



# **OPERATING AND SERVICE MANUAL**

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**Champion Aircraft Corporation**

**Osceola**

**Wisconsin**

## INTRODUCTION

### GENERAL:

This Manual is provided to the Model 7EC and 7FC Champion owner for service and parts information. It contains a complete parts breakdown of all the major assemblies and installations on the aircraft. Servicing instructions are detailed with the parts breakdown for easy reference to the aircraft maintenance.

### MAINTENANCE:

The Champion is designed and assembled so that proper routine care and maintenance will assure long life to the aircraft.

In the event that damage is sustained or that parts are to be replaced due to normal wear, be sure that only Champion parts are used. The manufacture of parts using the same dies and materials as the original approved parts assures a proper fit and continued satisfactory and safe operation.

### TAXIING:

When taxiing downwind with the Tri-Traveler Model, it is advisable in strong and gusty winds to taxi slowly with the stick well forward. Use particular care when turning from a downwind to a cross wind position. When a quartering tail wind is experienced, keep the aileron nearest the direction from which the wind is blowing in a down position. With a quartering tail wind always keep the stick directly away from the wind direction.

Always face directly into the wind when "running-up" the engine. Facing the wind tends to eliminate torque-quartering wind effects and aids engine cooling at high RPM.

## HOW TO ORDER PARTS

When ordering parts for your Champion aircraft, observance of the following instructions will assure correct parts shipments with a minimum of errors and delays:

1. Specify the Airplane Model (7EC or 7FC) and Serial or Registration Number.
2. Specify the part number, name, type, left or right and quantity required. A description of the part and its location will aid in identification and minimize misinterpretation.
3. Specify the method of shipment - Freight, Express, Air Express, Air Mail, Parcel Post or Will Call. The Company reserves the right to ship the most suitable way.
4. Place your order with your nearest Champion Salesman or order direct from the factory.

### SHORTAGES

All shipments are checked before leaving the Factory Shipping Department to prevent errors and shortages. Shipments should be checked against the accompanying Packing Slip immediately upon receipt of the parts. All claims for shortages should be made within three days after receipt of the order.

### RETURNED PARTS

No parts should be returned without the factory's written permission. Material returned without notice will be held at the owner's risk for thirty (30) days and will then be disposed of as seen fit. Transportation charges on returned items must be prepaid or the shipment will be refused.

### TRANSPORTATION DAMAGES

Inspect all parts upon receipt. Damages to parts in transit must be filed as a claim against the carrier. Have the claim agent inspect the damage or have the carrier make a note of same.

### WHERE TO ORDER PARTS

Order the desired parts from your area salesman or direct from the factory parts department.

#### **FACTORY ADDRESS:**

Champion Aircraft Corporation  
Osceola, Wisconsin

Telephone: Osceola, Wisconsin ST 4-2141

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## GENERAL DESCRIPTION

The CHAMPION is a two place, tandem, high wing monoplane. Basic fuselage construction is welded tubing with fabric covering. The wings are composed of two wooden spars with aluminum alloy ribs and fabric covering. The wing leading edges are covered with aluminum sheet to provide a more efficient airfoil.

Power is supplied by a 95 H.P. engine and fixed pitch propeller. Engine vibrations are dampened by rubber mount bushings.

Unrestricted vision is attained through the use of a one piece windshield plus large door and rear seat windows. The 7EC model provides greater forward visibility by employing the tricycle gear arrangement.

Basically the CHAMPION is a conventional three-control aircraft. The dual control system provides smooth and non-fatiguing control. Brake pedals are provided for both front and rear occupants. A trim tab on the left elevator compensates for load differences and provides for hands off flight. The trim tab control is conveniently located above and between the front and rear seats. Engine controls are readily accessible from both the front and rear seat. Concealment of cabin control cables provides greater cabin comfort. A large baggage compartment is located behind the rear seat to accommodate luggage and other items.

The "No Bounce" oleo landing gear system is provided in both 7EC and 7FC models. Ease of ground handling is assured by a steerable leaf spring tail wheel on the 7EC model, and a steerable nose wheel on the 7FC model. The 7FC model is equipped with hydraulic brakes which are also offered as optional equipment on the 7EC. Tie down rings are incorporated at the wing strut attachment point for securing to the ground.

The 7EC and 7FC models are the latest versions of the reliable 7 series CHAMPIONS. These models include increased gross weight, higher H.P., improved landing gear, and the addition of an electrical system. The 7FC model offers the added versatility of tricycle gear construction. Ski and float installation are available and adaptable to both Models.

SPECIFICATIONS AND PERFORMANCE DATA

ATC 759

AIRPLANE DIMENSIONS:

	<u>7EC</u>	<u>7FC</u>
LENGTH	21' 8"	21' 8"
HEIGHT, OVERALL (three point)	7'	8' 8"
HEIGHT, LEVEL	8' 8"	8' 8"
WING SPAN	35' 2"	35' 2"
ASPECT RATIO	7.25	7.25
WING CHORD	60"	60"
STABILIZER SPAN	10' 2"	10' 2"
WHEEL TREAD (STATIC)	70"	70"
WHEEL BASE (STATIC LEVEL)	16'	56.5"
STABILIZER INCIDENCE	-5 Deg.	-5 Deg.
WING DIHEDRAL	2 Deg.	2 Deg.
WING INCIDENCE	1 Deg.	1 Deg.
FIN OFFSET	1" left of C.L.	1" left of C.L.

WEIGHTS:

EMPTY WEIGHT (With electrical system)	880 lbs.	970 lbs.
GROSS WEIGHT	1450 lbs.	1450 lbs.
USEFUL LOAD	630 lbs.	540 lbs.
WING LOADING	8.5 p.s.f.	8.5 p.s.f.
POWER LOADING	16.1 lbs./HP	16.1 lbs./HP
BAGGAGE	50 lbs.	50 lbs.

PERFORMANCE:

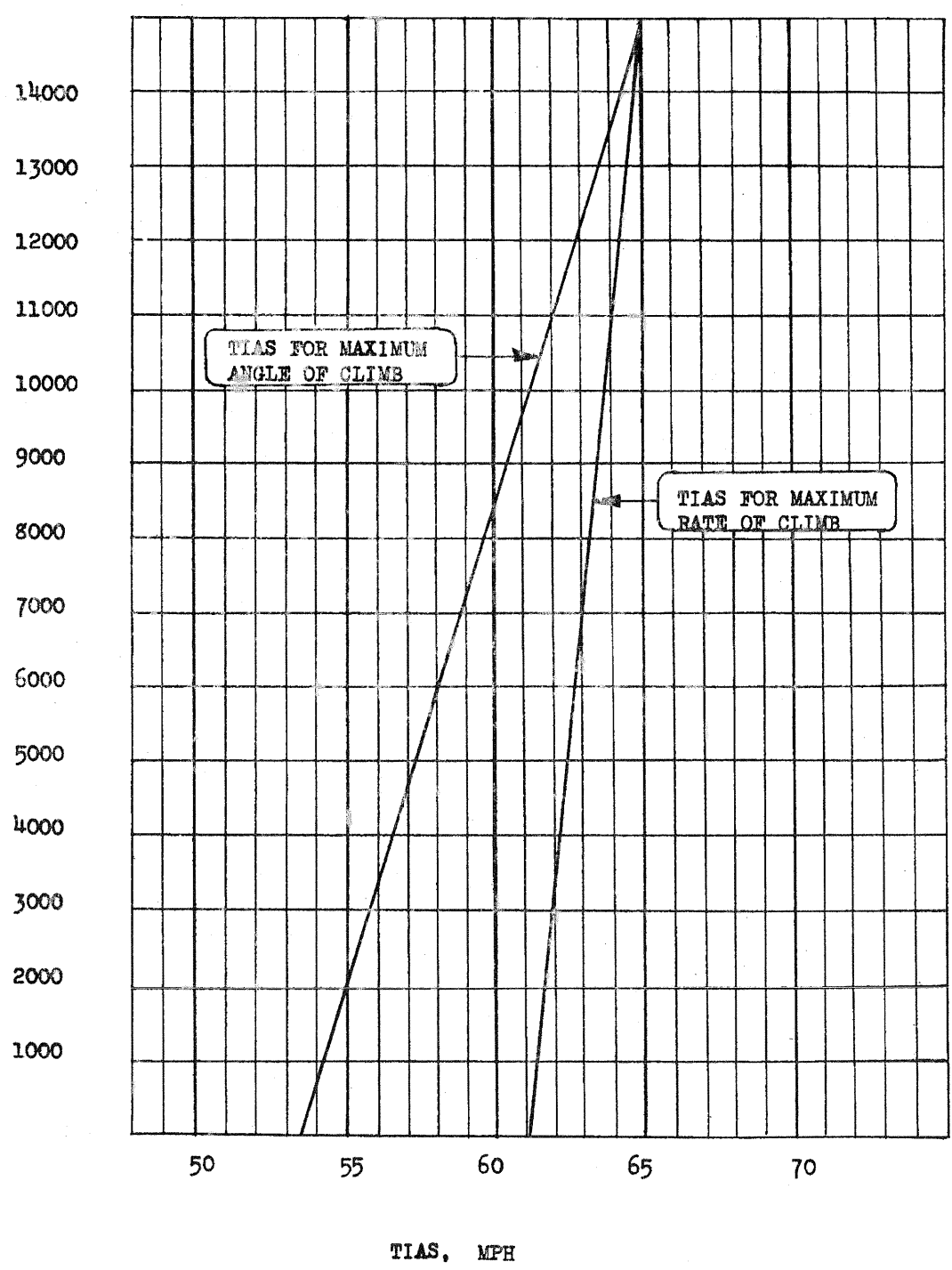
CRUISING SPEED	112 mph	108 mph
MAX. SPEED	135 mph	135 mph
LANDING SPEED	40 mph	40 mph
RATE OF CLIMB	700 f.p.m.	700 f.p.m.
FUEL CAPACITY	18 or 26 gal.	26 gal.
CRUISING RANGE	350-450 miles	450 miles

PROPELLER LIMITS:

(At full throttle setting)	2350 Max. allow. static rpm
	2150 Min. allow. static rpm

BEST AIRSPEED FOR CLIMB

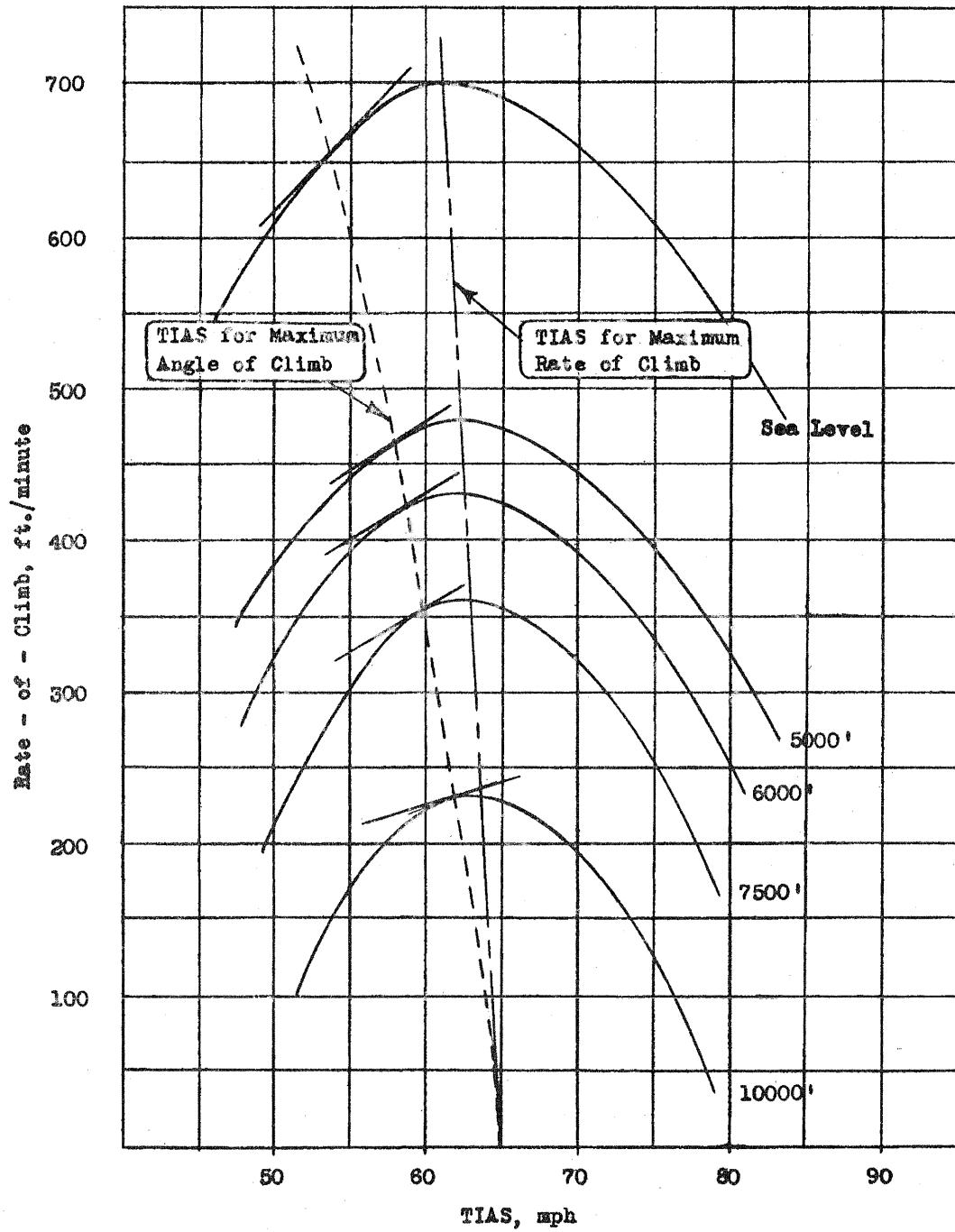
Approximate 7EC and 7FC Performance at 1450 lbs. (Full Throttle)



RATE - OF - CLIMB VS AIRSPEED AND ALTITUDE

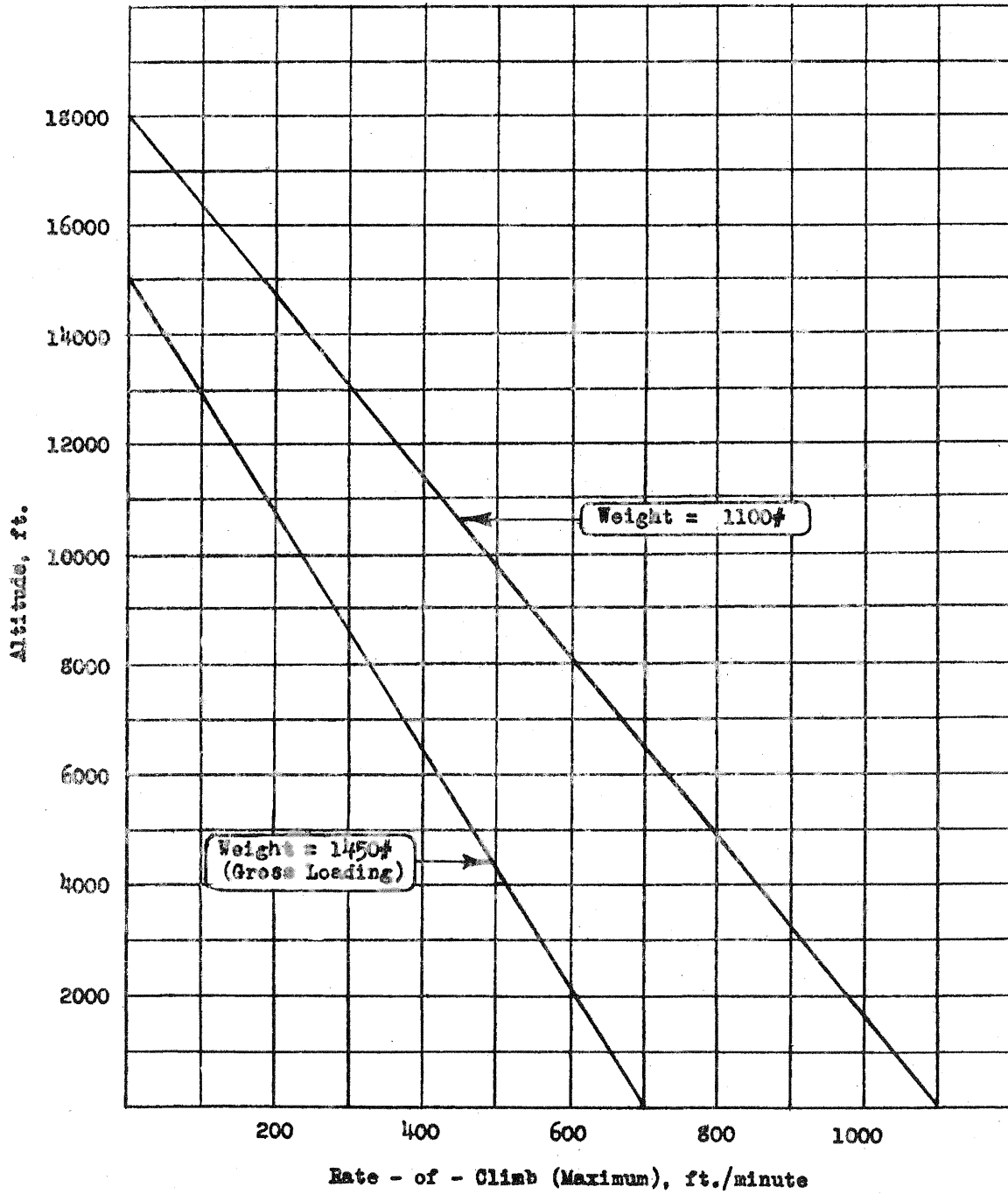
Approximate  $\gamma_{EC}$  and  $\gamma_{FC}$  Performance with  
McCaughey 1B90-CM7343 Propeller, at 1450# load.

(Full Throttle)



CLIMB VS ALTITUDE

Approximate 7EC and 7FC Performance with  
McCaughey 1B90-CM7343 Propeller, at 1450# load.  
(Full Throttle)



## SAFETYING

The word "safetying" is a shop term universally used in the aircraft industry. Briefly, safetying is defined as "Securing by various means any nut, bolt, or turnbuckle on the aircraft so that vibration or rotation will not cause it to loosen during operation."

Three basic methods are used in safetying; safety wire, cotter pins, and self-locking nuts or retainer washers and pal nuts.

Wire, either soft brass or steel, is used on cylinder studs, control cable turnbuckles, and engine accessory attaching bolts.

Cotter pins are used on airplane and engine controls, landing gear and tail wheel assemblies, or any other point where a turning or actuating movement takes place.

Self locking nuts or washers are used only on fairing attachments, or other non-moving components of the airplane.

Self locking nuts are secured with fibre inserts at the inside top of the nut. This lock nut should be replaced any time it is removed from the bolt.

Three types of lock washers (external spider, internal spider, and split types) are used at points on non-moving parts.

Pal or speed nuts include designs which force the nut thread against the bolt or screw thread when tightened. These nuts should never be used over again and should be replaced with new when removed.

**CAUTION:** In the event any safetying should be replaced on the aircraft, it should be inspected by a licensed aircraft or engine mechanic. Substitution of any one of the three methods described above, one for another, is not permissible.

LEVELING:

Level in fore and aft direction by using the front window sill or any portion of the cabin floor as a reference for a bubble level.

WING RIGGING:

DIHEDRAL - The plus 2° angle of dihedral is fixed by the length of the front strut.  
ANGLE OF INCIDENCE - The plus 1° angle of incidence is fixed in the manufacture of the airplane, at the wing root fittings on the fuselage. The angle of incidence at the rib nearest the strut point attachment fitting of the wing may be corrected to agree with the angle of incidence at the root, by adjusting the screw adjustment at the lower end of the rear strut where it attaches to the front strut. This provides zero washout.\*

AILERON RIGGING:

Adjust the Aileron Push Rod (#1-2341) to obtain:  $27\frac{1}{2}^{+0}_{-2}$  degrees up travel  
 $19^{+0}_{-2}$  degrees down travel

Adjust turnbuckles to obtain 22 -28# cable tension.

ELEVATOR RIGGING:

Place protractor so both ends of the level are resting on fabric supported by metal. Check the travel on each elevator, near mid-span. The protractor readings (with reference to surfaces, NOT to true chord lines) should be:

$+0$   
 $23-2$  degrees up travel  
 $+2$   
 $25-2$  degrees down travel

Adjust turnbuckles to obtain 45-55# cable tension.

RUDDER RIGGING

The travel is set at the factory, and is not adjustable. The rudder cables are not adjustable in tension. If aircraft is damaged and the rudder travel must be set, material may be added or filed away on rudder post stops to give desired travel.

Travel -  $23\frac{1}{2}$  deg. left and right plus 0, minus 2 deg.

TRIM TAB RIGGING:

Use the level near the right end of the Tab and on any "solid" portion of the elevator near mid-spar. The protractor readings (with reference to surfaces, NOT to true chord lines) should be:

$15\frac{1}{2}^{+2}_{-0}$  degrees up travel  
 $40\frac{1}{2}^{+1}_{-1}$  degrees down travel

The above readings should be obtained by adjusting the turnbuckles; with the elevator in level position, the Tab cable tension should be 15-20#.

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\* If the airplane seems to have a tendency toward wing heaviness, the necessary wash in or wash out may be secured by adjusting the rear strut at its lower attachment point. Wash out (reduce tip incidence) the high (light) wing one degree; then, if necessary, wash in the low (heavy) wing. CAUTION: Only a C.A.A. licensed aircraft mechanic should attempt the assembly and rigging of wings and struts.

## ASSEMBLY INSTRUCTIONS FOR EXPORT AIRCRAFT

As the aircraft is packaged for export, all correct bolts are attached to the proper fittings. All parts should fit easily without forcing or distortion of any fittings. If any difficulty is encountered in assembly, inspect carefully for evidence of damage inflicted in shipment or handling.

## I - TAIL SUPPORT WIRES

The support wires on the horizontal stabilizer should be tensioned to give the tail assembly rigidity. The horizontal surfaces are rigged parallel to the wing plane and the vertical fin rigged perpendicular to the wing plane.

## II - ELEVATORS

Adjust the turnbuckles to attain the correct cable tension, and check the travels. (See rigging instructions). Be certain that the stick clears the front and rear seats.

## III - AILERONS

Adjust the turnbuckles in the cabin so each aileron 'droops' about  $\frac{1}{4}$  inch below the trailing edge of the wing, when the control stick is centered. (See rigging instructions for correct tensions and travel.)

## IV - WINGS

The rear strut adjustment should be set for zero washout. This may be checked by setting the underside of the root rib parallel to the underside of the outboard main rib.

## V - PROPELLER

Tighten the propeller attachment bolts to a torque of 360 inch-pounds.

## VI - BOLT TORQUES (EXCEPT PROPELLER BOLTS)

BOLT DIAMETER, INCHES	RECOMMENDED TORQUE, INCH-POUNDS
3/16	20-25
1/4	50-70
5/16	100-140
3/8	160-190
7/16	450-500
1/2	480-700

## VII - SAFETYING

All safetying should be done by a qualified mechanic. Turnbuckles should be safetyed to comply with CAA standards.



## FUSELAGE FRAME

Basically the fuselage frame consists of 1025 and 4130 steel tubing gas welded to form the body structure shown on the airframe drawings.

