

LaceLok[®]

Cable Lacing Fasteners

The smarter alternative to cable ties and hand tied lace for secondary support of cable and wire bundling

U.S. Patent 9,334,091; 9,682,806
Other patents pending



DMC DANIELS
MANUFACTURING
CORPORATION[®]

LaceLok® Cable Lacing Fasteners

LaceLok® Cable Lacing Fasteners are used as secondary support for cable and wire bundling. Developed to replace cable ties and hand tied lacing tape, LaceLok provides an ergonomic solution for consistent bundling with unrivaled strength and superior performance.

Made of aerospace-grade materials, LaceLok Cable Lacing Fasteners feature a small rounded fastener head and Nomex® aramid fiber lace. This combination of materials provides superior resistance to fuel, chemicals, abrasion, and extreme operating temperatures.

LaceLok offers multiple installation configurations making it suitable for a variety of applications. Single, double, or triple wraps allow for increased tensile strength and accommodate pressure sensitive components such as coaxial and fiber optic cables.



Features & Benefits

Safer

- The LaceLok installation tool removes the risk of repetitive motion and abrasion injuries typically associated with hand tied lace and cable ties.

More Consistent

- The LaceLok system delivers consistent tension that is applied by the tool and controlled by the fastener.
- LaceLok installs faster and produces repeatable results.

Superior Performance

- Rated for operation in extreme temperature range from -65° C to 260° C per MIL-DTL-32554.
- Tested for submersion in JP-8 Jet Fuel, Hydraulic Fluid, Lubricating Oil, and Isopropyl Alcohol per MIL-DTL-32554.
- Made of abrasion resistant Nomex® aramid fiber lace per A-A-52084, Size 2, finish C.
- LaceLok Cable Lacing Fasteners weigh 40% less than average cable ties and contribute to fuel efficiency in weight-critical applications.

Faster

- LaceLok can be applied in 15-20 seconds per termination.



Specifications & Approvals

AS50881
MIL-DTL-32554
MIL-DTL-32555
NAVAIR 01-1A-505-1
MIL-HDBK-522

Nomex® is a registered trademark of E. I. du Pont de Nemours and Company

Part Number System

DMC Part Number

LF2 - XXCCC	
Length	Color
06 = 6" (15cm)	NA1 = Natural (White)
10 = 10" (25cm)	BLK = Black
18 = 18" (45cm)	
24 = 24" (61cm)	

MIL-DTL-32554 Part Number

M 32554-XX-1-XXX	
Length	Color
06 = 6" (15cm)	NA1 = Natural (White)
10 = 10" (25cm)	BLK = Black
18 = 18" (45cm)	
24 = 24" (61cm)	

Ordering Information

CLF Color	CLF Length	Part No.	MIL-DTL Part No.
White	6 in. (15 cm)	LF2-06NA1	M32554-06-1-NA1
	10 in. (25 cm)	LF2-10NA1	M32554-10-1-NA1
	18 in. (45 cm)	LF2-18NA1	M32554-18-1-NA1
	24 in. (61 cm)	LF2-24NA1	M32554-24-1-NA1
Black	6 in. (15 cm)	LF2-06BLK	M32554-06-1-BLK
	10 in. (25 cm)	LF2-10BLK	M32554-10-1-BLK
	18 in. (45 cm)	LF2-18BLK	M32554-18-1-BLK
	24 in. (61 cm)	LF2-24BLK	M32554-24-1-BLK

CLF is sold in quantities of 100. Contact DMC for additional CLF color options.

Tooling and Kits	CLF Length	Part No.	MIL-DTL Part No.
LaceLok Installation Tool	N/A	DLT-1100	M32555/01-01
Starter Kit: LaceLok Installation Tool, Cutting Blade Assembly, Wire Cutters, 100 Quantity of White CLF	10 in. (25 cm)	DMC2300-10NA1	N/A
	18 in. (45 cm)	DMC2300-18NA1	

Other starter kits are available with 6", 10", 18" and 24" length CLF in both natural (white) and black options.

