



UL 1450

STANDARD FOR SAFETY

Motor-Operated Air Compressors,
Vacuum Pumps, and Painting
Equipment

UL Standard for Safety for Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment,
UL 1450

Fourth Edition, Dated May 5, 2010

Summary of Topics

The revisions to ANSI/UL 1450 dated May 27, 2021 include the following changes in requirements:

- Revision of Cord Tag Requirements; [56.2](#)***
- Update of Standard Reference For Ultraviolet Light Test; [SA10.9.1](#) and [SA10.9.2](#)***

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

The revised requirements are substantially in accordance with Proposal(s) on this subject dated April 9, 2021.

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



ANSI/UL 1450-2021

1

UL 1450

Standard for Motor-Operated Air Compressors, Vacuum Pumps, and

Painting Equipment

First Edition – February, 1981

Second Edition – May, 1993

Third Edition – July, 2003

Fourth Edition

May 5, 2010

This ANSI/UL Standard for Safety consists of the Fourth Edition including revisions through May 27, 2021.

The most recent designation of ANSI/UL 1450 as an American National Standard (ANSI) occurred on May 27, 2021. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

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>.

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.

COPYRIGHT © 2021 UNDERWRITERS LABORATORIES INC.

No Text on This Page

CONTENTS

INTRODUCTION

1	Scope	7
2	Glossary	7
3	Components	9
4	Units of Measurement	9
5	References	9
6	Attachments	10
7	Instructions Provided with the Product	10

CONSTRUCTION

8	General	10
9	Enclosure	10
10	Mechanical Assembly	14
11	Protection Against Corrosion	15
12	Accessibility of Uninsulated Live Parts and Film-Coated Wire	15
13	Supply Connections	21
	13.1 Cord-connected products	21
	13.2 Strain relief	24
	13.3 Bushings	24
	13.4 Permanently connected products	25
14	Current-Carrying Parts	26
15	Insulating Material	27
16	Gaskets and Seals	27
17	Internal Wiring	27
	17.1 Mechanical protection	27
	17.2 Types of wire	28
	17.3 Splices and connections	28
18	Separation of Circuits	29
19	Capacitors	29
20	Grounding	30
	20.1 General	30
	20.2 Grounding identification	31
21	Double Insulation	31
22	Lampholders	32
23	Motors	32
	23.1 Construction	32
	23.2 Overload protection	32
	23.3 Brushes and brush holders	33
24	Overload- or Thermal-Protective Devices	34
25	Receptacles	34
26	Switches and Controls	35
27	Spacings	35
27A	Alternative Spacings – Clearances and Creepage Distances	37
27B	Low Voltage Limited Energy Circuits	37

PROTECTION AGAINST INJURY TO PERSONS

28	General	38
29	Sharp Edges	38
30	Enclosures and Guards	38
31	Materials	40

32	Surface Temperatures	40
33	Stability	41
34	Strength of Handles and Mounting Means	41
35	Rotating or Moving Members.....	42
36	Pressure Vessels and Parts Subject to Pressure.....	42
	36.1 Pressure vessel.....	42
	36.2 Parts subject to pressure.....	43
37	Pressure Relief Means.....	44
38	Pressure-Regulating Control Switches	45
39	Switches, Controls, and Interlocks	46

PERFORMANCE

40	General	47
41	Leakage Current Test	47
42	Leakage Current Test Following Humidity Conditioning	50
43	Starting Current Test.....	50
44	Loaded Starting Test.....	51
45	Input Test.....	51
46	Temperature Test	51
	46.1 General.....	51
	46.2 Maximum normal load	56
47	Grounding Continuity Test.....	57
48	Dielectric Voltage Withstand Test.....	57
49	Resistance to Moisture Test	58
50	Paint Entry Test.....	62
51	Test on Switches and Controls.....	62
52	Strain Relief Test	63
53	Push-Back Strain Relief Test	63
54	Abnormal Operation Test	63
55	Accelerated Aging Test	64
56	Permanence of Marking Tests	64
57	Vibration Test	65
58	Hydrostatic Strength Test.....	66

MANUFACTURING AND PRODUCTION TESTS

59	Dielectric Voltage Withstand.....	66
60	Grounding Continuity.....	67
61	Pressure Vessel Assembly.....	68
62	Start-to-Discharge of Pressure-Relief Device.....	68

RATING

63	Details.....	68
----	--------------	----

MARKING

64	Details	69
	64.1 General.....	69
	64.2 Permanently connected products	70
	64.3 Cord-connected products	71
	64.4 Household type products.....	71
65	Cautionary	72

