



SERVICE CLEARANCES TOLERANCES & SPECIFICATIONS TORQUE DATA

SECTION VI - DIV. H

Issued October, 1960

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INTRODUCTION

This division is to be used as a reference to necessary Tolerances, Specification, Service Clearances, and Torque Data when servicing Clinton engines.

Listed below in numerical order are all the various model Clinton engines manufactured. NOTE: Each model has a column number assigned to be used on pages 2, 3, 4 or 5 for reference to the necessary Tolerances, Specifications or Service Clearance for a specific model engine.

Under each column heading there are shown two (2) figures; the minimum clearance and the maximum clearance. When reworking is necessary, the final clearance should be between the minimum and maximum and favoring the minimum for best performance.

TOLERANCES AND SPECIFICATIONS ----- Pages 2 thru 5 TORQUE DATA ----- Page 6

MODEL NO.	COLUMN NO.	MODEL NO.	COLUMN NO.	MODEL NO.	COLUMN NO.
E-65	29	V1000-1000	10	VS4100-2000	4
100	1	VS1000	10	J-5	36
100-1000	1	A&B1100	9	J-6	36
100-2000	1	C1100	9	J-7	36
V100-1000	3	D1100	9	J-8	36
VS100	3	V1100-1000	11	J-9	36
VS100-1000	3	VS1100	11	E10-1000	33
VS100-2000	3	VS1100-1000	11	D15-1000	30
VS100-3000	3	1200	12	D25-1000	30
VS100-4000	3	1200-1000	12	D35-1000	31
200	24	1200-2000	13	D55-1000	32
A200	24	A1200	13	D65-1000	31
AVS200	24	B1290-1000	13	E75-1000	34
AVS200-1000	25	V1200-1000	14	E95-1000	35
VS200	24	VS1200	14	400-0000-000	1
VS200-1000	24	1600	17	401-0000-000	3
VS200-2000	25	A1600-1000	18	402-0000-000	1
VS200-3000	25	1800-1000	19	403-0000-000	3
VS200-4000	27	2100	1	404-0000-000	2
300	5	A2100	1	405-0000-000	4
A300	5	A2100-1000	1	406-0000-000	2
VS300	6	A2100-2000	1	407-0000-000	4
350	5	VS2100	3	407-0002-000	4
A400	28	VS2100-1000	3	408-0000-000	2
A400-1000	28	VS2100-2000	3	409-0000-000	4
AVS400	26	VS2100-3000	3	411-0000-000	3
AVS400-1000	27	2500	20	411-0002-000	3
BVS400	27	A2500	22	412-0000-000	16
CVS400-1000	27	B2500-1000	21	413-0000-000	16
VS400	26	2790-1000	23	414-1300-000	18
VS400-1000	26	VS3000	3	414-1301-000	18
VS400-2000	27	3100	2	415-0000-000	4
VS400-3000	27	3100-1000	2	415-0002-000	4
VS400-4000	27	3100-2000	2	416-1300-000	18
GK590	29	3100-3000	2	417-0000-000	4
650	7	H3100-1000	2	418-1300-000	19
700-A	7	FV3100-1000	4	418-1301-000	19
B700	7	AFV3100-1000	4	420-1300-000	21
C700	7	AV3100-1000	4	420-1301-000	21
D700	8	AV3100-2000	4	422-1300-000	23
D700-1000	8	AVS3100	4	422-1301-000	23
D700-2000	8	AVS3100-1000	4	424-0000-000	2
D700-3000	8	AVS3100-2000	4	426-0000-000	2
VS700	7	AVS3100-3000	4	429-0003-000	15
VS750	7	V3100-1000	4	431-0003-000	15
800	9	V3100-2000	4	435-0003-000	4
A800	9	VS3100	4	492-0300-000	9
VS800	9	VS3100-1000	4	494-0000-000	9
900	9	VS3100-2000	4	494-0001-000	9
900-1000	9	VS3100-3000	4	497-0000-000	14
900-2000	9	4100	2	498-0300-000	13
900-3000	9	4100-1000	2	498-0301-000	13
900-4000	9	4100-2000	2	499-0000-000	14
VS900	10	AVS4100-1000	4	500-0000-000	28
		AVS4100-2000	4	501-0000-000	27
		VS4100-1000	4	501-0001-000	27

