

MANDATORY SERVICE BULLETIN**MSB23-01**

Subject Matter of This Document may be Incorporated, in Whole or in Part,
in an FAA Issued Airworthiness Directive

**TECHNICAL PORTIONS
FAA APPROVED**

SUBJECT: Crankshaft counterweights

PURPOSE: Inspect affected crankshafts for proper counterweight installation.

COMPLIANCE: For Engines with **less than 200** operating hours:
Accomplish immediately; an additional five flight hours acceptable to move to a maintenance facility with minimum essential crew, if necessary. Compliance time begins upon Service Bulletin receipt
For Engines with **more than 200** operating hours:
No further action required

MODELS

AFFECTED: New and rebuilt Continental Aerospace Technologies aviation gasoline (AvGas) engines or crankshaft assemblies with serial numbers listed in Appendix 1 or Appendix 2:
IO-360-A, AB, AF, C, CB, D, DB, ES, G, GB, H, HB, J, JB, K, KB;
LTSIO-360-E, EB, K, KB, RB;
TSIO-360-A, AB, B, BB, C, CB, D, DB, E, EB, G, GB, H, HB, J, JB, KB, LB, MB, RB, SB;
O-470-R, S, U;
IO-470-K, L, N, U, VO;
GTSIO-520-C, D, H, K, L, M, N;
IO-520-A, BB, BE, CB, D, DB, E, EB, F, J, JB, K, KB, L, LB, MB, NB, UB, VB, WB;
LTSIO-520-AE;
TSIO-520-AE, AF, C, CE, G, H, M, P, R, T, UB, VB, WB;
IO-550-A, B, C, D, E, F, G, L, N, P, R;
TSIO-550-A, B, C, E, G, K, N;
TSIOL-550-A, B, C;
TSIOF-550-K.

I. GENERAL INFORMATION

Continental discovered a potential assembly error affecting approximately 2000 crankshaft assemblies. It is possible one or more counterweight retaining rings were not properly seated in the crankshaft counterweight groove. This condition could allow the counterweight to depart from the crankshaft during engine operation resulting in catastrophic engine damage.

II. SCOPE

The engines and crankshaft assemblies affected by this bulletin are identified by Serial Number in Appendix 1 (engines) and Appendix 2 (crankshaft assemblies sold as replacement parts). Only the engine or crankshaft assembly serial numbers listed in the two tables are subject to inspection. Inspection is not required on engines and crankshaft assemblies not included in the two tables.

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The engine data plate is mounted to the 1-3-5 side of the engine. Inspect the serial number on the data plate to determine if the engine is affected by this service bulletin. The crankshaft serial number is stamped in the perimeter of the propeller flange.

III. ACTION REQUIRED

1. Locate the affected crankshaft assemblies:
 - a. For spare crankshaft assemblies, collect affected spare crankshaft assemblies from protected storage and relocate to a workbench with V-blocks and a surface plate and proceed to Section III, step 2.
 - b. For crankshaft assemblies installed in engines, remove cylinders from the odd (1-3-5) side of the crankcase according to the instructions in the primary Instructions for Continued Airworthiness (ICA). The number of cylinders required to be removed for inspection is determined by the number of and location of the counterweights on the crankshaft assembly. Crankshaft assemblies differ by engine model.

CAUTION: Cylinder removal from the crankcase relieves through-bolt preload. Use of torque plates or spacers to maintain tension on the crankcase is recommended before rotating the crankshaft with cylinders removed.

Engine Model	Cylinders to be removed
O-470-R and IO/LTSIO/TSIO-360	1
GTSIO-520	1, 3, and 5
All others	1 and 3

2. After cylinder removal, rotate the crankshaft for best access to the counterweight plates. Inspect crankshaft counterweights with an inspection mirror and flashlight for security and proper installation of the retaining clip in the counterweight groove. The following illustrations, as well as detailed disassembly, inspection, and assembly instructions are contained in M-0, Section 10-9.1.
 - a. If a counterweight retaining ring, plate, or pin is missing, terminate the inspection and remove the engine for disassembly. Inspect and repair, as necessary.
 - b. Verify the installed retaining rings are installed in counterweight grooves and match the installed specifications in Figure 2 or Figure 3.
 - 1) Refer to the installation instructions in M-0, Section 10-9.1.5 for “Crankshaft Counterweight Bushing Replacement” step 6. instructions.
 - 2) Consult online illustrated parts catalogs for assembly part numbers.

NOTE: The leading edge of the gage must contact the surface of the retaining plate squarely for an accurate measurement. Slide the gage between the retaining ring ears until the gage contacts the edge of the counterweight. Blue Dykem may be present on the counterweight assembly or the counterweight plate, or the retaining ring; removing excess Dykem is acceptable to complete the inspection. There may be slight resistance when trying to insert the gage - this is acceptable and expected.

- 3) Measure installed counterweight retaining ring minimum gap (Figure 1) between ears with a copy of the gage block manufactured to meet the specifications in Figure 4 or Figure 5. All three conditions specified in Figure 1 must be met. Inspection gages are available to borrow upon request from Continental or the tool may be locally manufactured according to the specifications provided in Figure 4 or Figure 5.

