

(R)

Aerospace Rod Scraper Gland Design Standard

1. SCOPE:

Gland details are described for rod diameters from 1/4 to 15-1/2 in, inclusive, corresponding to AS568 O-Ring Dash No. sizes -108/-111, -206/-222, -325/-349 and -425/-460.

1.1 Purpose:

This SAE Aerospace Standard (AS) offers gland details that provide sufficient space to fit efficient and reliable exclusion devices.

Exclusion device configurations are not specified in this document.

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, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS568A	Aerospace Size Standard for O-Rings
AS4052	Gland Design; Scraper, Landing Gear Installation
AS4716	Aerospace Standard, Gland Design, O-Ring and Other Elastomeric Seals

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 reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright 1999 Society of Automotive Engineers, Inc.
All rights reserved.

Printed in U.S.A.

QUESTIONS REGARDING THIS DOCUMENT:
TO PLACE A DOCUMENT ORDER:
SAE WEB ADDRESS:

(724) 772-8510
(724) 776-4970
<http://www.sae.org>

FAX: (724) 776-0243
FAX: (724) 776-0790

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

MS 28776 Scraper Piston Rod (Inactive for New Design)
MS 33675 Scraper Installation, Packing Gland Ring (Inactive for New Design)

3. BACKGROUND:

The Scraper Installation Gland Design Standard MS 33675 accepts the MS 28776 Piston Rod Scraper. This scraper is a split bronze ring designed to clean the surface of a piston rod and several other PTFE replacements are available. The MS 28776 scraper does not actually exclude contamination from migrating into the rod gland bushing or seal cavity due to a scarf-out. Although non-metallic exclusion devices that offer design improvements to the MS 28776 scraper are available, the design options are limited by the small space provided by the MS 33675 gland configuration.

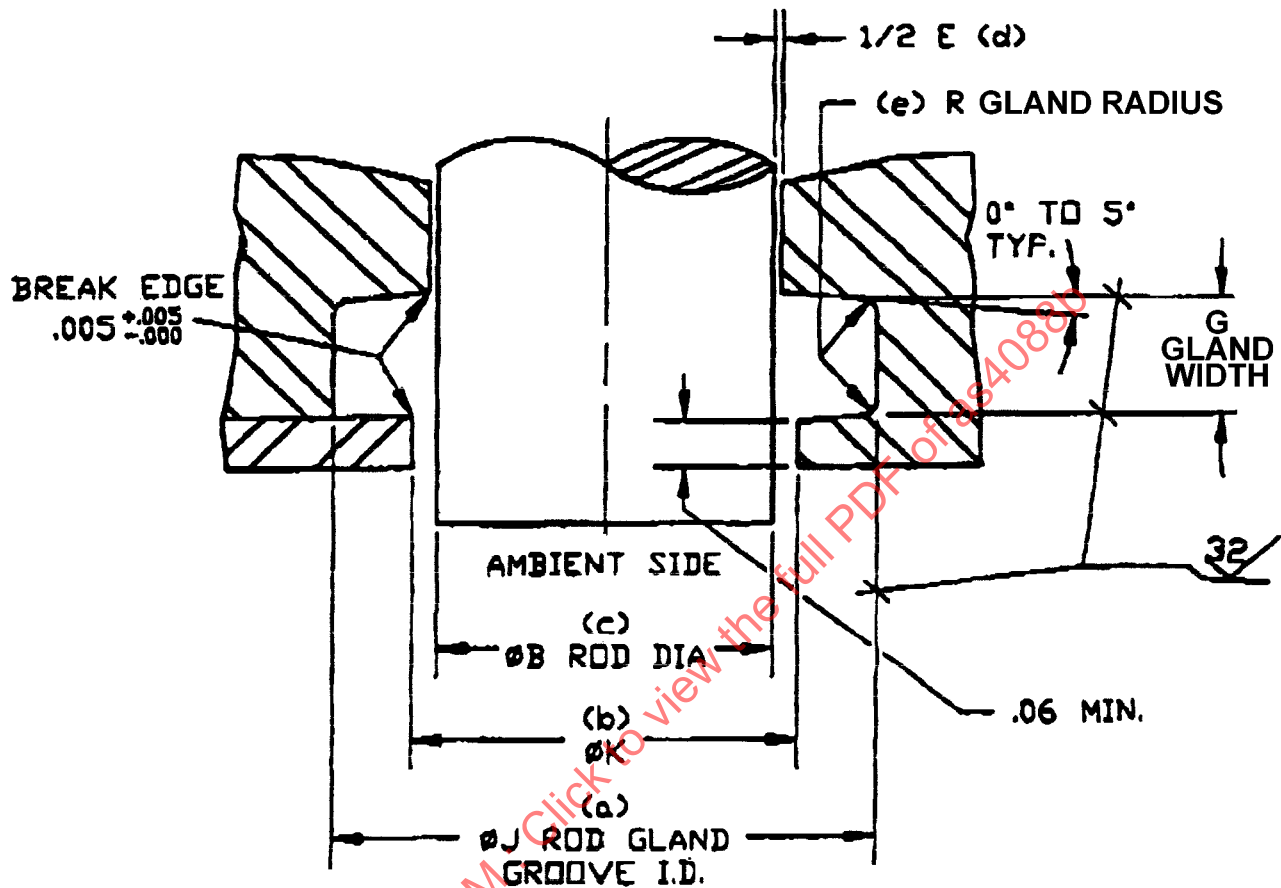
4. GENERAL NOTES:

