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MS²[™] Modular Splicing System

Instructions

3M™ MS²™ Modular Splicing System Instructions

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1.0 General

1.1 These instructions describe the 3M™ MS²™ Modular Splicing System, including modules, tools and applications. Applications are shown with dry modules only.

2.0 Module Description

2.01 MS² modules will:

- Connect and cut off up to 25 pairs of conductors from both the CO and field at one time, without the craftsperson having to strip insulation.
- Accept 22-28 AWG (0.6 - 0.32 mm) solid copper conductors insulated with PIC, pulp or paper with a maximum insulation O.D. of .065" (1.7 mm), G module series .053" (1.35 mm).
- Accept a mixture of wire gauges and insulation types in one module.

2.02 MS² modules have:

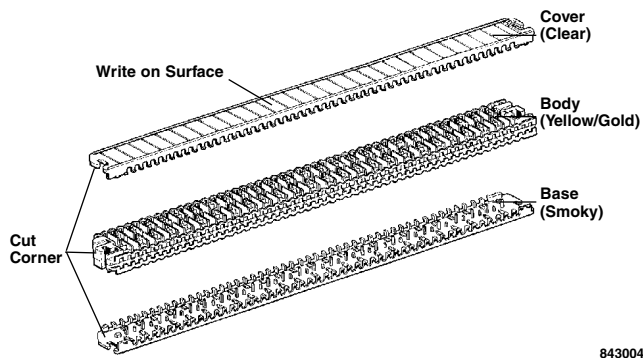
- Individual elements
- Individual cutoff blades
- Test entry ports
- Removable covers and bases for reentry

2.03 Encapsulated module versions (3M™ MS²™ Super Mini Splicing Module 4000-G, 3M™ MS²™ Super Mate Bridge Module 4005-GBM) and sealant boxes are available for moisture protection. Fire-retardant and specialty modules are also available.

2.1 Module Types

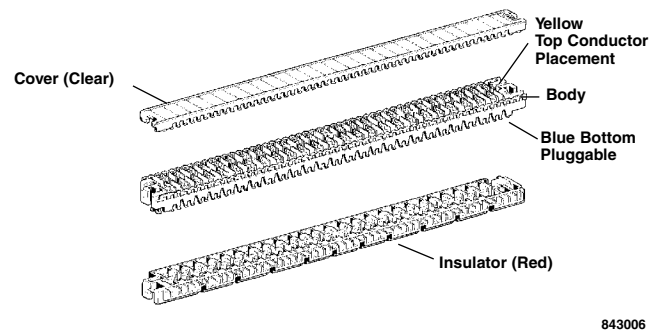
2.11 Super-Mini

3M™ MS²™ Super Mini Test Module 4000D/TR



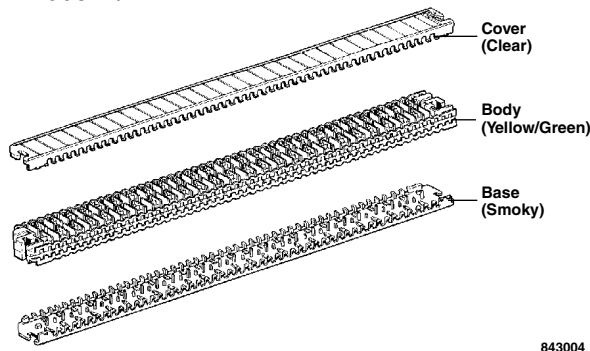
2.13 Super-Mate Pluggable

3M™ MS²™ Super Mate Pluggable Module 4005-DPM/TR



2.12 Half-Tapping

3M™ MS²™ Super Mini Half-Tap Module 4008 D/TR



3.0 Tool Description

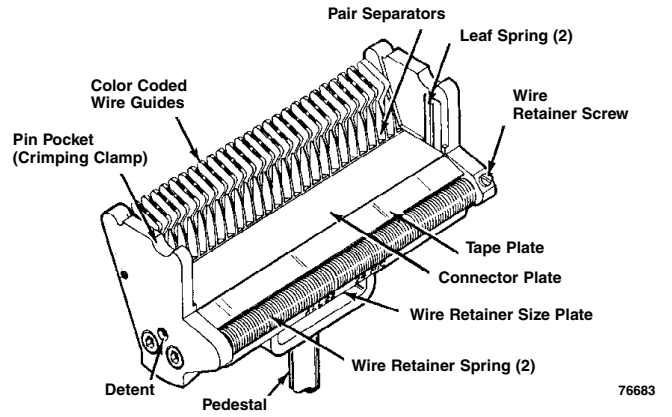
3.1 Main Splicing Rig Components

3.1.1 The 3M™ MS² Splicing Head 4041 is used for initial termination of conductors in the modules. The splice head holds the conductors in their proper locations during the splicing procedure. The splice head holds module combinations for splicing.

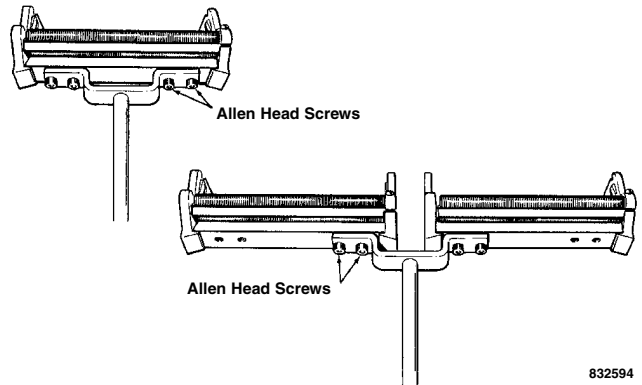
- 1 Super-Mini
- 1 Super-Mini and 1 Super-Mate
- 2 Super-Mates
- 3 Super-Mates

3.1.2 It can be used to make connections with preterminated modules.

3.1.3 The splice head can be set up in a one or two splice head configuration for different applications.



3M™ Splicing Head 4041



Double Head Set Up

3.2 Hydraulic Crimping Units

3.2.1 One air-hydraulic and two hand-hydraulic crimping units can be used with the 4041 splice head to crimp the module.



3M™ MS²™ Crimping Clamp



3M™ MS²™ Air Crimping Unit 4030



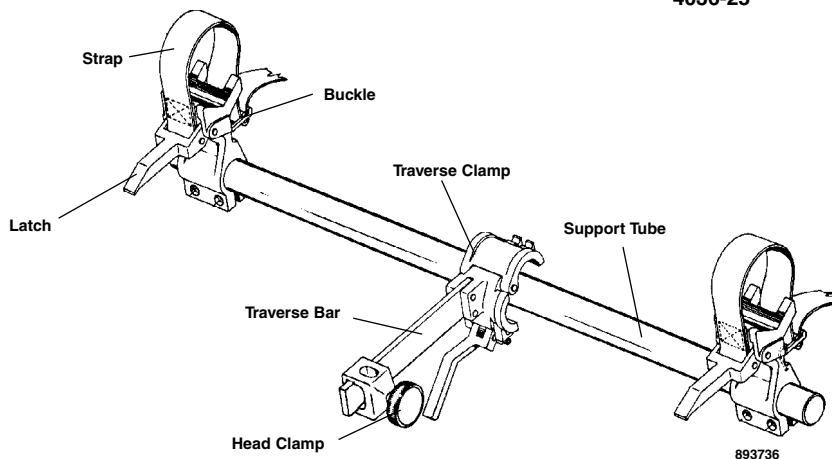
3M™ MS²™ Hand Hydraulic Crimping Unit 4031



3M™ MS²™ Hand Hydraulic Crimper 4036-25

3.3 Support Tube

3.3.1 The support tube and related components provide support for cables and tools while splicing is being done.



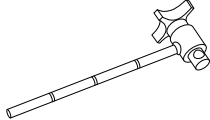



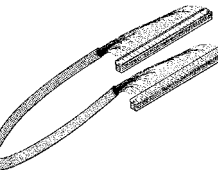
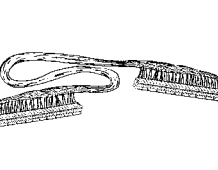


3.4 Rig/Kit Components



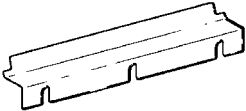



	Product Number	Description	4021-M2/36/NXG	4021-M2/36/TMK/NXG	4022-M2/NXG	4022-M2/TMK/NXG	4045-K2/36/FL/NXG	4045-K/36/NXG	4049-NXG	4026-A M2/TMK/NXG
	4049	Rig container/pail							1	
	4036-H	Tool holster							1	
	4028A	Rig case	1	1	1	1	1	1		
	4036-25	Hand crimper	1	1			1	1	1	
	4041-SH	Splice head holder							1	
	4040	Splicing head assembly includes:	2 each	2 each	2 each	2 each				
	4041-SPL	Splicing head	2	2	2	2				
	Spare-Rigs/PED	Pedestal	2	2	2	2				
	Spare-Rigs/TC-L	Traverse clamp assembly with long bar	2	2	2	2				

3M™ MS²™ Modular Splicing System Instructions

	Product Number	Description	4021- M2/36/NXG	4021- M2/36/TMK/NXG	4022- M2/NXG	4022- M2/TMK/NXG	4045- K2/36/FL/NXG	4045- K/36/NXG	4049-NXG	4026-A M2/TMK/NXG
	Spare-Rigs/HKCA	Head clamp	2	2	2	2				
	4041-P	Splicing head and "T" bar pedestal support					2	1	1	
	4046 CST	Collapsible support tube	1		1					
	4047	Pair test plug	1	1	1	1	1	1	1	1
	4051	Wire insertion tool	1	1	1	1	1	1	1	1
	4052T	Tester check comb	2	2	2	2	2	1	1	
	4053-PM	Separation tool	1	1	1	1	1	1	1	1
	4053	Cover removal tool								1

