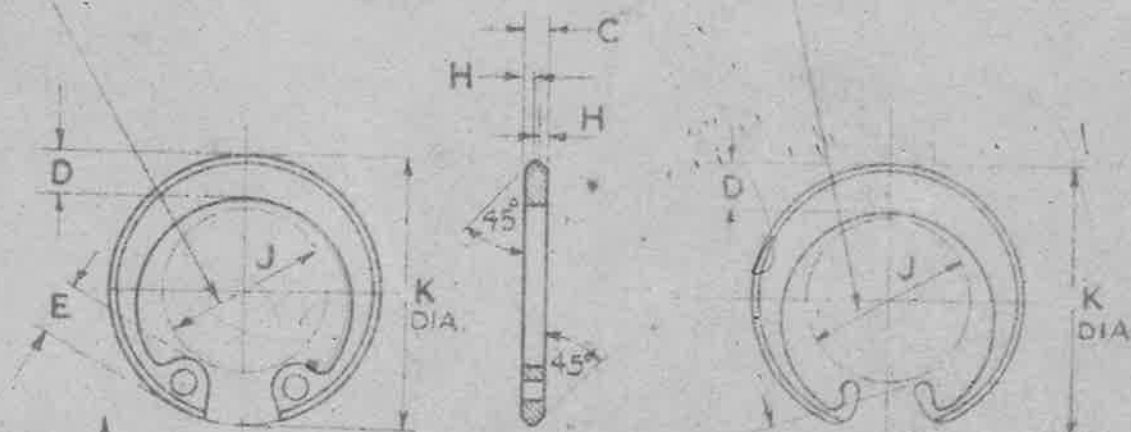



7 4 49
7/STAND/43

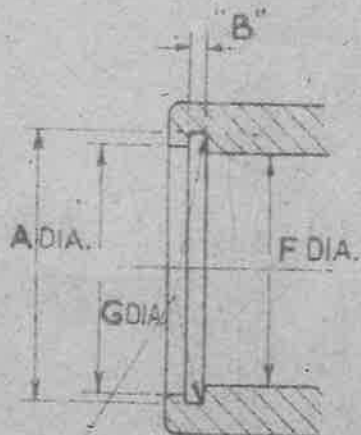
MAXIMUM DIAMETER OVER WHICH CIRCLIP WILL PASS WHEN IN POSITION IN GROOVE.



GRAIN FLOW  BELOW 5" SIZE

GRAIN FLOW  FOR 5" SIZE & OVER.

FOR MARK NO 1. ONLY.



SD M/M - 57
23 - 22
1010 - 005
01 - 000

DATA & RECOMMENDATIONS FOR GROOVE IN HOUSING.

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

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.I. NOS FORMERLY USED.

ISSUED BY THE, ROYAL AIRCRAFT ESTABLISHMENT	TITLE - INTERNAL CIRCLIPS AND GROOVES				DRAWN J.T. Reynolds	TRACED A. Janet 21-8-67
	ISSUE NO	1	2	3	CHECKED	APPROVED
	ALTERN NO	MOD A.G.S. 7/5			<i>[Signature]</i>	<i>[Signature]</i>

P

8x3

MINISTRY OF SUPPLY

AGS. No 2030

SHEET No 2

No OF SHEETS 12

METHOD OF USING AGS 2030.

- ① CIRCLIPS MUST BE CALLED UP AS AGS 2030 MK.7 (SAY) OR MORE BRIEFLY AGS 2030/7 THE MARK No BEING OBTAINED FROM COLUMN 1 OF TABLE.
- ② THE F DIAMETER IS GIVEN IN COLUMN 2 IN ^M 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 & 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, 10 & 15 CONTAIN DATA FOR DESIGNERS USING AGS CIRCLIPS. COLUMNS 11, 12, 13, 14 & 16 CONTAIN THE ACTUAL DIMENSIONS OF AGS CIRCLIPS AND ARE THE ONLY COLUMNS REQUIRED FOR THE INSPECTION OF CIRCLIPS AS CONFORMING TO THE AGS. NOTE THAT DIMENSIONS A B G D & E HAVE A CONSTANT LIMIT THROUGHOUT THE RANGE OF SIZES & R IS A MAXIMUM FOR ALL SIZES. DIMENSIONS C H & K HAVE LIMITS WHICH INCREASE IN STEPS AS THE CIRCLIP SIZES GET LARGER.

20

7 + 43
7/STAND/53

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE:- INTERNAL CIRCLIPS AND GROOVES				DRAWN G.T. Parsons	TRACED R. Gault 22 8 47
	ISSUE NO	1 75			CHECKED	APPROVED
	ALTERNATIVE	1200 117 AGS 7 419			<i>[Signature]</i>	<i>[Signature]</i>