INSTRUCTION MANUAL

66	General	75
67	Operating and Installation Instructions	76
68	User-Maintenance Instructions	76
69	Grounding Instructions	77
70	Double-Insulation Instructions	79

BATTERY-OPERATED PRODUCTS

71	Scope	79
72	Construction	80
73	Performance	81

SUPPLEMENT SA – HIGH-PRESSURE PAINT SPRAYING PRODUCTS**INTRODUCTION**

SA1	Scope	83
-----	-------------	----

CONSTRUCTION

SA2	General	83
SA3	Hoses	83
SA3.1	General	83
SA3.2	Electrical bonding	84

PROTECTION AGAINST INJURY TO PERSONS

SA4	Trigger Guard	84
SA5	Spray Tip Guard	85

PERFORMANCE

SA6	Injection Test	86
SA7	Paint Entry Test	87
SA8	Spray Gun Assembly Tests	88
SA8.1	General	88
SA8.2	Drop test	88
SA8.3	Mold stress-relief distortion test	88
SA9	Gaskets and Seals Tests	88
SA9.1	Accelerated aging test	88
SA9.2	Immersion test	89
SA10	Hose Tests	89
SA10.1	Proof-pressure test	89
SA10.2	Minimum burst pressure test	89
SA10.3	Leakage test	90
SA10.4	Change in length test	90
SA10.5	Flex Impulse test	90
SA10.6	Electrical resistance test	91
SA10.7	Accelerated air-oven aging test	91
SA10.8	Ozone test	91
SA10.9	Ultraviolet-light test	91
SA10.10	Cold bend test	91

SA10.11 Solvent exposure tests	92
SA10.12 Pull force test	93
SA10.13 Flexing test	93

MANUFACTURING AND PRODUCTION TESTS

SA11 Production-Line Tests	94
----------------------------------	----

MARKING

SA12 Details	94
SA13 Cautionary	95

INSTRUCTION MANUAL

SA14 Operating Instructions	96
SA15 User-Maintenance Instructions	96
SA16 Important Safety Instructions	97

SUPPLEMENT SB – *Deleted*

APPENDIX A

Standards for Components	102
--------------------------------	-----

Appendix B – *Deleted*

INTRODUCTION

1 Scope

1.1 These requirements cover household and commercial air compressors, vacuum pumps, inflators (both compressor-type and blower-type inflators), paint sprayers, paint mixers, and paint pigment dispensers intended for indoor or outdoor use or both in accordance with the National Electrical Code, ANSI/NFPA 70. These requirements also cover motor-operated air compressors intended for use with sprinkler systems in accordance with the Standard for Installation of Sprinkler Systems, NFPA 13, and the National Electrical Code, ANSI/NFPA 70.

1.2 These requirements do not cover products:

- a) Rated more than 600 V,
- b) Employing a universal motor rated more than 250 V, or
- c) Intended for installation and use in a hazardous location.

1.3 These requirements do not cover medical and dental products; products intended to be used in heating, air conditioning, or refrigeration systems; paint heaters; electrostatic paint spraying products; or other products covered by separate requirements.

1.4 These requirements do not cover pneumatic tools and accessories that are covered by the Outline for Investigation for Portable Pneumatic Tools, Subject 7700-1.

1.5 These requirements do not cover industrial compressors that are primarily supplied to an individual customer specification with regard to pressure, flow, electrical supply, or optional equipment.

2 Glossary

2.1 For the purpose of this standard the following definitions apply.

2.2 **AUTOMATICALLY CONTROLLED PRODUCT** – A product is considered to be automatically controlled under any one or more of the following conditions if:

- a) The repeated starting of the product, beyond one complete predetermined cycle of operation to the point where some form of limit switch opens the circuit, is independent of any manual control.
- b) During any single predetermined cycle of operation, the motor is caused to stop and restart one or more times.
- c) Upon energizing the product, the initial starting of the motor may be intentionally delayed beyond normal, conventional starting.
- d) During any single predetermined cycle of operation, automatic changing of the mechanical load may reduce the motor speed sufficiently to reestablish starting-winding connections to the supply circuit.

2.3 **EQUIPMENT, FIXED** – Equipment that is intended for permanent connection to the electrical supply. This type of equipment may be physically secured to the supporting surface.

2.4 **EQUIPMENT, MOVABLE** – Cord-connected equipment that is intended to be moved from location to location during and in between performing its intended function. This type of equipment is not supported by the user, but supported by the ground or by other supporting surface during use.