

Installation Instructions  
for  
**Model BC702**  
**Oil Filter Adapter**

for replacement of existing pressure oil screens  
or spin-on oil filter adapters

on

Lycoming O-235; O, IO, LIO, AIO, AEIO-320; O, IO, LIO, HO, HIO, TIO, AEIO-360;  
O, IO, HIO, TIO, LTIO, AEIO-540 & IO-720 series engines

## Revision History

<b>Rev</b>	<b>Description</b>	<b>Date</b>
A	Original Issue	8/08/00
B	Added Diagram 2a	12/06/05

## Introduction

This kit is applicable to any aircraft fitted with Lycoming O-235, O, IO, LIO, AIO, AEIO-320; O, IO, LIO, HO, HIO, TIO, AIO, AEIO360; O, IO, HIO, TIO, LTIO, AEIO-540 or O-720 series engines and having adequate mechanical airframe clearance for the filter installation and not using the AND20000 accessory pad usually outfitted with a vacuum pump.

## Parts List

The following parts are supplied with this installation kit:

<u>Qty.</u>	<u>Part No.</u>	<u>Description</u>
1	BC702	Oil Filter Adapter
1	700-302-1	Gasket, Oil Filter Adapter
1	MS35769-11	Crush Gasket
1	76510	Gasket, Vern-a-therm
1	CH48108 or 48109	Oil Filter
3	STD-1856	Mounting Bolt
4	AN960-416	Flat Washer
1	S886-10 or Lycoming 25c-10	Stud, 1/4-20 x 1.25 Lg.
1	AN936A-416	Lockwasher, 1/4", Int. Tooth
1	S804-420	Nut, 1/4-20 Gr 8

## Installation

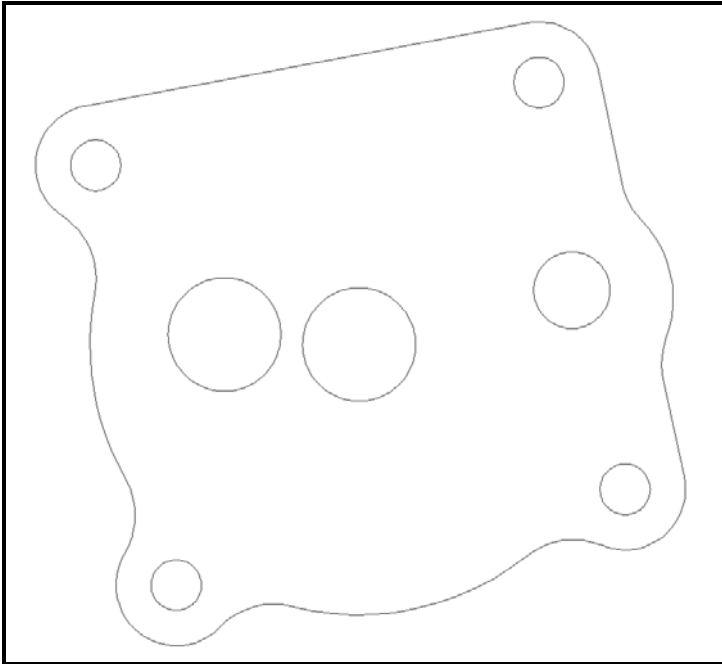
Installation of the new 90E oil filter adapter, (referred to as **OFA**) is accomplished as follows:

1. Remove or break loose the oil temperature bulb or oil temperature sender on existing oil screen housing or oil filter adapter.
2. Remove or break loose the thermostatic bypass valve (Vern-a-therm) or plug (if the thermostatic bypass valve is not used) on existing oil screen housing or oil filter adapter.
3. Remove the existing oil screen housing or oil filter adapter.
4. Remove all of the old gasket material. Be sure that you have a clean smooth mounting surface to install the new gasket and **OFA**. Refer to Lycoming service instruction 1316A and check the condition of the thermostatic bypass valve (Vern-a-therm) and accessory case seats if so equipped.

