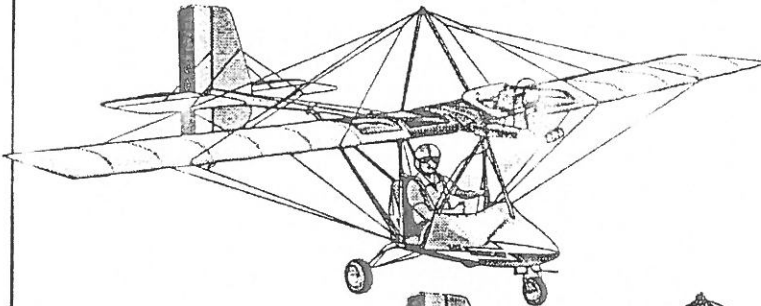
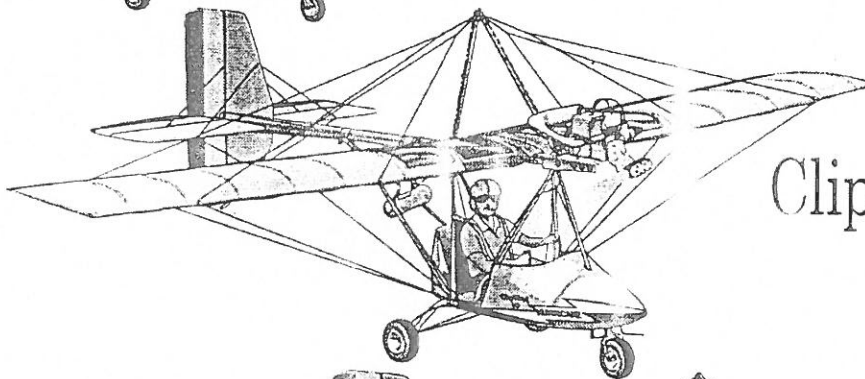


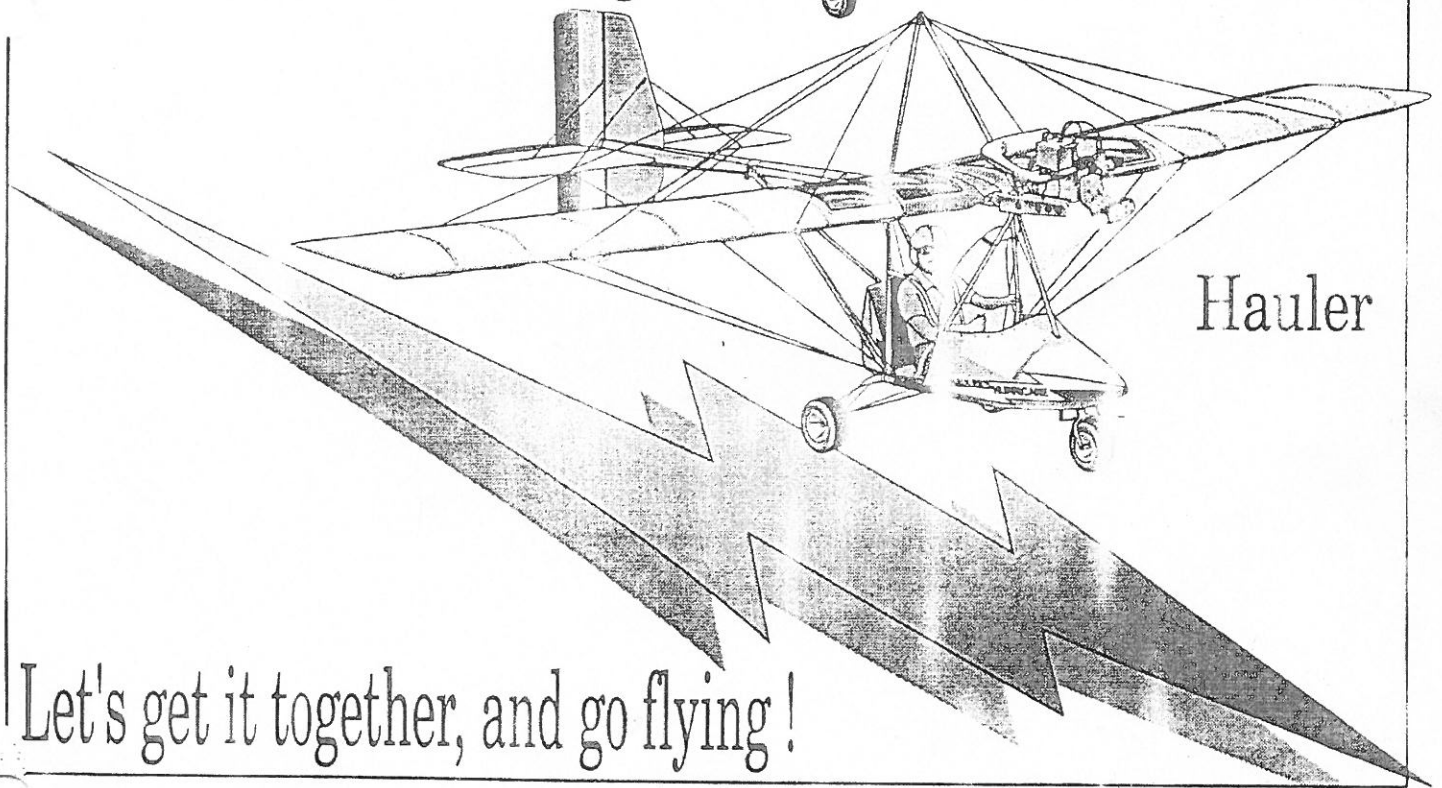
# HURRICANE Assembly Manual



ULTRA 03  
103 Model



ClipWing - HP

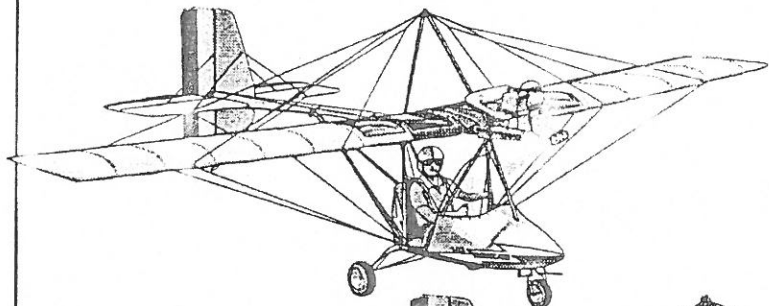


Hauler

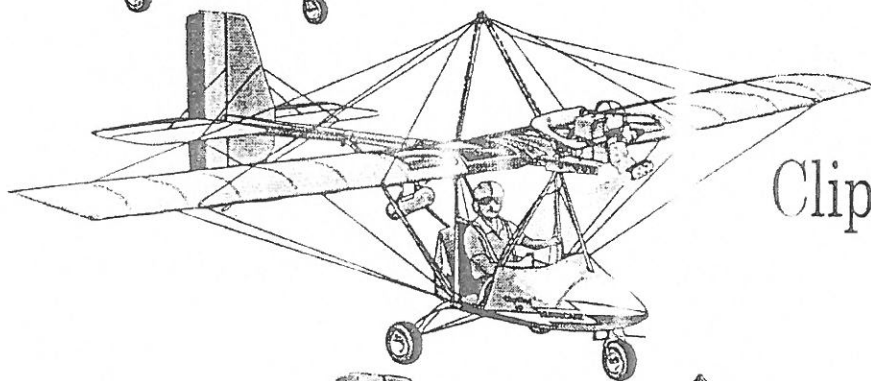
Let's get it together, and go flying!

HY-TEK HURRICANE  
23055 Airport Rd. N.E., Suite #1  
Aurora, OR 97002  
(503) 678-5740 FAX (503) 678 2771

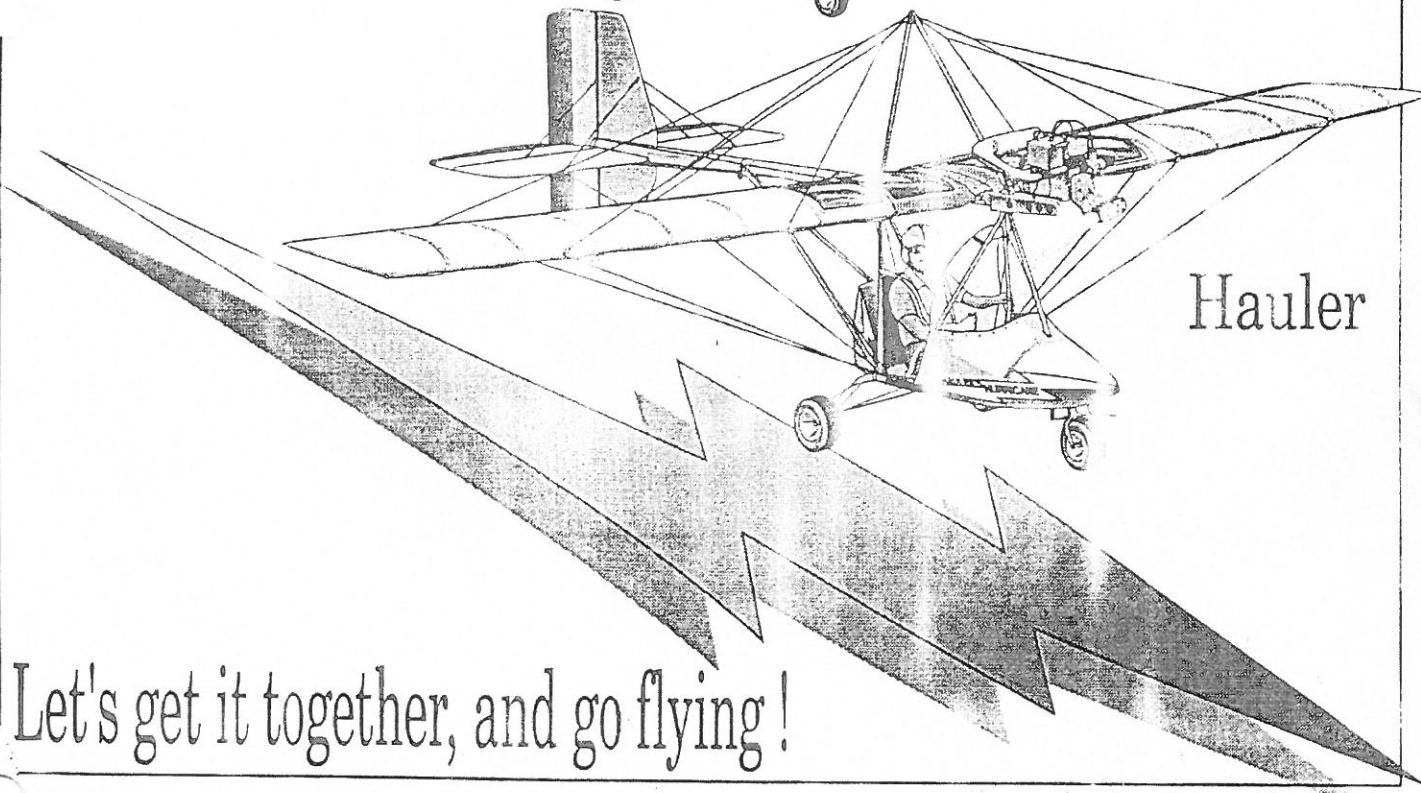
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# ASSEMBLY MANUAL FOR THE PROUD OWNER OF HURRICANE #

## TABLE OF CONTENTS

### **Introduction**

- Page 1 Cover page  
Page 5 Table of Contents  
Page 9-17 Parts Numbering System & Inventory List

### **Owner Information**

- Page 18 Specifications and 3-view drawing  
Page 21-24 Owners Responsibility / General Instructions

### **Assembly**

- Page 27 General overview of assembly sequence and cage assembly  
Page 28-32 Lower tubes / fittings & Landing gear assembly (Fig. 1, 2 and 3)  
Page 32-37 Rudder Pedals & F. and R. Wheel Assembly and Control stick ( Fig. 4 & 5)  
Page 37 Wheel / Tire / Brake Assembly illustration  
Page 38 Lower Elevator Mount / Instrument mount (Fig. 6)  
Page 39 Control Stick Illustration (Fig. 7)  
Page 40 Elevator Pulley Illustration (Fig. 8)  
Page 44-47 Upper Cage, Keel tube, Down tubes Illustrations (Fig. 9, 10, 11, 12)  
Page 48 Aileron / Flaperon Cable Routing (Fig. 13)  
Page 49 Engine Mounting (Fig. 14)  
Page 53-54 Seat Support, Seat Belt/Shoulder Harness Illustration (Fig. 17, 18)  
Page 55-58 Pod Mounting and Fuel Tank mounting ( Fig.19, 20, 21 )  
Page 59-60 Tail Surfaces Assembly Text  
Page 61-62 Horizontal Stabilizer / Vertical Stabilizer Assembly Text  
Page 63 Elevator Assembly Text  
Page 64-65 Rudder Assembly Text  
Page 70-75 Wing Assembly and Illustration (Fig. 27)  
Page 76-77 Aileron Assembly Text  
Page 78 Aileron Illustrations (Fig. 28)  
Page 79 Wing Stands (Fig. 28)  
Page 80 Flap Illustration (Fig. 29)  
Page 81 Windshield Installation  
Page 82 Finishing Touches of various areas  
Page 83 Preflight Checklist  
Page 84 Bolt Chart

### **Miscellaneous**

- Page 85-97 Replacement Parts, Accessories & Order Form  
Page 99-101 Release Form  
Page 103-110 Construction Records & How to license your Hurricane as a homebuilt  
Page 113-164 Rotax Info  
Page 165-180 BRS Info  
Page 181-183 Flight Logbook  
Page 185-187 Records Storage

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# Hurricane Parts Numbering System

Each area or section of the aircraft is grouped by numbers within a hundred number group. Hopefully each group of parts and numbers will be logically grouped and easily referenced. The Hurricane parts numbering system is kept as simple as possible to avoid confusion. Parts are not necessary in numerical sequence, thus allowing for new part numbers to be given to new upgraded replacement parts in the future.

**Numbers:  
From - To**

<b>100 - 199</b>	<b>Landing Gear, Nose Wheel Steering, Lower Cage / Trike Group, Wheels &amp; Tires</b> Wheel hubs, brakes, bearings, brake lever, nose fork and linkages <p style="text-align: center;">* Hardware</p>
<b>200 - 299</b>	<b>Upper Cage / Trike and Boom Tube Group</b> Keel tube , attach brackets, wing attach brackets, all tubes between keel and trike <p style="text-align: center;">* Hardware</p>
<b>300 - 399</b>	<b>Seat Group, Belt &amp; Harness Group</b> Alum seat bottom, alum seat back, alum lumbar support, seat belt, shoulder harness, seat upholstery <p style="text-align: center;">* Hardware</p>
<b>400 - 499</b>	<b>Aerodynamic Controls Group; Stick, Rudder Pedals, Cables, Pulleys, Etc</b> Control stick, rudder pedals, rudder pedal linkages, elevator cables, rudder cables, aileron cables <p style="text-align: center;">* Hardware</p>
<b>500 - 599</b>	<b>Pod, Windshield, Instrument Panel Group</b> Fiberglass pod, pod bracket(s) and spacers, Crylon windshield, fiberglass instrument panel, pitot tube <p style="text-align: center;">* Hardware</p>
<b>600 - 699</b>	<b>Engine, Propeller, Motor Mounts, Engine Controls, Fuel System Group</b> Engine (447 or optional 503), Prop, prop hub, motor mount, muffler mounts, Berry mounts, fuel tank, fuel lines, (soft and hard), fuel bulb, primer (option), throttle quadrant, throttle cable(s), kill switch <p style="text-align: center;">* Hardware</p>
<b>700 - 799</b>	<b>Tail Group, Vertical &amp; Horizontal Stabilizers, Rudder &amp; Elevator</b> All tubing to form all tail surfaces, covers for all surfaces, control plates, structure wires, control cables <p style="text-align: center;">* Hardware</p>
<b>800 - 899</b>	<b>Wings &amp; Ailerons Group, Including the Optional Flaperon System</b> Leading edge spars, trailing edge spars, spreader tubes, internal wires, upper and lower wing wires, ailerons, aileron belcrank , flaperon cables and system (if ordered as option), wing covers and aileron covers <p style="text-align: center;">* Hardware</p>
<b>900 - 999</b>	<b>Ballistic Recovery Systems, BRS mounts, Other Accessories</b> BRS chute in canister , mount for BRS, bridle wire, activator wire and handle, keel mount <p style="text-align: center;">* Hardware</p>

\* NOTE: All bolts, nuts, washers, or other common AN hardware will be shown with it's proper AN# on the illustrations and referred to in the text by the same. In addition, other miscellaneous small parts will be referred to by their manufacture's part numbers.

# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

	Item / Part Description	Part # as shown in the manual & illustrations	Quantity Shipped	Quantity Rec'd	Note:
1	1 5/8" lower tube (Main trike tubes)	101	2 ✓		
2	1/2" x 1" Forward lower pod spacer	102	1 ✓		
3	Main landing gear legs	103	2 ✓		
4	Brake handle	104	1 ✓		
5	Lower trike support / nose fork / weldment	105	1 ✓		
6					
7	Large (1 1/2") lower cage attach brackets	107	4 ✓		
8	Small (1") lower cage attach brackets	108	6 ✓		
9	1" FWD trike cross support tube	109	1 ✓		
10	1 3/4" x 2 1/2" lower trike spacer (alum)	113	2 ✓		
11	1 3/4" x 2" lower trike spacer (alum)	114	2 ✓		
12	1 3/4" STEEL lower trike side connectors	116	2 ✓		
13	Brake Assemblies	120	2 ✓		Brake backing plates, w/shoes, brake drums, & spacers, axle spacers and hardware
14	1 1/2" AFT trike support cross tube	121	1 ✓		
15	Lower elevator pulley bracket AU-120	AU-120	1 ✓		
16	1 1/2" FWD trike support cross tube	122	1 ✓		
17	<del>1/2" x 1 5/8" weldment bracket spacer</del>	123 (Preinstalled)	<del>1</del>		
18					
19	Brake cable set	130	1 set ✓		2 outer cable housings, 2 inner cable housings
20	Main landing gear axle boots	140	2	B/O	1-2 weeks
21	Nose Fork	150	1 ✓		
22	Nose fork assembly kit	151+	1 ✓		Includes: Bearings, 3/4" x 1 7/8" spacers, axle, cotter pins
23	Wheel hub bearings	160	3 ✓		
24	<del>5" wheel halves</del>	<del>170</del>	<del>2</del>		
25	6" wheel halves	172	6 ✓		
26	Wheel hardware sets	175	3 ✓		O-rings, bolts, washers, nuts,
27	Landing gear support wire set (5 wires)	180	1 ✓		
28	<del>Small tire (nose) 410 x 350 x 5</del>	<del>190</del>	<del>1</del>		
9	Large tires (main) 13 x 600 x 6	192	3 ✓		
J	Non-skid strips (goes on parts(s) 102)	199	2 ✓		

(Note: Any blank spaces above are not "missing" parts. They are intentionally blank to allow for future changes in the construction of the Hurricane line of planes.)

# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

	Item / Part Description	Part #	Quantity Shipped	Quantity Rec'd	Note:
31	Rudder pedal(s) assembly	115	2 ✓		
32	Main boom tube assembly	200	1 ✓		
33	FWD nose tube (down support tube)	201	1 ✓		
34	Tall strut bracket	202	1 ✓		
35	Bent spar attach bracket	205	2 ✓		
36	Flat spar attach bracket	206	2 ✓		
37	FWD trike down tubes	206L & 207R	2 ✓		} NOTE: L & R tubes are marked inside the tubes
38	AFT down (seat support) tubes	211 & 212	2 ✓		
39	AFT boom (down support) tubes	215 & 216	2 ✓		
40	Down tube attach brackets (attach at boom)	217	4 ✓		
41	FWD King Post Tube	220	1 ✓		
42	AFT King Post tube	221	1 ✓		
43	FWD Boom Insert Assembly	223	1 ✓		
44	King Post upper brackets	224	2 ✓		
45	Cable to pulley retainers	261	14 ✓		6 with Kit
46	Cable pulleys	262	14 ✓		6 with Kit 8 installed
47	1" x 1/2" Plastic standoff, rudder pulley	263	2 ✓		
48	3/4" x 3 1/2" AFT Rudder Pedal retainer spacer	264	1 ✓		
49	3/4" x 3 1/8" FWD Rudder pedal retainer spacer	265	1 ✓		
50	Seat cushion	302	1 ✓		
51	Alum. seat back	305	1 ✓		
52	Alum. seat bottom	306	1 ✓		
53	Alum. Lumbar seat plate	307	1 ✓		
54	Seat Belts / Shoulder Harness	308	1 set ✓		
55	Alleron control horn (L & R are the same) Elevator control horn and Rudder control horn	400	4 ✓		
56	Rudder pedal retainer	403	4 ✓		
57	Rudder cable housing retainers	414	2 ✓		
58	Control stick plates	415	2 ✓		
59	Nose steering rod assemblies	450	2 ✓		1/4" x 1/4" x 28 Ball joints
	"	"	2 ✓		1/4" x 28 (threads) & 2 threaded rods

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# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

	Item / Part Description	Part # as shown in the construction manual	Quantity Shipped	Quantity Rec'd	Note:
61	5/16" x 1 3/8" control stick plate spacers	435	1 ✓		
62	Control stick AFT / alleron bellcrank	436	1 ✓		
63	Control stick torque tube w/ spacer (1 1/8" x 1/4")	415	1 ✓		
64	Control Stick handle assembly	401	1 ✓		
65	Up / down elevator control wires	400	2 ✓		
66	Rudder control cable (w/nylon guide)	402	2 ✓		
67	Tail surface wire set (8) & tail brace wires	713	1 set of 8 ✓		
68	Upper wing to king post wire set	801	2 ✓		
69	Lower wing, flying-wire set	802	4 ✓		read labeling to ID the RH or LH, FWD or AFT
70	Wing cross brace wire set (Anti drag wires)	805	1 set ✓		
71	Foam stick grip	405	1 ✓		
72	Control stick torque tube guides	433	2 ✓		
73	Pod	501	1 ✓		
74	Windshleld	502	✓		Alum. Pop rivets (20) and washers for mounting the windshield are in a small "baggie"
75	Instrument panel	550	1 ✓		
76	Pilot tube	503	✓		
77	1" x 1/4" plastic throttle / pod spacer	531	1 ✓		
78	5/16"x2 1/4" lower (AFT) pod attach spacers	422	2 ✓		
79	Instrument panel mounting kit	551	1 ✓		
80	Large motor mount, FWD blocks, (Delrin)	604	2 ✓		
81	Small Motor mount, AFT blocks, (Delrin)	606	2 ✓		
82	Complete motor mount assembly (w/4 Berry mounts)	602	1 set ✓		Berry mounts 8.50 Eng. side plates 90.00 eng. center plate 81.00
83	Primer squeeze bulb	640	2 ✓		
84	Air cleaner(s) , 2 if dual carb	641	2 ✓		
85	Fuel tubing	642	10 ✓		
86	Lower fuel tube (alum)	643	1 ✓		
87	Upper (boom tube) fuel tube (alum)	644	1 ✓		
88	Fuel pump (comes w/ engine)	645	1 ✓		
89	Throttle Assembly	620	1 ✓		55.00 w/o cables 75.00 with cables
90	Throttle Cable(s) & housing (2 if dual carb)	601	2 ✓		

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# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

Item / Part Description	Part # as shown in the construction manual	Quantity Shipped	Quantity Rec'd	Note:
91 Fuel Pump mount kit	624	✓		
92 Muffler bracket (complete w/hardware)	625	✓		Shock mounts 4.00 Stainless brackets 8.00
93 Motor (Standard 447, Option 503)	600	✓		
94 Propeller	650	✓		DROP SHIP
95 8mm prop bolts (w/related hardware)	651	✓		
96 Kill switch (2 if dual Ign)	652	2 ✓		
97				
98 Universal wiring harness (10 ft)	605	✓		
99 Fuel Tank (4.5 gal standard)	653	1 ✓		DROPPED SHIP
100 5/16" x 3 1/2" upper fuel tank attach spacer	620	2 ✓		
101				
102				
103				
104 Forward Horz. Stab Frame Assembly	701	2 ✓		L & R Frame Assemblies
Elevator Frame Assembly	710	2 ✓		L & R Frame Assemblies
106 Upper Vertical Stab. Assembly	L.E. Tube, T.E. Tube, Lower Connecting tube, 1/2" Spreader Tube 720	1 ✓		Frame Assemblies (including 1/2" spreader tubes)
107 Lower Vertical Stab Assembly	L.E. Tube, T.E. Tube, Upper Connecting tube, 730	1 ✓		Frame Assemblies (including 1/2" spreader tubes)
108 Rudder Frame Assembly	L.E. Tube, T.E. Tube, Middle Connecting tube, 1/2" Spreader tube, Rudder Horn Mount 700	1 set of tubing ✓		Frame Assemblies
109 2" x 1 1/2" Derlin blocks aileron pulley spacers	606B	2 ✓		same as AFT Eng mount blocks
110				
111				
112				
113				
114				
115 Upper wing surface ribs (w/tips & ends)	810	✓		Alum rib 9.00 Rib tip .95 Contour Tip 1.80
116 Lower wing surface ribs (w/tips & ends)	811	✓		
117 Complete Set of Sails (All Surfaces)	830	✓		Drop Shipped directly from sail maker to customer's house
118 Sail mounting nuts (flat)	831	✓		
119 1 1/8" End Caps	832	4 ✓		
1" End Caps	833	2 ✓		



# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

Item / Part Description	Part # as shown in the construction manual	Quantity Shipped	Quantity Rec'd	Note:
121 Leading Edge Spar (Includes outerspar extensions)	804	2 ✓		
122 Tailing Edge Spar (Includes outer extentions)	806	2 ✓		
123 Alleron Assembly (Incl. L.E. & T.E. outboard ext.)	*820	2 ✓		
124 Alleron spreaders tubes	* 830	1 set ✓		
125 1" Outboard wing spreader tube	824	2 ✓		
126 Inboard Wing spreader tube (1 hole drilled)	825	2 ✓		
127 1" Wing Compression strut 2/w angles for teleflex cables	840	4 ✓		
128 1 5/8" End caps for L.E. & T.E. tubes	* 860	<del>2</del>		
129 Upper Elevator Pulley Plate	671	1 ✓		
130 Lower Elevator Pulley Plate	* 670	1 ✓		
131 Fuel Filter (2 if dual carb)	861	<del>2</del>		
132				
133				
34 Safety Wire ( 8 ft. )	862	1 ✓		
35 AU-120 "U" Channels	863	1 ✓		
136 "U" channel Plastic Washers	864	<del>8</del>		
137				
138				
139				
140				
141				
142				
143				
144 Spar Bushings ( 3/8" x 1 3/4" )	865	16 ✓		
145 Small Plastic Washers (control surface hinge use ) (1/2" x .605)	866	<del>15</del>		
146 Upper Forward Nose Pod Support Bracket and rubber grommet	Part #867	1 ✓		Complete Assembly Part #867 Kit in throttle, pod, packing
147 Phillips Head Screw (long threaded) 1 1/2"		1 ✓		
148 AN 970-4 Fenders Washers		2 ✓		
149 S01-04 (plastic standoffs)		2 ✓		
150 AN 3-16A nuts & washers		2 ✓		

(Note: Any blank spaces above are not "missing" parts. They are intentionally blank to allow for future changes in construction of the Hurricane line of planes).