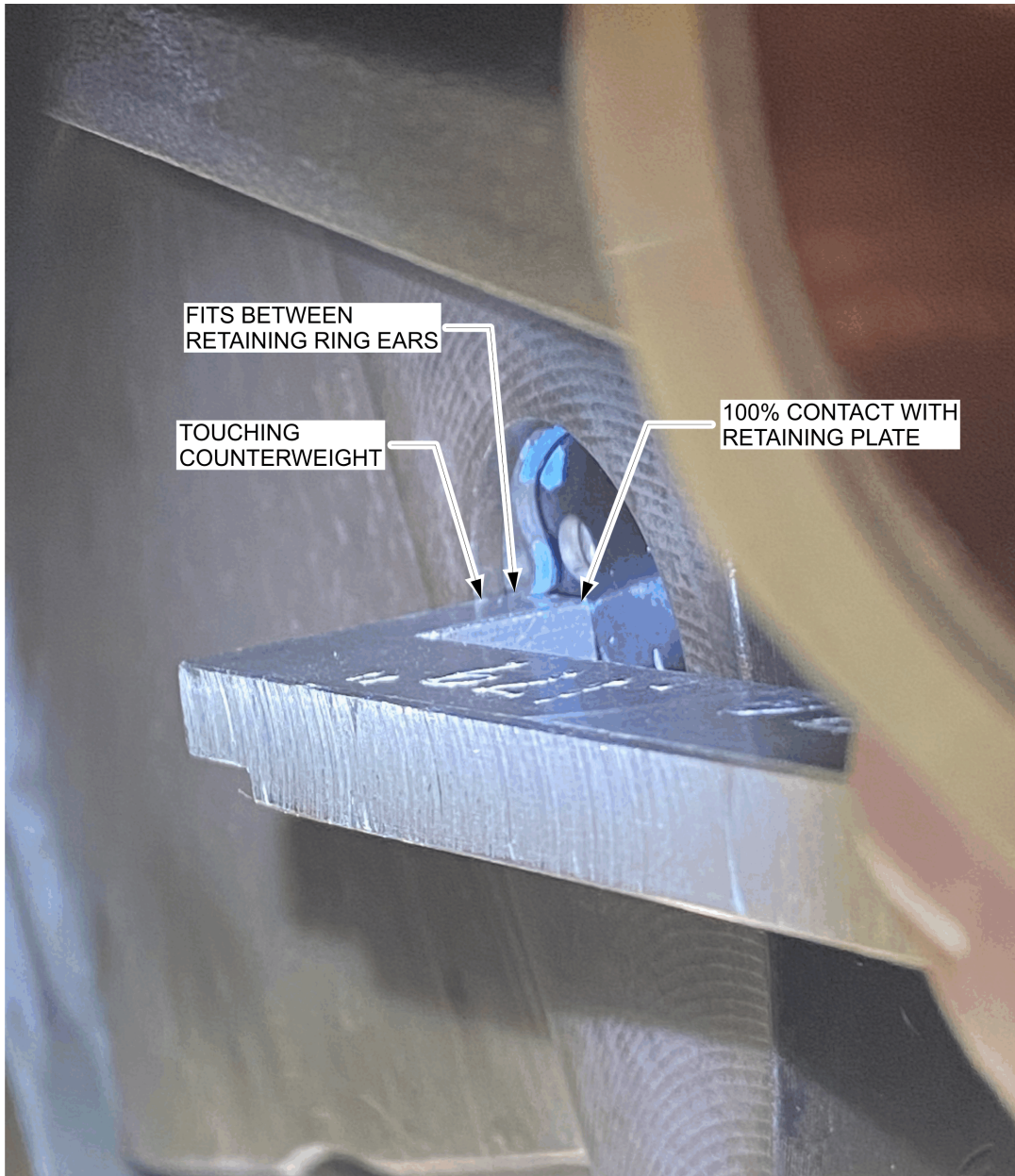


Figure 1. Gage Inserted to Measure Retaining Ring Gap

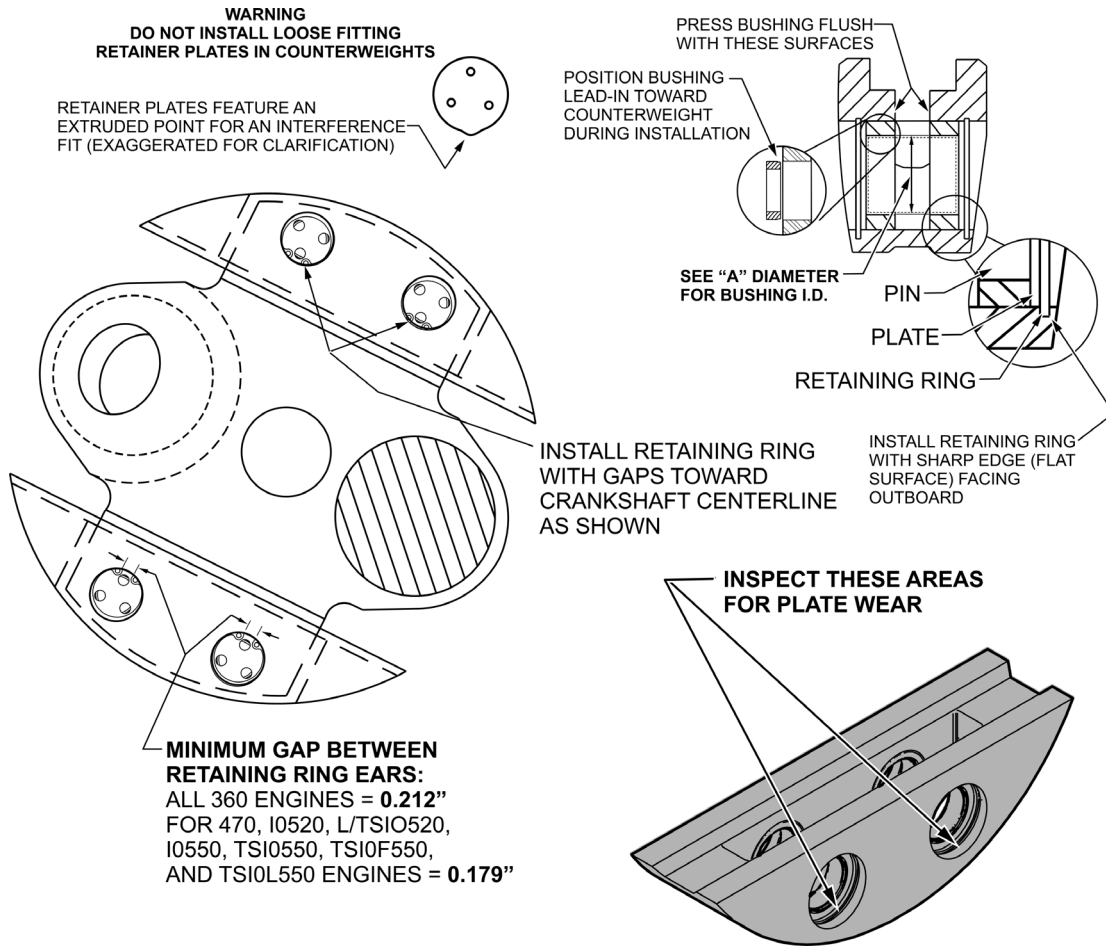


Figure 2. Counterweight Inspection
(Applicable to 360, 470, IO520, L/TSIO-520, and 550 Series Engines Only)

Figure 3 is NOT applicable to GTSIO-520 (See Figure 3)

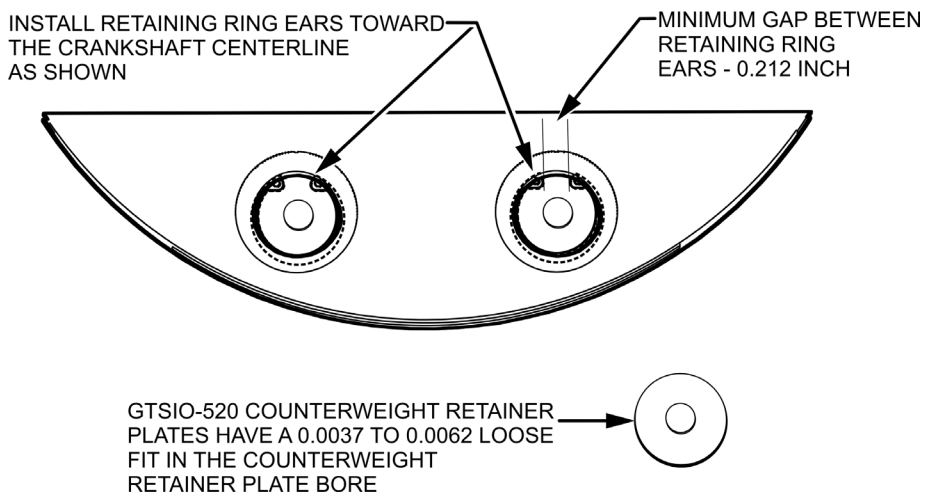


Figure 3. Counterweight Inspection
(Applicable to GTSIO-520 Only)

- c. If all the components appear to be installed but the counterweight retaining ring does not exhibit the proper orientation or the minimum distance between the retaining ring ears is not met, attempt to reposition or reseal the retaining ring with retaining ring pliers or a small drift or punch.

NOTE: If counterweight retaining ring(s) are removed from the counterweight, new retaining ring(s) are required for reassembly.

- d. If repositioning or reseating the retaining rings is not successful, remove the retaining rings, retaining plates and the counterweight pins from one side of the counterweight and remove the counterweight from the crankshaft hanger blade to determine the cause of non-conformity using the instructions in Section 10-9.1.

NOTE: Record the position from which the counterweight pins are removed. The counterweight pin part numbers determine the magnitude of vibration the counterweight is designed to inhibit. Installing incorrect pin in the counterweight assembly could increase engine vibration.

3. Rotate the crankshaft, as necessary, to gain access to the remaining counterweight assemblies on the crankshaft until all counterweight assemblies have been inspected and proper installation of the counterweight plates and retaining rings has been verified.
4. Re-install cylinders according to the instructions in the primary ICA.
5. Perform an engine start and ground run-up according to the AFM/POH to verify engine operation after installation and perform a engine visual leak check.
6. Record compliance with this service bulletin on crankshafts installed in the engine in the engine log book. For replacement crankshafts, apply a 0.375” dot of white enamel paint to the outer face of each counterweight after completing the inspection.

IV. TOOL DRAWINGS

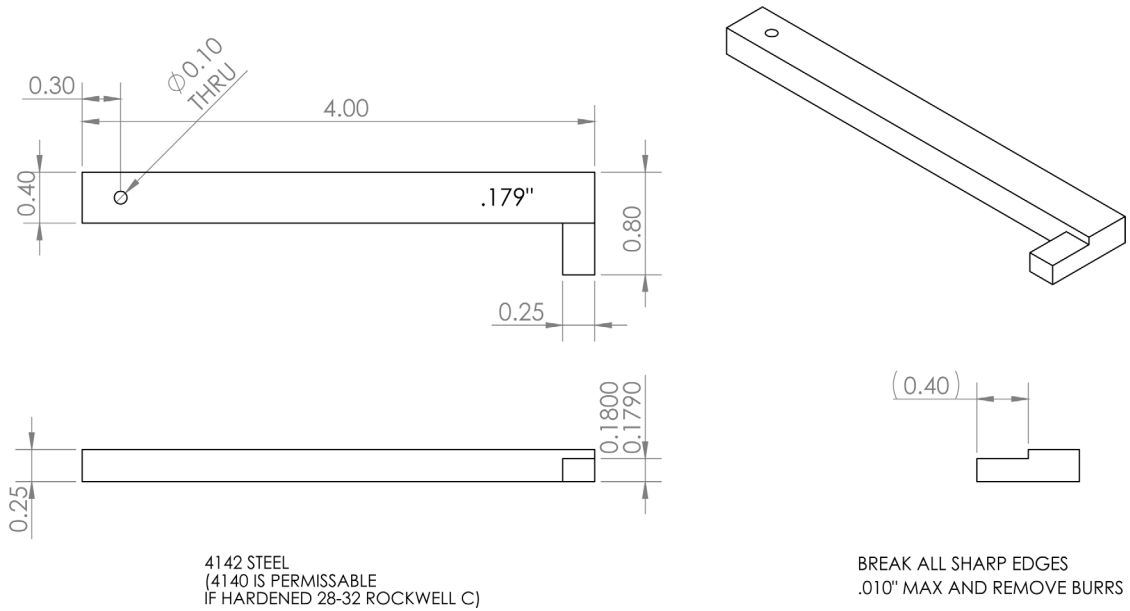


Figure 4. 0.179 Inch Gage (470, IO520, L/T5IO-520, and 550 Series Engines Only)

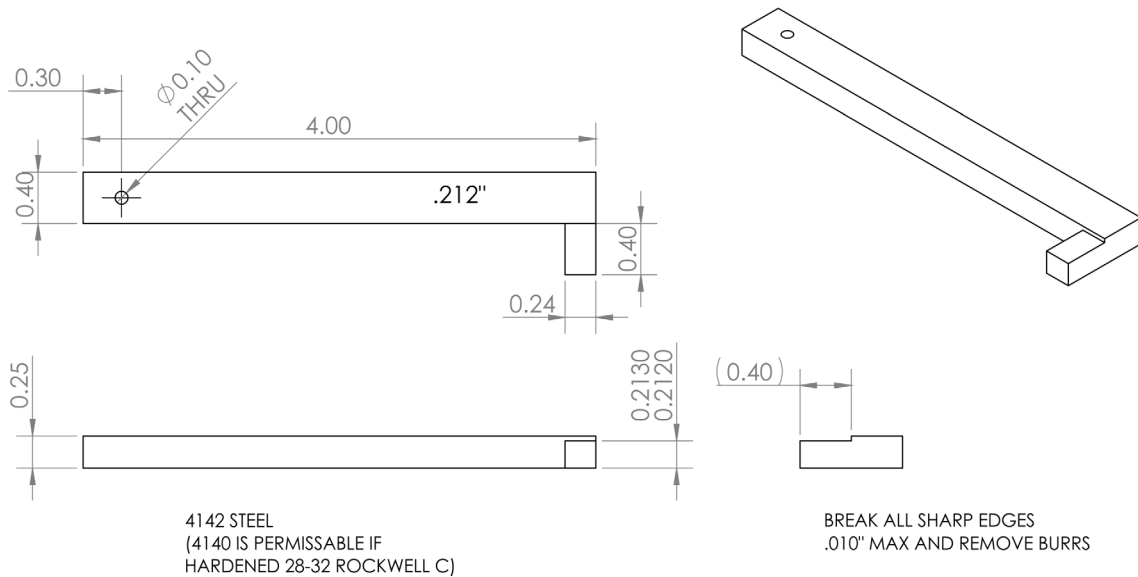


Figure 5. 0.212 Inch Gage (IO/LTSIO/TSIO-360 and GTSIO-520 Series Engines Only)

V. WARRANTY

The actions required to comply with this Service Document are covered, up to the Eligible Allowance provided for reimbursement, as shown below. Standard warranty practices apply. Visit the Continental web site at www.continental.aero to obtain copies of Continental Warranty Policies.

