

THE REQUIREMENTS FOR ACQUIRING THE PRODUCT(S) DESCRIBED HEREIN SHALL CONSIST OF THIS SPECIFICATION SHEET AND THE ISSUE OF THE FOLLOWING SPECIFICATION LISTED IN THAT ISSUE OF THE DODDS SPECIFIED IN THE SOLICITATION: FT-S-92

THIS SPECIFICATION IS APPROVED FOR USE BY ALL DEPARTMENTS AND AGENCIES OF THE DEPARTMENT OF DEFENSE.

Form Approved
OMB No 0704-0188

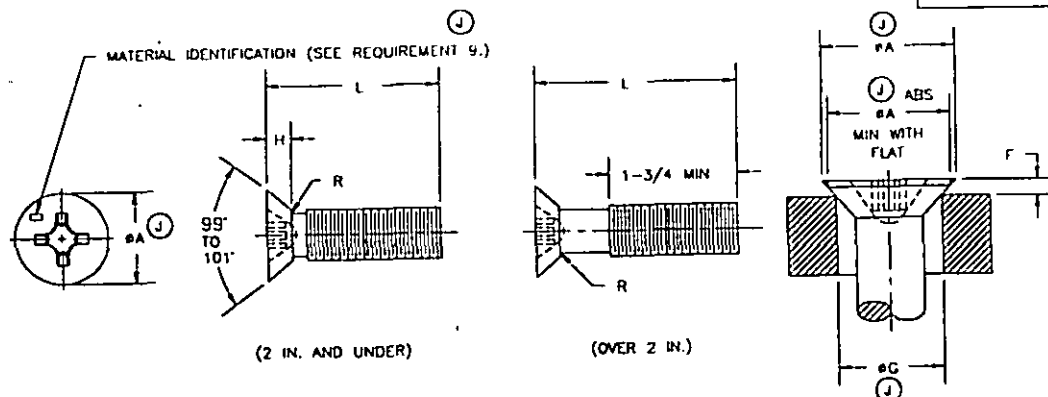


TABLE 1

THREAD SIZE		.0600 (#0)	.0860 (#2)	.1120 (#4)	.1360 (#6)	.1640 (#8)	.1900 (#10)	.2500	.3125	.3750
THREADS PER INCH		80 UNF	56 UNC	40 UNC 48 UNF	32 UNC 40 UNF	32 UNC 36 UNF	24 UNC 32 UNF	20 UNC 28 UNF	18 UNC 24 UNF	16 UNC 24 UNF
#A HEAD DIAMETER	MAX SHARP MIN SHARP ABS. MIN	.119 .104 .096	.172 .155 .143	.225 .207 .191	.279 .257 .238	.332 .308 .285	.385 .359 .333	.507 .477 .442	.635 .600 .556	.762 .722 .670
F PROTRUSION ABOVE GAGING DIAMETER	MAX MIN	.020 .012	.022 .014	.025 .016	.028 .017	.031 .019	.034 .021	.040 .025	.047 .030	.053 .034
#G GAGING DIAMETER		.074	.121	.167	.214	.261	.307	.415	.526	.638
H HEAD HEIGHT	REF	.026	.037	.049	.060	.072	.083	.110	.138	.165
R FILLET RADIUS	MAX MIN	.007 .003	.008 .004	.015 .010	.015 .010	.020 .010	.020 .010	.020 .010	.025 .010	.030 .015

REQUIREMENTS:

- MATERIAL:**
ALUMINUM ALLOY PER QQ-A-225/6. BRASS PER ASTM B16, ASTM B36, ASTM B134 OR ASTM B206. COPPER-SILICON ALLOY PER ASTM B98 OR ASTM B99, UNS C65100, UNS C85500 OR UNS C66100. NICKLE-COPPER ALLOY PER QQ-N-281, TYPE A (UNS N04400). CARBON STEEL PER FED-STD-68. CORROSION RESISTANT STEEL PER FED-STD-66, COMPOSITION 302, 303, 304, 305 OR 316 OR EQUAL TO OR INTERCHANGEABLE WITH 16-18 OR 18-8 CHROMIUM-NICKLE ALLOY STEEL (DEVELOPED FOR COLD HEADING).
- PROTECTIVE COATING, PLATING OR TREATMENT:**
ANODIZE IN ACCORDANCE WITH MIL-A-8625, TYPE I OR II, CLASS 1. BLACK CHEMICAL FINISH IN ACCORDANCE WITH MIL-F-495. BLACK OXIDE COATING IN ACCORDANCE WITH MIL-C-13924. CADMIUM PLATE IN ACCORDANCE WITH QQ-P-416, TYPE II, CLASS 3. NICKLE PLATE IN ACCORDANCE WITH QQ-N-290, CLASS 1, GRADE E. CLEAN AND DESCALE IN ACCORDANCE WITH ASTM A380.
- MAGNETIC PERMEABILITY:**
CORROSION RESISTANT STEEL SCREWS SHALL HAVE A MAGNETIC PERMEABILITY IN ACCORDANCE WITH THE PROCUREMENT SPECIFICATION.
- HEAT TREATMENT:**
ALUMINUM ALLOY SCREWS. 62 KSI MINIMUM ULTIMATE TENSILE STRENGTH IN ACCORDANCE WITH MIL-H-6088.
- RECESS:**
THE RECESS SHALL BE IN ACCORDANCE WITH MS9006.
- THREADS:**
THREADS SHALL BE CLASS 2A IN ACCORDANCE WITH FED-STD-H28/2. ACCEPTABILITY OF SCREW THREADS SHALL BE IN ACCORDANCE WITH FED-STD-H28/20, SYSTEM 21.
- THREAD LENGTH:**
FOR SCREWS UP TO AND INCLUDING 2.000 INCHES IN LENGTH, THE COMPLETE THREADS SHALL EXTEND TO WITHIN TWO (2) THREADS OF THE BEARING SURFACE OF THE HEAD, OR CLOSER IF PRACTICABLE. SCREWS OF LONGER LENGTH SHALL HAVE A MINIMUM COMPLETE THREAD LENGTH OF 1.750 INCHES.

(J) DENOTES CHANGE(S)

INCH-POUND

PREPARING ACTIVITY: JS
CUSTODIANS: ARMY- AR NAVY- AS
AIR FORCE- 99
REVIEW: AT, AV, EA, MC, ME, MI, NS, SH
USER:
PROJECT NUMBER: 5305-2071

MILITARY SPECIFICATION SHEET
TITLE
SCREW, MACHINE, FLAT COUNTERSUNK HEAD,
100°, CROSS RECESSED, UNC-2A AND UNF-2A

SPECIFICATION SHEET NUMBER
14 FEB 95
MS24693
REV J
SUPERSEDING MS24693H 26 OCT 84
AND AN501 21 APR 67
AMSC- N/A FSC 5305

DISTRIBUTION STATEMENT

A. Approved for public release; distribution is unlimited.

Page 1 of 5

DD Form 672, MAY 88

PREVIOUS EDITIONS ARE OBSOLETE

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8. UNTHREADED PORTION:

THE DIAMETER OF THE UNTHREADED PORTION OF SCREWS SHALL NOT BE LESS THAN THE MINIMUM PITCH DIAMETER NOR MORE THAN THE MAXIMUM MAJOR DIAMETER OF THE THREAD.

(J)

9. MATERIAL IDENTIFICATION:

CORROSION RESISTING STEEL SCREWS WITH NOMINAL SIZES .1380 (#6) AND LARGER SHALL BE PERMANENTLY MARKED WITH ONE DASH ("-"). MARKING SHALL BE PLACED ON THE TOP OF HEAD AND INDENTED. METHOD AND SIZE OF MARKING SHALL CONFORM TO THE REQUIREMENTS FOR PERMANENT MARKINGS SPECIFIED IN SAE AS478.

(J)

10. POINTS:

SCREWS SHALL HAVE PLAIN SHEARED ENDS. HEADER POINTS ARE ACCEPTABLE IN ACCORDANCE WITH ANSI B18.6.3.

