TEST REPORT
UL 1450 & CSA C22.2 No.68
Standard for safety
Motor-Operated Air Compressors, Vacuum Pumps, and Painting Equipment & Motor-operated appliances (household and commercial)

Report Number ..... :	AOC251016005S
Date of issue ..... :	2025-10-16
Total number of pages ..... :	46 pages
Applicant's name ..... :	Ningguo Yongshi Auto Tools Co., Ltd.
Address..... :	Building9, Zhenning Road, Electronic Industrial Park, Ningguo City, Anhui Province, China
Test specification:	
Standard..... :	UL 1450:2019 & CSA C22.2 NO.68-18:2018
Test procedure ..... :	UL test report
Non-standard test method..... :	N/A
Test Report Form No. ..... :	UL1450_1A
Test Report Form(s) Originator ..... :	AOCE
Master TRF ..... :	Dated 2020-03-11

General disclaimer:

The test results presented in this report relate only to the object tested.

Test Item description ..... :	Electric Pulse Brake Oil Replacement Machine
Trade Mark ..... :	N/A
Manufacturer ..... :	Ningguo Yongshi Auto Tools Co., Ltd.
Manufacturer Address..... :	Building9, Zhenning Road, Electronic Industrial Park, Ningguo City, Anhui Province, China
Model/Type reference ..... :	YS-0115A, YS-0115B, YS-0115
Ratings ..... :	AC 120V, 60Hz, 24W

Testing procedure and testing location:			
	Testing Laboratory:	Shenzhen AOCE Electronic Technology Service Co., Ltd	
Testing location/ address .....:		Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China	
	Associated Testing Laboratory:		
Testing location/ address .....:			
Tested by (name + signature) .....:		WanYang Ye Technical Engineer	
Approved by (name + signature) .....:		Robin Liu Technical Manager	
	Testing procedure: TMP/CTF Stage 1:		
Testing location/ address .....:			
Tested by (name + signature) .....:			
Approved by (name + signature) .....:			
	Testing procedure: WMT/CTF Stage 2:		
Testing location/ address .....:			
Tested by (name + signature) .....:			
Witnessed by (name + signature).....:			
Approved by (name + signature) .....:			
	Testing procedure: SMT/CTF Stage 3 or 4:		
Testing location/ address .....:			
Tested by (name + signature) .....:			
Witnessed by (name + signature).....:			
Approved by (name + signature) .....:			
Supervised by (name + signature) .....:			

List of Attachments (including a total number of pages in each attachment):
-Appendix 1: Photo attachments. (5 pages)

Summary of testing:

Tests performed (name of test and test clause):	**Testing location:**
All clauses.	Shenzhen AOCE Electronic Technology Service Co., Ltd Room 202, 2nd Floor, No.12th Building of Xinhe Tongfuyu Industrial Park, Fuhai Street, Baoan District, Shenzhen, Guangdong, China

Summary of compliance with National Differences:
N/A

The product fulfils the requirements of UL 1450:2019 & CSA C22.2 NO.68-18:2018

Copy of marking plate:

The artwork below may be only a draft.

POSSIBLE TEST CASE VERDICTS:	
- test case does not apply to the test object..... :	N/A
- test object does meet the requirement .....:	P (Pass)
- test object does not meet the requirement .....:	F (Fail)
- Date of receipt of test item.....:	October 9, 2025
-Date (s) of performance of tests.....:	October 9, 2025 to October 16, 2025
GENERAL REMARKS:	
"(See Enclosure #)" refers to additional information appended to the report. **"(See appended table)" refers to a table appended to the report.** **Throughout this report a comma / point is used as the decimal separator.** Determination of the test result includes consideration of measurement uncertainty from the test equipment and methods.	
Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:	
The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	**Yes** **Not applicable**
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	Same as Manufacturer

GENERAL PRODUCT INFORMATION:

Product Description –

1. The product is Electric Pulse Brake Oil Replacement Machine, electronic components mounted on PCB, external enclosure is plastic material.
2. All models are the same, but the model name and appearance are different, so the model YS-0115A is selected as the representative model for the complete test.

