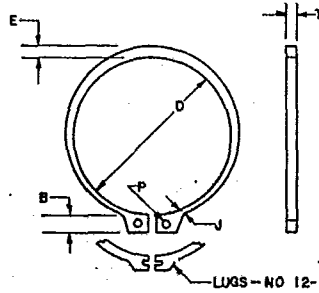


NATIONAL AEROSPACE STANDARD

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC., 1725 DE SALES STREET, N. W., WASHINGTON 6, D. C.

NAS 670 SUPERSEDES & IS INTERCHANGEABLE WITH NAS 51



LUGS--NO 12-23 INCL

MATERIAL: SIZES DASH 12 TO DASH 23 INCL. ONLY, BERYLLIUM COPPER PER QQ-C-533 CONDITION H. SIZES DASH 25 AND LARGER, STEEL PER FEDERAL STANDARD 66 NOS. 1066 THRU 1090.

HEAT TREAT:	DASH NOS.	ROCKWELL	DASH NOS.	ROCKWELL	DASH NOS.	ROCKWELL
	12-23	15N 79-82	50-81	30N 66-71	106-343	C47-52
	24-46	30N 69.5-73	87-102	C47-53	350 AND LARGER	C45-50

FINISH: UNPLATED: COAT WITH CORROSION PREVENTION COMPOUND, SPEC MIL-C-16173 GRADE 2 FOR UNIT PACKAGING OR GRADE 3 FOR BULK PACKAGING. SUFFIX "N" TO PART NUMBER. EXCEPT: RINGS -12 TO -23 INCLUSIVE, "N" SHALL MEAN NO PRESERVATIVE REQUIRED.

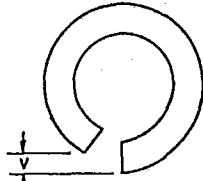
PHOSPHATE COATING: SPEC MIL-P-16232 TYPE II. SUFFIX "P" TO DASH NUMBER.

CADMIUM PLATE: SPEC QQ-P-416, TYPE II, CLASS 2, NO SUFFIX OR DASH NUMBER. THE REQUIREMENT OF MIL-S-5002, PROHIBITING ELECTRODEPOSITED CADMIUM PLATE ON STEEL HAVING A HARDNESS OF ROCKWELL C-46 OR HIGHER WITHOUT MILITARY APPROVAL, DOES NOT APPLY TO RETAINING RINGS OTHERWISE CONFORMING TO THE REQUIREMENTS OF THIS STANDARD.

TO ASSESS THE EFFECTIVENESS OF BAKING AFTER PLATING EACH LOT, DEFINED AS A GROUP OF RINGS OF ONE SIZE WHICH HAS BEEN HEAT TREATED, PLATED AND BAKED AS A UNIT SHALL BE TESTED AS FOLLOWS. MOUNT THE RINGS ONE AT A TIME ON TEST BARS WITH A DIAMETER OF NOMINAL SHAFT DIAMETER +1% AND HOLD FOR 4 HOURS. ANY FAILURE SHALL BE CAUSE FOR REJECTION OF THE LOT. SAMPLING SHALL BE AS SPECIFIED IN THE TABULATION BELOW.

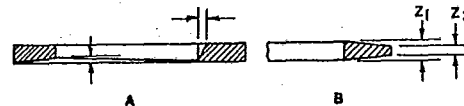
RING SIZE	SUSTAINED LOADING SAMPLING		
	UNDER SIZE (PGS)		
	1 TO 100	101 TO 300	301 AND UP
-25 TO -200	18	18	25
-206 AND LARGER	10	15	25

PART NUMBER NAS 670-231N: RING FOR 2.312 NOM. DIA. SHAFT, OILED OR GREASED ONLY, NO PLATING. DASH NUMBER INDICATES SHAFT NOM. DIA. IN HUNDRETHS.



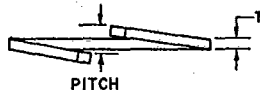
THE V DIMENSION SHALL NOT EXCEED THE VALUES IN TABLE.

