



DISTRIBUTION LIST #3

***Continental Motors Corporation***  
***Aircraft Engine Division***

205 MARKET STREET

MUSKEGON, MICH., U. S. A.

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M47-16

CABLE ADDRESS:

"CONTENT"

(Revised 7-9-52)

**TO:** Aircraft Manufacturers, Continental Authorized and Approved Service Stations, Parts Distributors, Dealers, Maintenance Personnel, and Engine Owners.

**SUBJECT:** Procedure and Instructions for Engine Model or Series Conversion.

**MODELS:** A50-4 to -9; A65-1 to -9; A75-8; -9, -12; C75 and C85-8, -12.

**PURPOSE:** To facilitate C.A.A. approval of converted engines.

Gentlemen:

We have been advised by the Civil Aeronautics Administration that some agencies are attempting to convert certain models of Continental light aircraft engines to other models or other dash numbers of the same model without having received instructions for the changes involved or approval of the conversions from either this firm or the manufacturer of the aircraft involved. This has led to difficulty in determining whether the converted engines conform to current specifications and, hence, are eligible for re-certification. In some cases the owners have suffered delays, inconvenience, and unnecessary trouble.

We wish to call to your attention the Civil Air Regulations concerning modification of approved engine types. These rules are contained in C.A.A. 18, paragraphs 18.401, 18.4102, 18.4103, 18.4110, 18.500, 18.5011, 18.5021, 18.51, 18.52, 18.530, 18.5300, 18.531, 18.5311, 18.5315, 18.5316, 18.5317, 18.5318, 18.5319.

In recent months a number of requests for new Engine Identification Plates have been received by this office from engine repair agencies who state that certain Continental light aircraft engines have been converted to models of higher power, though there is no record of their applications for approval of these conversions and no indication of their having received our conversion instructions. These irregularities are probably due to lack of knowledge of the regulations cited above.

For the foregoing reasons it seems necessary to endeavor, by means of this bulletin, to inform all light aircraft operators and repair agencies of the procedure required in order to obtain the approval of this firm prior to any engine model or series conversion work. Unless this procedure is followed, requests for Identification Plates appropriate to models other than the original cannot be fulfilled.

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C.M.C. Form No. AVS-1, entitled, "Application for Engine Model or Series Conversion," will be furnished on request to the registered owner of any Continental light aircraft engine. This application must be approved by this office before conversion work is undertaken.

Before requesting approval of an engine conversion, owners are urged to ascertain from the Civil Aeronautics Administration that the proposed engine model and power rating are covered by the Aircraft Type Specification in effect for the Aircraft in which it is proposed to install the converted engine. Some aircraft are not certificated for higher power or speed than originally provided. Others may require extensive alteration of fuel systems or other equipment to accommodate the converted model. These possibilities should all be investigated before a decision is made.

Three copies of Form No. AVS-1 are furnished to each Applicant. Copies Nos. 1 and 2 must be mailed to this office. Copy No. 3 is to be retained by the Applicant for reference. Instructions for completing the applications are stated thereon. These instructions must be followed in all details.

Form No. AVS-1 incorporates a certificate of compliance with C.M.C. requirements and conditions of approval of the conversion application. This certificate must be signed by the registered owner of the engine. If the owner is a corporation, the signer must be an officer of the firm and must identify his position.

During the execution of Form No. AVS-1, the owner will find it necessary to search the engine log book for entries relative to certain important parts repairs and/or replacements. Certain other information may have to be obtained by internal inspection of the engine.

