Operating instructions for the TRS modified Accucraft AC-11/12:

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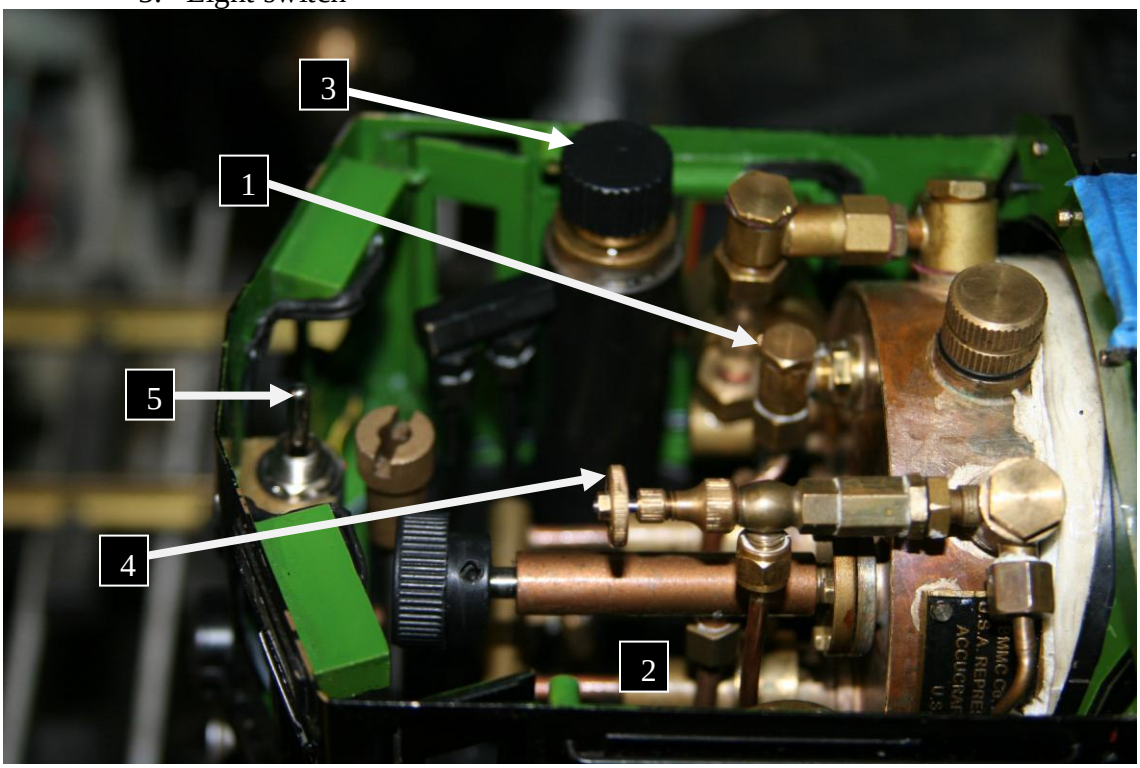
- Overview:
  This is a supplement to the existing running knowledge to bring to light some of the changes made to your Accucraft AC-11/AC-12. As time allows, a more complete disassembly manual and corresponding exploded diagrams will be forwarded to the owners of modified locomotives.

- Unpacking:
  Once your locomotive is unpacked and checked for shipping damage, find the box located within the tender packaging. This box contains the tender hatch, reversing wheel (if the locomotive was originally shipped with it), rear deck fall plate, along with various surplus OEM screws and parts that were replaced by TRS.
  - Reattach the fall plate by; removing the hinge pin (bar) on the rear deck, aligning the holes in the fall plate with the corresponding ones on the rear deck, and reinserting the hinge pin.
  - The exhaust pipes may have moved off center during shipment, check to see that they are aligned with the center of the smoke splitter.
  - Included with the locomotive is a bottle of enamel touch up paint that is a factory match. This may need to be thinned with a lacquer thinner.

- New features on TRS-rebuilt AC-11/12's now include the ability to notch-up the valve gear, increasing efficiency of the engine, relocated bypass valve for easier access outside of the cab, modified lubrication system allowing for up to 4 hours of oil capacity, rebuilt cylinders, pistons, valves and valve gear, just to name a few items.
- This guide will review the above modifications and others that affect the day-to-day operations of your AC-11/12 model. A Haynes-style mechanical manual is being written and developed for extensive troubleshooting of the inner workings.

