

MAIN ROTOR DRIVE

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MAIN ROTOR DRIVE SYSTEM

63-1. KAFLEX® DRIVESHAFT.

The Kaflex driveshaft is a mechanical drive coupling which requires no lubrication or seals and transmits power while accommodating misalignment and length change through the use of flexible rectangular frames. A fail-safe feature enables the coupling to continue to transmit power even in the unlikely event of a failure in a load carrying member..

63-2. REMOVAL

NOTE

The following instructions detail differences between the TH57 B and C models. The applications are identified in each paragraph, where applicable.

1. Disconnect battery.
2. Remove airframe fuel filter to gain access to driveshaft.
3. Remove the R/H rotor brake caliper from the free wheeling cap assembly (C Model).
4. From right side of helicopter, remove 15 screws (Item 14, Figure 63-1) securing firewall cover (Item 6, Figure 63-1) and driveshaft door (Item 5, Figure 63-1) to firewall. Remove firewall cover (Item 7, Figure 63-1) driveshaft door (Item 5, Figure 63-1), and gasket (Item 4, Figure 63-1) from aircraft.
5. Remove four nuts (Item 1, Figure 63-1), 8 washers (Item 2, Figure 63-1), and 4 bolts (Item 3, Figure 63-1) securing the forward portion of the driveshaft.
6. Remove 4 nuts (Item 11, Figure 63-1), 8 washers (Item 10, Figure 63-1) and 4 bolts (Item 3, Figure 63-1) securing the aft portion of the driveshaft.
7. Install workaid per Figure 63-2 on driveshaft by installing workaid collars over driveshaft and attach tightening screws with nuts. Ensure serial number on driveshaft center rib is facing the workaid collars. Position lugs of the tightening screws over the hex head of flex frame nut at aft end of driveshaft. The driveshaft will

be reinstalled with the serial number aft to facilitate future maintenance and inspections. This procedure does not affect the function of the driveshaft.

8. Compress Kaflex® Flex frames by tightening the workaid nuts approximately ¼ inch.
9. Remove driveshaft from aircraft.

63-3. INSPECTION

1. Check general condition of the driveshaft. Check for broken, loose, or missing hardware. Inspect flex frame bolt torque stripes for evidence of slippage.

