Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The Project Resource Manual—CSI Manual of Practice, Fifth Edition.*

This section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all "Specifier Notes" after editing this section.

Section numbers are from *MasterFormat 2010 Update.*

SECTION 26 05 83.13
WIRING CONNECTIONS: CRIMP TOOLS FOR SOLDERLESS CONNECTORS

Specifier Notes: Delete any information below in Parts 1, 2 or 3 which is not required or relevant for the project.

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes mechanical, hydraulic and pneumatic tools for crimping industrial solderless connectors (wire size range: #26 AWG to 2000 kcmils).

B. Related Sections:

1.	Section 26 05 83.11	Wiring Connectors: Solderless Connectors
2.	Section 26 05 83.12	Wiring Connections: Compression Lugs, Splices and Connectors
3.	Section 26 05 83.17	Wiring Connections: Crimp Tools for Aluminum and Copper Lugs and Splices

1.02 REFERENCES

A. Underwriters Laboratories, Inc. (UL):

1.	UL486A-486B	Wire Connectors
2.	UL486C	Splicing Wire Connectors
3.	UL310	Electrical Quick Connect Terminals

B. Canadian Standard Association (CSA):

1.	CSA C22.2-65	Wire Connectors
2.	CSA C22.2-188	Splicing Wire Connectors
3.	CSA C22.2-153	Quick Connect Terminals

C. National Fire Protection Association (NFPA):

1.	NFPA 70	National Electrical Code (NEC)

1.03 SUBMITTALS

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data:
1. Submit manufacturer's descriptive literature and product specifications for each product.
2. Manufacturer's product drawings.

C. Manufacturer's installation instructions

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Products shall be free of defects in material and workmanship.

1.05 WARRANTY

A. Product is warranted free of defects in material and workmanship.

B. Product is warranted to perform the intended function within design limits.

PART 2 – PRODUCTS

2.01 GENERAL

A. Industrial solderless connectors shall include terminals, splices, quick disconnects for copper wires from #26 AWG to 250 kcmils; lugs and splices for copper conductors from #8 AWG to 2000 kcmils, and lugs and splices for aluminum conductors #10 AWG to 1000 kcmils.

B. Crimp tools for use on solderless terminals and connectors shall be one of the following types:
1. Plier: WT2000, WT112M. WT110M
2. Ratcheting/Handheld: ERG4000 series, TBM6S, TBM45S, TBM14MC, OD581, PAIR22-6
3. Battery: BAT22-6, BPI42CR, BPLT6BSCR, BPLT62BSCR, BPLT14BSCR, BPLT15BSCR
4. Bench Mount: 25000, 12050, EBP22-10, BAIR22-6
5. Pump & Head: TBM6H, TBM12, 13642M, 13100A, TBM15I, 21940, 13610A, 13810

B. Solderless connectors must use the appropriate crimping tool and die in order to assure the correct mechanical and electrical connection

C. Crimp tools when used with appropriate connector shall provide a UL Listed and CSA Certified crimp.

2.02 MANUFACTURERS

A. Acceptable Manufacturers:
ABB Installation Products Inc.
860 Ridge Lake Boulevard
Memphis, Tennessee 38120
800-816-7809, 901-252-5000
electrification.us.abb.com

Products:
1. Sta-Kon® Application Tools
2. Color-Keyed® Compression Tools

2.03 DESIGN AND PERFORMANCE REQUIREMENTS

A. Plier Type
1. Application Range:
   a. Tools in this section shall be capable of crimping the full range of products for which they are intended, typically terminals in the range of #26 to #10 AWG.
2. Construction:
   a. Tools shall be constructed of durable materials suitable for long life use in industrial environments.
   b. Metallic materials shall be required for all structural load-bearing tool components.

c. Polymeric materials or PVC coatings shall be required for the hand grip portions of the tool.

