WIRE JOINING
WITH
3M BRAND SUPER MATE PLUGGABLE MODULE

CONTENTS PAGE

1.0 General

1.01 Introduction

This Practice describes the splicing procedures, applications and tools used with the MS²® Super Mate Modules. When using these procedures the craftsperson should have basic knowledge of the 3M/ MS² System; such as: connector components and assembly (i.e. wire handling, crimping, etc.), splicing rigs (set-up) and miscellaneous accessories as described in 632-205-235.

1.02 Description

a. Super Mate 4005-DPM Module Detail: See Figure 1.

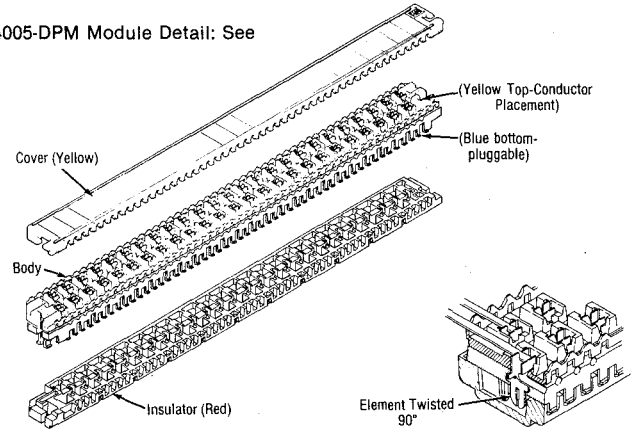


Fig. 1—Super Mate 4005 DPM Module Detail.

b. The Super Mate Module is a connector that can terminate up to a twenty-five pair conductor group in the module body top. The Super Mate Module provides a pluggable connection when used in conjunction with a 3M Brand MS² Super Mini® 4000, 4008 or another Super Mate Module. See Figure 2 and 3.

Note: ***The Super Mate Module cannot be used with the Super Mini 4005 Bridging Module.***

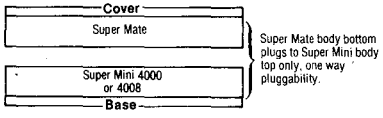


Fig. 2—Super Mate to Super Mini Module One Way Pluggability

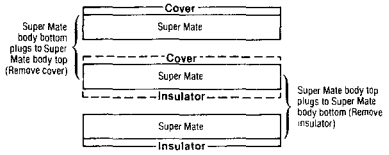


Fig. 3—Super Mate to Super Mate Module Two Way Pluggability

c. The Super Mate Module will accommodate solid copper conductors of 22-28 AWG (.8 - .32 mm) with PIC, pulp, or paper insulation having a maximum O.D. of .065" (1.7 mm).

2.0 Tools Used with the Super Mate Modules

The following products are designed to be used with the Super Mate Modules. Refer to their respective instruction bulletins for further information.

2.01 MS² 4041 Splicing Head and Hydraulic Crimping Unit

a. The 4041 Splicing Head holds conductors and connector components in place and uses either the 4030/Air or 4031/Hand Hydraulic Crimping Unit to crimp the connectors. The splicing head is used with a support rig and for applications of:

1. Initial termination of conductors in the modules.
2. For making connections with preterminated modules.

b. The maximum capacity of the splicing head is two modules (one Super Mini+one Super Mate Module or two Super Mate Modules).

2.02 4053PM Separator Tool

a. The 4053PM Separator Tool is the only recommended tool for unplugging Super Mate Modules from any other module. See Figure 4.

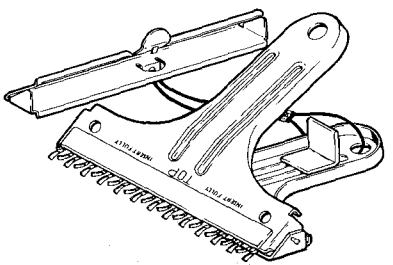
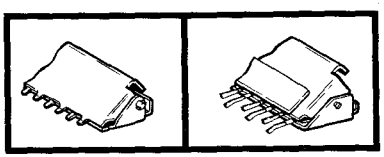


Fig. 4—4053PM Separator Tool

b. The enlarged pins of the tool distinguish the 4053PM Separator Tool from the 4053 Cover Removal Tool. The 4053PM Separator Tool cannot be used to remove covers or bases. See Figure 5.



4053 4053 PM

Fig. 5—Difference between 4053 and 4053PM Tools.

Note: ***The 4053 Cover Removal Tool must not be used to separate Super Mate Modules. It will damage the modules.***

2.03 4255 Hand Presser

a. The 4255 Hand Presser is a five position tool. Two positions are for use with Super Mate Module and three positions are for the Super Mini Modules. See Figure 6.

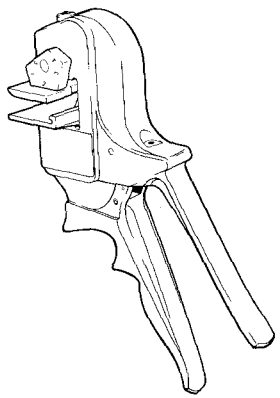


Fig. 6—4255 Hand Presser

b. The positions are:

1. One—Base/Body/Cover: crimps replacement base or cover on a Super Mini 4000 Module.
2. Two—Pre-Con Male/Female: crimps the two Pre-Con components together.
3. Three—Bridge: crimps a preterminated (Pre-Con) Super Mini 4005 Bridge Module to a spliced Super Mini 4000 Module.
4. Four—Super Mini/Super Mate: crimps a preterminated Super Mate to the top of a spliced Super Mini 4000 Module.
5. Five—Super Mate/Super Mate: crimps two preterminated Super Mate Modules together.