# HURRICANE PARTS LIST

## Factory Packing List / Customer Inventory List

Item / Part Description	Part # as shown in the construction manual	Quantity Shipped	Quantity Rec'd	Note:
211 SO1-44	SO1-44	42		
212 S-44	S-44	42		
213 1" x 1" Countour upper strut spacer	286	12		
214 1 x 1/8" Trike down tube spacer	285	3		
215 Aileron pop rivets 3/16"x3/4"	821	130		
216 Lower fuel tank mount tube	290	1 ✓		
217 3/16" x 1/4" alum rivit / AN970-3	291	480		seat pad attach
218				
219 Aileron idler retainer	266	1 ✓		
220 Aileron idler cable	850	1 ✓		
221 Aileron control cables	851	2 ✓		
222				
223				
224				

### OPTIONS

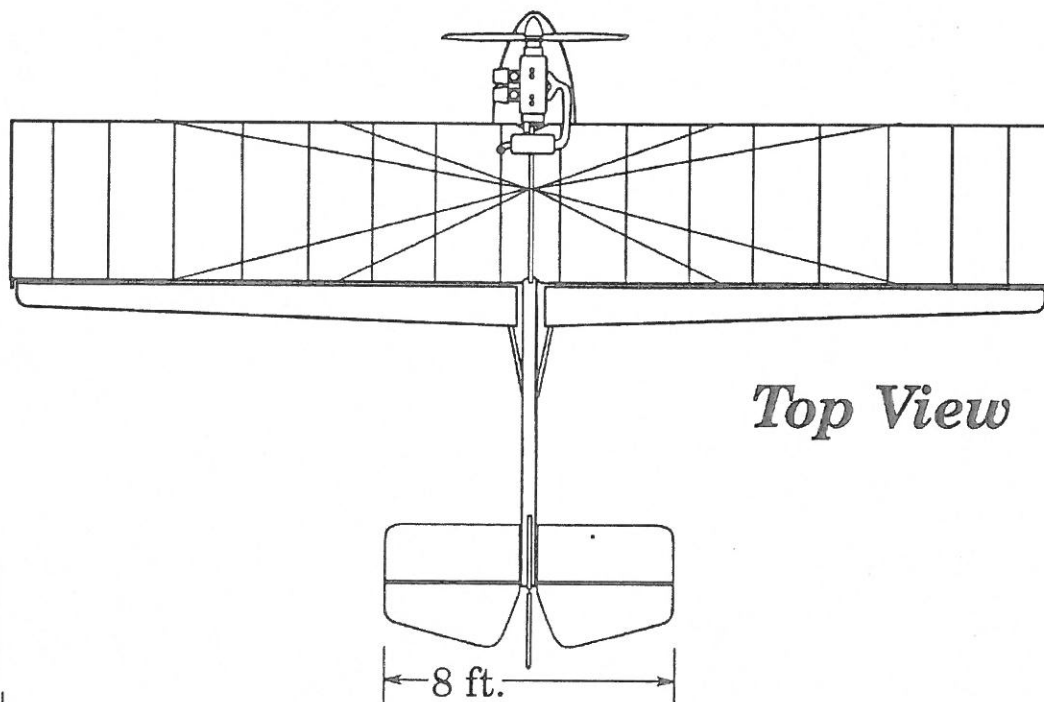
226 Electric Starter				
227 Trim System				
228 Primer (Incl mount)				
229 Extra large windshield				
230 Large 15 x 600x6 tires				
231 Flaps				
232 30 foot wing / Spelfy STD or Flat bottom airfoil				
233 Remote Choke (complete)				
234 Cockpit pull starter kit	905			
235 BRS Ballistic parachute (in canister) UL-1	900	1		
236 BRS Boom Tube Mount	902	1		
237				
238				
239				

# OWNER INFORMATION

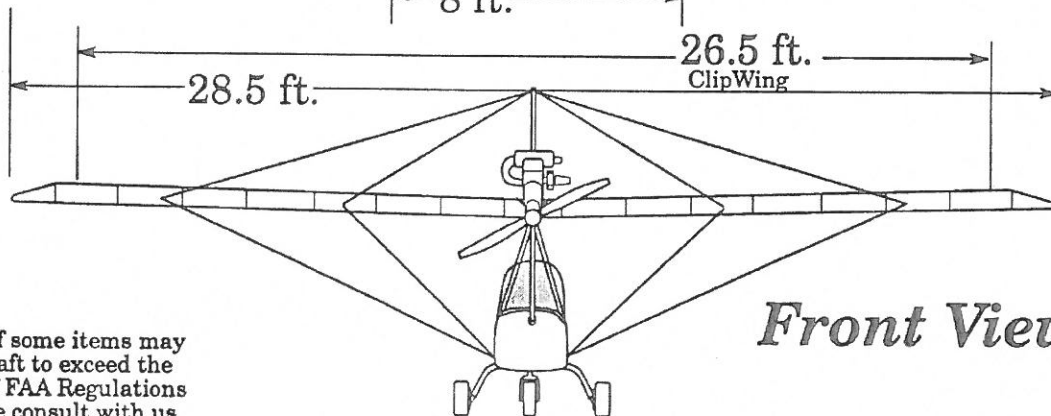
This section covers a few recommendations and guidelines that will help you in the construction process. If you have not assembled a similar type ultralight or aircraft kit before, then you will want to read and follow the procedures carefully. And even if you have some prior experience, you don't want to take for granted that you know how each part should be assembled. Part of the fun of owning a Hurricane is the pride and satisfaction in knowing you put it together yourself. You want to be sure that each step in the process is followed carefully and done correctly. Your safety depends on your attention to details and correctly following the assembly manual's instructions.

Also, view the Assembly Video a number of times so that you have a real understanding of the assembly process.

# Standard Hurricane 103 & Ultra 103 Specifications & 3 - View Drawing

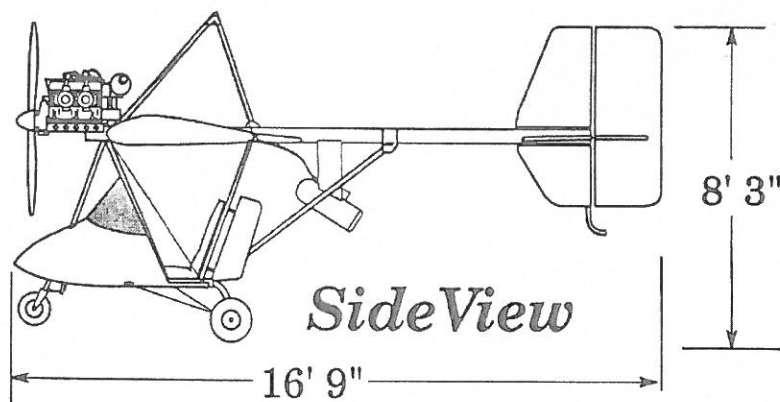


*Top View*



*Front View*

\* The addition of some items may cause your aircraft to exceed the current limits of FAA Regulations Part 103. Please consult with us before deciding on options.



*Side View*

## Specifications

Wing Span	28.5 ft.	Engine Power	40 HP
Root Cord	5 ft. 4 in.	Engine Size	447 cc
Height	8 ft. 3 in.	Power Loading	.28 HP/SQ FT
Wing Area	142 sq. ft.	Fuel Tank Capacity	4.5 gal.
Wing Loading	3.72 lb/sq/ft	Empty Weight	252 lb.
Length	16 ft. 9 in.	Propeller Dia.	66 in.

# OWNER RESPONSIBILITY

## IMPORTANT

READ CAREFULLY COVER TO COVER BEFORE ASSEMBLING

Hi ! If you don't mind I'd like to introduce myself. I am the manual, and if I am not mistaken you are the new ( and no doubt PROUD) owner, builder, and pilot of a new Hurricane.

We will need to work together smoothly for a few of weekends, so let me share a few tips to get us started off on the right path to make the work proceed much easier.

First, the manual has six main sections:

1. Owner Information
2. Inventory of Parts List
3. Assembly, Written Instructions w/ photos & illustrations
4. Construction Records
5. Replacement or Accessory Parts Listing
6. Registering your Hurricane as an Experimental aircraft

So, how do you use me ? Start on the first page and read the instructions COVER to COVER. Then, go to the componets list, placed just after the written instructions, and finally take a look at the drawing(s) or photo and find the particular part.

Assemble it, carefully following the instructions. If you have any problems, write a note and return it to Mike Kern. Mike will check it out, and if the problem is valid, a change will be made in the manual.

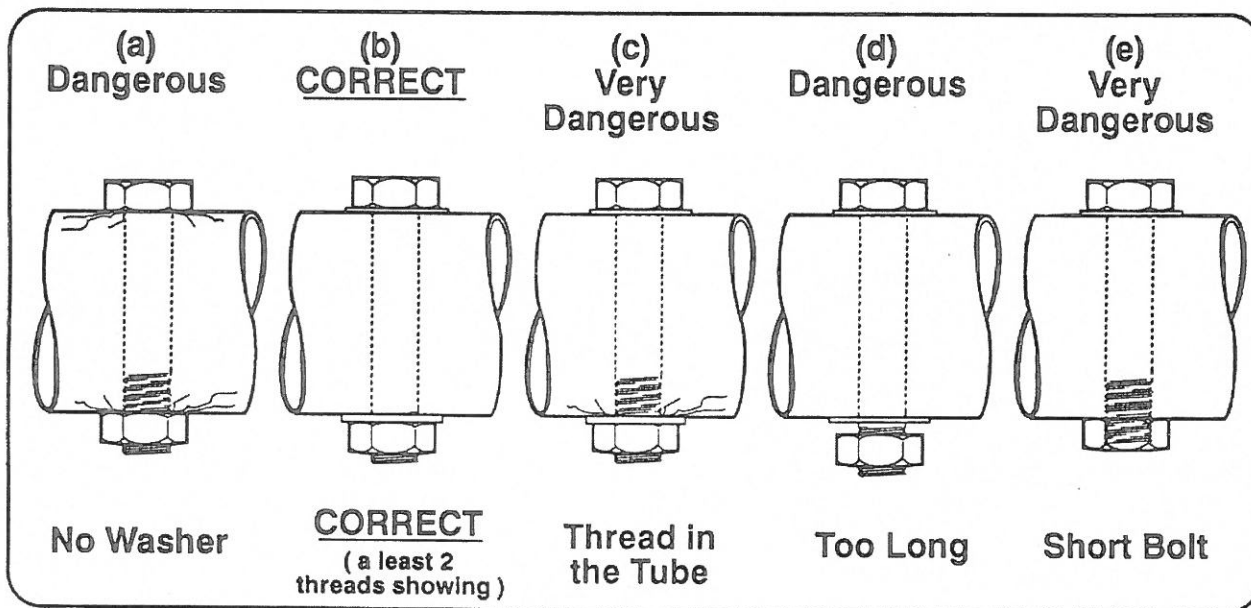
Before you start to put together the first pieces, however, I would like to make absolutely certain that you pay strict attention to the following points:

1. NEVER tighten a bolt too tight ! Explanation: This type of airplane is mainly built from thin-walled aluminum tubes, and it is almost impossible to "feel" the right tightness, because the locknut is difficult to turn with a wrench until it is visibly almost tight. Take off the wrench and check the tightness by hand. If you can turn it by hand, tighten another half turn, and check again. Do it until the first time when you cannot turn the bolt by hand. This is the correct tightness.

Remember: The locknut is designed to stay on the bolt, because of the locking part (the little plastic piece inside the nut), and not because of the tightness.

2. A locknut is cheap. If you take one off, always replace it with a new one. If you don't have a new one, order some from your Hurricane .

3. Washers. You have to know the reason that we put washers around the bolts in order to understand when, where, what type and how many you can put on.



a. The problem here is that if you don't put the washer under the bolt when you tighten it (the nut), you can scratch the aluminum easily. A scratch under stress can develop a crack and you don't want this. Solution: put a washer under the nut.

b. This is the correct way. You can leave the washer out from under the head if necessary, but it is better to use one. You can use either thin or thick washers to adjust the spacing. When the nut is tight (problem #1), you are supposed to see two or more threads on the bolt. Also, note that the threaded part of the bolt always starts outside of the tubes (or part) so if you would not have washers, you couldn't even tighten the bolt.

A great effort was made during the designing of the Hurricane, to put the correct length bolt in each location, as well as the correct number and thickness of washers. But the bolts have tolerances, so sometimes you must change a thick washer to a thin one, or add one more washer. That's all OK as long as you have at least one thin washer under the nut. If you can't even get one washer in there (the bolt is too short, for example), then you will have to go to the next longer-sized bolt.

c. Very dangerous. The threaded part of the bolt is inside the tube. It loses some of its bolt strength because the threaded part of the bolt has less cross section than the solid part. Solution: Longer bolt.

d. Dangerous. The bolt is too long, it does not have enough washer to space it out tight. In this situation the bolt can vibrate and oval the hole in the tube. Solution: More washers or shorter bolt.

e. Very dangerous. The nut doesn't go up all the way and / or more threads aren't visible on the "lock" side of the nut. The nut can vibrate off the bolt. Solution: Longer bolt.

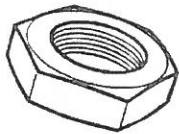
4. Niko. If you have to work with nikopress sleeves and cables, always make sure that you use the correct tool and check it with the gauge.

5. Patience. If you don't have enough time to work on a problem, or if you are tired, or if you run out of patience, or you just had a fight with your wife or husband (or girlfriend or boyfriend) , or you are just hungry and nervous, DON'T start to work on the airplane. You will only screw things up. Your concentration to the task at the time is of GREAT IMPORTANCE !

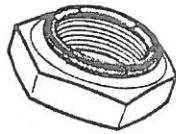
6. Direction of bolts. On the drawing(s), you will see that the bolt goes into the assembly in a certain direction (i.e., from top to bottom, from inside to outside). Always follow the drawing. Generally, the bolt goes in from top to bottom, from inside to outside, from front to back. (If the bolt goes in from inside to outside, from front to back. (If the bolt goes in from top to bottom, it will stay in even if the nut comes off, etc. ). But there are exceptions, so follow the drawings.

I will sometimes give you instructions like from inside to outside, from top to bottom, from forward to rear, etc. Imagine that you are sitting in the cockpit. "Forward" is in front of you, the direction toward the front of the plane. "Backwards" is the direction toward the tail. "inside to outside" is the direction from the centerline of the plane toward the wing tip. "From top to bottom" is the direction from the kingpost toward the ground. "Left" is on your left side. (Remember, you are sitting in the cockpit). "Right" is on your right side etc.

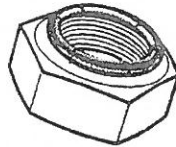
7. Nuts. You will use two different nuts. One is called a full nut, the other a shear nut. The shear nut (thinner than a full nut) is used only where there is just shearload on the bolt. Its only purpose is to keep the bolt in place, because it does not have any load on it. If the nut has any load other than shear load, you have to use a full nut.



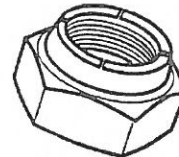
Regular Nut  
(used to hold stuff together during assembly, NOT to be used for flight!)



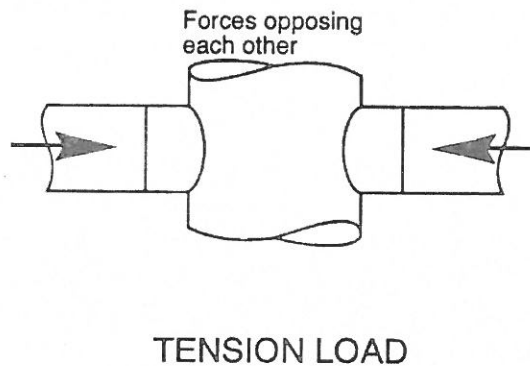
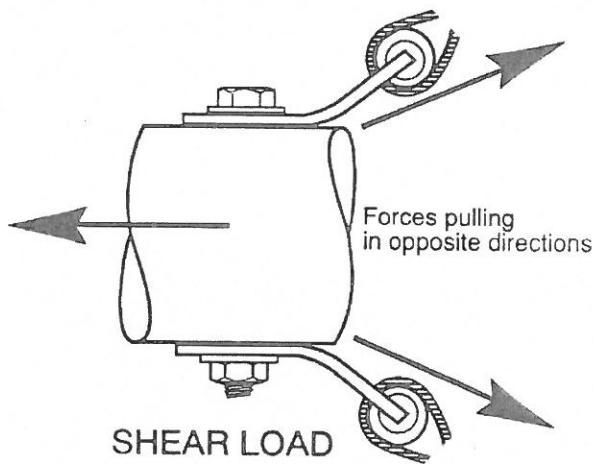
Shear Nut  
or (Nyloc nut)



Full Nut  
or (Nyloc nut)



Stop Nut  
(AN, all metal)



8. Assembly nuts. Sometimes I will write out "tighten nut, finger - tight only. If you do this with the locknut, the assembly is going to be loose. So it is better if you buy 25 pieces 1/4" x 28 regular nuts in your local hardware store and use them **TEMPORARILY** for assembly. Don't forget to replace them with locknuts (AN 365-428) later.

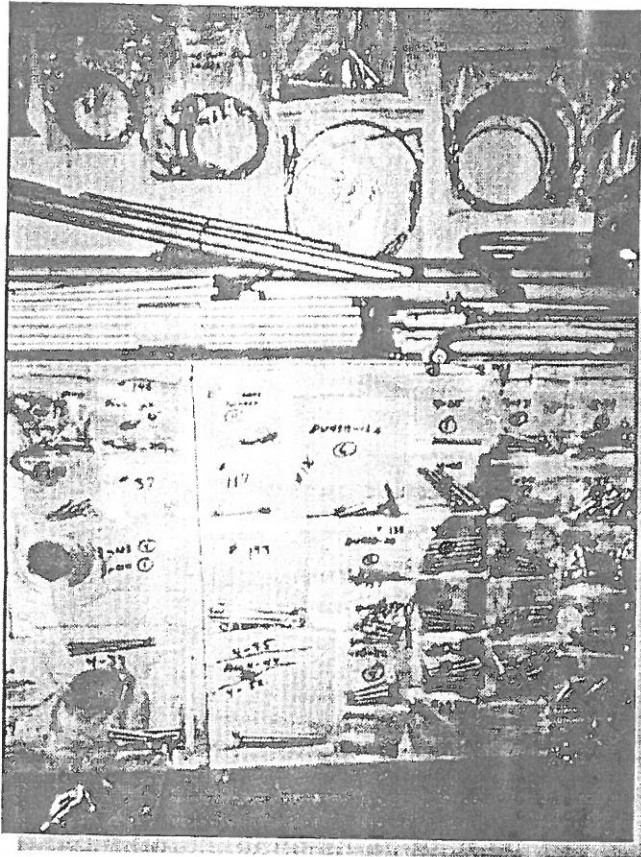


# ASSEMBLY PROCESS

This section covers the complete assembly process step-by-step. The text should be read carefully and if anything is not clear, reread it. If there is still some confusion, do not hesitate to call Mike Kern before proceeding. If you have a alternative idea on the construction process let us know. We are always open to better ideas and ways to improve any area of the Hurricane. From time to time a revision of a part or area of the plane may be made. You will receive information on all updates automatically. If it is a safety related item, you will be notified immediately. If there is any area of the illustrations that need revision or clarifying please let us know so that our illustrator can redo them. We appreciate your input.

## ASSEMBLY HINT:

After unpacking your crate and taking inventory of your parts, layout all parts on a wall or the sides of the crate as shown below. This will save you a lot of time when looking for parts, (especially hardware). Use your staple gun to mount the baggies to your selected area.



# Assembly Instructions

## Assembly Sequence

1. First, assemble the trike/cage completely, But don't put on the windshield.
2. Assemble the keel.
3. Put the keel and cage together.
4. Put on the engine package without the propeller.
5. Assemble the tail without the cover, and fit it in the keel. When it is perfect, cover it and put it back permanently.
6. Put on the wing.
7. Put together the aileron frame.
8. Connect the control surfaces and adjust them.
9. Put on the propeller, windshield, gas tank and fuel system.
10. Preset propeller at 11 degrees pitch (447 engine), 13 degrees (503 engine).

## Cage Assembly

Landing Gear Assembly Use Fig. #1 This area of construction in your Hurricane is probably the most difficult because of the need to pay close attention to the trike area. The proper assembly and adjustments and hole drilling required here, is important to getting all the support tubing, (from trike to boom), aligned properly.

1. Assemble the cage in the following order:
  - a. Assemble the right (101) and left (101) trike support side tubes with the front weldment (105). Pre-drill FWD weldment holes on tubes to 1/4". Use 4, AN4-22A bolts, thin washers, and shear nuts. Lightly tighten nuts.

Note: On the front weldment, you might have to drill the holes with a 1/4" drill. But don't drill until you put in the front seat cross tube. If it doesn't go in, take the seat tube, match drill the weldment and the tube, and reassemble.

**SPECIAL NOTE:**

When you see this ICON ( video cassette ), this means that it is very helpful to refer to the assembly video in understanding how this step should be done.



GHR 15

b. Bolt the front down tube AU-120 bracket on the top of the weldment (105). Use a AN4-35A bolt and large area fender washer, and put a 1/2" x 1 5/8" long spacer between the upper and lower side of the front weldment. Also, put on washers, and a full nut, just finger tight. These washers sandwich between the pod upon installation later in the assembly process.

c. Put the 1" wide front seat tube brackets (108) on the right and left trike support tubes.

d. Install the front cross seat tube (122), with AN4-22A bolts, thin washers, and shear nuts. Leave the nuts finger tight at this time. Slide the front cross tube in until the 1 3/4" x 2" sleeve is tight to assembly (114), (113), (108) as shown in Fig. 2.

e. Slide onto the main tubes the 1 3/4" x 2" alum spacers (114), then a 1" bracket (108). Next a 1 3/4" x 2 1/2" spacer (113) and the 6" steel sleeves (116) next. In the front two holes of the 6" long steel sleeves use AN4-21A bolts thin washers, and full nuts. If you have to match drill, put in one bolt and tighten it with a nut. Afterwards, carefully match drill the other one with a 1/4" drill. Make sure you don't have any play between the sleeves and the tubes. (If you have play, your landing gear will be sloppy).

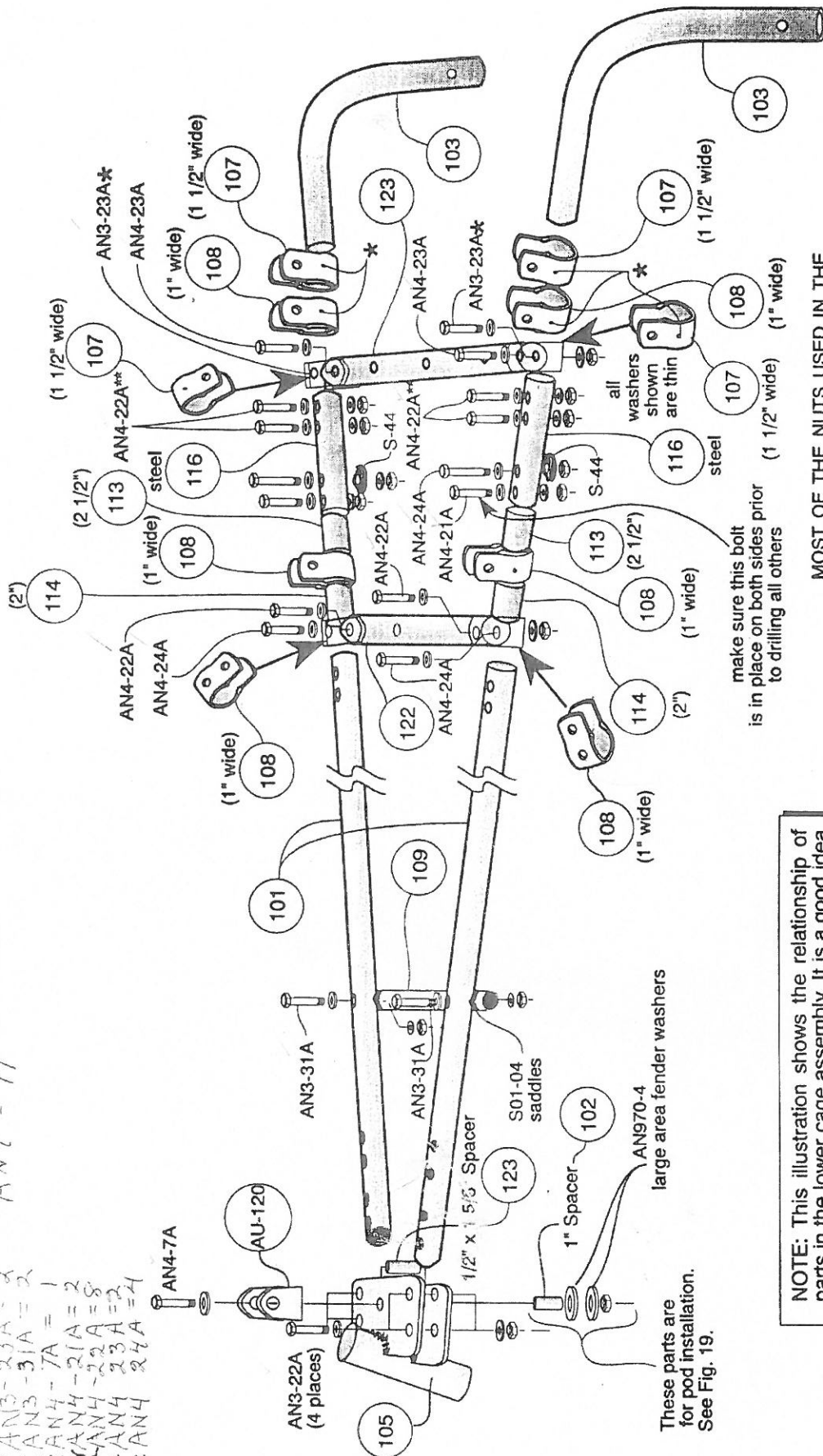
f. Place both brackets in the right place, and match drill the brackets with the tubes using the pilot holes and a 1/4" drill bit. Fasten together, bracket and tube with AN4-24A bolts, thick washers, and full nuts.

g. Slide on to the left and right rear landing gear tubes (103), the 1.5" wide tail strut brackets (107), the 1" wide rear down tube bracket (108) and the 1.5" wide rear seat cross tube brackets (107).

h. Push the rear landing gear tube into the 6" long steel tube (116) completely, it will go in a min. of 3". Bolt in the rear seat tube (123) with AN4-23 bolts, thin washers, and full nuts. Bolt it finger tight only.

# Trike Assembly

# Fig. 1



MOST OF THE NUTS USED IN THE CONSTRUCTION OF THE TRIKE ARE FULL NUTS. Use shear nuts only in areas where no load or stress will be involved.

\* At these points, holes are not drilled right now. After the upright tubing is assembled to the boom tube (and the related steps thereto, then you will come back and drill these holes and install bolts, washers, and nuts.  
 \*\* Wing wires attach here

make sure this bolt is in place on both sides prior to drilling all others

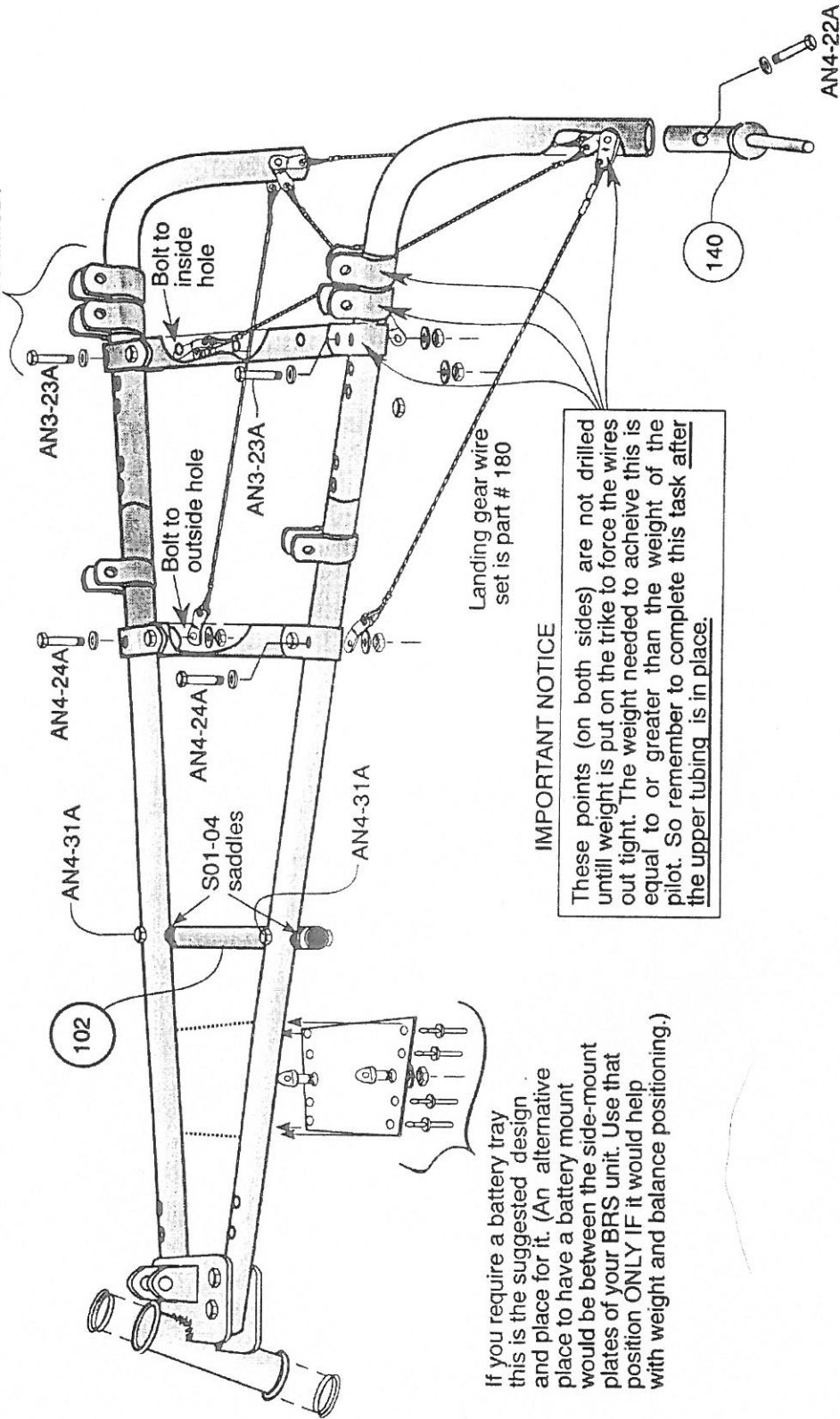
NOTE: This illustration shows the relationship of parts in the lower cage assembly. It is a good idea to study Figures 2, 3, and 4 prior to starting to work on this first step, so you will have knowledge about how later assembly steps are important to the proper sequence of assembly here.