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict

	CONSTRUCTION		
8	General		P
8.1	A product shall employ materials found by investigation to be acceptable for the intended application.		P
8.2	An air compressor categorized as household use only in accordance with 2.12 shall not be rated more than 3 hp (2.25 kW output) or more than 150 psi (1034 kPa) and shall comply with 66.7.		P
8.3	A motor-operated air compressor intended for use with sprinkler systems shall be provided with a means to be permanently connected to a wiring system.		P
9	Enclosure		P
9.1	A product shall be formed and assembled so that it will have the strength and rigidity necessary to resist the abuses to which it is likely to be subjected, without resulting in a risk of fire, electric shock, or injury to persons due to total or partial collapse with resulting reduction of spacings, loosening or displacement of parts, or other defects		P
9.2	Cast and sheet-metal portions of an enclosure shall not be thinner than the applicable values specified in Table 9.1.		N/A
9.3	Among the factors that shall be considered when judging the acceptability of a nonmetallic enclosure or an enclosure of magnesium are: a) Mechanical strength, b) Resistance to impact, c) Moisture-absorptive properties, d) Flammability, and e) Resistance to distortion at temperatures to which the material may be subjected under conditions of normal or abnormal usage.		P
9.4	An enclosure of polymeric material shall comply with the applicable requirements for products that are not categorized as household use only as contained in the Standard for Polymeric Materials – Use in Electrical Equipment Evaluations, UL 746C.		P
9.5	An enclosure of polymeric material shall be subjected to the Resistance to Impact Test described in the Standard for Polymeric Materials		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
9.6	The enclosure of a remotely or automatically controlled product shall prevent molten metal, burning insulation, flaming particles, or the like from falling on flammable materials, including the surface upon which the product is supported.		N/A
9.7	The requirement in 9.6 will necessitate that a switch, a relay, a solenoid, or the like be individually and completely enclosed, except for terminals	Under a motor	P
9.8	The barrier mentioned in 9.7 shall be horizontal, shall be located as indicated in Figure 9.1, and shall not have an area less than that described in that illustration		P
9.9	A paint sprayer or compressor shall be constructed so that the accumulation of paint on any uninsulated live part is unlikely when tested as described in Section 50, Paint Entry Test		N/A
9.10	In determining whether a paint sprayer or compressor is capable of being carried in one hand as mentioned in Exception No. 2 to 9.9, consideration shall be given to such factors as the weight of the compressor, the number and location of handles, and the like.		P
9.11	A door or a cover of an enclosure that provides access to any overload-protective device that requires resetting or renewal shall be hinged or otherwise attached in an equivalent manner		P
9.12	Means shall be provided for holding the door or cover over a fuseholder in a closed position, and the door or cover shall be tight-fitting.		P
10	Mechanical Assembly		P
10.1	A product shall be assembled so that it will not be adversely affected by the vibration of operation. Brush caps shall be tightly threaded or otherwise constructed to prevent loosening.		P
10.2	A switch other than a through-cord switch, a lampholder, an attachment-plug receptacle, a motor-attachment plug, or similar component shall be mounted securely and shall be prevented from turning.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
10.3	Uninsulated live parts shall be secured to the base or mounting surface so that they will be prevented from turning or shifting in position, if such motion may result in a reduction of spacings below the minimum required values.		P
10.4	The means for preventing the turning or shifting mentioned in 10.2 and 10.3 shall consist of more than friction between surfaces – for example, a properly applied lock washer, is acceptable as the means for preventing a small stem-mounted switch or other device, having a single-hole mounting means, from turning.		P
11	Protection Against Corrosion		N/A
11.1	Iron and steel parts shall be protected against corrosion by enameling, galvanizing, plating, or other equivalent means, if corrosion of such unprotected parts would be likely to result in a risk of fire, electric shock, or injury to persons		N/A
11.2	If deterioration of a liquid container provided as a part of a product would result in a risk of fire or electric shock, the container shall be of a material that is resistant to corrosion by the liquid intended to be used therein.		N/A
12	Accessibility of Uninsulated Live Parts and Film-Coated Wire		N/A
12.1	To reduce the likelihood of unintentional contact that may involve a risk of electric shock from an uninsulated live part or film-coated wire, an opening in an enclosure shall comply with either (a) or (b).		N/A
12.2	With respect to a part or wire as mentioned in 12.1 in an integral enclosure of a motor as mentioned in the Exception to 12.1:		N/A
12.3	The probes mentioned in 12.1 and 12.2 and illustrated in Figures 12.1 – 12.4 shall be applied to any depth that the opening will permit, and shall be rotated or angled before, during, and after insertion through the opening to any position that is necessary to examine the enclosure.		N/A
12.4	The probes illustrated in Figures 12.1 – 12.4 shall be used as measuring instruments to judge the accessibility provided by an opening, and not as instruments to judge the strength of a material; they shall be applied with the minimum force necessary to determine accessibility.		N/A
12.5	With reference to the requirements in 12.1 and 12.2, the minor dimension of an opening is the diameter of the largest cylindrical probe having a hemispherical tip that can be inserted through the opening.		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
12.7	During the examination of a product to determine whether it complies with the requirements in 12.1 or 12.2, a part of the enclosure that may be opened or removed by the user without using a tool (to attach an accessory, to make an operating adjustment, or for other reasons) is to be opened or removed		N/A
13	Supply Connections		N/A
13.1	Cord-connected products		N/A
13.2	Strain relief		N/A
13.3	Bushings		N/A
13.4	Permanently connected products		N/A
14	Current-Carrying Parts		P
14.1	A current-carrying part shall be of silver, copper, a copper alloy, or other similar metal.		P
14.2	Ordinary iron or steel shall not be used as a current-carrying part.		P
15	Insulating Material		N/A
15.1	Material for mounting an uninsulated live part shall be porcelain, phenolic composition, or other equivalent material.		N/A
15.2	Ordinary vulcanized fiber may be used for insulating bushings, washers, separators, and barriers, but not as the sole support for uninsulated live parts where shrinkage, current leakage, or warpage may introduce a risk of fire or electric shock.		N/A
15.3	A thermoplastic material generally is not considered acceptable for the sole support of uninsulated live parts, but may be employed if found to have mechanical strength and rigidity, resistance to heat, resistance to flame propagation, dielectric voltage withstand, and other properties acceptable for the application.		N/A
15.4	Small molded parts, such as a brush cap, shall be constructed to have the necessary mechanical strength and rigidity to withstand the stresses of actual service. Brush caps shall be secured or located so that they are protected from mechanical damage that might result during use.		N/A
16	Gaskets and Seals		N/A
16.1	Gaskets and seals relied upon to reduce the risk of electric shock or injury to persons shall comply with the Standard for Gaskets and Seals, UL 157		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
17	Internal Wiring		P
17.1	Mechanical protection		P
17.1.1	Wiring and connections between parts of a product shall be protected or enclosed.		P
17.1.2	Insulated wiring is considered to be protected as required in 17.1.1 if, when judged as though it were film-coated wire, it would be acceptable in accordance with 13.1.3 – 13.1.13. Internal wiring not so rotected may be acceptable if it is secured within the enclosure so that it is unlikely to be subjected to stress or mechanical damage.		N/A
17.1.3	Wires within an enclosure, a compartment, a raceway, or the like shall be routed or otherwise rotected so that damage to conductor insulation cannot result from contact with any rough, sharp, or moving part.		P
17.1.4	If wiring or flexible cord between parts of a product is located so that it may be in proximity to flammable material or may be subjected to mechanical damage, it shall be enclosed in armored cable, rigid metal conduit, electrical metallic tubing, or enclosed metal raceway, or shall be otherwise equivalently protected.		N/A
17.1.5	A hole through which insulated wires pass in a sheet-metal wall within the overall enclosure shall be provided with a smooth, rounded bushing or shall have smooth, rounded surfaces upon which wires may bear, to prevent abrasion of the insulation.		N/A
17.1.6	A flexible cord used for external connections shall be as serviceable as the power-supply cord and shall be so located as to reduce the likelihood of damage or stress		N/A
17.1.7	Insulated wires may be bunched and passed through a single opening in a metal wall within the enclosure of a product.		P
17.2	Types of wire		P
17.2.1	Internal wiring shall consist of wires of a type or types that are acceptable for the application, when considered with respect to the temperature and voltage to which the wiring is likely to be subjected and with respect to its exposure to oil, grease, or other conditions of service to which it is likely to be subjected.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
17.2.2	Thermoplastic-insulated wire employed for internal wiring shall be standard building wire or appliance-wiring material acceptable for the purpose.		P
17.3	Splices and connections		P
17.3.1	Each splice and connection shall be mechanically secure and shall provide reliable electrical contact. A soldered connection shall be mechanically secured before being soldered if breaking or loosening of the connection may result in a risk of fire or electric shock.		P
17.3.2	The requirement in 17.3.1 will necessitate the use of a lock washer or other equivalent means to prevent a wire-binding screw or a nut from becoming loosened		P
17.3.3	A splice shall be provided with insulation equivalent to that of the wires involved if permanence of spacing between the splice and other metal parts may not be maintained.		P
17.3.4	Aluminum conductors, insulated or uninsulated, used as internal wiring, such as for internal connection between current-carrying parts or as motor windings, shall be terminated by a method acceptable for the combination of metals involved at the point of connection.		N/A
17.3.5	With reference to the requirements in 17.3.4, a wire-binding screw or a pressure wire connector used as a terminating device shall be acceptable for use with aluminum under the conditions involved – for example, temperature, heat cycling, vibration, and the like.		N/A
17.3.6	Insulation consisting of two layers of friction tape, two layers of thermoplastic tape, or of one layer of friction tape on top of one layer of rubber tape, is acceptable on a splice if the voltage involved is less than 250 V.		N/A
17.3.7	If stranded internal wire is connected to a wire-binding screw, loose strands of wire shall be positively prevented from contacting an uninsulated live part that is not always of the same polarity as the wire and from contacting a dead metal part.		N/A
17.3.8	A nominal 0.110-in, 0.125-in, 0.187-in, 0.205-in, or 0.250-in wide quick-connect terminal shall comply with the requirements for quick-connect terminals, UL 310		N/A
18	Separation of Circuits		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
18.1	Conductors of circuits operating at different potentials shall be reliably separated from each other unless they are each provided with insulation acceptable for the highest potential involved.		P
18.2	An insulated conductor shall be reliably retained so that it cannot contact an uninsulated live part of a circuit operating at a different potential		N/A
18.3	In a compartment that is intended for the field installation of conductors, and that contains provision for connection of Class 2 or Class 3 circuit conductors, and Class 1,		N/A
19	Capacitors		N/A
19.1	A capacitor provided as a part of a capacitor motor and a capacitor connected across the line, such as a capacitor for radio-interference elimination or power-factor correction, shall be housed within an enclosure or container that will protect the plates against mechanical damage and that will prevent the emission of flame or molten material resulting from malfunction or breakdown of the capacitor		N/A
19.2	If a capacitor that is not a part of a capacitor motor or a capacitor-start motor is connected in a product that is intended to be automatically or remotely controlled so that malfunction or breakdown of the capacitor could result in a risk of fire, electric shock, or injury to persons, thermal or overcurrent protection shall be provided in the product to prevent such a condition		N/A
19.3	A capacitor connected from one side of the line to the enclosure of a product shall have a capacitance rating of not more than 0.10 µF		N/A
