

customer manual

ORIGINAL INSTRUCTIONS

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SAFETY PRECAUTIONS — AVOID INJURY — READ THIS FIRST!

Safeguards are designed into this application equipment to protect operators and maintenance personnel from most hazards during equipment operation. However, certain safety precautions must be taken by the operator and repair personnel to avoid personal injury, as well as damage to the equipment. For best results, application equipment must be operated in a dry, dust-free environment. Do not operate equipment in a gaseous or hazardous environment.

Carefully observe the following safety precautions before and during operation of the equipment:



Always wear approved eye protection while operating equipment.



Always wear appropriate ear protection while using equipment.



Moving parts can crush and cut. Always keep guard(s) in place during normal operation.



Always insert power plug into a properly grounded receptacle to avoid electrical shock.



Always turn off the main power switch and disconnect the electrical cord from the power source when performing repair or maintenance on the equipment.



*Never insert hands into installed equipment.
Never wear loose clothing or jewelry that may catch in moving parts of the equipment.*



Never alter, modify, or misuse the equipment.

SUPPORT CENTER

CALL TOLL FREE 1-800-522-6752 (CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)

The **Support Center** offers a means of providing technical assistance when required. In addition, Field Service Specialists are available to provide assistance in the adjustment or repair of the application equipment when problems arise which your maintenance personnel are unable to correct.

INFORMATION REQUIRED WHEN CONTACTING THE SUPPORT CENTER

When calling the Support Center regarding service to equipment, it is suggested that a person familiar with the device be present with a copy of the manual (and drawings) to receive instructions. Many difficulties can be avoided in this manner.

When calling the Support Center, be ready with the following information:

1. Customer name
2. Customer address
3. Person to contact (name, title, telephone number, and extension)
4. Person calling
5. Equipment number (and serial number if applicable)
6. Product part number (and serial number if applicable)
7. Urgency of request
8. Nature of problem
9. Description of inoperative component(s)
10. Additional information/comments that may be helpful

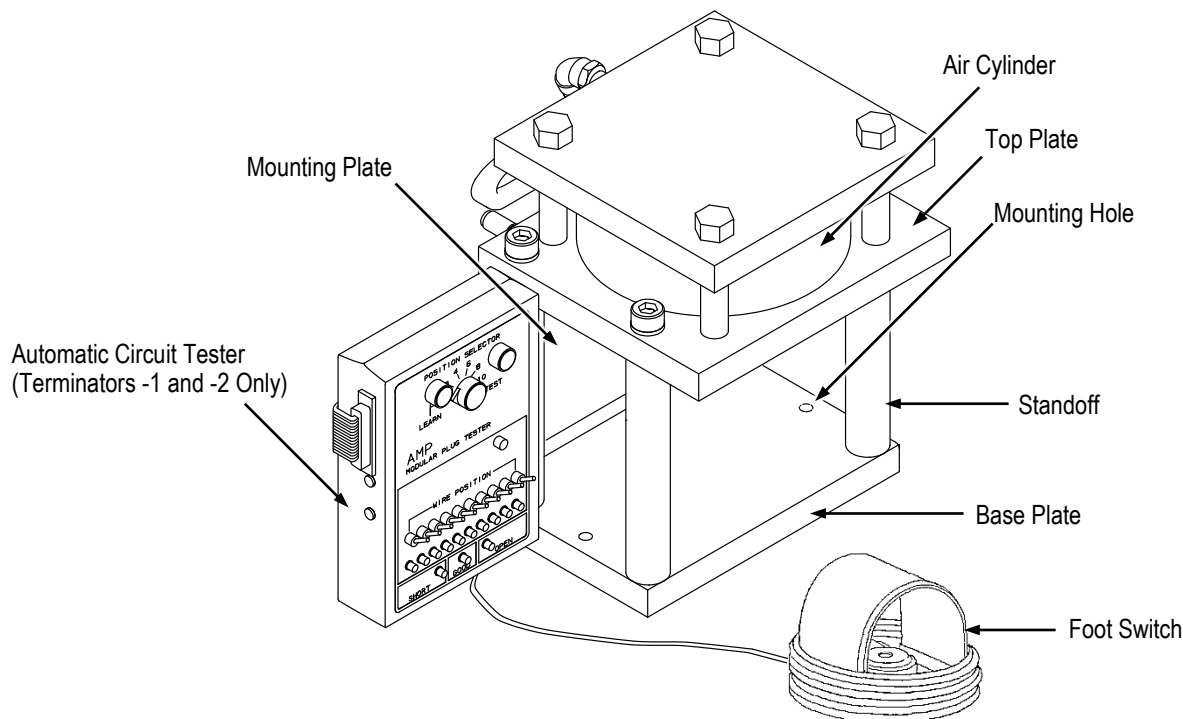


Figure 1

1. INTRODUCTION

Each modular plug dual terminator (1320840-[]) (see Figure 1) is a pneumatically-powered, bench-mount machine that uses a terminating module (791804-[]) or 856196-[]) to apply specific modular plugs to cable. The terminating module must be purchased separately.