Tubing members shown are identified by the numbers in the small circles so that they may be described by part number if repairs are necessary in the field. These circled numbers are to be preceded by 7-1050 for the 7EC model and by 7-1070 for the 7FC model when describing tube members.

EXAMPLE: The most forward left fuselage member is 7-1050-18 on the 7EC and 7-1070-18 on the 7FC model.

In the event of serious damage to the landing gear yoke section, a complete assembly may be ordered for replacement. The replacement assembly will be furnished as shown on the respective model drawing.

Should the front or rear landing gear attachment fuselage tube cluster be damaged beyond repair on the 7EC model, it is possible to obtain the complete cluster. The front component, (3-439-2L) or rear component, (3-439-2½L) may be obtained separately or as a complete assembly consisting of the front and rear clusters part number 3-439, left or right.

NOTE: When any of the preceding numbered parts are ordered they must be specified LEFT or RIGHT.

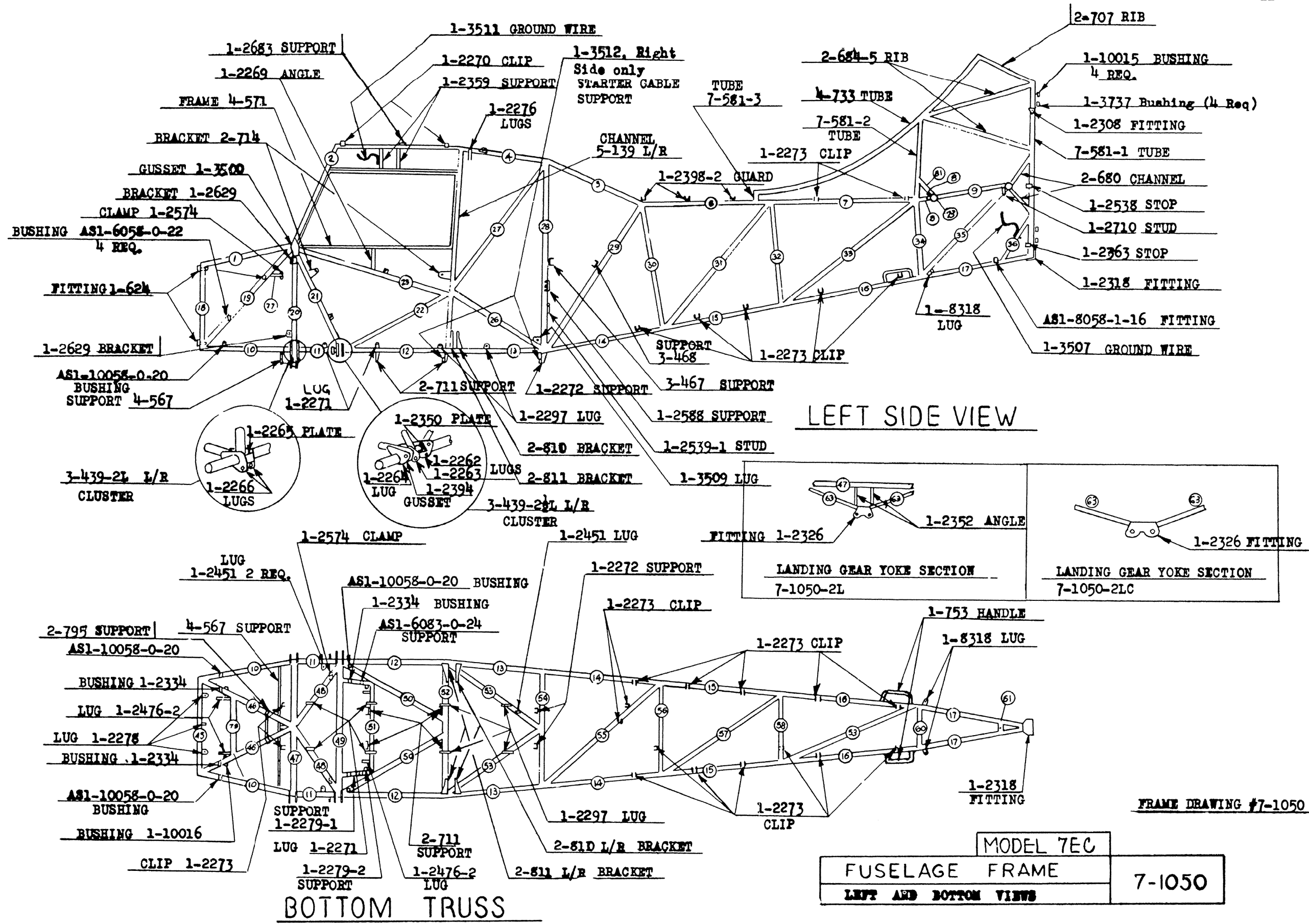
Should the front or rear landing gear attachment fuselage tube clusters be damaged on the 7FC model the front component (4-1002-2 3/4L) or rear component, (4-1002-3L) may be obtained. The fuselage strut attachment cluster may also be obtained under number (4-1002-2½L). The complete cluster consisting of the front and rear components may be obtained by ordering part number 4-1002 left or right.

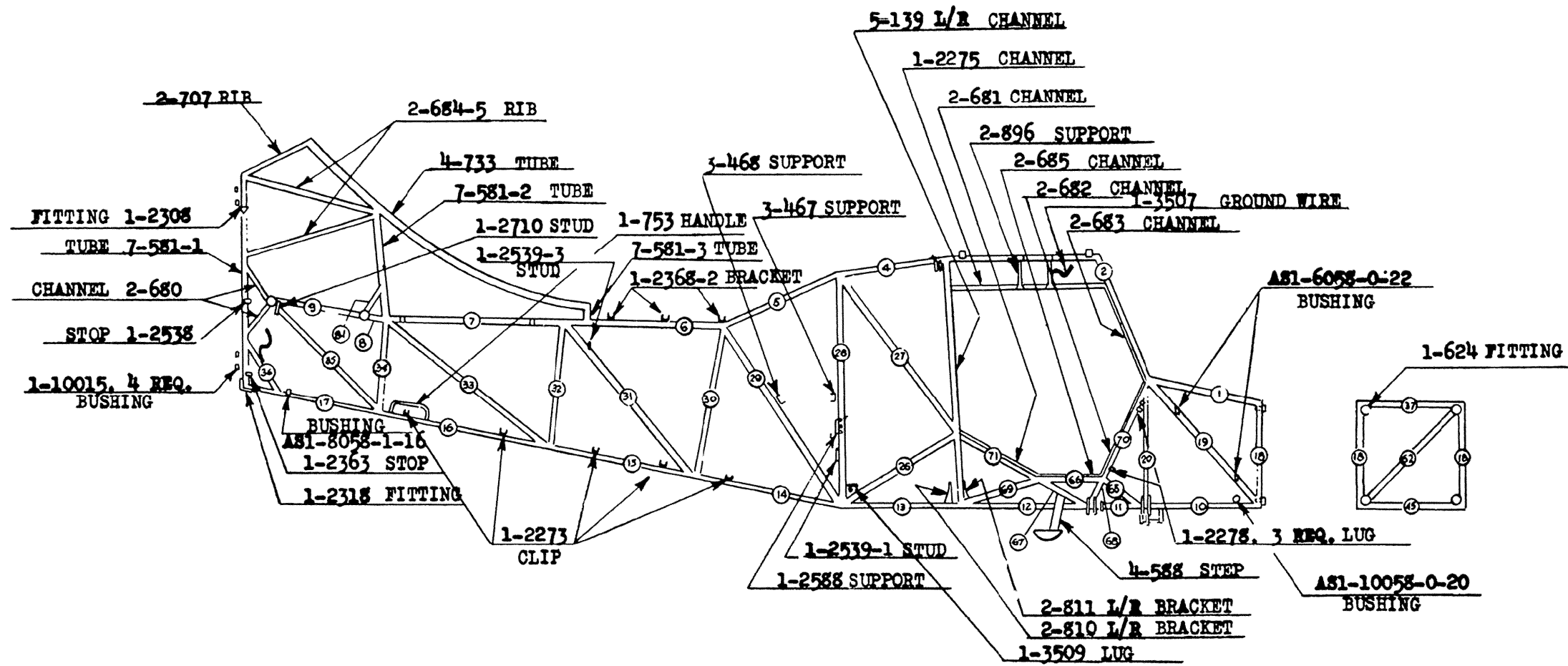
NOTE: When any of the preceding numbered parts are ordered they must be specified LEFT or RIGHT.

See the fuselage frame drawings in this manual for gear cluster locations and number for the particular model.

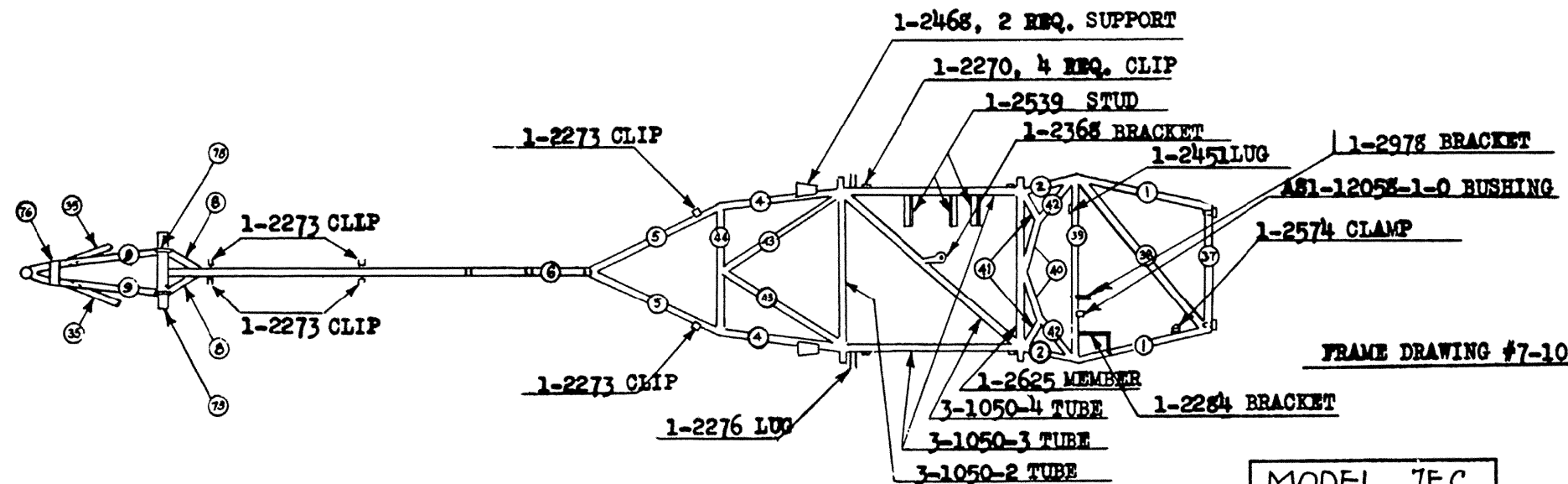
The entire fuselage frame structure is coated with zinc chromate primer at the factory. Upon making any repairs in the field, care should be taken to thoroughly clean the repaired areas and recoat with zinc chromate primer.

All repairs should be made in accordance with Civil Aeronautics Manual 18.





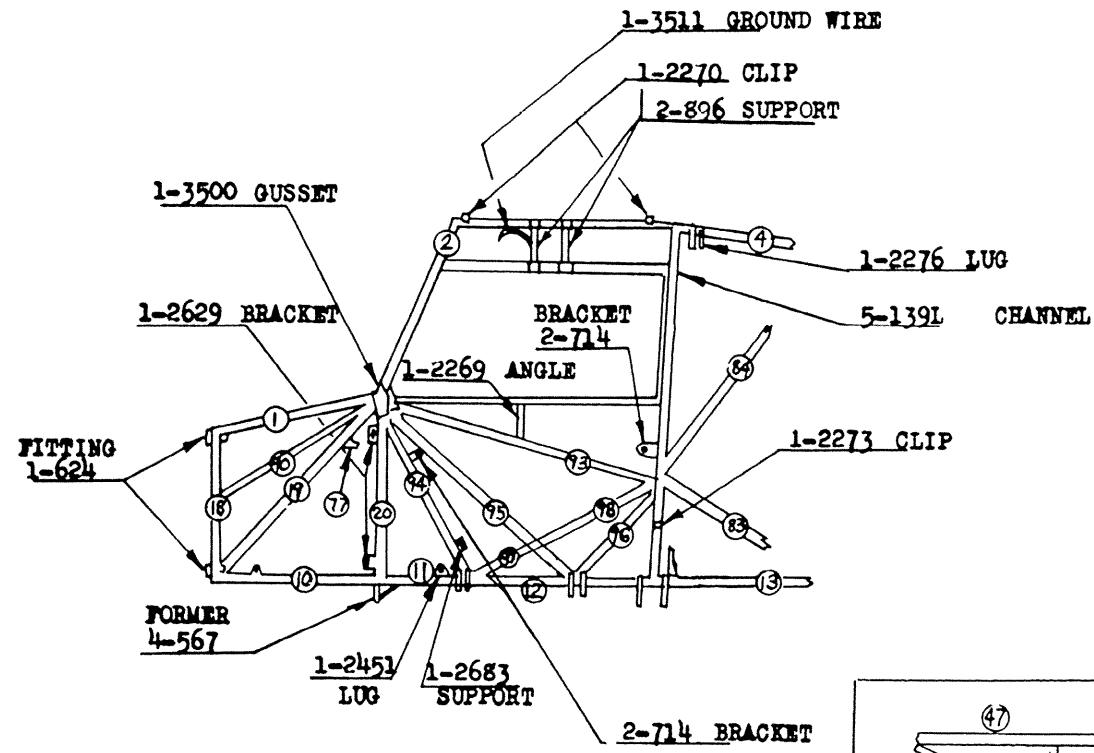
RIGHT SIDE VIEW



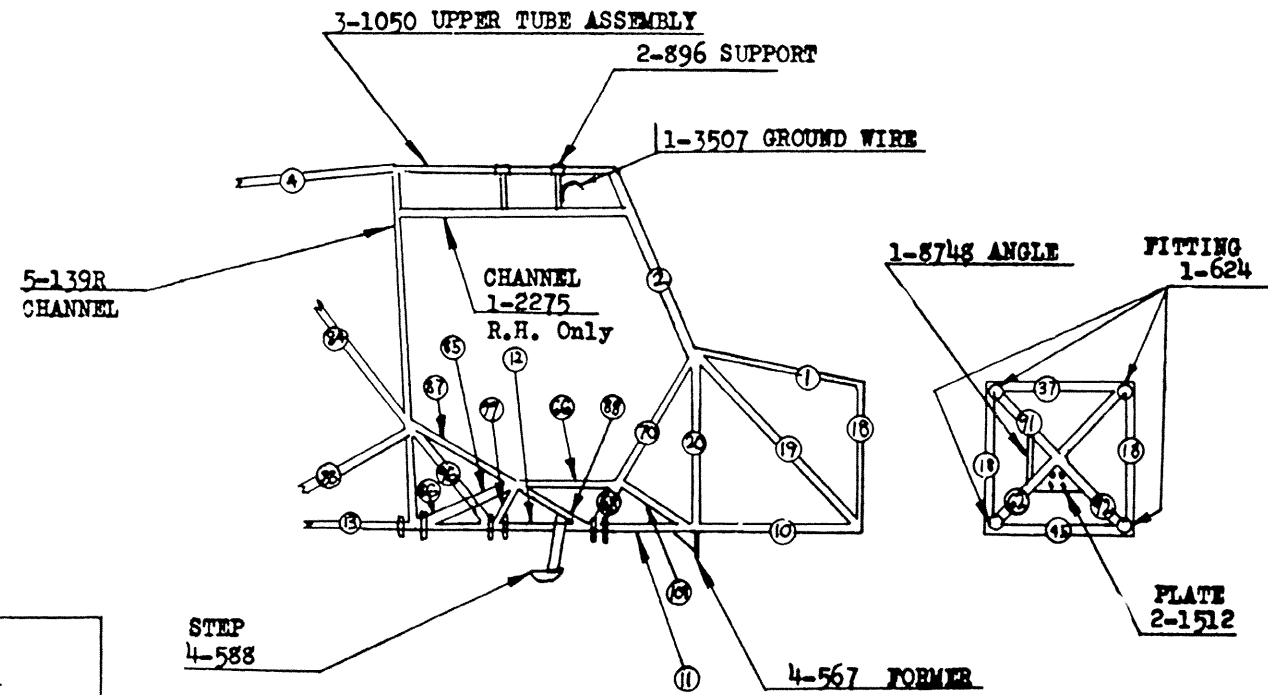
TOP VIEW

FRAME DRAWING #7-1050

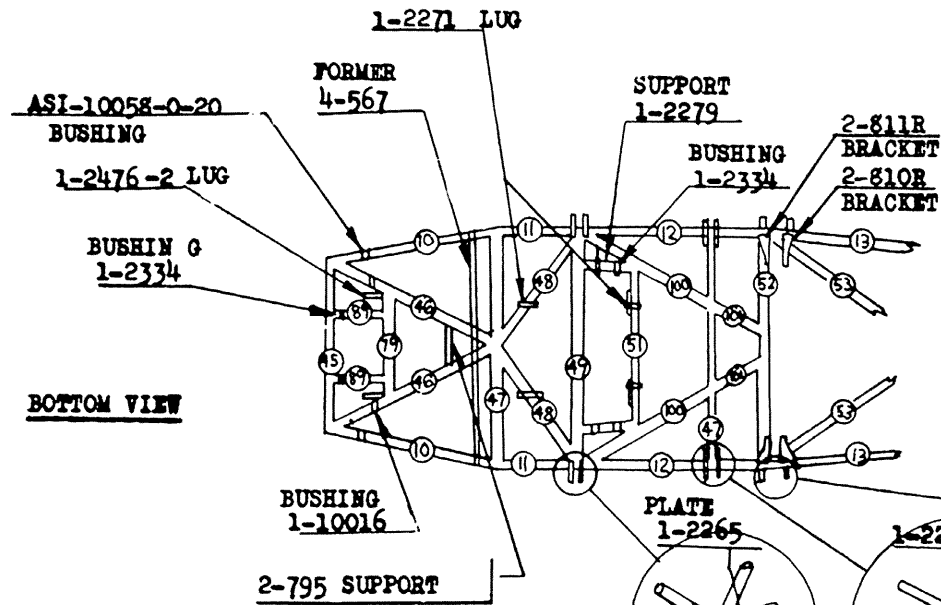
MODEL 7EC	
FUSELAGE FRAME	
RIGHT AND TOP VIEWS	7-1050



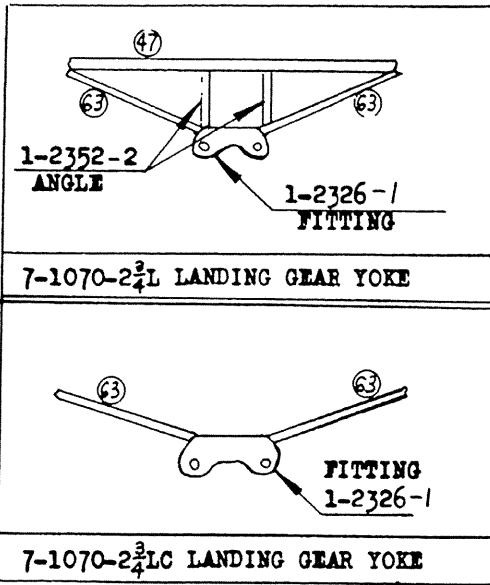
LEFT SIDE



RIGHT SIDE



BOTTOM VIEW



FUSELAGE FRAME 7FC	7-1070	LEFT, RIGHT AND BOTTOM.
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All rear members and detail not shown in this drawing are the same as the 7FC drawing Ref. pages 10, 11, 12, 13.  
 The major difference between the frame of the 7EC and 7FC models are the position of the main landing gear fittings, the addition of the nose gear, added frame tubes in the forward frame section and other minor changes noted elsewhere.

The top view of the 7FC Model is the same as 7ES.

ASSEMBLY DWG. NO. 7-1070

MODEL 7FC	
FUSELAGE FRAME	7-1070

**GENERAL**

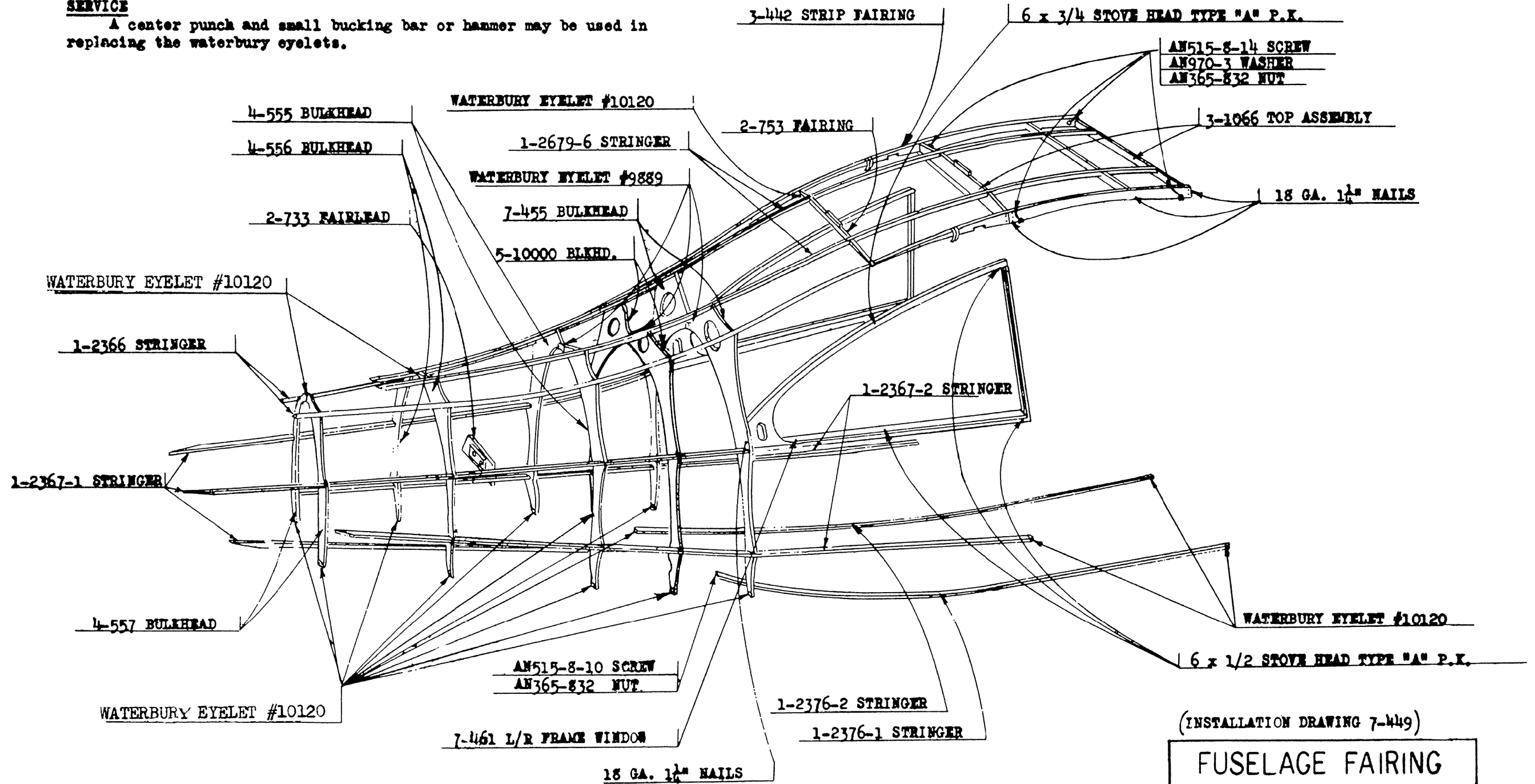
Wood fairing is incorporated in the basic design of the fuselage structure to provide streamlining, thereby lessening wind resistance. This fairing also adds to the beauty of the contour and contributes to the elimination of weight.

