Parts & Materials Callout

Chapter 7 Control System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A	QUANTITY BD-5B	MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
FLAP HANDLE INSTALLATION					
❑CF 36	Flap Handle	1	1	BD-5-M-0136	.190 2024-T3
❑CF 37	Spring Retainer	2	2	BD-5-M-0025	.016 2024-T3
❑CF 38	Detent	1	1	BD-5-M-0138	.31 Phenolic
❑CF 39	Pin	1	1	AN4-11A Bolt 1 A Solt	
❑CF 41	Knob	1	1	Procure Locally	.50 Hardwood
❑CF1	Spring	1	1	MBD5CF1	.125 Music Wire QQ-W-470 470
❑CF 6	Cable	1	1	BD-5-M-0132	0132 3/32 Gat. Cable MIL-C-1511
❑CF 46	Rub Plate	1	1	BD-5 M 0141	.020 4130 "N" STL
❑CF 45	Stop	2	2	BD-5-M 0123	.50 0. D. x .028 Wall 2024-T3 Tube
RUDDER PEDALS					
❑CR14	Lower Tab	4	4	BD-5-M 0105	.060 4130 Cond "N" STL SHT
❑CR15	Outboard Tab	2	2	BD 5 M 0105	.050 4130 Cond "N" STL SHT
❑CR16	Mid Tab	2	2	BD-5-M 0105	.050 4130 Cond "N" STL SHT
❑CR17	Inboard Tab	2	2	BD-5-M-0113 13	.063 4130 Cond "N" STL SHT
❑CR18	Lower Tab	2	2	BD-5-M-0107	.625 O.D. x .049W 4130 Cond "N"
❑CR19	Vertical Tube	2	2	SD-5-M-0107	.625 O.D. x .049W 4130 Cond "N"

❑CR20	Upper Tube	2	2	BD-5-M 0107	.625 O.D. x .049W 4130 Cond "N"
❑CR21	Side Outboard L. H.	1	1	BD-0013	.063 1”x1” angle 2024-T3 AL
❑CR22	Side Inboard L. H.	1	1	BD-0013	.063 1”x1” angle 2024-T3 AL
❑CR23	Face	2	2	BD-5-M-0029	.050 2024 -T3
❑CR24	Brake Mount	2	2	BD5LG208	2024-T4 AL Extrusion
❑CR25	Brake Arm Outboard L. H.	1	1	BD-5-M-0008	.063 2024-T3
❑CR26	Brake Arm Inboard L. H.	1	1	BD-5-M-0008	.063 2024-T3
❑CR27	Outboard Pedal Mount	2	2	BD-5-M-0029	.050 2024-T3
❑CR28	Lever Tube	1	1	BD-5-M-0156	.50 O.D. x .058W 4130 Cond "N"
❑CR29	Lever	1	1	BD-5-M-0105	.050 4130 Cond "N" Sheet
❑CR30	Cover	1	1	BD-5-M-0029	.050 2024-T3
❑CR31	Stop Angle	1	1	BD-0007	.125 x 1.5 x 1.0 Extruded Angle AL 2024-T3511
❑CR33	Pedal Assy L.H.	1	1	Consists Of CR14 (2), CR15, CR16, CR17, CR18, & CR19	
❑CR34	Pedal Assy R.H.	1	1	Consists Of CR14 (2). CR15, CR16, CR17, CR18, & CR19	
❑CR 35	Lever Assy	1	1	Consists Of CR28 & CR29	
❑CR 38	Spacer	4	4	BD-5-M-0095	1/4" O.D. x .028W 4130 Cond "N" Steel Tubing
❑CR 39	Brake Arm Outboard RH	1	1	BD-5-M-0008	.063 2024-T3
❑CR 40	Brake Arm Inboard RH	1	1	BD-5 M 0008	.063 2024-T3
❑CR 41	Side Outboard RH	1	1	BD-0013	.063 1” x 1”Angle 2024-T3
❑CR 42	Side Inboard RH	1	1	BD-0013	.063 1” x 1”Angle 2024-T3

❑CR 43	Spacer	2	2	BD-5-0046	5/16 O.D. x .028W 4130 Cond "N" Steel Tubing
❑CR 44	Spacer	2	2	BD-5-M-0095	1/4 O.D. x .028W 4130 Cond "N" Steel Tubing

Control System:

THE DRAWING ON THE FACING PAGE ILLUSTRATES LOCATIONS OF PARTICULAR CONSTRUCTION DETAILS OF THE CONTROL SYSTEM.

ⓘ Before Beginning Construction, Note The Following:

1. Assemble all parts so that related pivot points are parallel in all axis.

2. Steel tube spacers at pivot points are cut to length during assembly to provide a minumum clearance between moving parts of .03".

3. Dimensions not given may be scaled from full size drawings.

4. Position flap handle detent block so that the f lap handle forward position (up flap) is as shown on page 7-6

Beginning Construction

❑1. Fabricate all parts pages 7-7 through 7-11

❑2. Complete all welded assemblies page 7-7 and 7-10 . (See Note 1 page 7-2)

❑3. Construct sheet metal portion of pedal assemblies and fasten parts together permanently. (CR 21, 41, 22, 42, 25, 39, 26, 40, reference pages 7-3 and 7-4) See Special Notes 1 and 3 page 7-1

❑4. Assemble the rudder pedal assemblies complete with brake cylinders and install them on nosegear box. (Reference pages 7-3 and 7-4)

❑5. Install CR 35 control stop arm and related parts including threaded rods on nosegear box. (Reference pages 7-3 and 7-4) See Special Notes 2 and 3 page 7-1.

❑6. Lay a flat, straight piece of wood across the aft f ace of the pedals and clamp it to each pedal so that it holds each pedal in the horizontal position shown in View BB page 7-3.

❑7. Adjust the length of the threaded rods so that they hold the pedals in the vertical position shown on page 7-3 and CR35 arm is perpendicular with BL 0.00 as in View A-A page 7-4.

❑8. Fasten threaded rods to pedals (View F-F page 7-4 and 7-8)

❑9. Position LG 179's on LG 178 using No.12 bolt holes to align them and drill rivet holes. (Reference page 7-5) Disassemble, deburr, and reassemble with cables in place. Proseal and rivet LG 179's to LG 178 note locations of cables LG 39 and 40, 45 and 46 page 7-5 .

