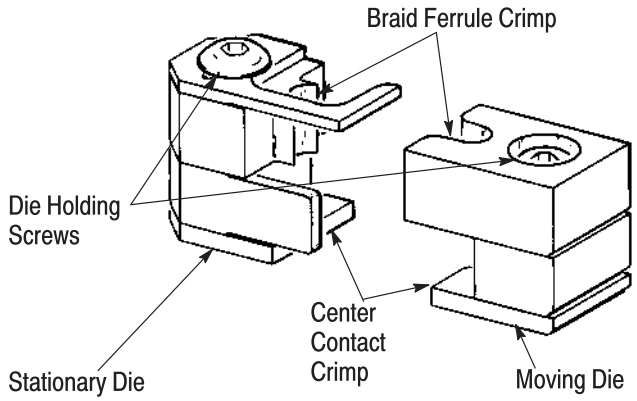
Series BNC and TNC Single Crimp Connector Crimping Dies

PROPER USE GUIDELINES

Cumulative Trauma Disorders can result from the prolonged use of manually powered hand tools. Hand tools are intended for occasional use and low volume applications. A wide selection of powered application equipment for extended–use, production operations is available.



CRIMPING DIES		
69223–1	69422	69429–1
69224–1	69423	69471
69408	69424	220000

Figure 1

1. INTRODUCTION

NOTE

All dimensions on this document are in metric units [with U.S. customary units in brackets]. Figures and illustrations are for identification only and are not drawn to scale.

This instruction sheet provides information on product application and maintenance and inspection procedures for interchangeable crimping dies shown in Figure 1.

NOTE

Read all instructions provided with the hand or pneumatic tooling concerning crimping procedures and general tool usage. Also refer to the selection charts shipped with the connectors for proper connectors, cables, and cable strip lengths.

Basic instructions on the use of these dies are provided in Section 2, DIE INSTALLATION AND CRIMPING PROCEDURES; and Section 3, MAINTENANCE AND INSPECTION PROCEDURES.

See Section 6, REVISION SUMMARY, for revision information.

2. DIE INSTALLATION AND CRIMPING PROCEDURES

2.1. Die Installation

DANGER

To prevent injury, shut off air supply for the pneumatic tool.

Each set of dies consists of a moving die and a stationary die. Refer to Figure 1.

1. Position the stationary die in the stationary die holder. Secure the die with the die holding screw. Do NOT fully tighten the screw.
2. Position the moving die in the moving die holder. Secure the die with the die holding screw. Do NOT fully tighten the screw.
3. Connect the air supply for the pneumatic tool
4. Actuate the pneumatic tool, or if the hand tool is used, close the handles until the die bottom.
5. Tighten both die holding screws while the dies are bottomed. Refer to Figure 2. The tool is now ready for operation.

NOTE

Check the die alignment and tighten the die holding screws at least twice daily.

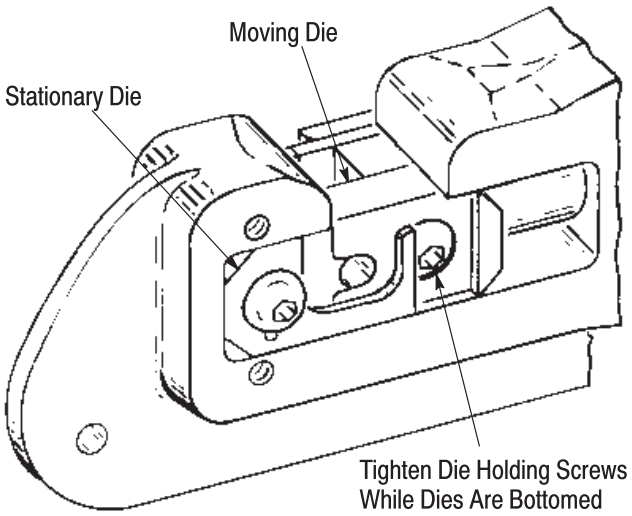


Figure 2

2.2. Crimping Procedure

The die assemblies have two sets of crimping dies as shown in Figure 1. One set crimps the center contact, and the other set crimps the braid ferrule. Both crimps are made at the same time.

1. Prepare the cable and assemble the connector crimp end onto the cable as described on the connector instructions.

2. Place the jack or plug crimp end, assembled on the stripped conductor, in the crimping dies as shown in Figure 3.

NOTE

Make certain that the crimp end is bottomed in the crimping die.

