**Rockwell** custom kit **No. CK-AG-12A**

**International**

**P.O. BOX 3090 ALBANY, GEORGIA 31706-3090 PHONE 229/883-1440 FAX 229/439-9790**

**CUSTOM KIT NO. CK-AG-12A** **26 JULY 1977**

# Equip your Rockwell Thrush Commander with Cleveland 29-inch hi-flotation tires and disc brakes…

- **GREATER FLOTATION WHEN OPERATING FROM UNPAVED SURFACES.**
- **A STANDARD RED OIL HYDRAULIC SYSTEM AND BETTER BRAKING CAPACITY FOR AIRCRAFT SERIAL NUMBERS 1416 THRU 1938.**

**EFFECTIVELY:** **PART I –** **AIRCRAFT SERIAL NUMBERS 1416 THRU 1938 THAT HAVE NOT COMPLIED WITH CUSTOM KIT NO. CK-AG-1.**

**PART II -** **AIRCRAFT SERIAL NUMBER 1939 THRU 2173 AND 5000 THRU 5075 EQUIPPED WITH CLEVELAND WHEELS P/N 40-129, BRAKES P/N 30-94 AND MIL-H-5606 RED OIL SYSTEM.**

**THIS KIT IS AVAILABLE WITH INSTALLATION INSTRUCTIONS.**

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**Service Letter No. CK-AG-12A**
**(Supersedes Custom Kit No. CK-AG-12 dated 28 April 1976)**
**July 26, 1977**

## INSTALLATION OF CLEVELAND 29-INCH WHEEL AND BRAKES

**MODELS AFFECTED:** Model S-2R, Serial No's 1416R thru 2173R and 5000 thru 5075.

**NOTE**

If basic Custom Kit No. CK-AG-12 has been complied with, disregard this Custom Kit.

**REASON FOR PUBLICATION:** Provide Hi-Flotation tires, wheels and brakes.

**COMPLIANCE:** At owner's discretion

**NOTE**

If any problems are encountered while installing this Custom Kit, contact the nearest Thrush Commander dealer or your Thrush Commander Regional Service Manager.

**BY WHOM WORK WILL BE ACCOMPLISHED:** A & P Mechanic or Equivalent.

**APPROVAL:** FAA DER Approved

**ESTIMATED MAN HOURS:** Part I – Fourteen (14) hours.
Part II – Thirty (30) hours.

**PARTS DATA:** Parts required to comply with this Custom Kit may be purchased through your nearest Thrush Commander Dealer. Reference this Custom Kit, aircraft model and factory serial number when ordering Custom Kit No. CK-AG-12A consisting of the following:

Kit No. 1 – Serial No's 1416R thru 1938R that have not complied with Custom Kit No. CK-AG-1.

Kit No. 2 – Serial No's 1939R thru 2173R and 5000 thru 5075 equipped with Cleveland Wheels P/N 40-129, Brakes P/N 30-94 and MIL-H-5606 Red Oil System.

| Kit No. 1 Qty | Kit No. 2 Qty | Part No. | Description |
|---|---|---|---|
| 2 ea. | 2 ea. | 50102-1 | Tongue Washer |
| 2 ea. | -- | 50154-1 | Adapter |
| 2 ea. | 2 ea. | 50158-501 | Wheel Assy |
| 2 ea. | -- | 50176-1 | Master Cylinder Assy |
| -- | 2 ea. | 50330-1 | Axle |
| -- | 2 ea. | K50389-1 | Weld Assy |
| 2 ea. | -- | 90035-23 | Placard |
| 2 ea. | 2 ea. | 90171-0255 | Tube Assy |
| -- | 2 ea. | 30-98 | Brake Assy |
| 2 ea. | -- | 30-98B | Brake Assy |
| 2 ea. | -- | Model 4500A2 | Parking Brake Assy |
| 24 ea. | 24 ea. | AN5C7A | Bolt |
| -- | 2 ea. | AN5-30A | Bolt |
| 2 ea. | 2 ea. | AN6289-4 | Nut |
| 4 ea. | -- | AN526-1032R23 | Screw |
| 2 ea. | 2 ea. | AN7502-23 | Nut |
| 2 ea. | -- | AN815-4 | Union |
| 2 ea. | 2 ea. | AN837-4 | Elbow |
| 2 ea | -- | AN901-5C | Washer |
| 4 ea. | -- | AN960-10 | Washer |
| 48 ea. | 2 ea. | AN960C516 | Washer |
| 24 ea. | 24 ea. | MS21043-5 | Nut |
| 4 ea. | -- | MS20365-1032 | Nut |
| -- | 2 ea. | MS21044N5 | Nut |
| 2 ea. | 2 ea. | MS24665-360 | Cotter Pin |
| 2 ea. | 2 ea. | MS28741-4-0110 | Hose Assy |
| 2 ea. | -- | MS28741-4-0182 | Hose Assy |
| 2 ea. | 2 ea. | S-0310-012R | O-Ring |
| 2 ea. | 2 ea. | S-0311-904 | Backup Ring |
| | | Custom Kit No. | |
| 1 ea. | 1 ea. | CK-AG-12A | Instructions |