	Product Number	Description	4021-M2/36/NXG	4021-M2/36/TMK/NXG	4022-M2/NXG	4022-M2/TMK/NXG	4045-K2/36/FL/NXG	4045-K/36/NXG	4049-NXG	4026-A M2/TMK/NXG
	Spare-Rigs/STB	Short traverse bar	1	1	1	1				
	4045-SHSA	Universal splicing head support assembly					1	1		
	4049-VTB	Variable traverse brace assembly								
	4045	Support vise					1			
	4035A	Strand clamp					1			
	4044	Splice headframe adapter					1			
	4005-DPM/BTP/JMP	Super-mate bottom test plug jumper assembly								2
	4005-DPM/36PJT	Preterminated jumper assembly								2

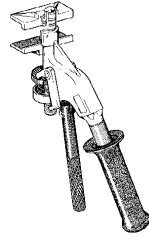
3M™ MS²™ Modular Splicing System Instructions

	Product Number	Description	4021- M2/36/NXG	4021- M2/36/TMK/NXG	4022- M2/NXG	4022- M2/TMK/NXG	4045- K2/36/FL/NXG	4045- K/36/NXG	4049-NXG	4026-A M2/TMK/NXG
	4270-A	Hand presser								1
	4041-2	Unilength hook	2	2	2	2	2	1	1	
	4041-RS	Rear spring holder	2	2	2	2	2	1	1	
	3M710-TMK10-A	Tool mount kit includes:		1 each		1 each				
	3M710-TMK10-A1	Base		1		1				
	3M710-TMK10-A2	Tool clamp kit		1		1				
	3M710-TMK10-A3	Swivel bar kit		1		1				
	3M710-TMK10-A4	Tube clamp		1		1				
	3M710-TMK10-A5	Vise kit		1		1				
	3M710-TMK10-A6	Swivel/knob		1		1				
	3M710-TMK10-A7	Tube/clamp kit		1		1				
3M710-TMK10-A8	90° mount			1		1				
	Spare-Rigs/TSXA	Tube support extension	1		1					
	4046-CST	Collapsible support tube	1		1					

3.5 3M™ MS²™ Hand Tools

3.5.1 3M MS² Hand Presser 4270-A

Used for plugging combinations of two through seven modules together.



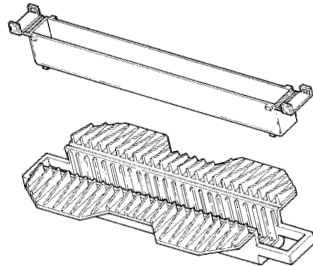
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3M™ MS²™ Hand Presser 4270-A

4.0 MS² Accessories

4.1 3M™ MS²™ Super-Mini Sealant Boxes 4075-S with Insertion Tool

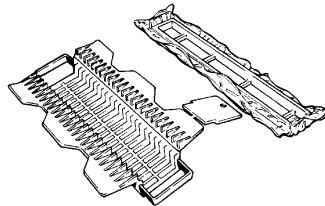
Designed for moisture protection and reentry applications. The boxes can be applied to both foldback and inline splices. The 4075-S is designed to be used in all 2-wire 3M™ MS²™ Super-Mini 4000-D splice applications.



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4.2 3M™ MS²™ Sealant Boxes 4077 Series with Insertion Tool

The 4077 series sealant box is designed for use with the 3M™ MS²™ Module 4005-DPM.

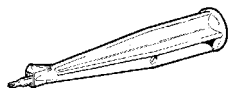


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- 4077-A - One Super-Mate Module
- 4077-B - One Super-Mate / One Super-Mini Module
- 4077-C - Two Super-Mate Modules
- 4077-D - Three Super-Mate Modules

4.3 3M™ MS²™ Wire Insertion and Cut Off Tool 4051

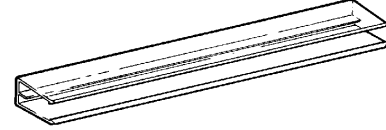
Individual conductors can be inserted into elements by using the 4051 wire insertion and cut off tool.



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4.4 3M™ MS²™ Half Tap Cover 4078-C

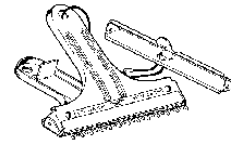
Used to protect wire ends after the half-taps has been cut out of the 3M™ MS²™ Super-Mini Half Tap Module 4008 in pulp/paper and pressurized PIC cable splices and vault splices.



832569

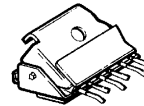
4.5 3M™ MS²™ Separator Tool 4053-PM

- a. The 4053-PM separator tool is the only tool recommended for unplugging Super-Mate modules.



863422

- b. The enlarged pins of the tool distinguish the 4053-PM tool from the 3M™ MS²™ Cover Removal Tool 4053. **The 4053-PM tool cannot be used to remove covers or bases.**

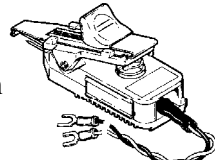


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3M™ MS²™ Separation Tool 4053-PM 3M™ MS²™ Cover Removal Tool 4053

4.6 3M™ MS²™ Pair Test Plug 4047

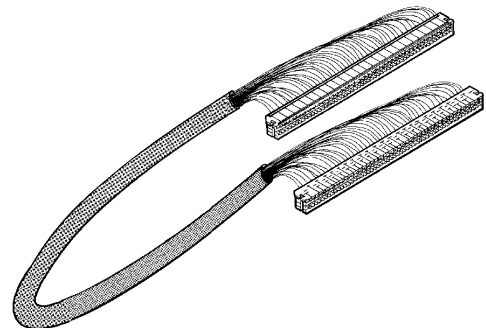
The 4047 pair test plug is a connector probe which permits pair checking through the test entry port without damaging wire insulation.



781247

4.7 3M™ MS²™ Bottom Test Plug 4005-DPM/BTP

Test plug assembly consisting of 4005-DPM module attached by a 24" jumper to a module designed to plug into the bottom of a 4000 or 4000 D/TR module.



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3M™ MS²™ Modular Splicing System Instructions

4.8 3M™ MS²™ Module Maintenance Kit 4026

Contains the tools necessary for reentry of Super-Mini and Super-Mate modules.

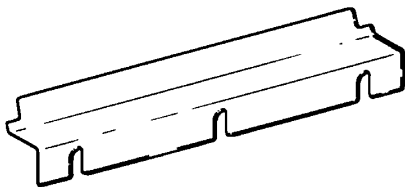
Kit Contents:

- 3M™ MS²™ Hand Presser 4270-A
- 3M™ MS²™ Wire Insertion and Cut Off Tool 4051
- 3M™ MS²™ Separator Tool 4053-PM
- 3M™ MS²™ Cover Removal Tool 4053
- 3M™ MS²™ Pair Test Plug 4047
- 3M™ MS²™ Jumper Assembly DPM/DPM (2)
- 3M™ MS²™ Bottom Test Plug Jumper Assembly 4005-DPM/BTP (2)



4.9 3M™ MS²™ Rear Spring Holder 4041

Allows the addition of a second set of wire retaining springs to the back of the 3M™ MS²™ Splicing Head 4041. Used in the conversion of Super-Mini splices to pluggable Super-Mate splices and for cutting in Super-Mate modules on through cables.



883640

4.10 3M™ MS²™ 2" Unilength Hook 4041-2

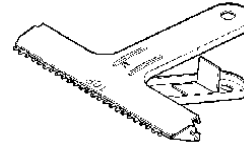
Attaches to all 3M™ MS²™ Splicing Heads to facilitate splicing in the unilength configuration.



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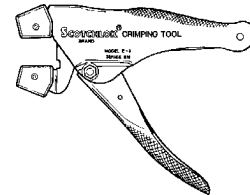
4.11 3M™ MS²™ Cover Removal Tool 4053

Recommended tool for the removal of 3M™ MS²™ Module Covers and Bases.



4.12 3M™ MS²™ Crimping Tool E9-BM

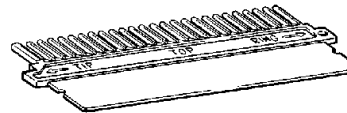
Crimps MS² module bases and covers onto connector bodies.



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4.13 3M™ MS²™ Check Comb 4052-T

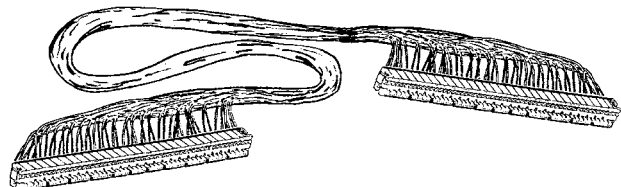
Used to detect splicing errors prior to module crimping. Also used as a temporary module cover in certain splicing applications.



903882

4.14 3M™ MS²™ Preterminated Jumper Assemblies 4005-DPM

The 4005-DPM/PTJ Assembly consists of 24 AWG, PIC, unsheathed 25-pair binder group terminated on each end with a 4005-DPM module. Available in 36" (91.4 cm) or 72" (182.9 cm) lengths, the jumpers enable fast restoration of cut or damaged cables. Also used in maintenance of Super-Mate module splices where uninterrupted service is required.

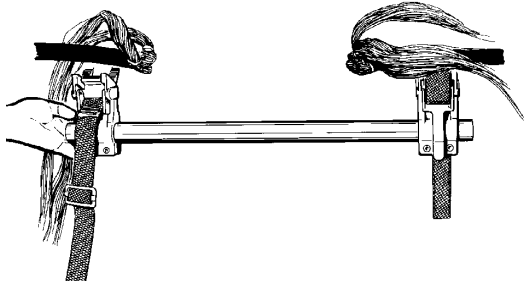


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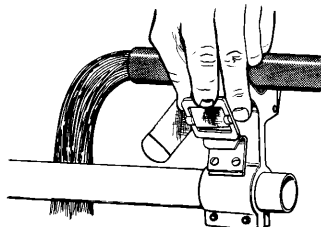
5.0 Basic Use of Tools and Module

5.1 Rig set-up

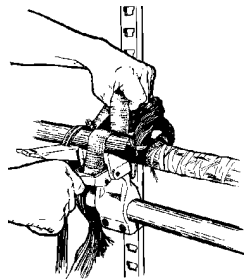
5.1.1 Attach support tube to cable with appropriate splice opening



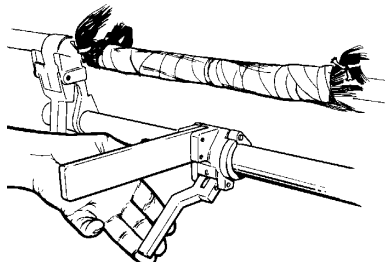
5.1.2 Attach buckle.



