

SCTH62XX SERIES HYDRAULIC SAFE-T-CABLE® APPLICATION TOOL

DMC DANIELS
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DATASHEET

SEE PAGE 11 FOR IMPORTANT INFORMATION CONCERNING
LIMITED WARRANTY, AND LIMITATION OF LIABILITY

INTRODUCTION:

The Daniels SCTH62XX Hydraulic Safe-T-Cable® application tool is designed to terminate ferrules to .062 Safe-T-Cable® in accordance with SAE specification AS4536*.

The following steps are critical to assure proper Safe-T-Cable® applications:

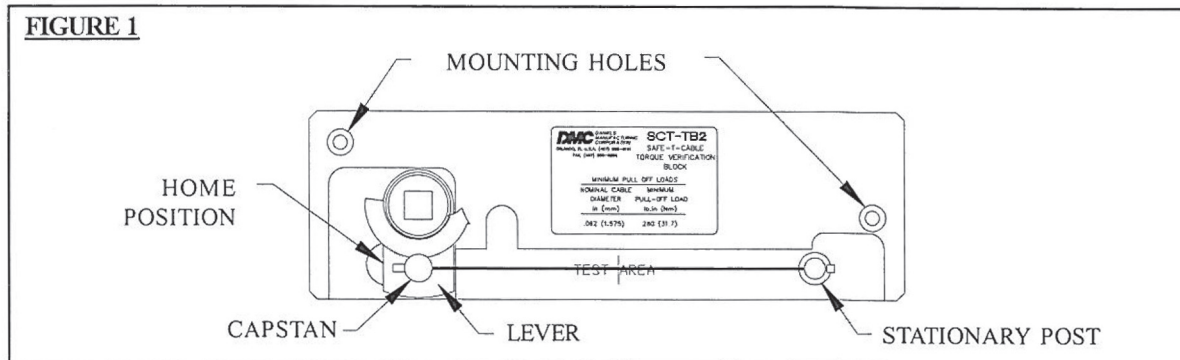
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* SAE Publications are available from:

SAE International
400 Commonwealth Drive
Warrendale, PA 15096-0001

For service and support of this tool, contact Daniels Manufacturing Corp. at:

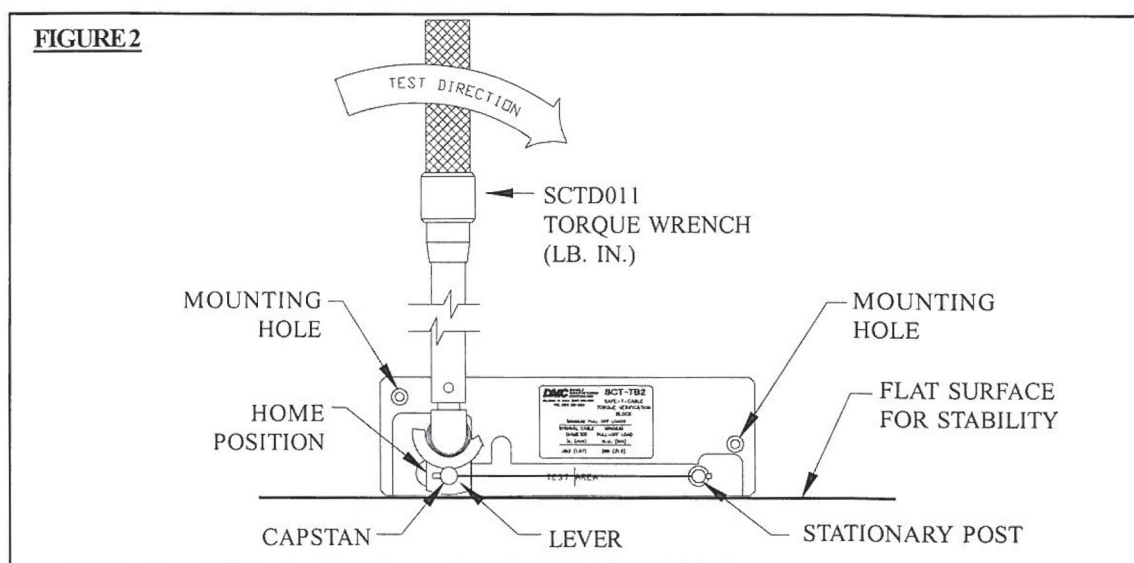
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1.0 TOOL VERIFICATION AND MAINTENANCE

1.1 Checking Indenter Position with SCT-TB2 Torque Verification Block

1.1.1. **CAUTION: Do not stop activating the tool handle when the cable cut is complete. Continue, as stated in Section 3.1.6, until the crimp pressure is achieved. The cable will separate prior to full crimp deformation.**



Indenter position should be checked periodically and must be checked after the nose assembly has been removed or interchanged.

1.1.2. Thread the cable into the capstan and through the stationary post, holding the lever in the home position as shown in Figure 1. If the lever is not kept in the home position the results may be adversely affected. Terminate the cable per Sections 2.0 and 3.0, making sure to open and close the handles until the tool is fully cycled. There will be an audible “click” when the tool has cycled fully.

