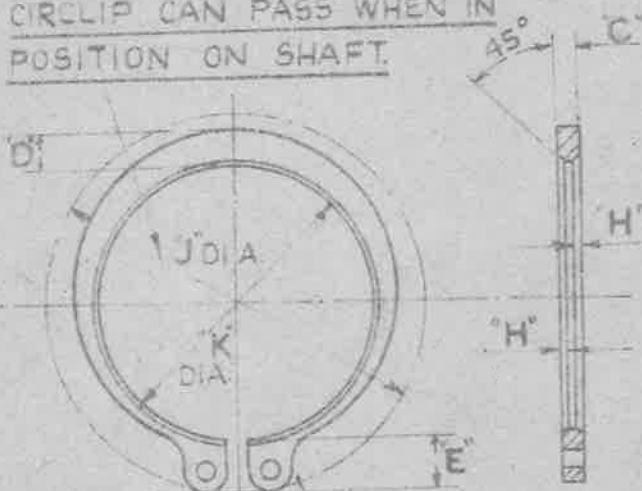


7 4 43  
7/STAND/53

DIMENSION THROUGH WHICH CIRCLIP CAN PASS WHEN IN POSITION ON SHAFT.

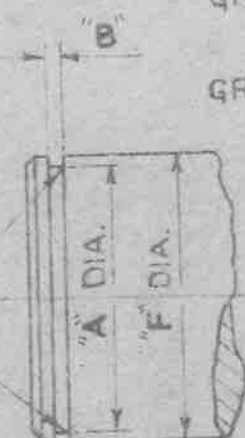


1/16  
0.000  
0.00

GRAIN FLOW BELOW 4 3/4" SIZE

GRAIN FLOW FOR 4 3/4" SIZE & OVER

GROOVE TO HAVE RADIUS IN BOTH BOTTOM CORNERS TO DIMENSION "R"



DATA & RECOMMENDATIONS FOR GROOVE IN SHAFT.

MATERIAL:- STEEL TO D.T.D. SPEC. 187 (LATEST ISSUE)

HARDNESS WITHIN RANGE 49-52 ROCKWELL C

PROTECTIVE TREATMENT:- PHOSPHATING BY ONE OF THE PROCESSES

IN D.T.D SPEC. 900 APPENDIX III (LATEST ISSUE)

TO BE FOLLOWED BY OILING. TO REMOVE THE EFFECTS

OF HYDROGEN EMBRITTLEMENT IT MAY BE NECESSARY

TO APPLY A LOW TEMPERATURE HEAT TREATMENT TO THE

PARTS. HEAT TREATMENT FOR NOT LESS THAN 1/2 HOUR

AT 150 - 200° C IS RECOMMENDED.

NOTE ① ALL BURRS TO BE REMOVED

② A.G.S MARK Nos ARE IDENTICAL WITH C.S.X. Nos FORMERLY USED.

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE...EXTERNAL CIRCLIPS AND GROOVES.		DRAWN C.T. Reynolds	TRACED B. Jones 21-8-47
	ISSUE No 1	1	CHECKED M. Moore	APPROVED A. R. 1/1/47
	ALTER No M50 AGG/519			

METHOD OF USING A.G.S. 2031.

- ① CIRCLIPS MUST BE CALLED UP AS A.G.S. 2031 MK.1 (SAY) OR MORE BRIEFLY A.G.S. 2031/1 THE MARK No BEING OBTAINED FROM COLUMN 1 OF TABLE.
- ② THE F DIAMETER IS GIVEN IN COLUMN 2 IN <sup>M</sup>/<sub>M</sub> FOR USE WHEN DESIGNS ARE BASED ON MILLIMETRES, AND IN COLUMN 3 IN INCH FRACTIONS WHEN DESIGNS ARE BASED ON INCHES.

COLUMN 4 GIVES THE DECIMAL INCHES EQUIVALENT OF THE CORRESPONDING F DIMENSION IN COLUMN 2 OR 3 AND IS THUS PURELY FOR CONVENIENCE - I.E. IT IS NOT A BASIC DIMENSION. COLUMNS 5 AND 6 ARE THE 'SIZE DESCRIPTIONS' EXTRACTED FROM SEEGER CIRCLIPS CATALOGUE WHICH WILL SUIT DIMENSION F. NOTE THAT THIS DOES NOT NECESSARILY CORRESPOND WITH COLUMN 2 OR 3 DIMENSION.

COLUMNS 7, 8, 9 AND 14 CONTAIN DATA FOR DESIGNERS USING A.G.S. CIRCLIPS. COLUMNS 10, 11, 12, 13 AND 15 CONTAIN THE ACTUAL DIMENSIONS OF A.G.S. CIRCLIPS AND ARE THE ONLY COLUMNS REQUIRED FOR THE INSPECTION OF CIRCLIPS CONFORMING TO THE A.G.S.