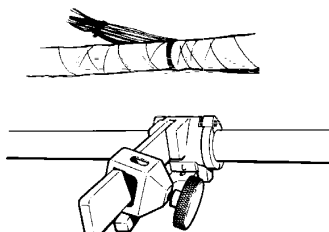
5.1.3 Tighten strap.



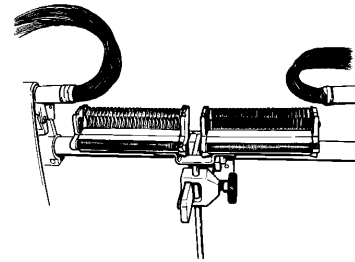
5.1.4 Attach traverse clamp assembly.



5.1.5 Slide head clamp on traverse bar.

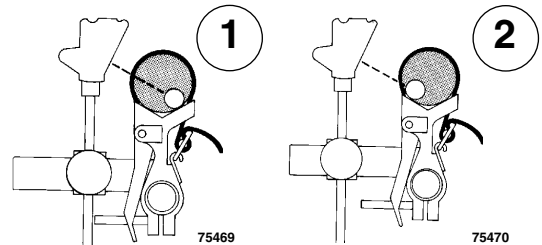


5.1.6 Insert pedestal with splice head or heads in head clamp. Double splice head is shown.



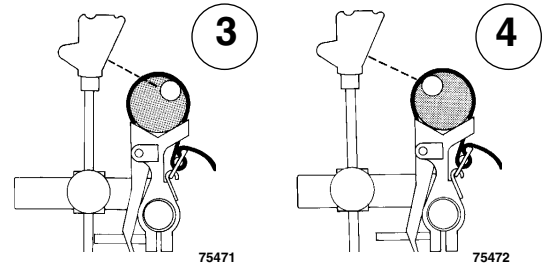
5.1.7 Locate splice head

a. Splice, back-bottom group first.

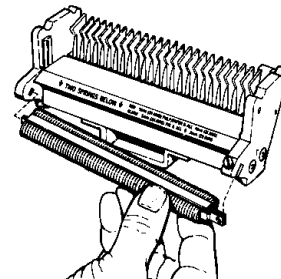


b. For inline splicing, adjust head(s) to group being handled.

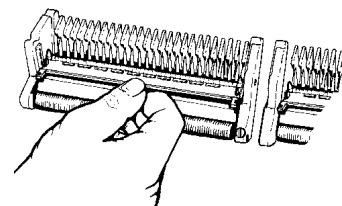
c. Splice head should be higher than group being spliced.



5.1.8 Set retainer spring to wire gauge of splice.



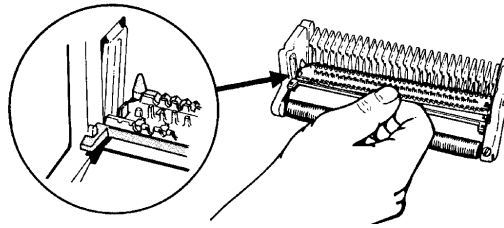
5.1.9 The gold splice adapter is used with all **Super-Mini Modules only**.



5.2 Wire Handling in Module

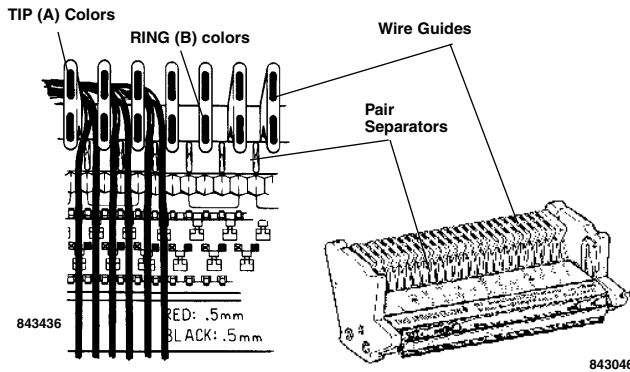
- 5.2.1 Using Super-Mini Module – Install base
- Using Super-Mate Module – Install body/insulator

Module cut corner towards the white/blue wire guide



812117

- 5.2.2 Follow the color code according to the white wire guides. Wire pair to right side of corresponding color coded wire guide. Separate pair over pair separator, TIP (A) left and RING (B) right.



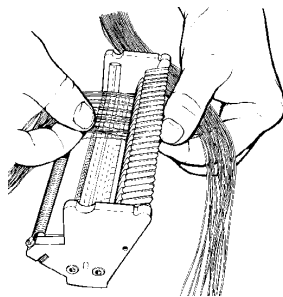
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- 5.2.3 Select a 25-pair group and place wires in module.

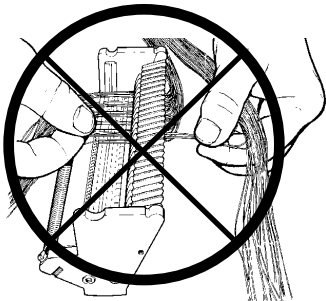
Draw wires snug into wire channels in module.

Secure in retainer springs.

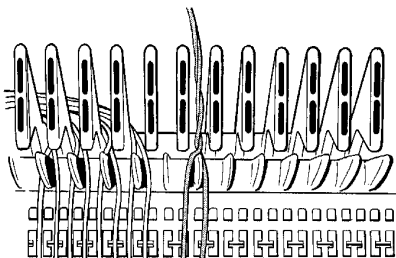
Thumb placed too far from splice head rear could cause twist in pair, resulting in “shiners.”



832596



832597

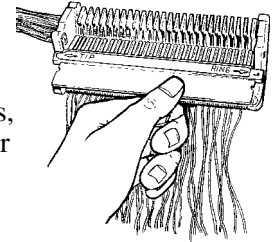


75436

- 5.2.4 Make sure all wires are lying flat in module channel.

Look for empty channels, 2 wires in one channel or reversed pairs with the check comb.

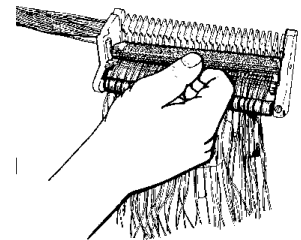
Slide comb left, only TIP (A) wires should show. Slide comb right, only RING (B) wires should show.



893745

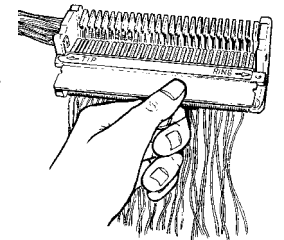
- 5.2.5 Install next module component.

Place pairs from corresponding group.



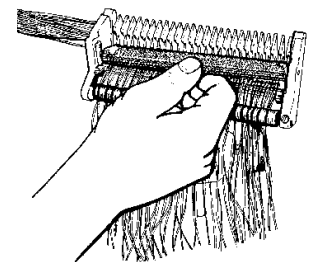
832600

- 5.2.6 Check for correct wire placement using the orange check comb.



893745

- 5.2.7 Install module cover.

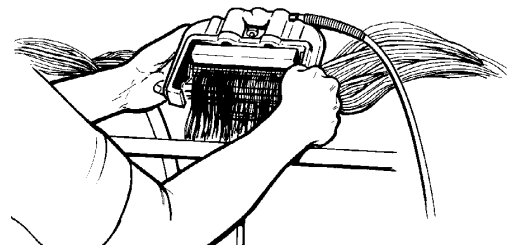


832601

5.3 Crimping Modules

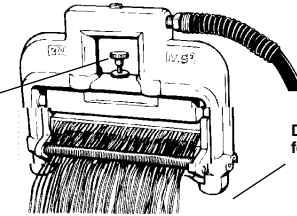
5.3.1 Hydraulic Hose Crimpers

- a. Hydraulic hose can face left or right. Rest crimper on splice head with legs angled toward you.
- b. Rotate the clamp until it is locked in an upright position by the detents.



75442

Adjust for proper height



Detents can be adjusted for tightness

781167

5.3.1.2 Crimping Hose Hydraulic Pumps

a. Hand/Hose Hydraulic Pump.

1. Always position output end **level or lower than rear.**



2. Close the pressure release valve and operate the pump handle until the audible bypass is heard, then pump three additional times. Leave the crimping clamp closed until the cut conductors are removed.

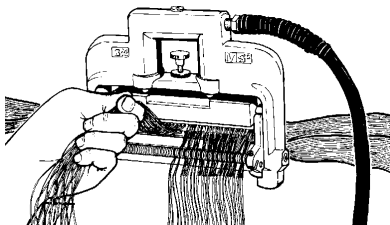
b. Air/Hydraulic Pump

1. Always position output end **level or lower than rear.**



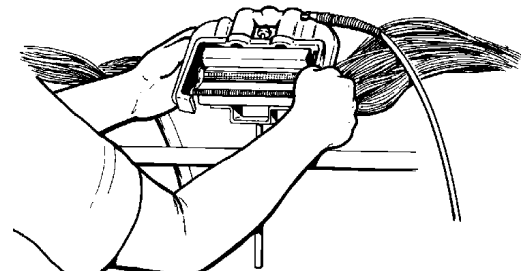
2. Operate the PRESS/RELEASE control to the PRESS position and hold until the pressure bypass is heard to operate. This signifies a completed crimp. Leave crimping clamp closed until the cut conductors are removed.

