

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.

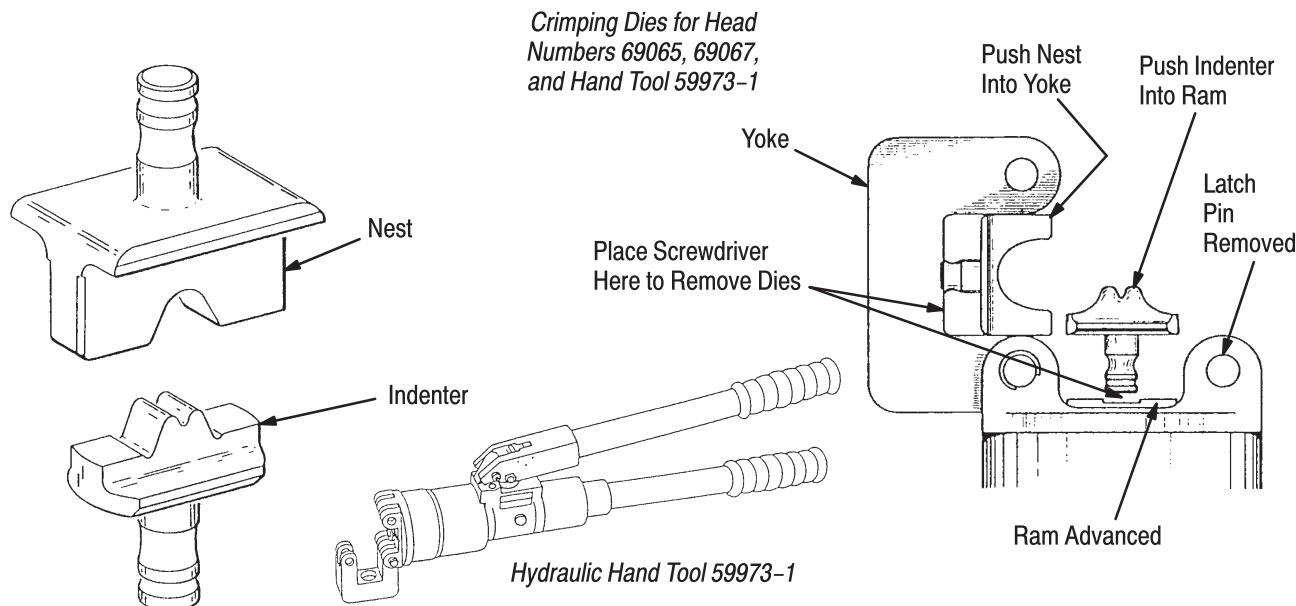


Figure 1

1. INTRODUCTION

This instruction sheet provides instruction on application and maintenance and inspection procedures for dies that crimp SOLISTRAND ring tongue terminals, butt splices, and parallel splices. These dies are used to crimp product on solid or stranded copper wires 6.637–117.049 mm² [13.1–231 MCM]. The dies are used in Hydraulic Heads 69065, 69067 and Hydraulic Hand Tool 59973–1. Read these instructions, and all applicable references, before inserting any die assemblies and crimping any terminals. See Figure 2.

NOTE


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

Reason for revision is give in Section 7, REVISION SUMMARY.

2. DESCRIPTION (Figure 1)

Each die assembly consists of a nest and an indenter, ordered separately, which are retained in the crimping head by ball plungers. The nest is positioned in the

yoke of the crimping head and the indenter is positioned in the ram of the tool, in all applications.

3. DIE INSTALLATION AND REMOVAL

Refer to Figure 2 and determine the correct die assembly, wire size, proper product number, and which tool head is correct to use.



DANGER *AVOID PERSONAL INJURY. Exercise extreme caution when using power unit. Avoid depressing foot switch or trigger control when installing or removing die assemblies.*

3.1. Die Installation

1. Remove latch pin on head of crimping head and open yoke.
2. Push nest into yoke until nest snaps into position.
3. Activate power unit to advance ram to approximate position shown in Figure 1.
4. Push indenter in ram until indenter snaps into position.
5. Return ram to the down position.
6. Close yoke and insert latch pin.

