TYPICAL SAFETYING METHODS - MAINTENANCE PRACTICES

EFFECTIVITY: ALL

1. General

   A. These procedures show how to safety nuts, bolts, turnbuckles, and electrical connectors.

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TYPICAL SAFETYING METHODS - MAINTENANCE PRACTICES

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2. Safety Wiring

A. The safety wire must obey Spec. NASM20995.

B. The diameter of general-function safety wires must be 0.81 mm (0.032 in) or more; 0.51 mm (0.020 in) safety wire can be used for small hardware with bores of 1.0 mm (0.039 in) or more. Copper wire of 0.51 mm (0.020 in) can only be used on emergency equipment, if clearly specified. Such wire must obey Spec. NASM20995.

C. Obey the precautions below when you safety hardware:

CAUTION: DO NOT LET PIECES OF DISCARDED LOCKWIRE STAY IN THE AIRCRAFT OR IN THE AREA WHERE THE WORK IS DONE. IF NECESSARY, USE A VACUUM CLEANER TO REMOVE THEM.

(1) When you remove a safety wire, make sure that all pieces are removed.

(2) Use only a new safety wire of the same type, temper, and diameter as that which was removed. Do not use a safety wire again.

(3) Do not kink, nick, scrape, or flatten the safety wire.

(4) Do not hold too tightly with the tools or twist the wire too much.

(5) Do not pull the wire around sharp corners.

(6) When you install the safety wire, make it tighten the part.

(7) Install the lockwire and twist until it is tight. Do not put too much tension on the not lockwire.

(8) Do not loosen or torque parts too much to come to the safety-wire hole location.

(9) Do not drill safety wire holes not specified.

(10) When you cut the end of the safety wire, let approximately 6 twists of wire stay. Do not twist off the end of the wire.

(11) Bend the wire end to the part to prevent injury to the hands and not to permit the wire to catch on moving parts.

(12) Do not safety more bolts or screws in a series than you can do with a 24-inch length of wire.

D. One-Wire Safetying

NOTE: One-wire safetying is used when a series of three or more parts, usually small screws or bolts, are in a geometric pattern (square, rectangle, triangle or circle). Other location of one-wire safetying is on emergency equipment. The wire in this location must be sufficiently strong to safety the part but it must be easily broken when it is necessary to use the emergency equipment. One-wire safetying is also used in places where it is impracticable to use double-wire safetying.

(1) Refer to Figure 201 for the one-wire safetying procedure.

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(2) This figure shows the one-wire safetying for the right-hand threads; for the left-hand threads, it is in the opposite direction.

E. Two-Wire Safetying

(1) Refer to Figure 202 for the typical two-wire safetying procedures.

(2) This figure shows the two-wire safetying for the right-hand threads; for the left-hand threads, it is in the opposite direction.

(3) Use the two-wire safetying as the usual method. Use the one-wire method only when it is specified.

(4) When you do the two-wire safetying in a series, the twisting direction must be changed at each unit.

(5) When you safety units in a series, but installed largely apart from each other, the maximum number of units is 3. When you safety a group of units installed near each other, the number of units safetied together must be that you can safety with a 60 cm (24 in) length of wire by the two-wire safetying method.

F. Safetying of Electrical Connectors

(1) Refer to Figure 203 for the typical safetying of electrical connectors.

3. Cotter Pin Safetying (Typical)

A. Installation of Cotter Pins (Figure 204)

(1) For installation of cotter pins in castellated nuts, the pin must be installed with the head parallel to the slot in the nut. Bend the cotter pin ends one to the bolt end and the other to the nut slot.

(2) The cotter pin and washers can be installed on clevis pin. For this, put the pin through the hole in the clevis pin and bend the cotter pin ends around the side of the clevis pin.

(3) For the installation of cotter pins in non-castellated nuts, the pin must be installed through the hole in the bolt and their ends bent back on each side of the bolt, to approximately 90°.