Please provide details of discrepancy with the completed compliance form as verification of non-conformity. Photos are preferred, a detailed description is acceptable.

Complete and email a copy of the linked [Compliance Form](#), along with a copy of the work invoice and a copy of the repair agency’s W-9, immediately upon completion for reimbursement. To prevent delays in reimbursement processing, the following information **MUST** be included in the “Details and Description of Troubleshooting” section of the compliance form.

1. Non-conformity found? Yes or No
2. If yes, what condition of non-conformity was found?

Continental reserves the right to request copies of invoices and maintenance records to verify warranty applicability.

Allowances/Reimbursements

Eligible Allowances for Reimbursement (not installed in aircraft)		Labor Hours¹
1	Inspect crankshaft counterweight retaining rings (per counterweight)	0.15
2	Reposition, Reseat, or Remove and Install Crankshaft Counterweight Assemblies (per counterweight assembly)	0.25

1. at published shop rate

Eligible Allowances for Reimbursement (installed in aircraft)		Labor Hours¹
1	Remove and install one cylinder (see table in Section III)	10.0
	Remove and install two cylinders (see table in Section III)	18.0
	Remove and install three cylinders (see table in Section III)	22.0
2	Inspect crankshaft counterweight retaining rings (per counterweight)	0.25
3	Reposition, Reseat, or Remove and Install Crankshaft Counterweight Assemblies (per counterweight assembly)	0.50

1. at published shop rate

Continental has established a dedicated telephone line and email address to field questions regarding this service document.

Direct Dial 251-441-4460
 Main Line 251-308-9100 - Option 9
 Email: MSB23Support@continental.aero

If unable to reach our representatives using the dedicated lines, the numbers below are also active:

1.888.826.5465 Toll Free in the United States
 +1.251.436.8299 International Callers

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Appendix 1. Affected Engine Serial Numbers

0470R Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042336	N21BA070
1043271	N21FA169
1043246	N21FA197
1043161	N21FA203
1043162	N21FA210
1043165	N21FA211
1043181	N21FA190
1043981	N21KA228
1043688	N21KA247
1043696	N21KA249
1043705	N21KA255
1043799	N21KA259
1043800	N22CA193
1043858	N22CA197
1043867	N22CA198
1043945	N22CA199
1044448	N22CA216
1044021	N22CA217
1044444	N22CA218
1044396	N22CA219
1044024	N22CA220
1044394	N22CA221
1044931	N22CA226
1044382	N22CA228
1044395	N22CA230

0470S Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043272	N21FA213
1043668	N21KA254
1043671	N21KA265

0470U Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043252	N21FA166
1043207	N21FA167
1043209	N21FA170
1043208	N21FA175

0470U Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044012	N21FA177
1043384	N21FA182
1043305	N21FA188
1043664	N21KA223
1043706	N21KA234
1043684	N21KA235
1043760	N21KA236
1043385	N21KA241
1043713	N21KA244
1044389	N22CA205

GTSI0520L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042500	N21CA009
1042499	N21CA035

I0360CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044728	N22DA076

I0360DB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044430	N22DA066

I0360ES Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042000	N20KA258
1044404	N21GA023
1043551	N21GA029
1044443	N22DA057
1044403	N22DA065
1044447	N22DA072
1044435	N22DA077

I0360GB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043390	N21GA050

I0360HB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043391	N21GA010

I0360KB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042000	N20KA258
1044404	N21GA023
1043551	N21GA029
1044443	N22DA057
1044403	N22DA065
1044447	N22DA072
1044435	N22DA077

I0470L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043786	N22BA010
1043785	N22BA015

I0470N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043589	N21FA225
1043789	N22BA012

I0520A Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043589	N21FA225
1043789	N22BA012

I0520BB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041969	N21BA331
1043206	N21DA195
1043024	N21DA204
1044035	N21KA140
1044046	N21KA144
1043918	N21KA147
1044586	N22IA132
1044799	N22IA170

I0520CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043163	N21DA200
1043164	N21DA202
1044042	N21DA208
1044043	N21KA149
1044581	N22IA160

I0520D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043639	N21AA227
1043587	N21AA250
1043260	N21FA098
1044878	N21KA071
1044712	N21KA086
1044704	N21KA091
1043882	N22CA062
1043787	N22CA080
1044234	N22CA136
1044695	N22CA138
1044708	N22FA146
1044467	N22FA158
1044809	N22LA008

I0520E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043562	N21AA260

I0520F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044557	N21AA225
1043268	N21FA072
1043674	N21FA074
1044714	N21KA088
1044694	N21KA089
1044772	N21KA093
1043779	N22CA063
1043801	N22CA065
1043788	N22CA086
1043725	N22CA103

I0520F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043827	N22CA107
1043906	N22CA131
1044629	N22FA118
1044175	N22FA125
1044333	N22FA134
1044178	N22FA147
1044825	N22LA009

I0520L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043261	N21FA084
1044215	N22FA123

I0520MB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043177	N21DA193
1043176	N21DA206
1043869	N21KA137
1044800	N22IA130
1044737	N22IA172

I0550A Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043709	N22DA203

I0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042671	N21FA231
1042672	N21FA233
1042619	N21JA052
1042712	N21JA053
1042310	N21JA118
1042518	N21JA141
1042374	N21JA154
1042618	N21JA157
1043068	N21KA016
1043000	N22AA056
1043150	N22BA085
1043111	N22BA086

I0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043239	N22BA087
1043248	N22BA088
1044501	N22BA092
1043405	N22BA105
1043470	N22CA005
1043552	N22CA039
1043001	N22CA045
1043495	N22CA050
1043509	N22CA055
1043500	N22CA060
1043511	N22CA234
1043503	N22CA236
1043502	N22CA240
1043529	N22CA252
1043545	N22CA274
1044473	N22CA279
1043576	N22CA283
1043584	N22DA015
1043630	N22DA170
1043673	N22DA175
1043672	N22DA188
1044374	N22DA190
1044363	N22DA196
1043698	N22DA197
1043749	N22EA038
1043803	N22EA055
1043975	N22EA136
1043950	N22EA141
1043971	N22EA193
1043849	N22EA210
1043872	N22EA246
1044490	N22FA005
1043972	N22FA020
1044449	N22FA028
1043961	N22FA030
1044516	N22FA081
1044104	N22FA096
1044198	N22GA096
1044196	N22GA103
1044197	N22GA110

I0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044495	N22HA067
1044497	N22HA069
1044486	N22HA077
1044392	N22HA084
1044496	N22HA104
1044511	N22HA116
1044471	N22HA117
1044481	N22HA132
1044572	N22HA159
1044401	N22HA176
1044579	N22IA028
1044576	N22IA056
1044761	N22JA026
1044690	N22JA038
1044723	N22JA079
1044741	N22JA107
1044900	N22KA133
1044760	N22KA176

I0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042692	N21JA051
1042691	N21JA168
1042693	N21JA189
1042694	N21JA190
1042992	N21KA022
1042996	N21KA028
1043117	N22AA025
1043116	N22AA028
1043290	N22AA049
1043381	N22AA071
1043307	N22AA101
1042997	N22AA103
1043382	N22BA077
1043380	N22BA078
1043383	N22BA079
1043404	N22BA083
1043180	N22BA089
1043403	N22BA091

I0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043402	N22BA096
1043409	N22BA103
1043195	N22BA104
1043405	N22BA105
1043178	N22BA107
1043179	N22BA109
1043462	N22BA121
1043472	N22CA025
1043471	N22CA026
1043548	N22CA027
1043461	N22CA028
1043546	N22CA031
1043549	N22CA043
1043514	N22CA233
1043515	N22CA237
1043499	N22CA238
1043707	N22CA241
1043517	N22CA242
1043519	N22CA243
1043518	N22CA250
1043572	N22CA265
1043571	N22CA275
1043556	N22CA276
1043570	N22CA285
1043569	N22DA002
1043577	N22DA005
1043568	N22DA006
1043699	N22DA009
1044503	N22DA037
1043630	N22DA170
1043710	N22DA201
1043726	N22DA204
1044398	N22DA211
1043980	N22DA214
1043737	N22EA034
1043749	N22EA038
1043743	N22EA045
1043930	N22EA051
1043716	N22EA059
1043729	N22EA060

I0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043888	N22EA084
1044450	N22EA181
1043974	N22EA197
1044451	N22EA239
1044439	N22EA242
1043949	N22EA248
1043958	N22FA003
1043889	N22FA007
1044267	N22FA008
1043928	N22FA025
1044440	N22FA032
1044275	N22FA077
1044476	N22HA018
1044438	N22HA054
1044441	N22HA109
1044468	N22HA120
1044397	N22HA124
1044875	N22HA154
1044597	N22HA156
1044876	N22HA157
1044499	N22HA172
1044587	N22IA031
1044580	N22IA039
1044605	N22IA075