- Cab Modifications:
  Upon opening the roof to the cab, the observant user will notice additions and removals of items from the original backhead arrangement. These include:

  1. Bypass valve relocation
  2. Limiting valve removal
  3. Larger capacity lubricator (with or without metering)
  4. Gas tank heater valve
  5. Light switch

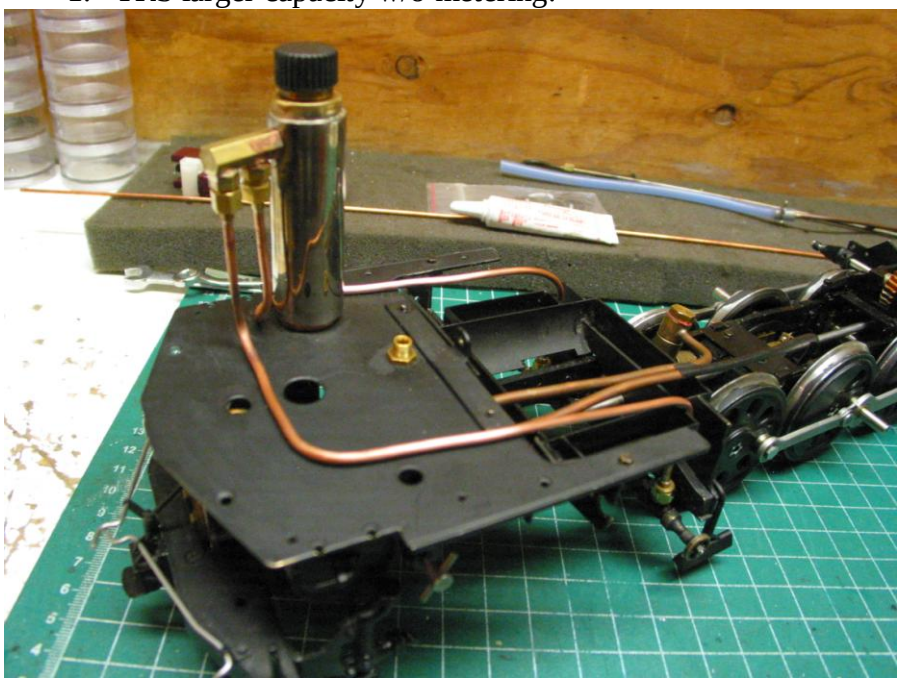


- Removal of the Cab (with lights installed):
  If your engine is equipped with lights and you need to remove the cab, follow these steps in order to safely remove the cab:
  - Remove the 4 (+) M2 x 4 pan head screws from the cab floor
  - Remove the 2 M1.7x 10 hex head screws from the back wall of the cab, which attach to the turret box on the boiler shell.
  - Remove the cab handrails
  - Carefully roll the engine over and remove the pilot truck
  - Locate the 4- pin electrical connector in the firebox area (2 white dots facing one another) and disconnect it.
  - Gently lift the cab off, you will see the 4 strand wire leading down the fireman's (LH) side of the boiler shell. Guide the wire out of the shell and remove the cab fully.
  - Replacing the cab follows these steps in reverse order. Make sure the white dots are facing the same sides.