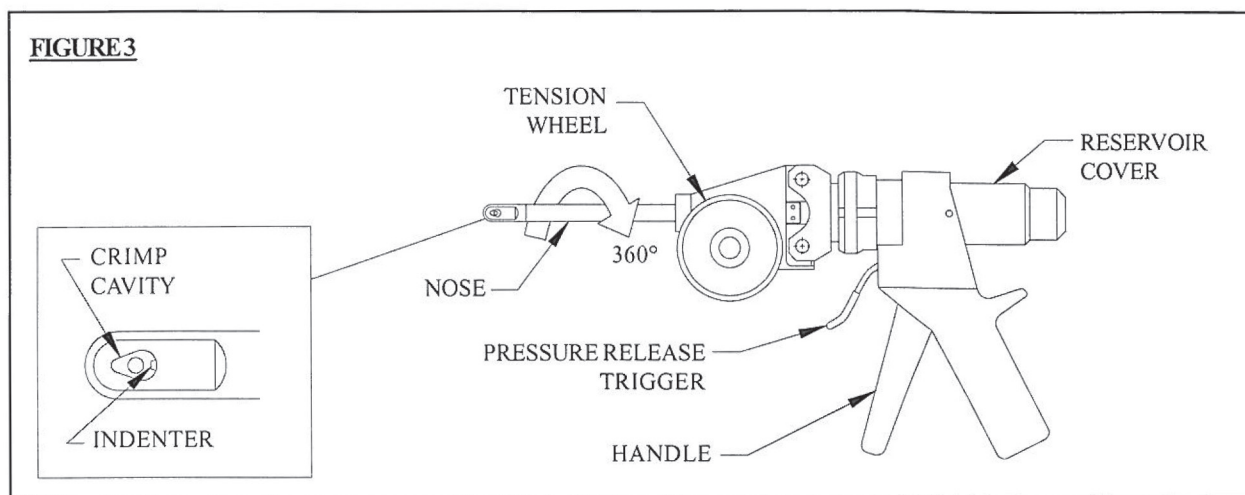
1.1.3. Apply approximately 2 lb. force to the cable with your finger at the line marked “TEST AREA”. If the cable touches either the side or bottom surface of the test area, remove the cable from the verification block and adjust the tension per Section 1.5. Terminate another cable as described above, making sure that the tool nose is held perpendicular to the fastener as shown in Figure 12. Repeat this procedure until the cable does not touch either the side or the bottom surface of the test area.

1.1.4. Place a 3/8 inch drive torque wrench (see Section 5.1 for torque wrench part number) into the square drive hole. Orient the verification block on a flat surface as shown in Figure 2, or have the block securely mounted using the mounting holes provided. Apply the proper pull-off load as shown in Table 2. Release torque when minimum pull-off load is achieved. Do not apply additional tension to the cable.

1.1.5. **CAUTION: Do not apply excessive torque. The Verification Block/Torque Wrench system is designed to meet the minimum pull-off load per Table 2. Other equipment should be used for destructive testing (consult factory).**

If the cable did not break or pull out of the ferrule after applying proper torque, remove the torque wrench and apply approximately 2 lb. force to the cable with your finger (or use Daniels P/N SCTD013) at the line marked "TEST AREA". If the cable does not touch the side or the bottom surface of the test area, the crimp is acceptable.

1.1.6. If the cable breaks or pulls out of the ferrule, then the crimp is unacceptable and the tool indenter should be adjusted per Section 1.2. If the cable touches either the side or bottom surfaces of the test area, then the crimp is unacceptable and the indenter should be adjusted per Section 1.2. Also, check for proper tension adjustment per Section 1.5.