2.04 4270 Hand Presser

a. The 4270 Hand Presser is used to plug preterminated and spliced module combinations together. These module combinations can range from two single modules (i.e. Super Mate Module to Super Mini Module or Super Mate Module to Super Mate Module) up to seven modules. See Figure 7.

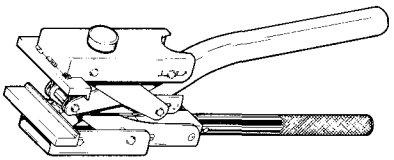


Fig. 7—4270 Hand Presser

Note: ***The 4270 Hand Presser cannot be used to crimp Pre-Con Male-Female or Super Mini 4005 Bridge Modules.***

b. Two mating combinations of modules is the maximum that can be plugged together at one time, i.e. one Super Mate Module plugged to three Super Mate Modules.

c. The 4270 Hand Presser does not have any set positions. The jaws of the tool are positioned over the module combination to be crimped and are adjusted by the screw knob on the top of the tool. The completion of crimp is indicated by the triggering of the torque handle.

3.0 Splice Configurations

a. The following recommendations should be used to provide necessary flexibility for future cable plant rearrangements.

b. Specific splice opening dimensions vary with closure type used. 19" (482 mm) for a two bank module splice and 36" (914 mm) for a four bank module splice will be used in this bulletin.

3.01 Main Feeder Cable Splices

a. Junction Splice —J—
This splice is not multipled and is used at the end of an allocation area and taper points. Sequential pair identity is not used. See Figure 8.

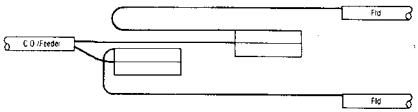


Fig. 8—Taper Feeder Splice (Two Bank)

1. Pulp C.O./Feeder Cable

   (a) Conductors on the C.O. side of the splice should be built in the basic inline splice configuration.

   (b) Pairs are randomly laid into the base/body bottom of a Super Mini 4000D Module.

   (c) All other cables (field) entering the splice will be built with a conductor slack loop of 27" (685 mm) for two bank module or 40" (1 m) for a four bank module splice and terminated in Super Mate Modules.

   (d) Construction of this connection is described in more detail in Section 4.02 - One Way Pluggable.

2. PIC C.O./Feeder Cable

   (a) When the feeder cable is PIC, terminate all conductors in Super Mate Modules, using the cable preparation described in a. 1. (a) and (c) Construction of this connection is described in more detail in Section 4.04 - Two Way Pluggable.

b. Multipled Straight Splice —S—
This splice connects all conductors straight through. An intermediate stub is used between feeder pairs and distribution pairs where bridge tap is not a concern. Reentry is for plugging and unplugging stub modules only. See Figure 9.

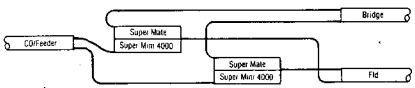


Fig. 9—Bridged Main Feeder Splice (Two Bank)

1. The C.O. and Field cables of the splice should be built in the basic inline splice configuration.

Note: ***The Inline Splice method is recommended because this splice should be treated only as a through connection for the main cable and an access point for multipled cable.***

2. C.O. and field pairs are laid into the Super Mini Module.

3. The bridge cable entering the splice will be built with a conductor slack loop of 27" (685 mm) for a two bank module or 40" (1 m) for a four bank module splice and terminated in Super Mate Modules.

4. Construction of this connection is described in more detail in Section 4.03 - Pluggable Bridge Connection.

3.02 Transfer - Access Splice/Facility Splice —F—

a. This splice provides a tagged access to a main feeder cable count by the use of a stub. Future distribution additions, transfers and rearrangements can be made without reentering main cable splices. See Figure 10, 11 and 12.

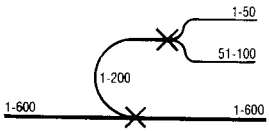


Fig. 10—Example of Bridged Main Splice and Transfer Splice.

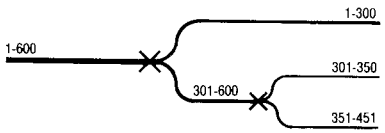


Fig. 11—Example of Taper Splice and Transfer Splice

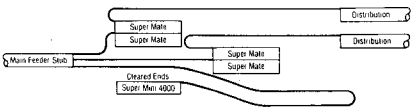


Fig. 12—Transfer-Access Splice (Two Bank)

1. Conductors of the stub from the main feeder splice (non-color coded PIC from pulp main cables) are built in the basic inline splice configuration.

2. Lay pairs in tagged or PIC order into Super Mate Modules. Clear and cap all unused groups from the stub.

3. Distribution/subscriber cables entering the splice will be built with a conductor slack loop of 27" (685 mm) for a two bank module or 40" (1 m) for a four bank module splice and terminated in Super Mate Modules in PIC order.

4. Construction of this connection is described in more detail in Section 4.04 - Two Way Pluggable.

3.03 Apparatus - Load Coil Splice —L—

a. This splice is utilized where any "in" and "out" apparatus is required (i.e. load coil, carrier). See Figure 13.