5.3.1.3 Remove one-fourth to one-third of the cut conductors at a time by lifting them straight up from the retainer spring.



781170

5.3.1.4 Remove crimping clamps.

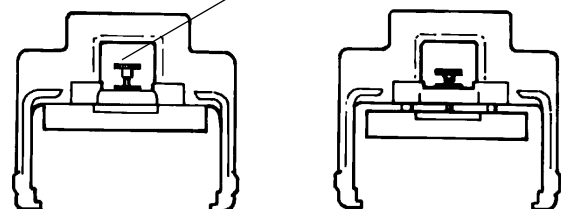


75446

Note: *To avoid damaging the retainer spring, do not attempt to remove all the conductors at once.*

Note: *An adjustment screw on crimping clamp can be set to limit return on crimping bar. This screw can be adjusted to reduce the number of strokes required for crimping a two-wire splice when using the hand pump, but must be completely backed off for crimping 3-wire bridge splices.*

Adjusting Screw



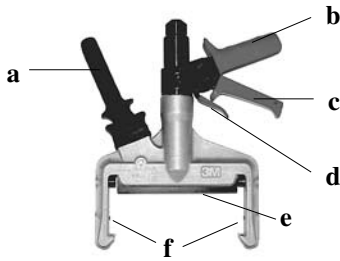
75447

3M™ MS²™ Modular Splicing System Instructions

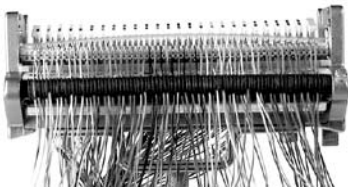
5.3.2 3M™ MS²™ Hand Hydraulic Crimper 4036-25

5.3.2.1 The 4036-25 crimper is a self-contained, pistol-gripped crimper designed to crimp 3M™ MS²™ Splicing and Pluggable Modules 4000-D and 4005-DPM series.

- a. Rapid advance lever
- b. Fixed handle
- c. Moveable handle
- d. Release trigger
- e. Press bar
- f. Ball plungers



5.3.2.2 Use standard MS² splicing practice to prepare cable, set up splice head, and wire module.



5.3.2.3 Place crimper rockers into yoke of splice head. Rotate crimper until it locks into upright position. Adjust ball plungers (indicated by arrows) in or out with standard screwdriver if necessary to allow rotation and locking.



5.3.2.4 Using rapid advance lever, advance press bar until it presses down firmly on the module.



5.3.2.5 Pump handle until pressure bypass operates, indicating module is fully crimped.



5.3.2.6 Remove cut off conductors by lifting straight up from retainer spring and pulling gently.



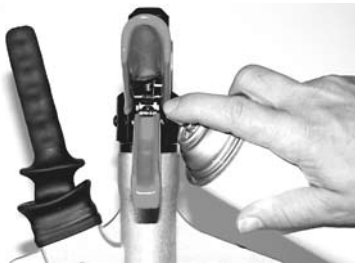
5.3.2.7 Pull release trigger to reset press bar.



5.3.2.8 Remove crimper by reversing rotation described above. Remove module from splice head.



5.3.2.9 Periodically (about every 1000 cycles) lubricate moving parts of the rotating handle with a lightweight machine oil or water displacing lubricant.



5.3.2.10 To guard against general corrosion, spray blackened steel surfaces with a lightweight machine oil or water displacing lubricant. This is especially important before extended periods of storage.



Note: Carefully follow safety, health and environmental information given on product label or the MSDS sheet.

5.3.2.11 Crimpers may be cleaned by brushing carefully with a citrus-based cleaning solution. Do not immerse the entire crimper in the solution. After cleaning, wipe dry and lubricate as described in preceding paragraphs.

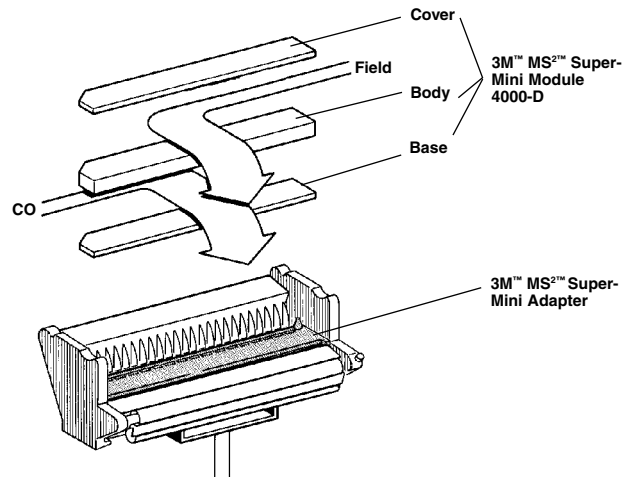


Note: Carefully follow safety, health and environmental information given on product label or the MSDS sheet.

5.4 Basic Module Connections

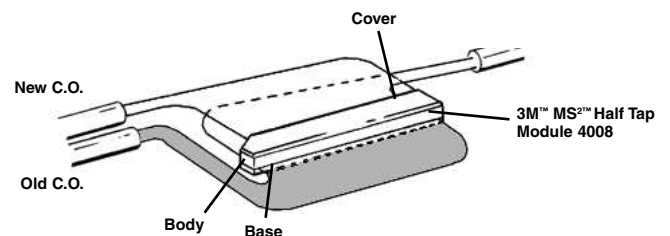
5.4.1 Straight Splice

This connection is a Central Office (CO) feeder group to a field/house group made with a 3M™ MS²™ Super Mini Module 4000 module series.



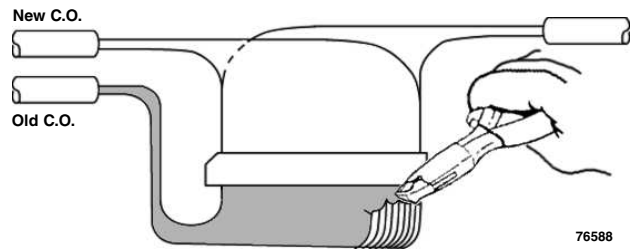
5.4.2 Half-Tap Splice

- a. This is a connection to an existing group (with slack) and a group to tap on to it. Typical example is an old central office through cable and a new central office cable to replace it.



3M™ MS²™ Modular Splicing System Instructions

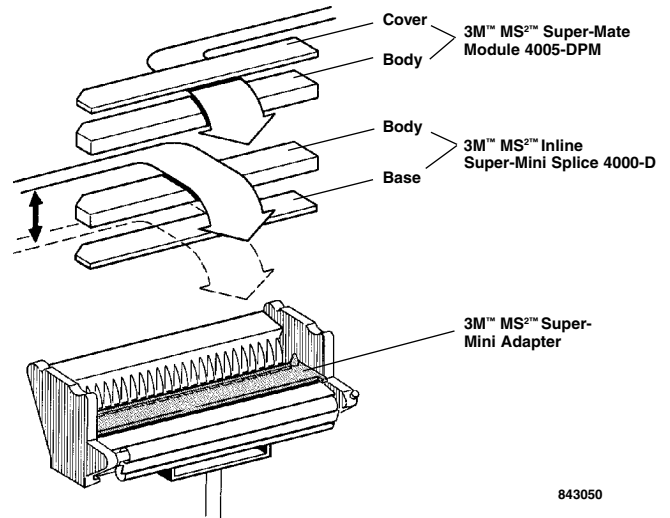
- b. To remove half-tapped cable, use a flush cut offset pair of pliers to allow one conductor to be cut at a time. Care should be taken not to short against adjacent cut conductors.



5.4.3 One-Way Pluggable Connection

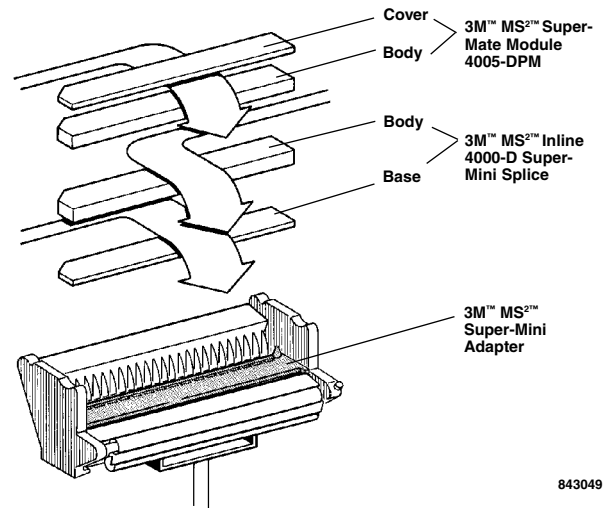
This combination connects two conductor groups by plugging the 3M™ MS²™ Super-Mate Module to the body top of the 3M™ MS²™ Super-Mini Module.

Conductors can be terminated either in the body bottom or body top of the Super-Mini module.



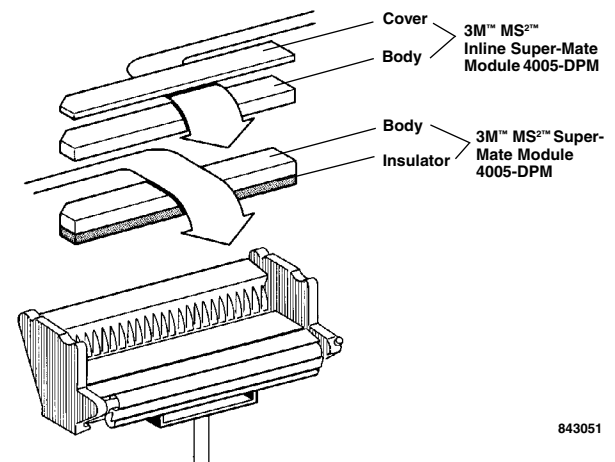
5.4.4 Pluggable Bridge Connection

This combination makes a three conductor connection (bridged) by plugging a Super-Mate module to the body top of the Super-Mini module.



