

service bulletin

M78-9
Supersedes M66-4
FAA-DER Approved

23 August 1978

TO: Distributors, Dealers, Aircraft Engine Overhaul Facilities, Owners and Operators of Teledyne Continental Motors' Aircraft Engines.

SUBJECT: CRANKCASE, CRANKSHAFT AND BEARING APPLICATIONS

MODELS

AFFECTED: All O-470, IO-470, IO-520, TSIO-470 and TSIO-520 Engines Referenced in this Bulletin.

Over the years, there have been several changes to the crankcase, crankshaft and bearing combinations used with various engine models. The following charts have been compiled to assist the customer in identifying the proper combination for his engine.

SPECIAL NOTE:

ALTHOUGH THE STUDDING ASSEMBLY PART NUMBER ON THE PHASE 2 STYLE CRANKCASES REMAINS, IN MOST INSTANCES, THE SAME AS THE PHASE 1 STYLE, THE ACTUAL MACHINING OF THE CRANKCASE IS DIFFERENT. FOR THIS REASON, IT IS IMPERATIVE TO MAKE ABSOLUTELY CERTAIN WHICH CRANKCASE YOU ARE WORKING WITH.

PHASE 1

Crankcases were machined for flanged type thrust bearings for O-470 and IO-470 engines.

PHASE 2

Crankcases for above listed models are machined to accommodate four thrust washers at the front mains. In addition, the rear main bearing was moved back .060 because of new crankshaft on O-470 and IO-470 engines as listed in Service Bulletin M74-12. Many of the new crankshafts have narrower rod bearings, smaller lightner holes and thicker cheeks. Because of the narrower crankpin bearings, it is necessary to use different connecting rods and rod bearings.

PHASE 3

Main bearing journals have been narrowed, which required relocation of bearing tangs. Identification can be made by way of new casting part number CA642360 and CA642361.

CAUTION:

BECAUSE OF THE CHANGE IN THE NEWER CRANKSHAFT, YOU MUST BE CERTAIN THAT WHEN INSTALLING THIS CRANKSHAFT IN THE PHASE 1 STYLE CRANKCASE, YOU INSERT TWO PIECES OF SERVICE BEARING, PART NO. 633334, AT THE REAR MAIN CRANKCASE LOCATION.

This bearing is for service use only. When installing the new crankshaft in an old Phase 1 style crankcase, simply substitute the 633334 bearings for the two rear main bearings listed.

The different location of the tang in this bearing moves it back enough to allow proper installation of the crankshaft. After the crankshaft is installed, you must check for clearance between the forward side of the rear main bearing boss and the crankshaft cheek. This must be .020 to .030. Provide necessary clearance by burring if required.

When installing either an old style crankshaft in a new style crankcase or a new style crankshaft in Phase 2 or 3 new style crankcase, there will be no clearance problem and you simply install the applicable thrust washers and bearings in new style crankcase and old style bearings per chart when using Phase 1 style crankcases.

You will also note that on this chart we have listed Phase 1, 2, and 3 new style and old (optional) crankshafts, crankcases, applicable bearings and bearing sets. For information on connecting rods and rod bearings, please refer to Bulletin M74-12.

Engine Model	Crankcase Studding & Machining Assembly	Crankshaft & Damper Assembly	Front Main Bearings			Thrust Washers At Front Main Bearings	Intermediate Main Bearings		Rear Main Bearings		Complete Bearing Sets	
			Forward	Rear	Full Length		Standard	Option	Standard	Option		
O-470 - Phase 3	G	642178	633256	642270(2)	642270(2)		637579(4)	642720(4)		642720(2)		642720A1
	F, J1, 8	642183	633225									
	J11, R14	642162										
	J14	642191										
	R3, 5, 7, 11, 15, 16 20, 23, 25, 37	642159										
	R6	642164										
	R13, 17, 35	642161										
	R32	642163										
	S1	642194										
	S2	642194	633136(2)	637579(4)	642720(4)	642720(2)	633136A3					
	K1	642183										
	K17	642162										
	L1, 9, 10	642182										
	L16	642162										
	M22	642192										
	M23, 26	642193										
U1, 3	642194											
U2, 4	642195	641905										
O-470 - Phase 2	G	641213 626762	632256	530386(2)	630464(2)		637579(4)	630464(4)	537848(4)	630464(2)	537848(2)	630464A5
	F	539734	633225									
	F, J1, 8	641186 539500										
	J11, R14	641215 628239										
	J14	641271										
	R3, 5, 7, 11, 15, 16 20, 23, 25, 37	641212 632309										
	R6	641435 640540										
	R13, 17, 35	641185										
	R32	641187 635635										
	S1	641398										
	S2	641373										
	B	539501	633227			633136(2)	637579(4)	630464(4)	537848(4)	630464(2)	537848(2)	633136A2
	N	629548										