19.4	If a product employs a combination consisting of a rectifier and an electrolytic capacitor, no risk of fire, electric shock, or injury to persons shall result when either the rectifier or the capacitor is short-circuited.		N/A
19.5	Under both normal and abnormal conditions of use, a capacitor employing a liquid dielectric medium more flammable than askarel shall not expel the dielectric medium when tested in accordance with the applicable performance requirements in this standard		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
19.6	If a product is constructed to be controlled by or operated in conjunction with a capacitor or a capacitor/transformer unit, such a capacitor or unit shall be supplied with the product. See 64.1.5		N/A
20	Grounding		N/A
20.1	General		N/A
20.2	Grounding identification		N/A
21	Double Insulation		N/A
21.1	A cord-connected product may be provided with a system of double insulation that complies with the applicable requirements in the Standard for Double Insulation Systems for Use in Electrical Equipment, UL 1097, in lieu of a means for grounding.		N/A
21.2	A double-insulated product shall comply with the requirements in the Standard for Double Insulation Systems for Use in Electrical Equipment, UL 1097, and with the applicable requirements in this standard.		N/A
21.3	A product marked as being provided with double insulation shall not be provided with a means for grounding. See 64.1.13.		N/A
22	Lampholders		N/A
22.1	A lampholder for a low-voltage lamp – for example, a 6-V lamp – shall not be tapped across a part of a winding of a motor if the motor is rated more than 230 V.		N/A
22.2	The screw shell of an Edison-base lampholder in permanently connected product, or product equipped with a polarized attachment plug shall be connected to the terminal or lead that is intended to be connected to the grounded conductor of the power-supply circuit.		N/A
23	Motors		P
23.1	Construction		P
23.1.1	A motor shall be acceptable for the application, and shall be capable of handling the maximum normal load of the product as described in 46.2.1 – 46.2.7 without creating a risk of fire, electric shock, or injury to persons.		P
23.1.2	A motor winding shall resist the absorption of moisture		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
23.1.3	With reference to the requirement in 23.1.2, film-coated wire is not required to be additionally treated to prevent absorption of moisture, but fiber slot liners, cloth coil wrap, and similar moisture-absorptive materials are to be provided with impregnation or otherwise treated to prevent moisture absorption.		P
23.2	Overload protection		P
23.2.1	motor shall be provided with thermal protection as described in:		P
	a) Thermal protection complying with the applicable requirements in either the Standard for Overheating Protection for Motors,		N/A
	b) Impedance protection complying with the applicable requirements in either the Standard for Overheating Protection for Motors,		N/A
	c) Other protection that is shown by test to be equivalent to the protection specified in (a).		P
23.2.3	The control mentioned in Exception No. 1 to 23.2.2(a) is a control that positively and reliably limits the length of time the product can be operated– for example, a timer.		P
23.2.4	For a multispeed motor that employs a separate overload protective device to provide running heating protection, the requirement in 23.2.1 applies at all speeds at which the motor is intended to operate		N/A
23.2.5	If a requirement in this standard refers to the horsepower rating of a motor and the motor is not rated in horsepower, use is to be made of the appropriate table of the National Electrical Code, ANSI/NFPA 70, that gives the relationships between horsepower and full-load currents for motors		N/A
23.2.6	The motor of a product with load characteristics likely to result in an overload or stalled condition that will not be evident to the user shall incorporate thermal or overload protection as specified in 23.2.2 to protect the motor against those conditions likely to occur		N/A
23.2.7	The functioning of a motor-protective device provided as part of a product, whether such device is required or not, shall not result in a risk of fire or injury to persons		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
23.2.8	Overload devices employed for running heating protection, other than those that are inherent in a motor, shall be located in at least one ungrounded conductor of a single-phase supply system and in each ungrounded conductor of a 3-phase supply system.		N/A
23.2.9	Fuses employed for motor-running heating protection shall be located in each ungrounded conductor; and in the case of a 3-phase, 3-wire, alternating-current motor, they shall be located in each of the three phases.		N/A
23.3	Brushes and brush holders		P
23.3.1	A brush cap shall be recessed, enclosed, or otherwise protected from mechanical damage that might occur during use of the product.		P
23.3.2	A brush cap that is accessible to the user without the removal of a guard or enclosure shall be provided with a positive means that will prevent its disengagement from the brush-holder assembly		P
23.3.3	A brush-holder assembly shall be constructed so that when a brush is worn out – no longer capable of performing its function		P
24	Overload- or Thermal-Protective Devices		N/A
24.1	An overload- or thermal-protective device shall have a current and voltage rating not less than the load that it controls		N/A
24.2	A product employing subdivided circuits within that product feeding two or more power-consuming components (for example, motors, motor-control circuits, electric heating elements) that are connected in parallel with each other across any pair of main-supply terminals or leads, shall be provided with overcurrent protection for the conductors of each terminal circuit in accordance with the National Electrical Code		N/A
24.3	A protective device such as a fuse, the functioning of which requires renewal or replacement, shall be in a readily accessible location. A protective device shall be wholly inaccessible from outside the product without opening a door or cover.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
24.4	A fuseholder shall be constructed and installed so that no uninsulated live part other than the screw shell or clips will be exposed to contact by persons removing or replacing fuses. The screw shell of a plug-type fuseholder shall be connected toward the load.		N/A
25	Receptacles		N/A
25.1	A 15- or 20-A general-use attachment-plug receptacle in a product provided with a means for grounding – a permanently wired product or a cord-connected product with a grounding conductor in the cord – shall be of the grounding type. The grounding contact of the receptacle shall be electrically connected to dead metal that will be grounded when the product is in use.		N/A
25.2	A general purpose receptacle rated for use on a nominal 120 V circuit shall be of a polarized type. The grounded supply conductor shall be connected to the terminal that is substantially white in color or otherwise marked to indicate that it is intended for connection to the grounded supply conductor.		N/A
25.3	If a product includes one or more attachment-plug receptacles intended for general use, and if the overcurrent protection of the branch circuit to which the product will properly be connected exceeds that acceptable for the receptacle or receptacles, each receptacle circuit shall have overcurrent protection of the time-delay type rated not more than 20 A provided as a part of the product		N/A
25.4	A fuseholder provided in accordance with 25.3 shall be of Type S construction or shall be of the Edison-base type with a factory-installed nonremovable Type S adapter.		N/A
25.5	A portable product provided with a general purpose receptacle shall be marked in accordance with 65.19 at the receptacle so that the combined ampacity of the product operated under maximum normal load and the equipment connected to the receptacle does not exceed the rating of the product.		N/A
25.6	The face of a general-use receptacle shall be:		N/A
25.7	Ground-fault circuit protection shall be provided for 120-V, single-phase, 15- and 20-A general-use receptacles that are part of a product intended to be used outdoors.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
26	Switches and Controls		P
26.1	A switch or other control device shall have a current and voltage rating not less than that of the load that it controls.		P
26.2	the current rating of a switch that controls an inductive load other than a motor, such as a transformer or an electric-discharge-lamp ballast, shall not be less than twice the rated full-load current of the transformer or ballast unless the switch has been investigated and found acceptable for the application.		N/A
26.3	A line-connected, single-pole switch or an overcurrent (overload) protective device of the single-pole type other than an automatic control without a marked off position shall be connected to a terminal or lead intended for connection to an ungrounded conductor of the supply circuit		N/A
26.4	A switch or other control shall be guarded or located so that it is not likely to be damaged during use of the product. A through-cord switch shall not be employed unless		P
26.5	A switch that controls a medium-base lampholder of other than a pilot or indicating light shall be acceptable for use with tungsten-filament lamps.		N/A
26.6	A manually operated motor-control switch shall be provided in a cord-connected product that employs a motor rated more than 1/3 hp		N/A
27	Spacings		P
27.1	All uninsulated live parts connected to circuits of different voltage ratings shall be spaced from each other as though they were parts of opposite polarity in accordance with the requirements in 27.3 and 27.4, and shall be judged on the basis of the highest voltage involved		N/A
27.2	The spacing between uninsulated live parts of opposite polarity and between such parts and dead metal that may be grounded in service is not specified for parts of low-voltage circuits.		N/A
27.3	The spacing between a field-wiring terminal and any other uninsulated live or dead metal part not of the same polarity shall not be less than the applicable value specified in Table 27.1. See 13.4.6 and 27.7.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
27.4	Other than at wiring terminals, the spacing between uninsulated live parts of opposite polarity, and between an uninsulated live part and a dead metal part that is exposed to contact by persons or that may be grounded shall not be less than the value specified in Table 27.2 or as provided in Alternative Spacings – Clearances and Creepage Distances, Section 27A.		N/A
27.5	If an uninsulated live part is not rigidly fixed in position by means other than friction between surfaces, or if a movable dead metal part is in proximity to an uninsulated live part, the construction shall be such that the required minimum spacing will be maintained.		N/A
27.6	In a product incorporating two or more motors of different sizes, the spacings in the product are to be judged on the basis of the size of the largest motor in the product. See 27.8		N/A
27.7	The spacing requirements in 27.3 – 27.6 do not apply to the inherent spacings of a component of a product, such as a snap switch; such spacings are to be judged on the basis of the requirements for the component.		P
27.8	The spacings in a motor shall comply with the spacing requirements in the Standard for Rotating Electrical Machines – General Requirements, UL 1004-1. 27.8 revised November 1		P
27.9	At terminal screws and studs to which connection may be made in the field by means of the wire connectors, eyelets, or the like, as described in 13.4.6, spacings shall not be less than those specified in Table 27.2 when such connectors, eyelets, or the like are in such position that minimum spacings – opposite polarity and to dead metal – exist.		N/A
27.10	If an isolated dead metal part is interposed between or is in close proximity to:		N/A
27.11	An insulating lining or barrier of vulcanized fiber or similar materials employed where spacing would otherwise be insufficient shall not be less than 1/32 in (0.8 mm) thick, and shall be so located or of such material that it will not be adversely affected by arcing, except that vulcanized fiber not less than 1/64 in (0.4 mm) thick may be used in conjunction with an air spacing of not less than 50 percent of the spacing required for air alone		N/A
27.12	An insulating lining or barrier of polymeric material shall comply with the requirements for insulating materials as specified in the Standard for Polymeric Materials-Use in Electrical Equipment Evaluations, UL 746C.		N/A
27A	Alternative Spacings – Clearances and Creepage Distances		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
27A.1	As an alternative to the spacing requirements in Section 27, as applicable, the spacing requirements in the Standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment		N/A
27A.2	The level of pollution for indoor use products, and for portable compressors or paint sprayers not intended to be exposed to rain, shall be pollution degree 2.		N/A
27A.3	The equipment shall be rated overvoltage category II as defined in the Standard for Insulation Coordination Including Clearances and Creepage Distances for Electrical Equipment, UL 840.		N/A
27A.4	In order to apply Clearance B (controlled overvoltage) clearances, control of overvoltage shall be achieved by providing an overvoltage device as an integral part of the product.		N/A