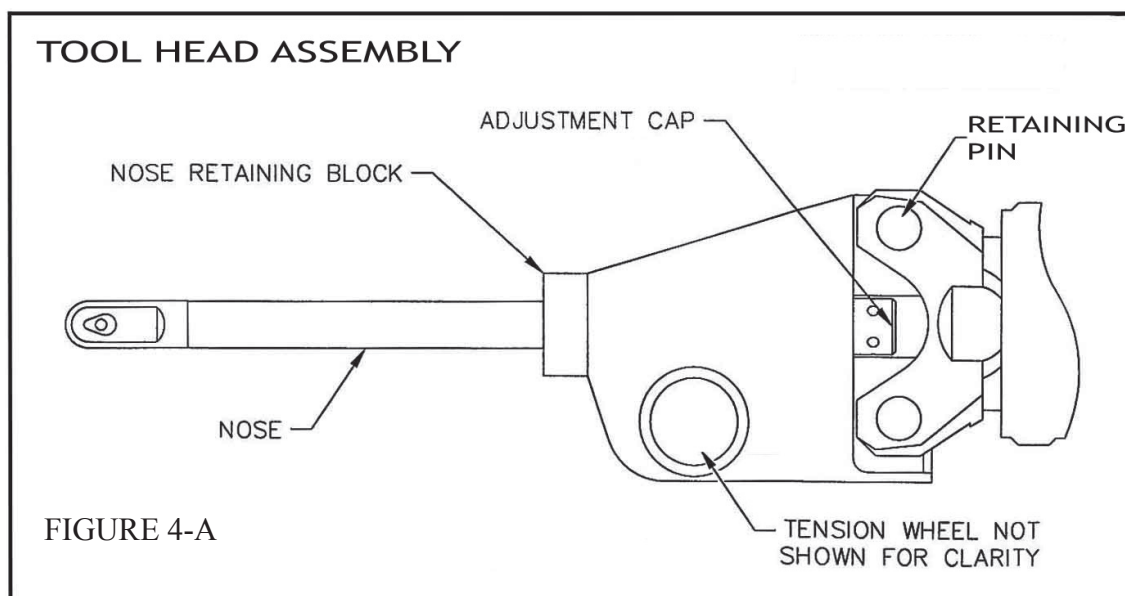
1.2 ADJUSTING INDENTER POSITION

1.2.1. **Checking Indenter Position (See Figure 3):** Feed a ferrule onto a length of cable and place the ferrule and cable into the crimp cavity in the nose. The indenter end should be very close to the ferrule (.005-.035 inch clearance) but should not interfere with the entry of the ferrule into the crimp cavity. A small paper clip can be used as a gauge.

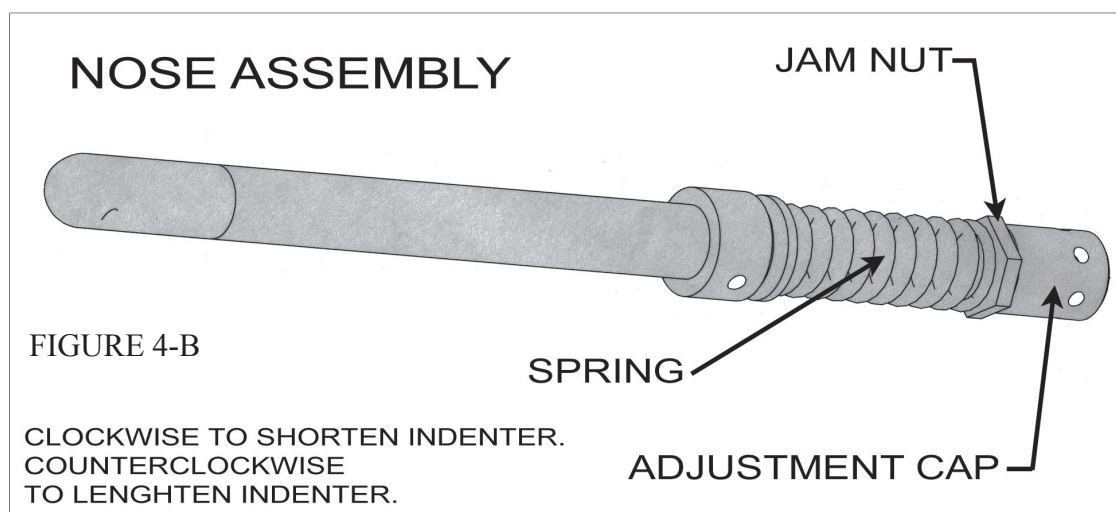
1.2.2. Indenter Adjustment (See Figure 4):

NOTE: Tool settings should be checked frequently by the use of the test fixture/torque wrench or the electronic pull tester.

1.2.2.1 Remove the nose assembly by verifying there are no ferrules in the crimp cavity of the nose, and the ram of the tool is retracted by depressing the pressure release trigger. Remove the four 8-32 button head cap screws in the nose retaining clamp. Slide the retaining clamp off the tool nose assembly. Slide the complete tool nose assembly (nose, extension, indenter, spring and adjustment cap) out of the tool. (See figure 4-A)



1.2.2.2 Hold the nose of the tool with a pair of pliers and loosen the jam nut (between the adjustment cap and the spring) with a 7/16 wrench. (See Figure 4-B)



1.2.2.3 Turn the indenter adjustment cap with a 3/32 inch diameter draft punch (P/N 565B).

CAUTION: Do not adjust the adjustment cap more than a quarter of a turn at a time! Severe adjustment may damage the tool!

1.2.2.4 If the indenter needs to be adjusted outward (toward the ferrule for a tighter crimp), turn the adjustment cap counterclockwise (looking at the adjustment cap end of the nose assembly) until the indenter tip is very close to the ferrule (.005-.035 inch clearance).

1.2.2.5 If a ferrule and cable cannot be inserted into the cavity when the indenter is fully retracted, the indenter needs to be adjusted inward (away from the ferrule for a less tight crimp). Turn the adjustment

cap clockwise (looking at the adjustment cap end of the nose assembly) until the indenter retracts enough for the ferrule and cable to fit in the crimp cavity very close to the indenter tip (.005-.035 inch clearance).

Once adjustments are made, retighten the jam nut and reassemble the tool head assembly. Then recheck the indenter setting with the SCT-TB2 test fixture.

1.3 MAINTENANCE OF THE CRIMP CAVITY

1.3.1. Debris can accumulate in the crimp cavity during use. This debris must be removed, and the crimp cavity oiled periodically depending upon use and environment. Ferrules can “stick” in the crimp cavity if this procedure is not followed.

1.3.2. Remove debris by gently scraping or brushing the crimp cavity. Blow any remaining debris from the cavity with air.