5.4.4 Two-Way Pluggable Connection

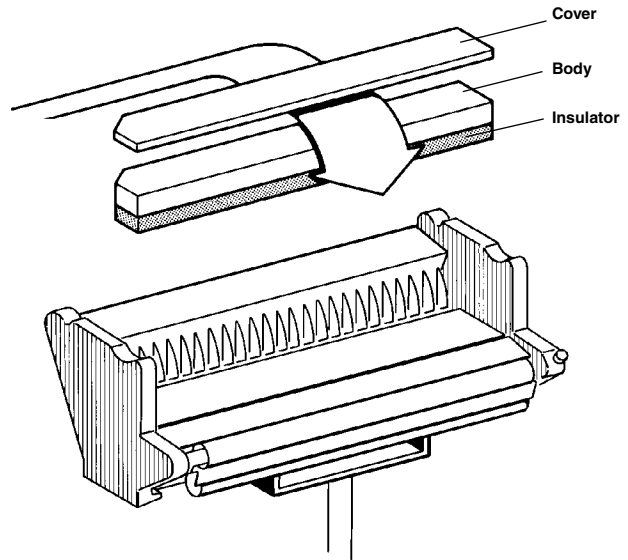
This combination makes a two-conductor connection by plugging a Super-Mate module to either the body top or body bottom of another Super-Mate module.



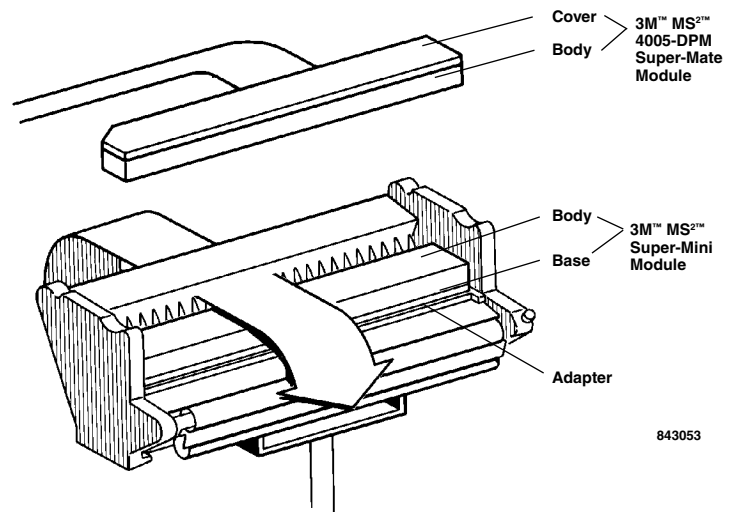
5.5 Preterminated Module Connections and Tools to Crimp Them

Preterminated 3M™ MS²™ Super-Mate Modules can be used as pluggable units with modules during splice construction and modules in existing splices

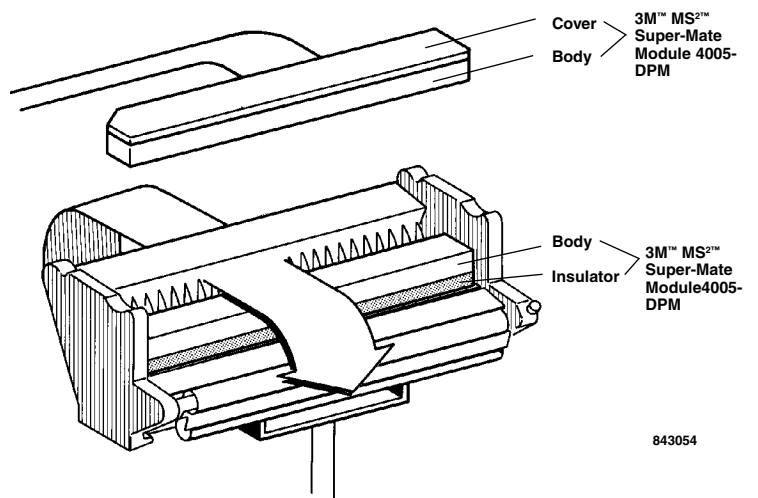
5.5.1 Pretermination of one Super-Mate module



5.5.2 Preterminated Super-Mate, plugged to a new 3M MS² Super-Mini Splice.

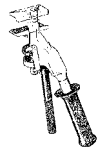


5.5.3 Preterminated Super-Mate, plugged into a new Super-Mate splice.

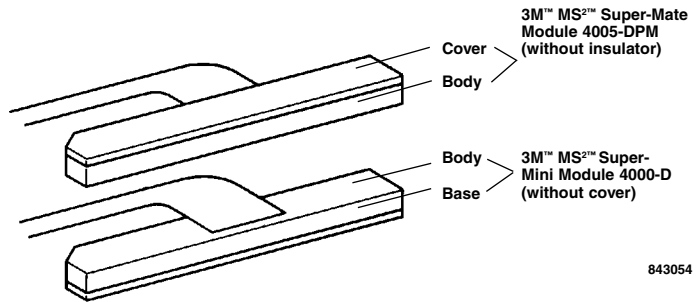


3M™ MS²™ Modular Splicing System Instructions

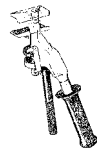
5.5.4 Preterminated 3M MS² Super-Mate Module plugged to Preterminated 3M MS² Super-Mini Module is done by using a 3M MS² Hand Presser 4720-A.



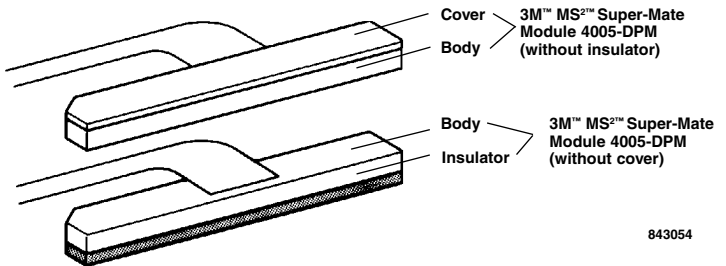
3M™ MS²™ Hand Presser 4720-A



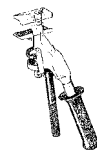
5.5.5 Preterminated Super-Mate Module plugged to Preterminated Super-Mate Module is done by using a 4720-A hand presser.



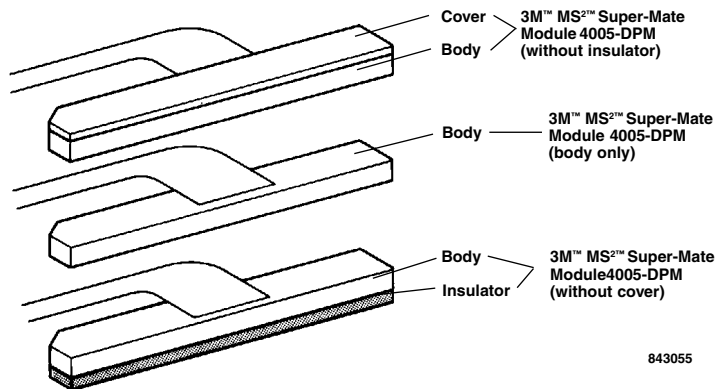
3M™ MS²™ Hand Presser 4720-A



5.5.6 Three Super-Mate Modules (3-conductor splice) can be plugged together using a 4720-A hand presser. First, plug two Super-Mate modules with the 4720-A hand presser. Last, plug the third Super-Mate module with the 4720-A hand presser.

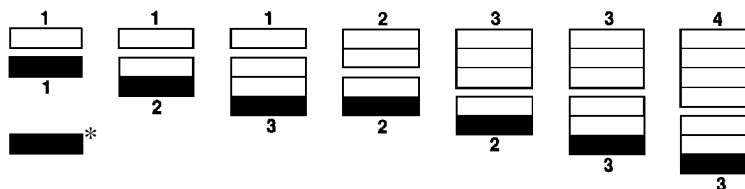


3M™ MS²™ Hand Presser 4720-A



5.5.7 Preterminated Super-Mate Module Combination, Plugged to Preterminated Super-Mate or Super-Mini Module Combination.

Any module combination from two single modules to a total of seven modules may be plugged together using the 4720-A hand presser. Only a combination of up to three modules may be done in a splice head.



* Can be either a 3M™ Super-Mini Module or a 3M™ Super-Mate Module with Insulator

842795

Note: If a Super-Mini module is used, it must always be on the bottom of the final configuration.

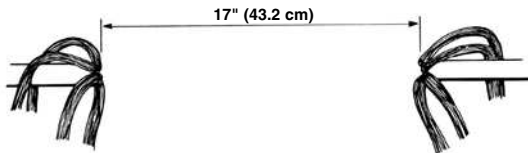
Note: It is recommended that only one module combination should be plugged together at a time.

6.0 Application

Note: *Splice modules so that equal number of modules will fall in each bank.*

6.1 Inline Splicing (2-Bank)

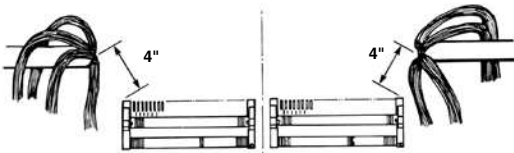
6.1.1 Splice opening must be that recommended for closure used, with a minimum of 17" (43.2 cm) for a 2-bank splice.



Free conductors length (each cable) = 1.5 X splice opening

893756

6.1.2 Attach rig using double heads. Center heads in opening.



893756

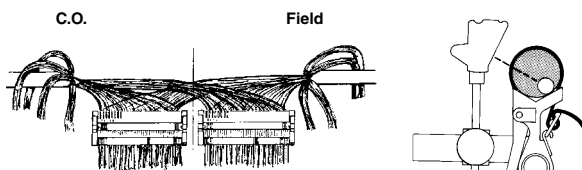
Note: *Splice heads set 4" (10.2 cm) from butt of group being spliced and slightly higher.*

6.1.3 When splicing with 3M™ MS²™ Super-Mini Module, splice head adapter must be used.

Select back bottom 25-pair group from C.O. cable.