I0550D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043084	N21FA157
1042737	N21JA086
1043308	N21JA088
1042808	N21JA093
1043104	N21JA105
1044280	N21KA177
1043770	N21KA184
1043935	N21KA189
1043910	N21KA193
1043783	N21KA200
1043667	N21KA213
1043441	N21KA214
1044261	N22CA145
1044885	N22CA148
1044277	N22CA151
1044268	N22CA152
1044278	N22CA154
1044340	N22CA158
1044883	N22CA161
1044891	N22CA171
1044463	N22CA176
1044341	N22CA184
1044933	N22KA023
1044884	N22KA054

I0550D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042777	N21AA299
1043291	N21AA302
1043331	N21AA311
1043083	N21AA314
1043782	N21AA321
1041011	N21DA152
1042733	N21FA135
1043105	N21FA139
1043289	N21FA140
1043292	N21FA145
1043082	N21FA148
1043110	N21FA151

I0550E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044269	N22CA142

I0550F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043113	N21AA305
1043304	N21AA307
1043076	N21AA310
1043087	N21AA315
1043114	N21AA318
1043055	N21FA137
1042795	N21FA161
1042987	N21JA070

I0550F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042794	N21JA083
1043077	N21JA106
1044007	N21KA171
1043629	N21KA174
1043766	N21KA178
1043852	N21KA190
1043591	N21KA191
1043805	N21KA196
1043459	N21KA199
1043847	N21KA209
1044297	N21KA217
1044288	N21KA218
1044286	N22CA144
1044260	N22CA146
1044272	N22CA153
1044287	N22CA164
1044259	N22CA183
1044912	N22KA018
1044913	N22KA047

I0550G Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044491	N22CA232
1043941	N22FA013

I0550G Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043112	N21AA303
1044008	N21KA206
1044494	N22CA149

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042204	N21DA005
1042281	N21DA011
1042282	N21DA016
1042311	N21DA019
1042284	N21DA021
1042338	N21DA029

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042146	N21DA035
1042214	N21DA039
1042227	N21DA040
1042249	N21DA043
1042221	N21DA047
1042222	N21DA054
1042070	N21DA060
1042153	N21DA063
1042151	N21DA065
1042280	N21DA068
1042287	N21DA071
1042285	N21DA072
1042250	N21DA075
1042149	N21DA089
1042168	N21DA098
1042127	N21DA103
1042150	N21DA104
1042224	N21DA108
1042211	N21DA110
1042156	N21DA112
1042288	N21DA115
1042319	N21DA119
1042312	N21DA129
1042301	N21DA131
1042379	N21DA136
1042341	N21DA137
1042665	N21FA236
1042449	N21JA001
1042448	N21JA007
1042452	N21JA010
1042443	N21JA011
1042476	N21JA018
1042447	N21JA022
1042453	N21JA024
1042590	N21JA043
1042605	N21JA045
1042660	N21JA046
1042710	N21JA047
1042581	N21JA054
1042477	N21JA107

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042644	N21JA117
1042608	N21JA132
1042632	N21JA142
1043175	N21JA151
1042662	N21JA153
1042607	N21JA156
1042642	N21JA160
1042709	N21JA161
1042638	N21JA166
1042711	N21JA172
1043306	N21JA178
1043170	N21JA182
1042811	N21JA191
1042812	N21JA199
1042985	N21JA202
1042810	N21KA001
1043059	N21KA023
1043058	N21KA025
1043057	N21KA027
1043033	N21KA029
1043085	N21KA037
1043169	N21KA041
1043146	N22AA003
1043124	N22AA009
1043106	N22AA011
1043174	N22AA014
1043151	N22AA022
1043147	N22AA026
1043167	N22AA029
1043168	N22AA035
1043278	N22AA041
1043228	N22AA046
1043229	N22AA047
1043230	N22AA050
1043231	N22AA052
1043354	N22AA058
1043335	N22AA061
1043356	N22AA066
1044626	N22AA068
1043388	N22AA069

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043336	N22AA072
1043387	N22AA074
1043323	N22AA078
1043324	N22AA080
1043277	N22AA084
1043592	N22AA090
1043120	N22AA099
1043318	N22AA108
1043355	N22AA110
1043386	N22BA084
1043023	N22BA094
1043240	N22BA106
1043455	N22BA108
1043448	N22BA112
1043457	N22BA119
1043426	N22CA006
1043474	N22CA012
1043525	N22CA014
1043449	N22CA015
1043458	N22CA017
1043450	N22CA021
1043521	N22CA030
1043488	N22CA033
1044482	N22CA036
1043547	N22CA040
1043536	N22CA244
1043520	N22CA247
1043534	N22CA259
1043550	N22CA268
1043553	N22CA272
1043595	N22CA277
1043590	N22CA281
1043555	N22CA287
1043685	N22DA011
1043605	N22DA016
1043597	N22DA017
1043615	N22DA018
1043623	N22DA022
1043649	N22DA023
1043618	N22DA025

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043585	N22DA035
1043647	N22DA039
1043643	N22DA040
1044507	N22DA041
1043642	N22DA168
1044371	N22DA171
1043650	N22DA172
1043594	N22DA176
1043638	N22DA179
1043648	N22DA181
1043593	N22DA182
1043669	N22DA187
1043686	N22DA189
1043683	N22DA192
1043665	N22DA194
1043704	N22DA206
1043691	N22DA207
1043712	N22DA209
1043714	N22DA213
1044225	N22DA217
1043740	N22DA220
1043879	N22EA003
1043747	N22EA004
1043771	N22EA005
1043790	N22EA006
1043755	N22EA007
1043734	N22EA008
1043798	N22EA009
1043924	N22EA011
1043751	N22EA037
1043870	N22EA068
1043885	N22EA079
1043857	N22EA083
1044023	N22EA087
1043959	N22EA088
1043940	N22EA109
1043880	N22EA116
1044422	N22EA131
1044022	N22EA169
1044152	N22EA178

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044327	N22EA180
1044232	N22EA189
1044064	N22EA199
1043966	N22EA200
1043819	N22EA211
1043929	N22EA236
1043944	N22EA240
1043948	N22EA243
1043856	N22EA245
1044337	N22EA252
1043891	N22FA004
1043890	N22FA010
1043970	N22FA014
1043919	N22FA024
1043979	N22FA044
1044081	N22FA045
1044366	N22FA049
1044090	N22FA055
1044027	N22FA061
1043996	N22FA062
1044080	N22FA063
1044031	N22FA064
1044082	N22FA067
1044276	N22FA070
1044324	N22FA072
1044110	N22FA073
1044009	N22FA074
1044066	N22FA076
1044111	N22FA083
1044281	N22FA089
1044295	N22FA090
1044083	N22FA091
1044105	N22FA093
1044155	N22FA097
1044079	N22FA102
1044095	N22FA105
1044279	N22FA146
1044153	N22GA013
1044097	N22GA017
1044089	N22GA020

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044181	N22GA052
1044460	N22GA067
1044106	N22GA071
1044311	N22GA094
1044182	N22GA100
1044151	N22GA114
1044294	N22HA001
1044461	N22HA013
1044319	N22HA016
1044336	N22HA020
1044229	N22HA024
1044345	N22HA032
1044231	N22HA044
1044360	N22HA076
1044334	N22HA087
1044335	N22HA100
1044365	N22HA103
1044421	N22HA105
1044372	N22HA113
1044498	N22HA114
1044472	N22HA128
1044534	N22HA155
1044492	N22HA163
1044514	N22IA009
1044558	N22IA033
1044561	N22IA048
1044699	N22IA094
1044679	N22IA098
1044655	N22JA001
1044725	N22JA014
1044774	N22JA030
1044763	N22JA033
1044677	N22JA045
1044691	N22JA076
1044674	N22JA077
1044765	N22JA096
1044773	N22JA098
1044768	N22JA109
1044762	N22KA136
1044868	N22KA154

I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044894	N22KA187
1044904	N22KA189

I0550P Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043232	N21FA239
1042631	N21FA240
1042677	N21JA125
1042676	N21JA176
1043032	N21KA019
1043118	N22AA024
1043119	N22AA027
1043392	N22AA076
1043238	N22AA100
1043465	N22CA022
1043501	N22CA059
1043628	N22DA046
1043708	N22DA186
1043700	N22DA210
1043772	N22EA010
1043947	N22EA085
1044270	N22EA167
1043926	N22EA241
1044362	N22HA098
1044484	N22HA126
1044470	N22HA178
1044585	N22IA057
1044599	N22IA066
1044688	N22JA046

LTSI0360RB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042346	N20IA175
1044432	N21BA131
1043379	N21BA135
1044434	N21GA063
1044431	N21GA071

R-0470K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043677	N11HA173

R-0470L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042827	N17HA233
1041780	N17IA109
1042957	N22CA200

R-0470R Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042745	N05DA214
1043337	N11JA238
1042743	N21BA067
1041620	N21BA069
1041783	N21FA174
1042765	N21FA176
1041781	N21FA178
1041837	N21FA181
1041782	N21FA193
1041613	N21FA194
1041615	N21FA196
1041722	N21FA200
1041618	N21FA201
1041622	N21FA208
1041617	N21FA209
1041619	N21FA214
1041621	N21FA215
1042766	N21KA225
1042744	N21KA242
1042742	N21KA243
1042746	N22CA191
1042764	N22CA192
1042741	N22CA196

R-0470S Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041838	N21FA179
1041623	N21FA206
1042830	N21KA257

R-0470S Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042829	N21KA263
1042831	N22CA202

