Propeller Governor P-W22-3, P-W25-3 and Beta Switch P-S-2B

A. Purpose

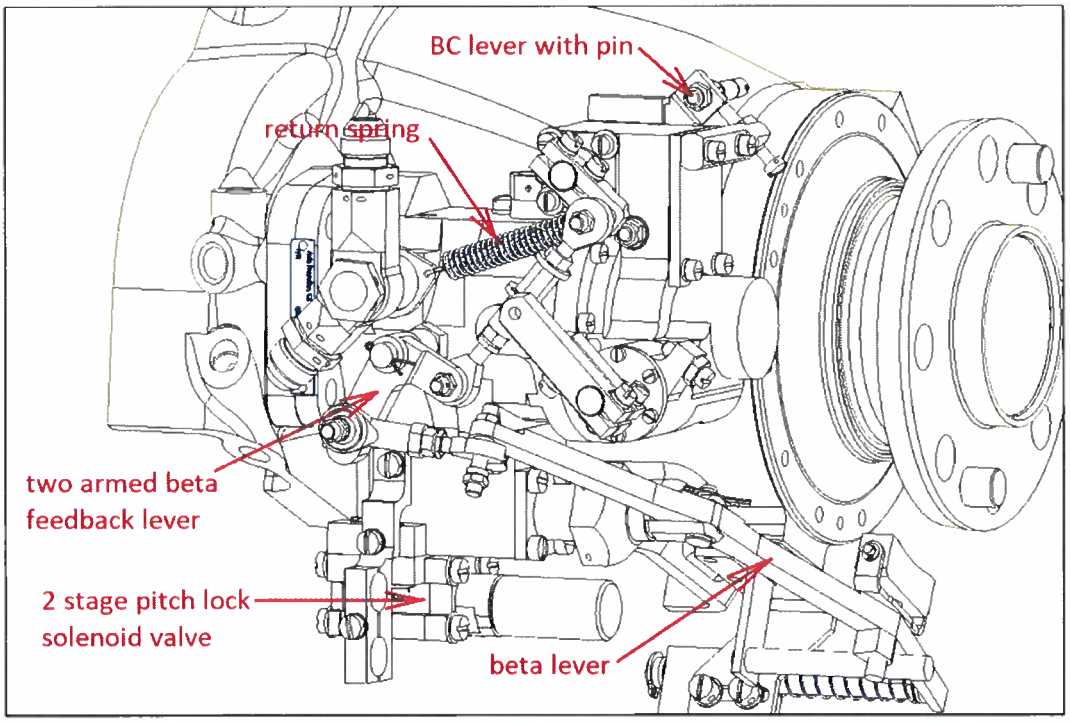
1. This Service Bulletin describes procedures to upgrade the propeller governor from P-W22-1 to P-W22-3 and from P-W25-2 to P-W25-3.
2. This Service Bulletin describes procedure to exchange the beta switch P-S-2A with P-S-2B.

B. Reason

1. It is realized as the part of push-pull control linkage upgrade of GE-H80/H85 engine.

C. Description

1. The governor upgrade consists of the pitch lock solenoid valve exchange, exchanging BC lever with pin to connect engine linkage, beta feedback two arm lever, installation of auxiliary return spring, replacement of original return spring and installation of auxiliary return spring, replacement of beta feedback lever and beta lever support.



2. Beta switch upgrade consists of holder exchange, cam with return spring exchange and completing the beta switch with cover as protection against contamination entering inside the switch.

   Beta switch will be exchanged as a whole unit, it means P-S-2A will be removed and replaced by P-S-2B.

D. Material

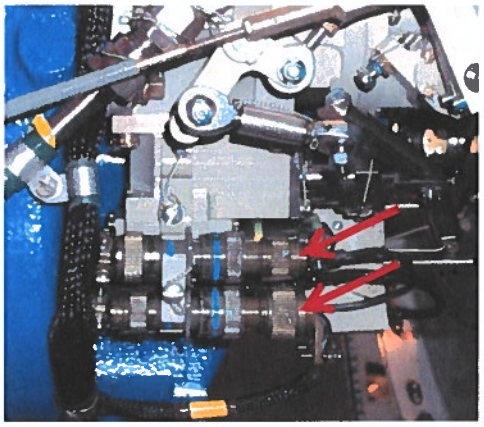
1. Replacement kit for propeller governor - P/N 900-0541

2. P-S-2B Beta switch - P/N 222-0168-7

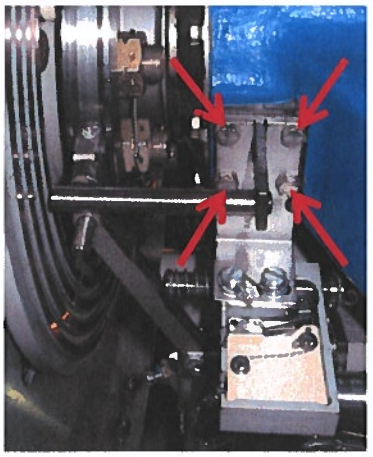
3. Tooling

- Retaining ring pliers
- Nose pliers
- Side cutters
- Wire twisting pliers
- Various screwdrivers and spanners
- Fixture P/N 900-0543 for adjustment of beta feedback linkage
- Fixture P/N 900-0544 for maximum reverse check
- Fixture P/N 900-0545 for beta switch setting
- Safety wire, stainless steel Ø0,5 mm (0,020")
- Safety wire, stainless steel Ø0,64 mm (0,025")
- Loctite 262 or equivalent
- Marking paint

