

Hand Winches—Boat Trailer Type

Foreword—This Reaffirmed Document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. Scope—This SAE Standard includes spur gear and direct drive type hand-cranked winches as used on boat trailers. This does not include brake type winches as used in boat lift, davit, or industrial applications.

2. References—There are no referenced publications specified herein.

3. Definitions

3.1 Winch Nomenclature—The following nomenclature has been adopted for uniformity in the terms used for the component parts of the winch.

3.1.1 FRAME—The basic structure that provides the mounting for the various component parts of the winch. (See Figure 1.)

3.1.2 DRUM—That portion of the winch to which the winch line is attached for winding same on to. (See Figure 1.)

3.1.3 PINION SHAFT—The input shaft to which the primary input gear and crank handle are attached. (See Figure 1.)

3.1.4 INTERMEDIATE SHAFT—Any intermediate shafts incorporated for additional gear reduction or change in direction of rotation. (See Figure 1.)

3.1.5 RATCHET PAWL—That spring-loaded device which is designed to index repeatedly into a gear during rotation of the handle/winch when the handle is released. (See Figure 1.)

3.1.6 RATCHET RETURN SPRING—The spring that activates the ratchet pawl. (See Figure 1.)

3.1.7 WINCH LINE—Rope, wire rope, tape, or equivalent. (See Figure 1.)

4. Identification—Boat trailer winches shall be permanently marked as follows:

4.1 Winch manufacturer's name, initials, or trademark.

4.2 Model number.

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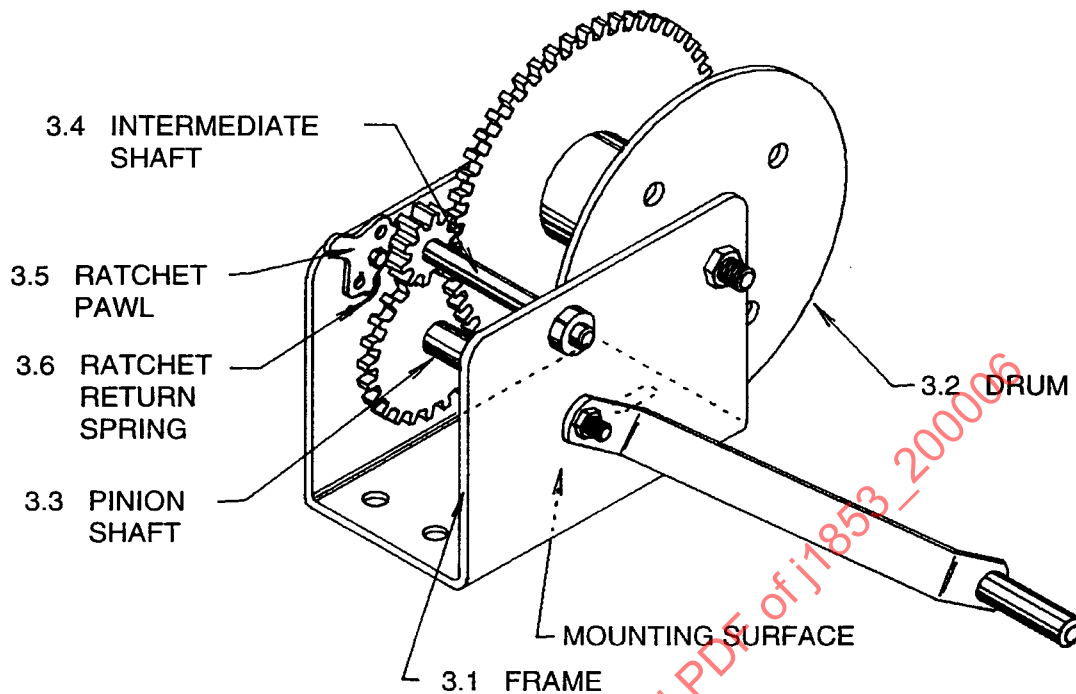


FIGURE 1—COMPONENT PARTS OF THE WINCH

4.3 Maximum first layer line pull rating of the winch.

4.4 Year of manufacture.

5. General Specification and Performance Requirements

5.1 **Drum Diameter for Wire Rope**—The minimum drum diameter shall be based on Equation 1 when wire rope is used.

$$\frac{\text{Drum Diameter}}{\text{Wire Rope Diameter}} = 8 \text{ minimum} \quad (\text{Eq. 1})$$

5.2 The winch shall be capable of withstanding a momentary load applied at the first layer equivalent to 200% of its rated first layer maximum line pull without releasing the load. The winch must be operable after this overload test.

5.3 The winch shall be capable of withstanding a momentary load applied at the first layer equivalent to 300% of its rated first layer maximum line pull without releasing the load.

6. Attachment

6.1 **Attachment of Winches**—All winches shall be mounted by bolting or welding in such a manner that 300% of the rated straight line pull of the winch can be applied without failure of its attachment.

6.2 Winch Line Attachment

- 6.2.1 When using rope, wire rope, or similar line, a minimum of 3 turns shall be maintained on the drum at the beginning of the loading cycle to ensure the integrity of the attachment to the drum.
- 6.2.2 When using winch tapes, or the like, the attachment to the drum shall be capable of withstanding 150% of the rated straight line pull of the winch.

7. Application Requirements

- 7.1 Winch rope, wire rope, tapes, and lines. The minimum breaking strengths of these lines and their attachments shall not be less than 150% of the rated straight line pull of the winch.
- 7.2 The minimum breaking strength of a winch hook shall not be less than 125% of the strength of its attachment to steel cable or 150% of its attachment to other winch lines, times the number of working lines.

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