UL 1681

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Wiring Device Configurations

Underwriters Laboratories Inc. (UL)
333 Pfingsten Road
Northbrook, IL 60062-2096

UL Standard for Safety for Wiring Device Configurations, UL 1681

Third Edition, Dated March 31, 2003

Revisions: This Standard contains revisions through and including January 15, 2004.

Summary of Topics

This revision of UL 1681 is being issued to delete Figure C5.1.

UL Standards for Safety are developed and maintained in the Standard Generalized Markup Language (SGML). SGML -- an international standard (ISO 8879-1986) -- is a descriptive markup language that describes a document's structure and purpose, rather than its physical appearance on a page. Due to formatting differences resulting from the use of UL's new electronic publishing system, please note that additional pages (on which no requirements have been changed) may be included in revision pages due to relocation of existing text and reformatting of the Standard.

Text that has been changed in any manner is marked with a vertical line in the margin. Changes in requirements are marked with a vertical line in the margin and are followed by an effective date note indicating the date of publication or the date on which the changed requirement becomes effective.

The new and revised requirements are substantially in accordance with UL's Bulletin(s) on this subject dated February 12, 2003. The bulletin(s) is now obsolete and may be discarded.

The revisions dated January 15, 2004 include a reprinted title page (page1) for this Standard.

The master for this Standard at UL's Northbrook Office is the official document insofar as it relates to a UL service and the compliance of a product with respect to the requirements for that product and service, or if there are questions regarding the accuracy of this Standard.

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The requirements in this Standard are now in effect, except for those paragraphs, sections, tables, figures, and/or other elements of the Standard having future effective dates as indicated in the note following the affected item. The prior text for requirements that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

New product submittals made prior to a specified future effective date will be judged under all of the requirements in this Standard including those requirements with a specified future effective date, unless the applicant specifically requests that the product be judged under the current requirements. However, if the applicant elects this option, it should be noted that compliance with all the requirements in this Standard will be required as a condition of continued Recognition and Follow-Up Services after the effective date, and understanding of this should be signified in writing.

This Standard consists of pages dated as shown in the following checklist:

Page	Date
1-4	January 15, 2004
5-14	March 31, 2003
15-16	January 15, 2004

No Text on This Page

MARCH 31, 2003
(Title Page Reprinted: January 15, 2004)

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UL 1681

Standard for Wiring Device Configurations

Prior to the first edition, the configurations were published in the Standard for Attachment Plugs and Receptacles, UL 498.

First Edition – April, 1991
Second Edition – April, 1996

Third Edition

March 31, 2003

An effective date included as a note immediately following certain requirements is one established by Underwriters Laboratories Inc.

Revisions of this Standard will be made by issuing revised or additional pages bearing their date of issue. A UL Standard is current only if it incorporates the most recently adopted revisions, all of which are itemized on the transmittal notice that accompanies the latest set of revised requirements.

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FOREWORD

A. This Standard contains basic requirements for products covered by Underwriters Laboratories Inc. (UL) under its Follow-Up Service for this category within the limitations given below and in the Scope section of this Standard. These requirements are based upon sound engineering principles, research, records of tests and field experience, and an appreciation of the problems of manufacture, installation, and use derived from consultation with and information obtained from manufacturers, users, inspection authorities, and others having specialized experience. They are subject to revision as further experience and investigation may show is necessary or desirable.

B. The observance of the requirements of this Standard by a manufacturer is one of the conditions of the continued coverage of the manufacturer's product.

C. A product which complies with the text of this Standard will not necessarily be judged to comply with the Standard if, when examined and tested, it is found to have other features which impair the level of safety contemplated by these requirements.

D. A product employing materials or having forms of construction which conflict with specific requirements of the Standard cannot be judged to comply with the Standard. A product employing materials or having forms of construction not addressed by this Standard may be examined and tested according to the intent of the requirements and, if found to meet the intent of this Standard, may be judged to comply with the Standard.