NOMINAL WIRE SIZE		mm ² [CIRCULAR MILL AREA RANGE]	TYPICAL PRODUCT	DIES		TOOL OR HEAD NUMBER
				NEST	INDENTER	
7-8	8	6.637-10.539 [13,100-20,800]	33463 RTT◆	48126■	48355■	Head Number 69065 (408-2452)
				48128-1●	48127-1●	
13-15	6	10.539-16.771 [20,800-33,100]	33466 RTT◆	48128■	48127■	69067 (408-2454)
				48129-1●	48127-1●	
21	4	16.771-26.653 [33,100-52,600]	34323 BS†	48129■	48127■	Hand Tool 59973-1 (408-6803)
				48130-1●	48127-1●	
34-35	2	26.653-42.411 [52,600-83,700]	35187 PS▲	48130■	48127■	Hand Tool 59973-1 (408-6803)
				48132-1●	48131-1●	
59-60	1/0	42.411-60.551 [83,700-119,500]	36946 PS▲	48132■	48131■	48131
				48133-1●	48131-1●	
67-70	2/0	72.259-96.274 [150,500-190,000]	36948 PS▲	48133		
80-95	3/0	96.274-117.049 [190,000-231,000]	36927 RTT◆	48134		
100-125	4/0	96.274-117.049 [190,000-231,000]	36932 RTT◆	300430		

■Also used for STRATO-THERM* Heat Resistant Uninsulated Terminals.

●Dies for Heavy Duty Terminals.

◆RTT=Ring Tongue Terminals. †BS=Butt Splice. ▲PS=Parallel Splice.

Figure 2

CAUTION

Ensure the latch pin is fully inserted or damage may occur to the yoke, dies, or latch pin.



3.2. Die Removal

1. Remove latch pin and open yoke.
2. Insert blade of screwdriver under nest and pry nest out of yoke.
3. Raise ram to full up position.
4. Insert blade of screwdriver under nest and pry indenter out of ram.

4. WIRE STRIPPING AND CRIMPING PROCEDURE

4.1. Wire Stripping

Strip wire to dimensions listed in Figure 3. Do NOT nick or cut wire strands.

DANGER

AVOID PERSONAL INJURY. When operating power unit, exercise caution while holding terminals, splices, or wire near crimping area.



4.2. Crimping Procedure

1. Ensure the wire range or size stamped on the terminal or splice corresponds with the size being

used with the wire size or range stamped on the nest and indenter.

2. Center terminal or splice in nest as shown in Figure 4. For best results, when brazed seam on terminal or splice is visible, position seam toward indenter.

3. Activate power unit so that ram advances and holds terminal or splice in place. Do NOT deform terminal or splice wire barrel.

4. Insert stripped wire into terminal or **parallel splice** until end of conductor is flush with or extended slightly beyond end of wire barrel.

5. Insert stripped wire into **butt splice** until end of conductor butts against splice wire stop.

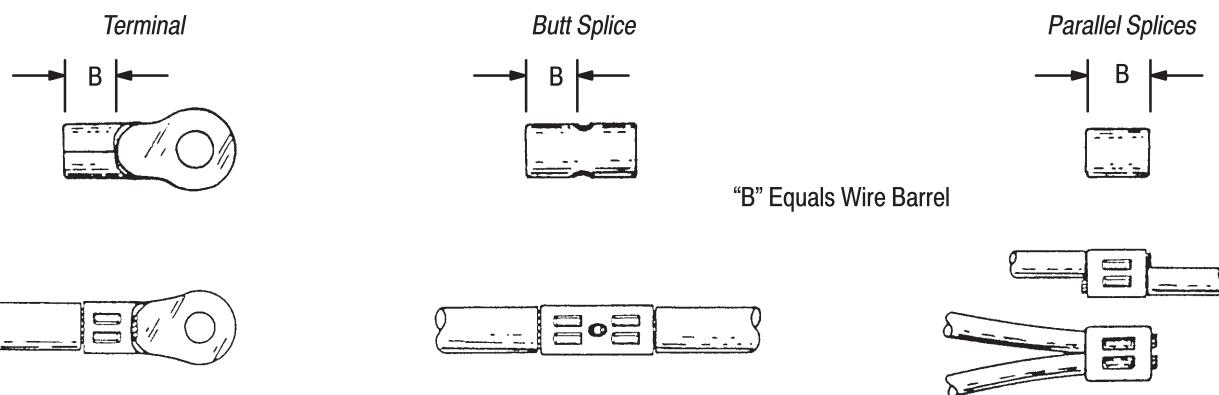
6. Activate power unit to complete the crimp.

