

Installation Instructions  
for  
**Model No. BC320-1, -2, or -3**  
**Starter**

Replacement of existing key-type starter  
on  
Continental C-75, C-85, C-90, C-145, O-200, O-300, GO-300 and IO-240 series engines

**B & C Specialty Products**  
**PO Box B**  
**Newton, KS 67114**  
**Phone (316) 283-8000**

**Document No. FK501-1**  
**Revision D, February 19, 2003**

**Record of Revisions**

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Revision	Description of Change	Date
A	Original Issue . . . . .	11 Mar 94
B	IO-240 added . . . . .	8 Aug 94
C	IO-240B, GO-300 & 24V added.... . . .	9 Oct 00
D	Added Continental P/N 653673 and B&C 320-342 as alternate gaskets	19 Feb 03

## **INTRODUCTION**

This kit is applicable to any aircraft currently fitted with an all electric, key-type starter on the following engines: C75-12, C85-12, C85-14F, C90-12, C90-14F, all C145 series, all O-200 series, O-300 A, B, & C, and GO-300 A, B, & C, all IO-240 Series Engines.

## **DESCRIPTION OF INSTALLATION**

- (1) Remove engine cowl
- (2) Remove existing starter
- (3) Remove pinion shaft needle bearing from crankcase.
- (4) Install plug in vacated bearing bore.
- (5) Install new starter.
- (6) Replace cowl.
- (7) Update ship's weight and balance, pilot operating handbook and maintenance records.

## **NOTE**

A needle bearing may be pressed into the crankcase insert that supports the pinion shaft of the existing starter. This bearing must be removed and the hole plugged. If the engine is mounted on an airplane, crankcase-firewall clearances may limit the choice of bearing extraction and plug installation tools. Special tools have been developed which will work in the space between engine and firewall. If you do not possess suitable tools for removal of bearing and installation of plug, contact B & C Specialty Products, P.O. Box B, Newton, Kansas 67114. Phone (316) 283-8000 for information on purchasing or renting proper tools.

## PARTS LIST

The following parts are needed, but **not** supplied with this installation kit:

Qty.	Part No.	Description
1	BC320-1	Starter, 12 Volt

The following parts **are** supplied with this kit:

Qty.	Part No.	Description
1	FK501-1	Field Kit Instruction Manual
1	352179 or 653673 or B&C 320-342	Gasket
2	S813-5C28	Bolt
2	AN960-516L	Washer
2	MS35337-45	Lockwashers
1	501-300-1	Bearing Bore Plug
1	MS25171-2S	Nipple, Terminal Cover

### CHANGE IN WEIGHT AND BALANCE

Installation of this kit will decrease aircraft weight by approximately 4.3 pounds. Variations in airframe station references for all aircraft affected by this kit prevent including precalculated weight and balance data in these instructions.

### INSTALLATION INSTRUCTIONS

- Step 1. Refer to applicable service manual instruction; remove and retain upper and lower engine cowl.
- Step 2. Refer to applicable service manual instruction; remove existing starter motor. Retain all existing attach hardware except top bolts which will be replaced.
- Step 3. Clean gasket surface on accessory case starter mounting pad.