3. Finish:
   a. All metallic tool components, and fasteners shall have an electro-plated corrosion resistant finish.
   b. Polymeric or PVC coated hand grips shall adhere to T&B accepted color scheme.
   c. All markings or instructions vital to the safe operation of the tool shall be permanent in nature, i.e. laser etched, or molded in.
4. Die Nests:
   a. Die nests shall be positively identified as to which connectors they are intended to compress.
5. WT2000 plier tool shall be used for RA, RB, RC insulated and A, B, C non-insulated Sta-Kon® terminals and splices (#26 – #10 AWG wire range). The WT2000 plier tool shall include wire cutters and wire strippers.
6. WT112M plier tool shall be used for RA, RB, RC insulated and A, B, C non-insulated Sta-Kon® terminals and splices (#26 – #10 AWG wire range). The WT112M plier tool shall include wire cutters.
7. WT110M plier tool shall be used for A, B, C non-insulated Sta-Kon® terminals and splices (#22 – #10 AWG wire range).

B. Ratcheting/Handheld Type
1. Application Range:
   a. Tools in this section shall be capable of crimping the full range of products for which they are intended, typically #26 AWG to 900 kcmils.
2. Construction:
   a. Tool shall be constructed of durable materials suitable for long life use in industrial environments.
   b. Metallic materials shall be required for all structural load-bearing tool components.
   c. Ergonomic handheld tools shall have polymeric hand grips. The grips shall be a two-part design with a rigid thermoplastic base and a soft thermoplastic elastomer over-molded onto the base.
3. Finish:
   a. All metallic tool components and fasteners shall have an electro-plated corrosion resistant finish.
   b. Polymeric hand grips shall adhere to T&B accepted color scheme and be constructed with a rigid base material and a softer over-molded material in the grip areas.
   c. All markings or instructions vital to the safe operation of the tool shall be permanent in nature, i.e. laser etched, or molded in.
4. Die Nests:
   a. Die nests shall be positively identified as to which connectors they are intended to compress.
5. Ratcheting Mechanism:
   a. Tools of this type shall contain a ratchet-like mechanism that compels the user to completely cycle the tool through its full range of motion, thus ensuring complete and repeatable compression of the connector.
   b. In the event of an emergency, the ratcheting mechanism shall have an easily accessible override should the full tool stroke need to be aborted.
6. ERG4000 ergonomic handheld tool series shall consist of the following types:
   a. ERG4001 – RA, RB, RC insulated terminals, splices and quick disconnects (#22 – #10 AWG wire range).
   b. ERG4002 – A, B, C non-insulated terminals, splices and quick disconnects (#22 – #10 AWG wire range).
   c. ERG4004 – A, B, C flag terminals (#22 – #10 AWG wire range).
   d. ERG4005 – B, C, D, E non-insulated terminals and splices (D & E tubular terminals only), (#18 – #6 AWG wire range).

e. ERG4006 – RA, RB .110 quick disconnects and RAX terminals (#26 – #14 AWG wire range).
f. ERG4007 – RD, RE insulated terminals (tubular only), (#8 and #6 AWG wire sizes).
g. ERG2008 – non-insulated terminals #8 to 1/0 AWG (tubular only).

7. TBM6S handheld tool shall be used to crimp #8 to 500 kcmil Color-Keyed® copper lugs, splices and taps; and #10 to 350 kcmil aluminum lugs and splices using the 13475/13477 die set series. TBM6S series handheld tool shall also be used to crimp Sta-Kon® D thru M non-insulated terminals using the 11802/11803 die series and RD thru RM insulated terminals using the 11821 die series.
8. TBM45S ergonomic handheld tool shall be used to crimp #8 to #2 AWG copper Color-Keyed® lugs and #10 to #6 AWG aluminum lugs.
9. TBM14MC handheld hydraulic tool shall be used to crimp up to 900 kcmil Color-Keyed® copper lugs and splices and up to 750 kcmil aluminum lugs and splices using the 15500 or 15500X die series.
10. OD581 handheld compression tool shall be used to crimp #8 to 250 kcmil Color-Keyed® copper lugs and splices and #10 to 3/0 AWG aluminum lugs and splices using the BY15C series dies.
11. PAIR22-6 portable handheld air tool shall be used to crimp #22 to #6 AWG Sta-Kon® insulated and non-insulated terminals, splices and quick disconnects using the DIE2000 series dies.