E. Upgrade of beta switch - procedure



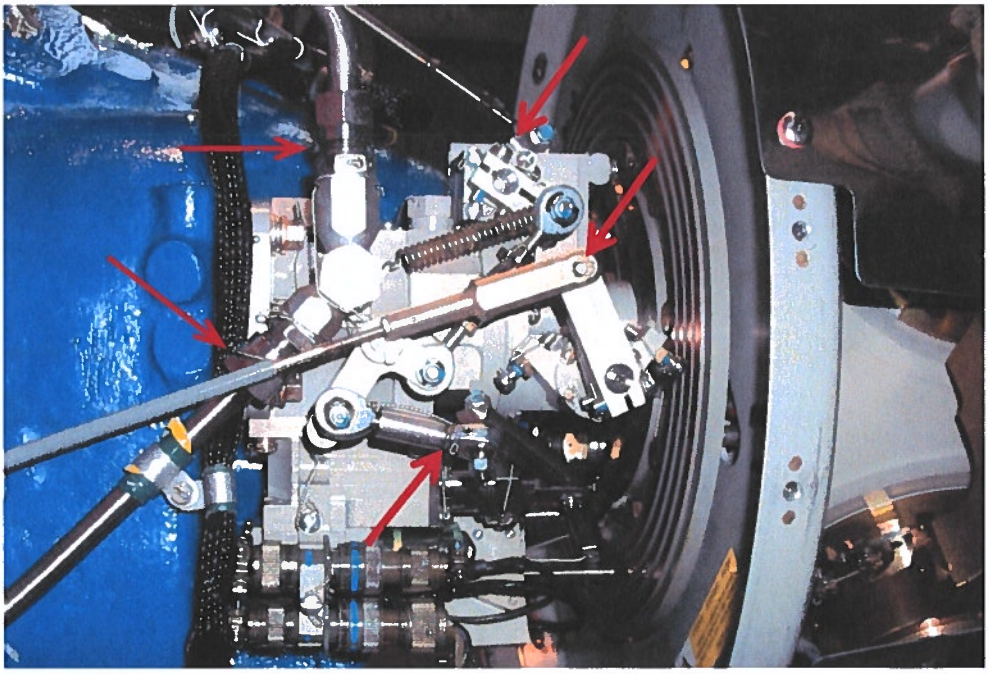
1. Disconnect pitch lock solenoid connector and beta switch connector from engine harness.



2. Remove beta switch P-S-2A from engine gear box by releasing four screws (together with beta lever support bracket).

F. Upgrade of propeller governor - procedure

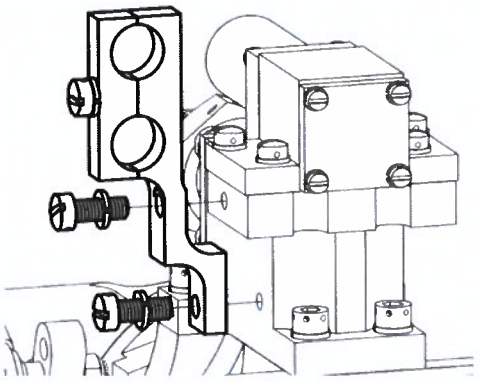
1. Disconnect control linkage, disconnect hydraulic tubes. The arrows show where to disconnect governor interfaces, seal tubes and governor fitting with suitable caps.



2. Remove the governor from engine drive pad. Release 4 mounting screws; take the governor off the engine drive pad.

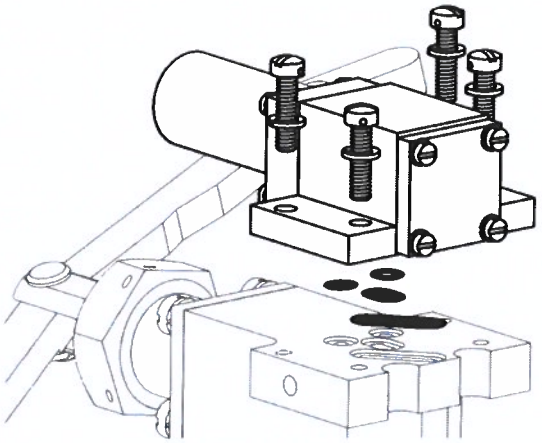
3. Replace the pitch lock valve.

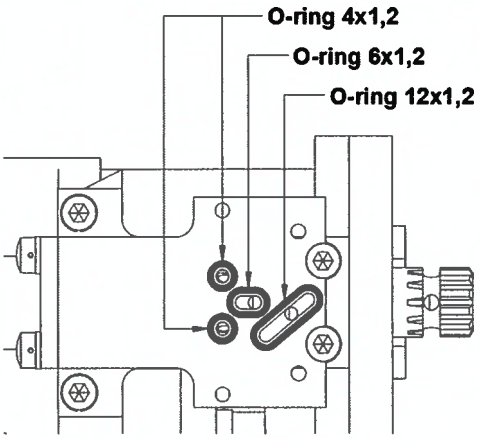
   a) Remove bracket for connectors.