R-0470U Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043894	N17HA226
1040787	N21BA062
1040587	N21BA073
1041785	N21FA168
1041625	N21FA171
1041627	N21FA172
1042747	N21FA173
1041786	N21FA180
1041628	N21FA186
1041784	N21FA187
1042834	N21KA221
1042933	N21KA222
1042833	N21KA224
1042836	N21KA233
1042835	N21KA238
1043050	N21KA240
1042832	N21KA245
1043413	N22CA194

R-GTSI0520L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041629	N20FA072
1042793	N21CA011
1042790	N21CA022

R-GTSI0520M Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044475	N10JA053
1041788	N20FA066
1042792	N20FA067
1041735	N20FA069
1042958	N20FA074
1042791	N21CA037

R-I0360CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043508	N14LA092

R-I0360DB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042065	K288908N
1042236	N11LA149
1042064	N14HA164
1042283	N15EA046
1043051	N21GA041

R-I0360ES Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043338	N02FA493
1042914	N04LA123
1043192	N08GA230
1043130	N14LA117
1042256	N15LA146
1041634	N20KA245
1041551	N20KA252
1041635	N21BA088
1041789	N21BA102
1041790	N21BA114
1042703	N21GA006
1042841	N21GA008
1042838	N21GA016
1042839	N21GA018
1042842	N21GA019
1042260	N21GA033
1042366	N21GA040
1042843	N21GA046
1042840	N21GA048
1040545	I119602N

R-I0360GB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043952	N12FA195

R-I0360HB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041636	N20KA260
1044787	N22DA074

R-I0360KB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042918	I109610N
1043303	N08GA242
1042158	N12BA165
1042919	N14CA105
1043052	N21GA026
1042916	N21GA037
1042917	N21GA047

R-I0470L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041637	N00DA171
1041638	N08LA065
1042848	N22BA007
1042847	N22BA009
1042845	N22BA019

R-I0470N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042849	N21BA017
1042784	N22BA008

R-I0520A Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043797	F269914N
1042757	N22CA077
1042920	N22CA082

R-I0520BB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042851	N00DA291
1042959	N04JA395
1042852	N05AA436
1042404	N07JA446
1041641	N21BA308

R-I0520BB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041639	N21BA311
1042367	N21BA317
1041642	N21BA325
1041701	N21BA333
1041546	N21BA335
1042854	N21BA340
1041791	N21DA165
1041840	N21DA166
1041792	N21DA168
1041717	N21DA180
1042961	N21DA199
1042855	N21KA153
1042853	N21KA167
1044458	N22IA141

R-I0520CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043414	N21KA142
1042861	N21KA143
1042862	N21KA148
1042858	N21KA154
1043967	N21KA168
1044356	N22IA155

R-I0520CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042963	N19HA107
1041757	N21BA295
1041644	N21BA305
1041724	N21BA327
1041643	N21BA328
1041645	N21BA330
1041646	N21BA334
1041725	N21BA337
1042962	N21BA342
1041793	N21DA152
1041964	N21DA155
1041841	N21DA156
1041965	N21DA174
1043968	N21DA181
1043247	N21DA185
1043053	N21KA101
1042859	N21KA105
1042857	N21KA106
1043479	N21KA117
1042856	N21KA119
1043480	N21KA121
1042860	N21KA141

R-I0520D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044048	F089002N
1044240	N00FA128
1042368	N01GA035
1044241	N10HA029
1041737	N11HA087
1043412	N16GA093
1042257	N16IA059
1041738	N20AA142
1043425	N20AA183
1042731	N21AA252
1041647	N21AA265
1041794	N21FA105
1044141	N21KA085
1042935	N22CA067
1043202	N22CA073
1042967	N22CA078
1042965	N22CA101
1042966	N22CA104
1043423	N22CA112
1042934	N22CA125
1043155	N22CA127
1043009	N22CA132

R-I0520E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044306	N17FA101

R-I0520F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044168	N02AA204
1041649	N02DA232
1041796	N03GA039
1043895	N06JA110
1043583	N08BA145
1041648	N15HA088
1042066	N17BA088
1044002	N18JA185
1041797	N20AA187
1041544	N20HA082
1042541	N22CA072
1042940	N22CA079
1042939	N22CA095
1042540	N22CA096
1042937	N22CA105
1042941	N22CA110
1043601	N22CA111
1043374	N22CA123
1043765	N22FA109
1043721	N22FA131

R-I0520L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043411	K019614N
1041477	N05AA330
1043839	N06HA090
1043840	N17FA138
1043012	N21AA247
1041253	N21BA054
1042362	N21FA114
1042968	N22CA069
1042969	N22CA084
1042481	N22CA121
1043659	N22CA135
1042968	N22DA069

R-I0520MB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042647	N10EA029
1042648	N15DA096
1042261	N21BA345
1042970	N21BA347
1042942	N21KA107
1043701	N21KA113

R-I0550A Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042760	N06FA288
1042759	N07GA164
1041799	N13HA076
1041800	N21DA024

R-I0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041860	N02BA513
1042921	N02GA073
1041801	N02JA124
1041653	N03AA159
1042948	N03BA427
1041650	N04BA217
1042542	N04EA048
1042946	N04HA348
1042943	N05BA050
1044169	N05DA232
1042690	N06BA076
1042369	N07FA275
1042405	N07GA171
1042254	N07JA314
1042232	N07JA483
1042482	N08EA105
1041773	N08JA104
1041862	N11BA256
1041654	N12AA058
1043132	N14FA061
1041651	N14LA036
1041864	N16GA188
1042971	N16IA219

R-I0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041859	N16IA241
1042947	N17AA111
1042945	N17AA131
1043432	N18KA047
1041858	N21DA015
1041802	N21DA077
1042824	N21JA041
1042922	N21JA147
1042999	N22BA095
1043225	N22CA020
1042944	N22CA269
1043433	N22DA042
1043722	N22FA018
1044459	N22IA004

R-I0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043129	N11KA093
1041657	N12CA144
1043188	N14GA117
1043544	N17CA056
1043424	N17CA151
1041663	N18IA165
1043527	N19AA167
1041655	N19EA094
1041966	N21DA064
1042803	N21JA185
1042773	N21JA196
1043185	N22AA023
1044436	N22CA023
1043526	N22CA257
1044017	N22DA038
1043603	N22EA053
1043702	N22EA077
1043937	N22EA144
1043602	N22EA234
1043660	N22FA012
1043896	N22GA003

R-I0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043302	E099906N
1042772	N02AA013
1044120	N03JA138
1043219	N04CA010
1044018	N04DA191
1041661	N04GA047
1043343	N04IA199
1041665	N04JA179
1041658	N04JA460
1043344	N05KA268
1041662	N06AA083
1043224	N06AA382
1043543	N06BA106
1043193	N06CA462
1043422	N06JA080
1042571	N07HA346
1041666	N07HA386
1043528	N09LA104
1041660	N10KA060
1042774	N10LA020
1040552	N11BA240
1043703	N11GA148

R-I0550D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042483	C159412N
1043339	N04DA314
1044003	N05DA209
1043346	N06AA449
1043345	N14AA057
1042974	N19AA117
1043678	N19CA022
1042484	N20GA057
1042972	N21AA312
1043482	N21AA319
1041846	N21AA322
1041675	N21FA116
1041806	N21FA117
1042538	N21FA120
1041674	N21FA124

R-I0550D Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042973	N21FA130
1041842	N21FA131
1042880	N21FA141
1043054	N21FA142
1041804	N21FA146
1042881	N21FA150
1042877	N21FA159
1041667	N21FA160
1041805	N21FA164
1041505	N21FA165
1041861	N21JA058
1041668	N21JA060
1041673	N21JA064
1041670	N21JA080
1041672	N21JA081
1041478	N21JA084
1041743	N21JA085
1041843	N21JA087
1041479	N21JA094
1041803	N21JA098
1042539	N21JA099
1042253	N21JA101
1042878	N21KA175
1042879	N21KA185
1042876	N21KA198
1042875	N21KA215
1043992	N22CA157
1043723	N22CA189

R-I0550E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041676	N21FA118
1041677	N21FA154

R-I0550F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043524	N01FA074
1044173	N16HA004
1043614	N16HA005
1041847	N20LA055

R-I0550F Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043131	N21AA301
1041680	N21FA119
1041679	N21FA122
1041849	N21FA123
1041678	N21FA125
1041848	N21JA077
1043342	N21JA100
1042819	N21KA173
1042820	N21KA176
1043190	N21KA204
1043029	N21KA207
1042485	N21KA211
1042649	N21KA212
1043724	N22CA160
1044172	N22CA162
1044171	N22CA163
1044170	N22CA165
1044143	N22CA167
1044300	N22KA051

R-I0550G Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042928	N04HA151
1041807	N21DA120
1041967	N21JA023

R-I0550L Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044512	N22KA044

R-I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041598	E109902N
1042870	H319902N
1042262	N00GA376
1042872	N02DA106
1043218	N02JA089
1042486	N03BA151
1042869	N03EA142
1044650	N03IA120
1042688	N03JA114

R-I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041686	N04DA157
1041852	N04EA031
1043341	N04HA340
1041690	N05AA110
1041723	N05JA118
1041688	N05JA164
1041809	N06CA072
1042570	N06CA432
1041808	N06EA382
1043375	N07GA156
1042873	N07GA195
1041853	N08EA018
1043802	N08EA306
1041854	N08FA082
1042569	N08FA107
1042370	N08HA151
1042258	N08KA171
1042084	N09DA121
1042572	N09GA029
1042867	N10AA137
1044144	N10HA032
1042406	N10IA113
1042868	N11IA046
1043127	N11LA078
1042018	N12HA219
1044590	N13HA070
1043778	N14FA042
1043126	N16BA133
1042689	N16FA137
1042864	N17AA153
1041685	N20IA133
1041681	N21AA177
1041851	N21DA001
1041811	N21DA046
1041810	N21DA066
1041687	N21DA073
1042082	N21DA121
1041863	N21DA138
1042650	N21JA012
1042865	N21JA181

