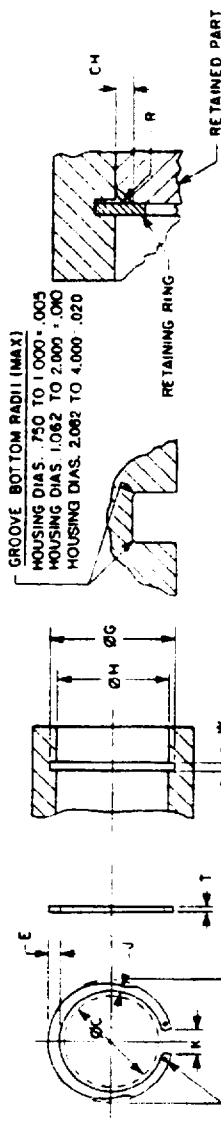


DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

This military standard is approved for use by all Departments and Agencies of the Department of Defense. It is the policy of the Department of Defense to permit and design applications and for repetitive use shall be made from this document when applicable.

AMSC N/A

REVIEWER AC
ARMY-AV, MI
AIR FORCE-82
DLA-ISUSER ACTIVITIES:
ARMY-AT, ER, ME
NAVY-AS, MC, SH

ENLARGED DETAILS

FOR HOLE DIAMETER SEE
PROCUREMENT SPECIFICATION

TABLE 1. DIMENSIONS

Ø H HOUSING (REF)	Ø D FREE	LARGE SECTION HEIGHT		J SMALL SECTION HEIGHT		THICKNESS		Ø G RECOMMENDED GROOVE (REF)		W WIDTH		R 3/ MIN	Ø C 4/ 1.130	R 5/ OF RETAINED PART (REF)	CH 5/ OF RETAINED PART (REF)
		BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL				
.750	.808	.085	+.004	.042	+.004	.035		.796	+.002	.040		.165	.560	.050	.031
.812	.877	.092		.044		.042		.862	FIM 2/	.047		.180	.620	.054	.034
.875	.944	.099		.047		.042		.931	+.003	.047		.190	.650	.057	.036
.938	1.015	.106	+.005	.051	+.005	.042		1.000	FIM 2/	.047		.220	.700	.060	.038
1.000	1.081	.113		.054		.042		1.066	FIM 2/	.047		.235	.750	.064	.040
1.062	1.150	.120		.057		.050		1.130		.056		.220	.800	.069	.041
1.125	1.217	.123		.059		.050		1.197		.056		.245	.860	.070	.044
1.188	1.283	.126	+.006	.060	+.006	.050	+.002	1.262	+.004	.056		.260	.910	.071	.045
1.250	1.351	.129		.061		.050		1.330	.005	.056		.280	.970	.071	.045
1.312	1.418	.132		.063		.050		1.396	FIM 2/	.056		.290	1.020	.072	.045
1.375	1.486	.135		.065		.050		1.461		.056		.330	1.080	.074	.046
1.438	1.552	.144		.069		.050		1.528		.056	+.004	.350	1.130	.079	.050
1.500	1.622	.148		.070		.050		1.594		.056		.330	1.180	.081	.051
1.562	1.688	.158		.074		.062		1.658		.068		.360	1.210	.088	.055
1.625	1.756	.162		.077		.062		1.725		.068		.385	1.270	.090	.056
1.688	1.823	.166		.079		.062		1.792		.068		.405	1.320	.091	.057
1.750	1.891	.170		.082		.062		1.858	+.005	.068		.420	1.380	.093	.058
1.875	2.025	.188	+.007	.090	+.007	.062	+.003	1.969	.005	.068		.440	1.470	.105	.066
2.000	2.160	.208		.100		.062		2.122	FIM 2/	.068		.480	1.550	.118	.074
2.062	2.224	.218	+.025	.106	+.025	.078		2.186	+.006	.086		.485	1.590	.125	.078
			-.015						FIM 2/						

ⓑ ENTIRE STANDARD REVISED

P A
NAVY-OS
Other: Cusi
ARMY-AR
AIR FORCE-99PROCUREMENT SPECIFICATION
MIL-R-21248INTERNATIONAL
INTEREST

SUPERSEDES

TITLE
RING, RETAINING, INTERNAL, INVERTED
(TAPERED SECTION TYPE)MILITARY STANDARD
MS16627

PAGE 1 OF 6

APPROVED 11 DEC 1958

REVISED

ⓑ 14 MAY 1990

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

This military specification is approved for use by all Departments and Agencies of the Department of Defense for procuring and design applications and for repetitive use shall be made from this