		1	2	3	4	5	6	7	8	9	10
Cylinder Bore Dia.	Min.	2.3745	2.3745	2.3745	2.3745	2.000	2.000	2.000	2.125	2.375	2.375
	Max.	2.3755	2.3755	2.3755	2.3755	2.001	2.001	2.001	2.126	2.376	2.376
Piston Skirt Dia.	Min.	2.3690	2.3690	2.3690	2.3690	1.9935	1.9935	1.9935	2.119	2.3690	2.3690
	Max.	2.3700	2.3700	2.3700	2.3700	1.9945	1.9945	1.9945	2.120	2.3700	2.3700
Piston Skirt to Cylinder Clearance	Min.	.0045	.0045	.0045	.0045	.0045	.0045	.0045	.005	.0055	.0055
	Max.	.0065	.0065	.0065	.0065	.0065	.0065	.0065	.007	.0075	.0075
Piston Ring to Groove Clearance	Min.	.002	.002	.002	.002	.002	.002	.002	.002	.002	.002
	Max.	.005	.005	.005	.005	.005	.005	.005	.005	.005	.005
Ring End Gap in Cylinder	Min.	.007	.007	.007	.007	.007	.007	.007	.007	.007	.007
	Max.	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017
Connecting Rod Bore Crankshaft End	Min.	.8140	.8770	.8140	.8770	.7515	.7515	.8770	.8770	.8770	.8770
	Max.	.8145	.8775	.8145	.8775	.7520	.7520	.8775	.8775	.8775	.8775
Connecting Rod to Crankshaft Clearance	Min.	.0015	.0015	.0015	.0015	.0018	.0018	.0018	.0018	.0018	.0018
	Max.	.0030	.0030	.0030	.0030	.0035	.0035	.0035	.0035	.0035	.0035
Connecting Rod to Wrist Pin Clearance	Min.	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004	.0004
	Max.	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011
Crankshaft Rod Pin Diameter	Min.	.8119	.8745	.8119	.8745	.7483	.7483	.8745	.8745	.8745	.8745
	Max.	.8125	.8752	.8125	.8752	.7490	.7490	.8752	.8752	.8752	.8752
Crankpin Out-of-Round	Max.	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Crankshaft Main Diameter P.T.O. End	Min.	.8733	.8733	.8733	Note #1	.7483	.8745	.8745	.8745	.8745	.9995
	Max.	.8740	.8740	.8740		.7490	.8752	.8752	.8752	.8752	1.0002
Crankshaft Main Diameter Flywheel End	Min.	.8120	.8120	.8120	.8120	.7483	.7483	.8745	.8745	.8745	.8745
	Max.	.8127	.8127	.8127	.8127	.7490	.7490	.8752	.8752	.8752	.8752
Crankshaft to Main Bearing Clearance	Min.	.0018	.0018	.0018	.0018	.0018	.0018	.0018	.0018	.0018	.0018
	Max.	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0035	.0035
Crankshaft End Play	Min.	.008	.008	.008	.008	.004	.004	.008	.008	.008	.008
	Max.	.018	.018	.018	.018	.012	.012	.018	.018	.018	.018
Block or Bearing Plate Main Bearing Bore P.T.O. End	Min.	.8758	.8758	.8758	Note #5	.7510	.877	.877	.877	.877	1.002
	Max.	.8768	.8768	.8768		.7520	.878	.878	.878	.878	1.003
Bearing Plate or Block Bearing Bore(Flywheel) End	Min.	.8145	.8145	.8145	.8145	.7510	.7510	.877	.877	.877	.877
	Max.	.8155	.8155	.8155	.8155	.7520	.7520	.878	.878	.878	.878
Valve or Tappet Guide Bore I.D.	Min.	.2495	.2495	.2495	.2495	.2495	.2495	.2495	.2495	.2495	.2495
	Max.	.2510	.2510	.2510	.2510	.2510	.2510	.2510	.2510	.2510	.2510
Valve Stem to Guide Clearance	Min.	.0015	.0015	.0015	.0015	.0020	.0020	.0020	.0020	.0020	.0020
	Max.	.0045	.0045	.0045	.0045	.0045	.0045	.0045	.0045	.0045	.0045
Valve Clearance, Intake & Exhaust	Min.	.009	.009	.009	.009	.007	.007	.009	.009	.009	.009
	Max.	.011	.011	.011	.011	.009	.009	.011	.011	.011	.011
Camshaft to Axle Clearance	Min.	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
	Max.	.003	.003	.003	.003	.003	.003	.003	.003	.003	.003
Camshaft Axle Clearance P.T.O.	Min.	.001	.001	.001	.001						
	Max.	.003	.003	.003	.003						
Camshaft Axle Clearance Flywheel End	Min.	.001	.001	.001	.001						
	Max.	.003	.003	.003	.003						
Point Setting	Min.	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018
	Max.	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021
Spark Plug Gap	Min.	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025
	Max.	.028	.028	.028	.028	.028	.028	.028	.028	.028	.028
Comp. at Cranking Speed, P.S.I.	Min.	65	65	65	65	65	65	65	65	65	65
Carburetor Float Setting (Clinton)	Min.	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32
	Max.	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64
Carburetor Float Setting (Carter)	Min.	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64	11/64
	Max.	13/64	13/64	13/64	13/64	13/64	13/64	13/64	13/64	13/64	13/64
Magnet Air Gap	Min.	.007	.007	.007	.007	.007	.007	.007	.007	.007	.007
	Max.	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017
Magnet Edge Gap (Phelon)	Min.	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32	5/32
	Max.	9/32	9/32	9/32	9/32	9/32	9/32	9/32	9/32	9/32	9/32
Magnet Edge Gap (Clinton)	Min.	7/64	7/64	7/64	7/64			7/64	7/64	7/64	7/64
	Max.	1/4	1/4	1/4	1/4			1/4	1/4	1/4	1/4
Oil Recommended A.P.I. Rating	See Bulletin #9 for SAE	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
		MS	MS	MS	MS	MS	MS	MS	MS	MS	MS
Fuel Recommended		Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas

Note 1 Crankshaft diameter .8733 to .8740 or .9995 to 1.0002, except 435-0000-000 which is 1.220 to 1.221.

Note 2 Ball, needle or roller bearing used. Check component parts, if worn or defective, replace.

Note 3 Wrist pin clearance, .0004 minimum, .0011 maximum on units other than listed below. Needle bearing used in D65-1000 Type (C), J9-1000 Type (B), J6-1100 and J6-1101. Check component parts, if worn or defective, replace.

Note 4 412-0000-000, 413-0000-000 with sleeve bearings .002 to .006, 412-0300-000 with roller bearings .001 to .006.

Note 5 Bearing bore diameter .8758 to .8768 or 1.0002 to 1.0003, except 435-0000-000 which is 1.2228 to 1.2235.

Note 6 Valve guides .312 to .313 inside diameter and are replacable. Tappet guide inside diameter .437 to .438.

Note 7 412-0000-000 .001 minimum, .004 maximum. 413-0000-000 .0005 minimum, .002 maximum.

		11	12	13	14	15	16	17	18	19	20
Cylinder Bore Dia.	Min.	2.375	2.4685	2.4685	2.4685	2.499	2.8125	2.8125	2.8125	2.9995	3.1245
	Max.	2.376	2.4695	2.4695	2.4695	2.500	2.8135	2.8135	2.8135	3.0005	3.1255
Piston Skirt Dia.	Min.	2.3690	2.4630	2.4630	2.4630	2.4935	2.8045	2.8045	2.8045	2.9915	3.117
	Max.	2.3700	2.4640	2.4640	2.4640	2.4945	2.8055	2.8055	2.8055	2.9925	3.118
Piston Skirt to Cylinder Clearance	Min.	.0055	.0055	.0055	.0055	.0045	.007	.007	.007	.007	.0065
	Max.	.0075	.0075	.0075	.0075	.0065	.009	.009	.009	.009	.0085
Piston Ring to Groove Clearance	Min.	.002	.002	.002	.002	.002	.0025	.0025	.0025	.0025	.0025
	Max.	.005	.005	.005	.005	.005	.0050	.0050	.0050	.0050	.0050
Ring End Gap in Cylinder	Min.	.007	.007	.007	.007	.007	.007	.007	.007	.007	.010
	Max.	.017	.017	.017	.017	.017	.017	.017	.017	.017	.020
Connecting Rod Bore Crankshaft End	Min.	.9140	.8770	.9140	.9140	.8770	1.2510	1.1265	1.1265	1.1265	1.2510
	Max.	.9145	.8775	.9145	.9145	.8775	1.2513	1.1268	1.1268	1.1268	1.2513
Connecting Rod to Crankshaft Clearance	Min.	.0018	.0018	.0018	.0018	.0015	.001	.0015	.0015	.0015	.0010
	Max.	.0035	.0035	.0035	.0035	.0035	.002	.0025	.0025	.0025	.0018
Connecting Rod to Wrist Pin Clearance	Min.	.0004	.0004	.0004	.0004	.0004	.0002	.0002	.0002	.0002	.0002
	Max.	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011
Crankshaft Rod Pin Diameter	Min.	.9114	.8745	.9114	.9114	.8745	1.2493	1.1243	1.1243	1.1243	1.2495
	Max.	.9120	.8752	.9120	.9120	.8752	1.2500	1.1250	1.1250	1.1250	1.2500
Crankpin Out-of-Round	Max.	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Crankshaft Main Diameter P.T.O. End	Min.	.9995	Note #2	Note #2	.9995	1.220	1.2510	Note #2	Note #2	Note #2	Note #2
	Max.	1.0002			1.0002	1.221	1.2515				