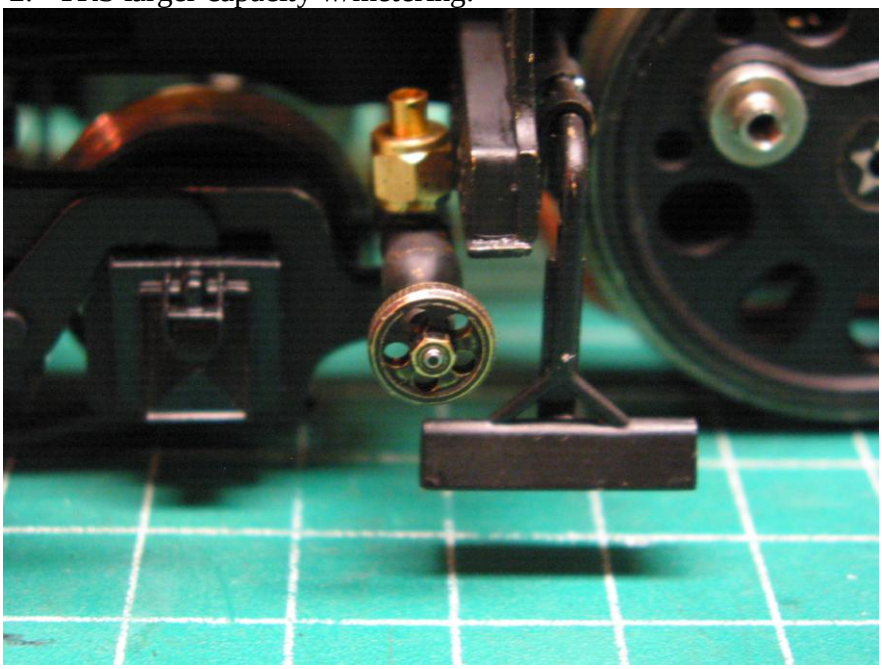
- Burner modifications:
  The standard Accucraft burners are notorious for being temperamental and become loud when the engine is under load. Your engine has been fitted with silencers in the form of screening inserted into the burner tubes, along with cotton filters behind the gas jets.
  - It is recommended that the filters be replaced every year, dependent on the amount of hours per year the engine is run. The filter is simply half of a cotton swab tip (q-tip) that is inserted into the gas jet holder.
  - Reseal the threads of the jets with permatex brand (or equivalent) high temperature thread sealant, readily available in any automobile store. It comes in a small white tube with orange lettering on it.

- Oil system modifications:
  As delivered, the stock oil system has a running duration of 25 minutes, which is a far cry from the near 60 minute running time the engines do on one filling of fuel. The oil system is also inserted into the steam feeds before the steam is introduced into the superheater, which results in overheating of the oil, causing the oil to thin and loose lubrication properties. In turn, this can cause wear on the valves, port faces, cylinder bores and can lead to premature piston ring failure.

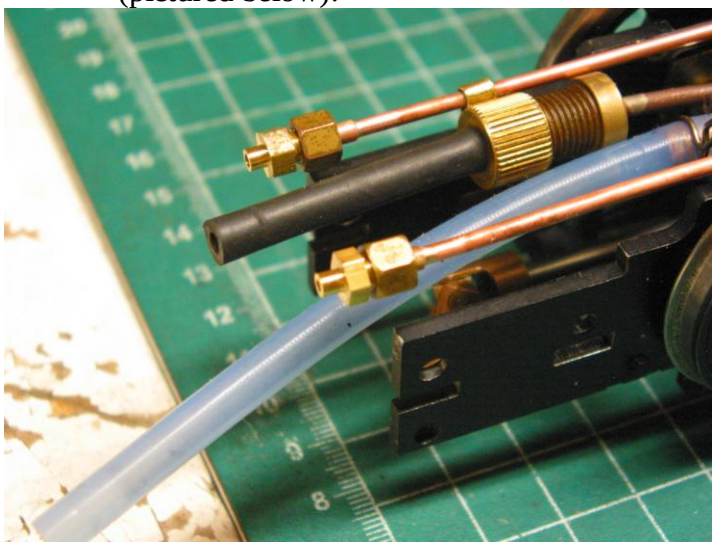
  TRS modified lubricators come in two styles:
  1. TRS larger capacity w/o metering:



2. TRS larger capacity w/metering:



- ❖ Both styles have individual feeds running to each engine and are introduced at the steam chest, bypassing the superheater (pictured below):



- <u>Adjusting the Metered Lubricator:</u>
  - TRS AC-11/12 locomotives that are equipped with a metered larger capacity lubricator have two metering valves located near the blow down spreaders on the front engine (pictured above).
  - The meter located on the fireman's side of the front engine (pictured above) controls the oil flow to the front engine. This side of the

locomotive is also where the bypass valve is located for the axle pump return.

- The meter on the Engineer's side of the front engine (same side as the lubricator) controls the oil flow to the rear engine.
  - **Above all else, this metering valve <u>must maintain a consistent oil flow</u> to the rear engine.**
    *****Failure to do so will result in premature failure of the mechanical steam pivot o-rings!*****

- Experimentation will show the operator how much oil is needed to keep the valves and pistons amply lubricated without making a mess on top of the locomotive.