**SPECIAL TOOLS:** PART I – NONE

PART II - Cutting equipment to remove existing wheel mounting plate and welding equipment to install new wheel mounting plate.

**ACCOMPLISHMENT INSTRUCTIONS:**

**PART I – SERIAL NO'S 1416R THRU 1938R.**

1. Release parking brakes.

2. Jack airplane as outlined in the Airplane Maintenance Manual, Section II.

3. Remove existing left and right wheel assemblies.

4. Drain left and right brake master cylinders.

5. Disconnect brake hydraulic lines at brake housing.

6. Remove existing left and right brake assemblies.

7. Remove existing left and right parking brake valve. Retain existing attaching hardware.

8. Remove and discard existing hose assemblies and tube assemblies directly above the brake assemblies.

**NOTE**

Retain existing unions for later installation.

9. Remove existing left and right brake master cylinders from airplane.

10. On aircraft with Volkswagen brake master cylinders installed, remove existing brake master cylinder reservoir and tubing between reservoir and master cylinder.

**NOTE**

New master cylinder P/N 50176-1 has a self contained reservoir.

11. Flush out existing steel brake lines, located inside fuselage, with Methyl Ethyl Ketone (MEK) and blow dry with shop air.

12. Install Model 4500A2 parking brake valve, AN901-5C washer, 50154-1 adapter and existing nipple on 50176-1 brake master cylinders (see Figure 1., Sheet 2 of 3).

13. Install items assembled in step 12 on airplane and install 90035-23 placard on parking brake valve (see Figure 1., Sheet 2 of 3).

14. Reconnect existing elbow and existing steel brake line to parking brake valve (see Figure 1., Sheet 1 of 3).

15. Remove backplate assembly (6 places) from 30-98B brake assemblies and install 30-98 B brake assemblies on left and right landing gear tripod assemblies and torque MS21043-5 nut to 100-140 inch-pounds (see Figure 1., Sheet 3 of 3).

16. Using 30-98B brake torque plate as a guide, drill three (3) 0.3150 (± 0.0035) inch diameter holes through left and right brake attach plates (see Figure 1., Sheet 3 of 3).

17. Inspect wheel bearings as received from manufacturer for proper lubrication. If wheel bearing inspection reveals an absence of grease or contamination, remove all grease provided by manufacturer by wiping bearings and bearing races clean and repack bearings with MIL-G-81322B grease.

18. Install 50158-501 wheel assembly with AN7502-23 nut and 50102-1 tongue washer on left and right tripod assemblies and tighten nut as follow:

    a. Lubricate AN7502-23 nut and 50102-1 tongue washer with MIL-G-81322B grease.

    b. While rotating wheel, torque nut to 80-inch-pounds.

    c. While rotating wheel, back nut off to zero (0) inch-pounds.

    d. While rotating wheel, retorque nut not to exceed 40 inch-pounds.

    e. If nut is not locking position, advance nut to next position (not to exceed 30 degrees and/or 40 inch-pounds) while wheel is rotating.

    f. Install MS24665-360 cotter pin.

    g. Install hub cap and snap ring furnished with 50158-501 wheel assembly.

19. Reinstall backplate assemblies and torque backplate bolts to 60 inch-pounds.

20. Install AN837-7 elbow, AN6289-4 nut, S-0310-012R O-ring and S-0311-904 backup ring in aft port of left and right brake assemblies (see Figure 1., Sheet 3 of 3).

21. Install MS28741-4-0182 hose assembly, 90171-0255 tube assembly, MS28741-4-0110 hose assembly, AN815-4 union and existing unions (see Figure 1., Sheet 3 of 3).

**NOTE**

Route MS28741-4-0110 hose assembly along back of main gear strut so that hose assembly is protected from air stream and/or ground obstacles, by strut. Hose assembly to be “snug” against strut.