R-I0550N Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042930	N21KA024
1042871	N22AA106
1042874	N22CA004
1042929	N22CA034
1044315	N22CA044
1042913	N22CA254
1044593	N22DA014
1044314	N22DA167
1044149	N22EA190
1044147	N22GA130

R-I0550P Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041520	N04FA331
1042081	N08EA268
1041691	N18DA118
1041744	N21DA105
1043969	N22FA085

R-LTSI0360E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042886	G209913N
1043128	N00LA198
1041745	N21BA136
1042884	N21GA080

R-LTSI0360KB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042910	N07EA147
1042699	N21GA058

R-LTSI0360RB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041812	N20IA170
1042911	N21GA077
1042912	N21GA079

R-TSI0360CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043679	N11EA033
1043270	N13BA021

R-TSI0360EB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042888	N04LA151
1043187	N17AA006
1041746	N20KA250
1042889	N21GA024

R-TSI0360FB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041538	N20DA117
1041692	N20KA242
1041693	N21BA092
1041813	N21BA100
1041747	N21BA105

R-TSI0360HB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044554	N22DA062
1044550	N22DA128

R-TSI0360HB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043809	N02FA593
1043599	N22FA060

R-TSI0360LB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041254	N20KA253
1042890	N21GA030

R-TSI0360RB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042977	G219909N
1041814	N20KA246
1041748	N21BA112
1044058	N22DA095

R-TSI0520BE Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041508	N21BA318

R-TSI0520CE Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041694	N08HA278

R-TSI0520EB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041604	N21BA341
1044145	N21KA114

R-TSI0520KB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043070	N21KA169

R-TSI0520M Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041695	N21FA081
1042903	N22CA068
1042902	N22CA071

R-TSI0520NB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044159	N22IA133

R-TSI0520R Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041318	H319304N
1042898	N13CA009
1041816	N21FA085
1041696	N21FA086
1042900	N22CA099
1042899	N22CA139

R-TSI0520T Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041697	N21FA076

R-TSI0520VB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042651	N00IA293
1042495	N02LA064
1041750	N03EA021
1041751	N05DA046
1042496	N05IA096
1042488	N08AA099
1043135	N08BA101
1042490	N10BA166
1042537	N10IA020
1042652	N12EA011
1042494	N14HA062
1042487	N14IA141
1044263	N15BA121
1042269	N15DA103
1042493	N17LA020
1041749	N21BA296
1041198	N21BA309
1040608	N21BA312
1041755	N21BA319
1041726	N21BA321
1041756	N21BA326
1041754	N21BA343
1042497	N21BA344
1041536	N21BA346
1042263	N21DA154
1042264	N21DA157
1041856	N21DA159
1041817	N21DA161
1042268	N21DA162
1041752	N21DA163
1042266	N21DA164
1042267	N21DA169
1042459	N21DA170
1041753	N21DA171
1041855	N21DA176
1042265	N21DA179
1042491	N21DA183
1043137	N21DA186
1042489	N21DA188

R-TSI0520VB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043223	N21DA189
1043134	N21DA203
1043136	N21DA209
1043818	N21KA127
1044193	N21KA139
1044242	N21KA157
1044262	N21KA160
1043145	N21KA162
1043435	N21KA164
1044784	N22IA118
1044779	N22IA124
1044387	N22IA129
1044320	N22IA143
1043142	N22IA144
1043141	N22IA152
1044785	N22IA167

R-TSI0520WB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044243	N22IA117

R-TSI0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041857	N01DA165
1042893	N04IA008
1042892	N05DA022
1042909	N05GA128
1041963	N05KA322
1042371	N07KA090
1042363	N08EA061
1042894	N08JA142
1042896	N09FA216
1042897	N15DA067
1041699	N19JA165
1044052	N22CA253
1044174	N22IA045

R-TSI0550E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043897	N06CA078
1042364	N06EA403
1042904	N07JA043
1044301	N22HA133

R-TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042907	N02JA093
1042905	N06BA071
1042372	N07AA191
1042906	N07KA093
1043575	N22CA256
1043415	N22EA040

TSI0360CB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042418	N21BA111

TSI0360FB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042414	N20KA238
1044428	N22DA079
1044433	N22DA127

TSI0360FB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044554	N22DA062
1044550	N22DA128

TSI0360RB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042411	N20KA236
1043397	N21GA013
1043396	N21GA022
1044738	N22DA067
1044442	N22DA130

TSI0520M Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043637	N21AA223
1042163	N21AA232
1043257	N21FA073
1043259	N21FA083
1044788	N21KA072
1043989	N22CA066
1043745	N22CA070
1043892	N22CA074
1043916	N22CA088
1043823	N22CA090
1043934	N22CA114
1043884	N22CA124
1043886	N22CA126
1043821	N22CA137
1044214	N22FA119
1044247	N22FA124
1044124	N22FA126
1044213	N22FA129
1044112	N22FA136
1044123	N22FA154

TSI0520NB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044578	N21KA116

TSI0520P Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044245	N22FA144

TSI0520R Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043645	N21AA224
1043633	N21AA228
1043348	N21FA066
1043350	N21FA068
1043258	N21FA077
1043349	N21FA104
1044697	N21KA095
1043781	N22CA075

TSI0520R Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043754	N22CA081
1043804	N22CA089
1043780	N22CA093
1043988	N22CA108
1043905	N22CA113
1044094	N22FA114
1044103	N22FA117
1044179	N22FA151
1044871	N22LA003

TSI0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044148	N22GA010
1044342	N22HA037
1044347	N22HA066
1044361	N22HA099

TSI0550E Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043640	N22DA180

TSI0520T Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043631	N21AA226
1043641	N21AA242
1043573	N21AA249
1043264	N21FA079
1043263	N21FA087
1043332	N21FA088
1043753	N22CA100
1043822	N22CA106
1044248	N22FA120
1044212	N22FA130

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1041924	N20CA018
1042136	N21AA112
1042148	N21AA114
1042137	N21AA154
1042139	N21BA143
1042010	N21BA215
1042015	N21BA241
1042186	N21BA338
1042194	N21DA002
1042191	N21DA003
1042190	N21DA006
1042176	N21DA010
1042292	N21DA018
1042251	N21DA020
1042348	N21DA023
1042320	N21DA026
1042335	N21DA027
1042196	N21DA032
1042299	N21DA037
1042298	N21DA048
1042167	N21DA056
1042177	N21DA057
1042178	N21DA059
1042138	N21DA062
1042318	N21DA074
1042117	N21DA081
1042101	N21DA082
1042130	N21DA084

TSI0520UB Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042427	N21DA158
1044040	N21KA123
1044032	N21KA159

TSI0550B Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042998	N22BA095

TSI0550C Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043554	N22CA042
1043563	N22CA282
1043564	N22DA173
1043806	N22DA191

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042103	N21DA087
1042129	N21DA093
1042131	N21DA095
1042195	N21DA099
1042135	N21DA100
1042175	N21DA109
1042210	N21DA113
1042309	N21DA125
1042308	N21DA128
1042300	N21DA133
1042291	N21DA134
1042347	N21DA135
1042345	N21DA148
1042350	N21DA150
1042687	N21FA235
1042643	N21FA238
1042456	N21JA002
1042455	N21JA006
1042457	N21JA008
1042400	N21JA009
1042458	N21JA013
1042507	N21JA015
1042508	N21JA017
1042454	N21JA020
1043286	N21JA021
1042503	N21JA025
1042528	N21JA038
1042630	N21JA040
1042609	N21JA042
1042732	N21JA048
1042635	N21JA111
1042705	N21JA113
1042502	N21JA114
1042589	N21JA122
1042588	N21JA123
1042566	N21JA126
1042592	N21JA127
1042629	N21JA129
1042585	N21JA134
1042646	N21JA135

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1042587	N21JA136
1042586	N21JA137
1042559	N21JA138
1042645	N21JA139
1042610	N21JA140
1042378	N21JA144
1042633	N21JA148
1042634	N21JA150
1042736	N21JA164
1042715	N21JA167
1042716	N21JA173
1042738	N21JA175
1042707	N21JA177
1043148	N21JA183
1042706	N21JA184
1042697	N21JA192
1042982	N21JA198
1042981	N21JA200
1043037	N21KA017
1043069	N21KA018
1043056	N21KA020
1043038	N21KA021
1043063	N21KA026
1043109	N21KA030
1043066	N21KA031
1043067	N21KA033
1043095	N21KA034
1043088	N21KA035
1043107	N21KA046
1043108	N22AA001
1043149	N22AA005
1043159	N22AA006
1043198	N22AA007
1043196	N22AA008
1043133	N22AA012
1043160	N22AA016
1043182	N22AA019
1043197	N22AA020
1043115	N22AA032
1043205	N22AA033

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043204	N22AA036
1043222	N22AA039
1043236	N22AA040
1043018	N22AA043
1043273	N22AA044
1043237	N22AA048
1043285	N22AA051
1043283	N22AA053
1043321	N22AA054
1043361	N22AA055
1043366	N22AA057
1043359	N22AA059
1043362	N22AA062
1043373	N22AA063
1043360	N22AA065
1043398	N22AA070
1043372	N22AA077
1043274	N22AA082
1043276	N22AA083
1043320	N22AA085
1043275	N22AA086
1043284	N22AA089
1043333	N22AA092
1043452	N22AA095
1043317	N22AA096
1043319	N22AA097
1043316	N22AA107
1043313	N22AA109
1043365	N22BA076
1043395	N22BA082
1043393	N22BA097
1043394	N22BA098
1043399	N22BA100
1043400	N22BA101
1043428	N22BA111
1043466	N22BA113
1043451	N22BA114
1043454	N22BA123
1043429	N22BA124
1043438	N22BA125