- As delivered from TRS, the metering valves are preset for 2 hours of continuous running between oil fillings. Once the engine has been fully broken in, the metering valves can adjusted to provide 4+ hours of running time before the lubricator needs to be serviced.
  - Again, the <u>REAR engine meter must never be turned off</u> as the mechanical steam pivot is lubricated through a common oil feed. *****Failure to do so will result in premature failure of the mechanical steam pivot o-rings!*****

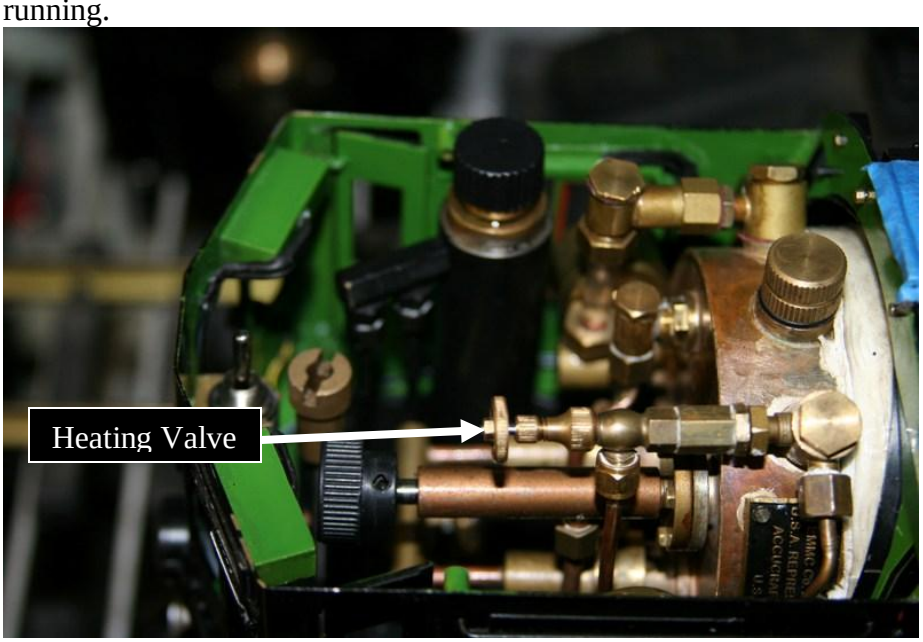
- <u>Bypass valve relocation:</u>

  As supplied from the factory, the bypass valve is inconveniently located inside the cab, and requires the operator to lift the cab roof in order to make an adjustment. This can cause damage to the paint on the silver front as well.

- To allow for easy access and on-the-fly adjustments of the bypass, we have relocated the stock bypass valve to below the footplate on the fireman's side of the locomotive. The original check valve, which was combined with the bypass valve, has been removed and a new 90° check valve has been put in the factory position.
  The feed pipes are modular and have three joints from the bypass to the check valve: at the bypass, a bulkhead fitting on the footplate, and a short connection pipe to the check valve from atop the footplate. This is to allow for ease of disassembly and will be covered with much detail in the disassembly manual.

  - Operation of the bypass valve is unchanged. To the left (front of the engine, unscrewing the valve) will allow water to return to the tender, to the right (tightening, or turning towards the smokebox) will divert all the water into the boiler. Check under the tender fill hatch to see exactly how much water is being returned with each axle pump stroke.