REVIEWER ACTIVITIES

ARMY-AV,MI
AIR FORCE-82
DLA-IS

USER ACTIVITIES

ARMY-AT,ER,ME
NAVY-AS,MC,SH

TABLE 1. DIMENSIONS - CONTINUED

ϕ H HOUSING (REF)	ϕ D FREE		E LARGE SECTION HEIGHT		J SMALL SECTION HEIGHT		T 1/ THICKNESS		ϕ C RECOMMENDED GROOVE (REF)		R 3/ MIN		ϕ C 4/ MAX		R 5/ OF RETAINED PART (REF)		CH 5/ MAX	
	INCH	MM	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL	BASIC	TOL
2.125	54.0		2.295		.223		.108		2.251		.490		1.650		.128		.080	
2.375	60.3		2.567	+0.025	.243		.115		2.517		.550		1.860		.138		.086	
2.438	61.9		2.634	-.015	.248		.117		2.584		.570		1.910		.141		.088	
2.500	63.5		2.700		.254		.120		2.648		.590		1.960		.144		.090	
2.625	66.7		2.840		.266		.128		2.781		.600		2.060		.150		.094	
2.750	69.8		2.975		.278		.134		2.914		.630		2.160		.157		.098	
2.812	71.4		3.063	+0.030	.286		.139		2.980		.610		2.210		.162		.102	
2.835	72.0		3.063	-.020	.286		.139		3.006	+0.006	.670	+0.005	2.230		.162		.102	
3.000	76.2		3.245		.302		.143		3.182		.705		2.360		.169		.106	
3.156	80.2		3.408		.314		.149		3.348	FIN 2/ FIN 2/	.760		2.500		.174		.109	
3.346	85.0		3.611		.321		.155		3.546		.810		2.670		.177		.111	
3.500	88.9		3.780		.324		.154		3.710		.840		2.820		.175		.110	
3.562	90.5		3.850		.326		.155		3.776		.860		2.880		.175		.110	
4.000	101.6		4.350		.338		.161		4.240		.930		3.290		.175		.110	

1/ T = THICKNESS "T" APPLIES TO UNPLATED RINGS. FOR CORROSION RESISTANT STEEL AND PLATED RINGS, $\pm .002$ SHOULD BE ADDED TO THE MAXIMUM TOLERANCE, I.E., $\pm .002$ SHOULD BE $\pm .004/- .002$.

2/ FIN - (FULL INDICATOR MOVEMENT) - IS THE MAXIMUM ALLOWABLE DEVIATION OF CONCENTRICITY BETWEEN THE GROOVE AND THE HOUSING.

3/ R - MINIMUM DIMENSION WHEN THE RING IS PROPERLY SEATED IN THE GROOVE (DESIGN REFERENCE DIMENSION).

4/ C - ACTUAL CLEARANCE DIAMETER WHEN THE RING IS SPRUNG INTO THE HOUSING, PRIOR TO INSTALLATION INTO THE GROOVE (DESIGN REFERENCE DIMENSION).

5/ R AND CH - RADII OR CHAMFERS ALLOWABLE ON PARTS TO BE RETAINED BY THE RING. THRUST LOADS OF RINGS, RETAINING PARTS WITH CORNER RADIUS OR CHAMFERS ARE TABULATED ON PAGE 6.

PA	INTERNATIONAL	TITLE
NAVY-OS	INTEREST	RING, RETAINING, INTERNAL, INVERTED
Other Cust		(TAPERED SECTION TYPE)
ARMY-AR		
AIR FORCE-99		
PROCUREMENT SPECIFICATION	SUPERSEDES	
MIL-R-21248		