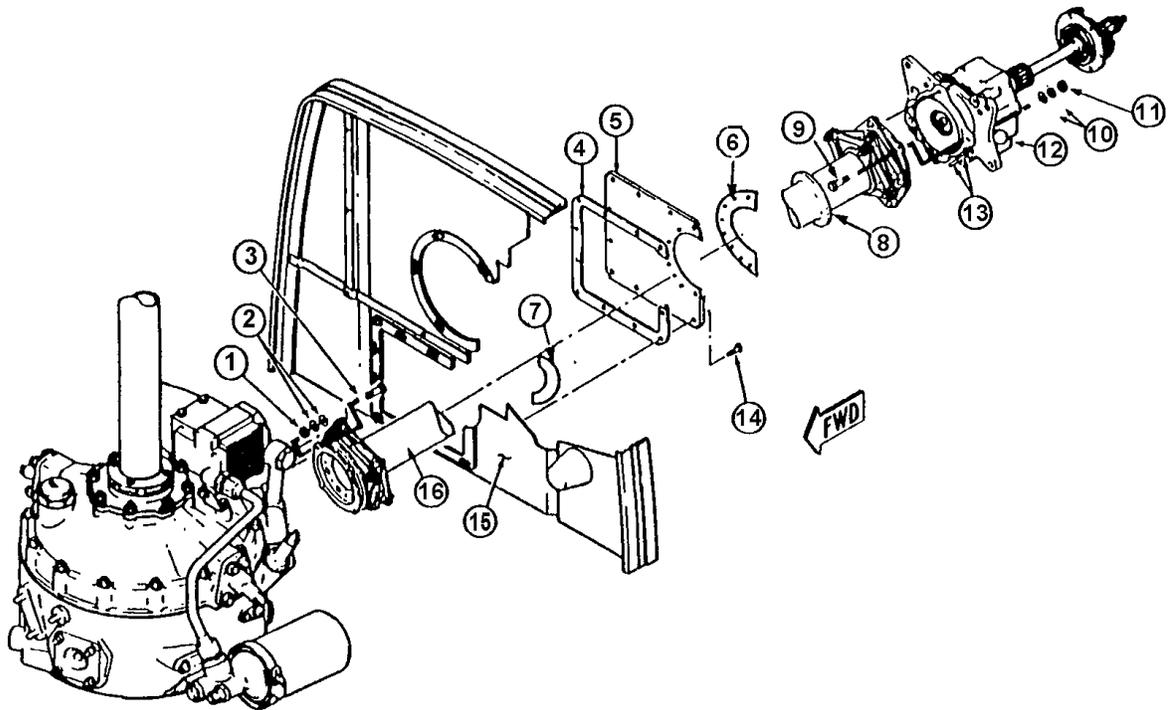
WARNING

DO NOT disturb or tighten Flex frame nuts or bolts. Evidence of turning of fasteners by wrench or other means is cause for rejection

2. Inspect driveshaft for damage and corrosion. Refer to Figure 63-3 for damage and repair limits.
3. Inspect driveshaft for sign of contact, rubbing, and/or chafing.

63-4. INSTALLATION

1. Install workaid per Figure 63-2 on driveshaft by installing workaid collars over driveshaft and attach tightening screws with nuts. Ensure serial number on driveshaft center rib is facing workaid collars. Position lugs of the two tightening screws over nut attaching flex frame to end fitting of driveshaft. The driveshaft will be installed with the serial number aft to facilitate future maintenance and inspections. Orientation does not affect function of the driveshaft.
2. Compress flex frames approximately ¼ inch by tightening the workaid nuts.
3. Install the driveshaft in the aircraft with the workaid facing aft. This will ensure the driveshaft serial number is facing aft.



- | | |
|--------------------------------|----------------------------------|
| 1. Nut | 9. Bolt |
| 2. Washer | 10. Washer |
| 3. Bolt | 11. Nut |
| 4. Gasket | 12. Freewheeling Clutch Assembly |
| 5. Door, Driveshaft | 13. Rotor Brake Mounting Studs |
| 6. Firewall Cover SKCP 1322-15 | 14. Screw |
| 7. Firewall Cover SKCP 1322-17 | 15. Forward Firewall |
| 8. Serial Number | 16. KAFLEX Driveshaft |

