Enstrom Helicopter Corp.

Field Adjustment of the Fuel Servo.

F & C Models

Disclaimer

- The procedures outlined in this presentation are intended to supplement the Maintenance Manual and do not take preference over it.

- This is the procedure to field adjust the fuel servo on the Enstrom F28-F and 280FX.
- Differences with the ‘C’ models will be addressed when appropriate.
- Adjustment is recommended when it is suspected that the idle mixture is out of tolerance, or when the aircraft has moved to a base with a different density altitude.

Prepare the helicopter

1. Prepare the helicopter by installing a fuel pressure gauge into the fuel injector servo.

Adjusting Fuel Pressures

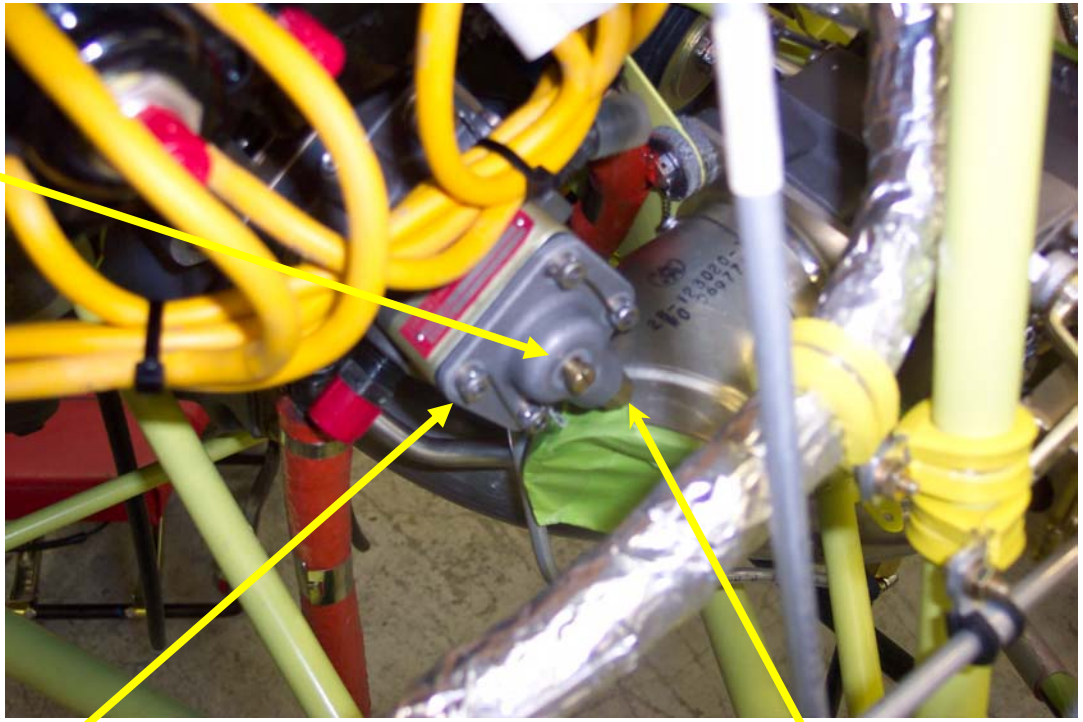
1. Remove the end plug from the servo.
2. Install an adapter fitting in the port and connect the pressure gauge.

3. An AN 815-4 fitting may be used for the adapter, but the flare must be ground off the end that is inserted into the servo, or it will hit and collapse the screen.

- Run or fly the helicopter until cylinder head temperature and oil pressure are in the green
- Its best to perform this procedure when the ambient air temperature is less than 85 degrees F.
- With the blades turning at full flat-pitch RPM, note the fuel pressures, with the electric boost pump on, and then off.
  - ‘F’ Model pressures should be 27 psi electric pump on, and 24 psi, electric pump off.
  - ‘C’ Model pressures are 23 psi for both conditions.
- The engine-driven fuel pump must be adjusted with the electric boost pump off, the blades engaged, and the RPM in the normal operating range.