7.4.49
7 STAND/53

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

A.G.S. No 2030

SHEET No 3

No OF SHEETS 12

MARK	No	2 MAIN BORE F		3 DECIMAL EQUIV OF (INCHES)	4 SEEGER CATALOGUE SIZES M/M	5 DIA G ^{+0.005} -0	8 GROOVE DIMENSIONS		9 A ^{+0.005} -0	10 B MIN	11 R MAX	12 C TOL	13 D ^{+0.005} -0	14 E ^{+0.010} -0	15 H TOL	16 J	K TOL
		M/M	INCHES				A ^{+0.005} -0	B MIN									
1	1	27/64	4.219	7/16	12	.437	.461	.024	.005	.037	.047	.150	.006	.138	.467	.010	
2	2	7/16	4.375		12	.472	.500	.043	.005	.039	.047	.144	.006	.192	.508	.010	
2	2	23/64	4.531		12	.472	.500	.043	.005	.039	.047	.144	.006	.192	.508	.010	
2	2	15/32	4.687		12	.472	.500	.043	.005	.039	.047	.144	.006	.192	.508	.010	
3	3	31/64	4.844	1/2		.500	.528	.043	.005	.039	.050	.130	.006	.245	.536	.010	
4	4	1/2	5.000		13	.512	.539	.043	.005	.039	.054	.133	.006	.253	.547	.010	
7	7	33/64	5.156		14	.551	.579	.043	.005	.039	.061	.153	.006	.253	.589	.010	
7	7	17/32	5.312		14	.551	.579	.043	.005	.039	.061	.153	.006	.253	.589	.010	
7	7	35/64	5.469		14	.552	.579	.043	.005	.039	.061	.153	.006	.253	.589	.010	
9	9	9/16	5.625		15	.591	.618	.043	.005	.039	.058	.121	.006	.356	.635	.010	
9	9	37/64	5.781		15	.591	.618	.043	.005	.039	.058	.121	.006	.356	.635	.010	
5	5	19/32	5.937	5/8		.625	.658	.043	.005	.039	.065	.156	.006	.326	.676	.010	
5	5	39/64	6.094	5/8		.625	.658	.043	.005	.039	.065	.156	.006	.326	.676	.010	
5	5	5/8	6.250		16	.630	.658	.043	.005	.039	.065	.156	.006	.326	.676	.010	
6	6	41/64	6.299	41/64		.641	.673	.043	.005	.039	.063	.150	.006	.353	.683	.010	
10	10	41/64	6.406		17	.669	.705	.043	.005	.039	.067	.157	.006	.371	.719	.010	
10	10	21/32	6.562		17	.669	.705	.043	.005	.039	.067	.157	.006	.371	.719	.010	
16	16	43/64	6.719	11/16		.687	.724	.043	.005	.039	.069	.157	.006	.390	.734	.010	
11	11	11/16	6.875		18	.709	.748	.043	.005	.039	.072	.152	.006	.424	.761	.010	
11	11	45/64	7.031		18	.709	.748	.043	.005	.039	.072	.152	.006	.424	.761	.010	
13	13	23/32	7.187	47/64		.734	.772	.043	.005	.039	.078	.165	.006	.422	.790	.010	
14	14	47/64	7.344		19	.748	.787	.043	.005	.039	.079	.164	.006	.439	.802	.010	
14	14	3/4	7.490			.753	.787	.043	.005	.039	.079	.164	.006	.439	.802	.010	
147	147	3/4	7.500	23/32		.781	.827	.043	.005	.039	.081	.168	.006	.471	.841	.010	

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES
 ISSUE No
 ALTERN No

DRAWN: CT 14-0045
 CHECKED: [Signature]
 TRACED: [Signature]
 APPROVED: [Signature]

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS. NO 2030

SHEET NO 4

NO OF SHEETS 12

7 + 49
7/STAND/53

MARK	2	3	4	5	6	7	8		10	CIRCLIP DIMENSIONS AND TOLERANCES		13	14	15	16		
							A	B		C	D					E	H
NE	M/M	F	INCHES	DECIMAL EQUIV (INCHES)	M/M	SEEGER CATALOGUE SIZES	DIA	A	B	R	TOL	D	E	H	J	K	TOL
147		49/64	7656		25/32	781	827	043	005	0394	0015	081	168	006	1471	841	010
15		25/32	7812	20	13/16	787	831	043	005	0394	0015	089	172	006	1467	849	010
17		51/64	7963			812	854	043	005	0394	0015	077	169	006	1496	869	010
18		13/16	8125	21		827	870	043	005	0394	0015	089	177	006	1496	885	010
35	21		8268		55/64	859	902	043	005	0394	0015	094	168	006	1546	916	010
35		53/64	8281		55/64	859	902	043	005	0394	0015	094	168	006	1546	916	010
35		27/32	8437		53/64	859	902	043	005	0394	0015	094	168	006	1546	916	010
20		55/64	8594	22		866	910	043	005	0394	0015	096	171	006	1548	924	010
21	22	7/8	8661			875	917	043	005	0394	0015	099	174	006	1549	932	010
22		57/64	8750	23		906	949	043	005	0394	0015	094	165	006	1599	978	010
22		29/32	8906	23		906	949	043	005	0394	0015	094	165	006	1599	978	010
24		59/64	9062		15/16	937	984	051	006	0472	0015	094	195	008	1574	1005	010
24		15/16	9219		15/16	937	984	051	006	0472	0015	094	195	008	1574	1005	010
24		61/64	9375	24		945	988	051	006	0472	0015	094	195	008	1578	1005	010
31	24		9443	25		984	1032	051	006	0472	0015	094	189	008	1634	1050	010
31		31/32	9531	25		984	1032	051	006	0472	0015	094	189	008	1634	1050	010
31		63/64	9587	25		984	1032	051	006	0472	0015	094	189	008	1634	1050	010
32		1	9844	26		1000	1047	051	006	0472	0015	096	195	008	1657	1065	010
29		1/64	10000	26		1024	1071	051	006	0472	0015	110	203	008	1675	1082	010
29		1/64	10156	26		1024	1071	051	006	0472	0015	110	203	008	1675	1082	010
33	26		10236		1/6	1062	1114	051	006	0472	0015	110	190	008	1714	1133	010
33		1/32	10312		1/6	1062	1114	051	006	0472	0015	110	190	008	1714	1133	010
33		1/64	10469		1/6	1062	1114	051	006	0472	0015	110	190	008	1714	1133	010
34		1/6	10522		1/32	1094	1146	051	006	0472	0015	113	194	008	1735	1175	010