The terminator and module terminates the modular plugs listed in instruction sheet [408-8734](#) (modules 791804-[]) and [408-9743](#) (modules 856196-[]) to cable (two at a time) to create a cable assembly. During termination, terminators 1320840-1 and 1320840-2 will test the assembly for electrical circuit continuity. Terminator 1320840-3 does not have this capability.

Refer to 408-8734 or 408-9743 for operation of the specific module.

The terminator is shipped with a documentation package that should remain with the terminator for operator reference and maintenance personnel. The documentation package includes this customer manual for information on safety, receiving inspection and installation, setup and operation, adjustments, troubleshooting, preventive maintenance, and replacement of parts, and assembly drawings of the terminator. For solutions to any problems with the terminator, call the number at the bottom of page 1.

When reading this manual, pay particular attention to DANGER, CAUTION, and NOTE statements.



DANGER

Denotes an imminent hazard that may result in moderate or severe injury.



CAUTION

Denotes a condition that may result in product or equipment damage.



NOTE

Highlights special or important information.

Reasons for re-issue of this customer manual are provided in Section 10, REVISION SUMMARY.



NOTE

Dimensions in this customer manual are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.

2. DESCRIPTION

2.1. Physical Description

The terminator is a compact, bench-mount unit, which includes an air cylinder, a mounting plate, and a top plate. Two .25-in. diameter bolts are used for mounting the unit to a bench or table. See Figure 2.

The terminating modules fit interchangeably into the terminator. Each module features dual nests for positioning the plugs; inserters for terminating modular plug contacts, and stuffers for terminating the primary and secondary strain relief. Since each feature is independently adjustable, crimp heights can be adjusted to meet International Electrotechnical Commission (IEC) specifications for modules 791804-[] and FCC specifications for modules 856196-[].

Tooling is driven by a one-stage air cylinder with 152.4-mm [6-in.] bore is capable of exerting 2200 lbs of force with a regulated air supply of 551 kPa [80 psi] (minimum) at 0.47 liters/sec [1.0 scfm].

NOTE
The air cylinder cannot be repaired by the customer.

Terminators -1 and -2 each contain an automatic circuit tester (shown in Figure 2) with cable hookup and ground and an AC/DC converter. The automatic circuit tester can be set to test specific modular plug sizes and contact arrangements. Test results are signaled by a beeper; specific information is displayed by means of a series of light-emitting diodes (LEDs) on the front panel of the tester.

Terminator -3 does not have an automatic circuit tester.

The terminator is actuated by a foot switch.

The noise levels produced by these terminators vary between 82 and 87 dB at the operator position.