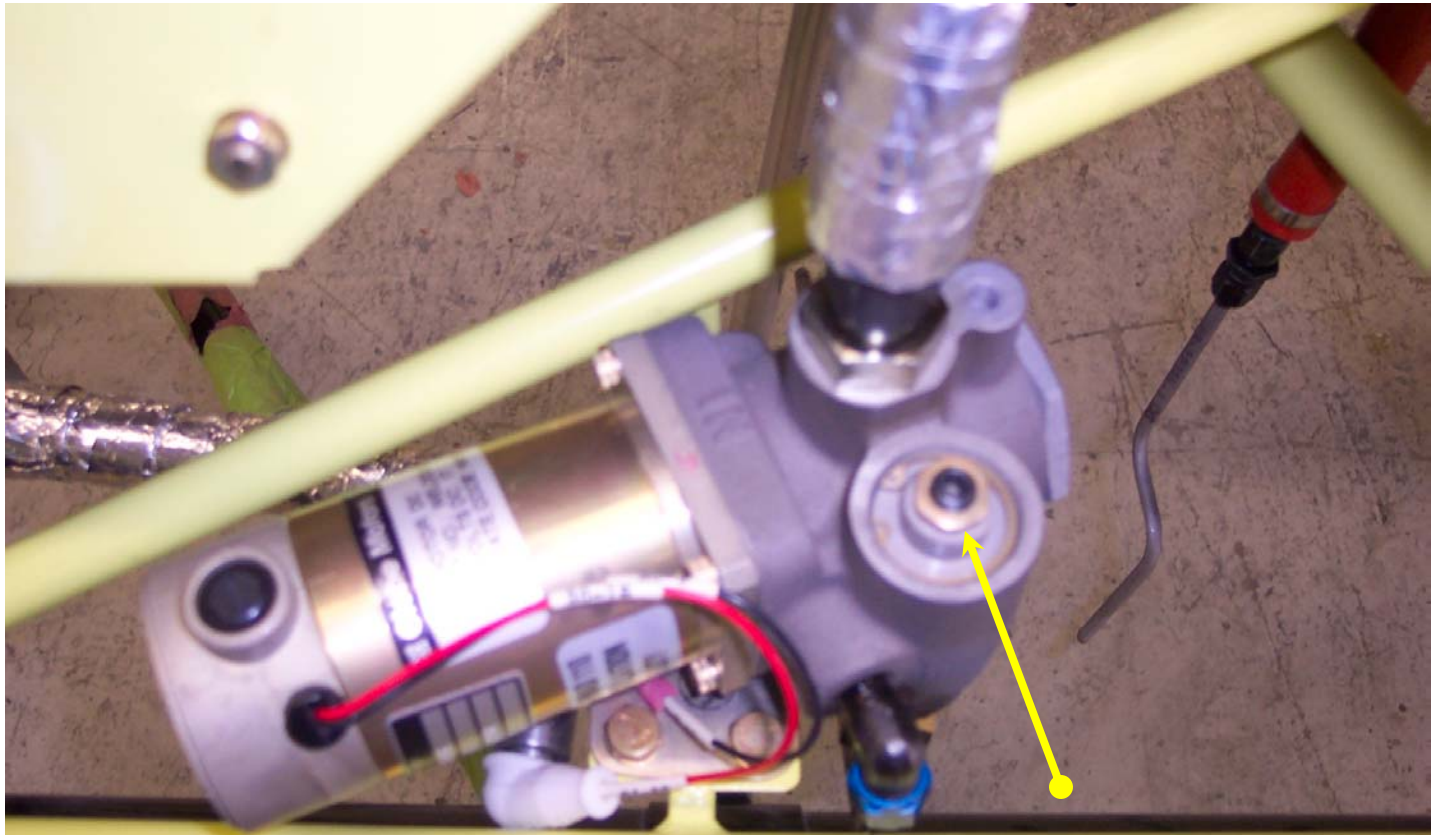
Engine Driven Fuel Pump

- Fuel pressures can be set by adjusting the center screw on the end of the engine-driven fuel pump.
- It's a good idea to check the tightness of the four outside screws and check the parting-surface gaskets of the fuel pump for leakage any time service is being performed.