❑10. Position LG 183 onto LG 180 and fasten with temporary bolt through existing No.12 holes. Using LG 183 as a guide, drill and csk No.12 hole through LG 180. Disassemble, deburr and install MS24694-554 screw. (Reference page 7-5)

❑11. Install gear handle assembly on LG 178 pulley assembly with bolts. (Reference page 7-5)

❑12. Slide LG185 shaft into handle assembly and place an LG69 bearing block (with bushing installed) on each end.

❑13. Install handle assembly on nosegear box and clamp both LG69 bearing blocks f irmly to FU125 and 126. Both ends of the LG185 shaft should be at the same waterline and station location and the handle pulley should clear the fuselage skins. A thin strip of sheet metal can be clamped across the lower f langes of FU125 and 126 to simulate the fuselage skins. (Reference page 7-5)

❑14. Using a 6" extention drill, drill the two No.40 holes at the top of the left hand LG69 through FU125. Drill from the right hand side with drill passing over the top of FU126.

❑15. Enlarge the two holes to No.12 and using them as access holes, drill the four No.40 holes through the right hand LG69 and FU126. Enlarge these holes to No.12 and drill lower holes in left hand LG69 using same procedure.

❑16. Position the handle assembly on LG185 shaft so that the center line of the handle pulley is aligned with the gap between the two pulleys at the top of the gear well. Mark the position of the LG 180 tube on the LG 185 shaft. Identify each LG96 bearing block right hand or left hand and top and bottom.

❑17. Remove handle assembly and bearing blocks from gear box assembly. Remove handle pulley from handle. Align LG180 with mark on LG185 and drill and install bolt. (Reference page 7-5)

❑18. Build up f lap handle assembly and place on LG185 shaft (CF1 f lap spring should be held in compressed position with wire or tape). Place LG69 bearing blocks on shaft and install entire assembly in gearbox assembly with temporary bolts (reference pages 7-5 , 7-6 and 7-9).

❑19. Remove wire or tape from CH spring. Position CF38 and 46 on FU125 and clamp in place. Rotate flap handle to insure that the detent pin drops into all detent holes in CF38 and 46. (See Note 4 page 7-1).

❑20. Using a 6" extention drill, drill two No.40 holes through FU126 (right hand side) at a point approximately in line with the attach holes at each end of CF38 and 46. Using these holes as access holes, drill two No.40 holes through CF38, 46, and FU125. Enlarge these holes to No.12 and install bolts.

❑21. Remove gear and flap handle assembly from gear box. Install handle pulley on handle and reinstall flap and gear handle assemblies permanently in a gear box.

ⓘ Note: If the optional aft nosegear door is to be used, the hinge brackets should be installed and the hinge cutouts made on the nose gear box.

INSTALLING NOSE GEAR BOX

❑22. Pilot drill with No.40 all holes common to the nosegear box assembly and fuselage skins. These holes are to be drilled through nosegear box only at this time (Reference pages 1-55 through 1-59 and page 6-14 of chapters 1& 6)

❑23. Position nosegear box in fuselage (Reference pages 7-3 , 7-6, and 76 . Also pages 1-46 , 1-47 of Chapter 1)

❑24. Drill all holes common to the nosegear box assembly and fuselage skins with No.40 and cleco in place. Using the No.40 holes in the nosegear box attach angles as a guide, mark the hole locations which cannot be drilled with the nosegear box in place. A sharp scribe should be used. Mark the fuselage skins deep enough to make these hole locations easy to find. when the nosegear box is removed.

❑25. Position CR27 as shown on page 7-3 and using a scribe, mark the four No.40 holes on fuselage skins.

❑26. Remove nosegear box from fuselage and drill with No.40 all hole locations marked with scribe through fuselage skins. Wooden brace can be removed from rudder pedals.

MAKING NOSE GEAR DOOR CUTOUT

❑27. Cleco several long strips of light cardboard approximately 1.5" wide to the gearbox attach angles on each side and ends of the gear door opening. Trim these strips to match the skin trim lines. Remove these strips from the gearbox and cleco to fuselage skins being careful to use the correct holes. Trace around these strips with felt tip pen and make cutout in fuselage (Reference page 6-14 1. A 1/8" router bit may be used to make cutout, finish with rotary file or hand file.

❑28. Complete Nosegear Fabrication and Installation, Chapter 6, pages 6-1 through 6-8 . Note; If optional aft nosegear door is used, fabricate and install all actuating linkage and related brackets and. hardware.

❑29. Remove FU77 from gearbox and cut 2" hole. (Reference View A-A Page 1-65 of Chapter 1)

❑30. Complete steps 1 through 22 page 1-63 (Chapter 1) and reinstall FU77.

❑31. Complete steps 1 through 7 page 6-9 Chapter 6). Center line of door should align with BL 0.00 in both the open and closed position. Adjust hinge position if necessary.

❑32. Remove FU77 from fuselage and permanently install on nosegear box assembly with rivets and proseal. (Reference pages 1-46 and 1-47 and 1-55 through 1-59 .) (Chapter 1)

❑33. Dimple all holes common to nosegear box and fuselage skins and drill to No.29.

❑34. Complete step 24 page 1-63 . (Chapter 1)

❑35. Permanently install nosegear box assembly in fuselage with proseal and rivets. Nosegear doors should not be installed until landing gear cables are hooked up and gear is operating (See Chapter 6, "Landing Gear Cable Rigging")

Parts & Materials Callout

Chapter 7 Control Stick System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
STICK ASSY					
❑CA1	Fork	1	1	MBD5CA1	2024T351 Bar
❑CA6	Grip	1	1	MBD5CA6	Plastic Molding
❑CA7	Column	1	1	BD-5-M-0174	2024-T351 Bar
❑CA8	Spacer, Stop Bolt	1	1	BD-5-M-0154	.312 O.D.x.028 W4130 Cond "N" Tubing
❑CA9	Torque Tube, Longitudinal	1	1	BD-5-M-0037	.75 O.D. x .058 W 2024-T3 Tubing
❑CA29	Bracket, Hor. Stab Control	1	1	BD-5-M-01 12	.090 2024-T3
❑CA37	Sleeve	1	1	BD-5-M-0184	.3125 x .028W Steel Tubing
STICK BOX ASSY					
❑CA4	Housing, Bearings	1	1	BD-5-M-0151	.025 Phenolic Rate
❑CA5	Cover, Bearing	1	1	BD-5-M-0029	.050 2024-T3
❑CA25	Bracket Half, Stick Box, Upper	1	1	BD-5-M-0027	.025 2024-T3
❑CA26	Bracket Half, Stick Box, Lower	1	1	BD-5-M-0027	.025 2024 T3
❑CA27	Web, Stop Bolt	1	1	BD-5-M-0101	.032 2024-T3
❑CA28	Web, Stick Box Bearing	1	1	BD-5-M-0101	.032 2024-T3
❑CA31	Grommet, Edging	1	1	MS21266-1 N	Plastic

Control Stick Installation:

ⓘ Before Beginning Construction, Note The Following:

1. The side consoles and floorboards should be installed before proceeding with this portion of the plans. See Chapter Eight.

