



<b>SERVICE LETTER NUMBER 154</b>			
<b>TITLE: MAIN GEAR OLEO AND TOP ARM REPLACEMENT</b>			
BY: J. SORTOR	AIRCRAFT MAKE/MODEL(S):	FLOAT MODEL(S):	NOTE(S):
APP: C. WOKEN	CESSNA 208	WIPLINE MODEL 8750	MANDATORY COMPLIANCE
DATE: 6/24/14	CESSNA 208B	WIPLINE MODEL 7000	ECO—23673
REV: C	QUEST KODIAK 100		S/L P/N 1006963

**FAA APPROVAL HAS BEEN OBTAINED FOR TECHNICAL DATA IN THIS PUBLICATION THAT AFFECTS STC OR TSO DESIGN COMPLIANCE**

**EFFECTIVITY:**

This service letter applies to:

Quest Kodiak 100 when equipped with Wipline 7000 Floats Serial Numbers 70032A and prior, in accordance with STC SA02848CH.

Cessna 208 Series when equipped with Wipline 8750 Floats Serial Numbers 87042A and prior, in accordance with STC SA1311GL.

**COMPLIANCE:**

Compliance with this Service Letter is Mandatory.

Compliance with this Service Letter satisfies compliance with Wipaire Service Letter 152.

**BACKGROUND:**

Compliance with this service letter allows for the Main Landing Gear on model 7000 and 8750 floats to retract approximately 3-inches further up into the wheel well. The increased retraction provides the landing gear with additional clearance from the water stream. Depending on weight and center-of-gravity position, the reduction of spray impacting the tires and gear draglink provides improved performance and handling during the water takeoff phase.

**COMPLIANCE METHOD:**

Both Float Models - Replacement of the Main Gear Top Arm Assembly P/N 1002600 with the longer length Main Gear Top Arm Assembly P/N 1006860.

For Model 8750 floats - Replacement of the current oleo shock strut, P/N 1005490, with oleo shock strut P/N 1006863, in addition the aforementioned "Top Arm" replacement.

For Model 7000 floats - Replacement of the current oleo shock strut, P/N 1004350, with oleo shock strut P/N 1006868, in addition the aforementioned "Top Arm" replacement.

**APPROX. SHOP HOURS:**

This Service Letter will take approximately 4.5 labor hours to complete the oleo strut and top arm removal and replacement. An oleo rebuild kit is provided and is comprised of the replacement shorter inner chrome cylinder, piston, a complete set of O-rings and T-seals, and a replacement placard listing the new fluid level and nitrogen charge pressure. For model 7000 floats the rebuild kit will also include a replacement metering pin. Rebuilding each oleo shock absorber requires approximately 1 hour, excluding a 24 hour curing time for the Loctite adhesive (10 hour cure if primer/activator is used). A complete factory modified oleo that can be directly replaced is also available at extra charge.

The old inner cylinder with the attached piston (or old complete oleo assembly) is to be returned to Wipaire for exchange credit. Contact Wipaire Customer Service for an RMA number and other details.

**WARRANTY INFORMATION:**

Parts and Labor will be provided for any floats within 72 months of purchase. Contact Wipaire Customer Service for cost on out of warranty parts exchange

**TECHNICAL DATA:**

Copies of this service letter, Service Kit 76 modification drawing, float service manuals and float parts manuals are available on the website [www.wipaire.com](http://www.wipaire.com).

For basic Float model maintenance information, see Wipaire applicable Service Manual on website [www.wipaire.com](http://www.wipaire.com).

For basic Float model parts information, see applicable Wipaire Parts Manual on website [www.wipaire.com](http://www.wipaire.com).