NOTE

If the terminal sticks in the die after crimping, grasp the wire close to the crimp and apply a rocking motion to remove the die.

7. For butt splice, repeat steps 5 and 6 for other wire barrel.

8. Refer to Paragraph 5.1, Crimp Inspection, for standard terminal, butt and parallel splice crimp inspection procedure.



NOMINAL WIRE SIZE		mm ² [CIRCULAR MILL AREA]	STRIP LENGTHS mm [in.]						
mm ²	AWG		RING TONGUE TERMINALS		BUTT SPLICES		PARALLEL SPLICES		
			MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
7-8	8	6.637-10.539 [13,100-20,800]	8.334 [.328]	9.128 [.359]	10.319 [.406]	11.112 [.437]	10.319 [.406]	11.112 [.437]	
13-15	6	10.539-16.771 [20,800-33,100]	9.922 [.391]	13.255 [.522]	11.906 [.469]	12.700 [.500]	11.112 [.437]	11.906 [.469]	
21	4	16.771-26.653 [33,100-52,600]	11.509 [.453]	12.302 [.484]	13.493 [.531]	14.288 [.563]	13.493 [.531]	14.288 [.563]	
34-35	2	26.653-42.411 [52,600-83,700]	13.096 [.516]	13.890 [.547]	15.081 [.594]	15.875 [.625]	15.081 [.594]	15.875 [.625]	
59-60	1/0	42.411-60.551 [83,700-119,500]	18.653 [.734]	20.240 [.797]	15.875 [.625]	17.462 [.687]	17.462 [.687]	19.050 [.750]	
67-70	2/0	60.551-72.259 [119,500-150,500]	18.653 [.734]	20.240 [.797]	15.875 [.625]	17.462 [.687]	17.462 [.687]	19.050 [.750]	
80-95	3/0	72.259-96.274 [150,500-190,000]	19.050 [.750]	20.637 [.812]	17.463 [.688]	19.050 [.750]	17.463 [.688]	19.050 [.750]	
100-125	4/0	96.274-117.049 [190,000-231,000]	19.446 [.766]	20.637 [.812]	17.463 [.688]	10.050 [.750]	10.050 [.750]	20.637 [.812]	

