SAE Aerospace
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AEROSPACE STANDARD

AS4088	REV. C

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Superseding AS4088B

Aerospace Rod Scraper Gland Design Standard

RATIONALE

This specification was created to define gland dimensions for rod scrapers originally using 1 backup width basic groove dimensions to MIL-G-5514F, later AS4716. The 1 backup width provides good part stability along with improved performance compared to the previous MS33678 standard. The significant differences between this standard and AS4716 are the clearance on the atmosphere side of the gland and the size range -104 thru -111 and -206 thru -209 have been extrapolated to provide larger cross section parts than AS4716 allowed.

1. SCOPE:

This SAE Aerospace Standard (AS) defines gland details 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.

The gland details herein provide more space than MS33675 and sufficient to fit more efficient and reliable excludion 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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org

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

2.2 U.S. Government Publications

Available from the Document Automation and Production Service (DAPS), Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, Tel: 215-697-6257, http://assist.daps.dla.mil/quicksearch/

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. Both these specifications are inactive for new design. The 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-cut. 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.

The gland details in this specification provide more axial space than MS 33675 groove widths and use width to length ratios essentially the same as one backup width grooves per AS4716 in order to enable more efficient and more stable scrapers to be provided. The atmosphere side of the gland is designed to provide sufficient retention for scrapers while allowing clearance to prevent contaminants becoming trapped.

Scraper configurations are not provided in this standard.

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. It should also be noted that hardware dimensions for dash sizes 206 through 209 are extrapolated from AS4716 dimensions.

Dash sizes 206 through 209 use the same rod diameters as dash sizes 112 through 115.

4.2 One backup gland width is defined for each rod diameter from 1/4 to 15-1/2 in, inclusive.

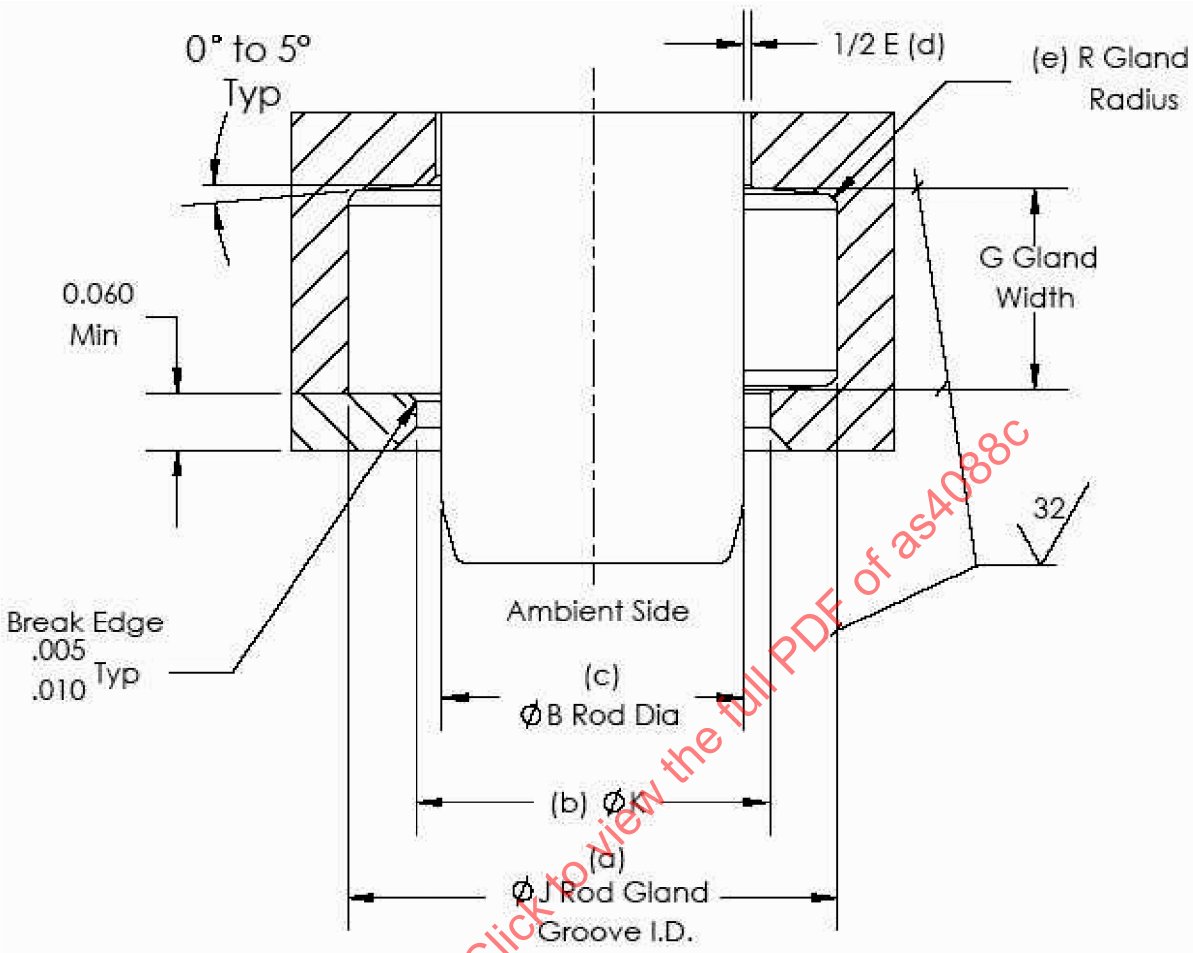
4.3 The glands covered in this standard are similar to AS4052 except this standard includes the smaller 100 and 200 series dash sizes.