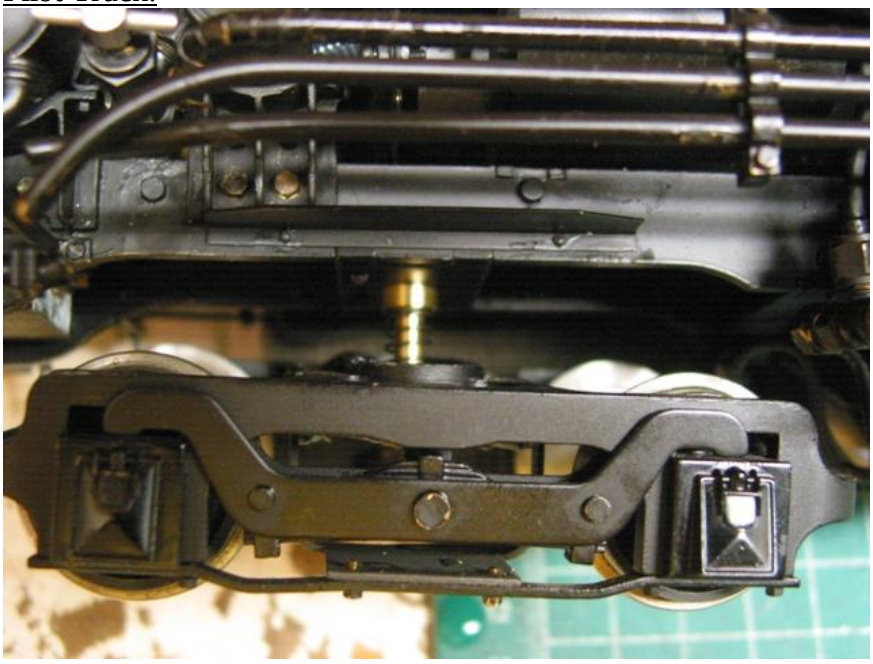
- Tender Heating system:
  The standard AC-11/12 has no way of keeping the gas tank warm, which in turn keeps the fuel pressure up allowing for a more efficient burn and better running.

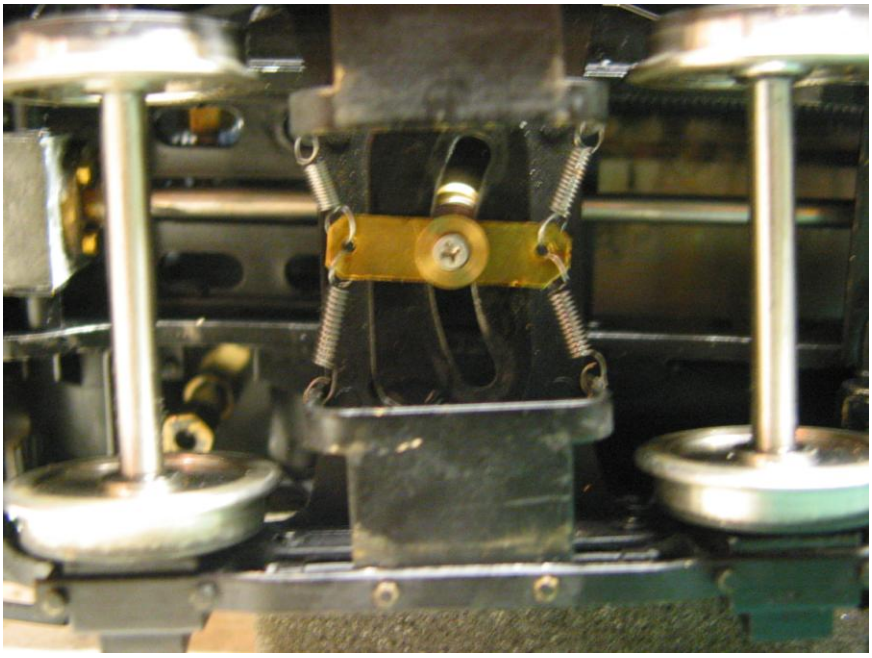


If your locomotive has been fitted with a tender heater, it is a valve that taps steam from the boiler and sends it in to the tender through a copper heating coil which is wrapped around the gas tank.

- While running the locomotive, you will notice the tender water becoming colder than atmospheric temperature.
- Open the heating valve; you will hear a buzzing sound coming from the tender, which indicated steam is flowing to the tender tank.
- When operating, as the gas pressure drops, open the valve for a short period of time to regain the pressure loss.
- **DO NOT run the heater constantly! The gas tank is not designed to be constantly heated.**
- Periodically check the temperature of the water tank, it should be lukewarm, not overly hot.

- Pilot Truck:

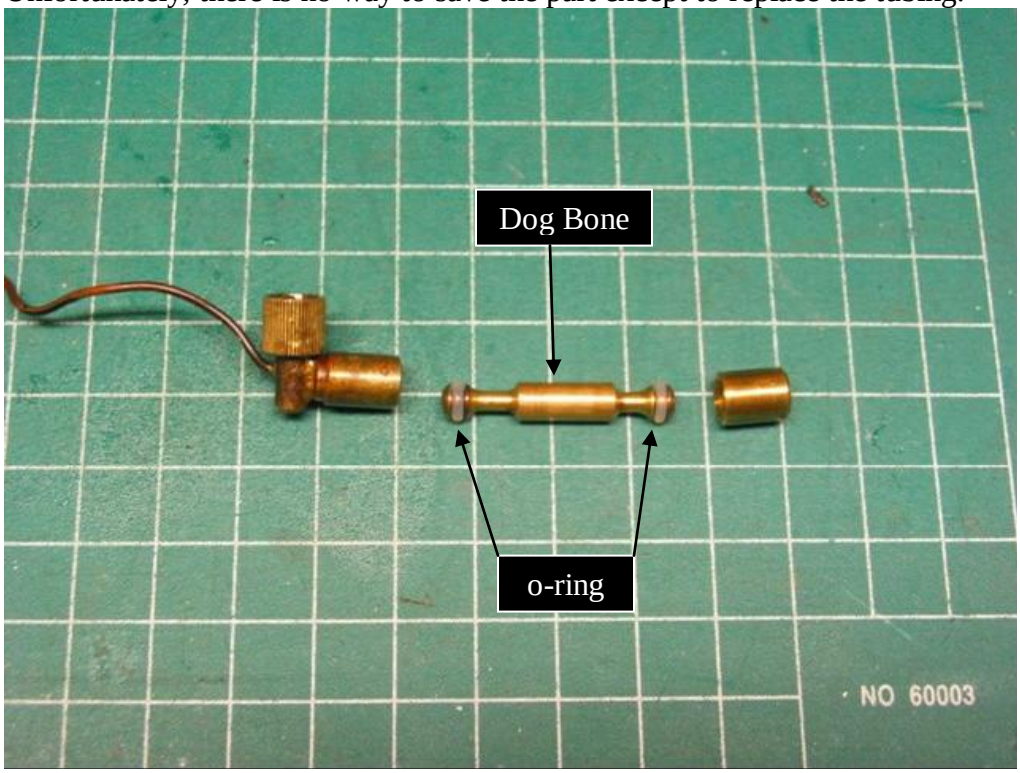




The pilot truck has been fitted with a rigid post, which allows more travel and strength over the original shoulder screw.

- Also fitted is a centering spring device to allow the pilot truck to guide the engine through the curves and rough track.
- To remove the pilot truck, simply remove the single (+) 2mm countersink Philips head screw and washer. The centering spring rig will stay in place through tension.

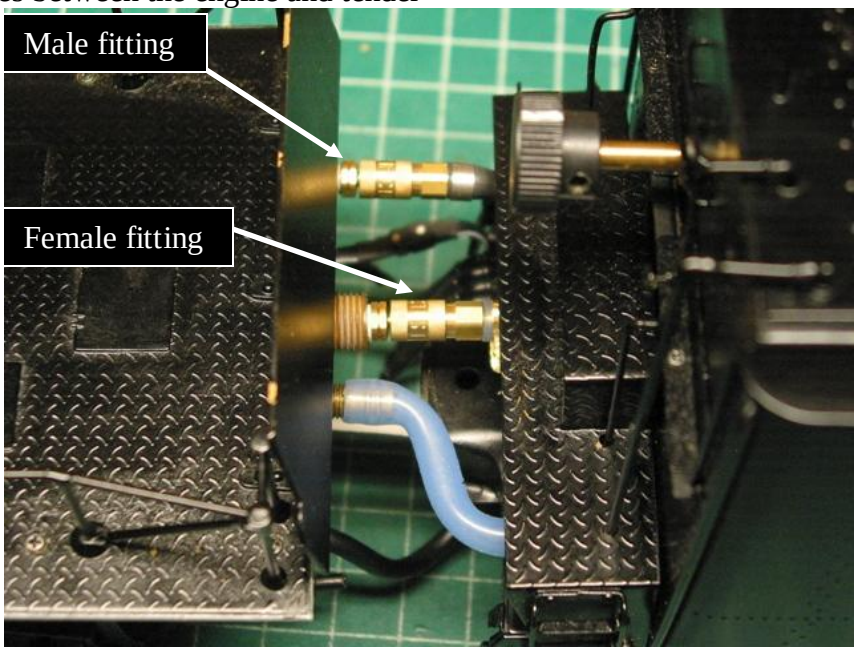
- Mechanical Steam Pivot:
  The OEM part as supplied by Accucraft can become distorted and fail. Unfortunately, there is no way to save the part except to replace the tubing.