DASH NO.	V (e)
-12 TO -75	.016
-78 TO -150	.031
-156 TO -250	.047
-256 TO -400	.078

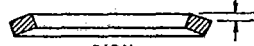


PARALLEL SECTION

CONDITION A, THE MAXIMUM VARIATION SHOULD NOT EXCEED TOTAL THICKNESS TOLERANCES FOR ALL RINGS. CONDITION B, Z₁ AND Z₂ MUST BE WITHIN THE THICKNESS TOLERANCES.



PITCH SHALL NOT EXCEED 2T



DISH SHALL NOT EXCEED .005 FOR -334 AND SMALLER AND .010 FOR SIZES GREATER THAN -334.



THE AXIAL KINK SHALL NOT EXCEED MINIMUM GROOVE WIDTH -.001.

ALL RINGS SHALL BE FREE FROM HANGING BURRS AND SLIVERS.

DASH NO.	X MAX (e)
-12 TO -46	.002
-50 TO -400	.003

UNACCEPTABLE ACCEPTABLE PROVIDED THE OVERALL THICKNESS OF THE UNPLATED RING DOES NOT EXCEED T MAX SHOWN ON SHEET 2. FOR PLATED RINGS -12 THROUGH -102, THE OVERALL THICKNESS OF THE RING SHALL NOT EXCEED W MIN -.0002 AND FOR -106 AND LARGER THE THICKNESS SHALL NOT EXCEED T MAX +.002. AFTER EXPANSION OVER A SHAFT 1% GREATER THAN NOMINAL SHAFT DIAMETER FIVE TIMES, THE RING FREE DIAMETER SHALL NOT EXCEED THE NOMINAL FREE RING DIAMETER PLUS 1%. THE RING SHALL SHOW NO EVIDENCE OF CRACKING AFTER EXPANSION OVER A SHAFT 1.15X FREE RING DIAMETER. RINGS USED FOR THE CRACK TEST SHALL BE DISCARDED AFTER THE TEST. A RING REMOVED FROM AN INSTALLATION MAY BE REUSED IF THE FREE DIAMETER IS NOT GREATER THAN THE MINIMUM GROOVE DIAMETER. SEE SHEET 3 FOR NOTE (c).

SEE SHEET 2 FOR RING DIMENSIONS & SHEETS 3 THROUGH 5 FOR DESIGN & INSTALLATION DATA.

(5)

ACTIVE SHEETS		
SHEET 1 REVISION 5	SHEET 3 REVISION 2	SHEET 5 REVISION 2
SHEET 2 REVISION 3	SHEET 4 REVISION 3	

INACTIVE FOR DESIGN AFTER 1 SEPTEMBER 1963, SEE DRAWING MSI6624. FOR DEFINITION OF DRAWING STATUS NOTES, SEE NAS380.

CUSTODIAN: NATIONAL AEROSPACE STANDARDS COMMITTEE

PROCUREMENT SPECIFICATION	TITLE	CLASSIFICATION
		STANDARD PART
NONE	RING-EXTERNAL RETAINER	NAS 670

NATIONAL AEROSPACE STANDARD

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC., 1725 DE SALES STREET, N. W., WASHINGTON 6, D. C.

