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AEROSPACE STANDARD

SAE AS4052

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Submitted for recognition as an American National Standard

GLAND DESIGN: SCRAPER, LANDING GEAR, INSTALLATION

1. SCOPE:

This SAE Aerospace Standard (AS) covers an alternate gland design for the installation of scraper/wiper rings in the lower end of landing gear shock struts for the purpose of contaminant exclusion.

The defined scraper gland covered by this document, as shown in Table 1, is a variant of MIL-G-5514, the accepted gland standard for MS28775. Piston diameters, gland internal diameters, and the groove sidewall angles and surface finish are defined by MIL-G-5514, but the gland outer retaining wall diameter is changed.

AS4088 is similar to this document, but was developed by SAE A-6 for flight control and general purpose cylinders. It differs from this document primarily by the clearance between the rod (piston) and outer gland wall. Since landing gears are more susceptible to dirt contamination, the additional clearance provides a larger path to allow excessive dirt accumulation to exit the gland.

1.1 Purpose:

This document is intended to present an interface groove which will accommodate an improved scraper/assembly design and is not intended to obsolete MS33675.

- 1.1.1 Present Practice: Currently the most common scraper gland is an MS33675 which accepts either an MS28776 bronze scraper or a comparable TFE scraper. It has been noted that this arrangement is deficient in two aspects: the metal scraper ring is split, allowing contaminants to pass through and around it; and, being installed in a very abbreviated gland, the scraper frequently dislodges under conditions of shock strut deflection. An improved metal, plastic, or elastomeric endless scraper ring would require additional gland volume with greater retaining surfaces than specified by MS33675.

