



1-26D Hydraulic Brake Kit

Installation Instructions

1. For ease of installation, remove wings, canopy, and aft canopy deck from fuselage
2. Raise and support fuselage with main wheel off the ground
3. Remove the hardware attaching main wheel/tire to airframe (save hardware for reinstallation)
4. Remove wheel/tire from airframe
5. Remove the hardware that retains the 26221-001 brake shoe assembly to the fuselage at aft end of the 26226-001 wheel housing (save hardware for reinstallation)
6. Remove the hardware that attaches the forward end of the 26221-001 brake shoe assembly to the 26153-001 torque tube assembly (the hardware will not be reused)
7. Remove the 26221-001 brake shoe assembly from the aircraft (it will not be reused)
8. Reinstall the hardware, removed in step #5, to secure the aft end of the 26226-001 wheel housing to the frame
9. Disconnect the 26161-009 cable assembly from the 26153-001 torque tube assembly (the hardware will not be reused)
10. Disconnect the 26161-009 cable assembly from the 26154-001 torque tube assembly (the hardware will not be reused)
11. Remove the 26161-009 cable assembly from the aircraft (it will not be reused)
12. Remove the hardware securing the 26153-001 torque tube assembly to the aircraft (the hardware will not be reused)
13. Remove the 26153-001 torque tube assembly from the aircraft (it will not be reused)
 - a. Note: allowable to trim the 26094-003 lug and 26153-009 lug that held the 26153-001 torque tube assembly, but be careful not to nick the frame or cables
14. Disconnect the 26155-001 push rod from the 26154-001 torque tube assembly (save the hardware for reinstallation)
15. Remove the shoulder harness and AN115-32 shackle from the aircraft (the hardware will not be reused)
16. Remove the AN115-32 shackle from the shoulder harness (the shackle and hardware will not be reused)
17. Set the shoulder harness aside for later modification/reinstallation
18. Complete the 26249-003 torque tube sub-assembly as follows:
 - a. To increase accessibility to the 26156-001 horn on the 26154-001 torque tube assembly, rotate the torque tube so that the horn is up vertically



- b. To ease installation of the 26243-017 pusher plate, trim the 26156-015 horn (as shown in the 26249-003 torque tube sub-assembly) as close to the torque tube as possible without nicking the tube
 - c. Cut out the drill template for the 26243-017 pusher plate from the second page of the kit list
 - d. Use spray adhesive, or equivalent, to stick the template to the inboard side of the 26156-001 horn with proper orientation
 - e. Drill through the marks on the template with a #30 (0.129" diameter) drill
 - f. Celco the 26243-017 pusher plate to the inboard side of the 26156-001 horn so that the pusher plate is going aft when the 26156-001 horn is down in its original orientation (shown in 26249-003 torque tube sub-assembly)
 - g. Drill & line ream one of the holes through the pusher arm and horn to 0.188"-0.190" diameter
 - h. Temporarily install an AN3-12A bolt, AN960-10 washer, and AN365-1032 nut in the previously drilled hole
 - i. Drill & line ream the remaining hole through the pusher arm and horn to 0.188"-0.190" diameter
 - j. Remove the temporarily installed hardware and move the 26243-017 pusher plate to the outboard side of the 26156-001 horn
 - i. Note: make sure the orientation of the pusher arm matches the one in the 26249-003 torque tube sub-assembly
 - k. Install (2) AN3-12A bolts, (2) AN960-10 washers, and (2) AN365-1032 nuts in the 26243-017 pusher plate so that it is secured to the 26154-001 torque tube assembly (shown in 26249-003 torque tube sub-assembly)
 - l. The 26154-001 torque tube assembly can be rotated back down to its original orientation
19. Locate the 26243-019 channel on the aircraft per the 26249-001 hydraulic brake installation
- a. Note: remove any foam or sealer on the longeron where the channel will be located
20. Securely clamp the 26243-019 channel to the aircraft based on step #19
21. Using the (2) holes on each end of the 26243-019 channel as a guide, drill through the top of the longeron
22. Once all (4) holes have a pilot hole into the longeron, drill entirely through the channel and longeron using a #14 (0.182" diameter) drill
- a. Note: it is advised to use a drill bushing to keep the drill straight as it goes through both sides of the longeron
23. Ream the previously drilled holes to 0.188"-0.190" diameter; put a 3/16" celco in each hole as it is reamed
24. Place an AN742D12 clamp (alt. AN742-12 clamp) on each diagonal tube (as shown in 26249-001 hydraulic brake installation) so that the flat side of the clamp is up when it is rotated inboard
25. Slide the clamps under the 26243-019 channel so that the clamps are toward the front of the channel (as shown in the 26249-001 hydraulic brake installation)