Figure 63-1. KAFLEX® Driveshaft Installation

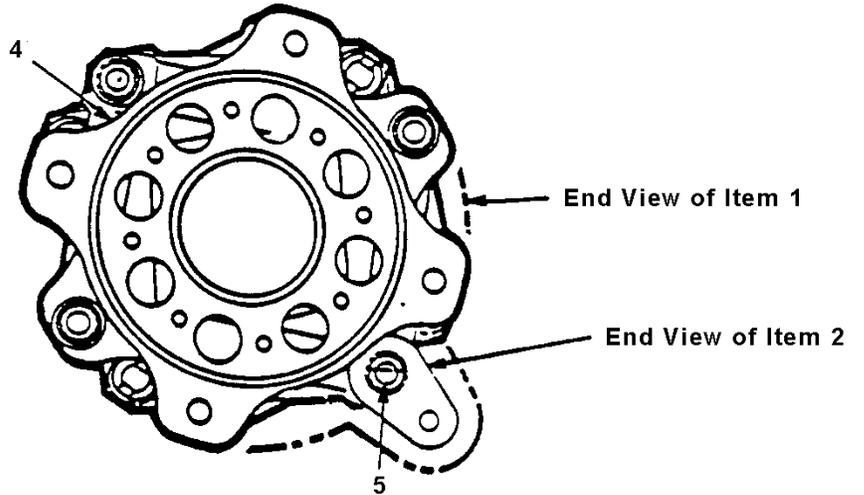
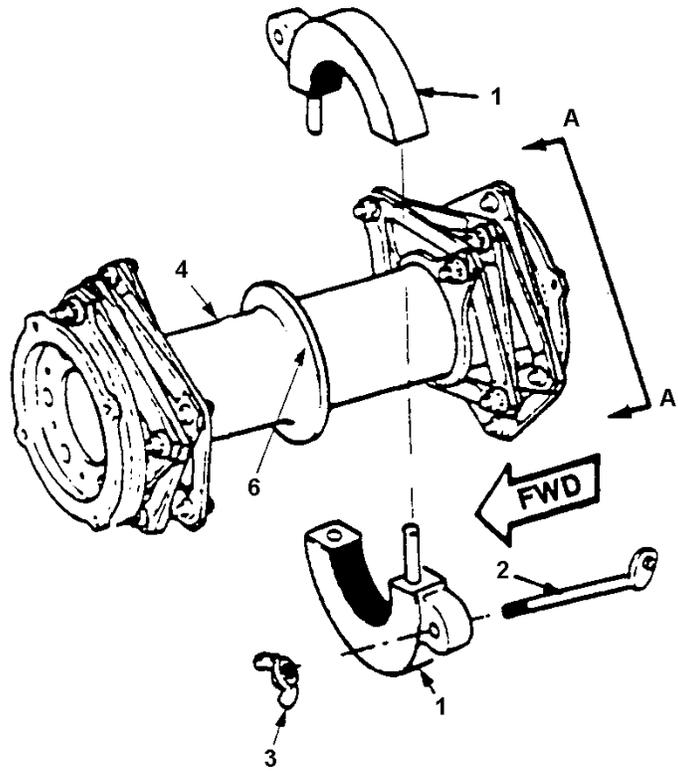
4. Loosen workaid nuts and allow driveshaft to extend, aligning pilots on driveshaft to quill adapter, and freewheeling adapter. Remove workaid.
5. Install four bolts (Item 3, Figure 63-1) at the forward portion of the driveshaft, ensuring bolt heads face aft. Do not put washers under bolt heads.
6. Install eight washers (Item 2, Figure 63-1) and four nuts (Item 1, Figure 63-1) on the four bolts. Do not put washers under bolt heads.
7. Install four bolts (Item 9, Figure 63-1) at the aft portion of the driveshaft, ensuring bolt heads are facing forward. Put one washer under head of bolt and one washer under nut (C Model).
8. Install eight washers (Item 10, Figure 63-1) and four nuts (Item 11, Figure 63-1) on the four bolts. Do not put washers under bolt heads (B Model).
9. Torque four nuts (Item 11, Figure 63-1) to 50-70 in. lbs., ensuring pilot is engaged and driveshaft end fitting flanges are flat against the freewheeling adapter.
10. Apply torque stripes to mounting bolts and nuts.
11. Torque four nuts at the forward portion of the driveshaft (Item 1, Figure 63-1) to 50-70 in. lbs., ensuring pilot is engaged and driveshaft end fitting flanges are flat against the quill adapter.
12. Apply torque stripes to four forward mounting bolts and nuts.
13. Install firewall cover (Item 7, Figure 63-1) using four screws (Item 8, Figure 63-1).
14. Install driveshaft door (Item 5, Figure 63-1) and gasket (Item 4, Figure 63-1) using 11 screws (Item 14, Figure 63-1).
15. Install R/H brake caliper (C Model).
16. Re-install airframe fuel filter. Torque mount bolts to 20-25 in. lb. Perform an airframe fuel filter bleed to remove any entrapped air.
17. Turn driveshaft by hand to ensure proper operation and clearance. Check clearance between the driveshaft and firewall covers (Items 6 and 7, Figure 63-1) at four positions, 3 o'clock, 6 o'clock, 9 o'clock and 12 o'clock. Minimum clearance must be 0.450". If the clearance is less than 0.450", it can be adjusted by loosening four(4) screws (Item 14, Figure 63-1) and sliding firewall cover (Item 7, Figure 63-1) or by loosening eleven (11) screws (Item 14, Figure 63-1) and sliding driveshaft door (Item 5, Figure 63-1) within the clearance of the screw hole and re-tightening the screws.
18. Close engine cowling and install transmission fairing.
19. Connect Battery.
20. Ground run aircraft.
21. Complete Historical Service Record, and applicable logbook entries.



ENSURE AIRCRAFT ROTORS ARE FREE TO TURN AND WILL NOT STRIKE ANY SURFACE.