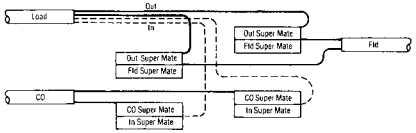


Fig. 13—Apparatus-Load Coil Splice (Two Bank)

1. The C.O. and Field cables of the splice should be built in the basic inline splice configuration.

2. Lay pairs into Super Mate Modules with corresponding conductor groups in the same module bank.

3. Apparatus cable entering the splice will be built with a conductor slack loop of 27" (685 mm) for a two bank module or 40" (1 m) for a four bank module splice and terminated in Super Mate Modules.

4. Connect the appropriate "in", "out" Super Mate Modules to the respective C.O. and Field Super Mate Modules.

5. If apparatus stub is:

   (a) Color-Coded: Lay into Super Mate Module in color code order.

   (b) Quadded Pair: Lay "in" and "out" pairs into corresponding positions in appropriate Super Mate Modules.

4.0 Connector Splicing Procedures

The MS² 4041 Splicing Head and a Hydraulic Crimping unit will be utilized to splice the combinations of connectors that follow. Cable preparation should either be according to local practice or use the suggested methods found in Section 3.0 - Splice Configuration.

4.01 Removing Red Insulator

a. This procedure must be done during construction of some connector combinations:

1. Disengage both alignment posts by prying ends of insulator downward with a tool (i.e. scissors) inserted into end slots. See Figure 14.

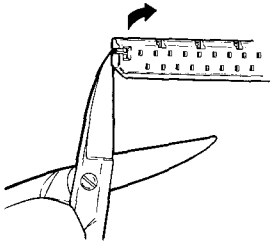


Fig. 14—Removing red insulator.

2. Rotate insulator down and forward off Super Mate Module.

Note: ***The red insulator can be reused in future applications.***

4.02 One Way Pluggable Connection - Super Mate Module to a Super Mini Module Configuration.

a. This combination connects two conductor groups pluggable one way, the body bottom of the Super Mate Module to the body top of the Super Mini Module. Conductors can be either terminated in the body bottom or body top of the Super Mini Module. See Figure 15.

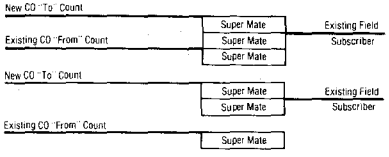


Fig. 15—One Way Pluggable Connection

1. Prepare cables and set up MS² Splicing Rig.

2. Place the Super Mini base onto the adapter in the splice head.

3. Select a binder group from one of the cables to be connected and lay pairs into the base.

4. After checking conductor placement, position a Super Mini body onto the conductors in the splicing head.

5. Remove the red insulator from the Super Mate Module and place the body onto the Super Mini Module.

6. Select the corresponding binder group to be connected and lay pairs into the Super Mate Module.

7. Check conductor placement and lay a cover onto the conductors in the splicing head and crimp the modules.

Note: ***The adjustment screw on the crimping clamp must be backed off completely when using a Super Mate Module.***

4.03 Pluggable Bridge Connection - Super Mate to Super Mini Module Configuration

a. This combination makes a three conductor group connection (bridged) pluggable one way, the body bottom of the Super Mate Module to the body top of the Super Mini Module. See Figure 16.

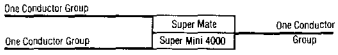


Fig. 16—Pluggable Bridge Connection

1. Repeat procedures 4.02 a. 1. through 4.

2. Select the corresponding binder group to be spliced and lay pairs into the body top of the Super Mini Module. Check conductor placement.

3. Remove the red insulator from the Super Mate Module and place the body onto the Super Mini Module in the splicing head.

4. Crimp the modules and remove cut wire ends.

5. Select appropriate binder group from bridge cable and lay pairs into Super Mate Module.

6. Check conductor placement, position a cover onto the conductors in the splicing head and crimp the modules.

4.04 Two Way Pluggable Connection - Two Super Mate Module Configuration

a. This combination makes a two conductor group connection, pluggable two ways, body top or body bottom of the Super Mate Modules. See Figure 17.

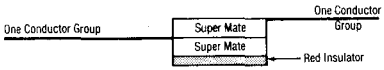


Fig. 17—Two Way Pluggable Connection

1. Prepare cables and set up MS² Splicing Rig.

Note: ***Do not use Super Mini Splice Head Adapter for this module.***

2. Place the Super Mate body, with red insulator, into the splicing head.

3. Select a binder group from one of the cables to be connected and lay pairs into the Super Mate body top.

4. After wire placement has been checked, remove the red insulator from another Super Mate Module and position it onto the Super Mate Module in splicing head.

5. Select the corresponding binder group to be connected and lay pairs into the Super Mate body top. Check conductor placement.

6. Place a cover onto conductors in the splicing head and crimp the modules.

4.05 Pretermination of One Super Mate Module

a. The Super Mate Module can be preterminated for applications of plugging conductor groups to the body top of a Super Mini Module, the body top or body bottom of other Super Mate Modules or for clearing the cable ends. See Figure 18.

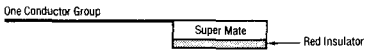


Fig. 18—Preterminated Super Mate Module

1. Prepare cables and set up MS² Splicing Rig.

Note: ***Do not use Super Mini Splice Head Adapter for this module.***

2. Place the Super Mate with red insulator into the splicing head.

3. Lay pairs of the binder group to be preterminated into the Super Mate body top and check conductor placement.

4. Place a cover onto the conductors and crimp the module.

5.0 Pluggable Module Procedures

Preterminated Super Mate Modules (Section 4.05) can be used as a pluggable unit with other modules during splice construction, modules in existing splices, or other preterminated modules.

