



# UL 1682

## **STANDARD FOR SAFETY**

Plugs, Receptacles, and Cable Connectors of the  
Pin and Sleeve Type



UL Standard for Safety for Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type, UL 1682

Fifth Edition, Dated February 15, 2017

### **SUMMARY OF TOPICS**

***This Fifth Edition of the Standard for Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type, UL 1682, is being issued as a Trinational Standard with ANCE and CSA.***

The new/revised requirements are substantially in accordance with Proposal(s) on this subject dated May 6, 2016 and October 14, 2016.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form by any means, electronic, mechanical photocopying, recording, or otherwise without prior permission of UL.

UL provides this Standard “as is” without warranty of any kind, either expressed or implied, including but not limited to, the implied warranties of merchantability or fitness for any purpose.

In no event will UL be liable for any special, incidental, consequential, indirect or similar damages, including loss of profits, lost savings, loss of data, or any other damages arising out of the use of or the inability to use this Standard, even if UL or an authorized UL representative has been advised of the possibility of such damage. In no event shall UL’s liability for any damage ever exceed the price paid for this Standard, regardless of the form of the claim.

Users of the electronic versions of UL’s Standards for Safety agree to defend, indemnify, and hold UL harmless from and against any loss, expense, liability, damage, claim, or judgment (including reasonable attorney’s fees) resulting from any error or deviation introduced while purchaser is storing an electronic Standard on the purchaser’s computer system.

No Text on This Page



**Association of Standardization and Certification**  
**NMX-J-719-ANCE**  
**First Edition**



**CSA Group**  
**CSA C22.2 No. C22.2 No. 182.1-17**  
**Fifth Edition**



**Underwriters Laboratories Inc.**  
**UL 1682**  
**Fifth Edition**

## **Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type**

February 15, 2017



**ANSI/UL 1682-2017**

This is a preview. [Click here to purchase the full publication.](#)

## **Commitment for Amendments**

This standard is issued jointly by the Association of Standardization and Certification (ANCE), the Canadian Standards Association (operating as “CSA Group”), and Underwriters Laboratories Inc. (UL). Comments or proposals for revisions on any part of the standard may be submitted to ANCE, CSA Group, or UL at anytime. Revisions to this standard will be made only after processing according to the standards development procedures of ANCE, CSA Group, and UL. CSA Group and UL will issue revisions to this standard by means of a new edition or revised or additional pages bearing their date of issue. ANCE will incorporate the same revisions into a new edition of the standard bearing the same date of issue as the CSA Group and UL pages.

---

## **Copyright © 2017**

Rights reserved in favor of ANCE.

---

## **ISBN 978-1-4883-0379-1 © 2017 CSA Group**

All rights reserved. No part of this publication may be reproduced in any form whatsoever without the prior permission of the publisher.

This Standard is subject to review five years from the date of publication, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to [inquires@csagroup.org](mailto:inquires@csagroup.org) and include “Proposal for change” in the subject line: Standard designation (number); relevant clause, table, and/or figure number; wording of the proposed change; and rationale for the change.

To purchase CSA Group Standards and related publications, visit CSA Group’s Online Store at [shop.csa.ca](http://shop.csa.ca) or call toll-free 1-800-463-6727 or 416-747-4044.

---

## **Copyright © 2017 Underwriters Laboratories Inc.**

UL’s Standards for Safety are copyrighted by UL. Neither a printed nor electronic copy of a Standard should be altered in any way. All of UL’s Standards and all copyrights, ownerships, and rights regarding those Standards shall remain the sole and exclusive property of UL.

This ANSI/UL Standard for Safety consists of the Fifth Edition. The most recent designation of ANSI/UL 1682 as an American National Standard (ANSI) occurred on February 15, 2017. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page (front and back), or the Preface.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL’s On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

To purchase UL Standards, visit Comm 2000 at <http://www.comm-2000.com/HowToOrder.aspx> or call toll-free 1-888-853-3503.

