COMMERCIAL MANUAL HAND TOOLS

A FLEXIBLE APPROACH TO MANUAL CRIMPING

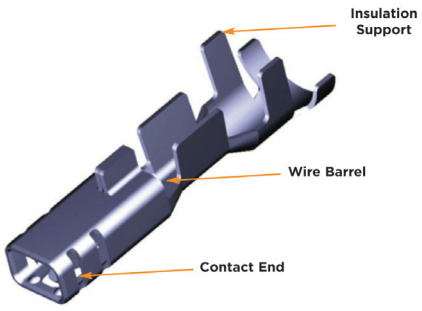
INTRODUCTION TO TOOLING SOLUTIONS

TE Connectivity. A Leader in Crimp Quality.

Anyone can make a tool to crimp terminals onto a wire. But not everyone can manufacture a tool to crimp the terminals properly. Crimp termination of wires isn't easy. At least, doing it right isn't easy. We know. We started it. TE Connectivity developed the technology of hand crimping over 70 years ago.

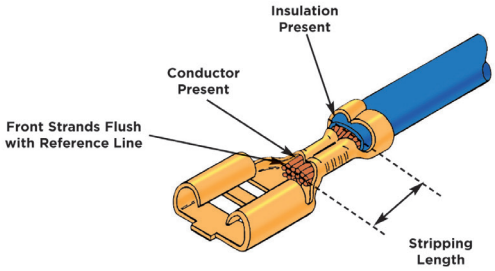
The Secret to a Successful Crimp.

Matching the Terminal to the Tooling - Among the many factors that are critical in producing a quality crimp, matching the terminal to the tooling is crucial. Unlike inferior tooling options, TE Connectivity offers engineered solutions that are designed to match the exact crimp geometry of the terminal to be applied on the wire. To create a proper crimp you need to follow these important steps:

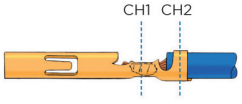


1. Wire Selection - AWG and wire insulation thickness varies from wire to wire. Just because two wires are listed at the same AWG, it doesn't mean their insulation thickness is the same. If you don't take into account both factors, the copper or aluminum strands may not fit in the wire barrel correctly or the terminal's insulation support may be too large or small for the wire strand.

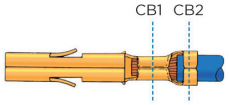
2. Wire Prep - In order to properly place a wire in a terminal, the wire insulation must first be stripped to the proper length based on the terminal specifications. If the insulation is cut too short, or too too long the wire will not be seated properly into the wire barrel, causing terminal separations or shorting.



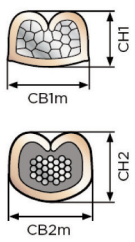
3. Crimp Specifications - To create a proper crimp for a TE connector or terminal you should use a TE Connectivity tooling solution that is specifically engineered to the proper Crimp Height, Width and Crimp Geometry of the selected terminal or contact.

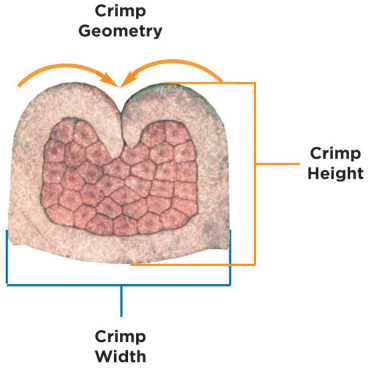


CH2: Insulation crimp height
CH1: Conductor crimp height



CB2m: Insulation crimp width
CB1m: Conductor crimp width





What You Need to Know About TE Hand Tools

Tool Grade

Tool grade is a prime consideration when choosing the appropriate tool for an application. Our hand tools are categorized into three levels: Service, Commercial and Premium. The higher the grade of the tool, the less operator skill is required to repeatedly meet the specified parameters of the crimp.