All wood fairing components are coated with zinc chromate primer before installation. This protective coating prevents deterioration from heat and moisture.

Waterbury eyelets are used to fasten fairing to fuselage structure in conjunction with A.N. screws and self-locking nuts.

**SERVICE**

A center punch and small bucking bar or hammer may be used in replacing the waterbury eyelets.



## AILERON AND TAIL SURFACES

GENERAL:

The fabric is attached to the control surfaces by the means of PK screws, washers and pinked tape as described on the wing surface covering. Assembly of the aileron and tail surfaces is shown on the 'Explosion Drawing'.

RUDDER:

The rudder design with the top leading edge protruding over the vertical fin provides a counterbalance action in the rudder control movements. An adjustable rudder trim tab is provided so that compensation for yaw may be accomplished.

The rudder is attached to the vertical stabilizer at two points by the use of bushings welded to the rudder frame and stabilizer and held in place with flat head clevis pins. A horn welded to the rudder regulates rudder travel by contacting adjustable rudder stops attached to the lower part of the tail post. (See page 7 for correct rudder travel.)

ELEVATORS:

The elevators are attached to the horizontal stabilizers by the same means as described for the rudder. Incorporated in the left elevator is the all metal trim tab assembly, attached with a continuous hinge bolted to the elevator. The trim tab is operated from the cabin.

HORIZONTAL STABILIZER:

The horizontal stabilizer is designed in two interchangeable sections. Rigidity is accomplished by the use of SAE 2330 steel rod braces, heat treated to an ultimate tensile strength of 95,000 PSI. These "wires" are cadmium plated and care should be observed to preserve this protective finish.

Both upper and lower tail wires are attached to fittings on the stabilizer, fuselage and vertical fin by means of clevis bolts and can be adjusted by turning the wire. To do so, a smooth jaw wrench should be used on the flat space provided for this purpose. The wrench should be adjusted carefully to avoid damaging the finish on the wire. The clevis fittings are threaded left and right hand to facilitate adjustment without removing the wires or fittings. Rigging load is 350 to 450 pounds.

VERTICAL STABILIZER:

The vertical stabilizer (fin) is an integral part of the fuselage and is shown on the fuselage frame drawing together with all fittings. This fin is offset 7/8 inch to the left to compensate for torque.

AILERON:

Aileron frames are all metal, single spar, fabric covered and are attached to the supporting brackets with clevis type fittings. The leading edge of the aileron is designed to provide additional ease of control movement through partial "aerodynamic balance". Fabric is attached to the aileron by the same method as used on the wing.

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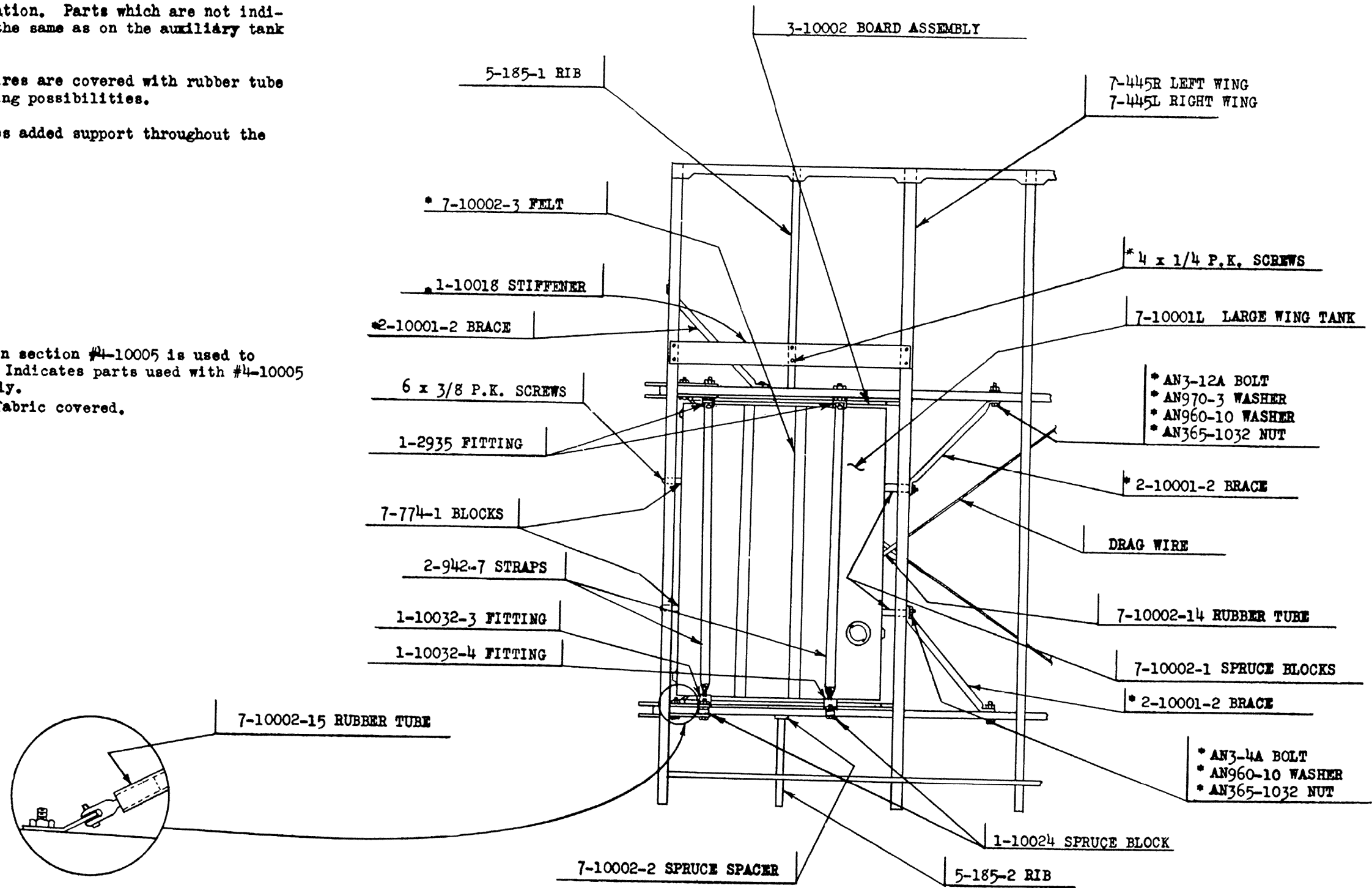


The large reinforced aluminum wing tanks are installed similar to the auxiliary tanks in the standard model. Wing rib structure of the large tank installation is modified over the auxiliary tank installation. Parts which are not indicated on this drawing are the same as on the auxiliary tank installation.

The tank bay drag wires are covered with rubber tube to eliminate any tank chafing possibilities.

A plywood board gives added support throughout the entire tank bottom.

NOTE: Removable wing skin section #4-10005 is used to cover tank bay. \* Indicates parts used with #4-10005 Aluminum cover only. Tank may also be fabric covered.



INSTALLATION DRAWING #7-10002

LARGE WING TANK INSTALLATION

## FUEL SYSTEM

### GENERAL

Two types of fuel systems are installed on CHAMPION Models 7EC and 7FC.

One system employs the use of a forward fuselage tank of 13 gallons with either one or two  $5\frac{1}{2}$  gallon auxiliary wing tanks.

The other consists of two 13 gallon wing tanks connected as an integral system.

### FUSELAGE TANK SYSTEM

The welded aluminum main tank is attached to the fuselage top front frame by two felt insulated straps. It rests on a plywood tank board designed to give support over the entire tank bottom.

The auxiliary wing tanks are located just outboard of the wing butt rib. Fuel can be fed to the main tank through the use of selector valves.

Fuel is gravity fed from the tanks to the gascolator and then to the carburetor. A positive and accurate method for checking main tank fuel supply is provided with a float type fuel gage located directly on top of the fuel tank deck. Auxiliary tank fuel levels are indicated by float type gages located in the tank sides facing the cabin area. The fuel shutoff valve, being located on the engine control box is readily accessible from front and rear seats. A primer is furnished on the instrument panel to aid in cold weather starting.

### WING TANK SYSTEM

A welded aluminum 13 gallon main tank is attached in each wing by two felt insulated tank straps. Fuel is gravity fed to a manifold located on the firewall and then to the gascolator and carburetor. A manifold located beneath the baggage compartment directs the fuel from the two rear tank lines to a line leading to the front manifold. A line leading from the front and rear of each tank insures adequate fuel flow at any attitude.

### GASCOLATOR FILTER ASSEMBLY

Located on the engine side of the firewall, the gascolator assembly affords a means of straining sediment and foreign matter from the fuel flow. Water is collected in the sediment bulb and care should be taken to check for its presence.

## FUEL SYSTEM - CONTINUED

CAUTION: The checking for water in the sediment bulb should be a daily check. Operating in cold weather and storing in warm hanger with an unfilled tank, also operating in a climate where high humidity is prevalent are most probable causes for condensation and the presence of water in the system.

Care should be taken to replace the bowl securely and re-safety the gascolator. The gasket should not be used more than once before being replaced. When draining gascolator bowl, filter screen should be cleaned and checked for enlarged mesh or damage.

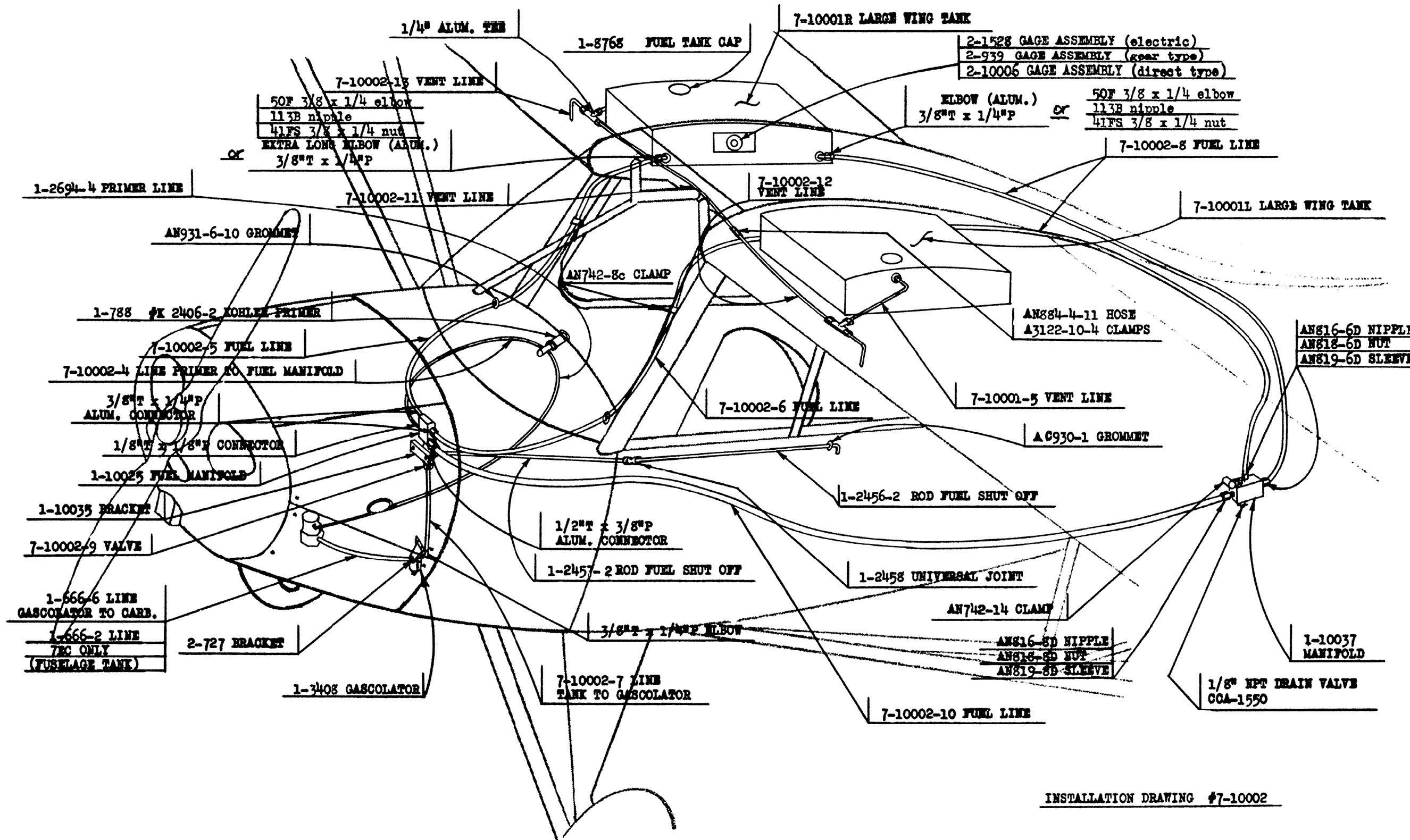
PRIMER

For cold weather starting, three slow movements of the primer pump as the propeller is being pulled through will force fuel directly into the induction system assuring quick, positive starting.

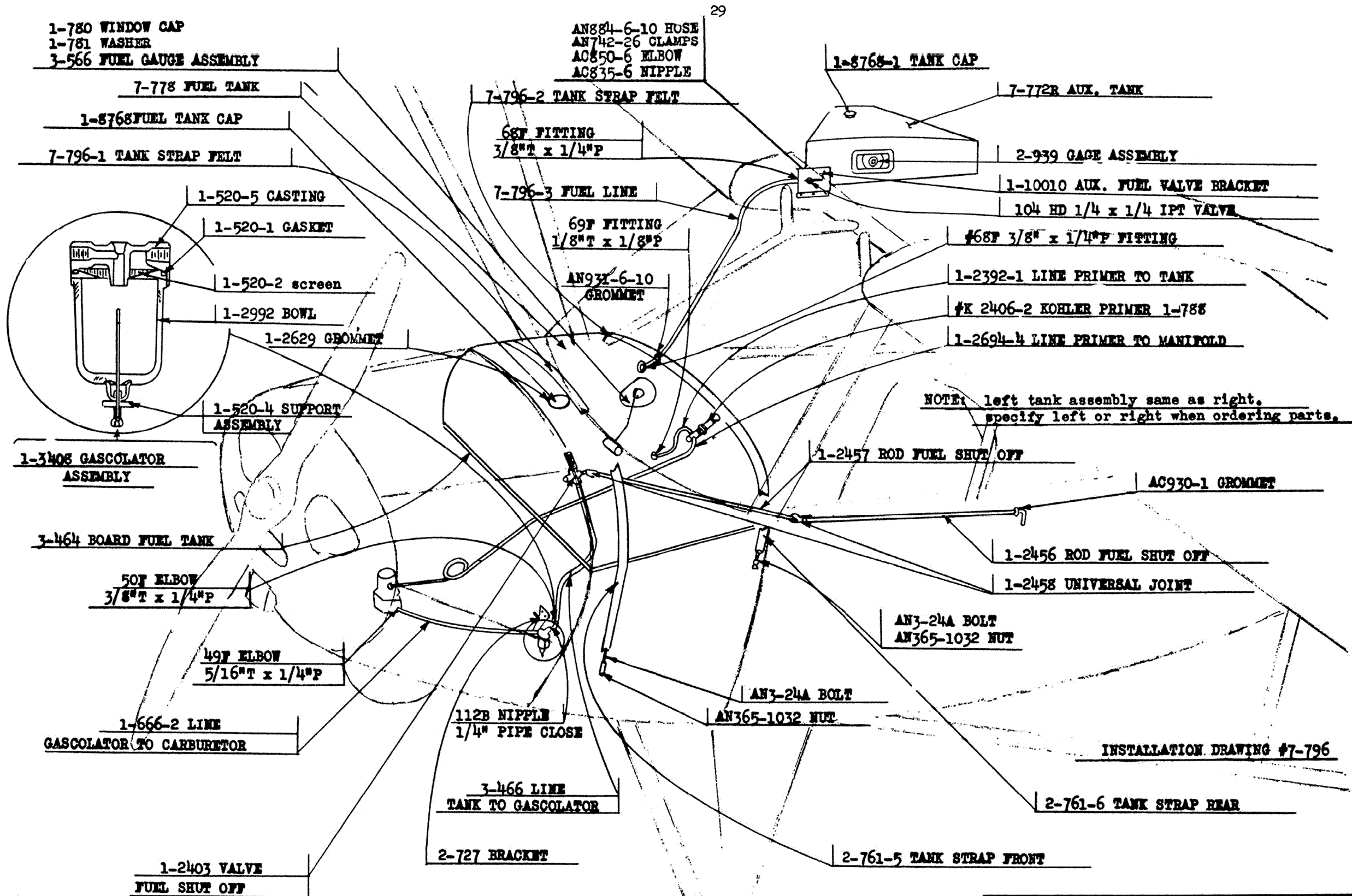
VENT SYSTEM

Both main wing tanks are interconnected by a vent system which opens to the air by means of two scarfed aluminum tubes. The tubes are located just outboard of the wing tanks.

Individual vent lines are installed on each auxiliary wing tank, and emerge from the wing in a similiar manner to that of the main wing tanks.

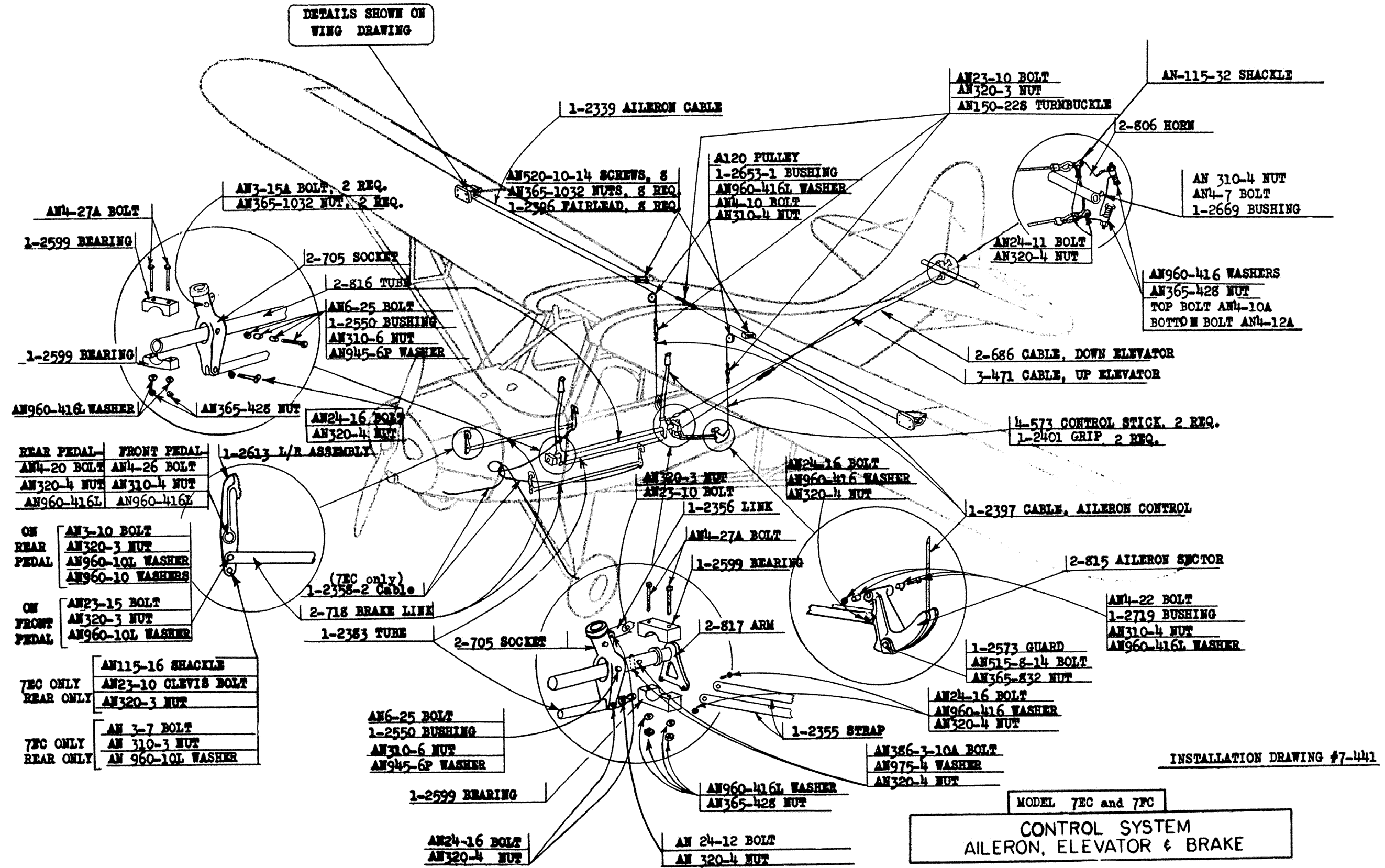


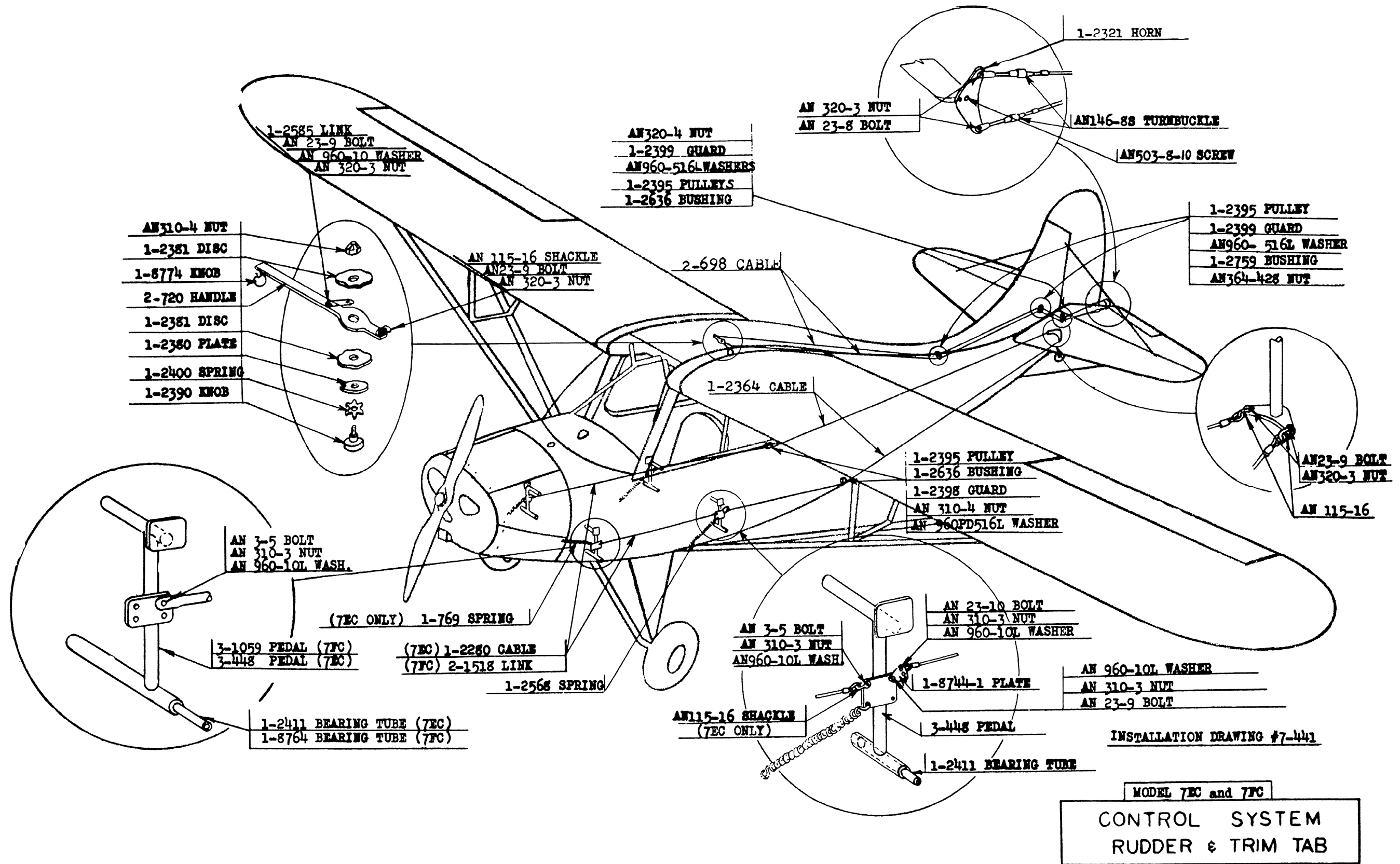
FUEL SYSTEM — 26 GALLON



FUEL SYSTEM

INSTALLATION DRAWING #7-796





GENERAL:

All control surfaces are cable operated from the front or rear seat. A steel torque tube connects the front and rear control sticks for coordinated longitudinal control.

