NOTE

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ±0.13 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for the application of Budget FASTON Receptacle Contacts. The contact insulation is color-coded by wire size range to eliminate errors during installation. These contacts are designed to accept a wire size range of 22-10 AWG. Color-coded wire sizes are: 22-18, red; 16-14, blue; and 12-10, yellow. Budget FASTON Receptacle Contacts are only available in 6.35 [.250]. Application may be done by hand for loose piece contacts and/or machine for tape- or reel-mounted contacts.

When corresponding with Tyco Electronics Personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

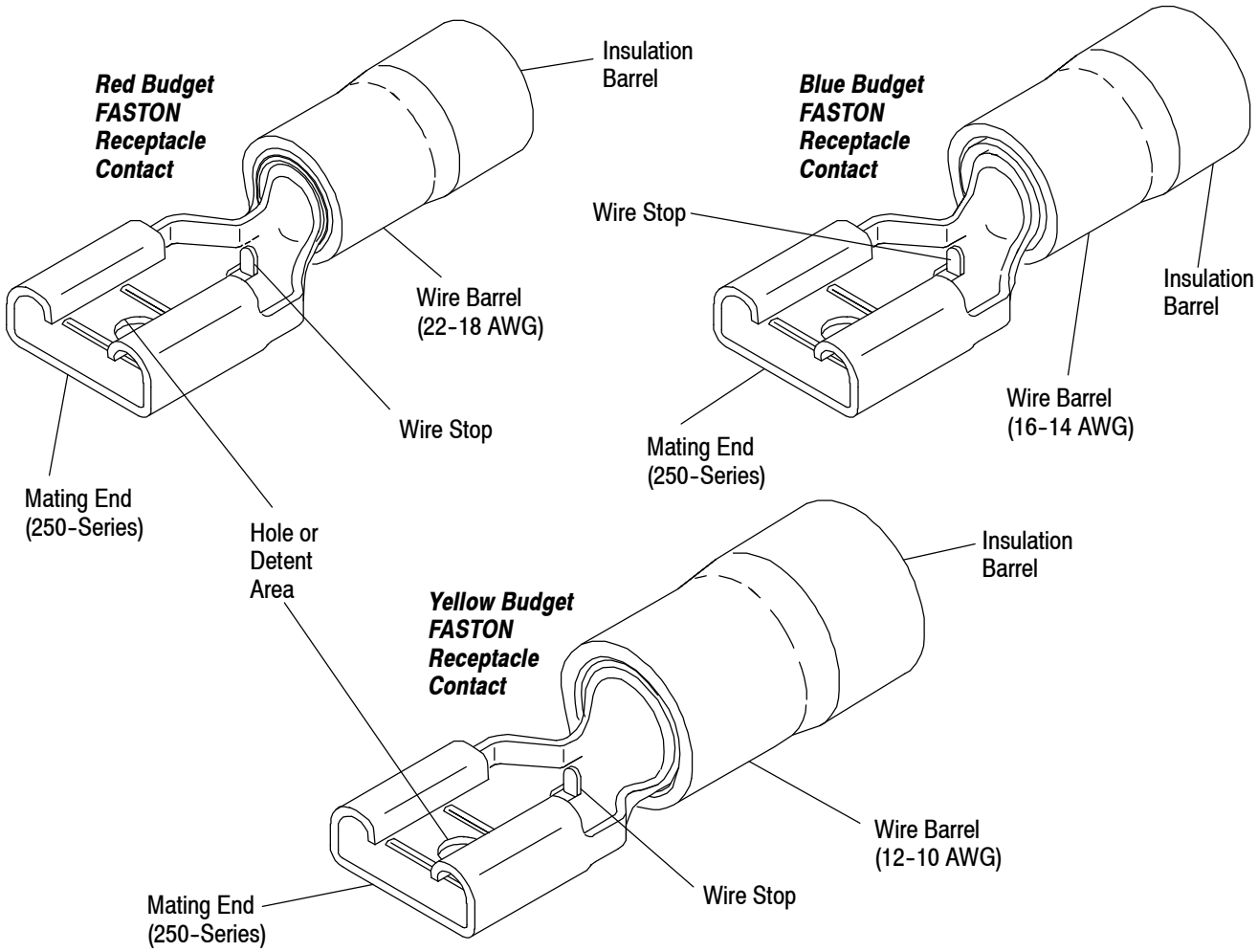


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements and new logo and format

2.2. Customer Assistance

Reference Part Number 696301 and Product Code G742 are representative numbers of Budget FASTON Receptacle Contacts. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local Tyco Electronics Representative or, after purchase, by calling the Tooling Assistance Center or Product Information number at the bottom of page 1.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by Tyco Electronics.

2.4. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for operation, maintenance and repair of tooling; and customer manuals (409-series) that provide setup, operation, and maintenance of machines.