MILITARY STANDARD
MSI6627

PAGE 2 OF 6

APPROVED 11 DEC 1958 REVISED 8 FOR CHANGES SEE PAGES 1 THRU 6

FED SUP CLASS
5365**REQUIREMENTS:**

1. **CLASSIFICATION:** RETAINING RINGS FURNISHED UNDER THIS STANDARD SHALL BE TYPE 1, CLASS 3 OF THE PROCUREMENT SPECIFICATION.
2. **MATERIAL:** CARBON SPRING STEEL, GRADE 1060 THRU 1095 (UNS G10600 THRU G10950) IN ACCORDANCE WITH ASTM A568 OR ASTM A682.
CORROSION RESISTANT STEEL IN ACCORDANCE WITH AMS 5520 (UNS S15700).
BERYLLIUM COPPER, ALLOY NUMBER 170 (UNS C17000), OR ALLOY NUMBER 172 (UNS C17200) IN ACCORDANCE WITH ASTM B194.
3. **HARDNESS:**

TABLE II. HARDNESS

Ø HOUSING (REF)	CARBON STEEL	CORROSION RESISTANT STEEL	BERYLLIUM COPPER
.812 & .750	85.5-88 BRIN (50-55 HRC EQUIV) ✓	82.5-86 BRIN (44-51 HRC EQUIV) ✓	79-82 BRIN (37-43 HRC EQUIV) ✓
.938 & .875	66.5-71 BRIN (48-53 HRC EQUIV) ✓	63-69.5 BRIN (44-51 HRC EQUIV) ✓	56.5-62 BRIN (37-43 HRC EQUIV) ✓
.938 TO 1.500 INCL	52.5-58.5 BRIN (48-53 HRC EQUIV) ✓	48-56 BRIN (44-51 HRC EQUIV) ✓	39.5-47 BRIN (37-43 HRC EQUIV) ✓
1.562 TO 2.000 INCL	46-51 HRC	44-51 HRC	37-43 HRC
2.062 TO 3.000 INCL	46-51 HRC	44-51 HRC	-
3.156 TO 4.000 INCL	44-49 HRC	44-51 HRC	-

1/ USE HIGHEST SCALE TO PROVIDE SECTION WIDTH EQUAL TO OR GREATER THAN 5 TIMES THE BRAILLE DEPRESSION DIAMETER.

4. **PROTECTIVE FINISH OR SURFACE TREATMENT:**

a. CARBON STEEL - SHALL BE AS SPECIFIED (SEE TABLE III OR IV):

1. CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3 OR ASTM B696, TYPE II, CLASS 5.
2. ZINC COAT IN ACCORDANCE WITH ASTM B633, TYPE II, CLASS Fe/Zn5, OR ASTM B695, TYPE II, CLASS 5.
3. PHOSPHATE COAT IN ACCORDANCE WITH DOD-P-16232, TYPE 2, CLASS 2.

b. CORROSION RESISTANT STEEL - SHALL BE CLEANED, DESCALED AND PASSIVATED IN ACCORDANCE WITH QQ-P-35.

5. **PART NUMBER:** THE BASIC MS PART NUMBER IS FOLLOWED BY A DASH NUMBER TAKEN FROM TABLE III OR IV.

EXAMPLE: MS16627-1100 IS THE PART NUMBER FOR CARBON STEEL CADMIUM PLATE, INTERNAL, INVERTED RETAINING RING FOR USE IN A 1.000 HOUSING DIAMETER.

NOTES:

1. UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
2. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS STANDARD SHALL TAKE PRECEDENCE.
3. REFERENCED GOVERNMENT (OR NON-GOVERNMENT) DOCUMENTS OF THE ISSUE LISTED IN THAT ISSUE OF THE DEPARTMENT OF DEFENSE INDEX OF SPECIFICATIONS AND STANDARDS (DODISS) SPECIFIED IN THE SOLICITATION FORM A PART OF THIS STANDARD TO THE EXTENT SPECIFIED HEREIN.

PA NAVY-OS Other Cust ARMY-AR AIR FORCE-99	INTERNATIONAL INTEREST	TITLE RING, RETAINING, INTERNAL, INVERTED (TAPERED SECTION TYPE)	MILITARY STANDARD MS16627
PROCUREMENT SPECIFICATION MIL-R-21248	SUPERSEDES	PAGE 3 OF 6	

APPROVED 11 DEC 1956 REVISED (B) FOR CHANGES SEE PAGES 1 THRU 6

USER ACTIVITIES:
ARMY-AT, ER, ME
NAVY-AS, MC, SH

REVIEWER J
ARMY-AV
AIR FORCE-82
DLA-IS

UNCLASSIFICATION STATEMENT A. Approved for public release; distribution is unlimited.
This document is approved for use by all Departments and Agencies of the Department of Defense
for all engineering and design applications and for repetitive use shall be made from this
document when appropriate.