22. There are two (2) methods acceptable for bleeding brakes and hydraulic lines as follows:

    a. Bleed up from brake hose to reservoir using a manual pump as follows:

        (1) Disconnect hose at brake fitting and drain all fluid from brake reservoir.

        (2) Remove bleed fitting brake assembly and fill brake assembly with MIL-H-5606 red oil, using a manual pump, through aft brake fitting.

        (3) Reinstall bleeder fitting and cap aft fitting on brake assembly after assuring that brake assembly is full of fluid.

        (4) Using a manual pump, fill brake reservoir by pumping MIL-H-5606 red oil up through hose assembly allowing brake reservoir to overflow and then pull parking brake handle to ON to entrap fluid in brake lines.

**NOTE**

Place a container under brake reservoir to catch excess fluid.

(5) Reconnect hose to aft brake fitting.

(6) Crack aft brake fitting, depress and hold brake pedal to bleed aft brake fitting and then tighten fitting.

b. Bleed down using aircraft brake and reservoir as follows:

(1) Check hydraulic reservoir for proper fluid level.

(2) Buildup hydraulic pressure by pumping brake, hold pressure by setting parking brake, crack bleeder fitting to release any air in brake and retighten bleeder fitting.

(3) Release parking brake.

(4) Repeat process as required to release all air in brake system.

23. Remove jacks from airplane.

**PART II – SERIAL NO'S 1939R THRU 2173R AND 5000 THRU 5075.**

1. Release parking brakes.

2. Jack airplane as outlined in the Airplane Maintenance Manual, Section II.

3. Disconnect and cap brake hydraulic lines at flex hoses mounted on top of landing gear tripod assemblies.

4. Remove left and right wheel and brake assemblies as outlined in the Airplane Maintenance Manual, Section IV.

5. Remove and discard existing left and right hose assemblies and tube assemblies directly above brake assembly.

**NOTE**
Retain existing unions for later reinstallation.

6. Remove and discard existing axles.

7. Cut off existing wheel mounting plates and trim landing gear tripod hubs to dimensions shown in Figure 2.

**NOTE**
It may be necessary to remove tripods from airplane to accomplish this rework.

8. Remove and discard existing bushings from tripod hub.

9. Install K50389-1 weld assembly in landing gear tripod hub and weld (see Figure 2.).

10. Install 50330-1 axle in tripod hub and line drill a 0.3125 (± 0.0001) inch diameter hole in existing tripod hub, axle and K50389-1 weld assembly (see Figure 2.).

11. Attach 50330-1 axle to tripod hub with AN5-30A bolt. AN960C516 washer and MS21044N5 nut. Torque bolt to 100-140 inch-pounds (see Figure 2.).

12. Remove backplate assembly (6 places) from 30-98 brake assemblies and install 30-98 brake assemblies on left and right landing gear tripod assemblies (see Figure 3.).

13. Install 50158-501 wheel assembly with AN7502-23 nut and 50102-1 torque washer on left and right tripod assemblies and tighten nut as follows:

    a. Lubricate AN7502-23 nut and 50102-1 torque washer with MIL-G-81322B grease.

    b. While rotating wheel, torque nut to 80 inch-pounds.

    c. While rotating wheel, back nut off to zero (0) inch-pounds.

    d. While rotating wheel, retorque nut not to exceed 40 inch-pounds.

    e. If nut is not in locking position, advance nut to next position (not to exceed 30° and/or 40 inch-pounds) while wheel is rotating.

    f. Install MS24665-309 cotter pin.

    g. Install hub cap and snap ring furnished with 50158-501 wheel assembly.

14. Reinstall backplate assemblies and torque backplate bolts to 60 inch-pounds.

15. Install AN837-4 elbow, AN6289-4 nut, S-0310-12R O-ring and S-0311-904 backup ring in aft port of left and right brake assemblies (see Figure 3.).

16. Install 90171-0255 tube assembly, MS28741-4-0110 hose assembly and existing unions (see Figure 3.).

**NOTE**

Route hose assembly along back of main gear strut so that hose assembly is protected from air stream and/or ground obstacles by strut. Hose assembly to be “snug” against strut.

17. There are two(2) methods acceptable for bleeding brakes and hydraulic lines as follows:

    a. Bleed up from brake hose to reservoir using a manual pump as follows:

        (1) Disconnect hose at brake fitting and drain all fluid from brake reservoir.

        (2) Remove bleed fitting from brake assembly and full brake assembly with MIL-H-5606 red oil, using a manual pump, through aft brake fitting.