E. UL, in performing its functions in accordance with its objectives, does not assume or undertake to discharge any responsibility of the manufacturer or any other party. The opinions and findings of UL represent its professional judgment given with due consideration to the necessary limitations of practical operation and state of the art at the time the Standard is processed. UL shall not be responsible to anyone for the use of or reliance upon this Standard by anyone. UL shall not incur any obligation or liability for damages, including consequential damages, arising out of or in connection with the use, interpretation of, or reliance upon this Standard.

F. Many tests required by the Standards of UL are inherently hazardous and adequate safeguards for personnel and property shall be employed in conducting such tests.

INTRODUCTION

1 Scope

1.1 These configurations cover attachment plugs, receptacles, cord connectors, some forms of current taps, and flatiron and appliance plugs– all for use in accordance with the National Electrical Code (NEC) ANSI/NFPA-70.

1.2 These configurations do not cover devices rated at more than 200 A or for more than 600 V.

1.3 This standard does not cover devices having NEMA configurations in accordance with Wiring Devices – Dimensional Specifications, ANSI/NEMA WD6.

1.3 added March 31, 2003

2 General

2.1 The information given in (a) – (h) applies to each configuration in Sections C3 – C5.

a) All dimensions are in inches.

b) Decimal dimensions without tolerances shall be subject to a ±0.005 inch tolerance.

c) Angular dimensions without tolerances shall be subject to a ±1/2 degree tolerance.

d) Where two values are given for the same dimension, the larger is the maximum value and the smaller the minimum value.

e) Leading edges of plug blades shall be free of burrs and sharp edges.

f) A contour, face dimension, yoke construction, or mounting ears and dimensions for any receptacle construction that is shown depicts an acceptable construction; other constructions may also be acceptable if tested and found to be equivalent.

g) A relationship of contact nibs, recess of contacts, or internal construction in a receptacle that is shown depicts an acceptable construction; other constructions may also be acceptable if tested and found to be equivalent.

h) Terminal Identification shall comply with the following:

1) The grounded terminal shall be identified in the Figures by the letter ″W″.

2) The grounding terminal shall be identified in the Figures by the letter ″G″.

3) Other conductors need not be identified, but if they are, the letters ″X″, ″Y″, and ″Z″ shall be used for identification according to the following convention:

i) Viewing the blade end of the plug and proceeding counter-clockwise, starting from the grounding blade (G), or in the absence of a grounding blade, the grounded blade (W), the terminals shall be marked in sequence ″X″, ″Y″, and ″Z″.

ii) Viewing the face end of the receptacle and proceeding clockwise, starting from the grounding contact slot (G), or in the absence of a grounding contact slot, the grounded contact slot (W), the terminals shall be marked in sequence "X", "Y", and "Z".

2.1 revised March 31, 2003

CONFIGURATIONS

C1 *Section C1 deleted March 31, 2003*

C2 *Section C2 deleted March 31, 2003*

C3 Non-NEMA Plugs and Receptacles

Section C3 revised March 31, 2003

Figures C3.1 – C3.7 deleted March 31, 2003

Figure C3.8
Hospital use only 2-pole, 3-wire grounding-type locking devices rated 20 A, 125 V

