



MS²[™] Modular System Splicing

Cut Over or Section Throw with 4000-D
and 4005-DPM Series Modules

Instructions

June 1995

Issue 1, 78-8098-4214-5

General

These instructions describe 3M™ MS²™ Modular System Splicing, including modules, tools and applications.

Module Description

3M™ MS² modules will:

- Connect and trim off 25 pairs of conductors at one time without stripping insulation.
- Accept 22-28 AWG (.6 - .32 mm) solid copper conductors insulated with PIC, pulp or paper with a maximum insulation O.D. of .065" (1.7 mm).
- Accept a variety of wire gauges and insulation types in one module.

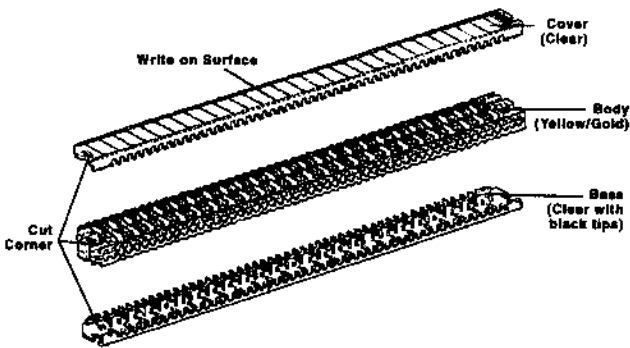
3M™ MS² modules have:

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

Note: Encapsulated versions are also available:

- **4000-C Straight splice**
- **4008-C Half-tap**
- **4005-CBM Bridge module**

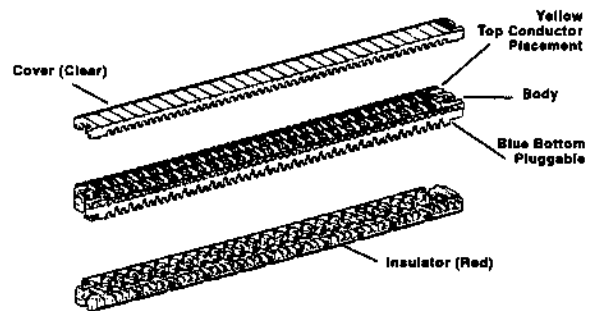
Super-Mini 4000-D Straight Splicing



Note: 4000-D CO is all gray in color.

843004

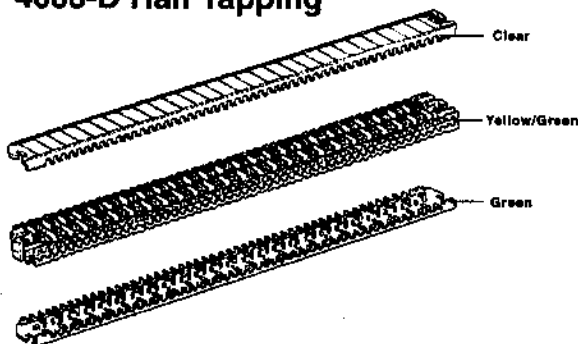
Super-Mate Pluggable 4005-DPM



Note: 4005-DPM/FR is gray/blue in color.

843005

4008-D Half Tapping



Note: 4008-D CO is all gray in color.

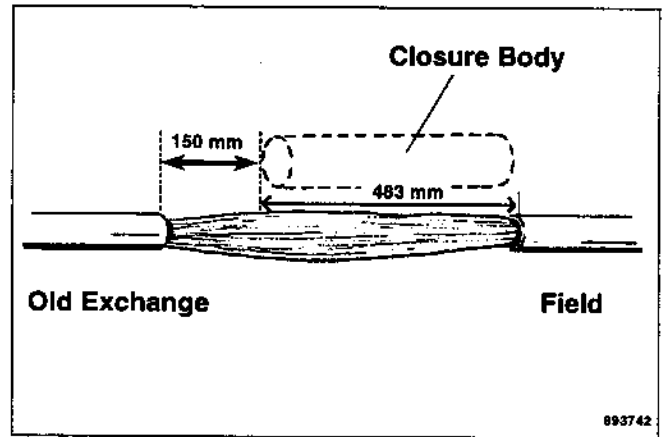
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Module Dimensions: (4000-D, 4005 DPM, 4008-D)

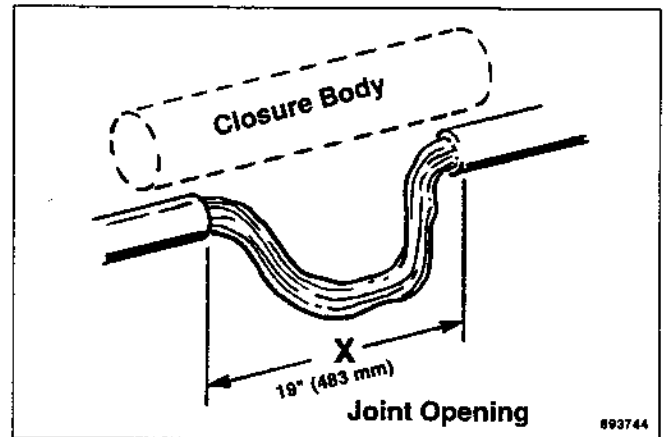
Length	6-1/2"	(165.1 mm)
Width	5/8"	(15.9 mm)
Thickness	1/2"	(12.7 mm)

1. Open cable to be cut out to closure length plus a minimum of 6" (150 mm) for slack loop in cable.

Note: *Sheath opening depends on the closure length being used.*

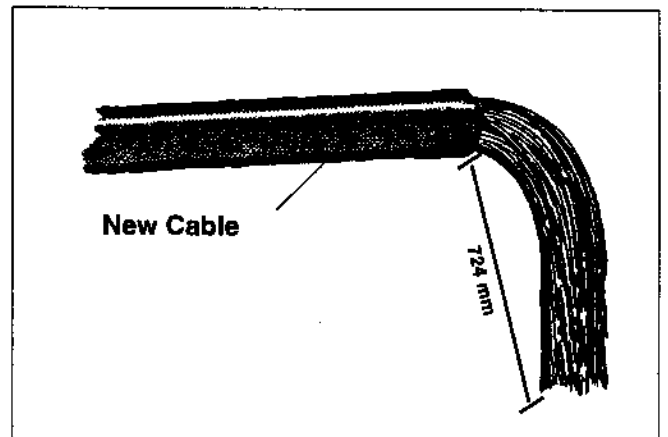


2. Pull a minimum of 6" (150 mm) of slack into old cable.



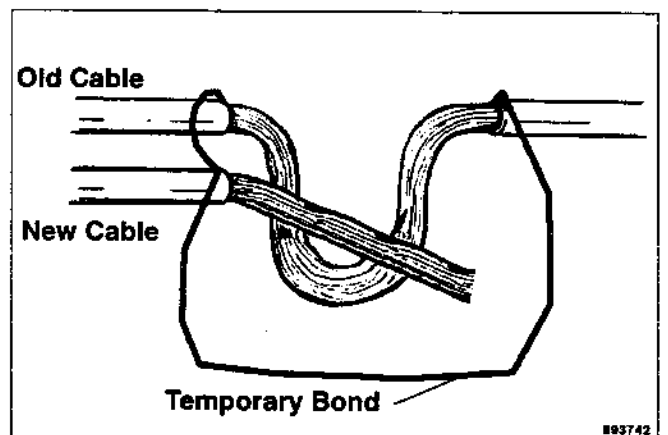
3. Open new cable to be spliced 1 1/2 times the length of the closure.