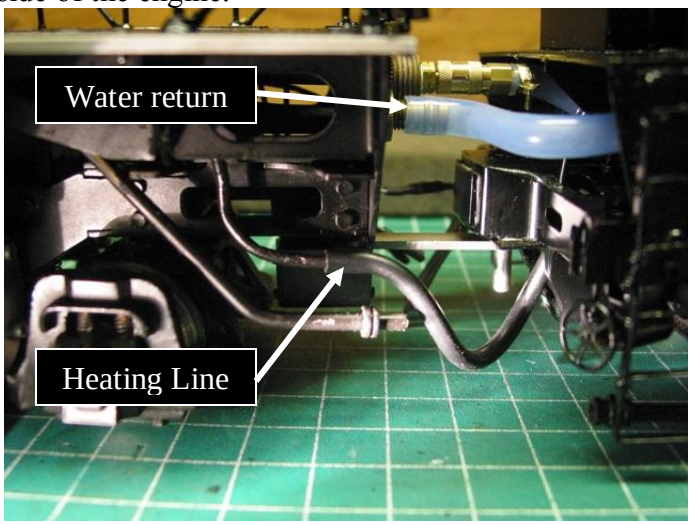
  - TRS upgrades the flexible tubing with a mechanical steam pivot, nicknamed the "dog bone". It is a three piece unit that consists of one moving part.
  - For engines so equipped with the "dog bone", there are two o-rings that will require periodic service. One o-ring is located on each end of the dog bone. The service life of the o-rings is a 1.5-2.5 years, dependent on the frequency of use. Spare rings have been included with your model and are available at TRS free of charge.

    - Replacing the o-rings:
      1. Remove the 1.6mm and 2mm (+) Phillips pan head screws from the rear (monkey) deck
      2. Remove monkey deck
      3. Locate the pivot cup attached to the rear steamchest
      4. Unscrew the large straight-knurled nut on the rear steamchest
      5. Remove the rear steam cup and attaching nut
      6. Remove Dog Bone
      7. Replace o-rings
      8. Coat with steam oil or grease prior to reinserting dog bone
      9. Reassemble (in reverse order)

- Tender Connections:
  Your engine has been fitted with quick disconnect fittings on the gas and water feed lines between the engine and tender



- How to use Rectus® style Quick-Disconnects:
  - To *connect*: push the female fitting over the corresponding male fitting until you feel and hear a click which indicates the fittings are seated.
  - To *disconnect* follow the following steps:
    1. Pull back on the knurled outer sleeve on the female fitting
    2. Disconnect the fittings by pulling back on the female fitting while holding back the knurled sleeve.
- Two slip fittings for the water return and steam heating line (if equipped) have been fitted.
  - The heating line is a black tube that connects below the footplate on the fireman's side of the engine.



- Lighting (if equipped):
  For the added bit of realism, TRS offers a full complement of cab lighting for the AC-11/12 locomotives. If your engine is so equipped, below are a few tips and maintenance items:

  - Light operation:
    - A DPDT center off throw switch is located directly behind the center pillar on the cab front. Refer to the photo on Page 2 for location (item #5 on the photo)
    - Moving the switch one way from off (right to left) will light up the LED train number boards, engine number boards (flanking the headlight), and cab interior lighting. This position would have been used while sitting in the yard or when double heading a train.
    - The opposite position of the switch lights up the above LEDs as well as the incandescent headlight and marker light bulbs. This is to be used when running point on a train.

  - Battery location:
    - There are 4 AAA batteries located underneath the center of the tender, between the trucks. The incandescent lamps are on one 2 AAA pack and the LEDs are on the other 2 AAA pack.
    - The service life of the incandescent is around 1.5-2 hours of constant use. The bulbs will begin to dim after an hour of constant use.
    - The LED lighting will last upwards of 4 hours without needing battery replacement.

  - Connections:
    - Between the engine and the tender there is a 4 pin-4 wire electrical connector with a white dot on each end.
      - These white dots must remain on the same side to maintain correct polarity!
    - Underneath the engine, where the connections between front and rear engine are located, there is another 4 pin-4 wire connector that allows the rear engine to be removed without any tether.

- Enjoy your new and improved TRS AC-11/12. The engine has been made to be as maintenance free as possible and to be consistently reliable.