Worldwide Leadership in Wire and PCB Manufacturing Products

Leadership demands commitment and TE is committed to meeting manufacturing needs worldwide with technology, products and systems, and service.

Application Tooling of TE Connectivity

TE has long been recognized as a leader in providing the tools for wire harness and printed circuit manufacturing. There's a good reason. Our products are designed to meet and anticipate our customers' ever-changing requirements and built to the highest quality standards, for longest, most productive performance lifetimes.

Whatever your production volume and job mix, we can offer the tools to get it done. With a full range of tooling from hand tools to high volume, fully automated systems, TE is able to meet most manufacturing demands worldwide. It's an ability that comes from our experience with manufacturers large and small, giving us a unique view of the trends and challenges in wire harness and PCB manufacturing. It all derives from our commitment to your manufacturing challenges, giving you the advantage in your marketplace.

This catalog is just a sampling of the types of solutions that will make your job easier, faster, more productive and more profitable. Make tooling, assembly equipment, and service from TE part of your thinking, now and as you grow into the future.

For more information regarding the products and services shown in this brochure, visit our website at www.tooling.te.com

TE Connectivity Service and Support

Few suppliers can match TE customer service and support. From helping you select the tooling for your requirements to maintenance and repair and analyzing your operation for maximum productivity, our worldwide capabilities and experience will make a real difference in your production and bottom line.

ProductionChek Service — In a consultative role, our field engineer will meet with you to determine your objectives and known production issues, then observe and record in detail each step in your operation. Based on this information, the engineer will be able to make recommendations for improvement, typically in people, process or equipment.

Tool Repair and Certification — Our field engineers will set up, certify, and repair application tooling on site or recommend our factory-level service. Flexible plans, including options for premium access to parts and service, will keep your PCB assembly automation equipment running at peak performance.

For additional maintenance services, the TE Technical Support Center is dedicated to providing the answers you need, toll-free at 1-800-522-6752. Support contracts are available for preventive maintenance, training, emergency situations and other specific requirements.

Application Tooling

Magnet Wire Crimp Application Equipment

MAG-MATE and AMPLIVAR splices and terminals are available in a wide range of configurations to meet most magnet-wire termination needs. All provide high reliability with minimal wire preparation. TE Connectivity offers a wide variety of magnet-wire termination solutions for thru splicing, pigtail splicing and coil termination.

AMPLIVAR Product Terminator (APT) Machines

The new APT 5A magnet wire pigtail splice machine offers a fast, efficient system, with no need to strip mag-wire insulation. Simply place the wires in the target area and depress the foot switch. The machine automatically shears the splice or Direct Connect contact from the strip, crimps it, shears off excess wire, and advances the next splice or contact into position.

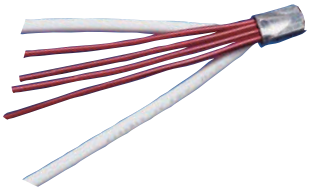
APT bench machines are available in two versions: the 5A with automatic precision adjustment controlled by the crimp quality monitor (CQM) and the 5E with manual precision adjustment. Using CQM, the APT 5A provides 100% inspection and automatic adjustment of crimp height. If a questionable crimp is detected, visual and audible alarms alert the operator.

The lower cost, manual adjust APT 5E is a simpler version with the advantage of faster set-up times but without CQM capability.

Power Splice Machine

Not CE approved, contact engineering for quotation.

The Power Splice Machine and applicator from TE provides reliable pigtail splice termination of magnet wire and solid or stranded lead wire. This machine can terminate pigtail splices consisting of up to two solid or stranded copper lead wires in wire size from 10-14 AWG and having a Circular Mil Area (CMA) of 4,100 - 11,000. The splice will simultaneously accept combinations of multiple copper magnet wires in a range of 11-20 AWG. The total CMA range for lead wire and magnet wire is 4,000 to 40,000.



Application Tooling

Magnet Wire Crimp Application Equipment

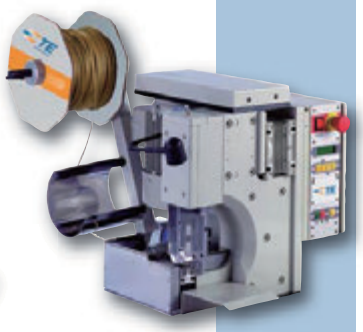
AMPLIVAR Terminator for Parallel and End Connections

Primarily sold in Europe.