NOTE THAT DIMENSIONS A, B, D AND E HAVE A CONSTANT LIMIT THROUGHOUT THE RANGE OF SIZES AND R IS A MAXIMUM FOR ALL SIZES. DIMENSIONS C, H AND K HAVE LIMITS WHICH INCREASE IN STEPS AS THE CIRCLIP SIZES GET LARGER.

7. 4. 49  
7/STAND/53

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE: EXTERNAL CIRCLIPS AND GROOVES.				DRAWN C.T. Reynolds	TRACED S. J. Jones 25-8-47
	ISSUE NO	1	28		CHECKED J. Moore	APPROVED J. M. 27/8/53
	ALTERNATIVE NO		MOD. No A.G.S. / 619			

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

AGS. NO 2031

SHEET NO 3

NO OF SHEETS 12

7 + 1  
7/STAND/53

MARK NO	SHAFT DIA F		DECIMAL EQUIV. OF COL 2 & 3 INCHES	SEEGER CATALOGUE SIZES	GROOVE DIMENSIONS		C TOL	D ±.005	E ±.010	H TOL	J	K TOL	
	M/M	INCHES			A ±.005	B MIN							R MAX
1	12		.4724	12	.450	.033	.005	.0295 ±.0015	.065	.127	.006 ±.004	.724	.437 ±.010
2	13	1/2	.5000		.470	.043	.005	.0394 ±.0015	.065	.140	.006 ±.004	.770	.463 ±.010
3	13	33/64	.5118	13	.488	.043	.005	.0394 ±.0015	.053	.130	.006 ±.004	.768	.475 ±.010
3		17/32	.5156	13	.488	.043	.005	.0394 ±.0015	.053	.130	.006 ±.004	.768	.475 ±.010
4		35/64	.5312	14	.527	.043	.005	.0394 ±.0015	.059	.146	.006 ±.004	.839	.521 ±.010
4	14		.5469	14	.527	.043	.005	.0394 ±.0015	.059	.146	.006 ±.004	.839	.521 ±.010
4		9/16	.5512	14	.527	.043	.005	.0394 ±.0015	.059	.146	.006 ±.004	.839	.521 ±.010
4		37/64	.5625	14									
5	15		.5781										
5		19/32	.5906	15	.560	.043	.005	.0394 ±.0015	.073	.138	.006 ±.004	.856	.554 ±.010
5		39/64	.5937	15	.560	.043	.005	.0394 ±.0015	.073	.138	.006 ±.004	.856	.554 ±.010
6		5/8	.6094										
6	16		.6250		.591	.043	.005	.0394 ±.0015	.067	.163	.006 ±.004	.937	.582 ±.010
6		41/64	.6299		.591	.043	.005	.0394 ±.0015	.067	.163	.006 ±.004	.937	.582 ±.010
7	17		.6406										
7		21/32	.6562	17	.636	.043	.005	.0394 ±.0015	.069	.140	.006 ±.004	.936	.621 ±.010
7		43/64	.6693	17	.636	.043	.005	.0394 ±.0015	.069	.140	.006 ±.004	.936	.621 ±.010
7		11/16	.6719	17	.636	.043	.005	.0394 ±.0015	.069	.140	.006 ±.004	.936	.621 ±.010
7		45/64	.6875		.657	.043	.005	.0394 ±.0015	.069	.140	.006 ±.004	.936	.621 ±.010
11		23/32	.7031	18	.670	.051	.005	.0472 ±.0015	.079	.156	.006 ±.004	1.002	.661 ±.010
11	18		.7087	18	.670	.051	.005	.0472 ±.0015	.079	.156	.006 ±.004	1.002	.661 ±.010
11		47/64	.7187		.685	.051	.005	.0472 ±.0015	.079	.156	.006 ±.004	1.002	.661 ±.010
9	19		.7344	19	.709	.051	.005	.0472 ±.0015	.083	.168	.006 ±.004	1.065	.690 ±.010
9			.7480	19	.709	.051	.005	.0472 ±.0015	.083	.168	.006 ±.004	1.065	.690 ±.010

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES

DRAWN: C.T. Reynolds  
TRACED: 5-8-47

ISSUE NO: 1  
ALTERNATIVE NO: MOD AGS/519

CHECKED: [Signature]  
APPROVED: [Signature]