3. Hold the cable in place and press the trigger or close the tool handles to complete the crimp.

4. Remove the crimped assembly from the dies.

5. Screw the crimp end into the connector body.

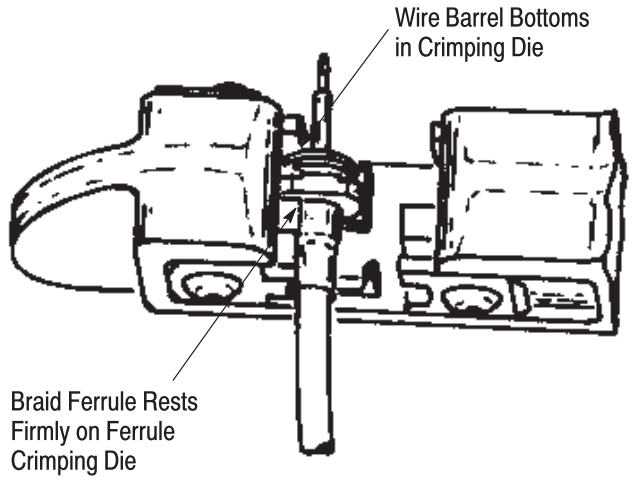


Figure 3

3. MAINTENANCE AND INSPECTION PROCEDURE

Tyco Electronics recommends that a maintenance and inspection program be performed periodically. This is necessary to ensure that continued use of the dies will result in the same dependable and uniform terminations for which the dies were designed.

Tyco Electronics recommends an initial frequency of inspection of once a month. This frequency may be adjusted to suit any requirements through experience. The frequency of an inspection is dependent upon:

- the care, amount of use, and handling of the dies
- the type and size of the products crimped
- the degree of operator skill
- the presence of abnormal amounts of dust and dirt
- user established standards

All dies are thoroughly inspected before being shipped from the factory, however, since there is a possibility of die damage in shipment, Tyco Electronics recommends that new dies be inspected in accordance with this section upon arrival.

3.1. Cleaning

CAUTION

Do NOT allow deposits of dirt, grease, and foreign matter to accumulate in the die closure area. These deposits may cause excessive wear in the die closure surfaces, thereby affecting the quality of the crimp. The dies should be wiped clean frequently with a clean, dry cloth.

3.2. Visual Inspection

NOTE

Visually inspect the die closure surfaces for broken, pitted, or chipped areas. Although dies may gage within permissible limits, worn or damaged die closure surfaces are objectionable and can affect the quality of the crimp.

3.3. Die Closure Inspection

Every die set is inspected and tested for proper die closure before being shipped from the factory. An inspection should be performed periodically to measure the center contact crimp configuration of all die assemblies and braid ferrule die closure of the dies listed in Figures 5 and 6.

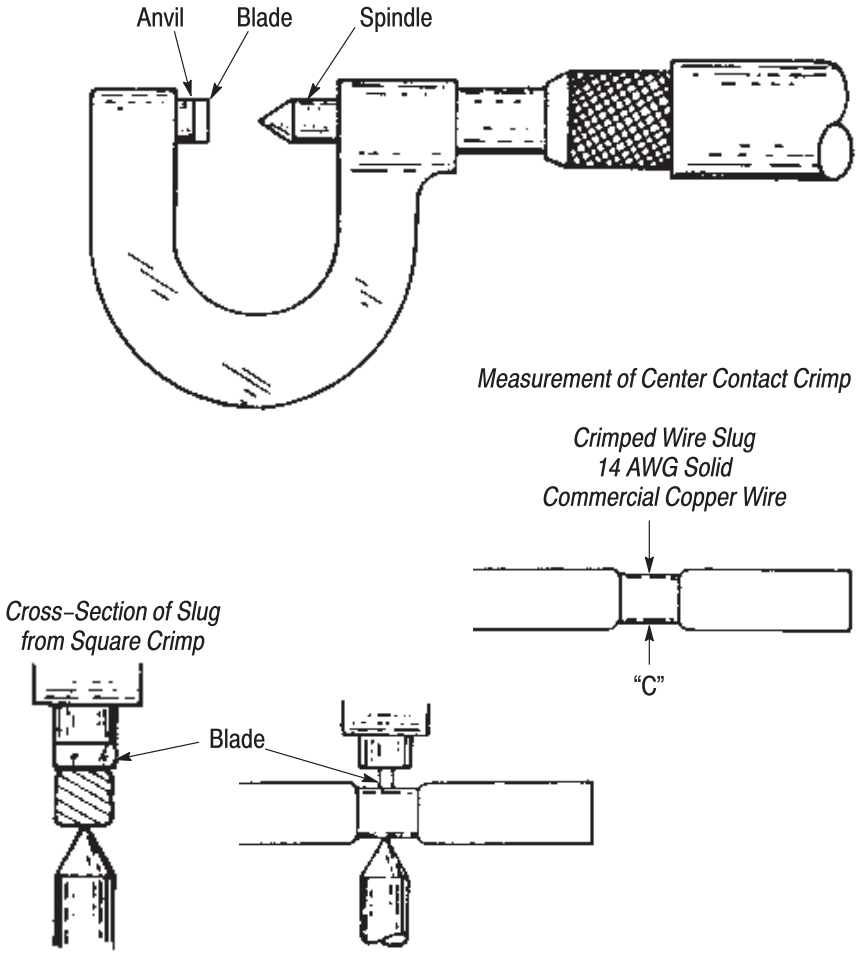
Correct crimp configuration is determined by measuring a crimped slug. Recommended material for this slug is solid 14 AWG commercial wire.