26. Mark the hole locations of the clamps on the bottom of the channel
27. Remove the 26243-019 channel and drill the marked locations up to a #10 (0.1935" diameter) drill
28. Complete the 26249-005 channel sub-assembly as follows:
 - a. Celco the 26243-015 shoulder harness lug to the 26243-019 channel so that the round end of the lug is sticking out of the slot in the center of the channel (shown in 26249-005 channel sub-assembly)
 - b. Drill & ream the three holes through the shoulder harness lug and channel up to 0.188"-0.190" diameter
 - c. Install an AN3-6A bolt, AN365-1032 nut, and (2) AN960-10 washers in each hole previously drilled & reamed
 - d. Locate the 26243-013 & 26243-014 angles on the 26243-019 channel per the 26249-005 channel sub-assembly
 - e. Celco the angles to the channel, then drill & ream the (4) holes in the angles to 0.188"-0.190" diameter
 - f. Install (2) AN3-3A bolts, (2) AN365-1032 nuts, and (2) AN960-10 washers in each of the angles
 - g. Drill & line ream the remaining hole in each angle to 0.188"-0.190" diameter (shown in 26249-005 channel sub-assembly)
 - h. Locate the 35919-001 placard on the 26243-019 channel approximately as shown in the 26249-005 channel sub-assembly
 - i. Locate both of the 35908-013 straps per the 26249-005 channel sub-assembly
 - i. Note: it is optional to bond the straps to the channel using 3M 1300L or equivalent
 - j. Fit the (4) 35908-007 rubber edges so that when the Velcro straps are used, they will set on the rubber edge and not the metal of the channel (shown in 26249-005 channel sub-assembly)
29. Complete the 26249-007 wheel sub-assembly as follows:
 - a. Rework 26226-001 wheel cover:
 - i. Add 11/16" (0.69" diameter) hole for brake hose on aft end of wheel cover on left hand side of aircraft (see 26249-007 wheel sub-assembly for details)
 - ii. Add 0.40" x 1.19" slot in wheel cover for torque plate on the left front side of aircraft (see 26249-007 wheel sub-assembly for details)
 - iii. Patch original holes on the front side of the wheel cover by fabricating an aluminum plate and installing it with (4) MS20470A4 rivets or equivalent. As an alternate, use (2) layers of aluminum tape on each side of the wheel cover
 - b. Rework the wheel/tire assembly:
 - i. Release air from tire and remove valve core from stem (keep valve core for reinstallation)
 - ii. Disassemble rim and 26202-001 axle assembly from tire ((1) bolt will not be reused; the rest of the hardware will be reinstalled)
 - iii. Remove (2) flanged bearings from the 26202-001 axle assembly to inspect/service