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES
 ISSUE NO: 1
 ALTERNING NO: MOD 215-2
 165/613

DRAWN: G.T. Reynolds
 TRACED: 22 7-47
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 APPROVED: [Signature]

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

A.G.S. No 2030

SHEET No 5

No OF SHEETS 12

7 4 49
7 STAND/52

MARK	NO	MAIN BORE		SEGER CATALOGUE SIZES	DIA	GROOVE DIMENSIONS		CIRCLIP DIMENSIONS AND TOLERANCES							
		M/M	INCHES			A ^{+0.005} ₋₀	B ^{+0.005} _{MIN}	C	D ^{+0.005} ₋₀	E ^{+0.010} ₋₀	H	J	K	TOL	
34	34	28	5/64	28	1.094	1.146	.05	.006	.0472 ^{+0.0015} ₋₀	.113	.194	.008 ^{+0.004} ₋₀	.738	1.175	±.010
34	34	28	3/32	28	1.102	1.154	.05	.006	.0472 ^{+0.0015} ₋₀	.113	.194	.008 ^{+0.004} ₋₀	.746	1.175	±.010
34	34	28	7/64	28	1.107	1.154	.05	.006	.0472 ^{+0.0015} ₋₀	.113	.194	.008 ^{+0.004} ₋₀	.746	1.175	±.010
36	36	28	1/8	29	1.125	1.177	.05	.006	.0472 ^{+0.0015} ₋₀	.118	.199	.008 ^{+0.004} ₋₀	.759	1.195	±.010
37	37	29	1/8	29	1.142	1.193	.05	.006	.0472 ^{+0.0015} ₋₀	.126	.213	.008 ^{+0.004} ₋₀	.747	1.215	±.010
37	37	29	3/64	29	1.146	1.193	.05	.006	.0472 ^{+0.0015} ₋₀	.126	.213	.008 ^{+0.004} ₋₀	.747	1.215	±.010
19	19	30	5/32	30	1.181	1.235	.05	.006	.0472 ^{+0.0015} ₋₀	.124	.202	.008 ^{+0.004} ₋₀	.812	1.271	±.010
19	19	30	1/8	30	1.181	1.236	.05	.006	.0472 ^{+0.0015} ₋₀	.124	.202	.008 ^{+0.004} ₋₀	.812	1.271	±.010
19	19	30	7/32	30	1.186	1.236	.05	.006	.0472 ^{+0.0015} ₋₀	.124	.202	.008 ^{+0.004} ₋₀	.812	1.271	±.010
19	19	30	5/16	30	1.193	1.244	.05	.006	.0472 ^{+0.0015} ₋₀	.124	.202	.008 ^{+0.004} ₋₀	.820	1.271	±.010
39	39	32	5/64	32	1.250	1.311	.05	.006	.0472 ^{+0.0015} ₋₀	.128	.196	.008 ^{+0.004} ₋₀	.899	1.329	±.010
39	39	32	7/32	32	1.250	1.311	.05	.006	.0472 ^{+0.0015} ₋₀	.128	.196	.008 ^{+0.004} ₋₀	.899	1.329	±.010
39	39	32	5/64	32	1.250	1.311	.05	.006	.0472 ^{+0.0015} ₋₀	.128	.196	.008 ^{+0.004} ₋₀	.899	1.329	±.010
39	39	32	1/4	32	1.260	1.315	.05	.006	.0472 ^{+0.0015} ₋₀	.128	.196	.008 ^{+0.004} ₋₀	.903	1.329	±.010
39	39	32	1/4	32	1.265	1.315	.05	.006	.0472 ^{+0.0015} ₋₀	.128	.196	.008 ^{+0.004} ₋₀	.903	1.329	±.010
41	41	32	17/64	33	1.299	1.358	.05	.006	.0472 ^{+0.0015} ₋₀	.134	.202	.008 ^{+0.004} ₋₀	.934	1.384	±.010
41	41	32	9/32	33	1.299	1.358	.05	.006	.0472 ^{+0.0015} ₋₀	.134	.202	.008 ^{+0.004} ₋₀	.934	1.384	±.010
42	42	35	19/64	34	1.312	1.370	.05	.006	.0472 ^{+0.0015} ₋₀	.138	.206	.008 ^{+0.004} ₋₀	.938	1.392	±.010
42	42	35	5/16	34	1.317	1.370	.05	.006	.0472 ^{+0.0015} ₋₀	.138	.206	.008 ^{+0.004} ₋₀	.938	1.392	±.010
43	43	35	21/64	34	1.339	1.398	.063	.006	.0590 ^{+0.0015} ₋₀	.126	.207	.008 ^{+0.004} ₋₀	.964	1.430	±.010
43	43	35	11/32	34	1.349	1.402	.063	.006	.0590 ^{+0.0015} ₋₀	.126	.207	.008 ^{+0.004} ₋₀	.968	1.430	±.010
23	23	35	23/64	35	1.375	1.437	.063	.006	.0590 ^{+0.0015} ₋₀	.132	.204	.008 ^{+0.004} ₋₀	1.009	1.462	±.010
23	23	35	3/8	35	1.380	1.437	.063	.006	.0590 ^{+0.0015} ₋₀	.132	.204	.008 ^{+0.004} ₋₀	1.009	1.462	±.010
23	23	35	3/8	35	1.383	1.437	.063	.006	.0590 ^{+0.0015} ₋₀	.132	.204	.008 ^{+0.004} ₋₀	1.009	1.462	±.010

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE INTERNAL CIRCLIPS & GROOVES	DRAWN C.T Reynolds	TRACED P.M.B. 25.747
	ISSUE NO	CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
ALTERNATING	MDD 411 12-5 AGC 613		