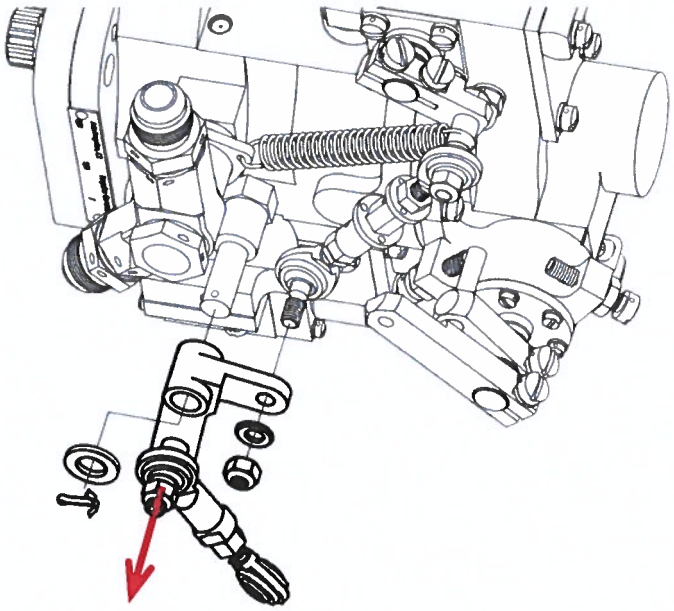
   b) Release 4 screws as shown. Remove the pitch lock valve. This pitch lock has housing P/N 219-0030-1. Clean the pad, remove the o-rings.

   c) Install new O-rings and install new 2-stage pitch lock valve (its housing has P/N 222-0030-6), fix with the 4 new AN503-8-12 screws and MS35338-42 spring washers. Secure the screws by lock-wiring. Install the bracket for connectors with 2 screws and secure with lock-wiring.

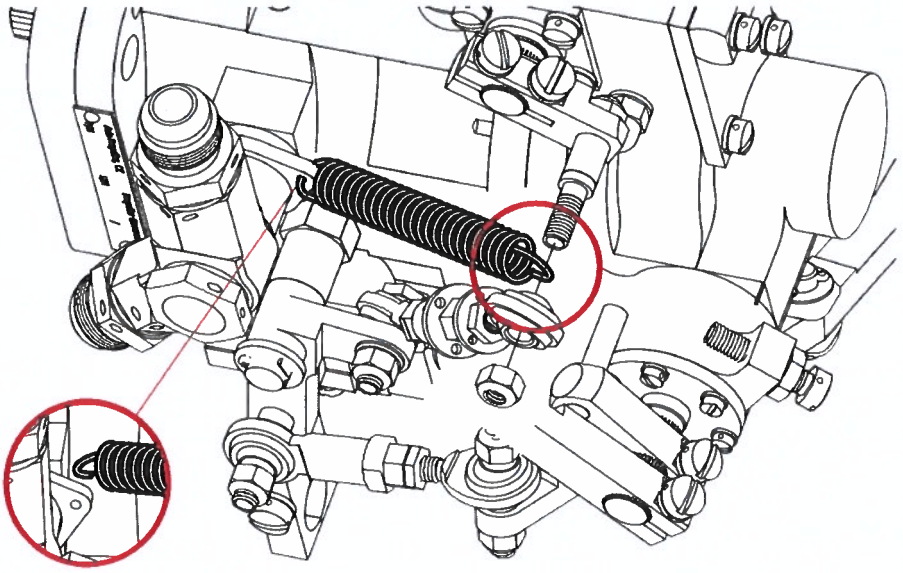




4. Replace the two-armed lever.
   a) Release the cotter pin and remove the washer.
   b) Release the self-locking nut and remove beta lever adjusting rod.
   c) Remove two-armed lever from the governor. Original lever is marked 222-0131-2.
   d) Remove beta feedback rod from the pin on the lever.

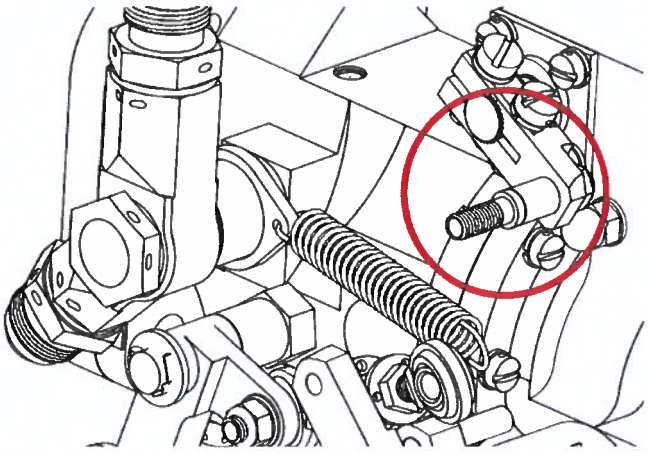


5. Exchange the original return spring.
   a) Release the self-locking nut at the pin for connecting adjusting rod. Pull out the end of the rod and remove the spring from the pin.
   b) Hook out the spring from the holder.



