

# COMANCHE GEAR



10340 REGENT CIRCLE ∞ NAPLES, FL 34109  
PHONE & FAX 239/593-6944 ∞ CELL 239/404-7524  
WWW.COMANCHEGEAR.COM

## NOSE GEAR DOORS ACTUATOR BRACKET ASSEMBLY REFURBISH

HERE ARE A FEW THOUGHTS TO CONSIDER IF YOU ARE HAVING A PROBLEM WITH THE NOSE GEAR DOORS RETRACTING PROPERLY ON YOUR 400; FUNCTIONALLY THIS WILL APPLY TO THE 2600 ALSO.

1) ONE ISSUE THAT WILL AFFECT THE DOORS CLOSURE IS THE SHIM BETWEEN THE CLEVIS AND THE LEFT REAR DRAG LINK. REMOVING A SHIM WILL FURTHER RETRACT THE NOSE GEAR AND THUS PULL THE DOORS FARTHER UP. ADDING A SHIM WILL CONVERSELY LESSEN THE RETRACTION OF THE NOSE GEAR INTO THE WHEEL WELL. NOTE THIS SECTION IN THE SERVICE MANUAL 6-56, C WHICH COVERS THIS ADJUSTMENT. THREE SHIMS MAXIMUM, NO MENTION OF MINIMUM SHIM REQUIREMENT; ONE COULD ASSUME THEREFORE ZERO SHIM IS ALLOWABLE. SEE FIGURE 17, #21 IN THE PARTS CATALOG; AND FIGURE 17 INSET ON PAGE 4 OF THIS DOCUMENT. IF YOU CHANGE THE SHIMS YOU MUST REDO THE NOSE GEAR **RETRACTION** PUSH-PULL ROD **PRELOAD** ADJUSTMENT.; A SOMEWHAT LENGTHY PROCESS.

2) THE NOSE GEAR DOOR ACTUATOR BRACKET ASSEMBLY, #11 BELOW, ORIGINALLY HAD A RUBBER PLATE AND RUB STRIP ATTACHED WHICH CONTACTS THE STRUT TUBE AS THE GEAR IS RETRACTED – SEE THE PHOTO OF THE ORIGINAL ON PAGE 3. THE GEAR RETRACTING ACTION CAUSES THE #11 ACTUATOR TO PIVOT, PULLING ON THE RODS WHICH ARE ATTACHED TO THE DOOR BRACKETS, AND THE DOORS ARE THUSLY PULLED CLOSED. IF THIS BRACKET ASSEMBLY IS DIMENSIONALLY COMPROMISED, GAINING COMPLETE DOOR CLOSURE WITH PRELOAD AS SPECIFIED IN THE SERVICE MANUAL CAN BE IMPOSSIBLE. AN ENGINE OIL LEAK OR OIL CHANGES DRIPPING ONTO THE RUBBER SHOE WILL DETERIORATE THE RUBBER; LIKEWISE AGE AND ELEVATED TEMPERATURE. BOTH OF THESE CONDITIONS ARE CONTRIBUTING FACTORS.

IN TRYING TO DIAGNOSE THIS PROBLEM IT WOULD AT FIRST APPEAR THAT THE RODS #17 ARE TOO LONG. HOWEVER IF YOU ATTEMPT TO SHORTEN OR BEND THE RODS TO ACCOMMODATE, THEN THE DOORS WILL BE TOO CLOSE TO THE GEAR FORK WHEN THE GEAR IS IN THE EXTENDED POSITION, AND THE DOORS MAY RUB ON THE FORK DURING RETRACTION. IF YOU EXPAND YOUR DIAGNOSTICS A BIT, THERE ARE OTHER FACTORS TO CONSIDER. PIPER DID A FINE JOB OF ENGINEERING THIS SYSTEM 45 YEARS AGO AND WHEN ALL IS RIGHT IT WORKS THE WAY IT WAS INTENDED. THE DETERIORATED ACTUATOR ASSEMBLY CAN BE RESTORED TO ITS ORIGINAL DIMENSIONAL INTEGRITY AND THINGS SHOULD AGAIN BE NORMAL.