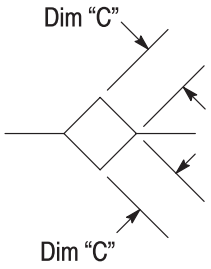
Braid ferrule die closure inspection is accomplished using GO NO–GO plug gages for all die assemblies listed in Figures 5 and 6. Tyco Electronics neither manufactures nor sells plug gages. However, suggested plug gage designs are shown in Figures 5 and 6.

The following procedure is recommended for measuring the die closures.

A. Center Contact Dies

1. Remove traces of oil or dirt from the crimping area and wire slug to be crimped.





DIE	Dim "C"■
69223–1 69224–1 69422	1.257 1.346 [.0495 .0530]
69408 69423 69424 69471 220000	1.219 1.308 [.0480 .0515]
69429–1	1.35 1.42 [.053 .056]

■One side can go 0.064 mm [.0025 in.] out of tolerance as long as the average measurements of both sides are within dimension specified.

Figure 4

2. Place the slug on the center contact die and cycle the tool to complete the crimp.

3. Remove the slug from the dies and measure the dimensions over "flats" formed in the dies. A typical measuring device is shown in Figure 4.

4. If the dimensions do not conform to those listed in Figure 4, contact your local Tyco Electronics Representative.

NOTE

The micrometer shown in Figure 4 is conventional outside type with the exception of the design of the anvil and spindle. The anvil's measuring surface is a blade perpendicular to the movable spindle which is conical. Tyco Electronics does not stock or sell these items.

B. Braid and Insulation Dies – Die Closure Measurement

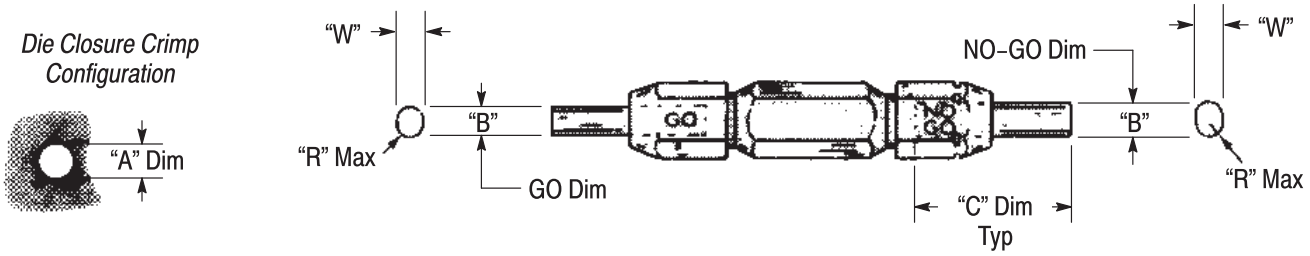
1. Remove traces of oil or dirt from the die closure and plug gage members.

2. When using the pneumatic tool, reduce the air supply pressure to a range between 15–20 psi. Actuate the tool to bottom the dies without placing additional pressure on the dies.

3. With crimping dies bottomed, check the braid and insulation crimp die closure using the proper plug gage. Hold the gage in straight alignment with the dies and carefully try to insert without forcing the GO element, and then the NO–GO element. See Figure 7. The GO element must pass completely through the barrel crimp die closure.

4. The NO–GO element may enter partially, but must NOT pass completely through the length of the barrel crimp die closure. See Figure 7.

5. Dies containing separate braid and insulation dies require a gage of special design when the braid crimp dies have a larger outside diameter than the insulation crimp. See Figure 7, detail B.