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

This military standard is approved for use by all Departments and Agencies of the Department of Defense. See also for all new engineering and design applications and for repetitive use shall be made from this document when applicable.

AMSC N/A

REVIEWER ACTIVITIES:
ARMY-AV, MI
AIR FORCE-82
DLA-ISUSER ACTIVITIES:
ARMY-AT, ER, ME
NAVY-AS, MC, SH

P.A. NAVY-OS Other Cont ARMY-AR AIR FORCE-99		INTERNATIONAL INTEREST	TITLE RING, RETAINING, INTERNAL, INVERTED (TAPERED SECTION TYPE)	MILITARY STANDARD MSI6627
PROCUREMENT SPECIFICATION MIL-R-21248		SUPSEDES	PAGE 4 OF 6	

TABLE III. DASH NUMBERS FOR MSI6627

Ø H HOUSING (REF)	CARBON STEEL CALCIUM PLATE	CARBON STEEL ZINC COAT	CARBON STEEL PHOSPHATE COAT	STEEL CORROSION RESISTANT	BERYLLIUM COPPER
DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.	DASH NO.
.750	-1075	-2075	-1075	-4075	-5075
.812	-1081	-2081	-1081	-4081	-5081
.875	-1087	-2087	-1087	-4087	-5087
.938	-1093	-2093	-1093	-4093	-5093
1.000	-1100	-2100	-1100	-4100	-5100
1.062	-1106	-2106	-1106	-4106	-5106
1.125	-1112	-2112	-1112	-4112	-5112
1.188	-1118	-2118	-1118	-4118	-5118
1.250	-1125	-2125	-1125	-4125	-5125
1.312	-1131	-2131	-1131	-4131	-5131
1.375	-1137	-2137	-1137	-4137	-5137
1.438	-1143	-2143	-1143	-4143	-5143
1.500	-1150	-2150	-1150	-4150	-5150
1.562	-1156	-2156	-1156	-4156	-5156
1.625	-1162	-2162	-1162	-4162	-5162
1.688	-1168	-2168	-1168	-4168	-5168
1.750	-1175	-2175	-1175	-4175	-5175
1.875	-1187	-2187	-1187	-4187	-5187
2.000	-1200	-2200	-1200	-4200	-5200
2.062	-1206	-2206	-1206	-4206	
2.125	-1212	-2212	-1212	-4212	
2.375	-1237	-2237	-1237	-4237	
2.438	-1243	-2243	-1243	-4243	
2.500	-1250	-2250	-1250	-4250	
2.625	-1262	-2262	-1262	-4262	
2.750	-1275	-2275	-1275	-4275	
2.812	-1283	-2283	-1283	-4283	
2.875	-1283	-2283	-1283	-4283	
3.000	-1300	-2300	-1300	-4300	
3.156	-1315	-2315	-1315	-4315	
3.346	-1334	-2334	-1334	-4334	
3.500	-1350	-2350	-1350	-4350	
3.562	-1356	-2356	-1356	-4356	
4.000	-1400	-2400	-1400	-4400	

TABLE IV. SUBSTITUTION TABLE (CROSS REFERENCE OF PART NUMBERS)