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

A.G.S. No 2031

SHEET No 4

No OF SHEETS

7.4.49  
7/STAND/52  
8x13

MARK	1	2	3	4	5	6	7		9	10	11	12	13	14	15	
							A	B								
No	M	M	INCHES	DECIMAL EQUIV. OF CCL 2 & 3 (INCHES)	SEEGER CATALOGUE SIZES		GROOVE DIMENSIONS		R MAX	C TOL	D ±.005	E ±.010	H TOL	J	K	TOL
					M	M	+0 -0.005	MIN								
9			3/4	.7500	19		.709	.051	.005	.0472 ±.0015	.083	.168	.006 ±.004	1.065	.690	±.0
8			49/64	.7656	20		.748	.051	.005	.0472 ±.0015	.087	.150	.006 ±.004	1.068	.728	±.0
8	20		25/32	.7812	20		.748	.051	.005	.0472 ±.0015	.087	.150	.006 ±.004	1.068	.728	±.0
10			51/64	.7969												
10			15/16	.8125		1 1/16	.780	.051	.005	.0472 ±.0015	.094	.151	.006 ±.004	1.102	.765	±.0
10	21			.8268	21		.787	.051	.005	.0472 ±.0015	.094	.151	.006 ±.004	1.109	.765	±.0
10			53/64	.8281	21		.787	.051	.005	.0472 ±.0015	.094	.151	.006 ±.004	1.109	.765	±.0
12			27/32	.8438												
12			35/64	.8594		7/8	.823	.051	.005	.0472 ±.0015	.095	.170	.006 ±.004	1.183	.804	±.0
12	22			.8661	22		.827	.051	.005	.0472 ±.0015	.095	.170	.006 ±.004	1.187	.804	±.0
12			7/8	.8750	22		.827	.051	.005	.0472 ±.0015	.095	.170	.006 ±.004	1.187	.804	±.0
			57/64	.8906												
				.9055												
		23	29/32	.9062												
14			59/64	.9219		15/16	.890	.051	.006	.0472 ±.0015	.097	.157	.008 ±.004	1.224	.872	±.0
14			15/16	.9375	24		.905	.051	.006	.0472 ±.0015	.097	.157	.008 ±.004	1.239	.872	±.0
14	24			.9449	24		.905	.051	.006	.0472 ±.0015	.097	.157	.008 ±.004	1.239	.872	±.0
14			61/64	.9531	24		.905	.051	.006	.0472 ±.0015	.097	.157	.008 ±.004	1.239	.872	±.0
16			31/32	.9687	25		.930	.051	.006	.0472 ±.0015	.102	.175	.008 ±.004	1.300	.910	±.0
16	25			.9843	25		.930	.051	.006	.0472 ±.0015	.102	.175	.008 ±.004	1.300	.910	±.0
16			63/64	.9844	25		.930	.051	.006	.0472 ±.0015	.102	.175	.008 ±.004	1.300	.910	±.0
18			1	1.0000		1	.941	.051	.006	.0472 ±.0015	.110	.169	.008 ±.004	1.299	.925	±.0
			1/64	1.0156												

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES  
 ISSUE No  
 ALTERN No

DRAWN  
 TRACED  
 CHECKED  
 APPROVED

AGS 619

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

AGS. No 2031

SHEET No 5

No OF SHEETS

7.4.49  
7/STAND/53

MARK	2	3	4	5	6	7	8		9	10	11	12	13	14	15
							A	B							
No	M/M	SHAFT DIA. INCHES	DECIMAL EQUIV. OF COL. 2 & 3 (INCHES)	M/M	SEEGER CATALOGUE SIZES INCHES	A +0 -0.005	GROOVE DIMENSIONS		R MAX.	C TOL	D ±.005	E ±.010	H TOL	J	K TOL
							A -0.005	B M/M							
20	26		1.0236	26		.984	.051	.006	.0472 ±.0015	.115	.197	.008	±.004	1.398	.950 ±.010
20		1/32	1.0312	26		.984	.051	.006	.0472 ±.0015	.115	.197	.008	±.004	1.398	.950 ±.010
22		3/64	1.0469			1.024	.051	.006	.0472 ±.0015	.110	.199	.008	±.004	1.442	.985 ±.010
22	27	1/16	1.0625	27		1.024	.051	.006	.0472 ±.0015	.110	.199	.008	±.004	1.442	.985 ±.010
24		5/64	1.0781			1.063	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.523	1.040 ±.010
24	28	3/32	1.0937	28		1.063	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.523	1.040 ±.010
24		7/64	1.1024	28		1.063	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.523	1.040 ±.010
24	28	1/8	1.1094	28		1.063	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.523	1.040 ±.010
24		9/64	1.1250	28		1.063	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.523	1.040 ±.010
24	29	1/8	1.1406	29		1.082	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.542	1.040 ±.010
24		5/32	1.1417	29		1.082	.063	.006	.0590 ±.0015	.116	.220	.008	±.004	1.542	1.040 ±.010
25		11/64	1.1562			1.122	.063	.006	.0590 ±.0015	.122	.194	.008	±.004	1.530	1.092 ±.010
25	30	1/4	1.1719	30		1.122	.063	.006	.0590 ±.0015	.122	.194	.008	±.004	1.530	1.092 ±.010
25		13/64	1.1811	30		1.122	.063	.006	.0590 ±.0015	.122	.194	.008	±.004	1.530	1.092 ±.010
25		15/64	1.1875		1 3/16	1.126	.063	.006	.0590 ±.0015	.122	.194	.008	±.004	1.534	1.092 ±.010
26		13/64	1.2031			1.177	.063	.006	.0590 ±.0015	.128	.199	.008	±.004	1.595	1.160 ±.010
26		1/32	1.2187		1/4	1.177	.063	.006	.0590 ±.0015	.128	.199	.008	±.004	1.595	1.160 ±.010
26		15/64	1.2344		1/4	1.177	.063	.006	.0590 ±.0015	.128	.199	.008	±.004	1.595	1.160 ±.010
26		1/4	1.2500		1/4	1.177	.063	.006	.0590 ±.0015	.128	.199	.008	±.004	1.595	1.160 ±.010
26		17/64	1.2656	32		1.201	.063	.006	.0590 ±.0015	.128	.199	.008	±.004	1.619	1.160 ±.010
23		9/32	1.2812	33		1.240	.063	.006	.0590 ±.0015	.132	.215	.008	±.004	1.690	1.210 ±.010
23		19/64	1.2969	33		1.240	.063	.006	.0590 ±.0015	.132	.215	.008	±.004	1.690	1.210 ±.010
27		1 5/16	1.3125		1 5/16	1.252	.063	.006	.0590 ±.0015	.138	.220	.008	±.004	1.712	1.236 ±.010