        (3) Reinstall bleeder fitting and cap aft fitting on brake assembly after assuring that brake assembly is full of fluid.

(4) Using a manual pump, fill brake reservoir by pumping MIL-H-5606 red oil up through hose assembly allowing brake reservoir to overflow and then pull parking brake handle to ON to entrap fluid in brake lines.

**NOTE**

Place a container under brake reservoir to catch excess fluid.

(5) Reconnect hose to aft brake fitting.

(6) Crack aft brake fitting, depress and hold brake pedal to bleed aft brake fitting and then tighten fitting.

b. Bleed down using aircraft and reservoir as follows:

(1) Check hydraulic reservoir for proper fluid level.

(2) Buildup hydraulic pressure by pumping brake, hold pressure by setting parking brake, crack bleeder fitting to release any air in brake and retighten bleeder fitting.

(3) Release parking brake.

(4) Repeat process as required to release all air in brake system.

18. Remove jack from airplane.

**ELECTRICAL LOAD:** No Change

**WEIGHT AND BALANCE:** The weight and balance change resulting from the installation of this Custom Kit is as follows:

| | WEIGHT (LBS) | H-ARM (INCHES) | H-MOMENT (IN-LBS) |
|---|---|---|---|
| Part I | +28.0 | +3.1 | +86.8 |
| Part II | +48.0 | +3.1 | +148.8 |

**PUBLICATION AFFECTED:** None

**RECORD COMPLIANCE:** Make appropriate entry in airplane maintenance records as follows: Custom Kit No. CK-AG-12A dated July 26, 1977, entitled "Installation of Cleveland 29-inch Wheels and Brakes",
Part I accomplished (date)_____.
Part II accomplished (date)_____.

