



SERVICE BULLETIN NO. 5

SERVICE BULLETIN NO. 5-SEC. VIII
REVISED MARCH, 1962
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HORIZONTAL & VERTICAL SHAFT 4 CYCLE ALUMALLOY & HORIZONTAL
2 CYCLE ALUMALLOY SHORT BLOCK ASSEMBLIES

Short Block Assemblies are now available from the Clinton Engine Corporation through your source of supply. These are to provide a more rapid and economical method of servicing engines that have been damaged or worn internally requiring major overhaul or worn to the point that it is not economically possible to repair. The use of a short block assembly will reduce time required to service many units and will supply your customer with an engine that is new internally. The original sub-assemblies, to be reused from original engine, are listed. To select proper short block assembly, first secure the crankshaft number of used engine with reference to basic parts list and model variations and then refer to short block assembly and crankshafts (engines) that a particular short block assembly will replace. Refer to notes when listed.

The following models and types may be serviced with a short block assembly by identifying the original crankshaft and using a cross-reference of crankshaft to short block.

All VS100-3000 (Except type A)	All 100-2000 (Except type A & B)	400	404
All VS100-4000	All A2100-2000 (Except type A & B)	401	405
All VS2100-3000 (Except type A)	All 3100-2000 (Except type A & B)	402	408
All VS3100-2000 (Except type A)	All 3100-3000	403	409
All VS3100-3000	All 4100-1000 (Except type A)		
All VS4100-1000 (Except type A)	All 4100-2000		
All VS4100-2000	See Page 5 for Horizontal 2 Cycle Short Block Information		

NOTE: Short Block Assembly will not service 405 or 409 engines when "1" is indicated in the following location in model numbers 405-0010-000 or 409-0010-000. The "1" in this specific location indicates auxiliary P. T. O. Shaft through Base and the Short Blocks are not so equipped.

The Short Block Assembly consists of a cylinder block, base, valve chamber cover with breather assembly and all internal parts, plus head gasket, manifold gasket and air vane pivot pin. Note some of the units covered did not use a snap on air vane and it will be necessary to use vane number 91033 or secure pivot pin number 7238, from stock. Reuse Magneto Ass'y, flywheel, breaker cam, housing and tank ass'y, head, muffler, carburetor, cleaner assembly, and governor, etc., which are to be removed from the original engine. If any parts to be reused should require replacement, these should be secured from stock and installed at labor and parts price normally charged to customer.

The Horizontal Shaft Short Blocks are 149-503 (Sleeve Bearing P. T. O.) and 149-504 (Ball Bearing P. T. O.). These Short Blocks have P. T. O. End cover for oil fill from either side. Please note the Screw & L'Washer in envelope. This is included to cover more variations of engine and is used in Block above Crankshaft. The Horizontal Short Blocks listed DO NOT have a stellite insert and should not be used where a stellite Valve is installed in the engine and is required for service in which engine used.

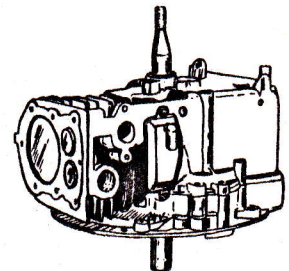
Identification

The short block assembly will have the model and type number on the block assembly. A pressure sensitive label listing model and type number is included with gaskets. Clean and dry nameplate; remove backing from label and install on nameplate below present model, serial and type number for future service reference. The variation will be carried with respective model parts list and variation sheet in the Engine Service Manual.

Re-assembly of Parts to Short Block Assembly

CAUTION: Clean crankshaft on flywheel side with solvent and dry before installing breaker cam and flywheel. A rust preventative has been used and must be removed; especially important on taper for flywheel.