Upon receipt of an Application for Model or Series Conversion at this office, it will be checked against production records and will be examined for completeness, accuracy, and apparent safety of the subject engine and its major parts. Some applications cannot be approved, because the subject engines cannot be made to conform with current Type Specifications or Stock Lists. Others may be disapproved because of obsolescence of the desired model. In general, the model conversions which are not approved are:

- (a) Conversion of model A40 to any other model.
- (b) Conversion of model A50, Series -1, -2, or -3 to any other model or series.
- (c) Conversion of models A50, A65, or A75 (any series) to model A80.
- (d) Conversion of model W670-9 A to any other series of model W670.
- (e) ~~Conversion of model C75 or C85 to model C90.~~
- (f) Conversion of model C125 to model C14.
- (g) Conversion of any carburetor engine to an injector type.
- (h) Conversion of any series 8 model to a series 12 and visa versa is not recommended as being practical due to the numerous parts changes required and the prohibitive cost involved.
- (i) Conversion of E185 engines to the 205 horsepower take-off rating is restricted to factory major overhauled and remanufactured engines only.

Upon approval of the application by this office, the No. 2 copy is mailed, and the No. 1 copy, bearing conditions of approval and signature, is returned to the Applicant, who must obtain conditions of approval of the installation from C.A.A. The aircraft manufacturer should be consulted for information regarding aircraft parts to be installed in conjunction with the converted engine. If desired, the Applicant may send the No. 1 copy of his application to the aircraft manufacturer with a request for his instructions and approval.

Upon receipt of the No. 1 copy of the application bearing the approval of Continental Motors Corporation, the Applicant may proceed with conversion work in accordance with conditions of approval and instructions supplied. The Engine Identification Plate should not be altered, and it should not be removed until the work has been inspected by a designated C.A.A. inspector.

C.A.A. approval of the engine conversion will be based on conformity with regulations enumerated on page 1 of this bulletin. These require that the work be performed by one of the three types of repair agency, that certain data be submitted, that the engine manufacturer's C.A.A. approved instructions be followed, that original parts be exhibited along with conversion parts, that weight and balance data be provided, and that required test flights be performed. The data required is to be submitted, on form ACA-337. This should include a list of original parts removed (with numbers) and of conversion parts installed. The approved No. 1 copy of the conversion application should also be submitted.

In order to complete the conversion it will be necessary to order from this office and install a new Engine Identification Plate which is properly stamped according to the new model number. This plate, correctly stamped with all identifying data, will be supplied on receipt of:

- (a) Purchase Order or letter order stating engine serial number and new serial and series.
- (b) Original Engine Identification Plate.
- (c) Copy of C.A.A. Form ACA-337 describing the conversion and signed by a C.A.A. Inspector or designee (other than the conversion agency).
- (d) Check or Money Order in the amount of \$1.38.

The dash number of the new model may be determined from the list accompanying this bulletin. The new serial number assigned will be the original number followed by the letter "C". Our production records will be noted accordingly.

New Identification Plates are sent complete with 6 drive screws for attachment to the crankcase. The original screws should be removed from the crankcase or ground off flush with the surface. New holes must be drilled for the new drive screws with a 1/16" drill to a depth of only 3/32", using the new plate as a template.

The general rules under which this office will approve or disapprove applications for model or series conversion are:

1. Before any application will be approved, the Applicant must have assurance of C.A.A. that the proposed model and series will be approved as a power plant for the aircraft make and model in which installation of the converted engine is intended. This rule does not apply to Service Stations who wish to convert engines for stock purposes, however such agencies must have C.A.A. approval on C.A.A. Form ACA-337 prior to sale of any converted engine. In this special case only, completion of the conversion and its approval will be hastened if the items specified in (a), (b), (c), and (d) in the third paragraph on this page are submitted with the conversion application.

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2. Conversions to models of higher power will be approved only when there appears to be no increase in the hazard of operation as a result, that is:
- (a) The engine must not have been operated more than 300 hours since the last major overhaul which included magnaflux, inspection of steel parts and careful inspection of all castings for cracks and other dangerous conditions.
  - (b) The crankshaft must be one of the types currently approved for the higher power rating. Crankshafts having 1-3/16" crankpin lightening holes must be replaced if the conversion increases the engine's power rating.
  - (c) All changes, modifications, and inspections of engine and accessory parts specified in currently effective C.M.C. mandatory Service Bulletins and C.A.A. Airworthiness directives must have been carried out prior to submission of the application. Numbers of Bulletins with which the owner has complied must be stated on the application in item 13.
  - (d) Dual Ignition and all other essential modernization parts must be installed concurrently with the conversion, unless they are already installed. Continental Authorized and Approved Service Stations are in a position to check engines for conformity with this requirement.
3. The original model must be capable, by replacement and addition or removal of parts and accessories and by retiming of ignition, of conforming to the current specification and Production Stock List of the desired model in order to be eligible for an approved conversion.