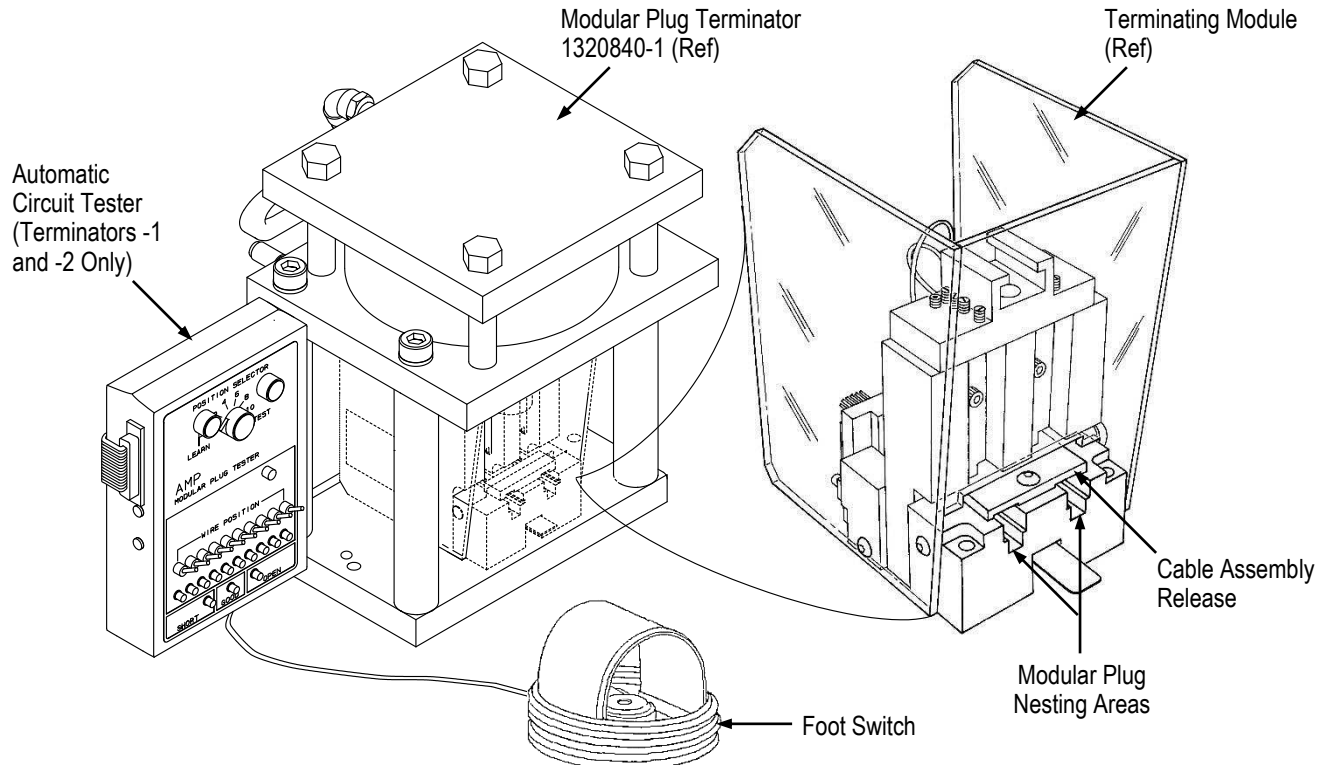


Figure 2

2.2. Functional Description

For this description, it shall be assumed that the terminator has been properly installed, is set up with the applicable terminating module tooling to apply a particular type and size of modular plug, is connected to the required air supply, and is ready for normal production operation.

With the cable and modular plugs properly placed in the tooling, the operator actuates the terminator by depressing the foot switch. At this point, the air pressure is diverted to the extension side (upper port) of the air cylinder and the ram descends to terminate the modular plug to the cable. The timing sequence begins upon release of the actuator. The flow control timing valve is factory-set for 1.5 seconds, but can be adjusted for up to 60 seconds per cycle, depending upon the application. When the timing sequence is completed, air is diverted to the lower port of the air cylinder and the ram will retract to the up position.



NOTE

When the terminator is actuated, it will make a single, complete cycle and reset itself.

2.3. Pneumatic Description

Figure 3 shows how the pneumatic system works in the terminator.

Pneumatic Diagram for Terminator (-1 Shown)

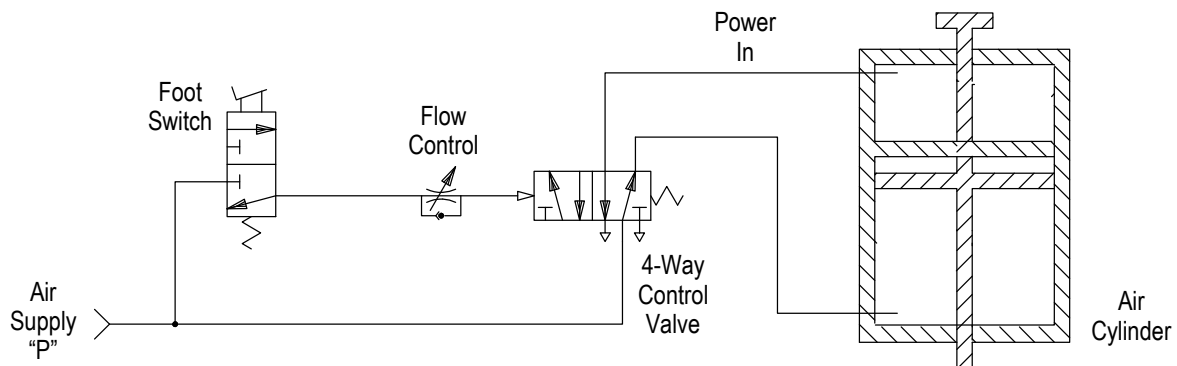


Figure 3

3. RECEIVING INSPECTION AND INSTALLATION

3.1. Receiving Inspection

The terminator is thoroughly inspected during and after assembly. Before it is shipped, a final series of tests and inspections is made to ensure proper functioning. However, the following inspection should be performed as a safeguard against problems generated during shipment.

1. Carefully uncrate the terminator and place it on a sturdy bench where there is enough light to permit a careful examination.
2. Thoroughly inspect the entire terminator for evidence of damage that may have occurred during transit. If the terminator is damaged, file a claim against the carrier and notify TE Connectivity (TE) immediately.
3. Check all components and parts to be certain they are secure.
4. Check all air lines for evidence of loose connections or leaks.