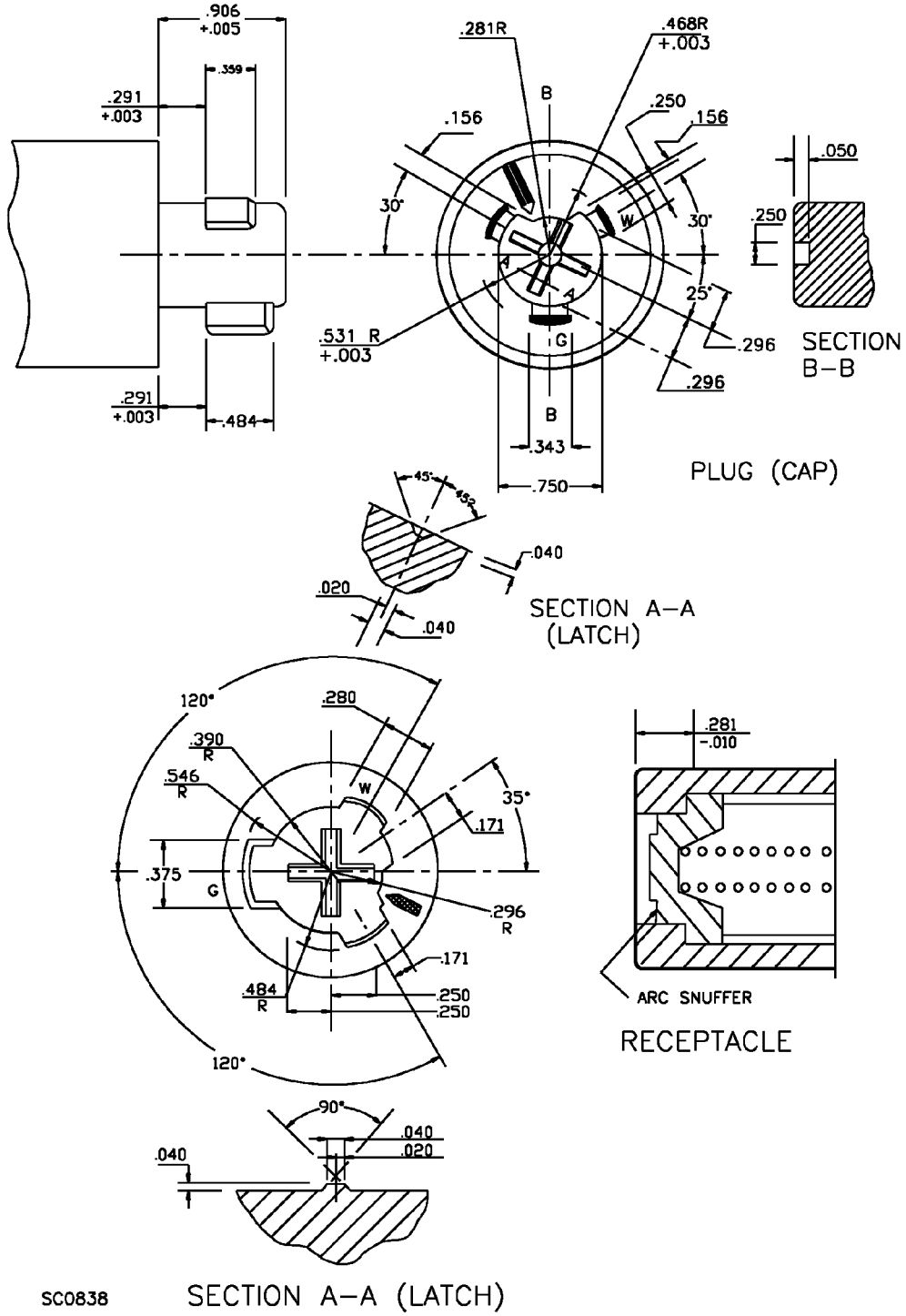


Figure C3.9
3-pole, 3-wire nongrounding-locking devices rated 20 A, 125/250 V

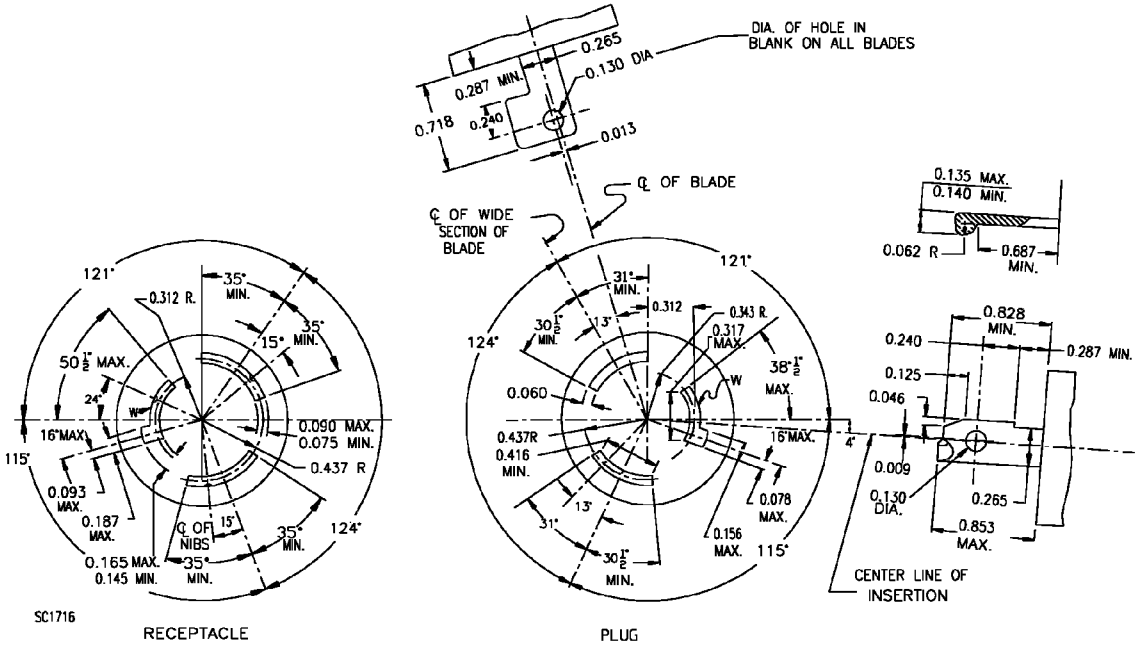


Figure C3.10