Note: *For section throws, you must clear one end of the new cable to prevent shorting, crossing, and grounding of cable pairs.*

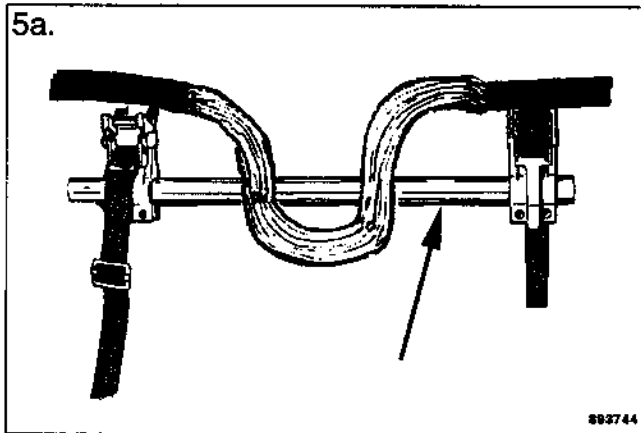


4. Install temporary bond strap.

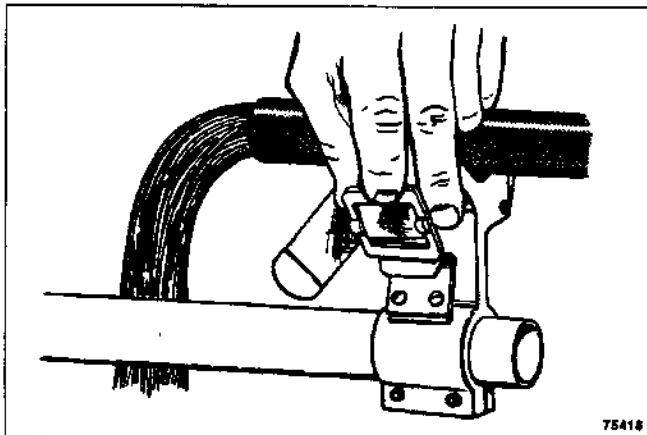
Note: *See recommended practice or procedures for installation of bonding system per local practice.*



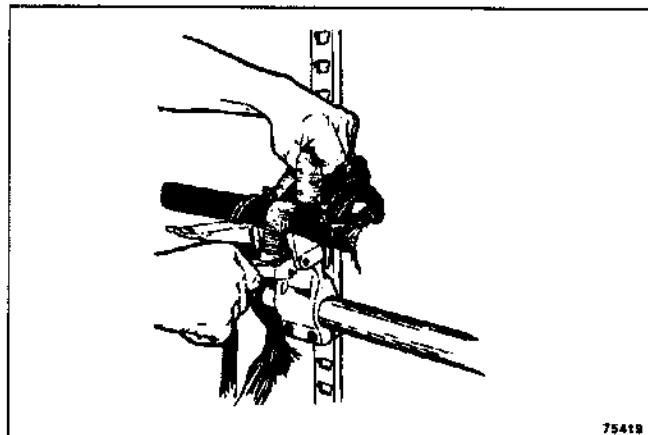
5. Mount support tube onto old cable.
Then center the tube into splice opening.



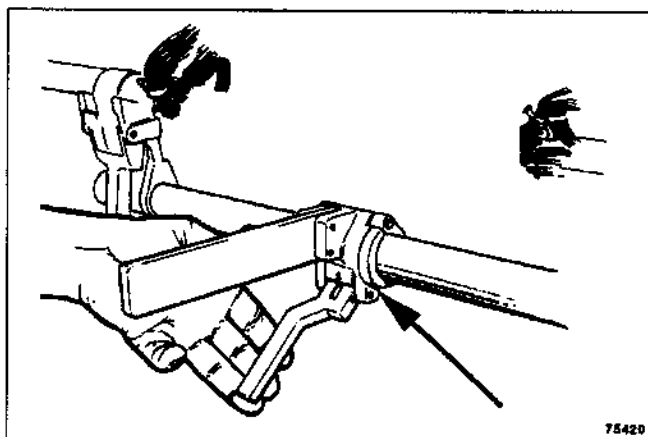
- 5b. Attach strap.



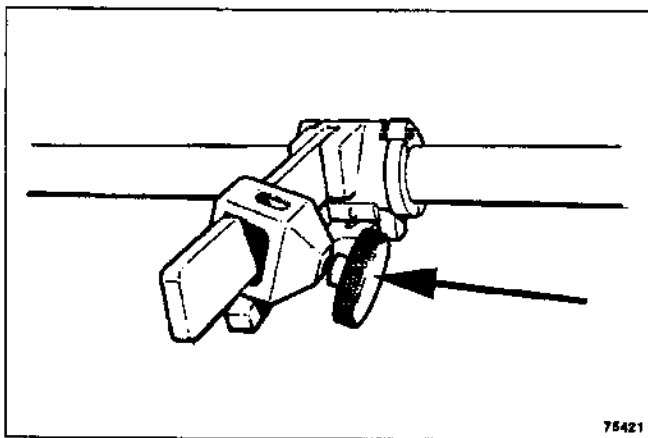
- 5c. Tighten strap, then close clamp.



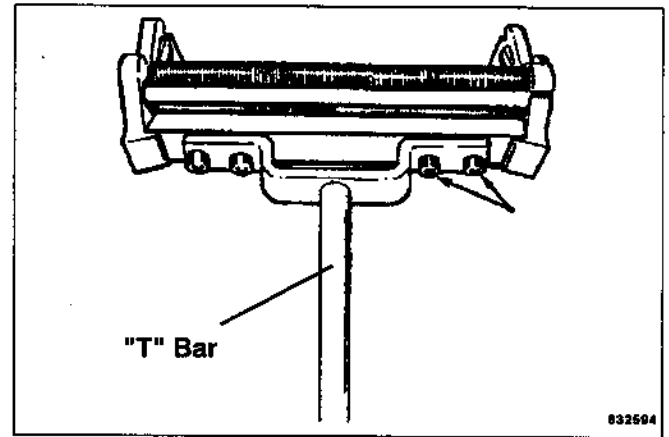
6. Attach clamp and traverse bar to support tube.



7. Slide head clamp onto traverse bar.

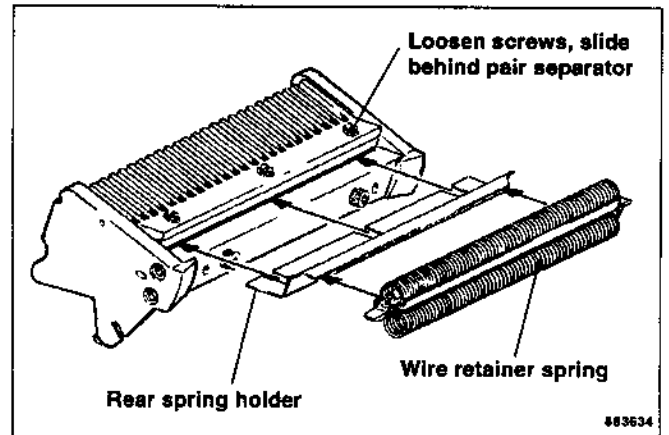


8. Mount splicing head on "T" bar.

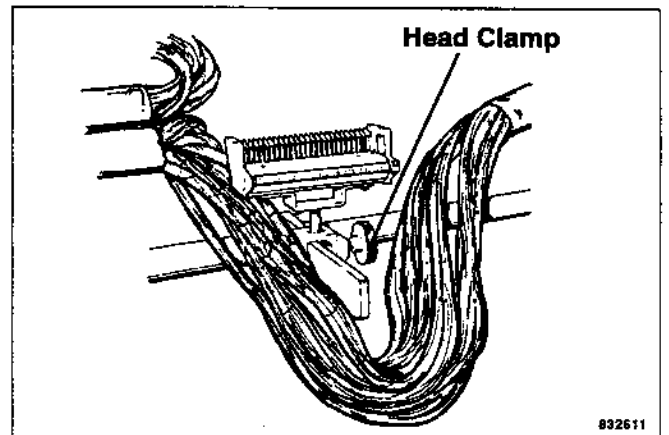


9. Attach rear spring holder and spring to splicing head.

Place spring on holder by sliding onto the flat plate of the rear spring holder.