The two sticks are mounted on a second tube supported by fibre bearing blocks on front and rear ends for coordinated lateral control. A bell crank attached to the rear of this tube actuates the mechanism producing aileron control. Pulleys, sectors and aileron hinge attachments are ball bearing providing a minimum of friction in the system.

AILERON:

The rigging load on the aileron system is 22 - 28 pounds and can be adjusted at the sides of the cabin enclosure or top by opening the slide fastener and adjusting the turnbuckles.

RUDDER:

Rudder tension is springloaded through springs attached to the rudder pedal and floor frame. No adjustment is necessary. The nose gear steering is integral with rudder system on the tricycle model.

ELEVATOR:

Adjustment may be accomplished at the turnbuckles located just aft of the rear stick. Rigging load should be 45 to 55 pounds.

ELEVATOR TAB:

A slide fastener opening in the top of the cabin provides access to the tab friction control knob. By tightening or loosening the knurled knob, the desired amount of friction may be applied to the tab control adjustment arm. Rigging load of 15 to 20 pounds, with elevator in neutral, may be adjusted at the turnbuckles located immediately fore of the tab assembly on the left elevator.



## FIXED EQUIPMENT

### GENERAL:

All components of the cabin enclosure are shown on the fixed equipment drawing except brake pedals, rudder pedals or any part of the control system. These parts are included in the control system drawings.

Fiberglass insulation at the firewall and around the wrap-around suppresses engine noise and insulates against heat radiated from the engine.

Cabin heat is controlled from the instrument panel, the heated air entering at the valve opening in the lower left corner of the firewall.

Moulded metal instrument panels accommodate the flight instruments. Grouping of instruments is arranged to permit full visibility from both seats. The padded safety instrument panel is also available as optional equipment. Two different panels are available, a standard panel #5-260 or a two piece full gyro and radio panel #5-265.

### WINDOWS AND WINDSHIELD:

Plexiglas is used throughout assuring a minimum of discoloration due to exposure. Front left side windows are aluminum reinforced and slide in felt insulated channel.

The one piece moulded windshield provides unobstructed visibility, unexcelled in the light plane field.

When cleaning plexiglas, all grit and foreign particles should be flushed off with clear water. Final cleaning should be done with a soft cloth and any recommended type of plexiglas cleaner. NEVER USE DIRTY, OILY RAGS TO CLEAN PLEXIGLAS.

Rapid changes in temperature should be avoided (i.e., moving from warm hanger to extreme cold) which will cause rapid contraction and breakage. Allowing fifteen minutes after plexiglas has cooled is recommended before starting engine. Vibration increases the possibility of breakage during cooling.

### DOOR

One piece stamped, spotwelded aluminum alloy is the construction of the large car type door. Incorporated in this design, on unupholstered models, is a large compartment located just under the door window to accommodate maps, log books and personal effects.

Plexiglas is weather-sealed in the door and rear windows with 3M EC-847 compound and reinforced with aluminum alloy channel. When installing new door window, center the plexiglas in the frame to allow for expansion front and rear. The plexiglas should not touch the frame at either the front or rear.

### ENGINE CONTROL:

A recessed panel located between front and rear seats, left side of cabin, houses ignition switch, carburetor heater control and fuel shut-off valve.

### FLOORBOARD SURFACES:

Floorboards consist of three ply laminated fir, designed in three sections. Sections are finished with black DuLuxe enamel or zinc chromate and bolted to the fuselage frame

- 5-182 RETAINER TOP-REAR WINDOW
- AN 515-6-5 SCREW 5 REQ.
- AN 10-632 NUT 5 REQ.
- 3-460 ENG. CONTROL BOX
- 2-847 CONTROL CARB. HEAT
- 1-2448 SWITCH - IGNITION
- 1-2560 PLATE
- 2-1510 GUARD
- 1-2375 ESCUTCHEON - THROTTLE
- 1-8765 KNOB THROTTLE CONTROL
- AN 23-9 BOLT
- AN 320-3 NUT
- AN 380-2-2 COTTER PIN
- 2-715 ARM- THROTTLE
- AN 4-6 BOLT
- AN 310-4 NUT
- AN 970-4 WASHER
- 1-2381 DISC, 1-2400 SPRING
- # 4 x 3/8 PK SCREWS TYPE "A"
- NAME PLATE- 1-10017-2 (7FC)
- \* NAME PLATE- CHAMPION 1-10017-1
- 4-583 LUGGAGE COMPARTMENT
- 4-610 PANEL REAR
- 4-560 CUSHION FRONT SEAT BACK
- 7-463 REAR WINDOW
- 5-183 RETAINER BOT. WINDOW
- \* 4-878 BOARD - REAR FLOOR
- 4-609 R. SIDE PANEL-UPHOL.
- \* 3-544 R. REAR SIDE PANEL
- 7-1067 REAR SEAT FRAME
- AN 176-10A BOLT
- AN 960-616 WASHER
- AN 365-624 NUT
- 3-541-4 SAFETY BELT, REAR
- 2-750 COVER-CONT.STICK SOCKET
- # 4 x 3/8 SCREWS TYPE 'A' PK

- 3-10007 ELECTRICAL PANEL
- 4-10014-1 LEFT SIDE PANEL
- 4-10014 LEFT SIDE PANEL (UPHOLS.)
- 1-2435-3 CABLE- MAGNETO TO IG.SWITCH
- 1-2373 SHAFT- THROTTLE CONT.

- AN 960-10 WASHER, 2 REQ.
- AN 380-2-2 COTTER, 2 REQ.
- 1-670-3 CABLE- THROTTLE CONTROL
- CABIN HEATER CONTROL 1-2486
- TACHOMETER
- ALTIMETER
- 5-260 INSTRUMENT PANEL OR 5-265 RADIO PANEL
- AMMETER
- 1-10011 PLACARD
- OIL PRESSURE INDICATOR
- OIL TEMP INDICATOR
- PRIMER 1-788
- TURN AND BANK INDICATOR
- 1-2615 DEVIATION CARD
- 3-10008 COMPASS ASS'Y
- STARTER CONT.
- AIR SPEED

- 2-748-3 LINE - OIL PRESSURE
- CABLE - OIL TEMP GAUGE
- 1-2435-4, 2 REQ.; 1-2435-3
- 1568860 TACH. SHAFT (AC)
- 1-670-3 CABLE- THROTTLE CONTROL
- STIFFENER; 3-536 INSIDE, 3-537
- \* 4-861 FIREWALL ASSEMBLY
- 1-2758-1 TUBE AIRSPEED LINE
- 2-847 CONTROL- CARB. HEAT
- \* 4-862 FIBERGLASS MAT
- AN 515-8-10 SCREW, 8 REQ.
- AN 970-8 WASHER, 8 REQ.
- 2-749 BRACE - FLOOR BOARD, 2 REQ.
- \* 5-158 L. BOARD- FRONT FLOOR
- 1-2575 CLAMP 7 REQ.
- \* 5-158 R. BOARD- FRONT FLOOR
- \* 3-538 PANEL- FRONT DOORWAY
- AN 4-5A BOLT- FRONT LEG ATTACH
- AN 960-416 WASHER
- AN 365-428 NUT
- 1-2587 RETAINER
- 3-543 RETAINER
- 4-611 RETAINER RUBBER
- 7-537 WINDOW ASS'Y, 7-537-1 SEALER
- # 1040 LATCH
- AN 505-8-6 SCREWS
- 2-1450 HANDLE
- 7-1054 DOOR FRAME
- 1-2581 RUBBER SEALER
- AN 4-5 BOLT, AN 310-4 NUT FRONT
- AN 4-7 BOLT, AN 310-4 NUT REAR

- AN 4-7A BOLT, AN 365-428 NUT
- \* 3-539 PANEL- CENTER DOORWAY
- \* 3-540 PANEL - REAR DOORWAY
- 4-558 CUSHION- FRONT SEAT BOTTOM
- 7-456 FRONT SEAT FRAME
- 3-485 COVER - AILERON BELLCRANK
- # 4 x 3/8 PK SCREWS TYPE "A"
- 4-10311 CUSHION-REAR SEAT BACK
- 4-10310 CUSHION-REAR SEAT BOTTOM
- 4-871 COVER- ELEVATOR CABLES

\* FOR 7FC ONLY. (ADJUSTABLE SEAT ONLY)

THE FOLLOWING ARE FOR 7FC ONLY:

- FRAME FRONT SEAT 7-457 (ADJUSTABLE)
- FIREWALL ASSY. 4-1018
- BOARD REAR FLOOR 3-484
- BOARD FRONT FLOOR 5-261
- PANEL -DOORWAY 4-10004

(NOTE: 3-524 HEADLINER INSTALLED IN UPHOLSTERED MODELS.)

INSTALLATION DRAWING #7-10004

FIXED EQUIP'T & DOOR INSTALLATION	7-10004
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MAIN LANDING GEARGENERAL:

The CHAMPION is equipped with the exclusive "No Bounce" hydraulic spring type main landing gear assembly which is wide-stance mounted to provide minimum fuselage loading.

CASE FRAME:

The oleo case frame assembly incorporates the frame and cylinder which houses the spring and hydraulic unit. This frame attaches to the fuselage at station 2 and 2 $\frac{1}{2}$  on the 7EC and at station 2  $\frac{3}{4}$  and 3 on the 7FC models. A bronze bushing is pressed into the lower end of the case frame to provide a bearing surface for the oleo piston. This bushing may be replaced when excessive wear is noted.

OLEO ASSEMBLY:

This assembly consists of a spring, piston and cylinder. It is important that the cylinder be filled with only 8 $\frac{1}{2}$  fluid ounces of MIL-P-5606 oil or its equivalent.

To fill the oleo, remove the connecting bolt at the axle strut connection and raise the oleo to a position where the brass screw can be removed. The cylinder may then be filled with 8 $\frac{1}{2}$  fluid ounces of hydraulic fluid.

If it is necessary to change the graphite packing, release oleo unit from the oleo case assembly by removing the bolt at the top of the case. Drive the bushing out of the retainer washer and remove retainer and oleo spring. Pry the plug at the top of the cylinder loose and remove old packing. Assemble in reverse order. Caution should be used when installing the oleo retaining bolt at the top of the oleo cylinder. If the bolt is not passed through the retainer the gear will fall out when the weight is removed. This can be checked by removing the weight from the gear and standing on the wheel. The gear may be removed from the ground by pulling down on the opposite wing strut attachment points.

AXLE STRUT:

The axle strut consists of welded non-heat treated 4130 steel tubing. It is attached to the fuselage center landing gear yoke at its upper end and to the oleo assembly at its lower fitting. It is not advisable to attempt to straighten this strut if bent more than  $\frac{1}{4}$  inch from its initial position.

NOTE:

ALL LANDING GEAR PARTS ARE INTERCHANGEABLE, LEFT AND RIGHT.

NOSE LANDING GEARGENERAL:

The model 7FC CHAMPION is equipped with a hydraulic-spring type nose gear assembly. A shimmy dampener is provided to offset any high speed vibration. This installation provides the added versatility of the tricycle gear system.

STRUT ASSEMBLY:

The upper strut assembly 4-1007, is attached at its upper end to the center of the front frame cross-members. The lower portion of this assembly is supported by the 4-1005 support. The major purpose of the strut is to house the 4-1008 fork and oleo assembly, and provide the bearing surface for the 2-1514 steering sector. (See NOSE WHEEL STEERING ASSEMBLY Page 45 )

CYLINDER AND FORK ASSEMBLY:

The cylinder and fork assembly 4-1004, consists of the 3-1055 cylinder and the 4-1003 fork. The 4-1003 fork is heat shrunk and bolted to the 3-1055 cylinder. This operation is to be accomplished at the factory and should not be attempted in the field.

OLEO ASSEMBLY:

The 4-1008 fork and oleo assembly provides the shock absorbing action of the nose gear. This unit is composed of the fork, piston, cylinder, and two springs. When a load is applied to the nose gear, the upper spring is compressed and fluid is metered through the piston orifice. This assembly provides the smooth non-shocking action of the nose gear assembly.

The lower spring is installed as a safety precaution to prevent the piston from bottoming under extreme load conditions.

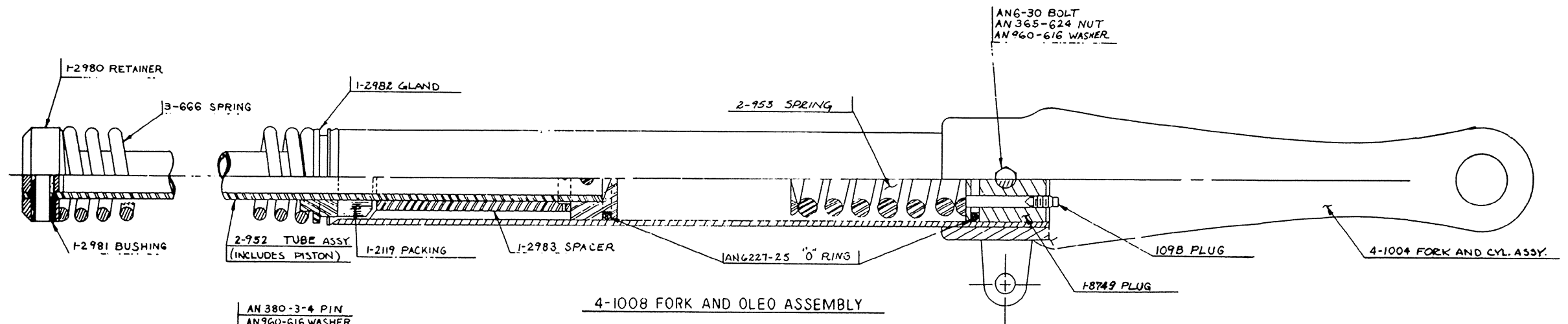
NOSE WHEEL STEERING:

Nose wheel steering is provided by spring loaded attachments to the rudder pedals. This installation provides a high degree of travel for maximum ground handling efficiency.

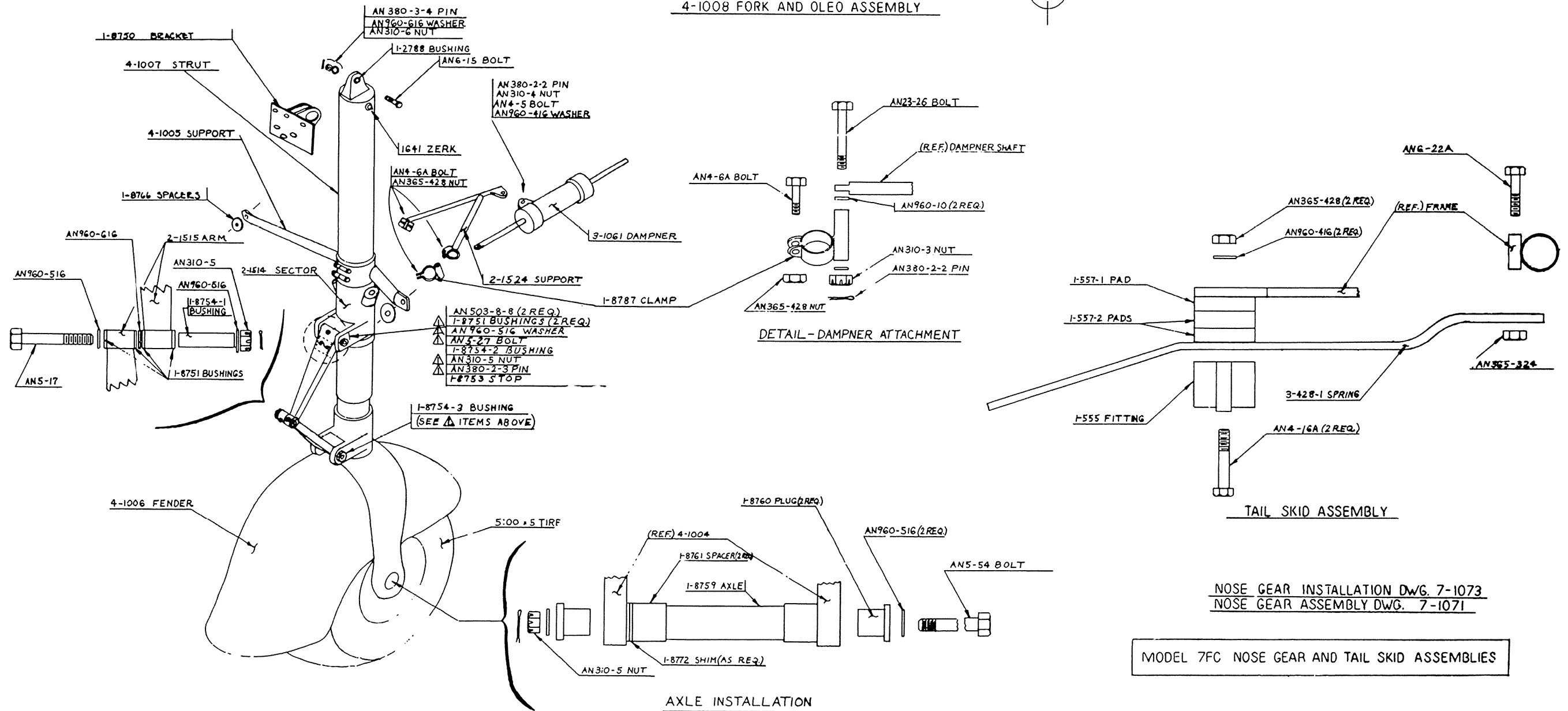
The steering sector is attached to the fork assembly by two scissors-type arms. The upper scissors arm also provides for the extended position alignment of the nose gear through a cam acting positioning device.

SHIMMY DAMPENER:

A hydraulic type shimmy dampener is attached to the nose wheel steering sector to prevent high speed shimmy from developing in the nose gear system.