Engine Model	Crankcase Studding & Machining Assembly	Crankshaft & Damper Assembly	Front Main Bearings			Thrust Washers At Front Main Bearings	Intermediate Main Bearings		Rear Main Bearings		Complete Bearing Sets	
			Forward	Rear	Full Length		Standard	Option	Standard	Option		
O-470 - Phase 2 (cont.)	P 641213 626762	633258	530386(2)	630464(2)		637579(4)	630464(4)	537848(4)	630464(2)	537848(2)	630464A5	
	K1 641186 539500	633129									633136A1	
	K17, L16 641215 628239				633136(2)	637579(4)	530386(4)		530386(2)			
	L1, 9, 10 641226 625193											
	M22 641225 636433				633136(2)	637579(4)	630464(4)	537848(4)	630464(2)	537848(2)		633136A2
	M23, 26 641270 625168											
	U1, 3 U2, 4 641398 641373		641905			633136(2)	637579(4)	530386(4)		530386(2)		
O-470 - Phase 1	A 537498	537920									37401A1	
	C 537498											
	E 539734											
	F 539500				537401(2)		530386(4)		530386(2)			
	J 539500											
	R 632309											
	B 539501	539576			538879(2)		630464(4)	537848(4)	630464(2)	537848(2)	538879A1	
	N 629548											
	G 626762	627576	530386(2)	627795(2)		626740(1) 626741(1)	630464(4)	537848(4)	630464(2)	538897(2)	627795A1	
	K 539500	539665			537401(2)		530386(4)		530386(2)		537401A1	
	L 625193											
	M 625168				538879(2)		630464(4)	537848(4)	630464(2)	537848(2)	538879A1	
	P 626762		627587	530386(2)	627795(2)		626740(1) 626741(1)	630464(4)	537848(4)	630464(2)	538897(2)	627795A1

Engine Model	Crankcase Studding & Machining Assembly	Crankshaft & Damper Assembly	Front Main Bearings			Thrust Washers At Front Main Bearings	Intermediate Main Bearings		Rear Main Bearings		Complete Bearing Sets	
			Forward	Rear	Full Length		Standard	Option	Standard	Option		
IO-470 - Phase 3	D	642172	642720(2)	642720(2)		637579(4)	642720(4)		642720(2)		642720A1	
	D42	642196										
	E, S1, 3	642167										
	F1	642173										
	F3, 4, 5, 19	642175										
	F7, 18, 23, 26	642174										
	G	642178										
	M	642166										
	S2, 8	642168										
	C	642178										633258
	J	642189										633246
	K	642178										
	L	642177										630886
	L	642176										
	H	642179										630977
U	642169											
V1, 2	642170	632195										
V6, 8, 9, 10	642171											

IO-470 - Phase 2	D	541193 627490	630927	530386(2)	630464(2)	637579(4)	630464(4)		630464(2)		630464A5			
	D42	641227												
	E, S1, 3	641192 628137												
	F1	641191 627856												
	F3, 4, 5, 19	641195 629398												
	F7, 18, 23, 26	641194 632545												
	G	641213 628137											537848 (4) IO-470-G Only	538897 (4) IO-470-G Only
	M	641197 628858												
	S2, 8	641210 636611												
	C	641213 626762										633258	530386(2)	630464(2)

Engine Model	Crankcase Studding & Machining Assembly	Crankshaft & Damper Assembly	Front Main Bearings			Thrust Washers At Front Main Bearings	Intermediate Main Bearings		Rear Main Bearings		Complete Bearing Sets			
			Forward	Rear	Full Length		Standard	Option	Standard	Option				
J	641214 628509	633246	530386(2)	630464(2)		637579(4)	630464(4)	537848(4)	630464(2)	538848(2)	630464A5			
IO-470 P Phase 2 (cont.)	K	641213 632285	633246	530386(2)	630464(2)		637579(4)	630464(4)	537848(4)	630464(2)	538848(2)	630464A5		
	L	641189 628500	630886	530386(2)	630464(2)	637579(4)	630464(4)		630464(2)		630464A5			
	L	641188 629300												
	N1, 7, 10, 11	641273 641072 633363A1	630932											
	N3	641274												
	N12	641211 640881												
	H	641273 641072 633363A1	630977											
	U1, 3	642276	632195											
	V1, 2	641190 633170												
	V6, 8, 9, 10	641206 635006												
IO-470 - Phase 1	D	627490	627530									530386(2)	627795(2)	626740(1) and 626741(1)
	E	628137												
	F	627586												
	G	628137		537848(4)	538897(2)									
	M	628858												
	S	628137												
	C	626762		626784										
	J	628509		628358	537848(4)	538897(2)								
	K	632285												
	L	628500		628694										
	H	627816A2		627348										
	R	628137		629366	537848(4)	538897(2)								
	N	627816A2		629309										

Engine Model		Crankcase Studding & Machining Assembly	Crankshaft & Damper Assembly	Front Main Bearings			Thrust Washers At Front Main Bearings	Intermediate Main Bearings		Rear Main Bearings		Complete Bearing Sets									
				Forward	Rear	Full Length		Standard	Option	Standard	Option										
TS10-470 PHASE 2	B	642155	628995	642720(2)	642720(2)		637579(4)	642720(4)		642720(2)		642720A1									
	B2, 3	642190																			
	C	642157																			
	D	642157	632494																		
IO-70 – Phase 1	B	641207 629254	628995	530862(2)	630464(2)		637579(4)	630464(4)		630464(2)		630464A5									
	B2, 3	641208 629288																			
	C	641209 631977																			
	D	641209 631977	632494																		
IO-520 – Phase 3	A, D, F2, 3, 4, 5 7, 9, J, L	631716	631716	642720(2)	642720(2)		637579(4)	642720(4)		642720(2)		642720A1									
	D10, 15, F6, K E	642186 642158																			
IO-520 – Phase 2	A, D, F2, 3, 4, 5 7, 9, J, L	641200 631596	631716	630464(2)	630464(2)		637579(4)	630464(4)		630464(2)		630464A1									
	D10, 15, F6, K	641199 634685																			
	E	641201 635133																			
	B, BA	642088 641315 640471 630969	639243										635439(2)	635439(2)		637579(4)	630464(4)		635439(2)		635439A2
	BA12	642089 641501																			
	C2, 3, 6	642090 641316 640472 631096	633620																		
	C5, 7	642091 641318 640474 638101																			