Crankshaft Main Diameter Flywheel End	Min.	.8745	Note #2	Note #2	.8745	.8120	1.2510	Note #2	Note #2	Note #2	Note #2
	Max.	.8752			.8752	.8127	1.2515				
Crankshaft to Main Bearing Clearance	Min.	.0018	Note #2	Note #2	.0018	.0018	.0010	Note #2	Note #2	Note #2	Note #2
	Max.	.0035			.0035	.0035	.0025				
Crankshaft End Play	Min.	.008	.001	.001	.008	.008	Note #4	.006	.001	.001	.006
	Max.	.018	.006	.006	.018	.018		.020	.006	.006	.020
Block or Bearing Plate Main Bearing Bore P.T.O. End	Min.	1.002	Note #2	Note #2	1.002	1.2228	1.2525	Note #2	Note #2	Note #2	Note #2
	Max.	1.003			1.003	1.2235	1.2535				
Bearing Plate or Block Bearing Bore (Flywheel) End	Min.	.877	Note #2	Note #2	.877	.8145	1.2525	Note #2	Note #2	Note #2	Note #2
	Max.	.878			.878	.8155	1.2535				
Valve or Tappet Guide Bore I.D.	Min.	.2495	.2495	.2495	.2495	.2495	.312	Note #6	Note #6	Note #6	Note #6
	Max.	.2510	.2510	.2510	.2510	.2510	.313				
Valve Stem to Guide Clearance	Min.	.0020	.0020	.0020	.0020	.0015	.002	.002	.002	.002	.002
	Max.	.0045	.0045	.0045	.0045	.0045	.004	.004	.004	.004	.004
Valve Clearance, Intake & Exhaust	Min.	.009	.009	.009	.009	.009	.011	.010	.010	.010	.010
	Max.	.010	.010	.010	.010	.011	.012	.012	.012	.012	.012
Camshaft to Axle Clearance	Min.	.001	.001	.001	.001			.0015	.0015	.0015	.0015
	Max.	.003	.003	.003	.003			.0035	.0035	.0035	.0035
Camshaft Axle Clearance P.T.O.	Min.					.001	Note #7				
	Max.					.003					
Camshaft Axle Clearance Flywheel End	Min.					.001	.001				
	Max.					.003	.003				
Point Setting	Min.	.018	.018	.018	.018	.018	.018	.028	.028	.028	.028
	Max.	.021	.021	.021	.021	.021	.021	.030	.030	.030	.030
Spark Plug Gap	Min.	.025	.025	.025	.025	.025	.025	.025	.025	.025	.025
	Max.	.028	.028	.028	.028	.028	.028	.028	.028	.028	.028
Comp. at Cranking Speed, P. S. I.	Min.	65	65	65	65	65	65	70	70	70	70
Carburetor Float Setting (Clinton)	Min.	5/32	5/32	5/32	5/32	5/32	5/32		11/64	11/64	
	Max.	11/64	11/64	11/64	11/64	11/64	11/64		13/64	13/64	
Carburetor Float Setting (Carter)	Min.	11/64	11/64	11/64	11/64			15/64	15/64	15/64	15/64
	Max.	13/64	13/64	13/64	13/64			17/64	17/64	17/64	17/64
Magneto Air Gap	Min.	.007	.007	.007	.007	.007	.007	.012	.012	.012	.012
	Max.	.017	.017	.017	.017	.017	.017	.020	.020	.020	.020
Magneto Edge Gap (Phelon)	Min.	5/32	5/32	5/32	5/32						
	Max.	9/32	9/32	9/32	9/32						
Magneto Edge Gap (Clinton)	Min.	7/64	7/64	7/64	7/64	7/64	7/64				
	Max.	1/4	1/4	1/4	1/4	1/4	1/4				
Oil Recommended	See Bulletin #9 for SAE	MM	MM	MM	MM	MM	MM	MM	MM	MM	MM
A. P. I. Rating		MS	MS	MS	MS	MS	MS	MS	MS	MS	MS
Fuel Recommended		Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas

Note 1 Crankshaft diameter .8733 to .8740 or .9995 to 1.0002, except 435-0000-000 which is 1.220 to 1.221.

Note 2 Ball, needle or roller bearing used. Check component parts, if worn or defective, replace.

Note 3 Wrist pin clearance, .0004 minimum, .0011 maximum on units other than listed below. Needle bearing used in D65-1000 Type (C), J9-1000 Type (B), J6-1100 and J6-1101. Check component parts, if worn or defective replace.

Note 4 412-0000-000, 413-0000-000 with sleeve bearings .002 to .006, 412-0300-000 with roller bearings .001 to .006.

Note 5 Bearing bore diameter .8758 to .8768 or 1.0002 to 1.0003, except 435-0000-000 which is 1.2228 to 1.2235.

Note 6 Valve guides .312 to .313 inside diameter and are replaceable. Tappet guide inside diameter .437 to .438.

Note 7 412-0000-000 .001 minimum, .004 maximum. 413-0000-000 .0005 minimum, .002 maximum.

		21	22	23	24	25	26	27	28	29	
Cylinder Bore Dia.	Min.	3.1245	3.1245	3.1245	1.875	1.875	2.125	2.125	2.125	2.125	
	Max.	3.1255	3.1255	3.1255	1.876	1.876	2.126	2.126	2.126	2.126	
Piston Skirt Dia.	Min.	3.117	3.1185	3.1185	1.8695	1.8695	2.1195	2.1195	2.1195	2.1195	
	Max.	3.118	3.1195	3.1195	1.8705	1.8705	2.1205	2.1205	2.1205	2.1205	
Piston Skirt to Cylinder Clearance	Min.	.0065	.005	.005	.0045	.0045	.005	.005	.005	.005	
	Max.	.0085	.007	.007	.0065	.0065	.007	.007	.007	.007	
Piston Ring to Groove Clearance	Min.	.0025	.0025	.0025	.0015	.0015	.0015	.0015	.0015	.002	
	Max.	.0050	.0050	.0050	.0040	.0040	.0040	.0040	.0040	.004	
Ring End Gap in Cylinder	Min.	.010	.010	.010	.005	.005	.007	.007	.007	.010	
	Max.	.020	.020	.020	.013	.013	.017	.017	.017	.015	
Connecting Rod Bore Crankshaft End	Min.	1.2510	1.2510	1.2510	.7820	.7820	.7820	.7820	.7820	Note	
	Max.	1.2513	1.2513	1.2513	.7827	.7827	.7827	.7827	.7827	#2	
Connecting Rod to Crankshaft Clearance	Min.	.0010	.0010	.0010	.0026	.0026	.0026	.0026	.0026	Note	
	Max.	.0018	.0018	.0018	.0040	.0040	.0040	.0040	.0040	#2	
Connecting Rod to Wrist Pin Clearance	Min.	.0002	.0002	.0002	.0004	.0004	.0004	.0004	.0004	.0004	
	Max.	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	.0011	
Crankshaft Rod Pin Diameter	Min.	1.2495	1.2495	1.2495	.7788	.7788	.7788	.7788	.7788	.6594	
	Max.	1.2500	1.2500	1.2500	.7795	.7795	.7795	.7795	.7795	.6599	
Crankpin Out-of-Round	Max.	.001	.001	.001	.001	.001	.001	.001	.001	.001	
Crankshaft Main Diameter P.T.O. End	Min.	Note	Note	Note	.8745	.8745	.8745	.9995	.8745	Note	