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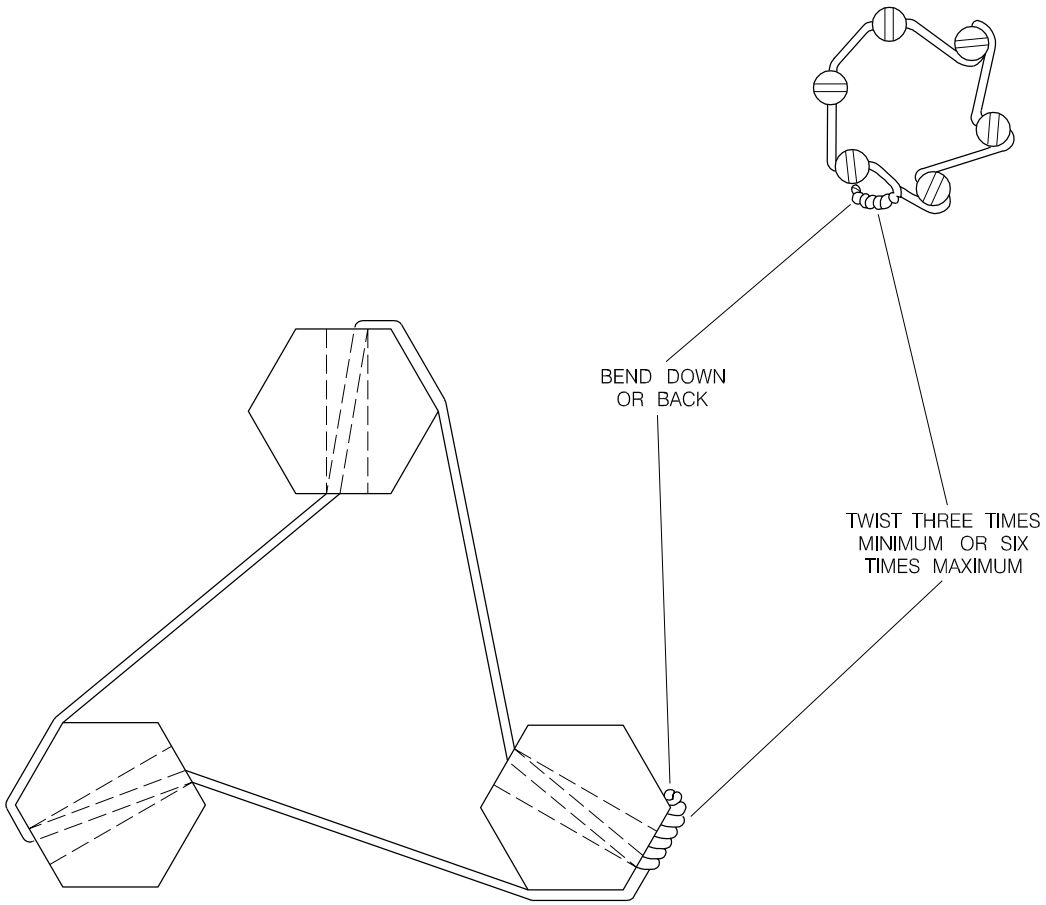
One-Wire Safetying (Typical)
Figure 201



NOTE: RIGHT – HAND THREADED PARTS SHOWN, CHANGE TO THE OPPOSITE DIRECTION FOR LEFT – HAND THREADS.