C. Battery Type

1. Application Range;
   a. Tools in this section shall be capable of crimping the full range of T&B connector products for which they are intended, typically #22 AWG to 1500 kcmils.
2. Construction:
   a. Tool shall be constructed of durable materials suitable for long life use in industrial environments.
   b. Metallic materials shall be required for all structural load-bearing tool components.
   c. Polymeric materials shall be required for outer housings and/or hand grip portions of the tool.
3. Finish:
   a. All metallic tool components and fasteners shall have an electro-plated corrosion resistant finish.
   b. Any other visible components of the tool that are manipulated in order to change an adjustment or tool setting as a normal part of the tool operation shall be alternately colored to identify that component as a touchpoint.
   c. All markings or instructions vital to the safe operation of the tool shall be permanent in nature, i.e. laser etched, or molded in.
4. Die Nests:
   a. Die nests shall be positively identified as to which connectors they are intended to compress.
5. Full Stroke Compelling Mechanism:
   a. Tools of this type shall contain a full stroke compelling mechanism that compels the user to completely cycle the tool through its full range of motion, thus ensuring complete and repeatable compression of the connector.
   b. In the event of an emergency, the full stroke compelling mechanism shall have an easily accessible override should full tool stroke need to be aborted.
6. BAT22-6 tool shall provide 1-1/2-tons of compression to crimp #22 to #6 AWG Sta-Kon® insulated and non-insulated terminals, splices and quick disconnects using the DIE2000 die series.
7. BPI42CR tool shall provide 4-tons of compression to crimp up to 300 kcmil Color-Keyed® copper lugs and splices and Sta-Kon® D thru M non-insulated terminals using TBM62 or TBM62X series dies.

8. BPLT6BSCR tool shall provide 6-tons of compression to crimp up to 600 kcmil Color-Keyed® copper lugs and splices, and up to 350 kcmil aluminum lugs and splices using the TBM62, TBM62X or 6TON series dies.
9. BPLT62BSCR tool shall provide 6-tons of compression to crimp up to 500 kcmil Color-Keyed® copper lugs and splices, and up to 350 kcmil aluminum lugs and splices using the TBM62 or TBM62X series dies.
10. BPLT14BSCR tool shall provide 14-tons of compression to crimp up to 900 kcmil Color-Keyed® copper lugs and splices and up to 750 kcmil aluminum lugs and splices using the 15500 or 15500X series dies.
11. BPLT15BSCR too shall provide 15-tons of compression to crimp up to 1500 kcmil Color-Keyed® copper lugs and splices and up to 1000 kcmil aluminum lugs and splices using the 15500, 15500X (with 15500-TB adapter), 15600 or 15600X series dies.
12. BAT22-6 tool shall use a 9.6V rechargeable Ni-Cd battery. BPI42CR shall use a 9.6V rechargeable Ni-MH battery. BPLT6BSCR, BPLT62BSCR, BPLT14BSCR, BPLT15BSCR tools shall use a 14.4V rechargeable Ni-MH battery.
13. The TBM62X, 15500X and 15600X dies shall be used when crimping flexible conductors.

D. Bench Mount Type
1. Application Range;
   a. Tools in this section shall be capable of crimping the full range of T&B connector products for which they are intended, typically #26 AWG to 500 kcmils.
2. Construction:
   a. Tool shall be constructed of durable materials suitable for long life use in industrial environments.
   b. Metallic materials shall be required for all structural load-bearing tool components.
3. Finish:
   a. All metallic tool components and fasteners shall have an electro-plated corrosion resistant finish.
   b. All markings or instructions vital to the safe operation of the tool shall be permanent in nature, i.e. laser etched, or molded in.
4. Die Nests:
   a. Die nests shall be positively identified as to which connectors they are intended to compress.
5. Full Stroke Compelling Mechanism:
   a. Tools of this type shall contain a full stroke compelling mechanism that compels the user to completely cycle the tool through its full range of motion, thus ensuring complete and repeatable compression of the connector.
6. 25000 air-operated bench mount tool shall be used to crimp #8 to 500 kcmil Color-Keyed® copper lugs, splices and taps; and #10 to 350 kcmil aluminum lugs and splices using the 13475/13477 die set series. 25000 tool shall also be used to crimp Sta-Kon® D thru M non-insulated terminals using the 11802/11803 die series and RD thru RM insulated terminals using the 11821 die series
7. 12050 air-operated bench mount auto-feed tool shall be used to crimp #26 to #10 AWG Sta-Kon® terminals mounted to mylar tape using the 12051 die series.
8. EBP22-10 electric bench mount auto-feed tool shall be used to crimp #22 to #10 AWG Sta-Kon® plastic strip terminals using the RAH22-16, BAH16-14 and YAH12-10 die sets.
9. BAIR22-6 air-operated bench mount tool shall be used to crimp #22 to #6 AWG Sta-Kon® insulated and non-insulated terminals, splices and quick disconnects using the DIE2000 die series.