2. The position and alignment of the control arms and control stick is critical. A jig for this operation is described in the text and it's use is recommended.

3. Be extremely careful when drilling bolt holes through the tube assemblies so that the bolts are 90º to the surface and pass through the center of the tubes. Drill all bolt holes in direction shown.

4. All steel parts are to be coated with zinc chromate primer before installation.

Beginning Construction

❑1. Fabricate all parts shown in detail J and K.

❑2. Assemble CA7 control stick and CA1 control fork with proper bushings and bolt (Do not install nut) Ref. Detail A.

❑3. Rotate the CA7 and file as required until the CA7 contacts the CA1 and stops at the correct pitch up and pitch down position. Note that the neutral position is established with the centerline of CA7 perpendicular to the centerline of CA1. Ref. Detail C. A small cardboard protractor can be constructed using the dimensions given in Detail C and glued to one side of CA1. Mark CA1 "Top" and "Bottom" and dissassemble CA7 and CA1.

❑4. Fit the CA6 stick grip to CA7 by filing CA7 as required until CA6 slides snugly onto CA7 and the attaching screw can be inserted through both parts. Remove CA6 from CA7. Ref. Detail A.

❑5. Assemble the control stick box assembly and cleco together. Ref. Detail D (Do not install CA4 and CA5 and do not rivet box assembly)

❑6. Slide a B538 DD bearing onto shank of CA1. This should be a very light press fit so that the bearing can be installed or removed by hand. Sand down shank of CA1 if necessary.

❑7. Insert CA1 with bearing installed into end of CA9 torque tube until bearing inner race is firmly captured between shoulder of CA1 and CA9 tube.

❑8. Drill No. 29 through CA9 and CA1 and enlarge hole to No. 12. Drill hole so that bolt head will be on "Top" side of CA1. Drill hole so that it passes through the center of CA9 and CA1 and is perpindicular to their centerline. Ref. Detail A. Mark CA9 "Top" and "Bottom" to match CA1 and dissassemble parts.

❑9. Position CA5 bearing retainer on stick box assembly and drill in place being careful to align the .88 diameter hole with the matching hole in CA28. Ref. Detail D.

❑10. Press the B538DD bearing into the CA4 phenolic block and bolt the CA4 and CA5 on stick box assembly. Ref. Detail D.

❑11. Drill CA29 onto CA7 and install bolts. Install CA7 and CA8 on CA1 and bolt in place.

❑12. Insert CA1 into B538DD bearing in stick box assembly.

❑13. Rotate CA7 side to side. The CA8 sleeve should stop against the MS21266 Grommet in CA27 at 20º each side of neutral. Ref. Detail B. Modify the hole size in CA27 as necessary to achieve this. A cardboard protractor can be constructed using the dimensions shown in Detail B. The base of the protractor should rest on top of the stick box assembly. Note that the neutral position is established when the centerline of CA7 is perpinclicular with the top of the stick box assembly. Ref. Detail B.

❑14. Sand down the diameter of the aft end of CA9 tube until a B539DD bearing will slide onto CA9 for a distance of approximately three (3) inches.

❑15. Cut a 1" diameter clearance hole in FU14 bulkhead as shown in Detail F. and elongate the existing clearance hole in FU1 bulkhead as shown in Detail G.

❑16. Install two B539DD bearings in two CA19 phenolic blocks. Position a CA20 retainer on CA21 bulkhead (two places) and drill in place. Assemble two CA19 and CA20 bearing assemblies and bolt to CA21 bulkhead. Ref. Detail H.

❑17. Insert aft end of CA9 through clearance holes in FU1 and FU14 Slide the CA34 phenolic bushing, CA18 arm and CA21 bulkhead assembly onto CA9. Position CA21 bulkhead approximately as shown and clamp top f lange to FU18 longeron. (Ref. Detail 1.)

❑18. Position stick box assembly in fuselage with CA7 pivot point on STA 50.00 and clamp to CC68. Slide CA9 onto CA1 being careful to match "top" marks on both parts and insert bolt through both parts using access hole on bottom side of stick box assembly. (Do not install nut). Ref. Detail A and E.

❑19. Insert a .50" Diameter X 24" long dowel or tube into the right hand wing aileron torque tube.

❑20. Fit the right hand wing onto FU99 and bolt in place. Extend the dowel inboard until it contacts the fuselage skin. Cut a .75" or 1" clearance hole in the fuselage skin at this point and extend the dowel through this hole so that it passes below CA9.

❑21. Position the CA18 arm on CA9 as shown in Detail H. Note that the fore and aft position of CA18 is established when the centerline of the CA1 6 tube (dowel) is .25" aft of CA18. Mark the position of CA18 on. CA9 and mark CA 18 "Top",

❑22. Loosen clamp and adjust position of CA21 bulkhead to correspond with dimensions shown in Detail 1. Slide CA34 bushing forward to the FU14 bulkhead and carefully trace it's outline of FU14. CA9 tube should not be touching FU1 and FU14 bulkhead before or after CA34 is in place. Elongate holes in bulkheads if necessary.

❑23. Drill all rivet holes common to stick box assembly, CC68 longeron and fuselage skins with No.40. Ref. Details D&E.

❑24. Drill all holes common to CA21 bulkhead and fuselage skins with No. 40 except for the three holes through the inboard flange. These will be drilled later. CA21 is to be located so that the B539DD bearing and CA9 tube are aligned to prevent binding. Use a 6" extension drill bit to drill as many holes as possible. Mark the holes that cannot be drilled with a scribe and drill through skin after CA21 is removed.