- 4.1 Rod and gland diameters, gland widths and tolerances are in accordance with AS4716 with the exception described in 4.3.
- 4.2 One gland width is defined for each rod diameter from 1/4 to 15-1/2 in, inclusive.
- 4.3 The glands covered in this standard are similar to AS4052 except this standard has only one gland width and includes the smaller 100 and 200 series dash sizes.
- 4.4 The diametral clearance on the ambient side of the gland is greater than specified in AS4716 to minimize the possibility of trapping contaminants between the rod and gland bushing diametral clearance.
- 4.5 A two-piece gland is shown as optional.

5. NOTES:

- 5.1 The change bar (|) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this document. An (R) symbol to the left of the document title indicates a complete revision of the document.

PREPARED BY SAE SUBCOMMITTEE A-6C, FLUID POWER DISTRIBUTION ELEMENTS
OF COMMITTEE A-6, AEROSPACE FLUID POWER, ACTUATION & CONTROL TECHNOLOGIES



- (a) MAJOR DIAMETER (J) TO BE CONCENTRIC WITH ROD BUSHING BORE WITHIN .005 T.I.R.
- (b) MINOR DIAMETER (K) TO BE CONCENTRIC WITH ROD BUSHING BORE WITHIN .010 T.I.R.
- (c) ROD DIAMETER (B) FROM AS4716.
- (d) ROD CLEARANCE (E) FROM AS4716.
- (e) GROOVE RADIUS (R) FROM AS4716.

FIGURE 1 - Gland Design, Rod Scraper, Installation

SAE AS4088 Revision B

TABLE 1 - Gland Dimensions

Dash No.	ϕ B Rod Dia (c) Nominal	ϕ B Rod Dia (c) +.000 -.001	ϕ J Rod Gland Dia (a) +.001 -.000	G Gland Width +.010 -.000	ϕ K Minor Dia (b) +.010 -.000
108	1/4	.248	.423	.183	.278
109	5/16	.310	.486	.183	.340
		+.000 -.002	+.002 -.000		
110	3/8	.373	.546	.183	.403
111	7/16	.435	.609	.183	.465
206	1/2	.498	.741	.235	.528
207	9/16	.560	.803	.235	.590
208	5/8	.623	.866	.235	.653
209	11/16	.685	.928	.235	.715
210	3/4	.748	.989	.235	.778
211	13/16	.810	1.051	.235	.852
212	7/8	.873	1.115	.235	.915
213	15/16	.935	1.177	.235	.977
214	1	.998	1.240	.235	1.040
215	1 1/16	1.060	1.302	.235	1.102
216	1 1/8	1.123	1.365	.235	1.165
217	1 3/16	1.185	1.427	.235	1.227
218	1 1/4	1.248	1.490	.235	1.290
219	1 5/16	1.310	1.552	.235	1.352
220	1 3/8	1.373	1.615	.235	1.415
221	1 7/16	1.435	1.677	.235	1.477
222	1 1/2	1.498	1.740	.235	1.540

SAE AS4088 Revision B

TABLE 1 - Gland Dimensions (Continued)

Dash No.	ϕ B Rod Dia (c) Nominal	ϕ B Rod Dia	ϕ J Rod Gland Dia	G Gland Width	ϕ K Minor Dia
		(c) +.000 -.002	(a) +.002 -.000	+.010 -.000	(b) +.010 -.000
325	1 1/2	1.498	1.870	.334	1.540
326	1 5/8	1.623	1.995	.334	1.665
327	1 3/4	1.748	2.120	.334	1.790
328	1 7/8	1.873	2.245	.334	1.915
329	2	1.998	2.370	.334	2.040
330	2 1/8	2.123	2.495	.334	2.165
331	2 1/4	2.248	2.620	.334	2.290
332	2 3/8	2.373	2.745	.334	2.415
333	2 1/2	2.498	2.870	.334	2.540
334	2 5/8	2.623	2.995	.334	2.665
335	2 3/4	2.748	3.120	.334	2.790
336	2 7/8	2.873	3.245	.334	2.915
337	3	2.997	3.369	.334	3.039
338	3 1/8	3.122	3.494	.334	3.164
339	3 1/4	3.247	3.619	.334	3.289
340	3 3/8	3.372	3.744	.334	3.414
341	3 1/2	3.497	3.869	.334	3.539
342	3 5/8	3.622	3.994	.334	3.664
343	3 3/4	3.747	4.119	.334	3.789
344	3 7/8	3.872	4.244	.334	3.914
345	4	3.997	4.369	.334	4.039
346	4 1/8	4.122	4.494	.334	4.164
347	4 1/4	4.247	4.619	.334	4.289
348	4 3/8	4.372	4.744	.334	4.414
349	4 1/2	4.497	4.869	.334	4.539