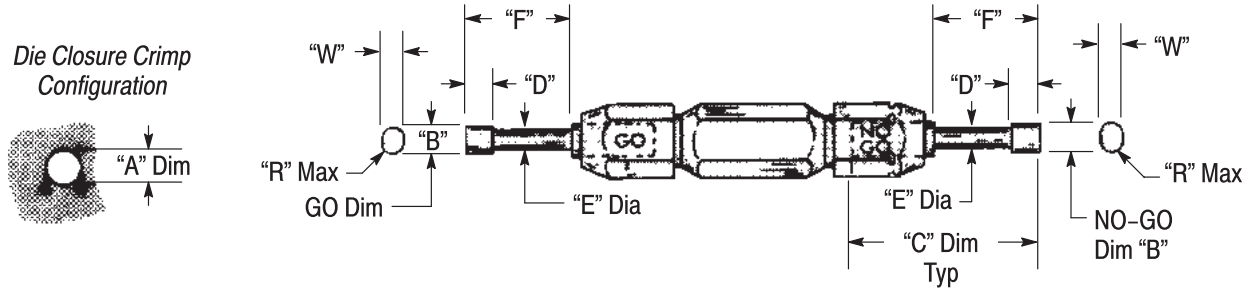


SUGGESTED PLUG GAGE DESIGN – INSULATION DIE

TOOL	DIE CLOSURE DIMENSIONS "A"†		GAGE MEMBER‡ DIMENSIONS				
			"B"		"C"	"W" MAX	RADIUS "R" MAX
	GO	NO-GO	GO	NO-GO			
69223-1●	4.902 [.1930]	5.156 [.2030]	4.902-4.910 [.1930-.1933]	5.154-5.156 [.2029-.2030]	25.4 [1.00]	4.78 [.188]	2.39 [.094]
69224-1●	6.020 [.2370]	6.274 [.2470]	6.020-6.027 [.2370-.2373]	6.271-6.274 [.2469-.2470]	25.4 [1.00]	5.94 [.234]	2.97 [.117]
69408	2.845 [.1120]	3.099 [.1220]	2.845-2.852 [.1120-.1123]	3.096-3.099 [.1219-.1220]	25.4 [1.00]	2.69 [.106]	1.35 [.053]
69422	2.845 [.1120]	3.099 [.1220]	2.845-2.852 [.1120-.1123]	3.096-3.099 [.1219-.1220]	25.4 [1.00]	2.69 [.106]	1.35 [.053]
69423	4.039 [.1590]	4.293 [.1690]	4.039-4.046 [.1590-.1593]	4.290-4.293 [.1689-.1690]	25.4 [1.00]	3.81 [.150]	1.90 [.075]
69424●	5.410 [.2130]	5.664 [.2230]	5.410-5.418 [.2130-.2133]	5.662-5.664 [.2229-.2230]	25.4 [1.00]	5.28 [.208]	2.64 [.104]
69429-1●	5.461 [.2150]	5.639 [.2220]	5.461-5.469 [.2150-.2153]	5.636-5.639 [.2219-.2220]	25.4 [1.00]	5.33 [.210]	2.67 [.105]
69471	2.210 [.0870]	2.464 [.097]	2.210-2.217 [.0870-.0873]	2.461-2.464 [.0969-.0970]	25.4 [1.00]	2.08 [.082]	1.04 [.041]
220000	8.255 [.3250]	8.509 [.3350]	8.255-8.263 [.3250-.3253]	8.506-8.509 [.3349-.3350]	25.4 [1.00]	8.33 [.328]	4.17 [.164]

●These assemblies have single dies for both insulation and braid. Additional plug gages are not required for the braid section of dies.

Figure 5



SUGGESTED PLUG GAGE DESIGN – BRAID DIE

TOOL	DIE CLOSURE DIMENSIONS "A"†		GAGE MEMBER‡ DIMENSIONS							
					"B"		"E" DIA	"W" MAX	"C"	RADIUS "R" MAX
	GO	NO-GO	"F"	"D"	GO	NO-GO				
69408	3.429 [.1350]	3.683 [.1450]	15.88 [.625]	4.57 [.180]	3.429-3.437 [.1350-.1353]	3.680-3.683 [.1449-.1450]	2.54 [.100]	3.30 [.130]	2.54 [.100]	1.65 [.065]
69422	3.429 [.1350]	3.683 [.1450]	15.88 [.625]	4.57 [.180]	3.429-3.437 [.1350-.1353]	3.680-3.683 [.1449-.1450]	2.54 [.100]	3.30 [.130]	2.54 [.100]	1.65 [.065]
69423	4.420 [.1740]	4.674 [.1840]	15.88 [.625]	4.50 [.177]	4.420-4.427 [.1740-.1743]	4.671-4.674 [.1839-.1840]	3.81 [.150]	4.22 [.166]	2.54 [.100]	2.11 [.083]
69471	4.420 [.1050]	2.896 [.1140]	15.88 [.625]	5.38 [.212]	2.667-2.675 [.1050-.1053]	2.893-2.896 [.1139-.1140]	2.08 [.082]	2.44 [.096]	2.54 [.100]	1.22 [.048]

