



(page 1 of 6)

Assembly Alert: 144

Date: November 15, 2000

Subject: Brake Cylinder Orientation

Compliance: Voluntary

Models Effected: S-16 Shekari

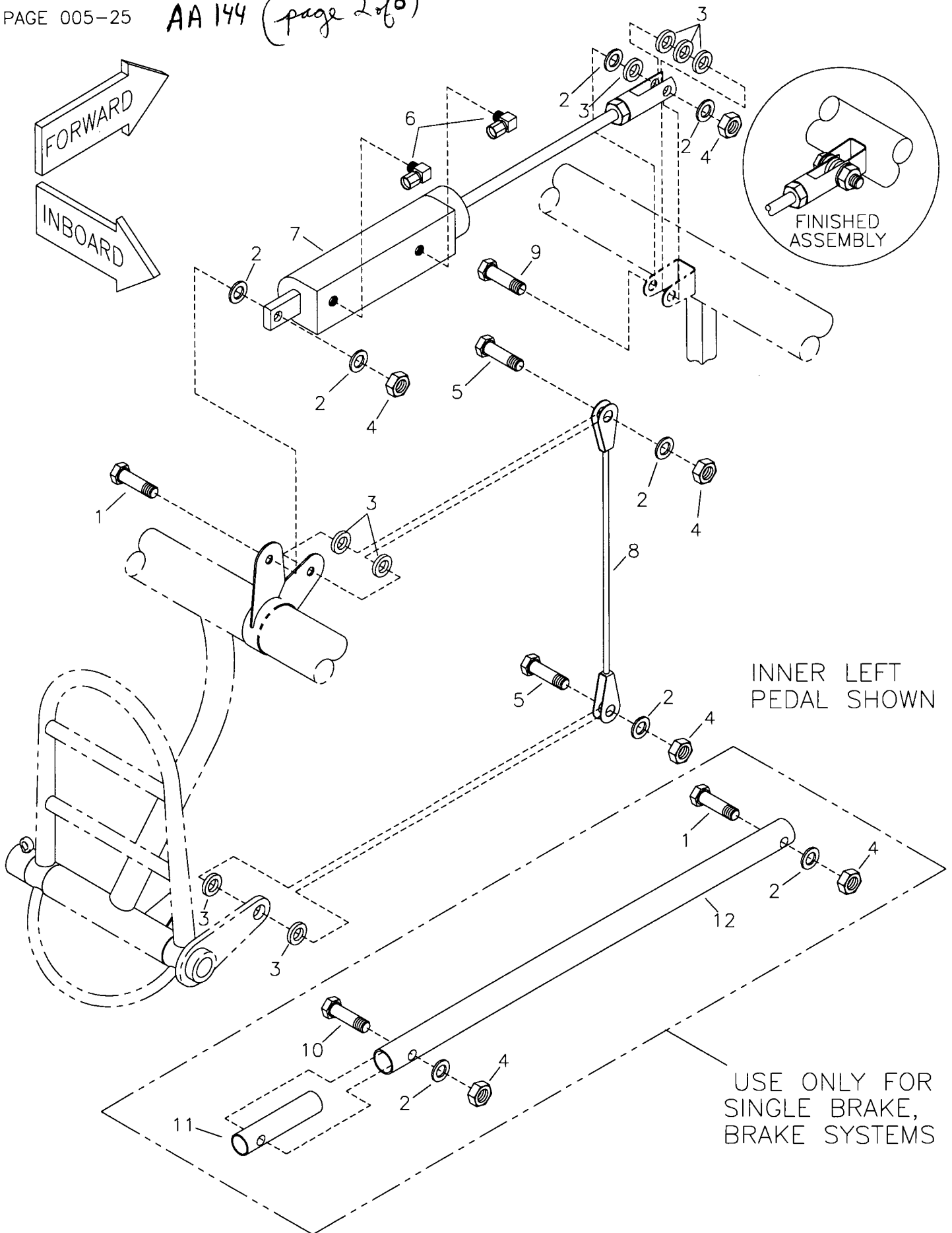
1. To facilitate easier bleeding of the brake system, orientate the brake cylinders with the barrel end AFT. See included parts pages. Position the shackle over the inboard ear of the station 1 welded bracket and bolt in place. Use washers to shim tight. Check cylinder to fuselage clearance.
2. The orientation of the cylinders, does not affect the brake effectiveness once the system is purged of all air.

