

HORSEPOWER (Maximum RPM) Engine Model		4	7	8	10	12	14	16	
		K91	K161	K181	K241	K301	K321	K341	
GENERAL	Bore x Stroke	2.375x2.000	2.938x2.500	2.938x2.750	3.251x2.875	3.375x3.250	3.500x3.250	3.750x3.250	
	Displacement Cu. In.	8.86	16.94	18.64	23.85	29.07	31.27	35.90	
	Max. Operating RPM	4000	3600	3600	3600	3600	3600	3600	
BALANCE GEAR	Shaft O.D.	New	—	—	.4998/.5001	.4998/.5001	.4998/.5001	.4998/.5001	
		Maximum Wear Limit	—	—	.4996	.4996	.4996	.4996	
	End Play	—	—	—	.002/.010	.002/.010	.002/.010	.002/.010	
CAMSHAFT	Sleeve I.D. Installed	—	—	—	—	—	—	—	
	End Play	.005/.020	.005/.010	.005/.010	.005/.010	.005/.010	.005/.010	.005/.010	
CONNECTING ROD	Running Clearance	Rod to Crank-Pin (New)	.001/.0025	.001/.002	.001/.002	.001/.002	.001/.002	.001/.002	
		Rod to Crank-Pin Wear Limit	.003	.0025	.0025	.0025	.0025	.0025	
		Rod to Piston Pin (New)	.0007/.0008	.0006/.0011	.0006/.0011	.0003/.0008	.0003/.0008	.0003/.0008	.0003/.0008
Small End I.D. (New)	.5630/.5633	.6255/.6258	.6255/.6258	.8596/.8599	.8757/.8760	.8757/.8760	.8757/.8760		
CRANKSHAFT	M A I N S	PTO & Flywheel End O.D.	New	.9841/.9844	1.1811/1.1814	1.1811/1.1814	1.5745/1.5749	1.5745/1.5749	1.5745/1.5749
			Maximum Wear Limit	.9841	1.1811	1.1811	1.5745	1.5745	1.5745
		Max. Out of Round (Sleeve)	—	—	—	—	—	—	—
		Max. Taper (Sleeve)	—	—	—	—	—	—	—
		Running Clearance (Sleeve)	Maximum New	—	—	—	—	—	—
	Wear Limit ①	—	—	—	—	—	—	—	
	C R A N K P I N	New Sleeve Bearing I.D. Installed	New	.9360/.9355	1.1860/1.1855	1.1860/1.1855	1.5000/1.4995	1.5000/1.4995	1.5000/1.4995
			Max. Wear Limit	.9350	1.1850	1.1850	1.4990	1.4990	1.4990
			Max. Out of Round	.0005	.0005	.0005	.0005	.0005	.0005
			Max. Taper	.001	.001	.001	.001	.001	.001
End Play			.004/.023	.002/.023	.002/.023	.003/.020	.003/.020	.003/.020	.003/.020
CYLINDER BORE	Inside Diameter	New	2.3755/2.3745	2.9380/2.9370	2.9380/2.9370	3.2515/3.2505	3.3755/3.3745	3.5005/3.4995	
		Maximum Wear Limit	2.378	2.941	2.941	3.254	3.378	3.503	
	Max. Out of Round	.003	.003	.003	.003	.003	.003		
CYLINDER HD.	Max. Taper	.003	.003	.003	.002	.002	.002		
	Max. Out of Flatness	.003	.003	.003	.003	.003	.003		
IGNITION	Spark Plug Type & Gap	Type②	RCJ-8	RCJ-8	RCJ-8	RH-10	RH-10	RH-10	
		Battery	.025	.025	.025	.035	.035	.035	
		Magneto	.025	.025	.025	.025	.025	.025	
		Gaseous Fuels	.018	.018	.018	.018	.018	.018	
	Nominal Point Gap	.020	.020	.020	.020	.020	.020		
PISTON	Service Replacement Sizes		.003 — .010 — .020 — .030						
	Thrust Face O.D.③	New	2.371/2.369	2.9297/2.9281	2.9297/2.9281	3.2432/3.2413	3.368/3.365	3.4941/3.4925	
		Maximum Wear Limit	2.366	2.925	2.925	3.238	3.363	3.491	
	Thrust Face To Bore Clearance (New)④	.0035/.006	.007/.010	.007/.010	.007/.010	.007/.010	.007/.010	.007/.010	
	Ring End Gap	New Bore	.007/.017	.007/.017	.007/.017	.010/.020	.010/.020	.010/.020	
		Used Bore (Max.)	.027	.027	.027	.030	.030	.030	
Max. Ring Side Clearance	.006	.006	.006	.006	.006	.006			
PISTON	Service Replacement Sizes		.003 — .010 — .020 — .030						
	Thrust Face O.D.⑤	New	—	—	2.9329/2.9336	—	3.3700/3.3693	3.4945/3.4938	
		Maximum Wear Limit	—	—	2.931	—	3.367	3.492	
	Thrust Face To Bore Clearance (New)④	—	—	.0034/.0051	—	.0045/.0062	.0050/.0067		
	Ring End Gap	New Bore⑥	—	—	.010/.023	—	.010/.020	.010/.020	
		Used Bore⑥ (Max.)	—	—	.032	—	.030	.030	
Max. Ring Side Clearance	—	—	.006	—	.006	.006			
PISTON PIN	Outside Diameter	.5623/.5625	.6247/.6249	.6247/.6249	.8591/.8593	.8752/.8754	.8752/.8754		
	Guide Reamer Size	.250	.3125	.3125	.3125	.3125	.3125		
VALVES	Tappet Clearance (Cold)	Intake	.005/.009	.006/.008	.006/.008	.008/.010	.008/.010	.008/.010	
		Exhaust	.011/.015	.017/.019	.017/.019	.017/.019	.017/.019	.017/.019	
	Minimum Lift (Zero Lash)	Intake	.2035	.2718	.2718	.318	.318	.318	
		Exhaust	.1768	.2482	.2482	.318	.318	.318	
	Minimum Valve Stem O.D.	Intake	.2478	.3103	.3103	.3103	.3103	.3103	
		Exhaust	.2458	.3088	.3088	.3074	.3074	.3074	
	Nominal Angle Valve Seat	45°	45°	45°	45°	45°	45°		
	Guide I.D. Maximum Wear Limit⑦	Intake	.005	.005	.005	.006	.006	.006	
Exhaust		.007	.007	.007	.008	.008	.008		

① Maximum limits combination of I.D. and O.D. measurements
 ② Ball bearing 1.3779/1.3784, Maximum Wear 1.3779
 ③ Ball bearing 1.7716/1.7721, Maximum Wear 1.7716

④ Pre Series II 1.3733/1.3738, Maximum Wear 1.3728
 ⑤ Ball bearing .002/.023
 ⑥ Champion spark plugs or equivalent
 ⑦ Measure just below oil ring groove and at right angles to piston pin

⑧ 1800 RPM generator sets .005/.007
 ⑨ Measure 1/2" above the bottom of the piston skirt.
 ⑩ Top and center compression rings.

* Includes K141

Figure 1-5. Engine Specifications And Tolerances.

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