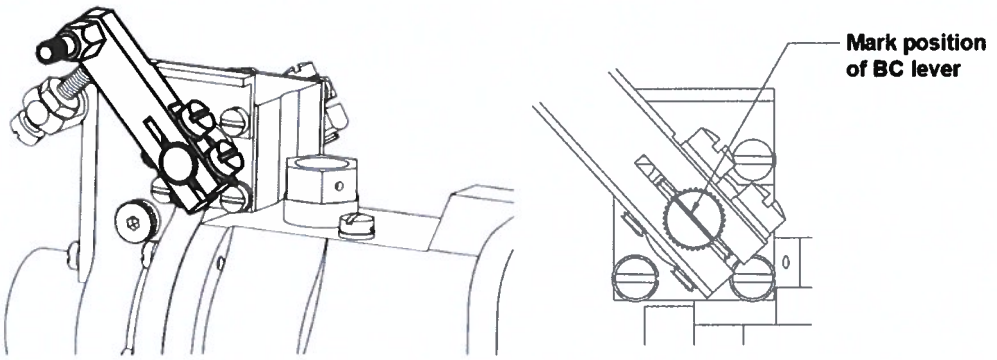
c) Hook up the new spring at one end to the holder. Do NOT slide the other end of the spring onto the pin. Do not reinstall the adjusting rod now!

Keep the feedback lever free.

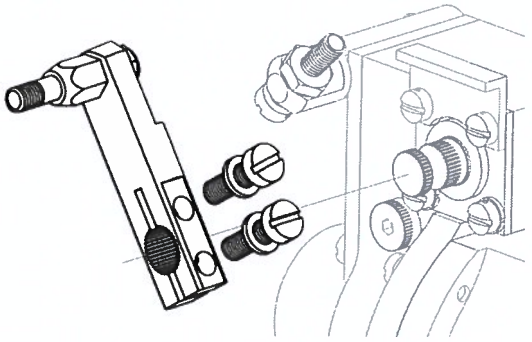


6. Exchange the BC lever.

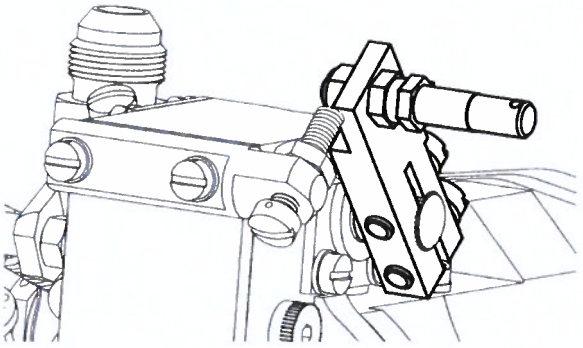
a) Mark position of the BC lever with a permanent pen at the control shaft.



b) Remove the safety wire from BC lever fixing screws. Release the screws and remove the BC lever from the shaft. Original BC lever is marked 220-0023-5-1.

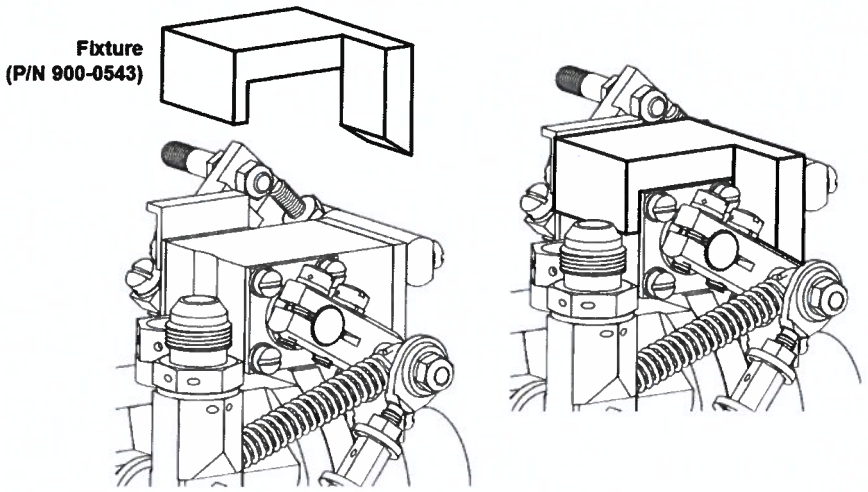


c) Install new BC lever with the new pin in the same position (or very close) and fix with original screws and washers.