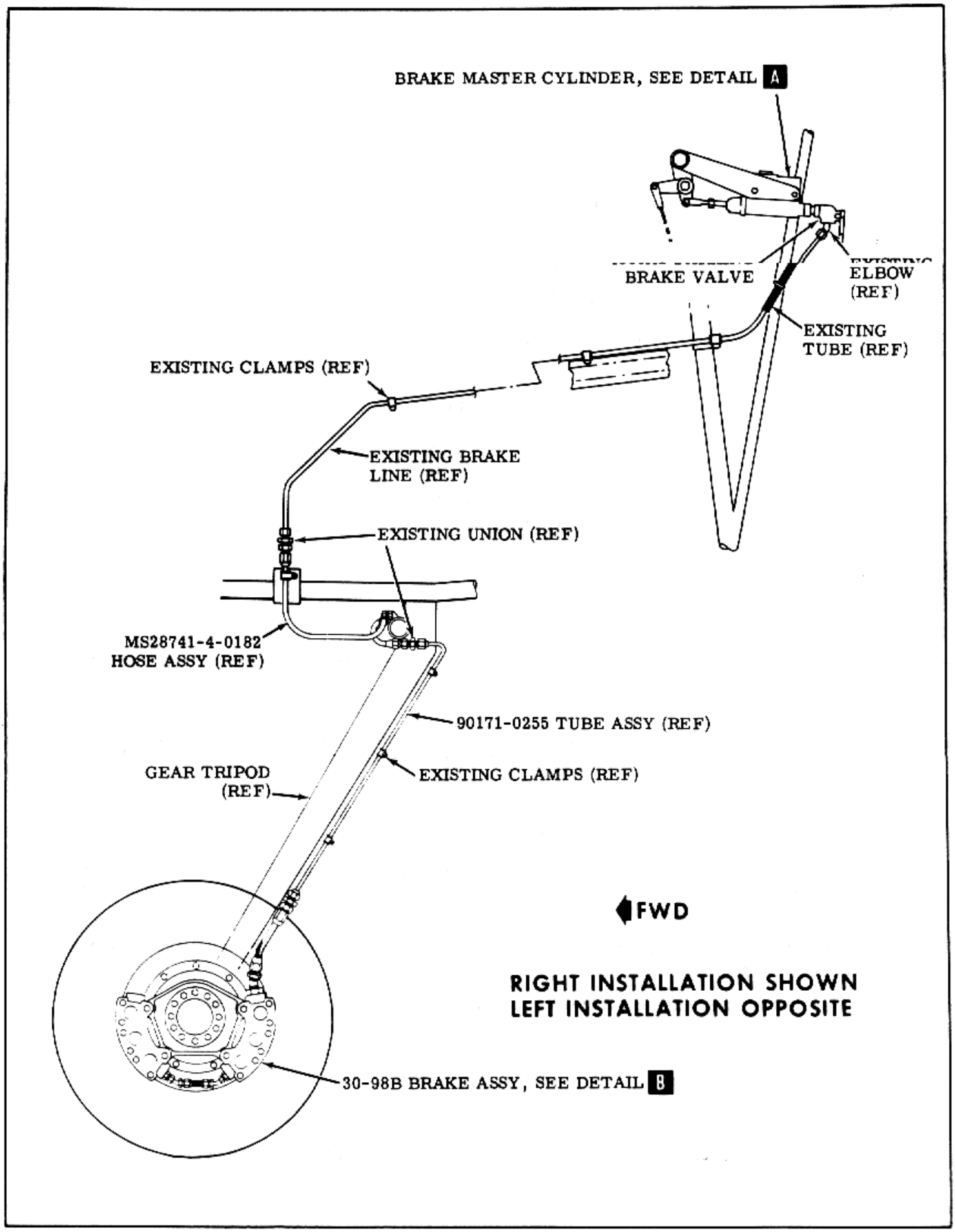


Figure 1. (Sheet 1 of 3)

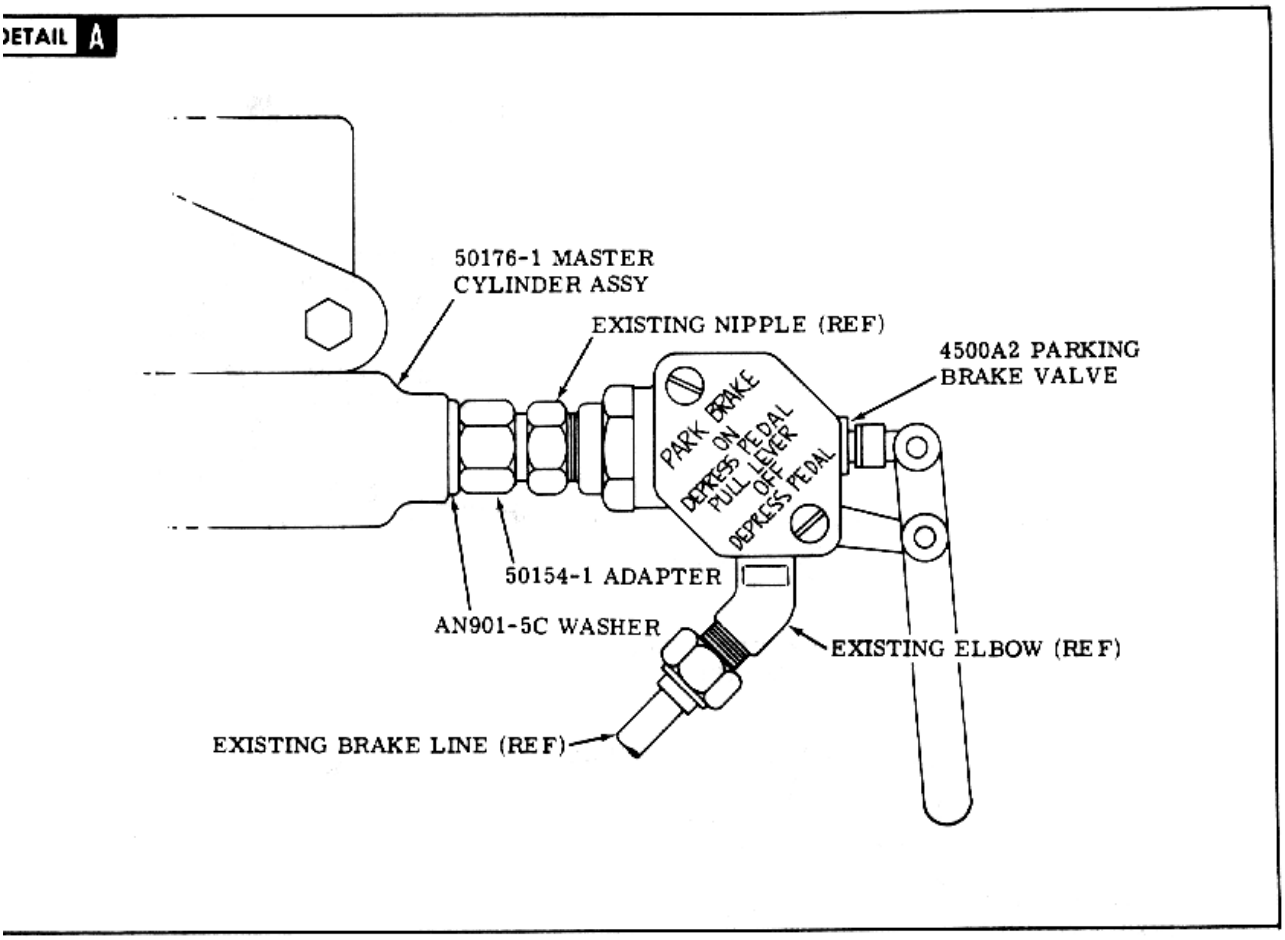


Figure 1. (Sheet 2 of 3)