RING DIMENSIONS

DASH NO.	FREE I.D.		THICKNESS		LUG DIM (g)		SECTION (g)		SECTION (g)		HOLE DIA.	
	D	TOL	T	TOL	B	TOL	J	TOL	E	TOL	P	TOL
12	.112		.010		.046		.011		.018		.026	
15	.142		.010	±.001	.054		.016	±.0015	.026	±.0015	.026	
18	.168		.015		.050		.016		.022		.026	
19	.179	±.002	.015		.056	±.002	.016		.026		.026	
21	.196	-.004	.015		.056		.017	±.002	.028	±.002	.026	
23	.215		.015		.056		.019		.030		.026	
25	.225		.025		.080		.025		.035		.041	
27	.250		.025		.081		.024		.035		.041	
28	.256		.025		.080		.0255		.038		.041	
31	.281		.025		.087		.026		.040		.041	
34	.309		.025		.087		.025		.040		.041	
35	.320		.025		.087		.029	±.003	.046	±.003	.041	
37	.338	±.002	.025		.088		.0305		.050		.041	
39	.354	-.005	.025		.087		.031		.052		.041	
40	.366		.025		.087	±.003	.033		.054		.041	
43	.395		.025		.088		.033		.055		.041	
46	.428		.025		.088		.035		.060		.041	
50	.461		.035		.108		.040		.065		.047	
55	.509		.035	±.002	.108		.036		.053		.047	
56	.521		.035		.108		.041		.072		.047	
59	.550		.035		.109		.043	±.004	.076	±.004	.047	
62	.579		.035		.110		.045		.080		.047	
66	.618		.035		.110		.043		.082		.047	
68	.635		.042		.136		.048		.084		.052	
75	.693	±.005	.042		.136		.051		.092		.052	
78	.722	-.010	.042		.136		.052		.094		.052	
81	.751		.042		.136		.054		.096		.052	
87	.810		.042		.137		.057	±.005	.104	±.005	.052	
93	.867		.042		.166		.063		.110		.078	
98	.910		.042		.167		.0645		.114		.078	
100	.925		.042		.167		.065		.116		.078	
102	.946		.042		.168		.066		.118		.078	
106	.982		.050		.181		.069		.122		.078	
112	1.041		.050		.182		.071		.128		.078	
118	1.098		.050		.182		.072		.132		.078	
125	1.156	±.010	.050		.183	±.004	.076		.140		.078	
131	1.214	-.015	.050		.183		.0765		.146		.078	
137	1.272		.050		.184		.082		.152		.078	
143	1.333		.050		.184		.086		.160		.078	
150	1.387		.050		.214		.091		.168		.120	
156	1.446		.062		.235		.093	±.006	.172	±.006	.125	
162	1.503		.062		.235		.097		.180		.125	
168	1.560		.062		.235		.099		.184		.125	
175	1.618	±.013	.062		.237		.101		.188		.125	
177	1.637	-.020	.062		.237		.102		.190		.125	
181	1.675		.062		.238		.102		.192		.125	
187	1.735		.062		.239		.104		.196		.125	
196	1.813		.062		.245		.106		.200		.125	
200	1.850		.062		.239		.108		.204		.125	
206	1.906		.078		.266		.111		.208		.125	
212	1.964		.078		.266		.113		.212		.125	
215	1.993		.078		.266		.113		.212		.125	
225	2.081	±.015	.078		.267		.116		.220		.125	
231	2.139	-.025	.078		.267		.118		.222		.125	
237	2.197		.078		.267		.119		.224		.125	
243	2.255		.078		.268		.120		.228		.125	
250	2.313		.078		.268		.122	±.007	.232	±.007	.125	
255	2.377		.078		.268		.125		.238		.125	
262	2.428		.078		.268		.127		.242		.125	
268	2.485		.078	±.003	.268		.129		.246		.125	
275	2.543		.093		.310		.131		.248		.125	
287	2.659		.093		.308		.133		.256		.125	
293	2.717		.093		.308		.136		.260		.125	
300	2.775		.093		.308	±.005	.138		.264		.125	
306	2.832		.093		.298		.131		.252		.125	
312	2.892		.093		.308		.141		.272		.125	
315	2.920		.093		.308		.143		.274		.125	
325	3.006	±.020	.093		.308		.145		.280		.125	
334	3.092	-.030	.093		.308		.147		.286		.125	
343	3.179		.093		.308		.148		.292		.125	
350	3.237		.109		.328		.148	±.008	.285	±.008	.125	
354	3.277		.109		.328		.149		.288		.125	
362	3.352		.109		.328		.153		.296		.125	
368	3.410		.109		.330		.156		.302		.125	
375	3.468		.109		.332		.160		.310		.125	
387	3.584		.109		.330		.163		.318		.125	
393	3.642		.109		.342		.163		.318		.125	
400	3.700		.109		.352		.163		.318		.125	

③ SEE SHEET 3 FOR NOTE (g).

INACTIVE FOR DESIGN AFTER 1 SEPTEMBER 1963, SEE DRAWING MSI6624.
FOR DEFINITION OF DRAWING STATUS NOTES, SEE NAS380.

CUSTODIAN: NATIONAL AEROSPACE STANDARDS COMMITTEE

PROCUREMENT
SPECIFICATION

NONE

TITLE

RING-EXTERNAL RETAINER

CLASSIFICATION
STANDARD PART

NAS670