These parts are for pod installation. See Fig. 19.

- Notes  
 AN3-22A = 4  
 AN3-23A = 2  
 AN3-31A = 2  
 AN4-7A = 1  
 AN4-21A = 2  
 AN4-22A = 8  
 AN4-23A = 2  
 AN4-24A = 4

# Landing Gear Wires

NOTE: Be sure these tube fittings/connectors are pushed tightly together before any holes are drilled!



### IMPORTANT NOTICE

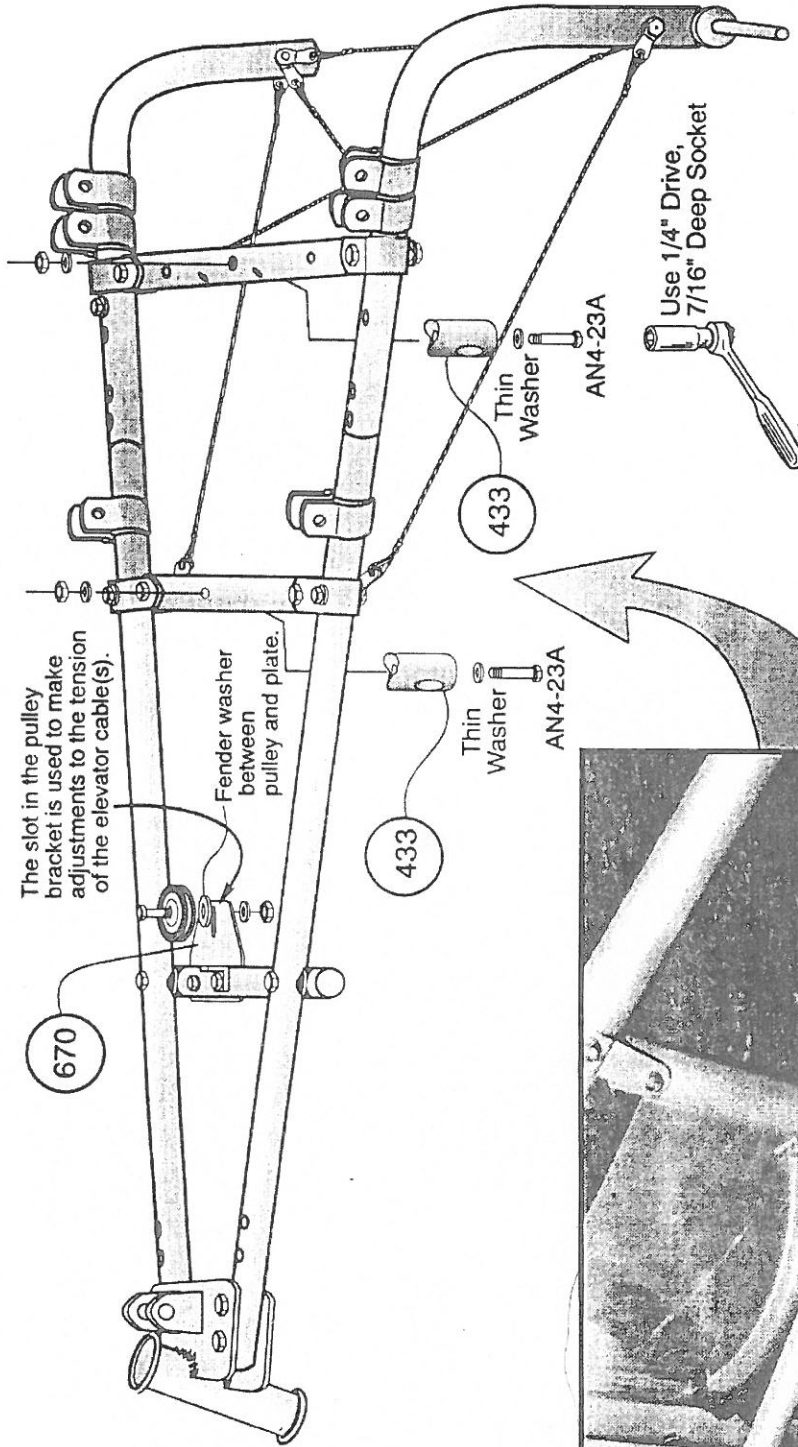
These points (on both sides) are not drilled until weight is put on the trike to force the wires out tight. The weight needed to achieve this is equal to or greater than the weight of the pilot. So remember to complete this task after the upper tubing is in place.

If you require a battery tray this is the suggested design and place for it. (An alternative would be between the side-mount plates of your BRS unit. Use that position **ONLY** if it would help with weight and balance positioning.)

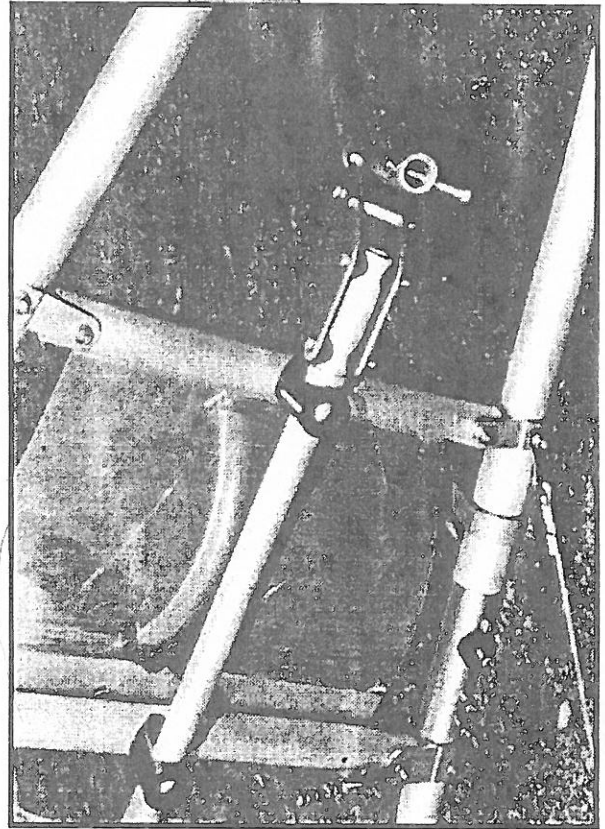
Fig. 2

# Control Stick Torque Tube Blocks Installation

Fig. 3



**CONSTRUCTION HINT:** Prior to installing the control stick torque tube, use a strong one inch O.D. bar inserted into both delrin support guides (433), and use enough force to insure perfect alignment between both peices. This will ensure that when the torque tube is installed that it is not in a bind. Also lube the inside of both guides with some white lithium grease.



## *Landing Gear Legs Assembly (Fig. 4 & 5)*

(Find front and rear wheel assemblies - Assemble per Fig. 4 and 5)

A. Now take the headset (just like a bicycle headset) and put a bearing on the fork. Put some grease around it, and put the fork in the front weldment. (Special note at this time: If you will be painting and of the tubing or other parts in this area, do not grease up this area until after the painting has been done). Put the other bearing in its place (opposite direction) also using grease, and put on the bearing retainer ring, the washer and the nut. Don't adjust too carefully, because you will have to take it off when you put on the fiberglass nose pod. But when you put on the fiberglass nose pod, you will have to assemble it inside the dark nose pod, so it is necessary to understand now how it goes together.

Note: Prior to paragraph B, remove bolts holding L/G cables so axle boots will go in all the way.

B. Find the rear axle boots (140). They go into rear landing gear tube (103). If they don't go in check the roundness, because maybe they are out of shape. (Either put in a vise and slightly push together to make it round or use a plastic hammer to round it. Either way is OK).

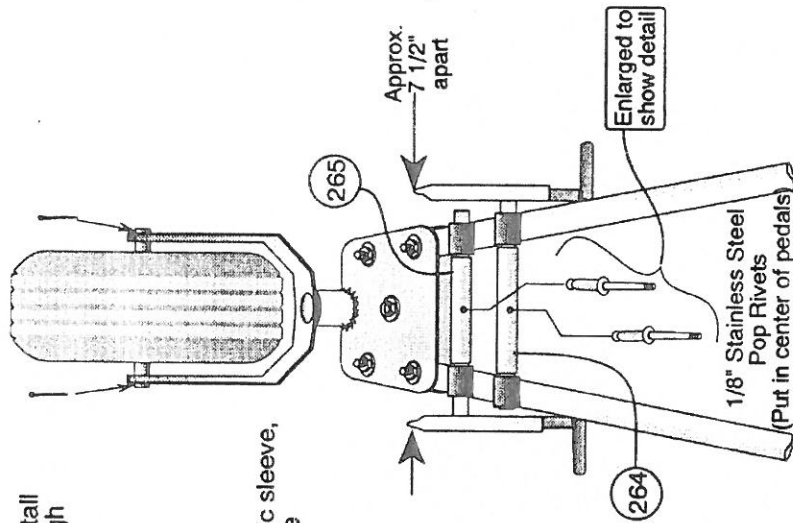
Note: Install the landing gear support cables as shown in Fig. 2, less axle boots prior to continuing to paragraph 'c'.

C. Put the landing gear torque tube assembly on a 12" high stand parallel with the floor, and set up the rear landing gear tubes 45 degrees, or until the support cables are tight. Some cable twisting may be required. When you are satisfied with the cables and they are tight, make sure again that the landing gear tubes are all the way up in the sleeves. Tighten the rear seat tube bolts, and very slowly drill the steel sleeves. Carefully match drill the sleeve and tubes with a 1/4" drill bit. Drill one hole at a time, put in an AN4-23 bolt and a thick washer, 1/4" nut, and pin. Next match drill the other one. Put in the bolt. Do the same thing on the other side. Drill slowly so that the hole will be exactly 1/4" and the bolt will fit tightly.



# Rudder Pedal Assembly

View from Bottom



Drill hole and install cotter pin through fork and axle, (both sides)

Rudder cable inside plastic sleeve, wire tied to main trike tube

Use a wire tie to secure L & R rudder cables, and wrap cables around tube toward the inside, one time before getting to pulley.

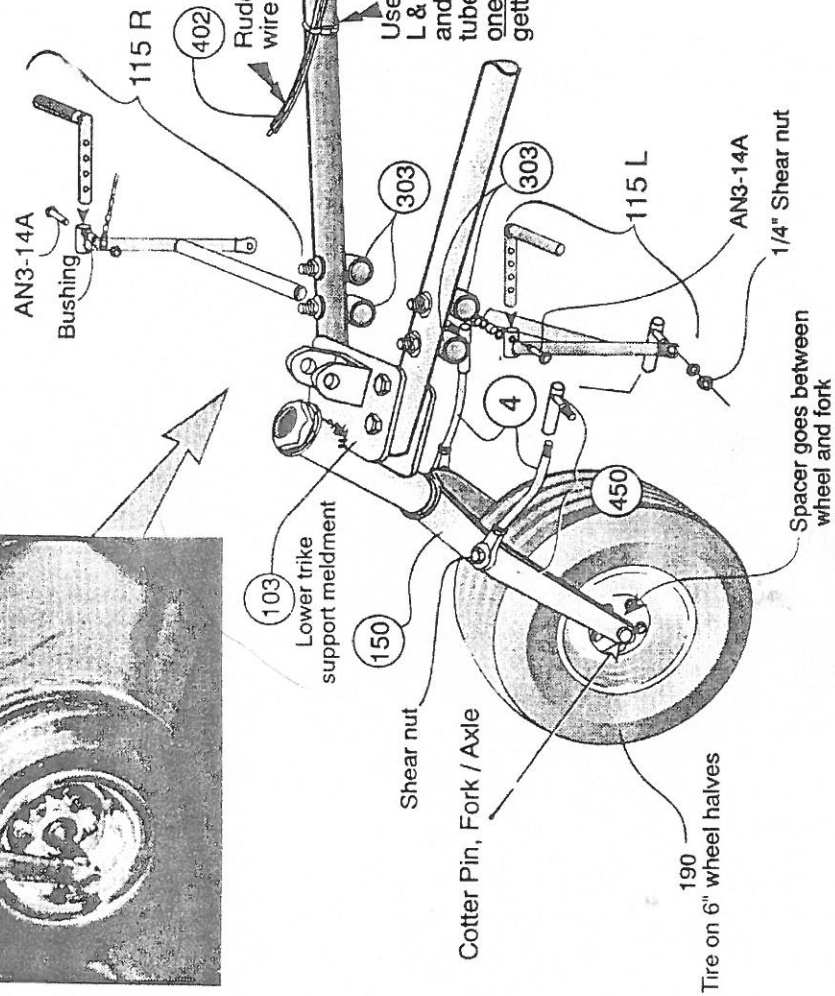
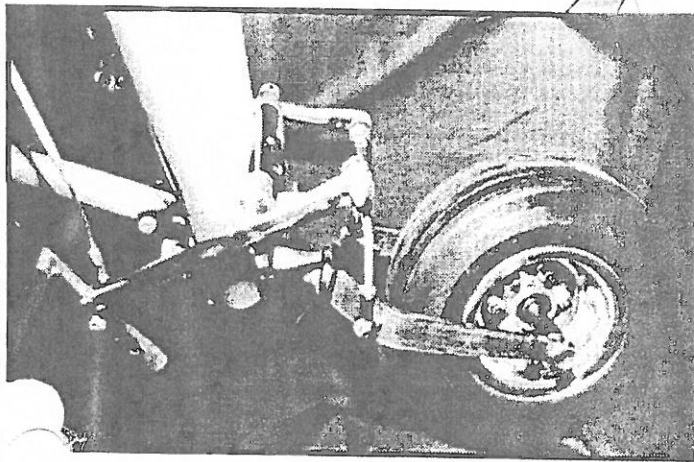
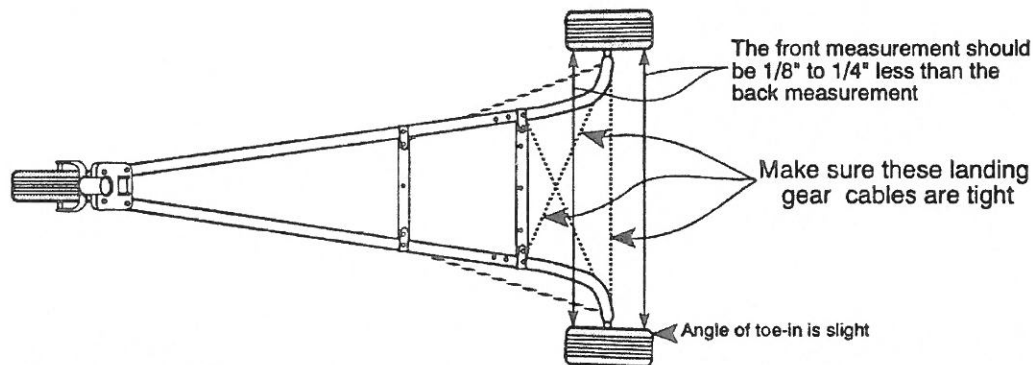


Fig. 4

Put them into the landing gear tube. Also, adjust the wheels a little bit forward, just like your car's front wheels. That helps the landing gear during landing (so that when you land, the landing gear doesn't want to go out).



The easiest way to set it up is to tape a piece of string on the two axle boots. The axle boots are supposed to be a little bit forward in relation to the string.

When everything is OK, i.e. the wheels are pointing a slightly together and the rear part of the frame is a little bit higher than the front part, carefully start to drill a 3/16" hole, 2" at the end of the rear landing gear tube, where your cables are secured.

When you are through with this, check the alignment again, adjust it if necessary and drill through with 1/4" bit at this time. Do it on the other side too and use AN4-22A bolt and thick washer, reinstall landing gear cable assembly. Now you can test it --- jump on it, sit on it, whatever, and it will hold.

### ***Control Stick Blocks and Control Stick Assembly (Fig. 6 and Fig. 9)***

1. Bolt in the two control stick torque tube blocks (433) on the front and rear seat cross tube. Use a AN4-23A bolt and thin washers, and shear nut. To keep the bolt from turning, use a 1/4" drive, 7/16" deepwell socket into the block. (See Fig. 3)
2. Attach the control side plates (415) to the torque tube (432) using a AN3-16 bolt, saddles, washers, and nuts. Tighten nuts securely.
3. Install the two control stick bushing ( 1 3/16") between the side plates (415) using AN3-20A bolts, washers, and nuts. Tighten securely.
4. Insert control stick (415) into control stick grip (405). Use soapy water (or dishwasher liquid) to make it slippery.
5. Slide the torque tube assembly through the front and rear torque tube bearing blocks (433). Slide the torque tube aileron bellcrank (436) over the end of the torque tube. Do not install bolt at this time.
6. Temporarily attach 3/16" female rod ends to the torque tube aileron bellcrank using AN3-7 bolts, lock nuts, and cotterpins.
7. Attach the front brake handle just below the handgrip on the control stick.

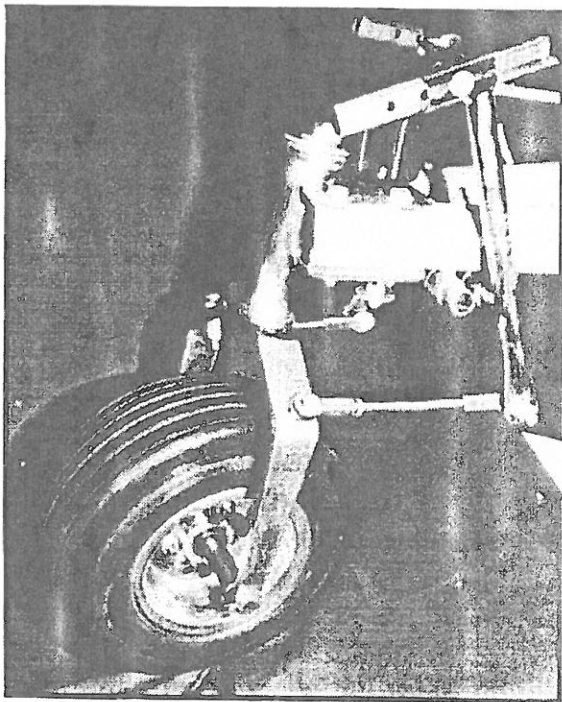
1. Bolt in the four rudder guiding sleeves (303). Put a small amount of grease into the guiding sleeves.
2. Find the right and left rudder assembly. The L-shaped foot pedals are the same, but the rudder steering arms are slightly bent and an inch different in length to compensate for the offset mounting.
3. Slide the right rudder steering arm into the two front sleeves with the top welded tube length facing aft. Slide the left rudder steering unit into the two rear sleeves with the top welded tube length facing forward. Bolt the left steering rod assembly (longer one) into the hole on the bottom of the rudder steering arm in an outside to outside direction. Put on the AN4-10 bolt, 1/8" spacers on both sides of the ball joints, & shear nut.
4. Bolt in the right steering rod assembly the same way. Connect the other end to the steering arm of the front fork. The steering rod assembly goes in from the top to the bottom direction.
5. Lift up the front end of the cage, as high as you can. Now you can see the rudder assemblies from the bottom (see Fig. 4). Next find the 2, 1/8" stainless steel rivets, your electric drill and #30 drill bit (1/8"), and a hand pop rivet gun. If you have everything, you can start to do the final adjustment.
  - a. Adjust both rudder steering arms about perpendicular to the frame. Make sure that the bolt holes where the rudder cable will connect, are in line! (See thick arrows on Fig. 4).
  - b. Adjust the steering rod assembly, to make the front fork straight. Make sure that the steering rod is screwed in on both ends evenly, a minimum of 5 turns or threads into rod ends. Correct it with an even adjustment! Try not to have less than 3 turns in as a good practice, and that's still cutting it close. Call Hurricane Company if you run into a problem.
  - c. Now push the rudder pedals back and forth and note that the rudder steering arm bumps into the main trike tube. This is the stop, but you will never use this much pedal travel during flying or taxiing.

d. Repeat the adjustment 1-5, until you are satisfied with the result. Make final adjustments after rudder cable and rudder is installed.

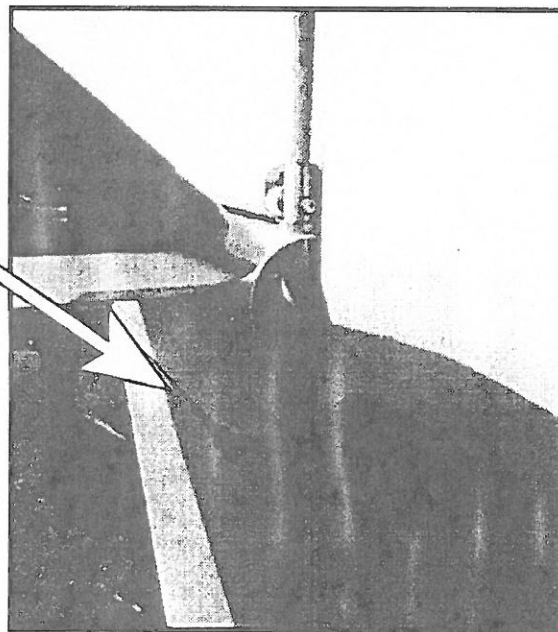
**Make sure that everything is in good working order, because once the fiberglass pod is on, you can't see the rudder and pedal assemblies very easily.**

The smooth operation and accurate adjustment of the rudder pedals is important both for ground steering and for flying. Note: This adjustment tightens your rudder cables. Make them "snug", not tight. Make sure rudder is in align with nose wheel.

*And remember to come back one last time after you are finished building your plane and recheck the nose wheel / rudder alignment one more time before your first test flight !*



The proper alignment of the rudder, rudder pedals, and nose wheel is obtained through the adjustment of the threaded rods and ball joints. It may take a few times of making changes to get "just the right" alignment but it is important that it be CORRECT. If not correct, what you'll have is the rudder and nose wheel fighting each other as the plane tries to track down the runway in a straight line.



# Wheel / Tire / Brake Assembly

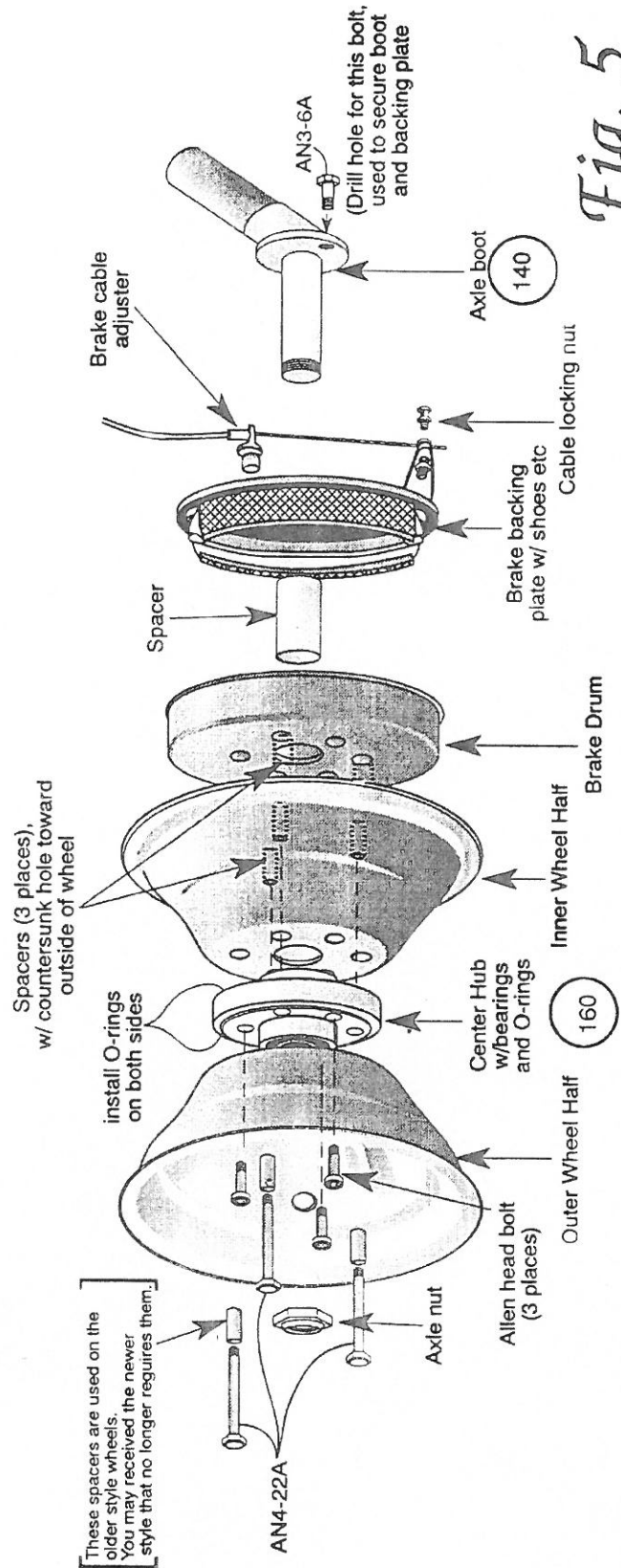
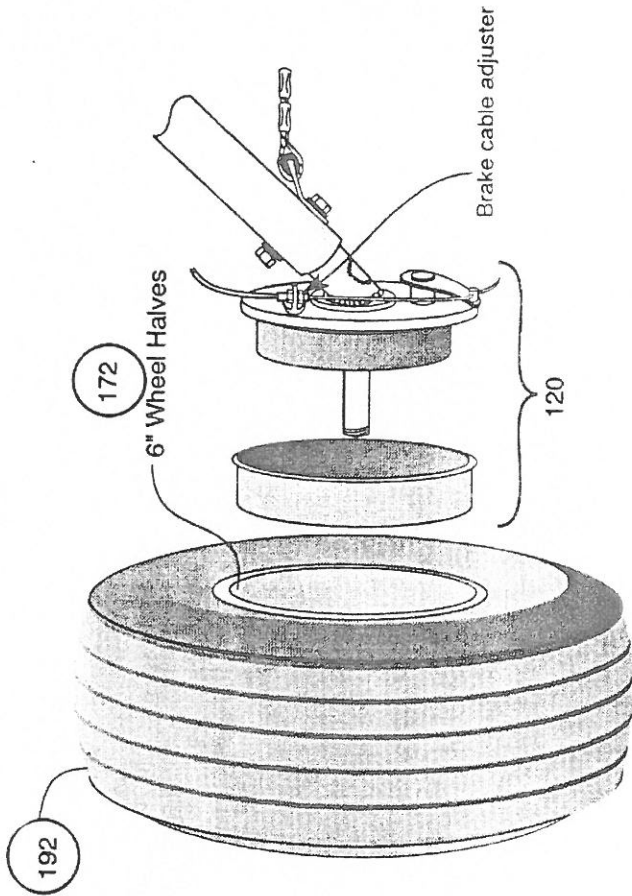
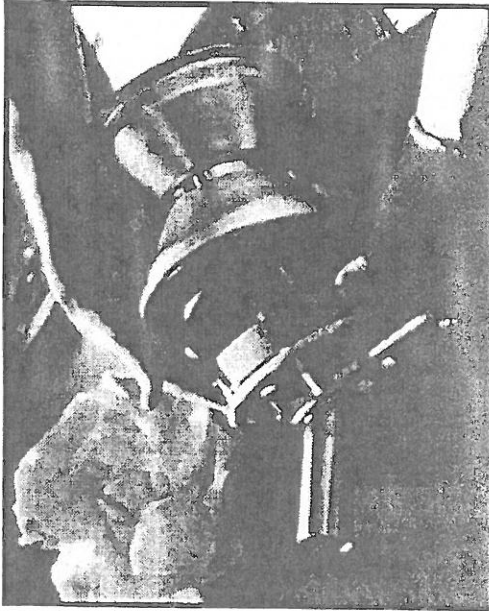
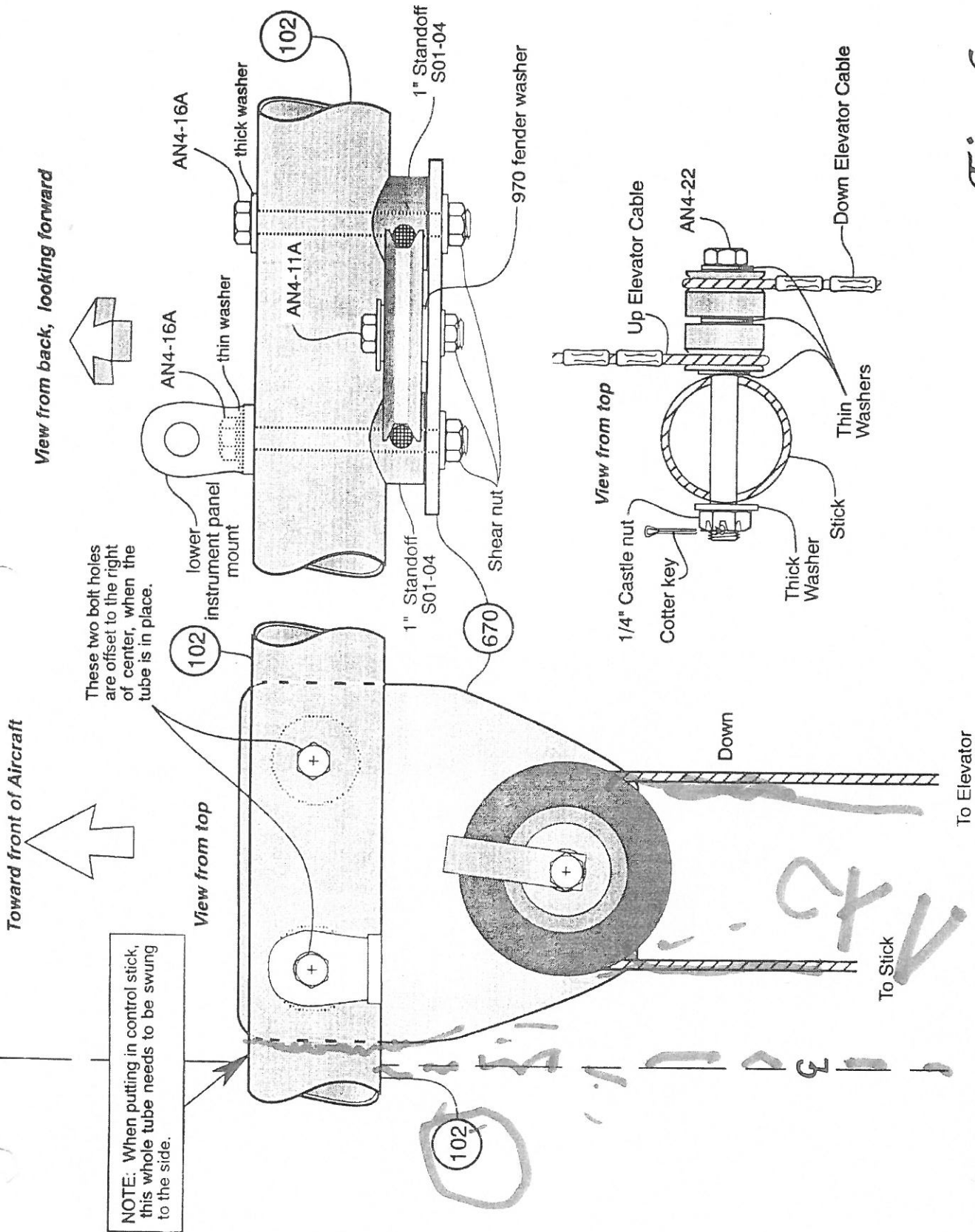