1. Clean parts and inspect prior to assembly.
2. Short block assembly needs no adjustment.
3. Use correct pivot pin supplied (refer to section on parts to be reused.)
4. Use new head gasket supplied along with head from used engine, unless otherwise specified.
5. On installation of magneto, test coil and condenser, reset points at .018 to .021 and clean points with Carbon Tetra-Chloride. Dry with lintless tape.
6. Install flywheel and starter cup. Torque flywheel nut to 350 or 400 inch lbs. with compression, toothed or split lock-washer. Torque 200 to 250 inch lbs. for flat washer. Compression washer 5879 used with either recoil or impulse starter cup.
7. Install muffler.
8. Install link and air vane.
9. Install carburetor assembly, using new gasket supplied. Torque 60-65 inch lbs.
10. Install housing and tank assembly.
11. Torque head bolts to 125-150 inch lbs.
12. Tighten screws holding housing to block; torque 65-70 inch lbs.
13. Re-install starter assembly, if so equipped.
14. Remove air cleaner, inspect and service if needed, and re-install.
15. Add 1 pint of oil to Crankcase. Use SAE 30 MM or MS above 32°F.
Use SAE 10 W MM or MS from 32°F. to -10°F.
Use SAE 5 W MM or MS from -10°F. to -20°F.



Warranty

For usage in warranty repair, refer to Service Bulletin No. 1.
Warranty on short block assembly is listed in Service Bulletin No. 1.

CRANKSHAFT NO.	IBM CRANKSHAFT NO.	NOTE	149-494	NOTE	149-495	NOTE	149-496	NOTE	149-497	NOTE	149-498	NOTE	149-499	NOTE	149-500	NOTE	149-501	NOTE	149-502	NOTE	149-503	NOTE	149-504
10100-1	46-355				X		1	X		1	X												
10101-1	46-356		X																				
10102-1	46-357		X	Cut off at 2.50; tap 3/8" x 24-.94" D, or use 10102-1 (46-357) Crankshaft.																			
10103-1	46-358		X	Cut off at 3.13", tap 3/8"-24 x .94"D, or use 10103-1 (46-358) Crankshaft																			
10104-1	46-153			X		1	X			1	X												
10105-1	46-154		X																				
10106-1	46-144		X		X	Use 10106-1 (46-144) Crankshaft																	
10107-1	46-155			X		1	X			1	X												
10108-1	46-145		X																				
10109-1	46-146			X	Drill and tap 1/2"-20 x 94"D or use 10109-1 (46-146) Crankshaft																		
10110-1	46-156			X																			
10111	46-157		X		X	Use 10111 (46-157) Crankshaft																	
10112	46-158		X		X	Use 10112 (46-158) Crankshaft																	
10113-1	46-147		X		X	Use 10113-1 (46-147) Crankshaft																	
10114	46-159			X		1	X			1	X												
10115-1	46-152			X		1	X			1	X												
Change stud to 3/8"-24 (Original crankshaft drilled & tapped 3/8"-16). Or use 10115-1 (46-152) Crankshaft in 149-495 Short Block.																							
10116-1	46-148		X		X	Use 10116-1 (46-148) Crankshaft																	
10117-1	46-161		X		X	Use 10117-1 (46-161) Crankshaft																	
10118	46-645		X	Drill and tap 1/2"-20 x .94"D or use 10118 (46-645) Crankshaft																			
10119-1	46-151														1	X	1	X					
10120-1	46-149			X	Drill and tap 7/16"-20 x 1.13" or use 10120-1 (46-149) Crankshaft																		
10121-1	46-162		X		X	Use 10121-1 (46-162) Crankshaft																	
10122-1	46-163		X		X	Use 10122-1 (46-163) Crankshaft																	
10123-1	46-164		X		X	Use 10123-1 (46-164) Crankshaft																	
10124	46-165		X		X	Use 10124 (46-165) Crankshaft																	
10125-1	46-166		X	Cut off at 2.50" Drill & tap 7/16"-20 x 7/94"D or use 10125-1 (46-166) Crankshaft																			
10126	46-167			X		1	X																
10127-1	46-168		X		X	Use 10127-1 (46-168) Crankshaft																	
10128-1	46-361			X																			
10129-1	46-150		X																				
10130-1	46-169			X																			
10132-1	46-187		X	If long keyway required-use 10132-1 (46-187) Crankshaft																			
10150-1	46-170		Special base, etc. required-refer to Sec. III, Div. L, Page 4																				
10161	46-171		X		X	Use 10161 (46-171) Crankshaft																	
10176	46-673																				2	X	
16128	46-744		Use 16128 (46-744) Crankshaft																				
21100-1	46-353																				2	X	
21101	46-363		No Short Block available with 1/2" Dia. Crankshaft Extension																				
21102-1	46-362		No Short Block available with 1/2" Dia. Crankshaft Extension																				
21103	46-340		No Short Block available																				
21104	46-360		Use 31304-1 (46-419) Crankshaft																				