❑25. Remove CA21 bulkhead, CA9 tube and stick box assembly from fuselage. Finish drilling any holes marked with scribe and dimple all holes common to fuselage skins, CC68 and FU18 longerons, stick box assembly and CA21 bulkhead. Ref. Details D, E, and F.

❑26. Place CA34 bushing on FU14 bulkhead and clamp it in place. Drill two No. 19 holes through FU14 using CA34 as a drill guide. Mark CA34 "Top" and remove from FU14. Sand or ream hole in CA34 until it will spin freely on CA9. (Approx. .003 clearance).

❑27. Remove CA1 and CA9 from stick box assembly and pro-seal and rivet stick box assembly together. (Do not rivet stick box assembly to fuselage). Ref. Detail D.

❑28. Pin CA 1 and CA9 together with bolt with "Top" marks matching. Place CA9 in fixture similar to that shown in Detail G. Slide forward CA18 arm onto CA9 and align it with the marks on CA9. Ref. paragraph 21 and Detail 1.

❑29. Slide the protractor onto CA9 until it contacts CA18 and secure it to the table with clamps. Bolt CA18 to protractor and drill the No. 12 attaching bolt hole through CA18 and CA9. Remove protractor. Ref. Detail G.

❑30. Slide the aft CA18 arm onto CA9 and locate it measuring from forward CA18. Install protractor as before and drill the No. 12 attaching hole through CA18 and CA9. Cut off excess portion of CA9 f lush with the aft end of the rear CA18 arm.

❑31. Re-install CA9 tube in fuselage. Bolt CA34 bushing to FU14 bulkhead. Slide forward CA8 arm onto CA9 and rivet CA21 bulkhead in place using pro-seal. (Do not bolt CA18 arms to CA9).

❑32. Pro-seal and rivet stick box assembly to fuselage. Position CA1 and CA9 with "Top" marks down. Insert bolt through CA1 and CA9 then rotate 180º. "Top" marks and bolt head will now be on top side.

❑33. Install nut and washer on CA1 and CA9 attach bolt and tighten. Install bolts through both CA18 arms and tighten and permantly install CA7 on CA1.

❑34. Glue three tabs of cardboard to fuselage skin so that the inboard portions cover the three J-nut locations on the stick box assembly and drill with No. 40 through tabs and stick box. Ref. Detail E.

❑35. Glue a large cardboard tab to the forward portion of CC91-2 floorboard so that it covers the nutplate location on CA38 and make No. 12 hole in cardboard to match that in CA38.

❑36. Make control stick cutout in CC8 console and install console in fuselage with cardboard tabs on outside. Drill screw holes through CC8 using the holes in the cardboard tabs as a guide. Ref. Detail B and E.

Parts & Materials Callout

Chapter 7 Aileron & Flap Control System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
❑CA2	Disconnect Half -Inb'd	2	2	MBD5CA2	2024-T3 Bar
❑CA3	Disoonnect Half-Outb'd	2	2	MBD5CA3	2024-T3 Bar
❑CA10	Mount Tube	4	4	BD-5-M-0155	.875 O.D. x .058 W4130 "N" Stl Tube
❑CA13	Control Rod, Aileron	2	2	BD-5-M-0149	.312 O.D. x .075 W 4130 Cond "N" Stl Tube
❑CA11	Actuating, Arm Assy	2	2	BD-5-M-0111	.040 4130 "N" Stl Sht
❑CA12	Actuating, Arm Assy	2	2	BD-5-M-0111	.040 4130 "N" Stl Sht
❑CA15	Torque Tube, Cross	1	1	BD-5-M-0036	.750 O.D. x.35W 2024-T3 Alum Tubing
❑CA16	Torque Tube, Fillet	2	2	BD-5-M-0036	.750 O.D. x.36W 2024-T3 Alum Tubing
❑CA17	Spacer, U Joint	2	2	BD-5-M-0148	318 IPS, Schedule 40 D 6061 -T6 Alum Tube
❑CA20	Cover, BRG,Torque Tube	4	4	BD-5-M-0101	.032 2024-T3
❑CA21	Bracket, Support	1	1	BD-5-M-0101	.032 2024-T3
❑CA22	Stop, Right Aileron Control	1	1	BD-5-M-0101	.032 2024-T3
❑CA23	Bracket, Fillet Torque Tube L.H.	1	1	BD-5-M-0030	.063 2024-T3
❑CA24	Bracket, Fillet Torque Tube R.H.	1	1	BD-5-M-0030	.063 2024-T3
❑CA30	Bracket, Stop, Aileron	1	1	BD-5-M-0028	.032 2024-T3
❑CA32	Actuation Arm Assy,Lower	2	2	Consists of CA10 & CA1 2	

❑CA34	Support Intermediate	1	1	BD-5-M-0152	.125 Phenolic Sheet
❑CA35	Trim Tab Aileron	1	1	BD-5-M-0027	.025 2024-T3
❑CF2	Mount Tube Outer	2	2	BD-5-M-0056 & BD-5-M-0155	.875 O.D.x.058 4130 "N" SO. Tube
❑CF3	Torque Tube, Flap	2	2	BD-5-M-0150	.750 O.D. x.049 W 2024-T3 Tube
❑CF4	Pin, Actuation Arm	2	2	MS20073-03-15	Steel Bolt
❑CF7	Retainer	2	2	BD-5-M-0173	.125 Nylon Strip
❑CF18	Web Outer Arm	2	2	BD-5-M-0111	.040 4130 "N" Stl Sht.
❑CF 27	Actuation Arm Assy, Outer	2	2	Consists of CF2, CF4, CF18, & CF35	
❑CF 30	Retainer, Lower	2	2	BD-5-M-0134 & BD-5-M-0172	.875 DIA x.058 2024-T3 Tubing
❑CF 32	Guide Flap Actuator	2	2	BD-5-M-0175	1.0 x 1.0 2024-T351 Bar
❑CF 33	Stud, Flap Torque Tube	2	2	BD-5-M-0176	.75 DIA 4130 Cond "N" Stl Bar
❑CF34	Abrasion Shield	1	1	BD-5-M-0100	Shrink Tubing
❑CF35	Arm, Outer Actuation	2	2	BD-5-M-01 11	.040 4130 "N" Stl Sht
❑A14	Bearing Shim	2	2	BD-5-M-0068	.75 O.D. x .058 W 2024-T3 Tube
❑CF5	Arm, Inner Actuation	2	2	BD-5-M-01 11	.040 4130 Cond “N” Sht Stl
❑CF8	Splice	2	2	BD-5-M-0030	.063 2024-T3
❑CF9	Arm, Upper Actuation	1	1	BD-5-M-01 11	.040 4130 Cond “N”
❑CF10	Mount Tube, Upper Arm	1	1	BD-5-M-01144	.500 Dia x.042”W4130 Cond “N” Steel Tubing
❑CF11	Link, Spring	2	2	BD-5-M-01 11	.040 4130 Cond "N"