- iv. Rework 26202-001 per 26249-007 wheel sub-assembly
 - 1. Note: If using K&L Soaring axle exchange program this step may be skipped
 - c. Reassemble wheel/tire/axle:
 - i. 26202-009 axle assembly flange is to be located so that it is trapped between the (2) wheel halves (shown in 26249 section C-C) with the longer end of the axle on the opposite side of the tire from the valve stem.
 - ii. Install the AN5-12A bolt, 35247-009 bushing, (2) 93852A102 washers, and AN365-524 nut, opposite the valve stem, with the head of the bolt and bushing toward the longer end of the axle
 - iii. Install the remaining hardware in the wheel per 26249-007 wheel sub-assembly
 - 1. Note: bolt heads should be on the opposite side from the valve stem
 - iv. Torque nuts to 165-185in.lbs. and inflate tire to 35psi.
 - v. Reinstall wheel bearings into 26202-009 axle assembly
 - d. Assemble 26243-031 torque plate assembly onto 26247-001 brake caliper assembly (shown in 26249-007 wheel sub-assembly) using (2) AN525-10R6 screws with Loctite #263 or equivalent.
 - e. Torque the (2) AN4H-15A brake pad bolts to 75-80 in.lbs. (dry) then safety wire bolt heads with MS20995C-32 stainless steel safety wire
 - f. Install AN823-4D elbow into 26247-001 brake caliper assembly using fuel lube or equivalent with the elbow facing away from the torque plate and turned slightly inboard (shown in 26249-007 wheel sub-assembly)
30. Complete the 26249-001 hydraulic brake installation as follows:
- a. Apply commercial sealer to the longeron where the 26249-005 channel sub-assembly will be located and apply sealer to the hardware that will hold the channel so that the longeron will be sealed from corrosion
 - b. Attach the 26249-005 channel sub-assembly to the holes that were reamed in step #23 using (4) AN3-14A bolts, (8) AN 960-10 washers, and (4) AN365-1032 nuts
 - i. Note: the shoulder harness lug should be toward the front of the aircraft
 - c. Attach the (2) AN742D12 clamps (alt. AN742-12 clamps) to the 26243-019 channel using (2) AN3-4A bolts, (2) AN960-10 washers, and (2) AN365-1032 nuts (shown in 26249-001 hydraulic brake installation)
 - d. Using 3M 1300L or equivalent, bond the 35908-005 foam liner on the side of the channel without the angles (as shown in 26249-001 hydraulic brake installation)
 - i. Note: trim the foam liner as required to allow the bolt from the clamp to fit properly
 - e. Using 3M 1300L or equivalent, bond the 26243-029 foam liner in between the 26243-015 shoulder harness lug and the 26243-013 angle (as shown in the 26249-001 hydraulic brake installation)
 - i. Note: trim the foam liner as required to allow the bolt from the clamp to fit properly
 - f. Install an AN823-4D elbow into the 33218-005 master cylinder using fuel lube or equivalent



- q. Place the bottom of the 33218-005 master cylinder between the 36110-051 links and secure with an AN3-7 bolt, AN960-10 washer, and AN310-3 nut (shown in 26249-001 hydraulic brake installation)
 - i. Note: do not safety at this point
- r. Slide 26243-009 brake disk assembly onto the longer end of the 26202-009 axle assembly with the brake disk toward the outside of the wheel/tire and the brake disk guide plate keyed on the 35247-009 bushing (shown in 26249 view B-B)
- s. Mount the brake caliper/torque plate assembly onto the 26243-009 brake disk assembly so that the brake pads are on either side of the brake disk and that the hole in the torque plate, with the spacer, is lined up with the hole in the axle assembly (shown in 26249-007 wheel sub-assembly)
- t. Install the wheel/brake assembly into the aircraft as follows:
 - i. While holding the wheel/brake assembly so that the caliper is toward the left side of the aircraft, slide the torque plate arm into the 0.40" x 1.19" slot in the front of the wheel cover
 - ii. Finish sliding the wheel/brake assembly into the aircraft so that the holes in the axle and torque plate line up with the holes in the frame
 - iii. Re-install the AN6-66 bolt, AN310-6 nut, and AN960-616 washer removed in step #3
 - 1. Note: do not safety at this point
- u. Working from inside aircraft, locate and drill 0.25" diameter hole through fuselage cross tube (26001-086) centered in line with hole of 26243-031 torque plate assembly and 0.06" inboard of the torque plate
- v. Install AN43B-14 eyebolt, using sealant, with (2) AN960-416 washers under the head, through the hole drilled in step #30s. Secure with an AN960-416 washer and an AN365-428 nut on lower side of aircraft
- w. Attach the 26243-031 torque plate arm to the AN43B-14 eyebolt with an AN3-6A bolt, AN365-1032 nut, and AN960-10 washer
- x. Reconnect the 26155-001 push rod to the 26154-001 torque tube assembly
 - i. Note: do not safety at this point
- y. With the dive brakes closed, check to see if the distance between the centerline of the hole in the 26156-001 horn assembly and the front edge of the 26095-001 bracket is 2.74 ± 0.13 (shown in 26249-001 hydraulic brake installation)
 - i. Note: if the measurement is out of tolerance, adjust the 26155-001 push rod until the measurement is within tolerance
- z. Cycle the spoiler/brake control to allow the brake fluid level in the master cylinder to neutralize
 - i. Note: brake fluid may leak out of the master cylinder during this process
- aa. The fuselage can now be lowered to have the main wheel on the ground
- bb. Install wings on the fuselage