The machine was developed for processing magnet wire connections. Different versions for end-feed and side-feed contacts are available. The design takes into account that the motor windings and coils can be supplied directly to the connectors. The exposed crimp position permits precise handling. In case of end connections the projecting magnet wires are cut off.

AMPLIVAR splices and terminals are specifically designed to terminate magnet wires or in combination with standard solid or stranded wire. In a one-step operation the magnet wire is automatically multiple ring stripped of its insulation as it is forced into the serrations during the precisely controlled crimping operation.

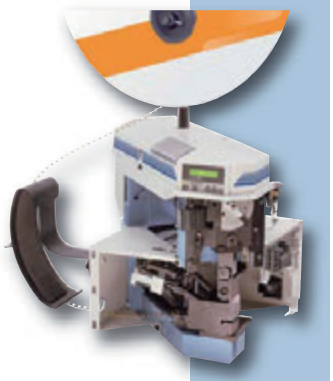
As many as three magnet wires can be terminated, simultaneously in one splice. Nearly the entire AMPLIVAR splice program can be applied with this machine in combination with suitable applicators. The comprehensive range of manufacturing possibilities demands a specific machine and applicator combination.

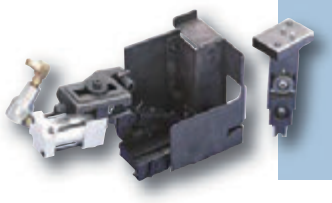


AMP-O-LECTRIC Model G Terminator with Thru-Splice Applicator

Not CE Approved.

Applying thru-splices is fast and efficient when you have access to both sides of the applicator for placing and holding the wires. The AMP-O-LECTRIC model G splice terminator with a standard G splice applicator provides front and rear access to maximize production efficiency. It provides full guarding for operator safety and is available with or without a Crimp Quality Monitor. **Request catalog 889021 for more information.**





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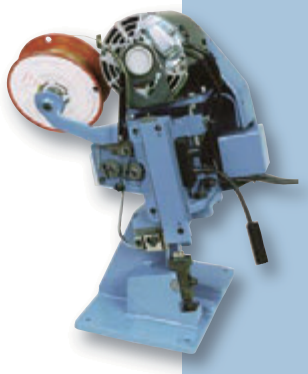
Application Tooling

Magnet Wire Crimp Application Equipment

Crimpband application machines have been discontinued and are no longer offered by TE.

Crimpband Application Tooling

Not CE approved, contact engineering for quotation.



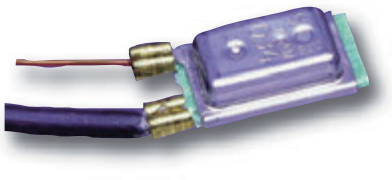
TE offers solderless crimping systems to handle a wide range of wire connections including solid and stranded lead wire, insulated magnet wire, and component leads. Each system is comprised of continuous, serrated Crimpband material and a crimping machine. The TE solution allows the flexibility to create a shape and size, which optimizes the crimp's electrical and mechanical performance.

The TE crimping system produces a very economical and reliable interconnection. Utilizing a continuous crimpband material the machine will feed, cut form, and crimp your application resulting in a very strong and uniform interconnect crimp.

Whether your application required a wire-to-wire, wire to components leads, wire to terminals, or magnet wire splice termination, the very flexible and dependable crimping machine will provide high-speed scrap free interconnects.

Substantial increase in production interconnection rates can be realized versus traditional soldering. Not to mention it completely eliminates the noxious fumes.

The **mod I crimping system** is used when running standard RTM and MTM crimpband product. In addition, left and right horn termination machines are available when your application requires additional working envelope.



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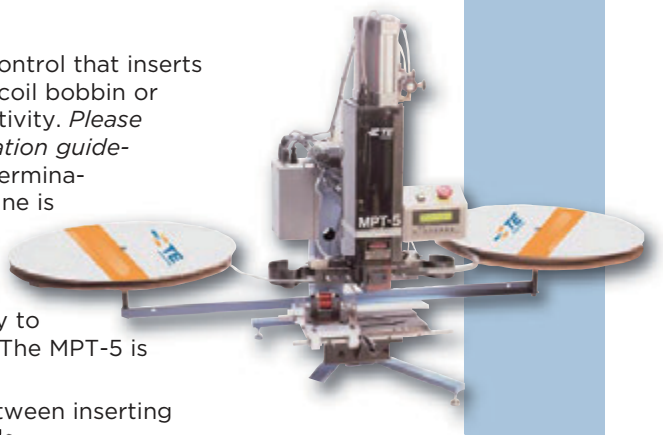
Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

MPT-5 MAG-MATE Product Terminator

Not CE approved, refer to Mark I, Mark II pages 83, 84.