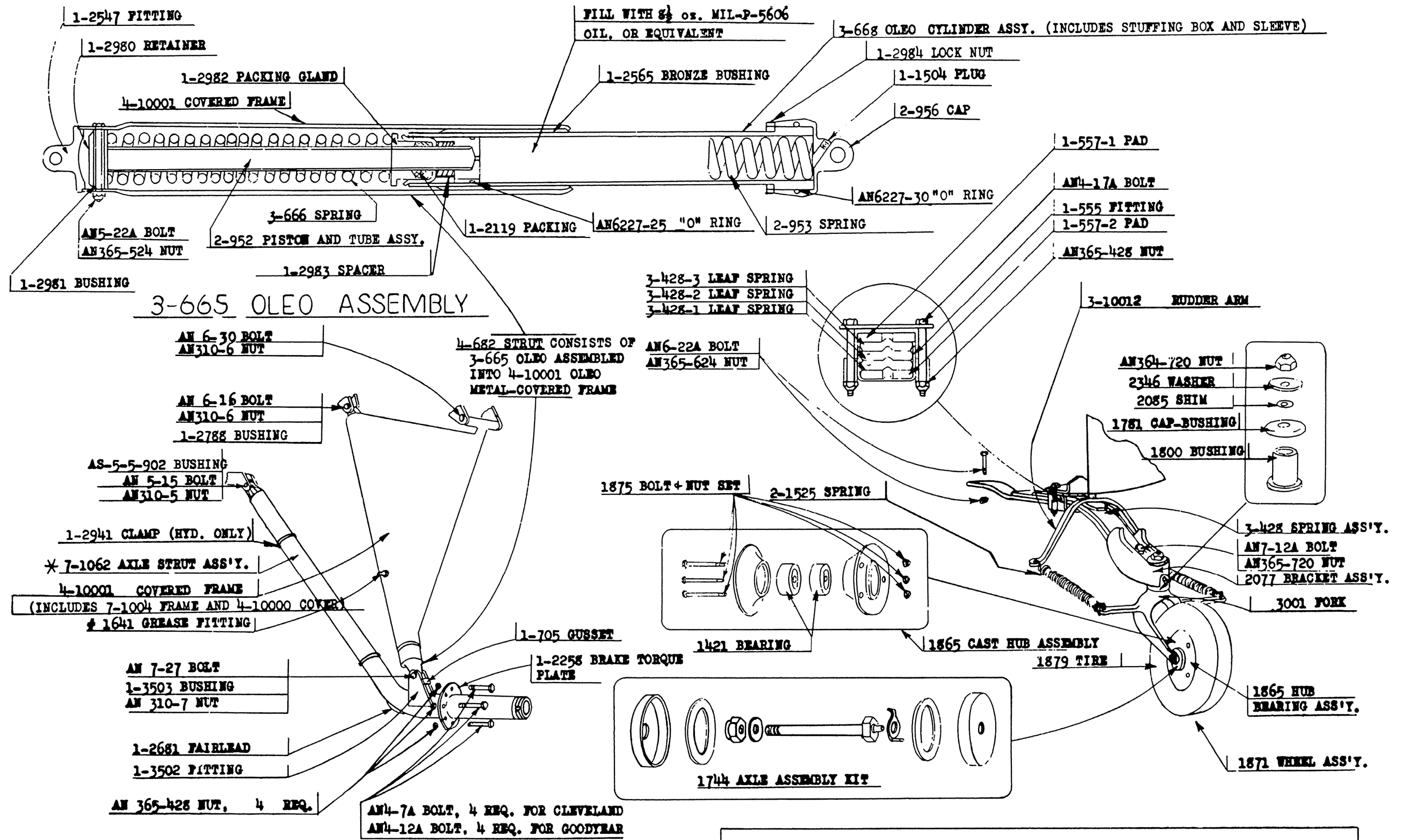


4-1008 FORK AND OLEO ASSEMBLY



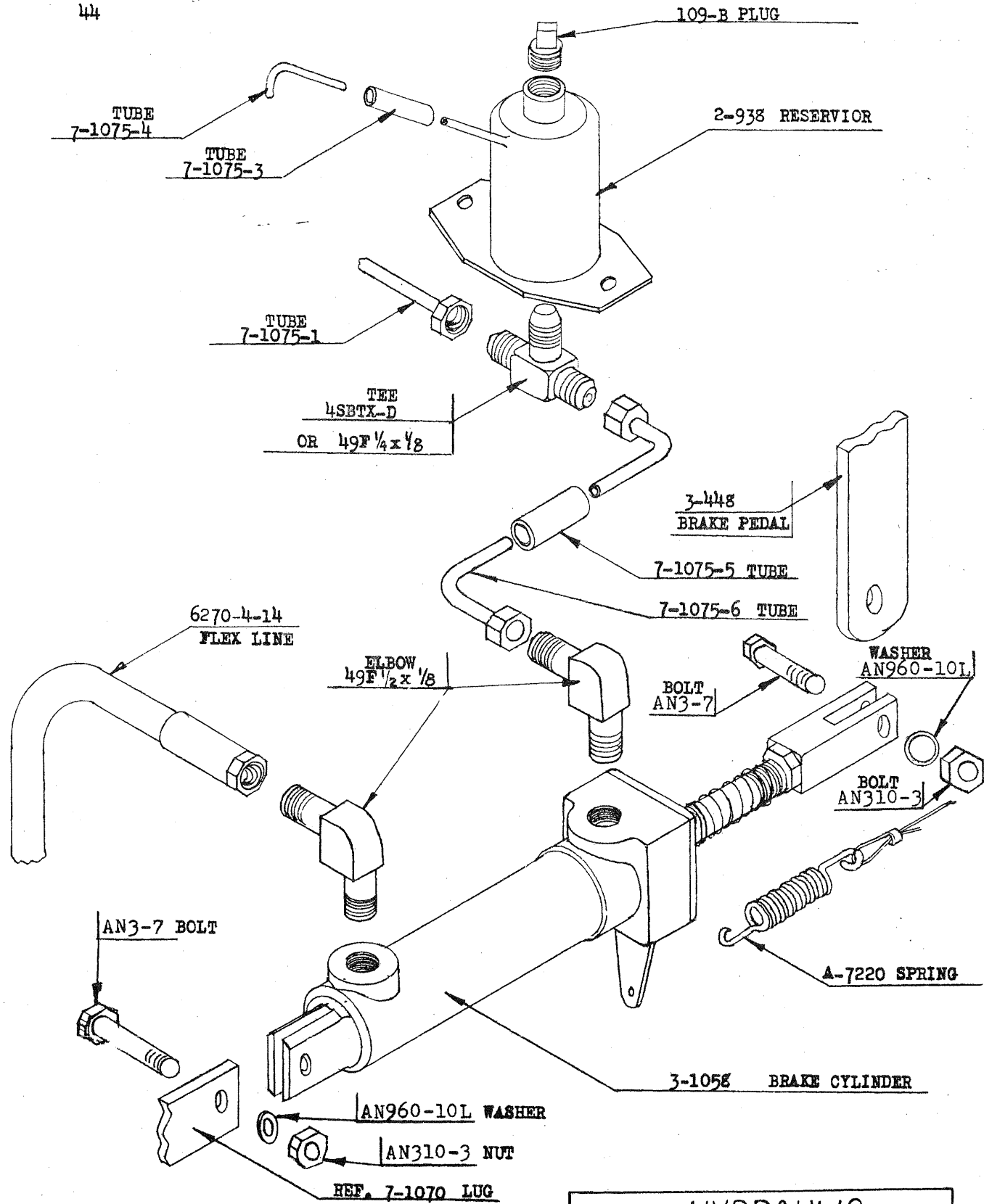
NOSE GEAR INSTALLATION DWG. 7-1073  
NOSE GEAR ASSEMBLY DWG. 7-1071

MODEL 7FC NOSE GEAR AND TAIL SKID ASSEMBLIES

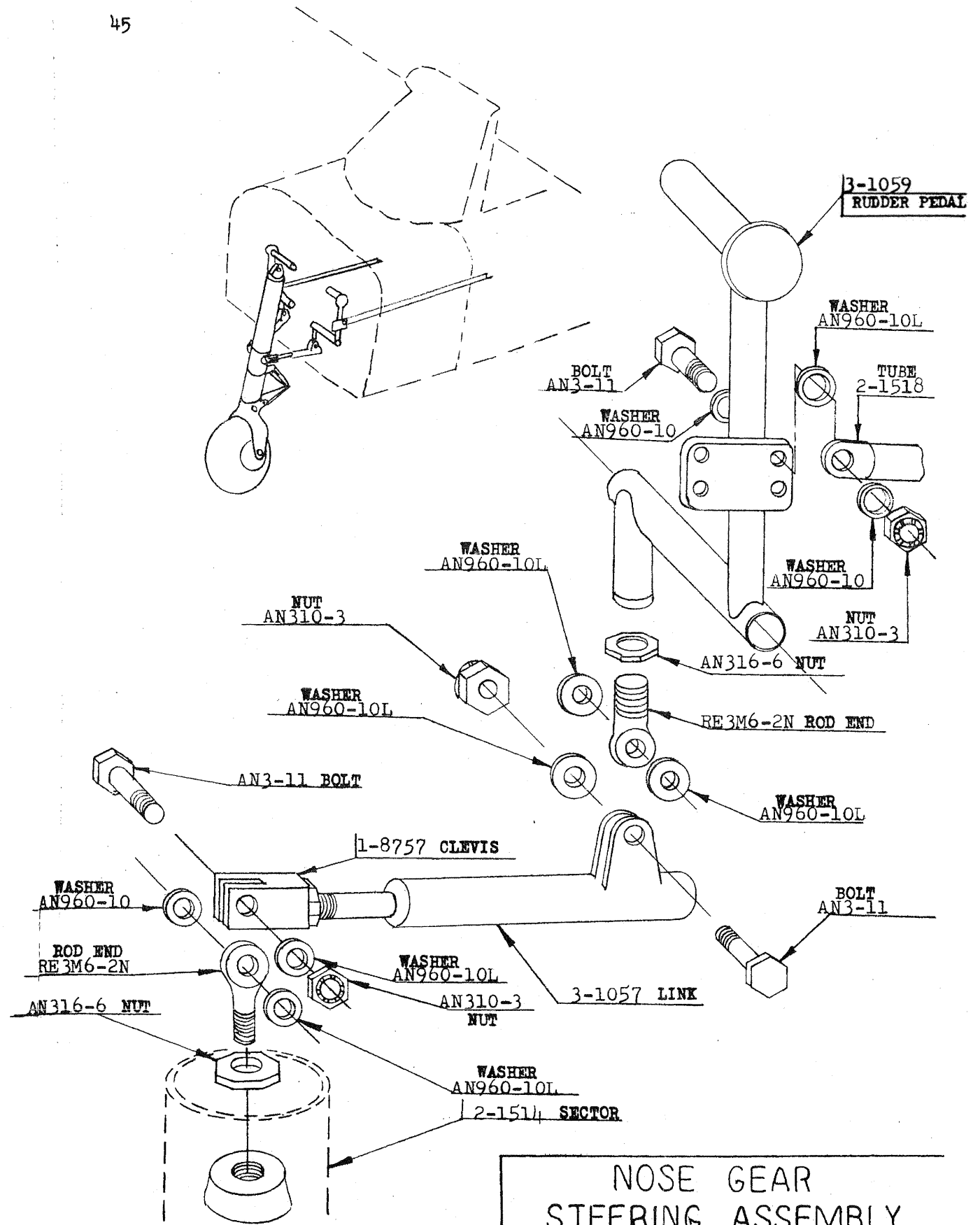


MAIN LANDING GEAR & TAIL WHEEL ASSEMBLIES

\* FOR MECHANICAL BRAKE. 7-1080 USED WITH HYDRAULIC BRAKE.



HYDRAULIC BRAKE UNIT



NOSE GEAR STEERING ASSEMBLY

MECHANICAL BRAKE ASSEMBLY

The mechanical brake assembly used is a Cleveland C7000 Brake, internal expander, shoe-type unit.

BRAKE UNIT:

Hardened steel cams are used for operating and expanding the shoes against the brake drums. Adjustment may be accomplished on the linkage provided at the cam control lever without disturbing the original cable setting. All steel parts are cadmium plated.

All assemblies are interchangeable, left and right.

WHEELS:

Wheels are die castings of high strength aluminum alloy designed for maximum strength and durability. These wheels come in halves clamped together with alloy steel cadmium plated bolts.

Flanges are knurled to secure firm grip on the tire casings. The brake drum is heavy gauge pressed steel with an approximate total braking area of 25.5 square inches per wheel.

Cleveland's wheel assembly C38500-HMA is used with the mechanical brake assembly.

HYDRAULIC BRAKE ASSEMBLY

The hydraulic brake assembly used is Cleveland's C2000-H Brake, internal expander, shoe-type unit.

BRAKE UNIT:

Hydraulic cylinders provide the force necessary for actuating the shoes. Adjustment of the brake unit can be accomplished through the use of eccentrics located on the torque plate.

WHEELS:

Cleveland's wheel assembly C38500-HA is used with the hydraulic brake assembly.

Wheel halves and brake area are designed similar to that of the mechanical brake wheel.

TAIL WHEEL:

SCOTT MODEL 3000-A1, steerable tail wheel or full swivel model 3-24B assemblies attached to leaf spring assembly and rudder arms.

WHEEL - cast in two sections, locked together with three bolts and elastic stop nuts. Ball bearings facilitate easy rolling.

FORK - Manganese Silicon steel high strength weight ratio, attached and bushed with bronze one piece bushing at the bracket. Bracket and axle are equipped with Zerk fittings for lubrication.

SCOTT 3000 tail wheel assembly shown on drawing. For Scott #3-24B full swivel wheel assembly see Scott tail wheel parts list.



RUDDER ATTACHMENT SPRINGS:

Provided to lessen strain on assembly in turning, absorbing shock from rudder arm to tailwheel fork.

RUDDER ARM attaches to the rudder post by means of two AN bolts and elastic stop nuts through the arm and post.

TAIL WHEEL LEAF SPRINGS are attached to the tail post bottom lug with two A bolts and shimmed with leather pads. The front of the leaf spring assembly attaches the first cross member tube forward of the tail post with one AN bolt.

TIRE TAIL WHEEL: General solid rubber 6 x 2 steel wire reinforced to eliminate rolling off during rough usage.

TIRES - MAIN GEAR:

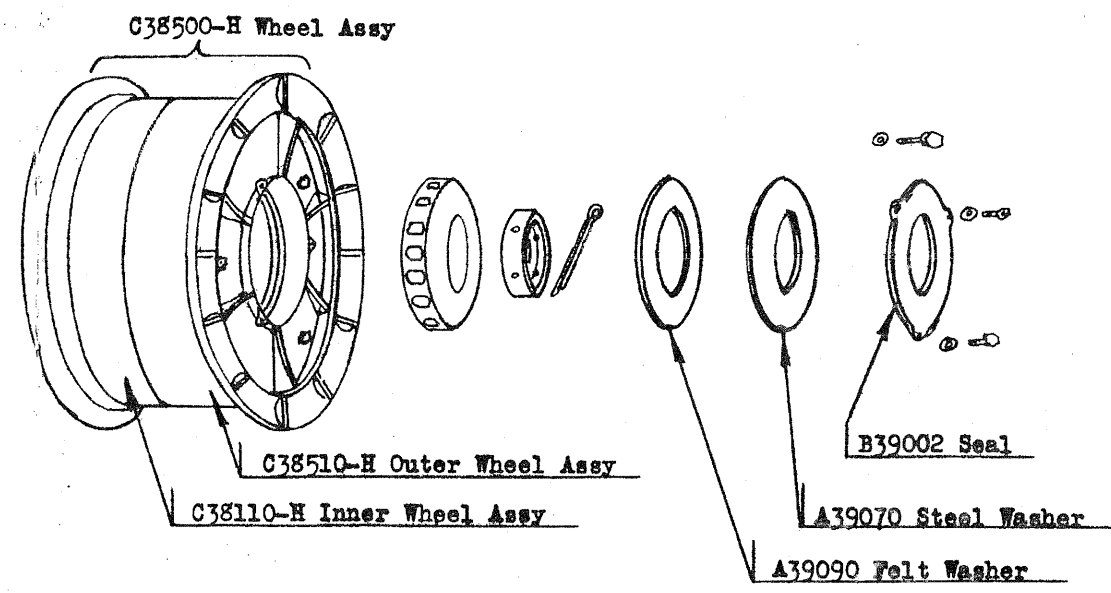
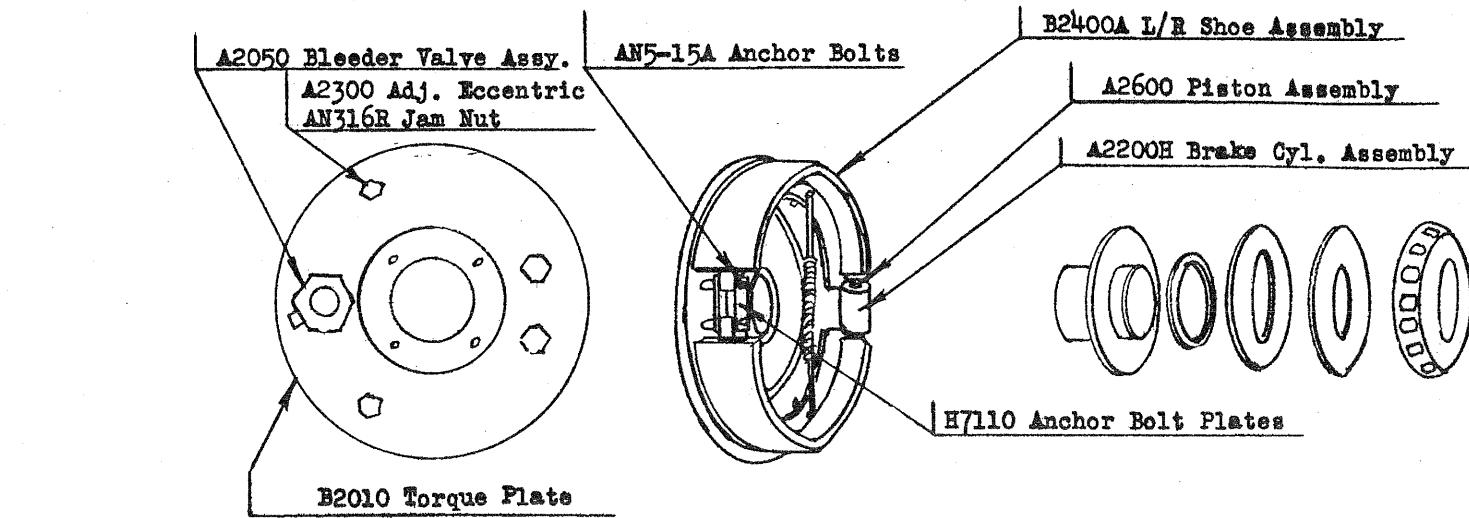
600 x 6, 4 ply, low pressure tire inflated to 15 - 20 pounds per square inch pressure depending on load in airplane.

NOTE: Goodyear inner tubes are not to be used with Cleveland installation.

\*NOTE: The Cleveland Model C-2000H hydraulic brakes may also be obtained on the 7EC model as optional equipment. The hydraulic brake is provided as standard equipment on the 7FC model.

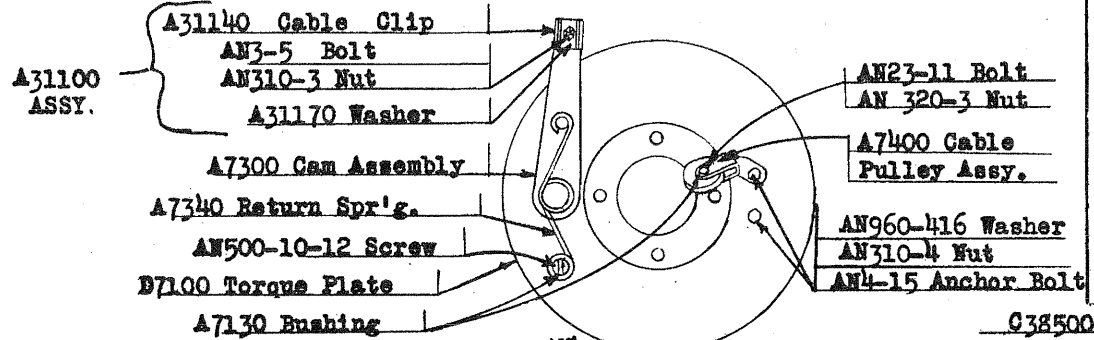
TIRE - NOSE GEAR:

A 500 x 5 tire is used on the nose gear. This tire should be inflated to approximately 15 pounds per square inch.

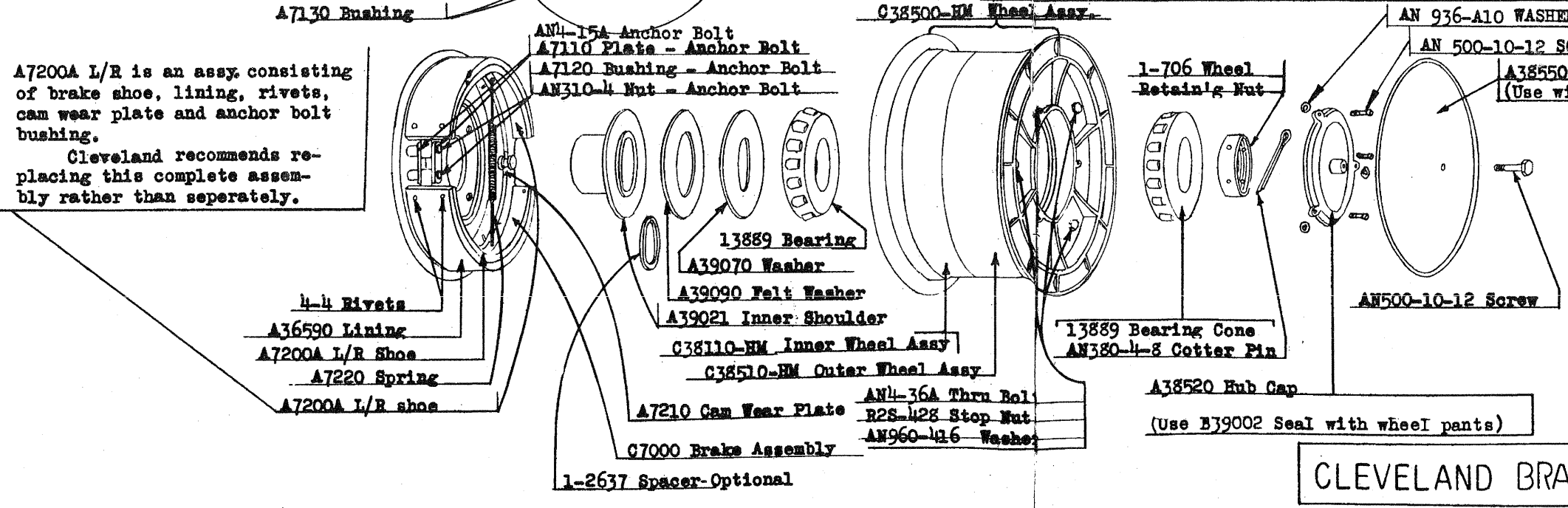


NOTE: ALL PART NUMBERS NOT MENTIONED SAME AS MECHANICAL BRAKE

C2000H HYDRAULIC BRAKE  
WITH C38500-HA HYDRAULIC WHEEL ASSEMBLY



A7200A L/R is an assy. consisting of brake shoe, lining, rivets, cam wear plate and anchor bolt bushing.  
Cleveland recommends replacing this complete assembly rather than separately.



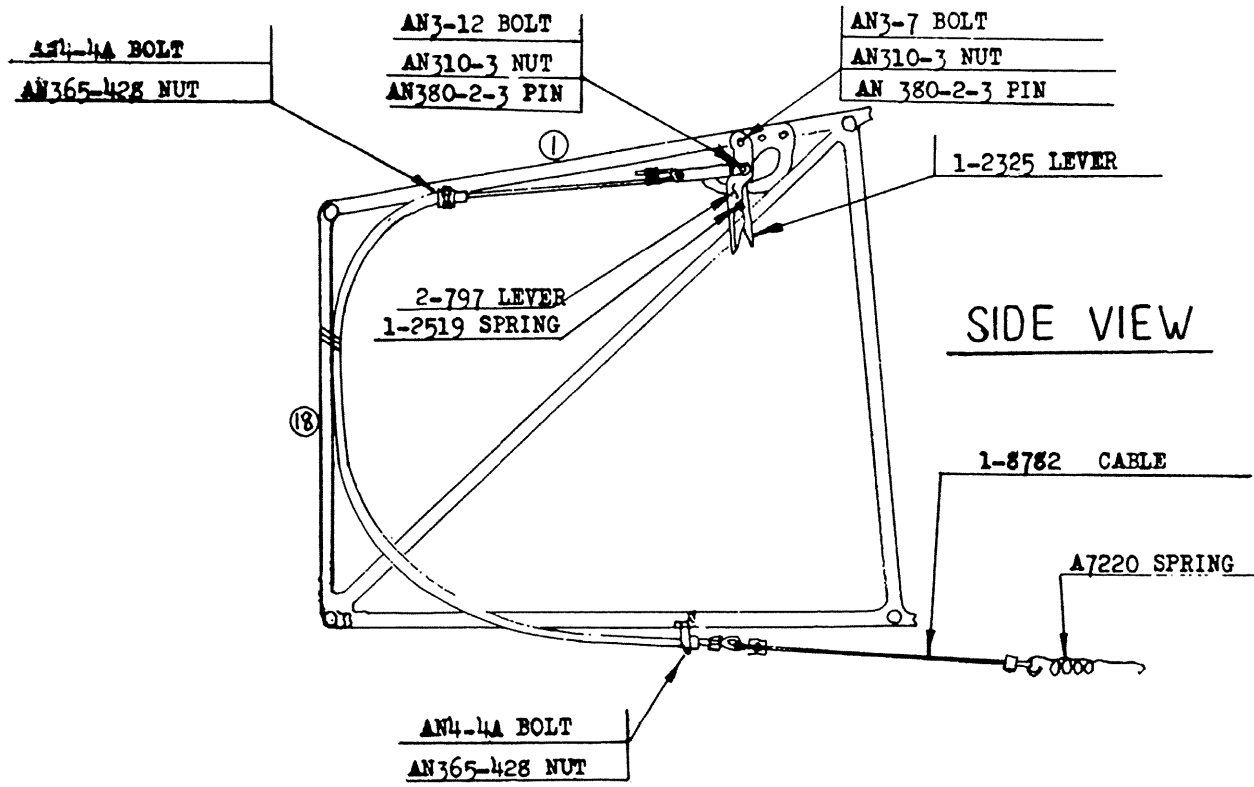
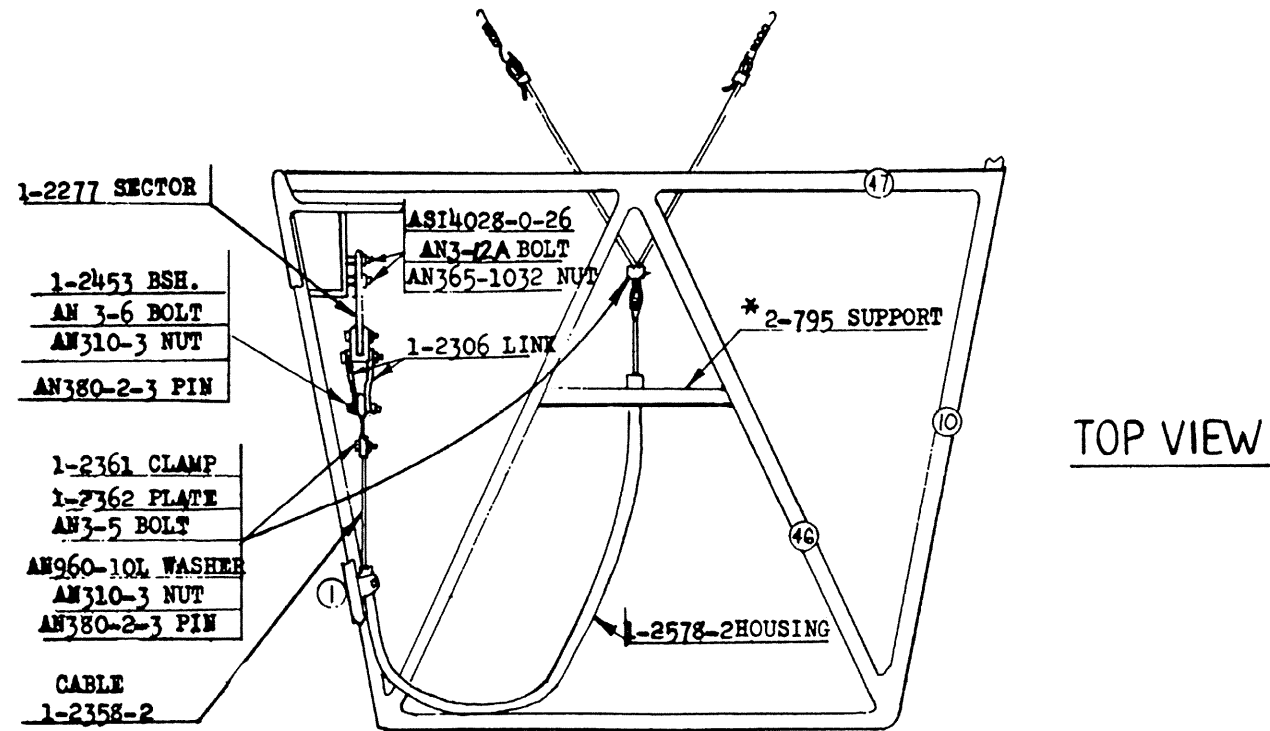
C7000 MECHANICAL BRAKE  
WITH C38500-HMA HYDRAULIC WHEEL ASSEMBLY