NOTE 1: Use 31477 (122-19) Head
NOTE 2: Use 31011 (122-17) Head

CRANKSHAFT NO.	IBM CRANKSHAFT NO.	NOTE	149-494	NOTE	149-495	NOTE	149-496	NOTE	149-497	NOTE	149-498	NOTE	149-499	NOTE	149-500	NOTE	149-501	NOTE	149-502	NOTE	149-503	NOTE	149-504
21105-1	46-364	No Short Block available with 1/2" Dia. Crankshaft Extension																					
21106-1	46-510	Use 31306-1 (46-417) Crankshaft																	2		X		
21107-1	46-483	Use 31318-1 (46-495) Crankshaft																				2	X
21108-1	46-365	Use 16128 (46-744) Crankshaft																				2	X
21109	46-482	Use 31309-1 (46-480) Crankshaft																				2	X
21110-1	46-354	Use 31330 (46-490) Crankshaft																				2	X
21111-1	46-359	Use 31302-1 (46-418) Crankshaft																	2		X		
21112-1	46-481	Use 31312 (46-473) Crankshaft																				2	X
21113	46-485	No Short Block available																				2	X
21115-1	46-486	No Short Block available with 1/2" Dia. Crankshaft Extension																					
21117	46-352																		2		X		
21302	46-745	Use 31312 (46-473) Crankshaft																				2	X
31100-1	46-409								X					X									X
31101-1	46-411								X					X									X
31102-1	46-412	Use 31102-1 (46-412) Crankshaft							X														X
31103-1	46-413	Use 31103-1 (46-413) Crankshaft							X														X
31104-1	46-425								X														X
31105-1	46-322								X					X									X
31106	46-395	Use 31106 (46-395) Crankshaft					X				X		X				X		X				X
31107-1	46-426								X					X									X
31108	46-397	Use 31108 (46-397) Crankshaft					X				X		X				X		X				X
31109	46-423								X					X					X				X
31110	46-646	Use 31110 (46-646) Crankshaft																					X
31111-1									X					X									X
31112-1									X					X									X
31113-1	46-429	Use 31113-1 (46-429) Crankshaft							X					X									X
31114-1	46-430	Use 31114-1 (46-430) Crankshaft							X					X									X
31115-1	46-431								X					X									X
31116-1	46-402																						X
31119	46-405						X																X
31121-1	46-432	Use 3321-1 (46-432) Crankshaft							X														X
31122-1	46-433	Use 31122-1 (46-433) Crankshaft							X														X
31124	46-410								X					X									X
31127		Use 31103-1 (46-413) Crankshaft							X														X
31128	46-414													X									X
31135	46-421						X							X									X
31162	46-445													X									X
31163	46-446						X							X									X
31165	46-448								X					X									X
31166	46-449													X									X
31167	46-450								X					X									X
		Add spot on Crankshaft 1.56" from end of Shaft or use 31167 (46-450) Crankshaft in 149-497 Short Block																					
31168	46-451																						X

