

LO-LOAD METAL SEALS

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"LO-LOAD" METAL SEALS

The "Lo'Load" metal seal is an accurately machined, heat treated seal specifically designed for low-flange loading. It was developed by the Aerospace Components Corporation of California and is now being manufactured and marketed under an exclusive license agreement with The Advanced Products Co., of North Haven, Conn. With the soft lead/indium plating all the seals performed well and in addition they can be resealed a couple of times. The main problem with this or any of the machined seals is the cost, which is about four times as expensive as the metal O-ring type of seal. Details of our laboratory tests are given below.

Six "Lo'Load" metal seals were originally ordered from the Aerospace Components Corp. Los Angeles, Calif. They were specifically designed by them for use in our standard 8 1/2 I.D. O-ring groove. The gaskets were silver plated. The first two gaskets leaked at sealing forces up to 850 lb/lin. inch of seal. The remaining seals were returned to Aerospace Corp. for replating. The silver was stripped off and the seals were plated with .0015" of lead followed with .0005" of indium. Under further tests all four seals were leak tight. Initial sealing force was 150 lb/lin.in. and with the gasket compressed to maximum groove depth the force increased to 850 lb/lin.in. (see Table I)

The above tests were made using stainless steel flanges having at least a 32 micro-inch finish. The gaskets were next tried on aluminum flanges. A standard cast aluminum valve from stock and a machined (32 micro-inch) aluminum flange were used as the test fixture. The standard bolting arrangement of eight (8) 3/8" screws were used to clamp the flange to the valve. Spacer blocks were used to limit the seal compression to the same depth previously used (0.201 inches). Three gaskets sealed at 0.201" height the remaining one seal at 0.200".

A gasket was next tried as a seal for an aluminum window. Of the four seals available, the one in the best condition, was chosen for this test. (No particular care had been taken to preserve the finish of the rings and they were now beginning to show scratches, dents, etc.). The window assembly used is shown in Figure 1. A seal was achieved when the gasket was compressed to a height of 0.200 inches.

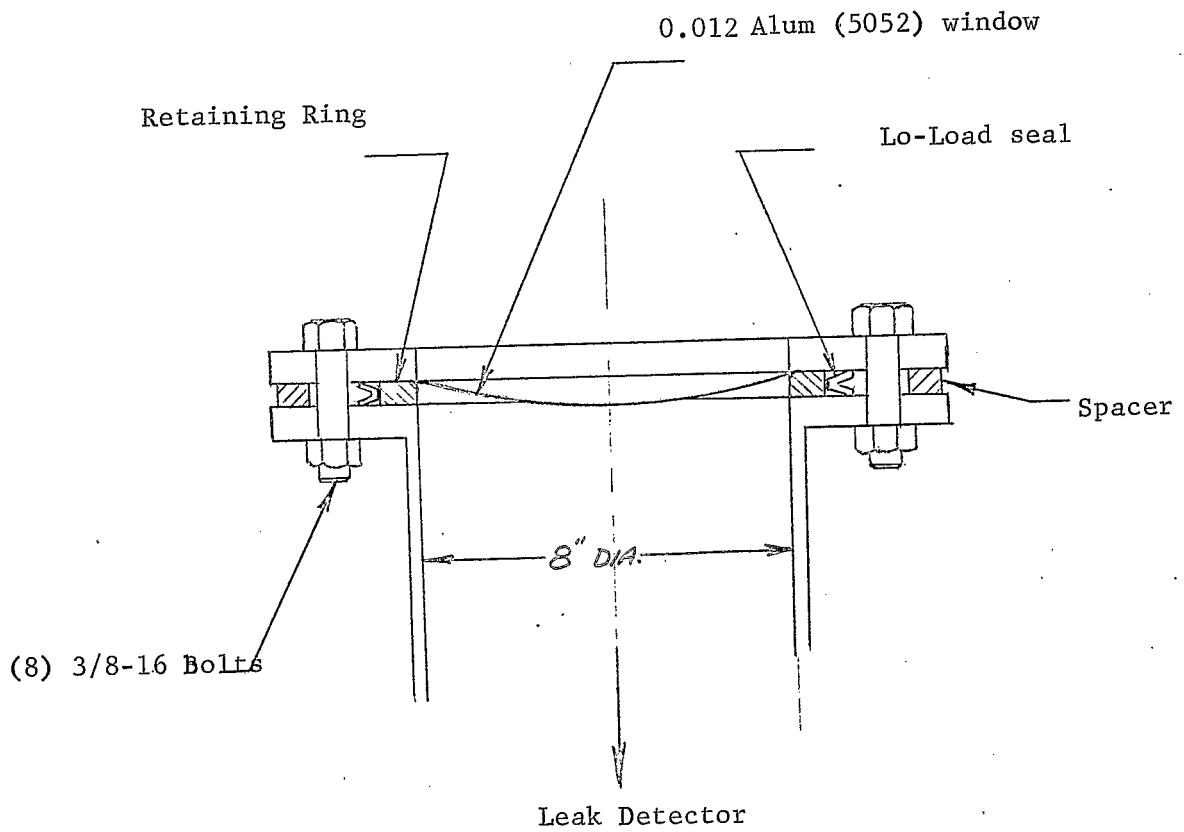


Fig. 1

TABLE I

TEST RESULTS

Seal Material and Size	Seal No.	Seal (Yes/No)	Sealing Force lb/lin.in.	Gasket Height(in.)		
				Free	Compressed	Released
Inconel X-750	1	No	580	(.227)	.220	-
Silver plate	2	No	865			
Inconel X-750	3	Yes	151	(.227)	.220	.227
Lead/Indium plate	3a	Yes	866	.227	.201	.205
	4	Yes	151	(.227)	.221	.226
	4a	Yes	700	.226	.201	.206
	5	Yes	175	(.227)	.221	.227
	5a	Yes	724	.227	.201	.206
	6	Yes	151	(.227)	.220	.227
	6a	Yes	840	.227	.201	.206

Note: 1. Letter "a" after seal number indicates reseal with same gasket.
 2. Parentheses indicate nominal free height, not actually measured.

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