Check the side of the static reference fitting for the 'R' in accordance with AD 91-08-07

Electric Boost Pump

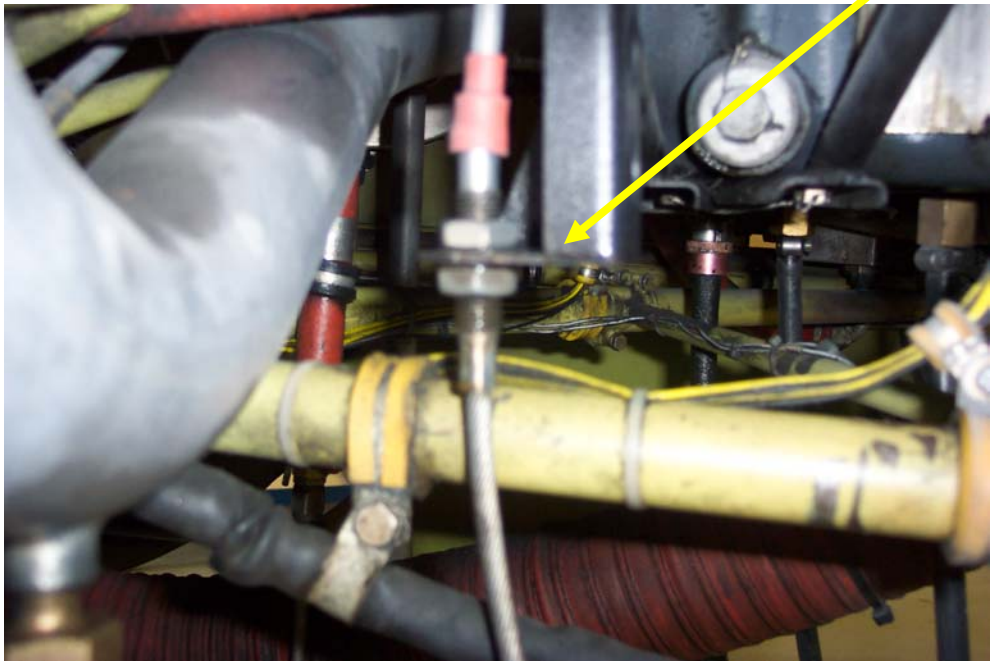


This is the adjustment screw for the electric boost pump. This picture is taken from the front so the pump will be normally accessed from the far side.