1.3.3. Coat the crimp cavity with a light film of any lightweight synthetic or petroleum based oil after the cavity has been thoroughly cleaned.

1.4 TENSION WHEEL LOCATION:

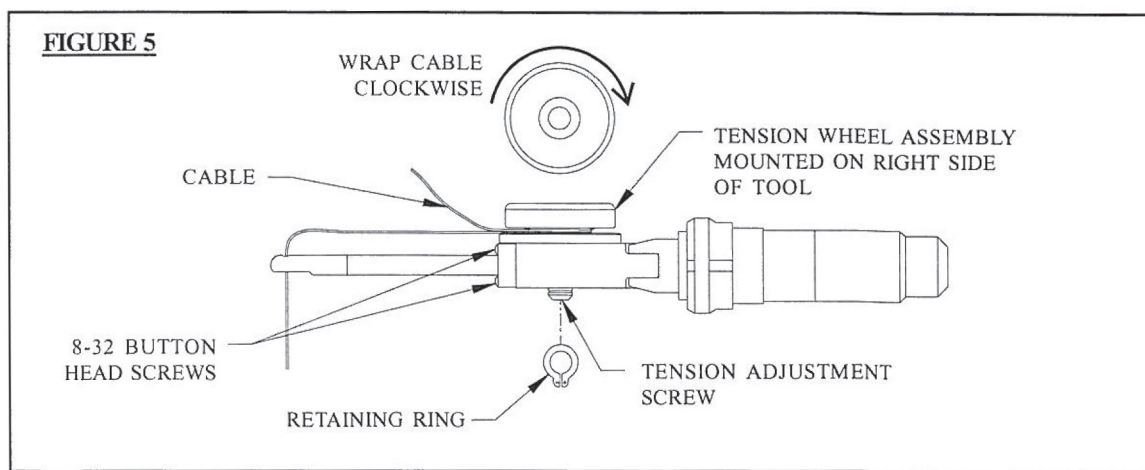
1.4.1 The tension wheel can be mounted on either the left or the right side of the tool.

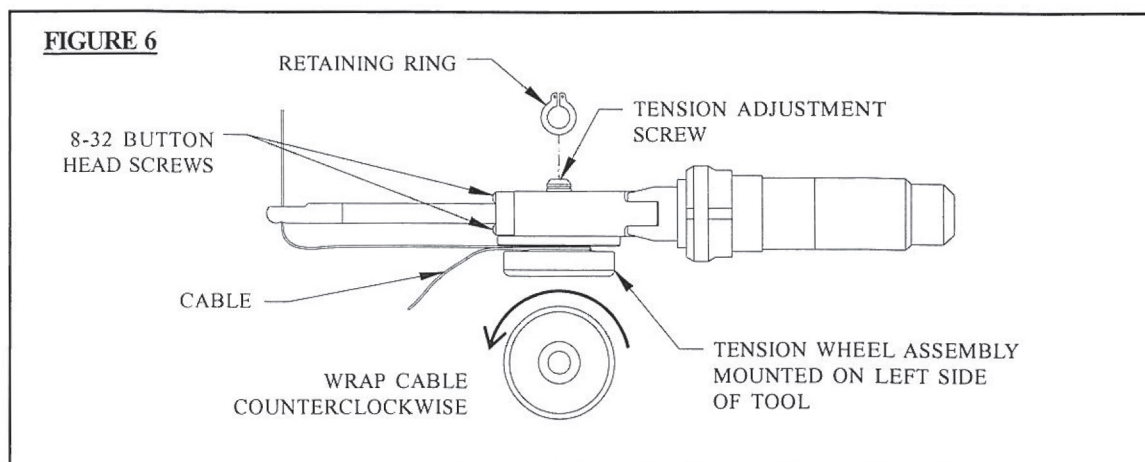
1.4.2 To remove the tension wheel, remove the retaining ring shown in Figure 5 or 6, using P/N SCTD012 Retaining Ring Pliers or equivalent. Do not remove the retaining ring from the tension wheel itself.

1.4.3 Slide the tension wheel from the tool.

1.4.4 Install the tension wheel on the opposite side of the tool.

1.4.5 Reinstall the retaining ring.





1.5 ADJUSTING CABLE TENSION

1.5.1 Adjust the cable tension using a 1/4" straight edge screwdriver.

1.5.2 Turn the tension adjustment screw which is located in the tension wheel axle assembly, and accessible on the side of the tool opposite the tension wheel (see Figure 5), clockwise to increase the cable tension or counterclockwise to decrease cable tension. See Table 1 for allowable flex limits. Do not adjust the cable tension tighter than necessary.

1.6 LOSS OF HYDRAULIC OIL

1.6.1 Hydraulic activated tools gradually lose their hydraulic oil over a period of time. This loss is caused by the adherence of small amounts of oil to the moving parts exposed to the outside, such as plungers, pistons, and rams, and from occasional leakage around mechanical seals. A small loss of hydraulic oil is normal and will not affect the operation of the tool. However, if the level drops too low, air can become trapped in the hydraulic system causing the tool to develop a "spongy" feel, preventing it from operating correctly. If this happens, hydraulic oil needs to be added.