(J)

11. CODE:

"A" BEFORE DASH NUMBER - ANODIZED, ALUMINUM ALLOY SCREW.
 "B" BEFORE DASH NUMBER - UNCOATED, BRASS SCREW.
 "BB" BEFORE DASH NUMBER - BLACK CHEMICAL FINISH, BRASS SCREW.
 "C" BEFORE DASH NUMBER - CLEANED AND DESCALED, CORROSION RESISTANT STEEL SCREW.
 "CB" BEFORE DASH NUMBER - CADMIUM PLATED, BRASS SCREW.
 "N" BEFORE DASH NUMBER - UNCOATED, NICKLE-COPPER SCREW.
 "NB" BEFORE DASH NUMBER - NICKLE PLATED, BRASS SCREW.
 "S" BEFORE DASH NUMBER - CADMIUM PLATED, CARBON STEEL SCREW.
 "U" BEFORE DASH NUMBER - UNCOATED, COPPER-SILICON SCREW.
 "B" AFTER DASH NUMBER - BLACK OXIDE COATED, CORROSION RESISTANT STEEL SCREW.

(J)

12. PART NUMBER:

THE PART NUMBER SHALL CONSIST OF THE BASIC MS NUMBER FOLLOWED BY A DASH NUMBER WITH A DASH NUMBER CODE. ONLY ONE (1) DASH NUMBER CODE SHALL BE USED PER PART NUMBER. DO NOT USE UNASSIGNED DASH NUMBERS OR CODES. SEE TABLE II AND PART NUMBER EXAMPLES.

EXAMPLES:

MS24693-A28 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1380-32 UNC-2A THREAD, ANODIZED, ALUMINUM ALLOY, .500 INCH LENGTH.
 MS24693-B54 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1640-32 UNC-2A THREAD, UNCOATED, BRASS, 1.000 INCH LENGTH.
 MS24693-BB80 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1900-24 UNC-2A THREAD, BLACK CHEMICAL FINISH, BRASS, 1.500 INCH LENGTH.
 MS24693-C202 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-48 UNF-2A THREAD, CLEANED AND DESCALED, CORROSION RESISTANT STEEL, .250 INCH LENGTH.
 MS24693-CB132 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .3125-18 UNC-2A THREAD, CADMIUM PLATED, BRASS, 3.000 INCH LENGTH.
 MS24693-N254 = SCREWS, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1640-36 UNF-2A THREAD, UNCOATED, NICKEL-COPPER ALLOY, 1.000 INCH LENGTH.
 MS24693-NB106 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .2500-20 UNC-2A THREAD, NICKEL PLATED, BRASS, 2.000 INCH LENGTH.
 MS24693-S2 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-40 UNC-2A THREAD, CADMIUM PLATED, CARBON STEEL, .250 INCH LENGTH.
 MS24693-U154 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .3750-16 UNC-2A THREAD, UNCOATED, COPPER-SILICON ALLOY, 3.000 INCH LENGTH.
 MS24693-2068 = SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, .1120-48 UNF-2A THREAD, BLACK OXIDE COATED, CORROSION RESISTANT STEEL, .500 INCH LENGTH.

PREPARING ACTIVITY: IS

CUSTODIANS: ARMY-AR

NAVY-AS

AIR FORCE-99

REVIEW: AT, AV, EA, MC, ME, MI, NS, SH

USER:

PROJECT NUMBER: 5305-2071

DISTRIBUTION STATEMENT

MILITARY SPECIFICATION SHEET

TITLE

SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100', CROSS RECESSED, UNC-2A AND UNF-2A

SPECIFICATION SHEET NUMBER

14 FEB 95

MS24693

REV J

SUPERSEDING MS24693H 26 OCT 94
AND ANS01 21 APR 67

AMSC- N/A

FSC 5305

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DD Form 672, MAY 88

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NOTES:

1. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
2. UNLESS OTHERWISE SPECIFIED, ISSUES OF REFERENCED DOCUMENTS ARE THOSE IN EFFECT AT THE TIME OF SOLICITATION.
3. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS DOCUMENT AND THE REFERENCES CITED HEREIN, THE TEXT OF THIS DOCUMENT SHALL TAKE PRECEDENCE.