❑CF12	Link, Cable	1	1	BD-5-M-01 11	.040 4130 Cond "N”
❑CF13	Bracket, L. H.	1	1	BD-5-M-0088	.040 2024-T3
❑CF14	Bracket, R. H.	1	1	BD-5-M-0088	.040 2024-T3
❑CF15	Cam Spring Link	1	1	BD-5-M-0111	.040 4130 Cond "N"
❑CF16	Bracket Pulley Support R.H.	1	1	BD-5-M-0088	.040 2024-T3
❑CF17	Bracket Pulley Support L.H.	1	1	BD-5-M-0088	.040 2024-T3
❑CF19	Web, Inner Arm	2	2	BD-5-M-01 11	.040 4130 Cond "N"
❑CF20	Mount Tube, Inner Arm	2	2	BD-5-M-0155	.875 O.D. x .058W 4130 Cond "N" Steel Tubing
❑CF21	Web, Upper Center Arm	1	1	BD-5-M-01 11	.040 4130 Cond "N"
❑CF22	Web, Lower Center Arm	1	1	BD-5-M-01 11	.040 4130 Cond "N"
❑CF23	Web, Center Arm	1	1	BD-5-M-01 11	.040 4130 Cond "N"
❑CF24	Housing, Lower B'R'G	2	2	BD-5-M-0140	.25 Phenolic Plate
❑CF25	Stop	1	1	BD-5-M-0146	.44 Phenolic Plate
❑CF26	Housing, Upper B'R'G	2	2	BD-5-M-0122	.38 Phenolic Plate
❑CF28	Actuation Arm Assy,Inner	2	2	Consists of CPS,CF19,&CF20	
❑CF29	Actuation Arm Assy,Upper	1	1	Consists of CF9, CF10, CF21 CF22 & CF23	
❑CF30	Retainer, Lower	2	2	BD-5-M-0134 & BD-5-M-0172	.875 O.D. x .058 2024-T3 Tubing
❑CF31	Cover, Upper B'RG	2	2	BD-5-M-0025	.016 2024-T3
❑CF40	Spacer	3	3	BD-5-M-0123	.25 DIA x .028 W 2024-T3 Tubing
❑CF43	Bracket, Keel, L.H.	1	1	BD-5-M-0101	.032 2024 T3
❑CF44	Bracket, Keel R.H.	1	1	BD-5-M-0101	.032 2024-T3
❑CF47	Doubler	1	1	BD-5-M-0008	.063 2024-T3

Aileron & Flap Control Installation:

ⓘ Before Beginning Construction, Note The Following:

1. Extreme care should be exercised during the aileron control installation as mistakes in this area generally require the replacement of two or more parts.

2. All views are shown with parts in the neutral position unless noted otherwise. It is important that the "clocking" or position of the various control arms remains as shown.

Beginning Construction

❑1. Fabricate all parts shown in detail D.

❑2. Cut off A5 (short wing) or AIT (long wing) aileron tube on left hand wing so that it extends .90 inches inboard of the W52 bearing bracket assembly. Smooth end of tube with file and install A 3 and A14 but do not drill in place. Ref. Detail A & E. Repeat procedure on right hand wing.

❑3. Install 8 539 DD bearings in two CA 19 phenolic blocks and install CA 19 & 20 assemblies on to CA 23 & 24 brackets. Note direction of attaching screws for left hand and right hand parts. Details A & B.

❑4. Install wings and bolt in place. Using a 1/2" DID dowell determine the point at which the left hand aileron torque tube will pass through the fuselage skin. Make cutouts in fuselage using pattern shown in Detail D also, See special instructions in Detail D.

❑5. Make the CA 16 tubes 1/2" longer than shown in Details A & B. Insert CA 2 fittings flush with ends of tubes and drill & bolt in place. Note direction of bolts. Ref. section X-X Detail A. Make two CF 30 collars and slide onto CA 16 tubes. Insert tubes into CA 23 & 24 bracket assemblies and f it CA 16 tubes on CA3 fittings. Ref. Details A & B.

❑6. Position the CA 23 & 24 brackets on fuselage skins so that the CA16 tubes are aligned with the A 17 aileron torque tubes in all axis. Form the tabs on the CA 23 & 24 brackets as required to achieve proper alignment of the tubes and bearings and drill and cleco the CA 23 & 24 brackets in place. Note: If both long and short wings are to be used, see special instructions

Special Instructions

Use only if both long and short wings are used.

Because of the difference in taper between the long and short wings, the point at which the A5 or A17 torque tubes would (if extended) pass through the fuselage skin differs by .040". Therefore, it is necessary to split this difference between the two sets of wings so that only a slight mis-alignment exists between the CA16 tube and the A5 or A17 tubes.

If long wings are being fitted, follow instructions in paragraph 8 except move the CA 23 & 24 aft .020" and drill in place. If short wings are being f itted, move the CA 23 & 24 forward .020".

Using this method, the mis-alignment at the A 2 and A 3 fittings will only be 10 16" and is entirely acceptable provided that the A 2 and A 3 fittings are drilled in place with the flat lugs in the proper position as call for later in the text.

❑7. Push the CA 16 tubes outboard to insure that the A 2 & A 3 fittings are fully engaged. Slide the CF 30 collars inboard until they contact the inner race of the B 539 DID bearings and carefully mark their position on the CA 16 tubes. Ref. Details A & B.

❑8. Remove the CA 23 & 24 brackets and tube assemblies from fuselage by sliding the CA 16 tubes inboard until A 2 & A 3 f ittings disengage.

❑9. Align the CF 30 collars with the marks on the CA 1*6 tubes and drill a No. 29 hole through collars and tubes at top and bottom. Ref. Details A, B, & C. Cleco collars in place.