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 (l) 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.



(a) Major Diameter J to be concentric with Rod Bushing Bore within .005 TIR
(b) Minor Diameter K to be concentric with Rod bushing Bore within .010 TIR
(c) Rod Diameter (B) frim AS4716
(d) Rod Clearance (E) from AS4716
(e) Groove Radius fro AS4716

TIR = Total Indicator Reading

FIGURE 1 - GLAND DESIGN, ROD SCRAPER, INSTALLATION

TABLE 1 - GLAND DIMENSIONS (REFER TO FIGURE 1)

TABLE 1A - DASH NO. 108 - 111 AND 206 - 222

Dash No. per AS568	Dash No. per MS33675 (for Reference only)	ϕB Rod Dia (c) Nominal (for Reference only)	ϕB Rod Dia (c) +.000 –.001	ϕJ Rod Gland Dia (a) +.001 –.000	G Gland Width +.010 –.000	ϕK Minor Dia (b) +.010 –.000
108	1/4	1/4	.248	.423	.183	.278
109	5/15	5/16	.310	.486	.183	.340
			+.000 –.002	+.002 –.000		
110	3/8	3/8	.373	.546	.183	.403
111	7/17	7/16	.435	.609	.183	.465
206	01	1/2	.498	.741	.235	.528
207	02	9/16	.560	.803	.235	.590
208	03	5/8	.623	.866	.235	.653
209	04	11/16	.685	.928	.235	.715
210	05	3/4	.748	.989	.235	.778
211	06	13/16	.810	1.051	.235	.852
212	07	7/8	.873	1.115	.235	.915
213	08	15/16	.935	1.177	.235	.977
214	09	1	.998	1.240	.235	1.040
215	10	1 1/16	1.060	1.302	.235	1.102
216	11	1 1/8	1.123	1.365	.235	1.165
217	12	1 3/16	1.185	1.427	.235	1.227
218	13	1 1/4	1.248	1.490	.235	1.290
219	14	1 5/16	1.310	1.552	.235	1.352
220	15	1 3/8	1.373	1.615	.235	1.415
221	16	1 7/16	1.435	1.677	.235	1.477
222	17	1 1/2	1.498	1.740	.235	1.540