Fig. 5

# Lower Elevator Mount & Lower Instrument Mount



*Fig. 6*

# Control Stick & Related Parts

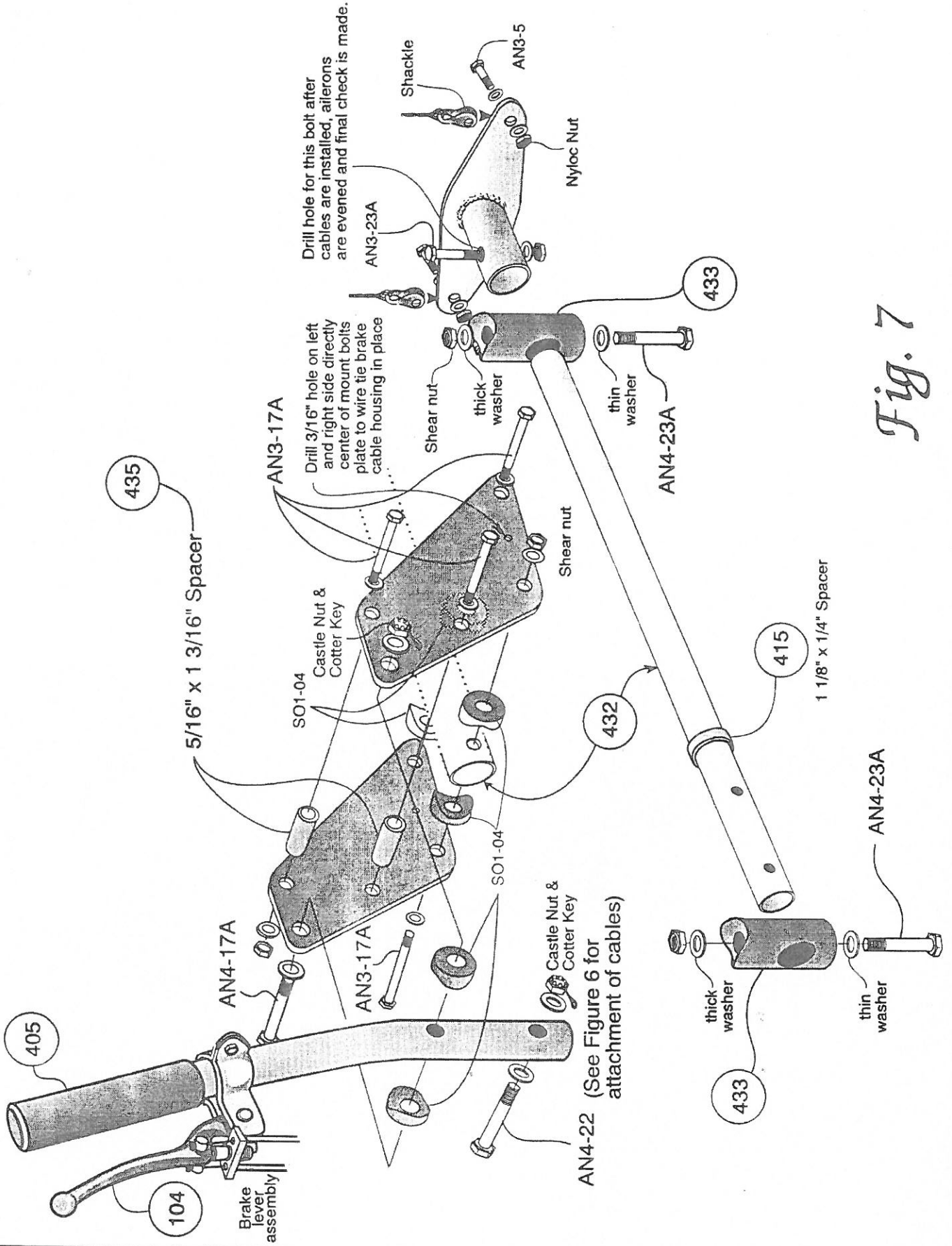
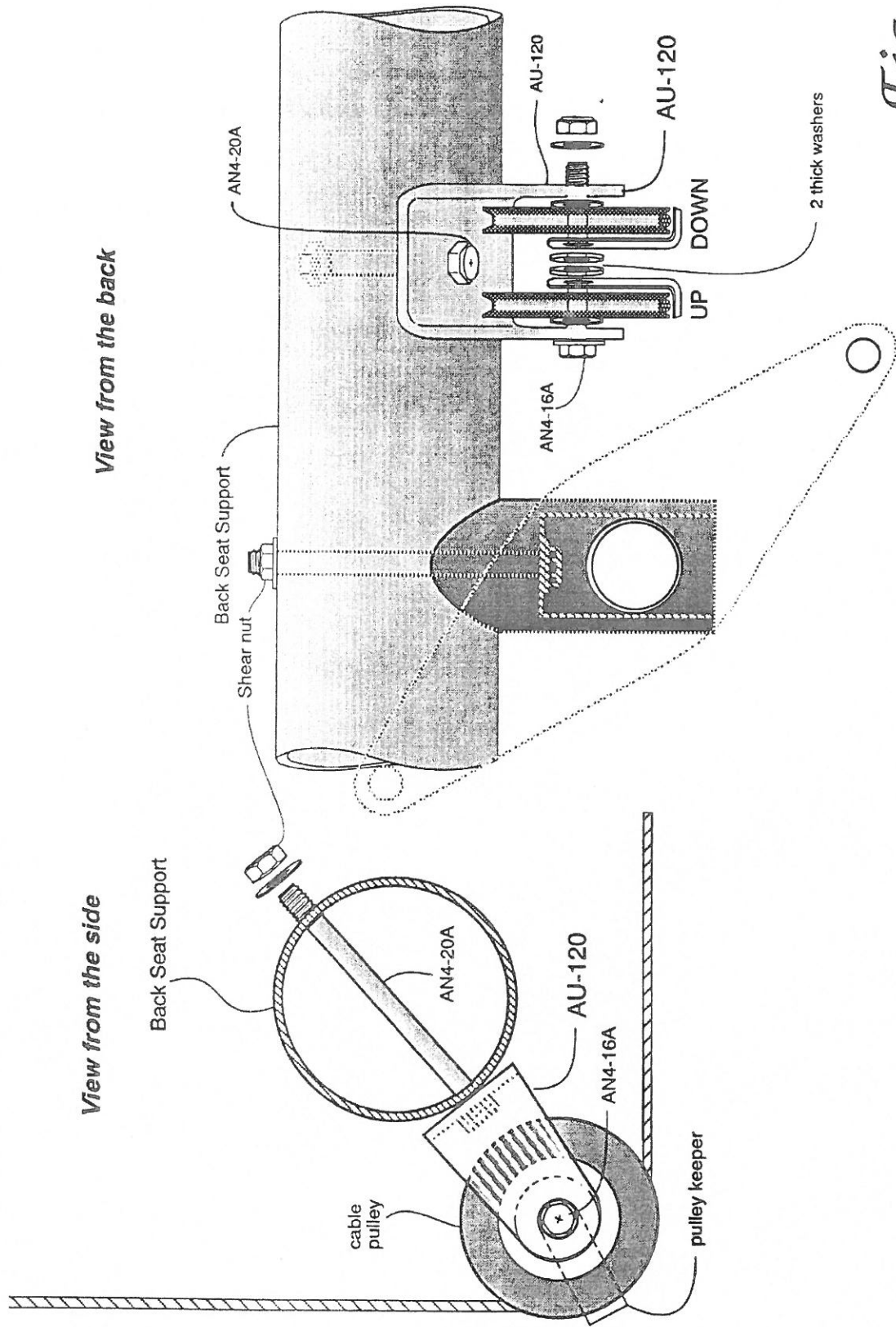


Fig. 7

# Elevator Pulley Assembly (lower trike AFT seat tube)

Fig. 8





**Assemble the keel in the following manner:**

1. Attach tail strut bracket (202) to the keel tube (200), using AN3-44A bolts forward and an AN4-52 with cable pulleys, thin washers. Do not drill now, wait until keel is completely attached to trike.

2. Attach spar brackets (205) and (206) to the bottom of the keel tube using AN3-6A bolts and AN3-5A and thin washers, and nuts.

Note: Side mount holes must be drilled to keel after bolts on pre-drilled holes (bottom) are installed and tight.

**Keel Assembly Fig. #9 & #10**



**SPECIAL NOTE:** The keel, and the brackets that attach to it, are assembled at the factory. The exception is that the BRS bracket and rearmost upright tubes bracket are not attached because they must be drilled only after the correct alignment is made for the tubes and the BRS unit is positioned to correct for CG when needed.

1. Mount the keel assembly on the cage assembly. Attach the 2 FWD diagonal braces (217) to the keel, using AN4-33A bolt, 2 saddles, shear nut, on the rear hole of the attach bracket, and attach front down tube to the FWD hole, and rear cage upright to AFT attach bracket center hole, using AN4-33A bolt, saddles, washer, and nut. Tighten nut securely. (Use long saddle 1" x 1" on front down tube). NOTE; You may have to disconnect one FWD support downtube to get the bolt through the upper keel attach bracket then reattach downtube at bracket.

2. Attach AFT support struts (215 & 216) to the front hole of the tail strut bracket, using AN4-31A bolt, saddle, thin washer and nut. Prior to drilling the bracket to the keel tube, be sure all other support tubes are secured. Then drill 3/16" hole on FWD part and 1/4" hole on AFT part. The last thing to be done is to install the end caps into the top ends of both AFT support tubes.

**Keel Extention Fig. 10**

Slide the keel extention into the keel tube. Be sure that extention and keel are both right side up (marked together). When correct alignment is assured, bolt them together using AN4-43A bolt, washer, and nut. Tighten nut finger-tight only at this time. Be sure to attach flaperon control handle assembly at this time if you have ordered this option.

***Keel Assembly (continued) (Referance Fig. #9, 10, 11)***

3. Put AN4-11A bolts into the rear LH hole and AN4-15 to the RH holes of the tail strut brackets. Attach pulleys, pulley keepers, thin washers, and nuts. Leave finger-tight.
4. Assemble the front and rear king post (220) and (221) with the king post brackets (224). Insert AN3-16A bolt through the king post brackets and the lower hole in the front king post. Install washer and nut. Tighten nut securely. Insert AN4-20A bolt through washer, tangs for the upper wing wires, the king post brackets (224) and the upper hole in the front king post. Install full nut. Install the third AN4-16A bolt and washer, and nut . Tighten all nuts securely.
5. Install assembled king post to front and rear king post brackets, using AN4-22A bolt on the front alignment with muffler brackets, and AN4-25 bolt on rear, and saddles, washers, nuts.
6. On the rear downtube attach bracket assembly, put a AN4-33A` bolt in the rear hole and thin and thick washers, sheernut, and at center hole use a AN4-33A bolt and two washers, and nut. Leave finger-tight.

***Keel Insert (discussed here for your referance only, as this assembly comes from the factory already assembled)***

1. Assemble the berry mounts with the engine side plates (607 & 608), using bolts, nuts, and washers, inner spacers. Tighten nuts securely.

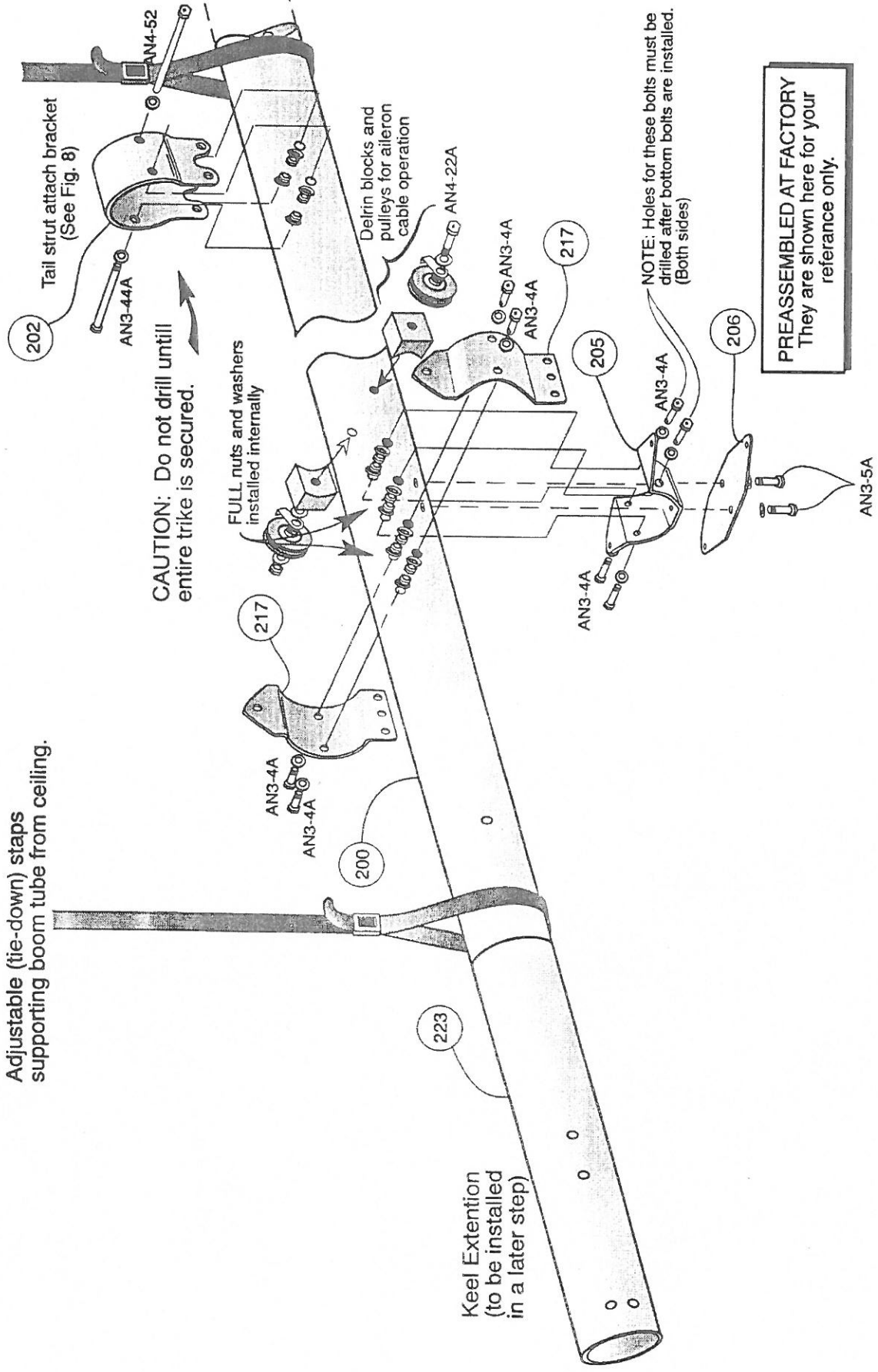
NOTE: The berry mounts are installed on the engine plate.

2. The rear hole of the front side attach bracket has to be drilled out to 1/4". (At the FWD keel mount)
3. Mount the engine side plates on the keel, using bolts AN4-22A, washers, rear delrin spacers, and nuts. Tighten nuts securely.
4. Install the forward engine side plate AN4-30A bolts, using washers, forward delrin spacers (604), internal delrin spacers (605), (Note: Light reaming may be necessary), washers, and nuts.

Install center engine plate and spacers in berry mounts and AN4-21 bolt, and top large washer. Bottom nut uses large washer.

# Keel Assembly

Adjustable (tie-down) straps supporting boom tube from ceiling.

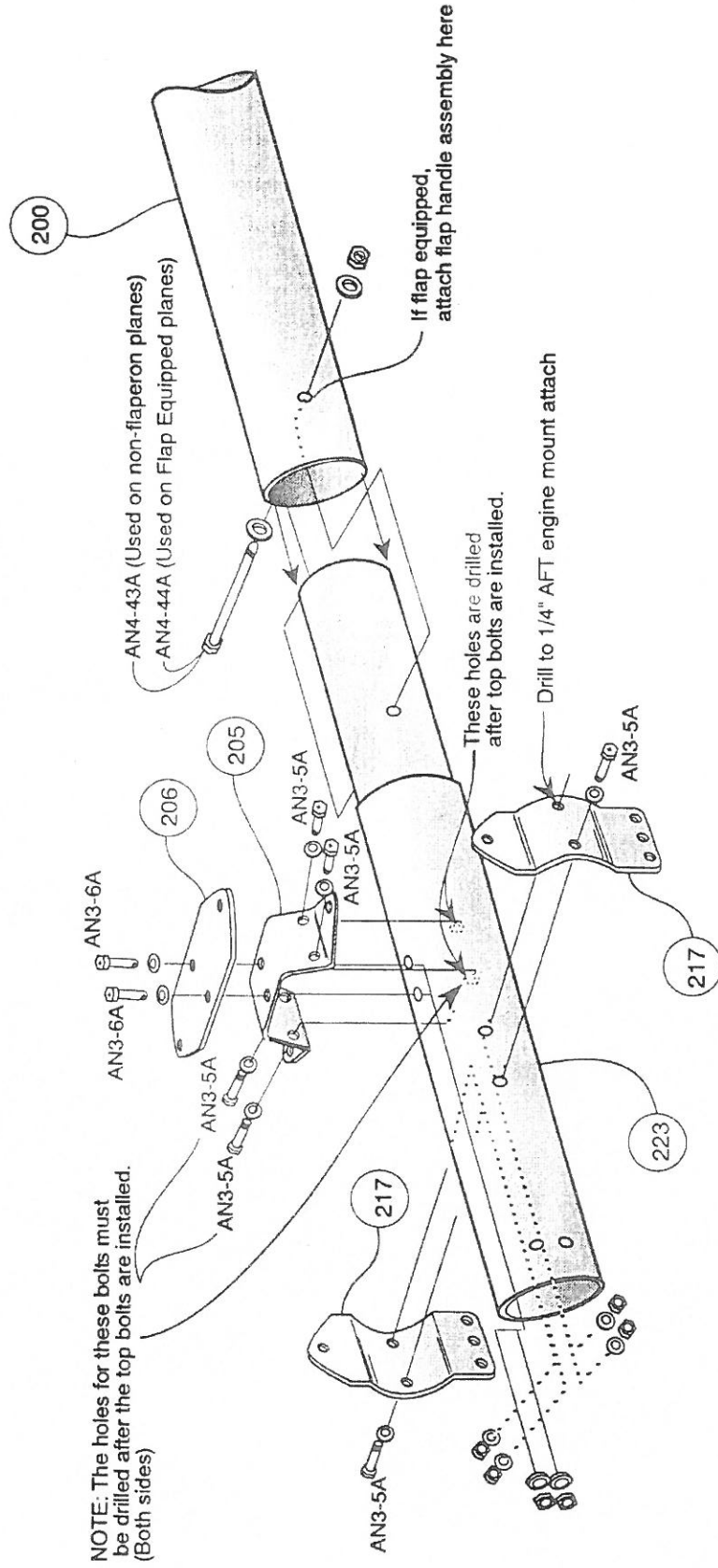
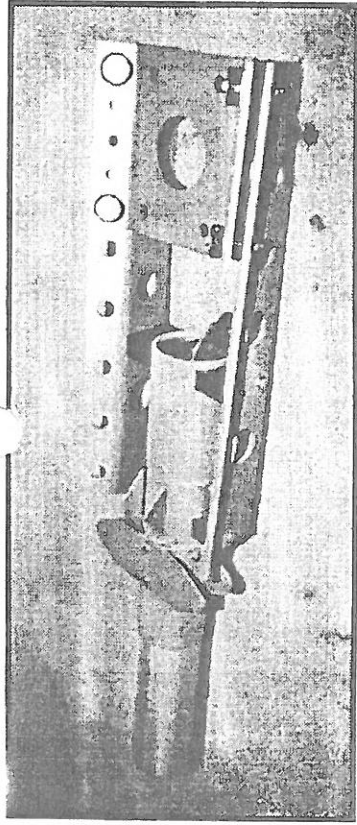


CAUTION: Do not drill until entire trike is secured.

**PREASSEMBLED AT FACTORY**  
They are shown here for your reference only.

Fig. 9

# Keel Extension Assembly



NOTE: The holes for these bolts must be drilled after the top bolts are installed. (Both sides)

NOTE: FULL nuts are used on all the bolts shown here.

Fig. 10

## *Upright Down Tubes Assembly*

1. Install the front down tube (201) with a AN4-17A bolt and thin washers on the outside and shear nut . (See Fig. 11)
2. Install throttle cables and wire harness at this time.
3. Install FWD diagonal brace down tubes (206) & (207), to the lower cage, with AN4-22A bolts and SO1-04 plastic saddles , a thin washer , and shear nut . Put the bolts on from inside to outside, and don't forget to align the plastic rudder cable guide and retainer. Leave nuts finger- tight. (See Fig. 11)
4. Install the rear cage tubes (211 & 212 ) with AN4-22A bolts and plastic saddles (SO1-04), washers , and shear nuts.
5. Install the tail strut tubes (215 & 216), with AN4-33A bolts, pulley keepers, rudder pulleys, 1" x 1/2" spacers, thick washers, and full nuts. Use saddles (SO1-04 ) again on both sides of the tube. (See Fig. 11)



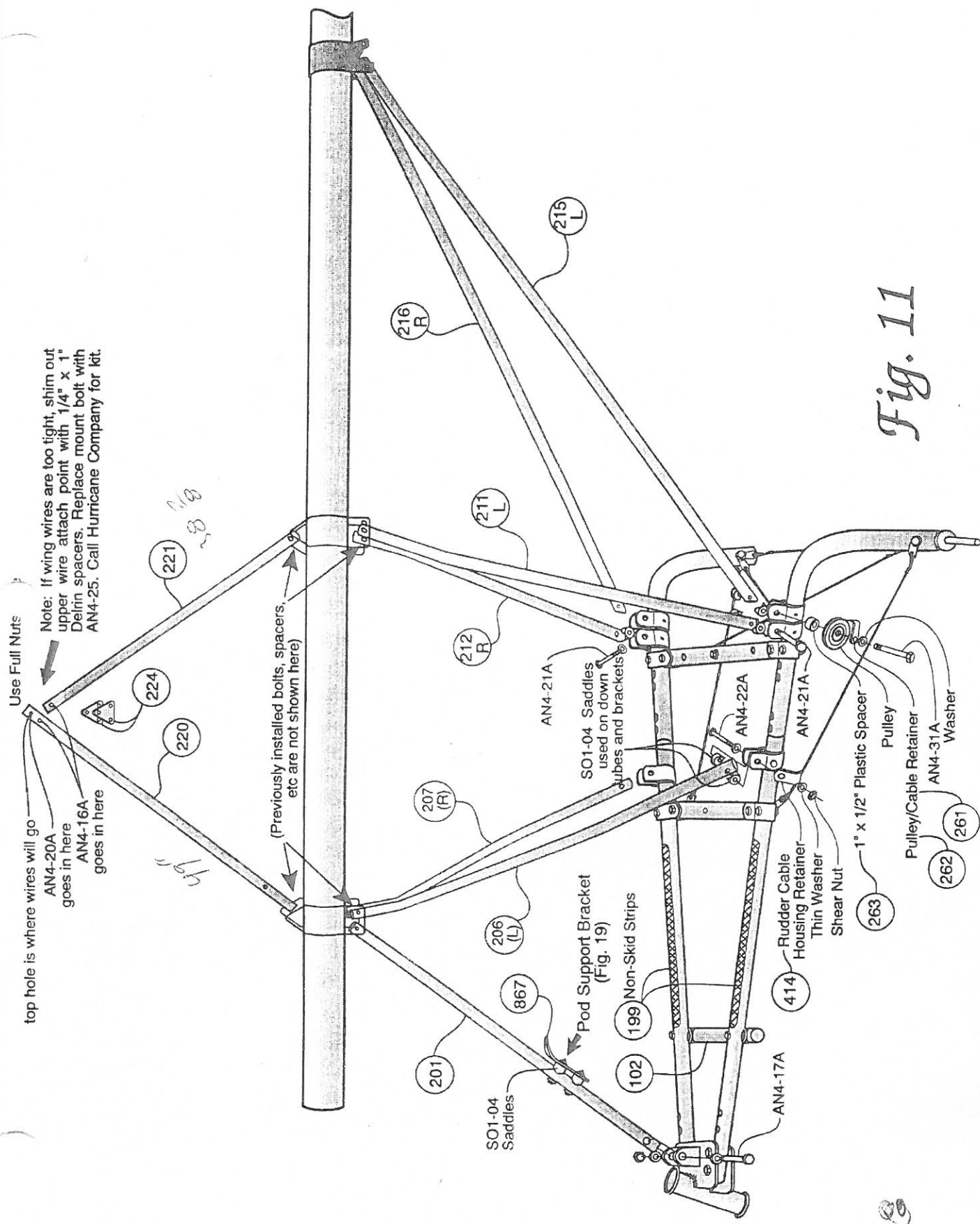
**NOTE :** Once you have completed the attachment of all the down tubes to the trike, review how they are to attached to the boom tube by watching the steps on the video.

### **ASSEMBLY HINT:**

It seems that no matter what tape is used to wrap your tubing prior to packing it in the crate, there is always some tape residue left on it when you unwrap it. Use some lacquer thinner and rags to clean it off. Also, if you plan to paint your tubing contact us for an instructional sheet on the best methods as recommended by PPG. (we are talking Super-Show Finish here !)



# Upper Cage to Trike Assembly



Use Full Nuts

Note: If wing wires are too tight, shim out upper wire attach point with 1/4" x 1" Delrin spacers. Replace mount bolt with AN4-25. Call Hurricane Company for kit.