TABLE II

DASH NUMBERS																
LENGTH	COURSE THREAD							FINE THREAD								
	.0880-58 UNC-2A	.1120-40 UNC-2A	.1380-32 UNC-2A	.1840-32 UNC-2A	.1900-24 UNC-2A	.2500-20 UNC-2A	.3125-18 UNC-2A	.3750-16 UNC-2A	.0800-80 UNC-2A	.1120-48 UNC-2A	.1380-40 UNC-2A	.1840-38 UNC-2A	.1900-32 UNC-2A	.2500-28 UNC-2A	.3125-24 UNC-2A	.3750-24 UNC-2A
.093	15								217							
.125	16								218							
.158	17								219							
.187		1	23	46	69	91	118	138	420	201	224	246	268	292	316	332
.250		2	24	47	70	92	117	139	421	202	225	247	269	293	317	335
.312		3	25	48	71	93	118	140	422	203	226	248	270		318	340
.375		4	26	49			119	141	423	204	227	249	271		319	341
.437	+0	5	27	50	72	94	120	142	424	205	228	250	272	294	320	342
	-0.031	6	28	51	73	95	121	143	425	206	229	251	273	295	321	343
.500		7	29	52	74	96	118	144		207	230	252	274	296	317	344
.625		8	30	53	75	97	119	145		208	231	253	275	297	318	345
.750		9	31	54	76	98	120	146		210	232	254	276	298	319	346
.875		10	32													
1.000																
1.125		11	33	55	77	99	121	143		211	233	255	277	299	321	343
1.250		12	34	56	78	100	122	144		212	234	256	278	300	322	344
1.375										213	235	257	279	301	323	345
1.500	+0	14	36	58	80	102	124	146		214	236	258	280	302	324	346
1.625	-0.062									215	237	259	281	303	325	347
1.750			36	60	82	104	126	148		216	238	260	282	304	326	348
1.875											239	261	283	305	327	349
2.000			40	62	84	106	128	150			240	262	284	306	328	350
2.125											241	263	285	307	329	351
2.250											242	264	286	308	330	352
2.500	+0	42	64	86	108	130	152	154								
2.750	-0.083															
3.000			66	88	110	132	154				265	287	309	310	332	354

Form Approved
OMB No. 0704-0188

PREPARING ACTIVITY: IS
CUSTODIANS: ARMY- AR NAVY- AS
AR FORCE- 99
REVIEW: AT, AV, EA, MC, ME, MI, NS, SH
USER:
PROJECT NUMBER: 5305-2071
DISTRIBUTION STATEMENT

MILITARY SPECIFICATION SHEET
TITLE
SCREW, MACHINE, FLAT COUNTERSUNK HEAD,
100°, CROSS RECESSED, UNC-2A AND UNF-2A

SPECIFICATION SHEET NUMBER
MS24693
14 FEB 93
REV J
SUPERSEDING MS24693H 26 OCT 94
AND AN501 21 APR 67
AMSC- N/A FSC 5305

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TABLE III

NOMINAL SIZE	MINIMUM TENSILE STRENGTH 1/					CORROSION RESISTANT	
	CARBON STEEL	BRASS	ALUMINUM ALLOY	COPPER-SILICON ALLOY	NICKLE-COPPER ALLOY	NICKLE-COPPER ALLOY	STEEL
	LBS	LBS	LBS	LBS	LBS	LBS	LBS
.0600-80 UNF-2A	105	95	110	105	140	140	140
.0860-56 UNC-2A	220	200	225	220	295	295	295
.1120-40 UNF-2A	380	330	370	360	480	480	480
.1120-48 UNF-2A	400	360	410	400	525	525	525
.1380-32 UNC-2A	545	500	560	545	725	725	725
.1380-40 UNF-2A	610	560	630	610	810	810	810
.1640-32 UNC-2A	840	770	870	840	1120	1120	1120
.1640-36 UNF-2A	850	810	880	850	1180	1180	1180
.1800-24 UNC-2A	1050	960	1060	1050	1400	1400	1400
.1800-32 UNF-2A	1200	1100	1240	1200	1600	1600	1600
.2300-20 UNF-2A	1910	1750	1970	1910	2540	2540	2540
.2300-28 UNF-2A	2180	2000	2250	2180	2910	2910	2910
.3125-16 UNC-2A	3140	2880	3250	3140	4190	4190	4190
.3125-24 UNF-2A	3480	3190	3600	3480	4840	4840	4840
.3750-16 UNC-2A	4650	4260	4800	4650	6200	6200	6200
.3750-24 UNF-2A	5270	4830	5440	5270	7070	7070	7070