	Max.	#2	#2	#2	.8752	.8752	.8752	1.0002	.8752	#2	
Crankshaft Main Diameter Flywheel End	Min.	Note	Note	Note	.7495	.7495	.7495	.7495	.7495	.7495	
	Max.	#2	#2	#2	.7502	.7502	.7502	.7502	.7502	.7502	
Crankshaft to Main Bearing Clearance	Min.	Note	Note	Note	.0015	.0015	.0015	.0015	.0015	Note	
	Max.	#2	#2	#2	.0035	.0035	.0035	.0035	.0035	#2	
Crankshaft End Play	Min.	.001	.006	.001	.005	.005	.005	.005	.005	Note	
	Max.	.006	.020	.006	.020	.020	.020	.020	.020	#2	
Block or Bearing Plate Main Bearing Bore P.T.O. End	Min.	Note	Note	Note	.8770	.8770	.8770	1.002	.8770	Note	
	Max.	#2	#2	#2	.8780	.8780	.8780	1.003	.8778	#2	
Bearing Plate or Block Bearing Bore (Flywheel) End.	Min.	Note	Note	Note	.7517	.7517	.7517	.7517	.7517	Note	
	Max.	#2	#2	#2	.7525	.7525	.7525	.7525	.7525	#2	
Valve or Tappet Guide Bore I.D.	Min.	Note	Note	Note							
	Max.	#6	#6	#6							
Valve Stem to Guide Clearance	Min.	.002	.002	.002							
	Max.	.004	.004	.004							
Valve Clearance, Intake & Exhaust	Min.	.010	.010	.010							
	Max.	.012	.012	.012							
Camshaft to Axle Clearance	Min.	.0015	.0015	.0015							
	Max.	.0035	.0035	.0035							
Camshaft Axle Clearance P.T.O.	Min.										
	Max.										
Camshaft Axle Clearance Flywheel End	Min.										
	Max.										
Point Setting	Min.	.028	.028	.028	.018	.018	.018	.018	.018	.018	
	Max.	.030	.030	.030	.021	.021	.021	.021	.021	.021	
Spark Plug Gap	Min.	.025	.025	.025	.025	.025	.025	.025	.025	.025	
	Max.	.028	.028	.028	.028	.028	.028	.028	.028	.028	
Comp. at Cranking Speed, P.S.I.	Min.	70	70	70	60	60	60	60	60	60	
Carburetor Float Setting (Clinton)	Min.	11/64		11/64	5/32	5/32	5/32	5/32	5/32	5/32	
	Max.	13/64		13/64	11/64	11/64	11/64	11/64	11/64	11/64	
Carburetor Float Setting (Carter)	Min.	15/64	15/64	15/64	11/64	11/64	11/64	11/64	11/64	11/64	
	Max.	17/64	17/64	17/64	13/64	13/64	13/64	13/64	13/64	13/64	
Magneto Air Gap	Min.	.012	.012	.012	.007	.007	.007	.007	.007	.007	
	Max.	.020	.020	.020	.017	.017	.017	.017	.017	.017	
Magneto Edge Gap (Phelon)	Min.				5/32	5/32	5/32	5/32	5/32		
	Max.				9/32	9/32	9/32	9/32	9/32		
Magneto Edge Gap (Clinton)	Min.				7/64	7/64	7/64	7/64	7/64	7/64	
	Max.				1/4	1/4	1/4	1/4	1/4	1/4	
Oil Recommended A.P.I. Rating	See Bulletin #9 for SAE	MM MS	MM MS	MM MS	Outboard Motor Oil or SAE 30 Non Detergent						
Fuel Recommended		Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	

Note 1 Crankshaft diameter .8733 to .8740 or .9995 to 1.0002, except 435-0000-000 which is 1.220 to 1.221.