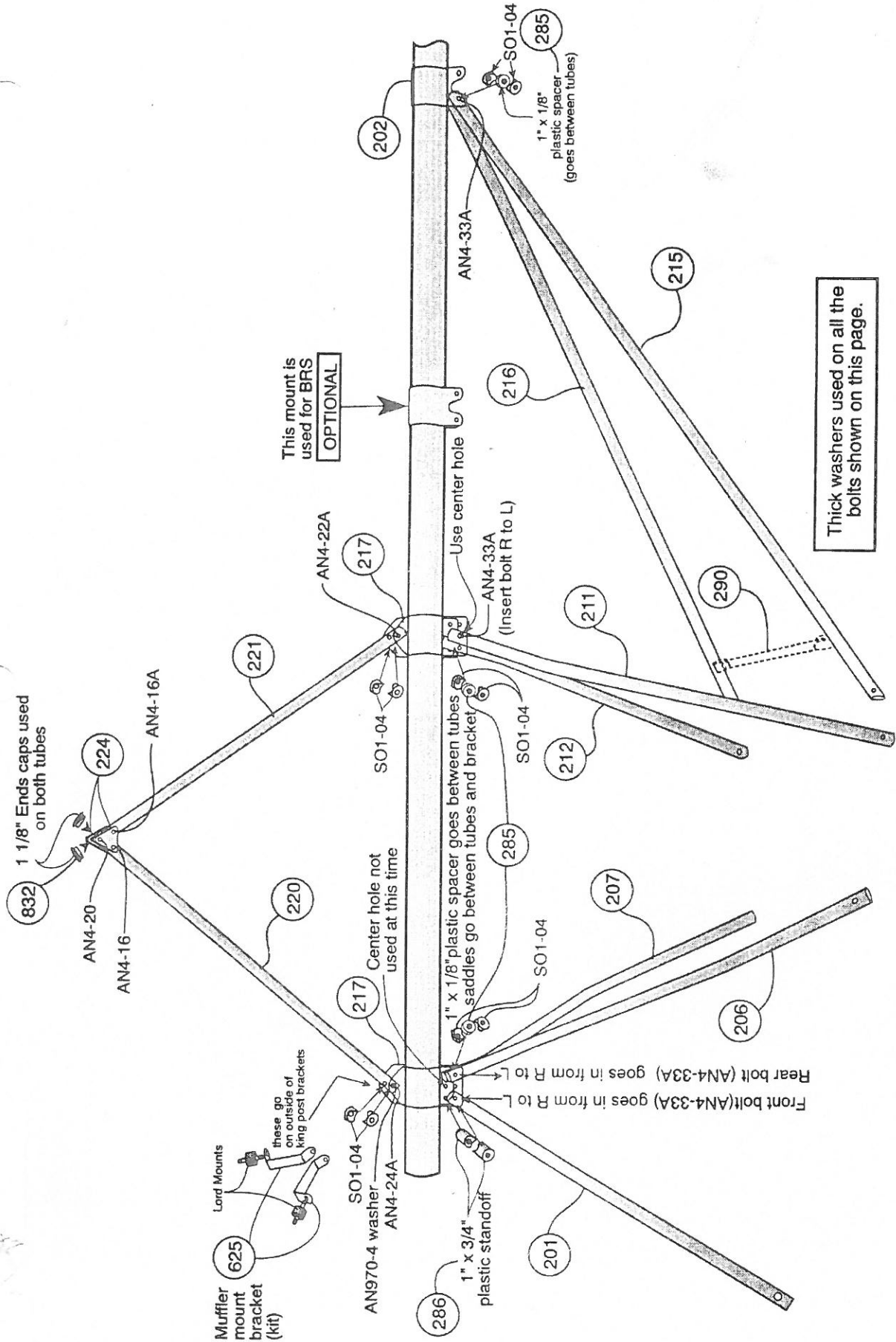
top hole is where wires will go  
AN4-20A goes in here  
AN4-16A goes in here

(Previously installed bolts, spacers, etc are not shown here)

- 221
- 224
- 220
- 207 (R)
- 206 (L)
- 867
- 201
- SO1-04 Saddles
- Pod Support Bracket (Fig. 19)
- 199 Non-Skid Strips
- 102
- AN4-17A
- 215 L
- 216 R
- 211 L
- 212 R
- AN4-21A
- SO1-04 Saddles used on down tubes and brackets
- AN4-22A
- AN4-21A
- 414 Rudder Cable Housing Retainer
- Thin Washer
- Shear Nut
- 263
- 1" x 1/2" Plastic Spacer
- Pulley
- Pulley/Cable Retainer
- AN4-31A Washer
- 262
- 261

Fig. 11

# King posts, Keel tube, and Down tubes



Thick washers used on all the bolts shown on this page.

Fig. 12

# Aileron & Elevator Cable Routing

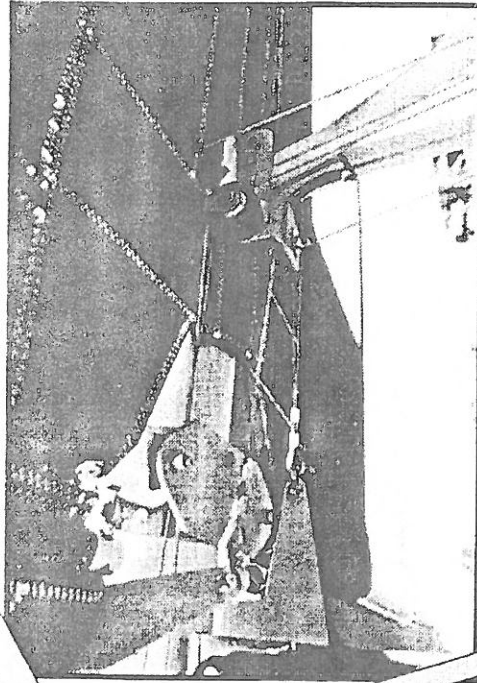
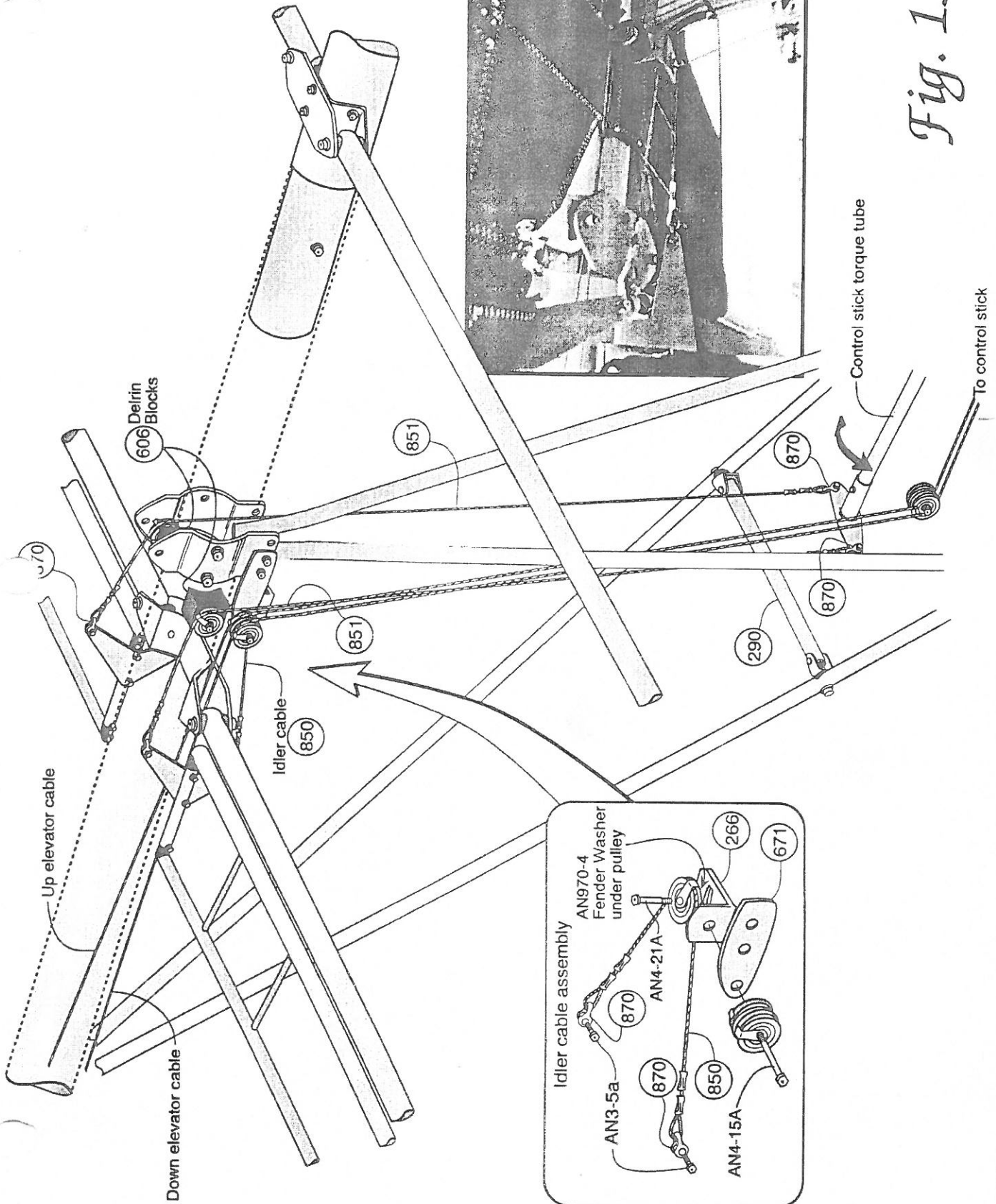
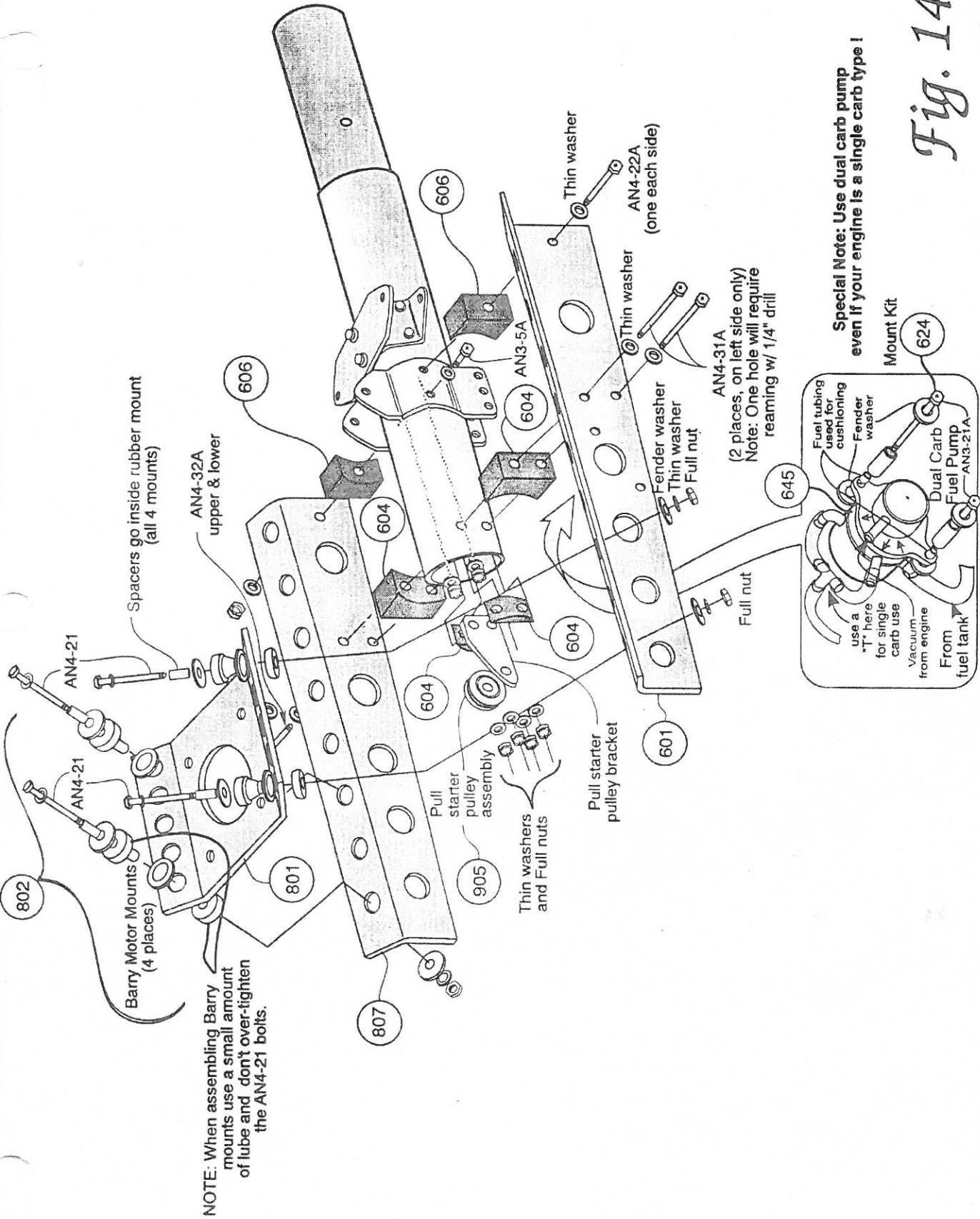


Fig. 13

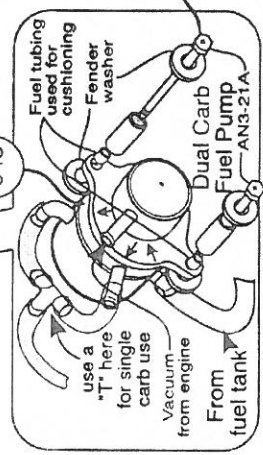




# Exploded View of Engine Mount



## Fig. 14



Upper Elevator Plate Pulley Assembly  
and Shoulder Harness Mount

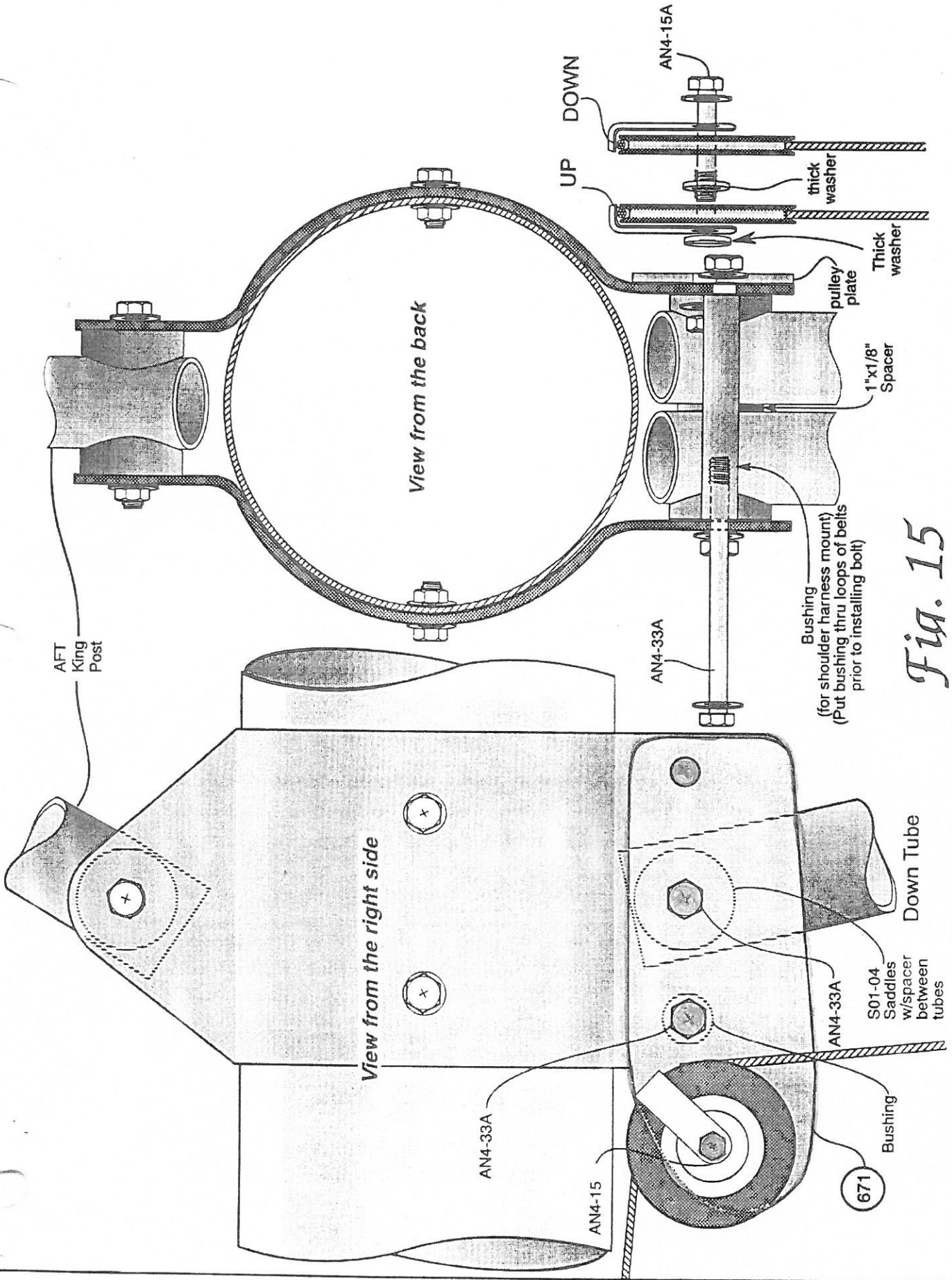


Fig. 15

# Tail Mount Bracket Assembly

Take extra care to ensure this mount is very snug around the boom tube before drilling hole for the long bolts, and has no gap between the mount and boom tube.

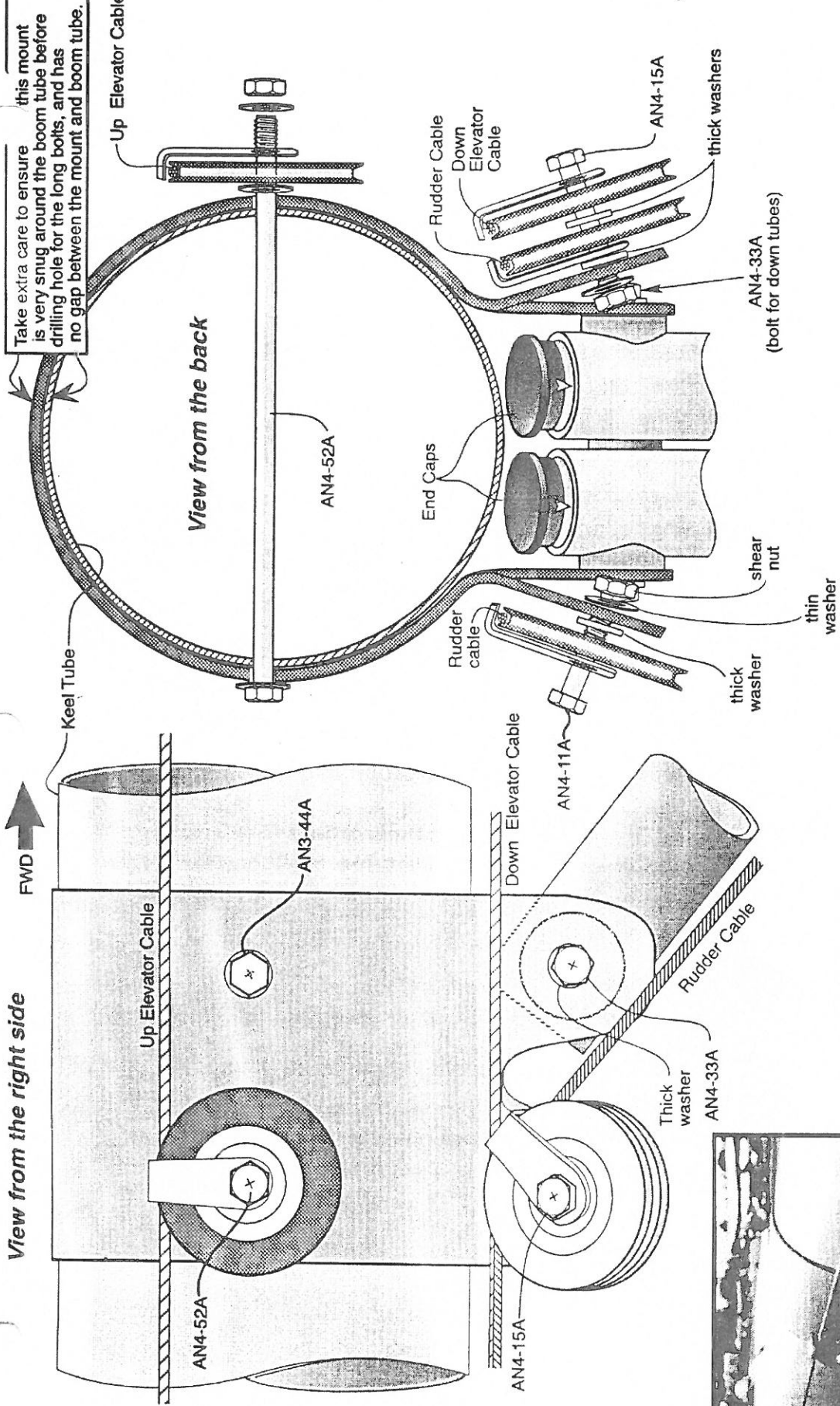
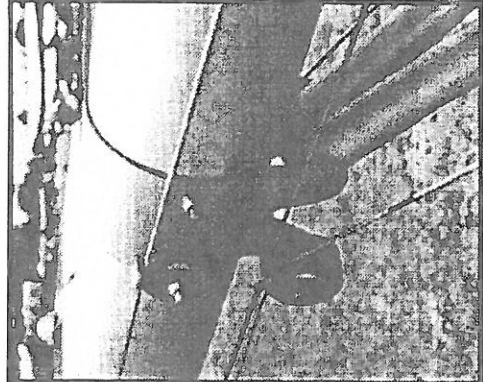


Fig. 16





### Seat Pan and Back Installation Fig. #17

1. Put the seat bottom (306) on the front (122) and rear (123) seat cross tubes. (In the middle of both ends of the plate should be a notch to clear the control stick torque block bolts by a minimum of 1/2" clearance). Push the middle down until the notch clears the bolts. At this point the bottom of the seat plate should not be touching the control stick torque tube. If everything is right, center the plate and drill four 1/8" holes on the four corners of the plate (minimum 1/4" from the edges). Rivet together with seat tube, using 1/8" steel rivets.

Now drill eight more holes, and rivet the seat bottom.

2. Put the rear seat plate (305) on the rear cage upright tube. The lower end of the plate is approximately 7 to 8" high from the bottom of the rear cage upright tube. Drill 1/8" rivet holes on the four corners of the plate, while it is on the tube. Rivet it with 1/8" (stainless steel rivets). Make sure that the holes are at least 1/8" from the edges of the plate. Divide up the remaining distance to five equal spaces and make marks for the five rivets (per side). Rivet it. (NOTE: Your seat back may come from the factory with the holes already drilled. If so, then just line up the back with the tubes and drill the tubes.

3. Align seat add-on tank and drill per Fig. 20.

4. Add lumbar support with 1/8" steel rivets just below seat back (1 to 2 inches). Holes are predrilled in the lumbar support, all you must do is line it up evenly with the tubes, and drill the holes.



### Throttle Fig. #18

1. Put together throttle handle assembly (620). Put the base plate, and handle on the left diagonal out board down tube against pod brace, using a AN4-40A bolt, plastic, 1 1/4" standoff, plastic 1" x 1 1/2", spacer, plastic washer, washer, and nut. On the bottom of the throttle base plate (624) goes the small screw and drill a hole for it in the pod and secure (Do this upon final assembly). Put plastic spacer between the throttle arm and the tube. This is the throttle stop. Don't connect the cables at this time.

# Seat Support & Lumbar Support

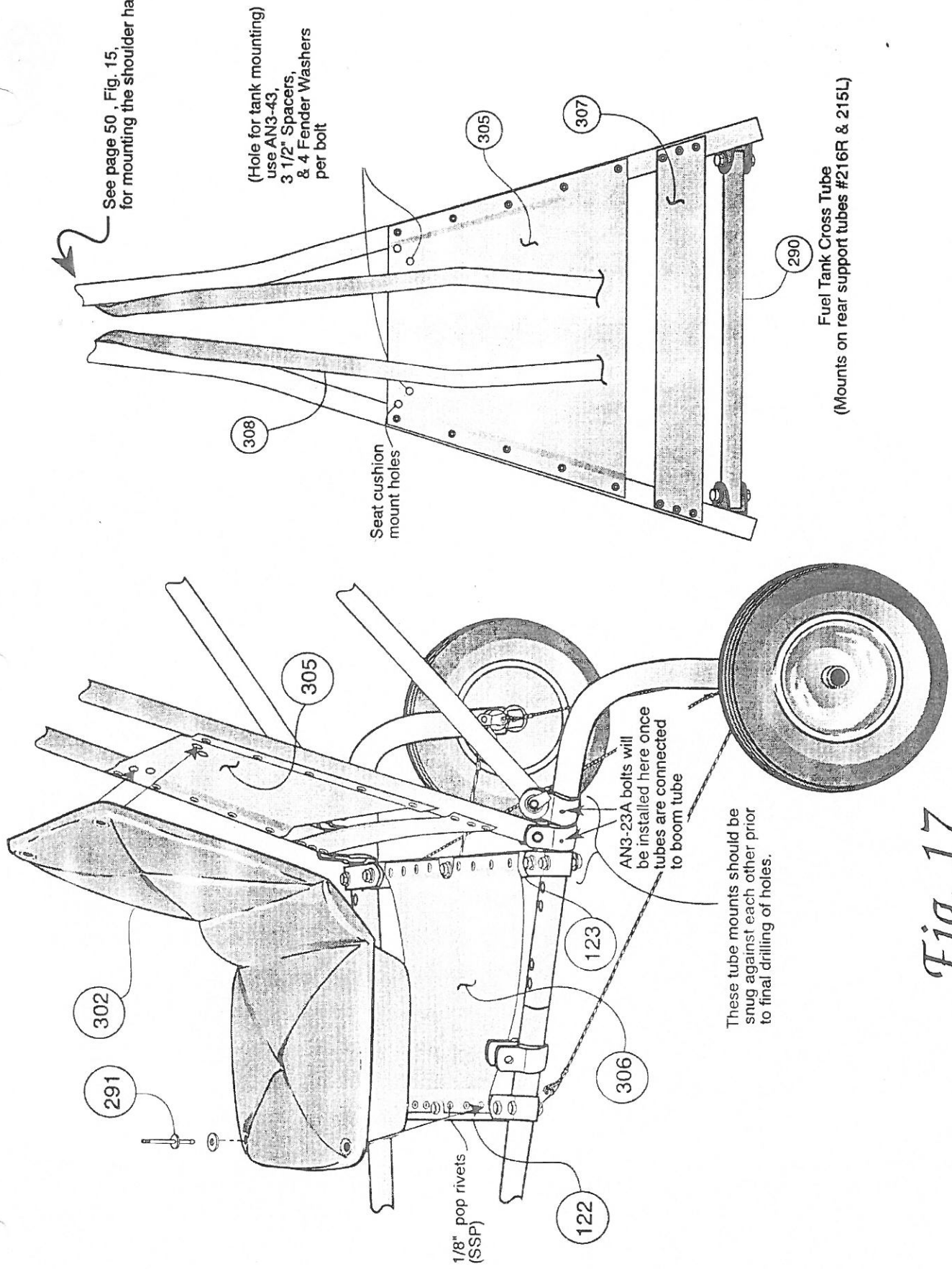
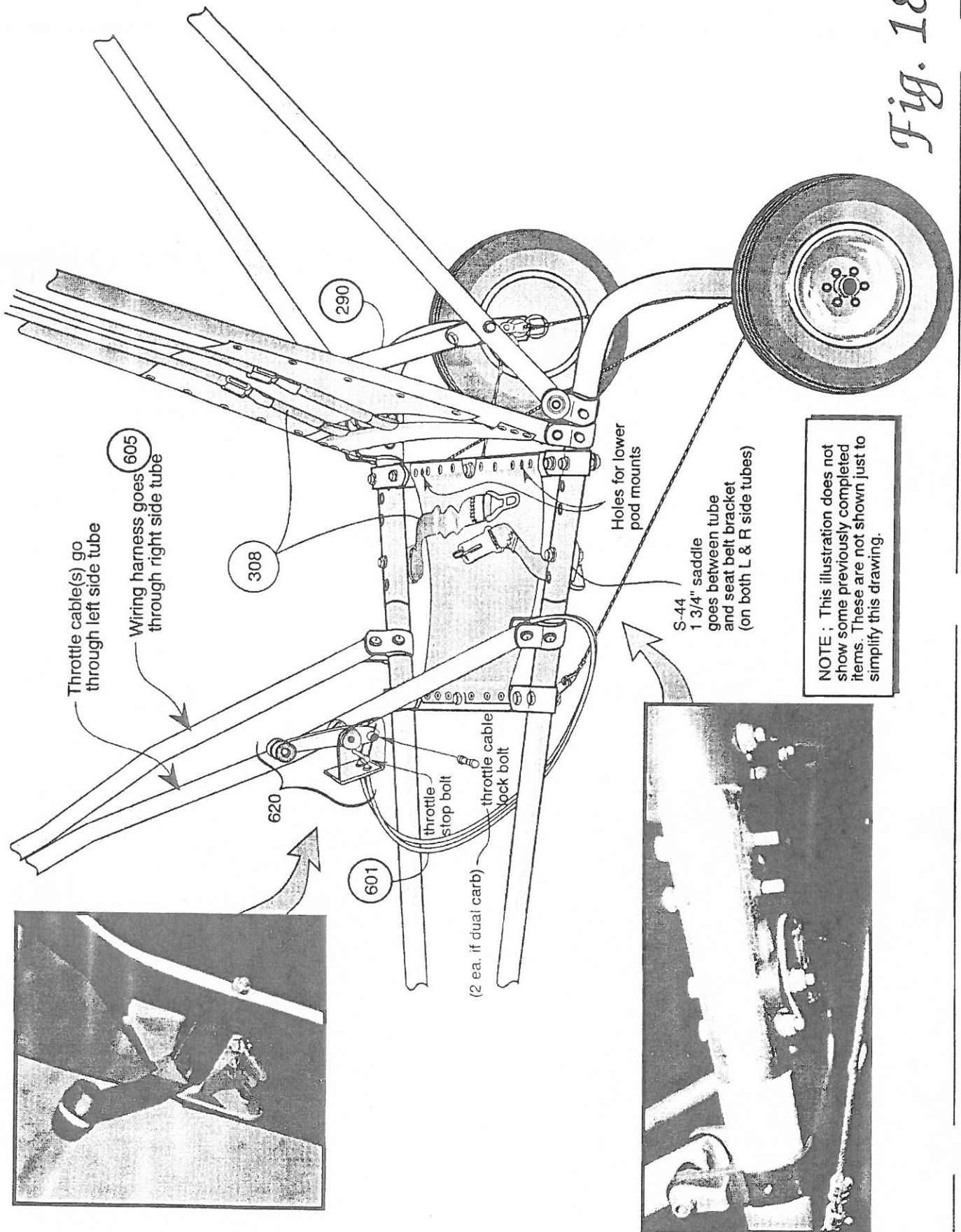


Fig. 17

# Lap & Shoulder Harness Installation Throttle Control Assembly Installation

Fig. 18



## Fiberglass Pod Mounting Fig. #19



Handle the fiberglass pod extremely carefully. It has a thin wall.