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

A.G.S. No 2030

SHEET No 6

No OF SHEETS | 2

MARK NO	2	3	4	5	6	7	8			10	11	12	13	14	15	16
							GROOVE DIMENSIONS									
NO	M/M	INCHES	COL 2 & 3 EQUIV (INCHES)	M/M	INCHES	G ⁺ - 0	A - 0	B	R	C	D	E	H	J	K	TOL
45		1 25/64	1.3906	36		1.417	1.504	.063	.006	.0590 ± .0015	.132	.226	.008	1.032	1.510	± .020
45		1 15/32	1.4062	36		1.417	1.504	.063	.006	.0590 ± .0015	.132	.226	.008	1.032	1.510	± .020
45		1 27/64	1.4219		1 7/16	1.437	1.504	.063	.006	.0590 ± .0015	.132	.226	.008	1.032	1.510	± .020
45		1 7/16	1.4375		1 7/16	1.443	1.504	.063	.006	.0590 ± .0015	.132	.226	.008	1.032	1.510	± .020
25		1 29/64	1.4531	38		1.496	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
25	37	1 15/32	1.4567	38		1.496	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
25		1 31/64	1.4687	38		1.496	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
25	38	1 1/2	1.4844	38		1.496	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
25		1 1/2	1.4961		1 1/2	1.501	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
25		1 33/64	1.5000		1 1/2	1.505	1.583	.063	.006	.0590 ± .0015	.140	.228	.008	1.107	1.604	± .020
26		1 17/32	1.5156		1 9/16	1.562	1.646	.073	.006	.0690 ± .0015	.144	.244	.008	1.138	1.702	± .020
26		1 35/64	1.5469		1 9/16	1.562	1.646	.073	.006	.0690 ± .0015	.144	.244	.008	1.138	1.702	± .020
26		1 9/16	1.5625	40		1.575	1.673	.073	.006	.0690 ± .0015	.144	.244	.008	1.155	1.702	± .020
26	40	1 37/64	1.5748	40		1.580	1.673	.073	.006	.0690 ± .0015	.144	.244	.008	1.155	1.702	± .020
26		1 39/64	1.5781	40		1.583	1.673	.073	.006	.0690 ± .0015	.144	.244	.008	1.155	1.702	± .020
27		1 19/32	1.5937	41		1.614	1.720	.073	.006	.0690 ± .0015	.150	.244	.008	1.254	1.749	± .020
27		1 39/64	1.6094	41		1.615	1.720	.073	.006	.0690 ± .0015	.150	.244	.008	1.254	1.749	± .020
27		1 5/8	1.6250	42	5/8	1.630	1.720	.073	.006	.0690 ± .0015	.150	.244	.008	1.254	1.749	± .020
28		1 41/64	1.6406	42		1.654	1.760	.073	.006	.0690 ± .0015	.157	.235	.008	1.270	1.774	± .020
28	42	1 21/32	1.6535	42		1.659	1.760	.073	.006	.0690 ± .0015	.157	.235	.008	1.270	1.774	± .020
28		1 43/64	1.6562	42		1.661	1.760	.073	.006	.0690 ± .0015	.157	.235	.008	1.270	1.774	± .020
28		1 1/4	1.6719	42		1.677	1.760	.073	.006	.0690 ± .0015	.157	.235	.008	1.270	1.774	± .020
47		1 1/16	1.6875	44		1.732	1.839	.073	.006	.0690 ± .0015	.165	.211	.008	1.397	1.860	± .020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES
 ISSUE NO: 1
 ALTERNATIVE: 1

DRAWN: C.T. Reynolds
 TRACED: I.K.R.
 CHECKED: [Signature]
 APPROVED: [Signature]