Note 2 Ball, needle or roller bearing used. Check component parts, if worn or defective, replace.

Note 3 Wrist pin clearance, .0004 minimum, .0011 maximum on units other than listed below. Needle bearing used in D65-1000 Type (C), J9-1000 Type (B), J6-1100 and J6-1101. Check component parts, if worn or defective, replace.

Note 4 412-0000-000, 413-0000-000 with sleeve bearings .002 to .006, 412-0300-000 with roller bearings .001 to .006.

Note 5 Bearing bore diameter .8758 to .8768 or 1.0002 to 1.0003, except 435-0000-000 which is 1.2228 to 1.2235.

Note 6 Valve guides .312 to .313 inside diameter and are replacable. Tappet guide inside diameter .437 to .438.

Note 7 412-0000-000 .001 minimum, .004 maximum. 413-0000-000 .0005 minimum, .002 maximum.

		30	31	32	33	34	35	36
Cylinder Bore Dia.	Min. Max.	1.8750 1.8765	2.1255 2.1270	1.8750 1.8765	1.811 1.814	1.8750 1.8765	2.1255 2.1270	2.1255 2.1270
Piston Skirt Dia.	Min. Max.	1.8695 1.8705	2.120 2.121	1.871 1.872	1.807 1.809	1.871 1.872	2.120 2.121	2.120 2.121
Piston Skirt to Cylinder Clearance	Min. Max.	.0045 .0065	.0045 .0070	.0045 .0065	.003 .007	.0045 .0065	.0045 .0070	.0045 .0070
Piston Ring to Groove Clearance	Min. Max.	.002 .004	.002 .004	.002 .004	.002 .005	.002 .004	.002 .004	.002 .004
Ring End Gap in Cylinder	Min. Max.	.010 .015	.010 .015	.010 .015	.004 .020	.010 .015	.010 .015	.010 .015
Connecting Rod Bore Crankshaft End	Min. Max.	.7816 .7825	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Connecting Rod to Crankshaft Clearance	Min. Max.	.0021 .0037	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Connecting Rod to Wrist Pin Clearance	Min. Max.	.0004 .0011	Note #3	.0004 .0011	Note #2	.0004 .0011	Note #3	Note #3
Crankshaft Rod Pin Diameter	Min. Max.	.7788 .7795	.6594 .6599	.6594 .6599	.4960 .4965	.6594 .6599	.6594 .6599	.6594 .6599
Crankpin Out-of-Round	Max.	.001	.001	.001	.001	.001	.001	.001
Crankshaft Main Diameter P.T.O. End	Min. Max.	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Crankshaft Main Diameter Flywheel End	Min. Max.	.7495 .7502	.7495 .7502	.7495 .7502	Note #2	.7495 .7502	.7495 .7502	.7495 .7502
Crankshaft to Main Bearing Clearance	Min. Max.	.0015 .0035	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Crankshaft End Play	Min. Max.	Note #2	Note #2	Note #2	.003 .020	.003 .020	.003 .020	Note #2
Block or Bearing Plate Main Bearing Bore P.T.O. End	Min. Max.	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Bearing Plate or Block Bearing Bore(Flywheel) End	Min. Max.	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2	Note #2
Valve or Tappet Guide Bore I.D.	Min. Max.							
Valve Stem to Guide Clearance	Min. Max.							
Valve Clearance, Intake & Exhaust	Min. Max.							
Camshaft to Axle Clearance	Min. Max.							
Camshaft Axle Clearance P.T.O.	Min. Max.							
Camshaft Axle Clearance Flywheel End	Min. Max.							
Point Setting	Min. Max.	.018 .021	.018 .021	.018 .021	.013 .017	.014 .016	.014 .016	.018 .021
Spark Plug Gap	Min. Max.	.025 .028	.025 .028	.025 .028	.025 .030	.025 .028	.025 .028	.025 .028
Comp. at Cranking Speed, P.S.I. Min.		60	60	60	80	60	60	60
Carburetor Float Setting (Clinton)	Min. Max.							1-25/64 1-27/64
Carburetor Float Setting (Carter)	Min. Max.							
Magneto Air Gap	Min. Max.	.007 .017	.007 .017	.007 .017	.007 .017	.007 .017	.007 .017	.007 .017
Magneto Edge Gap(Phelon)	Min. Max.							
Magneto Edge Gap (Clinton)	Min. Max.	7/64 1/4	7/64 1/4	7/64 1/4	3/32 5/16	3/32 5/16	3/32 5/16	7/64 1/4
Oil Recommended A.P.I. Rating		Outboard Motor Oil or SAE 30 Non Deterger						
Fuel Recommended		Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas	Reg. Gas

Note 1 Crankshaft diameter .8733 to .8740 or .9995 to 1.0002, except 435-0000-000 which is 1.220 to 1.221.