Lay pairs into module base on C.O. side of splice opening.

For easy group ID, place odd groups to left side, even groups to right side.

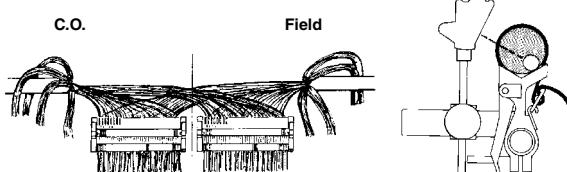


893756

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6.1.4 Select next back bottom 25-pair group from C.O. cable.

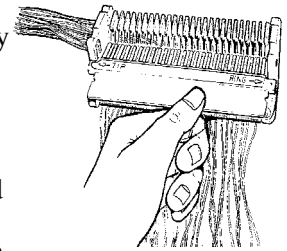
Lay pairs into module base on field side of splice opening.



893756

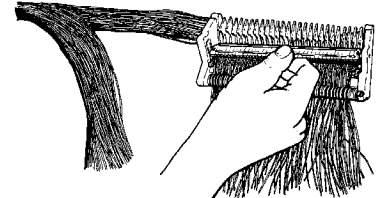
75469

6.1.5 Place the check comb over the base and slide it to the left, only TIP (A) conductors should show. Slide the check comb to the right, only RING (B) conductors should show. Also check for two conductors in one channel, for vacant channels and for reversed pairs.



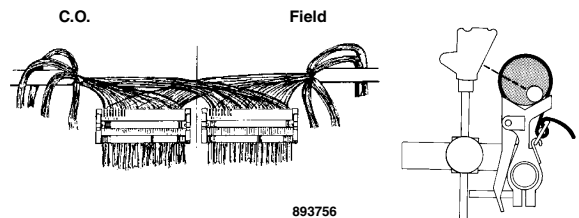
893745

6.1.6 Place body into leaf spring tracks of both splice heads with cut corner to left of rear splice heads.



832600

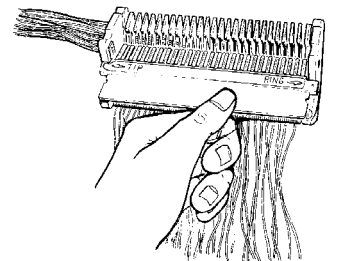
6.1.7 Select matching 25-pair groups from field cable. Lay pairs into module bodies.



893756

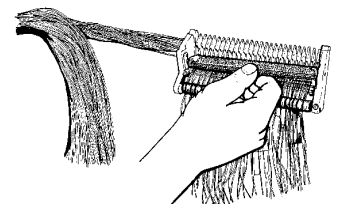
75469

6.1.8 Check for correct placement of pairs.



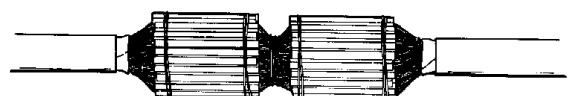
893745

6.1.9 Place covers and crimp. Repeat process for remaining 25-pair groups.



832601

6.1.10 Tie down splice bundle in center first, working any slack toward both cable butts.

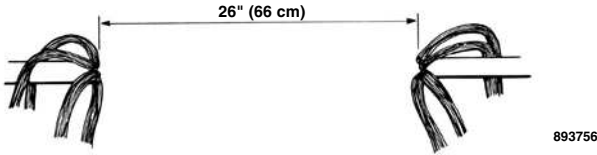


75473

3M™ MS2™ Modular Splicing System Instructions

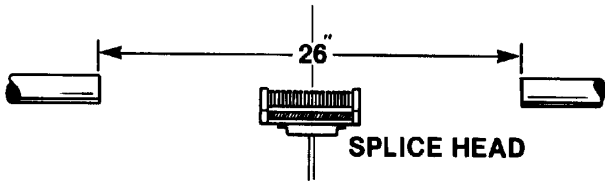
6.2 Inline Splicing (3-Bank)

6.2.1 Splice opening must be that recommended for closure used, with a minimum of 26" (66 cm) for a 3-bank splice.

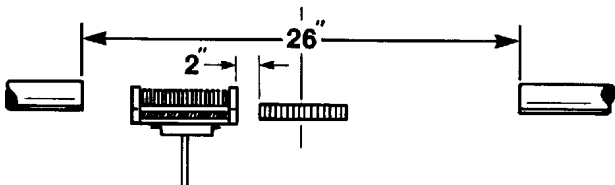


Free conductors length (each cable) = minimum splice opening plus 6" (152 mm)

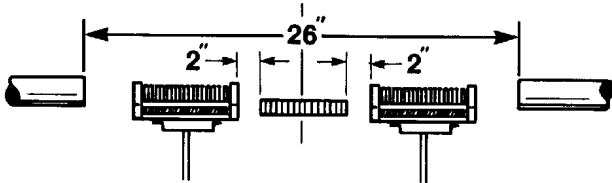
6.2.2 Attach rig using single head. Splice first connector following wire handling procedure Inline Splicing (2-bank.)



6.2.3 Adjust splice head for second connector. Splice per standard procedure (6.1).



6.2.4 Adjust splice head for third connector.



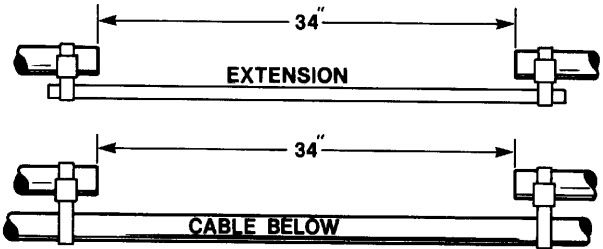
6.2.5 Complete splicing and bundling.



6.3 Inline Splicing (4-Bank)

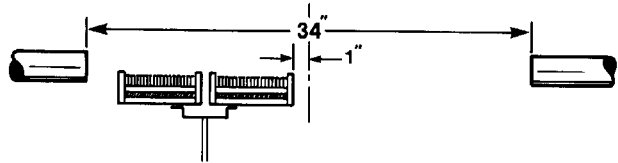
6.3.1 Splice opening must be that recommended for closure used, with a minimum of 34" (86.4 cm) for a 4-bank splice.

Note: This opening will require an extended support tube to attach to the cable butts; or support tube can be attached to a lower adjacent cable.

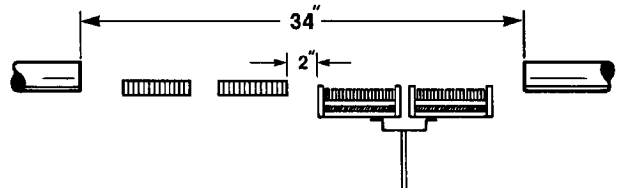


Free conductors length (each cable) = minimum splice opening plus 6" (152 mm)

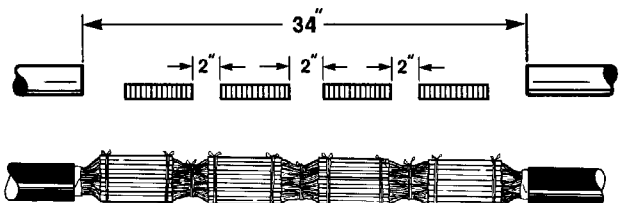
6.3.2 Attach rig using double heads. Splice 100-pair in both heads in this position.



6.3.3 Adjust splice head for next 100-pair.



6.3.4 Adjust splice head for next 100-pair.



6.4 Foldback Splicing (2-Bank)

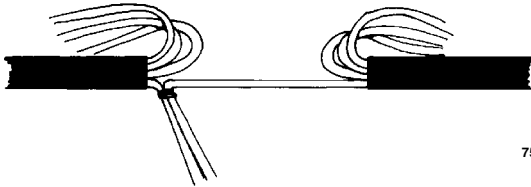
6.4.1 Splice opening must be that recommended for closure use.



Free conductors length (each cable) = 2 X splice opening plus 6" (152 mm)

6.4.2 Identify all binder groups. Starting with lower back groups, tightly tie matching groups together as close to cable butt as possible.

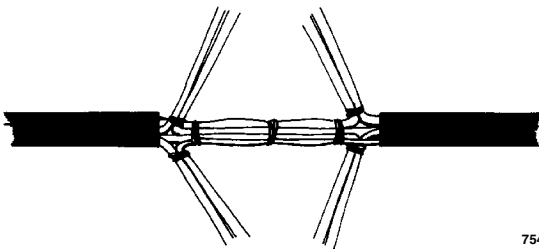
For easy group ID, **fold back odd number groups to left side and even number groups to the right.**



75449

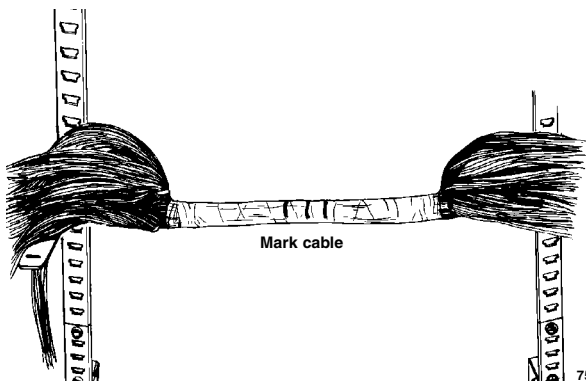
6.4.3 Alternate tie points from side to side until all matching groups are tied.

Note: Tie down core of splice with three ties or as per your company practice.