5.01 Preterminated Super Mate Module Plugged to a Super Mini Module

The Super Mate body bottom plugs to the Super Mini body top.

a. Super Mini Module being constructed in MS² 4041 Splicing Head:

1. Build a One Way Pluggable or Pluggable Bridge Connection as described in Sections 4.02 a. 1-4 or 4.03 a. 1 and 2.

2. Remove the red insulator from the preterminated Super Mate Module.

3. Position the Super Mate Module onto the Super Mini Module and crimp.

4. Remove the cut wire ends and connector from the splicing head.

b. Super Mate Module and Super Mini Module Preterminated:

1. Remove the cover of the Super Mini Module and the red insulator of the Super Mate Module to be crimped.

2. Align modules together and precrimp the ends using finger pressure.

3. Crimp module configuration using either a 4255 or 4270 Hand Presser.

5.02 Super Mate Module Plugged to Super Mate Module(s)

For maximum plant flexibility the Super Mate Module plugs onto either the body top or bottom of another Super Mate Module to provide two way pluggability. With proper planning, plugging and unplugging of the desired Super Mate Module can be accomplished without interruption of service.

a. Preterminated Super Mate(s) added to the top of other Super Mate Module(s):

1. Remove the red insulator of the Super Mate Module to be added and the cover of the top module in the existing Super Mate Module splice configuration.

2. Precrimp module ends together using finger pressure.

3. Crimp modules using either a 4255 or 4270 Hand Presser.

b. Preterminated Super Mate Module(s) added to the bottom of other Super Mate Module(s):

1. Remove cover of the preterminated Super Mate Module and the red insulator of the bottom Super Mate Module in the splice.

2. Repeat steps 2. and 3. above.

5.03 Unplugging the Super Mate Module

The 4053 PM Separator Tool (Refer to Section 2.02 - Tools) is the only tool recommended for unplugging the Super Mate Module from any other module.

Note: ***DO NOT use the 4053 Cover Removal Tool, it will damage the modules.***

a. Remove pin guard from tool

b. Fully insert pins into enlarged ports between the modules to be separated making sure "TOP" side of tool is "up".

Note: ***Hold the tool by the lower handle only! This will prevent the pins from being partially opened.***

c. Squeeze the handles until the modules "pop" apart.

d. After separation, insure that any exposed elements or conductors are protected with a red insulator or cover.

e. To prevent pin damage, replace guard when tool is not in use.

6.0 Super Mate Module Applications

6.01 Super Mate Probe

a. When preterminated into the end of a test cord, the Super Mate Module can be used as a probe to transition between test equipment and modular spliced conductors.

b. The recommended test cord conductor size is 24 AWG (.48 mm). Stranded conductor must not be used.

6.02 Module Cable Transfer

By using the Super Mate Module a transfer can be accomplished without interruption of service, cutting any conductors or adding additional connectors. For a more efficient, trouble free rearrangement, it is suggested that a total transfer plan be implemented in conjunction with module transfers.

a. Conductor Termination

1. New Cable

(a) New conductor groups involved with a transfer must be terminated in Super Mate Modules according to 3M/MS^2 Splicing Procedures and local transfer plan. (See Sections 3.02 - Transfer-Access Splice and 4.04 Two Way Pluggable Connection).

2. Existing Splices

(a) Existing conductor groups involved in module cable transfers must be in a pluggable mode. If these existing groups are terminated in anything other than a Super Mate Module, they must be converted to Super Mate Modules. Convert existing splices to Super Mate Module connections without service interruptions as follows:

(1) Provide sufficient slack to rework conductors.

(2) Set-up MS^2 4041 Splicing Head.

(3) Lay pairs into Super Mate Modules. Make sure that all existing C.O. and field conductors are placed in corresponding wire channels in each Super Mate Module. See Figure 19.

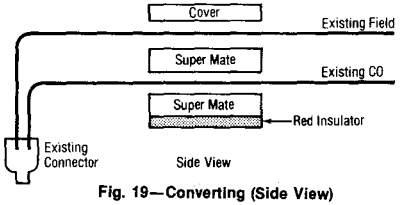


Fig. 19—Converting (Side View)

(4) Crimp modules and remove from splicing head.

(5) Continue converting conductors involved in the transfer or follow local transfer plan.

b. Module Cable Transfer

1. Splice Work Example:

(a) The subscriber, existing and new C.O. count pairs, should be terminated in Super Mate modules. See Figure 20.

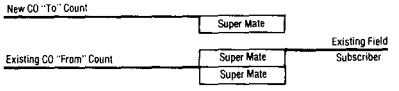


Fig. 20—All Conductors in pluggable connectors.

(b) Crimp the new C.O. count (transfer "to") module to the subscriber module (See Figure 21) using a 4270 Hand Presser.

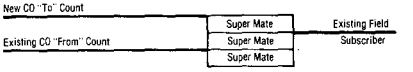


Fig. 21—New count crimped to subscriber.

(c) Remove old count (transfer "from") module from the subscriber module (See Figure 22) using a 4053PM Separator Tool.

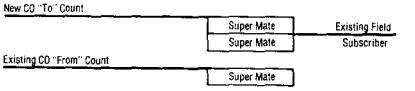


Fig. 22—Removal of old C.O. count.