---

## CONTENTS

<b>Preface .....</b>	<b>6</b>
1 Scope .....	8
2 Definitions .....	8
3 General .....	10
3.1 Components .....	10
3.2 Reference publications .....	11
3.3 Units of measurement .....	17
4 Construction .....	17
4.1 General .....	17
4.2 Configurations .....	17
4.3 Insulating material .....	17
4.4 Resistance to corrosion .....	19
4.5 Enclosures .....	19
4.6 Current-carrying parts .....	21
4.7 Clearances and creepage distances .....	21
4.8 Accessibility of live parts .....	22
4.9 Grounding/bonding and dead-metal parts .....	23
4.10 Grounding/bonding connections .....	24
4.11 Terminal parts .....	25
4.12 Pin-type (insulation-piercing) or insulation-displacement terminals .....	26
4.13 Assembly .....	26
4.14 Interlocks .....	27
4.15 Devices intended to accommodate a fuse .....	28
4.16 Cord or cable grip .....	29
5 Tests .....	29
5.1 Representative devices .....	29
5.2 Accelerated aging .....	30
5.3 Comparative tracking index .....	31
5.4 Glow wire .....	31
5.5 High-current arc resistance to ignition .....	31
5.6 Mold stress relief .....	32
5.7 Moisture absorption resistance .....	33
5.8 Humidity .....	34
5.9 Insulation resistance .....	34
5.10 Dielectric withstand .....	35
5.11 Conductor secureness .....	35
5.12 Cord or cable secureness .....	36
5.13 Impact (plugs and connectors) .....	37
5.14 Crush .....	38
5.15 Withdrawal force .....	39
5.16 Grounding path current (In Mexico and the United States only) .....	39
5.17 Short circuit withstand (motor rated devices) .....	40
5.18 Strength of insulating base and support .....	46
5.19 No-load endurance .....	47
5.20 Endurance with load .....	47
5.21 Overload .....	48
5.22 Abnormal overload .....	49
5.23 Horsepower rated locked rotor .....	50
5.24 Electromagnetic (pilot contacts) .....	50

5.25	Temperature rise .....	51
5.26	Resistance to arcing .....	52
5.27	Polarization integrity .....	52
5.28	Resistance to corrosion .....	52
5.29	Moisture resistance .....	53
5.30	Environmental enclosure type designators .....	54
5.31	Pin-type (insulation-piercing) or insulation-displacement terminals .....	54
6	Ratings .....	58
6.1	General .....	58
7	Markings .....	59
7.1	Details .....	59
7.2	Identification and marking of terminals .....	67

## **SUPPLEMENT SA - REPLACEMENT PARTS FOR USE WITH SPECIFIC MANUFACTURER'S PLUGS, RECEPTACLES, and CABLE CONNECTORS of the PIN and SLEEVE TYPE (MANDATORY)**

### **INTRODUCTION**

SA1	Scope .....	85
SA2	General .....	85
SA3	Definitions .....	85

### **CONSTRUCTION**

SA4	General .....	85
-----	---------------	----

### **PERFORMANCE**

SA5	General .....	86
SA6	Replacement Part Assembly Test .....	86

### **MARKINGS**

SA7	General .....	87
-----	---------------	----

### **INSTRUCTIONS**

SA8	General .....	87
-----	---------------	----

## **SUPPLEMENT SB - EQUIPMENT WIRING TERMINALS FOR USE WITH COPPER CONDUCTORS (For Mexico Only)**

SB1	Mechanical Sequence .....	89
SB1.1	Secureness test .....	89
SB1.2	Pullout test .....	92

### **ANNEX A (informative)**



## **Component Standards**

## **ANNEX B (informative)**

## Preface

This is the harmonized ANCE, CSA Group, and UL Standard for Plugs, Receptacles, and Cable Connectors of the Pin and Sleeve Type. It is the First edition of NMX-J-719-ANCE, the Fifth edition of CSA C22.2 No. 182.1, and the Fifth edition of UL 1682. This edition of CSA-C22.2 No. 182.1 supersedes the previous edition published in February 2014. This edition of UL 1682 supersedes the previous edition published on February 7, 2014.

This harmonized Standard was prepared by the Association of Standardization and Certification, (ANCE), CSA Group, and Underwriters Laboratories Inc. (UL).

The efforts and support of the Technical Harmonization Subcommittee, 23H, on the Harmonization of Electrotechnical Standards of the Nations of the Americas (CANENA), are gratefully acknowledged.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The present Mexican standard was developed by the CT 23 – Accesorios eléctricos (Artefactos eléctricos) from the Comité de Normalización de la Asociación de Normalización y Certificación, A.C., CONANCE, with the collaboration of the plugs, receptacles and conductors manufacturers and users.

This Standard was reviewed by the CSA Integrated Committee on Wiring Devices under the jurisdiction of the CSA Technical Committee on Wiring Products and the CSA Strategic Steering Committee on Requirements for Electrical Safety, and has been formally approved by the CSA Technical Committee.

This Standard has been approved by the American National Standards Institute (ANSI) as an American National Standard.

### Application of Standard

Where reference is made to a specific number of samples to be tested, the specified number is to be considered a minimum quantity.

Note: Although the intended primary application of this standard is stated in its scope, it is important to note that it remains the responsibility of the users of the standard to judge its suitability for their particular purpose.

### Level of harmonization

This Standard is published as an equivalent Standard.

An equivalent Standard is a Standard that is substantially the same in technical content, except as follows. Technical deviations are allowed for Codes and Government Regulations and those recognized as being in accordance with NAFTA Article 905, for example, because of fundamental, climatic, geographical, technological, or infrastructural factors, scientific justification, or the level of protection that the country considers appropriate. Presentation is word for word except for editorial changes.

### Reasons for Differences From IEC

There is no corresponding IEC standard.