accurate data are to be used. Accuracy of weights and measuring devices are to be within ±3% of the measured load.

4.2 **Method of Test**—Two methods of conducting these tests are:

4.2.1 LIFTING METHOD—The load is applied by lifting a weight of predetermined magnitude with the load overhang distance adjusted so the machine with the load suspended is stable in the position described in paragraph 2.12 or paragraph 2.13.

4.2.2 Anchored Method—The load is applied by lifting on a fixed anchor and adjusting the lifting force and boom so that the resultant load line force is vertical when the tipping load for a given overhang distance is measured.

4.3 Obtain a minimum of four static tipping load readings, including one at a load overhang distance of approximately 1.22 m (4 ft) and one at the maximum load overhang distance of the boom. On articulated wheel tractors, also obtain a minimum of four static tipping load readings with machines steered fully left and right, at load overhang distances specified above.

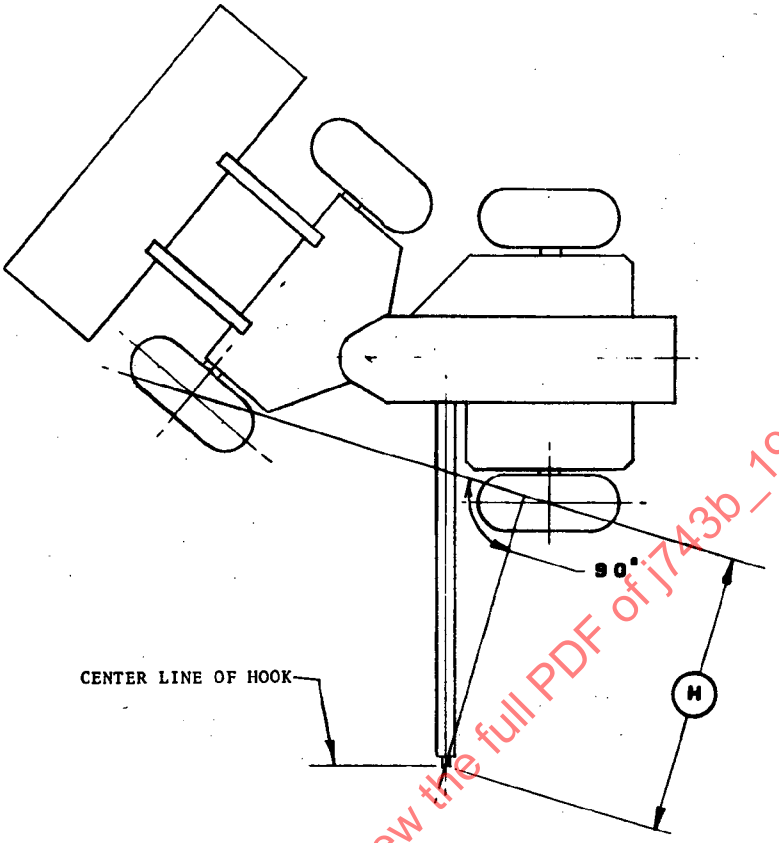

FIG. 4—ARTICULATED WHEEL TRACTOR STEERED RIGHT LOAD OVERHANG DISTANCE