Document Number	Document Title
408-2822	Crimping Die Assemblies 59826-1, 59827-1, and 59828-1
408-2823	TETRA-CRIMP* Hand Crimping Tool 59824-1
408-3295	Preparing Reel Of Contacts for Application Tooling
408-7424	Checking Terminal Crimp Height Gaging Die Closure
408-7432	Force Gage 92-100505 For Testing FASTON Terminals
408-8044	Miniature Quick-Change Applicator for Tape Mounted Closed Barrel Terminals
408-8063	TETRA-CRIMP HD Miniature Quick-Change Applicators (Side-Feed Type)
408-8082	Miniature Quick-Change Applicators (Side-Feed Type)
408-9816	Handling Of Reeled Products
409-1993	AMP-TAPETRONIC* Machine No. 69875 and 69875-1
409-5128	AMP-O-LECTRIC* Model “K” Terminating Machine, Accessories, Modified Machines
409-5842	AMP-O-LECTRIC Model “G” Terminating Machine 354500-[ ]
409-5852	Model III-G AMPOMATOR* CLS Lead-Making Machine 122500-[ ]
409-5878	AMPOMATOR CLS IV+ Lead-Making Machine 356500-[ ]
409-10016	Entry Level Terminator (ELT) Machine1338600-[ ]

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connectors.

B. Reel Storage

When using reeled contacts, store coil wound reels horizontally and traverse wound reels vertically.

C. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the contacts. The contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

D. Chemical Exposure

Do not store contacts near any chemicals listed below, as stress corrosion cracking in the contacts may occur.

Alkalies	Ammonia	Citrates	Phosphates Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites	Tartrates

NOTE

Where the above environmental conditions exist, phosphor-bronze contacts are recommended if available.

3.2. Special Characteristics

These pre-insulated receptacles will accept tabs widths of 6.35 [.250]. Serrations inside the wire barrel provide maximum contact and tensile strength to solid or stranded wire sizes. See Figure 2.

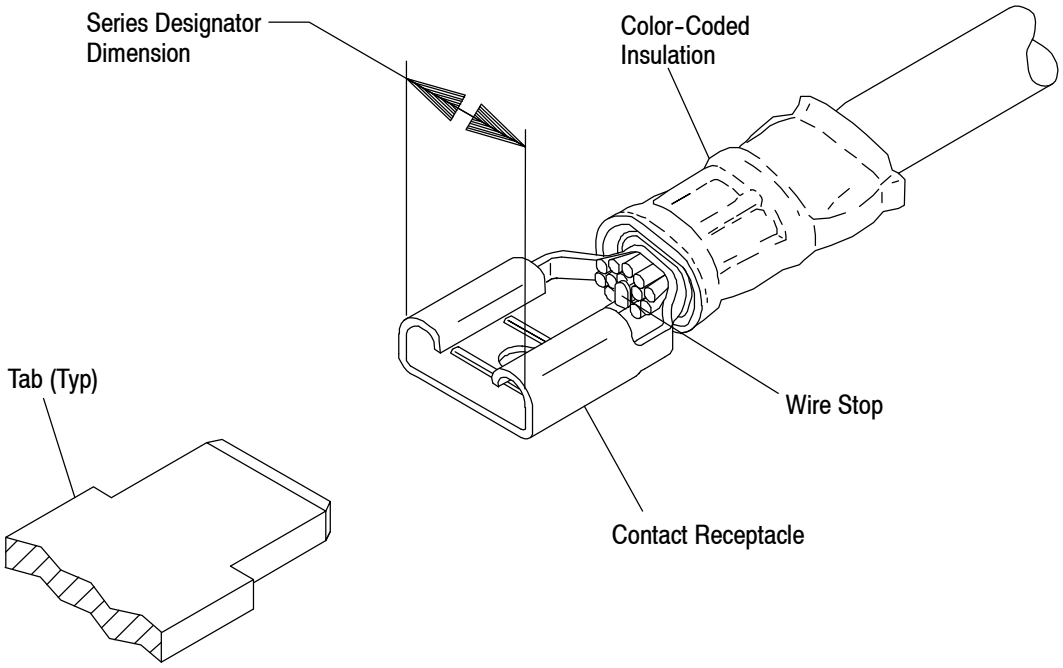


Figure 2

3.3. Wire Selection and Preparation

A. Type

The total wire range for Budget FASTON Receptacle Contacts is 22 through 10 AWG. See Section 4, QUALIFICATION, for specific agency certification and listings.

B. Preparation

The wire must be stripped to the dimension provided in Figure 3.

CAUTION

Do not nick, scrape, or cut the wire conductor during the stripping operation.

The table in Figure 3 also provides insulation strip lengths as determined by the size contact used. Also listed are acceptable wire insulation outside diameters for the contacts, and color codes used to easily identify loose-piece contacts.

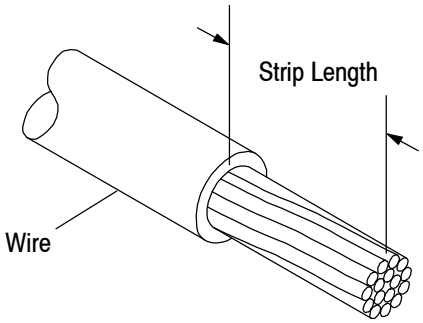
Locate the contact to be crimped in the appropriate tooling according to the instructions packaged with that tooling. Refer to Section 5, TOOLING. Perform the crimping operation.

3.4. Tensile Inspection

Crimped contacts should hold the wire firmly and have a pull-test value meeting that specified in the table in Figure 3.

NOTE

Adjust tensile testing machine for head travel of 25.4mm [1 inch] per minute. Directly and gradually apply force for one minute.