On the attached pages will be found lists of parts to be removed and parts to be installed in making the usual engine model and series conversions. Ignition timing is included with these instructions. These processes involve only normal overhaul operations in nearly all cases, hence no special process or procedure instructions are required. In any instance where special equipment or technique is required, it will be necessary to have the work done at either this factory or any Authorized Continental Service Station.

In some cases it will be necessary to combine two or more conversions in order to modernize the engine and to bring it into conformity with the current Stock List and Specification for the desired model and series.

The attached conversion parts lists apply to unshielded Ignition systems. Radio Shielded Ignition systems are listed in existing Service Manuals. Such equipment lists may be obtained, if necessary, by request to this office.

Continental Motors Corporation cannot supply information relative to propellers, cylinder baffles, fuel system parts or other items of aircraft equipment installed by aircraft manufacturers or others. We do not stock spare parts for purchased engine accessories. These may be obtained from authorized Dealers, Service Stations, or factory branches of the accessory manufacturer.

CONTINENTAL MOTORS CORPORATION  
AIRCRAFT ENGINE DIVISION  
SALES & SERVICE DEPTS.

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To convert model A65-8 to model A75-8 the following parts changes are required:

REMOVE ORIGINAL PART NO.	INSTALL NEW PART NO.	PART NAME	NUMBER REQUIRED PER ASSEM.
	40577-A1	Piston Assembly (consists of following 6 parts)	4
4848 ) 40313 ) 40731 )	40577	Piston	1
530144	35661 or 530144	Ring - Piston (Compression)	2
530145	35741 or 530145	Ring - Piston (Oil Control)	1
*25256-A1 or 530853	35127-A1	Pin Assembly - Piston	1
*25256	35127	Pin - Piston	1
25117	35117	Plug - Piston Pin	2
*A35160-A1	A35159-A1	Rod Assembly - Connecting (Complete)	4
*A35160	A35159	Rod and Pushing Assembly - Connecting	1
35897	35897	Bearing - Connecting Rod	2
31004	530213	Bolt - Connecting Rod	2
2458	2458	Nut, 3/8-34 Castle-Connecting Rod Bolt	2
3506	3506	Cotter Pin - 3/32" x 3/4"	2
21030	24805	Insert - Exhaust Valve Seat	4
22311	21475	Valve - Exhaust	4
31031	24608	Insert - Intake Valve Seat	4
**23653	31445	Plate - Engine Identification	1
**21101	21907	Screw, Drive - Identification Plate	6
4A5334	530199-A1 (or 530196-A1)	Crankshaft Assembly (40 Taper)	1

NOTE: (\*) These parts installed with #40731 piston ONLY.

(\*\*) These parts shipped from factory. See pages 1 and 3 of this bulletin.

(/) Crankshaft Replacement required only if crankpin lightening holes are 1-3/16" dia. or if present shaft has been reground and operated for a majority of its remaining life.

(%) Available in -3 (.002" O.S.); -10 (.010" O.S.); -30 (.020" O.S.); -30 (.030" O.S.). These inserts must be installed in engines below serial number 409498.

Re-time magnets to fire on compression stroke: R.H.: 29° B.T.C., L.H.: 32° B.T.C.

All mandatory inspections, parts changes, and modifications applicable to model A65-8 and described in currently effective C.M.C. Service Bulletins must be completed prior to or concurrently with the conversion unless the parts involved are to be replaced by conversion parts listed above.

Aircraft installation parts, including propeller, baffles, and fuel system, must conform to C.A.A. specification for appropriate make and model of aircraft as equipped with model A75-8 engines.

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