- cc. Check top dive brakes for a minimum opening of 80° with dive brake/brake control pulled firmly aft
 - i. Note: adjusting clevis on master cylinder can change how far the dive brakes open
 - dd. Ground check proper brake operation by pulling on aircraft with brake engaged
 - i. Note: if the brake system does not function properly, you may have to bleed the brake system again to remove any trapped air
 - ee. When the dive brake/brake control is latched closed, check for forward play in the stick. If the stick is able to be pushed forward even when the dive brakes are closed, contact K&L Soaring for corrective action
 - ff. If everything is functioning properly, remove the wings and support the fuselage again
 - gg. Install the AN931-5-9 grommet into the 11/16" (0.69" diameter) hole in the wheel cover
 - hh. Install the 26243-037 chafe tube onto 26001-076 tube and place it so that the brake line will not rub on the tube (shown in 26249 view E-E)
 - ii. Use the provided 8" zip-tie to secure the brake line to the chafe tube (shown in 26249 view E-E)
 - jj. Safety the master cylinder, wheel, and dive brake/brake push rod
 - kk. Attach the STD1A318-001 lug to the shoulder harness and then attach the lug to the 26243-015 shoulder harness lug using an AN4-7A bolt, (2) AN960-416 washers, and AN365-428 nut
31. Trim the rear canopy deck angle as follows:
- a. Locate where the rear canopy will be in relation to the shoulder harness tray and mark the location on the rear canopy
 - b. Add approximately 0.75" fore and aft of the marks in order to have plenty of clearance around the tray
 - c. Leave approximately 0.38" flange on the rear canopy deck in order to maintain rigidity
 - d. Trim the rear canopy deck angles
32. Calculate and record weight and balance change in accordance with form I-4609RB
- a. The 1-26D hydraulic brake kit adds 4lbs. at station 82.50
 - b. Note: this is assuming your ship has a full weight and balance previously done
 - c. If not, follow these steps:
 - i. Go to www.klsoaring.com
 - ii. On the left hand side, under main menu, click downloads
 - iii. Under glider documents, click weight & balance sheets
 - iv. Scroll down until you find 1-26 weight & balance sheet
 - v. Left click on it and it should open a .pdf that you can print out
33. Flight test the brake system
- a. Make sure the flight controls are connected and working properly, and the aircraft has been inspected for flight worthiness



- b. To have the brake system activate sooner with the pulling of the dive brake handle, lengthen the clevis on the master cylinder
- c. To have the brake system activate later with the pulling of the dive brake handle, shorten the clevis on the master cylinder
 - i. Note: When adjusting master cylinder, make sure the top dive brakes still open a minimum of 80°