(d) After transfer is complete, make sure that any exposed elements or conductors are protected with a red insulator or cover.

c. Procedure for Module Cable Transfer

Local module cable transfer procedures should be followed. One such procedure using Super Mate Modules in Transfer-Access Splices is outlined below:

1. Pretesting: Pretesting is for pair verification as stated on the cable records.

   (a) Pretest all new cable pairs from proper location using an approved test set. See Figure 23A.

2. Preliminary Splice Preparation: All cables must be terminated in Super Mate Modules for transferring and an accurate record of the condition of the cable pairs made at the transfer location.

   (a) After following established splice opening procedures, perform pair identification and verification of old and new cable counts using approved test sets.

   (b) If any corrections are required, notify assignment.

   (c) Convert splice to Super Mate Modules. See Figure 23B.

      (1) If 50% or more of the distribution pairs are to be transferred or energized total conversion of the splice is required.

      (2) If less than 50% of the distribution pairs are to be handled, convert only those pairs which are to be transferred or energized. However consideration should be given if future work may be required.

   (d) If required, test existing cable pairs for instrument and/or trouble locations with an approved transfer set and indicate conditions on proper form. See Figure 23C.

Note: ***If instrument is not found, the possibility of ringer isolator exists. Ground either side of the cable pair.***

   (e) Temporarily close splice location in accordance with accepted procedures.

   (f) Refer test results back to assignment.

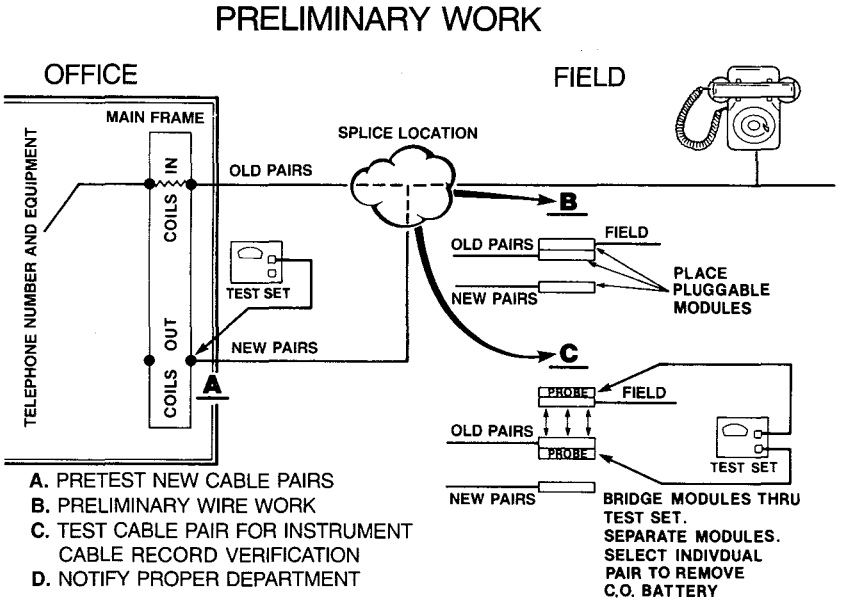


Fig. 23

3. Back Tap Validations

With the issued transfer sheet, C.O. jumper work can be verified.

(a) Manual Office:

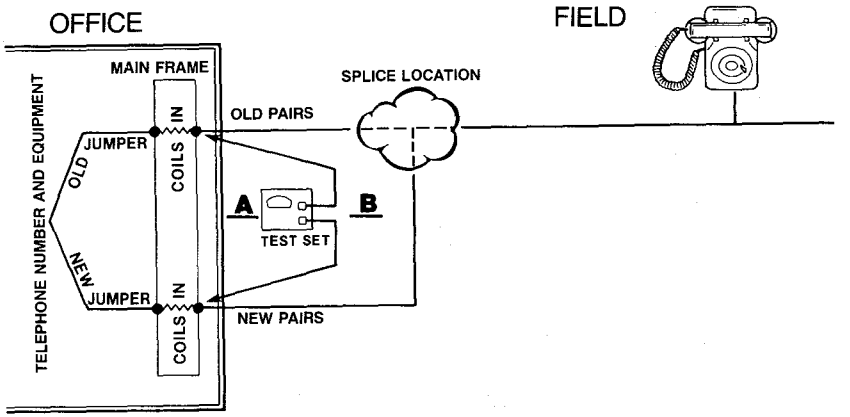
(1) Using an approved transfer test set and test shoes, attach equipment to old and new counts. See Figure 24A.

(2) Check transfer list for special circuits and turn in all coils on noncritical circuits.

(3) Validate each jumper.

(4) Notify proper department of any discrepancies.

MANUAL C.O. WORK



A. PLACE TRANSFER SET

B. VALIDATE BACKTAPS

C. NOTIFY PROPER DEPARTMENT OF ANY DISCREPANCIES

Fig. 24

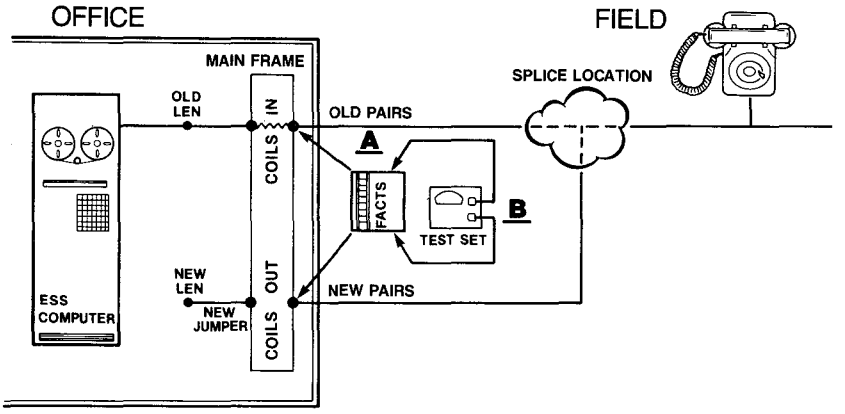
(b) ESS Electronic Office

(1) Because electronic office verifications may not be consistent with manual office methods, a front tap auxiliary cable transfer system will be required.