1.6.2 Adding Hydraulic Oil and Bleeding the Tool: Place a ferrule with a scrap piece of cable into the crimp cavity and depress the pump handle until the crimp is approximately 75% complete, but before the tool reaches the release point. This can be determined by using scrap cable and a ferrule to determine the number of pumps to a full crimp.

1.6.3 Invert the tool nose down and allow the air to rise to the top of the reservoir.

1.6.4 Remove the reservoir cover by loosening the two M5 mounting screws shown in Figure 4, then unscrewing the cover itself. Remove the filler plug and fill with the proper hydraulic oil (Drydene Oil Co. Paradene Hydraulic Oil 32AV or equivalent). **DO NOT USE BRAKE FLUID!** Wrap a clean cloth around the top of the tool to contain any oil spillage that may occur.

1.6.5 Depress the pressure release trigger slowly, excess oil will be ejected from the reservoir as the ram retracts.

1.6.6 While the hydraulic oil is full to the top, replace the filler plug and reservoir cover. Tighten the two M5 mounting screws.

1.7 CHANGING THE TOOL NOSE ASSEMBLY

- 1.7.1 Verify there are no ferrules in the crimp cavity of the nose, and the ram of the tool is retracted by depressing the pressure release trigger.
- 1.7.2 Remove the four 8-32 button head cap screws in the nose retaining clamp (see Figure 5).
- 1.7.3 Slide the retaining clamp off the tool nose assembly.
- 1.7.4 Slide the complete tool nose assembly (nose, extension, indenter, spring and adjustment cap) out of the tool.
- 1.7.5 Install the new nose assembly by sliding it into the tool.
- 1.7.6 Slide the retaining clamp onto the tool nose assembly.

1.7.7 CAUTION: Always verify the position of the indenter and the cable tension in accordance with Section 1.1 and 1.5 when installing or removing tool noses.

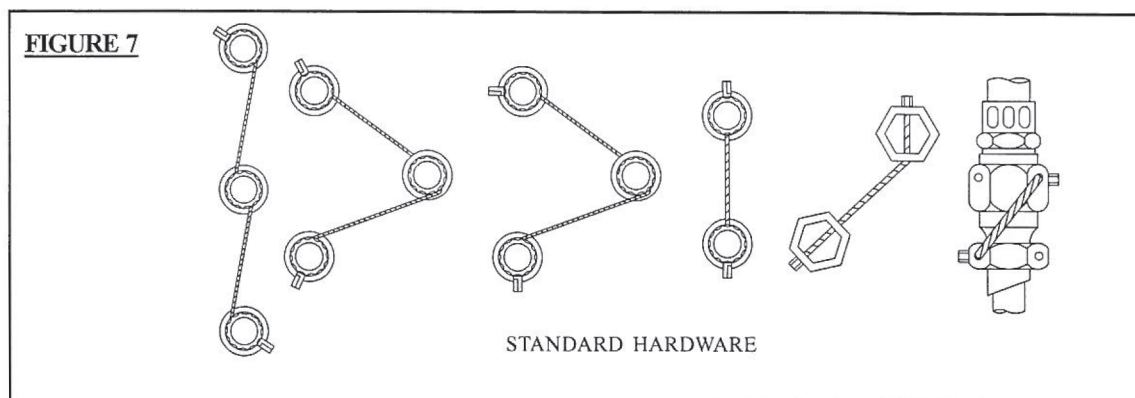
Reinstall the four button head screws into the nose retaining clamp. Prevent binding by alternately turning each screw a small amount until tight.

- 1.7.8 Adjust the indenter as described in Section 1.2.2.

2.0 PROPER CABLE INSTALLATION

2.1. The tool has an automatic relief valve with audible “click” to prevent over-compression. It also has a 360° rotating nose for easy accessibility and insertion of cable in confined working areas.

2.2. Various examples of Safe-T-Cable® installation are shown in Figure 7 to Figure 9. Although all possible combinations are not shown, three basic rules apply:



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FIGURE 8

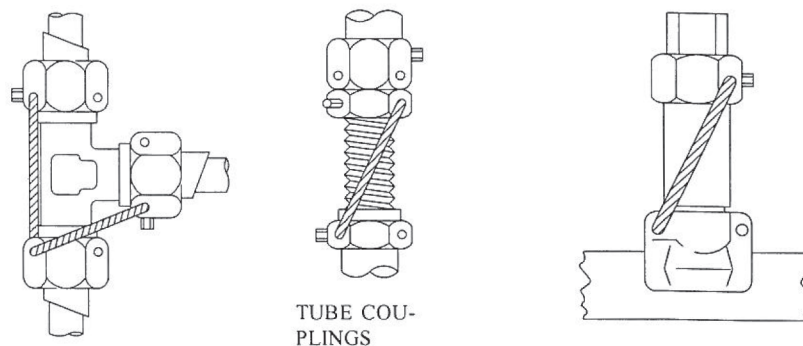
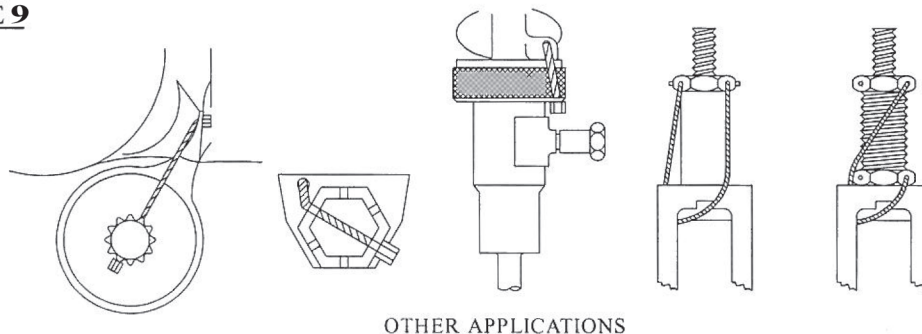