3-pole, 3-wire nongrounding-locking devices rated 30 A, 125/250 V

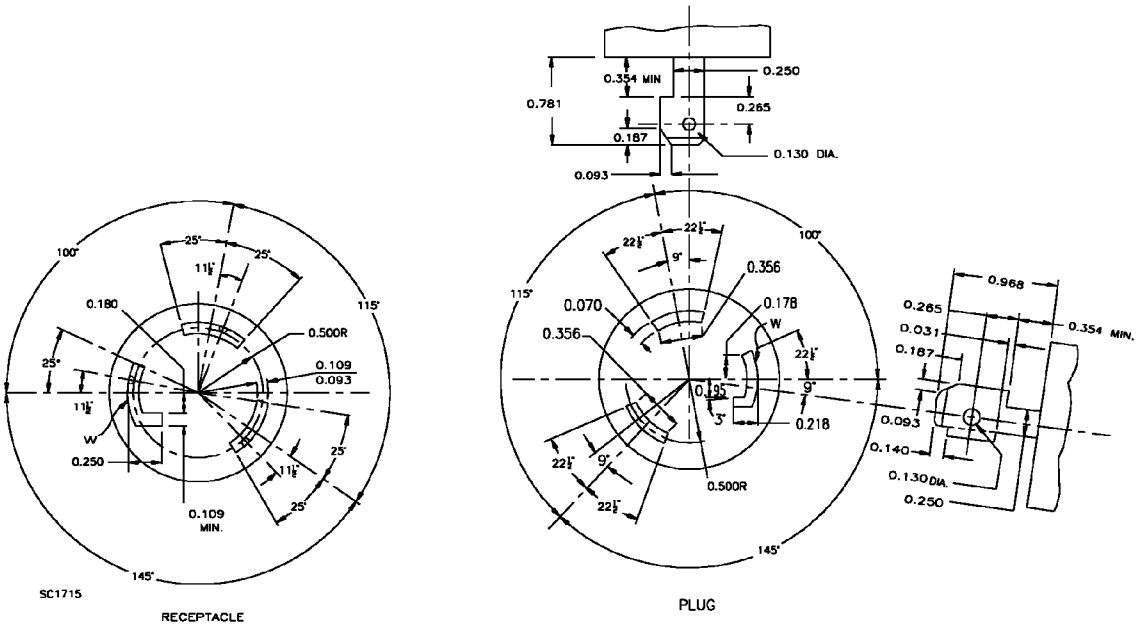


Figure C3.11
4-pole, 4-wire nongrounding-locking devices rated 20 A, 120/208 V 3-phase wye