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CRANKSHAFT NO.	IBM CRANKSHAFT NO.	NOTE	149-494	NOTE	149-495	NOTE	149-496	NOTE	149-497	NOTE	149-498	NOTE	149-499	NOTE	149-500	NOTE	149-501	NOTE	149-502	NOTE	149-503	NOTE	149-504
31169	46-452	Use 31169 (46-452) Crankshaft							X								X		X				
31179	46-680	Use 31179 (46-680) Crankshaft				X					X		X				X		X				
31180	46-758	Use 31180 (46-758) Crankshaft				X					X		X				X		X				
31181	46-784												X										
31182	46-785	Add spot or use 31182 (46-785) Crankshaft																				X	
31300	46-424										X		Cut off at 3.75" drill & tap 3/8"-24 x .94"D, or use 31301 (46-462) Crankshaft										
31301	46-462																					X	
31302-1	46-418	Use 31302-1 (46-418) Crankshaft									X		X				X		X				
31303	46-464	Use 31303 (46-464) Crankshaft				X					X		X				X		X			X	
31304-1	46-419	Use 31304-1 (46-419) Crankshaft									X		X				X		X			X	
31305	46-466	Use 31305 (46-466) Crankshaft				X					X		X				X		X			X	
31306-1	46-417	Use 31306-1 (46-417) Crankshaft									X		X				X		X			X	
31307	46-468	Use 31307 (46-468) Crankshaft				X					X		X				X		X				
31308	46-469	If second keyseat location important-use 31308 (46-469) Crankshaft									X		X				X		X				X
31309-1	46-480	Use 31309-1 (46-480) Crankshaft																					X
31310-1	46-404										X		X				X		X				X
31311	46-472	Use 31311 (46-472) Crankshaft				X					X		X				X		X				X
31312	46-473	Use 31312 (46-473) Crankshaft									X		X				X		X				X
31313	46-474	Use 31313 (46-474) Crankshaft				X					X		X				X		X				X
31314-1	46-403																						X
31316-1	46-477	Use 31316-1 (46-477) Crankshaft																					X
31318-1	46-495	Use 31318-1 (46-495) Crankshaft																					X
31319	46-479	Use 31319 (46-479) Crankshaft									X		X				X		X				X
31324	46-484	Use 31324 (46-484) Crankshaft				X					X		X				X		X				X
31327	46-487	Use 31327 (46-487) Crankshaft				X					X		X				X		X				X
31328	46-488					X											X		X				X
31329	46-489	Use 31329 (46-489) Crankshaft				X					X		X				X		X				X
31330	46-490	Use 31330 (46-490) Crankshaft									X		X				X		X				X
31331	46-491	Use 31331 (46-491) Crankshaft				X					X		X				X		X				X
31332	46-492												X										X
31333	46-493												X										X
31334	46-494	Cut off at cut off line and tap 3/8"-24 x .94"D, or use 31334 (46-494) Crankshaft																					X
31335	46-496	Use 31335 (46-496) Crankshaft									X		X				X		X				X
31336	46-496	Use 31336 (46-496) Crankshaft				X					X		X				X		X				X
31337	46-497												X				X		X				X
31338	46-498	Use 31338 (46-498) Crankshaft				X					X		X				X		X				X
31339	46-499	Use 31339 (46-499) Crankshaft				X					X		X				X		X				X
31342	46-501	Use 31342 (46-501) Crankshaft				X					X		X				X		X				X
91371	46-748					X																	
91527	46-770	X Use 91527 (46-770) Crankshaft			X						X		X				X		X				
91548	46-771	Use 91548 (46-771) Crankshaft				X					X		X				X		X				
91549	46-772	X Use 91549 (46-772) Crankshaft			X												X		X				
91634	46-760																						