Replacement Parts	Part No.	MIL-DTL Part No.
Cutting Blade Cover Screw	1-1025	N/A
Cutting Blade Cover	DLT-1100-33	N/A
Cutting Blade Assembly	DLT-1100-SA5	M32555/01-02

Description



Fastener Physical Dimensions	
Length (A)	0.28 in. (7.1mm)
Width (B)	0.23 in. (5.8mm)
Height (C)	0.18 in. (4.6mm)
Overall Length	6 - 24 in. (152-610mm)
CLF Construction	
Fastener Head	Ultra high temperature thermoplastic (PEEK)
Lacing Tape	Nomex® White or Black (A-A-52084 Size 2 Finish C)
Environmental	
Operating Temperature	-76°F to 500°F (-65°C to 260°C)
Chemical Resistance	Hydraulic fluid, jet fuel, lubricating oil, isopropyl alcohol

LaceLok® Cable Lacing Fasteners

Installation Instructions

1. Select desired LaceLok Cable Lacing Fastener (CLF) length based on size of bundle and application. Multiple wraps should be used where increased bundle strength or extreme resistance to lateral or radial motion is needed. Bundles containing pressure sensitive cables such as coax or fiber optic should also utilize multiple wraps.
2. Pass LaceLok CLF around the cable bundle one to three times (Fig. 1). Feed lacing tape end through fastener head under locking pin (Fig. 2). Cinch tight around bundle (Fig. 3).



Tips

To ensure the bundle is secured properly, it is important the lacing tape is not twisted during installation (Fig. 4).

If greater tensile strength is needed, wrap the lace around the bundle multiple times but only through the fastener head once on the final pass around the bundle. Do not thread the lace through the buckle multiple times (Fig. 5).

3. Loop end of lace over locking pin and back through opening (Fig. 6). Ensure lace is not twisted around bundle or in fastener head. Cinch around bundle (Fig. 7).
4. Hold end of lace creating a vertical portion. Pull tool trigger to position capstan with a vertical slot. Raise free end of lace perpendicular from the bundle and side-load the lace into the capstan (Fig. 8).



Tips

Remember the lace is not fed through the nose of the tool, but rather side-loaded through the capstan.

For larger bundles, bundles of twisted pair wire, or bundles where movement of the fastener may be a concern, a lockstitch is recommended to be used by looping the lace around one component and then completing the wraps and termination as normal (Fig. 9).

LaceLok is used to wrap wire, not gather the bundle. Before wrapping with LaceLok, it may be helpful to bundle the wire with a clamp or other bundling device. If a clamp is not available, it may be helpful to hold the bundle together with your non-dominant hand while using the tool with your dominant hand (Fig 10).

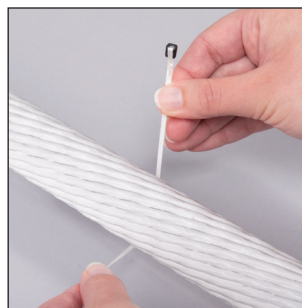


Fig. 1



Fig. 2

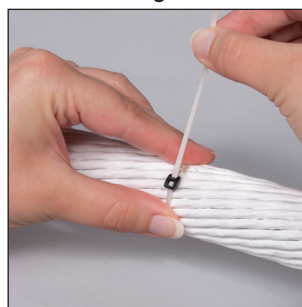


Fig. 3



Fig. 4



Fig. 5

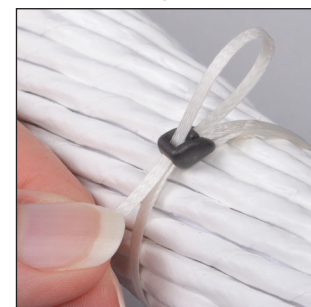


Fig. 6



Fig. 7



Fig. 8

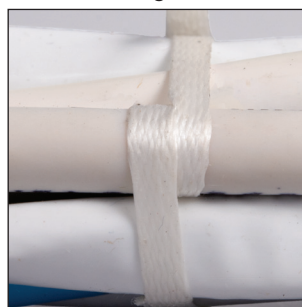


Fig. 9



Fig. 10



Installation Instructions (continued)

- Side load lace into capstan and ensure that the LaceLok fastener head is in the nose of the tool. (Fig. 11). Ensure LaceLok tool is tangent to wire bundle diameter and directly in line with LaceLok CLF head.

