SAE INTERNATIONAL

AEROSPACE STANDARD

AS5798™ REV. A

Issued 2007-07
Reaffirmed 2013-11
Revised 2019-12

Superseding AS5798

(R) Aerospace Size Standard for Oversize O-Rings

RATIONALE

AS5798 has been revised to include additional gland specifications and their limitations. Minor errors have been corrected, and Appendix A, which includes additional information, has been added.

1. SCOPE

This SAE Aerospace Standard (AS) specifies the dimensions, tolerances and size codes (dash numbers) for O-rings with a larger cross-section than those to AS568, for use in glands per MIL-G-5514 where squeeze at low temperature is often insufficient to provide a leak-tight seal.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AS568	Aerospace Size Standard for O-Rings
AS4716	Gland Design, O-Ring and Other Seals
ARP4727	Gland Design, Computation of Squeeze and Gland Volume
AS5781	Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Scarf-Cut, For Use in AS4716 Glands
AS5782	Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Solid, Un-Cut, For Use in AS4716 Glands
AS5857	Gland Design, O-ring and Other Elastomeric Seals, Static Applications
AS5860	Retainers, (Back-Up Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Static Gland

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2019 SAE International

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

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)

SAE values your input. To provide feedback on this Technical Report, please visit
98A

SAE WEB ADDRESS:

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

AS5861 Retainers, (Back-Up Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Solid, Static Gland

AS6235 Face Seal Gland Design, Static, O-ring and Other Seals for Aerospace Hydraulic and Pneumatic Applications

AS8791 Hydraulic and Pneumatic Retainers (Back-Up Rings), Polytetrafluoroethylene (PTFE) Resin

2.2 ASME Publications

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), www.asme.org.

ASME Y14.5 Dimensioning and Tolerancing

2.3 U.S. Government Publications

Copies of these documents are available online at https://quicksearch.dla.mil.

MS27595 Retainer, Packing Backup, Continuous Ring, Polytetrafluoroethylene

MIL-G-5514 Gland Design; Packings, Hydraulic, General Requirements for

3. GENERAL

An AS5798 sized O-ring is intended to replace an AS568 sized O-ring of the same dash number.

The dimensions and tolerances specified in this standard are suitable for any elastomeric material.

This standard shall not be used as a part standard, therefore no part numbers such as AS5798-001X shall be created.

Each dash number, which should be appended to an appropriate drawing or standard number, identifies one size O-ring only.

An X suffix is part of the dash number to signify the oversize O-ring, for example, NAS1611-010X, NAS1611-010AX, or M83461/1-110X.

Temperature limitations of 275 °F (135 °C) and elastomer linear coefficient of thermal expansion of 9.0 x 10^{-5} in/in/°F (1.6 x 10^{-4} mm/mm/°C) were used for O-ring expansion calculations. A virgin/pigmented PTFE (polytetrafluoroethylene) linear coefficient of thermal expansion of 7 x 10^{-5} in/in/°F (12.6 x 10^{-5} mm/mm/°C) was used for backup ring expansion calculations. Applications that exceed these values should be evaluated for excessive gland fill.

See Section 5 for information regarding the use of O-rings to AS5798 in glands other than MIL-G-5514.

4. REQUIREMENTS

4.1 Dimensional Requirements

Cross sections were selected to obtain a minimum room temperature squeeze in the range of 9 to 10% throughout each series. This is based on worst case dimensions and calculations per ARP4727.

The diameter was selected so that the nominal outer diameter is equal to the nominal outer diameter of O-rings per AS568. This provides a slight increase in stretch while maintaining the same fit in internal rod mounted grooves for ease of installation.

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

This rule was modified in the following sizes to limit stretch:

- -001X through -013X
- -110X through -115X
- -210X through -212X

The gland fill was analyzed with a goal of not exceeding 95% fill at 275 °F (135 °C) using a linear coefficient of thermal expansion for the O-ring material of 9.0 x 10^{-5} in/in/°F (1.6 x 10^{-4} mm/mm/°C) and a linear coefficient of thermal expansion for backup rings of 7 x 10^{-5} in/in/°F (12.6 x 10^{-5} mm/mm/°C). This was achieved in all sizes except -012X and smaller where tolerances have an exaggerated affect on these small glands.

The gland fill percentage is based on the space available to the O-ring with worst case MIL-G-5514 gland tolerances and maximum volume of solid backup rings per MS27595.

Other back-up rings may have different volumes which will result in a different percentage gland fill. Results are shown in Table 2 and charts of squeeze, stretch, and gland fill are shown in Appendix A.

Dimensions shall conform to Figure 1 and the dimensions listed in Table 1.

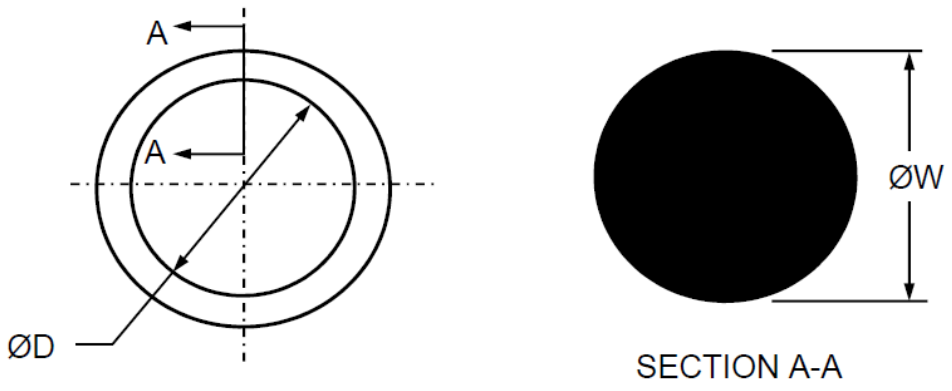

Figure 1 - Controlled features

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