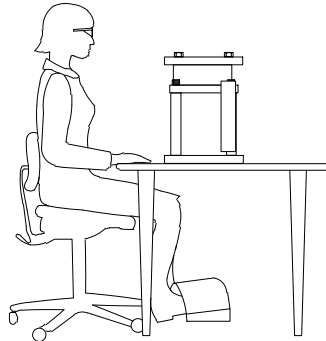
3.2. Terminator Placement

The location of the terminator in relation to the operator's position is extremely important in terms of both safety and maximum efficiency. Studies have repeatedly shown that operator fatigue will be reduced, and greater efficiency achieved, if: (1) the bench is of appropriate height, preferably with sound-deadening rubber mounts; (2) the terminator is properly located on the bench with ample work areas on both sides to facilitate work flow;

(3) the operator uses a swivel chair with padded seat and back rest which are independently adjustable; and
(4) the foot switch is placed on a rubber mat to maintain its movability, while preventing it from sliding unintentionally.

Figure 4 shows proper location of terminator and bench, as well as proper position of operator in chair, and a typical layout for the efficient handling of materials.

Operation Position and Location of Terminator on Bench



Typical Layout for Materials on Bench

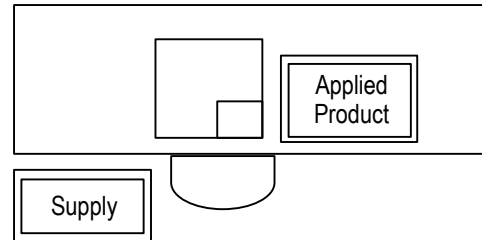


Figure 4

A. Bench

A sturdy bench 686 to 762 mm [27 to 30 in.] high aids comfort by allowing the operator's feet to rest on the floor and the weight and leg position to be easily shifted. The bench should have rubber mounts to reduce noise. The open area under the bench should allow the chair to slide far enough in for the operator's back to be straight and supported by the back rest.

B. Terminator Location on Bench

The operator's chair should swivel, and the seat and back rest should be padded and independently adjustable. The back rest should be large enough to support the back both above and below the waist. In use, the chair should be far enough under the bench so that the operator's back is straight and supported by the back rest.

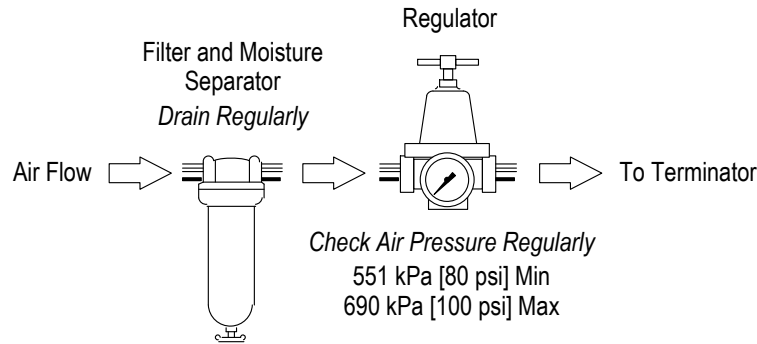
C. Foot Switch

When the operator is correctly positioned in front of the terminator, the foot should rest on the foot switch comfortably and easily. The foot switch should be placed on a rubber mat; this allows it be movable and permits the operator to shift position to minimize fatigue, while at the same time the mat prevents the foot switch from sliding unintentionally.

The preference for locating the foot switch varies among operators. Some operators prefer that the foot switch be positioned so that their leg is in a natural sitting position when their foot is on the foot switch. Other operators prefer their foot be slightly in front of the natural sitting position. The important thing is that the foot be about 90° to the calf when resting it on the foot switch. Those who prefer the foot switch slightly forward may require a wedge-shaped block to be placed under the foot switch.

3.3. Terminator Installation

1. Select a well-lighted location for the terminator. The location should have convenient and adequate air and power supplies.
2. Secure the terminator to the bench with two .25-in. diameter bolts or lag screws.
3. Blow air through the air hose to remove any foreign particles before attaching supply hose to the back of the terminator.
4. Install air line filter and air pressure regulator between the air supply and hose as shown in Figure 5. The assembly must be as close as possible to the terminator. When terminator is not in use, air supply should be turned off.
5. Install the module by referring to Paragraph 3.4.



**Suggested Manufacturers for
Filter and Moisture Separator and Regulator**

C.A. Norgren Co.
Littleton, Colorado
Chicago Pneumatic Tool Co.
New York, New York

Figure 5

6. Connect air supply to the terminator. Turn on the main air valve. The air pressure should be set at 551 kPa [80 psi].
7. Before operating terminator at production levels (and at periodic intervals), perform a test termination. Inspect the terminated modular plug using the inspection requirements established in the application specification:

114-6016	standard and small conductor modular plugs
114-6053	high performance modular plugs
114-13035	8-position category 6 shielded and unshielded modular plugs
114-22008	8-position category 5e EMT modular plugs
114-93006	8-position category 6 shielded modular plugs

If terminator adjustments are necessary, refer to Section 5.