NOTE 1: Use 31477 (122-19) Head
NOTE 2: Use 31011 (122-17) Head

CRANKSHAFT NO.	IBM CRANKSHAFT NO.	NOTE	149-494	NOTE	149-495	NOTE	149-496	NOTE	149-497	NOTE	149-498	NOTE	149-499	NOTE	149-500	NOTE	149-501	NOTE	149-502	NOTE	149-503	NOTE	149-504
91926	46-776	Add spot or use 91926 (46-776) Crankshaft									X												
91993	46-787																						
91994	46-788						X								X		X						
92020	46-790		X		X																		
92112	46-795																						
92150	46-798	Use 92150 (46-798) Crankshaft					X				X		X				X						
92159	46-799	No Short Block available															X		X				
	46-807	Use 46-807 Crankshaft					X				X		X				X		X				
	46-812																						
	46-813	Use 46-813 Crankshaft					X				X		X				X		X				X
	46-815	Use 46-815 Crankshaft									X		X				X		X				X
	46-819														1		X						X
	46-821																X						
	46-825	Use 46-825 Crankshaft					X				X		X				X						
	46-826	Use 46-826 Crankshaft									X		X				X		X				
	46-828	Use 46-828 Crankshaft					X				X		X				X		X			2	X
	46-829																X		X				
	46-830																						X
	46-831																X					X	
	46-832																X		X				

NOTE 1: Use 31477 (122-19) Head NOTE 2: Use 31011 (122-17) Head

149-508 HORIZONTAL ALUMALLOY (2-CYCLE) SHORT BLOCK

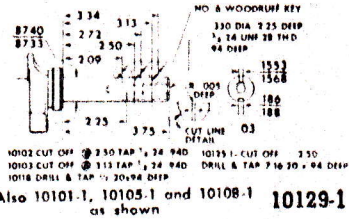
The Short Block Ass'y is a Ball Bearing P. T. O. Block Ass'y. It has a 2253-1 (46-32) Crankshaft, (2.422) extension from Block, 5/8" Diameter with 3/16 keyway full depth for 1.88". The Short Block Assembly includes the "Clintonized" Rod. Short Block Ass'y made up of Block Ass'y with P. T. O. Ball Bearing, Retainer and Seal; Piston Ass'y including Rings, Wrist Pin & Retainer; Rod Ass'y; Bearing Plate with Bearing and Seal assembled, Gasket, Screws, Locks, etc. assembled ready for completion into engine. Refer to Clinton Engine Service Manual, Sec. IV, Div. B, for any Crankshaft information required.

The 149-508 Short Block Ass'y will service A200, A400, A490, A400-1000, A490-1000, and 500 Series as follows:

Engine with 2142 Crankshaft--No Short Block Available
 Engine with 2250 Crankshaft--No Short Block Available
 Engine with 2251 Crankshaft--No Short Block Available
 Engine with 2252 or -1 Crankshaft--Use 149-508 Short Block Ass'y
 Engine with 2253 or -1 Crankshaft--Use 149-508 Short Block Ass'y
 Engine with 2254 or -1 Crankshaft--No Short Block Available
 Engine with 2255 or -1 Crankshaft--No Short Block Available
 Engine with 2256 or -1 Crankshaft--No Short Block Available

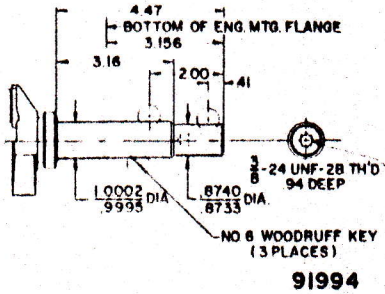
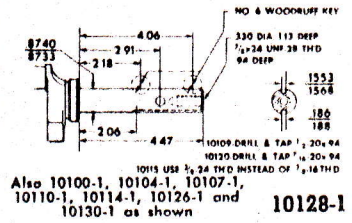
Engine with 2290 Crankshaft--No Short Block Available
 Engine with 2384 Crankshaft--Use 149-508 Short Block Ass'y & 2384 Crankshaft
 Engine with 2385 Crankshaft--Use 149-508 Short Block Ass'y & 2385 Crankshaft
 Engine with 2386 Crankshaft--Use 149-508 Short Block Ass'y & 2386 Crankshaft
 Engine with 2387 Crankshaft--No Short Block Available
 Engine with 2394 Crankshaft--Use 149-508 Short Block Ass'y & 2394 Crankshaft
 Engine with 46-817 Crankshaft--Use 149-508 Short Block Ass'y & 46-817 Crankshaft