E. Pump & Head Type
1. Application Range;
   a. Tools in this section shall be capable of crimping the full range of T&B connector products for which the are intended, typically #8 AWG to 2000 kcmils.
   b. Pumps and heads shall be designed for use at 10,000 psi operation.

2. Construction:
   a. Pumps and tool heads shall be constructed of durable materials suitable for long life use in industrial environments.
   b. Metallic materials shall be required for all structural load-bearing tool components.
3. Finish:
   a. All metallic pump and tool components and fasteners shall have an electro-plated corrosion resistant finish.
   b. All pump and tool components shall adhere to T&B accepted color scheme.
   c. All markings or instructions vital to the safe operation of the tool shall be permanent in nature, i.e. laser etched, or molded in.
4. Die Nests:
   a. Die nests shall be positively identified as to which connectors they are intended to compress.
5. Full Stroke Compelling Mechanism:
   a. Tools of this type shall contain a full stroke compelling mechanism that compels the user to completely cycle the tool through its full range of motion, thus ensuring complete and repeatable compression of the connector.
   b. In the event of an emergency, the full stroke compelling mechanism shall have an easily accessible override should full tool stroke need to be aborted.
6. TBM6H 6-ton hydraulic crimping head shall be used to crimp up to 600 kcmil copper Color-Keyed® lugs and splices and up to 400 kcmil aluminum lugs and splices using the 6TON die series.
7. TBHM12 12-ton hydraulic crimping head shall be used to crimp up to 900 kcmil copper Color-Keyed® lugs and splices and up to 750 kcmil aluminum lugs and splices using the TBM12D die series.
8. 13642M 12-ton hydraulic crimping head shall be used to crimp #8 AWG to 250 kcmil Sta-Kon® insulated and non-insulated terminals using the 11700 die series for standard non-insulated; 21700M die series for military listed insulated; and 11700M series for military listed non-insulated. 13642M 12-ton hydraulic crimping head shall also be used to crimp up to 900 kcmil copper Color-Keyed® lugs and splices and up to 750 kcmil aluminum lugs and splices using the 11700 die series.
9. 13100A 14-ton hydraulic crimping head shall be used to crimp up to 900 kcmil copper Color-Keyed® lugs and splices and up to 750 kcmil aluminum lugs and splices using the 15500 or 15500X die series.
10. TBM15I 15-ton hydraulic crimping head shall be used to crimp up to 1500 kcmil copper Color-Keyed® lugs and splices and up to 1000 kcmil aluminum lugs and splices using the 15600, 15600X, 15500 or 15500X (with 15500-TB adapter) die series.
11. 21940 40-ton hydraulic crimping head shall be used to crimp up to 2000 kcmil copper Color-Keyed® lugs and splices and aluminum lugs and splices using the 11300 and 11400 die series.
12. 13610A electric hydraulic pump shall have a 1/2 HP rated motor for use with the following tool heads: TBM6H, TBM12, 13642M, 13100A, TBM15I, 21940.
13. 13810 heavy-duty electric hydraulic pump shall have a 1-1/2 HP rated motor for use with the following tool heads: TBM6H, TBM12, 13642M, 13100A, TBM15I, 21940.
14. The 15500X or 15600X dies shall be used when crimping flexible conductors.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Properly crimped connectors shall be installed in accordance to the NEC, CEC and manufacturer's instructions.

END OF SECTION