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043439	N22CA003
1043427	N22CA007
1043440	N22CA008
1043437	N22CA010
1043436	N22CA011
1043469	N22CA019
1043468	N22CA024
1043467	N22CA032
1043453	N22CA037
1043485	N22CA049
1043486	N22CA235
1043535	N22CA249
1043532	N22CA260
1043533	N22CA261
1043531	N22CA262
1043607	N22CA264
1043530	N22CA273
1043682	N22DA007
1043609	N22DA013
1043613	N22DA019
1043611	N22DA020
1043616	N22DA021
1043624	N22DA026
1043612	N22DA028
1043644	N22DA029
1043608	N22DA032
1043646	N22DA033
1043610	N22DA034
1043651	N22DA036
1043666	N22DA166
1043652	N22DA174
1043663	N22DA177
1043640	N22DA180
1043681	N22DA185
1043687	N22DA193
1043727	N22DA195
1043690	N22DA200
1043697	N22DA218
1043735	N22DA222
1043769	N22EA012

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043813	N22EA016
1043866	N22EA017
1043841	N22EA018
1043828	N22EA023
1043842	N22EA025
1043835	N22EA028
1043836	N22EA029
1043829	N22EA030
1043731	N22EA035
1043741	N22EA036
1043739	N22EA039
1043768	N22EA042
1043744	N22EA043
1043767	N22EA050
1043820	N22EA057
1043862	N22EA071
1043860	N22EA072
1043877	N22EA074
1043837	N22EA078
1043859	N22EA080
1043993	N22EA095
1043861	N22EA114
1043878	N22EA115
1043960	N22EA120
1044005	N22EA133
1043985	N22EA135
1043939	N22EA137
1043951	N22EA142
1044221	N22EA148
1044271	N22EA150
1043986	N22EA171
1044028	N22EA182
1044026	N22EA191
1044039	N22EA192
1043973	N22EA194
1043991	N22EA202
1044115	N22EA206
1043834	N22EA207
1043817	N22EA209
1043883	N22EA212

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1043983	N22EA228
1043868	N22EA230
1044190	N22EA231
1043846	N22EA237
1043871	N22EA238
1043994	N22EA251
1043887	N22EA253
1044510	N22EA257
1044183	N22FA002
1043943	N22FA019
1043933	N22FA021
1043936	N22FA022
1043942	N22FA023
1044067	N22FA038
1044010	N22FA041
1044072	N22FA047
1044117	N22FA053
1044523	N22FA054
1044107	N22FA058
1043990	N22FA059
1043995	N22FA060
1044122	N22FA065
1044013	N22FA066
1044244	N22FA069
1044332	N22FA078
1044189	N22FA079
1044019	N22FA084
1044065	N22FA086
1044073	N22FA087
1044116	N22FA088
1044044	N22FA092
1044113	N22FA094
1044074	N22FA098
1044071	N22FA101
1044284	N22FA106
1044114	N22FA107
1044030	N22GA001
1044177	N22GA005
1044274	N22GA007
1044380	N22GA033

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044273	N22GA054
1044285	N22GA077
1044191	N22GA097
1044184	N22GA098
1044150	N22GA101
1044185	N22GA105
1044344	N22GA107
1044325	N22GA111
1044126	N22GA116
1044157	N22GA119
1044158	N22GA121
1044154	N22GA126
1044187	N22GA128
1044226	N22GA129
1044220	N22HA002
1044223	N22HA003
1044211	N22HA006
1044224	N22HA011
1044378	N22HA028
1044230	N22HA029
1044521	N22HA033
1044328	N22HA038
1044358	N22HA042
1044379	N22HA043
1044296	N22HA047
1044477	N22HA048
1044390	N22HA049
1044228	N22HA052
1044375	N22HA060
1044377	N22HA085
1044354	N22HA086
1044373	N22HA088
1044329	N22HA089
1044416	N22HA106
1044478	N22HA107
1044381	N22HA110
1044414	N22HA111
1044488	N22HA125
1044480	N22HA135
1044479	N22HA137

TSI0550K Engine Model	
Engine Serial No.	Crankshaft Serial No.
1044338	N22HA138
1044483	N22HA165
1044489	N22HA175
1044515	N22HA179
1044618	N22IA005
1044540	N22IA012
1044537	N22IA013
1044594	N22IA036
1044595	N22IA055
1044638	N22IA067
1044635	N22JA002
1044635	N22JA022
1044693	N22JA065
1044866	N22JA068
1044873	N22JA116
1044925	N22KA158

Appendix 2. Affected Crankshaft Assembly Serial Numbers

Crankshaft Part No.	Serial No.
646623	N20KA007
646623	N20LA044
646623	N20LA056
646623	N20LA057
646623	N21FA121
646623	N21FA126
646623	N21JA057
646623	N21JA059
646623	N21JA063
646623	N21JA069
646623	N21JA075
646623	N21JA089
646623	N21JA095
646623	N22KA020
646623	N22KA024
646623	N22KA031
646623	N22KA034
646623	N22KA042
646623	N22KA060
649131	N20AA200
649131	N21AA235
649134	N20HA046
649134	N20HA069
649134	N21AA229
649134	N21AA230
649134	N21AA231
649134	N21AA241
649134	N21AA248
649134	N21AA251
649134	N21AA256
649134	N21AA257
649134	N21AA258
649134	N21AA261
649134	N21FA106
649134	N21KA064
649134	N21KA069
649134	N21KA070
649134	N21KA097
649134	N21KA098

Crankshaft Part No.	Serial No.
649134	N22FA128
649134	N22LA004
649134	N22LA005
649134	N22LA011
649134	N22LA012
649134	N22LA013
649134	N22LA014
649134	N22LA015
649134	N22LA017
649134	N22LA021
649134	N22LA091
649134	N22LA095
649138	N21BA056
649138	N21BA057
649138	N21BA058
649138	N21BA059
649138	N21BA060
649138	N21BA061
649138	N21BA064
649138	N21BA065
649138	N21BA066
649138	N21BA071
649138	N21BA072
649138	N21BA075
649138	N21BA076
649138	N22CA203
649138	N22CA208
649141	N20HA008
649141	N20HA018
649141	N21AA273
649141	N21AA274
649141	N21AA275
649141	N21AA277
649141	N21AA279
649141	N21AA280
649141	N21AA281
649141	N21AA285
649141	N21AA286
649141	N21AA287
649141	N21AA289

Crankshaft Part No.	Serial No.
649141	N21AA291
649141	N21AA293
649141	N21AA294
649141	N21AA295
649141	N21AA296
649141	N21AA297
649141	N21KA264
649141	N21KA268
649898	N20AA017
649898	N20AA038
649898	N21BA294
649898	N21BA298
649898	N21BA300
649898	N21BA302
649898	N21BA304
649898	N21BA307
649898	N21BA313
649898	N21BA315
649898	N21BA323
649898	N21BA324
649898	N21BA329
649898	N21BA332
649898	N21BA348
649898	N21BA349
649898	N21DA182
649898	N21DA187
649898	N21DA190
649898	N21DA191
649898	N21DA194
649898	N21DA205
649898	N21DA207
649898	N21DA210
649898	N21KA102
649898	N21KA103
649898	N21KA104
649898	N21KA108
649898	N21KA109
649898	N21KA110
649898	N21KA111
649898	N21KA122
649898	N21KA129

Crankshaft Part No.	Serial No.
649898	N21KA130
649898	N21KA131
649898	N21KA132
649898	N21KA133
649898	N21KA135
649898	N21KA136
649898	N21KA138
649898	N21KA146
649898	N21KA150
649898	N21KA151
649898	N21KA152
649898	N21KA158
649898	N21KA163
649898	N21KA170
649898	N22IA142
649898	N22IA154
649900	N19CA066
649900	N20CA002
649900	N21BA142
649900	N21BA146
649900	N21BA147
649900	N21BA148
649900	N21BA151
649900	N21BA157
649900	N21BA158
649900	N21BA160
649900	N21BA164
649900	N21BA165
649900	N21BA166
649900	N21BA189
649900	N21BA201
649900	N21BA202
649900	N21BA212
649900	N21BA213
649900	N21BA214
649900	N21BA226
649900	N21BA227
649900	N21BA229
649900	N21BA230
649900	N21BA235
649900	N21BA236

Crankshaft Part No.	Serial No.
649900	N21BA237
649900	N21BA238
649900	N21BA243
649900	N21BA244
649900	N21BA245
649900	N21BA247
649900	N21BA248
649900	N21BA250
649900	N21BA251
649900	N21BA252
649900	N21BA253
649900	N21BA254
649900	N21BA256
649900	N21BA260
649900	N21BA261
649900	N21BA264
649900	N21BA265
649900	N21BA267
649900	N21BA268
649900	N21BA269
649900	N21DA004
649900	N22AA079
649900	N22AA081
649900	N22AA104
649900	N22AA105
649900	N22BA102
649900	N22CA013
649900	N22CA016
649900	N22DA045
649900	N22DA183
649900	N22EA020
649900	N22EA021
649900	N22EA022
649900	N22EA024
649900	N22EA026
649900	N22EA027
649900	N22EA032
649900	N22EA054
649900	N22EA075
649900	N22EA091
649900	N22EA093

Crankshaft Part No.	Serial No.
649900	N22EA113
649900	N22EA117
649900	N22EA119
649900	N22EA121
649900	N22EA123
649900	N22EA124
649900	N22EA127
649900	N22EA138
649900	N22EA145
649900	N22EA146
649900	N22EA149
649900	N22EA170
649900	N22EA174
649900	N22EA179
649900	N22EA183
649900	N22EA187
649900	N22EA203
649900	N22EA232
649900	N22EA235
649900	N22EA244
649900	N22EA247
649900	N22EA249
649900	N22FA031
649900	N22FA034
649900	N22FA036
649900	N22FA037
649900	N22FA042
649900	N22FA071
649900	N22FA080
649900	N22FA082
649900	N22FA095
649900	N22FA099
649900	N22FA104
649900	N22GA002
649900	N22GA004
649900	N22GA011
649900	N22GA012
649900	N22GA014
649900	N22GA023
649900	N22GA056
649900	N22GA057