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ALL DIMENSIONS IN INCHES

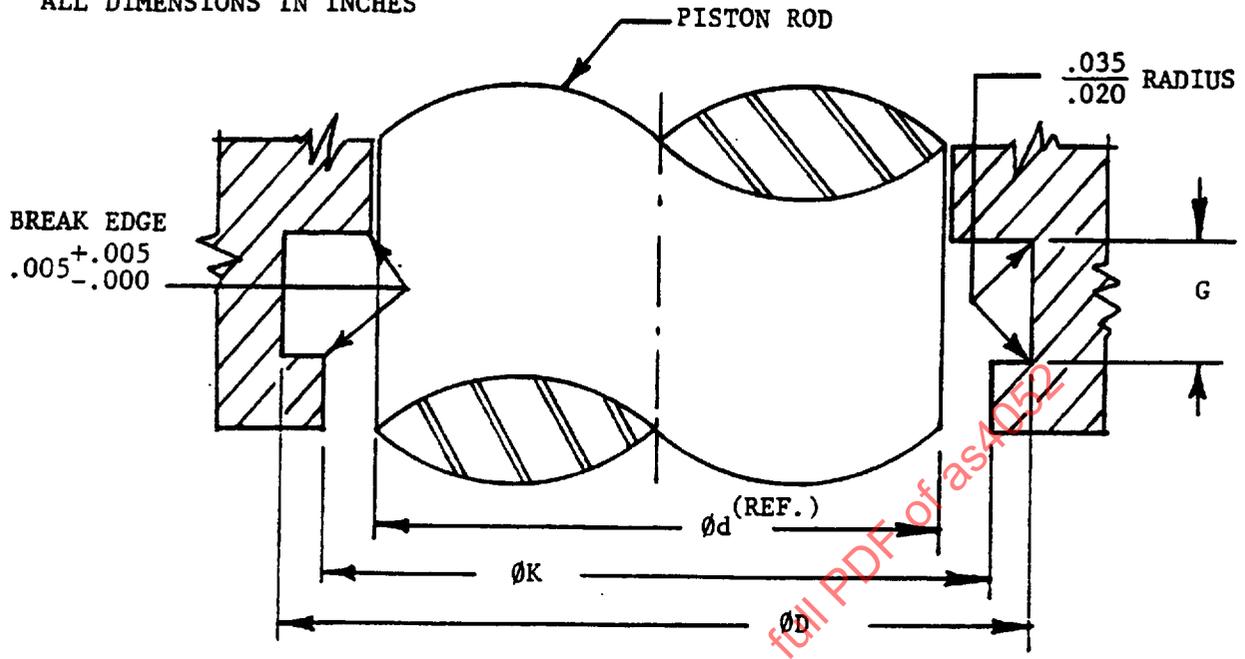


TABLE 1 - Gland Dimensional Information
All Dimensions in Inches

Gland Size Code Dash No.	Ød Piston OD Ref +0.000 -0.002	ØD Gland ID +0.002 -0.000	ØK Retaining Lip ID +0.010 -0.000	G Gland Length Type I	+0.010 -0.000 Type II
325	1.498	1.870	1.674	0.281	0.334
326	1.623	1.995	1.799	0.281	0.334
327	1.748	2.120	1.924	0.281	0.334
328	1.873	2.245	2.049	0.281	0.334
329	1.998	2.370	2.174	0.281	0.334
330	2.123	2.495	2.299	0.281	0.334
331	2.248	2.620	2.424	0.281	0.334
332	2.373	2.745	2.549	0.281	0.334
333	2.498	2.870	2.674	0.281	0.334
334	2.623	2.995	2.799	0.281	0.334
335	2.748	3.120	2.924	0.281	0.334
336	2.873	3.245	3.049	0.281	0.334
337	2.997	3.369	3.173	0.281	0.334
338	3.122	3.494	3.299	0.281	0.334
339	3.247	3.619	3.423	0.281	0.334
340	3.372	3.744	3.548	0.281	0.334
341	3.497	3.869	3.673	0.281	0.334
342	3.622	3.994	3.799	0.281	0.334
343	3.747	4.119	3.923	0.281	0.334
344	3.872	4.244	4.048	0.281	0.334
345	3.997	4.369	4.173	0.281	0.334
346	4.122	4.494	4.299	0.281	0.334
347	4.247	4.619	4.423	0.281	0.334
348	4.372	4.744	4.548	0.281	0.334
349	4.497	4.869	4.673	0.281	0.334

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TABLE 1 (Continued)

Gland Size Code Dash No.	ϕ d Piston OD Ref +0.000 -0.003	ϕ D Gland ID +0.003 -0.000	ϕ K Retaining Lip ID +0.010 -0.000	G Gland Length Type I	+0.010 -0.000 Type II
425	4.497	4.974	4.726	0.375	0.475
426	4.622	5.099	4.851	0.375	0.475
427	4.747	5.224	4.976	0.375	0.475
428	4.872	5.349	5.101	0.375	0.475
429	4.997	5.474	5.226	0.375	0.475
430	5.122	5.599	5.351	0.375	0.475
431	5.247	5.724	5.476	0.375	0.475
432	5.372	5.849	5.601	0.375	0.475
433	5.497	5.974	5.726	0.375	0.475
434	5.622	6.099	5.851	0.375	0.475
435	5.747	6.224	5.976	0.375	0.475
436	5.872	6.349	6.101	0.375	0.475
437	5.997	6.474	6.226	0.375	0.475
438	6.247	6.724	6.476	0.375	0.475
439	6.497	6.974	6.726	0.375	0.475
440	6.747	7.224	6.976	0.375	0.475
441	6.997	7.474	7.226	0.375	0.475
442	7.247	7.724	7.476	0.375	0.475
443	7.497	7.974	7.726	0.375	0.475
444	7.747	8.224	7.976	0.375	0.475
445	7.997	8.474	8.226	0.375	0.475
446	8.497	8.974	8.726	0.375	0.475
447	8.997	9.474	9.226	0.375	0.475
448	9.497	9.974	9.726	0.375	0.475
449	9.997	10.474	10.226	0.375	0.475
450	10.497	10.974	10.726	0.375	0.475
451	10.997	11.474	11.226	0.375	0.475
452	11.497	11.974	11.726	0.375	0.475
453	11.997	12.474	12.226	0.375	0.475
454	12.497	12.974	12.726	0.375	0.475
455	12.997	13.474	13.226	0.375	0.475
456	13.497	13.974	13.726	0.375	0.475
457	13.997	14.474	14.226	0.375	0.475
458	14.497	14.974	14.726	0.375	0.475
459	14.997	15.474	15.226	0.375	0.475
460	15.497	15.974	15.726	0.375	0.475

2. REFERENCES:

2.1 Applicable Documents:

The following documents shall form a part of this document to the extent specified herein:

- 2.1.1 SAE Publication: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS568 Aerospace Size Standard for O-rings