THE [SERVICEABLE] ALUMINUM CASTING IS PAINT STRIPPED, GLASS BEAD BLASTED, CLEANED AND ALODINE® TREATED BEFORE APPLICATION OF ZINC CHROMATE PRIMER AND BLACK EPOXY FINISH. A NEW 70A DUROMETER HARD RUBBER “SHOE” IS THEN FITTED, FOLLOWED BY A TEFLON® RUB STRIP INSTEAD OF THE ORIGINAL MATERIAL. NEW HARDWARE IS USED THROUGHOUT.

THE NEXT DETAIL IS TO SIMILARLY TREAT THE #2 DOOR BRACKETS; THEY ARE REFINISHED IN GLOSSY WHITE. NEW PHENOLIC DAMPENER STRIPS ARE RIVETED TO THESE BRACKETS AFTER PAINTING. THESE DAMPENER STRIPS ARE SUPPOSED TO CONTACT THE RODS WHEN THE DOORS ARE FULLY OPEN.

I ALSO PROVIDE CADMIUM PLATED DOOR RODS #17, COMPLETE WITH NEW BALL JOINTS #18.

THE CHARGE FOR THIS EXCHANGE SERVICE IS \$175.00 INCLUDING THE CADMIUM PLATED RODS AND 4 NEW BALL JOINTS; ALSO INCLUDES ALL NEW HARDWARE FOR A GOOD-LOOKING INSTALLATION.

I HAVE ONLY ONE “KIT” AVAILABLE. I’LL SHIP IT TO YOU; PERFORM THE INSTALLATION AND RETURN YOURS.

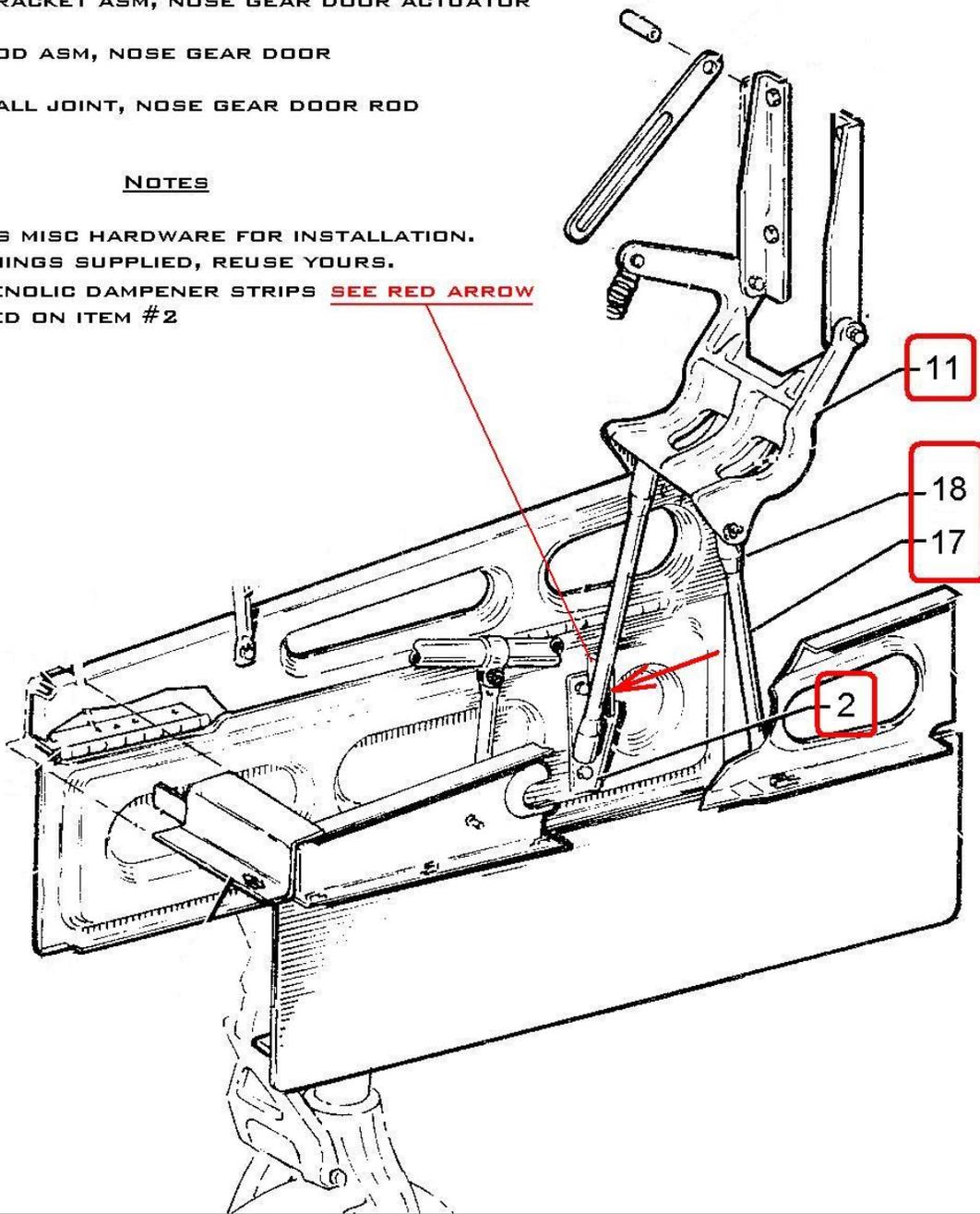
NOTES: ONLY STRAIGHT AND ORIGINAL LENGTH RODS 6.75 INCHES ARE ACCEPTABLE FOR EXCHANGE. THE #2 BRACKETS YOU RETURN MUST NOT HAVE ADDITIONAL HOLES DRILLED IN AN ATTEMPT TO SOLVE THIS PROBLEM DESCRIBED ABOVE; \$20 EACH BRACKET; \$10 EACH ROD IF THEY ARE NOT ACCEPTABLE. KEEP THE OLD BALL JOINTS AND HARDWARE. YOU’LL NEED TO REUSE THE 2 BUSHINGS LOCATED AT THE AN3 BOLT PIVOTS – SEE THE PHOTO ON THE BOTTOM OF PAGE 3.