(2) Using an approved transfer switch test set and test shoes, attach equipment to old and new counts. See Figure 25A.

(3) Check transfer list for special circuits and close switches on noncritical circuits. Verify with transfer switch. See Figure 25B.

ESS OFFICE WORK



A. PLACE FACTS/TRANSFER TEST SET

B. VALIDATE FRONT TAPS

Fig. 25

4. Transferring

At the field transfer location, verify pair for pair continuity prior to transferring each module. Transfers involving working circuits in both the "to" and "from" count must be properly engineered.

(a) Follow established opening procedures at transfer location.

(b) Obtain transfer sheets opening number from Local Test Board (LTB). Verify with LTB that appropriate releases have been made on critical circuits.

(c) Attach transfer test set to the old and new cable counts. See Figure 26A.

Note: ***Test set must be in a nonservice affecting mode when connection is made.***

(d) Adjust test set per manufacturers specifications.

(e) Test modules to be transferred.

Note: ***Caution must be taken when testing critical circuits.***

(f) Maintain circuits through Transfer Set.

(g) Prior to crimping, coordinate the release of any critical circuits contained in the module.

(h) Using the 4270 Hand Presser, crimp the new module to the field module. See Figure 26B.

(i) Using the 4053PM Separator Tool, unplug the old C.O. module. See Figure 26C.

(j) Repeat steps (e) through (i) for each module on the transfer sheets.

(k) If step 2.(d) (record verification) was not performed, proceed to Post Testing, paragraph 5.

(l) If Post Testing is not necessary, close field splice location in accordance with accepted procedures and obtain transfer sheet closing number.

FIELD TRANSFER

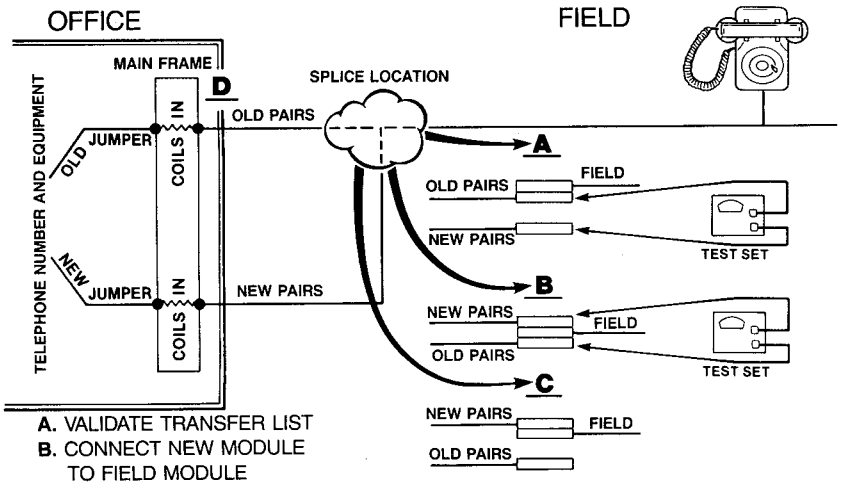


Fig. 26

5. Post Testing

Post Testing is required on ALL vacant pairs to verify if out of service conditions exist.

(a) Attach approved transfer test set to transferred module. See Figure 27A.

(1) Verify if any vacant pairs have instruments on the field side of the connector.

(2) If an instrument is found, an out of service condition may exist. Attach a transfer clip to reestablish service and notify assignment department.

Note: ***If an instrument is not found the possibility of ringer isolators exist. Ground either side of the cable pair.***

(3) Test all transferred pairs in groups of 100.

(b) When C.O. participation is available, post test old C.O. feed from the field location.

(1) Attach probe to old C.O. feed module. See Figure 27B.

(2) Contact C.O. and request that coils be pulled on old transferred pairs.

(3) Test back to the C.O. for instruments.

(4) If instruments are indicated, have coils replaced and notify assignment department.

(5) Close field splice location in accordance with accepted procedures.

(6) Obtain transfer sheet closing number.

(c) If C.O. participation is unavailable proceed as follows:

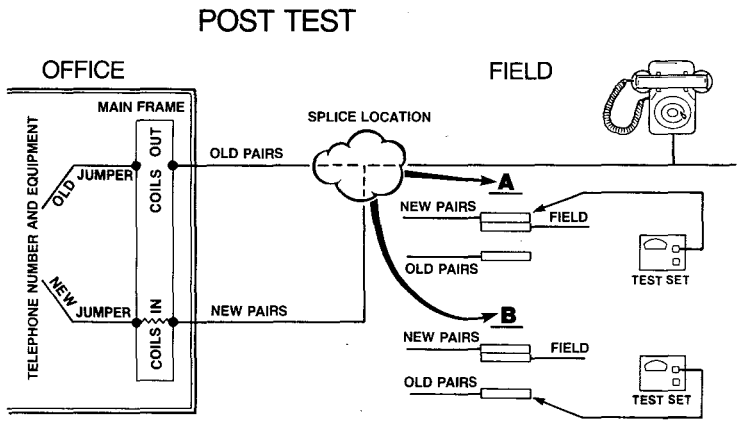
(1) Close field splice location in accordance with accepted procedures.