PARTS LIST WITH OLEO REBUILD KIT 8750 FLOAT: 1006963-1

<b>QTY</b>	<b>Part Number</b>	<b>Description</b>
2	1006860	ASSEMBLY, TOP ARM, MAIN GEAR
1	1006964	SL 154 TEMPLATE
4	1001929	T-Seal
2	1002028	T-Seal
2	1002569	PISTON, OLEO CYLINDER,MAIN GEAR
2	1006862	CYLINDER, INNER, SHOCK STRUT, 9.688 IN
2	8881910	WIPER (HALLITE INC)
2	MS28775-229	"O" RING
2	MS28775-231	"O" RING
2	MS28775-340	"O" RING
2	MS28775-015	"O" RING
2	1006864	PLACARD, HYDRAULIC CYLINDER
1	2047	LOCTITE 2047
1	7471	LOCTITE 7471 (PRIMER/ACTIVATOR)

PARTS LIST WITH OLEO REBUILD KIT 7000 FLOAT: 1006963-2

<b>QTY</b>	<b>Part Number</b>	<b>Description</b>
2	1006860	ASSEMBLY, TOP ARM, MAIN GEAR
1	1006964	SL 154 TEMPLATE
4	1001929	T-Seal
2	1002028	T-Seal
2	1002569	PISTON, OLEO CYLINDER,MAIN GEAR
2	1006862	CYLINDER, INNER, SHOCK STRUT, 9.688 IN
2	8881910	WIPER (HALLITE INC)
2	MS28775-229	"O" RING
2	MS28775-231	"O" RING
2	MS28775-340	"O" RING
2	MS28775-015	"O" RING
2	1006869	PLACARD, HYDRAULIC CYLINDER, 7000
2	1006947	METERING PIN, 7000 OLEO
1	2047	LOCTITE 2047
1	7471	LOCTITE 7471 (PRIMER/ACTIVATOR)



PARTS LIST 8750 FLOAT (COMPLETE OLEO): 1006963-3

QTY	Part Number	Description
2	1006863	ASSEMBLY, OLEO, SHOCK STRUT, 8750
2	1006860	ASSEMBLY, TOP ARM, MAIN GEAR
1	1006964	SL 154 TEMPLATE

PARTS LIST 7000 FLOAT (COMPLETE OLEO): 1006963-4

QTY	Part Number	Description
2	1006868	ASSEMBLY, OLEO, SHOCK STRUT, 21.27 IN, 7000
2	1006860	ASSEMBLY, TOP ARM, MAIN GEAR
1	1006964	SL 154 TEMPLATE

SHOP SUPPLIES:

Description
MIL-H-5606 HYDRAULIC FLUID (2000 ml)
PETROLEUM JELLY
CLEANING SOLVENT (MEK OR EQUIVALENT)
ALODINE PEN OR EQUIVALENT
ZINC-CHROMATE PRIMER OR EPOXY BASED PRIMER OR EQUIVALENT
STRAP WRENCH

## PROCEDURE:

1. Place aircraft on jack stands.
2. Pull the circuit breakers for the landing gear hydraulic pumps.
3. Remove the AN12 bolts (**1**) at the top and bottom of the oleo-pneumatic shock strut and remove the oleo shock strut from the float.
4. Unbolt the tie rod ends (**2**) where the two Linkage Rods attach to the Top Arm Brackets.
5. Remove the AN12 bolt (**3**) that attaches the Main Gear Top Arm Assembly to the Main Gear Top Mount.



6. Remove the left and right Top Arm Brackets (**4**) P/N 1004927 and 1004928 from the old Main Gear Top Arm Assembly and install them on the new top arm assembly P/N 1006860. Install the Top Arm Brackets and safety-wire the hardware following the instructions from Wipaire Service Kit 76. Use corrosion preventative grease on hardware and mating surfaces. Note that match drilling of holes per Service Kit 76 will not be necessary as the replacement Top Arm (P/N 1006860) has all the required holes. Standard torque specifications found in AC 43.13 Table 7-1 are used for the hardware attaching the Top Arm Brackets to the Main Gear Top Arm Assembly.



- Place the included trim template (5) P/N 1006964 onto the center of the Horizontal Stiffener on Bulkhead #10. The stiffening angle runs horizontally across the aft face of the step bulkhead right below the cutout box that the oleo shock tucks up into when the landing gear is retracted. The trim template needs to be centered along the length of the angle and will nest over the heads of the AN470-4 rivets. The material not covered up by the trim template will be removed to provide 3/16" of additional clearance for the oleo shock strut when the landing gear is being extended and retracted. Scribe along the trim template to mark section of the angle to be removed.

