

UL 307B

STANDARD FOR SAFETY

Gas-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles



UL Standard for Safety for Gas-Burning Heating Appliances for Manufactured Homes and Recreational Vehicles, UL 307B

Fifth Edition, Dated October 31, 2006

Summary of Topics

This revision to UL 307B is being issued to remove the reference to the withdrawal date of UL 873 and to address universal upkeep of UL Standards for Safety. These revisions are considered to be non-substantive and not subject to UL's STP process.

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

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.

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that have been revised and that have a future effective date are located after the Standard, and are preceded by a "SUPERSEDED REQUIREMENTS" notice.

No Text on This Page

This is a preview. Click here to purchase the full publication.

(Title Page Reprinted: September 17, 2013)

1

UL 307B

Standard for Gas-Burning Heating Appliances For Manufactured Homes and Recreational Vehicles

The First edition was titled "Gas- and Oil-Fired Heating Appliances for Trailer Coaches" and numbered UL 307. The Second edition was titled "Gas-Heating Appliances for Mobile Homes and Travel Trailers." The Third Edition was titled "Gas-Burning Heating Appliances for Mobile Homes and Recreational Vehicles."

First Edition – May, 1958 Second Edition – October, 1965 Third Edition – February, 1982 Fourth Edition – January, 1995

Fifth Edition

October 31, 2006

This UL Standard for Safety consists of the Fifth Edition including revisions through September 17, 2013.

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 http://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 © 2013 UNDERWRITERS LABORATORIES INC.

This is a preview. Click here to purchase the full publication.

No Text on This Page

CONTENTS

INT	RO	Dι	JC.	TIC	N

1 Scope 2 General 2.1 Components 2.2 Units of measurement 2.3 Terminology 3 Glossary	
CONSTRUCTION	
GENERAL	
4 Assembly	16
5 Accessibility for Servicing	
6 Air-Intake Assemblies	
7 Base	
7.1 General	
7.2 Warm air appliances	
8 Casing	
9 Radiation Shields	
10 Combustion Chamber	
11 Radiator	
12 Heating-Surface Joints	
13 Baffles	
13.1 General	
13.2 Water fleaters	
15 Flue-Gas Outlet Assembly	
16 Draft Hoods	
17 Warm Air Appliance Air Handling System	
18 Warm Air Handling System for Installation Downstream From a Cooling System	
19 Materials In Air Handling Compartments of Warm Air Appliance	
19.1 General	
19.2 Air filters	
20 Water Heater Storage Vessels	
21 Water Heater Dip Tubes	
BURNER EQUIPMENT AND CONTROLS	
22. Canaral	21
22 General	
24 Main Burner and Flame Spreaders	
25 Combustion Air Supply and Control	
25.1 General	
25.2 Air shutters	
25.3 Combustion air dampers	
26 Orifice Spuds and Orifice Fittings	
27 Manual Valves	
28 Gas Appliance Pressure Regulators	

30	Pilot Gas Filters Control Circuits	.38
32	Controls	
	32.1 General	
	32.3 Warm air appliance fan control	
	32.4 Boiler limit control	
	32.5 Water heater limit control	
	32.6 Water heater temperature regulating control	
	Automatic Gas Valves	
34	Automatic Gas Ignition Systems	.42
WIRING	METHODS	
35	Field Wiring	.43
	35.1 General	
	35.2 Grounding	
0.0	35.3 Cord-connected appliances	
	Factory Wiring Electrical Systems Rated 12 Volt DC	
	Separation of Circuits	
	Bonding for Grounding	
ELECTF	RICAL COMPONENTS	
40	General	.56
41	Electrical Enclosures	
	41.1 General	
	41.2 Doors and covers	
40	41.3 Field wiring system connections	
	Capacitors	
	Electrical Insulating Material	
	Switches and Controllers	
SPACIN	GS	
16	High-Voltage Circuits	70
	Low-Voltage Circuits	
PROTEC	CTION OF USERS AND SERVICE PERSONNEL	
48	General	.72
PERFOR	RMANCE	
GENER	AL	
	General Instrumentation 50.1 Draft measurement 50.2 Fuel input measurement	.76 .76