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE EXTERNAL CIRCLIPS & GROOVES		DRAWN C.T. Reynolds	TRACED G.E.M. 11-8-47
	ISSUE NO		CHECKED	APPROVED
	ALTERN NO			

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS. NO 2031

SHEET NO 6

NO OF SHEETS 12

MARK NO	SHAFT DIA F		DECIMAL EQUIV OF COL 2 & 3 (INCHES)	SEEGER CATALOGUE SIZES	GROOVE DIMENSIONS			C TOL	D <sup>+</sup> .005	E <sup>+</sup> .010	H TOL	J	K TOL
	M/M	INCHES			A <sup>+</sup> .005	B MIN	R MAX						
27		1 21/64	1.3281	1 5/16	1.252	.063	.006	.0590	.138	.220	.008	1.712	1.236
27		1 1/32	1.3437	34	1.280	.063	.006	.0590	.138	.220	.008	1.746	1.236
28		1 23/64	1.3594	3 3/8	1.315	.063	.006	.0590	.142	.241	.008	1.817	1.274
28		1 3/8	1.3750	3 3/8	1.315	.063	.006	.0590	.142	.241	.008	1.817	1.274
28	35		1.3780	35	1.319	.063	.006	.0590	.142	.241	.008	1.821	1.274
		1 25/64	1.3906										
		1 13/32	1.4062										
		1 27/64	1.4219										
		1 7/16	1.4375										
29		1 29/64	1.4531	1 1/2	1.413	.073	.006	.0690	.163	.256	.008	1.945	1.382
29		1 15/32	1.4687	1 1/2	1.413	.073	.006	.0690	.163	.256	.008	1.945	1.382
29		1 31/64	1.4844	1 1/2	1.413	.073	.006	.0690	.163	.256	.008	1.945	1.382
29		1 1/2	1.5000	1 1/2	1.413	.073	.006	.0690	.163	.256	.008	1.945	1.382
		1 33/64	1.5156										
		1 17/32	1.5312										
30		1 35/64	1.5469	40	1.504	.073	.006	.0690	.163	.219	.008	1.962	1.456
30		1 9/16	1.5625	40	1.504	.073	.006	.0690	.163	.219	.008	1.962	1.456
30	40		1.5748	40	1.504	.073	.006	.0690	.163	.219	.008	1.962	1.456
30		1 37/64	1.5781	40	1.504	.073	.006	.0690	.163	.219	.008	1.962	1.456
31		1 19/32	1.5937	41	1.543	.073	.006	.0690	.162	.238	.008	2.039	1.522
31		1 39/64	1.6094	41	1.543	.073	.006	.0690	.162	.238	.008	2.039	1.522
31		1 5/8	1.6250	41	1.559	.073	.006	.0690	.162	.238	.008	2.055	1.522
31		1 41/64	1.6406	42	1.559	.073	.006	.0690	.162	.238	.008	2.055	1.522
31		1 21/32	1.6562	42	1.575	.073	.006	.0690	.162	.238	.008	2.071	1.522