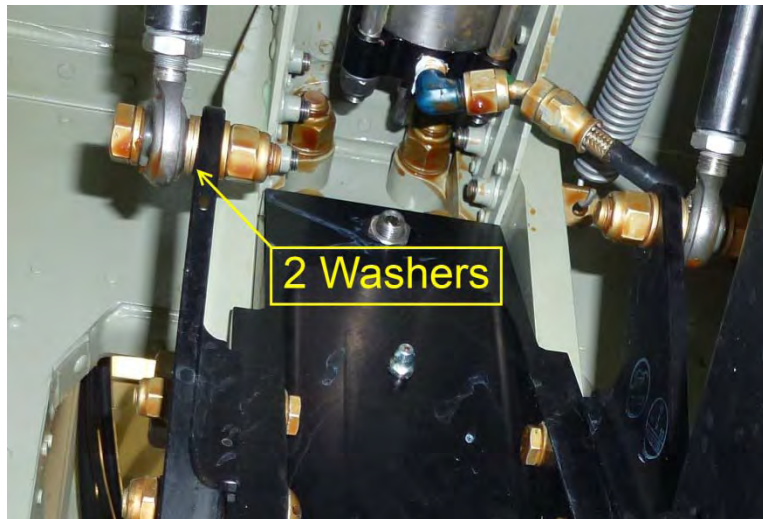




8. Trim the horizontal angle up to the marked line using a high-speed grinder and burr bit. Smooth the cut and touch up the finish using an alodine pen and either a zinc-chromate primer or epoxy based primer.



9. Install the new top arm assembly P/N 1006860 with the attached Bracket Arms from Step 6 using the AN12 bolt and hardware removed in Step 5. When tightening the AN12 bolt, gently snug the nut and then back off approximately 1/8 turn allowing for free rotation of the Top Arm. Make sure that the Gear Down Adjustment Setscrew (6) is not protruding past the flat forward face of the Top Arm Assembly at this time. If the adjustment setscrew is protruding (toward the position sensor switch), loosen the setscrew jam nut and back out the setscrew to recess it into the top arm. A protruding adjustment setscrew that contacts the down position proximity switch could damage the proximity switch. The setscrew will be adjusted for the proper location in Step 16.
10. Attach the rod ends that were removed in Step 4. Note that there are two NAS1149F0463P washers between the tie rod ends and the Bracket Arms.



11. Inspect for proper over-center locking of the top arm. Consult Chapter 4 of the Wipline Model 8750 Service Manual for complete inspection and adjustment procedures of the Main Gear retraction system. With the Top Arm in the Gear Down Position, adjust the NAS428-4-10 adjusting bolt (7) on the Main Gear Down Stop if necessary.
12. Install the replacement oleo-pneumatic shock strut, P/N 1006863 (8750 floats) or P/N 1006868





(7000 floats), using the hardware removed in Step 3. Tighten the nuts snug and then back off approximately 1/8 turn to allow free rotation of the oleo shock strut

13. Grease the two grease zerks on the oleo and the one grease zerk on the top arm.
14. Repeat steps 3-13 on the other float.
15. Push in the circuit breakers for the landing gear hydraulic pumps.
16. Cycle the landing gear fully in both directions and adjust the up and down gear position switches per the float maintenance manual.
17. Remove the aircraft from jack stands.
18. Return the old Oleo Shock Strut, or the replaced strut parts (Inner Cylinder, Piston) and the trim template used in Step 7 to Wipaire for core exchange credit.

## OLEO SHOCKSTRUT REBUILD INSTRUCTIONS:

**Note:** See Wipline Model 7000 and 8750 Parts Manuals for exploded assembly views of the Oleo Shock strut.

### DISASSEMBLY OF SHOCK STRUT:

1. Slightly open Schrader valve to bleed all nitrogen pressure.
2. Close Schrader valve.
3. Turn Strut over and remove Lower End Cap. Hold Oleo in soft jaw vice and use a large crescent wrench or a long  $\frac{3}{4}$ " diameter steel rod to un-thread the Lower End Cap. Discard the O-Ring



4. Drain all hydraulic fluid into approved container



5. Remove Schrader valve from the Upper End Cap and discard the O-Ring.
6. Slide Inner Cylinder Assembly out of the Outer Cylinder Assembly.