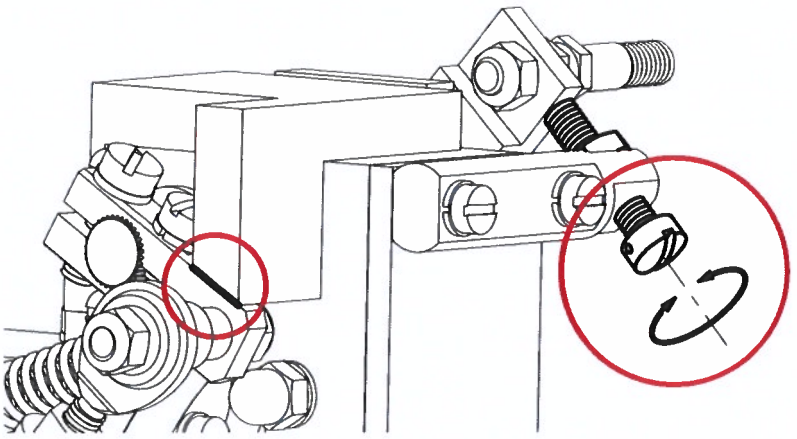


7. Adjust beta feedback linkage.

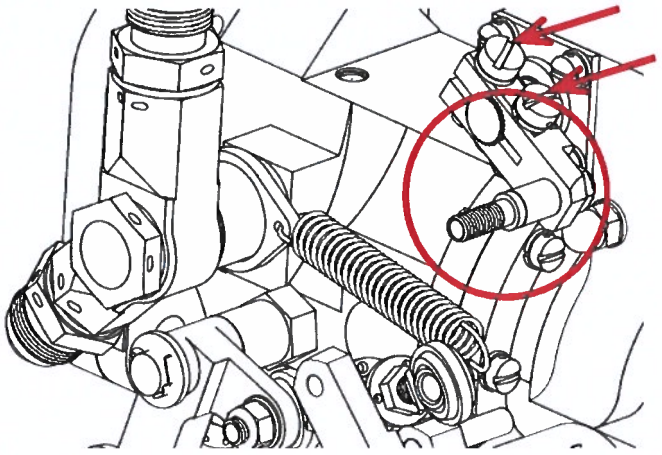
   a) Attach fixture P/N 900-0543 to the control head, as shown on the picture.



   b) The feedback linkage lever (P/N 220-0023-3-1) must match with angular surface of the fixture – see the picture. To adjust angle of the lever, use end stop of the BC lever.



   If the angular difference is big enough to turn the end stop more than 4 turns , reposition the lever feedback lever on its shaft by one tooth.
   Release two screws , remove the lever from the shaft and install again in the correct position. Place the fixture and make fine tuning with the end stop screw.

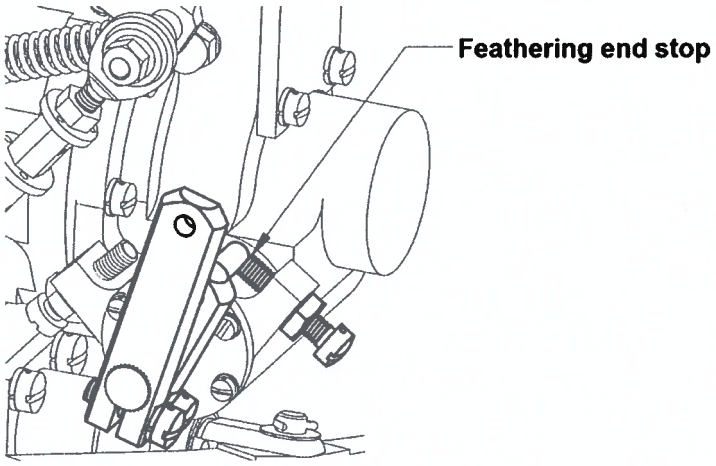


c) Safety wire the screws of BC lever.

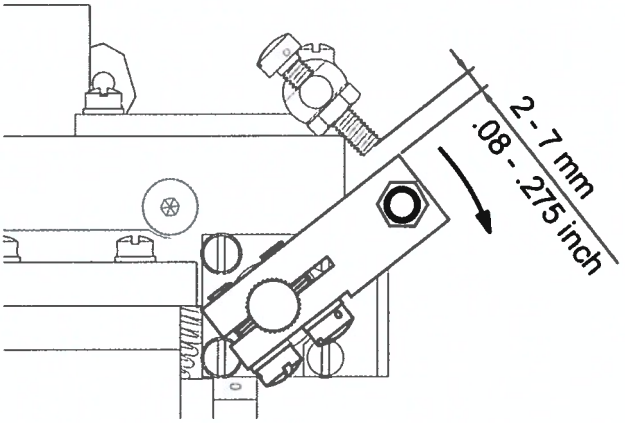
8. Check mechanical blocking between BC lever and speed control lever.