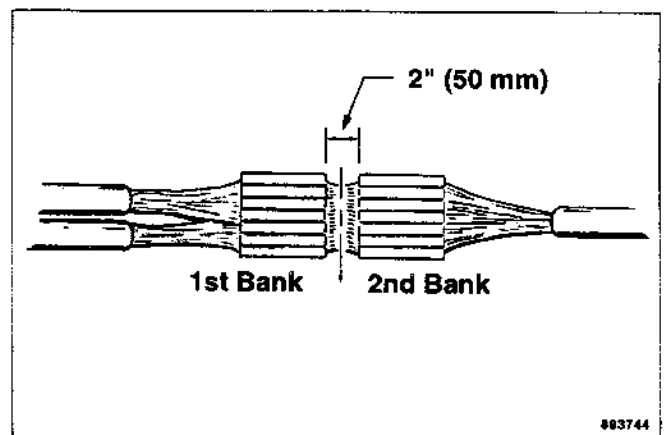


10. Install splicing head into head clamp and slide splice head up to the cable and tighten head clamp.

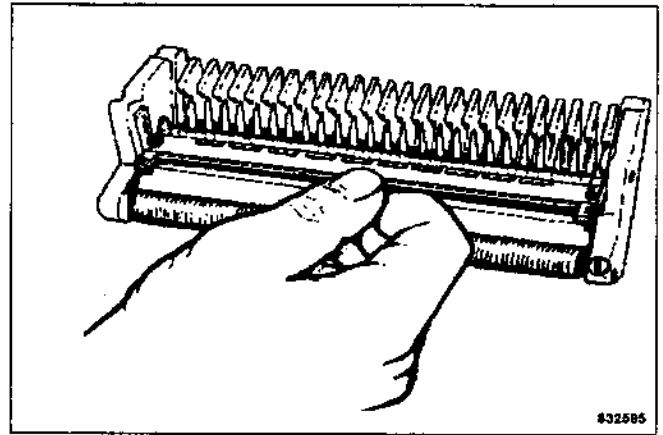


11. Adjust traverse bar on the support tube for 1st bank of modules.

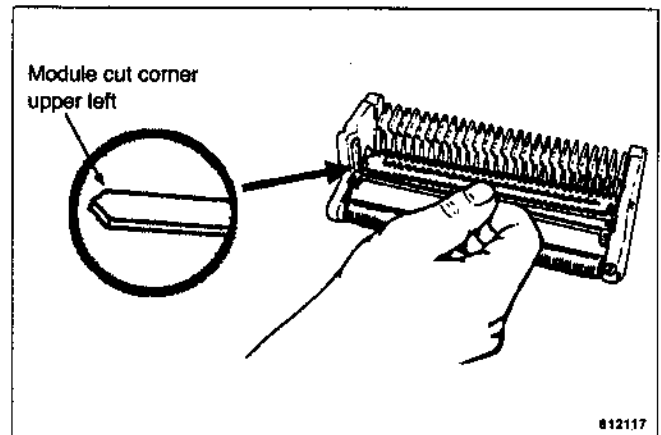
Note: Measure for 1st and 2nd bank for correct spacing before you start splicing.



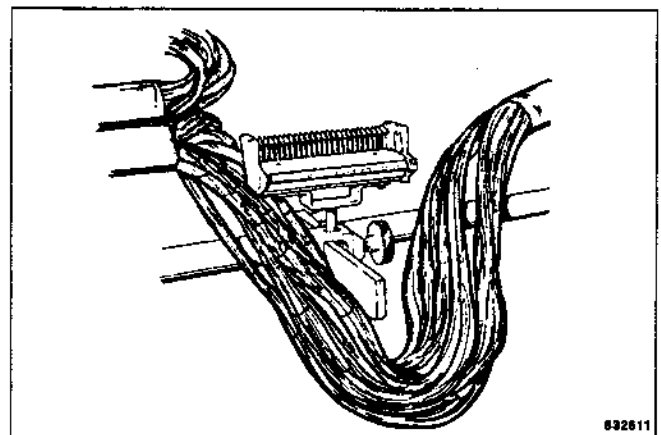
12. Place gold adapter in splicing head.



13. Place 4000-D module base into splicing head. (Cut corner top left).

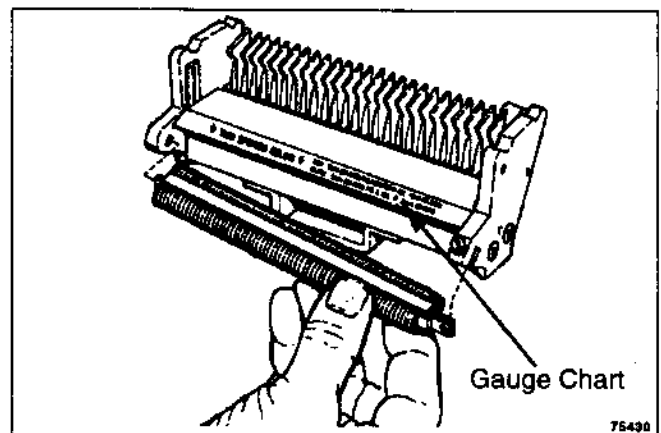


14. Place old cable conductors in front of splicing head.



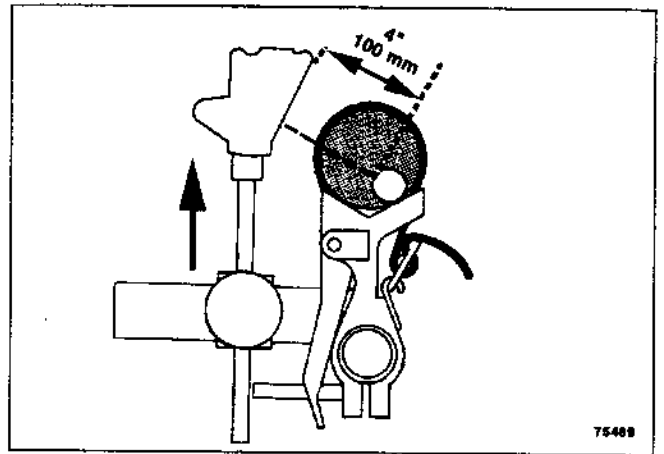
15. Set wire retainer spring to proper gauge.

Note: Separate groups to be joined in both the new and the old cables.



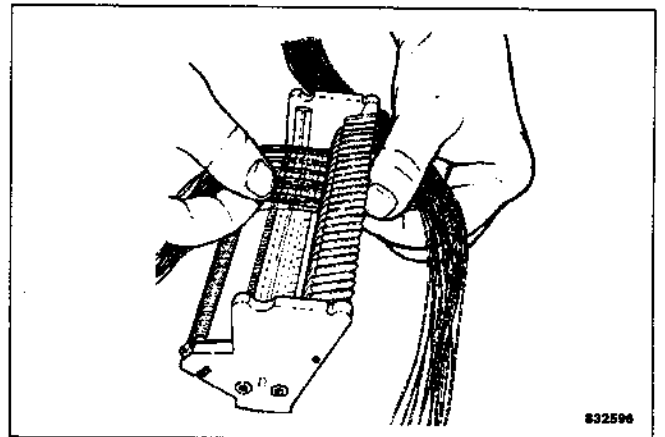
16. Adjust splicing head 4" (100 mm) from old cable group.

Note: *Be sure splicing head is above conductors being spliced.*

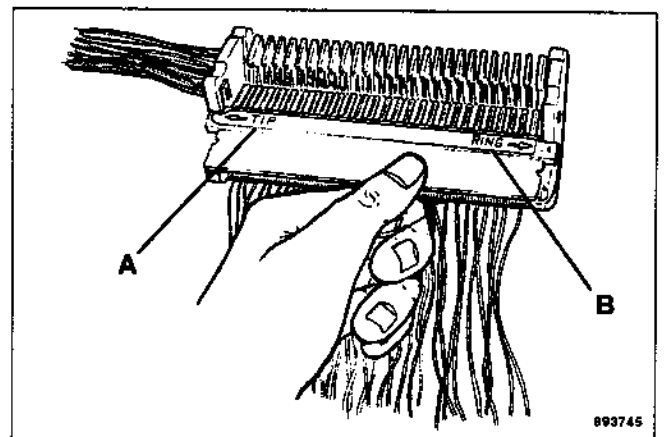


17. Start with new cable being layed into splicing head over module base.

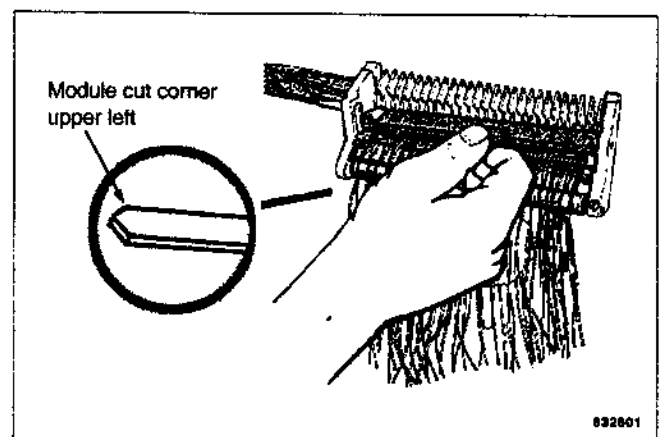
Note: *Work with groups from new cable that match groups from rear of existing cable.*