(2) Proceed to C.O. and pull coils from old transferred pairs.

(3) Test out from C.O. for instruments on vacant pairs.

(4) If instruments are indicated, replace coils and notify asssignment department.

(5) Obtain transfer sheet closing number.



A. TEST FOR INSTRUMENT OUT

B. TEST FOR INSTRUMENT IN

Fig. 27

6.03 Bridge Lifter Transfer

Field conditions exist that call for a throw to be made with bridge lifters. The following procedure illustrates the use of Super Mates for this special application.

a. Following preliminary wire work at splice opening, preterminate bridge lifter apparatus stub with Super Mate Modules and attach to cable pairs. See Figure 28A.

b. Temporarily close splice location in accordance with accepted procedures.

c. At the main frame location, attach an approved transfer test set and test shoes to old and new counts. See Figure 28B.

d. Obtain transfer sheet opening number from Local Test Board (LTB).

e. Test new pairs in order according to transfer sheet.

f. Transfer pairs by pushing in new and pulling out old heat coils at C.O. according to standard procedure.

g. Continue through transfer sheet until complete.

h. Obtain transfer sheet closing number from LTB.

i. Reopen field location and complete work operation.

   1. Attach new module to field module. See Figure 28C.

   2. Remove bridge lifter Super Mate Modules.

j. Close field splice location in accordance with accepted procedures.

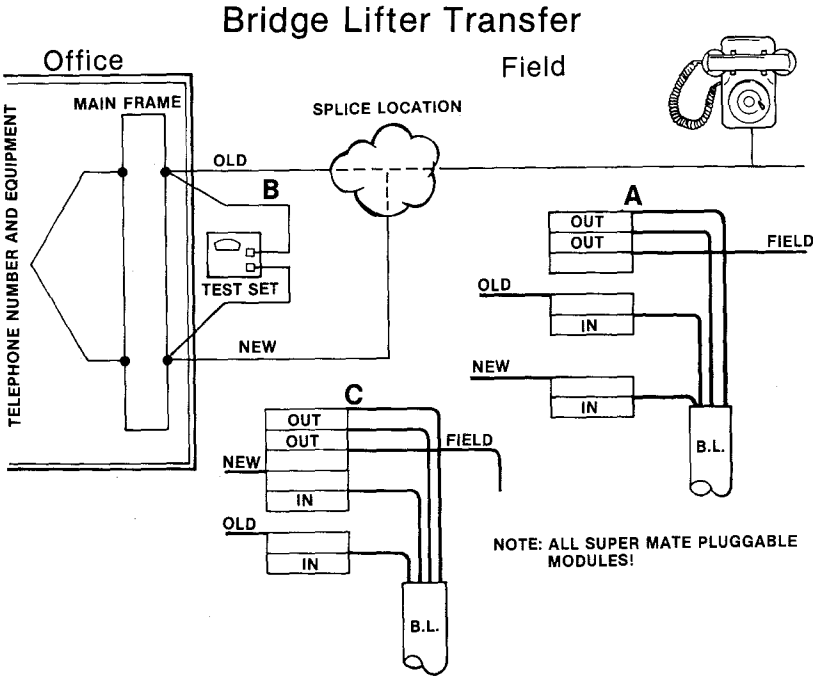


Fig. 28

6.04 Loading/Deloading

By building the Apparatus/Load Coil Splice with Super Mate Modules, Loading/Deloading of conductors can be performed without interruption of continuity.

a. Loading

1. Follow the procedures for construction found in Section 3.03.

2. Load modules should be placed in a position where the C.O. and Field module can be connected. See Figure 29.

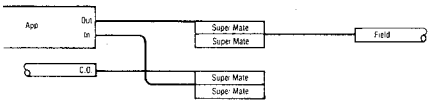


Fig. 29—Loaded modules.

b. Deloading

1. Crimp the corresponding loaded groups together (C.O. to Field) using the 4270 Hand Presser. See Figure 30.

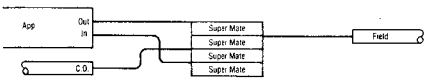


Fig. 30—Crimp loaded groups together.

2. Using a 4053PM Separator Tool remove load coil Super Mate Modules (in and out) from the group. See Figure 31.

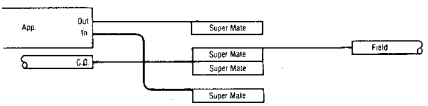


Fig. 31—Remove load coil Super Mate Modules from group.

c. Partial Group Deloading

Note: ***Circuit engineering is required before using this procedure.***

1. Identify pairs to be deloaded in the Apparatus/Load Coil Splice.

2. Build a shunting strap in Super Mate Modules according to the identified pairs position in the spliced modules (in and out). See Figure 32.

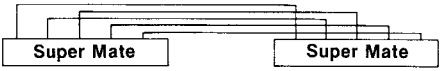


Fig. 32—Build shunting strap in Super Mates.

3. Crimp strap modules to corresponding group Super Mate Modules (in and out) using the 4270 Hand Presser.

6.05 Half Tapping

This is an alternate method to the use of conventional half tap type connectors such as the Super Mini 4008 Module.

a. Open existing cable and tap cable (new) providing appropriate free conductor length and slack according to standard MS² procedures for half tapping. See Figure 33.