Premium (CERTI-CRIMP Tool)

Premium tools include the appropriate crimp die configuration, integral locating, and integral straightening features that permit terminals or contacts crimped in these tools to meet all feature requirements in applicable TEC application (114-) specifications. Most premium tools include an adjustable insulation crimp height feature and the CERTI-CRIMP ratcheting feature, set at the factory, which prevents the ratchet from releasing until the wire crimp jaws bottom within .001. This helps provide consistent repeatability of the crimp. Premium hand tools require the least amount of user dexterity.

Commercial (PRO-CRIMPER III Tool)

Commercial die assemblies are designed to meet the wire crimp height requirements per the applicable TEC application (114-) specifications. Other feature requirements may or may not be met. Commercial handle assemblies permit the interchange of die assemblies and an adjustable ratcheting feature. Users are responsible for adjusting the ratchet to obtain the correct crimp height. Commercial tools require a greater amount of user dexterity than Premium crimp tools.

Service

Service tools are generally single thickness, stamped tools. They are not intended to meet any specifications and require a higher level of user dexterity to obtain acceptable results.

Tool Type

Choosing a tool type may be driven by several factors: simply by type preference, or by the application needs itself, i.e. heavy duty crimp, industry specification requirements, etc. The overall wire range is also a key consideration when choosing the appropriate tool for an application. Often there will be several tools referenced to the same product which have different wire ranges.

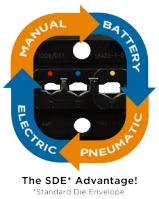
COMMERCIAL: MANUAL HAND TOOLING

Commercial SDE Tooling Options

PRO-CRIMPER III Hand Tool
Part No. 354940-1 (frame only)

The PRO-CRIMPER III hand tool is ideally suited for R&D prototyping, networking applications, and commercial, industrial, and institutional maintenance work.

- Enhanced ergonomics, with a thin, comfortable handle profile
- Manufactured with precision stamping that permits close tolerance controls on critical parts, for better performance and repeatability
- Improved tool geometry for a longer life, stronger tool frame
- Fits industry's largest selection of crimp die options



The SDE* Advantage!
*Standard Die Envelope

SDE SA Hand Tool
Part No. 9-1478240-0 (frame only)

The unique geometry of this tool results in a comfortable, easy-to-use handle design that is unmatched in the market.

- Large crimp jaw arc, minimizing roll in open barrel applications
- Easy accessibility for space-constrained applications
- User-adjustable ratchet control and emergency ratchet release

The SDE* Advantage!
*Standard Die Envelope

ERGOCRIMP Hand Tool
Part No. 539635-1

- Interchangeable dies
- Virtually a straight action jaw closure
- Ratchet mechanism ensures complete crimp cycle
- Easy access ratchet release
- Handle pressure adjustment with locking device
- Ergonomic non-slip handles

Insertion/Extraction Tools

FAST FACTS

- Portability
- Customization
- Cost effectiveness
- OEM personalization
- Flexibility in the factory as well as in service and repair garages.
- Consist of well-proven hand tools and dies as well as accessories matched to special applications
- A selection of sample terminals enables the technician to start work immediately

In addition to providing standard kits, TE Connectivity is also able to provide custom kits for volume requirements containing only tools, or a combination of tools, dies and terminals tailored to your specific requirements.

The kit shown is an example designed specifically for the Automotive Industry. However, we can also provide kits for promotion and product support as well as application support and repair.

The flexibility in creation of these individual kits enables the customer to help both control and ensure quality.

PRO-CRIMPER Hand Tool Kits

TE Specialty hand tools are available in convenient kits that contain the tooling, terminations, and spare parts you need for your crimping operations.

PRO-CRIMPER III Hand Tool PIDG and PLASTI-GRIP Terminal Kit Part No. 55823-1

Includes hand tool (part no. 58433-3), 225 insulated ring and spade terminals in 12-10, 16-14 and 22-16 AWG [3.0-5.0, 1.3-2.0 and 0.3-1.3 mm^2] wire sizes.