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS. No 2030

SHEET No 7

No OF SHEETS 12

CIRCLIP DIMENSIONS AND TOLERANCES

MARK	NO	2 MAIN		3 BORE	4 DECIMAL EQUIV OR COL 2 & 3 (INCHES)	5 SEEGER CATALOGUE SIZES	6 INCHES	7 DIA	8 GROOVE DIMENSIONS		10 R MAX	C TOL	D ±.005	E ±.010	H TOL	J	K TOL
		M/M	M/M						A-D +.005	B MIN							
47	47	44	44	1.7031	1.7031	44		1.732	1.839	.073	.006	±.0015	.165	.211	.008	1.397	1.860 ±.020
47	47	44	44	1.7187	1.7187	44		1.732	1.839	.073	.006	±.0015	.165	.211	.008	1.397	1.860 ±.020
47	47	44	44	1.7323	1.7323	44		1.737	1.839	.073	.006	±.0015	.165	.211	.008	1.397	1.860 ±.020
48	48	44	44	1.7344	1.7344	44	3/4	1.750	1.858	.073	.006	±.0015	.173	.219	.008	1.400	1.876 ±.020
48	48	44	44	1.7500	1.7500	44	3/4	1.755	1.858	.073	.006	±.0015	.173	.219	.008	1.400	1.876 ±.020
49	49	44	44	1.7656	1.7656	45		1.772	1.878	.073	.006	±.0015	.171	.228	.008	1.402	1.896 ±.020
44	44	44	44	1.7812	1.7812	46		1.811	1.921	.073	.006	±.0015	.186	.245	.008	1.411	1.938 ±.020
44	44	44	44	1.7969	1.7969	46		1.811	1.921	.073	.006	±.0015	.186	.245	.008	1.411	1.938 ±.020
44	44	44	44	1.8125	1.8125	46	15/16	1.818	1.921	.073	.006	±.0015	.186	.245	.008	1.411	1.938 ±.020
51	51	47	47	1.8437	1.8437	47		1.850	1.961	.073	.006	±.0015	.155	.243	.008	1.455	2.007 ±.020
51	51	47	47	1.8504	1.8504	47		1.855	1.961	.073	.006	±.0015	.155	.243	.008	1.455	2.007 ±.020
50	50	47	47	1.8750	1.8750	47	7/8	1.880	1.992	.073	.006	±.0015	.165	.253	.008	1.466	2.027 ±.020
57	57	52	52	1.9062	1.9062	50		1.969	2.087	.085	.008	±.002	.169	.271	.010	1.525	2.124 ±.020
57	57	52	52	1.9375	1.9375	50		1.969	2.087	.085	.008	±.002	.169	.271	.010	1.525	2.124 ±.020
57	57	52	52	1.9687	1.9687	50		1.974	2.087	.085	.008	±.002	.169	.271	.010	1.525	2.124 ±.020
59	59	52	52	2.0000	2.0000	51		2.008	2.126	.085	.008	±.002	.190	.280	.010	1.546	2.140 ±.020
58	58	52	52	2.0312	2.0312	52		2.047	2.165	.085	.008	±.002	.200	.283	.010	1.579	2.203 ±.020
58	58	52	52	2.0472	2.0472	52		2.052	2.165	.085	.008	±.002	.200	.283	.010	1.579	2.203 ±.020
86	86	53	53	2.0625	2.0625	53		2.087	2.224	.085	.008	±.002	.189	.268	.010	1.668	2.253 ±.020
87	87	53	53	2.0937	2.0937	53	2 1/8	2.125	2.264	.085	.008	±.002	.205	.283	.010	1.678	2.285 ±.020
87	87	53	53	2.1250	2.1250	53	2 1/8	2.130	2.264	.085	.008	±.002	.205	.283	.010	1.678	2.285 ±.020
88	88	55	55	2.1562	2.1562	55	2 3/16	2.165	2.303	.085	.008	±.002	.197	.307	.010	1.669	2.372 ±.020
88	88	55	55	2.1875	2.1875	55	2 3/16	2.193	2.327	.085	.008	±.002	.197	.307	.010	1.693	2.372 ±.020
89	89	57	57	2.2187	2.2187	57		2.244	2.382	.085	.008	±.002	.220	.265	.010	1.832	2.431 ±.020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES

ISSUE NO

ALTERNATIVE NO

DRAWN

CHECKED

APPROVED

TRACED

BY

DATE

AGS

7 4 49
7/STAND/53

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS NO 2030

SHEET NO 8

NO OF SHEETS 12

7 + -3
1/STAND/53

MARK	NO	MAIN BORE		DECIMAL EQUIV OR COL 253 (INCHES)	SEEGER CATALOGUE SIZES	DIA	GROOVE DIMENSIONS		C TOL	D 1.005	E +.00	H TOL	J	K TOL				
		M/M	INCHES				A +.005	B MIN							R MAX			
89		2 1/4	2 1/4	2.2500	2 1/4	2.255	2.390	.085	.008	.0787	±.002	.220	.265	.010	±.005	1.840	2.431	±.020
89		2 9/32	2 9/32	2.2812	2 1/4	2.287	2.390	.085	.008	.0787	±.002	.220	.265	.010	±.005	1.840	2.431	±.020
91	58			2.2835	60	2.362	2.500	.085	.008	.0787	±.002	.228	.294	.010	±.005	1.892	2.541	±.020
91		2 5/16		2.3125	60	2.362	2.500	.085	.008	.0787	±.002	.228	.294	.010	±.005	1.892	2.541	±.020
91		2 11/32		2.3437	60	2.362	2.500	.085	.008	.0787	±.002	.228	.294	.010	±.005	1.892	2.541	±.020
91		2 3/8		2.3750		2.380	2.512	.085	.008	.0787	±.002	.228	.294	.010	±.005	1.904	2.541	±.020
93		2 13/32		2.4062	61	2.412	2.539	.085	.008	.0787	±.002	.240	.306	.010	±.005	1.907	2.565	±.020
94		2 1/16		2.4375	62	2.443	2.579	.085	.008	.0787	±.002	.205	.296	.010	±.005	1.967	2.639	±.020
94	62			2.4409	62	2.446	2.579	.085	.008	.0787	±.002	.205	.296	.010	±.005	1.967	2.639	±.020
95		2 15/32		2.4687	63	2.480	2.619	.085	.008	.0787	±.002	.236	.323	.010	±.005	1.952	2.667	±.020
96		2 1/2		2.5000		2.505	2.638	.085	.008	.0787	±.002	.250	.325	.010	±.005	1.968	2.699	±.020
97		2 17/32		2.5312	65	2.559	2.697	.104	.010	.0984	±.002	.244	.332	.015	±.005	2.013	2.769	±.020
97		2 9/16		2.5625		2.568	2.701	.104	.010	.0984	±.002	.244	.332	.015	±.005	2.017	2.769	±.020
97		2 19/32		2.5937	66	2.599	2.736	.104	.010	.0984	±.002	.244	.332	.015	±.005	2.052	2.769	±.020
132		2 5/8		2.6250		2.630	2.764	.104	.010	.0984	±.002	.256	.344	.015	±.005	2.056	2.815	±.020
132		2 21/32		2.6562	67	2.662	2.776	.104	.010	.0984	±.002	.256	.344	.015	±.005	2.068	2.815	±.020
101		2 11/16		2.6875	69	2.717	2.854	.104	.010	.0984	±.002	.236	.271	.015	±.005	2.292	2.903	±.020
101		2 23/32		2.7187	69	2.724	2.854	.104	.010	.0984	±.002	.236	.271	.015	±.005	2.292	2.903	±.020
102		2 3/4		2.7500	70	2.756	2.906	.104	.010	.0984	±.002	.256	.290	.015	±.005	2.306	2.943	±.020
102	70			2.7559	70	2.761	2.906	.104	.010	.0984	±.002	.256	.290	.015	±.005	2.306	2.943	±.020
103		2 25/32		2.7812	71	2.795	2.945	.104	.010	.0984	±.002	.272	.306	.015	±.005	2.313	2.974	±.020
106		2 13/16		2.8125		2.818	2.961	.104	.010	.0984	±.002	.254	.317	.015	±.005	2.307	2.992	±.020
104	72			2.8346	72	2.840	2.984	.104	.010	.0984	±.002	.261	.323	.015	±.005	2.318	3.006	±.020
104		2 27/32		2.8437	72	2.849	2.984	.104	.010	.0984	±.002	.261	.323	.015	±.005	2.315	3.006	±.020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES

DRAWN C.T. Reynolds
TRACED G.E.M. 29.7.47

ISSUE NO 1
ALTERN NO
MOD NO
AGS 619

CHECKED APPROVED

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY
AGS. NO 2030

SHEET No 9 No OF SHEETS 12

7 4 49
7/STAND/53

MARK NO	MAIN BORE M M	DECIMAL EQUIV OF (COL 2 & 3 UNCHES)	SEGER CATALOGUE SIZES M/M	DIA G +0.005 -0	GROOVE DIMENSIONS			CIRCLIP DIMENSIONS AND TOLERANCES							
					A +0.005 -0	B MIN	R MAX	C TOL	D ±0.005	E ±0.010	H TOL	J	K TOL		
105	2 7/8	2.8750	74	2.880	3.024	.104	.010	.0984 ±0.002	2.96	.347	.015	±0.005	2.310	3.053	±0.020
114	2 29/32	2.9062	74	2.913	3.063	.104	.010	.0984 ±0.002	2.46	.316	.015	±0.005	2.407	3.100	±0.020
107	2 15/16	2.9375	76	2.943	3.087	.104	.010	.0984 ±0.002	2.68	.327	.015	±0.005	2.413	3.119	±0.020
108	3	2.9687	76	2.992	3.150	.104	.010	.0984 ±0.002	2.78	.327	.015	±0.005	2.476	3.179	±0.020
108	3	3.0000		3.005	3.150	.104	.010	.0984 ±0.002	2.78	.327	.015	±0.005	2.476	3.179	±0.020
115	3 1/32	3.0312	77	3.037	3.189	.104	.010	.0984 ±0.002	2.53	.342	.015	±0.005	2.485	3.209	±0.020
109	3 1/16	3.0625	79	3.110	3.268	.104	.010	.0984 ±0.002	2.49	.349	.015	±0.005	2.550	3.375	±0.020
109	3 3/32	3.0937	79	3.110	3.268	.104	.010	.0984 ±0.002	2.49	.349	.015	±0.005	2.550	3.375	±0.020
109	3 1/8	3.1250		3.130	3.283	.104	.010	.0984 ±0.002	2.49	.349	.015	±0.005	2.565	3.375	±0.020
109	3 1/4	3.1496	80	3.155	3.307	.104	.010	.0984 ±0.002	2.49	.349	.015	±0.005	2.589	3.375	±0.020
109	3 5/32	3.1562	80	3.162	3.307	.104	.010	.0984 ±0.002	2.49	.349	.015	±0.005	2.589	3.375	±0.020
113	3 1/2	3.1875	81	3.193	3.346	.104	.010	.0984 ±0.002	2.66	.359	.015	±0.005	2.608	3.397	±0.020
53	3 3/4	3.2187	82	3.228	3.386	.104	.010	.0984 ±0.002	2.87	.345	.015	±0.005	2.676	3.427	±0.020
54	3 5/8	3.2500		3.255	3.406	.104	.010	.0984 ±0.002	2.94	.353	.015	±0.005	2.680	3.442	±0.020
55	3 7/8	3.3125	84	3.318	3.465	.124	.015	.1181 ±0.002	2.72	.341	.020	±0.005	2.763	3.552	±0.020
56	3 15/16	3.3465	85	3.351	3.504	.124	.015	.1181 ±0.002	2.85	.355	.020	±0.005	2.774	3.570	±0.020
56	3 1/2	3.3750		3.380	3.531	.124	.015	.1181 ±0.002	2.85	.355	.020	±0.005	2.801	3.570	±0.020
116	3 7/8	3.4375	88	3.465	3.622	.124	.015	.1181 ±0.002	2.66	.285	.020	±0.005	3.032	3.680	±0.020
110	3 1/2	3.5000	89	3.505	3.661	.124	.015	.1181 ±0.002	2.85	.305	.020	±0.005	3.031	3.720	±0.020
110	3 9/16	3.5433	90	3.548	3.701	.124	.015	.1181 ±0.002	2.85	.305	.020	±0.005	3.071	3.720	±0.020
110	3 5/8	3.5625	90	3.568	3.701	.124	.015	.1181 ±0.002	2.85	.305	.020	±0.005	3.071	3.720	±0.020
111	3 3/4	3.6250		3.630	3.780	.124	.015	.1181 ±0.002	3.01	.362	.020	±0.005	3.036	3.894	±0.020
111	3 11/16	3.6875	94	3.701	3.858	.124	.015	.1181 ±0.002	3.01	.362	.020	±0.005	3.114	3.894	±0.020
112	3 1/2	3.7402	95	3.745	3.898	.124	.015	.1181 ±0.002	2.82	.265	.020	±0.005	3.324	3.956	±0.020