1/ BASED ON 80 KSI MINIMUM ULTIMATE TENSILE STRENGTH FOR CARBON STEEL, 55 KSI FOR BRASS, 82 KSI FOR ALUMINUM ALLOY, 80 KSI FOR COPPER-SILICON ALLOY, 80 KSI FOR NICKLE-COPPER ALLOY AND 80 KSI FOR CORROSION RESISTANT STEEL. LOAD POUNDS ARE CALCULATED BY THE STRESS AREAS INDICATED IN SCREW THREAD STANDARDS FOR FED-STD-H26.

PREPARING ACTIVITY: IS

CUSTOMERS: ARMY-AR

NAVY-AS

AIR FORCE-99

REVIEW: AT, AV, EA, MC, ME, MI, NS, SH

USER:

PROJECT NUMBER: 5305-2071

DISTRIBUTION STATEMENT

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MILITARY SPECIFICATION SHEET

TITLE

SCREW, MACHINE, FLAT COUNTERSUNK HEAD, 100°, CROSS RECESSED, UNC-2A AND UNF-2A

SPECIFICATION SHEET NUMBER

MS24693

14 OCT 95

REV J

SUPERSEDING

MS24693H 26 OCT 94

AND AN501 21 APR 67

AMSC-

N/A

FSC 5305

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Form Approved
OMB No. 0704-0188TABLE IV
INTERCHANGEABILITY - (Using Coded Dash Numbers)

After 21 April 1987, screws given on AN507 are canceled, but their existing stock should be used for maintenance purposes until depleted. USE ONLY THE NEW MS24693 SCREWS FOR NEW DESIGN AND ENGINEERING.

Codes for canceled and new dash numbers:

- (1) For cadmium plated, carbon steel screws: The following AN dash numbers are superseded by the following MS dash numbers with a prefix "S" added. Example: AN507-420R5 superseded by MS24693-S91.
- (2) For plain brass screws: AN dash numbers with a prefix "UB" superseded by MS dash numbers with a prefix "B". Example: AN507UB420R5 superseded by MS24693-B91.
- (3) For black chemical finish brass screws: AN dash numbers with a prefix "B" superseded by MS dash numbers with a prefix "BB". Example: AN507B420R5 superseded by MS24693-BB91.
- (4) For cadmium plated, brass screws: AN dash numbers with a prefix "PB" superseded by MS dash numbers with a prefix "CB". Example: AN507PB420R5 superseded by MS24693-CB91.
- (5) For passivated, corrosion resisting steel screws: AN dash numbers with a prefix "C" superseded by MS dash numbers with a prefix "CS". Example: AN507C420R5 superseded by MS24693-CS91.
- (6) For anodized, aluminum alloy screws: AN dash numbers with a prefix "DD" superseded by MS dash numbers with a prefix "A". Example: AN507DD420R5 superseded by MS24693-A91.
- (7) For AN507, part number inactive for design after 17 February 1959: Optional design II cross recessed ("R" between first and second dash numbers) and slotted head screws ("-" between first and second dash numbers) are canceled and superseded by the appropriately coded MS dash number. Example: AN507-420R5 or AN507-420-5 superseded by MS24693-S91.

AN507-420R5 or AN507-420-3 superseded by MS24693-357.

CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS	CANCELED AN507 DASH NUMBERS	NEW MS24693 DASH NUMBERS
420R5	91	448R14	209	624R48	354	836R7	249
420R6	92	448R16	210	632R3	23	836R8	250
420R7	93	448R18	211	632R4	24	836R10	251
420R8	94	448R20	212	632R5	25	836R12	252
420R10	95	448R22	213	632R6	26	836R14	253
420R12	96	448R24	214	632R7	27	836R16	254
420R14	97	448R26	215	632R8	28	836R18	255
420R16	98	448R28	216	632R10	29	836R20	256
420R18	99	518R8	116	632R12	30	836R22	257
420R20	100	518R10	117	632R14	31	836R24	258
420R22	101	518R12	118	632R16	32	836R26	259
420R24	102	518R14	119	632R18	33	836R28	260
420R26	103	518R16	120	632R20	34	836R30	261
420R28	104	518R18	121	632R22	35	836R32	262
420R30	105	518R20	122	632R24	36	836R34	263
420R32	106	518R22	123	632R26	37	836R36	264
420R34	107	518R24	124	632R28	38	836R38	265
420R36	108	518R26	125	632R30	39	836R40	266
420R38	109	518R28	126	632R32	40	836R42	267
420R40	110	518R30	127	632R34	41	836R44	268
420R42	111	518R32	128	632R36	42	836R46	269
420R44	112	518R34	129	632R38	43	836R48	270
420R46	113	518R36	130	632R40	44	836R50	271
420R48	114	518R38	131	632R42	45	836R52	272
420R50	115	518R40	132	632R44	46	836R54	273
420R52	116	518R42	133	632R46	47	836R56	274
420R54	117	518R44	134	632R48	48	836R58	275
420R56	118	518R46	135	632R50	49	836R60	276
420R58	119	518R48	136	632R52	50	836R62	277
420R60	120	518R50	137	632R54	51	836R64	278
420R62	121	518R52	138	632R56	52	836R66	279
420R64	122	518R54	139	632R58	53	836R68	280
420R66	123	518R56	140	632R60	54	836R70	281
420R68	124	518R58	141	632R62	55	836R72	282
420R70	125	518R60	142	632R64	56	836R74	283
420R72	126	518R62	143	632R66	57	836R76	284
420R74	127	518R64	144	632R68	58	836R78	285
420R76	128	518R66	145	632R70	59	836R80	286
420R78	129	518R68	146	632R72	60	836R82	287
420R80	130	518R70	147	632R74	61	836R84	288
420R82	131	518R72	148	632R76	62	836R86	289
420R84	132	518R74	149	632R78	63	836R88	290
420R86	133	518R76	150	632R80	64	836R90	291
420R88	134	518R78	151	632R82	65	836R92	292
420R90	135	518R80	152	632R84	66	836R94	293
420R92	136	518R82	153	632R86	67	836R96	294
420R94	137	518R84	154	632R88	68	836R98	295
420R96	138	518R86	155	632R90	69	836R100	296
420R98	139	518R88	156	632R92	70	836R102	297
420R100	140	518R90	157	632R94	71	836R104	298
420R102	141	518R92	158	632R96	72	836R106	299
420R104	142	518R94	159	632R98	73	836R108	300
420R106	143	518R96	160	632R100	74	836R110	301
420R108	144	518R98	161	632R102	75	836R112	302
420R110	145	518R100	162	632R104	76	836R114	303
420R112	146	518R102	163	632R106	77	836R116	304
420R114	147	518R104	164	632R108	78	836R118	305
420R116	148	518R106	165	632R110	79	836R120	306
420R118	149	518R108	166	632R112	80	836R122	307
420R120	150	518R110	167	632R114	81	836R124	308
420R122	151	518R112	168	632R116	82	836R126	309
420R124	152	518R114	169	632R118	83	836R128	310
420R126	153	518R116	170	632R120	84	836R130	311
420R128	154	518R118	171	632R122	85	836R132	312
420R130	155	518R120	172	632R124	86	836R134	313
420R132	156	518R122	173	632R126	87	836R136	314
420R134	157	518R124	174	632R128	88	836R138	315
420R136	158	518R126	175	632R130	89	836R140	316
420R138	159	518R128	176	632R132	90	836R142	317
420R140	160	518R130	177	632R134	91	836R144	318
420R142	161	518R132	178	632R136	92	836R146	319
420R144	162	518R134	179	632R138	93	836R148	320
420R146	163	518R136	180	632R140	94	836R150	321
