

# The 21st Centry R-390A/URR Reference Y2K - R3

Zoning for REF Gear Train Assembly, Exploded View Figure 6-36

Index #	Location	Part Name / Description PRELIMINARY	Reference Symbol
1	A1	Riveted locking plate	A216
2	A1	Spur gear	O323
3	A1	Rack gear springs (2 used)	O322
4	A1	7/16-inch retaining ring ("E" snap ring)	H213
5	A1	4-40 square nut	H219
6	A1	Gear clamp	O207
7	A1	3-56 by 1/4-inch socket head screw	H217
8	A1	Gear clamp	H231
9	A1	Bevel gear	O202
10	A2	Bevel gear	O213
11	A2	4-40 by 9/16-inch socket head screw	H218
12	A2	No. 8 split lockwashers (6 used)	H201
13	A2	8-32 by 3/8-inch binder head screws (6 used)	H230
14	A2	Gear bushing .2025 (approx. 13/64) inch thick	O221
15	A2	Gear clamp	H231
16	B1	Washers shim as needed with .01 washers.	H251
17	B1	Mechanical counter	M201
18	A1	No. 4 split lockwashers (4 used)	H202
19	A1	4-40 by 5/16-inch machine screws (4 used)	H227
20	A1	4-40 by 9/16-inch socket head screw	H218
21	A1 B1	Locked clutch gear assembly	O295
22	B1	3-56 by 1/4-inch socket head screw	H217
23	B1	Gear clamp	H231
24	B1	Bevel gear	O212
25	B1	Pressed bevel gear	O296
26	B1	6-32 by 3/16-inch machine screws (2 used)	H228
27	B1	Staked gear post	O252
28	B1	Special screw 5-40 .4476 Length overall: .4476" Threads length: .24" Unthreaded shoulder: .095; Head height: .09" Head diameter .25 inch.	H240
29	B1	No.5 split lockwasher 1/4" max outside diameter	H212
30	C1	8-32 by 3/8-inch binder head screws (6 used)	H230
31	C1	No. 8 split lockwashers (6 used)	H201
32	A2 B2 B1 C1	Front gear plate	A201
33	B2	4-40 square nut	H219
34	B2	0.312-inch hole gear clamp	H233
35	B2	4-40 by 1/2-inch socket head screw	H215
36	B2	Idler gear	O204
37	B2	Gear bushing .110 (approx. 7/64) inch thick	O242
38	B2	Shaft sleeve	O215
39	C2 C3	Final differential gear assembly	O219

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40	C2 C3	Gear panel spacing posts (2 used). One located right-hand edge of front gear plate - other located top-left corner of front gear plate. Overall length is 1.55" diameter is .315". Each end has a shoulder - .2185 diameter. One shoulder is .1, the other .03. The .1 end goes into the front gear plate (32) while the .03" end goes into the riveted front gear plate (109).	H236
41	C2	1/4-inch retaining ring (Snap ring)	H224
41A	C2	Shim(s) - Use .017 brass washer(s) as needed	
42	C2	No. 8 riveted gear	O205
43	C2	4-40 square nut	H219
44	C1 D1 C2 D2	Soldered rack gear	O201
45	D2	4-40 by 9/16-inch socket head screw	H218
46	D2 C2	Gear clamp	O208
47	D2	Retaining ring (Snap ring)	H234
48	C2 D2	Soldered gear	O392
49	C2 D2	Spur gear	O254
50	C2 D2	Gear rack springs (2 used)	O325
51	D2	4-40 by 9/16-inch socket head screw	H218
52	C2	Gear clamp	O209
53	C2	Soldered rack gear	O363
54	C2	4-40 square nut	H219
55	C3	4-40 by 1/4-inch machine screws (3 used)	H241
56	D2 D3	0.5 to 1.0 MHz RF cam, front	O311-1
57	D2	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O311-2
58	C3	Retaining ring (Snap ring)	H234
59	C3 D3	No. 2 gear assembly consisting of: Retaining ring Spur gear Springs (2 used) Soldered gear H234 O259 O270 O271	
60	C3 D3	2.0 to 4.0 MHz RF cam, front	O313-1
61	C3	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O313-2
62	C3	8.0 to 16.0 MHz RF cam and gear, front	O315-1
63	C3	8.0 to 16.0 MHz spur gear	O328
64	C3	8.0 to 16.0 MHz loading gear	O324
65	C3	8.0 to 16.0 MHz gear rack springs (2 used)	O273
66	B2 B3	Pinned spur gear	O390
67	C3	6-32 by 1/4-inch binder head screws (2 used)	H216
68	C3	No. 6 split lockwashers (2 used)	H203
69	C3	No. 6 flat washers (2 used)	H213
70	C3	Detent spring	O244
71	B3 C3	0.312-inch hole gear clamp	H233
72	C3	4-40 by 1/2-inch socket head screw	H215
73	C3	Differential shaft	O206
74	C3 C4	Pinned gear assembly	O261
75	C3	No. 6/0 taper pin / or .08 X 1/2 spring pin (roll pin)	O315-2
76	C4	Washers (2 used) .013 thick (each)	H254

