

REPLACEMENT PARTS LISTCONTRACT W635-AC-12741

<u>PART NO.</u>	<u>NAME AND DESCRIPTION</u>	<u>NO. OF UNITS</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
500946	Bushing - accessory shaft front New lead bronze bearing was installed as this type had proved very successful in the other accessory drives. New part, new design.	1	38.90	38.90
500945	Bushing - accessory shaft idler gear A new lead bronze bushing was installed to eliminate the recurring of the failure of this part, which had formerly been bronze. New part, no change	1	34.60	34.60
503500	Crankshaft Crankpin #3 was reground .007 under standard to re-condition surface injured due to the failure of #3 fork and blade connecting rod. All pins were polished and scratches removed. Rework present part	1	67.20	67.20
503606	Rod - Fork connecting It was necessary to install a new connecting rod, due to the failure described in E.S.M.R Serial No. E-57-285-106, dated June 21, 1939. However, this new rod was installed on #1 crankpin rod to use a special bearing on hand. New part, no change	1	580.20	580.20
503607	Rod - Blade connecting See explanation as described under part 503606 above. New part, no change	1	426.48	426.48
503606	Rod - Fork connecting The bore of the crankpin ends of the 5 remaining rods were reground .005 over-size, in order to remove gall marks and to provide a perfectly round bore under the proper pinch. Rework present parts	5	10.50	52.50
501059	Pin - crankpin bearing dowel The regrinding operation described above necessitated the replacement of the bearing dowels New part, no change	5	.48	2.40

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503607	Rod - Blade connecting The bore of the crankpin end of 5 blade rods were reground .007 over-size to correct an out of round condition and remove scratches caused by previous bearing failure. Rework present parts	5	6.00	30.00
503610 503611	Bearing - Connecting Rod New connecting rod bearings were installed in the reground connecting rods. These bearings were made special over-size on the steel back and were also copper plated on the contact surface, in order to eliminate galling, which we felt was the cause of the recent rod and piston failure, described in E.S.M.R. Serial No. E-57-285-106, dated June 21, 1939. New part, revised design	5 Pr.	76.10 Pr.	380.50
500618	Bearing - Crankshaft right thrust It was decided to replace the center main bearing in the new crankcase, as the lead bronze had started to flake out near the thrust faces. New part, no change	1	46.82	46.82
500667	Bearing - crankshaft left thrust See explanation above under Part 500618. New part, no change	1	46.82	46.82
503688	Shaft Assembly - Accessory drive In the engine failure described in E.S.M.R. Serial No. E-57-285-106, dated June 21, 1939, the accessory shaft was badly damaged by one of the broken connecting rods and it was necessary to replace complete. New part, revised design	1	507.16	507.16
503632	Cylinder Assembly The #3 right and #3 left cylinder assemblies were badly damaged in the failure described in E.S.M.R. Serial No. E-57-285-106, dated June 21, 1939, and were replaced complete with two new cylinder assemblies, which had been fabricated using cylinder jackets, Part 503631, which had been removed from previously replaced cylinders.			

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503632	Cylinder Assembly (Cont) On these assemblies the barrels were made over-size on the contact land to accommodate the re-conditioned jackets. Re-conditioned part, no design change	2	612.00	1224.00
503885	Piston - forged type It was felt that one of the contributing causes of the recent engine failure described in E.S.M.R. Serial No. E-57-285-106, dated June 21, 1939, was the failure of one of the cast pistons, which had been in the engine during all of the running. It was decided that special dies be made and forged pistons be fabricated for this engine. The cost of the dies for these pistons was to be amortized over 20 pistons, 6 to be supplied to Wright Field on special order, 2 to be used in the Twin, Cylinder Engine, and 12 to be used for this installation. Cost of future pistons will be materially decreased. New part, new design	12	118.21	1418.52
503650	Piston Pin New piston pins were installed on #3 right and #3 left pistons. New part, no change	2	8.95	17.90
503651	Plug - Piston Pin New piston pin plugs were installed in all piston pins, as several plugs gave evidence of cracks appearing in the body diameter and it was deemed advisable that all be replaced at this time. New part, no change	24	2.79	66.96
503829	Piston Ring - compression New compression rings were installed in all pistons. New part, no change	36	.26	9.36

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500602	Piston Ring - Oil Control One new oil control ring was installed on all pistons with the exception of #4 left, on which two were installed. New parts, no change	13	.52	6.76
503914	Pipe Assembly -Oil Drain Front The redesign of the front end of the crankcase necessitated new front oil drain pipe assembly. New part, new design	2	18.20	36.40
500986	Adapter - reduction gear drive New design of the front end of the crankcase necessitated a new adapter, which required an entire new pattern equipment. The amortization of the pattern equipment and the necessary engineering contained in the price of this item. New part, new design	1	456.00	456.00
500988	Bearing - reduction gear drive shaft New bearing was designed and installed in the new adapter. This was necessary due to a change in the over-all length and position of oil holes. New part, new design	1	46.20	46.20
500966	Pin - oil dowel The redesign of the front end necessitated oil transfer dowels. New part, new design	3	2.05	6.15
500948	Bushing - accessory drive shaft front A new lead bronze bushing was installed in the new adapter. New part, new design	1	34.60	34.60
500945	Bushing - accessory shaft idler gear A new lead bronze bushing was installed in the new adapter. New part, new design	1	34.60	34.60
501012	Bushing - cam drive idler New bushings were necessary in the new adapter as it was impossible to remove the old bushings without injury. New part, no change	4	12.56	50.24

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<u>PART NO.</u>	<u>NAME AND DESCRIPTION</u>	<u>NO. OF UNITS</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
500929	Spark plug Bendix 300 P.D. Reconditioned plugs were installed in all cylinders. Rework present parts	24	.80	19.20
503771	Plate, distributor insulating A new plate was installed, the old one having been damaged at assembly. New part, no change	1	2.83	2.83
504120	Ignition Harness A new ignition harness was installed to eliminate the trouble encountered by shorting of the wires. This harness had been used for many disassemblies and was in bad order. New part, no change	1	86.60	86.60
500929	Spark Plug, Bendix 300 P.D. The reconditioned spark plugs installed in the engine did not stand up and it was necessary to change 9 plugs. New parts, no change	9	2.87	25.83
500792	Stud, special stepped Fourteen of the studs in the cam housing had been loosened by the many assemblies and were replaced with step studs and the cam housing stud holes were rebored and retapped. New part, new design	14	2.20	30.80
TOTAL REPLACEMENT PARTS LIST DATED 12-31-39 .....				\$7063.33

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CONTRACT W535AC-8131

RECAPITULATION

Credit allowed on reduction gears (Progress Report 2-28-39).....\$ 492.66

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Total of Replacement Parts Previously Reported.....\$ 169.37

Replacement Parts List 12-31-39.....\$7063.33

Total Government Liability on Spare parts used in the engine  
to date, 12-31-39, over and above the amount specified in  
Article 18 as provided for in paragraph 2b1, Item 10 of Article  
16 subject Contract.....\$7232.70

CONTINENTAL MOTORS CORPORATION

J. W. KINNUCAN

December 31, 1939

AIR CORPS INSPECTOR'S CERTIFICATE

I certify that the articles listed on pages one through six  
of this report dated 12-31-39 were inspected and accepted by an  
Air Corps Inspector in the quantities stated, and that they con-  
form to the contract requirements for articles and parts used in  
the subject engine, and that the above replacement articles were  
necessary for the continued operation of the subject engine.

Joseph Haddad  
Inspector's Signature

Junior Mechanical Engineer  
U. S. Army Air Corps