63-5. DRIVESHAFT DOOR INSTALLATION

1. Install firewall cover (Item 7, Figure 63-1) using 4 screws (Item 8 Figure 2).
2. Install driveshaft door (Item 5, Figure 63-1) and gasket (Item 4, Figure 63-1) using 11 screws (Item 14, Figure 63-1).
3. Turn KAflex® Driveshaft by hand to ensure proper operation and clearance. Check clearance between the driveshaft and firewall covers (Items 6 and 7, Figure 63-1) at four positions, 3 o'clock, 6 o'clock, 9 o'clock and 12 o'clock. Minimum clearance must be 0.450". If the clearance is less than 0.450", it can be adjusted by loosening four (4) screws (Item 14, Figure 63-1) and sliding firewall cover (Item 7, Figure 63-1) or by loosening eleven (11) screws (Item 14, Figure 63-1) and sliding driveshaft door (Item 5, Figure 63-1) within the clearance of the screw hole and then re-tightening the screws.



1. Workaid Collars
2. Workaid Brackets (2 Req'd)
3. Wing Nut
4. Kflex Driveshaft
5. Flex Frame Nut
6. Serial Number

VIEW A-A

DRIVESHAFT AFT FITTING, LOOKING FORWARD MAIN DRIVESHAFT

Figure 63-2. Installation of Work Aids



Ensure aircraft rotors are free to turn, and will not strike any surface.

4. Close engine cowling and install transmission fairing.
5. Connect battery.
6. Ground run aircraft.
7. Complete Historical Service Record, and applicable logbook entries.

63-6. INSPECTION OF KAflex® DRIVESHAFT

A. DAILY INSPECTION

1. Check general condition of KAflex® Driveshaft.
 - a. Check for broken, loose, and missing hardware.
 - b. Inspect flex frame and mount bolt torque stripes for evidence of slippage.



DO NOT disturb or tighten flex frame nuts or bolts. Evidence of turning fasteners by wrench or other means is cause for rejection.

B. 100 HOUR INSPECTION

1. Check general condition of KAflex® Driveshaft.
 - a. Check for loose and missing hardware.
 - b. Inspect flex frame and mount bolt torque stripes for evidence of slippage. If the torque stripes have faded, touch up using F-925 "Skydrol" resistant seal or equivalent available from Organic Products Co. at (972) 438-7321.



DO NOT disturb or tighten flex frame nuts or bolts. Evidence of turning fasteners by wrench or other means is cause for rejection.

- c. Inspect KAflex® Driveshaft for damage and corrosion. Refer to Figure 63-3 of this Manual for damage and repair limits.
- d. Inspect KAflex® Driveshaft flex frame joints for fretting dust which will show up as red metallic residue. If grease, oil or dirt is covering suspected area, or any doubt exists as to whether actual fretting has occurred, clean suspected areas thoroughly and recheck in conjunction with next daily inspection. If fretting is apparent, return KAflex® Driveshaft to Kamatics Corporation as described under 6000 hour inspection.
- e. Inspect KAflex® Driveshaft for sign of contact, rubbing, and/or chafing.

C. OUT OF AIRCRAFT INSPECTION

NOTE

This inspection is to be done at 1500 hour intervals (coinciding with removal and inspection of freewheeling clutch). This inspection reads like the 100 hour inspection, but will be more comprehensive with the driveshaft out of the aircraft.

1. Check general condition of KAflex® Driveshaft.
 - a. Check for broken, loose, or missing hardware.
 - b. Inspect flex frame bolt torque stripes for evidence of slippage. If the torque stripes have faded, touch up using F-925 "Skydrol" resistant seal or equivalent available from Organic Products Co. at (972) 438-7321.

WARNING

DO NOT disturb or tighten flex frame nuts or bolts. Evidence of turning of fasteners by wrench or other means is cause for rejection.

- c. Inspect KAflex® Driveshaft for damage and corrosion. Refer to Figure 63-3 for damage and repair limits.
- d. Inspect KAflex® Driveshaft flex frame joints for fretting dust. This will show up as red metallic residue. If grease, oil or dirt is covering a suspected area, or any doubt exists as to whether actual fretting has occurred, clean suspected areas thoroughly and recheck. If fretting is apparent, replace KAflex® Driveshaft.
- e. Inspect KAflex® Driveshaft for sign of contact, rubbing, and/or chafing.

