

## SECTION TWO-

### Accucraft Cab Forward (AC-12) Upgrade: Dog Bone Steam Joint

THANKS TO THE WORK OF GORDON WATSON, RYAN BEDNARIK AND JEFF REDEKER; THIS DIY SHEET CAN HELP OWNERS OF THE ACCUCRAFT AC-12 UPGRADE THEIR FINE STEAM LOCOMOTIVES IN AREAS THAT CAN IMPROVE PERFORMANCE AND/OR PREVENT PREMATURE FAILURES.

THERE ARE SEVERAL MECHANICAL AND STRUCTURAL AREAS ON THE ACCUCRAFT CAB FORWARD THAT COULD BE IMPROVED. THESE IMPROVEMENTS WOULD BE NECESSARY FOR THE BETTERMENT OF RUNNING CHARACTERISTICS, OVERALL FUNCTIONING AND PREVENTATIVE OF PREMATURE WEAR AND TEAR. BASED ON THIS PREMISE WE OFFER A SERIES OF KEY AREAS THAT WILL ENHANCE YOUR AC-12 FOR THE LONG TERM: CROSSHEAD AND GUIDE, REAR ENGINE FLEX JOINT, CYLINDERS/PASSAGEWAYS, COMBINATION LEVERS AND SUSPENSION.

IF YOU HAVE ANY QUESTIONS FEEL FREE TO POST THEM HERE OR CONTACT US AT:

[WWW.REALSTEAMSERVICES.COM](http://WWW.REALSTEAMSERVICES.COM)

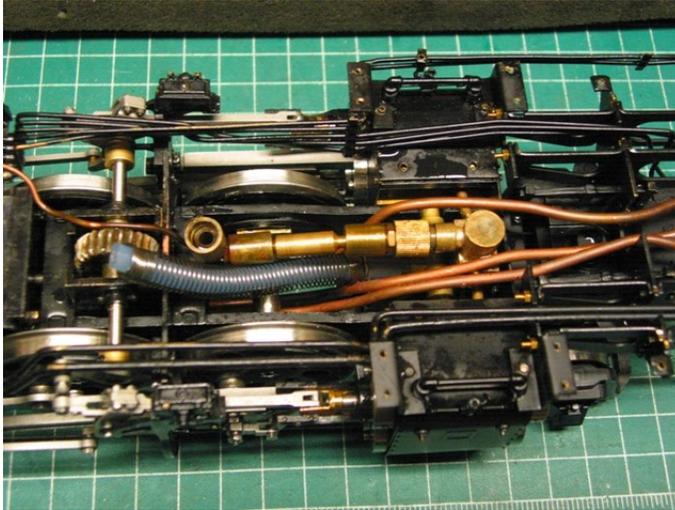
TR3SERVICES@GMAIL.COM

#### *Dog Bone flexible steam joint:*

THE OEM PART ARE SUPPLIED BY ACCUCRAFT CAN BECOME DISTORTED AND FAIL. THE MOMENT OF FAILURE CAN BE SEEN IMMEDIATELY UNDER THE SMOKEBOX WITH SMOKE, OIL, STEAM AND LOSS OF POWER TO THE ENGINE, COUPLED WITH A LARGE HISSING SOUND. UNFORTUNATELY, THERE IS NO WAY TO SAVE THE PART EXCEPT TO REPLACE THE TUBING. THE PHOTO BELOW SHOWS A DISTORTED AND MALFUNCTIONING LINE.



THE COMPLETED MECHANICAL PIVOT (HEREINAFTER KNOWN AS A DOG BONE) IS COMBINED WITH AN OIL LINE SEPARATED FROM THE SUPERHEATER TO AVOID COKING OF THE OIL AND PREMATURE FAILURE OF THE DOG BONE O-RINGS.



THERE ARE THREE COMPONENTS THAT MAKE UP THE DOG BONE FLEX JOINT:

THE PHOTO BELOW REFERENCE POINTS: TO THE LEFT IS THE 90\* CUP (WITH OIL LINE ATTACHED) THAT CONNECTS TO THE SUPERHEATER; CENTER IS THE DOG BONE THAT CHANNELS THE STEAM THROUGH THE SECOND CUP LOCATED ON THE VALVE CHEST TEE.



THE DOG BONE GENERAL INFORMATION:

STOCK- 1/4" BRASS ROD

LENGTH- 38 MM LONG

TAPER TO BALL ENDS- 3.2 MM

BALL END- 5.5 MM LENGTH

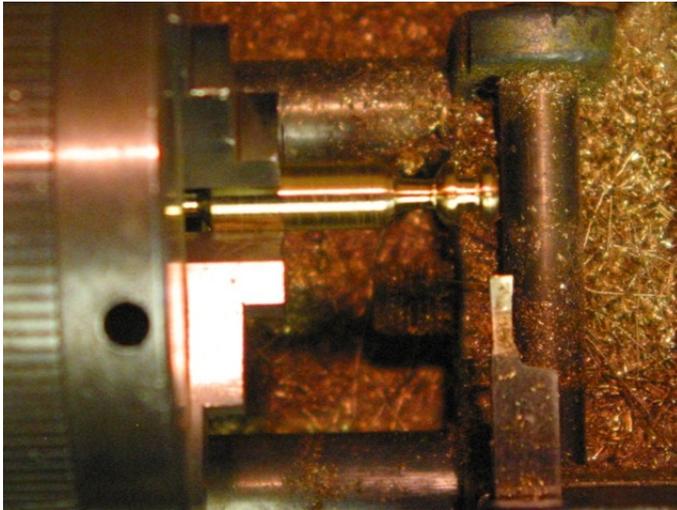
"O" RINGS\*- 3.0 MM X 2.0MM\*\*

PASSAGEWAYS- 2.0 MM ID ENTIRE LENGTH

\*BLACK FLUORIDE OR CLEAR SILICON O-RINGS SHOULD BE FITTED AS THESE PROVIDE THE LONGEST LIFE SPAN AND THE GREATEST RESISTANCE