27A.5	All printed wiring boards are considered to have a minimum comparative tracking index of 100 without further investigation.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
PROTECTION AGAINST INJURY TO PERSONS			
28	General		P
28.1	If the operation and maintenance of a product by the user involves the risk of injury to persons, protection shall be provided to reduce the risk.		P
28.2	When judging a product with respect to the requirement in 28.1, consideration shall be given to reasonably foreseeable misuse of the product		P
28.3	The adequacy of a guard, a release, an interlock, and the like, and whether such a device is required, are to be determined from an investigation of the complete product, its operating characteristics, and the likelihood of a risk of injury to persons resulting from a cause other than gross negligence.		P
28.4	Specific constructions, tests, markings, guards, and the like are detailed for some common constructions. Specific features and products not covered herein are to be given appropriate consideration. See the requirements for marking in Section 65, Cautionary.		P
29	Sharp Edges		P
29.1	An enclosure, a frame, a guard, a handle, or the like shall not be sufficiently sharp to constitute a risk of injury to persons in normal maintenance and use.		P
30	Enclosures and Guards		P
30.1	A moving part or high-pressure discharge opening that may cause risk of injury to persons shall be enclosed, guarded, located or otherwise arranged to reduce the likelihood of unintentional contact, and such a part shall not be contacted by the probe illustrated in Figure 12.1.		P
30.2	A moving part that may involve a risk of injury to persons shall be considered with respect		P
30.3	Some guards are required to be of the self-restoring type. Other features of guards that are to be considered		P
30.4	An enclosure or guard over a rotating part shall retain a part that, because of breakage or other reasons, may become loose or may separate from a rotating part, and retain a foreign object that may be struck and propelled by the rotating part.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
30.5	If complete guarding of a moving part that would obviously cause injury to persons would defeat the utility of a product		P
30.6	During the examination of a product to determine whether it complies with the requirements in 30.1, a part of the enclosure that may be removed without the use of a tool (to attach an accessory, to make an operating adjustment, or for other reasons) is to be opened or removed.		P
31	Materials		P
31.1	As a result of the tests in 31.2, there shall not be exposed moving parts that result in a risk of injury to persons.		P
31.2	Guards molded of polymeric material that are serving as protection of moving parts only and not serving as enclosures of insulated or uninsulated live parts, shall have a flammability rating of HB minimum.		P
31.3	The material of a part – such as an enclosure, a frame, a guard, or the like – the breakage or deterioration of which might result in a risk of injury to persons shall have such properties as to meet the demand of expected loading conditions.		P
31.4	The requirement in 31.3 applies to those portions of a part adjacent to a moving part considered to involve a risk of injury to persons.		P
	Surface Temperatures		P
32.1	During the temperature test described in Section 46, Temperature Test, the temperature of a surface that may be contacted by the user shall not be more than the maximum acceptable value specified in Table 32.1.		P
32.2	All values for temperatures specified in Table 32.1 are based on a 25°C (77°F) ambient temperature; however, tests may be conducted at any ambient temperature within the range of 20 – 30°C (		P
33	Stability		P
33.1	Overturning of a portable or free-standing product, not secured in place, when it is tested as described in 33.2 and 33.3, shall not result in a risk of injury to persons.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
33.2	The product is not to be energized during the stability test. The test is to be conducted under conditions most likely to cause the product to overturn. The following conditions are to be such as to result in the least stability:		P
33.3	In conducting the stability test, the product is to be		P
34	Strength of Handles and Mounting Means		P
34.1	A handle or mounting means used to completely support or carry a product shall withstand a force of four times the weight of the product without damage – to the handle or the mounting means, its securing means, or that portion of the enclosure to which the handle or mounting means is attached.		P
34.2	To determine whether a product complies with the requirements in 34.1, the weight of the product plus a force of three times its weight is to be used.		P
35	Rotating or Moving Members		P
35.1	A rotating member employed in a product provided with a series motor shall be constructed so as to reduce the likelihood of its breakage, or the release or loosening of a part that could become a risk of injury to persons		P
35.2	To determine whether a product employing a series motor complies with the requirement in 35.1, it is to be tested as described in 35.3. A part that can become a risk of injury to persons shall not work loose as a result of the test.		N/A
35.3	For the test mentioned in 35.2, a product employing a series motor is to be operated for 1 min at the no-load speed resulting from application of 1.3 times rated voltage.		N/A
35.4	A product with a user-removable rotating part, secured by threaded hardware – such as a nut – shall be constructed so that the direction of rotation tends to tighten the nut that secures the rotating part in place.		N/A
35.5	Unless secured as described in 35.4, a removable rotating part not intended to be removed by the user, shall be secured by a keyed nut, a jam nut, a nut locked in place with a pin, or other equivalent means.		N/A
36	Pressure Vessels and Parts Subject to Pressure		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
36.1	Pressure vessel		P
36.2	Parts subject to pressure		P
37	Pressure Relief Means		P
37.1	A means for relieving pressure shall be provided for a part in which pressure might be generated by an external source of heat.		P
37.2	A means for relieving pressure – a pressure relief device, a fusible plug, a soldered joint, nonmetallic tubing, or other equivalent means – shall be employed to comply with the requirement in 37.1.		P
37.3	A pressure-relief device is considered to be a pressure-actuated valve or rupture member designed to relieve excessive pressures automatically.		P
37.4	There shall be no shutoff valve between the pressure-relief means and the parts that it is intended to protect.		P
37.5	A vessel having an inside diameter of more than 3 in (76 mm) and subject to air or steam pressure generated or stored within the product shall be protected by a pressure-relief device.		P
37.6	The start-to-discharge pressure setting of a pressure-relief device shall not be higher than the working pressure marked on the ASME coded vessel.		P
37.7	To determine the start-to-discharge pressure setting of a pressure-relief device, each of three samples of the device is to be subjected three times to a gradually increasing air pressure.		P
37.8	A pressure-relief device shall:		P
37.9	A pressure-relief device having an adjustable setting is judged on the basis of the maximum setting unless the adjusting means is reliably sealed at a lower setting.		P
38	Pressure-Regulating Control Switches		P
38.1	A compressor system with an air-holding tank shall be provided with:		P
38.2	A pressure-regulating control switch depended upon to limit the pressure in a vessel shall:		P
38.3	A pressure-regulating control switch shall perform under rated load for 30,000 c of operation with no shift in calibration greater than 5 percent above initial calibration pressure setting.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
38.4	For a motor-operated compressor intended for use with sprinkler systems, a pressure-regulating control switch shall perform under rated load for 100,000 cycles of operation with no shift in calibration greater than 5 percent above initial calibration pressure setting.		P
39	Switches, Controls, and Interlocks		P
39.1	A product shall be constructed so as to prevent unexpected operation of any parts capable of causing injury to persons.		P
39.2	If unintentional operation of a switch can result in a risk of injury to persons, the actuator of the switch shall be located or guarded so that such operation is unlikely.		P
39.3	The actuator of a switch may be guarded by recessing, ribs, barriers, or the like.		P
39.4	A device that automatically starts a product, such as a pressure-regulating control switch, timer, an automatically reset overload-protective device, or the like, shall not be employed unless it can be demonstrated that automatic starting will not present a risk of injury to persons.		P
39.5	The requirement in 39.4 will necessitate the use of an interlock if moving parts or the like could result in a risk of injury to persons upon the automatic starting or restarting of the motor		P
39.6	The actuator of an interlock switch shall be located so that unintentional operation is unlikely. See 39.3.		P
39.7	Operation of an interlock during use shall not inconvenience the operator so as to encourage deliberate defeat of the interlock.		P
39.8	An interlock shall not be likely to be defeated by materials that could accumulate during use of the product.		P
39.9	An interlock shall be such that it can be defeated readily only by:		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
39.10	If an interlock is actuated by movement of a guard, the arrangement shall be such that the guard is in place when the interlock is in the position that permits operation of the parts being guarded. With the guard removed, the interlock shall comply with the requirement in 39.6.		P
39.11	A product that is not hand-supported and provided with a maintained contact switch or a switch that can be locked on shall not create a risk of injury to persons, such as by excessive travelling, when the product is in an at rest position and connected to the source of supply with the switch on.		N/A
39.12	For a product that is not hand-supported during actual use, the requirement in 39.11 will necessitate a means to prevent the product from traveling more than 6 inches (152 mm) in any one direction in 15 s when the product is placed on a hardwood surface while energized		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
PERFORMANCE			
40	General		P
40.1	Tests are to be conducted with the product connected to a supply circuit of rated frequency.		P
40.2	A product rated 50 – 60 Hz is to be tested at 60 Hz. A product rated 50/60 Hz is to be tested at both 50 and 60 Hz.		N/A
41	Leakage Current Test		N/A
41.1	The leakage current of a cord-connected product rated 250 V or less, when tested in accordance with 41.3 – 41.9 shall not be more than		N/A
41.2	Leakage current refers to all currents, including capacitively coupled currents, that may be conveyed between exposed conductive surfaces of a product and ground or other exposed conductive surfaces of a product.		N/A
41.3	All exposed conductive surfaces are to be tested for leakage currents. If simultaneously accessible, the leakage currents from exposed conductive surfaces are to be measured to the grounded supply conductor individually as well as collectively, and from one surface to another.		N/A
41.4	If a conductive surface other than metal is used for the enclosure or part of the enclosure, the leakage current is to be measured using a metal foil having an area of 10 by 20 centimeters in contact with the surface.		N/A
41.5	The measurement circuit for leakage current is to be as illustrated in Figure 41.1. The measurement instrument is defined in (a) – (c).		N/A
41.6	The meter is to be connected to the accessible part and the grounded supply conductor unless the meter is being used to measure leakage between two parts of a product.		N/A
41.7	A sample product is to be prepared for leakage current measurement as follows		N/A
41.8	The test sample is to be arranged so that all parallel ground paths – such as through fill and drain lines – are eliminated.		N/A
41.9	The leakage current test sequence, with reference to the measuring circuit, Figure 41.1, is to be as follows:		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
42	Leakage Current Test Following Humidity Conditioning		N/A
42.1	A product as described in 41.1 shall comply with the requirements for leakage current		N/A
43	Starting Current Test		N/A
43.1	product shall start and operate normally on a circuit protected by an ordinary – not time-delay – fuse having a current rating corresponding to that of the branch circuit to which the product should be connected.		N/A
43.2	In a test to determine whether a product complies with the requirement in 43.1, the product is to be started three times.		N/A
44	Loaded Starting Test		P
	A portable nontank type air compressor as described in Exception No. 1 to 23.2.1 and that is not provided with motor protection in accordance with 23.2.2 shall start and operate as intended when started under loaded conditions as described in 44.2.		P
	The product is to be operated with the outlet blocked and then de-energized when the maximum amount of air pressure is attained in the compressor assembly. Following this operation, the product is to be reenergized.		P
45	Input Test		P
	The input measured for a product shall not exceed either of the following conditions when the product is operated under the condition of maximum normal load as described in 46.2.1 – 46.2.6 and when connected to a supply as specified in 40.1:		P