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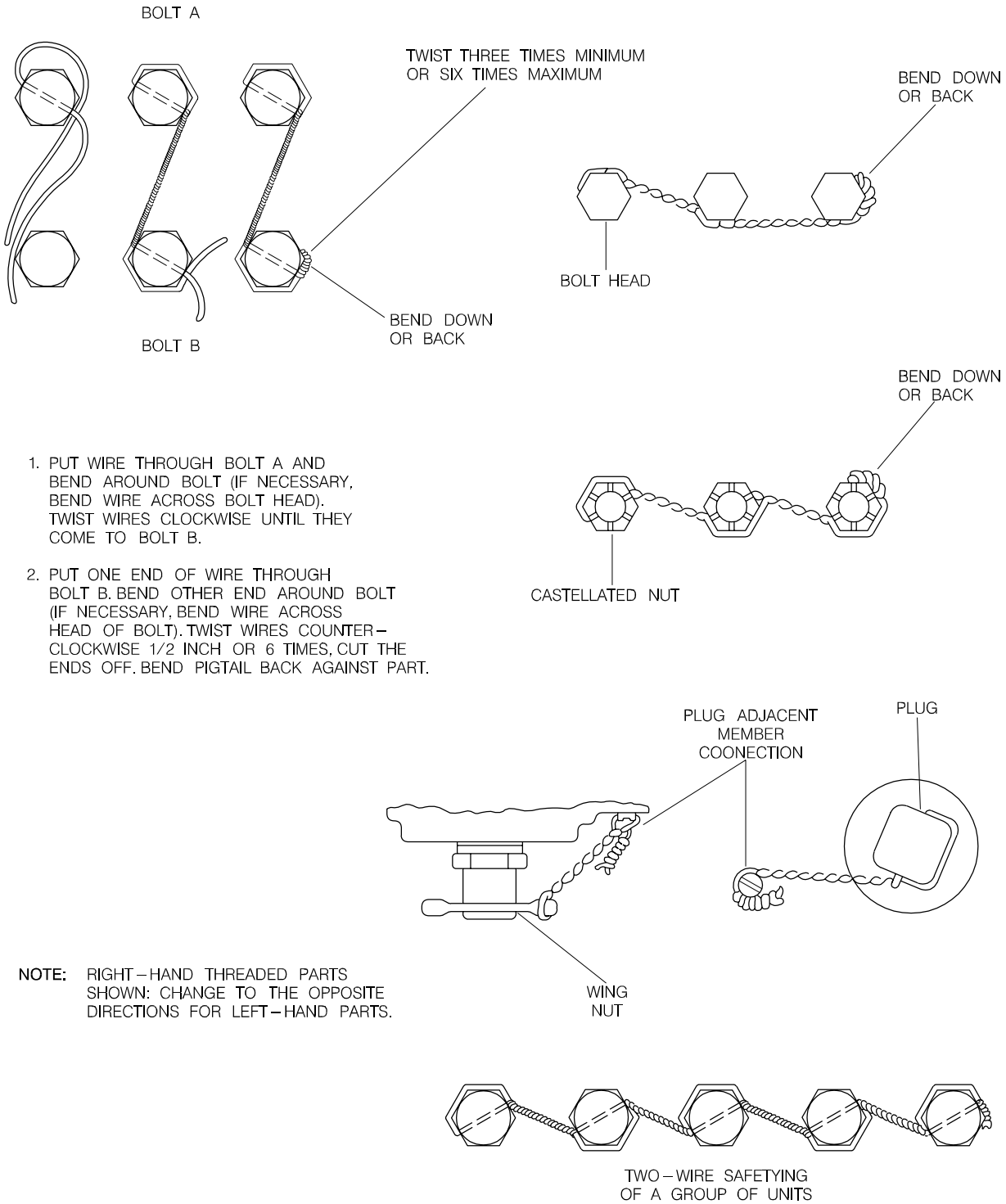
Two-Wire Safetying (Typical)
Figure 202