The tool shall not be in front or perpendicular to the fastener head (Fig. 13, 14, 15, 16). The tool nose should nest with and partially surround the fastener head (Fig. 11). Failure to correctly align the tool can result in a faulty LaceLok CLF installation.

- Squeeze installation tool trigger 2-3 times to rotate capstan and take up slack, tighten, lock, and terminate the LaceLok CLF (Fig. 12). The operator will be able to hear and visually observe locking and termination (Fig. 17).



Fig. 11



Fig. 12



Fig. 13

DO NOT DO



Fig. 14

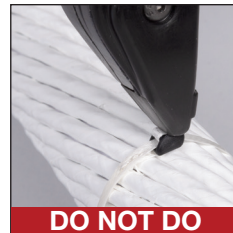


Fig. 15



Fig. 16

DO NOT DO

DO NOT DO

DO NOT DO



Tips

To achieve the best termination, remember to align the tool to the fastener head so that it is nested in the nose of the tool. Do not position the tool in front of (Fig 14) or perpendicular (Fig 13) to the fastener head. Failure to correctly align the tool can result in a faulty installation.



Fig. 17

Configurations

LaceLok Cable Lacing Fasteners are exceptionally strong with a single wrap. Additional strength can be achieved by simply applying a second or third wrap around the bundle prior to termination. Double and triple wrap configurations allow for a safe bundling option for pressure critical components such as coaxial and fiber optic cables.

Wraps Around Bundle	Minimum Tensile Strength
1 (Single)	55 lbs. (244N)
2 (Double)	110 lbs. (489N)
3 (Triple)	165 lbs. (733N)



Applications

Number of Wraps	Application
One	1/4" to 1" diameter cable bundles
Two	<1/4" and 1"-3" diameter cable bundles
Three	>3" diameter cable bundle
Three	Exposure to turbine jet fuel
Two or Three	Bundles containing coaxial or fiber optic

Number of wraps should be evaluated for each specific application.

LaceLok® Cable Lacing Fasteners

Inspection

1. Confirm LaceLok CLF locking pin is “Activated” and locked. The locking pin should move from its unlocked (Fig. 18) to locked position (Fig. 19). The lace should not be able to move around the locking pin.
2. The locking pin should be angled away from the cut end of lace (Fig.19, 20).
3. Ensure LaceLok CLF is adequately tight around bundle.
4. Ensure lacing tape is not twisted in the head or around the bundle (Fig. 21).
5. Ensure cable lacing tape is cut cleanly and cut end measures 0.5 in. +/- 0.25 in. (12.7mm +/- 6.4mm) (Fig. 20, 22).

If cut end of lace is repeatedly frayed, replace the cutting blade per maintenance instructions below. If locking pin is consistently not moving into the locked position, replace cutting blade cover per instructions below. If cutting blade cover has been damaged, replace per instructions below.

Installation of LaceLok CLF should only be performed with use of LaceLok Installation Tool. For additional information, please visit www.dmctools.com.

Maintenance

Cutting Blade and Nose Replacement

1. Unscrew cutting blade cover screw (1-1025).
2. Remove the cutting blade cover (DLT-1100-33).
3. Carefully remove used yellow cutting blade assembly (DLT-1100-SA5) (M32555/01-02).
4. Replace cutting blade assembly with new blade assembly.
5. Reinstall cutting blade cover, or replace as necessary.