The MPT-5 is an air-operated machine with microprocessor control that inserts MAG-MATE terminals into customer-designed cavities in the coil bobbin or similar magnet-wire housing, terminating the wire for connectivity. *Please note: The customer designed cavities must follow TE specification guidelines.* Termination of single, dual, triple and up to quadruple termination possible depending on the application details. The machine is available in either vertical or horizontal configuration to match the customer's application.



The dual reel capability of the MPT-5 machine allows insertion of two different MAG-MATE terminals, with the capability to alternate between inserting one and two terminals at a time. The MPT-5 is also capable of trimming excess magnet wire.

The MPT-5 Terminator also has the capability to alternate between inserting 2 bridged (or commoned) terminals and 2 separated terminals.

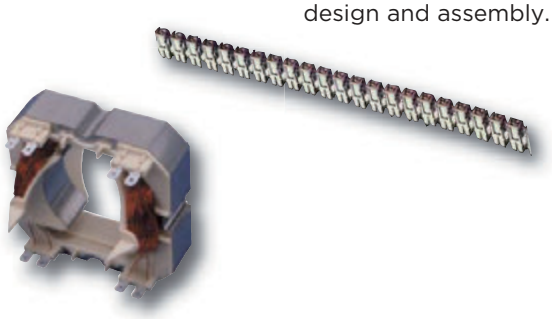
Request catalog 1308387 for more information.

MAG-MATE Terminal Cavity and Fixture Design

MAG-MATE terminals insert into a molded-in cavity in the coil bobbin. The bobbin is generally secured in a fixture during the insertion/termination process. TE engineers work with our customers to support cavity and fixture design, at any level. We can provide complete design of cavities and fixtures for customer's applications, work with our customer's engineers, or simply provide CAD models and other engineering data as needed. Consultation early in the design process allows customers maximum benefit from our decades of magnet-wire experience.

Product Line Integration

The MPT-5 and APT IIIA Machines have the production capacity and the electronics for easy integration into automated production lines. TE Engineers work with your system integrators to assure the efficiency of TE equipment into the line's design and assembly.



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Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

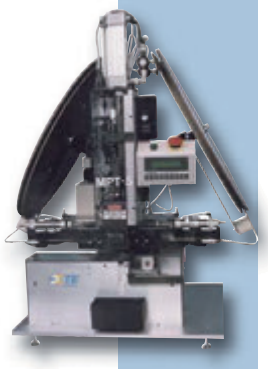
MPT-5 S/L Machine (for SIAMEZE and Lead Lok Terminals)

Not CE approved, refer to Mark I, Mark II pages 83, 84.

For quick, easy and reliable termination of magnet wire, TE offers the MPT-5 S/L MAG-MATE product terminator — an air-operated insertion machine with microprocessor control.

The MPT-5 S/L machine inserts a SIAMEZE terminal into a customer-designed cavity in the coil bobbin or similar mag-wire housing, terminating the wire for connectivity. Please note: The customer designed cavities must follow TE specification guidelines. It can insert both the SIAMEZE terminal and the Lead Lok terminal to assure your lead wire connection. The MPT-5 S/L offers dual reel capability and is also capable of trimming excess magnet wire. The dual reel capability of the MPT-5 S/L allows insertion of two different SIAMEZE terminals, with the capability to alternate between inserting one and two terminals at a time.

The MPT-5 S/L machine is available as a horizontal or vertical bench machine or as a discrete module for integration into automated lines.



MPT-5 S/L

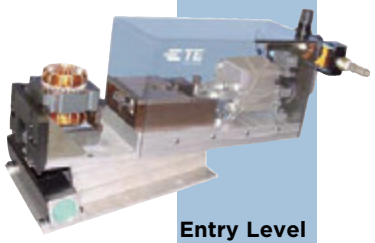
EMT — Entry Level Magnet Wire Terminator

(for loose piece SIAMEZE, Lead Lok, or MAG-MATE Terminals)

Not CE approved, contact engineering for quotation.