Ø H HOUSING (REF)	INACTIVE	SUBSTITUTE	SUBSTITUTE	SUBSTITUTE	SUBSTITUTE
	CARBON STEEL	CARBON STEEL CALCIUM PLATE	CARBON STEEL ZINC COAT	CARBON STEEL PHOSPHATE COAT	
	MSI6627	MSI6627	MSI6627	MSI6627	MSI6627
.750	-75	-1075	-2075	-1075	-1075
.812	-81	-1081	-2081	-1081	-3081
.875	-87	-1087	-2087	-1087	-3087
.938	-93	-1093	-2093	-1093	-3093
1.000	-100	-1100	-2100	-1100	-3100
1.062	-106	-1106	-2106	-1106	-3106
1.125	-112	-1112	-2112	-1112	-3112
1.188	-118	-1118	-2118	-1118	-3118
1.250	-125	-1125	-2125	-1125	-3125
1.312	-131	-1131	-2131	-1131	-3131
1.375	-137	-1137	-2137	-1137	-3137
1.438	-143	-1143	-2143	-1143	-3143
1.500	-150	-1150	-2150	-1150	-3150
1.562	-156	-1156	-2156	-1156	-3156
1.625	-162	-1162	-2162	-1162	-3162
1.688	-168	-1168	-2168	-1168	-3168
1.750	-175	-1175	-2175	-1175	-3175
1.875	-187	-1187	-2187	-1187	-3187
2.000	-200	-1200	-2200	-1200	-3200
2.062	-206	-1206	-2206	-1206	-3206
2.125	-212	-1212	-2212	-1212	-3212
2.375	-237	-1237	-2237	-1237	-3237
2.438	-243	-1243	-2243	-1243	-3243
2.500	-250	-1250	-2250	-1250	-3250
2.625	-262	-1262	-2262	-1262	-3262
2.750	-275	-1275	-2275	-1275	-3275
2.812	-281	-1283	-2283	-1283	-3283
2.875	-283	-1283	-2283	-1283	-3283
3.000	-300	-1300	-2300	-1300	-3300
3.156	-315	-1315	-2315	-1315	-3315
3.346	-334	-1334	-2334	-1334	-3334
3.500	-350	-1350	-2350	-1350	-3350
3.562	-356	-1356	-2356	-1356	-3356

FED SUP CLASS
5365

1/ SUBSTITUTE CORROSION RESISTANT STEEL WHEN USED IN FOOD PROCESSING, MACHINERY, OR IN FUEL OR LUBRICATION SYSTEMS, OR WHEN USED AT TEMPERATURES OVER 450°F (233°C).

2/ SAME DASH NUMBERS SUITABLE FOR EITHER HOUSING DIAMETER (INCHES OR MM).

APPROVED 11 DEC 1958 REVISED ② FOR CHANGES. SEE PAGES 1 THRU 6

5365-0131

01-977

FED SUP CLASS
5365RECOMMENDED DESIGN LIMITATIONS AND USAGE

- (a) **INTENDED USE** - TO PROVIDE UNIFORM PROTRUDING SHOULDERS FOR POSITIONING AND RETAINING MACHINE COMPONENTS IN HOUSINGS (BORES). TAPERED DESIGN PRINCIPLE PERMITS RINGS TO MAINTAIN PRACTICALLY CONSTANT CIRCULARITY, AND FIT SECURELY AGAINST BOTTOM OF THE GROOVE. ESPECIALLY SUITED FOR LOCATING AND RETAINING MACHINE PARTS HAVING CURVED ABUTTING SURFACES. THE USE OF THE FOLLOWING FORMULAS ARE BASED ON THE FACT THAT THE RING MATERIAL WILL NOT FAIL IN COMPRESSION.

LIMITATION ON USE - THE FOLLOWING FORMULAS ARE NOT TO BE USED FOR BRITTLE MATERIALS SUCH AS CAST IRON, ETC.

WARNING: RINGS SHOULD NOT BE EXCESSIVELY CONTRACTED DURING INSTALLATION SINCE THIS WILL LEAD TO RING FAILURE. IF RING HAS PLAY BETWEEN THE GROOVE DIAMETER AND THE OUTSIDE RING DIAMETER THIS INDICATES THAT THE RING HAS BEEN EXCESSIVELY CONTRACTED, (PROVIDING THE GROOVE DIAMETER HAS BEEN MACHINED TO RECOMMENDED DIMENSIONS).

- (b) **ALLOWABLE THRUST LOAD CAPACITY OF THE RING** = (ABUTTING COMPONENTS TO HAVE SHARP CORNERS)

$$P = \frac{2}{3} \frac{WBYT}{F}$$

WHERE:

P = ALLOWABLE THRUST LOAD (POUNDS)
H = HOUSING DIAMETER (INCHES)
T = RING THICKNESS (INCHES)
Y = ULTIMATE SHEAR STRENGTH OF THE RING MATERIAL (PSI) $\frac{1}{2}$
F = FACTOR OF SAFETY

A SAFETY FACTOR, F = 4, IS RECOMMENDED, SINCE THE RING UNDER LOAD IS SUBJECTED NOT ONLY TO PURE SHEAR STRESSES, BUT ALSO TO BENDING STRESSES.