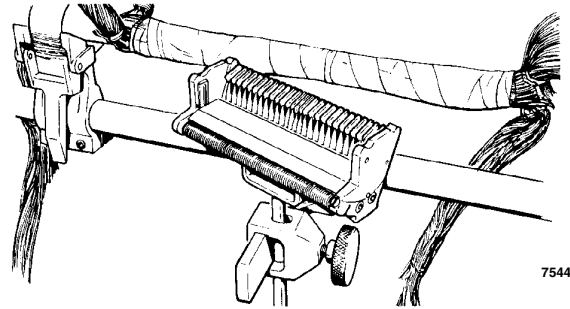
75449

6.4.4 Wrap core with polyethylene on PIC, muslin on pulp, or paper, per your company practice.



75450

6.4.5 Set up splicing rig.

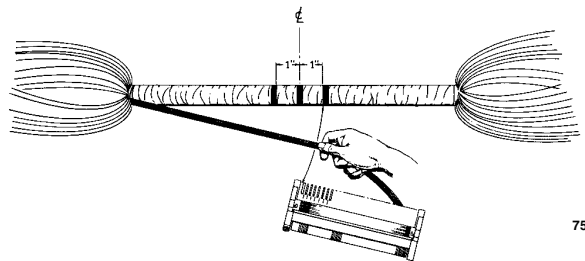


75442

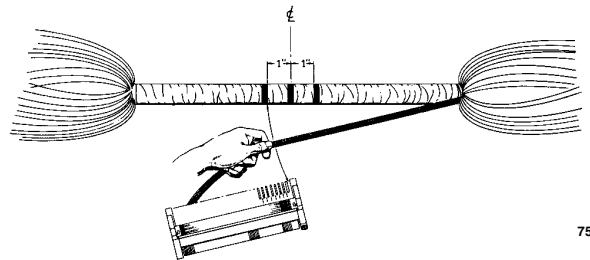
6.4.6 Three measurements must be repeated for each binder group to be spliced.

FIRST

Align splicing head with marks to prevent modules from overlapping at center of splice or laying over tie points.



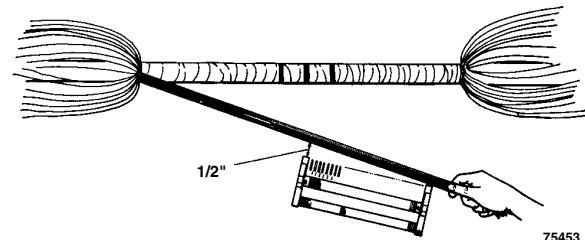
75451



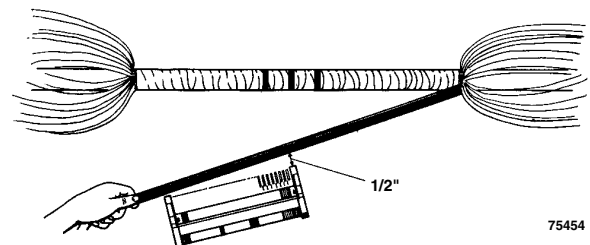
75452

SECOND

Rotate splicing head to assure that modules will lay parallel with core.



75453



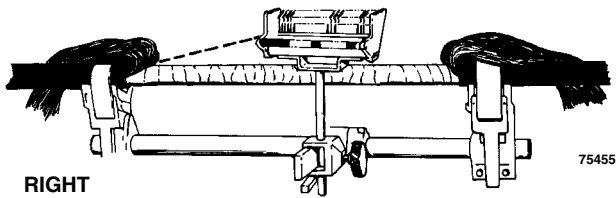
75454

3M™ MS²™ Modular Splicing System Instructions

THIRD

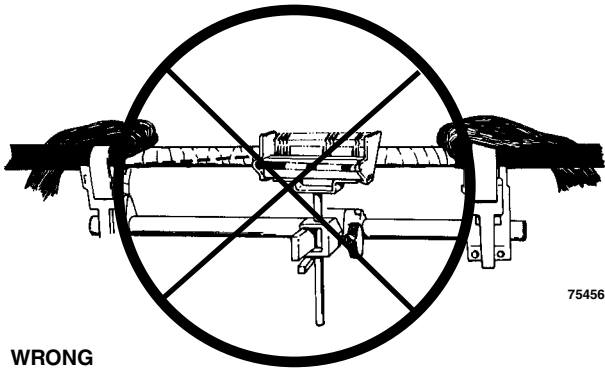
Adjust height of splicing head to prevent conductors from lifting out of wire channels before module is crimped, and to assure easy removal of module from head after crimping.

Position head slightly higher than origin of group to be spliced so that wires are running at a slight angle up into splicing head.



RIGHT

75455



WRONG

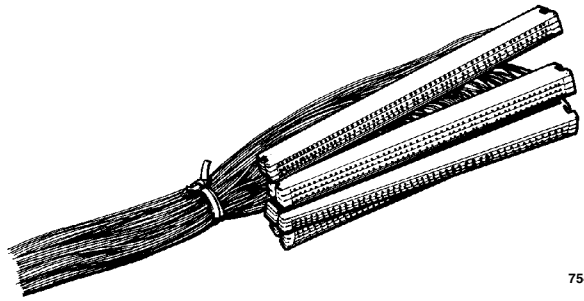
75456

6.4.7 Bundle modules as they are being spliced.

Plan first module location.

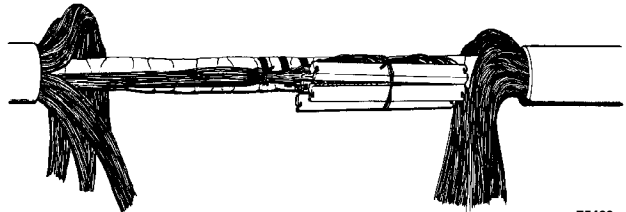
Splice first 100-pair group at proper location. Mark each module with binder group number for identification. Use indelible marker on matte-finish of module cover.

Place tie around group near modules for ease of bundling and group identification.



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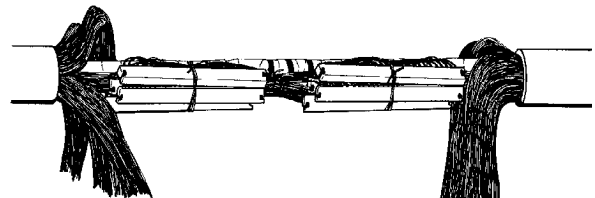
Lay group against core and bundle.



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Move head to other side. Plan second group location.

Splice second group, identify and bundle to core. Repeat above, alternating left and right until splice is completed.



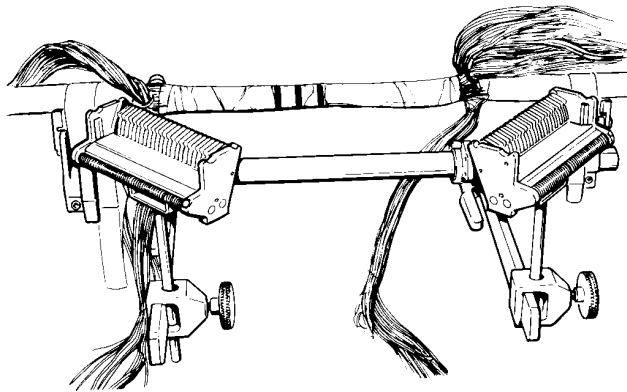
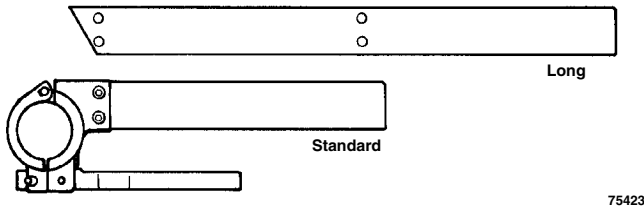
75461

6.5 Foldback Splicing (2-Person)

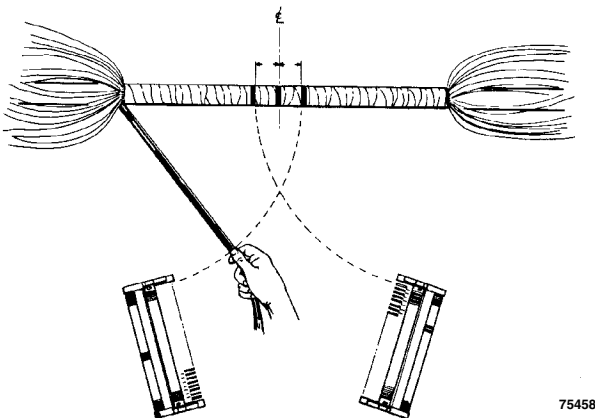
Set up two splicing heads using LONG traverse bar.

Put long traverse bars on two traverse clamps. A 3/16" allen wrench is supplied.

Note: For 2-person foldback splicing you will need two long traverse bars. (There may only be one to a rig.)



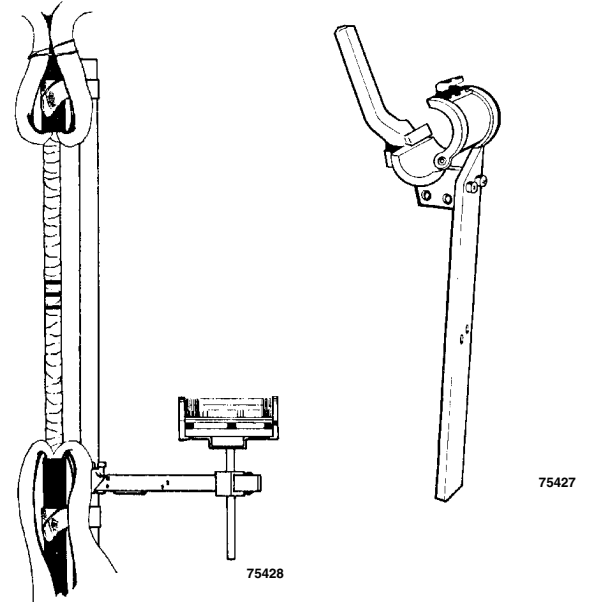
Each craftsperson will splice from one side, making the three basic measurements, described in Section 6.4.6. The modules spliced on the left will swing to the right of center and vice versa.