The Entry Level Magnet Wire Terminator tube design is based on the proven MPT-5 system and incorporates a fine adjust mechanism for easy set-up. The floating tube bottoms on the top of the terminal cavity to create the datum for the insertion depth of the terminal. The insertion depth can be adjusted in .002" [.05 mm] increments quickly and easily.

An unobstructed view of the tube bottom permits the operator to easily load loose piece terminals. A two-handed actuation system protects the operators during the insertion process and the open architecture design allows operators to easily load and unload the stators on and off the fixture.



Entry Level Terminator

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Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

Manual Hand Tool

(for loose piece SIAMEZE, Lead Lok, or MAG-MATE Terminals)

- Inserts loose piece terminals into molded cavities
- Insertion depth is repeatable due to the hand tools design which requires the operator to fully compress the handle before it is allowed to retract
- Since tooling captures the cavities during insertion, no fixturing is needed
- Hand tools are available quickly for prototyping, repair, and/or low volume applications

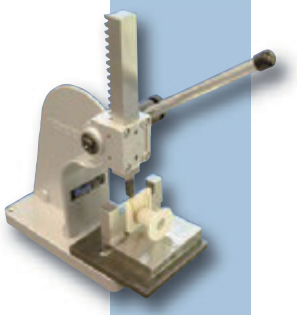
** *The manual hand tool is not compatible with every application. Please contact TE Connectivity for more information.*

Manual Hand Tool

Manual Arbor Press

(for loose piece SIAMEZE, Lead Lok, or MAG-MATE Terminals)

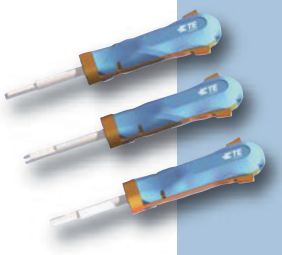
- Inserts loose piece terminals into molded cavities
- One tip is capable of inserting the SIAMEZE wire-to-wire terminal, the lead wire and the Lead Lok terminal
- Insertion tip bottoms on the top of the cavity to provide repeatable insertion depth capability
- Customers often supply their own fixtures for prototyping or low volume requirements
- Tips, arbor presses, and CERTI-LOK hand tools are available quickly for prototyping applications requirements



Manual Arbor Press

Hand Insertion Tools

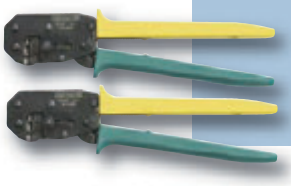
- Inserts loose piece terminals into molded cavities
- Available quickly for prototyping application requirements
- Available for each type of MAG-MATE terminal



Insertion Tools

Full Line of Crimp Tooling

- TE offers a full line of hand tools, bench equipment, and automatic machines to perform the wire crimps for the mating end of these MAG-MATE connections.



CERTI-LOK Tools

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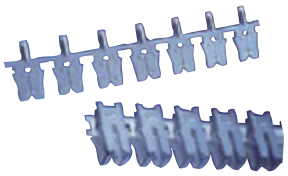
Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

MAG-MATE Inserter MK I with Pneumatic Control,

Primarily sold in Europe.

- Single, dual, triple and quadruple insertion
- Module easily integrated into production lines using simple handshake signals
- Holding fixture for bobbin can be designed and built by TE
- Can apply standard MAG-MATE and SIAMEZE terminals
- Load-while-running feature increases productivity
- Cycle time: 0.9 - 1.3 s depending on terminal type
- Mechanical insertion force limiter optional



MK I Inserter

MAG-MATE Inserter MK I with Electro Pneumatic Control (PLC),

Primarily sold in Europe.

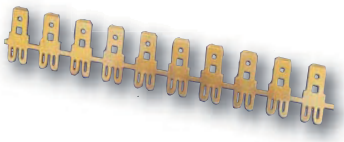
- Single contact
- Double contacts with or without bridge
- 2 single contacts alternately with 2 bridged contacts
- Module is easily integrated into customer's production line using simple handshake signals
- Terminations up to 4 terminals at a time as single or linked type
- Mechanical insertion force limiter optional

Mark II Inserter with PLC

MAG-MATE and SIAMEZE Inserter Mark II with PLC,

Primarily sold in Europe.