‡Material – Tool Steel. †Die closure dimensions apply when jaws are bottomed but not under pressure.

Figure 6

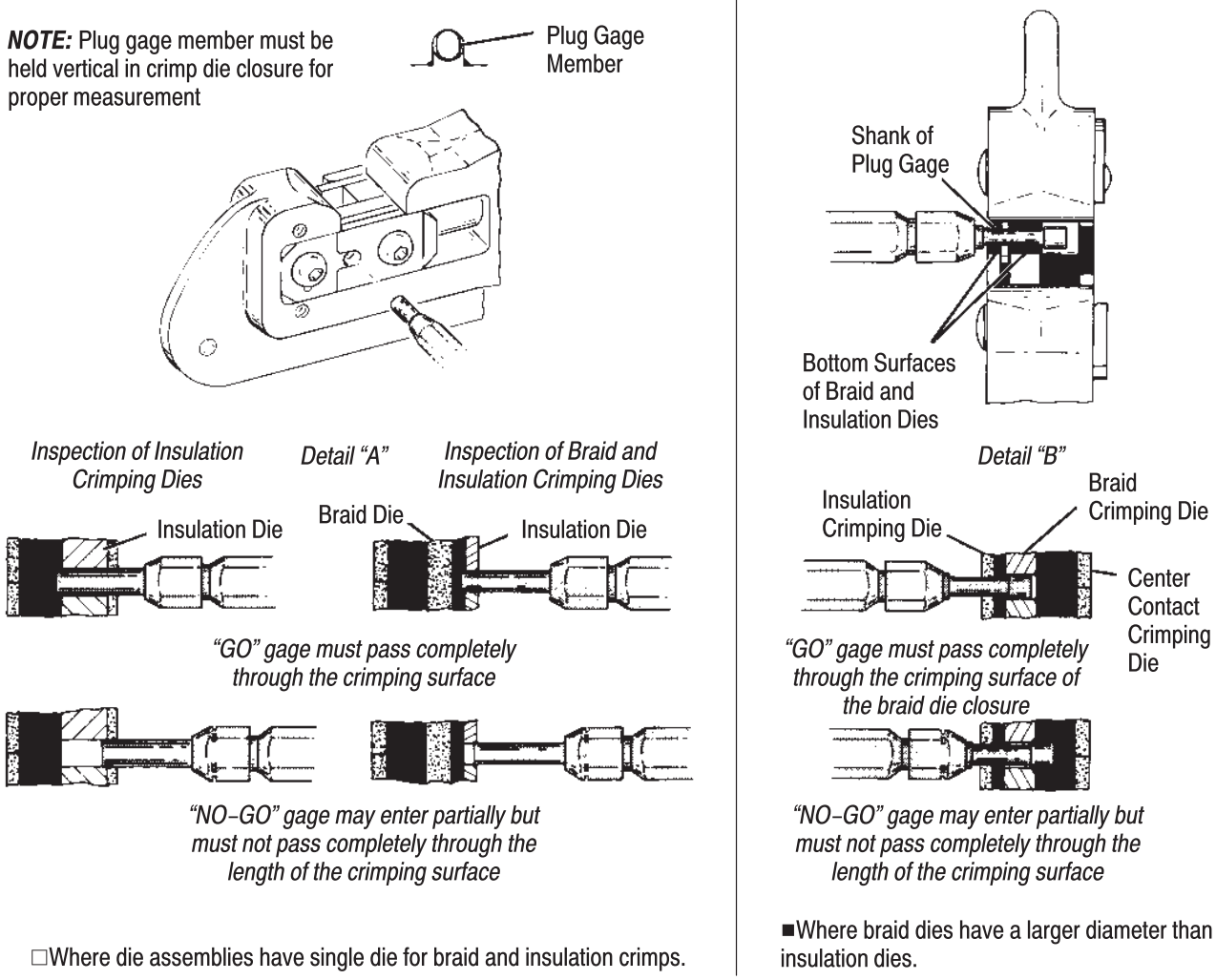


Figure 7

6. To use this gage, open crimping dies and locate end of gage member in the area between the center contact dies and the braid crimp dies. The shank of the member will be located in the insulation die closure. See Figure 7, Detail B.