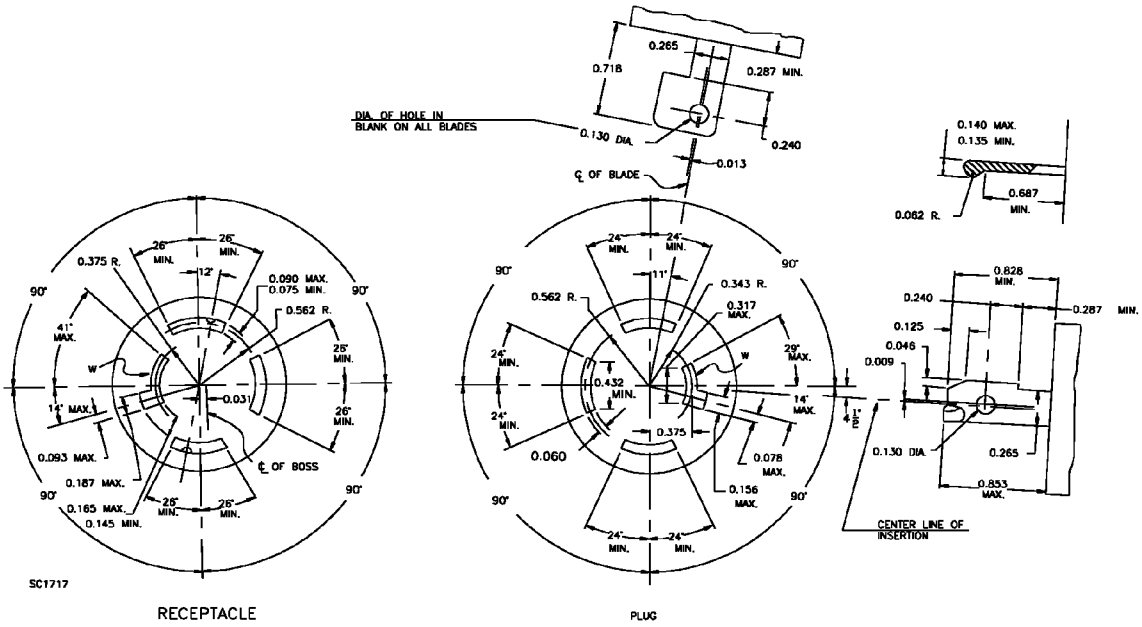
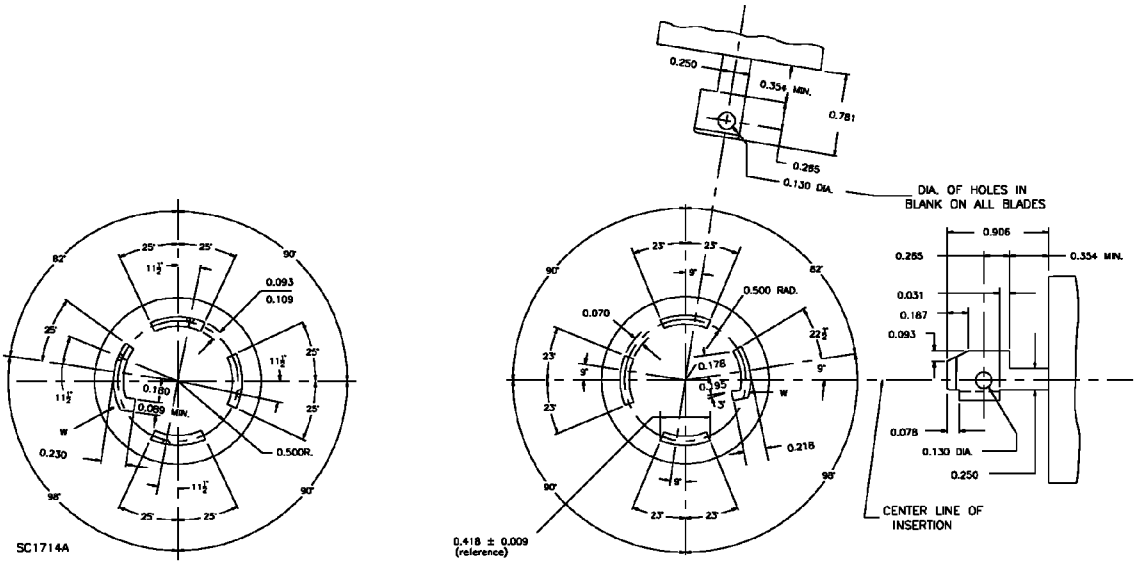