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES

DRAWN C.T. Reynolds

TRACED 11-8-47

ISSUE NO

CHECKED

APPROVED

ALTERN NO MOD NO AGS/619

*[Signature]*

*[Signature]* 27/10/47

8x13  
7/57/ND/53

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY  
 SHEET NO 7  
 NO OF SHEETS 12  
 A.G.S. NO 2031

7. + .49  
 7/STAND/53

MARK NO	SHAFT DIA F	DECIMAL EQUIV OF COL 2 & 3 (INCHES)	SEGER CATALOGUE SIZES	GROOVE DIMENSIONS			TOL	H	TOL	J	K	TOL	
				A +0 -0.005	B MIN	R MAX.							
33	1 45/64	1.6719	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 11/16	1.6875	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 45/64	1.7031	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 23/32	1.7187	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 47/64	1.7344	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 3/4	1.7500	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	1 49/64	1.7656	3/4	1.673	.073	.006	.0015	.181	.231	.008	2.155	1.630	±.004
33	45	1.7717	45	1.693	.073	.006	.0015	.181	.231	.008	2.175	1.630	±.004
19	1 25/32	1.7812	46	1.732	.073	.006	.0015	.185	.220	.008	2.192	1.690	±.004
19	1 51/64	1.7969	46	1.732	.073	.006	.0015	.185	.220	.008	2.192	1.690	±.004
19	1 13/16	1.8125	46	1.732	.073	.006	.0015	.185	.220	.008	2.192	1.690	±.004
34	1 53/64	1.8281	47	1.772	.073	.006	.0015	.188	.222	.008	2.236	1.745	±.004
34	1 27/32	1.8437	47	1.772	.073	.006	.0015	.188	.222	.008	2.236	1.745	±.004
34	1 55/64	1.8594	47	1.772	.073	.006	.0015	.188	.222	.008	2.236	1.745	±.004
34	1 7/8	1.8750	47	1.795	.073	.006	.0015	.188	.222	.008	2.259	1.745	±.004
21	1 29/32	1.9062	50	1.882	.085	.008	.002	.205	.257	.010	2.416	1.835	±.005
21	1 15/16	1.9375	50	1.882	.085	.008	.002	.205	.257	.010	2.416	1.835	±.005
21	1 31/32	1.9687	50	1.882	.085	.008	.002	.205	.257	.010	2.416	1.835	±.005
35	2	2.0000	2	1.913	.085	.008	.002	.187	.228	.010	2.389	1.867	±.005
32	2 1/32	2.0312	2 1/8	2.039	.085	.008	.002	.195	.256	.010	2.571	2.006	±.005
32	2 1/16	2.0625	2 1/8	2.039	.085	.008	.002	.195	.256	.010	2.571	2.006	±.005
32	2 3/32	2.0937	2 1/8	2.039	.085	.008	.002	.195	.256	.010	2.571	2.006	±.005
32	2 1/8	2.1250	2 1/8	2.039	.085	.008	.002	.195	.256	.010	2.571	2.006	±.005

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT  
 TITLE: EXTERNAL CIRCLIPS AND GROOVES  
 ISSUE NO: 1  
 ALTERN NO: 1  
 MOD. NO: 1  
 A.G.S. 619  
 DRAWN: C.T. Reynolds  
 TRACED: P.M.B. 12.8.47  
 CHECKED: [Signature]  
 APPROVED: [Signature]