Setting Idle Mixture

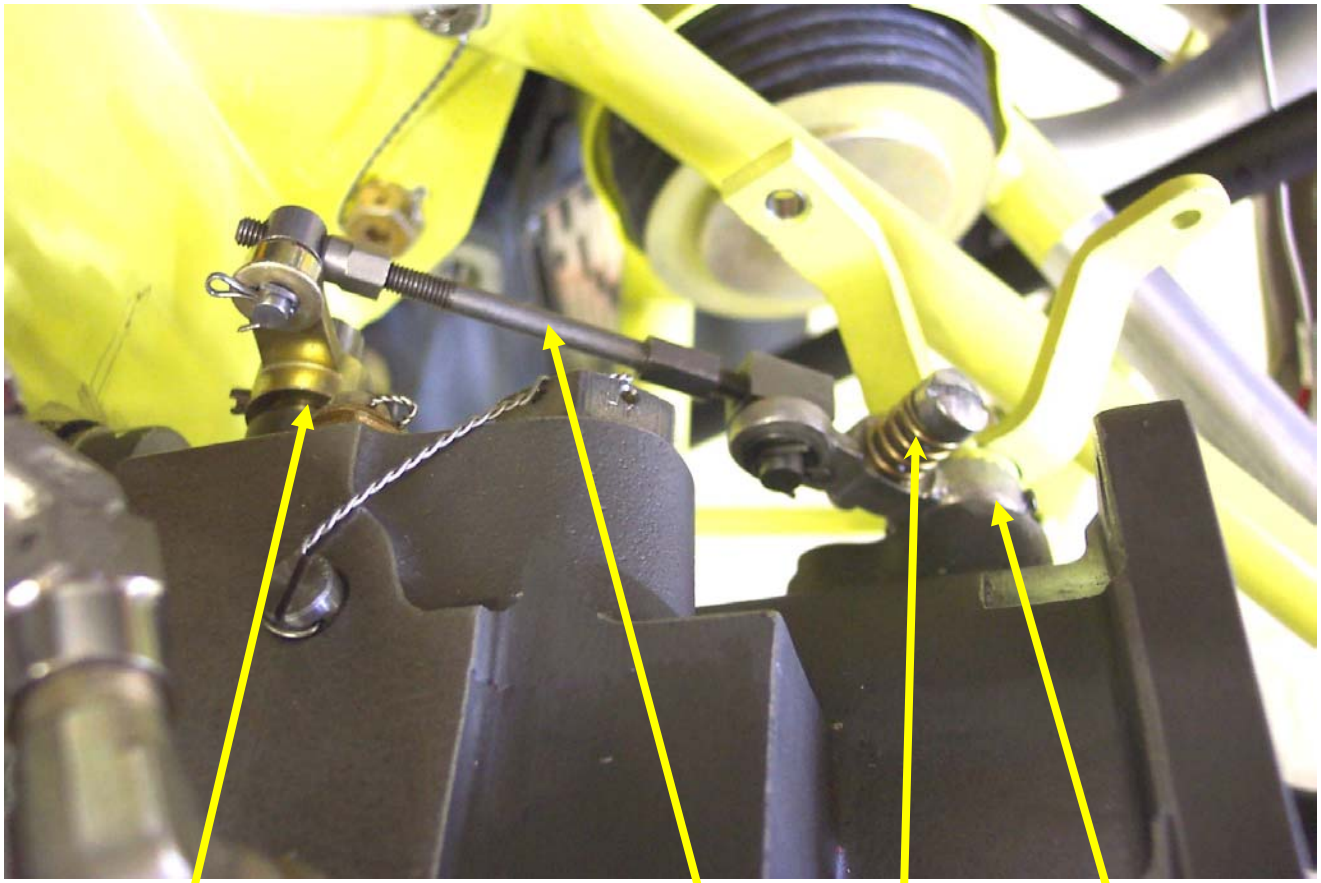
- Electric boost pump must be on to make servo idle-mixture adjustments.
- The idle-speed adjustment screw must be checked to ensure that it is touching the idle stop.
- With the throttle closed push down on the throttle lever. If the lever moves or the throttle speed decreases, then the cable needs to be adjusted.