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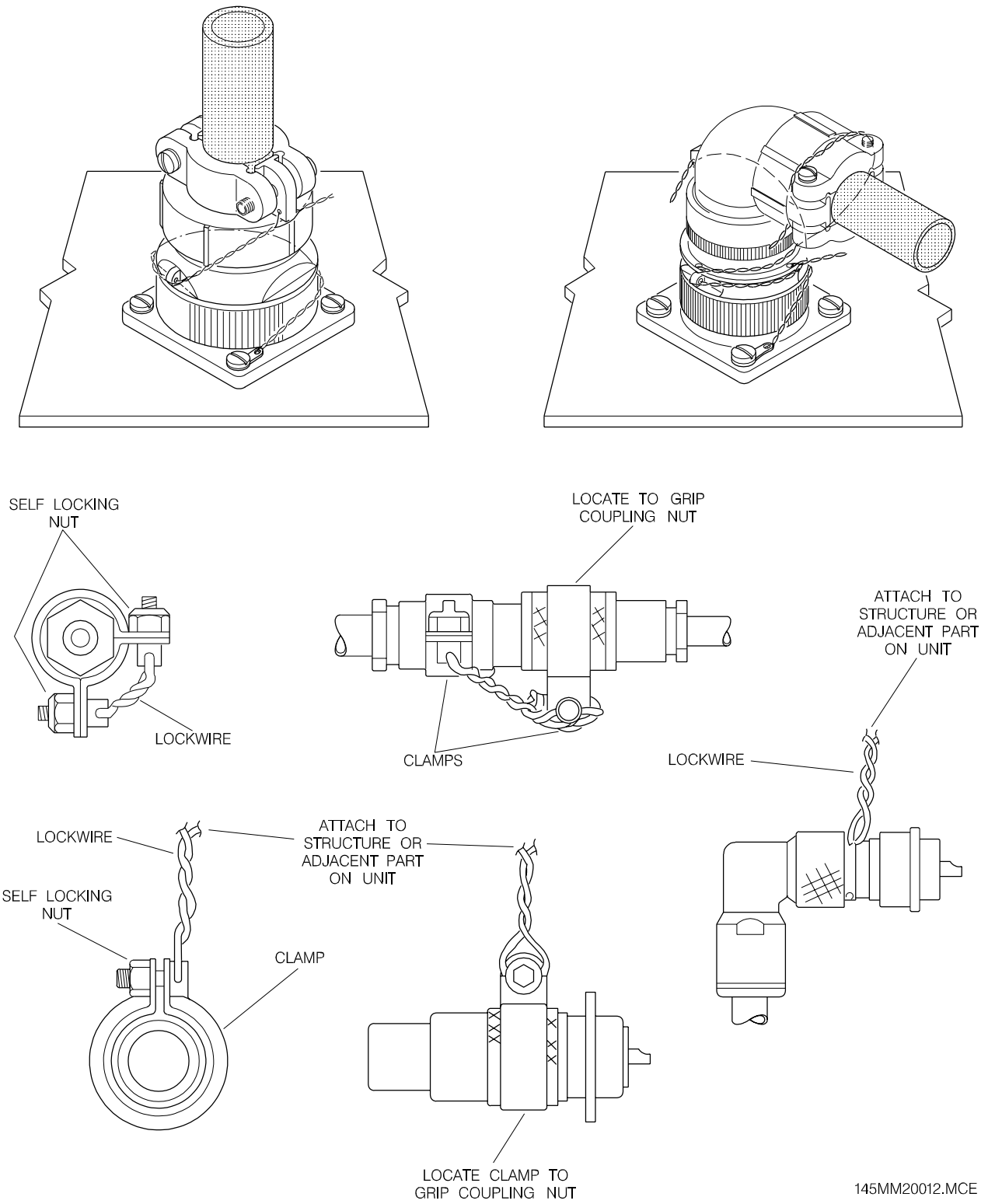
EFFECTIVITY: ALL