CLEVELAND BRAKE & WHEEL ASSY

INSTALLATION - HAND BRAKE-HYDRAULIC

\* 1-8793 SUPPORT ALSO USED

INSTALLATION PRINT 4-1021

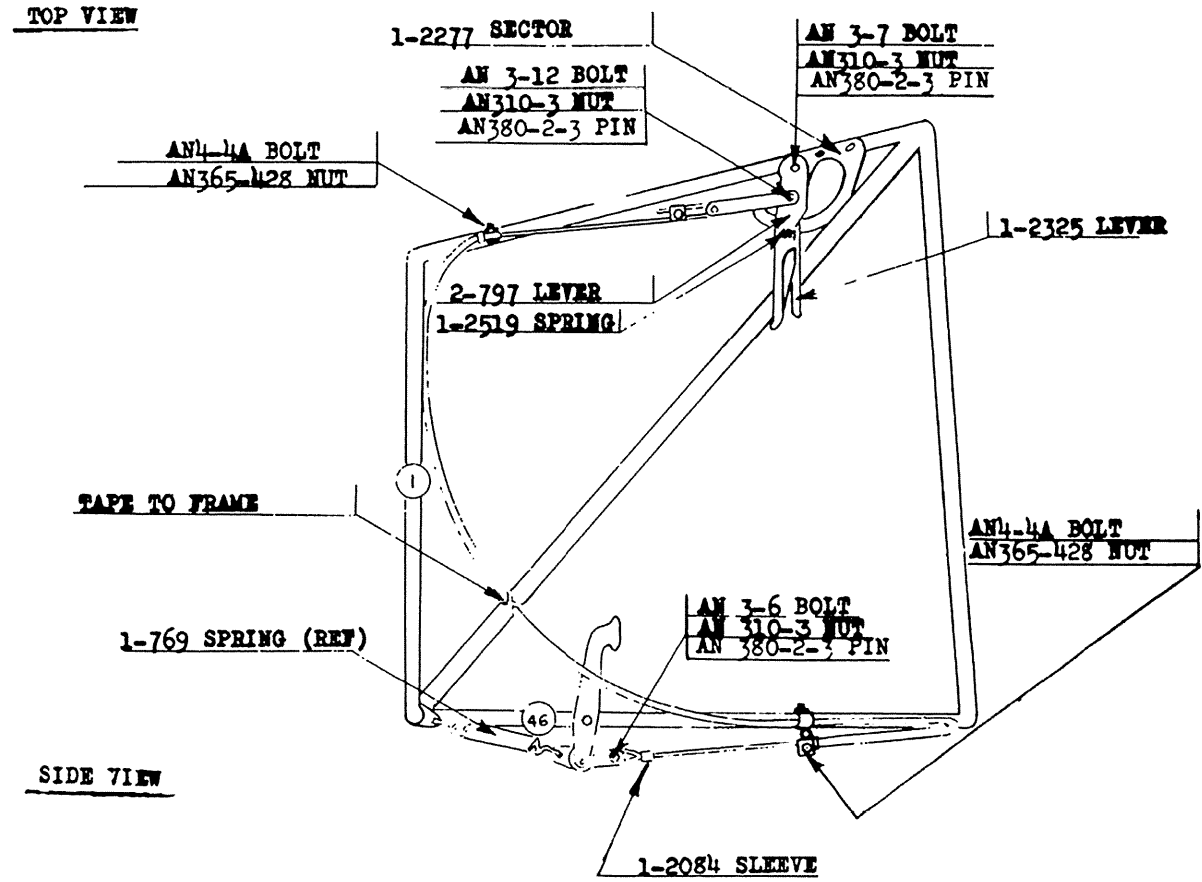
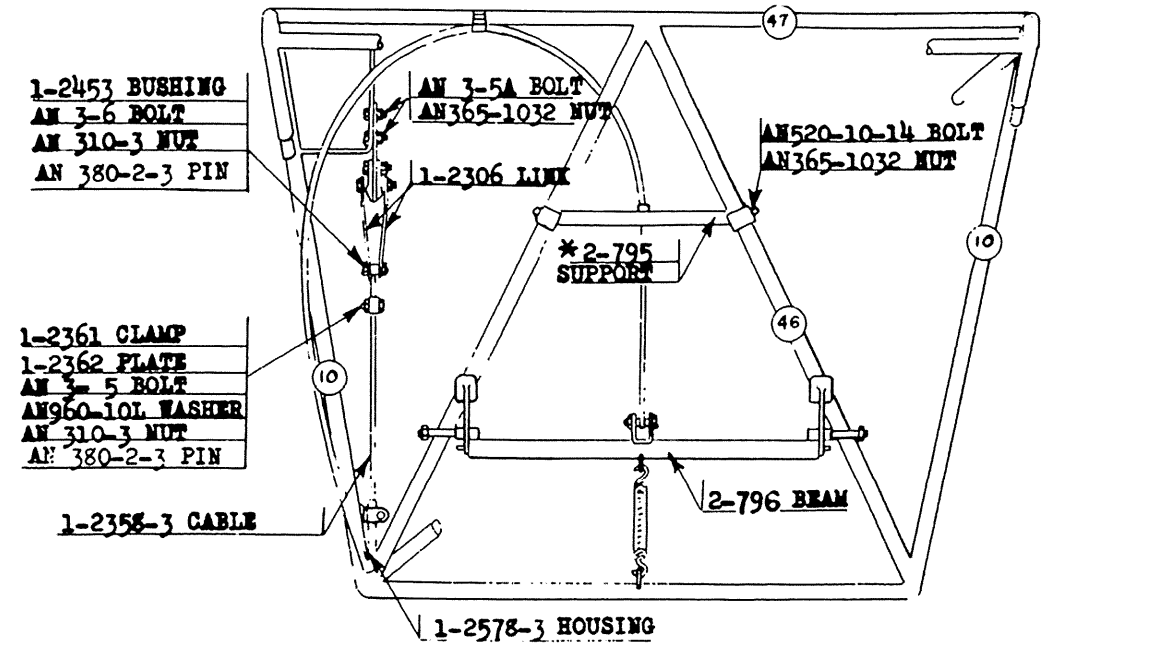


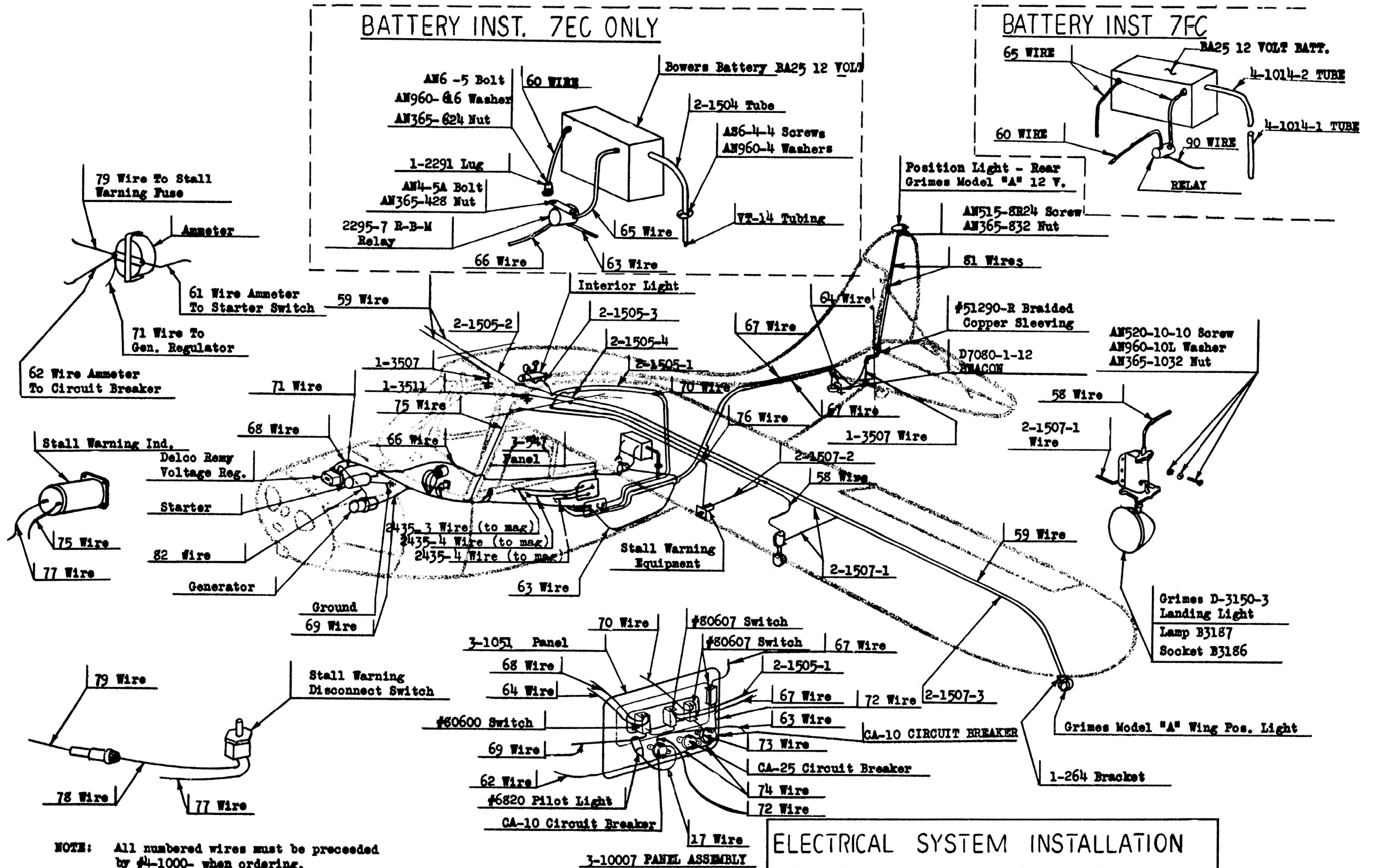
INSTALLATION- HAND BRAKE - TOP & SIDE VIEWS 7-443

MODEL 7EC ONLY

INSTALLATION PRINT 7-443

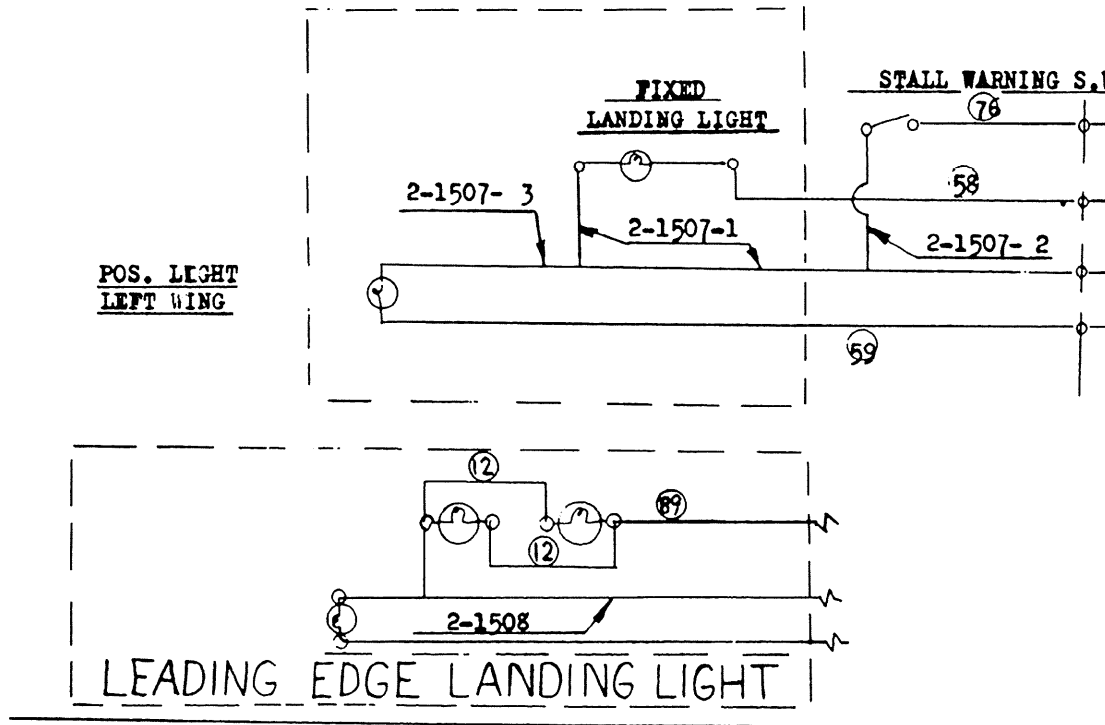
\* 1-8793 SUPPORT ALSO USED





NOTE: All numbered wires must be preceded by #4-1000- when ordering.  
 For leading edge landing lite see schematic wire diagram.

**ELECTRICAL SYSTEM INSTALLATION**



**GENERAL DISCRPTION**

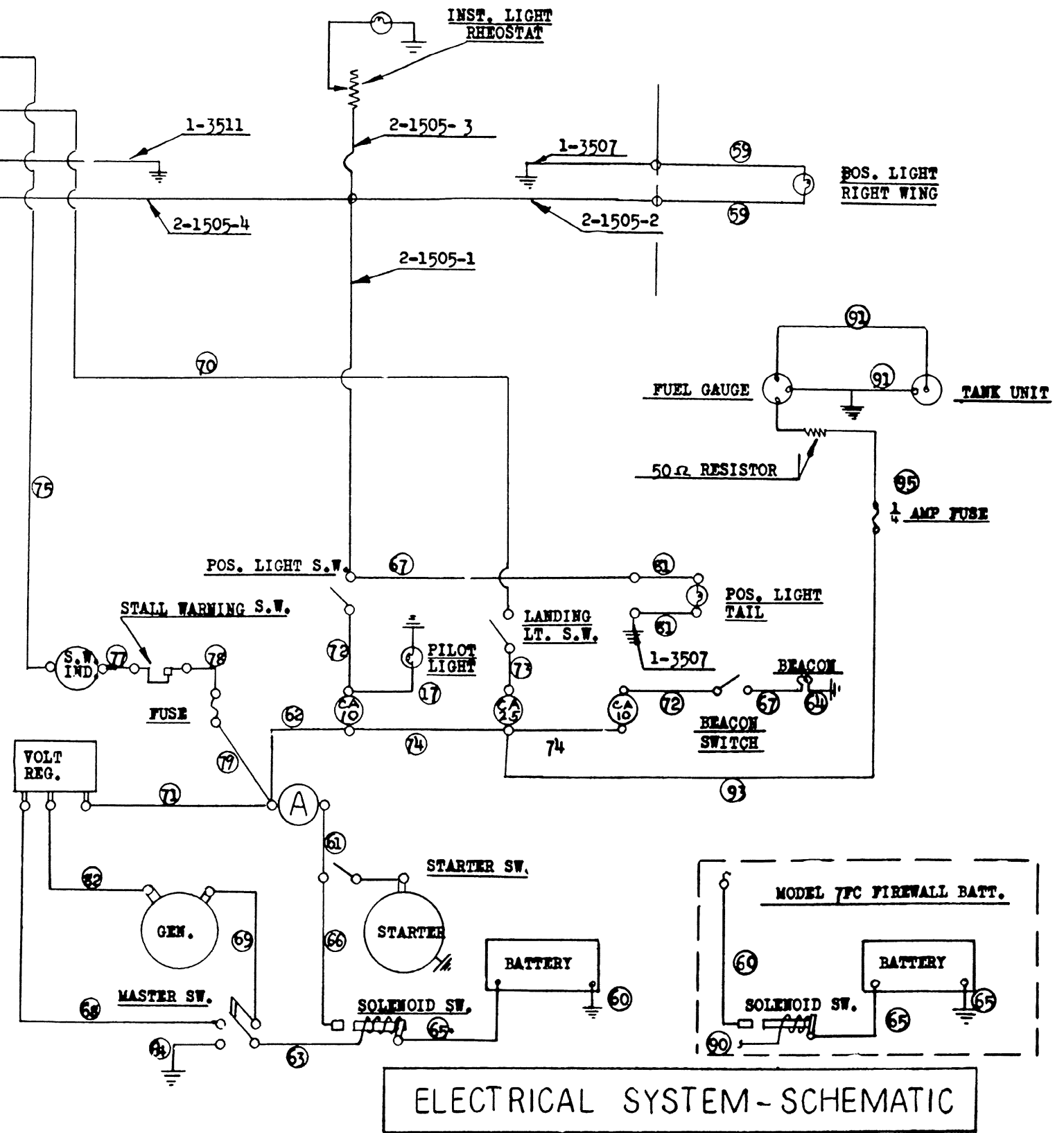
The complete 12 volt electrical system includes navigation lights, landing light, instrument light, pilot light, stall warning equipment, starter, generator, voltage regulator, ammeter, panel, and battery.

On both 7EC and 7FC models provisions are made for installation of landing light and position lights. The four available types of landing lights are the leading edge light, Grimes fixed light and two types of Grimes retractable lights. For installation of the retractable lights see CHAMPION drawings 4-10009 and 4-889. The fixed lights and leading edge light are shown on the schematic. All 7FC models are equipped with the leading edge landing light.

The electrical control panel is located midway between front and rear seat on the left side of the cabin. This panel houses the master, landing light, and navigation light switches.

The electrical system is optional equipment on the standard model.

All numbered wires must be preceded by 4-1000- when ordering.



## ENGINE INSTALLATION

GENERAL:

Continental C90-12F. Horizontally opposed, four cylinder, air cooled with 4 1/16" bore and 3 7/8" stroke. Total piston displacement is 200.91 cubic inches and compression ratio 7.0 to 1.

Rated horsepower at sea level, 90 h.p. at 2475 R.P.M. Recommended cruising 2300 R.P.M. - Rated takeoff horsepower, 95 h.p. at 2625 R.P.M.

NOTE: Recommended cruising R.P.M. should be static or the maximum R.P.M. shown on the tachometer when the engine is run up prior to flight with carburetor heat off.

OIL REQUIRED:

Warm weather	S.A.E. #40
Cold weather	S.A.E. #30
Oil pressure	10 - 35 pounds per sq. inch
Oil temperature	Minimum - 100° F. Maximum - 225° F.

CARBURETOR:

Stromberg NA-S3A1

FUEL REQUIRED:

80 octane. (min)

FUEL CONSUMPTION:

5.25 U. S. gallons per hour  
4.35 Imperial gallons per hour

IGNITION:

Scintilla or Eiseman magnetos. Champion C-27 spark plugs.

FIRING ORDER:

1 - 3 - 2 - 4.

SPARK ADVANCE:

Left magneto (Number 1 mag.) fires lower spark plugs at 28° B.T.C.  
Right magneto (Number 2 mag.) fires upper plugs at 26° B.T.C.

MOUNT:

Attachment of engine to fuselage is provided by the engine mount assembly, fabricated of 1010, 1025 and 4130 steel tubing engineered to lessen vibration transmission to the fuselage. Four AN bolts attach the mount to the fuselage and four AN bolts attach the engine to the mount. Rubber bushings are provided by the engine manufacturer to insulate further against vibration at the engine mount attachments.

**BAFFLES:**

Two side and two rear baffles make up the basic cylinder barrel and cylinder head pressure cooling system. Aluminum alloy sheet is used in the fabrication of these parts. Air, upon entering the upper front of the nose cowling, is forced around the cylinder fins of the engine assembly. Air from the upper cowling and baffle chamber is passed through flexible aluminum tubing to mufflers at the junction of the exhaust stack "Y" on each side of the engine. The air is heated upon contact with the exhaust stacks, the left muffler and stack assembly providing heated air for cabin heater, the right muffler and stack assembly providing heated air for the carburetor heater assembly.

**INTER-CYLINDER BAFFLES:**

Two baffles are incorporated below and between the cylinder heads and barrels on each side of the engine. Supported with a spring and rod assembly these units complete the baffle system for the engine cylinders. It is very important that these inter-cylinder baffles are in place at all times to prevent leakage of pressure in the upper baffle system resulting in improper cooling.

**CRANKCASE BAFFLES:**

These baffles are provided to force cool air around the crankcase of the engine. Outside air enters through the lower front nose cowling building up pressure at the front of the crankcase.

**HEAT CONTROL:**

Flow of the heated air to the carburetor heater and cabin heater is controlled from the engine control panel and instrument panel respectively.

**CAUTION:** Felt binding around the upper cylinder baffles must always extend inward. This insures a snug cowling and baffle fit when air pressure is exerted against the felt binding in flight.