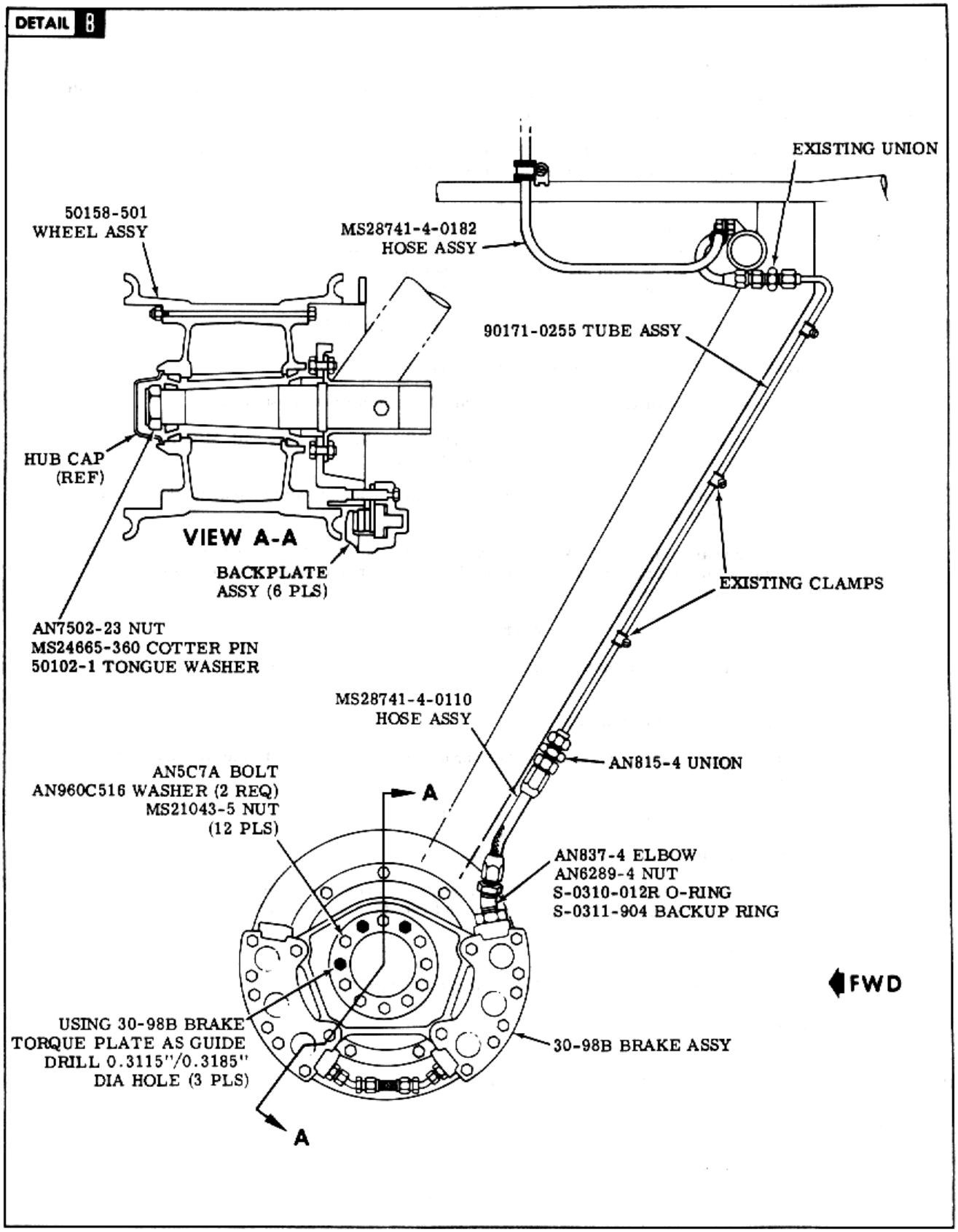


Figure 1. (Sheet 3 of 3)

