

General

Transportation of Navy ship propellers must be conducted in a manner to prevent damage or degradation of the propeller at all times. Certain propellers are classified and special security instructions apply. Propellers are normally made from bronze and are very susceptible to damage from improper transportation and securing during transportation. Transportation requirements for propellers are specified in MIL-DTL-2845E. The following are excerpts from MIL-DTL-2845E:

3.14.6 Transportation requirements.

3.14.6.1 Rail and barge shipment of monobloc propellers. Propellers shall be blocked with timber cribbing and topped by a rounded timber shaft which shall support the propeller as shown on figure 13. The wood members shall be of 10- by 10-inch or 12- by 12-inch timber. The support member shall be covered to prevent propeller hub damage. Cleats shall be used to align and fasten the crib members together. Steel rods, threaded at each end, shall be used to fasten the timbers to the car floor. Steel tie rods, not less than 1-inch diameter, shall be fastened to the timber shaft and to the car floor to provide longitudinal bracing. Blocking and bracing shall be applied between the crib walls to prevent side movement. To prevent propeller rotation, either blocking between the propeller blades and crib walls or holddown rods shall be installed. The propeller blades shall not be used to support the propeller weight or to block, brace or prevent shifting of the propeller and shall not extend through an orifice or any opening in the car floor. Loading on open cars shall meet the requirements of the Association of American Railroads Rules governing car loading.

3.14.6.2 Truck shipments of monobloc propellers. The carrier vehicle shall transport the propeller, forward face down, in a tilted position either on a separate shipping frame (see figure 1) or securely mounted on the carrier. The carrier shall contain a propeller centering and securing system consisting of, but not limited to:

- (a) A steel, threaded, centering shaft secured to the carrier.
- (b) A wood plug, padded clamps, or braces at the base of the propeller hub to center the propeller on the centering shaft.
- (c) A metal centering plate of not less than 1/2-inch thickness, predrilled, to accommodate the propeller centering shaft and lifting eyebolts (see 3.14.2.2).

Metal plates shall be provided by the activity shipping the propeller. A non-metallic gasket-type barrier shall be placed between the metal plate and the propeller hub. Chains or other metallic holddown devices that are added, when required for shipment and safety purposes, shall be covered with heavy duty chafing gear such as rubber or fire hose. Hold down devices shall be arranged and secured to the carrier and propeller in a manner so that no contact with the propeller blade and blade edges shall ensue during handling and shipment.

3.14.6.3 Shipments of built-up or controllable-pitch propellers. Crated built-up or controllable-pitch propellers shall be transported in accordance with federal and state trucking regulations. Crates shall be protected from exposure to the weather by a tarp or other suitable covering.

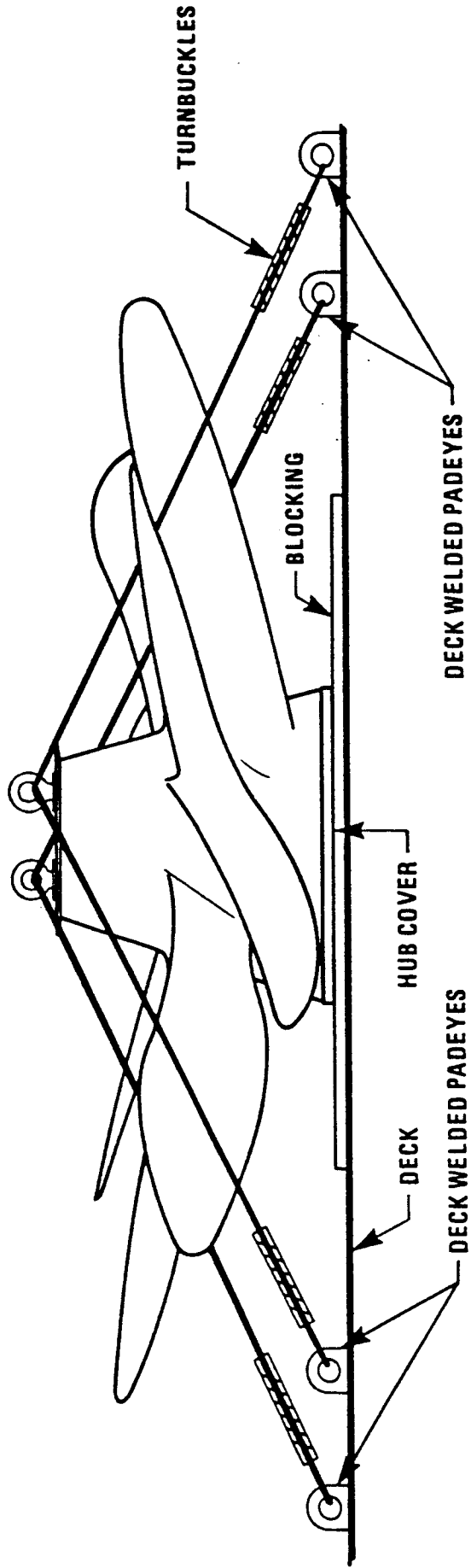
End MIL-DTL-2845E Excerpts.....

Guidance for shipping monobloc propellers by ship.

Propellers shall be placed flat on wood blocks to prevent the propeller from sitting directly on the deck or other metal surfaces. Propellers shall be secured from movement. Nylon straps are preferred as holddown devices. Chains or other metallic holddown devices may be used provided that the propeller hub areas in contact with the chains or metallic holddown devices are covered with heavy duty chafing gear such as rubber, fire hose or wood. Hold down devices shall be arranged and secured to the carrier and propeller in a manner so that no contact with the propeller blade and blade edges shall ensue during handling and shipment. Holddown devices should be arranged to pass through or tie to the propeller eyebolts when installed. When eyebolts are not installed, or a steel cover is not present on the exposed face of the propeller, wood blocks, in addition to the previously specified chaffing gear, shall be placed between the propeller hub and the holddown devices. The number of holddown devices is limited to the minimum number necessary to secure the propeller.

Guidance for transportation of classified propellers.

In addition to the preservation and packaging requirements contained in MIL-DTL-2845E, propellers containing classified technical characteristics must meet the requirements of OPNAVINST S5513.3C. To meet this requirement, propellers shall be covered by a heavy duty, opaque covering such as a heavy duty tarp. The opaque covering shall cover all blades and features and shall be positioned and secured in such a manner to prevent viewing or physical access to the propeller characteristics. To accomplish this, opaque coverings must be secured so that they cannot be removed by normal methods (such as untying or cutting a rope). A steel cable run through the opaque covering grommets and secured with a padlock or other permanent seal to provide proof of tampering must be provided. The concealment covering must be durable enough to withstand the transit intact. The eyebolts and face of the hub shall protrude through the opaque covering to permit handling of the propeller. Propellers shall be secured for transportation as previously specified. Holddowns shall be attached in a manner that will not cause the concealment covering to need to be removed.



Securing Propeller to Deck