

United States Institute for Theatre Technology, Inc.

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The American Association of Design and Production Professionals in the Performing Arts

# Standard for Rigging and Stage Machinery

## Wire Rope Terminations

A Project of the USITT Rigging and Stage Machinery  
Standards Committee

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# STANDARD FOR RIGGING AND STAGE MACHINERY

## WIRE ROPE TERMINATIONS

### Swage Fittings

Revised 11/28/95

## USITT RIGGING AND STAGE MACHINERY STANDARDS COMMITTEE

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#### 1.1 SCOPE

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This standard is a guide for using wire rope swage fittings for the termination of wire rope in load bearing applications. This standard does not include attaching wire ropes to winch drums, or the use of End Stops.

#### 1.2 NORMATIVE REFERENCES

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The following standard contains provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the specifications indicated below:

Military Specification MIL-W-83420, Wire Rope, Flexible, For Aircraft Control  
Military Standard MS-51844, Rev. C, Sleeves, Swaging-wire Rope

#### 1.3 GENERAL DESCRIPTION

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Swage fittings (metal oval sleeves) of copper, zinc plated copper and stainless steel (for stainless steel wire rope) that conform to Military Standard MS-51844 shall be used to fabricate eye splices in wire rope that is looped around a thimble. (Aluminum sleeves shall not be used.) These eye-splices, when made with Mil Spec. W-83420 wire rope, following the swage fitting manufacturers recommendations for installation, when pulled with increasing tension, shall hold until the wire rope breaks at a load not less than 90% of the rated breaking strength given in Table III of MS 51844. For wire rope not meeting Mil. Spec. Mil-W-83420, pull tests should be run prior to use. This step insures the proper selection of materials, the correct pressing procedure and an adequate margin of safety for the intended use.

#### 1.4 INSTALLATION PROCEDURES

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1.4.1 The swages shall be installed in accordance with the manufacturer's recommendation for number of swages, spacing and swage tool diameter for the size and load rating of the aircraft cable being used.

1.4.2 Swaging tool shall be checked for proper compression, according to manufacturer's recommendations, using a gauge provided by the manufacturer of the swage fittings being installed. Checks shall be performed every fifty compressions or with the start of each new project, whichever comes first.

# STANDARD FOR RIGGING AND STAGE MACHINERY

## WIRE ROPE TERMINATIONS

### Wire Rope Clips

Revised 11/2/94

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#### 2.1 SCOPE

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This standard is a guide for using wire rope clips for the termination of wire rope in load bearing applications. This standard does not include attaching wire ropes to winch drums.

#### 2.2 NORMATIVE REFERENCES

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The following standard contains provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the specifications indicated below.

Federal Specification FF-C-450 concerning clamps and wire rope.

#### 2.3 GENERAL DESCRIPTION

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Wire rope clips shall meet Federal Specification FF-C-450. Malleable cast iron clips shall not be used. All parts of a given clip shall be from the same manufacturer.

#### 2.4 INSTALLATION PROCEDURES

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2.4.1 The clips shall be installed according to manufacturer's recommendations for number of clips, spacing, clip size, wire rope lay and torque values. U-bolt clips shall have the U-bolt over the dead end of the wire rope and saddle over the live end.

2.4.2 All clips shall be tightened to recommended torque. While an initial load greater than or equal to those expected in use of the wire rope is applied to the wire rope, clips shall be retightened to the recommended torque to compensate for construction stretch of the wire rope.

#### 2.5 MAINTENANCE

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Wire rope clips shall be inspected at regular intervals and wire rope clips shall be retorqued according to manufacturers recommendations.