FIGURE 9



NOTE: Additional information on .062 cable installation may be found in MIL-STD-763 (NAVSEA). The governing component document, if one exists, should be referred to for specific locking cable requirements and instructions.

- A) It is recommended that Safe-T-Cable® be installed in such a manner that any tendency for a fastener to loosen will be counteracted by an additional tension on the cable. Sharp turns in excess of 90° should be avoided. Installed Safe-T-Cable® should produce a positive or neutral pull on the fastener.
- B) Safe-T-Cable® should be installed in two or three bolt patterns. Two bolt patterns being preferred when the cable is applied to an even number of fasteners.
- C) Maximum span of Safe-T-Cable® shall be six inches from end to end unless otherwise specified (see Figure 13).

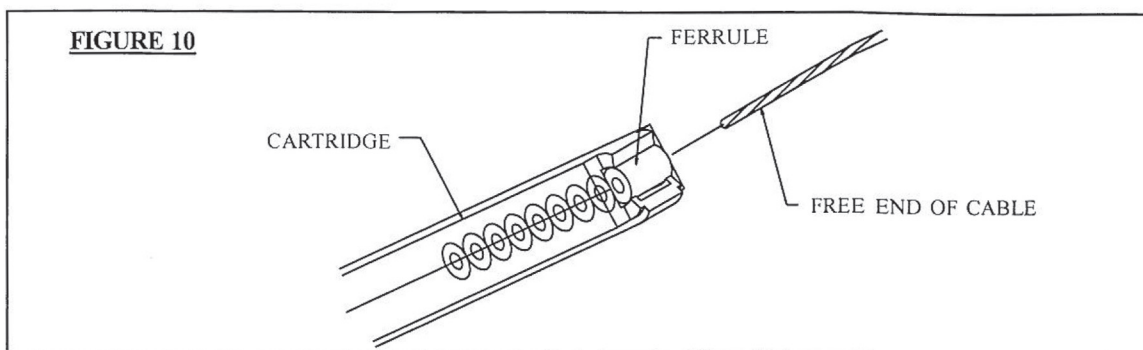
3.0 PROPER LOADING AND USE OF THE APPLICATION TOOL

3.1 Operation of the tool

3.1.1 Select the proper length .062 Safe-T-Cable®.

3.1.2 CAUTION: Do not release the free end of the cable until it has been inserted through the nose.

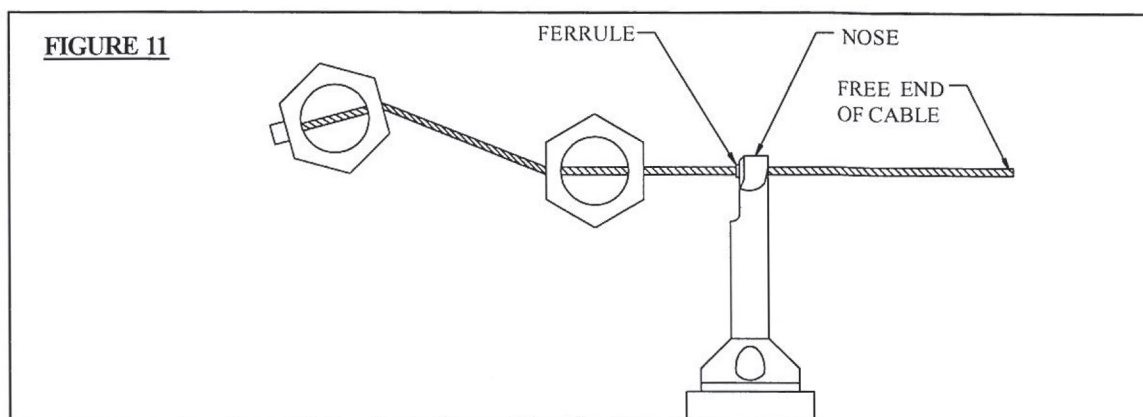
Install the cable through the fasteners as described in Section 2.0, or other specifications.



3.1.3 The nose can rotate to any position which is convenient to cable entry and termination. Rotate the nose to the desired position.

3.1.4 Insert the free end of the cable through the last ferrule in the cartridge as shown in Figure 10. Remove the ferrule by pulling the cable away from the end of the cartridge.

3.1.5 Insert the free end of the cable through the nose as shown in Figure 11. Slide the tool along the cable to the desired position. Make certain that the ferrule is fully seated in the nose cavity.