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76A	C4	Shim as needed .005 thick washers Note: may also be used on other end shaft #74 as well.	
77	C4	Gear bushing .2054 (13/64) inch thick	O222
78	C3 C4	Gear bushing .215 (7/32) inch thick	O223
79	C3	Spur gear	O243
80	B3	4-40 square nut	H219
81	B3	7/16-inch retaining ring	H213
82	B3	4-40 by 9/16-inch socket head screw	H218
83	B3	Gear clamp	O211
84	B3	4-40 square nut	H219
85	B2	1/4-inch E-type retaining ring	H222
86	B2	Pressed gear	O253
87	B3 A3	Switch gear assembly (Geneva Gear Assy).	O307
87A	A3	Ball, Geneva Gear .1871 (just under 3/16) Inch diameter (4.5mm ball should work OK).	
88	A3	Retaining ring (Snap ring or "E" clip)	H237
89	B3	Multi-turn gear springs (2 used)	O319
90	B3	Megahertz gear	O218
91	B3	Soldered megahertz gear	O321
92	B3	Wash .01" brass	H251
93	B3	Spur gear	O245
94	B3 B4	Pinned stop assembly	O316
95	B4 A4	Pinned gear assembly	O246
96	B4	Washers, steel (or plated brass, magnetic) (2 used) .012" thick.	H254
96A	A4	Shims as needed .01 brass	
97	B4	Panel spacing posts (4 used) Length: 1.412" Diameter .315 Do not confuse with Index #40	H235
98	B4	4-40 square nut	H219
99	B4	0.312-inch hole gear clamp	H233
100	B4	4-40 by 1/2-inch socket head screw	H215
101	B3 B4	RF stop assembly	O317
102	B4	1/8-inch E-type retaining ring	H221
102A	B4	Shim Washers as needed	
103	B4	Locking gear (Shim to mesh correctly with 87)	O203
104	C4	Washer - .01 Brass shims as needed	H251
105	C4	Washer, steel .012	H253
106	C4	Retaining ring	H234
107	C4	8-32 by 5/16-inch flathead machine screw	H226
108	C4	8-32 by 5/16-inch flathead machine screws (3 used)	H226
109	B5 C5 B4 C4 D4	Riveted front gear plate	A202
110	B5	Pinned gear	O283
111	C5	No. 8 split lockwashers (3 used)	H201
112	C5	8-32 by 3/8-inch machine screws (3 used)	H230
113	B5	5/16-inch flat washer	H214
114	B5	4-40 square nut	H219
115	B5	Gear clamp	O210
116	B5	4-40 by 9/16-inch socket head screw	H218