❑10. Place a CA 32 arm on the end of the right hand CA 16 tube. Slide the CA 32 arm outboard until the inner race of the B 539 DD bearing is f irmly captured between the CA 32 and the CF 30 collar. Ref. Detail A & C.

❑11. Position the CA 32 arm so that its relationship to the A 2 fitting is as shown in section C-C & X-X of Detail A, and drill a No. 12 hole through the CA 32 arm and the CA 16 tube. Cut off excess portion of CA 16 tube.

❑12. Measuring from inboard side of the B 539 DD bearing, cut the left hand CA 16 tube to the length shown in Detail C.

❑13. Fabricate and install a CA 17 filler in end of tube and insert the Universal joint as shown in Detail C.

❑14. Position universal joint in CA 16 tube so that its relationship with the CA 2 fitting is exactly as shown in Detail B and drill No. 12 hole through CA 16 tube, CA 17 f iller and universal joint and install bolt. (Note: Direction of Bolt.)

❑15. Fabricate the CA 15 crossover tube (Ref. Detail C) and install a CA 17 f iller in outboard end. Slide the CA 15 tube assembly onto the universal joint and drill and install bolt. (Note: Correct direction of bolt.) Ref. Detail C.

❑16. Re-install both left and right hand tube assemblies in fuselage and cleco CA 23 & 24 brackets in place. Be sure to insert the CA 15 crossover tube into the B 539 DD bearings on the CA 21 bracket (Ref. Detail C) and be sure both CA 2 fittings. The CF 30 retaining collars can now be riveted in place on the tubes. Ref. Detai Is A, B, & C.

❑17. Position the CA 21 bracket web so that the B 5399 DO bearing is perfectly aligned with the CA 15 tube and drill and cleco in place.

❑18. Place a CA 32 arm over the end of the CA 15 tube and connect the CA 18 & CA 32 arms with two CA 13 control rods. The correct AN bolts and hardware should be used to attach the CA 13 rods to the CA 32 arms and regular, nonlocking hardware store bolts and nuts should be used to connect the CA 13 rods to the CA 18 arms. Tighten all bolts but leave the jam nuts loose on all ball rod ends. Before proceeding, read all special notes Page 7.

❑19. Place the control stick in the neutral aileron position and secure it from movement. Ref. control stick installation portion of this chapter.

❑20. Position the CA 15 crossover tube assembly so that the universal joint and A 2 fittings are in neutral position. Slide the CA 32 arm firmly against the bearing inner race and drill & bolt in place. Ref. Details A & C_

❑21. Check to see that the CA 32 arm and A 2 fittings on the right hand tube are in neutral position. Adjust length of CA 13 rod if necessary to accomplish this.

Adjusting Aileron Travel

❑22. The neutral aileron position of the control stick must be established and a method devised so that the control stick ran be returned to this position and secured from movement.

❑23. The adjustments are to be made with the wings installed by with the CA fitting undrilled and free to rotate inside the A5 or A17 aileron tube. Both ailerons should be taped to prevent movement.

❑24. Make adjustment to right hand wing first. Place aileron protractor on CA16 tube and glue or tape the top portion to the fuselage skins. Install pointer on CA 16 tube and align with neutral mark on aileron protractor then clamp in place.

❑25. Move control stick to full right and left aileron position and check the amount of rotation of the CA 16 tube at each position. If travel is correct proceed to left hand CA 16 and repeat this procedure.

❑26. If travel of the right hand CA 16 is incorrect, return the control stick to neutral position and secure in place.

❑27. Remove the bolt connecting the upper end of the CA 13 rod assembly to the CA 18 arm and lengthen or shorten the CA 13 rod assembly. Re-install bolt connecting CA 13 and CA 18 and tighten.

❑28. Loosen pointer and realign it with the neutral mark on the aileron protractor and tighten in place. (The control stick must remain in its neutral position.)

❑29. Move the control stick to full right and left aileron position and check the amount of rotation of CA 16 tube at each position. Repeat this procedure as many times as necessary until the correct amount of rotation is obtained and the control stick and pointer both reach their neutral positions simultaneously.

❑30. Move to left hand CA 16 and adjust as necessary using the same procedure. When both CA 16 tubes have the correct amount of rotation and both pointers reach their neutral position simultaneously with the control stick, the jam nuts at both ends of the CA 13 rod assemblies should be tightened.

ⓘ NOTE: the ball rod ends of CA13 assemblies must be positioned as shown in details A & C with control stick in neutral position to prevent possible binding at the full up or down positions.

❑31. Remove the temporary hardware store bolts at the upper end of the CA13 rod assemblies and install the correct bolts, washers and nuts, Ref. Detail A.

❑32. Install the CA 22 and CA 30 control stop assemblies and adjust the stop bolts so that there is .062" clearance from the CA 32 arms with control stick placed in the full right and left aileron positions. Ref. Detail A & C.

❑33. Re-check rotation of CA16 tubes and secure control stick in neutral position

❑34. Place W 74 aileron protractor on right hand wing and position aileron so that its trailing edge is 10 down from the neutral. Secure the aileron in this position and drill a No. 12 hole through the A 14 spacer, A 5 or A 17 torque tube and A 3 fittings and install bolt. Note direction of bolt. Ref. Detail E. Repeat procedure on left hand wing.

❑35. Pages 7-29 thru 7-32 of this section show details of the flap control system. No text is supplied as the mechinisem is a simple one and the drawings are sufficiently noted.