WIRE SIZE, AWG	INSULATION DIAMETER RANGE	STRIP LENGTH RANGE	COLOR CODING	CRIMP HEIGHT (SOLDER DIAMETER)	CRIMP PULL-OUT TEST	
					NEWTONS	POUNDS
22	2.62-3.56 [.105-.140]	8.33-7.51 [.328-.296]	RED	3.18 [.125]	35.6	8
20					57.8	13
18					89	20
16	2.92-4.32 [.115-.170]	8.33-7.51 [.328-.296]	BLUE	4.76 [.1875]	133.4	30
14					222.4	50
12	3.81-6.35 [.150-.250]	9.15-8.33 [.360-.328]	YELLOW	6.35 [.250]	311.4	70
10					355.9	80

Figure 3

3.5. Crimped Contact Requirements

A. Straightness

There shall be no twist, roll, deformation, or other damage to the mating portion of the crimped contact that will prevent proper mating. See Figure 4.

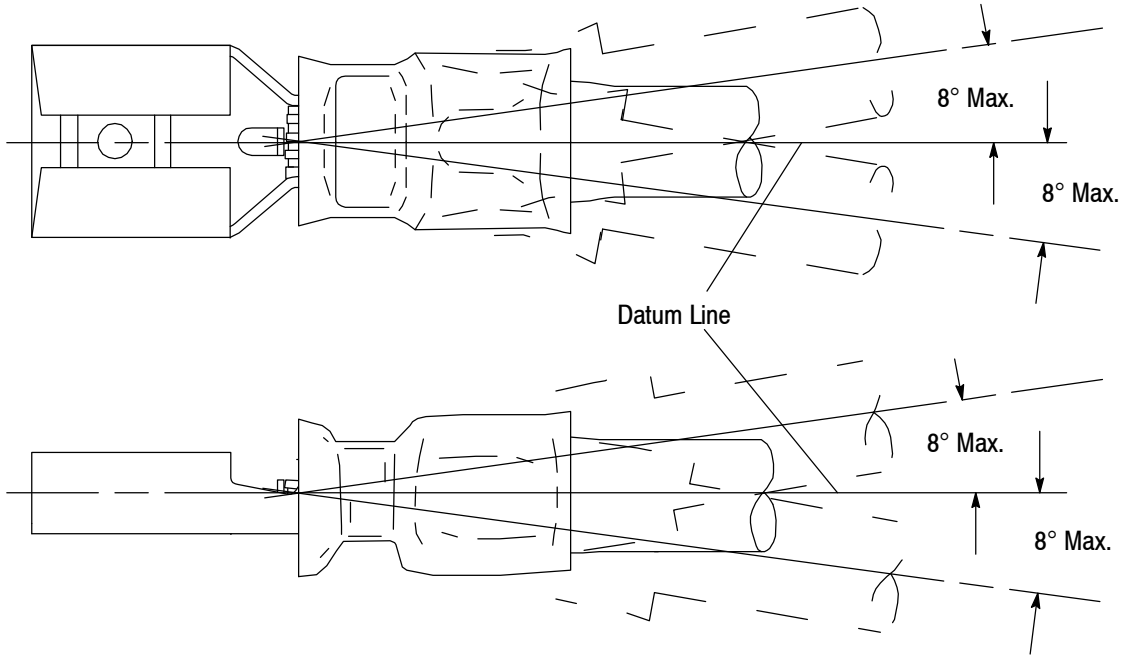


Figure 4

B. Crimp Height Procedure

Because these contacts are fully insulated, crimp height readings cannot be measured over the insulation. Therefore, to check for proper crimp height, crimp a piece of solid-core solder as specified in Figure 3. Solder with a ratio of 60% tin to 40% lead is recommended for the test. Check the height of the crimped solder against the crimp height dimensions given in the instructional material shipped with the application tooling. Also, refer to Instruction Sheet 408-7424.

CAUTION

Do NOT use solder in tools that crimp un-insulated contacts, unless specified by Tyco Electronics Engineering. (Solder particles could jam tooling locators, wire stops, ejectors, etc.)

CAUTION

DO NOT apply crimp height dimensions directly to the contact. This practice will over-crimp the contact, cracking the wire barrel, and possibly causing damage to the tooling.

Figure 5 shows a typical contact as it should appear after crimping.