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Note 6 Valve guides .312 to .313 inside diameter and are replaceable. Tappet guide inside diameter .437 to .438.

Note 7 412-0000-000 .001 minimum, .004 maximum. 413-0000-000 .005 minimum, .002 maximum.

CLINTON ENGINES

TORQUE DATA

		All 4 Cycle Aluminum Vertical & Horizontal Shaft	V100, V3100, 406, H3100 407, 417	429 & 431	A300	300, VS300, 350, 500, 650, 700A, C700 D700, VS700, VS750, 800, A800, VS800 900, VS900, V1000, A-B-1100, C1100, D1100, V1100, VS1100, 1200, A1200, B1290, V1200, VS1200, 492, 494, 497, 498, 499	412 & 413	1800, 1800, 2500, 2790 414, 416, 418, 420, 422	200, A200, VS200, VS400, A400, 500, 501	E65 & GK590	E10 - Chainsaw	D15 - Chainsaw D25 - Chainsaw	D35, D55, D65 - Chainsaws E75, E95 - Chainsaws	J5, J6, J7, J8, J9 - Outboards
Connecting Rod Aluminum	Min. Max.	100 125	100 125	100 125	70 80	70 80	215 235	215 235	35 45	70 80	50 55	55 65	80 90	80 90
Connecting Rod Forged Steel	Min. Max.									90 100			90 100	90 100
Bearing Plate P.T.O. End	Min. Max.	75 85	75 85	75 85			75 85	160 180						
Bearing Plate Flywheel End	Min. Max.				120 150	140 160			75 95	75 95		80 90	80 90	75 95
Back Plate to Block	Min. Max.							70 80						
Head Bolts	Min. Max.	125 150	225 250	225 250	200 220	200 220	200 220	200 220						
Base Bolts	Min. Max.	75 85	75 85	75 85	150 160	325 375	75 85	150 160	125 150	125 150				
End Cover or Gear Box	Min. Max.					120 150								
Speed Reducer Mounting	Min. Max.	110 150	110 150		110 150	110 150	110 150	110 150	110 150					
P.T.O. Housing or Mounting Flange	Min. Max.	75 85	75 85	75 85		120 150	75 85	160 180	125 150					
Carb. Reed Plate or Manifold to Blk.	Min. Max.	60 65	60 65	60 65	60 65	60 65	65 75	60 65	60 65	60 65	45 55	50 60	50 60	50 60
Carb. to Reed Plate or Manifold	Min. Max.	35 50	35 50	35 50	60 65	35 50	35 50	60 65	60 65	60 65		50 60	50 60	50 60
Blower Housing	Min. Max.	60 70	60 70	60 70	65 70	65 70	65 75	65 70	65 70	65 70	90 110	80 90	80 90	75 85
Muffler to Block	Min. Max.	110 120	110 120	110 120	140 150	140 150	170 180	170 180	40 60	40 60	90 110	60 70	60 70	
Flywheel	Min. Max.	375 400	375 400	375 400	375 400	400 450	400 500	*100 *120	375 400	250 300	150 180	375 425	**250 **300	250 300
Flywheel Touch & Stop for Brake	Min. Max.	650 700	650 700											
Spark Plug	Min. Max.	275 300	275 300	275 300	275 300	275 300	275 300	275 300	275 300	275 300	250 300	230 270	230 270	230 270
Stator Plate	Min. Max.	50 60	50 60	50 60	50 60	50 60	50 60	80 100	50 60	50 60	50 60	50 60	50 60	45 65

All torque in inch pounds except those marked with a single *.

* Foot Pounds

** D35 Requires Same as D25