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Index #	Location	Part Name / Description PRELIMINARY	Reference Symbol
117	B5	Oscillator spur gear	O241
118	C5	Cam plate brackets (2 used)	A206
119	C5	No. 6 split lockwashers (2 used)	H203
120	C5	6-32 by 7/16-inch machine screws (2 used)	H255
121	C5	1/4-inch retaining ring	H224
122	C5	Washer, steel .012	H251
123	C5	Washer - .01 Brass shims as needed	H253
124	C5	Oscillator dial hub	O240
125	C5	1/4-inch retaining ring	H224
126	D4	6-32 by 3/8-inch flathead machine screws (6 used)	H225
127	D4	6-32 by 3/8-inch flathead machine screw	H225
128	D4	No. 6 split lockwashers (4 used)	H203
129	D3	Loaded rack gear assembly consisting of: Retaining ring Springs (2 used) Spur gear Soldered gear H234 O247 O254 O262	
130	D3 D4	6-32 by 3/8-inch Phillips-head screws (4 used)	H229
131	D3	4-40 square nut	H219
132	D3	0.312-inch hole gear clamp	H233
133	D3	4-40 by 1/2-inch socket head screw	H215
134	D3 E3	No. 4 gear assembly consisting of: Spur gear Springs (2 used) Spur gear Soldered gear O253 O273 O274 O324	
135	D4	4-40 square nut	H219
136	E3 E4	0.312-inch hole gear clamp	H233
137	E4	4-40 by 1/2-inch socket head screw	H215
138	E3	4-40 square nut	H219
139	E3	0.312-inch hole gear clamp	H233
140	E3	4-40 by 1/2-inch socket head screw	H215
141	E4	Loaded rack gear assembly consisting of: Retaining ring Springs (2 used) Spur gear Soldered gear H234 O247 O254 O262	
142	E4	16.0 to 32.0 MHz RF cam, front	O310-1
143	E4	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O310-2
144	E4	4.0 to 8.0 MHz RF cam, front	O314-1
145	D4 E4	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O314-2
146	D4	1.0 to 2.0 MHz RF cam, front	O312-1
147	D4	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O312-2
148	D4	Rack panel spacing posts (3 used) 5-19/32 inches	H244
149	D4 D5 C5	Pressed cam plate	A209
150	D4	No. 6 split lockwashers (4 used)	H203
151	D5	6-32 by 3/8-inch machine screws (4 used)	H229
152	D5	Rack panel short posts (3 or 4 used) .5466 inches	H242
153	D5	1.0 to 2.0 MHz RF cam, inner	O312-3
154	D5	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O312-4
155	D5	4.0 to 8.0 MHz RF cam, rear	O314-3
156	D5	Rack panel long post 4-25/32 Inches	H243
157	D6	0.5 to 1.0 MHz RF cam, rear	O311-3
158	D6	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O311-4

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Index #	Location	Part Name / Description PRELIMINARY	Reference Symbol
159	D6	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O313-3
160	D6	8.0 to 16.0 MHz RF cam, inner	O315-3
161	D6	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O315-4
162	D6	2.0 to 4. 0 MHz RF cam, rear	O313-4
163	D6	2.0 to 4.0 MHz RF camshaft	O313-5
164	D6 D5	0.5 to 1.0 MHz RF camshaft	O311-5
165	D5	16.0 to 32.0 MHz RF cam, rear	O310-3
166	D5	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O310-4 O314-4
167	D5	4.0 to 8.0 MHz & 16.0 to 32.0 MHz RF camshafts O314-5 O310-5	
168	C6	Trimmer shaft	O236
169	C6	Trimmer shaft insulator	E227
170	C6	Helical driven gear	O318
171	C6	Helical gear clamp	H245
172	C6 C7 D6 D7	Helical gear bushing .1269 inches thick	O256
173	D7	Special washer, spring, .0173 inches thick	H232
174	D7	3/16-inch retaining ring	H223
175	C6 D6	8-32 by 1/8-inch setscrew	H220
176	D6	Pressed cam plate	O306
177	D6 D7	Pressed auxiliary cam plate	A208
178	D6	No. 6 split lockwashers	H203
179	D6	6-32 by 3/8-inch machine screw	H229
180	D7	Camshaft	O315-5
181	D7	1- to 2-mc camshaft	O312-5
182	D7	Soldered rf cam	O312-6
183	D7	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O312-7
184	D7	Soldered rf cam	O315-6
185	D7	No. 6/0 taper pin / or .08 X 3/8 spring pin (roll pin)	O315-7

a Index No. 129 and 141 consist of H234, O262, O254, and O247.

b Index No. 134 consists of O253, O273, O274, and O324.

c Index No. 59 consists of H234 O259 O270 O271.

Note: Parts O311 through O315 make up the entire camshaft assembly.