46	Temperature Test		P
46.1	General		P
46.2	Maximum normal load		P
47	Grounding Continuity Test		N/A
47.1	The resistance between the point of connection of the equipment-grounding means at or within the product and any other point in the grounding circuit of the product shall not be more than 0.1 W as determined by an ohmmeter or other equivalent means.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
47.2	If unacceptable results are observed with an ohmmeter, a low voltage current source can be employed.		N/A
48	Dielectric Voltage Withstand Test		P
48.1	A product shall withstand for 1 min without breakdown the application of a 60-Hz essentially sinusoidal potential between live parts and dead metal parts, between circuits that are different potentials and are not electrically connected, or between live parts of opposite polarity for a test on a capacitor as mentioned in (c), with the product at the maximum operating temperature reached in normal use. The test potential shall be:		P
48.2	The test potential for the secondary circuit of a product employing a transformer or auto-transformer shall be:	500v	P
48.3	To determine whether a product complies with the requirements in 48.1 and 48.2, the product is to be tested by means of a 500 VA or larger transformer, having an output voltage that is essentially sinusoidal and can be varied.		P
49	Resistance to Moisture Test		P
49.1	A product intended for outdoor use and not marked in accordance with 65.13 shall be conditioned as described in 49.3 and 49.4		N/A
49.2	Insulation resistance is to be measured by means of a high resistance voltmeter using a 250-V direct-current circuit.		N/A
49.3	The product is to be subjected to a water spray as described in 49.4. The leakage current or insulation resistance, as applicable, is then to be measured, following which the product is to be tested for dielectric voltage withstand in accordance with 48.1.		N/A
49.4	The rain test apparatus is to consist of three spray heads mounted in a water supply pipe rack as illustrated in Figure 49.1.		N/A
49.5	With reference to the test described in 49.4, it may be necessary to operate the product in various positions or under various modes of operation, or more than one sample may be tested if alternate modes are possible. The product may be de-energized if more adverse conditions could result.		P
50	Paint Entry Test		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
	To determine whether a paint sprayer or compressor complies with the requirements in 9.9, the product shall be subjected to the test described in 50.2 and 50.3.		N/A
50.2	A paint sprayer or compressor is to be placed in a three wall alcove with an upper closure. The alcove is to be 2 ft (0.61 m) wide, 2 ft deep, and 4 ft (1.22 m) high. A compressor is to be placed on the floor with the surface most susceptible to paint entry located parallel to and 18 in (457 mm) from the front of the alcove.		N/A
50.3	The unit is to be filled with water containing a tracer dye and operated for 20 c. Each cycle is to consist of continuous spraying until the unit is empty, followed by 1 min off to permit a refilling of the unit		N/A
51	Test on Switches and Controls		P
51.1	A switch or other device that controls a solenoid, a relay coil, or the like, and that has not been previously found to be acceptable for the purpose shall perform acceptably when subjected to an overload test consisting of 50 c of operation as described in 51.2.		P
51.2	To determine whether a switch or other device complies with the requirement in 51.1, the product is to be connected to a supply circuit of rated frequency and 110 percent of maximum rated voltage.		P
51.3	A switch or other device that controls a motor of a product, unless it has been found to be acceptable for the application or is interlocked so that it will never break the locked-rotor motor current, shall perform acceptably when subjected to a test consisting of 50 c of operation, making and breaking the locked-rotor current of the product.		P
51.4	To determine whether a switch or other control device complies with the requirement in 51.3, the product is to be connected to a grounded supply circuit of rated frequency and maximum rated voltage – see 46.1.4 and 46.1.5 – with the rotor of the motor locked in position		P
52	Strain Relief Test		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
52.1	The strain relief means provided on an attached flexible cord, flexible conduit, or armored cable, when tested in accordance with 52.2, shall withstand for 1 min without displacement a direct pull of 35 lbf (156 N) applied to the cord, with the connections within the product disconnected		P
52.2	A 35-lb (15.9 kg) weight is to be suspended on the cord and supported by the product so that the strain-relief means will be stressed from any angle that the construction of the product permits. The strain relief is not acceptable if, at the point of disconnection of the conductors, there is such movement of the cord as to indicate that stress would have resulted on the connections.		P
53	Push-Back Strain Relief Test		P
53.1	A product with a non-detachable cord is to be tested in accordance with 53.2 without occurrence of any of the conditions specified in 13.2.2		P
53.2	The supply cord or lead is to be held 1 in (25.4 mm) from the point where the cord or lead emerges from the product and is then to be pushed back into the product.		P
54	Abnormal Operation Test		P
54.1	If a product employs a semiconductor or one or more semiconductor junctions, a capacitor, or a combination of both, a risk of fire or electric shock shall not result when either the semiconductor junction or the capacitor is short- or open-circuited		P
54.2	In a test to determine whether a product complies with 54.1, the product is to be connected to a grounded supply of rated frequency and maximum rated voltage operating at no load with the short- or open-circuited condition introduced. Only one abnormal condition is to be simulated at a time.		P
54.3	During the tests described in 54.2, the product is to be connected in series with a nontime-delay fuse representative of the maximum current that could be passed in the circuit by the branch circuit protective device.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
54.4	Exposed dead metal parts of the product are to be connected to ground through a 3-A fuse, and the test is to be continued until ultimate results are obtained. The results are unacceptable if the fuse opens during the test		P
55	Accelerated Aging Test		P
55.1	A rubber or neoprene compound forming a part that is depended upon for protection from rain shall have physical properties as noted in Table 55.1 before and after aging.		P
55.2	The test procedure for determining whether a part complies with the requirement in 55.1 depends upon the material of which it is composed, its size and shape, the application in the product, and other factors.		P
55.3	With reference to the requirements in 55.1 and 55.2, a part of rubber or neoprene, if tested to compare its tensile strength and elongation before and after accelerated aging, is acceptable if these properties are not less than the minimum values specified in the Table 55.1, corresponding to the temperature of the component during the temperature test		P
56	Permanence of Marking Tests		P
56.1	A marking that is required to be permanent shall be molded, die-stamped, paint-stenciled, stamped or etched metal that is permanently secured, or indelibly stamped lettering on a pressure-sensitive label that complies with the requirements in the Standard for Marking and Labeling Systems, UL 969.		P
56.2	In addition to complying with the requirement in 56.1 and, after being tested as described in 56.6, a tag used for a cautionary marking in accordance with 65.5 is considered to be permanently affixed to a power-supply cord or hose if there is no:		P
56.3	Nine samples of a cord or hose tag are to be tested as described in 56.6. Each sample is to consist of a length of power-supply cord or hose to which the tag has been attached in the intended manner.		P
56.4	Three samples are to be conditioned for 240 h in an air-circulating oven maintained at a uniform temperature of 87.0 ±1.0°C (188.6 ±1.8°F)		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
56.5	Three additional samples are to be conditioned for 72 h at a temperature of 32.0 ±2.0°C (89.6 ±3.6°F) and a relative humidity of 85 ±5 percent.		P
56.6	Each sample power-supply cord or hose with attached tag is to be tightly suspended and clamped at each end in a vertical plane with the attachment plug on a cord pointing upward.		P
57	Vibration Test		P
57.1	Loose restraint shall be used to limit the area of travel. For an assembly provided with a mounting means intended to support a motor, compressor, or a similar device, a load equal to the maximum load that the tank is to support in normal use shall be secured to the intended mounting surface.		P
57.2	The test apparatus is to consist of a vibration table that provides continuous circular motion with a total displacement of 1 inch (25.4 mm) in a vertical plane with the table level at all times. The speed of the apparatus is to be adjusted so that the vibration frequency generates a 1/16-in (1.6-mm) vertical displacement of the pressure vessel assembly from the table.		P
57.3	During the test, the pressure vessel assembly is to be rotated 90 degrees from the initial position so that the sample is subjected to both longitudinal and transverse circular vibration.		P
57.4	After completion of the test, the pressure vessel assembly shall not show visual evidence of cracking or other indication of vessel or support damage. Damage to a wheel or mounting shall not result in a risk of fire, electric shock, or injury to persons. The pressure vessel shall withstand a hydrostatic strength test as described in 57.5.		P
57.5	A hydrostatic strength test is to be conducted by filling the pressure vessel with water so as to exclude all air, connecting the pressure vessel to a hydraulic pump, and gradually increasing the pressure to 1-1/2 times the relief valve setting.		P
58	Hydrostatic Strength Test		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
58.1	With reference to 36.1.9, 36.2.1, and 36.2.2, a hydrostatic strength test is to be conducted by filling the sample with water so as to exclude all air, connecting the sample to a hydraulic pump, gradually increasing the pressure to the specified test value, and holding it for a period of 1 min. As a result of the test		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
MANUFACTURING AND PRODUCTION TESTS			P
59	Dielectric Voltage Withstand		P
59.1	Each product shall withstand without electrical breakdown, as a routine production-line test		P
59.2	The production-line test shall be in accordance with either Condition A or Condition B of Table 59.1.		P
59.3	The product may be in a heated or unheated condition for the test.		P
59.4	The test is to be conducted when the product is complete – fully assembled. It is not intended that the product be unwired, modified, or disassembled for the test.		P
59.5	The test equipment shall have a means of indicating the test potential, an audible or visual indicator of electrical breakdown, and either a manually reset device to restore the equipment after electrical breakdown or an automatic reject feature of any unacceptable unit.		P
59.6	If the output of the test equipment is less than 500 VA, the equipment shall include a voltmeter in the output circuit to directly indicate the test potential.		P
59.7	If the output of the test equipment is 500 VA or larger, the test potential may be indicated by:		N/A
59.8	Test equipment other than that described in 59.5 – 59.7 may be used if found to accomplish the intended factory control		P
60	Grounding Continuity		N/A
60.1	Each product that has a power-supply cord having a grounding conductor shall be tested, as a routine production-line test, to determine that grounding continuity exists between the grounding blade of the attachment plug and the accessible dead metal parts of the product that are likely to become energized.		N/A
60.2	Only a single test need be conducted if the accessible metal selected is conductively connected by design to all other accessible metal.		N/A
60.3	Any indicating device, such as an ohmmeter, a battery-and-buzzer combination, or the like, may be used to determine compliance with the grounding continuity requirement in 60.1.		N/A
61	Pressure Vessel Assembly		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
61.1	Each pressure vessel manufactured shall be visually examined for quality of welds, pipe connection fittings, and general assembly details		P
61.2	Each non-ASME coded vessel and ASME vessel coded ² UM² shall be tested as described in 61.3 and shall show no evidence of permanent deformation or external leakage.		N/A
61.3	The test is to be conducted on a fully assembled vessel after all fabrication, including the attachment of saddles, legs, wheel supports, fittings, or the like, has been completed.		P
61.4	The test pressure for a non-ASME coded vessel is to be 1-1/2 times the start-to-discharge setting of the pressure relief device		N/A
62	Start-to-Discharge of Pressure-Relief Device		P
62.1	Each non-ASME coded pressure-relief device shall be tested by the manufacturer for the start-to-discharge pressure by subjecting the pressure-relief device to a gradually increasing air pressure until the device begins to open. The start-to-discharge pressure shall be in the range of 90 to 100 percent of its assigned start-to-discharge pressure setting.		P