TE magnet wire terminations are a perfect connecting alternative to all soldering techniques used in a lead-free environment. Special knowledge is required to design a mass manufacturing line for insulation displacement crimps on thin lacquerd insulated wires with high yield. Design aspects of the terminal, the cavity and the machine all need to be harmonized. With the Inserter Mark II, TE can offer an economic solution especially for the application of MAG-MATE and SIAMEZE terminals.



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Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

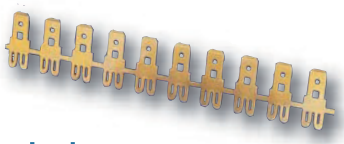
MAG-MATE and SIAMEZE Inserter Mark II with PLC and Insertion Force Control,

Primarily sold in Europe.

This advanced insertion machine provides the features of the MAG-MATE inserter Mark II with an additional force distance control system. The machine is designed to apply multiple different contacts and will be customized according to the customer or product specific requirement. The contacts can be used as single contacts or in strip form (bridge function adjusted "on-the-fly").

A gauge is available to check the adjusted insertion force and to recalibrate the insertion force control sensor.

Request catalog 7-1773440-4 for more information.



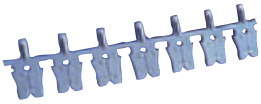
Mark II Inserter with PLC and Insertion Force Control

Pneumatic Insertion Tool for MAG-MATE Terminals,

Primarily sold in Europe.

The pneumatic tool for MAG-MATE terminals features a rotary insertion finger to faciliate different insertion angles.

This tool is designed for use in TE standard insertion machines such as P200 and P300 but can also be integrated into customized production lines or assembly cells.



Pneumatic Insertion Tool

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Application Tooling

Magnet Wire MAG-MATE Terminal Application Equipment

Customer Specific Machines

This unique machine was developed to process all IDC terminals regardless of shape and configuration. The insertion head module is capable of inserting individual or multiple terminals and can be configured for dual feed, left and right hand supply reels.

The servo-driven NC-Axis facilitates precisely controlled insertion with programmable ramp profile. If required, a servo driven torque motor will locate the stator/bobbin to programmable positions.

Excess magnet wire and wrap post are cut-off during the insertion cycle and removed via a ventury. The cutting punches are cam actuated via our patented linear slide module.

The machine is designed and built for easy maintenance. Spare parts (punches, insertion blades, trim blades, die plate inset) are easy to access and replace.

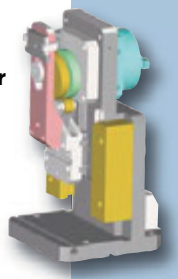
Custom Built IDC Terminal Insertion Head

The insertion head module is designed to be integrated into a rotary index or linear transfer line. The IDC terminal insertion can be in vertical or horizontal plane. The terminal strip feeds from the right and/or from the left, if necessary with 2 different terminal configurations.

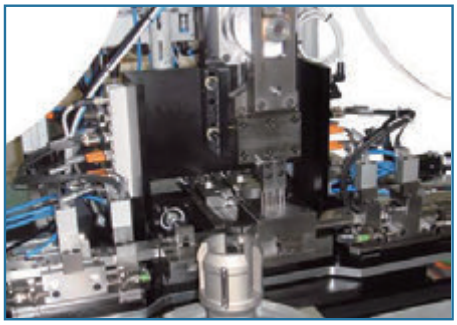
Wrap posts and excess magnet wire can be removed via a trim blade. Insertion force monitoring is available as an option.

The insertion head module is custom built according to your requirements.

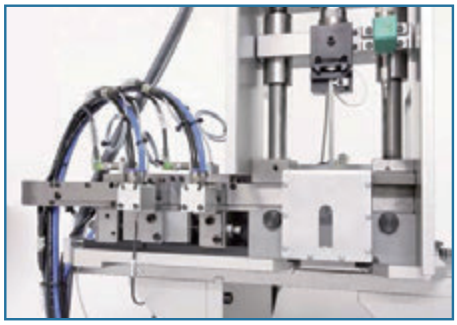
Request catalog 7-1773440-4 for more information.



Cam driven linear slide module for punch actuation.



Horizontal Design



Vertical Design

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