D. 6000 HOUR INSPECTION

1. Remove KAflex® Driveshaft for factory inspection. Return to Kamatics Corporation, 1330 Blue Hills Ave., Bloomfield, CT 06002. Include description of reason for return and copy of historical log with driveshaft.

WARNING

PACKAGE DRIVESHAFT CAREFULLY TO ENSURE SAFE ARRIVAL AT KAMATICS CORPORATION.

2. Assuming driveshaft is returned to the user for further service, inspections between 6000 and 12,000 hours or multiples thereof will be the same as between new and 6000 hours.

63-7. KAflex® DRIVESHAFT CONDITIONAL INSPECTION

NOTE

The following inspections detail special inspection instructions applicable to the KAflex® Driveshaft. Refer to appropriate Bell and Allison maintenance manuals for airframe and engine special inspection instructions.

A. OVERTORQUE

1. 110-120 percent overtorque, perform a daily inspection on KAflex® Driveshaft.
2. 120+ percent overtorque, perform a 100 hour inspection on KAflex® Driveshaft.

B. OVERSPEED

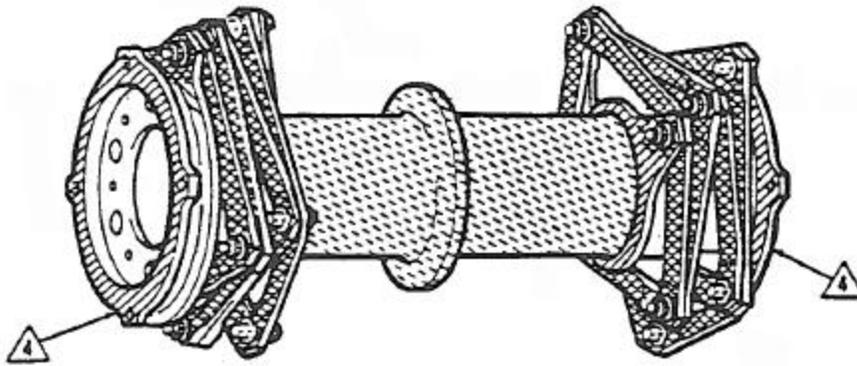
1. 114+ percent overspeed, no KAflex® Driveshaft inspection necessary.

C. SUDDEN STOPPAGE

1. Perform a 100 hour inspection on the KAflex® Driveshaft. Inspect freewheeling clutch assembly for evidence of overtorque. If clutch sprags are chipped or broken, if there is evidence of static brinelling of clutch races or other evidence of torsional overload, return driveshaft to Kamatics Corporation with information described in the Section on 6000 hour inspection.

D. HARD LANDING

1. If any of the following components do not pass their respective inspection criteria as detailed chapter 5, "Inspections" of the Bell 206A/B Maintenance Manual, the KAflex® driveshaft must be returned to Kamatics as described in the Section of this manual on inspection after 6000 hours:
 - a. Main Rotor Hub
 - b. Main Rotor Mast
 - c. Main Transmission, Main Transmission Mounts Drag Pin, Drag Plate
 - d. Freewheeling Clutch Assembly
 - e. Engine or Engine Mounts
2. Even if none of the items in Item 1 above show the effects of the hard landing, perform a 100 hour inspection on the KAflex® Driveshaft, and inspect the top of the isolation mount (P/N 206-030-539-003, -101 or-005) if installed. If contact has occurred, refer to Paragraph 63-13.



DAMAGE LOCATION SYMBOLS



TYPE OF DAMAGE	MAXIMUM DAMAGE AND REPAIR DEPTH			
MECHANICAL	0.001" before and after repair	0.005" before and after repair	0.005" before and after repair	0.015" before and after repair
CORROSION	Surface, no pits	0.005" before and after repair	0.005" before and after repair	0.010" before and after repair
MAXIMUM AREA PER FULL DEPTH REPAIR, SQ. IN.	0.05	0.10	0.25	0.25
NUMBER OF REPAIRS	One per leg			
EDGE DENTS, NICKS	0.001 in.	0.010 in	0.010 in.	0.025 in.

