



AEROSPACE STANDARD

AS8791™**REV. D**

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Reaffirmed 2025-07

Superseding AS8791C

Hydraulic and Pneumatic Retainers
(Backup Rings), Polytetrafluoroethylene (PTFE) Resin

RATIONALE

This document has been revised to:

- Clarify the use of these parts in glands other than MIL-G-5514
- Update the references
- Add the requirement that no resizing of parts during the manufacturing process is permitted
- Delete the dimensional stability test requirement (since this test is performed on each lot of molded material as required by AMS3678)
- Include some editorial improvements

AS8791D has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This specification and part standard specifies polytetrafluoroethylene (PTFE) resin material and the dimensional requirements for scarf-cut retainers (backup rings) previously specified by MIL-R-8791 and MIL-R-8791/1. The retainers are intended for use in hydraulic and pneumatic system components as anti-extrusion devices in conjunction with seals and O-rings.

1.1 Field of Application

Retainers to the dimensions in AS8791 are for use in glands to MIL-G-5514 (inactive for new design). They shall not be used in glands to AS4716 or AS5857; please see the note below.

NOTE: Parts standard AS5781 (scarf-cut backup rings) for use in AS4716 glands and parts standard AS5860 (scarf-cut backup rings) for use in AS5857 glands have been published.

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.

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Documents

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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.

AMS3678	Polytetrafluoroethylene (PTFE) Moldings and Extrusions Unfilled, Pigmented, and Filled Compounds
AMS3678/1	Type 1 Virgin Polytetrafluoroethylene (PTFE) Moldings and Extrusions
AS4716	Gland Design, O-Ring and Other Seals
AS5781	Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Scarf-Cut, for Use in AS4716 Glands
AS5857	Gland Design, O-Ring and Other Elastomeric Seals, Static Applications
AS5860	Retainers (Backup Rings), Hydraulic and Pneumatic, Polytetrafluoroethylene Resin, Single Turn, Static Gland

2.2 U.S. Government Publications

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

MIL-G-5514	Gland Design, Packings, Hydraulic, General Requirements for (Inactive for New Design)
MIL-R-8791	Retainer, Packing, Hydraulic and Pneumatic, Polytetrafluoroethylene Resin (Single Turn) (Cancelled)
MIL-R-8791/1	Retainer, Packing, Hydraulic and Pneumatic, Polytetrafluoroethylene, Single Turn (Cancelled)
MS27595	Retainer, Packing Backup, Continuous Ring, Tetrafluoroethylene (Inactive for New Design)
MS28773	Retainer, Packing Backup, Tetrafluoroethylene, Straight Thread Tube Fitting Boss (Inactive for New Design)
MS28774	Retainer, Packing Backup, Single Turn, Tetrafluoroethylene (Inactive for New Design)
MS28782	Retainer, Packing Backup, Teflon (Inactive for New Design)
MS28783	Ring, Gasket, Backup, Teflon (Inactive for New Design)

3. TECHNICAL REQUIREMENTS

3.1 Material

The material for parts to this specification shall be virgin polytetrafluoroethylene (PTFE) conforming to AMS3678 Type 1, Grade B.

3.2 Safety - Hazardous Materials

While the materials, methods, applications, and processes described or referenced in this specification may involve the use of hazardous materials, this specification does not address the hazards which may be involved in such use. It is the sole responsibility of the user to ensure familiarity with the safe and proper use of any hazardous materials and to take necessary precautionary measures to ensure the health and safety of all personnel involved.

3.3 Dimensional Requirements

The shape and dimensions of PTFE retainers shall conform to Figure 1 and Tables 1A and 1B.

3.3.1 Surfaces and Edges

Surfaces shall be smooth and free from irregularities. Edges shall be clean and sharp.

3.3.2 Dimensions

Parts shall be per Figure 1 with dimensions to Tables 1A and 1B.

During the manufacturing process, machined parts shall not be subject to a thermal cycle and/or resizing in order to achieve the dimensions specified in this aerospace standard.