	50.3 Power measurement	
	50.4 Speed measurement	
	50.5 Static pressure measurement	
	50.6 Temperature measurement	
	50.7 Warm air appliances	
	50.8 Boilers	
	50.9 Water heater	
DUOT	CONNECTED ADDITIONOE TEST INICTALL ATION	
DUC I -	CONNECTED APPLIANCE TEST INSTALLATION	
51	1 General	82
	2 Corner Installation For Central Furnaces	
	3 Alcove or Closet Installation for Appliance Furnaces	
	4 Wall Furnace Installation	
	5 Recessed Furnace Installation	
BOILER	R AND WATER HEATER TEST INSTALLATION	
56	6 General	94
FLUE-0	GAS OUTLET ASSEMBLY	
57	7 General	
ΙΝΙΙΤΙΔΙ	_ TEST CONDITIONS, TEST PRESSURES, AND BURNER ADJUSTMENTS	
	TEST CONDITIONS, TEST THESCORES, AND BOTTNETT ADJUSTMENTS	
58	8 Initial Test Conditions	
	58.1 General	
	58.2 Warm air appliance	
59	9 Test Pressures and Burner Adjustments	
APPLIA	ANCE TESTS	
60	0 Combustion – Burner and Appliance	
61	1 Burner Operating Characteristics	
	61.1 Flash back	
	61.2 Back pressure	
0.0	61.3 Flame extinguishment-water heaters	
62	2 Pilot Operating Characteristics	
	62.1 Ignition	
	62.2 Flame travel	
	62.4 Carbon deposits	
	62.5 Automatic relight pilot system	
63	3 Operation of Pilot Actuated Safety Shutoff Devices	
00	63.1 Pilot flame establishing period	
	63.2 Shutoff time	
	63.3 Nonautomatic shutoff	
64	4 Direct Ignition Tests	
3	64.1 General	
	64.2 Ignition time	
	64.3 Flame failure	
	64.4 Venting	108

	Temperature Test	
66	Wind Test	.111
	66.1 General	
	66.2 Main burners	
	66.3 Carbon monoxide	
	66.4 Operating characteristics	
	66.5 Carbon dioxide	
	66.6 Water heater tests	
67	Direct Vent System Leakage Test	.114
	Field Wiring Strain Relief Test	
69	Short-Circuit Test	
	69.1 Test no. 1	
	69.2 Test no. 2	
	69.3 Motor circuits	
70	Dielectric Voltage-Withstand Test	.118
WARM A	AIR APPLIANCE TESTS	
71	Limit-Control Cutout Test	110
	Continuity of Operation Test	
	Continuous Operation Temperature Test	
	Blocked Register Temperature Test	
	Blocked Outlet Temperature Test	
	Blocked Inlet Temperature Test	
	Fan Failure Temperature Test	
	Stalled Fan Motor Temperature Test	
	Heating Element Endurance Test	
	Horizontal Central Furnace Air Flow Test	
	Condensate Test	
	Surface Temperature Test	
	Ignition of Flammable Fabric and Related Hazards Test	
BOILER	TESTS	
	Limit Control Cutout Test	
	Low Water Level Control Cutout Test	
86	Continuous Operation Temperature Test	.130
WATER	HEATER TESTS	
87	Water Temperature Control Test	.131
	Thermostat Control Test	
	Limit-Control Cutout Test	
	Continuous Operation Temperature Test	
	Burner Durability Test	
	Blocked Flue Test	
	Draft Hoods	
	93.1 Blocked draft hood	
	93.2 Downdraft – I	
	93.3 Downdraft – II	.134
	93.4 Static load	.135
	93.5 Flue gases – I	
	93.6 Flue gases – II	.135

94 '	93.7 Smoke leakage	
	Nonmetallic Dip Tube Tests	
	95.1 Deformation and weight loss	
	95.2 Resistance to crushing	
	95.3 Collapse	
	Hydrostatic Pressure Test	
	Strain-Relief Test	
98 1	Leakage-Current Test	.141
MANUFA	CTURING AND PRODUCTION TESTS	
99 (General	.143
	Production-Line Grounding Continuity Test	
MARKING	G AND INSTRUCTIONS	
	General	
	Warm Air Appliance	
	Water Heater	
104	Instructions	
	104.2 Instructions for central furnaces	
	104.3 Instructions for water heaters	
OUTDOO	OR USE EQUIPMENT CONSTRUCTION	
105	General	.160
106	Enclosure	
	106.1 General	
407	106.2 Corrosion protection	
	Field-Wiring Connections	
	Wiring	
109	Electrical institating iviaterials	.103
PERFOR	MANCE	
110	Rain Test	.165
	110.1 General	
	110.2 Vents	
111	Gaskets	.169
112	Metallic Coating Thickness Test	.171
MARKING	G	
113	General	.172
110		
APPEND	IX A	
Star	ndards for Components	Δ1