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict

RATING			P
63	Details		P
63.1	A product shall be rated in volts, in frequency – expressed in one of the following terms: hertz, Hz, cycles-per-second, cps, cycles/second, c/s, ac-dc, or ac only and, other than as noted in 63.2, in amperes.		P
63.2	Instead of the ampere rating mentioned in 63.1, a product may be rated in watts if the full-load power factor is 0.80 or more or if the rating of a cord-connected product is 50 W or less.		P
MARKING			P
64	Details		P
64.1	General		P
64.2	Permanently connected products		N/A
64.3	Cord-connected products		N/A
64.4	Household type products		P
65	Cautionary		P
65.1	A product having a hidden or unexpected risk of injury to persons shall be marked to inform the user of the risk.		P
65.2	A cautionary marking shall be permanent and legible and shall be located on a permanent part of the product.		P
65.3	A cautionary marking intended to instruct the operator shall be legible and visible from the position normally assumed by the operator when starting the product or from the position normally assumed for the specific operation involved.		P
65.4	A cautionary marking on a paint sprayer or paint gun shall be in lettering raised not less than 0.020 in (0.51 mm) above the surrounding surface, or of a similar type not likely to become unreadable with several layers of paint covering it.		N/A
65.5	A tag used for a cautionary marking in accordance with the Exception to 65.4 or 65.12 shall		N/A
65.6	A marking intended to inform the user of a risk of injury to persons shall be prefixed by a signal word ² CAUTION,² ² WARNING,² or ² DANGER.² Upper case letters shall not be less than 0.080 in (2.0 mm) high. The signal word shall be more prominent than any other required marking on the product.		N/A