7. Bottom the dies and proceed as described in steps 2 through 4 by putting the gage into the braid crimp closure. The insulation die closure is inspected in the same manner as shown for single"O" crimp. Refer to Figure 7, Detail A.

8. If the die closures meet the GO, NO–GO gage conditions, the dies may be considered dimensionally correct. If you find that the die closures do not conform with the GO, NO–GO gage conditions, contact your local Tyco Electronics Representative or call the Tooling Assistance Center number at the bottom of page 1.

3.4. CERTI–CRIMP* Ratchet Inspection

The CERTI–CRIMP ratchet feature on Tyco Electronics hand tools should be checked to make certain that the ratchet does not release prematurely allowing the dies to open before the dies have fully bottomed. To check the ratchet feature:

1. Make a test crimp. When this crimp is made, squeeze the handles until the ratchet is free, however, DO NOT RELAX PRESSURE ON THE TOOL HANDLES.

2. Bottoming is satisfactory if bottoming surfaces of the dies make contact with each other or is the clearance between the bottoming surface is 0.03 mm [.001 in.] or less.

3. If the 0.03 mm [.001 in.] shim stock can be inserted completely between the bottoming surfaces of the dies, the dies are considered as not bottoming. Contact your local Tyco Electronics Representative or call the Tooling Assistance Center number at the bottom of page 1.

3.5. Replacement Parts

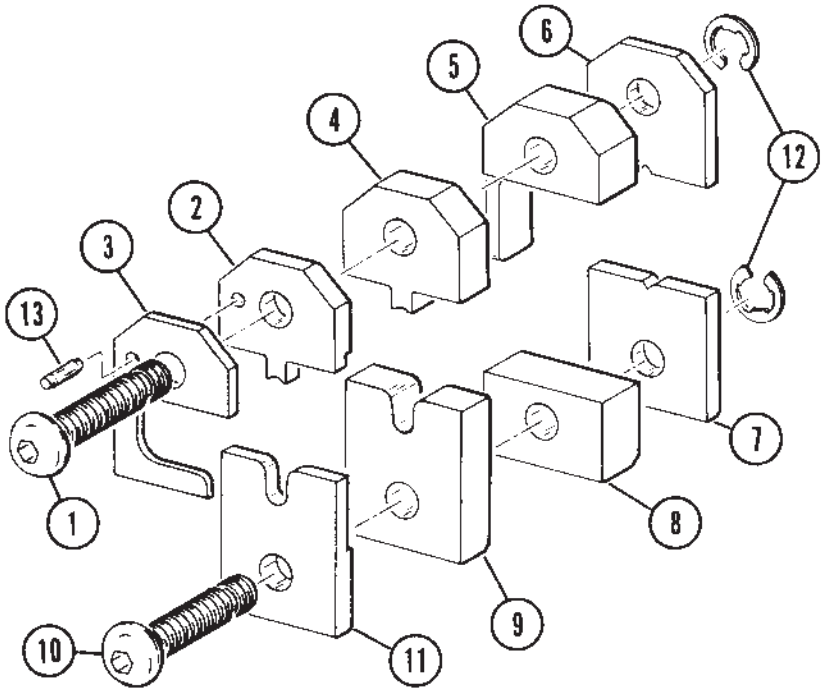
It may be advantageous to stock certain replacement parts to prevent loss of production time. Figure 8, Figure 9, and Figure 10 list the customer replacement parts that can be purchased from Tyco Electronics.

Order replacements through your local Tyco Electronics Representative, or call 1–800–526–5142, or send a facsimile of your purchase order to 1–717–986–7605, or write to:

CUSTOMER SERVICE (38–35)
TYCO ELECTRONICS CORPORATION
P.O. BOX 3608
HARRISBURG, PA 17105–3608

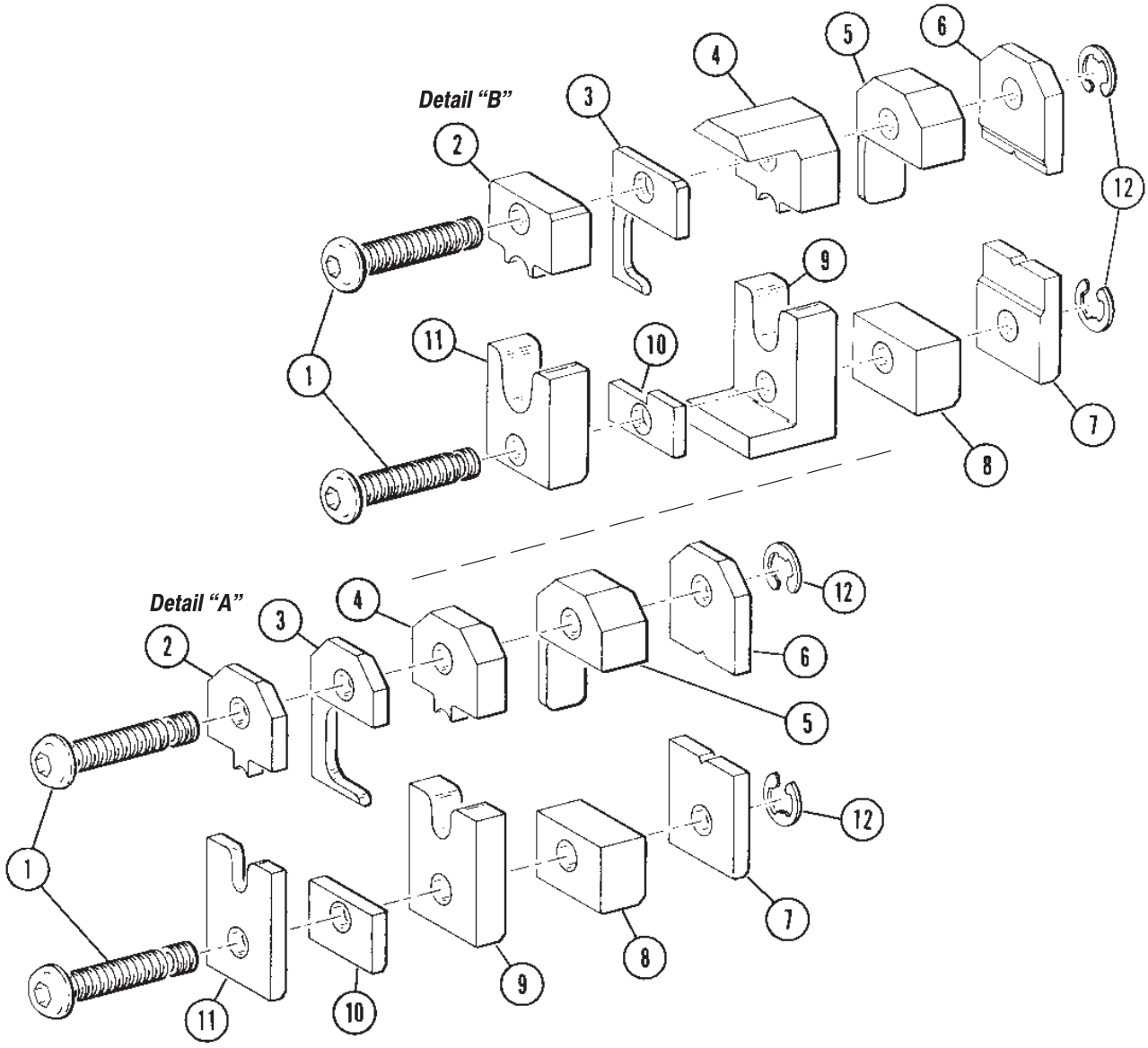
4. REVISION SUMMARY

- Updated document to corporate requirements
- Deleted obsolete part numbers from tables in Figures 1, 4, 5, 6, 8, and 9
- Deleted old Paragraph 3.3.3 and old Figure 8 and renumbered
- Added new information to tables in Figures 5 and 6
- Re–arranged Figures 8, 9, and 10