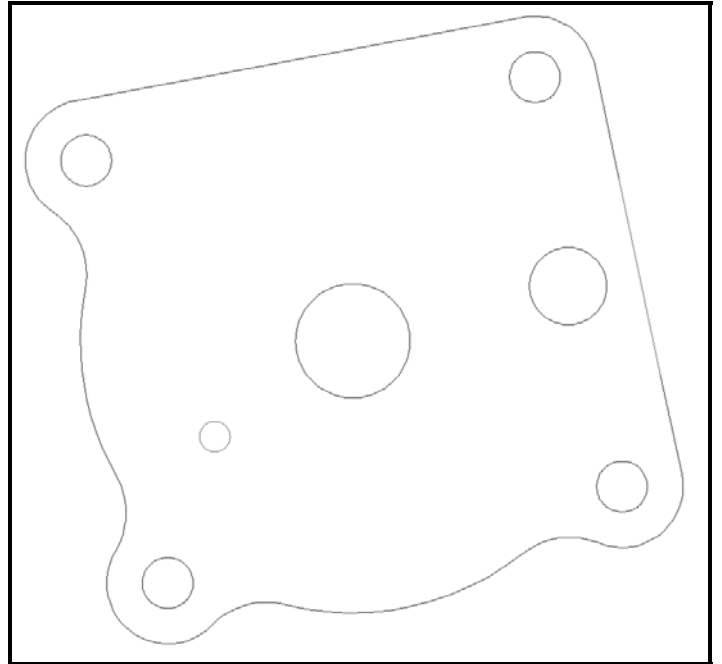
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If the engine was not equipped with a thermostatic bypass valve (Vern-a-therm) but one is being added, refer to Lycoming publication #SSP-885-1. This can be obtained by calling Lycoming at (570) 327-7278 or (570) 323-6181. Note that the oil cooler bypass valve and spring is removed when a Vern-a-therm is added to the installation.

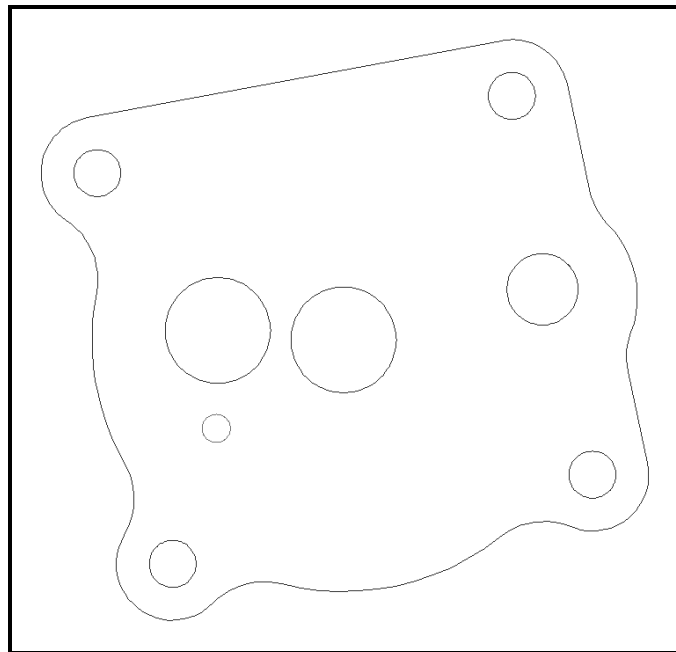
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**Figure 1**



**Figure 2**



**Figure 2a**

5. The mounting pad on the accessory case for the **OFA** should be like the drawing in Figure 1, Figure 2, or Figure 2a. If the mounting pad is different, **DO NOT** use this adapter. Call B & C Specialty Products at (316) 283-8000. The B&C **OFA** is not compatible with 76 series engines or on accessory cases with "Dual Magneto" mounts (two magnetos in one case with a single drive).

If installing the **OFA** on an IO-720 engine, it requires the use of a spacer (Lycoming part number LW-12775) to properly align the oil passages. This spacer should already be on the engine if a Lycoming oil filter adapter was previously installed and may be re-used under the **B&C OFA**.

6. Check the fit of the **OFA** on the accessory pad. Temporarily screw the oil filter onto the adapter and hold the adapter in place on the accessory case. Make certain that the oil filter will clear the engine mount, cowling, and any other fixed structure in the engine compartment by at least ½ inch. The installer is responsible for assuring that the oil filter and **OFA** will have adequate clearance to other structures during maximum engine mount deflection. Installation kits are available to space the filter away from the accessory case if required:

B&C P/N	Spacer Length	Description, P/N	Qty
FK503-.75	.75"	Spacer, 700-303-.75	1
		Gasket, Accessory Case, LW12795	1
		Lock washer, Int. Tooth, 1/4", AN936A-416	4
		Bolt, Hex Gr 8, 1/4-20 x 1.75 Lg., S879-28	3
		Stud, 1/4-20 x 2.0 Lg., S886-16	1
		Nut, 1/4-20, Gr 8, S804-420	1
FK503-1.4	1.4"	Spacer, 700-303-1.4	1
		Gasket, Accessory Case, LW12795	1
		Lock Washer, Int. Tooth, 1/4", AN936A-416	4
		Bolt, Hex, Gr 8, 1/4-20 x 2.37 Lg. S879-38	3
		Stud, 1/4-20 x 2.75 Lg., S886-22	1
		Nut, 1/4-20, Gr 8, S804-420	1
FK503-2.5	2.5"	Spacer, 700-303-2.5	1
		Gasket, Accessory Case, LW12795	1
		Lock Washer, Int. Tooth, 1/4", AN936A-416	4
		Bolt, Hex, Gr 8, 1/4-20 x 3.5 Lg. S879-56	3
		Stud, 1/4-20 x 3.75 Lg., S886-30	1
		Nut, 1/4-20, Gr 8, S804-420	1

7. Before installing the mounting bolts or mounting stud, check the depth of the tapped holes in the accessory case mounting pad. Turn a bolt into each hole by hand, as far as it will go. Measure the distance between the accessory case pad and the underside of the bolt head. If the distance is more than 1/4", re-tap the hole using a 1/4-20 bottoming tap to clean the threads in the bottom of the hole.