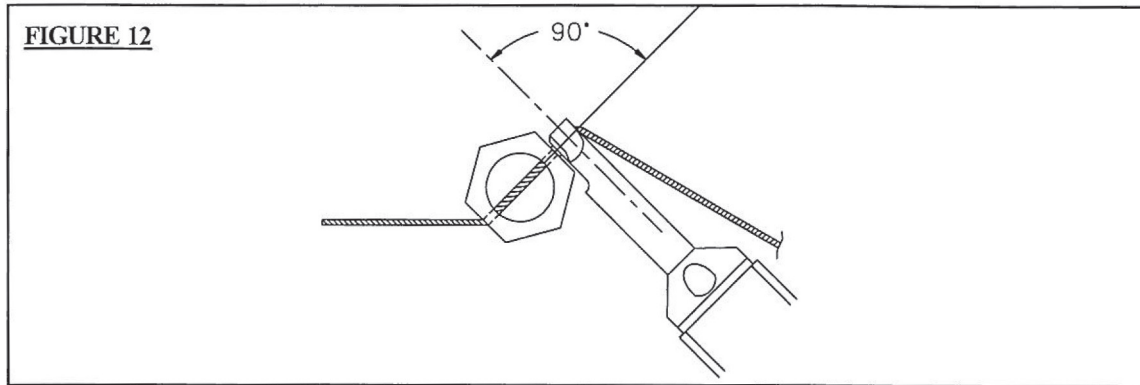
3.1.6 **CAUTION:** Do not stop activating the tool handle when the cable cut is complete. Continue pumping, as stated in Section 3.1.8 until the crimp is complete. The cable will separate prior to full crimp deformation.

Hold the tool perpendicular to the fastener as you wrap the cable into the tension wheel clockwise as shown in Figure 5. Wrap the cable one full revolution around the tension wheel making sure that the cable is held in place by the wheel. Tension the cable by rotating the tension wheel until several distinct clicks are heard and felt. The clicks indicate that proper tension has been achieved.

3.1.7 The procedure for wrapping the cable around the tension wheel and rotating the wheel are reversed if the wheel is mounted on the left side of the tool. Hold the tool perpendicular to the fastener as you wrap the cable counterclockwise into the tension wheel as shown in Figure 6. Wrap the cable one full revolution around the tension wheel making sure the cable is held in place by the wheel. Rotate the wheel counterclockwise until several distinct clicks are heard and felt. The clicks indicate that the proper tension has been achieved.

3.1.8 CAUTION: It is important to hold the tool as steady and perpendicular to the fastener as possible while crimping (see Figure 12). This will assure correct cable tension.

Hold the tool steady and perpendicular to the fastener to maintain cable tension, pump the handle until an audible click and handle release are felt. The crimping and cutting of the cable should be completed at this point.



3.1.9 Activate the pressure release trigger (see Figure 4) to retract the indenter and slide the tool from the crimped ferrule. Remove the excess cable by unwinding in the opposite direction of the installation. Dispose of properly.

4.0 VERIFICATION OF PREFERRED INSTALLATION

4.1 Verify proper tension of the cable per Section 1.0. Refer to Table 1 and Figure 13 for Safe-T-Cable® flex limits.

4.2 Verify that the cable was installed through the bolts in accordance with Section 2.0 and 3.0, or an overriding standard.

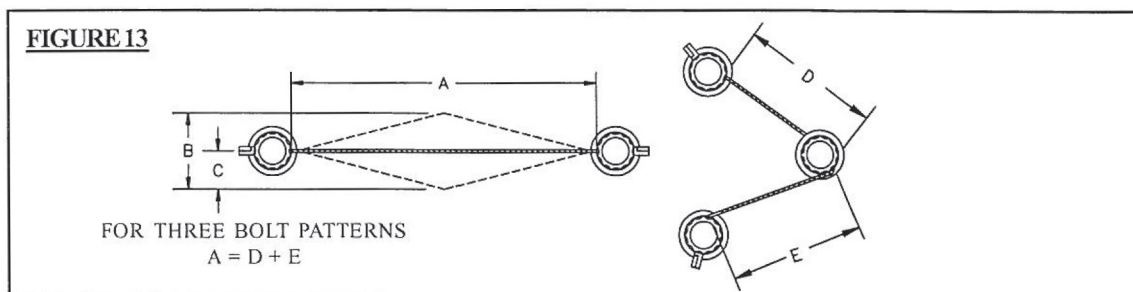
4.3 Verify that the cable was cut flush at the end of the ferrule with no strand extending more than 1/32 inch from the end of the ferrule.