Adjust throttle cable

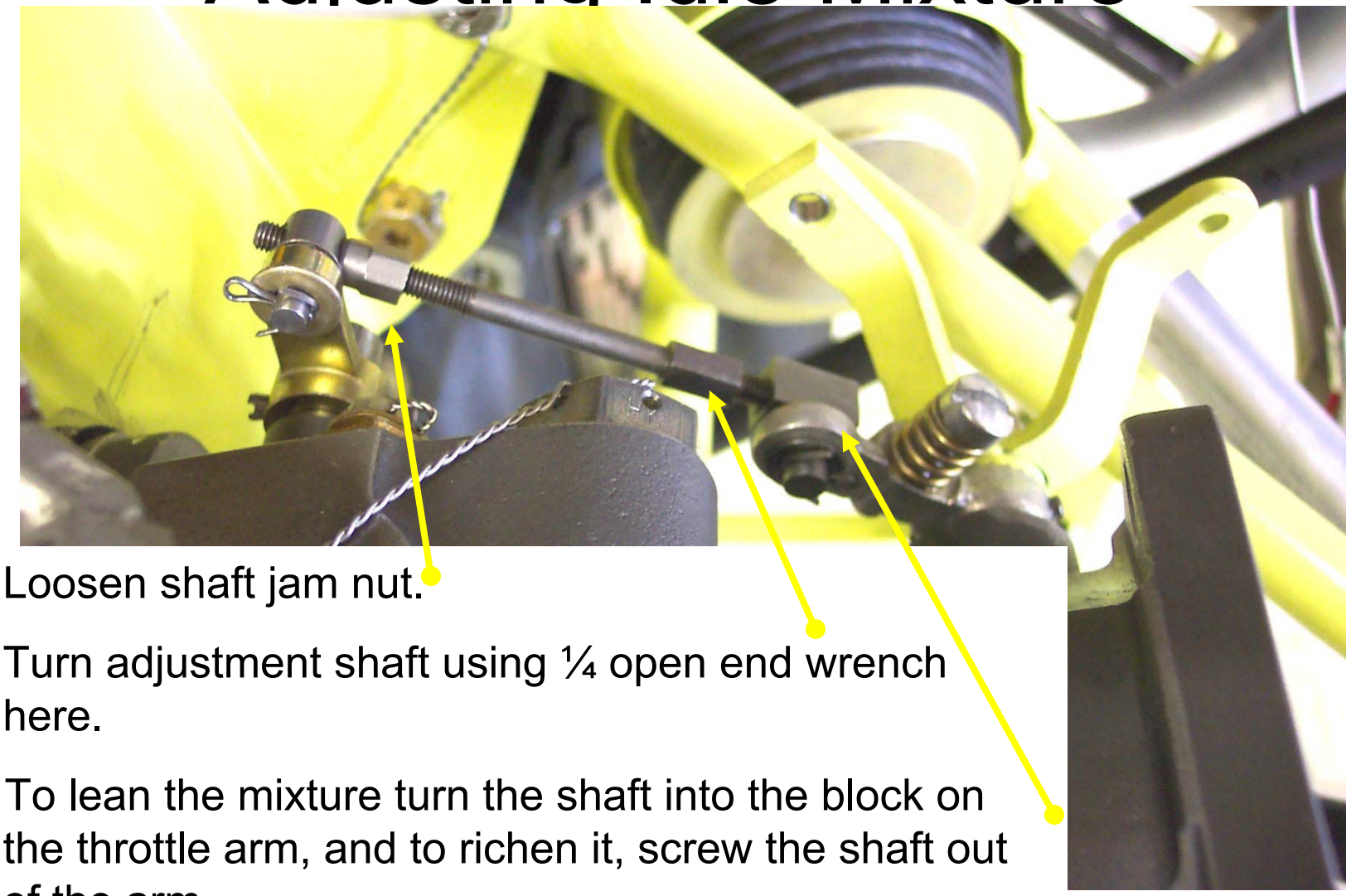


1. Loosen lower nut
2. Back off top nut a turn or two.
3. Tighten lower nut
4. This procedure pulls the cable down slightly
5. Check the idle stop screw for touching the stop pin
6. Repeat if necessary