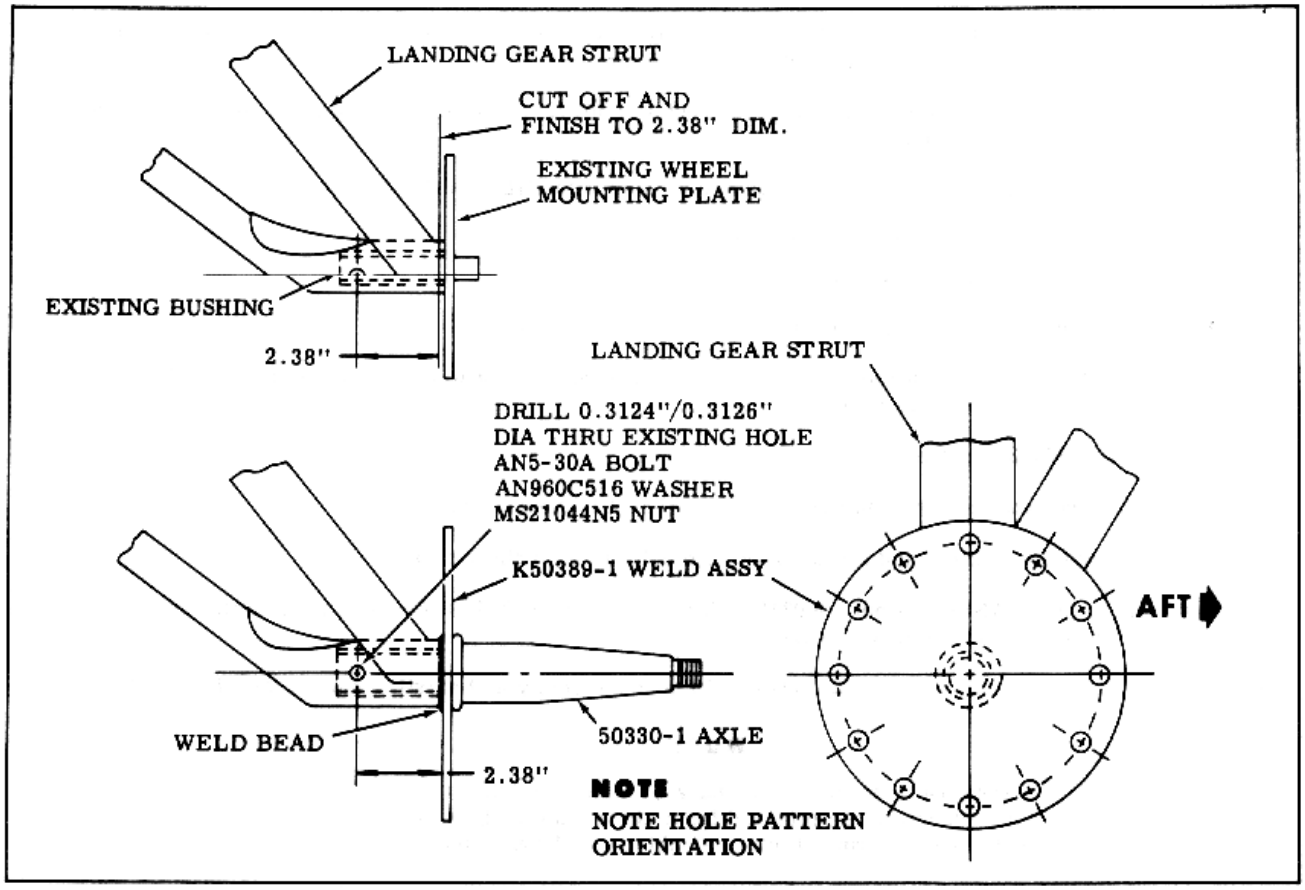
LANDING GEAR STRUT
CUT OFF AND
FINISH TO 2.38" DIM.
EXISTING WHEEL
MOUNTING PLATE
EXISTING BUSHING
2.38"
LANDING GEAR STRUT
DRILL 0.3124"/0.3126"
DIA THRU EXISTING HOLE
AN5-30A BOLT
AN960C516 WASHER
MS21044N5 NUT
K50389-1 WELD ASSY
AFT
WELD BEAD
50330-1 AXLE
2.38"
NOTE
NOTE HOLE PATTERN
ORIENTATION

Figure 2.

