



Standard Practice for Selection of Valve Operators¹

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^{ε1} NOTE—The Keywords Section was editorially added in November 2014.

1. Scope

1.1 This practice provides guidance in the selection of manual and power-actuated valve operators.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only. ~~mathematical conversions to SI units that are provided for information only and are not considered standard.~~

1.3 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety concerns associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ~~ANSI Standard: Standards:~~²
B16.5 Pipe Flanges and Flanged Fittings

3. List of Valve Operator Types

3.1 *Manual Operators:*

- 3.1.1 Handwheels.
- 3.1.2 Tee-wrenches.

3.2 *Electric Operators:*

- 3.2.1 Stem Nut Driven.
- 3.2.2 Handwheel Driven.

3.3 *Pneumatic Operators:*

- 3.3.1 Stem Nut Driven.
- 3.3.2 Handwheel Driven.

3.4 *Hydraulic Operators:*

- 3.4.1 Stem Nut Driven.
- 3.4.2 Handwheel Driven.

4. General Requirements

4.1 General requirements apply to all types of valve operators.

4.2 Operating terminals shall be accessible during all service conditions but shall not constitute an obstruction in working spaces.

4.3 Valve controls that are not immediately identifiable as to service shall be fitted with name plates.

4.4 Valve operating stations shall be fitted with a valve position indicator unless valve position is obvious for the service intended (full open or full closed), or valve is classified damage control smaller than 1½ in. (38.1 mm).

¹ This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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² Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

4.5 Positioning of the valve by either the local or remote actuators shall not void the ability of any other actuator to position the valve.

4.6 All valves, regardless of size, shall be readily operable by one man in a reasonable and limited time period, either through a manual or power-actuated valve operator.

5. Manual Valve Operators

5.1 Material for handwheels and tee-wrenches for casualty or damage control shall be either malleable iron, ductile iron, or steel.

5.2 Portable valve wrenches shall be labeled and stored near the valve operating station. Valve operating wrenches shall fit and turn (to open and close) deckbox operator covers.

5.3 Valves shall be located to prevent the necessity for ratchet wrenches wherever possible. Ratchet wrenches are, however, permitted where valve location prevents complete wrench rotation.

5.4 Handwheel diameter and tee-wrench handle length, based on the system torque at the operating station, is presented in **Table 1**.

6. Requirements for Power-Actuated Valve Operators

6.1 Requirements for power-actuated operators apply to electric, pneumatic, and hydraulic valve operators.

TABLE 1 Handwheel Diameters and Tee-Wrench Handle Lengths

Torque, lbf-ft	Tee-Wrench Handle Length, in. (mm)	Handwheel Diameter, in. (mm)
7.5	10 (254)	2 (50.8)
12.3	10 (254)	3 (76.2)
17.7	10 (254)	4 (101.6)
23.3	10 (254)	5 (127.0)
29.5	10 (254)	6 (152.4)
35.3	12 (304.8)	7 (177.8)
41.3	12 (304.8)	8 (203.0)
47.6	20 (508)	9 (228.6)
54.2	20 (508)	10 (254.0)
61.0	20 (508)	11 (279.4)
67.5	20 (508)	12 (304.8)
80.5	20 (508)	14 (355.6)
94.0	20 (508)	16 (406.4)
108.0	...	18 (457.2)
128.6	...	21 (533.4)
150.0	...	24 (609.6)
168.8	...	27 (685.8)
187.5	...	30 (762.0)
225.0	...	36 (914.4)

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