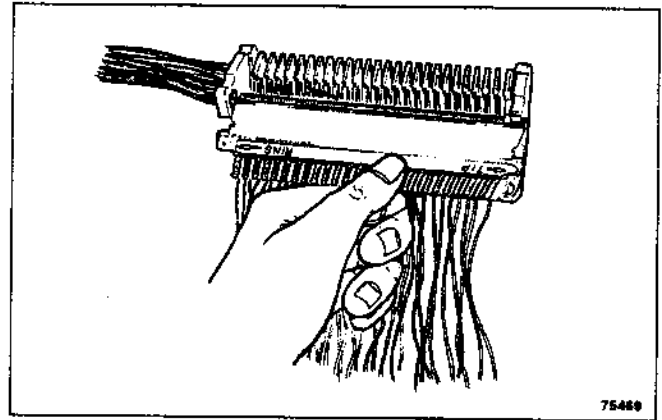
18. When 25 pairs of the new cable conductor have been layed into splicing head, check with check comb and correct any mistakes.



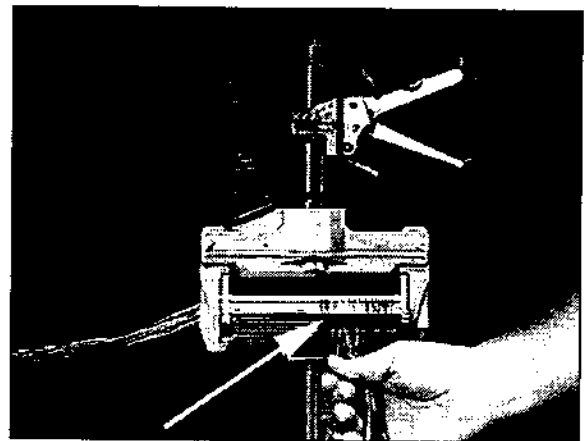
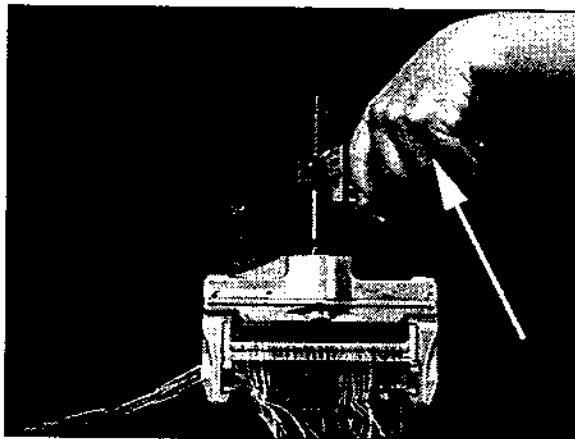
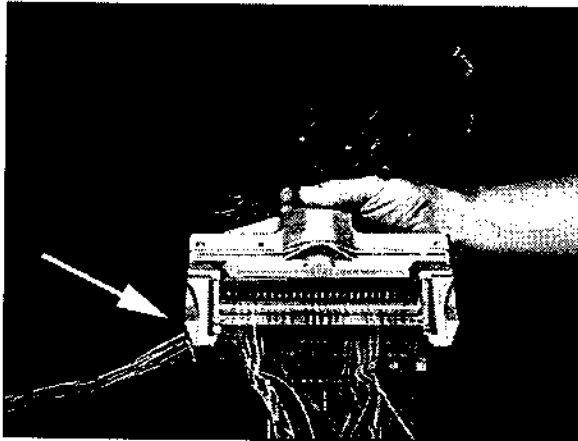
19. Install 4000-D Module body into splicing head. (Cut corner top left).



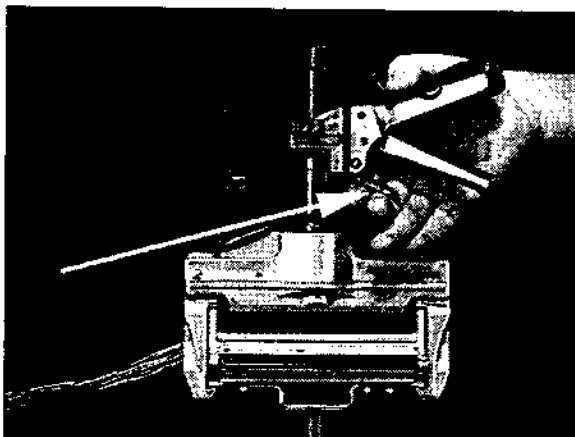
20. Reverse check comb and lay flat side of check comb on top of module body.



21. Crimp new conductors into module base and body, and pull conductors from front spring.



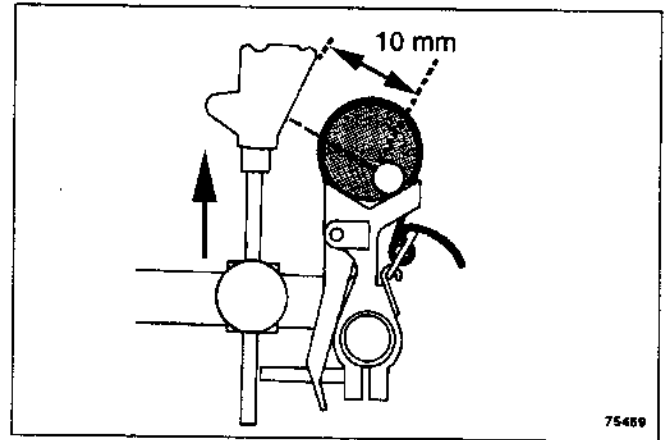
22. Remove crimp tool.



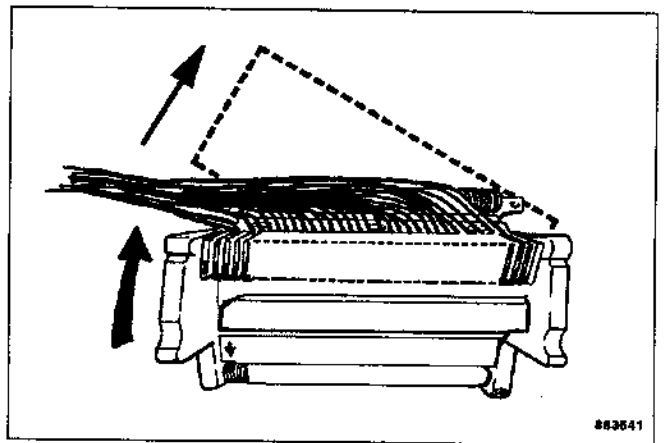
INSTALLING OLD CABLE

23. Loosen head clamp and move splicing head up to old cable.

Note: 10 mm gap or less.