Safetying of Electrical Connectors (Typical)
Figure 203



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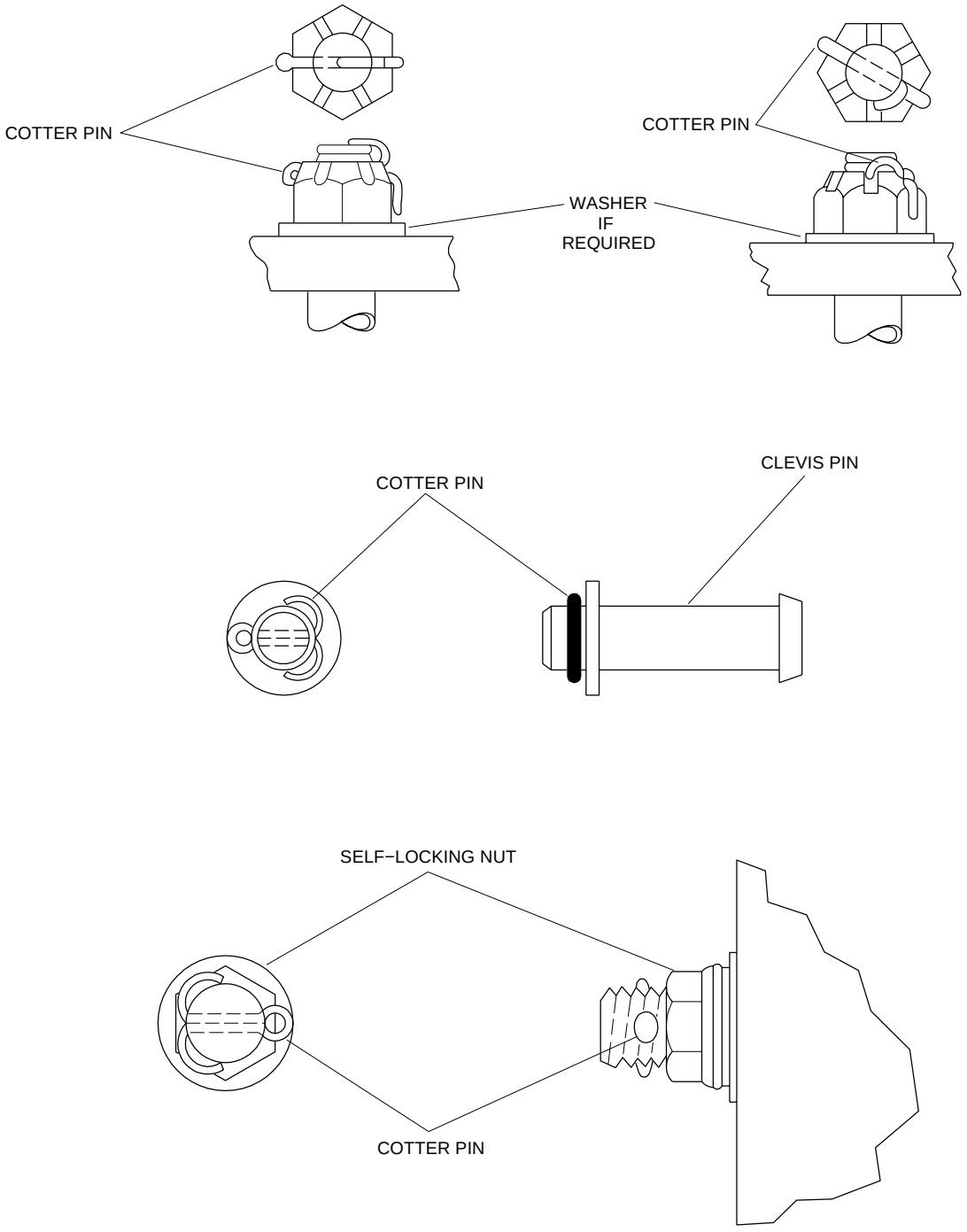
EFFECTIVITY: ALL
Cotter Pin Safetying (Typical)
Figure 204



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4. Rod Ends of Control Rods and Hydraulic Actuating Cylinders

A. The rod ends of the control rods are equal to each other, and they are safetied with jam nuts and/or safety wire. Do a security check on the terminal before the safetying.

(1) Put a pin with a diameter of 1.27 mm (0.05 in) into its inspection hole. The pin must hit against the rod end and not go through.

(2) If the pin goes through, adjust the rod and do the security check again (Figure 205).

B. The hydraulic actuating cylinders used are equal to each other, and their rod ends are safetied with a locknut and lockwasher.

(1) First tighten the locknut to the specified torque.

(2) Bend one side of the lockwasher on the locknut and the other side in the opposite direction against the flat surface of the rod (Figure 205).

NOTE: Do not use lockwashers two times because they can break when you bend their side again.

5. Safetying of Turnbuckles

A. Safetying of Turnbuckle Assemblies

(1) Adjust the cable tension with the turnbuckle. Obey the thread limits.

NOTE: Make sure that not more than three threads of the cable terminals are exposed. The terminal shanks can be fully threaded into the barrel, but there must be a space at the center of the barrel to permit the lock clip hook to engage correctly.

(2) Align the slot in the barrel with the slot in the cable terminal.

(3) Put the straight end of the lock clip into the aligned slots and move it until the hook loop is in the hole in the center of the turnbuckle (Figure 206).

(4) Apply pressure to the hook shoulder to make the hook loop go into the hole until the hook lip is engaged in the barrel.