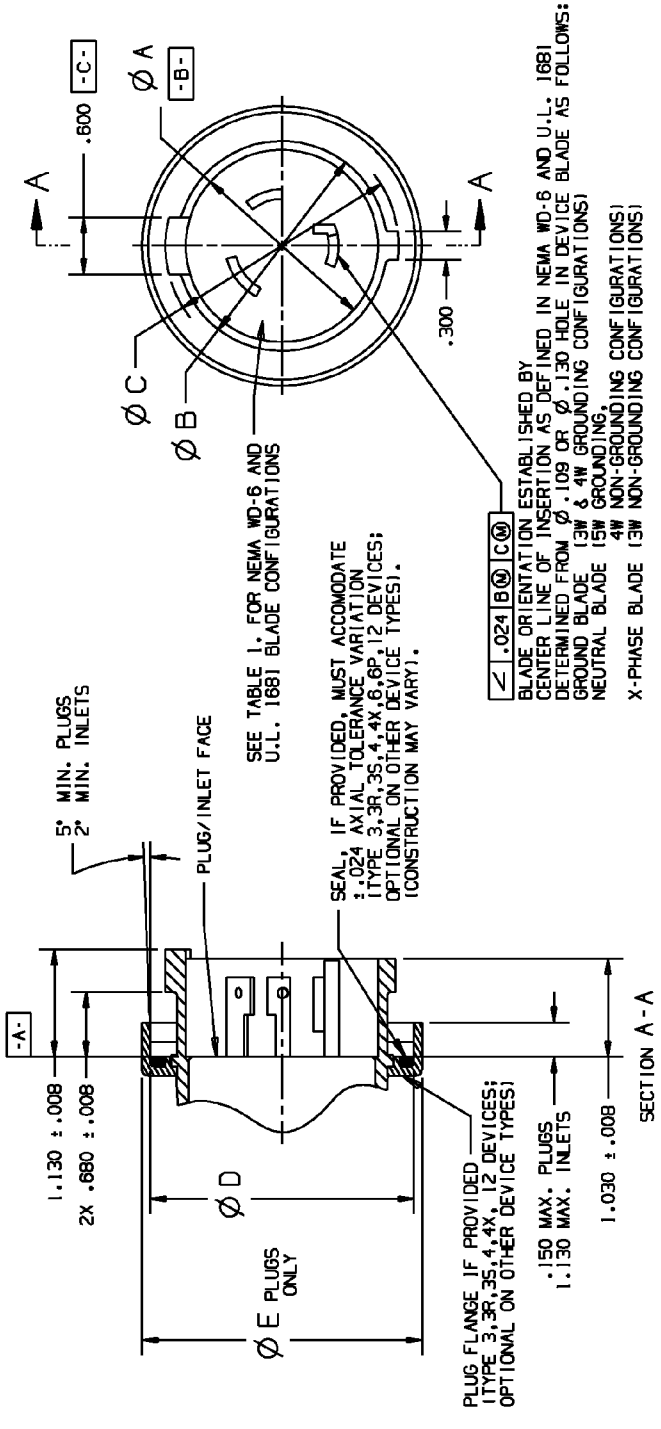