BNC Premises Wiring Kit Part No. 58477-1

Includes hand tool (part no. 58433-1); plugs—5 RG-58, 10 RG-59/62, 5 RG-58 plenum and RG-59/62 plenum sizes; adapters —2 jack-to-jack and 2 T.

PRO-CRIMPER III Hand Tool Repair Kit Part No. 679221-1

Includes retaining rings, handle return spring, pawl spring, pivot pins, pawl pin, ratchet pawl, die pins, nut and die set screws.

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Tooling-to-Terminal Cross Reference

COMMERCIAL TOOLS

PRO-CRIMPER Hand Tools (PC)

SDE-SA Hand Tools (SDE-SA)

ERGOCRIMP Hand Tool

UNINSULATED TERMINALS

		Wire Range		Max.		Hand Tools	Tool Type
		AWG	mm²	Insul.	Dia.	Commercial	Commercial
SOLISTRAND Terminals and Splices		22-16	0.3-1.25	—	—	58546-1	PC
		16-14	1.25-2	—	—	58546-1	PC
		12-10	3-5	—	—	58546-1	PC
		8	7	—	—	—	—

INSULATED TERMINALS

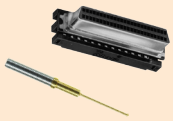
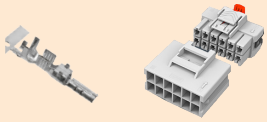
		Wire Range		Max.		Hand Tools	Tool Type
		AWG	mm²	Insul.	Dia.	Commercial	Commercial
PIDG FASTON Receptacles (6409oo Series)		22-18	0.3-0.8	.100	2.54	58433-3	PC
		16-14	1.25-2	.170	4.32	58433-3	PC
		12-10	3-5	.250	6.35	—	—
PIDG Terminals and Splices, PLASTI-GRIP Terminals		22-16	0.3-1.25	.125	3.18	58433-3	PC
		16-14	1.25-2	.150	3.81	58433-3	PC
		12-10	3-5	.230	5.84	58433-3	PC

FULLY-INSULATED TERMINALS

		Wire Range		Max.		Hand Tools	Tool Type
		AWG	mm²	Insul.	Dia.	Commercial	Commercial
Ultra-Fast FASTON Tabs and Receptacles		22-18	0.3-0.8	.230	5.84	58628-1	PC
		16-14	1.25-2	.260	6.60	58628-1	PC

Tooling-to-Terminal Cross Reference

OPEN BARREL TERMINALS

		Style	Wire Range AWG	Wire Range mm²	Max Insul.	Max Dia.	Hand Tools Premium	Tool Type Premium
AMPLIMITE D-Sub. Connectors		Size 20 DF Contacts	28-24	0.08-0.2	.040	1.02	58448-2	PC
			24-20	0.2-0.5	.060	1.52		
		Size 22 DF Contacts	28-22	0.08-0.3	.040	1.02	90800-1	PC
AMPMODU Connectors		Mod. IV Contacts	26-22	0.12-0.3	.061	1.55	58641-1	PC
			24-20	0.2-0.5	.069	1.75	—	—
CPC Connectors, M Series Connectors		Type II Contacts	28-24	0.08-0.2	.055	1.40	—	—
			24-20	0.2-0.6	.062	1.57	58541-1	PC
			18-16	0.8-1.4	—	—	58541-1	PC
			14	2	—	—	58541-1	PC
		Type III+ Contacts	30-26	0.05-0.15	.060	1.52	—	—
			26-24	0.12-0.2	.055	1.40	58495-1	PC
			24-20	0.2-0.6	.080	2.03	58495-1	PC
			24-20	0.2-0.6	.100	2.54	—	—
			24-20	0.2-0.6	.120	3.05	—	—
			18-16	0.8-1.25	.100	2.54	58495-1	PC
			18-14	0.8-2	.100	2.54	—	—
FASTON Straight Receptacles (Premier Line Only)		250 Series	22-18	0.3-0.8	.130	3.30	—	—
			18-14	0.8-2	.170	4.32	58524-1	PC
			14-10	2-5	.200	5.08	58525-1	PC
MATE-N-LOK Connectors		Commercial Contacts	30-22	0.05-0.3	.075	1.91	—	—
			24-18	0.2-0.8	.100	2.54	90574-1	PC
			20-14	0.5-2	.130	3.30	90575-1	PC
		Universal & Universal II Contacts	24-18	0.2-0.8	.100	2.54	90548-1	PC
			20-14	0.5-2	.130	3.30	90546-1	PC
			20-18	0.5-0.8	.200	5.08	90547-1	PC
			16-14	1.25-2	.200	5.08	90547-1	PC
		Mini-Universal	20-16	0.5-1.25	.126	3.20	90760-1	PC
		Mini-Universal II Contacts	26-22	0.12-0.3	.069	1.75	90758-1	PC
			22-18	0.3-0.8	.094	2.39	90759-1	PC
			20-16	0.5-1.25	.126	3.20	58707-1	PC
Power Triple Lock Connectors		Power Triple Lock	22-20	0.3-0.6	.106	2.70	2217267-1	SDE-SA
			20-16	0.6-1.25	.130	3.30	2217208-1	SDE-SA
			18-14	0.9-2.1	.146	3.70	2217266-1	SDE-SA
			12	3.3	.167	4.25	2217268-1	SDE-SA