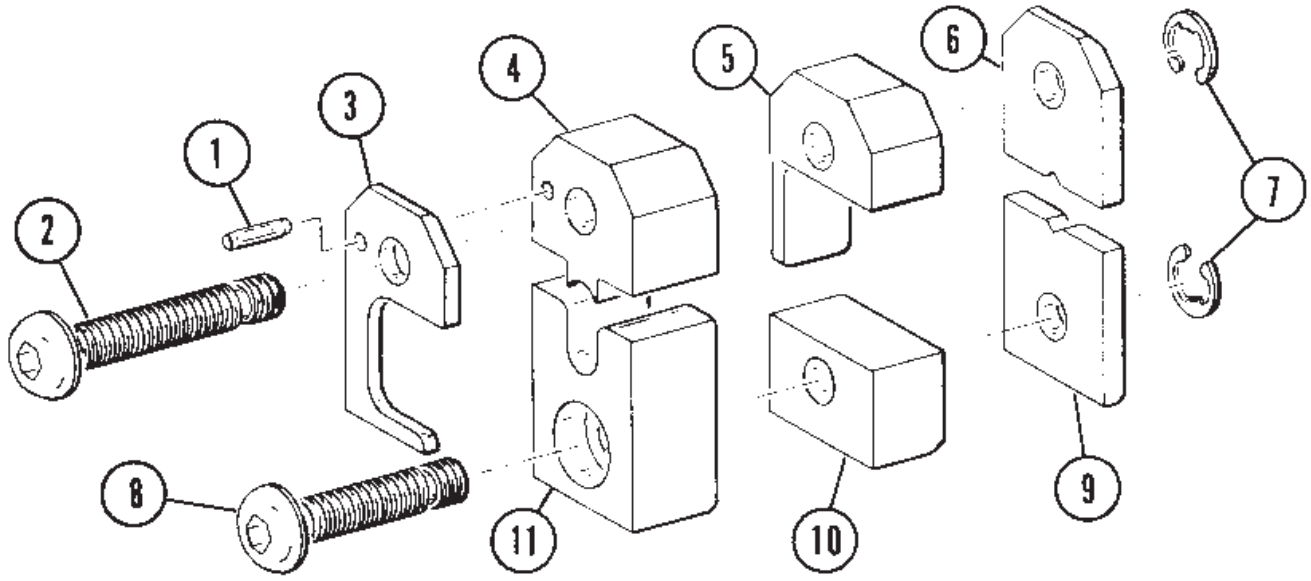
ITEM	DESCRIPTION	QTY PER ASSY	DIE 69471
1	SCREW, Special	1	1–306131–0
2	ANVIL, Insulation	1	306206–9
3	EJECTOR	1	1–306113–6
4	ANVIL, Braid	1	1–306541–2
5	SPACER, Special	1	5–305832–3
6	INSERT, Barrel, Upper	1	306208–2
7	INSERT, Barrel, Lower	1	306207–2
8	SPACER	1	5–305832–4
9	INDENTER, Braid	1	1–306542–2
10	SCREW, Special	1	3–306131–1
11	INDENTER, Insulation	1	306205–9
12	RING, Retaining	2	1–21046–3
13	PIN, Roll	1	21028–1

Figure 8



ITEM	DESCRIPTION	QTY PER ASSY	DIE NUMBERS AND DETAIL REFERENCE			
			69408 (DET. "A")	69422 (DET. "A")	69423 (DET. "A")	220000 (DET. "B")
1	SCREW, Special	2	306105–7	306105–7	306105–7	5–59575–9
2	ANVIL, Insulation	1	306206–3	306206–3	306206–4	45960–7
3	EJECTOR	1	1–306113–3	1–306113–3	1–306113–3	59548–4
4	ANVIL, Braid	1	1–306541–5	1–306541–5	1–306539–2	45968–5
5	SPACER, Special	1	5–305832–3			
6	INSERT Barrel, Upper	1	306208–2	306208–1	306208–2	306208–4
7	INSERT Barrel, Lower	1	306207–2	306207–1	306207–2	306207–4
8	SPACER	1	5–305832–4			
9	INDENTER, Braid	1	1–306542–5	1–306542–5	1–306540–2	45967–5
10	SPACER	1	5–305832–5	5–305832–5	5–305832–5	59589–4
11	INDENTER, Insulation	1	306205–3	306205–3	306205–4	45918–7
12	RING, Retaining	2	1–21046–3			

Figure 9



ITEM	DESCRIPTION	QTY PER ASSY	DIE NUMBERS			
			69223-1	69224-1	69424	69429-1
1	PIN	1	21028-2			
2	SCREW, Special	1	4-306131-2			
3	EJECTOR	1	1-306113-2			
4	ANVIL, Insulation	1	306206-1	306206-2	306206-5	306206-5
5	SPACER, Special	1	5-305832-1			
6	INSERT Barrel, Upper	1	306208-1	306208-1	306208-2	306208-3
7	RING, Retaining	2	1-21046-3			
8	SCREW, Special	1	7-306105-8			
9	INSERT, Barrel, Lower	1	306207-1	306207-1	306207-2	306207-3
10	SPACER	1	5-305832-2			
11	INDENTER, Insulation	1	306205-1	306205-2	306205-5	306205-5

Figure 10