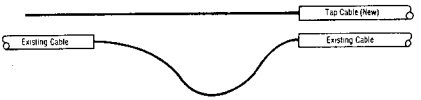


Fig. 33—Appropriate free conductor length.

b. Mount splicing rig, with one splice head, to cables.

c. Lay tap (new) conductors into the base of a 4000 Super Mini Module. Crimp 4000 Super Mini Module body onto conductors.

d. Lay field conductors into Super Mini body top.

e. Place Super Mate body onto Super Mini body. See Figure 34. Trace corresponding through pairs (old) and lay into matching wire channels of the Super Mate Module. See Figure 35.

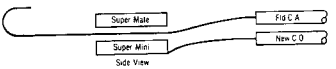


Fig. 34—Super Mate body or Super Mini body.

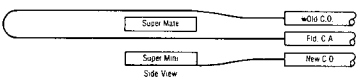


Fig. 35—Lay corresponding through pairs into Super Mate Module.

f. Place cover, crimp and remove cut conductors. Module configuration is shown in Figure 36.

Fig. 36—Module configuration.

g. When related work is complete and the removal of the old C.O. is needed; use the 4053PM Separator Tool to separate the old cable that is in the Super Mate Module. See Figure 37.

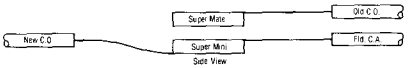


Fig. 37—Separate old cable that is in Super Mate Module.

h. Crimp a new cover onto the 4000 Super Mini Module and place a red insulator on the Super Mate Module.

7.0 Super Mate Module Accessories

7.01 4051 Wire Insertion and Cut Off Tool

Conductor corrections and rearrangements can be made in the body top of a Super Mate Module by using the 4051 Wire Insertion and Cut Off Tool.

a. Pull wire across top of U-contact. See Figure 38.

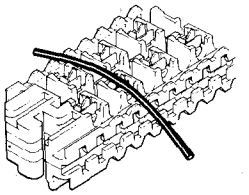


Fig. 38—Place wire.

b. Align 4051 Tool with U-contact and wire. The slot is aligned with the U-contact and the groove with the wire. See Figure 39.

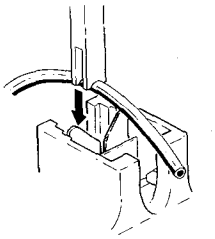


Fig. 39—Align tool with U-contact.

c. Push straight down forcing the conductor into the U-contact. **Do not rock tool back and forth.** See Figure 40.

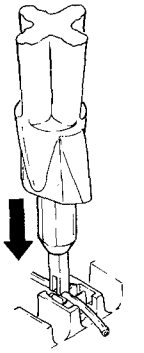


Fig. 40—Push straight down.

d. To cut excess wire, align slot with cut off blade and groove with wire. Push straight down. Remove excess wire from module. See Figure 41. Do not rock tool back and forth.

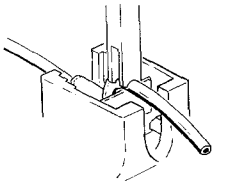


Fig. 41—Align tool with cut off blades.

7.02 4077 Series Sealant Boxes

For protection against moisture use a 4077 Series Sealant Box for the following configurations:

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

The 4077 Series Sealant Boxes are red with the series number stamped on the bottom side of the box for identification. One red insertion tool is packaged with every twelve sealant boxes.

a. Procedure:

1. Insert module into sealant box and uniformly press into sealant as far as possible. See Figure 42.

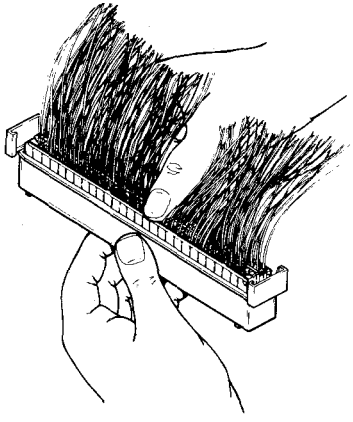


Fig. 42—Insert module into box.

2. Place insertion tool onto sealant box and lift tool wings to press module completely into sealant box. See Figure 43.

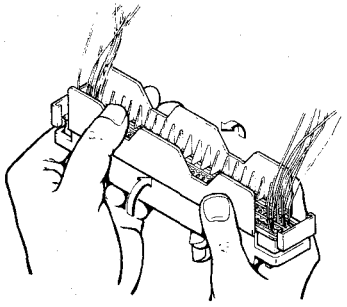


Fig. 43—Lift tool wings

3. Snap latches on ends of sealant box to lock module into place. See Figure 44.

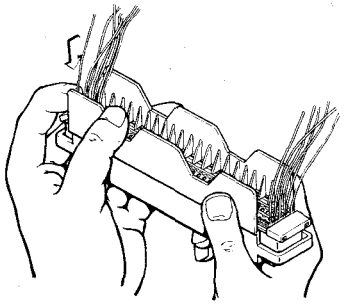


Fig. 44—Snap latches.

4. Remove insertion tool and repeat procedure for remaining modules.
5. To remove module from sealant box, release latches and remove nipple from base of box with snips or sheath knife. See Figure 45. Remove module.

Note: ***Sealant boxes must not be reused.***

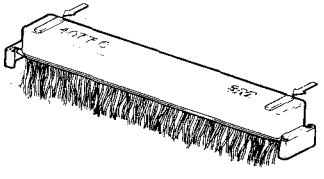


Fig. 45—Remove nipples from base of box.