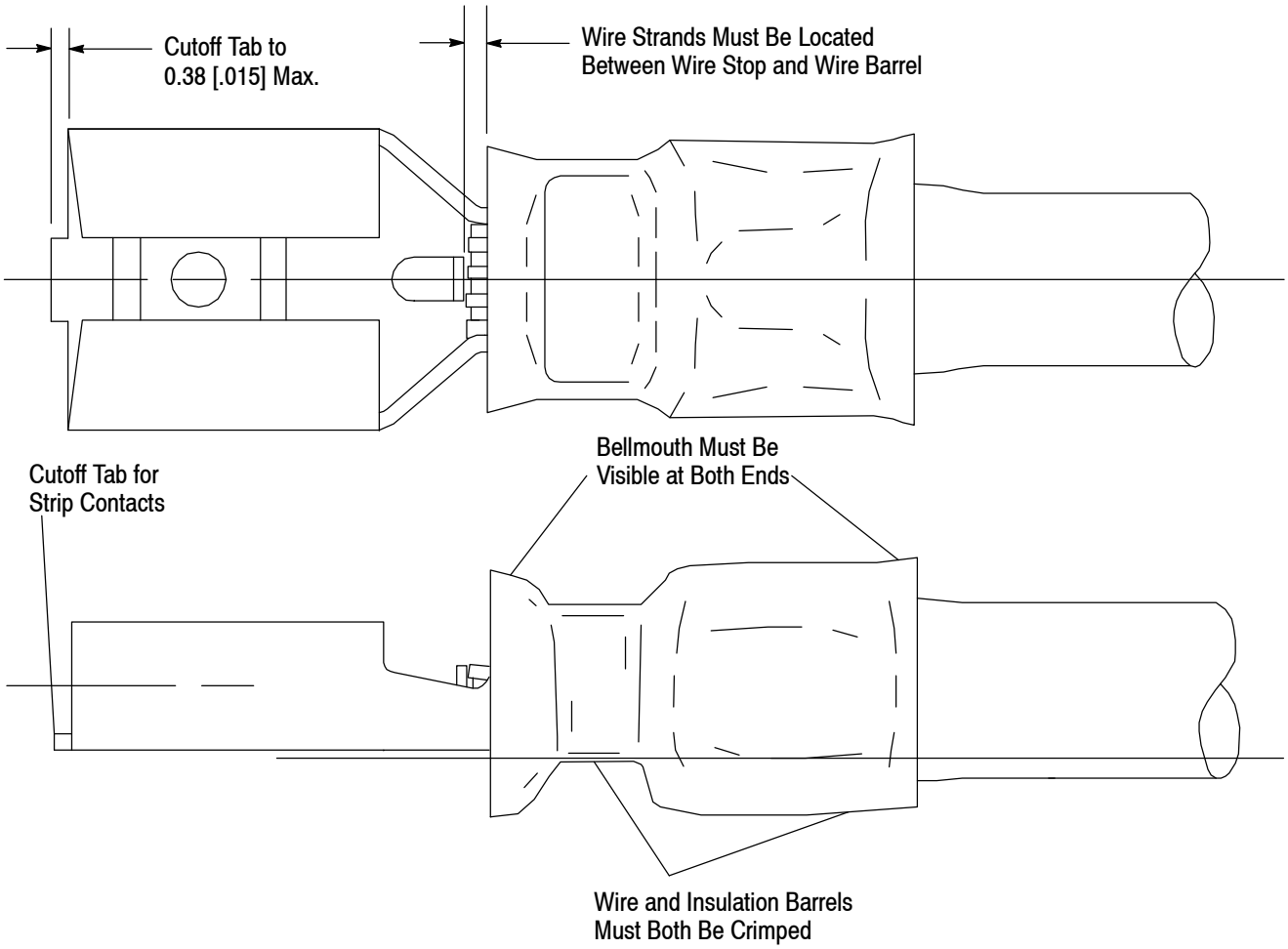


Figure 5

NOTE

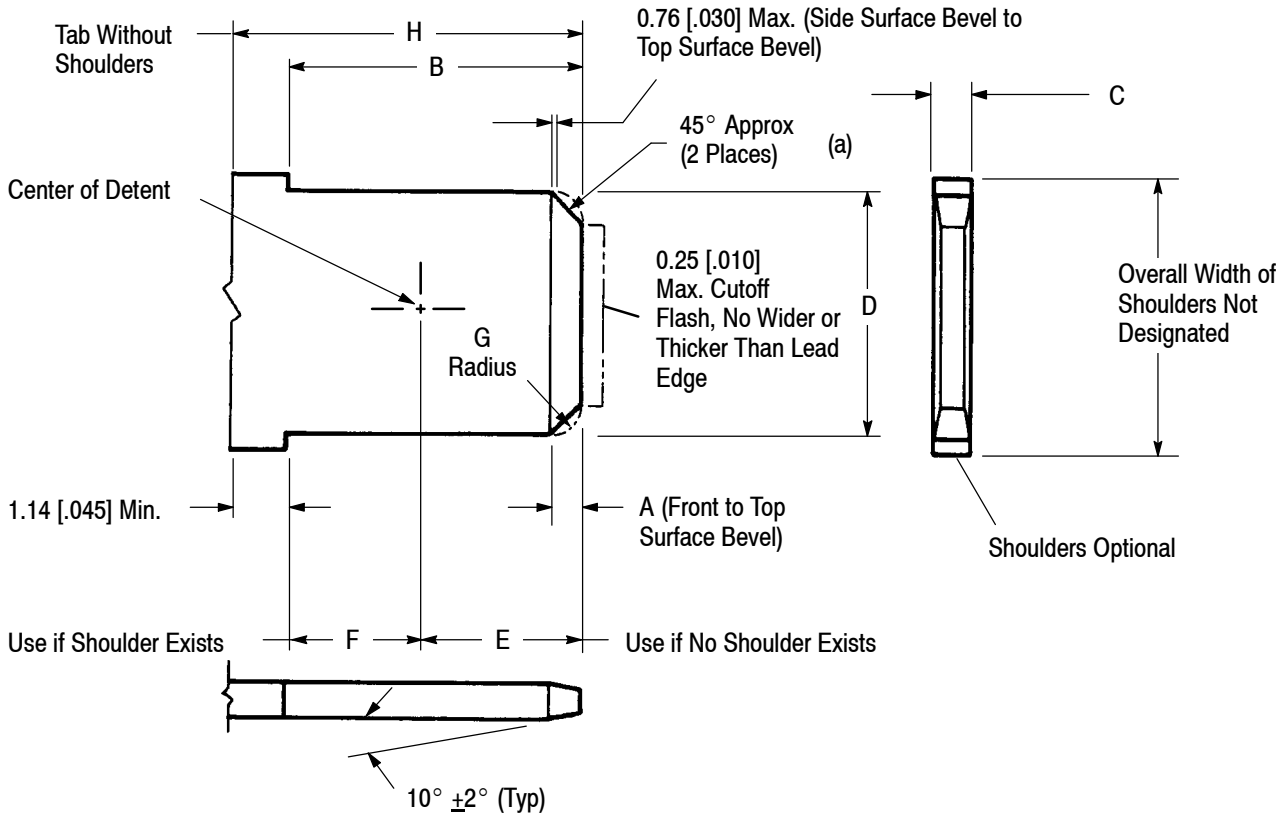
Periodic inspections must be made to ensure crimped contact formation is consistent as shown.