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES
ISSUE NO 1
ALTERNATIVE NO

DRAWN: G.T. Reynolds
TRACED: L.K.R.
CHECKED: [Signature]
APPROVED: [Signature]

TOLERANCES ARE IN INCHES

MINISTRY OF SUPPLY

AGS. No 2030

SHEET No 10

No OF SHEETS 12

7 4 49
STANDARDS

1 MARK NO	2 MAIN BORE F M/M	3 BORE INCHES	4 DECIMAL EQUIV OF COL 2 & 3 (INCHES)	5 SEEGER CATALOGUE SIZES M/M	6 SIZES	7 DIA G +0.005 -0	8 GROOVE DIMENSIONS		10 R MAX	11 C TOL ±0.002	12 D TOL ±0.005	13 E TOL ±0.010	14 H TOL ±0.005	15 J TOL ±0.005	16 K TOL ±0.030
							A +0.005 -0	B MIN							
112		3 3/4	3.7500	3 3/4		3.755	3.909	.124	.015	.1181 ±0.002	.282	.265	.020 ±0.005	3.335	3.956 ±0.030
117		3 15/16	3.8125	97		3.819	3.976	.124	.015	.1181 ±0.002	.302	.285	.020 ±0.005	3.362	3.995 ±0.030
60		3 3/8	3.8750	100		3.880	4.031	.124	.015	.1181 ±0.002	.305	.270	.020 ±0.005	3.411	4.177 ±0.030
60	100		3.9370			3.942	4.095	.124	.015	.1181 ±0.002	.305	.270	.020 ±0.005	3.475	4.177 ±0.030
60		3 15/16	3.9375		3 15/16	3.943	4.095	.124	.015	.1181 ±0.002	.305	.270	.020 ±0.005	3.475	4.177 ±0.030
146		4	4.0000		4	4.005	4.154	.124	.015	.1181 ±0.002	.325	.289	.020 ±0.005	3.494	4.218 ±0.030
61		4 1/16	4.0625	103		4.068	4.213	.163	.015	.1575 ±0.002	.307	.316	.020 ±0.005	3.561	4.315 ±0.030
61		4 3/8	4.1250	105		4.134	4.291	.163	.015	.1575 ±0.002	.307	.316	.020 ±0.005	3.639	4.315 ±0.030
61	105		4.1339			4.139	4.291	.163	.015	.1575 ±0.002	.307	.316	.020 ±0.005	3.639	4.315 ±0.030
62		4 3/16	4.1875	106		4.193	4.331	.163	.015	.1575 ±0.002	.311	.330	.020 ±0.005	3.651	4.473 ±0.030
62		4 1/4	4.2500	108		4.255	4.409	.163	.015	.1575 ±0.002	.311	.330	.020 ±0.005	3.729	4.473 ±0.030
65		4 5/16	4.3125	110		4.331	4.488	.163	.015	.1575 ±0.002	.321	.300	.020 ±0.005	3.836	4.631 ±0.030
65	110		4.3307			4.336	4.488	.163	.015	.1575 ±0.002	.321	.300	.020 ±0.005	3.836	4.631 ±0.030
65		4 3/8	4.3750		4 3/8	4.380	4.528	.163	.015	.1575 ±0.002	.321	.300	.020 ±0.005	3.876	4.631 ±0.030
145		4 7/16	4.4375	113		4.449	4.606	.163	.015	.1575 ±0.002	.341	.320	.020 ±0.005	3.914	4.670 ±0.030
66		4 1/2	4.5000		4 1/2	4.505	4.658	.163	.015	.1575 ±0.002	.356	.320	.020 ±0.005	3.936	4.769 ±0.030
66	115		4.5276			4.533	4.685	.163	.015	.1575 ±0.002	.356	.320	.020 ±0.005	3.963	4.769 ±0.030
66		4 9/16	4.5625	116		4.568	4.724	.163	.015	.1575 ±0.002	.356	.320	.020 ±0.005	4.002	4.769 ±0.030
67	117		4.6063			4.611	4.764	.163	.015	.1575 ±0.002	.333	.362	.020 ±0.005	4.020	4.898 ±0.030
67		4 5/8	4.6250		4 5/8	4.630	4.784	.163	.015	.1575 ±0.002	.333	.362	.020 ±0.005	4.040	4.898 ±0.030
67		4 11/16	4.6875	119		4.693	4.843	.163	.015	.1575 ±0.002	.333	.362	.020 ±0.005	4.099	4.898 ±0.030
68	120		4.7244	120		4.729	4.882	.163	.015	.1575 ±0.002	.356	.386	.020 ±0.005	4.090	4.945 ±0.030
68		4 3/4	4.7500		4 3/4	4.755	4.910	.163	.015	.1575 ±0.002	.356	.386	.020 ±0.005	4.118	4.945 ±0.030
69		4 13/16	4.8125	122		4.818	4.961	.163	.015	.1575 ±0.002	.355	.331	.020 ±0.005	4.279	5.103 ±0.030

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT

TITLE: INTERNAL CIRCLIPS & GROOVES

DRAWN
C.T. Reynolds

TRACED
30.7.47

ISSUE NO

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ALTERNATIVE NO

AGS. 619

[Signature]

[Signature]

TOLERANCES ARE IN INCHES.