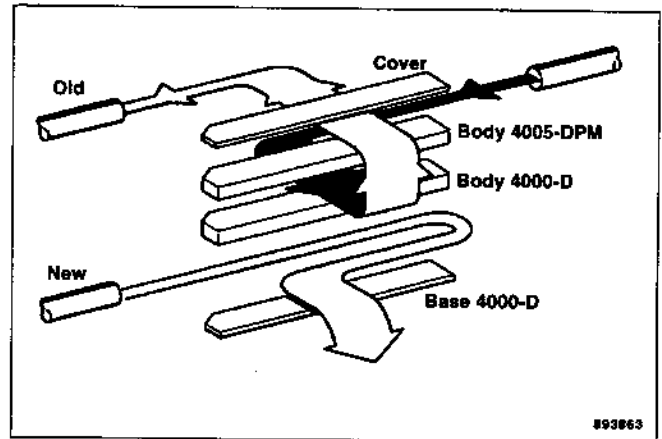


24. Turn splicing head at an angle to old cable and tighten head clamp.

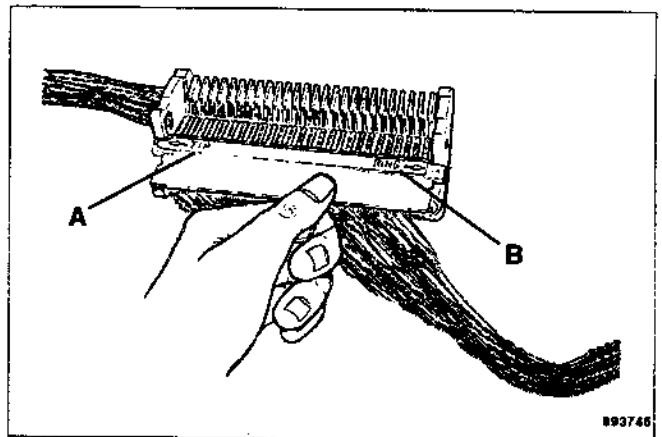


25. Start with conductors from old cable end to stay in service and lay wires into splicing head.

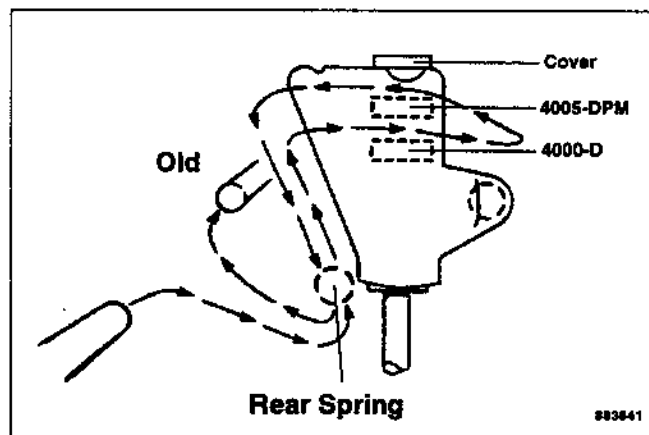
Note: Conductors will become tangled - keep conductor from the cable end that is to stay in service straight, and let the tangled conductors run to the end of the cable being cut out.



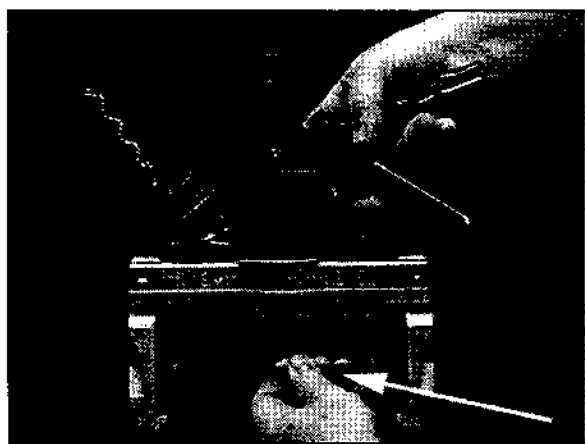
26. When 25 pairs of the conductors from the end of the cable you want to keep have been placed into the splicing head, check with the check comb and correct any mistakes.



30. When all 25 pairs have been folded over the 4005-DPM into the rear spring, place the cover on the 4005-DPM module and crimp the conductors into both modules.

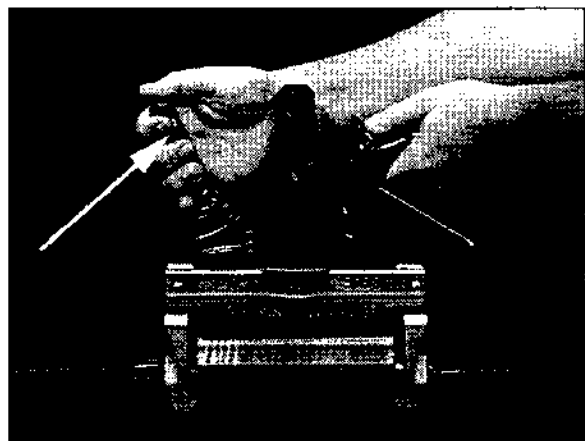
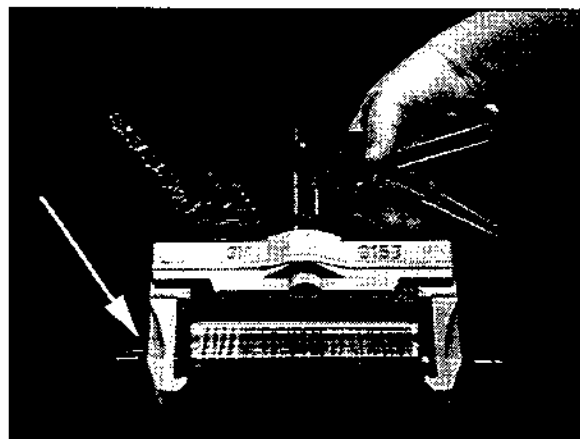


Note: Take the extender plate off the crimp bar on the 4036 crimping unit - in order to fit over 2 modules.



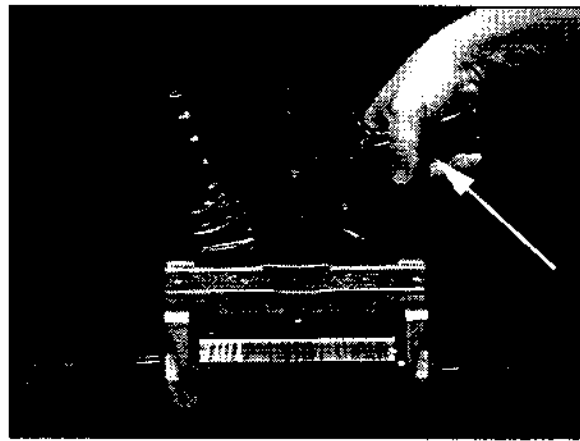
A

B

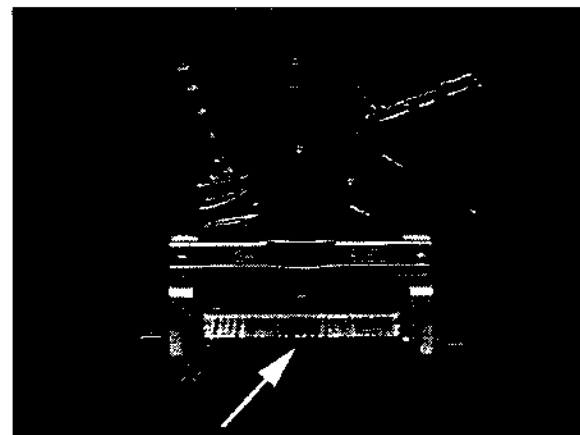
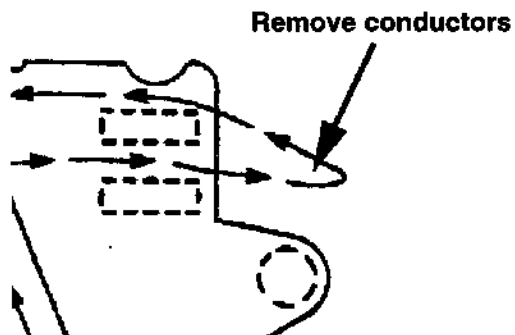