3.4. Terminating Module Installation

Install the terminating module into the terminator as described in:

408-8734 for terminating modules 791804-[] 408-9743 for terminating modules 856196-[]

4. OPERATION

4.1. Automatic Circuit Tester Setup for Terminators -1 and -2 Only

1. Plug the miniature plug of the AC/DC converter into the tester power inlet (top hole on the left side), and plug the base unit into:

120 Vac, 60 Hz receptacle on terminator -1 230 Vac, 50 Hz receptacle on terminator -2

At power-up, the tester will respond with one long tone, followed by three short tones. The wire position LEDs will begin the stand-by LED pattern.



NOTE

Wire position LEDs blink on and off in a fixed back-and-forth sequence.

2. Determine the wiring-to-plug relationship of the cables you will be making: 1:1/1:N or crossed conductors.
3. Set the tester switches in the following manner (see Figure 6):

1:1/1:N Orientation

 - a. Turn the position selector switch to indicate the total number of contacts in the plug being used.
 - b. Place the 1:1/1:N switch in the applicable position.
 - c. Set the wire position switches for all the contacts that will have wires in them to the "I" position. Set switches for contacts that are unused, or open, in the "O" position.

Crossed Conductors

- a. Obtain a cable that fits the specifications you require (crossovers, open positions, etc.). Insert and fully latch both plugs in the module nests, with the plug release tab facing downward.
- b. Turn the position selector switch to indicate the size plug being used.



NOTE

The 1:1/1:N switch and wire position switches are disabled when using the Learn mode and can be left in any position.

- c. Press and release the Learn pushbutton. The wire position LEDs will indicate a new pattern and a short tone will sound, indicating the tester has successfully examined and stored the cable wiring pattern.
- d. Hold the cable assembly release down, and remove the cable assembly from the module nests. Turn the position selector switch to the Learn position.

Circuit Tester Switches and LEDs for Terminators -1 and -2 Only

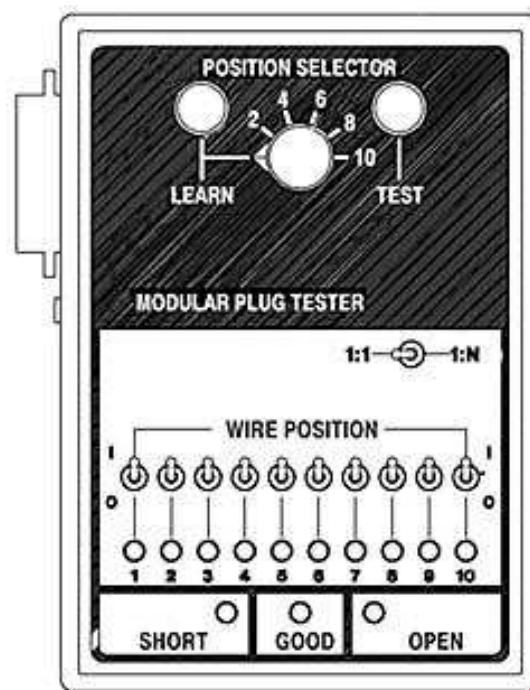


Figure 6

4.2. Terminating Modular Plugs

1. Strip the cable according to application specification for the modular plug (given in step 7 of Paragraph 3.3).



NOTE

Do not strip the insulation from the individual conductors.

2. Insert stripped cables into the plugs, and insert the cables and plugs into the module nests. Make sure of the following:
 - the cable conductors are oriented to the applicable contact slots before inserting the conductors into the modular plugs,
 - the cable conductors are bottomed in the contact slots of the modular plugs, and that they remain bottomed throughout the cycling of the terminator, and
 - the modular plugs bottom in the module nests; the plug release tab must snap firmly into place.

3. Press the foot switch to cycle the terminator.

4. When termination is complete:

For terminators -1 and -2 (only), the tester will automatically examine the cable assembly and respond with either a short tone or a long tone (refer to Figure 7). After the cable assembly is tested, hold the cable assembly release down, and remove the cable assembly from the module.



CAUTION

Removing the cable assembly before a tone has sounded may cause good terminations to test as failures.



NOTE

Any coupled cable assembly may be tested or re-tested by inserting and latching the modular plugs into the module nests and pressing the TEST pushbutton.

For terminator -3, hold the cable assembly release down, and remove the cable assembly from the module.

TESTING SUMMARY (Terminators -1 and -2 Only)

1:1/1:N ORIENTATION

TEST	CONDITION	TEST INDICATORS
The tester checks for open conductors.	There are one or more open conductors.	A long tone will sound and the OPEN LED will light. The wire position LEDs will also light, corresponding to the open conductors of the plug located in the right-hand nest. Note that if "opens" are found, the tester abandons further testing; therefore, shorts that may have also been present will not be indicated.
If there are no open conductors, the tester checks for short circuits.	The cable assembly has two or more shorted conductors.	A long tone will sound and the SHORT LED will light. The wire position LEDs will also light, corresponding to the shorted conductors of the plug located in the right-hand nest.
No "opens" or "shorts" are found.	The cable assembly is considered good.	The tester will sound a short tone and the GOOD LED will light.