UL 1450			
Clause	Requirement + Test	Result - Remark	Verdict
65.7	In the event that, when energized, a product has a part or function that involves a risk of injury to persons, a switch that controls the motor that drives the part shall have a plainly marked off position. The symbols shown in Figure 65.1 comply with the requirement when the user instruction manual identifies the symbols.		P
65.8	A product having provisions for two or more separate connections to a branch circuit or other power-supply source shall be permanently marked with the word [2] CAUTION[2] and the following or the equivalent: [2] This product has more than one connection to the source of supply. To reduce the risk of electrical shock, disconnect all such connections before servicing.		P
65.9	A compressor having a head or associated fittings and a motor frame that may:		P
65.10	A part of an enclosure as described in the Exception to 30.6 shall be marked to indicate that such servicing is to be done with the product disconnected from the supply circuit.		P
65.11	If complete guarding of a moving part that would obviously cause injury to persons would defeat the utility of a product a marking shall be provided warning the user of the potential risk of injury.		P
65.12	A compressor or attachment shall be provided with the following markings as applicable. The pressure value to be indicated shall be the maximum rated operating pressure. Upon investigation, other markings may be found to be necessary		P
65.13	A portable compressor or paint sprayer not intended to be exposed to rain shall be marked with the word [2] CAUTION[2] and the following or equivalent: [2] To reduce the risk of electric shock, do not expose to rain. Store indoors.		P
65.14	A product intended for indoor use only shall be marked with the word[2] CAUTION[2] and the following or equivalent: [2] To Reduce the Risk of Electric Shock or Injury, Use Indoors Only.[2]		P

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Clause	Requirement + Test	Result - Remark	Verdict
65.15	A product constructed in accordance with the Exception to 36.1.8 shall be marked adjacent to the drain hole and visible while the product is in use with the word [2] CAUTION[2] and the following or equivalent: [2] Risk of Bursting – Tilt tank to drain		P
65.16	A compressor shall be permanently marked with the word [2] WARNING[2] and the following or equivalent: [2] Risk of Fire or Explosion – Do not spray flammable liquid in a confined area. Spray area must be well ventilated		N/A
65.17	paint sprayer shall be permanently marked with the word [2] WARNING[2] and either the text specified in 65.16 or the following or equivalent: [2] Risk of Explosion – Do not spray flammable liquids.[2]		N/A
65.18	With reference to the requirement in 65.6, a marking that combines two or more applicable markings need not include the signal word more than once.		N/A
65.19	With reference to 25.5, a portable product provided with a general purpose receptacle shall be marked [2] Amps Maximum[2] at the receptacle so that the combined ampacity of the product operated under maximum normal load and the equipment connected to the receptacle does not exceed the rating of the product.		N/A
65.20	A product intended for use with a duty cycle as described in 46.1.7 shall be marked with the duty cycle.		N/A
65..21	Linear pumps intended for use in aerating septic tanks, fishponds, and similar applications, shall be marked with the following wording or the equivalent: [2] WARNING - To prevent electrical shock from back-siphoning, locate the pump above the water level.		N/A
INSTRUCTION MANUAL			P
66	General		P
66.1	A product shall be provided with legible instructions pertaining to:		P
66.2	The cautionary prefix [2] WARNING[2] required in 69.1, and all upper-case text indicated in 67.1 – 70.1 shall be entirely in upper-case letters or otherwise emphasized to distinguish them from the rest of the text.		P

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Clause	Requirement + Test	Result - Remark	Verdict
66.3	The text of all required instructions shall be in the words specified or words that are equivalent, clear, and understandable.		P
66.4	Instructions or illustrations shall be provided to identify important parts of the product, such as a pressure regulator. An illustration may be used with a required instruction to clarify the intent, but shall not replace the written instruction		P
66.5	Wording in parentheses in Sections 67 – 70 is explanatory, indicating options, alternatives, or cross-references.		P
66.6	A product evaluated in accordance with the Exceptions to 9.4 shall have the statement Household Use Only or the equivalent appearing in the instruction manual.		P
66.7	With reference to the requirement in 7.3, a tank-type compressor that does not employ a pressure vessel marked with the code symbol of ² U² or ² UM² of the American Society of Mechanical Engineers (ASME) shall not include reference to a horsepower rating of more than 3 hp (2.23 kW output) on the product or in the instruction manual provided with the product.		P
66.8	A product marked in accordance with 65.14 shall have the statement ² For Indoor Use Only² or the equivalent appearing in the instruction manual.		P
67	Operating and Installation Instructions		P
67.1	The operating and installation instructions shall include all information needed to operate and install the product as intended.		P
67.3	With reference to the Exception to 64.3.1, a statement advising of the availability of an acceptable extension cord and the importance of using such a cord included in the operating and installation instructions is an acceptable alternative to the marking on the product.		P
67.4	Instructions shall be provided with a product that is intended to be secured in place to indicate when it is necessary to fasten equipment to a floor or other part of a building in order to obtain proper stability.		P
67.5	A statement equivalent to that required in 64.2.3 shall also be included in the operating and installation instructions		P

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Clause	Requirement + Test	Result - Remark	Verdict
67.6	A product provided with a 2-blade polarized attachment plug shall be provided with the following instructions or the equivalent: This appliance has a polarized plug		P
67.7	A product intended for use with a duty cycle as described in 46.1.7 shall indicate the duty cycle in the operating instructions		P
67.8	For a motor-operated compressor intended for use with sprinkler systems, the instructions shall indicate that the compressor is intended to be installed in accordance with the Standard for Installation of Sprinkler Systems, NFPA 13.		P
67.9	For linear pumps intended to aerate septic tanks, fishponds, and similar applications, the installation instructions shall contain a statement regarding the installation of the pump above the water level.		P
68	User-Maintenance Instructions		P
69	Grounding Instructions		P
69.1	The grounding instructions shall include those instructions in (a) – (e) applicable to the product. The applicable instructions in (a) – (e) are able to be included in the operating instructions.		
BATTERY-OPERATED PRODUCTS			N/A
71	Scope		N/A
71.1	These requirements cover battery-operated products. Such a product shall comply with the requirements in Sections 1 – 3 and 6, 9.6 – 9.10, and Sections 10, 14 – 19, 22, 23, and 25 – 39, supplemented, and in some cases amended by Sections 72 and 73.		N/A
72	Construction		N/A
73	Performance		N/A
SUPPLEMENT SA - HIGH-PRESSURE PAINT SPRAYING PRODUCTS			N/A
SA1	Scope		N/A
SA1.1	This Supplement covers high-pressure airless paint sprayers.		N/A
SA2	General		N/A
SA3	Hoses		N/A
SA3.1	General		N/A
SA3.2	Electrical bonding		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
SA4	Trigger Guard		N/A
SA5	Nozzle Guard		N/A
SA6	Injection Test		N/A
SA7	Paint Entry Test		N/A
SA8	Spray Gun Assembly Tests		N/A
SA8.1	General		N/A
SA8.2	Drop test		N/A
SA8.3	Mold stress-relief distortion test		N/A
SA9	Gaskets and Seals Tests		N/A
SA9.1	Accelerated aging test		N/A
SA9.2	Immersion test		N/A
SA10	Hose Tests		N/A
SA10.1	Proof-pressure test		N/A
SA10.2	Minimum burst pressure test		N/A
SA10.3	Leakage test		N/A
SA10.4	Change in length test		N/A
SA10.5	Flex Impulse test		N/A
SA10.6	Electrical resistance test		N/A
SA10.7	Accelerated air-oven aging test		N/A
SA10.8	Ozone test		N/A
SA10.9	Ultraviolet-light test		N/A
SA10.10	Cold bend test		N/A
SA10.11	Solvent exposure tests		N/A
SA10.12	Pull force test		N/A
SA10.13	Flexing test		N/A
SA11	Production-Line Tests		N/A
SA12	Details		N/A
SA13	Cautionary		N/A
SA14	Operating Instructions		N/A
SA15	User-Maintenance Instructions		N/A
SA16	Important Safety Instructions		N/A

-Appendix 1: Photo document.