Figure 3

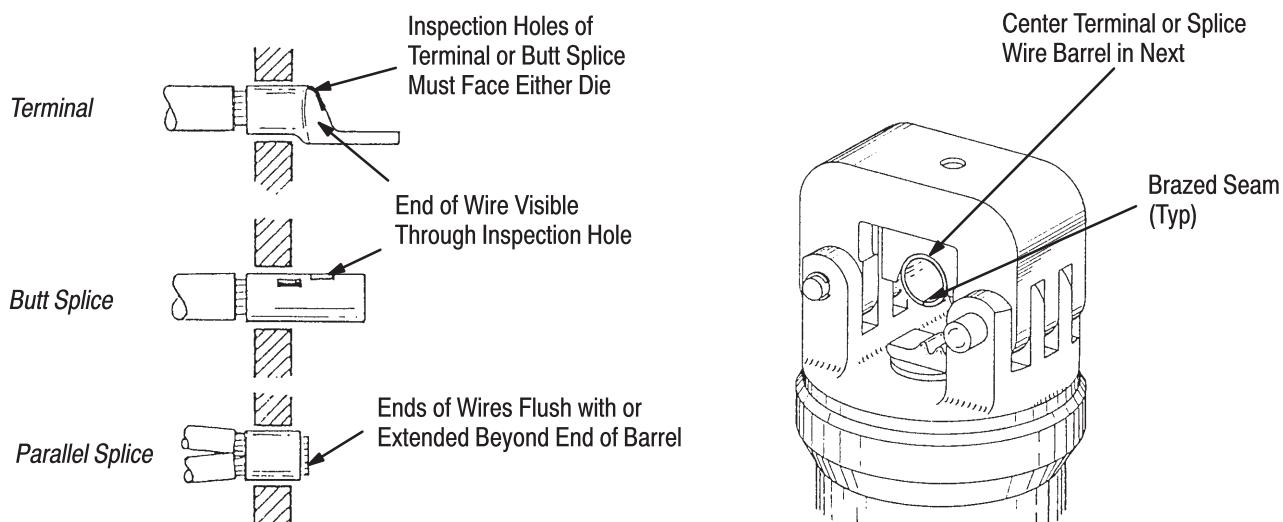


Figure 4

5. INSPECTION/MAINTENANCE

DANGER


Disconnect power supply before performing maintenance, adjustments, inspections, and repairs.

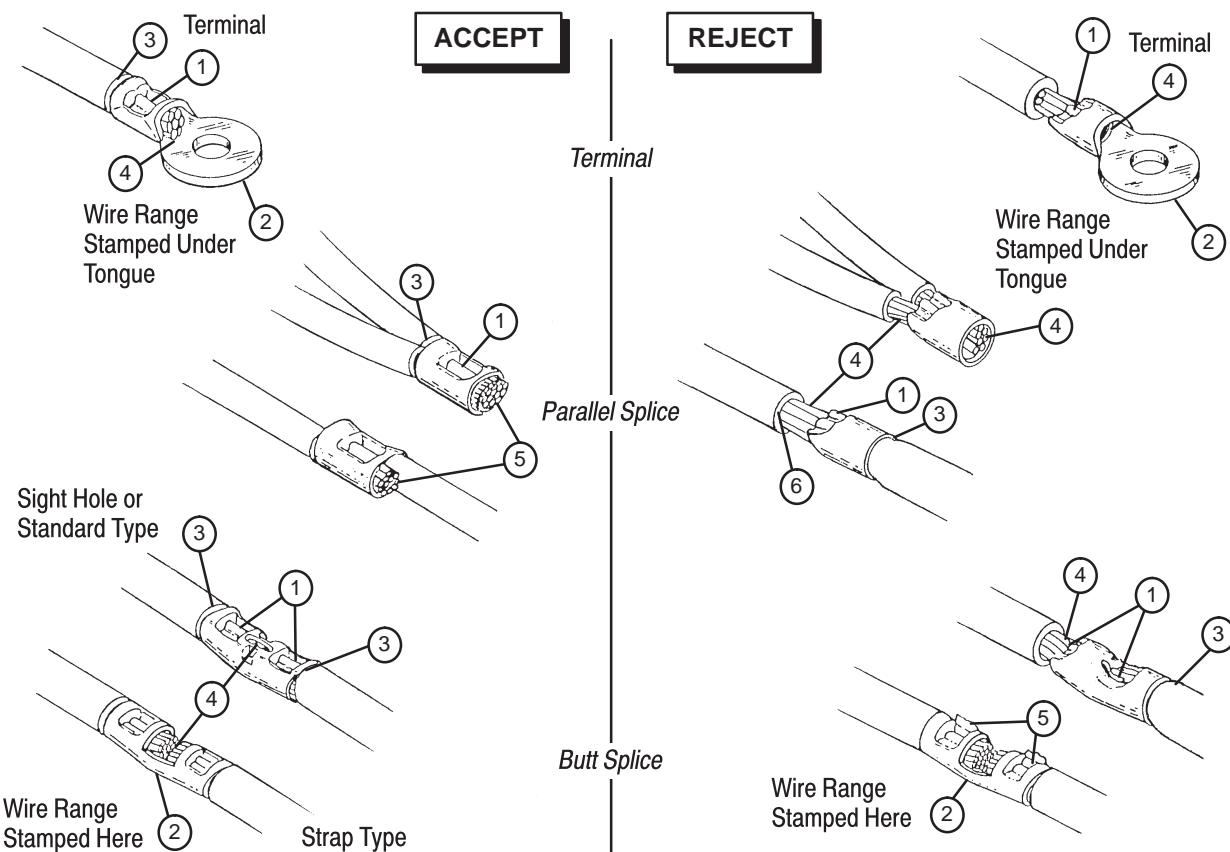
These instructions have been approved by Design, Production, and Quality Control Engineers to provide documented maintenance and inspection procedures. Through Tyco Electronics Test Laboratories and the inspection of production assembly, the procedures described herein have been established to ensure