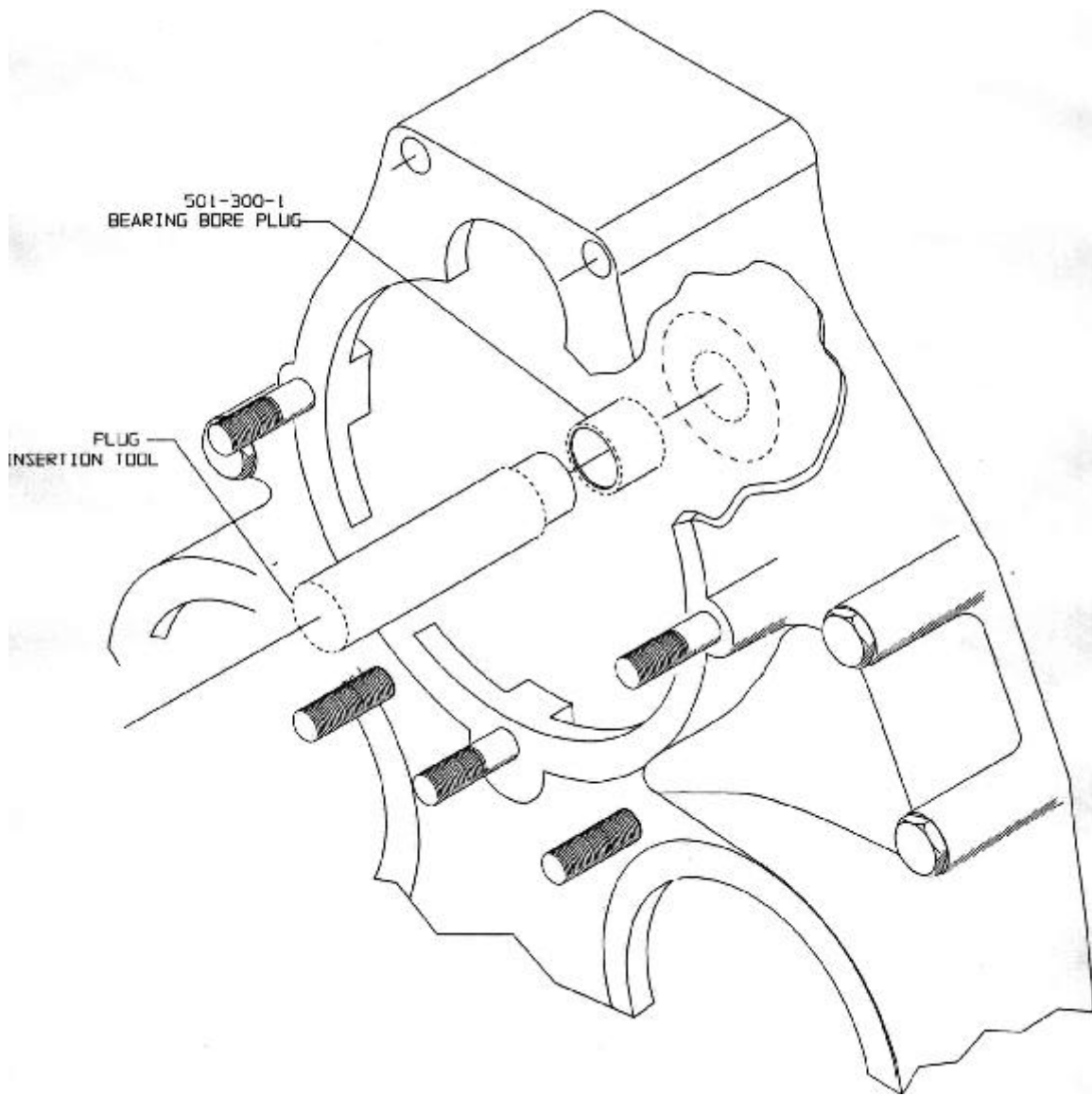
### -----CAUTION-----

The following step removes a pinion shaft support bearing which is pressed into the crankcase. The bearing may fall apart during extraction. Take care to insure that bearing needles do not drop into the accessory case.

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### NOTE

*The IO-240 series engine may not have a pinion shaft support bearing.  
If not, ignore steps 4 thru 8.*



- Step 4. Remove the pinion shaft needle bearing from rear of crankcase (refer to B&C instruction FK501-2 for this procedure).
- Step 5. Thoroughly clean the bearing bore.
- Step 6. The aluminum plug which contains the bearing bore should be warmed with a heat gut (1000 watt or larger) until too hot to touch. This will take approximately 4 to 5 minutes.
- Step 7. The bearing bore plug is a needle bearing shell with needles removed. It is supplied with a small quantity of grease inside to help hold it in place on the end of the installation tool. Use a small quantity of this grease to coat the outside surface of the plug.
- Step 8. Place plug on end of installation tool ( included in FK501-2 tool kit) and use light hammer to seat the plug in bearing bore. The plug is sufficiently seated when the top surface becomes 0.00 to 0.04" under-flush with end of bearing bore.
- Step 9. Before installing new starter, five 5/16" cap-head bolts must be removed from the new starter. These bolts are used during assembly and shipping but must be removed before installation. The two 6-32 flat-head screws will clear the accessory case and SHOULD NOT be removed. Remove old gasket. Refer to applicable service manual instructions; Install new starter using new gasket (352179). Original attach hardware is used except for top bolts. New, longer bolts (S813-5C28), flat washers (AN960-516L) and lockwashers (MS35337-45) are supplied with kit. Use a new terminal cover nipple (MS25171-2S) and install the starter wire on the terminal post at the 7 o'clock position of the linear actuator.
- Step 10. Test starter for proper operation.
- Step 11. Refer to applicable service manual instructions; replace cowl.
- Step. 12. Update ships's maintenance and weight and balance records to reflect this installation.