Idle Mixture Adjusting Arm



Adjusting Idle Mixture

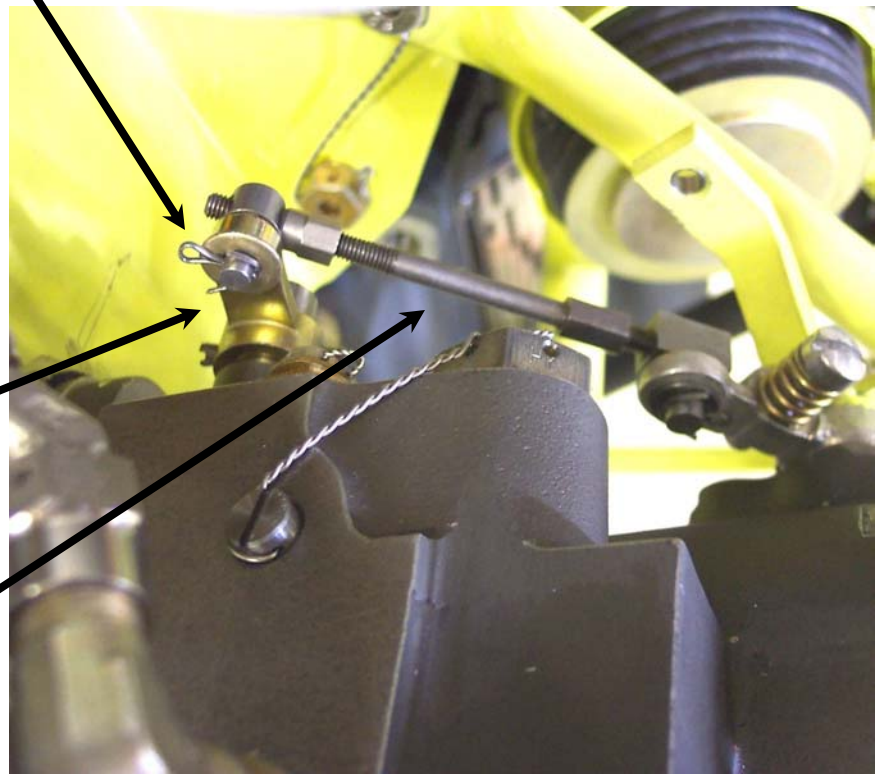


1. Loosen shaft jam nut.
2. Turn adjustment shaft using ¼ open end wrench here.
3. To lean the mixture turn the shaft into the block on the throttle arm, and to richen it, screw the shaft out of the arm.

- After each adjustment, check the results by slowly pulling out the mixture control and noting the RPM rise.
- Clear the engine by running it up to 2000 RPM after each adjustment, and then back to idle. (1500 RPM)
- Re-check that the idle speed screw is touching the stop and tweak idle speed if necessary.

Large Adjustment of Shaft.

1. Remove cotter pin and washer.
2. Push arm back so pin comes out of mixture arm.
3. Catch the wavy washer which may be on the inside or the outside depending on how old the servo is.
4. Adjust mixture arm manually until engine runs best.
5. Then adjust arm so that the pin will re-engage the mixture arm with the arm at mid-adjustment.
6. Reinstall the washers and install a new cotter pin.
7. Re-adjust the mixture using the previous procedures.



Final Checks

- Engage rotor blades and accelerate engine.
- If the engine stumbles in the 1600 to 2200 RPM range, the mixture is still too lean.
- Check that the engine does not change its operating characteristics too much when the electric boost pump is turned on & off.
    - Some small change may be normal depending on the operating temperatures.

- Perform some throttle chops and check that the engine RPM does not decrease excessively.

Some Troubleshooting Tips

- A sudden increase in idle speed usually indicates that this connection is loose or that a piece of the gasket has been sucked in.

- If the fuel pressure indications on the test gauge are fluctuating and unstable while trying to adjust the engine driven pump pressure, it is an indication that the pressure relief valve is malfunctioning.

- Fuel dripping from either the engine driven pump or the electric boost pump drain valves indicates a fuel pump shaft seal leak.
- Seals for both pumps can be obtained from New Garden Aviation, and are easy to change.
- Leakage does not normally require pump overhaul.
- The brushes in the electric boost pump are also available, and ACF 50 can be sprayed into the brush socket holes to lubricate the armature or brushes if necessary.