SHORT BLOCK CRANKSHAFT USAGE



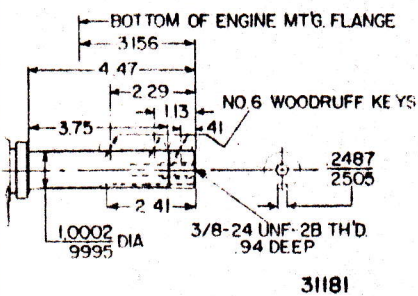
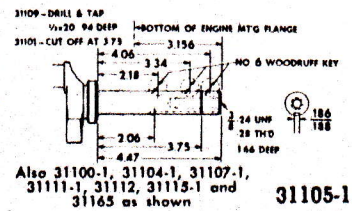
149-494 (VS100-4164) Ass'y uses 10129-1 (46-150) crankshaft, base for 7/8" diameter crankshaft.

149-495 (VS100-4165) Ass'y uses 10128-1 (46-316) crankshaft, base for 7/8" diameter crankshaft.



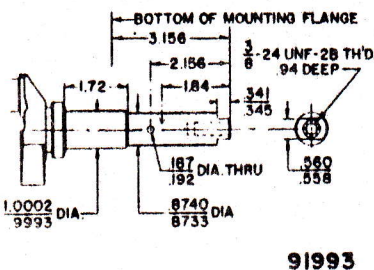
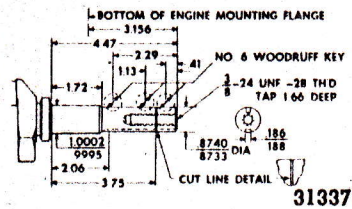
149-496 (VS3100-3156) Ass'y uses 91994 (46-788) crankshaft, base for 1" diameter crankshaft.

149-497 (VS3100-3157) Ass'y uses 31105-1 (46-422) crankshaft, base for 7/8" diameter crankshaft.



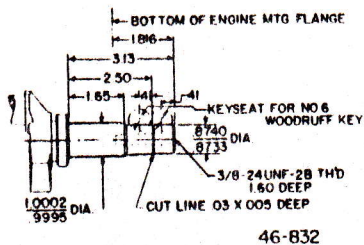
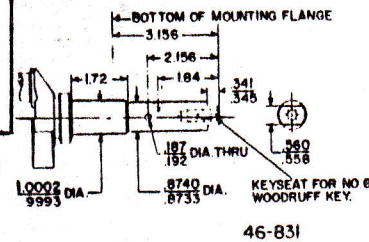
149-498 (VS3100-3158) Ass'y uses 31181 (46-784) crankshaft, base for 1" diameter crankshaft.

149-499 (VS3100-3159) Ass'y uses 31337 (46-497) crankshaft, base for 1" diameter crankshaft.



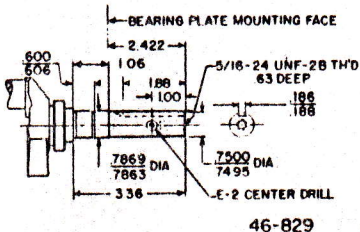
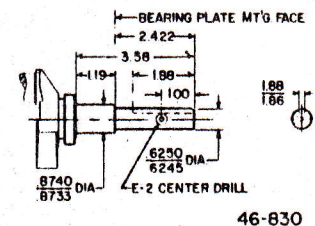
149-500 (VS3100-3160) Ass'y uses 91993 (46-787) crankshaft, base for 1" diameter crankshaft.

149-501 (405-9000-041) Ass'y uses 46-831 crankshaft, base for 1" diameter crankshaft.



149-502 (405-9000-042) Ass'y uses 46-832 crankshaft, base for 1" diameter crankshaft.

149-503 (404-9100-060) Ass'y (Horizontal Shaft Sleeve Bearing) uses 46-830 crankshaft.



149-504 (404-9300-059) Ass'y (Horizontal Shaft Ball Bearing P. T. O.) uses 46-829 crankshaft.

149-508 (500-9300-020) Ass'y (Horizontal Shaft Ball Bearing P. T. O. -2 Cycle) uses 2253-1 (46-32) crankshaft.