quality and reliability of the crimping die assemblies. Customer-replaceable parts are listed in Figure 2. A complete inventory should be stocked and controlled to prevent lost time when replacement of parts is necessary.

5.1. Crimp Inspection (Figure 5)

NOTE


The accompanying procedure is included as an aid to the tool operator ONLY. It is not intended to serve as a quality control procedure for qualifying finished crimps on SOLISTRAND Terminals or Splices.



- ① Crimps centered. Crimps may be off center BUT NOT OFF END OF WIRE BARREL.
- ② AWG wire size being used matches wire range or size stamped on terminal or splice and dies.
- ③ Insulation does not enter wire barrel.
- ④ Wire is visible through inspection hole of butt splices. Wire is flush with or extends slightly beyond end of terminal wire barrel.
- ⑤ On parallel splices, bare wire ends must be flush with or extended slightly beyond end of barrel.

- ① Crimped off end of splice or terminal wire barrel.
- ② AWG wire size being used does not match wire size or range stamped on terminal or splice and dies.
- ③ Insulation entered barrel of terminal or splice. CHECK FOR INCORRECT STRIP LENGTH.
- ④ Wire not inserted far enough in terminal or splice. End of wire must be visible through inspection hole of butt splices, and be flush with or extend slightly beyond end of terminal wire barrel or parallel splice.
- ⑤ Excessive "flash" on terminal or splice indicates damaged dies or wrong wire, splice, or tooling combination was used.
- ⑥ Nicked or missing strands.

Figure 5

Inspect crimped terminals or splices by checking the features described in Figure 5. Use only terminals or splices that meet the conditions shown in the ACCEPT column. Terminals and splices displaying the features shown in the REJECT column can be avoided by careful use of these instructions and by performing the maintenance and inspection procedures described in Paragraphs in 5.2 and 5.3.

5.2. Daily Maintenance

It is recommended that each operator of the dies be made aware of, and responsible for, the following steps of daily maintenance:

1. Remove dust, moisture, and other contaminants from the dies with a clean brush, or a clean, soft, lint-free cloth. Do NOT use objects that could damage the dies.
2. If dies are coated with oil or preservative, wipe clean — particularly in the crimping areas — before placing them in use.
3. When dies are not in use, make certain all surfaces are protected with a THIN coat of any good SAE No. 20 motor oil, and mate and store them in a clean, dry area.

5.3. Periodic Inspection

Regular inspections should be performed by quality control personnel. A record of scheduled inspections should remain with the dies or be made available to supervisory personnel responsible for the dies. Though recommendations call for at least a monthly inspection, the inspection frequency should be based upon the amount of use, working conditions, operator training and skill, and established company standards. These inspections should be performed in the following sequence:

A. Visual Inspection (Figure 6)

1. Remove all lubrication and accumulated film by immersing the dies in a suitable degreaser that will not affect paint or plastic.
2. Check all surfaces for wear. Inspect the crimp area for flattened, chipped, cracked, worn, or broken areas. If damage is evident, the die must be replaced.