CROSSED CONDUCTORS

TEST	CONDITION	TEST INDICATORS
With the position selector switch in the Learn position, the tester compares the cable assembly against a "learned" cable pattern. When a cable assembly has a "learned" cable pattern, open conductors, as well as, crossed conductors, are noted.	Contacts that were "learned" as "open" are found to have continuity to other conductors in the cable assembly.	The tester will sound a long tone, light both the OPEN and SHORT LEDs, and light the wire position LEDs corresponding to the connected conductors of the plug located in the right-hand side of the nest.
If there are no connections where there should be "opens", the tester will conduct the "opens" test.	The cable assembly has one or more open conductors.	The tester will sound a long tone, the OPEN LED will light, and the wire position LEDs will light, corresponding to the open conductors of the plug located in the right-hand side of the nest.
If there are no opens present, the tester performs the "shorts" test.	The cable assembly has two or more shorted conductors.	The tester will sound a long tone, the SHORT LED will light, and the wire position LEDs will light, corresponding to the open conductors of the plug located in the right-hand side of the nest.
The cable assembly passes all three tests.	The cable assembly is considered good.	Tester will sound a short tone and GOOD LED will light.

Figure 7

4.3. Inspecting Cable Assemblies

Inspect the crimps on the modular plugs using an indicator with a 0.25-mm [.010-in.] diameter needle-point probe. Refer to the application specification (given in step 7 of paragraph 3.3) for crimp height and other terminated modular plug criteria.

Problems associated with bad cable assemblies should be recorded to aid in troubleshooting. Check for the source of recurring problems in the following order:

1. Check the settings against the test cable.
2. Check that the correct combination of cable and plugs is being terminated.
3. Check crimp height and strain relief settings. If necessary, make corresponding adjustments to the module.
4. For terminators -1 and -2 only, inspect the terminator for secure engagement of the connectors and cable from the tester to the module and the wires to the limit switch at the left on the back of the module.
5. Check that the spring plungers are all correctly resting on the contact probes.
6. Inspect and replace any defective mechanical tooling parts.

5. TIME DELAY ADJUSTMENT

The following adjustment may be required to maintain the terminator in continuous operation and may be required after the replacement of parts.



CAUTION

To avoid personal injury, make sure the terminator is turned off and the power supply is disconnected before performing any adjustments.

Adjustment of the time delay is achieved by closing or opening the flow control valve on the main power valve (4-way control valve). This adjustment is pre-set at the factory to 1.5 seconds and should not require further adjustment. However, if an adjustment is required, turn the flow control adjustment screw *clockwise* to increase the time delay or *counterclockwise* to decrease the time delay. See Figure 8.