C

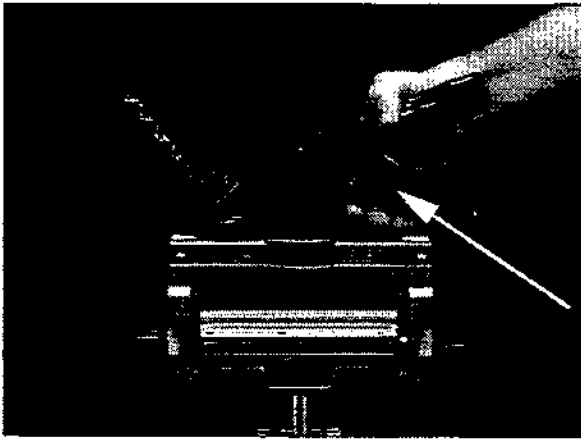
D



31. Pull the cut off conductors from the front of the modules.

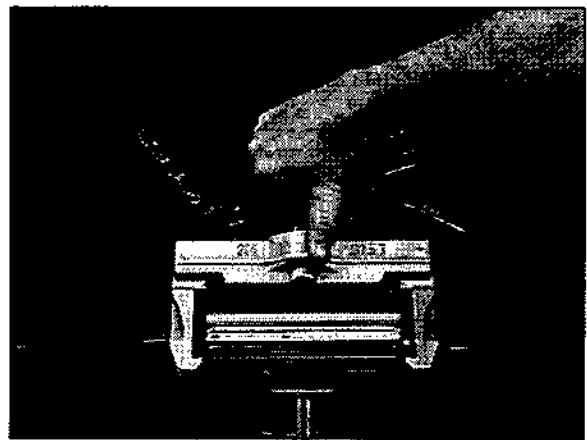


32. Remove crimp tool.



A

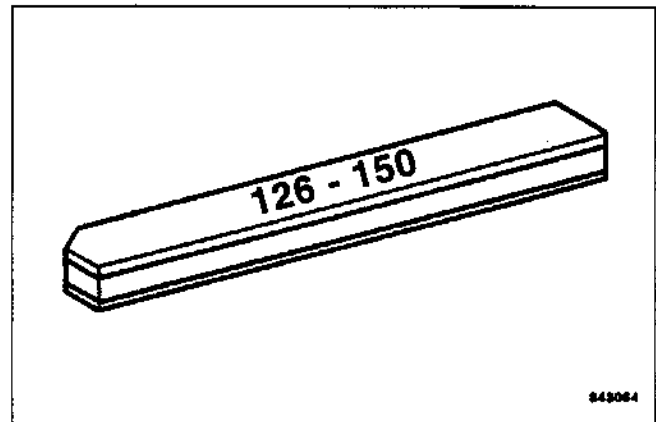
B



33. Mark cable count on module cover.

34. Lift both modules from splicing head.

35. Move traverse bar and splicing head to the next bank location in the splice opening and repeat steps 13 through 35.

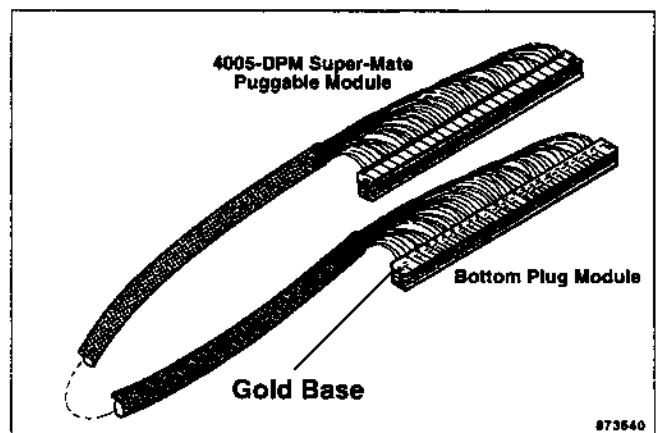


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36. To remove spiral in groups spliced, the following tools are required.

- 4005-DPM/BTP Test Plug Jumper
- 4270 Hand Presser
- 4053 Cover Removal Tool (silver)
- 4053-PM Unplugging Tool (black)

Note: *The 4005-DPM/BTP Jumper has a special module on one end with a gold cover. This will only plug into the bottom of a 4000-D module.*

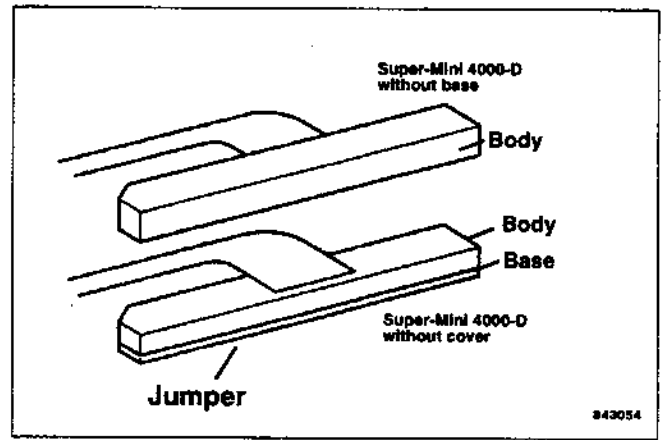
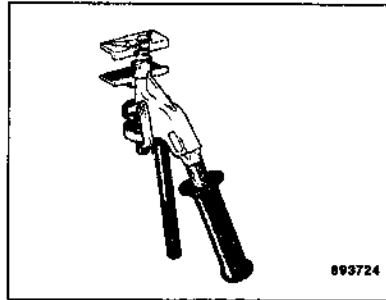


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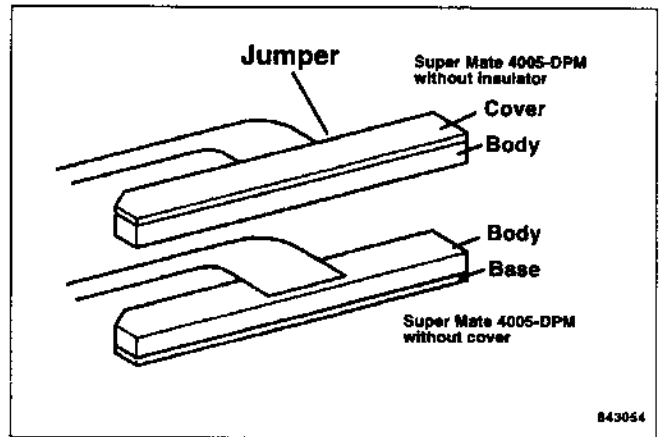
36.1 Take the red cover off the gold coloured module on the jumper. Take the base off of the 4000-D module in the splice.

Note: *Store all covers for jumper.*

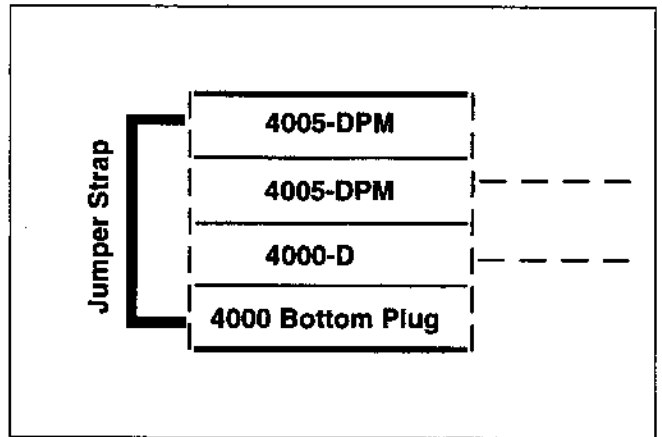
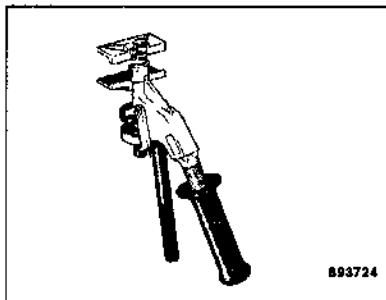
36.2 Line up the jumper module with the splice module and press together with 4270 Hand Presser. Match cut corners.