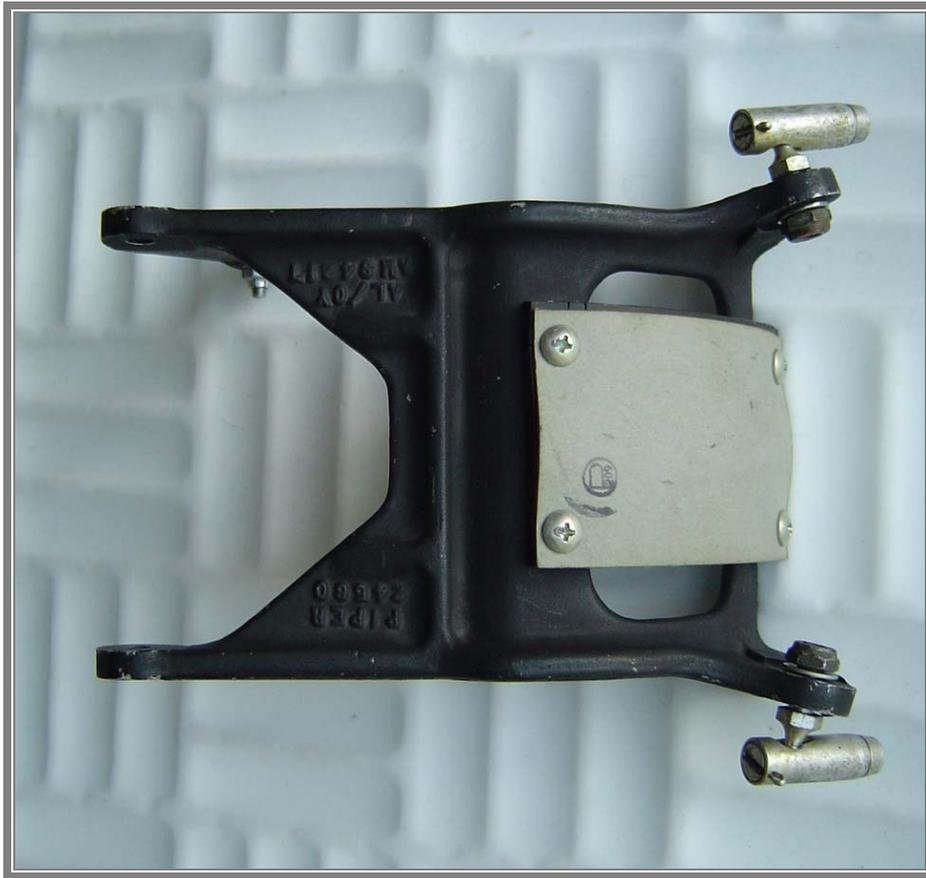
IF YOUR AIRCRAFT HAS BEEN ON ITS BELLY OR ENDURED OTHER REPAIRS AFFECTING COMPONENTS IN THIS REGIME, IT IS POSSIBLE THAT YOU MAY NEED SOME "ADJUSTMENTS" TO REGAIN DIMENSIONAL INTEGRITY AND PROPER DOORS OPERATION. THINK ABOUT IT; IF THE BOTTOM PLANE OF THE LOWER COWL ISN'T WHERE IT SHOULD BE, THAT WILL AFFECT THE DOORS CLOSURE. I CAN'T ACCOMMODATE ANY ADJUSTMENTS OUTSIDE OF THOSE MENTIONED [SEE #1 ABOVE] UNLESS YOU TELL ME EXACTLY WHAT YOU REQUIRE.