B. Gaging the Crimping Chamber (Figures 7 and 8)

The inspection requires the use of a plug gage conforming to the dimensions in Figure 8. Tyco Electronics does not manufacture or market these gages.

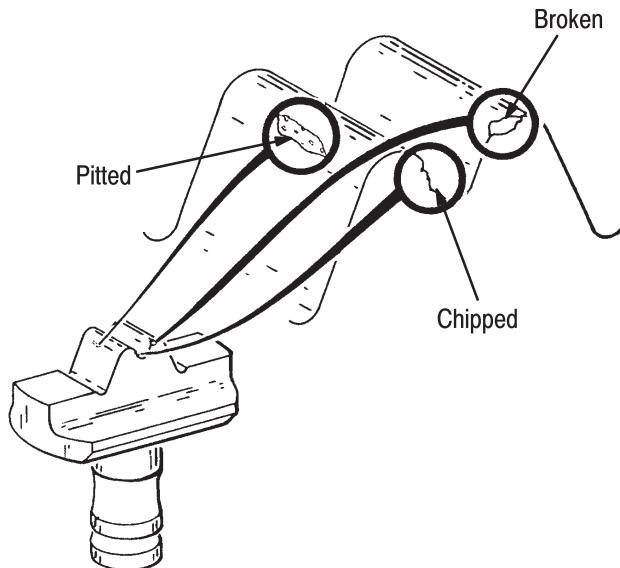


Figure 6

Proceed as follows:

1. Mate the dies until it is evident that they have bottomed. Hold the dies in this position.
2. Align the GO element with the wire barrel crimping chamber. Push the element straight into the crimping chamber without using force. The GO element must pass completely through the crimping chamber.
3. Align the NO-GO element and try to insert it straight into the same crimping chamber. The NO-GO element may start entry but must not pass completely through. If the crimping chamber conforms to the gage inspection, the dies are considered dimensionally correct. If not, they must be replaced. For additional information regarding the use of a plug gage, refer to Instruction Sheet 408-7424.

6. REPLACEMENT PARTS

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

CUSTOMER SERVICE (038-035)
TYCO ELECTRONICS CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

7. REVISION SUMMARY

Revisions to this instruction sheet include:

- Updated document to corporate requirements
- Corrected gage dimensions in table in Figure 8

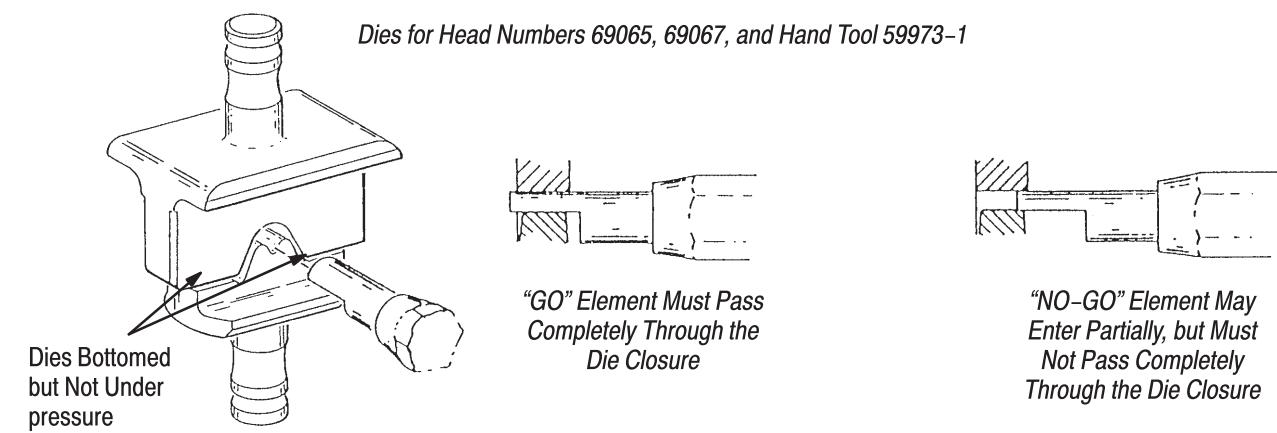
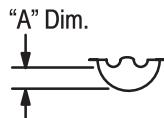
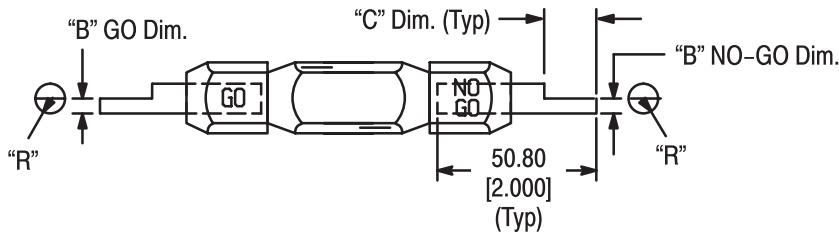