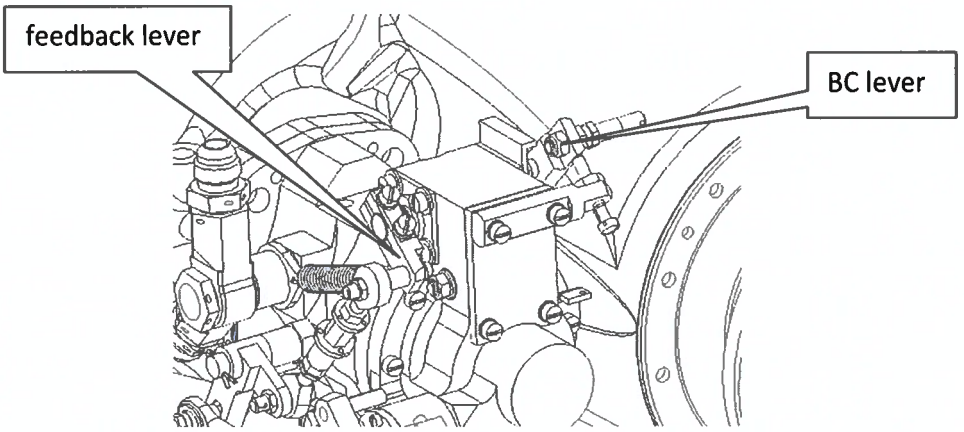
Check adjustment of the BC lever:

a) With one hand, move the propeller speed control lever to the feathering end stop and hold in this position.



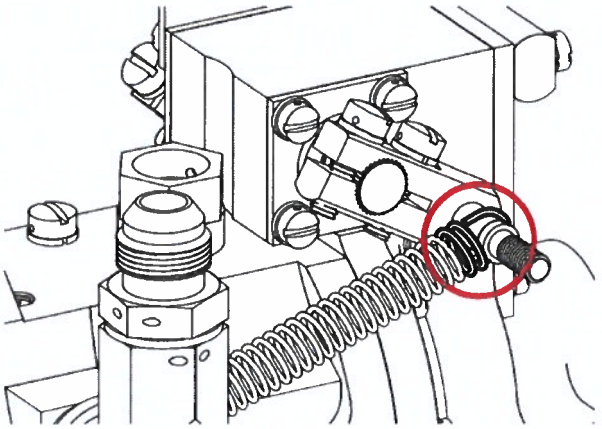
b) With the other hand, move the BC lever in direction against the end stop up to feeling mechanical blocking. The clearance between the BC lever and the end stop should be 2-7 mm (.08 to .275 inch). If not, release the BC lever from the spline and reposition by 1 tooth to reach the range. At the same time reposition also feedback lever in opposite direction, it means if BC lever is repositioned CW, reposition the feedback lever 1 tooth CCW.



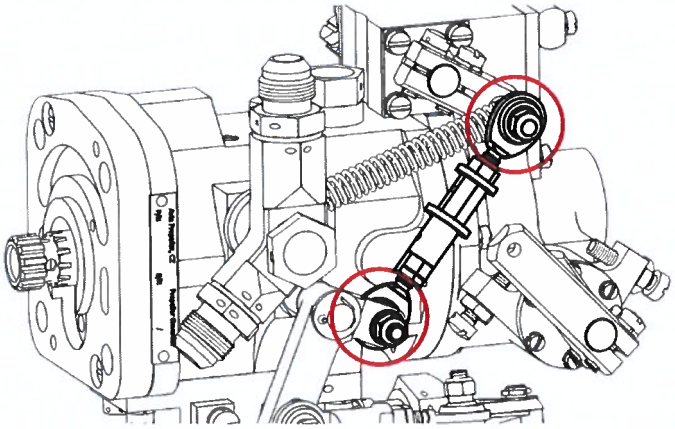


c) Secure the screws by lock-wiring.

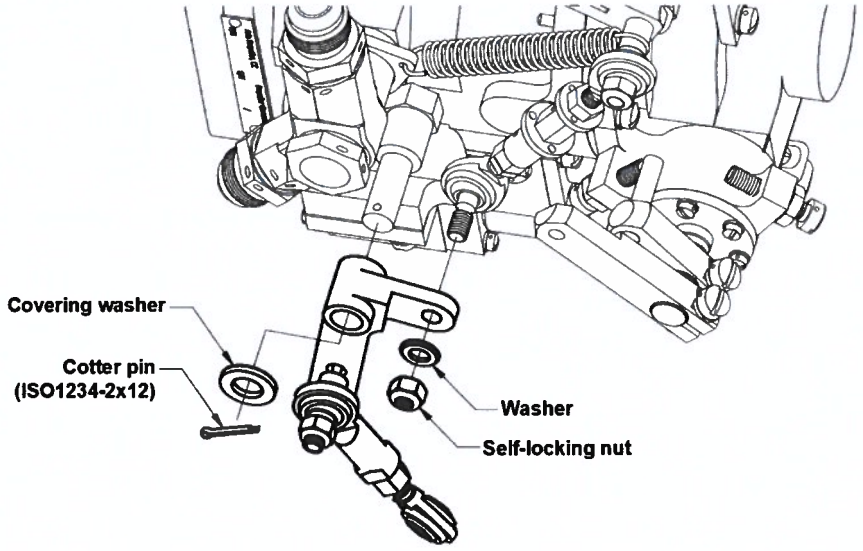
9. Reinstall the return spring to the beta feedback lever.