1. Cut out the holes on the pod with a hole saw. As marked on the pod. DO NOT exceed markings.

Drill the 1/4" windshield holes as marked, but wait until the pod is mounted to drill the 1/8" windshield holes. (Refer to the video for the best instructions on windshield installation). Next drill the 3/16" holes for the instrument panel mount as marked.

2. When you have all the holes done, call a friend to help you. You will have to take out the front fork and the front down tube from the plane. (The rudder pedals stay!) Now slide the fiberglass pod slowly onto the cage.

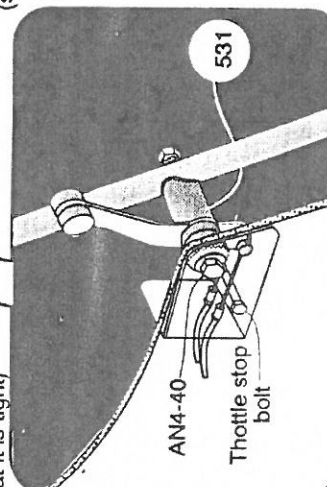
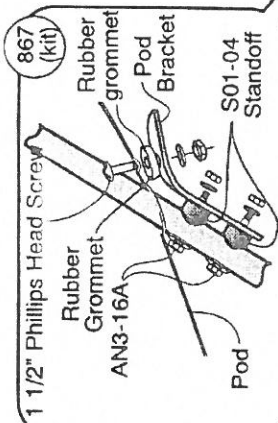
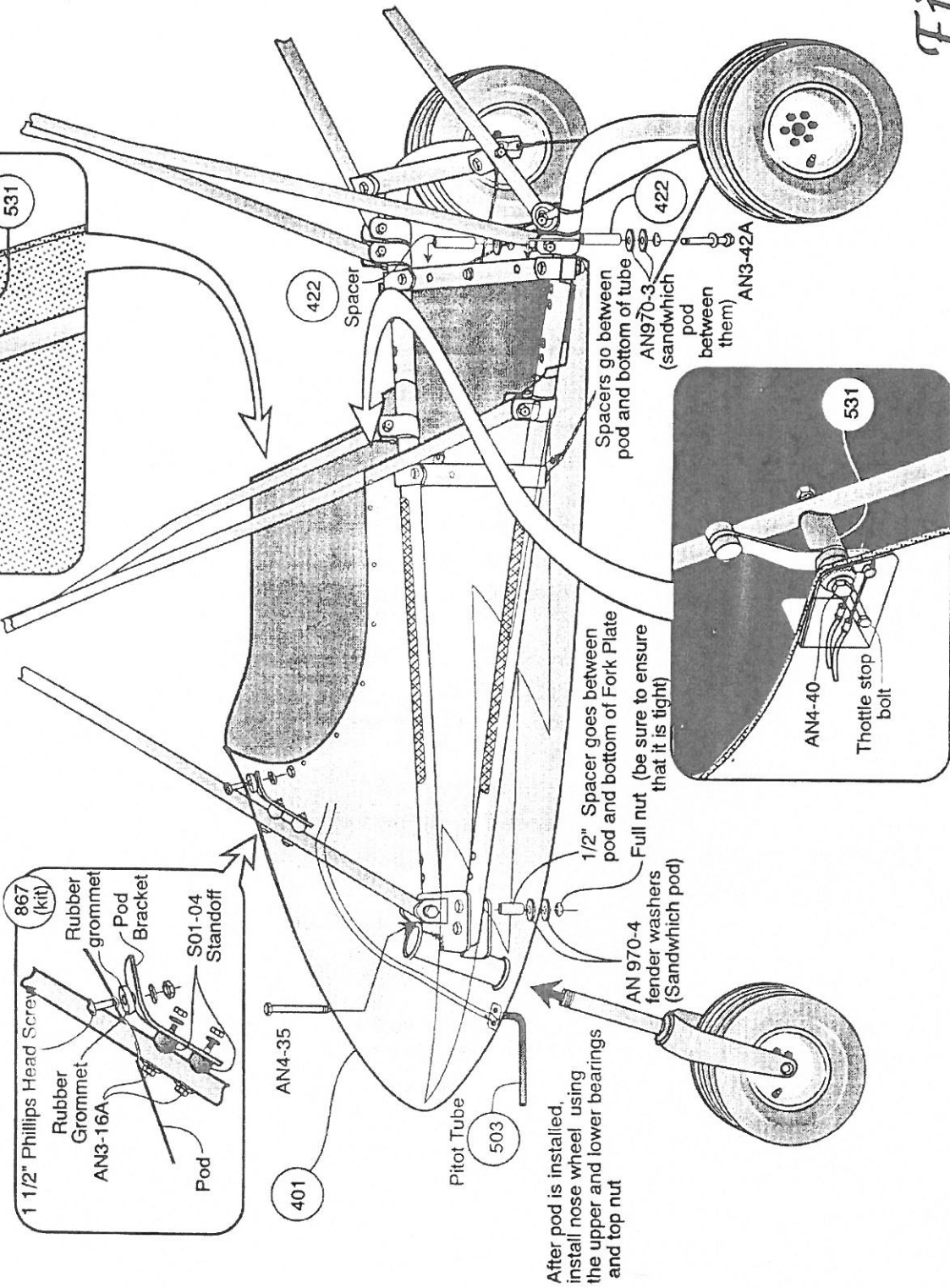
First bolt together the pod at the diagonal brace, Fig. 19. Use the throttle assembly AN4-22A bolt on one side of the cage and the AN4-33A bolt and plastic washer, stand off, thin washer, and shear nut, on the other side, Fig. 19.

3. Then fasten together the front end of the cage and the front end of the pod. Use the down tube bracket bolt, AN4-33A and put the 1" spacer, between the front weldment and the fiberglass pod. Put a large area washer on both sides of the pod, and nut, on the bottom of the pod.
4. Fasten together the rear side of the pod and the rear seat tube with AN3-43A bolt, spacers, plastic washer, and nut. The spacers go between the rear seat tube and the pod. These holes are not drilled on the pod AFT bottom. This should be done once the pod is secured. Then drill through the AFT seat cross tube holes with a long 3/16" drill bit.
5. Now put back the front down tube and front fork. Assemble the rudder pedal steering again. Use a short crescent wrench to tighten the front fork nut. Make sure it isn't too tight --- just tight enough to take out the play from the bearings. Install the upper pod support onto the front down tube. Drill up through bracket into pod to locate hole for securing pod to bracket.

# Pod Mounting

Fig. 19

**NOTE:** To simplify the illustration of construction steps shown here, certain other previously completed steps are not shown in this drawing. NOT SHOWN are the front steering linkages, rudder pedals, seat bottom and back, control stick and related items, seat belts and harness and the throttle control, keel tube and brackets.

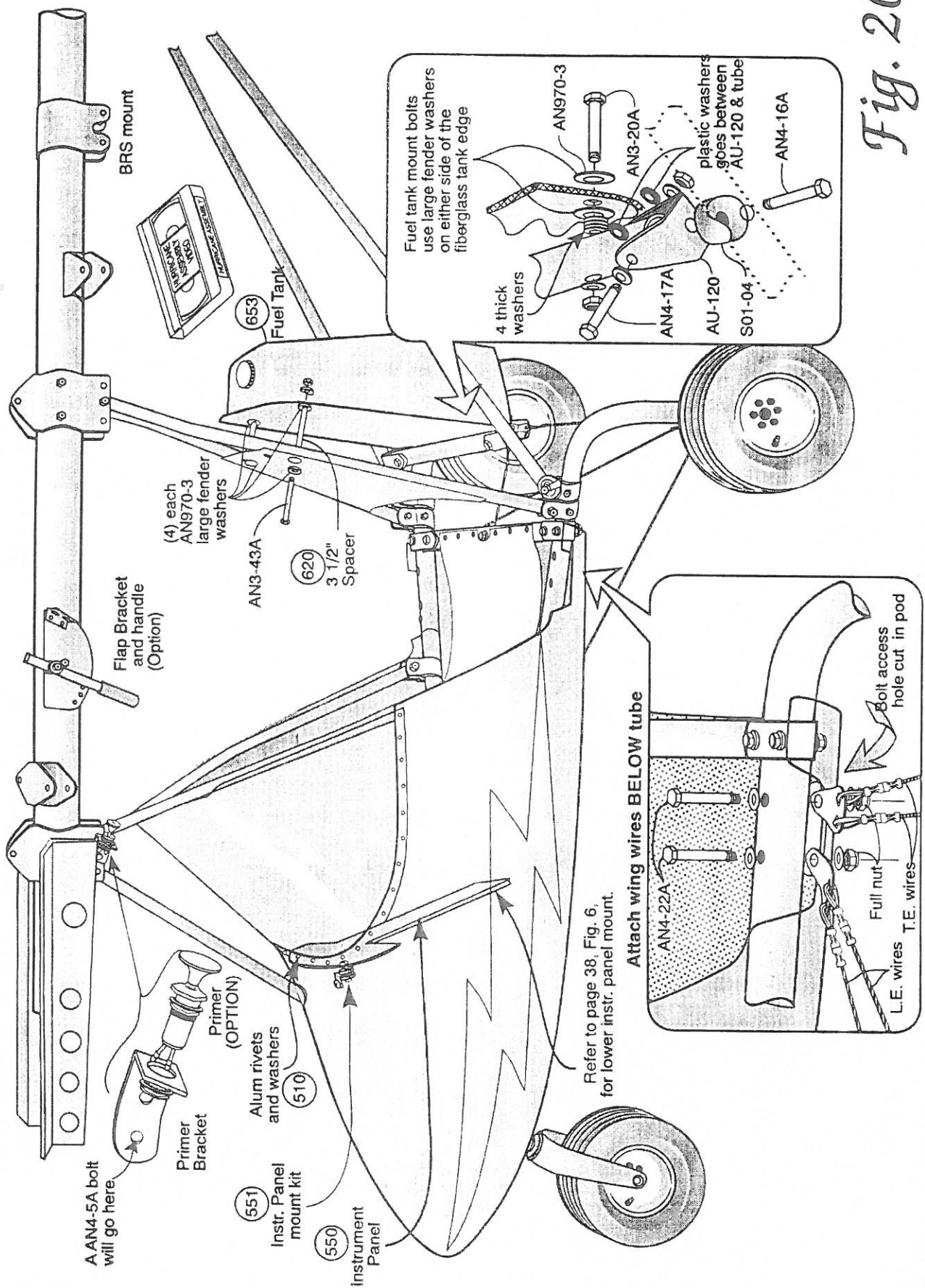


After pod is installed, install nose wheel using the upper and lower bearings and top nut



# Fuel Tank Mounting (& lower wing wire attach instructions)

Fig. 20



Refer to page 38, Fig. 6, for lower instr. panel mount.

# Fuel Line (Metal) Routeing Fuel Tubing, Squeeze Bulb, Fuel Pump Mounting

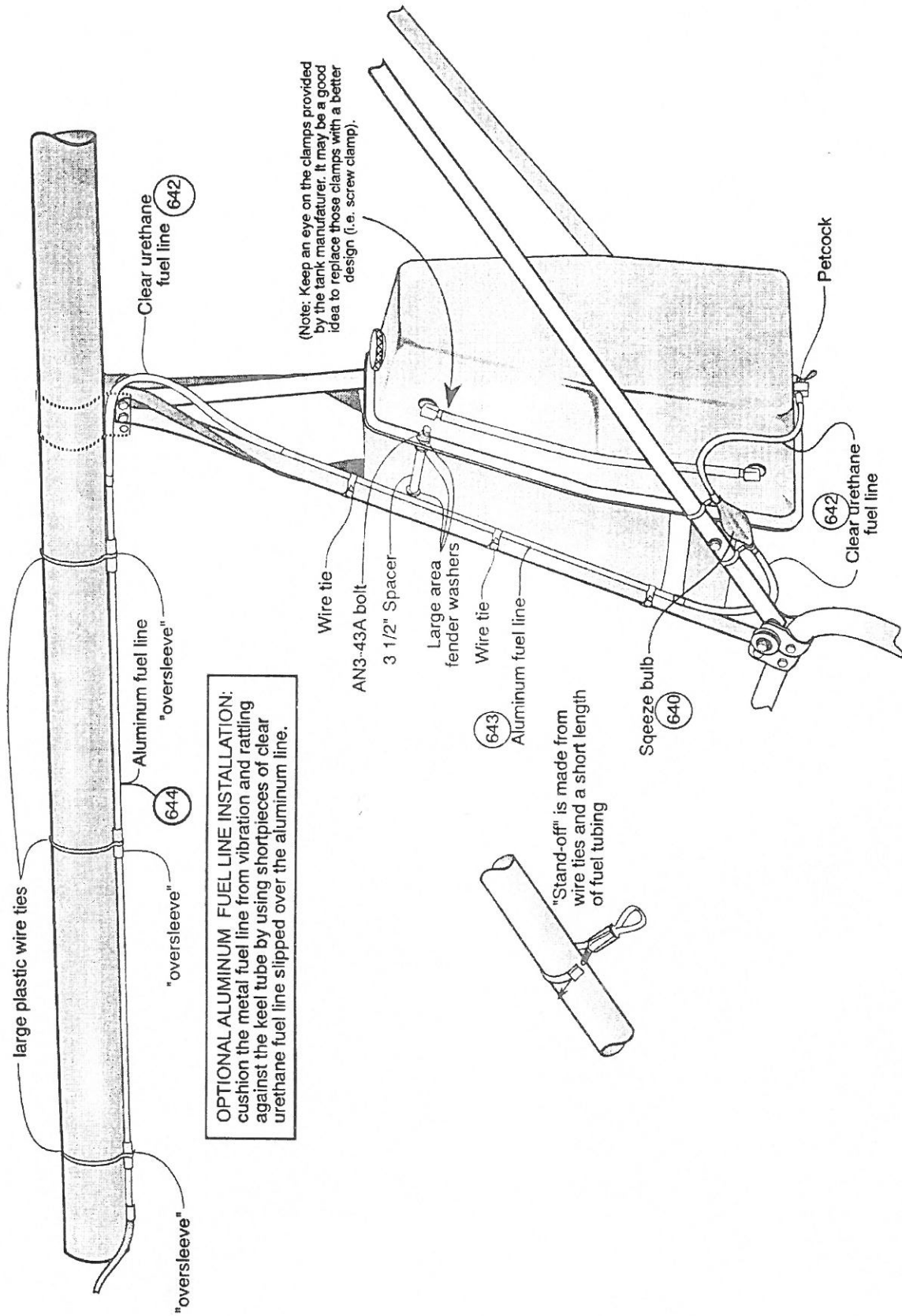


Fig. 21

## Tail Assembly

### Horizontal Stabilizer Fig. 22

1. Install TC-i (i means = steel threaded insert) into TC-1 aligning the holes in each. Insert the saddles (TC-1) fitting in the horizontal leading edges and the 1/2" horizontal stabilizer spreader tubes (705). The saddles are set parallel to the holes for AN3-13A bolts. Install AN3-13A bolts, washers, and nuts.

***SPECIAL NOTE: Before assembling any of the tail surface coverings BE SURE TO WASH YOUR HANDS. It is too easy to forget this step and mar your pretty new sails with dirty finger prints.***



2. I recommend that you assemble a bare frame first just to check that all the parts fit properly. So assemble the frame with AN4-16A bolts, AN43-16A bolts, AN43-15A eyebolts, saddles, and tangs. Check the fit in the tail section of the keel (in the sleeves). If necessary, make adjustments on TC-1 fittings.

NOTE: On the AN4-15A bolt there are the top and bottom and plastic stand off, attach at this point tail wire.

3. To assemble with the covering, slide the leading edge (701) and the trailing edge (702) inside the cover, through the two openings on the squared-off end. Join the outer corner using an assembly bolt. Make sure that the head of the bolt is not hanging over the tube, because it will tear the sail if it is out.

Carefully slide the assembly into the cover just deep enough to be able to put in the 1" spreader tube (725) with two more assembly bolts. (Make sure again that the bolts are not hanging over the outside edge of the tube). The bolt heads should be facing outward on the spreader.

Now slide the assembly in completely, and put the 1" spreader tube in with a AN4-15A bolt and an AN43-15A eyebolt, on the AFT side of the straight tube.

The easiest way to slide the cover on is to stand the frame up between your arms and push a screwdriver through the corner hole between the sail and the 1/2" tube, and then push the 1/2" tube down the rest of the way with the screwdriver. It is a two-handed operation, so you will need a helper to put in the bolts.

When the bolts are in, use a hot knife or soldering iron to melt holes for bolts AN4-15A and AN4-16A. Then take the assembly bolts out with a screwdriver and put in bolts, saddles and tangs. To install the center Horizontal 1/2" spreader tube, use the supplied insert tool. Move tube to one side and hold in place by poking a hole through fabric at the leading edge and insert an "Awl" to hold tube in place. Using insert tool, lightly tap (and be very careful to maintain center) the tube down until your inline with the trailing edge hole, use 1/4" x 28 starter tap to ensure proper hole alignment, so you won't cross thread fitting.

Then insert the completed horizontal stabilizer into the horizontal sleeves in the keel.

### **Vertical Stabilizer Fig. 23**



1. Insert the TC-i into TC-1` insert in the vertical stabilizer leading edge (720) and the vertical stabilizer spreader tubes (715). The saddle of the TC-1 fittings with AN3-15A bolts, washers, and nuts. Assemble the leading edge, trailing edge, and spreader tubes without the covering to check the proper fit in the keel. Use AN4-15A bolts and AN43B-15A eyebolts.
2. This is the best time to install the tail wires. Put the tail wires on with AN3-14 bolts, lock nuts.

***NOTE: Preassemble all tail tubing and support wires to ensure that all will go together properly and fit tight BEFORE putting on the tail surface fabric. Once you are satisfied with the way the tail surface tubing fits, then review the video for hints on tail surface covering installation.***

3. To assemble with covering, slide the leading edges (720 & 716) and trailing edges (740 & 717) and into the cover through the openings in the squared off ends. Join the outer corners using AN43B-15A eyebolts. Tighten eyebolts securely, being careful not to elongate the tube setting the eyebolts horizontally.
4. Install the vertical stabilizer spreader tubes (715). Slide the spreader tubes into sail. Use the screwdriver technique or the rope technique to assemble.

**NOTE:** Install internal spreader using supplied spreader insert tool pushing slotted end over button.

**Rope Technique:** Using a piece of rope , form a loop around the end of the spreader tubes adjacent to the trailing edge tubes. Pass both ends of the rope out through the corner openings. Allow the ends of the spreader tubes to angle inward until you have the slack to catch the opposite end of the spreader tubes on AN4-14A bolt. Bolts then serve as pivot points. Using the rope, pull the end of the spreader tubes into position and stabilizer and eyebolt securely, setting eyebolts horizontally.

5. Using a hot knife or soldering iron, melt holes in the fabric for AN3-14 bolt.
6. Insert the completed vertical stabilizer in the vertical sleeves in the keel tube.
7. Fasten the tail wires to the vertical stabilizer, using AN3-14 bolt, locknuts . (For easy assembly get both lower and upper locknuts started before tightening them completely). You may need help using someone to push down on the outer tip of stabilizer.

#### *Elevator Assembly Fig. #24*



1. Insert the threaded insert (TC-i) into TC-1. Insert TC-1 into both ends of the elevator trailing edges tubes (770). The saddles of the TC-1 fittings are set parallel to the holes for the AN3-12A bolts and AN3-14A. Fasten together the bare frame, using AN3-13A bolts and AN3-14A, washers, and nuts. One the left elevator tighten bolts securely, but temporarily install bolts with the nut finder-tight. These bolts later hold the elevator belcrank.
2. Assemble the bare frame to check that everything fits. To assemble with the covering, slide the elevator trailing edge tubes and into the covers through one of the corners starting at the inside. Insert the elevator leading edge tubes (773) and between the covering and the TC-1 fittings in the trailing edge. To get the leading edge tubes to engage the fittings at the outside 3 corners, you will have to pry the end of the tubes to overcome the fabric tension.
3. Fasten the elevator corners using AN43B-15A eyebolts. Tighten eyebolts securely being careful not to elongate tubes and setting them vertically.

4. Install the 1/2" elevator spreader tubes (775). Using the supplied 1/2" elevator spreader tubes. Using the supplied 1/2" x 36 insertion tube the flat taped end to tap the spreader of the riveted washers.

NOTE: Be sure the "cutout" on the spreader tube is facing towards the riveted washers.

5. Using a hot knife or soldering melt two holes in the right elevator for the elevator for the elevator bellcrank bolts. Install the elevator bellcrank (771), using AN3-15A bolts, washers, and full nuts. Use the flex head wrench and the tape-in-the-wrench trick to install and tighten nuts.

6. Join the two completed elevators, NOTE: (use silicone lube in this area) by inserting them into the slotted opening in the keel and sliding them together. Keep them hanging down -- this way it is easy to move right and left, and put bolts in from the top side. Fasten them using AN3-13A bolts, washers, and nuts. Make sure that you don't drill the holes up, because you don't want any play in the control surfaces. Tighten nuts securely. You will need to use a socket and extension.

7. Mount the elevator assembly on the horizontal stabilizer. The elevator eyebolt will be staggered to the outside of those on the horizontal stabilizer. Pin the eyebolts together using bolts, and Part #866 washers, between the eyebolt and nut. Tighten nut just enough to remove free play. The AN3-5A bolts should be free to rotate using just your fingers.

### *Rudder Assembly Fig. #25*

1. Insert the TC-i in the TC-1. Insert the WP-12 in the ends of the rudder trailing edge tube (723) and the rudder bellcrank spreader tube (724). The saddles of the TC-1 fittings are set parallel to the holes for bolts. To check the proper fit, lay out the rudder leading edge (721), trailing edge (723) and the spreader tube (728) on a flat surface. Adjust the TC-1 fittings to mate perfectly with the tubes they hold. Fasten TC-1, using AN3-13A bolts and AN3-15A bolts, washers, and nuts. Tighten finger-tight. Bolt (AN3-15A) will later hold the rudder bellcrank (705).

2. Assemble the bare frame to check that everything fits. To assemble with covering, slide the rudder trailing edge tube into cover through one of the corner openings. Insert the rudder leading edge tube between the covering and the TC-1 fittings in the ends of the rudder trailing edge. To get leading edge tube to engage the fitting at

the outside corner, you will have to pry out the end. Fasten the rudder corners using AN43-15A eyebolts and tighten securely. Be careful not to elongate the tube and set the eyebolts horizontally.

3. Install the rudder bellcrank spreader tube. Using a hot knife or soldering iron, melt holes for AN43-15A eyebolt and AN4-15A. Install temporarily both AN3-15A bolts with the nuts finger-tight in the spreader tube.

4. Install the rudder bellcrank (711) on the 1" spreader tube, using bolts, saddles, washers, and nut. Tighten securely.

5. Install the 1/2" rudder spreader tube. Insert the spreader tube through the upper hole of the trailing edge tube. Catch the AFT end of the spreader tube. Using the supplied tool push the front end of the spreader tube rearward until it pops over the button in the leading edge. It will try to jump off from the leading edge, so ask a helper to keep it in the middle with his/her hands through the sail.

6. Mount the complete rudder on the vertical stabilizer, staggering the rudder eyebolts below those on the stabilizer. Pin the eyebolts together using bolts and plastic washers (Part #866) between the eyebolts and nuts. Tighten nuts just enough to remove free play.

### *Rudder Rigging*

Attach the left and right rudder cables and to their respective ends on the rudder bellcrank using shackles, bolts and nuts (AN3-5A, & thin nuts). Tighten nuts just enough to remove free play.

Route the cables through the pulleys and don't forget to go around the torque tube (cage) in a spiral and attach the front end of the cable (tang) to the rudder pedal. To adjust and center the cable length and rudder turn as required the nose wheel steering rods.

### *Elevator Rigging*

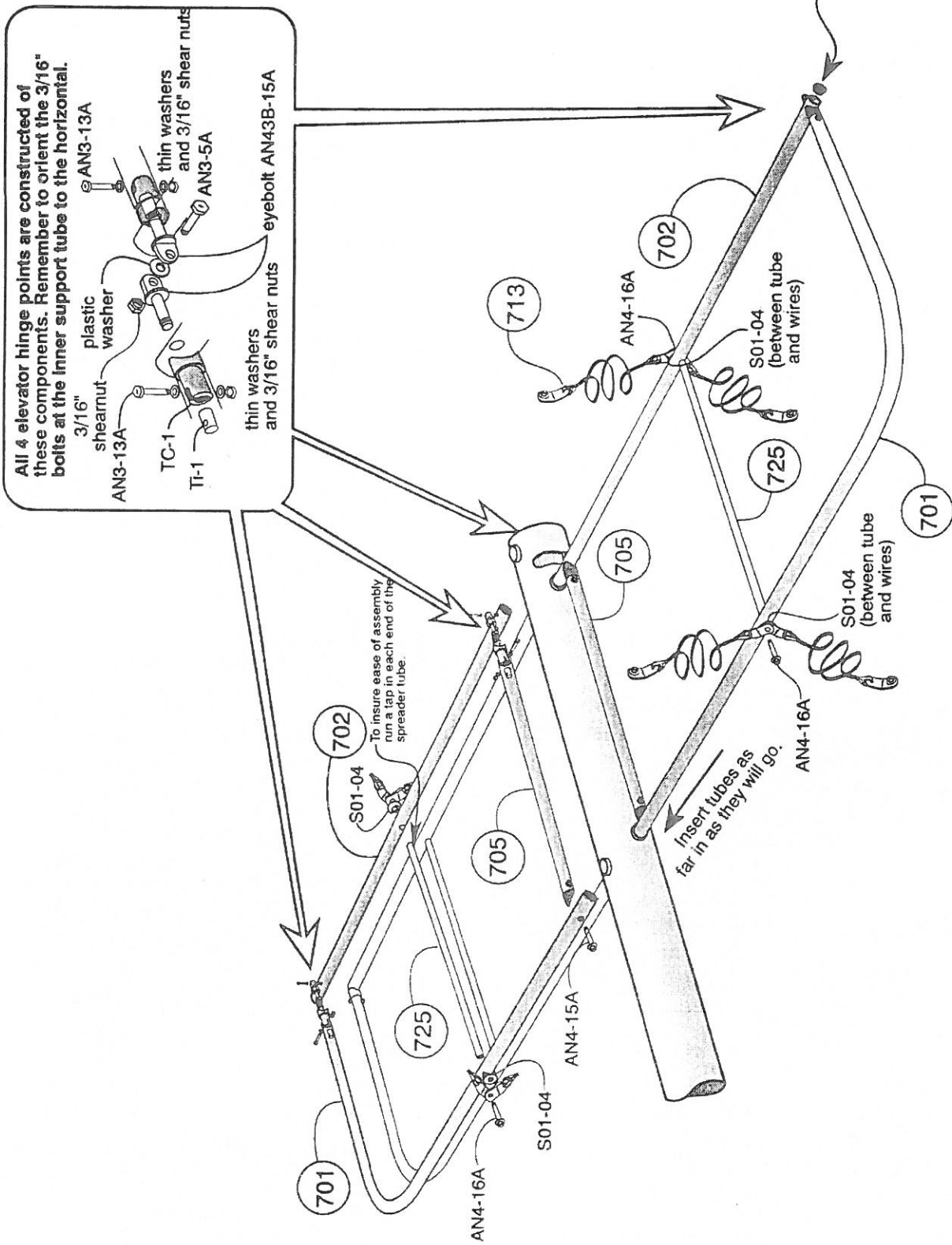
Adjusting tension on the elevator cables is done at the cockpit pulley just below the instrument panel. The mount is slotted where the pulley secures to ensure proper mild tension of the cables.