420R148	164	518R138	181	632R142	95	836R152	322
420R150	165	518R140	182	632R144	96	836R154	323
420R152	166	518R142	183	632R146	97	836R156	324
420R154	167	518R144	184	632R148	98	836R158	325
420R156	168	518R146	185	632R150	99	836R160	326
420R158	169	518R148	186	632R152	100	836R162	327
420R160	170	518R150	187	632R154	101	836R164	328
420R162	171	518R152	188	632R156	102	836R166	329
420R164	172	518R154	189	632R158	103	836R168	330
420R166	173	518R156	190	632R160	104	836R170	331
420R168	174	518R158	191	632R162	105	836R172	332
420R170	175	518R160	192	632R164	106	836R174	333
420R172	176	518R162	193	632R166	107	836R176	334
420R174	177	518R164	194	632R168	108	836R178	335
420R176	178	518R166	195	632R170	109	836R180	336
420R178	179	518R168	196	632R172	110	836R182	337
420R180	180	518R170	197	632R174	111	836R184	338
420R182	181	518R172	198	632R176	112	836R186	339
420R184	182	518R174	199	632R178	113	836R188	340
420R186	183	518R176	200	632R180	114	836R190	341
420R188	184	518R178	201	632R182	115	836R192	342
420R190	185	518R180	202	632R184	116	836R194	343
420R192	186	518R182	203	632R186	117	836R196	344
420R194	187	518R184	204	632R188	118	836R198	345
420R196	188	518R186	205	632R190	119	836R200	346
420R198	189	518R188	206	632R192	120	836R202	347
420R200	190	518R190	207	632R194	121	836R204	348
420R202	191	518R192	208	632R196	122	836R206	349
420R204	192	518R194	209	632R198	123	836R208	350
420R206	193	518R196	210	632R200	124	836R210	351
420R208	194	518R198	211	632R202	125	836R212	352
420R210	195	518R200	212	632R204	126	836R214	353
420R212	196	518R202	213	632R206	127	836R216	354
420R214	197	518R204	214	632R208	128	836R218	355
420R216	198	518R206	215	632R210	129	836R220	356
420R218	199	518R208	216	632R212	130	836R222	357
420R220	200	518R210	217	632R214	131	836R224	358
420R222	201	518R212	218	632R216	132	836R226	359
420R224	202	518R214	219	632R218	133	836R228	360
420R226	203	518R216	220	632R220	134	836R230	361
420R228	204	518R218	221	632R222	135	836R232	362
420R230	205	518R220	222	632R224	136	836R234	363
420R232	206	518R222	223	632R226	137	836R236	364
420R234	207	518R224	224	632R228	138	836R238	365
420R236	208	518R226	225	632R230	139	836R240	366
420R238	209	518R228	226	632R232	140	836R242	367
420R240	210	518R230	227	632R234	141	836R244	368
420R242	211	518R232	228	632R236	142	836R246	369
420R244	212	518R234	229	632R238	143	836R248	370
420R246	213	518R236	230	632R240	144	836R250	371
420R248	214	518R238	231	632R242	145	836R252	372
420R250	215	518R240	232	632R244	146	836R254	373
420R252	216	518R242	233	632R246	147	836R256	374
420R254	217	518R244	234	632R248	148	836R258	375
420R256	218	518R246	235	632R250	149	836R260	376
420R258	219	518R248	236	632R252	150	836R262	377
420R260	220	518R250	237	632R254	151	836R264	378
420R262	221	518R252	238	632R256	152	836R266	379
420R264	222	518R254	239	632R258	153	836R268	380
420R266	223	518R256	240	632R260	154	836R270	381
420R268	224	518R258	241	632R262	155	836R272	382
420R270	225	518R260	242	632R264	156	836R274	383
420R272	226	518R262	243	632R266	157	836R276	384
420R274	227	518R264	244	632R268	158	836R278	385
420R276	228	518R266	245	632R270	159	836R280	386
420R278	229	518R268	246	632R272	160	836R282	387
420R280	230	518R270	247	632R274	161	836R284	388
420R282	231	518R272	248	632R276	162	836R286	389
420R284	232	518R274	249	632R278	163	836R288	390