10. Reinstall the adjusting rod , secure with self-locking nuts.

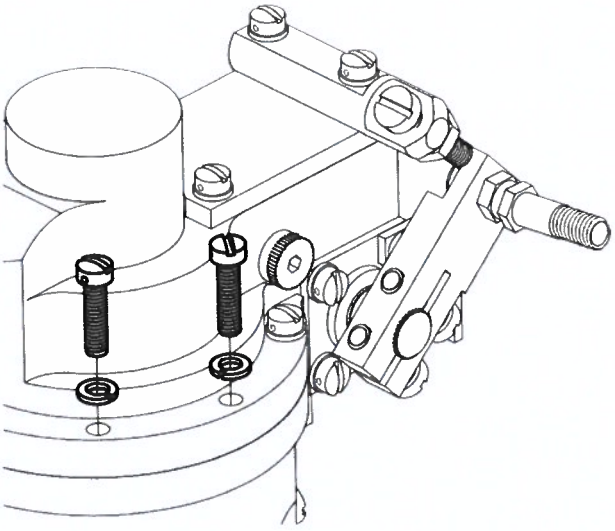


11. Reinstall new two-armed lever onto the governor pin, put the covering washer and secure with cotter pin. DO NOT connect the adjusting rod to the lever.

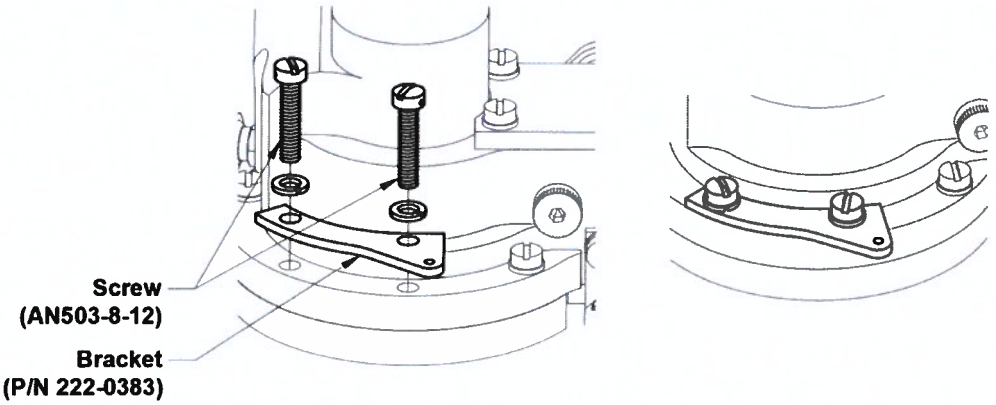


12. Installing auxiliary return spring

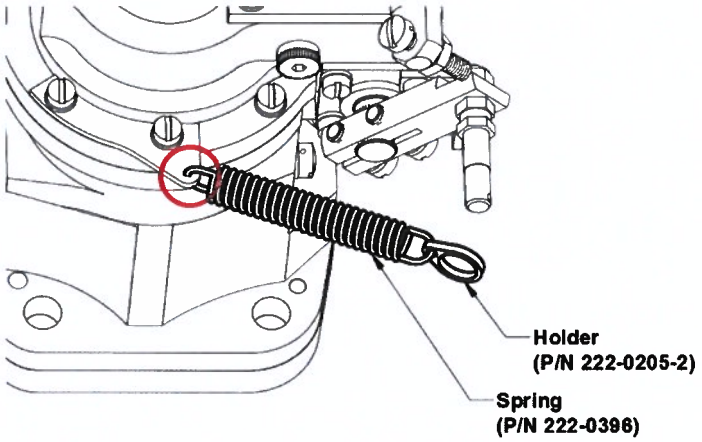
    a) Release and remove two screws at the control head, as shown in the picture.



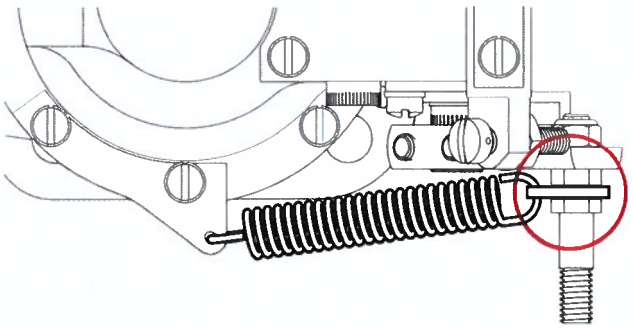
b) Install the bracket P/N 222-0383. For fixing use new AN503 8-12 screws (they are longer than originals). Tighten and secure by lock-wiring.



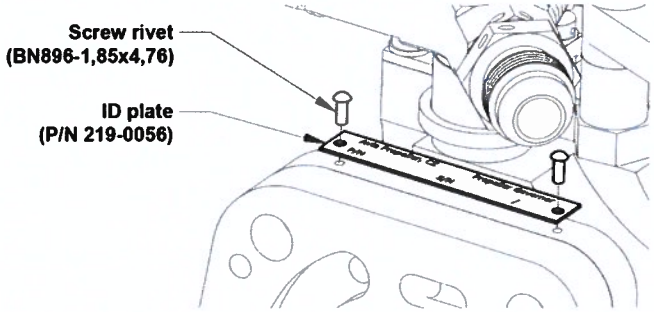
c) Install the auxiliary spring. Hook up one end to the bracket. Hook up the holder P/N 222-0205-2 on the other end of the spring.