\*\*PERIODIC INSPECTION OF THE O-RINGS IN THE DOGBONE FLEX JOINT IS RECOMMENDED TO KEEP TRACK OF THEIR WEAR RATE. REPLACE THE O-RINGS WHEN THE DOGBONE CAN SLIDE WITHOUT ANY RESISTANCE FROM ONE END OF THE CUP TO ANOTHER.

TURN FROM 1/4" STOCK TO DOG BONE UNIT:

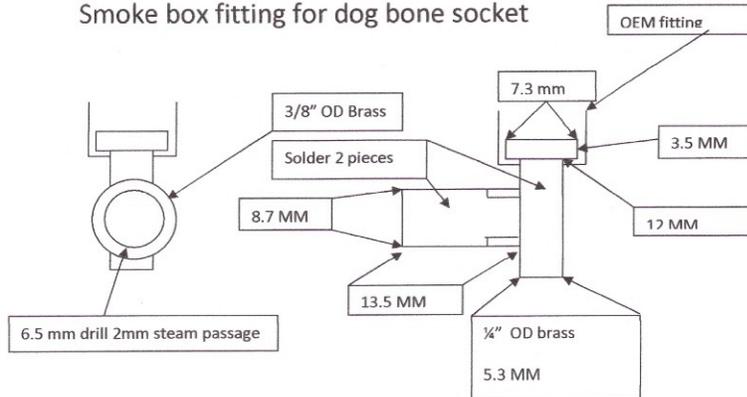


THE NEXT COMPONENT TO BE MADE IS THE 90\* CUP THAT RECEIVES THE SUPERHEATED STEAM AND OIL THAT IS PASSED THROUGH THE DOG BONE ONTO THE NEXT JUNCTION AT THE VALVE BLOCK.



GENERAL BUILDER SPECIFICATIONS FOR THE "90\*" CUP (RIGHT IN ABOVE PHOTO):

### Smoke box fitting for dog bone socket

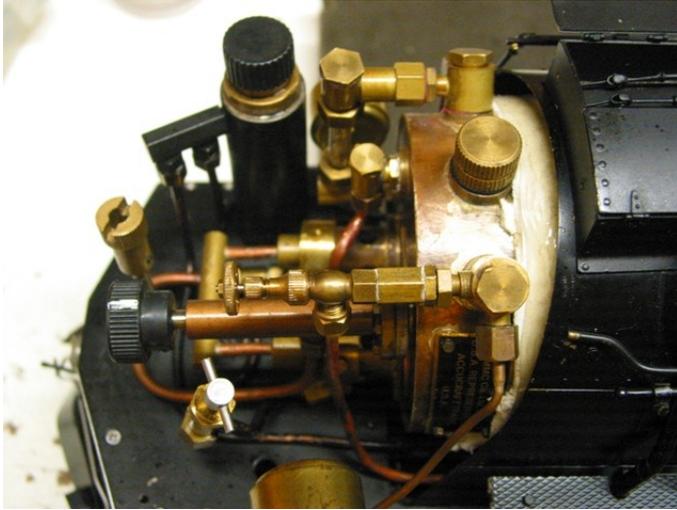


IT IS IMPERATIVE THAT WE NOTE ALL JOINTS MARKED FOR SOLDER SHOULD BE **Silver brazed** TOGETHER.

90\* CUP WITH OIL LINE IN THE PHOTO BELOW:



ONCE ALL THE COMPONENTS ARE FILLED THEN ANOTHER CONSIDERATION IS TO MODIFY OR METER THE LUBRICATOR TO ALLOW FOR BETTER OIL DISTRIBUTION TO EACH ENGINE. A SEPARATE FEED TO EACH ENGINE OUTSIDE THE SUPER HEATERS IS PREFERRED TO PROMOTE LONGER SUPERHEATER AND VALVE/PISTON SEAL LIFE. THE SEPARATE FEEDS ALSO ALLOW DIRECT INJECTION OF OIL INTO THE DOGBONE, KEEPING IT COOL AND ALLOWING THE O-RINGS TO STAY LUBRICATED, IMPORTANT WITH SUPERHEATED STEAM. NOTE THAT THE LUBRICATOR IN THE PHOTO BELOW WAS REBUILT WITH NEW PIPE (5/8" ID, 3/4" OD) THAT HAS A THINNER ID, ALLOWING FOR A LARGER CAPACITY:



THE FIRST RETROFIT OF THESE UNITS ONTO A CAB FORWARD WAS PERFORMED BY GORDON WATSON. THE PROTOTYPE UNIT HAS BEEN RUNNING SINCE AUGUST 2008 WITHOUT FAILURE AT MANY PUBLIC EVENTS (E.G. CABIN FEVER, TRAINFEST, ECLSTS).

NOW THAT WE HAVE GOTTEN THE STEAM AND OIL TO THE PROPER LOCATION WITH BETTER PASSAGE OPENING IT IS ON TO THE HEART OF THE LOCOMOTIVE: CYLINDERS AND VALVES.