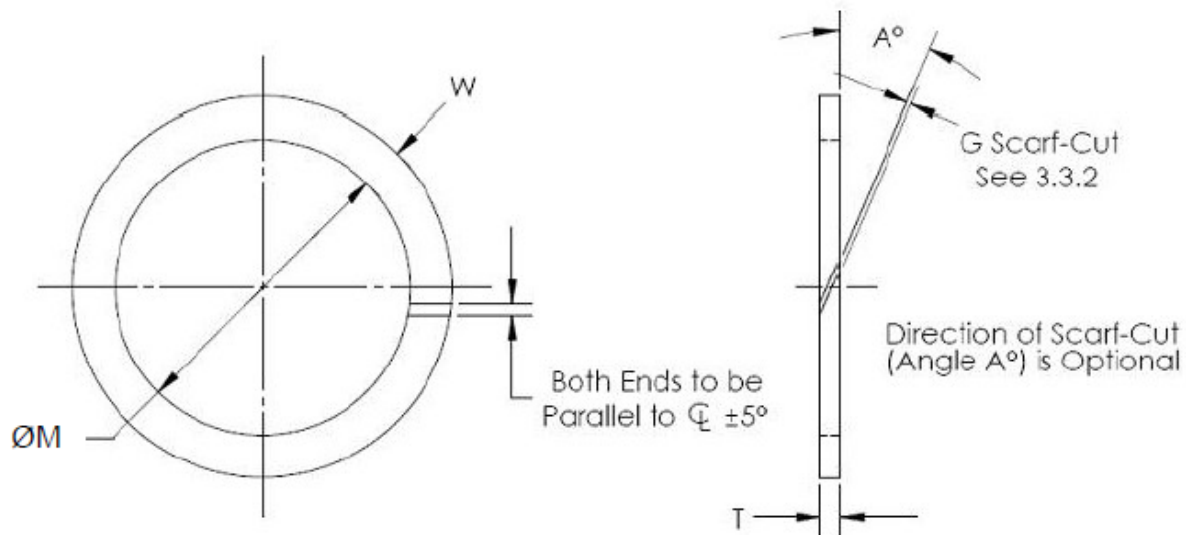


Figure 1 - Backup ring controlled features

3.3.3 Scarf-Cut

When measuring $\text{ØM} \pm 0.001$ inch (0.03 mm) over a mandrel (see Tables 1A and 1B) the scarf-cut shall not exceed dimension "G" and shall exhibit no overlap. These measurements are to be made at stabilized temperature of $73^\circ\text{F} \pm 2^\circ\text{F}$ ($23^\circ\text{C} \pm 1^\circ\text{C}$).

Table 1A - Part numbers and dimensions, in inches

Part No.	ØM Gage ±0.001	T ±0.002	W ±0.001	G Max See 3.3.3	A Degrees Range
M8791/1-004	0.076	0.050	0.053	0.005	45-42
M8791/1-005	0.108	0.050	0.053	0.005	36-33
M8791/1-006	0.123	0.050	0.053	0.005	33-30
M8791/1-007	0.154	0.050	0.053	0.005	27-24
M8791/1-008	0.185	0.050	0.053	0.005	22-19
M8791/1-009	0.217	0.050	0.053	0.005	22-19
M8791/1-010	0.248	0.050	0.053	0.005	22-19
M8791/1-011	0.310	0.050	0.053	0.005	22-19
M8791/1-012	0.373	0.050	0.053	0.005	22-19
M8791/1-013	0.438	0.050	0.053	0.005	22-19
M8791/1-014	0.501	0.050	0.053	0.005	22-19
M8791/1-015	0.563	0.050	0.053	0.005	22-19
M8791/1-016	0.626	0.050	0.053	0.005	22-19
M8791/1-017	0.688	0.050	0.053	0.005	22-19
M8791/1-018	0.751	0.050	0.053	0.005	22-19
M8791/1-019	0.813	0.050	0.053	0.005	22-19
M8791/1-020	0.881	0.050	0.053	0.005	22-19
M8791/1-021	0.943	0.050	0.053	0.005	22-19
M8791/1-022	1.006	0.050	0.053	0.005	22-19
M8791/1-023	1.068	0.050	0.053	0.005	22-19
M8791/1-024	1.131	0.050	0.053	0.005	22-19
M8791/1-025	1.193	0.050	0.053	0.005	22-19
M8791/1-026	1.256	0.050	0.053	0.005	22-19
M8791/1-027	1.318	0.050	0.053	0.005	22-19
M8791/1-028	1.381	0.050	0.053	0.005	22-19
M8791/1-110	0.373	0.054	0.086	0.006	22-19
M8791/1-111	0.435	0.054	0.086	0.006	22-19
M8791/1-112	0.498	0.054	0.086	0.006	22-19
M8791/1-113	0.560	0.054	0.086	0.006	22-19
M8791/1-114	0.623	0.054	0.086	0.006	22-19
M8791/1-115	0.685	0.054	0.086	0.006	22-19
M8791/1-116	0.748	0.054	0.086	0.006	22-19
M8791/1-117	0.815	0.054	0.086	0.006	22-19
M8791/1-118	0.878	0.054	0.086	0.006	22-19
M8791/1-119	0.940	0.054	0.086	0.006	22-19
M8791/1-120	1.003	0.054	0.086	0.006	22-19
M8791/1-121	1.065	0.054	0.086	0.006	22-19
M8791/1-122	1.128	0.054	0.086	0.006	22-19
M8791/1-123	1.190	0.054	0.086	0.006	22-19
M8791/1-124	1.253	0.054	0.086	0.006	22-19
M8791/1-125	1.315	0.054	0.086	0.006	22-19

NOTE: Scarf-cut angle "A" for sizes -004 through -006 is designed to ensure manufacturability (see 8.1).