#### **SPECIAL NOTE:**

*While the tail surface covers are generally pretty tight when you initially install them, after a few hours flying time they may develop some "slack" or looseness. What happens is that during flight, the surfaces may "dish" and produce a "heavyness" on the stick. To remove any slack from the tail surfaces (any and /or ALL of them), then just follow the hint on page 67, next to Fig. 25. After you've "shimmed" them, you'll notice a REAL difference in "stick and rudder feel".*

# Horizontal Stabilizer

Fig. 22







# Elevator Assembly

All 4 elevator hinge points are constructed of these components. Remember to orient the 3/16" bolts to the horizontal.

866 plastic washer  
TC-1  
AN3-13A  
AN3-13A  
AN3-5A  
thin washers  
AN43B-15A  
thin washers and 3/16" shear nuts

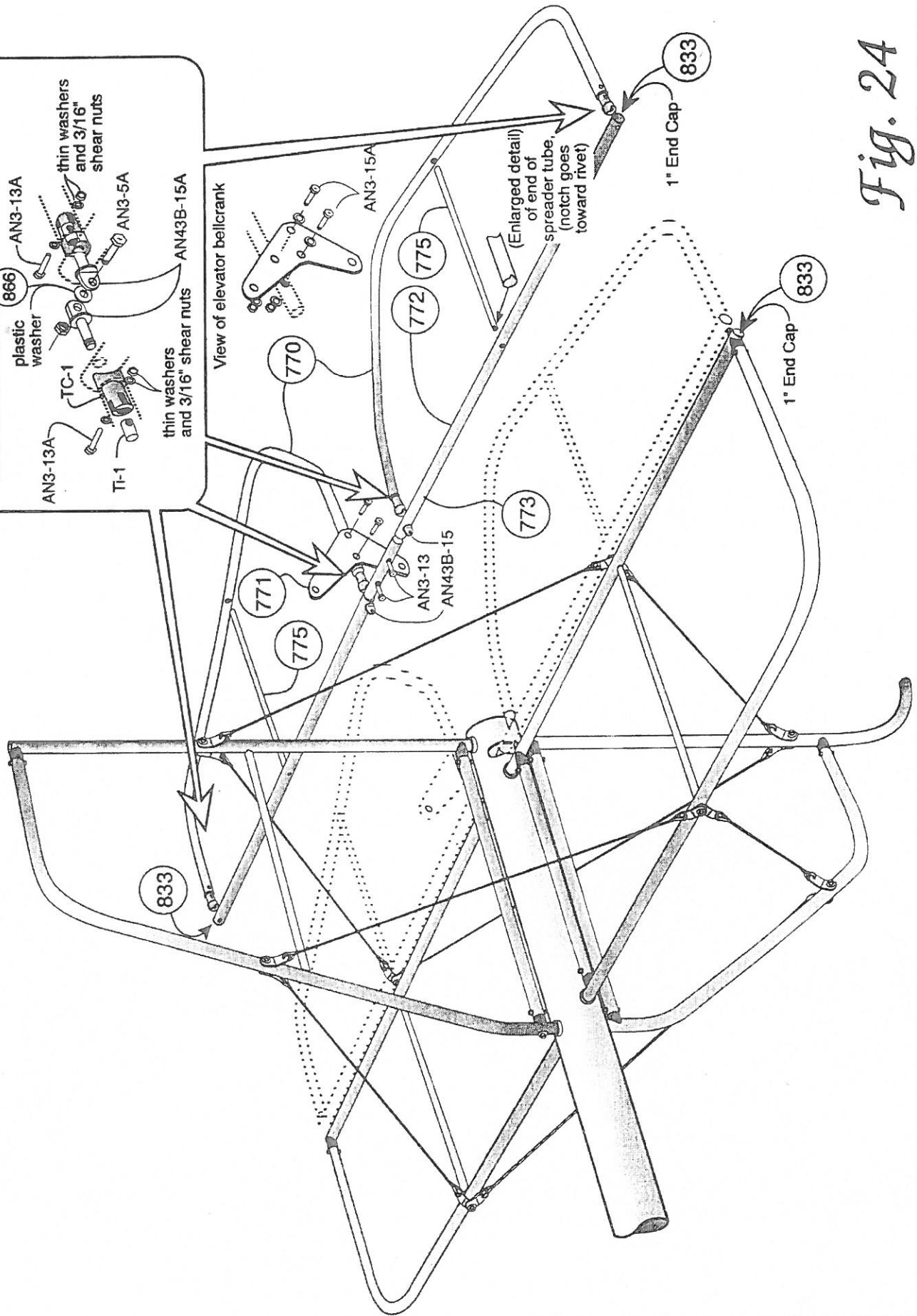
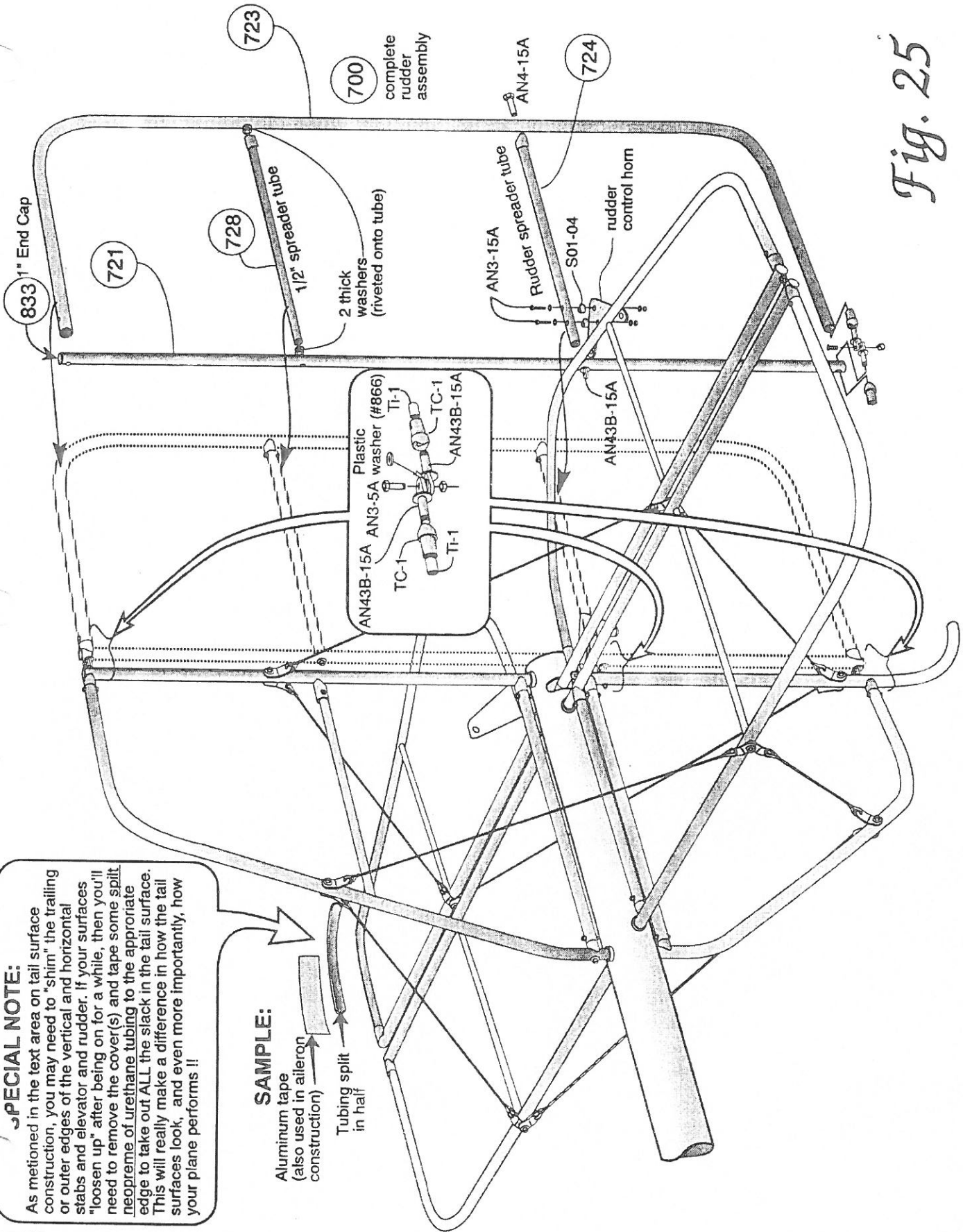


Fig. 24

# Rudder Assembly

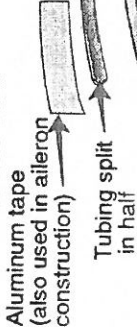
Fig. 25



**SPECIAL NOTE:**

As mentioned in the text area on tail surface construction, you may need to "shim" the trailing or outer edges of the vertical and horizontal struts and elevator and rudder. If your surfaces "loosen up" after being on for a while, then you'll need to remove the cover(s) and tape some split neoprene of urethane tubing to the appropriate edge to take out ALL the slack in the tail surface. This will really make a difference in how the tail surfaces look, and even more importantly, how your plane performs !!

**SAMPLE:**



Assemble the engine in the following manner:

1. Place the engine and bolt the assembly to the top of the motorplate, using bolts, lock washers supplied in engine box. Use blue lock-tite.
2. Install carburetor on the intake flange and tighten the clamp securely.
3. Install air filter on carburetor and tighten the clamp securely.
4. Install the exhaust manifold, using nuts and lock washers. These nuts and washers, and attaching springs.
5. Install the exhaust pipe and elbow by slipping into the exhaust manifold and attaching springs. Secure it to the two exhaust brackets using bolts, washers, rubber grommets, washers and nuts. Tighten nuts securely. Install exhaust springs.
6. Put on propeller. (Pull the starter handle slowly, and check the direction of the engine). Make sure that you don't put the prop on backwards, (the engine will turn clockwise when you're facing it).
7. Route the starter cable through the two pulleys. You should be able to reach it and pull the starter from the cockpit, while you sit on the seat.

Put the propeller bolts through the propeller backing plates. Secure using blue lock-tite and washers. Torque the propeller bolts to 15 foot pounds, alternating between the bolts opposite each other. Adjust pitch using the supplied manual with prop.

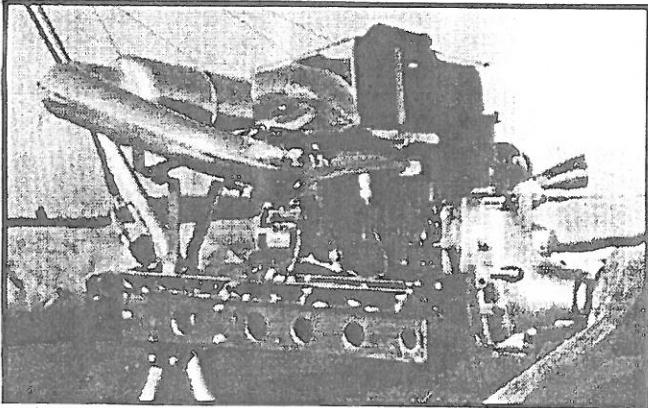
NOTE: Propeller tracking should be checked on a regular basis, particularly when there are wide variations in temperature and humidity or when you notice excessive vibration.

Check the tracking in the following way:

At any convenient spot along the arc formed by the propeller tip, affix a reference point. The reference must be mounted off a rigid, stationary part of the airplane. For instance, clamp a hefty tube or piece of wood on the wing or motorplate that will reach past the tip of the tip of the prop. Swing the prop around until the tip just touches and mark the spot. Swing the prop 180 degrees until the opposite tip touches. Check it's relation to the mark. If it is on the mark, you are all set.

Otherwise, tighten the prop bolt adjacent to the tip that was futher out. Proceed with slight adjustments, 1/8" of a turn on the bolt as most. As you bring in the tip, the other side will be moving out, so keep rotating the prop and remarking your reference, until you get both prop tips touching at the same points.

## "Example" Engine Photos

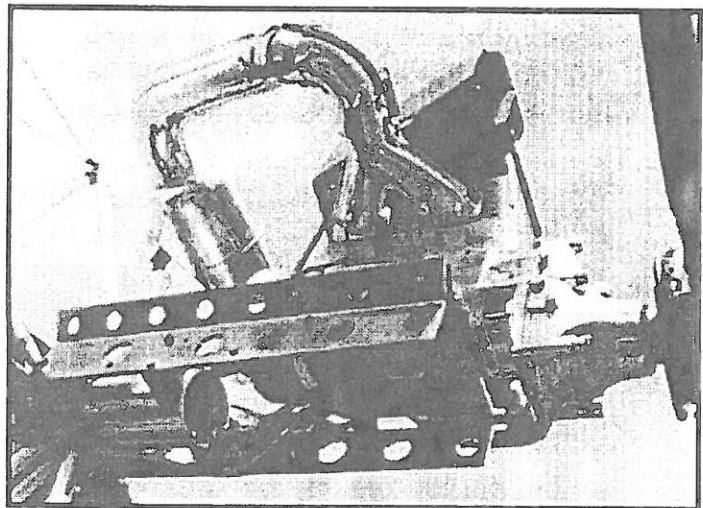


447 DC/CDI

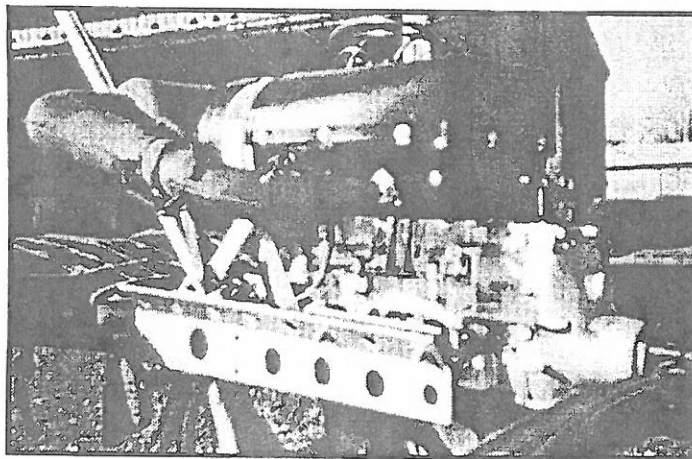
The photos on this page are for your reference. They show both a FreeAir scoop-equipped 447, a FreeAir a fan-equipped 503, and a stock fan-cooled 503. Equipping your engine with the FreeAir system is the best way you can improve your engine's performance, and increase it's reliability at the same time. There really is no "down side" to the FreeAir scoop system !

NOTE: The Free-Air scoops used on Hurricanes can be purchased thru the factory or thru CPS.

The part numbers are: P/N 1135 (447)  
P/N 1137 (503 point style)  
P/N 1139 (503 (CDI))



503 DC/DCDI



503 DC/DCDI

**Wing Assembly Fig. #27**



Assemble the wing in the following way:

1. Assemble the leading edge spars. Insert the outer leading edge spar 12" into the inner leading edge spar. You can find it, since it is marked together. Align the holes and insert the 3/8" x 1 3/4" bushings.

NOTE #1: The LE spar is best identified by the lesser number of holes (no aileron mount holes). Also, outboard cut is a 1" hole facing AFT.

NOTE #2: Rear spar is identified by two 1/4" holes next to attach points that have bushings. Also, outboard insert has a large slot that faces upward.

2. Assemble the rear spars. Insert the outer rear spar, 12" into the inner rear spar. Align the holes and insert bushings.

NOTE #3: The easiest way to distinguish the leading edge from the rear spar is that the leading edge has fewer holes in it.

When you put the bushing back into the leading edge and rear spar, make sure that you only hit it with a rubber or wooden hammer. Afterwards, when it is more than halfway in, turn the tube around and guide the bushing from the other side, until it is completely in.



NOTE: It is important to assemble the wing in a way in which the rivets in the leading edge are facing inboard and the rivets on the rear spar also face inboard.

3. Lay out the leading edges and rear spar as shown in the drawings. Make sure that you put them on a surface that will not scratch the tubes such as carpet or cardboard. Lay out the diagonal wing wires (605) -- they are all identical.

4. Fasten the tang from the diagonal wing wire (605) with the AU-120 (inside) of the leading edge (see on drawings). Secure using a AN4-24A bolt, AU-120, thick washers, and flat nut. Finger tighten only .

5. Fasten the tang from the other diagonal wire (605) within the set to the (inside) of the end of the rear spar (inboard) and secure, using an AN43B-24A eyebolt , thick washers, and full nut . Tighten nut securely.

6. On the leading (LE) insert AN4-27A bolt through the tangs for the diagonal wing wires (805), the compression strut brackets (AU-120) and the leading edge tubes. Temporarily secure with flat nuts, installed finger-tight only. Insert compression strut (840) into the compression strut brackets AU-120. Sandwich the struts between two plastic washers. Secure using AN4-16A bolts, thin washers, and shear nut. Tighten nuts , untill you begin to feel a slight resistance when you pivot the compression strut sockets, back and forth. Both should be inserted from the bottom to avoid future conflict with the sail.

7. On the rear spar , insert AN4-27A bolt through the tangs for the diagonal wing wires (805), the compression strut brackets (AU-120) and the rear spar. Temporarily secure with flat nuts, installed finger-tight. Insert the compression struts AU-120) into the compression strut brackets. Sandwich it between two thin plastic washers. Secure using AN4-16A bolts, thin washers, and shear nuts. Insert from under side. Tighten nut until you feel a slight resistance when you pivot the compression struts back forth. Both left and right wings should be assembled at this stage.

8. Prepare to hang the wing. You will need a pair of wing stands 6 feet high to wing during assembly. Any temporary stands will do at this time, but you might as well build a decent set that folds up to take with you for setting up the airplane on the field. These stands greatly help the breakdown and assembly of the wing for transport. (If you plan to set up the plane alone, the stands ARE A MUST).

9. Set your wing stand parallel to the keel and 10' to either side. Put on the appropriate sides the right and left wing. Connect it with bolts (should be in the keel bracket) to the keel.

Find the TOP and BOTTOM wing wires. The top should be on the top of the king post, the bottom still in the package. (There is a left and right , front and back , bottom wire).

10. Connect the wing wires to the wing and cage. Don't forget to install a saddle (1"x 1 3/4") S01-44, between the wires and the spars. Also put on thick washers, and nuts. Leave nuts finger-tight.

11. OK, you've checked the wing and hopefully everything fits. Now take off the top and bottom wires again.

12. Very carefully take off the nuts, washer, and saddle. Loosen up all at the same time so that none will pop out from the hole. The bolts should be flush with flat nuts in with the leading edge and rear spar. Now call some helpers. Find the right and left sail. Figure out which side is the top and which is the bottom. (Zippers should be on the bottom).

One helper should stand at the wing tip and hold the sail off the ground. (You don't want to get it dirty). Two helpers, one at the leading edge and one at the rear spar, should pull on the sail keeping together both sides. When it is on, install outboard spreader tube and secure connect the two sides with the velcro on the top and bottom of the sail. The two pieces of velcro should cover each other or overlap slightly (approx. 1/2"). Pull tight with straps and work wing up and down to stretch fabric until you can no longer pull straps tight.

13. Install half of the upper surface ribs (810) starting at the 2nd inboard rib and alternating side to side working you way toward tips. This technique keeps the sail from shifting off center. Then install the inboard upper rib.



The upper surface rib (810) is inserted through the opening in the velcro pushing the lower surface rib to one side or the other. Catch the tip fitting in the upper surface rib pocket and push the rib all the way in. This rib fits particularly tight in a brand new sail. A helpful technique is to gently tap the end of the rib up and in using a plastic or rubber hammer. The hook end fitting will pop in place in front of the rear spar.

Slide them in through the opening at the rear spar, catching the sewn-in -sock in the fabric. Push the rear end of the tip outward until it engages in the slotted rear spar opening. Push the top rib forward until it bumps into the front of the leading edge. Push up the rear end of the top rib contour fitting to the rear spar using same force.

14. Check to make sure that your wing stands are positioned just outboard of the outer compression struts. This gives the right amount of dihedral. Install half of the lower surface ribs (811), through the velcro tabs at the lower surface trailing edge. The upright position position of the lower surface ribs is with the curve downward and the hook fitting at the end pointing up.

To install the lower surface ribs, start them upside down, inserting them through the opening in the velcro and pocket. As soon as the rib is started, flip it over right side up. Push the rib all the way in and in front of the rear spar. Repeat the order of the upper ribs.



*Aileron Assembly Fig. #28*

1. Insert the outer aileron leading edge (851) into the inner aileron leading edge (850). Fasten using aluminum pop rivets (#208) in the holes provided.
2. Insert the outer aileron trailing edge (856) into the inner aileron trailing edge (855). Put in the pop rivets (but do not rivet them together yet).
3. Install the aileron spreader tubes (860) in the aileron leading edge assembly. The spreader tubes are arranged to form an even taper with the shortest one at the wing tip or the end of the outer aileron leading edge. The spreader tubes are installed by inserting them through the 5/16" holes in the aileron leading edge. Make sure that the spreader tubes are butted up solidly against the inside wall of the leading edge tubes. Install pop rivets (3/16" x 3/4" alum) right down inside of the spreader tube.
4. Install the aileron trailing edge assembly on the spreader tubes. Be sure to have the spreader tubes fully seated, before installing pop rivets (3/16" x 3/4" alum).
5. Install the TC-1 fitting and special aileron TC-3 fitting in the aileron bellcrank spreader tube (860). Both the TC-1(leading edge) and TC-3 (trailing edge) fittings should be installed with their saddles parallel to the bolt holes in the spreader tube. Install Ti-1 (insert) aligning the holes in each.  
  
Fasten special TC-1 fitting using AN3-12A bolt and nut. Tighten nut securely.
6. Now rivet together the outer and inner aileron trailing edges. If there is a little gap between the tubes, it's OK. Use pop rivets as shown on drawing. Once rivets are installed tap the heads down to contour the LE and TE. This will help in the fabric installation.
7. Install the aileron control horn (400), on the end of the aileron on the spreader tube (860). Of course, this will have to come off when you install the aileron fabric, and be reinstalled after the fabric is FULLY on the aileron and stretched as tight as it's going to get.



*NOTE: To ease aileron fabric installation soak fabric in COLD water for a few hours, install wet. This will relax the fabric and tighten again when it dries. This will make your work easier.*

*Talcum powder can be used as an alternative to cold water, (but not in conjunction with). This will make your work easier. We have always managed to get the covers on just gradually working out the slack. It isn't easy and it is best if you have another strong person to help. Make sure that your hands are clean, so you won't get the cover dirty. The primary thing to bear in mind is that dacron shrinks when it is hot and dry, and loosens when it cold and humid. By reviewing the assembly video, you'll understand this procedure very well. (Special note from RJ: This will be the HARDEST area of the entire kit to assemble because of the physical effort involved. But once the aileron covers are on, you'll be pleased with how "drum-tight" they are.)*

8. By now, you should have done the frame work. So now we can install the aileron cover. Put tape (alum) over all rivet heads. Slide the cover on over the narrow end of the aileron frame. As you slide the cover on keep the velcro gap seal centered on the front of the leading edge. It will go easily at first, and it should go up until the last 6" without much problem. If it goes up all the way but the last 6", that means your frame is good and the cover is good. Now comes "the hard part" !

Once you have got the cover to the point where the large plastic ties will reach the flaps, gradually keep tightening them, and the sail will creep along until it is completely on.

9. Install AN43B-13A eyebolts. Using hot knife or soldering iron melt the holes for the intermediate eyebolts. Tighten eyebolts, securely being careful not to crush the tube and setting them vertically.

10. Mount the completed aileron on the trailing edge spar of the wing. The aileron eyebolts should be staggered toward the wing tip. Pin each set of eyebolts together using AN4-5A bolts, and plastic washers, between the two eyebolts and secure with nuts. Tighten nuts, securely, just to the point of removing free play. The bolts should still be able to be rotated just using your fingers.

# Aileron Assembly (Teleflex & Cable control horns shown)

Fig. 28

The joining sleeve is preinstalled into outboard tubes at the factory. You must finish the joint by installing the 3, 1/8" pop rivets here. (L.E. & T.E.)

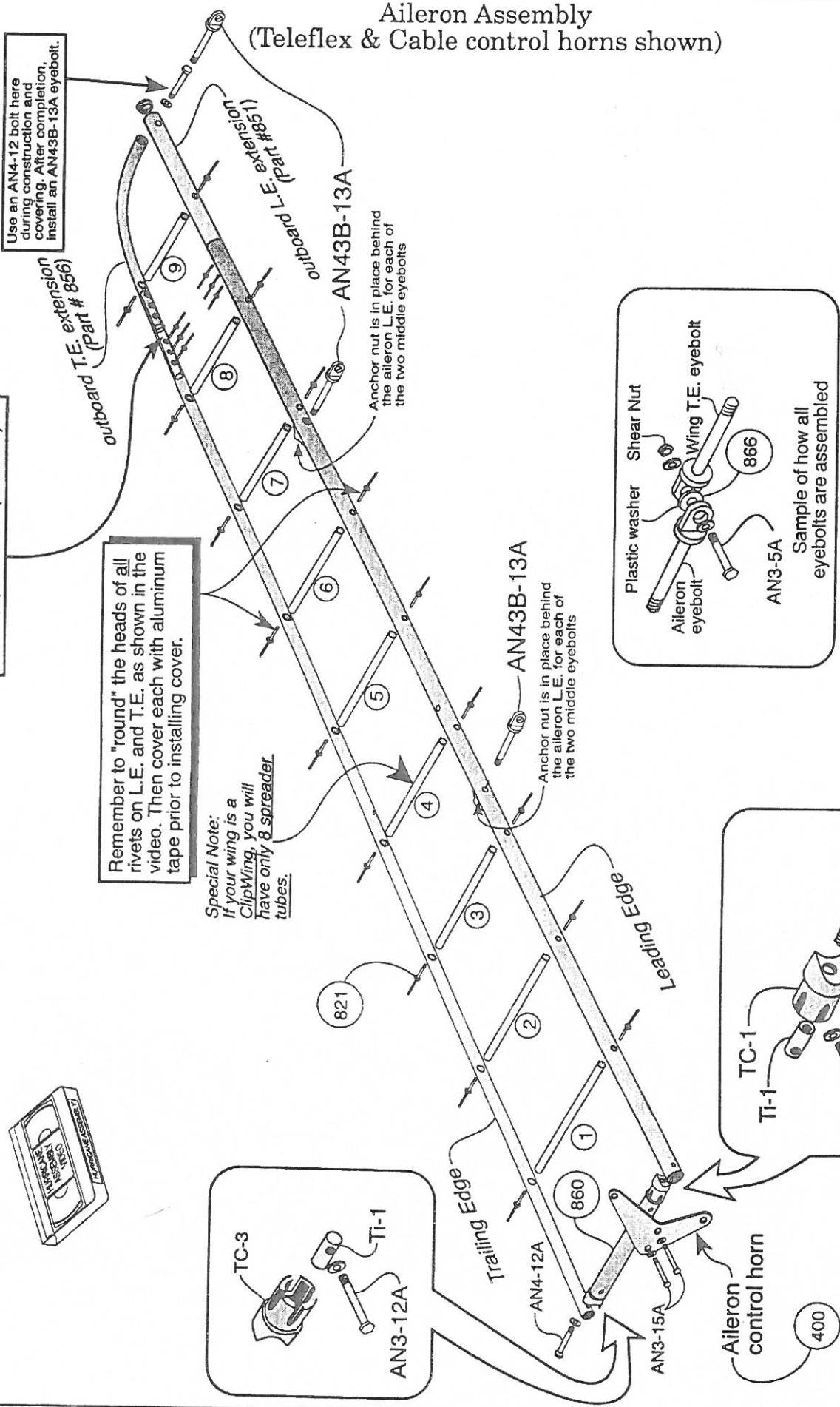
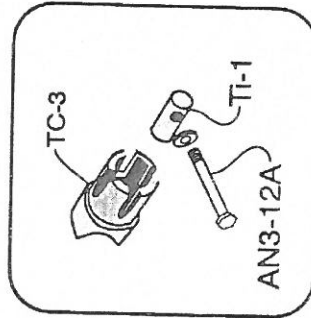
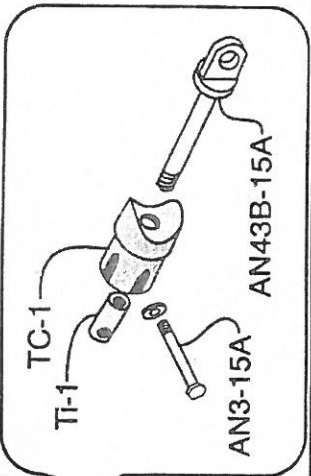
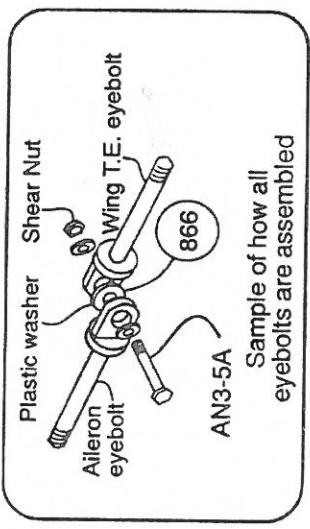
Use an AN4-12 bolt here during construction and covering. After completion, install an AN43B-13A eyebolt.