CAUTION

The insulation on pre-insulated contacts shall NOT be cut or broken during the crimping operation. Exercise of reasonable care by tooling operators should be sufficient to provide undamaged terminations.

3.6. Mating Tab Dimensions

Figure 6 shows features and dimensional requirements for tab contacts intended for mating with Budget FASTON Receptacles.



TAB	DIMENSION							
	A ±0.13 [±.005]	B (Min)	C ±0.03 [±.001]	D ±0.08 [±.003]	E ±0.20 [±.008]	F ±0.08 [±.003]	G ±0.51 [±.020]	H (Min)
6.35×0.81 [.250×.032] With Dimple	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]	3.86 [.152]	4.06 [.160]	1.27 [.050]	8.94 [.352]
6.35×0.81 [.250×.032] With Hole	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]	4.52 [.178]	3.40 [.134]	1.27 [.050]	8.94 [.352]

NOTE (a) Bevel need not be a straight line if within confines as shown, or a radius of G ± 0.51 [.020] may be substituted.

NOTE For detent and hole dimensions J, K, and L, see Figure 9.

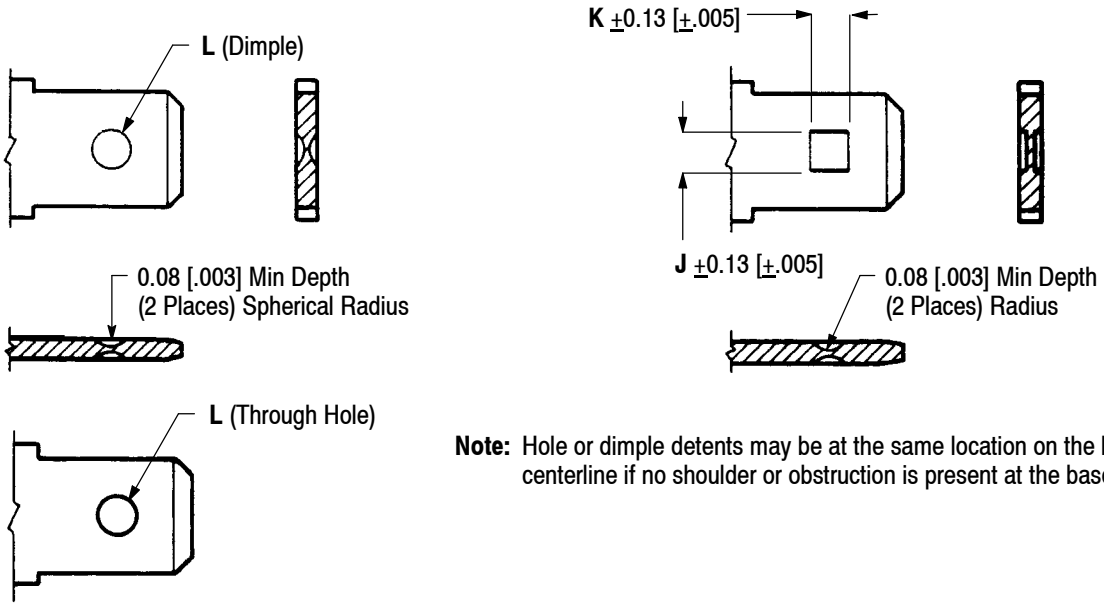
NOTE Top and bottom tab surfaces shall be flat within .1%; and free from burrs greater than 10% of tab thickness, or raised plateaus except as noted in Section 3.8.

NOTE Dimensional measurements shall not include plating, burrs, or flatness tolerance.

Figure 6

3.7. Tab Retention and Detent Configurations

A tab configuration having no locking feature may be used for applications where low mating retention forces are desirable. Where higher forces are sought, a tab with a detent meeting the requirements of Figure 7 should be used. Hole detents provide the greatest retention forces, while dimples provide acceptable medium-range forces.