Parts & Materials Callout

Chapter 7 Horizontal Stabilizer Control System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
❑CHS1	Front Strap, L.H.	1	1	BD-5-M-0026	.020 2024-T3
❑CHS2	Front Strap, R.H.	1	1	BD-5-M-0026	.020 2024-T3
❑CHS 5	Bracket, Inb'd pulley	1	1	BD-5-M-0028	.032 2024-T3
❑CHS 6	Bracket, Outb'd Pulley	1	1	BD-5-M-0028	.032 2024-T3
❑CHS 7	Horn, Upper Control	1	1	BD-5-M-0110	.125 2024 T3
❑CHS 8	Horn, Lower Control	1	1	BD-5-M-0110	.125 2024-T3
❑CHS 9	Spacer, Front Strap	1	1	BD-5-M-0036	.75 O.D. x .035 Wall 2024-T3 Tubing
❑CHS 10	Angle, Outb'd Pulley	1	1	BD-5-M-0028	.032 2024-T3
❑CHS 11	Bracket, Aft Inb'd Pulley	1	1	BD-5-M-0101	.032 2024-T3
❑CHS 12	Bracket, Aft Outb'd Pulley	1	1	BD-5-M-0101	.032 2024-T3
❑CHS 13	Fairlead, FWD	1	1	BD-5-M-0140	.25 Phenolic
❑CHS 14	Fairlead, Aft	1	1	BD-5-M-0140	.25 Phenolic

HORIZONTAL STAB CONTROL

Pages 7-34 through 7-38 show the cable routing and controls for the Horizontal Stabilizer. No text is supplied as the drawings are sufficiently noted.

Before Beginning Construction, Note The Following:

1. Be sure to place the horizontal stabilizer and control stick both in the neutral position when cutting cables to length and tensioning.

2. Do not allow the cables to rub against or interfere with the aileron control arms and rods.

3. Be sure all fairleads and bushings are in place before swedging nicopress sleeves on ends of cable. The swedging operations must be performed with cables in place in aircraft.

Parts & Materials Callout

Chapter 7 Horizontal Stabilizer Trim Control System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
❑CT1	Handle, Trim	1	1	BD-5-M-01 12	.090 2024-T3
❑CT2	Fairlead	4	4	BD-5-M-0082	33 NSR NYLO Seal Tubing
❑CT3	Bracket, Fairlead	1	1	BD-5-M-0101	.032 2024-T3
❑CT4	Bellcrank	1	1	BD-5-M-0112	.090 2024-T3
❑CT5	Bracket, LH, Bellcrank	1	1	BD-5-M-0029	.050 2024-T3
❑CT6	Bracket, RH, Bellcrank	1	1	BD-5-M-0029	.050 2024-T3
❑CT7	Rod, Push-Pull	1	1	BD-5-M-0094	.50 SQ x .058W Tube 6061-T651
❑CT8	Arm, Tab Actuation	1	1	BD-5-M-0112	.090 2024-T3
❑CT9	Angle LH Tab	1	1	BD-0002	.032 2024-T3
❑CT10	Angle, R H, Tab	1	1	BD-0002	.032 2024-T3
❑CT11	Washer, Cork	2	2	BD-5-M-0159	.063 Cork
❑CT12	Doubler	2	2	BD-5-M-0101	.032 2024-T3
❑CT13	Cable	1	1	Consists of 7 x 7 1/2" cable, thimble, nicopress & MS2125S-2LS Eye End	
❑CT14	Plate, Console	1	1	BD-5-M-0101	.032 2024-T3
❑CT15	Bracket,Throttle Quandrant	1	1	BD-5-M-0101	.032 2024-T3
❑CT16	Handle Throttle	1	1	BD-5-M-0110	.125 2024-T3
❑CT17	Spacer, Axle	2	2	BD-5-M-0157	.25 O.D. x.028 W4130 Cond "N"Tube
❑CT18	Grip, Throttle	1	1	Procure Locally	.75 Hardwood
❑CT19	Axle, Throttle Quandrant	1	1	AN 3-22A	Steel Bolt
❑CT20	Spacer	3	3	BD-5-M-0030	.063 2024-T3

❑CT21	Spacer, Tube	1	1	BD-5-M-0157	.25 O.D. x .028 W4130 Cond "N" Tube
❑CT22	Grip, Trim	1	1	BD-5-M-0125	Mahogany
❑CT23	Stop	4	4	BD-5-M-0101	.032 2024-T3
❑CT24	Plate	1	1	BD-5-M-0126	1/16 nylon strip
❑P18	Swivel, Rod	1	1	BD-5-M-0177	.44 D IA 4130 Cond "D4" .063 Cork
❑CT25	Washer, Cork	4	4	BC-5-M-0159	.063 Cork
❑CT26	Cable	1	1	Consists of 7x7x1 /16 cable, thimble nicopress & MS21255 Eye End	
❑CT27	Bushing	2	2	BD-0140	.4375 O.D. x.250 ID (Olite) Bushing
❑CT28	Sleeve	2	2	BD-M-0182	.250 O.D. x .180 1 D1015-1018 Steel Tubing
❑CT 29	Bushing	1	1	BD-0151	.1885 10, .3145, 3 1/16 Bushing (Olite)

Beginning Construction

❑1. Fabricate and install all parts in fuselage. (Do not install cables and do not fasten CT8 arm and CT9 angles to trim tab.) Ref. pages 7-40 through 7-47. Make fuselage trim to clear CT8 arm as shown on page 7-40.

❑2. Level the aircraft (See Fuselage leveling procedure)

❑3. Position HS43 on the R.H. Horizontal Stabilizer and place level on top of HS43. Level the Horizontal Stabilizer. This will be the neutral position.

❑4. Drill a No. 40 hole in the Fuselage at the forward tip of the Horizontal Stabilizer. This will permanently mark the neutral position of the Horizontal Stabilizer.

❑5. Tape H.S. 44 to the fuselage with 0º mark 1 Lined up with the No. 40 hole. The inside are of HS 44 should approximately match the arc the tip of the Horizontal Stabilizer makes when it rotates.

❑6. Tape stabilizer tip to fuselage to secure it in the neutral position.

❑7. Align the trim tab centerline with the horizontal stabilizer centerline as shown on page 7-40 and secure it in place with tape along the trailing edge at each end of the trim tab.

❑8. Position the CT4 actuating arm as shown on page 7-40 and tighten the friction adjustment around CT4 so that the coils of the spring are just touching. Ref. page 7-41.

❑9. Without changing the position of the CT4 arm, Locate and install the CT8 arm and CT9 angles on the trim tab. Ref page 7-40 and Section CC page 7-41. Note: stabilizer and trim tab should still be in neutral position.

❑10. Position the CT1 cockpit trim [ever in the neutral position as shown on page 7-45 and secure it from movement.

❑11. Rig cables with all parts held in their neutral position. Install CC7 console.

❑12. Remove tape from trim tab and stabilizer and place the stabilizer tip at the 5º leading edge down "take off" position.

❑13. Tape the stabilizer tip to the fuselage in the take off position and position the trim tab so that the centerlines of the stabilizer and trim tab are again aligned, This will change the position of the CT4 actuating arm and CT1 cockpit trim lever.