Let's Connect

To learn more about Commercial Manual hand tooling or our comprehensive bundle of tooling solutions please visit us at **www.tooling.te.com**

TE Technical Support Center

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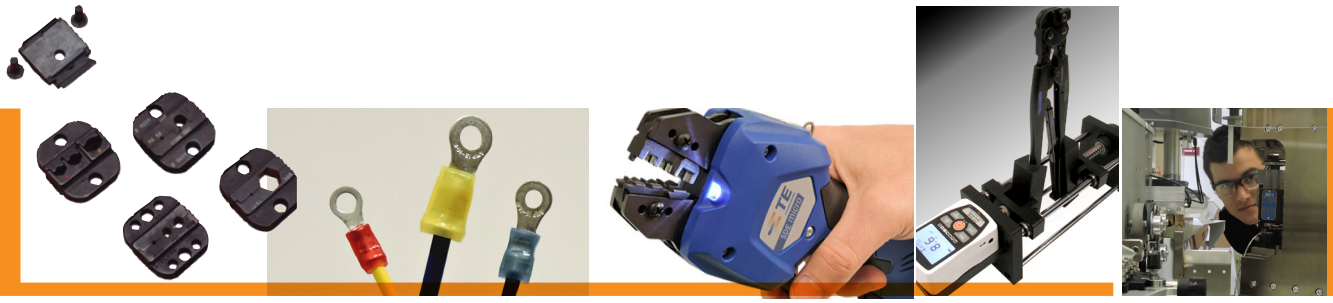
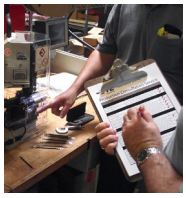


Add Power to Your Production.

If your production needs require the need for fast, mobile hand tools that can help eliminate the hand fatigue from performing manual crimps, consider maximizing the power of our Lithium-Ion battery hand tools. Many of our Lithium-Ion battery powered hand tools utilize the same interchangeable die sets found in our Premium and Commercial hand tool lines, thereby speeding up your production capacity without the need for purchasing new die sets. For purchasing options go to www.tooling.te.com and search for catalog number **1-1773859-6**.



Waste Not. Want Not.

Whether it's time or scrap, in manufacturing everyone knows that waste costs money. With our on-site certification and consultation services, we can help you:

- Reduce downtime
- Reduce scrap
- Maintain crimp quality
- Improve manufacturing efficiency

Connect with us today to learn more.

- E-mail: fieldservicesnorthamerica@te.com
- Phone: **800-722-1111 or 717-986-3434**
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