



ABYC P-18 July, 2008

**Machinery Division Standard
Control Systems Project Technical
Committee**

The ABYC Standards and Technical Information Reports for Small Craft are the product of a consensus of representatives of government, industry and public sectors. It is intended solely as a guide to aid manufacturers and the marine community in the design, construction, equipage and maintenance of small craft.

ABYC reviews each standard at least every five years at which time it may be reaffirmed, revised, or withdrawn. ABYC welcomes any written comments on the standards and Technical information reports.

ABYC P-18

CABLE OVER PULLEY STEERING SYSTEMS FOR OUTBOARD ENGINES



CONTROL SYSTEMS PROJECT TECHNICAL COMMITTEE

Dennis Graham, Chairman

Po Chang
Joseph Charles
David DeHorn
William Dickie

Paul Glendinning
Stephen Into
Richard Kolb
David Marlow

Robert Newsome
Daniel Ostrosky
Donald Reed
Jeffrey Zarembka

This list represents the membership at the time the Committee was balloted.

NOTE: Membership on a committee shall not in and of itself constitute an endorsement of ABYC or any document developed by the committee on which the member serves.

This standard was developed under procedures accredited as meeting the criteria for American National Standards. The Project Technical Committee that approved the Standard was balanced to ensure that individuals from competent and concerned interests have had an opportunity to participate.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum performance requirements.

ABYC's Project Technical Committee meetings are open to the public. All contact regarding standards activity, interpretations, or meeting attendance should be directed to the ABYC Technical Department at comments@abycinc.org.

ABYC and its committees do not "approve", "certify", or "endorse" any item, construction, or proprietary device.

REQUEST FOR INTERPRETATIONS

Upon written request, the Control Systems PTC will render an interpretation of any requirement of the Standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the PTC in a manner in which they may be answered in a yes or no fashion.

The committee reserves the right to reconsider any interpretation when or if additional information which might affect it becomes available to the PTC. Persons aggrieved by an interpretation may appeal to the Committee for reinterpretation.

P-18 CABLE OVER PULLEY STEERING SYSTEMS FOR OUTBOARD ENGINES

Table of Contents

18.1	PURPOSE.....	1
18.2	SCOPE.....	1
18.3	REFERENCES.....	1
18.4	DEFINITIONS	1
18.5	GENERAL REQUIREMENTS.....	2
18.6	REQUIREMENTS - OUTBOARD ENGINES	2
18.7	REQUIREMENTS - STEERING SYSTEMS	2
18.8	REQUIREMENTS - INSTALLATION	3
18.9	TESTING REQUIREMENTS	3
	FIGURE 1A - 1B: PULLEYS FOR CABLE OVER PULLEY SYSTEMS.....	5
	FIGURE 2 - ARRANGEMENTS FOR CABLE OVER PULLEY SYSTEMS	5
	FIGURE 3 - TRANSOM RIGGING	6
	FIGURE 4 - STEERING CABLE TARGET	6
	FIGURE 5 - TARGET DIMENSIONS	6
	FIGURE 6 - STEERING CABLE TARGET USE	6
	FIGURE 7 - CABLE TESTS FOR CABLE OVER PULLEY SYSTEMS	6
	FIGURE 8 - STEERING WHEEL AND HELM SHAFT FIT	7
P-18	APPENDIX.....	8
	FIGURE Ap. 1 - TANGENTIAL LOAD TEST	9
	FIGURE Ap. 2 - EYEBOLT POSITIONING	9
	Origin and Development of P-18, Cable Over Pulley Steering Systems For Outboard Engines	10

P-18 CABLE OVER PULLEY STEERING SYSTEMS FOR OUTBOARD ENGINES

Based on ABYC's assessment of the existing technology, and the problems associated with achieving the goals of this standard, ABYC recommends compliance with this standard for all boats, associated equipment, and systems manufactured after July 31, 2009.

18.1 PURPOSE

This standard is a guide for the design and installation of cable over pulley steering systems.

18.2 SCOPE

This standard applies to cable over pulley steering systems, and the major components thereof, between the helm and their connection to outboard engines up to, and including, 50 total horsepower (37 kW).

18.3 REFERENCES

18.3.1 The following publications form a part of this standard. Unless otherwise noted the latest version of the referenced standards shall apply.

18.3.1.1 ABYC - American Boat & Yacht Council, Inc., 613 Third St. Suite 10, Annapolis, MD 21403. Phone: (410) 990-4460. Fax: (410) 990-4466. Web site: www.abycinc.org.

[ABYC P-22, Steering Wheels](#)
[ABYC S-12, Outboard Motor, Transom, And Motor Well Dimensions](#)

18.4 DEFINITIONS

For the purposes of this standard, the following definitions apply.

18.4.1 Cable drum - A circular feature of the steering helm over which the steering cable is routed to provide the required cable travel.

18.4.2 Cable over pulley steering system - A steering system that transmits remote manual effort to the engine steering arm through the means of flexible cable over pulleys mounted to the structure of the boat.

18.4.3 Fairlead - A ring, eye, or loop that guides a cable in the desired direction. A pulley may also perform the function of a fairlead.

18.4.4 Fixed Strap Pulley - A pulley whose attachment is designed for minimum if any rotation of the pulley assembly about the fixed strap axis. [See FIGURE 1B.](#)

18.4.5 Helm - A mechanism, exclusive of a steering wheel, or other means for manual application of controlling force, by which controlling force is fed into a steering system cable.

18.4.6 Minimum retained system performance - System capability after test(s) such that at least 90% of the engine steering arm travel normally available each side of the mid-position may be attained by exertion of no more than 20 foot-pounds (27 Newton-meters) of torque at the helm through the wheel or other normal control.

NOTE: These limits are not meant to define a condition under which a boat can or cannot be safely operated, but are intended to provide quantitative limits for design and testing purposes.

18.4.7 Steering system - An assembly including all components necessary to transmit remote manual effort to the rudder arm, sterndrive, water jet drive, or outboard engine.

18.4.8 Swivel Pulley - a pulley whose attachment feature is designed to allow the pulley to rotate freely about the swivel centerline (See [FIGURE 1A.](#))

18.4.9 Total steering loss - Complete loss of the ability to steer the boat from the helm position by application of manual effort to the wheel or other helm control.