❑14. Mark the position of CT1 on the CT24 guide plate and mark this position "take off".

❑15. Set the horizontal stabilizer tip at the 3º mark on HS 44. Keeping the horizontal stabilizer tip at the 3º mark (+2º - 5º) move the trim tab so that its center line lines up with the centerline of the horizontal stabilizer. Moving the trim tab should move the trim control lever to the forward stop position. Set the forward trim control stop (CT-23) at this position,

❑16. Set the horizontal stabilizer tip at the 9º (+3-1º) mark on HS44, and holding the horizontal stabilizer at the 9º mark, move the trim tab until the centerline of the tab is in line with the centerline of the horizontal stabilizer. This should move the trim lever to the aft stop position. Set the aft trim control stop (CT-23) at this position.

Parts & Materials Callout

Chapter 7 Rudder Cable & Control Horn Control System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
❑CR1	Cable	2	2	Consists of Cable & Fittings	
❑CR2	Doubler	6	6	BD-5-M-0101	.032 2024-T3 *
❑CR3	Cap Rub	2	2	BD-5-M-0127	.016 Nylon Film 101
❑CR4	Retainer	1	1	BD-5-M-0101	.032 2024-T3
❑CR5	Bracket, Inner Channel	1	1	BD-5-M-0101	.032 2024-T3
❑CR6	Bracket, Outer Channel	1	1	BD 5-M-0101	.032 2024-T3
❑CR7	Horn Weldment	1	1	Consists of CR8, CR9 &CR10	
❑CR8	Base Plate	1	1	BD-5-M-01 11	.040 4130, Cond "N”
❑CR9	Torque Tube	1	1	BD-S-M-0051	.75 O.D. x .035 Wall 4130 Cond "N" Tube
❑CR10	Bellcrank	1	1	BD-5-M-0105	.050 4130 Cond "N"
❑CR11	Retainer, Conduit	4	4	BD-5-M-0178	.375 Dia 2024-T4 Rod
❑CR12	Bracket, Conduit, Fwd	4	4	BD-5-M-0029	.050 2024-T3
❑CR13	Bracket, Conduit, Aft	1	1	BD-0089	.12 x .78 x 1” 2024-T351 angle
❑CR36	Stop, Bell Crank	1	1	BD-5-M-0140	.25 Phenolic
❑CR45	Sleeve	2	2	BD-5-M-0157	.25 O.D. x .028 W 4130 Stl Tube

Beginning Construction

❑1. Rig rudder cables with rudder and redder pedals secured in the neutral position,

❑2. Adjust rudder pedal stops so that the rudder rotates right and left an equal amount. Correct rotation is established when the aft, bottom tip of the rudder travels 5.00" right and left of 8 BL 0.00" measured perpinclicular to BL 0.00".

❑3. File legs of CR36 so that a space of .05" exists between CR36 and CR1 0 when the rudder pedals Is are firmly against their stops.

Parts & Materials Callout

Chapter 7 Brake System

NOTE: BOLD DENOTES PART MADE FROM RAW MATERIAL

DWG. REF. NO.	DESCRIPTION	QUANTITY BD-5A/BD-5B		MATERIAL IDENTIFICATION	MATERIAL DESCRIPTION
BRAKE SYSTEM					
❑FU35	Bracket	1	1		.032 2024T3
❑	Brake Lines			BD-0082	Flexible Tube
❑	Master Cylinder	2	2	A-1 10-4	
❑	Fluid Resevoir	1	1	A-315	
❑	Union "Tee"	1	1	BD0047	
❑	Male Elbow Ftg.	9	9	BD0045	
❑	Grommet	1	1	MS-35489-A	
❑	Bleed Valve	2	2	A-1480	
❑	Clamp	5	5	BD0077-3	

Brake System:

Beginning Construction

BRAKE MASTER CYLINDER REMOVAL AND INSTALLATION.

A. Loosen bleed gauge at each wheel cylinder and drain hydraulic fluid from system.

B. Remove windshield and instrument cover from aircraft.

C. Disconnect master cylinders from rudder pedals and lower attach points.

D. Disconnect hydraulic lines to prevent entry of foreign matter.

BRAKE MASTER CYLINDER REPAIR.

Repair is limited to installation of new parts and cleaning. Use clean hydraulic fluid as a lubricant during assembly of the cylinders.

BRAKE LINES

Hydraulic brake lines are of flexible tubing used through out the system. The tubing does not have to be flared, the sleeves inside the fittings will wedge the tubing to a sealed condition. Check sleeve inside fitting for correct installations, it could be installed backwards, tapped end should face outward.

WHEEL BRAKE REMOVAL AND INSTALLATION

Wheel brake assembly can be removed by first removing the wheel. Now disconnect the hydraulic line from the master cylinder. Finally, remove the 4 bolts attaching the cylinder to the strut. Reverse procedure to install wheel cylinder.

WHEEL BRAKE INSPECTION AND REPAIR

A. Clean all parts except brake linings and O-rings in clean solvent and dry thoroughly.

B. New O-rings are usually installed at each overhaul. If O-rings are reused it is necessary to wipe them with a clean cloth soaked in hydraulic fluid and inspected for damage.

ⓘ NOTE - Cleaning is very important. Dirt and metal particles are the greatest single cause of malfunctions in the hydraulic system.

C. Check brake lining for deterioration and maximum permissible wear. New lining should be installed after present lining are warn to .350.

D. Inspect brake cylinder bore for scoring. A scored cylinder will leak or cause rapid O-ring wear. Install new brake cylinder.

E. Inspect brake disc for scoring or cracks. If brake disc is cracked install new part.

F. Lubricate all brake cylinder parts with cleaning hydraulic f luid and assemble components with care to prevent damage to O-rings.

BRAKE BLEEDING.

A. Standard bleeding, with a clean hydraulic pressure service connected to the wheel cylinder bleeder, is recommended.

B. Place a clean container under the over flow tube located in the nose wheel well to save hydraulic fluid.

C. As fluid is pumped into the system, observe the fluid being pumped in the over flow container, When the fluid is pumping out in a stream with out air mixed in, check the pedal feel, it feels spongy, continue to bleed until pedal feels solid.

D. Bleed both wheel cylinders following this procedure.