**Note**

If a spacer is used on the installation, use the longer mounting hardware provided. The distance under the bolt head should be 1/4" plus the spacer thickness.

**Do not** machine the holes deeper than they were originally machined. If you are removing a Lycoming oil filter adapter and there is a stud in the lower left mounting hole, leave the stud in the accessory case and use the original hardware with a new lock washer in this location. However, if a B&C spacer is being installed, the stud must be removed using double nuts locked together on the end of the stud. If heat is required for removal of the stud, a heat gun such as is used for paint stripping is suggested. Install the stud provided in the installation kit in the position nearest the oil filter.

8. Install the new aluminum washer (Lycoming P/N 76510) on the thermostatic bypass valve (Vern-a-therm, Lycoming P/N 75944). Screw thermostatic bypass valve into the **OFA**. If a thermostatic bypass valve was not originally used in the screen housing, the plug that was previously used is installed in the **OFA** using the new aluminum sealing washer.
9. Install B&C gasket P/N 700-302-1. Only this gasket must be used under the **OFA**. Use a thin film of Loctite 518 gasket eliminator on both sides of the gasket. Take care that the gasket holes align with all of the holes in the **OFA** and the gasket contour matches the surface. This will happen in only one gasket position.

**Note**

If a B&C spacer is being used under the **OFA**, Lycoming gasket P/N LW12795 (furnished with the spacer kit) must be used between the spacer and the accessory case. B&C gasket P/N 700-302-1 must be used between the **OFA** and the spacer. Loctite 518 is used on both sides of both gaskets. The spacer holes will align with the bolt holes in the accessory case in only one position with the hollow side of the spacer toward the accessory case.

10. After removing filter from the **OFA**, install the **OFA** using the STD-1856 bolts (or bolts and lock washers supplied with the spacer kit) and stud with an AN960-416 washer under each fastener. Use Loctite 271 thread locker on the accessory case end of the stud to retain the stud in the accessory case when removing the **OFA**. Torque the fasteners to 75 in-lbs.
11. Torque the thermostatic bypass valve to 300 in. lbs.
12. The hole provided for the oil temperature bulb is tapped 5/8-18UNF to accommodate P/N MS28034-3 temperature bulb. The temperature probe must not exceed .340" diameter or 1-3/8" length from the gasket surface.

13. Install MS35769-11 copper crush type gasket onto the temperature probe. Gasket should be installed with the unbroken surface against the flange of the temperature probe. Turn the temperature probe until the sealing surfaces are in contact. Then turn the temperature probe an additional 180°. If the temperature probe used requires a different type gasket such as a solid copper type, it may be used in lieu of the MS35769-11 gasket. On Robinson installations using solid copper sealing washers, the washer may be re-used.
14. Safety wire the thermostatic bypass valve (Vern-a-therm) and the temperature sender.
15. Lubricate the oil filter base gasket with Dow Corning -4 Compound. If unavailable, use clean engine oil. Install the spin-on oil filter and torque to 16-18 lb. ft. Do not use dirty engine oil to lube the filter base gasket. The dirty engine oil makes the oil filter difficult to remove later on.

**CAUTION**

DO NOT TIGHTEN THE SPIN-ON FILTER BEYOND THE SPECIFIED MAXIMUM TORQUE. OVER TIGHTENING WILL MAKE THE FILTER EXTREMELY DIFFICULT TO REMOVE. ALWAYS USE A 6 POINT, 1 INCH SOCKET WHEN TIGHTENING A FILTER.

16. **RUN ENGINE AND CHECK FOR CORRECT OIL PRESSURE AND OIL LEAKS.**
17. **CHECK OIL LEVEL.**
18. **SAFETY WIRE FILTER**
19. Refer to Lycoming Mandatory Service Bulletin No.480C for oil and filter change intervals and oil filter content inspections.
20. Refer to B&C BC702\_ICA.wpd for instructions for continued airworthiness.

## **REMOVING THE OIL FILTER**

1. Poke a hole in the top of the oil filter with an awl.
2. Remove safety wire on filter.
3. Drain the sump.
4. After 45 minutes to 1 hour of draining, the filter can be removed with minimal oil leakage. You can buy a plastic bag (2' X 2') that has a drawstring. Break the initial torque loose on the filter. Put the plastic bag over the filter and pull the drawstrings tight around the **OFA** flange and unscrew the filter inside the plastic bag. **NO MESS!**

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