4.4 Visually inspect the cable for any nicks or other damage that may have occurred during installation.

TABLE 1 - FLEX LIMITS, DIMENSIONS

A inch (mm)	B inch (mm)	C inch (mm)
0.5 (12.7)	0.125 (3.18)	0.062 (1.59)
1.0 (25.4)	0.250 (6.35)	0.125 (3.18)
2.0 (50.8)	0.375 (9.52)	0.188 (4.76)
3.0 (76.2)	0.375 (9.52)	0.188 (4.76)
4.0 (101.6)	0.500 (12.70)	0.250 (6.35)
5.0 (127.0)	0.500 (12.70)	0.250 (6.35)
6.0 (152.4)	0.625 (15.88)	0.312 (7.94)

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5.0 SAFE-T-CABLE® SYSTEM PART NUMBERS

5.1 Accessory part numbers:

CALIBRATION TOOLS AND ACCESSORIES	
TOOL PART NUMBER	DESCRIPTION
SCT-TB2	TORQUE VERIFICATION BLOCK
SCTD011	TORQUE WRENCH (100-750 LB IN)
SCTD015	DIAGONAL CUTTERS
SCTD012	RETAINING RING PLIERS
565B	3/32" DIA. PIN PUNCH
4-1136	3/32" HEX KEY WRENCH
SCTD013	SAFE-T-CABLE® RETENTION TESTER
4-1439	8 oz BOTTLE HYDRAULIC FLUID (32AW)

5.2 Application tool part numbers:

APPLICATION TOOLS (COMPLETE)		
TOOL PART NUMBER	NOMINAL CABLE DIAMETER	NOSE LENGTH
SCTH623	.062	3 INCHES
SCTH625	.062	5 INCHES
SCTH627	.062	7 INCHES
SCTH629	.062	9 INCHES

INTERCHANGEABLE NOSES		
TOOL PART NUMBER	NOMINAL CABLE DIAMETER	NOSE LENGTH
SCTHN62-3	.062	3 INCHES
SCTHN62-5	.062	5 INCHES
SCTHN62-7	.062	7 INCHES
SCTHN62-9	.062	9 INCHES

Indenter calibration must be checked whenever the tool nose is changed or removed. (See Section 1.1)

5.3 Safe-T-Cable® Kit (safety cable & ferrule) part numbers:

TABLE 2 - .062 NOMINAL DIAMETER CABLE KITS				MINIMUM PULL-OFF LOAD - LBF (Nm) or TORQUE - LB.IN.
KIT PART NUMBER	(D) CABLE DIAMETER	COMPONENT MATERIAL	(L) LENGTH (INCHES)	
C10-906	.062 - .072 (7 x 19 CABLE)	UNS S32100 CORROSION AND HEAT RESISTANT ALLOY (AMS5689)	6	280 (31.6)
C10-909			9	
C10-912			12	
C10-915			15	
C10-918			18	
C10-921			21	
C10-924			24	

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5.4 Safe-T-Cable® Assembly (safety cable only) part numbers:

TABLE 3 - .062 NOMINAL DIAMETER CABLE ASSEMBLIES				MINIMUM PULL-OFF LOAD - LBF (Nm) or TORQUE - LB.IN.
KIT PART NUMBER	(D) CABLE DIAMETER	COMPONENT MATERIAL	(L) LENGTH (INCHES)	
A10-906	.062 - .072 (7 x 19 CABLE)	UNS S32100 CORROSION AND HEAT RESISTANT ALLOY (AMS5689)	6	280 (31.6)
A10-909			9	
A10-912			12	
A10-915			15	
A10-918			18	
A10-921			21	
A10-924			24	

Consult factory for non-standard lengths.

5.5 Safe-T-Cable® ferrule part numbers:

TABLE 4 - FERRULES			
FERRULE PART NUMBER	FOR NOMINAL CABLE DIAMETER	DESCRIPTION	MATERIAL
F10-9	.062	STANDARD	UNS S32100
F10-10	.062	ELONGATED	
F10-11	.062	FLANGED	

Daniels Manufacturing Corporation offers complete refurbishing and calibration services. DMC specially engineers and manufactures complete tool kits to satisfy individual customer requirements, such as total aircraft support, general shop maintenance or production, on board ship and vehicle service, etc.

INVALIDATION OF LIMITED WARRANTY

This manual is provided to those owners of Daniels Manufacturing Corporation (DMC) products who have elected to conduct in-house repairs of such products and who thereby consent to waive any rights which they otherwise might have had under the DMC limited warranty applicable to such products.

DMC provides complete repair and maintenance service for all of its products. Owners of DMC products are warned that any tampering, including partial or complete disassembly of the product or attempted repairs of the product will invalidate the limited warranty applicable to said product.

LIMITATION OF LIABILITY

Daniels Manufacturing Corporation (DMC) is not liable for consequential or special damages of any nature or kind resulting from the use, or misuse, of any of its products. Owners and users of (DMC) products assume full responsibility for instructing their employees in the proper and safe use of such products.

LIMITED WARRANTY

Daniels Manufacturing Corporation (DMC) warrants each new product sold by it to be free from defects in material and workmanship under normal use and service. DMC's obligation under this warranty is limited to the free correction or, at DMC's option, the refund of the purchase price of any such product which proves defective in normal service within ninety (90) days after delivery to the first user, provided that the product is returned to DMC with all transportation charges prepaid in which shall appear to DMC's satisfaction, after DMC's inspection, to have been defective in material or workmanship, it being understood that DMC products are not consumer products. This warranty shall not cover any damage to any product which, in the opinion of DMC, was caused by normal wear, misuse, improper operation, tampering, neglect or accident. This warranty is in lieu of all other warranties express or implied. No warranty, express or implied, is made or authorized to be made or assumed with respect to products of Daniels Manufacturing Corporation other than those herein set forth.