(5) The two lock clips can be moved into the same barrel hole or into opposite holes (Figure 206).

(6) Make sure that the hook lip engages correctly in the barrel. For this, apply a light pressure towards the disenga ging direction while you turn it.

(7) Do a visual check on the locking clip to make sure that the hook is engaged on the turnbuckle.

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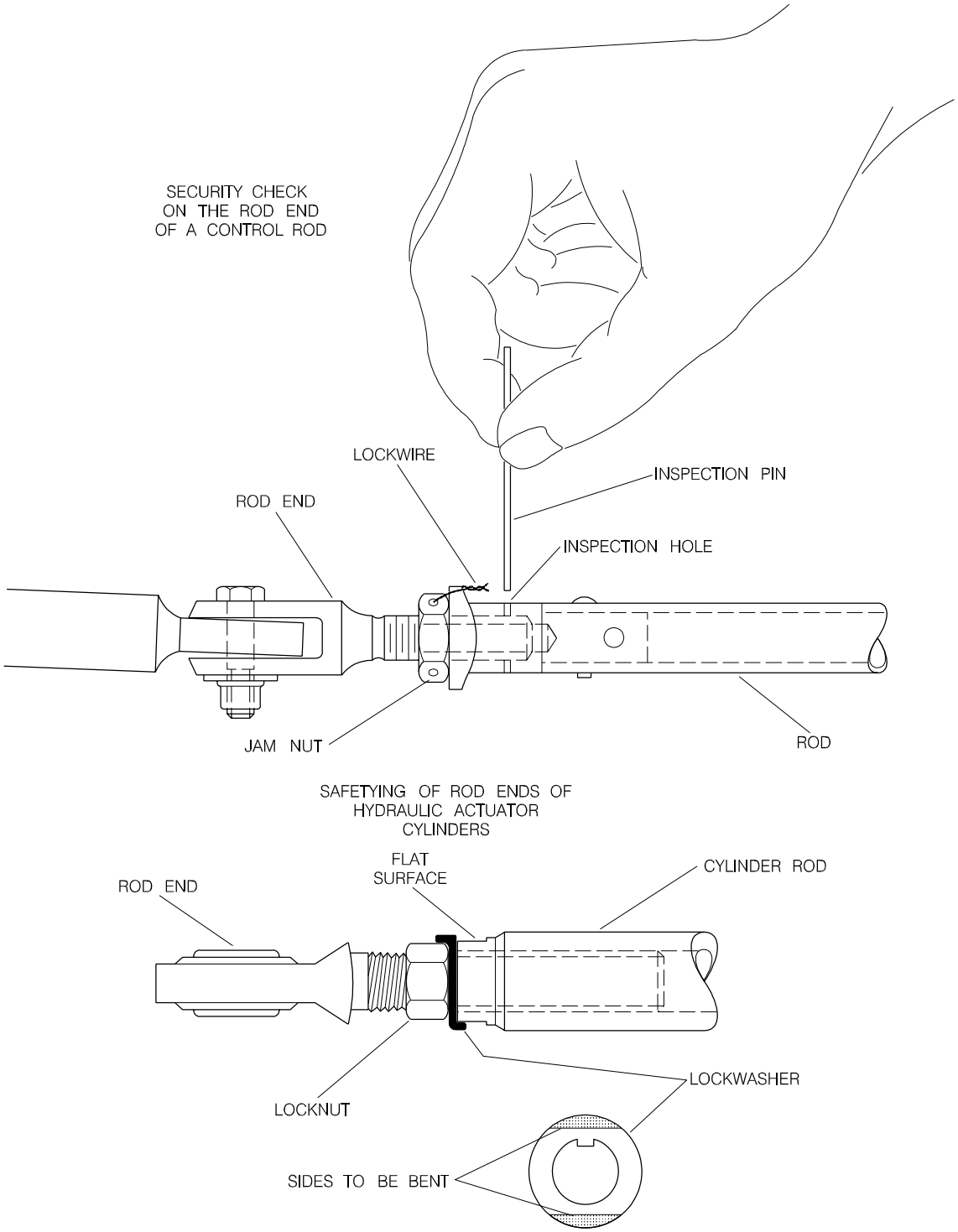
Safetying of Rod Ends of Control Rods and Hydraulic Actuating Cylinder (Typical)
Figure 205



