UL 25A

STANDARD FOR SAFETY

Meters for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0 - E85)

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

UL Standard for Safety for Meters for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0 - E85), UL 25A

First Edition, Dated July 30, 2014

Summary of Topics

This revision of ANSI/UL 25A adds torque requirements for larger size valve.

The revisions are substantially in accordance with Proposal(s) on this subject dated August 26, 2016.

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.

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.

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

July 30, 2014
(Title Page Reprinted: October 7, 2016)

ANSI/UL 25A-2016

UL 25A

Standard for Meters for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0 - E85)

Prior to the first edition, the requirements for the products covered by this standard were included in the Outline of Investigation for Meters for Gasoline and Gasoline/Ethanol Blends with Nominal Ethanol Concentrations up to 85 Percent (E0 - E85), UL 25A.

First Edition

July 30, 2014

This ANSI/UL Standard for Safety consists of the First Edition including revisions through October 7, 2016.

The most recent designation of ANSI/UL 25A as an American National Standard (ANSI) occurred on October 7, 2016. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, Title Page, or effective date information.

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 © 2016 UNDERWRITERS LABORATORIES INC.

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

CONTENTS

INTRODUCTION

1 Scope 5
2 General 6
2.1 Components 6
2.2 Units of measurement 6
2.3 Undated references 6
3 Glossary 6

CONSTRUCTION

4 General 7
5 Assembly 7
6 Materials 7
6.1 Metallic materials 7
6.2 Nonmetallic materials 10
6.3 Casting impregnation materials 13
6.4 Internal parts 13
6.5 Blending options 13
7 Bodies and Covers 14
8 Register-Shaft Seals 14
9 Springs 14
10 Piping and Fittings 15

PERFORMANCE

11 General 16
12 Long Term Exposure Test 17
12.1 General 17
12.2 Samples 17
12.3 Method 18
12.4 Results 18
13 High Pressure Leakage Test 19
14 Endurance Test 19
15 Hydrostatic Strength Test 20
16 Deformation Test 20
17 Temperature Reduction Test 20A
18 Moist Ammonia-Air Stress Cracking Test 20A
19 Marking Adhesion Test 20B
20 Blending Cycling Test 20B

MANUFACTURING AND PRODUCTION

21 General 21

MARKING

22 General 23
23 Permanence of Marking 24

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

SUPPLEMENT SA - Test Fluids

SA.1 Details SA1

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

INTRODUCTION

1 Scope

1.1 These requirements cover positive displacement liquid meters for use with motor fuels. Motor fuels, as defined by these requirements, include one or more of the fuels described in 1.2.

1.2 Meters covered by these requirements are intended for use with one or more of the following as applicable:

a) Gasoline formulated in accordance with the Standard Specification for Automotive Spark-Ignition Fuel, ASTM D4814;

b) Gasoline/ethanol blends with nominal ethanol concentrations up to 25 percent ethanol (E25), consisting of gasoline formulated in accordance with the Standard Specification for Automotive Spark-Ignition Fuel, ASTM D4814, when blended with denatured fuel ethanol formulated to be consistent with the Standard Specification for Denatured Fuel Ethanol for Blending With Gasolines For Use as Automotive Spark Ignition Engine Fuel, ASTM D4806; or

c) Gasoline/ethanol blends with nominal ethanol concentrations above 25 percent formulated in accordance with the Standard Specification in (b) above or formulated in accordance with the Standard Specification for Ethanol Fuel Blends for Flexible-Fuel Automotive Spark Ignition Engines, ASTM D5798.

1.3 Meters covered by this standard are for use in accordance with the National Fire Protection Association's Flammable and Combustible Liquids Code, ANSI/NFPA 30, and the Code for Motor Fuel Dispensing Facilities and Repair Garages, ANSI/NFPA 30A.

1.4 These requirements do not cover:

a) Meters for use with fuels other than as described in 1.2;

b) Velocity meters, head meters, or area meters;

c) Meters for use in centralized fuel oil distribution systems; and

d) Meter components incorporating electrical circuits except those meeting intrinsically safe or explosion standards.

1.5 Determinations of the suitability of registers, counters, or computers used or provided with these meters, or the accuracy of measurement resulting from or required in actual application are not within the scope of these requirements.

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

2 General

2.1 Components

2.1.1 Except as indicated in 2.1.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.1.2 A component is not required to comply with a specific requirement that:

a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or

b) Is superseded by a requirement in this standard.

2.1.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.1.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

2.2 Units of measurement

2.2.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

2.3 Undated references

2.3.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

3 Glossary

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

3.2 BLENDING OPTION – Dispensing devices may be provided with an option that blends two specific fuels into one fuel to be dispensed. This blending occurs at the dispenser level and can be in two forms:

a) Fixed blending – Blending at the dispenser level that blends two specific fuels into one fuel to be dispensed, and that fuel to be dispensed is fixed. For example, fixed blending includes blend options where gasoline and denatured fuel ethanol can be blended to achieve E85, which is the actual dispensed fuel.

b) Variable blending – Blending at the dispenser level that blends two specific fuels into the fuel to be dispensed, but the fuel to be dispensed can be any of a number of previously set points. For example, variable blending includes blend options where gasoline and E85 can be blended to achieve E40, E60, and E85 as the actual dispensed fuel.

3.3 GASOLINE/ETHANOL BLENDS – Blended fuels composed of a gasoline component and an ethanol component. The numerical value corresponding to the ethanol component determines the blend rating (such as E85 for 85% ethanol, 15% gasoline).

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL

3.4 SEALS, DYNAMIC – A seal that is subject to mechanical movement or other applied forces that result in movement or flexing of the seal under normal use conditions.

3.5 SEALS, STATIC – A seal that is not subject to mechanical movement or other applied forces other than compression forces that are applied during installation and maintained during normal use conditions.

CONSTRUCTION

4 General

4.1 A meter shall be constructed for a minimum working pressure of 345 kPa (50 psig), and an ultimate rupture pressure of not less than five times the rated working pressure.

4.2 Fluid confining parts, except gaskets and seals, shall be constructed of metallic materials.

4.3 A meter shall be constructed for an operating ambient temperature within the range of minus 29°C to 52°C (minus 20°F to 125°F).

5 Assembly

5.1 A meter shall be assembled as a unit and shall include all of the components necessary for its intended function.

5.2 If a meter requires the use of special pipe flanges, gaskets, bolts, or other special fittings or parts for making a proper installation, such parts shall be furnished by the manufacturer with each meter.

5.3 A brazing material used for joining fluid-confining parts of a meter shall have a melting point (solidus temperature) exceeding 538°C (1000°F).

6 Materials

6.1 Metallic materials

6.1.1 General

6.1.1.1 A metallic part, in contact with the fuels anticipated by these requirements, shall be resistant to the action of the fuel if degradation of the material will result in leakage of the fuel or if it will impair the function of the device. For all fuel ratings, see Corrosion due to fluid, 6.1.2.1. For products rated for gasoline/ethanol blends with nominal ethanol concentrations greater than 25 percent, see Metallic materials – system level, 6.1.3.

6.1.1.2 The exposed surfaces of metallic parts shall be resistant to atmospheric corrosion if this corrosion will lead to leakage of the fluid or if it will impair the function of the device. The material shall comply with the requirements in Atmospheric corrosion, 6.1.2.2.

UL COPYRIGHTED MATERIAL –
NOT AUTHORIZED FOR FURTHER REPRODUCTION OR
DISTRIBUTION WITHOUT PERMISSION FROM UL