- (c) **ALLOWABLE LOAD CAPACITY OF GROOVE WALL** =

$$P = \frac{1}{2} \frac{WHY}{F}$$

WHERE:

P = ALLOWABLE COMPRESSION LOAD (POUNDS)
H = HOUSING DIAMETER (INCHES)
d = GROOVE DEPTH (INCHES)
Y = YIELD STRENGTH IN COMPRESSION OF THE GROOVE MATERIAL (PSI)
F = FACTOR OF SAFETY

TO INSURE A SAFE WORKING LOAD, A SAFETY FACTOR, F = 2, IS RECOMMENDED.

- (d) **MINIMUM DISTANCE BETWEEN OUTER GROOVE WALL AND END OF HOUSING** =

Z = MINIMUM DISTANCE BETWEEN OUTER GROOVE WALL AND END OF HOUSING (INCHES)
d = GROOVE DEPTH (INCHES)

- (e) **DIFFERENTIAL ROTATION** =

THE CONDITIONS UNDER WHICH A RETAINING RING MAY BE USED WHEN ADJACENT PARTS ROTATE RELATIVE TO IT, FALL INTO TWO CATEGORIES:

- (1) WHERE NO THRUST IS EXERTED BY ADJACENT PART: IN THIS CASE, DIFFERENTIAL ROTATION OF RING AND ADJACENT PART CREATES NO ELEMENT OF RISK IN THE APPLICATION OF THE RINGS BECAUSE NO FRICTIONAL TORQUE IS EXERTED BY THE MACHINE PART ON THE RING.
- (2) CONSIDERATION MUST BE GIVEN TO THE MAGNITUDE OF THE THRUST INVOLVED. THE FRICTION MOMENT MAY NOT EXCEED THE BENDING MOMENT, WHICH THE RING CAN TOLERATE WITHOUT RELEASING ITS PRESSURE AGAINST THE BOTTOM OF THE GROOVE, FORMULATED AS FOLLOWS:

$$EPN \leq \frac{gT^2}{18}$$

OR

$$P \leq \frac{gT^2}{fEBN}$$

WHERE:

P = ALLOWABLE THRUST LOAD EXERTED BY ADJACENT PART (POUNDS)
f = COEFFICIENT OF FRICTION
E = WORKING STRESS OF RING UNDER MAXIMUM CONTRACTION (PSI) $\frac{2}{3}$
T = RING THICKNESS (INCHES)
E = GREATEST WIDTH SECTION OF RING (INCHES)
N = NEUTRAL RING DIAMETER (INCHES) = FREE DIAMETER MINUS $\frac{3}{4}$ E DIMENSION

IN SUCH CASES WHERE DIFFERENTIAL ROTATION OCCURS, THE CALCULATION SHOULD BE BASED ON THE MAXIMUM POSSIBLE VALUE OF THE COEFFICIENT OF FRICTION.

- 1/ X = 150,000 PSI ULTIMATE SHEAR STRENGTH FOR RINGS OF CARBON STEEL OR CORROSION RESISTANT STEEL.
- 2/ X = 110,000 PSI ULTIMATE SHEAR STRENGTH FOR RINGS OF BERYLLIUM COPPER.
- 3/ X = 250,000 PSI WORKING STRESS FOR RINGS OF CARBON STEEL OR CORROSION RESISTANT STEEL.
- 4/ X = 180,000 PSI WORKING STRESS FOR RINGS OF BERYLLIUM COPPER.

USER ACTIVITIES:
ARMY-AT,ER,ME
NAVY-AS,MC,SH

REVIEWER A YES
ARMY-AV,
AIR FORCE-B2
DLA-IS

DISCONTINUATION STATEMENT A Approved for public release; distribution is unlimited.
Approved for use by all Departments and Agencies of the Department of Defense
Engineering and design applications and for repetitive use shall be made from this
document when appropriate.

