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**Underwriters Laboratories Inc.®**A not-for-profit organization dedicated to public safety
and committed to quality service**August 7, 1996****Revision pages for****Standard for****High-Voltage Components for Television-Type Appliances****UL 1413, Fifth Edition**

Attached to this distribution notice is a reprinted title page for the Fifth edition of UL 1413.

THE REVISION DATED AUGUST 7, 1996 WAS ALSO ISSUED TO CORRECT TITLE OF THE STANDARD ON
PAGE 5.As indicated on the title page (page 1), this UL Standard for Safety is an American National Standard.
Attention is directed to the note on the title page of this Standard outlining the procedures to be followed
to retain the text of this ANSI/UL Standard.

Revised and/or additional pages may be issued from time to time.

With the inclusion of the accompanying material, the standard consists of pages dated as shown in the
following checklist:

Page	Date
i	August 23, 1995
1	October 27, 1994 (Reprinted August 7, 1996)
2	—
3, 4	October 27, 1994
5	August 7, 1996
6	October 27, 1994
7, 8	August 23, 1995
9	October 27, 1994
10	August 23, 1995

OCTOBER 27, 1994
(Title Page Reprinted: August 7, 1996)



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UL 1413

Standard for

**High-Voltage Components for
Television-Type Appliances**

The First edition was titled High-Voltage Components for Television Receiving Appliances and Other Electronic Equipment and numbered UL 492.3.

First Edition – January, 1974

Second Edition – May, 1981

Third Edition – March, 1983

Fourth Edition – June, 1988

Fifth Edition**October 27, 1994**

Approval as an American National Standard (ANSI) covers the numbered paragraphs on pages dated October 27, 1994, August 23, 1995, and August 7, 1996. These pages should not be discarded when revised or additional pages are issued if it is desired to retain the ANSI approved text.

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

Approved as ANSI/UL 1413-1982, October 15, 1982

Approved as ANSI/UL 1413-1988, March 14, 1988

Approved as ANSI/UL 1413-1996, June 5, 1996

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 published set of revision pages.

ISBN 1-55989-694-9**COPYRIGHT © 1974, 1996 UNDERWRITERS LABORATORIES INC.**

INTRODUCTION

1 Scope

1.1 These requirements cover flyback transformers, high-voltage multipliers, deflection yokes and picture-tube high-voltage-neck components intended to be employed in television-type appliances.

1.2 High voltage is defined as a potential equal to or greater than 2500 V peak.

1.3 Unless stated otherwise, each paragraph applies to all components covered by the scope of these requirements.

1.4 Protective devices or circuits that are an integral part of a component are to be considered as part of that component.

1.5 A product that contains features, characteristics, components, materials, or systems new or different from those covered by the requirements in this standard, and that involves a risk of fire, electric shock, or injury to persons shall be evaluated using the appropriate additional component and end-product requirements as determined necessary to maintain the acceptable level of safety as originally anticipated by the intent of this Standard. A product whose features, characteristics, components, materials, or systems conflict with specific requirements or provisions of this Standard cannot be judged to comply with this Standard. Where considered appropriate, revision of requirements shall be proposed and adopted in conformance with the methods employed for development, revision and implementation of this Standard.

2 Units of Measurement

2.1 If a value for measurement is followed by a value in other units in parentheses, the second value may be only approximate. The first stated value is the requirement.

CONSTRUCTION

3 Electrical Connections

3.1 Where malfunction of electrical connections involves risk of fire or electric shock, the connections shall be soldered, welded, or otherwise securely connected. A soldered joint shall be mechanically secure before soldering.

3.2 A lead is considered to be mechanically secure when one or more of the following is provided:

- a) At least one full wrap around a terminal.
- b) At least one right-angle bend when passed through an eyelet or opening.
- c) Twisted with other conductors.

3.3 The placing of a lead along a flat surface and soldering (identified as tack soldering) is not acceptable unless it can be demonstrated that a risk of fire, electric shock, or personal injury does not exist with the lead(s) detached.

3.4 Any other means of securing integral leads, for example, spade-type connectors, wire wrapping, or the like, is to be evaluated to determine its mechanical security.

4 Component Leads

4.1 All leads intended to connect the component to the circuitry of the appliance shall be provided with a strain relief means so that stress on an external lead, or combination of leads, shall not:

- a) Result in damage to or displacement of the leads, or
- b) Reduce spacings to any connection on or inside the component. The strain-relief means shall comply with Strain Relief Test, Section 14.

5 Lead Exit

5.1 If wires pass through an opening in a component enclosure, cover, or the like, the edges of the opening shall be smooth and well rounded, without burrs or fins that might damage the conductor insulation.

6 Bushings

6.1 A bushing, if used, shall be securely held in place. The material of the bushing shall comply with the requirements outlined by Table 10.1.

7 Corrosion Protection

7.1 All metal parts necessary for functioning of the component as intended shall be protected against corrosion.

7.2 7.1 applies to all parts upon which operation may depend. It does not apply to small, minor parts of iron or steel such as washers, screws, bolts, and the like that are not current carrying, if a malfunction of such unprotected parts cannot result in a risk of fire, electric shock, personal injury, or inability of the component to operate, but the protection of all such parts is recommended.

7.3 Parts made of nonferrous metal, coated or treated if necessary, do not require additional protection against corrosion.

8 Insulating Materials

8.1 Insulating material employed to maintain spacings between terminals involving risk of fire, electric shock, or personal injury, or as the sole means of physically supporting such terminals, shall be a material that complies with the requirements outlined by Table 10.1.

9 Small Gauge Wire

9.1 Leads of a component that are smaller than No. 24 AWG and are to be connected to the circuitry of an appliance shall be protected against mechanical damage including the effects of vibration and impact in service.



Underwriters Laboratories Inc.®

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August 23, 1995

Revision pages for

Standard for

High-Voltage Components for Television-Type Appliances

UL 1413, Fifth Edition

Attached to this transmittal notice is a revision of the Fifth edition of UL 1413.

A CHANGE ON A PAGE DATED AUGUST 23, 1995 IS INDICATED BY A SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM, PRECEDED AND FOLLOWED BY AN ASTERISK.

THIS REVISION IS BEING ISSUED TO CORRECT THE INADVERTENT OMISSION OF PAGE i AND THE EFFECTIVE DATE INFORMATION FROM NOTES ^d, ^e, ^f, ⁱ, ^j, AND ^l OF TABLE 10.1. THE REQUIREMENTS ARE NOW IN EFFECT EXCEPT FOR NOTES ^d, ^e, ^f, ⁱ, ^j, AND ^l OF TABLE 10.1, WHICH BECOME EFFECTIVE AS INDICATED IN THE SMALL PRINT NOTE FOLLOWING THE AFFECTED ITEM.

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Effective dates for the following requirements have not been established:

Notes ^d, ^e, ^f, ⁱ, ^j, and ^l to Table 10.1.

A program has yet to be implemented whereby information regarding the acceptability of component insulating materials can be transmitted to the end-product manufacturer. When such a program is developed, effective dates will be established and announced.

OCTOBER 27, 1994

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