Note: Hole or dimple detents may be at the same location on the longitudinal centerline if no shoulder or obstruction is present at the base of the tab.

TAB WIDTH (Nominal)	DIMPLE DETENT DIMENSION ±0.13 [.005]		DIMPLE OR THROUGH HOLE DETENT DIAMETER
	J (a)	K (a0	L
6.35 [.250]	2.36 [.093]	1.90 [.075]	1.78 +0.25/-0.13 [.070 +.010/-.005]

NOTE (a) Dimension applies to dimple detents only.

NOTE Hole or dimple detents may be at the same location on the longitudinal centerline if no shoulder or obstruction is present at the base of the tab.

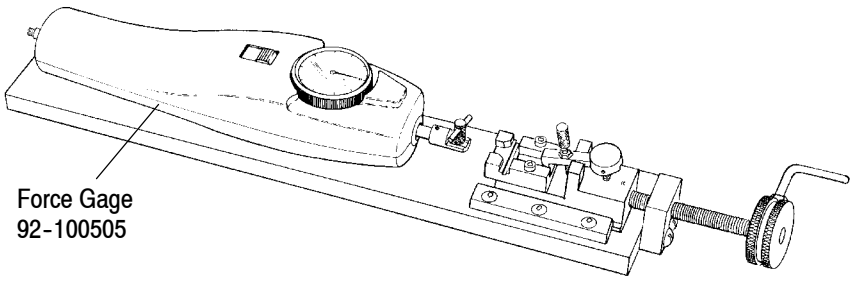
Figure 7

3.8. Mating Testing

The forces required to mate and unmate a test mating tab and receptacle shall be as specified in Figure 8. Measure the force using a testing device capable of holding the reading. It must also provide accurate alignment with slow and steady mating and unmating of the test tab and receptacle. Refer to Instruction Sheet 408-7432.

NOTE

Testing may be done using a gage as described in Residential Controls--Quick-Connect Terminals, ANSI/NEMA No. DC2--1982. Test tabs shall have dimensions as shown in Figure 6 of this specification, except that the "C" dimension shall have a tolerance of ≥ 0.008 [± .0003] for brass tabs (± 0.013 [.0005] for steel) and raised plateaus around detents shall be limited to a total of 0.03 [.001] for both sides.



MATING AND WITHDRAW FORCE (NEWTONS [LBS]) FOR TEST TAB AND RECEPTACLES						
TAB	FIRST INSERTION (MAXIMUM) INDIVIDUAL	FIRST WITHDRAW			SIXTH WITHDRAW	
		(MAX)	(MINIMUM)		(MINIMUM)	
			AVERAGE	INDIVIDUAL	AVERAGE	INDIVIDUAL
250	76 (17)	76 (17)	22 (5)	13 (3)	18 (4)	13 (3)

Figure 8

3.9. Repair

CAUTION

Contacts are not repairable once a termination has been made. Any defective or damaged contact must be removed and replaced with a new one.

4. QUALIFICATIONS

Budget FASTON Receptacle Contacts have been submitted to Underwriters Laboratories Inc. (UL), and CSA International for agency evaluation. UL 310 Standard for Electrical Quick-Connect Terminals provides product performance requirements and test information.

5. TOOLING

This section provides a selection of tools for various application requirements. Modified designs and additional tooling concepts may be available to meet other application requirements. A list of tooling recommendations and instructional material packaged with the tooling covering the full wire size range is provided in Figure 9.

NOTE

Use only TETRA-CRIMP type tooling for UL and CSA applications.

NOTE

Tyco Electronics Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact Tool Engineering through your local Tyco Electronics Representative or call the Tooling Assistance Center number at the bottom of page 1.

- **Applicators**
  Applicators are designed for the full wire size range of strip-fed, precision formed contacts, and provide for high volume, heavy duty production requirements. The applicators can be used in bench or floor model power units.

NOTE

Each applicator is shipped with a metal identification tag attached. DO NOT remove this tag or disregard the information on it. Also, a packet of associated paperwork is included in each applicator shipment. This information should be read before using the applicator; then it should be stored in a clean, dry area near the applicator for future reference. Some changes may have to be made to the applicators to run in all related power units. Contact the Tooling Assistance Center number at the bottom of page 1 for specific changes.

- **Power Units**
  A power unit is an automatic or semi-automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.

NOTE

AMP-O-LECTRIC Model "K" Terminating Machine 565435-5 has been superseded by AMP-O-LECTRIC Model "G" Terminating Machine 354500-1 for new applications. For existing applications, the Model "K" is still recommended because of the large number of installed machines.

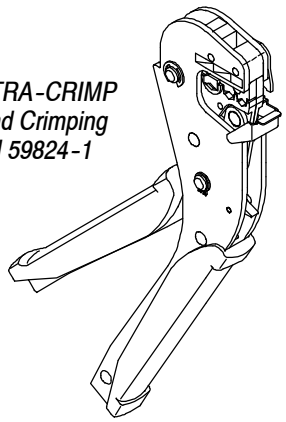
- **Hand Tools**
  Hand crimping tools are designed for prototype, low-volume applications, and repair.
- **Die Assemblies**
  Die Assemblies for crimping the contacts are available for the full wire size range. They are designed for easy installation and removal in hand crimping tool frame assemblies or applicators.