Figure C3.12
4-pole, 4-wire nongrounding-ocking devices rated 30 A, 120/208 V 3-phase wye



C4 Alternate Shrouding Configurations

Figure C4.1
Alternate shrouding configuration, male devices



	A +.015 -.015	B +.010 -.010	C +.010 -.010	D min	E max
4 & 5 WIRE	Ø2.030	Ø2.215	Ø2.455	Ø2.770	Ø2.950
3 WIRE	Ø1.855	Ø2.045	Ø2.290	Ø2.600	Ø2.785

UNTOLERANCED DIMENSIONS ±.005

INTERPRET THIS DRAWING IN ACCORDANCE WITH ANSI Y14.5M.

TABLE 1: RATINGS AND BLADE CONFIGURATION CROSS REFERENCE

3 WIRE DEVICES					4 AND 5 WIRE DEVICES				
RATING	20A		30A		RATING	20A		30A	
VOLTAGE	NEMA WD6	UL 1681	NEMA WD6	UL 1681	VOLTAGE	NEMA WD6	UL 1681	NEMA WD6	UL 1681
125V	L5-20		L5-30		125V/250V	L14-20		L14-30	
250V	L6-20		L6-30		3Ø 250V	L15-20		L15-30	
277VAC	L7-20		L7-30		3Ø 480V	L16-20		L16-30	
480VAC	L8-20		L8-30		3Ø 600V	X		L17-30	
600VAC	L9-20		L9-30		3Ø Y120/208V	L18-20		L18-30	
125V/250V	L10-20		L10-30		3Ø Y277/480V	L19-20		L19-30	
3Ø 250V	L11-20		L11-30		3Ø Y347/600V	L20-20		L20-30	
3Ø 480V	L12-20		L12-30		3Ø Y120/208V	L21-20		L21-30	
3Ø 600V	X		L13-30		3Ø Y277/480V	L22-20		L22-30	
125V/250V	C3.9	X	C3.10	X	3Ø Y347/600V	L23-30		L23-30	
					3Ø Y120/208V	X	C3.11	X	C3.12