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

A.G.S. No 2031

SHEET No 8

No OF SHEETS 12

CIRCLIP DIMENSIONS AND TOLERANCES

MARK NO	SHAFT DIA F	3	4	5	6	7		8		9	10	11	12	13	14	15
						A <sup>+0</sup>	B <sup>-0.005</sup>	R	C							
	M/M	INCHES	COL 2 & 3 OF (INCHES)	M/M	INCHES	A <sup>+0</sup>	B <sup>-0.005</sup>	R	C	D <sup>+0.005</sup>	E <sup>+0.010</sup>	H	TOL	J	K	TOL
36		2 5/32	2.1562	55		2.079	.085	.008	.0787	.193	.232	.010	±.005	2.563	2.040	±.020
36	55		2.1654	55		2.079	.085	.008	.0787	.193	.232	.010	±.005	2.563	2.040	±.020
36		2 3/16	2.1875		2 3/16	2.098	.085	.008	.0787	.193	.232	.010	±.005	2.582	2.040	±.020
37		2 7/32	2.2187		2 1/4	2.165	.085	.008	.0787	.226	.309	.010	±.005	2.803	2.080	±.020
37		2 1/4	2.2500		2 1/4	2.165	.085	.008	.0787	.226	.309	.010	±.005	2.803	2.080	±.020
38		2 9/32	2.2812													
38		2 5/16	2.3125	60		2.264	.085	.008	.0787	.221	.256	.010	±.005	2.796	2.230	±.020
38		2 11/32	2.3437	60		2.264	.085	.008	.0787	.221	.256	.010	±.005	2.796	2.230	±.020
38	60		2.3622	60		2.264	.085	.008	.0787	.221	.256	.010	±.005	2.796	2.230	±.020
38		2 3/8	2.3750		2 3/8	2.276	.085	.008	.0787	.221	.256	.010	±.005	2.808	2.230	±.020
40		2 13/32	2.4062													
40		2 7/16	2.4375	63		2.382	.085	.008	.0787	.236	.251	.010	±.005	2.904	2.357	±.020
40		2 15/32	2.4687	63		2.382	.085	.008	.0787	.236	.251	.010	±.005	2.904	2.357	±.020
40		2 1/2	2.5000		2 1/2	2.402	.085	.008	.0787	.236	.251	.010	±.005	2.924	2.357	±.020
42		2 17/32	2.5312	65		2.461	.104	.010	.0984	.244	.290	.015	±.005	3.061	2.416	±.020
42	65		2.5591	65		2.461	.104	.010	.0984	.244	.290	.015	±.005	3.061	2.416	±.020
42		2 9/16	2.5625		2 9/16	2.461	.104	.010	.0984	.244	.290	.015	±.005	3.061	2.416	±.020
		2 19/32	2.5937													
		2 5/8	2.6250													
		2 21/32	2.6562													
		2 11/16	2.6875													
46		2 23/32	2.7187		2 3/4	2.649	.104	.010	.0984	.276	.290	.015	±.005	3.249	2.612	±.020
46		2 3/4	2.7500		2 3/4	2.649	.104	.010	.0984	.276	.290	.015	±.005	3.249	2.612	±.020
46	70		2.7559	70		2.657	.104	.010	.0984	.276	.290	.015	±.005	3.257	2.612	±.020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE		DRAWN	TRACED
	EXTERNAL CIRCLIPS & GROOVES		C.T. Reynolds	11-8-47
	ISSUE NO	1	CHECKED	APPROVED
ALTERN NO	MOD NO 455/6/3			



TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

AGS. NO 2031

SHEET NO 9

NO OF SHEETS 12

CIRCLIP DIMENSIONS AND TOLERANCES

1 MARK NO	2 SHAFT DIA F M/M	3 INCHES	4 DECIMAL EQUIV OF COL 2 & 3 INCHES	5 SEEGER CATALOGUE SIZES M/M	6 INCHES	7 GROOVE DIMENSIONS		9 R MAX	10 C TOL	11 D ±.005	12 E ±.010	13 H TOL	14 J	15 K TOL
						A +.005	B MIN							
49		2 25/32	2.7812		2 15/16	2.835	.104	.010	.0984 ±.002	.283	.315	.015	3.485	2.788 ±.020
49		2 13/16	2.8125		2 15/16	2.835	.104	.010	.0984 ±.002	.283	.315	.015	3.485	2.788 ±.020
49	75	2 27/32	2.8437			2.846	.104	.010	.0984 ±.002	.283	.315	.015	3.496	2.788 ±.020
50		2 7/8	2.8750	75										
50		2 29/32	2.9062			2.886	.104	.010	.0984 ±.002	.293	.340	.015	3.586	2.850 ±.020
50		2 15/16	2.9375	76		2.886	.104	.010	.0984 ±.002	.293	.340	.015	3.586	2.850 ±.020
		2 31/32	2.9687		3	2.894	.104	.010	.0984 ±.002	.293	.340	.015	3.594	2.850 ±.020
		3	3.0000											
		3 1/32	3.0312											
		3 1/16	3.0625											
53		3 3/32	3.0937		3 1/8	3.016	.104	.010	.0984 ±.002	.287	.276	.015	3.600	2.986 ±.020
53		3 1/8	3.1250		3 1/8	3.016	.104	.010	.0984 ±.002	.287	.276	.015	3.600	2.986 ±.020
53	80		3.1496	80		3.043	.104	.010	.0984 ±.002	.287	.276	.015	3.627	2.986 ±.020
53		3 5/32	3.1562	80		3.043	.104	.010	.0984 ±.002	.287	.276	.015	3.627	2.986 ±.020
54		3 5/16	3.1875	82		3.122	.104	.010	.0984 ±.002	.287	.283	.015	3.708	3.088 ±.020
54		3 7/32	3.2187	82		3.122	.104	.010	.0984 ±.002	.287	.283	.015	3.708	3.088 ±.020
54		3 1/4	3.2500		3 1/4	3.142	.104	.010	.0984 ±.002	.287	.283	.015	3.728	3.088 ±.020
58		3 5/16	3.3125	85		3.240	.124	.015	.1180 ±.002	.297	.276	.020	3.844	3.199 ±.020
58	85		3.3465	85		3.240	.124	.015	.1180 ±.002	.297	.276	.020	3.844	3.199 ±.020
58		3 3/8	3.3750		3 3/8	3.268	.124	.015	.1180 ±.002	.297	.276	.020	3.872	3.199 ±.020
		3 7/16	3.4375											
59		3 1/2	3.5000		3 1/2	3.394	.124	.015	.1180 ±.002	.301	.276	.020	4.006	3.345 ±.020
59	90		3.5433	90		3.425	.124	.015	.1180 ±.002	.301	.276	.020	4.037	3.345 ±.020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE: EXTERNAL CIRCLIPS & GROOVES		DRAWN C.T.Reynolds	TRACED 13-B-47
	ISSUE NO	ALTER NO	CHECKED	APPROVED