MINISTRY OF SUPPLY

AGS. No 2030

SHEET No 11

NO OF SHEETS 12

MARK	2	3	4	5	6	7	8		10	11	12	13	14	15	16
							A - 0	B							
No	M/M	INCHES	DECIMAL EQUIV OF COL 283 (INCHES)	M/M	INCHES	G + .005 - 0	GROOVE DIMENSIONS		R MAX	C TOL	D + .005 - 0	E + .010 - 0	H TOL	J	K TOL
							A - 0	B							
69		4 7/8	4.8750	124		4.982	5.039	.163	.015	.1575 ± .002	.335	.331	.020 ± .005	4.357	5.103 ± .030
70	125		4.9213	125		4.926	5.079	.163	.015	.1575 ± .002	.374	.371	.020 ± .005	4.317	5.182 ± .030
70		4 15/16	4.9375	126		4.961	5.118	.163	.015	.1575 ± .002	.374	.371	.020 ± .005	4.356	5.182 ± .030
70	127		5.0000	127		5.005	5.158	.163	.015	.1575 ± .002	.374	.371	.020 ± .005	4.396	5.182 ± .030
70		5	5.0000		5	5.005	5.158	.163	.015	.1575 ± .002	.374	.371	.020 ± .005	4.396	5.182 ± .030
71		5 1/16	5.0625	129		5.079	5.236	.163	.015	.1575 ± .002	.335	.350	.020 ± .005	4.516	5.390 ± .030
71	130		5.1181	130		5.123	5.276	.163	.015	.1575 ± .002	.335	.350	.020 ± .005	4.556	5.390 ± .030
71		5 1/8	5.1250		5 1/8	5.130	5.284	.163	.015	.1575 ± .002	.335	.350	.020 ± .005	4.554	5.390 ± .030
72		5 3/16	5.1875	132		5.197	5.354	.163	.015	.1575 ± .002	.374	.390	.020 ± .005	4.554	5.469 ± .030
72		5 1/4	5.2500		5 1/4	5.255	5.410	.163	.015	.1575 ± .002	.374	.390	.020 ± .005	4.610	5.469 ± .030
99		5 5/16	5.3125	135		5.318	5.472	.163	.015	.1575 ± .002	.341	.335	.020 ± .005	4.780	5.615 ± .030
99	135		5.3150	135		5.320	5.472	.163	.015	.1575 ± .002	.341	.335	.020 ± .005	4.780	5.615 ± .030
99		5 3/8	5.3750		5 3/8	5.380	5.532	.163	.015	.1575 ± .002	.341	.335	.020 ± .005	4.840	5.615 ± .030
99	137		5.3937	137		5.399	5.551	.163	.015	.1575 ± .002	.341	.335	.020 ± .005	4.859	5.615 ± .030
100		5 1/2	5.4375	138		5.443	5.591	.163	.015	.1575 ± .002	.380	.374	.020 ± .005	4.821	5.694 ± .030
100		5 1/2	5.5000		5 1/2	5.505	5.658	.163	.015	.1575 ± .002	.380	.374	.020 ± .005	4.888	5.694 ± .030
100	140		5.5118	140		5.517	5.669	.163	.015	.1575 ± .002	.380	.374	.020 ± .005	4.899	5.694 ± .030
64		5 3/16	5.5625	142		5.591	5.748	.163	.015	.1575 ± .002	.354	.383	.020 ± .005	4.962	5.890 ± .030
64		5 5/8	5.6250	143		5.630	5.787	.163	.015	.1575 ± .002	.354	.383	.020 ± .005	5.001	5.890 ± .030
73		5 1/2	5.6875	145		5.709	5.866	.163	.015	.1575 ± .002	.394	.423	.020 ± .005	5.000	5.969 ± .030
73	145		5.7087	145		5.714	5.866	.163	.015	.1575 ± .002	.394	.423	.020 ± .005	5.000	5.969 ± .030
73		5 3/4	5.7500		5 3/4	5.755	5.906	.163	.015	.1575 ± .002	.394	.423	.020 ± .005	5.040	5.969 ± .030
73	147		5.7874	147		5.792	5.945	.163	.015	.1575 ± .002	.394	.423	.020 ± .005	5.079	5.969 ± .030
73		5 13/16	5.8125	147		5.818	5.945	.163	.015	.1575 ± .002	.394	.423	.020 ± .005	5.079	5.969 ± .030

ISSUED BY THE ROYAL AIRCRAFT ESTABLISHMENT	TITLE: INTERNAL CIRCLIPS & GROOVES		DRAWN C.T. Reynolds	TRACED L.K.R.
	ISSUE No	1	CHECKED	APPROVED
	ALTERING	MOD No AGS. 619		

8x13
7.4.49
7/STAND/53

MARK	No	2		3	4	5	6	7	8			9			10			11			12	13	14	15	16
		M/M	F						A ^{+0.005} ₋₀	B ^{+0.005} _{MIN}	R ^{+0.005} _{MAX}	C	TOL	D ^{+0.005}	E ^{+0.010}	H	TOL	J	K	TOL					
	74		5 7/8	5 7/8	5.8750		5 7/8	5.880	6.071	6.163	6.015	15.75	±.002	3.54	3.39	0.20	±.005	5.353	6.265	±.030					
	74	150		150	5.9055			5.911	6.102	6.163	6.015	15.75	±.002	3.54	3.39	0.20	±.005	5.384	6.265	±.030					
	74		5 15/16	151	5.9375			5.945	6.142	6.163	6.015	15.75	±.002	3.54	3.39	0.20	±.005	5.424	6.265	±.030					
	75		G		6.0000		6	6.005	6.197	6.163	6.015	15.75	±.002	4.15	3.78	0.20	±.005	5.357	6.344	±.030					

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	ISSUE NO.		CHECKED	APPROVED
	ALTERN NO.	MOD NO AGS 619	<i>[Signature]</i>	<i>[Signature]</i>