- # 2 BRACKET ASM, NOSE GEAR DOOR
- #11 BRACKET ASM, NOSE GEAR DOOR ACTUATOR
- #17 ROD ASM, NOSE GEAR DOOR
- #18 BALL JOINT, NOSE GEAR DOOR ROD

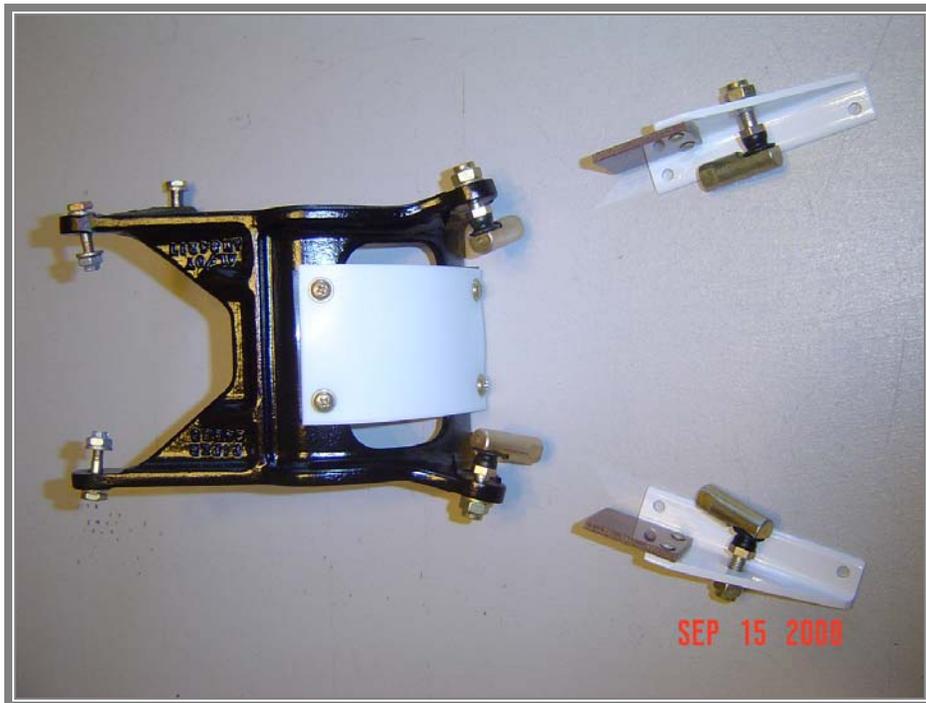
NOTES

INCLUDES MISC HARDWARE FOR INSTALLATION.  
NO BUSHINGS SUPPLIED, REUSE YOURS.  
NEW PHENOLIC DAMPENER STRIPS SEE RED ARROW  
INSTALLED ON ITEM #2