PA NAVY-OS Other Cost ARMY-AR AIR FORCE-99	INTERNATIONAL INTEREST	TITLE RING, RETAINING, INTERNAL, INVERTED (TAPERED SECTION TYPE)	MILITARY STANDARD MS16627
PROCUREMENT SPECIFICATION MIL-R-2124B	SUPRSEDES	PAGE 5 OF 6	

APPROVED 11 DEC 1958 REVISED (B) FOR CHANGES SEE PAGES 1 THRU 6

FED SUP CLASS
5365USER ACTIVITIES:
ARMY-AT,ER,ME
NAVY-AS,MC,SHREVIEWER ACTIVITIES:
ARMY-AV,MJ
AIR FORCE-82
DLA-IS

(F) IMPACT CAPACITY OF RING OR GROOVE WALL =

$$I_R = \frac{PT}{2} - \text{FOR THE RING (INCH POUNDS). ABUTTING COMPONENTS TO HAVE SHARP CORNERS.}$$

$$I_G = \frac{PD}{2} - \text{FOR THE GROOVE (INCH POUNDS)}$$

WHERE:

P = ALLOWABLE THRUST LOAD OF RINGS OR GROOVES (POUNDS)
 T = RING THICKNESS (INCHES)
 I_G = IMPACT CAPACITY OF GROOVE WALL (INCH POUNDS)
 D = GROOVE DEPTH (INCHES)
 I_R = IMPACT CAPACITY OF RING (INCH POUNDS)

(G) LOAD CAPACITY, WITH THE RETAINED PART RADIUS OR CHAMFERED =

WHEN THE RADIUS OR CHAMFER OF THE RETAINED PART DOES NOT EXCEED THE MAXIMUM RADIUS ALLOWED FOR THE BOTTOM OF THE RING GROOVE, THE LESSER LOAD CAPACITY COMPUTED FROM THE FORMULAS ON PAGE 5 WILL APPLY. THE CORNER RADIUS AND CHAMFERS LISTED ON PAGES 1 AND 2 WERE CHOSEN AS LARGE AS POSSIBLE FOR THE RING SIZES INVOLVED AND ARE RELATED TO THE MAXIMUM THRUST LOADS LISTED IN TABLE V. IF THE CORNER RADIUS OR CHAMFERS ARE SMALLER THAN THOSE LISTED, THEN THE THRUST LOADS INCREASE PROPORTIONALLY, IN ACCORDANCE WITH THE FOLLOWING FORMULAS:

$$P^1 = \frac{PCH}{CH^1} \quad \text{OR}$$

$$P^1 = \frac{PR}{R^1}$$

WHERE:

P¹ = NEW ALLOWABLE THRUST LOAD
 P = LISTED ALLOWABLE THRUST LOAD
 CH¹ = NEW (SMALLER) CHAMFER
 CH = LISTED CHAMFER
 R¹ = NEW (SMALLER) CORNER RADIUS
 R = LISTED CORNER RADIUS

LIMIT LOADS LISTED BELOW ARE BASED ON RINGS OF STEEL (WORKING STRESS 250,000 PSI) AND OF BERYLLIUM COPPER (WORKING STRESS 180,000 PSI). IF THE ALLOWABLE GROOVE CAPACITY LOADS AS CALCULATED BY USING THE FORMULA ON PAGE 5 ARE LESS, THEN THEY SHOULD BE USED.

TABLE V. LIMIT LOADS

NOMINAL RING SIZE		ALLOWABLE THRUST LOAD FOR RING ASSEMBLIES WITH PARTS HAVING MAXIMUM CORNER RADIUS OR CHAMFERS.	
FROM	TO	CARBON STEEL OR CORROSION RESISTANT STEEL	BERYLLIUM COPPER
.750		850 LB	610 LB
.812	1.000	1250 LB	900 LB
1.063	1.500	1800 LB	1300 LB
1.562	2.000	2900 LB	2000 LB
2.062	2.500	4600 LB	
2.625	3.000	6700 LB	
3.156	4.000	9000 LB	

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.
 This military standard is approved for use by all Departments and Agencies of the Department of Defense.
 Selection for all new engineering and design applications and for repetitive use shall be made from this document when applicable.

AMSC N

PA. NAVY-OS Other Cost ARMY-AR AIR FORCE-99	INTERNATIONAL INTEREST	TITLE RING, RETAINING, INTERNAL, INVERTED (TAPERED SECTION TYPE)	MILITARY STANDARD MS16627
PROCUREMENT SPECIFICATION MIL-R-21248	SUPERSEDES	PAGE 6 OF 6	

DD FORM 672-1

UNCLASSIFIED

PREVIOUS EDITIONS OF THIS PUBLICATION OBSOLETE

5365-0131

APPROVED 11 DEC 1958 REVISED 8 FOR CHANGES SEE PAGES 1 THRU 8