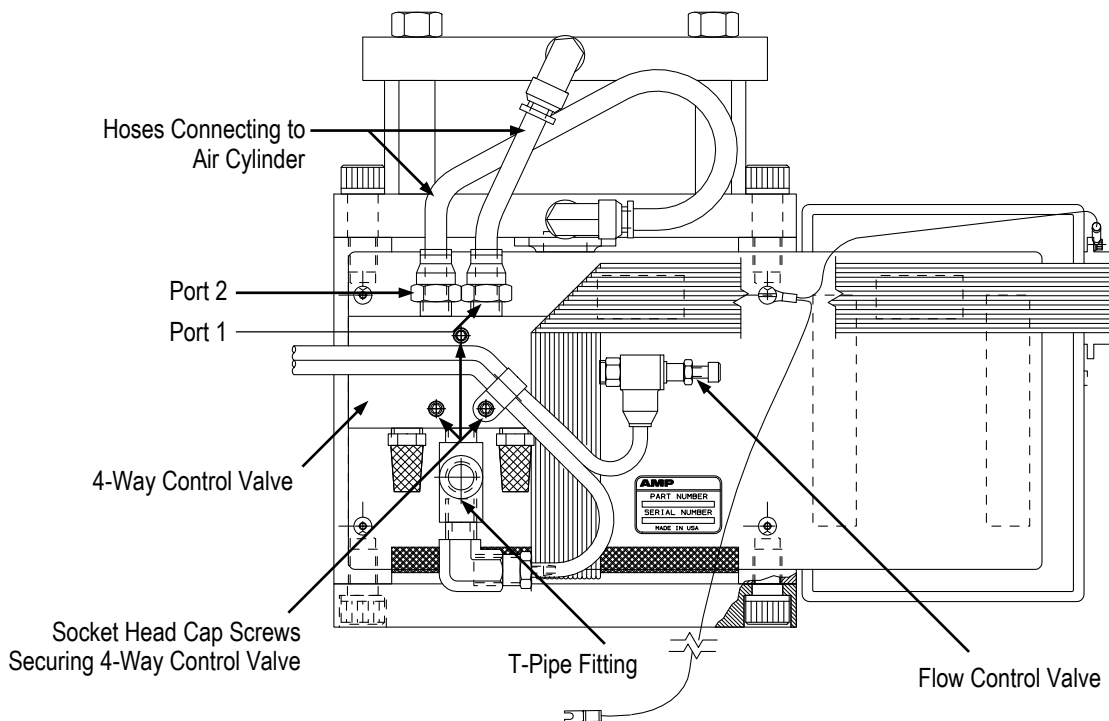


Figure 8

6. TROUBLESHOOTING

This section is intended as a guide to help you properly adjust and maintain the terminator. For problems not covered, call the number at the bottom of page 1.

6.1. Troubleshooting Terminator

1. Check air supply. If it is turned on, make certain that the air pressure is at least 551 kPa [80 psi]. If the air pressure is less than 551 kPa [80 psi], the terminator will not cycle.



CAUTION

*For the following troubleshooting, reduce air pressure to 241 kPa [35 psi]. **Do not remove and replace hoses and connections while air supply is on.***

2. Check air supply to and from foot switch. The IN and OUT ports are marked as shown in Figure 3. Then:
 - a. Remove clamp and hose from barbed fitting on IN port. If air exits from hose when air supply is on, turn off air and replace hose and clamp. Proceed to OUT port on foot switch.
 - b. Remove clamp and hose from barbed fitting on OUT port. With air **on** and foot switch **depressed**, air should flow from OUT port. If there is no air flow when the foot switch is depressed, a faulty foot valve is indicated and should be replaced. The foot switch can be replaced following the procedure in Paragraph 8.1.
3. Check 4-way control valve and flow control valve (see Figure 3). Then:
 - a. Remove the hose from the flow control valve. Remove the flow control valve from the 4-way control valve. Reconnect the hose to the flow control valve. With the foot switch depressed and the air supply ON, air should flow from the flow control valve. If it does not, replace flow control valve with a new one. Re-assemble the hoses after checking the air supply.
 - b. Disconnect hose from CYL 2 port of the air valve. With air supply on, check the air flow through CYL 2 port. If air flows through CYL 2 port, disconnect the air; then reconnect the hose to the CYL 2 port. If no air flows through CYL 2 port when the air supply is on, a faulty control valve is indicated and must be replaced. Refer to Paragraph 8.2.
 - c. Disconnect hose from CYL 1 port of the air valve. With air supply on and foot switch depressed, check the air flow through CYL 1 port. If air flows through CYL 1 port, disconnect the air and reconnect the hose to the CYL 1 port. If no air flows through the CYL 1 port, a faulty control valve is indicated and must be replaced. Refer to Paragraph 8.2.

6.2. Troubleshooting Automatic Circuit Tester for Terminators -1 and -2 Only

Refer to Figure 9. For solutions to problems other than listed, call the number at the bottom of page 1.

TROUBLESHOOTING TESTER (Terminators -1 and -2 Only)		
PROBLEM	CAUSE	SOLUTION
Tester LEDs do not display the standby pattern and the tester is unresponsive in general.	Power to the tester has been interrupted.	1. Make sure that the miniature plug of the AC/DC adaptor is fully inserted into the jack located through the top hole on the left-hand side of the tester. 2. Remove the miniature plug from the tester. With the base unit still plugged into the power outlet, check the voltage output of the adaptor. A voltmeter should read between 9 and 11 volts DC—outer ring of the plug positive, center hole negative. If the proper voltage is not present, check the wall outlet for proper AC line voltage. If the wall outlet voltage is adequate, replace the adaptor.
The tester falls dormant (no standby LED pattern) for approximately 1 to 2 seconds, then starts blinking all the LEDs and sounding a short tone once every second.	The ribbon cable from the tester to the module is loose or faulty.	Check the ribbon-cable for tight connections, both at the tester and at the module printed circuit board. Tighten connections if necessary. Replace if necessary.
	The two wires from the module printed circuit board to the limit switch are loose or connected incorrectly.	Check the wire connections at the terminals of the limit switch for tightness and for correct position: COM and NC terminals.
	The limit switch is faulty.	Check the limit switch with a continuity meter between the COM and the NC terminals. These terminals should show continuity when the switch is not actuated and open when the switch is actuated. Replace the switch if necessary.
	The terminator ram has been bottomed for more than 2 seconds.	The operator's foot must be removed from the pedal after cycling the terminator; otherwise, the ram will remain in the bottomed position.
While learning a cable pattern or testing a cable assembly against a "learned" cable pattern, the tester flashes all LEDs five times and then resumes the standby LED pattern.	The memory component that stores the "learned" cable pattern is faulty.	Return the tester to TE for repair.