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY A.G.S. No 2031

SHEET No 10 No OF SHEETS 12

MARK	2	3	4	5	6	7	8		9	10	11	12	13	14	15		
							GROOVE DIMENSIONS										
No	SHAFT DIA. F	INCHES	DECIMAL EQUIV OF COL 283 (INCHES)	SEEGER CATALOGUE SIZES	INCHES	A <sup>+0</sup> - .005	B <sup>+0</sup> - .005	MIN	R MAX	C	D <sup>+0.005</sup> - .010	E <sup>+0.010</sup>	H	TOL	J	K	TOL
	M/M																
60		3 1/16	3.5625	95		3.622	.124	.015		.1180 ± .002	.305	.285	.020 ± .005		4.242	3.572 ± .030	
60	95	3 5/8	3.6250	95		3.622	.124	.015		.1180 ± .002	.305	.285	.020 ± .005		4.242	3.572 ± .030	
60		3 1/16	3.6875	95	3 3/4	3.634	.124	.015		.1180 ± .002	.305	.285	.020 ± .005		4.254	3.572 ± .030	
61		3 13/16	3.8125	97	3 7/8	3.701	.124	.015		.1180 ± .002	.315	.285	.020 ± .005		4.341	3.651 ± .030	
61		3 7/8	3.8750			3.756	.124	.015		.1180 ± .002	.315	.285	.020 ± .005		4.396	3.651 ± .030	
62	100	3 15/16	3.9370	100		3.819	.124	.015		.1180 ± .002	.317	.305	.020 ± .005		4.463	3.770 ± .030	
62		4	4.0000		4	3.882	.124	.015		.1180 ± .002	.317	.305	.020 ± .005		4.463	3.770 ± .030	
63		4 1/16	4.0625	104		3.937	.163	.015		.1575 ± .002	.315	.295	.020 ± .005		4.526	3.770 ± .030	
63	105	4 1/8	4.1250		4 1/8	3.965	.163	.015		.1575 ± .002	.315	.295	.020 ± .005		4.577	3.907 ± .030	
63			4.1339	105		3.976	.163	.015		.1575 ± .002	.315	.295	.020 ± .005		4.605	3.907 ± .030	
64		4 3/16	4.1875	106		4.016	.163	.015		.1575 ± .002	.323	.295	.020 ± .005		4.616	3.907 ± .030	
64		4 1/4	4.2500		4 1/4	4.094	.163	.015		.1575 ± .002	.323	.295	.020 ± .005		4.672	3.986 ± .030	
65		4 5/16	4.3125	110		4.173	.163	.015		.1575 ± .002	.335	.295	.020 ± .005		4.750	3.986 ± .030	
65	110		4.3307	110		4.173	.163	.015		.1575 ± .002	.335	.295	.020 ± .005		4.853	4.144 ± .030	
65		4 3/8	4.3750		4 3/8	4.213	.163	.015		.1575 ± .002	.335	.295	.020 ± .005		4.853	4.144 ± .030	
66		4 7/16	4.4375	114		4.330	.163	.015		.1575 ± .002	.354	.217	.020 ± .005		5.048	4.301 ± .030	
66		4 1/2	4.5000		4 1/2	4.343	.163	.015		.1575 ± .002	.354	.217	.020 ± .005		5.061	4.301 ± .030	
66	115		4.5276	115		4.370	.163	.015		.1575 ± .002	.354	.217	.020 ± .005		5.088	4.301 ± .030	
66		4 9/16	4.5625	116		4.409	.163	.015		.1575 ± .002	.354	.217	.020 ± .005		5.127	4.301 ± .030	
67		4 11/16	4.6875	120		4.567	.163	.015		.1575 ± .002	.354	.217	.020 ± .005		5.285	4.537 ± .030	

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES

DRAWN: C.T. Reynolds TRACED: L.K.R.