Figure 7

Die Closure Configuration*Suggested Plug Gage Design*

DIES		DIE CLOSURE DIM. "A"		GAGE ELEMENT DIM. "B"		DIM. "C"	RADIUS "R"
NEST	INDENTER	GO	NO-GO	GO	NO-GO		
48126	48355	2.54 [.1000]	2.692 [.1060]	2.54-2.548 [.1000-.1003]	2.689-2.692 [.1059-.1060]	7.92 [.312]	3.18 [.125]
48128-1	48127-1	3.911 [.1540]	4.115 [.1620]	3.911-3.919 [.1540-.1543]	4.112-4.115 [.1619-.1620]	11.09 [.437]	4.34 [.171]
48128	48127	3.911 [.1540]	4.115 [.1620]	3.911-3.919 [.1540-.1543]	4.112-4.115 [.1619-.1620]	11.09 [.437]	4.34 [.171]
48129-1	48127-1	4.699 [.1850]	4.902 [.1930]	4.699-4.706 [.1850-.1853]	4.899-4.902 [.1929-.1930]	11.09 [.437]	5.54 [.218]
48129	48127	4.699 [.1850]	4.902 [.1930]	4.699-4.706 [.1850-.1853]	4.899-4.902 [.1929-.1930]	11.09 [.437]	5.54 [.218]
48130-1	48127-1	5.410 [.2130]	5.613 [.2210]	5.410-5.418 [.2130-.2133]	5.610-5.613 [.2209-.2210]	11.09 [.437]	6.35 [.250]
48130	48127	5.410 [.2130]	5.613 [.2210]	5.410-5.418 [.2130-.2133]	5.610-5.613 [.2209-.2210]	11.09 [.437]	6.35 [.250]
48132-1	48127-1	6.172 [.2430]	6.375 [.2510]	6.172-6.179 [.2430-.2433]	6.372-6.375 [.2509-.2510]	11.09 [.437]	7.52 [.296]
48132	48131	6.172 [.2430]	6.375 [.2510]	6.172-6.179 [.2430-.2433]	6.372-6.375 [.2509-.2510]	11.09 [.437]	7.52 [.296]
48133-1	48131-1	6.959 [.2740]	7.163 [.2820]	6.959-6.967 [.2740-.2743]	7.160-7.163 [.2819-.2820]	14.27 [.562]	8.33 [.328]
48133	48131	6.959 [.274]	7.163 [.2820]	6.959-6.967 [.2740-.2743]	7.160-7.163 [.2819-.2820]	14.27 [.562]	8.33 [.328]
48134	48131	7.823 [.3080]	8.026 [.3160]	7.823-7.830 [.3080-.3083]	8.023-8.026 [.3159-.3160]	14.28 [.562]	3.525 [.375]
300430	48131	8.788 [.3460]	8.991 [.3540]	8.788-8.796 [.3460-.3463]	8.989-8.991 [.3539-.3540]	14.28 [.562]	10.693 [.421]

Figure 8