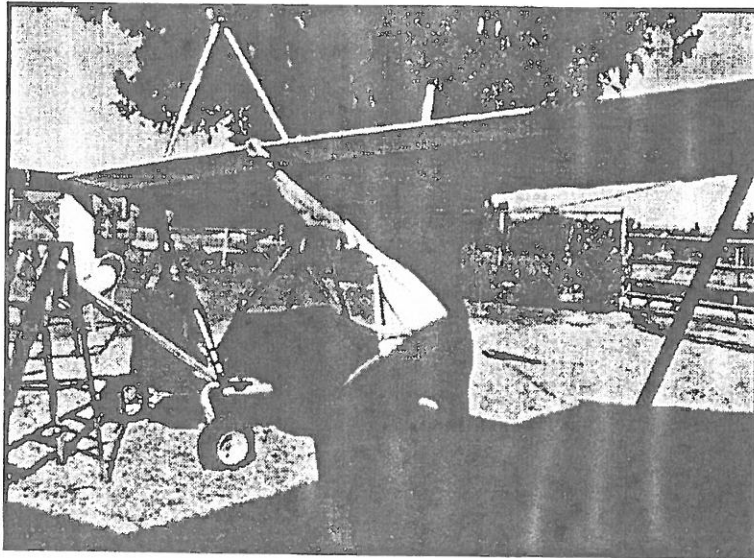
Remember to "round" the heads of all rivets on L.E. and T.E. as shown in the video. Then cover each with aluminum tape prior to installing cover.

**Special Note:**  
If your wing is a ClipWing, you will have only 8 spreader tubes.

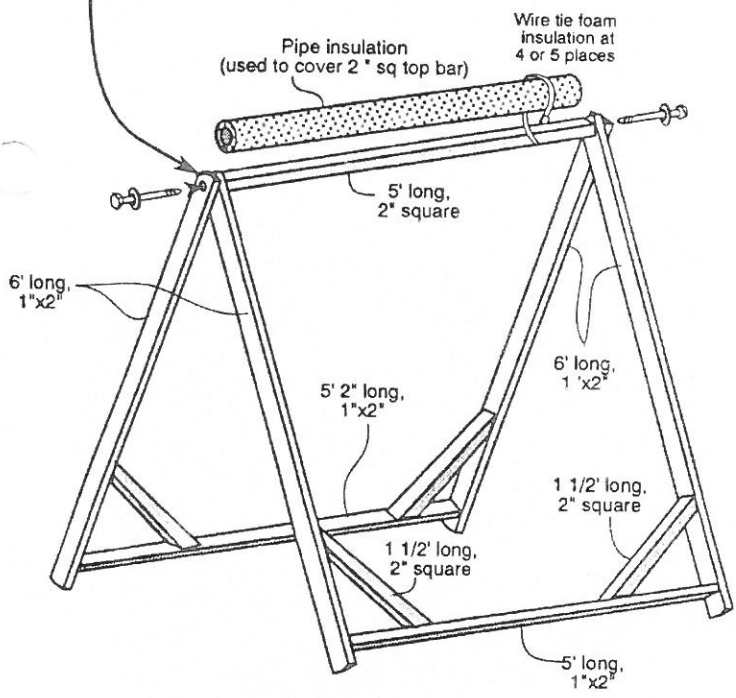
Anchor nut is in place behind the aileron L.E. for each of the two middle eyebolts

Anchor nut is in place behind the aileron L.E. for each of the two middle eyebolts

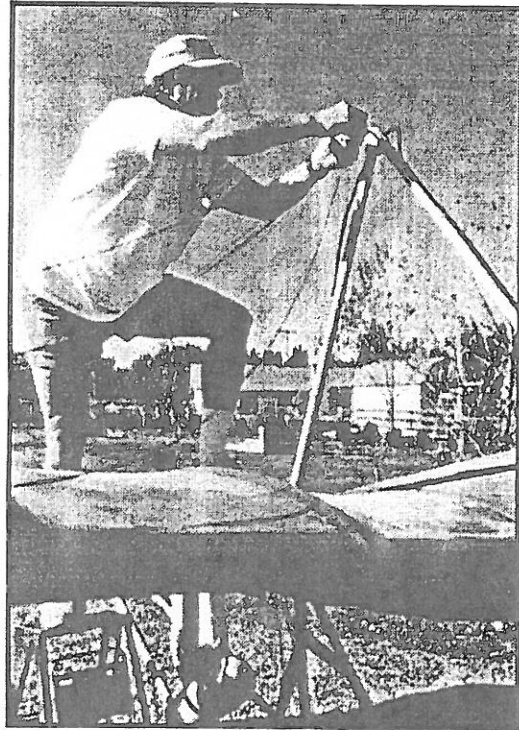




Round off the tops of all 6' long legs to avoid any sharp edges that could harm your sails.



Make 2 wing stands similar to this.



*Fig. 28*

Aileron Cable Routing

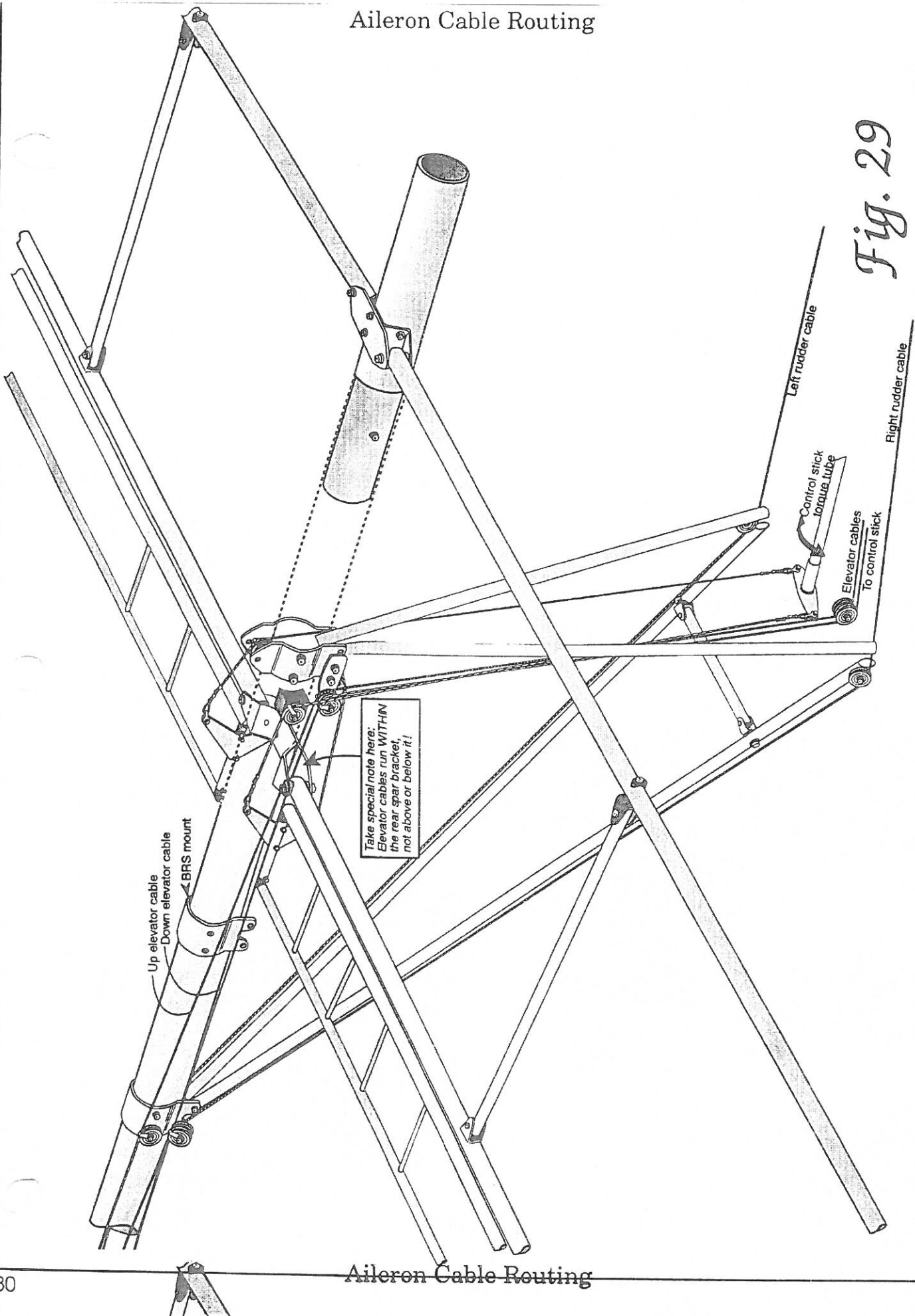


Fig. 29

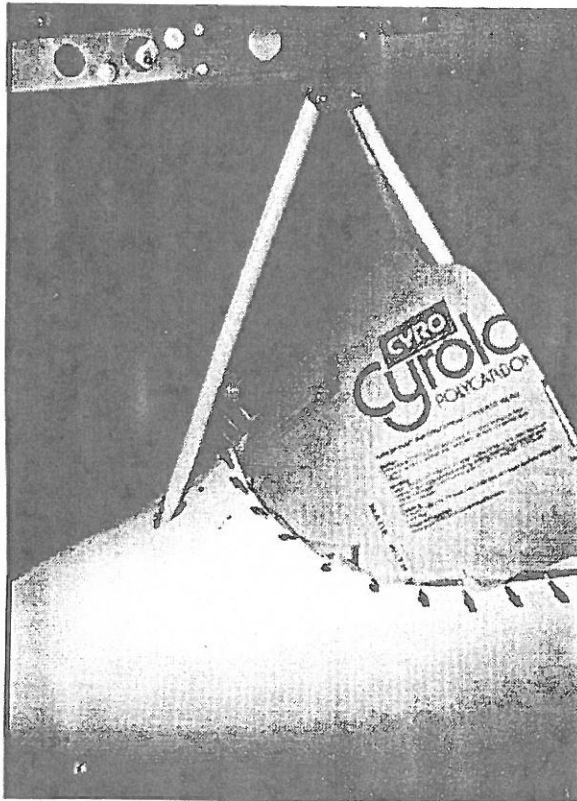
Aileron Cable Routing

## Windshield Installation



Trim the windshield as marked and drill 1/4" end holes. Attach windshield ends that are drilled to 1/4" to the pod. Attach corners where the throttle mounts on the left side, and on the opposite side. Your 1/8" rivet holes for the windshield should be already drilled on the pod. With the windshield resting inside the pod have a person push it up at the center and the windshield will contour the pod. While the help is holding the windshield up in this position, drill 1/8" holes through the existing pod 1/8" holes and set in rivets "DO NOT RIVET YET". After all the holes are drilled, pull out the retaining rivets. Remove windshield and deburr all holes. NOTE: This must be done or cracks will occur. Re-install windshield and rivet using 1/8" x 1/4" alum backing washers. The use of the washers is important to avoid the windshield from cracking and blowing off.

**One important note here: Be sure all previous steps concerning the pod installation are completed prior to final attachment of the windshield, because once the windshield is in place, you can't remove the pod without going through A LOT of other disassembly. So be sure your pod is painted and finished in every way you'd like before the final windshield installation.**



**A WORD TO THE WISE...**  
The installation of the windshield should be left as one of the final parts to be installed. There are a couple of good reasons for this. First it keeps the windshield from any accidental scratches while doing other work, and secondly if you keep the protective paper on until you are ready for your first test flight, the likelihood of damage from dripping fuel during engine testing and tuning will save you a lot of aggravation.

## *Finishing Touches*

1. Drill hole for pitot tube on front end of the pod. Insert pitot tube just forward of nose wheel.
2. Slide the curved end of the pitot tube so that the exposed area (approx. 8 to 10 inches), is well in front of the pod. Make sure it is level and not angled in any manner so as not to produce a false airspeed reading.
3. Drill the holes in the instrument panel for kill switch, airspeed indicator and any other instruments you may want to mount. The standard opening for aircraft instruments is 3 1/8". (Westach instruments (RPM-CHT) etc have 2" and 2 1/8" holes). Install your instruments as per the instruments that come in the box with the instrument.
4. Mount the instruments and kill switch in the panel. Route the kill switch, wires for CHT and EGT, and RPM through the right side trike support tube. On the left side support tube, run the throttle cable(s) through it.
5. Install the threaded fitting for the airspeed indicator. There are two openings in the airspeed indicator. Install the plastic tube for the airspeed indicator in to the "P" for the pitot hole. It is easiest to slide tubing in through the front of the pitot tube. Inside the fairing carefully route the tubing, so that it is well clear of the rudder pedals. When the tubing is properly installed, trim it off with the front of the pitot tube.
6. Install the wires from the kill switch to the electrical leads on the engine as shown in your Rotax. Also, connect the tachometer per the Rotax manual.

**IMPORTANT:** Remember that the ignition is on when the switch is in the open position. If your toggle switch has an on-off label, you will have to file off the tab and reverse it to have it have read properly. "OFF" is on "ON" is off."

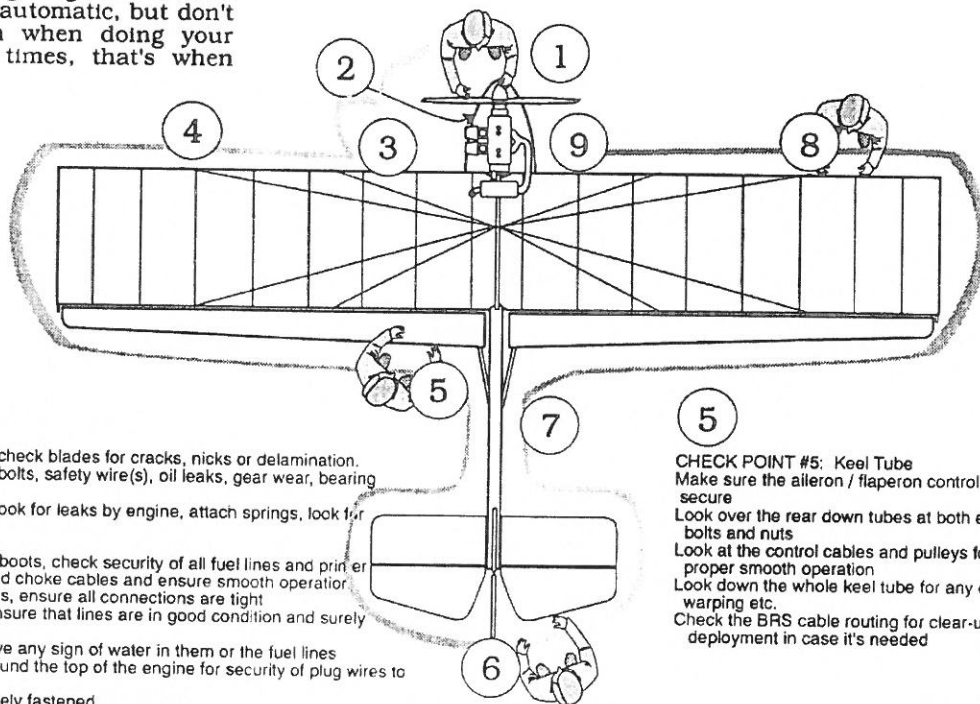
### **ONE REMAINING NOTE:**

For all intents and purposes you are finished with the construction of your Hurricane. One VERY IMPORTANT thing remains to be done though... Mounting the BRS unit, routing the airframe bridle cable and the activating cable. These important details are covered by the instruction sheet that comes with the BRS unit, and the Hurricane-specific illustrations in that section of the manual.

# Preflight Checklist

## (Walkaround Inspection)

Use this procedure to get yourself into an "ingrained" habit of preflighting. After a while these steps will become automatic, but don't EVER get into a rush when doing your preflights. Too many times, that's when trouble strikes!



1

### CHECK POINT #1: Engine Area

Check PROP for security of nuts, check blades for cracks, nicks or delamination.  
 GEAR BOX, check for security of bolts, safety wire(s), oil leaks, gear wear, bearing wear  
 EXHAUST, check manifold bolts, look for leaks by engine, attach springs, look for cracks,  
 check EGT probe security  
 CARB, look for cracking in rubber boots, check security of all fuel lines and primer and vent lines, look at throttle and choke cables and ensure smooth operation  
 ELECTRICAL, look for frayed wires, ensure all connections are tight  
 FUEL PUMP and filter, check to ensure that lines are in good condition and surely attached,  
 and filters are not clogged or have any sign of water in them or the fuel lines  
 SPARK PLUGS / WIRES, look around the top of the engine for security of plug wires to plugs and ensure  
 that cowling or shrouds are securely fastened  
 ENGINE MOUNTS, look for all hardware on mount and the security of same, inspect condition of rubber mounts

5

### CHECK POINT #5: Keel Tube

Make sure the aileron / flap aileron control horns are secure  
 Look over the rear down tubes at both ends for proper bolts and nuts  
 Look at the control cables and pulleys for wear and proper smooth operation  
 Look down the whole keel tube for any dents, warping etc.  
 Check the BRS cable routing for clear-unobstructed deployment in case it's needed

2

### CHECK POINT #2: Nose Gear and Main Gear

Steering assembly, fork, axles and retainers, and check the tires for proper inflation

3

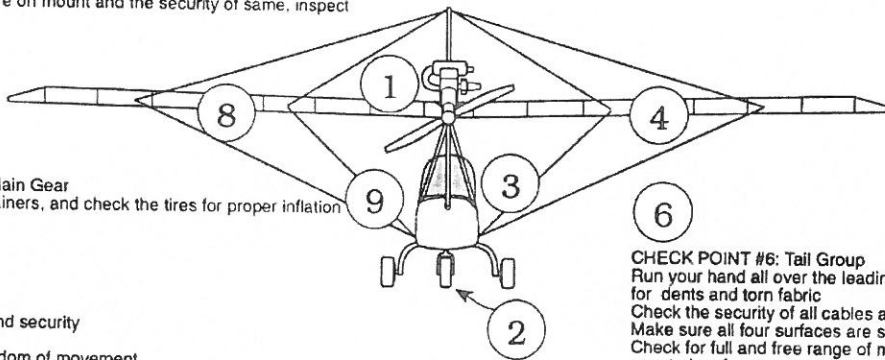
### CHECK POINT #3: Cockpit, Left side

Check pod and windshield for cracks and security  
 Look at the pitot tube for debris in tip  
 Check control stick for security and freedom of movement  
 Aileron teleflex cables should be tight and properly attached  
 Move the throttle and check for full range and security of mount  
 Move the rudder pedals and check for proper action and range of movement  
 Flaperons, move control handle and insure proper operation, also look for security of all hardware  
 Check seatbelts and shoulder harness for wear hardware security  
 Assure the lower wings wire cables are secure with the proper AM hardware  
 Check all downtube bolts and nuts  
 Look at the gas tank mounting hardware  
 Check the main gear axle nuts and proper movement of brake cables and action

6

### CHECK POINT #6: Tail Group

Run your hand all over the leading edge tubes looking for dents and torn fabric  
 Check the security of all cables and hardware  
 Make sure all four surfaces are secure in the sockets  
 Check for full and free range of movement of all control surfaces  
 Make sure hinge pins are secure  
 Look at the rudder control horn for security and proper operation and cable condition



4

### CHECK POINT #4: Left Wing

Check leading edge for dents and torn fabric (Run hand along tube)  
 Look at the security of the king posts assembly  
 Make sure the proper hardware was used to attach front leading edge tube as well as trailing edge tube  
 Make sure that all cables are free from any fraying  
 Ensure that all cable attach points are secure and the nuts are tight  
 Unzip the inspection zippers and look at the compression struts, the internal hardware is secure and the drag wires are secure, then be sure to zip the zipper shut  
 Wing tip tubes are to be checked for security  
 Look at and ensure the aileron hinge pins are secure and have the proper range of movement

7

### CHECK POINT #7: Keel tube / Right Side

(use same procedure as #5)

8

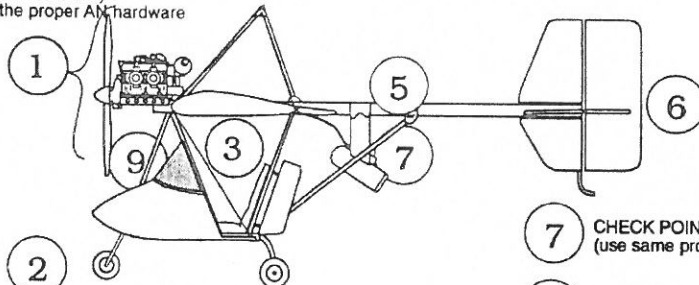
### CHECK POINT #8: Right Wing

(use same procedure as #4)

9

### CHECK POINT #9: Cockpit Area / Right Side

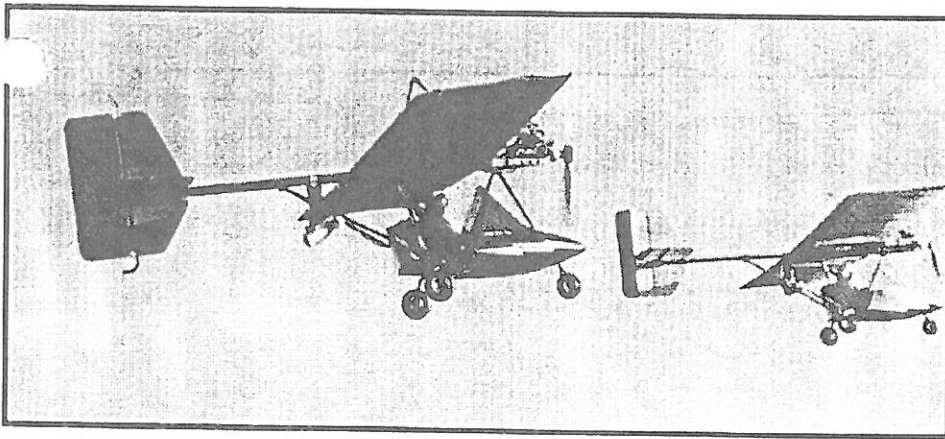
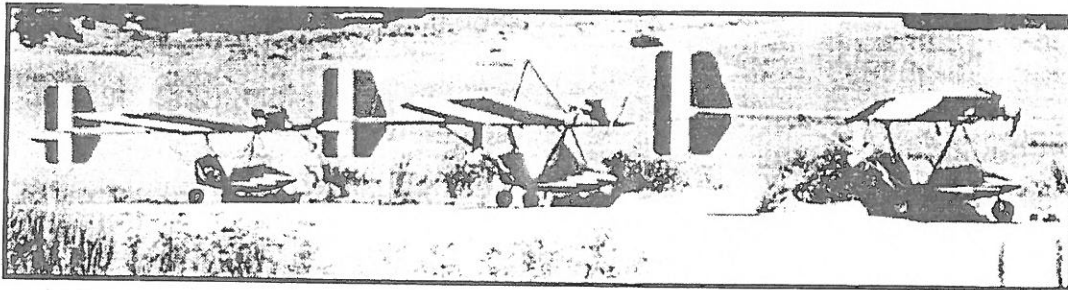
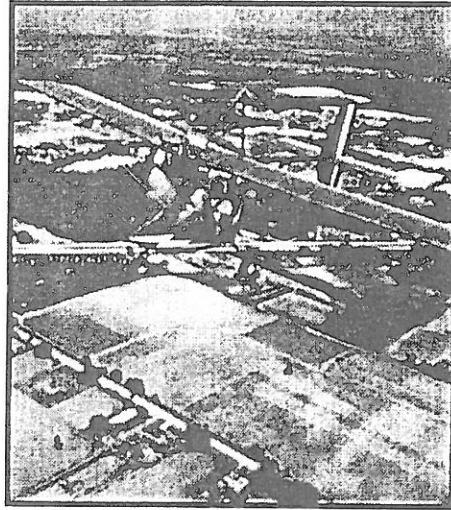
(use same procedure as #3)





*Life is too short....*

*Don't miss  
the thrill of a  
Hurricane !*



Way Cool, Huh!



*5 TIME WINNER of..  
"Best Assembly Kit"  
Sun 'N Fun, FL '92, '93, '94, '95, '96  
Cooperstate '92, '93  
Arlington, '93,  
as well as MANY other awards  
given to individual  
Hurricane owners !*

BRS Bridle Cable Routing

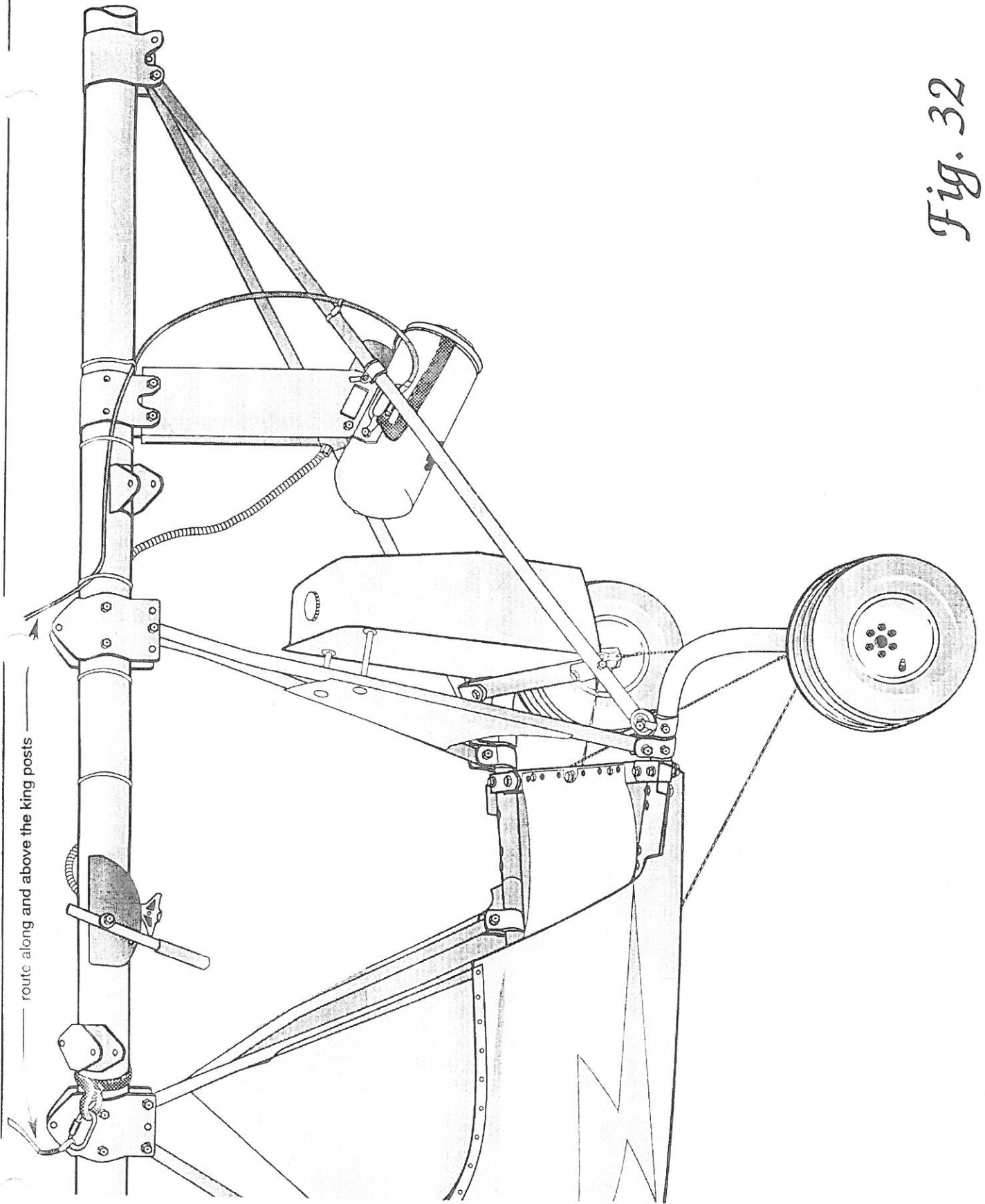


Fig. 32