6.6 Foldback Vertical Splicing (2-Bank)

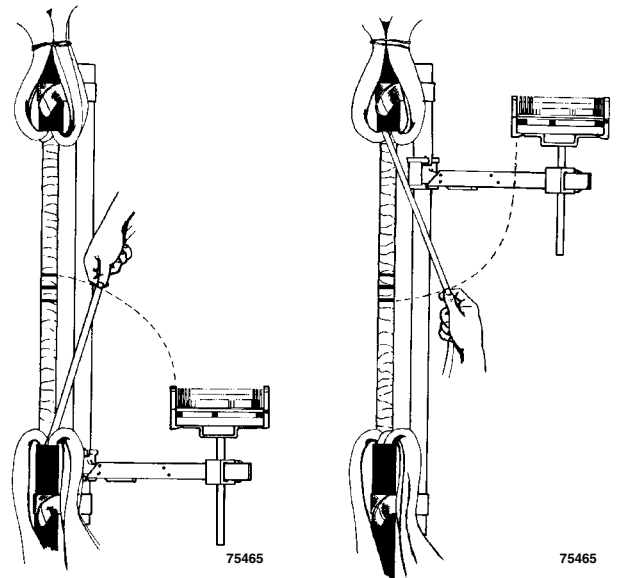
Mount support tube assembly to vertical cable.

Mount long traverse bar in **top holes** of traverse clamp with 3/16" allen wrench supplied.



Attach traverse clamp assembly, head clamp and splicing head assembly onto support tube.

Measure an upper binder group so modules will fall below the lower 1" (25 mm) mark.

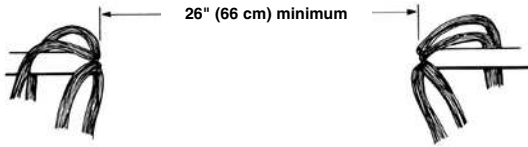


Measure a lower binder group so modules will fall below the upper 1" (25 mm) line.

3M™ MS2™ Modular Splicing System Instructions

6.7 Foldback Splicing (3-Bank)

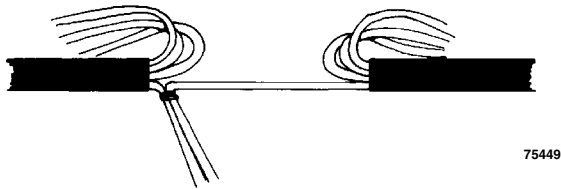
6.7.1 Splice opening must be that recommended for closure use.



Free conductors length (each cable) = 2 X splice opening plus 6" (152 mm)

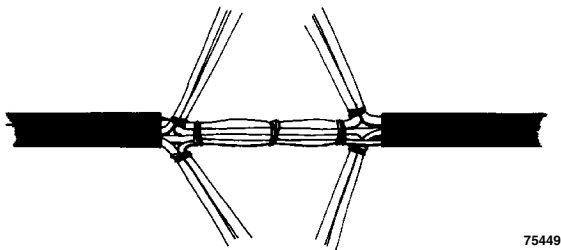
6.7.2 Identify all binder groups. Starting with lower back groups, tightly tie matching groups together as close to cable butt as possible.

For easy group ID, **fold back odd number groups to left side and even number groups to the right.**

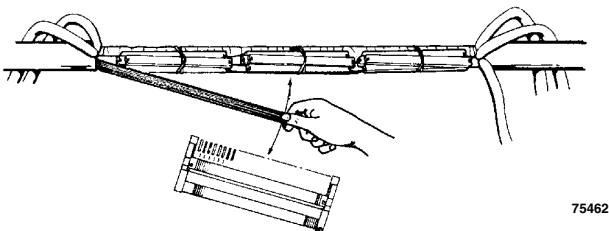


6.7.3 Alternate tie points from side to side until all matching groups are tied.

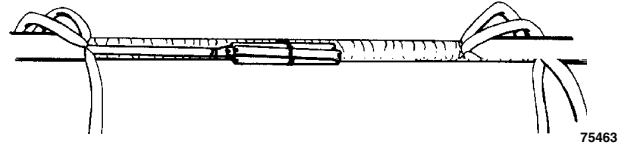
Note: Tie down core of splice with three ties or as per your company practice.



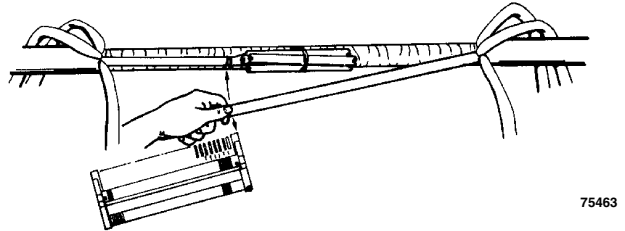
6.7.4 Mark center of splice and position head for first of 3-bank splice.



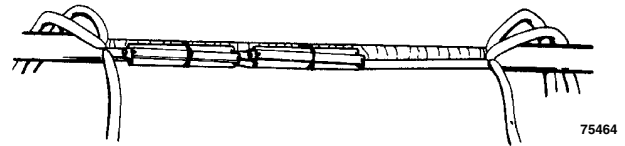
6.7.5 Splice first group, identify and bundle to the core.



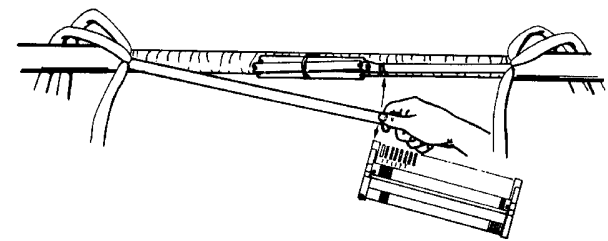
6.7.6 Position head for second group.



6.7.7 Splice second group, identify and bundle to the core.



6.7.8 Splice third group.

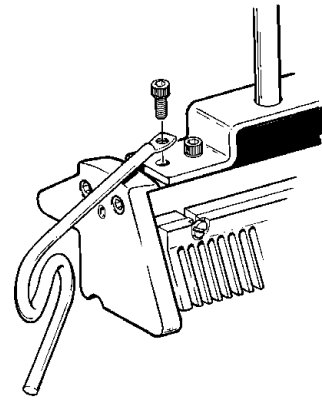


Note: When making 3-bank foldback splices, bundle while splicing. Splice a 100-pair group in one position, bundle to core; repeat procedure in another position and fit modules into vacant locations. Splice so that approximately an equal number of modules fall in each of the three positions.

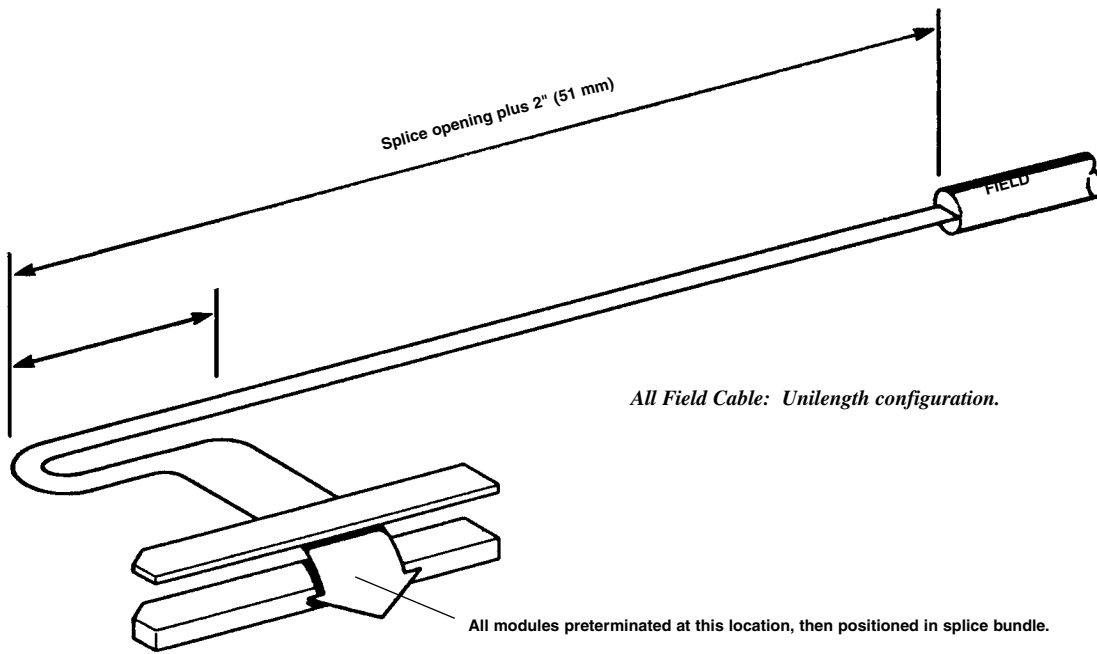
6.8 Unilength Splicing using 3M™ MS²™ Super-Mate Module 4005-DPM

6.8.1 Attach unilength hook to splice head as shown. Hook can be attached on either side depending on which side of the splice opening the cable is entering from.

Note: Refer to Section 8.6.2 for a definition of unilength splicing.



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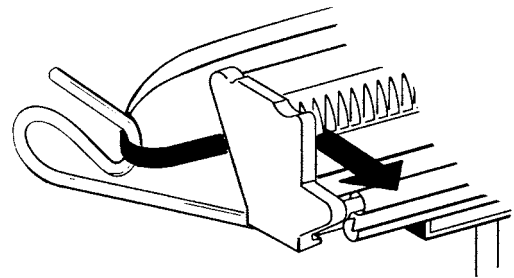


All Field Cable: Unilength configuration.

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6.8.2 Bring wire across the splice opening, then fold back 2" (51 mm) and splice.

Note: Unilength measurement is always used when stubs are added to a splice and for any distribution cables in a modified foldback splice.



Configuration	Splice Openings	Unilength
2-bank	17" (43.2 cm) – 19" (48.3 cm)	19" (48.3 cm) – 21" (55.3 cm)
3-bank	27" (68.6 cm) minimum	29" (73.7 cm)
4-bank	36" (91.4 cm) minimum	38" (96.5 cm)