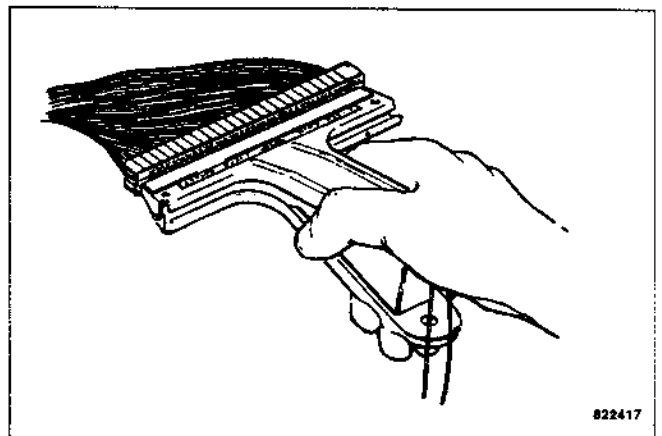
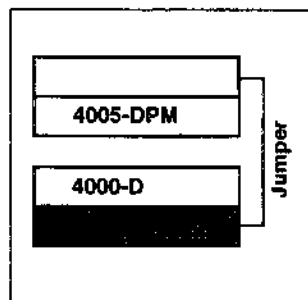
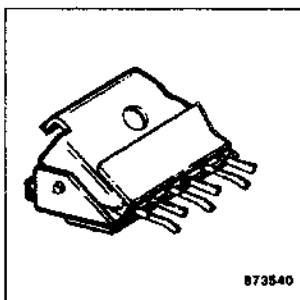
36.3 Take the red base off the 4005-DPM on jumper; and the cover off the 4005-DPM in splice.



36.4 Line the jumper module up with the splice module and press together with the 4270 Hand Presser.

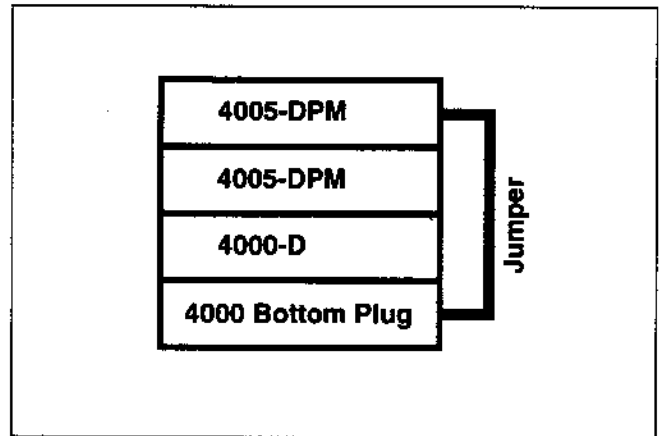
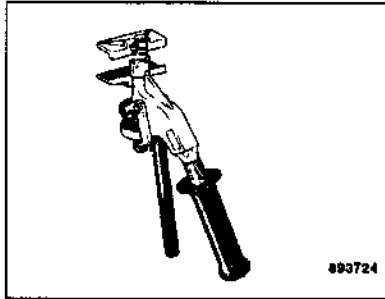


36.5 Using the black coloured 4053-PM tool, insert pins between the 4000-D and the 4005-DPM splice module and separate the modules.



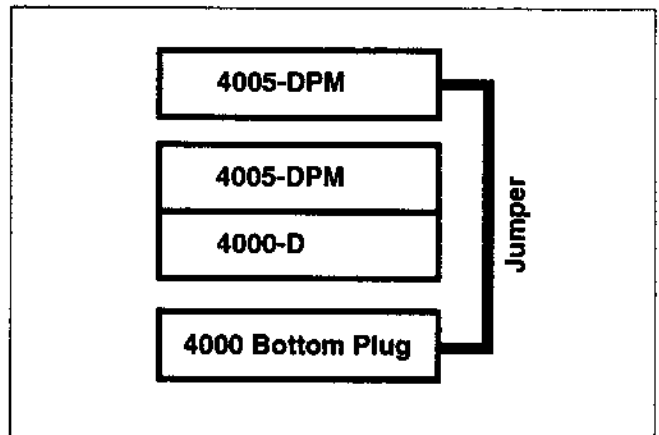
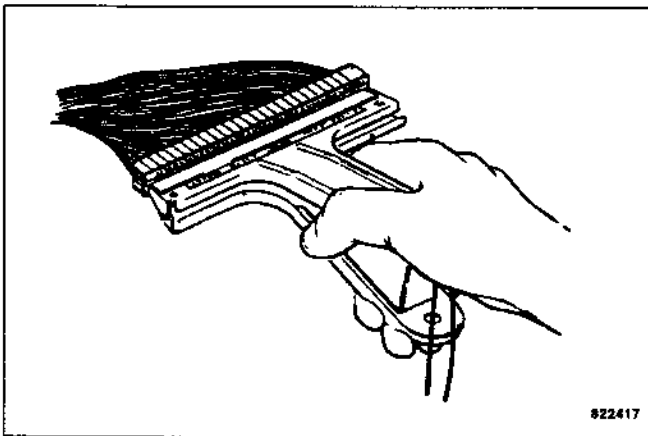
36.6 Move the cable group to un-twist cable to expose groups to be spliced.

36.7 Plug the splice back together with the 4270 Hand Presser.



36.8 Unplug jumper with black 4053-PM tool and replace all covers and bases on both the splice and the jumper.

Note: By moving a group in this manner, service will not be interrupted.

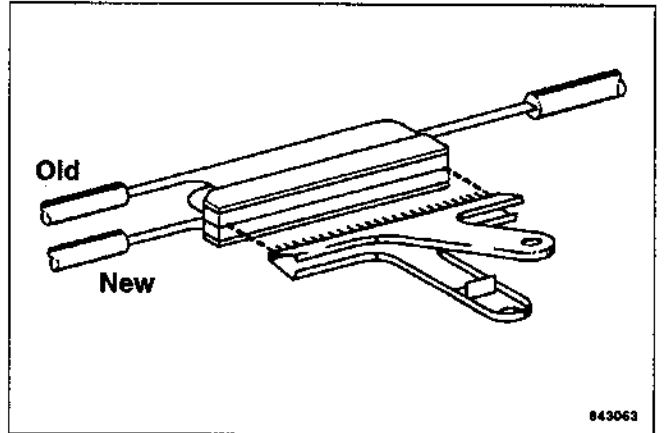
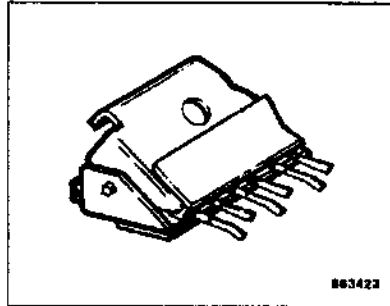


37. Complete splicing cables.

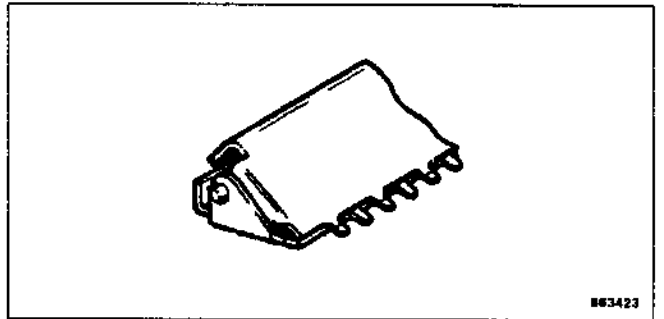
38. When splicing is complete, remove MS²™ splicing rig from cable.