Budget FASTON Receptacle Contacts (250 Series)

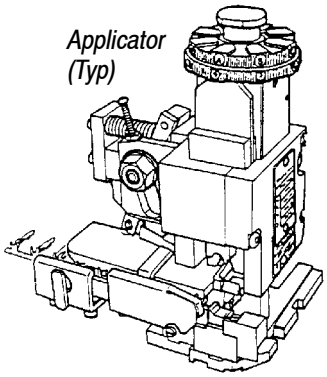
WIRE SIZE, AWG	HAND TOOL (DOCUMENT)	DIE ASSEMBLY■ (DOCUMENT)	APPLICATOR (DOCUMENT)	POWER UNIT (DOCUMENT)
22-18	59824-1 (408-2823)	---	---	---
	---	59826-1 (408-2822)	567200-2 (408-8082)	354500-1 (409-5842)
				565435-5 (409-5128)
			567200-3 (408-8082)	354500-[ ] (409-5842)
				1338600-[ ] (409-10016)
			687658-1 (408-8044)	122500-2, -3 (409-5852)
				356500-1, -2 (409-5878)
			---	69875 (409-1993)
		---	466788-3 (408-8063)	122500-2 -3 (409-5852)
				356500-1, -2 (409-5878)
			466788-4 (408-8063)	354500-1 (409-5842)
				565435-5 (409-5128)
16-14	59824-1 (408-2823)	---	---	---
	---	59827-1 (408-2822)	567200-2 (408-8082)	354500-1 (409-5842)
				565435-5 (409-5128)
			567200-3 (408-8082)	354500-[ ] (409-5842)
				1338600-[ ] (409-10016)
			687658-1 (408-8044)	122500-2, -3 (409-5852)
				356500-1, -2 (409-5878)
			---	69875 (409-1993)
		---	466789-3 (408-8063)	122500-2 -3 (409-5852)
				356500-1, -2 (409-5878)
			466789-4 (408-8063)	354500-1 (409-5842)
				565435-5 (409-5128)
12-10	59824-1 (408-2823)	---	---	---
	---	59828-1 (408-2822)	567200-2 (408-8082)	354500-1 (409-5842)
				565435-5 (409-5128)
			567200-3 (408-8082)	354500-[ ] (409-5842)
				1338600-[ ] (409-10016)
			687658-1 (408-8044)	122500-2, -3 (409-5852)
				356500-1, -2 (409-5878)
			---	69875 (409-1993)
		---	466790-4 (408-8063)	354500-1 (409-5842)
				565435-5 (409-5128)

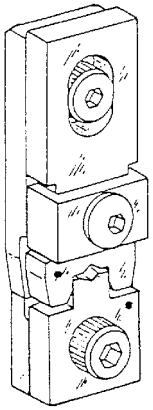
Figure 9 (cont'd)

TETRA-CRIMP Hand Crimping Tool 59824-1



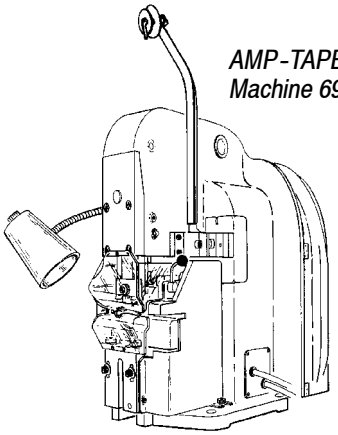
Applicator (Typ)



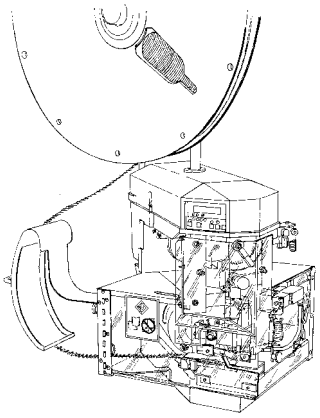


Die Assembly (Typ)

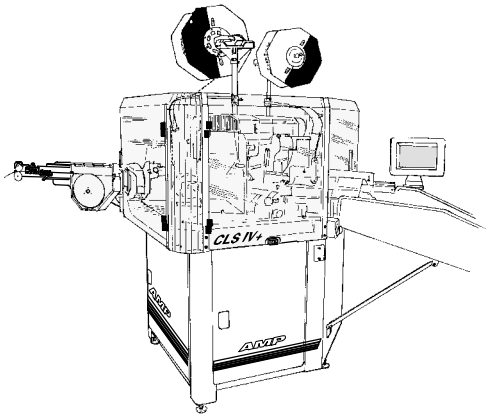
AMP-TAPETRONIC Machine 69875



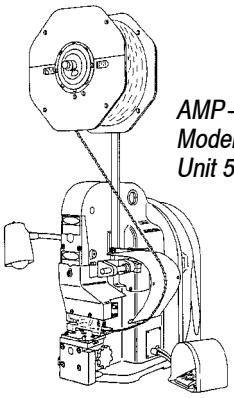
AMP-O-LECTRIC Model "G" Terminating Machine 354500-[ ]