PARTS REQUIRED TO COMPLY WITH ASSEMBLY ALERT

4 – 3/16" Bolt	AN3-7A
8 – 3/16" Thick Washer	AN960-10

Contact our parts department to order any needed parts.

Thank you for your attention to this matter. Hopefully we have not inconvenienced you to any great degree. Fly safe!



RANS S-16 SHEKARI BRAKE SYSTEM ASSEMBLY

S-16 SHEKARI - SINGLE BRAKE SYSTEM ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-6A	4
2.	3/16" Thin Washer	AN960-10L	16
3.	3/16" Thick Washer	AN960-10	16
4.	3/16" Shear Nut	AN364-1032A	16
5.	3/16" Bolt	AN3-5A	8
6.	90 Fitting	KSBS0017	4
7.	Master Cylinder - Brake	KSBS0015	2
8.	Brake Link Rod	KACS0016	4
9.	3/16" Bolt	AN3-7A	2
10.	3/16" Bolt	AN3-4A	2
11.	Link Tube Doubler, 1/4" x .028 x 1" *	KAAC0012-6	0
12.	Link Tube, 3/8" x .035 x 8 1/2" *	KAAC0012-15	0

*Builder must fabricate from raw stock.

S-16 SHEKARI - OPTIONAL DUAL BRAKE SYSTEM ASSEMBLY

#	DESCRIPTION	PART NUMBER	QUANTITY
1.	3/16" Bolt	AN3-6A	4
2.	3/16" Thin Washer	AN960-10L	24
3.	3/16" Thick Washer	AN960-10	32
4.	3/16" Shear Nut	AN364-1032A	16
5.	3/16" Bolt	AN3-5A	8
6.	90 Fitting	KSBS0017	8
7.	Master Cylinder - Brake	KSBS0015	4
8.	Brake Link Rod	KACS0016	4
9.	3/16" Bolt	AN3-7A	4