Fig.1

Fig.2

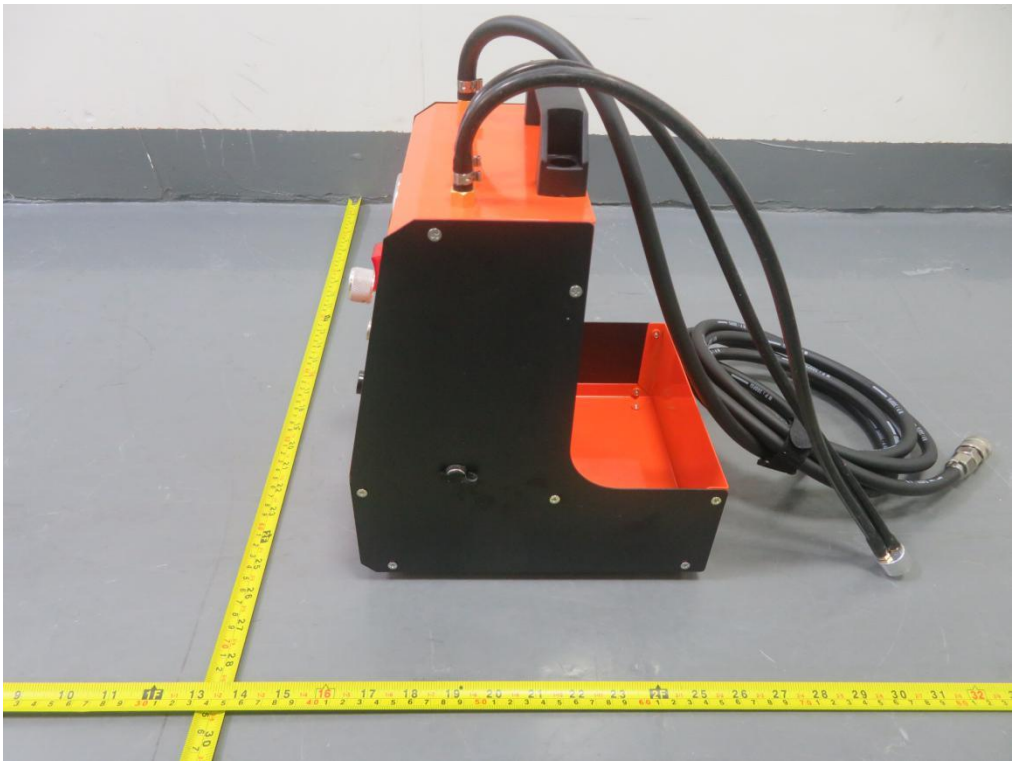

Fig.3

Fig.4

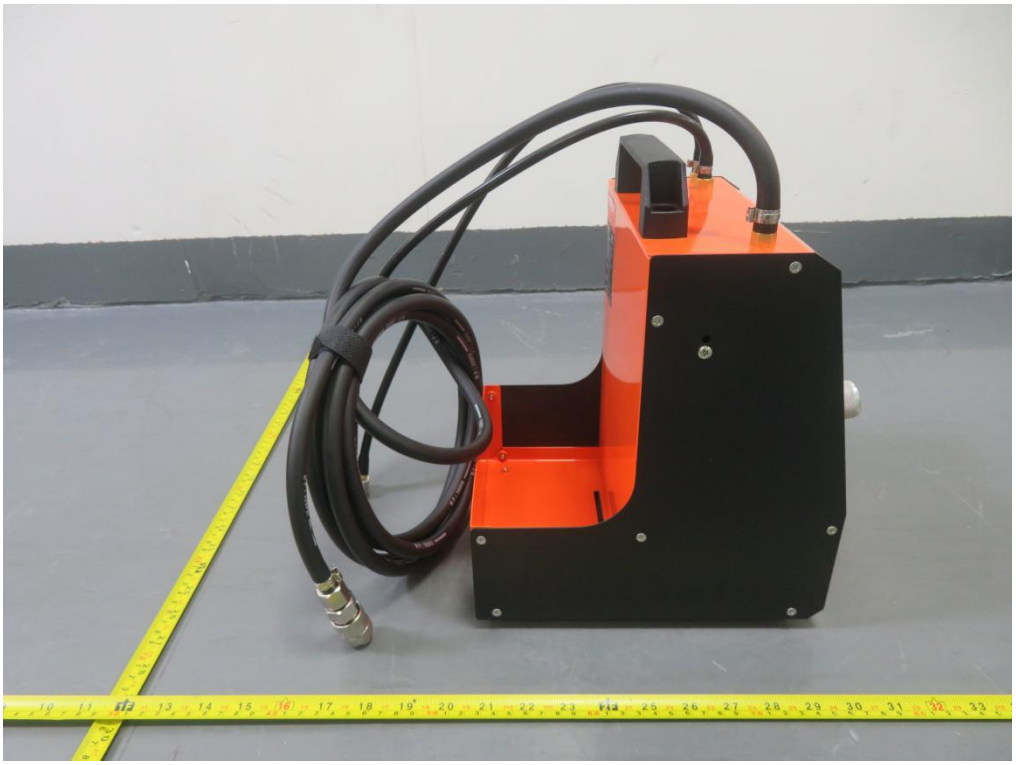

Fig.5

Fig.6

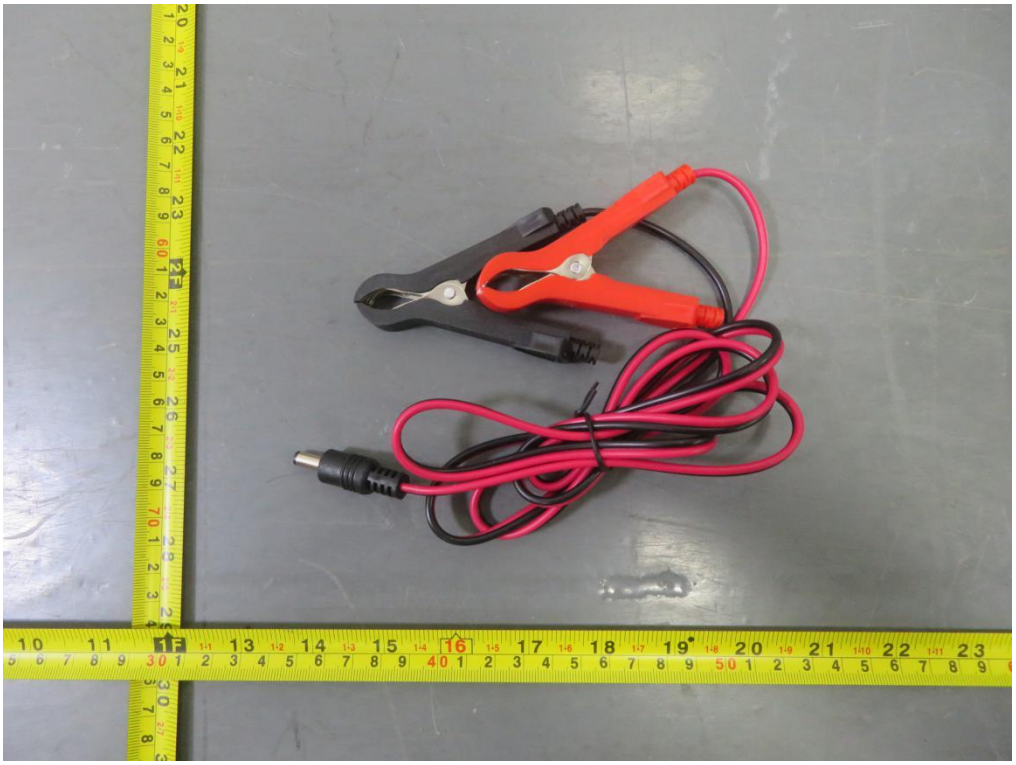

Fig.7

Fig.8

Fig.9

Fig.10

----------End of report----------