**NEW OLD STOCK ACTUATOR BRACKET ASSEMBLY.**



**BRACKET ASSEMBLIES REFURBISHED; CADMIUM PLATED RODS AND COMPLETE HARDWARE COMPLIMENT NOT SHOWN.**

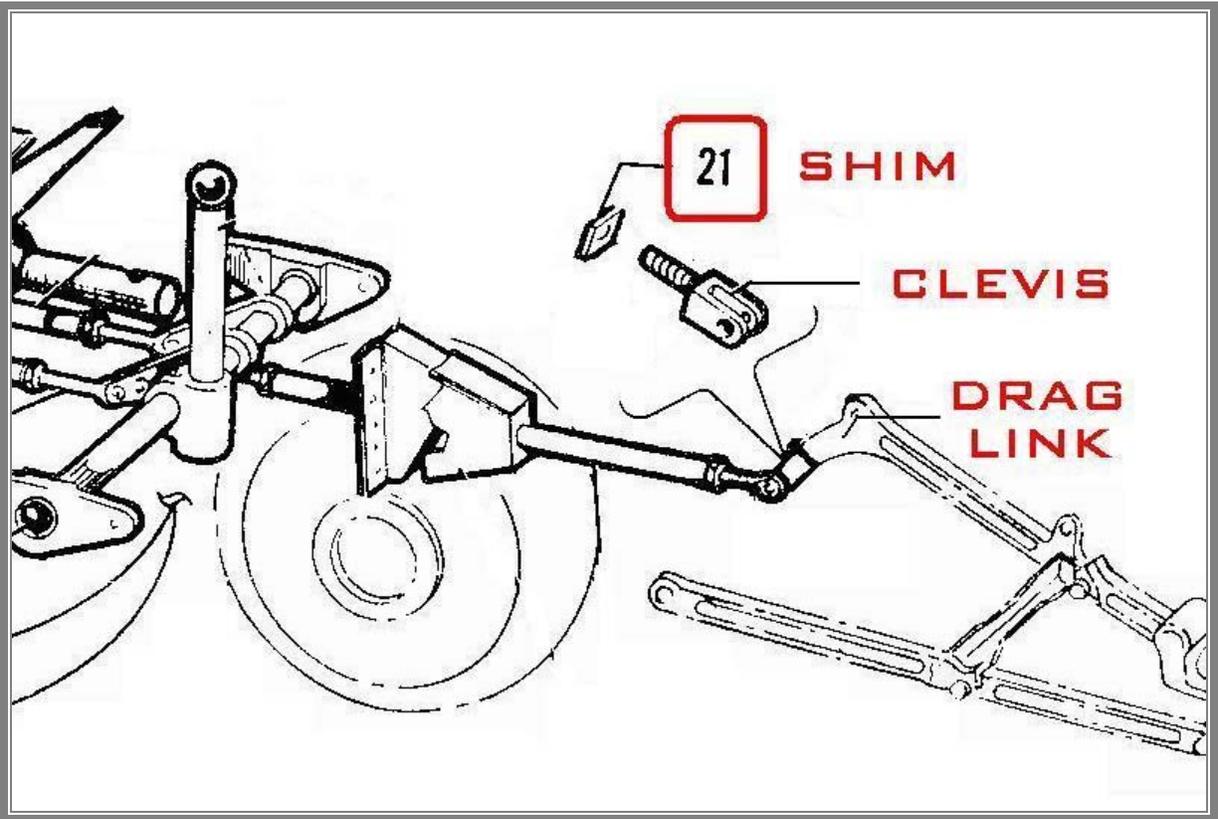


FIGURE 17, ITEM# 21