AT CUT OVER TIME

1. Locate group to be cut-over and unplug 4005-DPM from 4000-D module using 4053-PM tool (black).

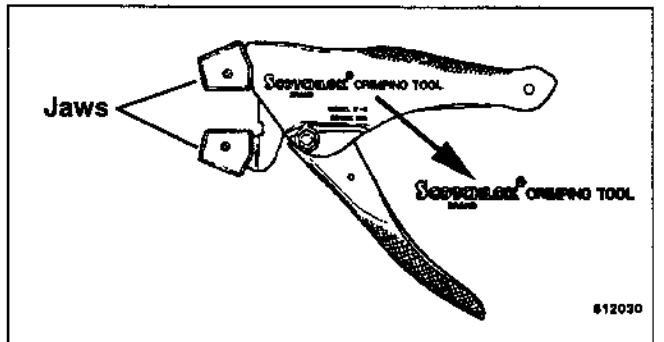


2. Remove the cover from the 4005-DPM with cable count - using 4053 Cover Removal Tool (silver).

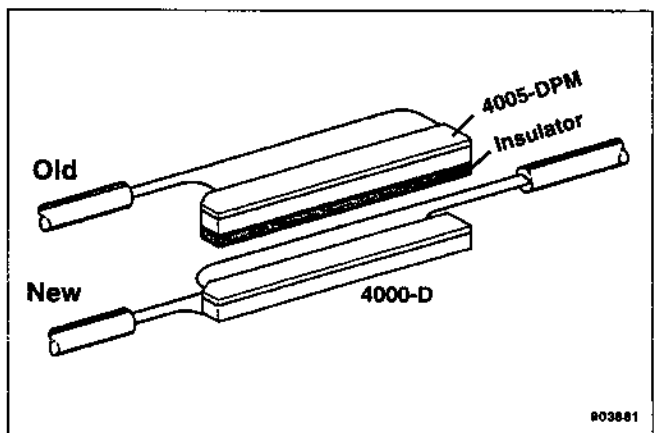
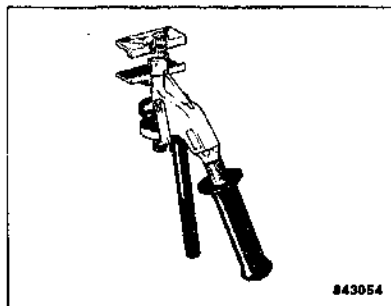


3. Install cover on 4000-D module and crimp with E9BM tool. Mark cable count on cover.

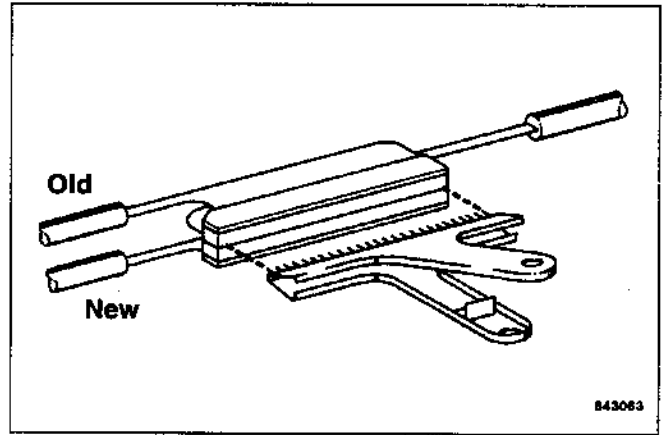
Note: One thick and one thin jaws.



4. If a problem arises with a new cable splice group, you can plug the 4005-DPM from old cable back onto the 4000-D module (using the 4270 tool) and locate fault.

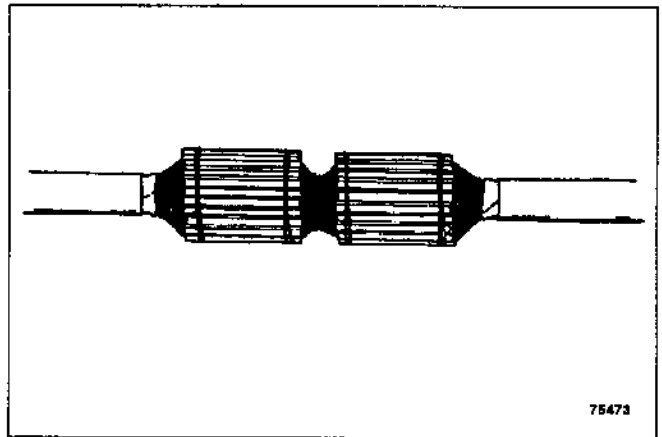


5. After the fault has been corrected, the 4005-DPM can be unplugged from the 4000-D module and the cover installed on the 4000-D.

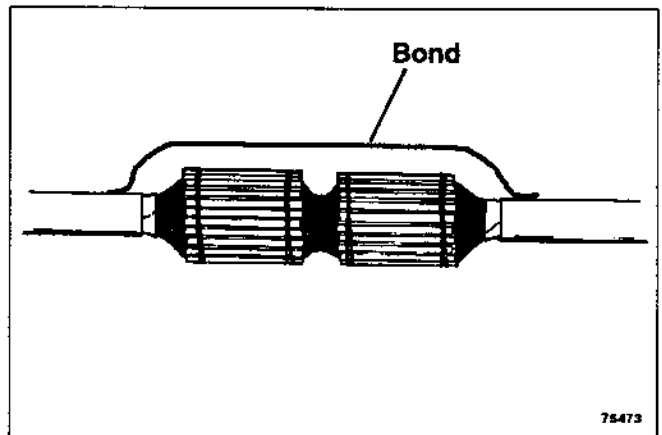


6. Tie cable bundle as needed.

Note: *Do not tie cable bundle if splice is to be filled with a compound.*



7. Install permanent bond per local practice.



39. Two Bank Inline Splice Data (Super-Mini)

Pair Count	AWG		Recommended Joint Opening		Inline Joint Dia.	
		mm	in.	mm.	in.	mm
400	26	.4	17	432	2.6	66
	24	.5			2.9	74
	22	.6			3.2	81
600	26	.4	17	432	3.1	79
	24	.5			3.5	89
	22	.6			4.6	117
900	26	.4	17	432	3.8	94
	24	.5			4.2	107
	22	.6			5.6	142
1100	26	.6	19	483	4.0	102
1200	26	.4	17	432	4.2	107
	24	.5			4.7	117
1500	26	.4	19	483	4.9	124
	24	.5			5.5	140
1800	26	.4	17	432	5.4	137
	24	.5			6.0	152
2100	26	.4	17	432	5.8	147
	24	.5			6.5	165
2400	26	.4	17	432	6.2	157
2700	26	.4			6.6	168
3000	26	.4	19	483	7.0	178
3600	26	.4	19	483	7.7	196

40. Maximum Bundle Size for Closures 26 AWG Two Bank Straight Splice*

**Straight Splice Measurement in Inline Configuration
(4000-D Super-Mini Modules)**

Main Cable Pair Count	Zero	
100	1.3"	3.3 cm
200	1.9"	4.8 cm
300	2.2"	5.6 cm
400	2.6"	6.6 cm
600	3.1"	7.8 cm
900	3.8"	9.7 cm
1100	4.0"	10.2 cm
1200	4.2"	10.7 cm
1500	4.9"	12.5 cm
1800	5.4"	13.7 cm
2100	5.8"	14.7 cm
2400	6.2"	15.8 cm
2700	6.6"	16.8 cm
3000	7.0"	17.8 cm
3600	7.7"	19.6 cm

***NOTE:** For 22 AWG conductors, increase values by 25%
For 24 AWG conductors, increase values by 12%
If sealant boxes are used, increase values approximately 25%

41. Maximum Bundle Size for Closures
26 AWG Three Bank Straight Splice*

Straight Splice Measurement in Inline Configuration
(4000-D Super-Mini Modules)

Main Cable Pair Count	Zero	
300	1.8"	4.6 cm
600	2.6"	6.6 cm
900	3.3"	8.4 cm
1200	3.9"	9.9 cm
1500	4.5"	11.4 cm
1800	5.1"	12.9 cm
2100	5.5"	13.9 cm
2400	5.9"	15.0 cm
2700	6.2"	15.8 cm
3000	6.5"	16.5 cm
3600	6.9"	17.5 cm

***NOTE:** For 22 AWG conductors, increase values by 25%
For 24 AWG conductors, increase values by 12%
If sealant boxes are used, increase values approximately 25%

42. Maximum Bundle Size for Closures
26 AWG Four Bank Straight Splice*

Straight Splice Measurement in Inline Configuration
(4000-D Super-Mini Modules)

Main Cable Pair Count	Zero	
400	2.0"	5.1 cm
600	2.3"	5.8 cm
900	2.8"	7.1 cm
1200	3.2"	8.1 cm
1500	3.7"	9.4 cm
1800	4.2"	10.7 cm
2100	4.6"	11.7 cm
2400	4.9"	12.5 cm
2700	5.4"	13.7 cm
3000	5.7"	14.5 cm
3600	6.2"	15.8 cm

***NOTE:** For 22 AWG conductors, increase values by 25%
For 24 AWG conductors, increase values by 12%
If sealant boxes are used, increase values approximately 25%

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