**CARBURETOR HEATER:**

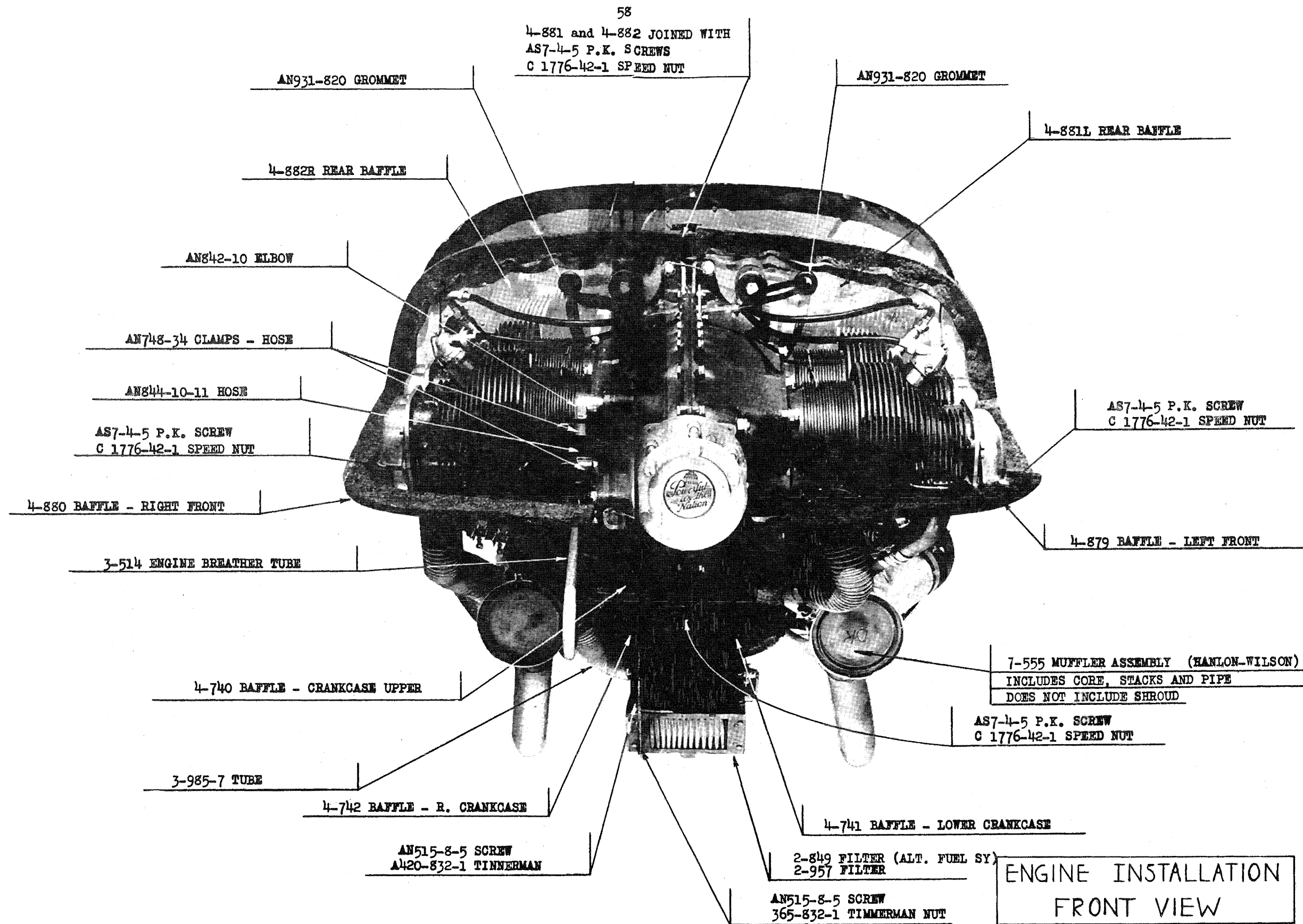
This assembly controls the flow of heated air from the baffle system to the carburetor venturi. A butterfly valve connected to the carburetor heater control cable directs the airflow to the carburetor when heat is desired, or through the outlet at the bottom of the air scoop assembly when not in use.

**CAUTION:** Proper functioning of the heater butterfly valve may be determined as follows:

Set throttle at cruising R.P.M. (2300 R.P.M.) Pull heater control on, R.P.M.'s should drop not less than 75 R.P.M. not more than 200 R.P.M.

If no change is noted check butterfly valve for proper seating.

Engine overhaul procedure, specifications and instructions are contained in the Continental Instruction Manual.



58

4-881 and 4-882 JOINED WITH  
AS7-4-5 P.K. SCREWS  
C 1776-42-1 SPEED NUT

AN931-820 GROMMET

AN931-820 GROMMET

4-881L REAR BAFFLE

4-882R REAR BAFFLE

AN842-10 ELBOW

AN748-34 CLAMPS - HOSE

AN844-10-11 HOSE

AS7-4-5 P.K. SCREW  
C 1776-42-1 SPEED NUT

AS7-4-5 P.K. SCREW  
C 1776-42-1 SPEED NUT

4-880 BAFFLE - RIGHT FRONT

4-879 BAFFLE - LEFT FRONT

3-514 ENGINE BREATHER TUBE

4-740 BAFFLE - CRANKCASE UPPER

7-555 MUFFLER ASSEMBLY (HANLON-WILSON)  
INCLUDES CORE, STACKS AND PIPE  
DOES NOT INCLUDE SHROUD

AS7-4-5 P.K. SCREW  
C 1776-42-1 SPEED NUT

3-985-7 TUBE

4-742 BAFFLE - R. CRANKCASE

4-741 BAFFLE - LOWER CRANKCASE

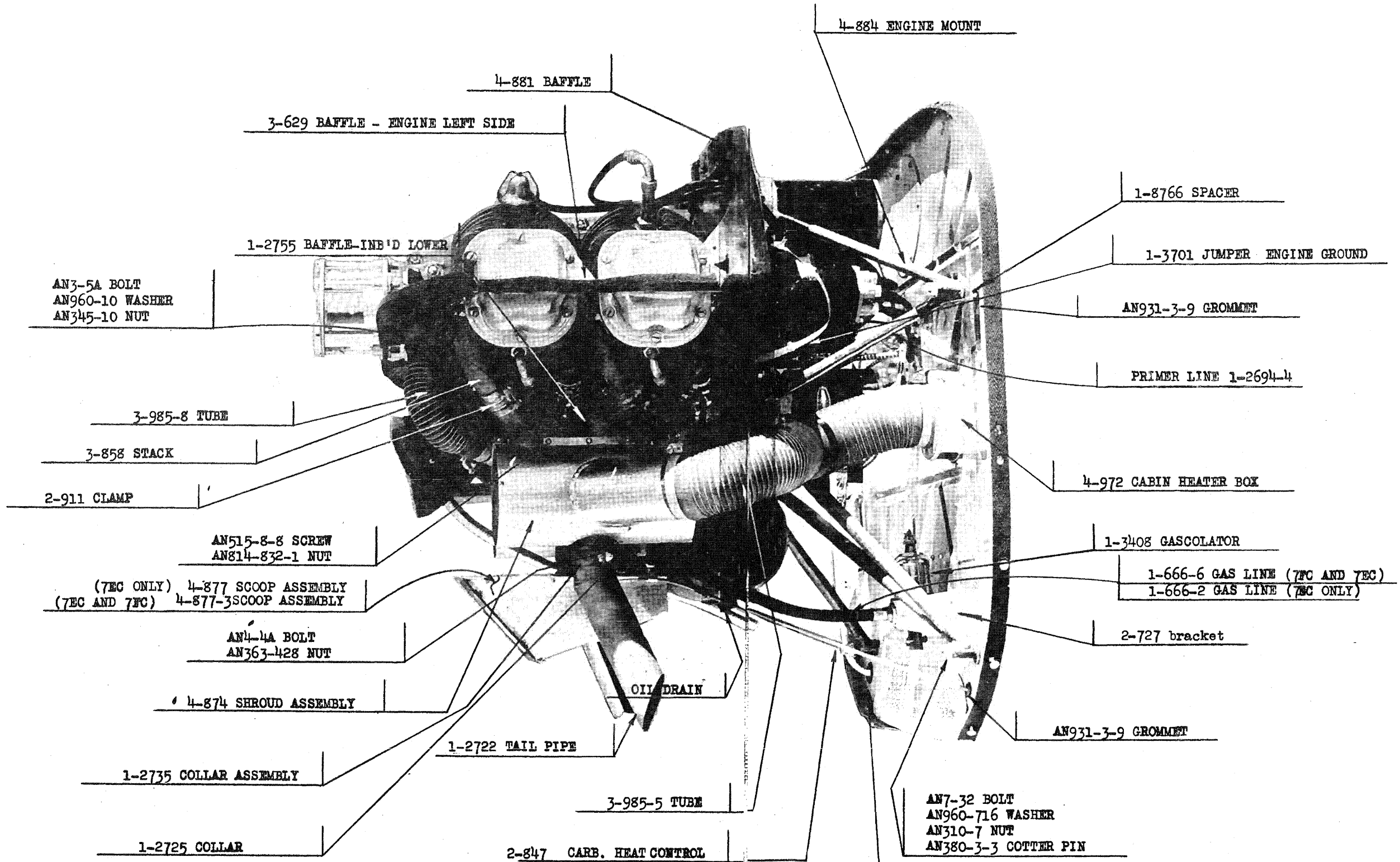
AN515-8-5 SCREW  
A420-832-1 TIMMERMAN

2-849 FILTER (ALT. FUEL SY)  
2-957 FILTER

AN515-8-5 SCREW  
365-832-1 TIMMERMAN NUT

ENGINE INSTALLATION  
FRONT VIEW





4-884 ENGINE MOUNT

4-881 BAFFLE

3-629 BAFFLE - ENGINE LEFT SIDE

1-2755 BAFFLE-INS'D LOWER

AN3-5A BOLT  
AN960-10 WASHER  
AN345-10 NUT

1-8766 SPACER

1-3701 JUMPER ENGINE GROUND

AN931-3-9 GROMMET

PRIMER LINE 1-2694-4

3-985-8 TUBE

3-858 STACK

2-911 CLAMP

4-972 CABIN HEATER BOX

AN515-8-8 SCREW  
AN814-832-1 NUT

1-3408 GASCOLATOR

(7EC ONLY) 4-877 SCOOP ASSEMBLY  
(7EC AND 7FC) 4-877-3 SCOOP ASSEMBLY

1-666-6 GAS LINE (7FC AND 7EC)  
1-666-2 GAS LINE (7EC ONLY)

AN4-4A BOLT  
AN363-428 NUT

2-727 bracket

4-874 SHROUD ASSEMBLY

OIL DRAIN

AN931-3-9 GROMMET

1-2722 TAIL PIPE

1-2735 COLLAR ASSEMBLY

3-985-5 TUBE

AN7-32 BOLT  
AN960-716 WASHER  
AN310-7 NUT  
AN380-3-3 COTTER PIN

1-2725 COLLAR

2-847 CARB. HEAT CONTROL

AN931-6-16 GROMMET

ENGINE INSTALLATION  
LEFT SIDE

AN7-37 BOLT  
AN960-716 WASHER  
AN310-7 NUT  
AN380-3-3 COTTER PIN

1-3703 SPRING-INNER BAFFLE  
1-3704-1 LINK-INNER BAFFLE  
1-3704-2 LINK-INNER BAFFLE  
1-1737 BAFFLE-CYL. HEAD  
1-873 BAFFLE-BOTTOM

ANGH32 BOLTS - McCAULEY METAL PROP.  
ANGH40 BOLTS - SENSENICH WOOD PROP.

4-882 REAR BAFFLE

3-631 BAFFLE-REAR LOWER

1-2415 ELBOW

3-985-9 TUBE

AS7-4-5 P.K. SCREW  
C1776-42-1 SPEED NUT

3-985-8 TUBE

7-1055-9 WEBBING

3-630 BAFFLE - ENGINE RIGHT SIDE

CONT. #530473-A-1 OIL SUMP

4-884 ENGINE MOUNT

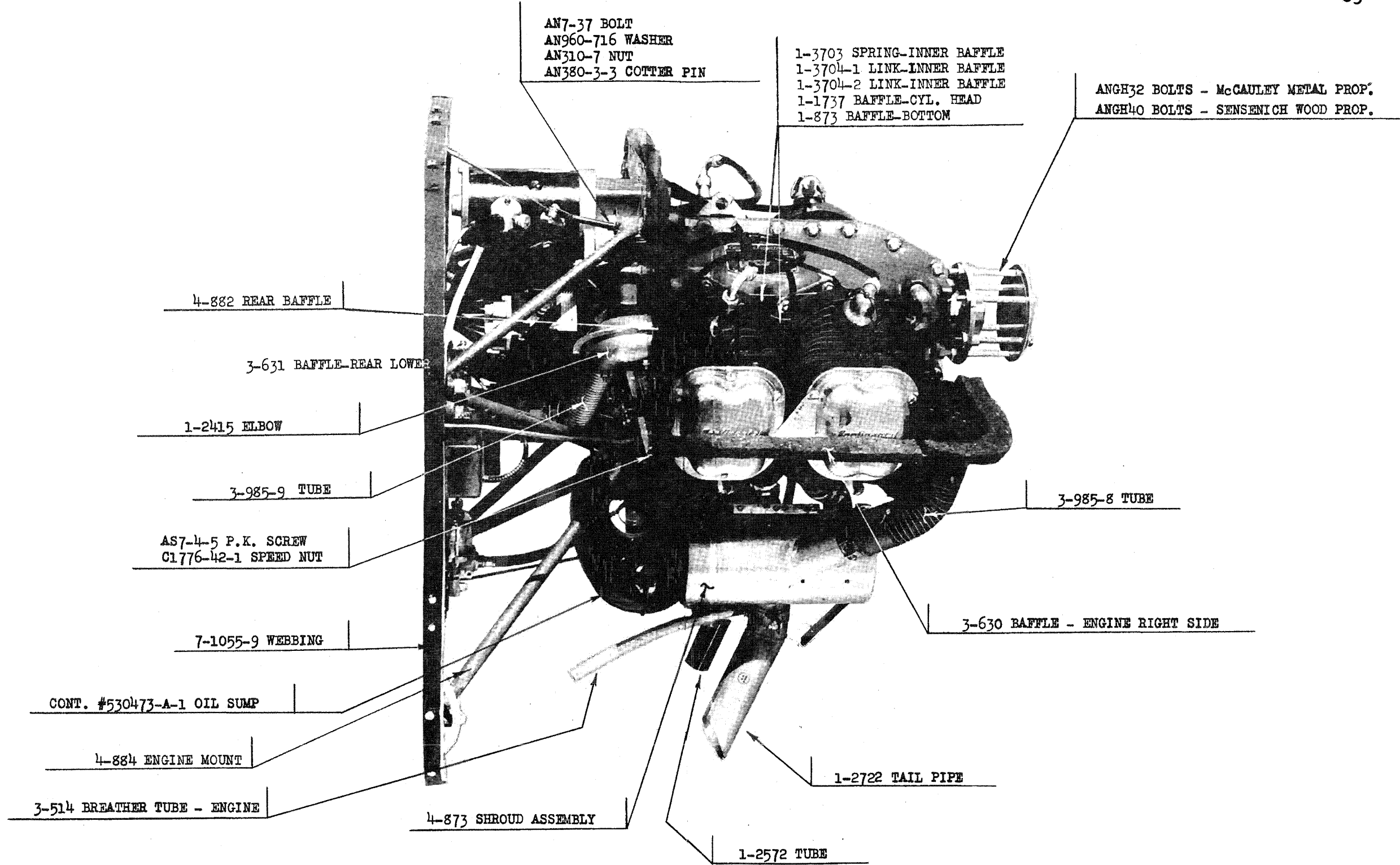
3-514 BREATHER TUBE - ENGINE

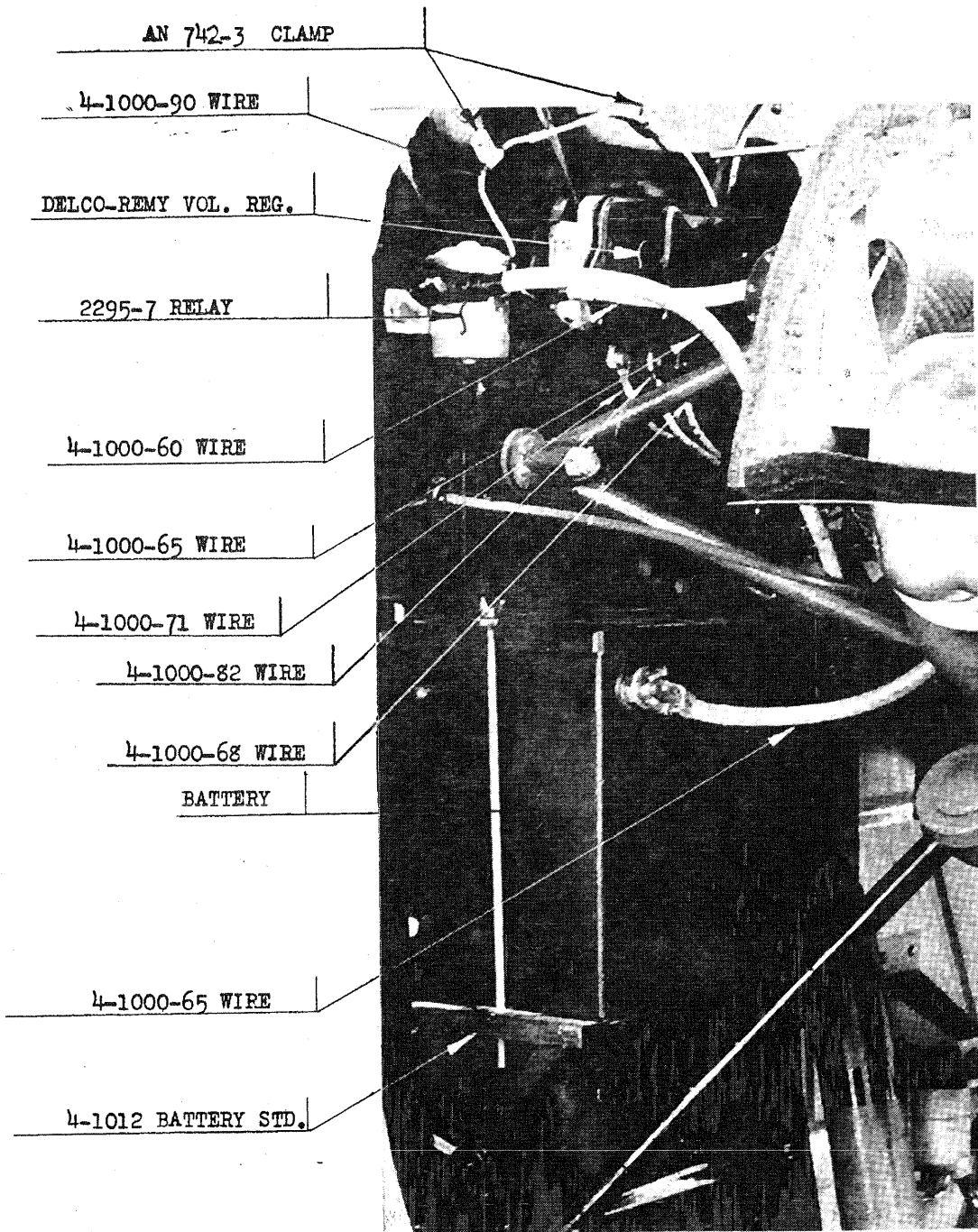
4-873 SHROUD ASSEMBLY

1-2722 TAIL PIPE

1-2572 TUBE

ENGINE INSTALLATION - RIGHT SIDE





BATTERY INSTALLATION 7FC ONLY

## COWL AND COVERING

COWLING:

Engine installation is enclosed with three sections of aluminum alloy, namely the nose, top and lower cowlings. These cowlings are secured with Dzus fasteners (incorporated at the most desirable points of accessibility) and self-locking nuts and machine screws.

The wraparound cowling which encloses the fuselage aft of the firewall is a semi-permanent installation. This cowling is one piece of aluminum alloy secured to firewall, fuselage and instrument panel with P.K. screws and machine bolts and stop nuts. An adjustable clamp assembly provides access to front rudder and brake pedal assemblies, besides securing the cowling together at the bottom.

Inspection plates on wings and fuselage covering are strategically placed to enable inspection of all critical structural parts and control cables.

FINISHING SPECIFICATIONS:

N.C. numbers are enamel instead of dope. Trim is also enamel. Using Grade "A" pre-doped fabric as covering material, the following dope application is made;

Six single coats clear dope brushed and sanded.

Two cross coats of aluminum pigmented dope sprayed and sanded.

Three cross coats of color pigmented dope, sprayed.

Zinc chromate primer or vinyl wash coat primer is used on all metals parts of the structure including landing gear components, cowling and fairing. V.C.M. enamel is applied over this primer on all of these exposed surfaces.

When washing the airplane use only mild soap and water, being sure to rinse thoroughly.

'Glidden' V.C.M. enamel used for enameled surfaces.

'Glidden' Cellulose Acetate Butyrate dope used for doped surfaces.

'Glidden' Xylol to be used for removing enamel from doped surfaces.

"GREENHOUSE" INFORMATION

The "Greenhouse" model includes the addition of plexiglass windows in the cabin roof plus larger cabin side windows. Flight - tested shoulder and seat-safety harness' are installed as extra safety features. This model also features a jettison type door as standard equipment.

As indicated on the fairing installation drawing (pages 68 and 69 ) the general window support frame installation has been modified over the standard model so as to give maximum window area.

Window covering strips, support flanges and finishing tape complete the window installation. They are installed as indicated on the Sky-Trac window installation drawing on pages 70 and 71 .

All other fuselage and wing members installed on the Standard and Traveler models are interchangeable with the "Greenhouse".

The deluxe interior installed in the "Greenhouse" model consists of floor carpeting, shatter resistant instrument panel and upholstered side panels, baggage compartment lid and cabin door. Two-tone Naughyde plastic leathercloth is used to cover the cabin side panels and door panel.

UPHOLSTERY INFORMATION

The CHAMPION deluxe interior and floor carpeting is installed as standard equipment on the special Traveler, Tri-Traveler, and 'Greenhouse' models.

Cabin side panels, baggage compartment lid and cabin door are covered with deluxe upholstery, either plastic leathercloth or corduroy over a cotton wadding base.

Sponge rubber is added between the false plastic instrument panel section #4-10006 and the instrument housing section to give added shatter resistant qualities.