7. Discard T-Seals and O-Rings in the Outer Cylinder Assembly.
8. While holding the Upper End Cap in a vise, use a strap wrench to remove the Upper End Cap from the Inner Cylinder. Discard the O-Rings. **DO NOT ATTEMPT TO SEPARATE THE PISTON FROM THE INNER CYLINDER.**





9. If the Oleo rebuild is for a Wipline Model 7000 shock strut, the metering pin will require replacement. Use a crow's foot wrench and extension to remove the metering pin jam nut and the metering pin.



**ASSEMBLY OF SHOCK STRUT:**

1. On model 7000 shock struts, clean and degrease using MEK or equivalent, the Lower End Cap, new metering pin and jam nut. Install the new metering pin P/N 1006947 until it bottoms out finger tight. Do not lubricate the metering pins threads. Install the metering pin jam nut and torque the jam nut to 600 in-lbs (50 ft-lbs). Use a punch to stake the jam nut.
2. Clean and degrease, using MEK or equivalent, the threaded area of Piston and Inner Cylinder.
3. Once clean apply a 360 degree bead of Loctite 2047 to the piston (P/N 1002569) and thread the piston onto the new shortened Inner Cylinder (P/N 1006862). Activator 7471 can be used to speed the curing time. A smooth rod (i.e. Philips screwdriver) can be passed through the hole pattern on the Inner Cylinder and a strap wrench can be used gently around the Piston to aid in assembling the two parts.
4. Wait 24 hours for the Loctite 2047 to cure on the Piston Assembly. If Loctite Activator 7471 is used, wait 10 hours. Once Loctite curing time has elapsed, begin reassembly.
5. Install O-rings P/N MS28775-229 and MS28775-231 on the Upper End Cap and install the Upper End Cap onto the assembled Inner Cylinder and Piston. Holding the Upper End Cap in a vise, use a strap wrench to tighten the Upper End Cap and Piston Assembly.
6. Install T-Seal P/N 1002028 onto the Piston.
7. Install T-Seal P/N 1001929 (qty 2) into the Outer Cylinder.
8. Slide the Outer Cylinder over the Inner Cylinder until the Piston is flush with the bottom of the Outer Cylinder.
9. Lightly lubricate threads on the Schrader valve with petroleum jelly, and reinstall the valve on the Upper End Cap using a new MS28775-015 O-Ring.
10. Remove old fluid quantity and pressure placard from the Outer Cylinder and apply the new placard (P/N 1006864 or P/N 1006869) in its place.
11. Install O-Ring P/N MS28775-340 on Outer Cylinder.
12. Turn assembly over and add 975 ml +/- 20 ml of MIL-H-5606 Hydraulic Fluid.





13. Install Bottom End Cap.



14. Turn assembly over. Open Schrader valve and slightly charge with Nitrogen until strut reaches full extended position and stop.

**(((CAUTION)))**  
**ROTATE UPPER CYLINDER ASSY. CLOCKWISE (ONLY) TO ALIGN**  
**GREASE ZERKS**

15. Align grease zerks on Upper and Lower End Caps. If piston does not rotate easily, open the Schrader valve releasing the pressure to allow easier rotation.
16. Finish charging the Oleo with nitrogen per the placarded specification on the Outer Cylinder and close the Schrader valve.
17. Install the rebuilt Oleo Shock Strut per the previous instructions in this Service Letter.

NOTES:

- 1) Upon completion of inspection, enter information in float logbook for completion of Wipaire Service Letter 154.
- 2) Once service letter is accomplished, please visit [www.wipaire.com](http://www.wipaire.com) and update your aircraft service letter/kit record using the link found on the Customer Support dropdown menu under "Update Service Letter & Kit Compliance Status".

### END ###