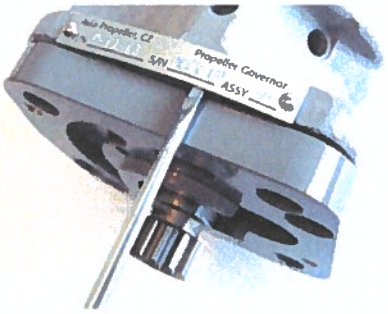
d) Install the spring on the BC lever pin.

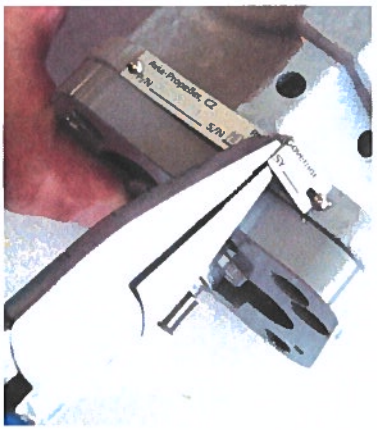


13. To finalize governor upgrade, replace governor ID plate with a new plate showing new P/N.

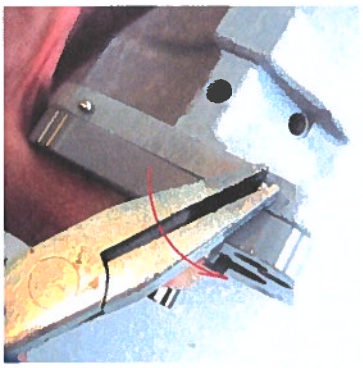


a) Using a small slotted screwdriver and suitable nose pliers, carefully release and remove the ID plate from the governor.

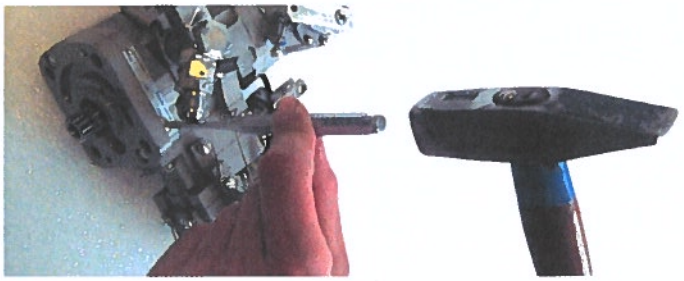




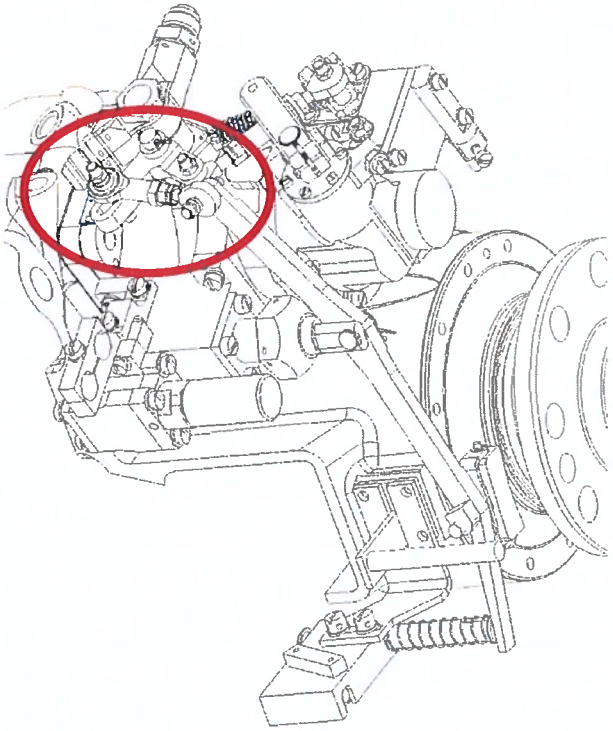
b) Using suitable nose pliers, carefully turn the screw rivets counterclockwise to remove them from the governor.



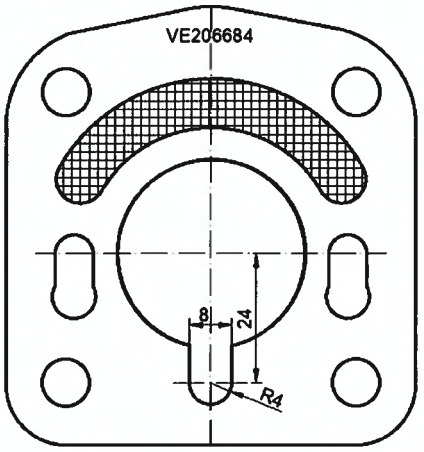
c) Place new ID plate and fix with new screw rivets. 4 mm punch is recommended.



14. Continue to finalize installation according to propeller governor manual E-1707 using new beta feedback lever P/N 222-0128-1-10.



- use the gasket with last configuration ; see picture below



15. Install beta switch P-S-2B with beta lever support P/N 222-0161-6.
    Beta switch setting is described in propeller governor manual E-1707 and it follows after propeller governor installation and setting.

16. Record realization of the bulletin in the Governor Log.