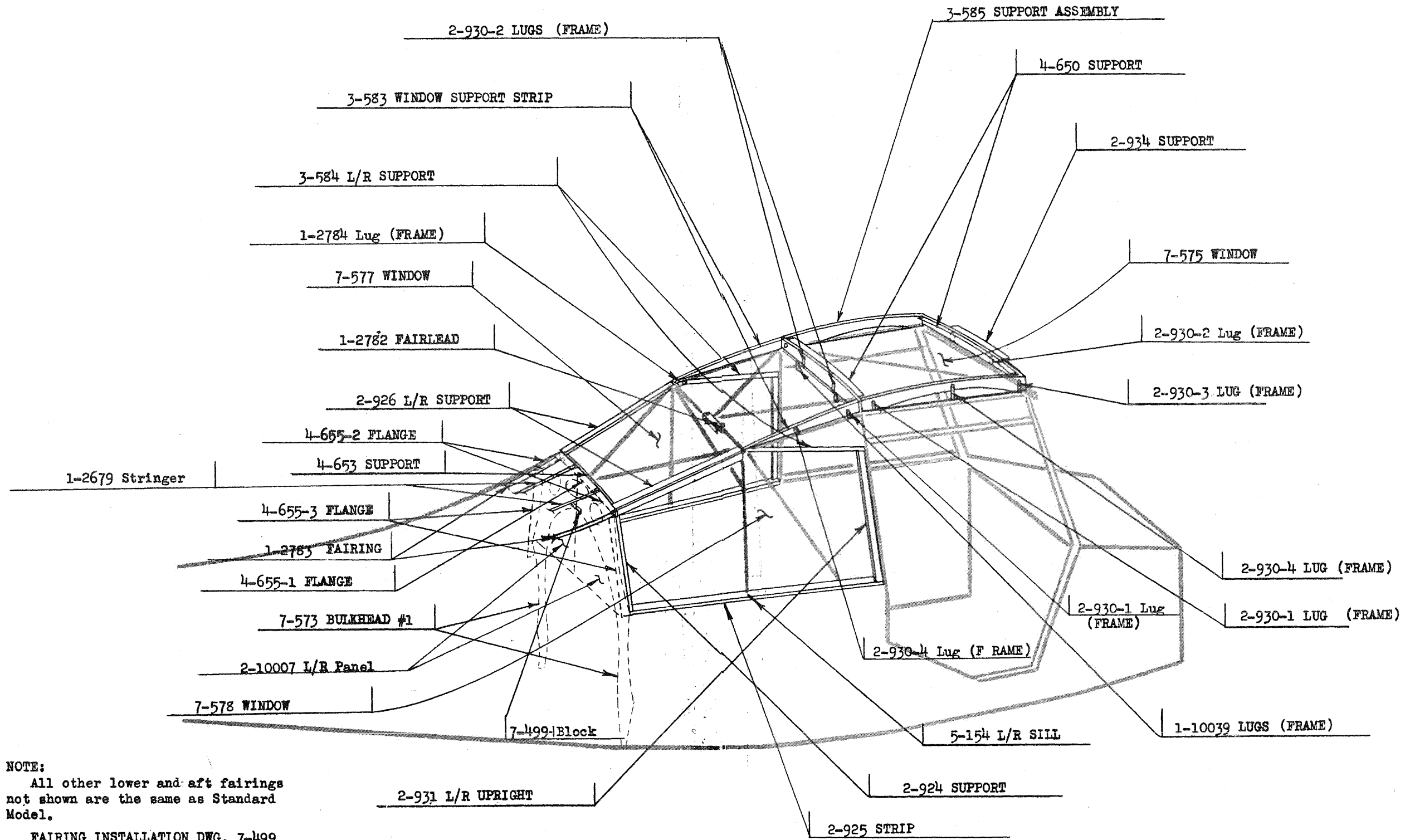
Upholstered cabin panels are installed per CHAMPION drawing #7-10003 and consist of the following:

Bottom doorway panel	#4-10004
Right rear side panel	#4-609R
Left side panel	#4-10014
Cabin door panel	#4-10003

The door panel is installed per CHAMPION drawing #7-1053. An upholstered bulkhead panel #2-10007 is installed on "Greenhouse" models only. (See "Greenhouse" fairing installation drawing - pages 68 and 69.)

SOUNDPROOFING INFORMATION

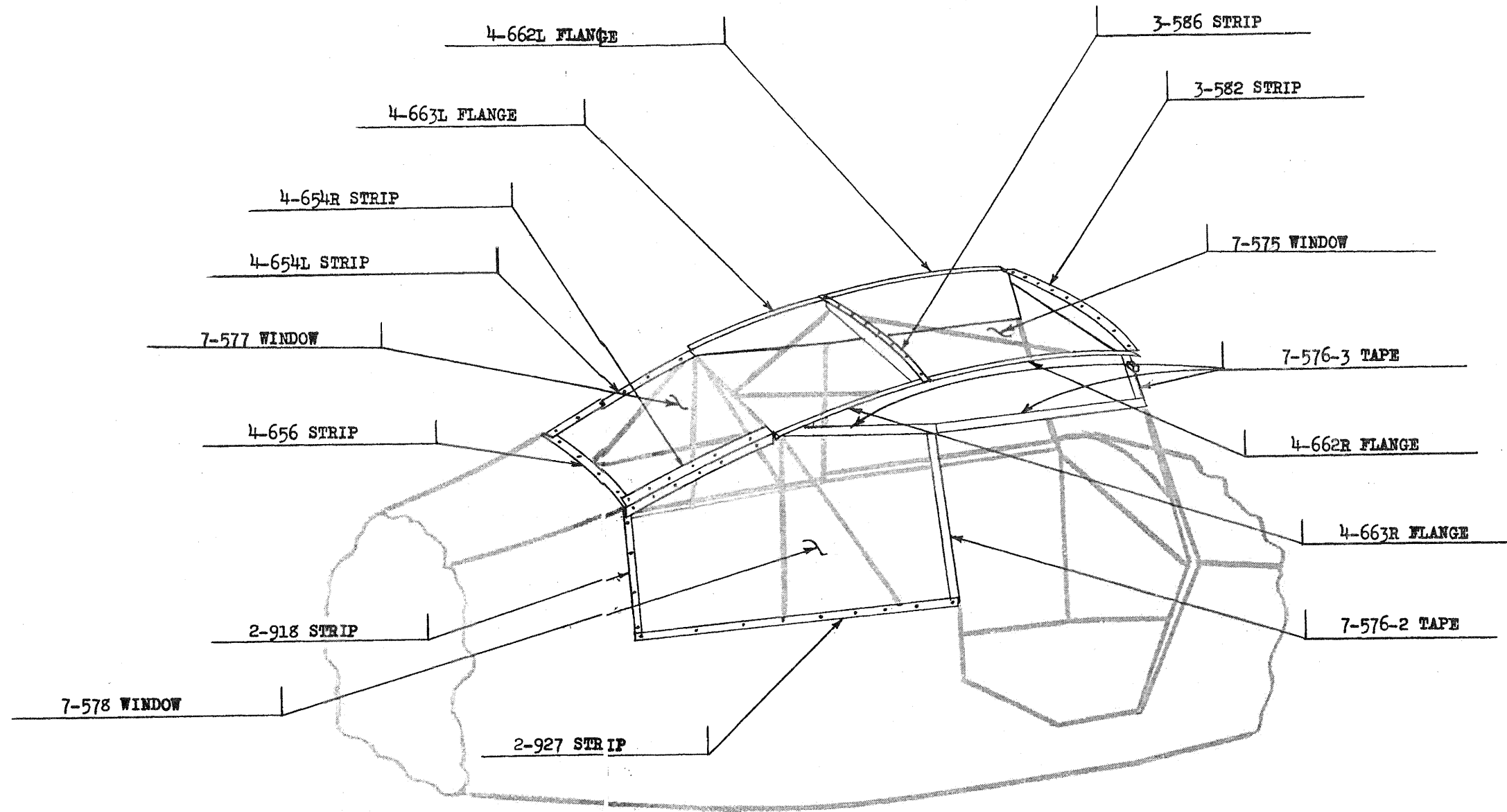
The cabin, on all deluxe and Tri-Traveler models, is soundproofed with fibre insulation. The insulation is installed between the cabin panels and the fuselage fabric covering. This helps to eliminate noise and vibration plus maintaining heat.



NOTE:  
 All other lower and aft fairings  
 not shown are the same as Standard  
 Model.

FAIRING INSTALLATION DWG. 7-499

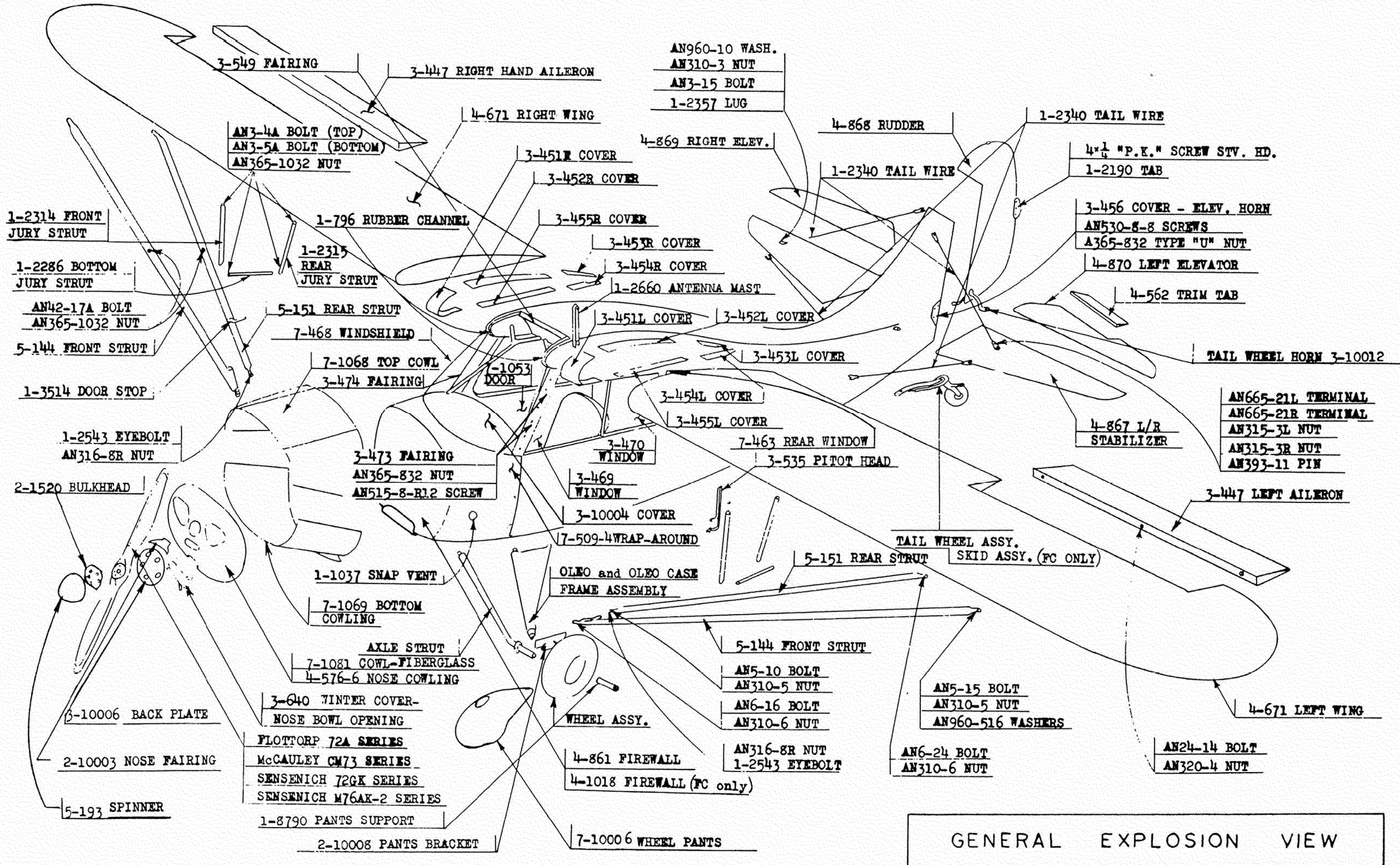
FAIRING INSTALLATION "GREENHOUSE" MODEL	7-499
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WINDOW INSTALLATION DWG. 7-576

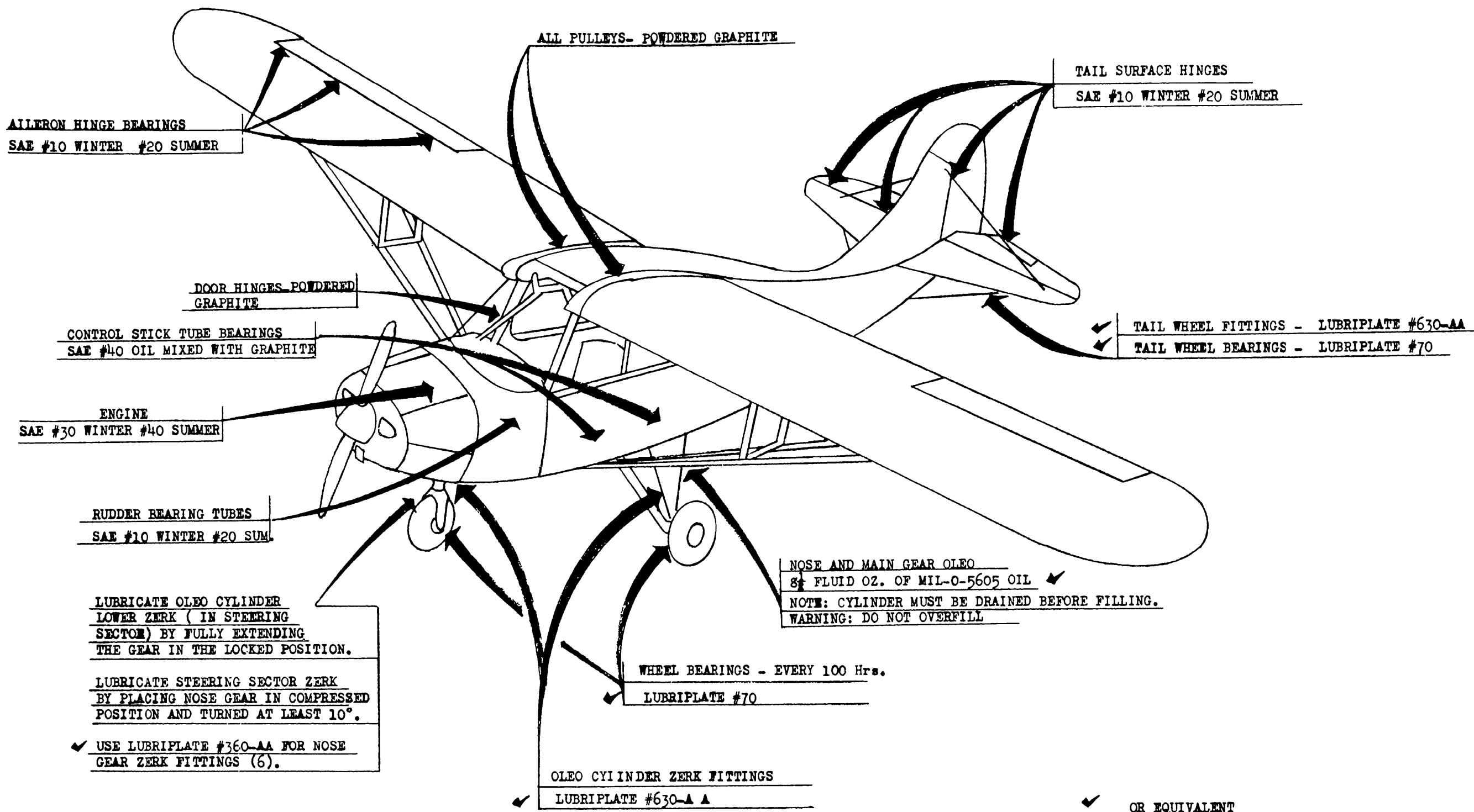
WINDOW INSTALLATION 'GREENHOUSE' MODEL 7-576





GENERAL EXPLOSION VIEW

NOTE:  
FOR NOSE GEAR ASSY SEE NOSE GEAR ASSY. DRAWING PAGE 40.



LUBRICATION CHART

**DO'S and DON'TS**

- DO - tie your ship down.**
- DO - cover the pitot tube head when not in use.**
- DO - check fuel and oil supply before takeoff.**
- DO - keep your ship clean.**
- DO - check your mags before takeoff.**
- DO - check your oil pressure and temperature when starting engine and during warmup.**
- DO - fasten your safety belt before starting engine.**
- DO - check freedom of controls before takeoff.**
- DO - check sediment bulb for water, daily.**
- DO - lubricate oleos every 25 hours.**
- DO - check engine and engine mount attachment bolts, every 20 hours for security.**
- DO - face wind during engine warm up.**

- DON'T - use the rudder trailing edge to push the airplane.**
- DON'T - use strong soap on the aircraft finish.**
- DON'T - leave your plane untied.**
- DON'T - hangar your plane without filling the fuel tank.**
- DON'T - neglect those 20 and 100 hour checks.**
- DON'T - try to imitate the stunt pilots.**
- DON'T - neglect checking tire pressures ( 15- 20 pounds).**
- DON'T - use waste fabric to clean your windows and windshield.**

KITS AVAILABLE

The following listed kits are available and can be purchased from the Factory. Send for a complete price list.

KIT NO.	TITLE	USE	MODELS APPLICABLE
1.	Complete Butt Rib Repair Kit	When Complete Butt Rib Has Sustained Damage	All 7 And 11 Series
2.	Butt Rib Trailing Edge Section Kit	When Only Trailing Edge Section Of Butt Rib Has Sustained Damage	All 7 And 11 Series
3.	Butt Rib Bottom And Top Center Section Kit	When Only Top And Bottom Center Section Of Butt Rib Has Sustained Damage	All 7 And 11 Series
4.	Butt Rib Nose Section Kit	When Only Nose Section Of Butt Rib Has Sustained Damage	All 7 And 11 Series
5.	Complete Main Rib Repair Kit	When Complete Main Rib Has Sustained Damage	All 7 And 11 Series
6.	Main Rib Trailing Edge Section Kit	When Only Trailing Edge Section Of Main Rib Has Sustained Damage	All 7 And 11 Series
7.	Main Rib Nose Section Kit	When Nose Section Of Main Rib Has Sustained Damage	All 7 And 11 Series
8.	Main Rib Top And Bottom Center Section Kit	When Only Top And Bottom Center Sections Of Main Rib Has Sustained Damage	All 7 And 11 Series
9.	Complete Aileron Bay Rib Repair Kit	When Complete Aileron Bay Rib Has Sustained Damage	All 7 And 11 Series
10.	Aileron Rib Trailing Edge Section Kit	When Only Trailing Edge Of Aileron Bay Has Sustained Damage	All 7 And 11 Series
11.	Aileron Rib Nose Section Kit	When Only Nose Sector Of Aileron Rib Has Sustained Damage	All 7 And 11 Series
12.	Aileron Rib Top And Bottom Center Section Kit	When Only Top And Bottom Center Section Of Aileron Rib Has Sustained Damage	All 7 And 11 Series
13.	Snare Kit	When Complying With CAA Mandatory Note	7A And 11 Series
14.	Complete Wings And Strut Hardware Kit (Both Wings)	When Replacing All Nuts, Bolts, And Washers On Wing And Struts	All 7 And 11 Series
15.	Complete Landing Gear Hardware Replacement Kit	When Replacing All Bolts, Nuts, Washers And Bushings In Landing Gear Axles And And Vee's	7A, 7B, 7C, 7D, And 11 Series

KIT NO.	TITLE	USE	MODELS APPLICABLE
16.	Complete Landing Gear Hardware Replacement Kit	When Replacing All Bolts, Nuts, Washers And Bushings In Landing Gear Axles And Vee's	7E And 7F
17.	Complete Control System Hardware Replacement Kit	When Replacing All Nuts, Bolts, Washers And Bushing In Control System	All 7 Series
18.	Complete Control System Pulley Replacement Kit	When Replacing All Pulleys In Control System	All 7 Series
19.	Complete Aileron Hardware Replacement Kit	When Replacing All Nuts, Bolts, And Spacers In Ailerons	All 7 And 11 Series
21.	Complete Tail Surfaces Hardware Replacement Kit	When Replacing All Bolts, Nuts, Washers, Pins and Bushing In Tail Surfaces	All 7 And 11 Series
101.	Complete Wheel Pants Installation Kit	When Installing Wheel Pants	7E And 7F
116.	Complete Low Frequency Radio Antenna Kit	When Installing Low Frequency Radio Antenna	All 7 Series Except Green-House Models
117.	Complete Low Frequency Radio Antenna Kit	When Installing Low Frequency Radio Antenna	All 7 Series Green-House Models
124.	Complete Position Light Installation Kit (6 Volt) (Less Generator And Battery)	When Installing Position Lights	7A, 7B, 7C, 7D
128.	Complete Muffler Installation Kit	When Installing Or Replacing Mufflers (Without High Output Heater)	7A, 7B 7C, 7D
129.	Complete Muffler Installation Kit	When Installing Or Replacing Mufflers	7E, 7F, All Other 7 Series With High-Output Heater
135.	Complete Parking Brake Installation Kit	When Installing Parking Brake	All 7 Series
140.	Complete Auxiliary Fin Installation Kit	When Installing Auxiliary Fin Only	7A and 7E
141.	Complete Auxiliary And Ventral Fin Installation Kit	When Installing Auxiliary And Ventral Fin	7A
142.	Complete Ventral Fin Installation Kit	When Installing Ventral Fin Only	7A, 7C, 7D
151.	Complete Adjustable Seat Kit	When Installing Adjustable Seat	All 7 Series

KIT NO.	TITLE	USE	MODELS APPLICABLE
163	Complete Auxiliary R. Wing Tank (5.5) Kit	When Installing Right Wing Auxiliary Tank	7A, 7B, 7D, 7E
164	Complete Frame Reinforcement Kit	When Converting 7A and 7B to 7C	7A, 7B
167	Complete High Output Cabin Heater Kit	When Installing High Output Cabin Heater	All 7 Series With Hanlon-Wilson Mufflers
168	Complete Leading Edge Landing Light Kit	When Installing Leading Edge Landing Light	7E
169	Complete Auxiliary Left Wing Tank (5.5) Kit	When Installing Left Wing Auxiliary Tank	All 7 Series
170	Complete Basic Electrical System	When Installing Electrical System	7E
171	Complete Turn And Bank Kit	When Installing Turn And Bank	All 7 Series
172	Complete Stall Warning Kit (12 Volt)	When Stall Warning Is Desired	7E
173	Complete Navigation Light Kit (12 Volt)	When Navigation Lights Are Used	7E
175	Wing Tip Bow Reinforcement Kit	When Repairing Damaged Wing Tip	All 7 And 11 Series
178	Complete Dorsal Fin Kit	When Installing Dorsal Fin	7A, 7B
179	Complete Rotating Beacon Light Kit (12 Volt)	When Installing Rotating Beacon Light	7E
180	Deluxe Interior Kit	When Installing Deluxe Interior	All 7 Series
181	Lear VHF And LF Radio Combination Kit	When Installing Lear LTRA-6 Radio	7E, 7F
182	Narco VHF Radio Kit(Superhomer)	When Installing Narco VHT-3 Superhomer	7E, 7F
183	Narco LF Attachment Kit	When Installing Narco LF Unit (LFR-3)	7E, 7F
186	Narco Omnigator Kit	When Installing Narco Omnigator	7E, 7F
187	Rear Seat Phone And Volume Control Kit	When Installing Rear Phone And Volume Control	7E, 7F
188	Stainless Steel Control Cable Kit	When Changing Control Cables To Stainless Steel	All 7 Series
189	Complete Hydraulic Brake Kit	Convert Mechanical Brakes to Hydraulic	7E

KIT NO.	TITLE	USE	MODELS APPLICABLE
190	Radio And Gyro Panel Kit	When Installing Radio And Gyro Panel	7E, 7F
191	Complete Nose Scissors Kit	When Replacing Bushings Bolts and Nuts On Nose Gear Scissors	7F
192	Complete 26 Gallon Wing Fuel Tank Kit	When Converting Old Type System To 26 Gallon	All 7 Series
193	Rear Seat Heater Kit	When Installing A Rear Seat Heater	ALL 7 Series
194	Mixture Control Kit	When Installing Engine Mixture Control	7E, 7F