Figure 9

7. PREVENTIVE MAINTENANCE

Preventive maintenance is limited to periodic cleaning, inspection, and lubrication. Depending on the amount of use, a regular maintenance program should be established and maintained. This will greatly reduce downtime for repairs and replacement of parts. When performing preventive maintenance, remove the cover to gain access to the terminator.



DANGER

To avoid personal injury, make sure the terminator is turned off and the air supply is disconnected when performing preventive maintenance.

7.1. Cleaning

Prior to operation, or on a daily basis, perform the following:

1. Use a clean, dry cloth to wipe the entire terminator. Remove any evidence of dust or other contaminants.
2. Use a solvent or similar cleaning fluid to remove any evidence of oil or grease from areas not requiring lubrication, particularly in the target area.

3. Use an approved-type air hose or vacuum to remove any chips or metal particles from the terminator.

**DANGER**

Compressed air used for cleaning must be reduced to less than 207 kPa [30 psi], and effective chip guarding (including eye protection) must be worn.

7.2. Inspection

Perform the following inspection daily or prior to each time the terminator is to be used.

1. Check to ensure all components of the terminator are secure. Look for evidence of worn and/or broken parts.
2. Inspect the pneumatic system for loose connections or leakage in the air lines. Repair and/or replace components as necessary.
3. Check the air supply system and follow the manufacturer's instructions for maintenance and care of the air supply filter/regulator/lubricator.

7.3. Lubrication

The cylinder and valve are lubricated at the factory and further lubrication is unnecessary.

Lubricate the module ram, if necessary, with a thin coat of high pressure grease. Do not lubricate excessively. Store in a clean, dry place.

**CAUTION**

Make sure to keep the terminator areas of the stuffers and module nests especially clean. Do not oil or grease the termination areas of the stuffers or the contact slides.

**CAUTION**

Do not allow any lubricants to enter the target area. If this should happen, thoroughly clean the area immediately.

8. REPLACEMENT AND REPAIR

Replacement parts and recommended spares are identified and listed on the customer drawings supplied with the terminator. For information concerning replacement parts or repair, call 1-800-522-6752, send a facsimile of your purchase order to 717-986-7605, or write to:

CUSTOMER SERVICE (038-035)
TYCO ELECTRONICS CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

8.1. Foot Switch Replacement

1. Remove the self-tapping pan head screws that secure the cover, remove the cover from the foot valve, and loosen the clamps on the twin hose.
2. Remove the hoses from the barbed pipe-to-hose fitting, then remove fittings.
3. Replace damaged foot valve. Transfer fittings, twin hose, and clamps, making sure that the air lines are properly positioned and secure.
4. Re-install the cover, and secure it with the self-tapping pan head screws.

8.2. 4-Way Control Valve Replacement

The 4-way control valve is a self-contained unit that can be replaced. Refer to Figure 3 and Figure 8, and proceed as follows:

**DANGER**

To avoid personal injury, make sure the terminator is turned off and the air supply is disconnected when performing preventive maintenance.

1. Make sure air supply is off. Remove the back cover.

2. Remove the two hose connections to the air cylinder (refer to Figure 8) from the 4-way control valve.
3. Remove the three socket head cap screws that secure the 4-way control valve.

**NOTE**

This will loosen the entire pneumatics package from the mounting plate.

4. Remove the flow control valve from the 4-way control valve as described in Paragraph 8.3.
5. Remove the air supply connection (T-pipe fitting) from the 4-way control valve.
6. Transfer all fittings and plumbing from damaged valve to the replacement valve and install parts in the reverse order of removal. Make sure that all air lines and fittings are properly positioned and connected.

8.3. Flow Control Valve Replacement

**DANGER**

To avoid personal injury, make sure the terminator is turned off and the air supply is disconnected when performing preventive maintenance.

1. Make sure air supply is off. Remove the back cover.
2. Remove the air supply connection (T-pipe fitting) from the 4-way control valve.
3. Remove the three socket head cap screws from the 4-way control valve. Remove the flow control valve from the 4-way control valve.

**NOTE**

The three socket head cap screws must be removed to facilitate turning of the valve.

4. Replace the flow control valve.
5. Replace the three socket head cap screws and the T-pipe fitting.

9. RESTRICTION ON HAZARDOUS SUBSTANCES (RoHS) INFORMATION

Information on the presence and location of any substances subject to RoHS can be found at <http://www.te.com/customersupport/rohssupportcenter>.

10. REVISION SUMMARY

Revisions to this customer manual include:

- Added callouts to Figure 1
- Added module 791804-[] and terminator part numbers that apply to tester
- Added volume flow rate to Paragraph 2.1 and application specifications for plugs used in added module
- Modified Section 1 and Paragraph 2.1
- Updated Section 9