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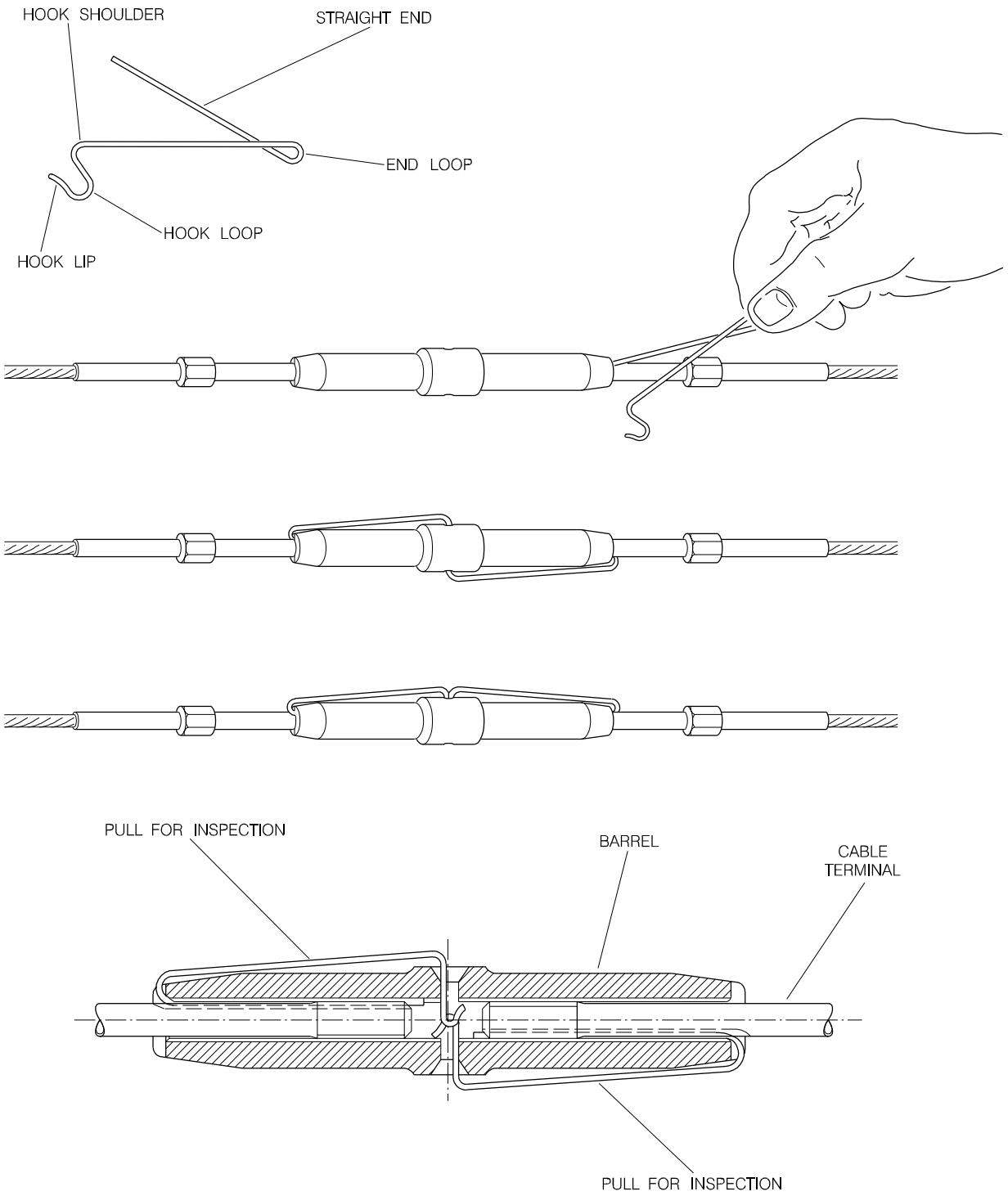
Safetying of Turnbuckle Assemblies
Figure 206



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