Crankshaft Part No.	Serial No.
649900	N22GA058
649900	N22GA072
649900	N22GA084
649900	N22GA091
649900	N22GA099
649900	N22GA115
649900	N22GA122
649900	N22GA123
649900	N22GA125
649900	N22GA127
649900	N22GA131
649900	N22HA004
649900	N22HA015
649900	N22HA031
649900	N22HA034
649900	N22HA036
649900	N22HA040
649900	N22HA046
649900	N22HA053
649900	N22HA065
649900	N22HA073
649900	N22HA074
649900	N22HA080
649900	N22HA082
649900	N22HA092
649900	N22HA094
649900	N22HA108
649900	N22HA123
649900	N22HA127
649900	N22HA129
649900	N22HA147
649900	N22HA148
649900	N22HA158
649900	N22HA167
649900	N22HA169
649900	N22HA170
649900	N22HA171
649900	N22HA182
649900	N22IA019
649900	N22IA021
649900	N22IA050

Crankshaft Part No.	Serial No.
649900	N22IA061
649900	N22IA074
649900	N22IA083
649900	N22IA088
649900	N22IA105
649900	N22IA110
649900	N22IA111
649900	N22JA023
649900	N22JA034
649900	N22JA050
649900	N22JA052
649900	N22JA056
649900	N22JA086
649900	N22JA097
649900	N22JA119
649900	N22KA135
649900	N22KA138
649900	N22KA139
652010	N19FA106
652010	N20FA195
652010	N20FA198
652010	N20FA199
652010	N21FA216
652010	N21FA224
652010	N22BA014
652010	N22BA016
652010	N22BA017
652010	N22BA025
652011	N20FA210
652011	N20FA211
652011	N21BA008
652011	N21BA012
653020	N20FA071
653020	N20FA073
653020	N20FA076
653020	N21CA007
653020	N21CA014
653020	N21CA016
653020	N21CA019
653020	N21CA034
653020	N21CA039

Crankshaft Part No.	Serial No.
653129	N20CA137
653129	N20DA118
653129	N20KA233
653129	N20KA234
653129	N20KA235
653129	N20KA241
653129	N20KA243
653129	N20KA244
653129	N20KA247
653129	N20KA248
653129	N20KA251
653129	N20KA254
653129	N20KA255
653129	N20KA256
653129	N20KA257
653129	N21BA083
653129	N21BA084
653129	N21BA087
653129	N21BA089
653129	N21BA090
653129	N21BA091
653129	N21BA095
653129	N21BA099
653129	N21BA101
653129	N21BA104
653129	N21BA107
653129	N21BA108
653129	N21BA110
653129	N21BA113
653129	N21BA115
653129	N21GA015
653129	N21GA020
653129	N21GA038
653129	N21GA042
653129	N22DA056
653129	N22DA110
653136	N20FA244
653136	N20FA245
653136	N20FA246
653136	N20FA247
653136	N20FA248

Crankshaft Part No.	Serial No.
653136	N20FA249
653136	N20FA251
653136	N20FA252
653136	N20IA167
653136	N20IA168
653136	N20IA169
653136	N20IA171
653136	N20IA172
653136	N20IA173
653136	N20IA174
653136	N20IA176
653136	N20IA177
653136	N20IA179
653136	N20IA180
653136	N20IA181
653136	N20IA182
653136	N20IA183
653136	N20IA184
653136	N21BA123
653136	N21BA124
653136	N21BA125
653136	N21BA128
653136	N21BA129
653136	N21BA130
653136	N21BA132
653136	N21BA134
653136	N21BA138
653136	N21BA140
653136	N21GA051
653136	N21GA057
653136	N21GA060
653136	N21GA061
653136	N21GA062
653136	N21GA064
653136	N21GA067
653136	N21GA069
653136	N21GA070
653136	N21GA074
653136	N21GA076
649899-1	N18EA131
649899-1	N21DA222

Crankshaft Part No.	Serial No.
649899-1	N21DA247
649899-1	N21DA251
652004-1	N19FA116
652004-1	N19FA135
R-646623M010	D059312N
R-646623M010	N01EA007
R-646623M010	N07CA175
R-649133M010	N00FA157
R-649133M010	N02IA233
R-649133M010	N12GA102
R-649133M010	N15JA164
R-649134	N21AA238
R-649134M010	F209908N
R-649134M010	G288906N
R-649134M010	H319304
R-649134M010	N013GA151
R-649134M010	N01HA145
R-649134M010	N02EA227
R-649134M010	N02HA232
R-649134M010	N02IA232
R-649134M010	N03HA038
R-649134M010	N04LA293
R-649134M010	N08BA177
R-649134M010	N08FA161
R-649134M010	N13GA176
R-649134M010	N13JA103
R-649134M010	N14DA129
R-649134M010	N14DA144
R-649134M010	N16FA005
R-649134M010	N16GA102
R-649134M010	N16GA110
R-649134M010	N17FA094
R-649134M010	N17JA128
R-649134M010	N17JA138
R-649134M010	N18AA084
R-649134M010	N18BA127
R-649134M010	N21BA046
R-649137M010	N07HA601
R-649138M010	N001A192
R-649138M010	N05EA332
R-649138M010	N05EA354

Crankshaft Part No.	Serial No.
R-649138M010	N08LA054
R-649138M010	N10DA148
R-649138M010	N142HA99
R-649138M010	N14HA287
R-649138M010	N15LA084
R-649138M010	N20KA042
R-649141	N020A195
R-649141	N220A195
R-649141M010	N04BA017
R-649141M010	N07BA071
R-649141M010	N12KA162
R-649141M010	N15IA040
R-649141M010	N17HA232
R-649895M010	N03KA154
R-649895M010	N04FA086
R-649898	N12FA003
R-649898	N21BA322
R-649898M010	N03HA110
R-649898M010	N04FA356
R-649898M010	N14IA129
R-649898M010	N15FA163
R-649898M010	N20KA218
R-649900	N00EA124
R-649900	N02CA251
R-649900	N04CA248
R-649900	N05BA262
R-649900	N07CA056
R-649900	N11IA015
R-649900	N12HA183
R-649900	N14GA090
R-649900	N16DA060
R-649900	N16EA145
R-649900	N18DA138
R-649900	N20AA106
R-649900	N221A004
R-649900	N22CH005
R-649900M010	J229911N
R-649900M010	N00GA064
R-649900M010	N00KA101
R-649900M010	N00KA477
R-649900M010	N01HA067

Crankshaft Part No.	Serial No.
R-649900M010	N01JA236
R-649900M010	N02GA078
R-649900M010	N02GA082
R-649900M010	N02IA201
R-649900M010	N02JA134
R-649900M010	N02JA138
R-649900M010	N03AA101
R-649900M010	N03DA199
R-649900M010	N04AA153
R-649900M010	N04AA424
R-649900M010	N04FA337
R-649900M010	N04GA064
R-649900M010	N05BA086
R-649900M010	N05BA111
R-649900M010	N05BA114
R-649900M010	N05DA237
R-649900M010	N05DA284
R-649900M010	N05DA316
R-649900M010	N05EA235
R-649900M010	N05FA005
R-649900M010	N05FA210
R-649900M010	N05GA108
R-649900M010	N05GA166
R-649900M010	N06EA008
R-649900M010	N06FA063
R-649900M010	N06LA127
R-649900M010	N07FA284
R-649900M010	N07GA151
R-649900M010	N07HA840
R-649900M010	N07KA080
R-649900M010	N07KA081
R-649900M010	N08BA064
R-649900M010	N08DA119
R-649900M010	N08DA214
R-649900M010	N08EA297
R-649900M010	N08FA305
R-649900M010	N08FA336
R-649900M010	N08GA085
R-649900M010	N08HA128
R-649900M010	N08HA137
R-649900M010	N08JA005

Crankshaft Part No.	Serial No.
R-649900M010	N08KA115
R-649900M010	N09EA263
R-649900M010	N120A173
R-649900M010	N12AA051
R-649900M010	N12EA027
R-649900M010	N13CA106
R-649900M010	N14BA058
R-649900M010	N14HA009
R-649900M010	N16FA125
R-649900M010	N16IA206
R-649900M010	N16IA215
R-649900M010	N17DA094
R-649900M010	N17EA120
R-649900M010	N18CA048
R-649900M010	N18CA124
R-649900M010	N21AA140
R-649900M010	N21AA143
R-649900M010	N21AA150
R-649900M010	N21AA153
R-649900M010	N21AA157
R-649900M010	N21AA209
R-649900M010	N21BA013
R-649900M010	N21BA176
R-649900M010	N21JA170
R-649900M010	N22AA021
R-649900M010	N22AA088
R-652039M010	N12FA175
R-653020M010	1099411N
R-653129	G209909W
R-653129	N07HA424
R-653129	N08AA003
R-653129	N12CA281
R-653129M010	F019916N
R-653129M010	N00FA197
R-653129M010	N03KA026
R-653129M010	N04AA034
R-653129M010	N04EA010
R-653129M010	N07HA020
R-653129M010	N08AA017
R-653129M010	N08AA032
R-653129M010	N14CA101

Crankshaft Part No.	Serial No.
R-653129M010	N14JA071
R-653129M010	N15SA013
R-653129M010	ND7HA042
R-653136	N04JA020
R-653136	N08J192
R-653136	N10DA024
R-653136	N14FA108