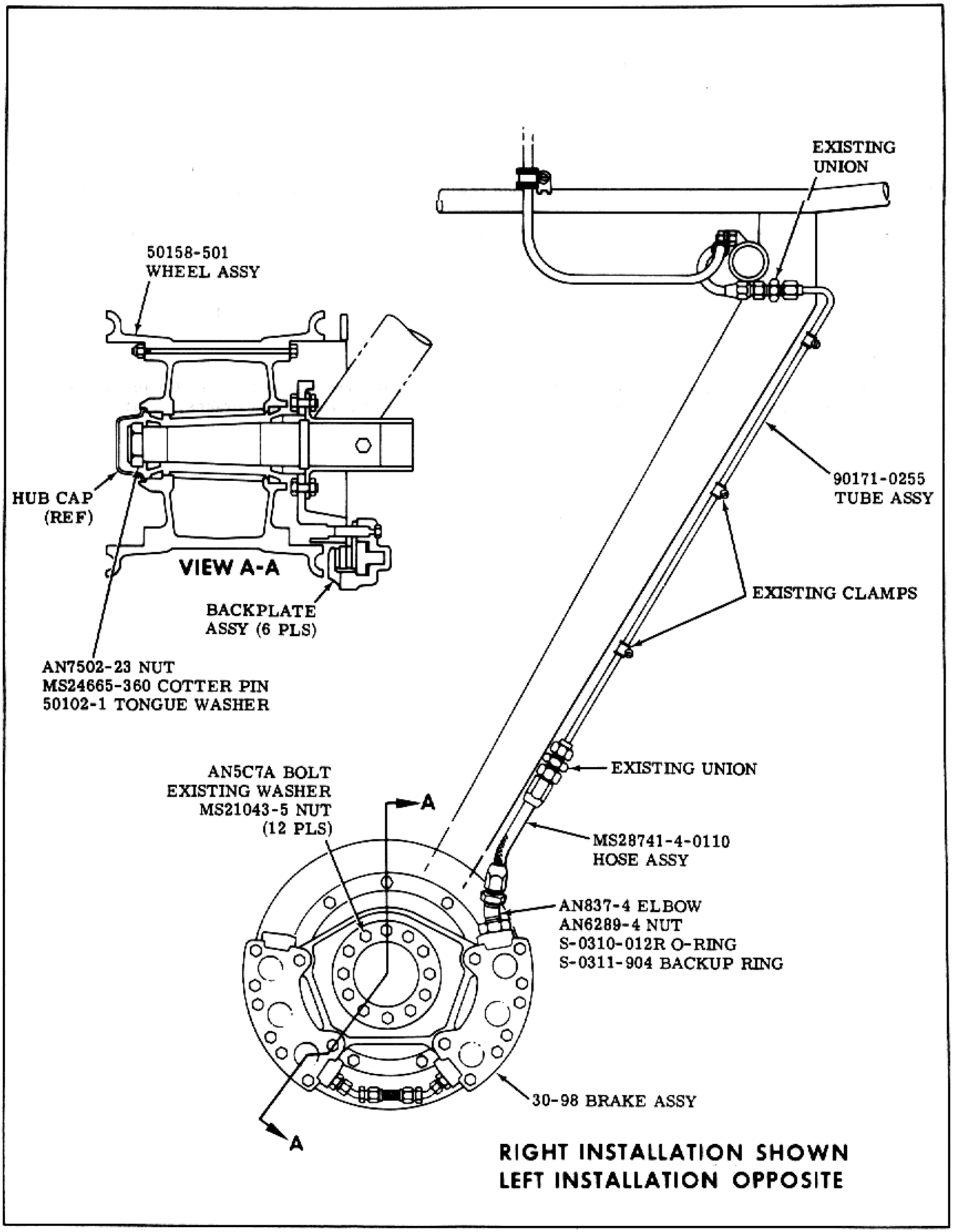
EXISTING
UNION
50158-501
WHEEL ASSY
HUB CAP
(REF)
VIEW A-A
BACKPLATE
ASSY (6 PLS)
AN7502-23 NUT
MS24665-360 COTTER PIN
50102-1 TONGUE WASHER
90171-0255
TUBE ASSY
EXISTING CLAMPS
EXISTING UNION
AN5C7A BOLT
EXISTING WASHER
MS21043-5 NUT
(12 PLS)
A
MS28741-4-0110
HOSE ASSY
AN837-4 ELBOW
AN6289-4 NUT
S-0310-012R O-RING
S-0311-904 BACKUP RING
30-98 BRAKE ASSY
A
RIGHT INSTALLATION SHOWN
LEFT INSTALLATION OPPOSITE

Figure 3.