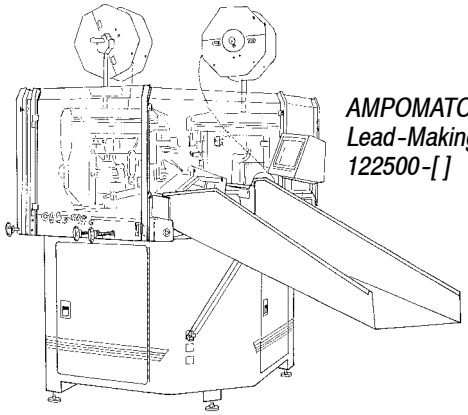
AMPOMATOR CLS IV Lead-Making Machine 356500-[ ]



AMP-O-LECTRIC Model "K" Terminating Unit 565435-[ ]



AMPOMATOR CLS Lead-Making Machine 122500-[ ]



Entry Level Terminator (ELT) Machine1338600-[ ]

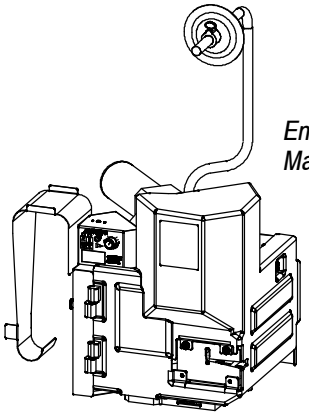


Figure 9 (end)

6. VISUAL AID

Figure 10 shows a typical application of Budget FASTON Receptacle Contacts. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

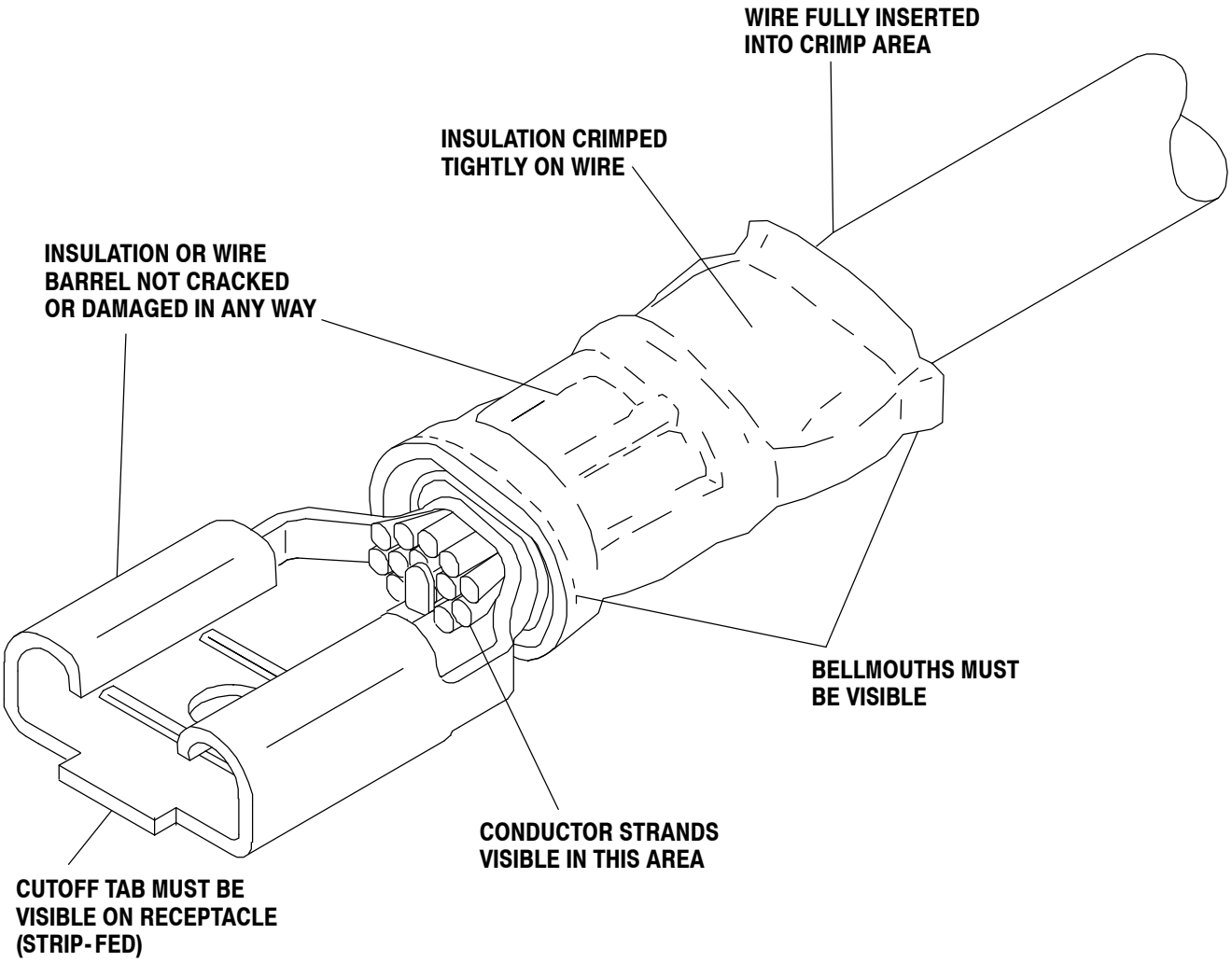


FIGURE 10. VISUAL AID