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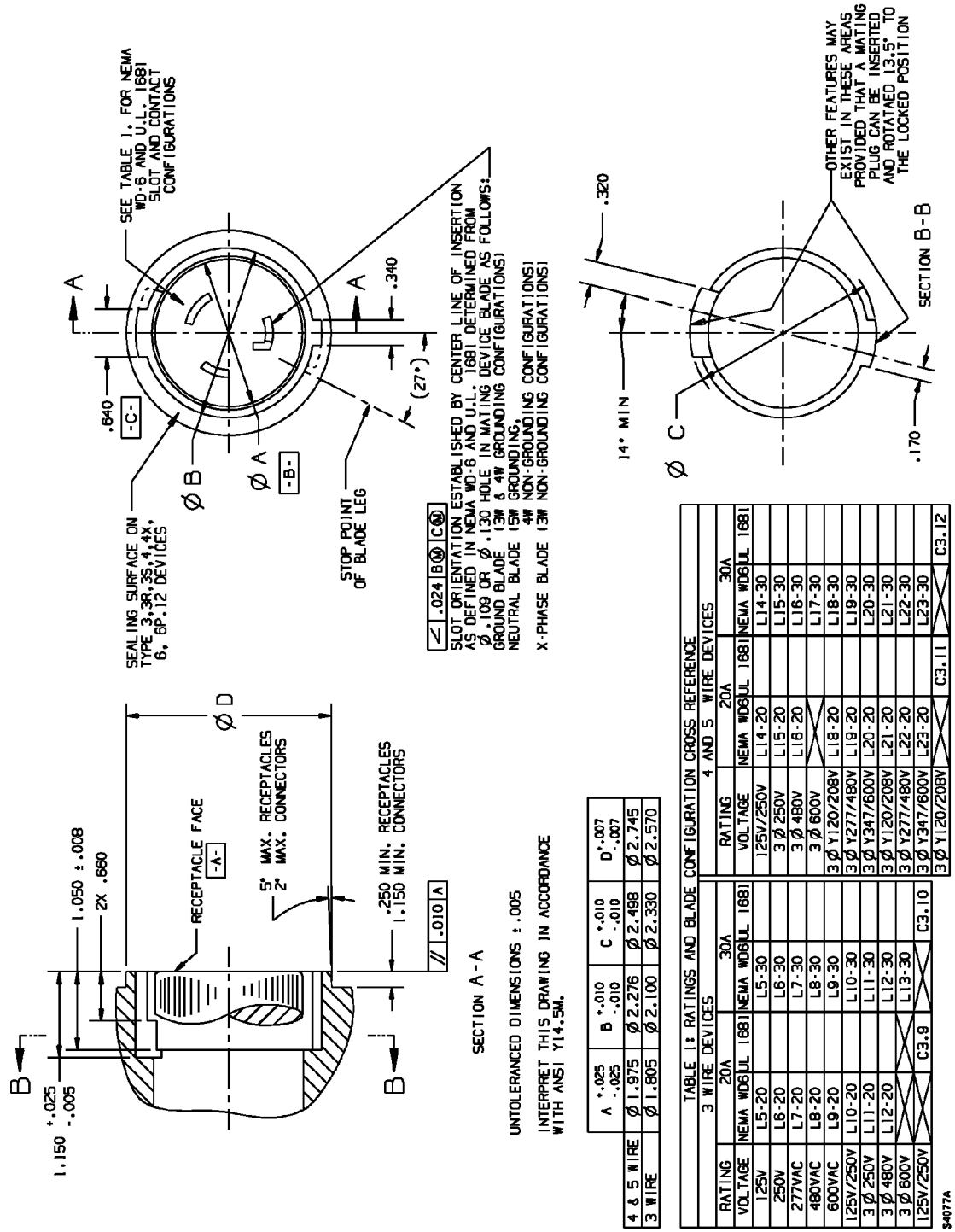
Figure C4.2
Alternate shrouding configuration, female devices



	A +.025 -.025	B +.010 -.010	C +.010 -.010	D +.007 -.007
4 & 5 WIRE	Ø1.975	Ø2.276	Ø2.498	Ø2.745
3 WIRE	Ø1.805	Ø2.100	Ø2.330	Ø2.570

TABLE I: RATINGS AND BLADE CONFIGURATION CROSS REFERENCE

3 WIRE DEVICES			4 AND 5 WIRE DEVICES		
RATING	20A	30A	RATING	20A	30A
VOLTAGE	NEMA WD6 UL 1681	NEMA WD6 UL 1681	VOLTAGE	NEMA WD6 UL 1681	NEMA WD6 UL 1681
125V	L5-20	L5-30	125V/250V	L14-20	L14-30
250V	L6-20	L6-30	3Ø 250V	L15-20	L15-30
277VAC	L7-20	L7-30	3Ø 480V	L16-20	L16-30
480VAC	L8-20	L8-30	3Ø 600V		L17-30
600VAC	L9-20	L9-30	3Ø Y120/208V	L18-20	L18-30
125V/250V	L10-20	L10-30	3Ø Y277/480V	L19-20	L19-30
3Ø 250V	L11-20	L11-30	3Ø Y347/600V	L20-20	L20-30
3Ø 480V	L12-20	L12-30	3Ø Y120/208V	L21-20	L21-30
3Ø 600V		L13-30	3Ø Y277/480V	L22-20	L22-30
125V/250V	C3.9	C3.10	3Ø Y347/600V	L23-20	L23-30
			3Ø Y120/208V	C3.11	C3.12

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C5 *Section C5 deleted January 15, 2004*

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