BRAKE SYSTEM INSTALLATION

1. LINK ROD ASSEMBLY – Install the brake link rod to the brake cylinder bellcrank and lever on the rudder pedal using the specified hardware. Orientate the bellcrank with one arm up and the other forward. **Note:** The link rod will bolt to the forward arm. Check for free rotation of the rudder pedal.
2. FABRICATE LINK TUBES – **Note:** This step only applies to single brake system installations. Fabricate two (2) link tubes and doublers from raw stock. See **FIGURE 5-13** for details. Insert the doubler into the end of the link tube. Using a 3/4” E.D. flatten the tube end. Be sure the doubler is centered and flush with the end of the tube. Drill each end #11 as per **FIGURE 5-13**.
3. INSTALL FITTINGS – Wrap the thread of each fitting with Teflon tape. Install the fittings into each master cylinder. For now, position each fitting toward the shackle end of each cylinder. Be careful not to overtighten the fittings.
4. INSTALL MASTER CYLINDERS – **Note:** Install each master cylinder with the barrel (large) end aft. The shackle-end mounts to the inner tab of the welded bracket on the front tube of the cage. Orientate the master cylinder with the fittings inward. Bolt the barrel-end to the top arm of the bellcrank. Be sure the jam nut is tight against the shackle. If needed, loosen this nut and adjust the shackle to bring the brake pedals into proper adjustment.
5. PARKING BRAKE – **Note:** Pre-fit the parking brake and control hardware before soundproofing the firewall. See the ENGINE & SYSTEMS SECTION for location. Wrap the end of each brass fitting with Teflon tape and install in the park brake. See the close-up on the description page for details. Install the parking brake on the aft side of the firewall after installing the soundproofing.
6. CONTROL HARDWARE – Rivet the swivel stop bracket to the aft side of the firewall. See the ENGINE & SYSTEMS SECTION for location. Install the cable housing swivel stop in the bracket. The park brake control cable mounts into the instrument panel. Mounting location is left to the builder’s preference. Install the non-cushioned and conduit clamp to the station 1 crossing tube. See the close-up on the description page for details. Route the control cable through the conduit clamp and into the cable housing swivel stop. Determine the correct length of cable and cable housing needed and cut both to length. Remove the cable from the cable housing to cut to length. Leave the cable a little long at this time for adjustment. Trim the cable to final length during final assembly. Route the cable through the cable housing swivel stop and the wire swivel/screw stop in the control arm of the park brake. Adjust the control arm and cable to allow full open with the control knob pushed in, and closed with the control knob pulled out. During final assembly Loctite the screw in the wire swivel stop.
7. BRAKE FLUID RESERVOIR - Teflon tape and install the 90 degree fitting into the bottom of the hydraulic brake reservoir. Locate the hole for the supply line in the firewall; see the ENGINE & SYSTEMS SECTION for details. Point the 90-degree fitting to the firewall. Install the reservoir expansion cap, this will keep unwanted debris out of the reservoir. Install the rubber grommet in the firewall for the supply line from the reservoir. Cut a short piece (about 8” should do) of brake line and insert through the grommet and into the fitting in the reservoir. **Note:** Leave the line a little long, it can be trimmed later. Fully insert the brake line into the ferrule fittings. **Note:** The ferrules can be completely tightened only once. Mount the reservoir on the firewall as shown in the parts drawing. The mount strap should be near the top of the reservoir. **Hint:** Pre-fit all items on the firewall before adding the soundproofing. Final install after soundproofing is complete.

8. BRAKE LINES - We recommend cutting and fitting all brake lines and hand tightening during trial assembly. Fully tighten during final assembly. Install the tee fitting to the reservoir line on the aft side of the firewall. Cut the brake line to length and route according to **FIGURE 5-14** for single brake systems and **FIGURE 5-15** for dual brakes. **Note:** Brake line length and routing is left to the discretion of the builder. The brake line will exit the fuselage aft of the landing gear sockets. Drill a 7/16" hole through the skin and install the rubber grommets. If you are installing gear leg fairings, the brake line will route through the fairing on the aft side of the gear leg.

Note: Perform the following steps during final assembly.

Important: Use only aircraft-grade brake fluid. Automotive brake fluid will destroy the seals in the system.

9. FILL THE SYSTEM - Fill the system from the bottom through the bleeder valves in the caliper cylinders. **Hint:** A small hand-held oil pump can, with a short piece of small-diameter hose attached, works well. With the oil pump full of hydraulic oil, slide the hose on the oil pump over the left bleeder valve. Remove the reservoir cap and open the bleeder valve. Fill the left side of the system until the fluid level is just above the "T." Close the bleeder valve and remove the oil pump. Refill the oil pump, and attach it to the right bleeder valve and follow the same procedure. Continue to fill the system and alternate sides until the system is free of all air bubbles and the reservoir is approximately 1/4 full.
10. BLEED THE SYSTEM - Fill the reservoir to approximately 3/4 full by pouring directly into the reservoir. Bleed the brakes by depressing pedals individually while opening the respective bleeder valve at the caliper. Close bleeder valve before releasing pedal. Repeat until brakes are solid. **Note:** Pump fluid through the caliper bleeder to eliminate all air in the system. **Hint:** Place a pan under bleeder valve to catch any dripping fluid. Replenish fluid in reservoir as required. Replace the reservoir cap.