ISSUE No

CHECKED APPROVED

ALTERN No

Mod. No AGS/819

*[Signatures]*

(P)

8x13

7 + 49  
2/STAND/53

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS. No 2031

SHEET No 11

No OF SHEETS 12

7. 4. 43  
7/STAND/53

1 MARK No	2 SHAFT DIA F M	3 INCHES	4 DECIMAL EQUIV OF COL 2 & 3 (INCHES)	5 SEGER CATALOGUE SIZES M/M	6 INCHES	7 GROOVE DIMENSIONS			10 C TOL	11 D <sup>+0.005</sup> E <sup>±0.010</sup>	12 H TOL	13 J TOL	14 K TOL				
						A <sup>+0</sup> -0.005	B MIN	R MAX									
67	120		4.7244	120		4.567	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.285	4.537	±.030
67		4 3/4	4.7500		4 3/4	4.591	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.309	4.537	±.030
67		4 13/16	4.8125	122		4.646	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.364	4.537	±.030
68		4 7/8	4.8750	125		4.764	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.482	4.734	±.030
68	125		4.9213	125		4.764	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.482	4.734	±.030
68		4 15/16	4.9375	125		4.764	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.482	4.734	±.030
68		5	5.0000		5	4.843	.163	.015	.1575	±.002	.354	.217	.020	±.005	5.561	4.734	±.030
69		5 1/16	5.0625	130		4.961	.163	.015	.1575	±.002	.374	.217	.020	±.005	5.719	4.931	±.030
69	130		5.1181	130		4.961	.163	.015	.1575	±.002	.374	.217	.020	±.005	5.719	4.931	±.030
69		5 1/8	5.1250		5 1/8	4.968	.163	.015	.1575	±.002	.374	.217	.020	±.005	5.726	4.931	±.030
69		5 3/16	5.1875	132		5.039	.163	.015	.1575	±.002	.374	.217	.020	±.005	5.797	4.931	±.030
70		5 1/4	5.2500		5 1/4	5.091	.163	.015	.1575	±.002	.394	.236	.020	±.005	5.889	5.049	±.030
70		5 5/16	5.3125	135		5.157	.163	.015	.1575	±.002	.394	.236	.020	±.005	5.955	5.049	±.030
70	135		5.3150	135		5.157	.163	.015	.1575	±.002	.394	.236	.020	±.005	5.955	5.049	±.030
71		5 3/8	5.3750		5 1/2	5.343	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.141	5.313	±.030
71		5 7/16	5.4375		5 1/2	5.343	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.141	5.313	±.030
71	140		5.5000		5 1/2	5.354	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.152	5.313	±.030
71		5 9/16	5.5118	140		5.394	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.192	5.313	±.030
71		5 5/8	5.5625	141		5.394	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.192	5.313	±.030
71		5 11/16	5.6250														
72		5 1/16	5.6875	145		5.551	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.349	5.522	±.030
72	145		5.7087	145		5.551	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.349	5.522	±.030
72		5 3/4	5.7500		5 3/4	5.591	.163	.015	.1575	±.002	.394	.236	.020	±.005	6.389	5.522	±.030
74		5 13/16	5.8125	148		5.669	.163	.015	.1575	±.002	.354	.197	.020	±.005	6.387	5.601	±.030

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES

DRAWN C.T. Reynolds

TRACED 15-8-47

ISSUE No 1  
ALTERNATIVE MOD No 1  
AGS/6/3

CHECKED APPROVED

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

AGS. NO 2031

SHEET NO 12

NO OF SHEETS 12

7.4.43  
7/5 STAND/53

MARK	2		3	4	5	6	7			8			9	10	11	12	13	14	15
	No.	M					SHAFT DIA F	DECIMAL EQUIV OF	SEEGER CATALOGUE SIZES	GROOVE DIMENSIONS	A	B							
		M	INCHES	COL 2 & 3 (INCHES)	M/M	INCHES	+0 --005	MIN	MAX	TOL	+0 -005	+0 -010	TOL	TOL	TOL	TOL	TOL	TOL	TOL
86		150	5 7/8	5.8750	150		5.709	.163	.015	.1575	±.002	.384	.246	.020	±.005	.6487	5.659	±.030	
86		150		5.9055	150		5.709	.163	.015	.1575	±.002	.384	.246	.020	±.005	.6487	5.659	±.030	
86			5 15/16	5.9375	151		5.748	.163	.015	.1575	±.002	.384	.246	.020	±.005	.6526	5.659	±.030	
73			6	6.0000		6	5.803	.163	.015	.1575	±.002	.384	.246	.020	±.005	.6581	5.738	±.030	

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: EXTERNAL CIRCLIPS & GROOVES

DRAWN: C.T. Reynolds  
TRACED: 15-8-47

ISSUE NO  
ALTERNATIVE

MOD AGS/63

CHECKED: [Signature]  
APPROVED: [Signature]