The installation tool was designed to be maintenance-free. The tool should be kept clean and away from debris which may affect the function of the tool. Repair work, other than changing the blade, including opening the tool, must only be conducted by DMC or those authorized by the manufacturer. If there is visible damage to the nose, contact DMC for a replacement nose.

Warnings

- Do not disassemble housing halves or injury may occur due to spring-loaded components.
- Disassembly of housing will void warranty.

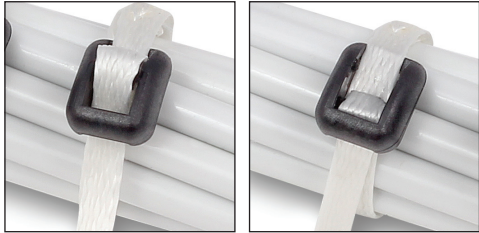


Fig. 18

Fig. 19

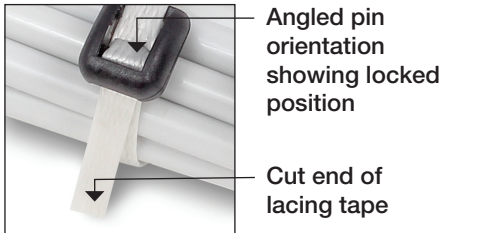


Fig. 20



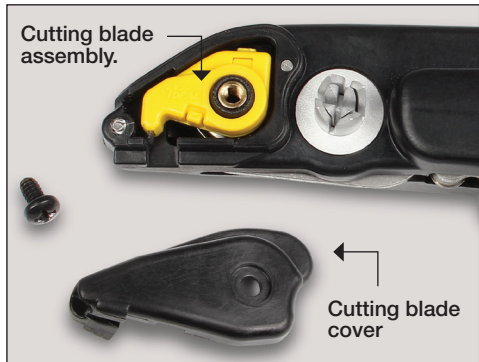
DO NOT DO

Fig. 21
Pin not locked
Lace is twisted



DO NOT DO

Fig. 22
Cut end of lacing
tape is too short



Cutting blade assembly.

Cutting blade cover

CAUTION
The blade is sharp and could cause injury.



Breakout Examples

LaceLok can be used to create breakouts in a similar application method as plastic cable ties or hand tied lace by replacing the knot with the activated buckle. Examples of breakouts include, but are not limited to the following examples. It is up to the responsible engineering authority to determine the applicable method and application of LaceLok.

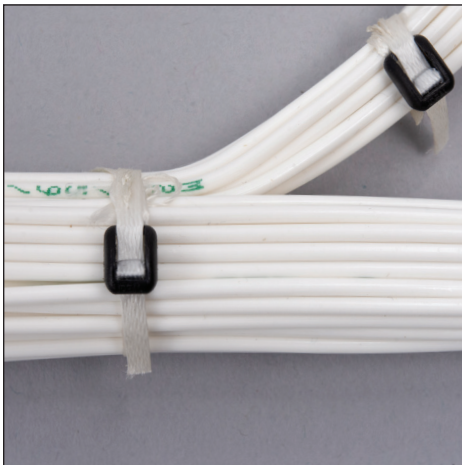


Fig. 23



Fig. 24



Fig. 25



Fig. 26

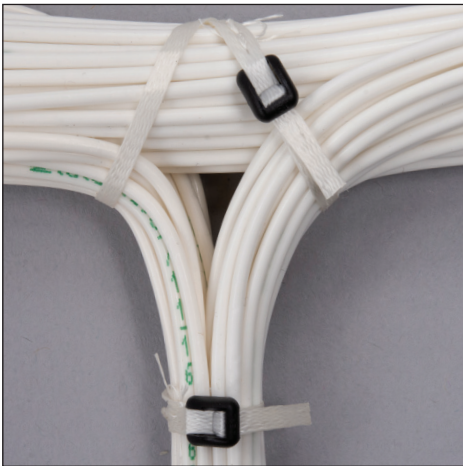


Fig. 27



Fig. 28



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