Figure 63-3. Damage Limits - KAFLEX® Driveshaft

E. LIGHTNING STRIKE

1. Lightning damage can show as burn marks, heat discoloration, arc marks, or as small weld marks (where the metal has melted and became solid again. If you find arc burn, put tag on the driveshaft and write, "THIS DRIVESHAFT WAS REMOVED FROM SERVICE BECAUSE OF A LIGHTNING STRIKE". Send the driveshaft to Kamatics for evaluation.

63-8. MAINTENANCE OF KAflex® DRIVESHAFT

1. There is no periodic maintenance requirement for the KAflex® Driveshaft.
2. The following maintenance practices will be incorporated as follows:
 - a. The KAflex® Driveshaft is not field overhauled. The KAflex® Driveshaft can only be torn down for inspection at Kamatics Corporation, Bloomfield, CT.
 - b. Anytime the KAflex® Driveshaft is transferred from one aircraft to another, the KAflex® Driveshaft does not require a complete disassembly and inspection. The KAflex® Driveshaft does require a 100 hour inspection at this time, and then at each aircraft 100 hour inspection.
 - c. The KAflex® Driveshaft is to be removed at 6000 hours and sent to Kamatics Corporation, Bloomfield, CT for complete factory inspection and overhaul as required. The KAflex® Driveshaft is not field overhauled.

Refer to the Section on 6000 hour inspection for return instructions.

63-9. REPAIR OF KAflex® DRIVESHAFT

1. Refer to Figure 5 for repair criteria. All blends shall be smooth at maximum depth and smoothly blended with surrounding surfaces.
2. The KAflex® Driveshaft is not field overhauled. The KAflex® Driveshaft can only be torn down for inspection at Kamatics Corporation, Bloomfield, CT.
3. The KAflex® Driveshaft is to be removed at 6000 hours and sent to Kamatics Corporation,

Bloomfield, CT for complete factory overhaul and inspection as required. The KAflex® Driveshaft is not field overhauled.

NOTES:

1. No cracks are permitted.
2. Repairs must be no less than 1.000 inch apart.
- 3 Repairs not to be within 0.500 in. of bolt hole.
- 4 Faying surfaces must be free of any raised metal areas.
5. All repairs to be smooth at maximum depth and smoothly blended with surrounding surface.
6. Exposed bare metal may be touched up with Sermetel Product 1122 or 196 available from Sermatech International, 155 South Limerick Rd., Limerick, PA 19488. Zinc Chromate, primer color T, even though it does not blend cosmetically with Sermetel coating, can be used if Sermetel touch-up products are unavailable.
7. Sides and corners of flex frames are to be treated as areas.
8. If damage results from contact with transmission isolation mount, proceed as follows:
 - a. If contact with Lord (Barry) mount (P/N 206-030-539-003) occurs, return driveshaft to Kamatics for evaluation.
 - b. If contact with Lord (Barry) mount (P/N 206-030-539-101 or -005) occurs during unusual and severe condition and depth of damage to top cover does not exceed .025", lightly stone smeared aluminum/ceramic coating on corners of flex frames, end fittings and interconnect ears to remove raised material and sharp edges. Restore coating per Note 6 as necessary. If damage to top cover exceeds .025", return driveshaft to Kamatics for evaluation.

63-10. INSTALL ROTOR BRAKE

1. Install Work Aid on driveshaft as shown in Figure 63-1 and compress forward frames.

2. Remove clear rust inhibiting coating from SKCP 2962 Rotor Brake Disk with acetone.



BE CERTAIN TO OBSERVE MANUFACTURER'S RECOMMENDED SAFETY PROCEDURES WHEN USING ACETONE.

3. Install SKCP 2962 Rotor Brake Disk on SKCP 2967 Cup using 8 AN3-5A bolts and associated hardware.



ROTATION OF THE DRIVESHAFT DURING THESE PROCEDURES WILL CAUSE MAIN AND TAIL ROTOR BLADES TO ROTATE. VERIFY THAT ADEQUATE CLEARANCE EXISTS AROUND THE BLADES PRIOR TO ROTATING THE DRIVESHAFT.

4. Insert driveshaft, with Work Aid installed, through front of hole in firewall.
5. Maneuver assembly of cup and brake disk into position on driveshaft, and then maneuver these parts into position between the engine output shaft and the main gearbox input shaft. The four cup/disk assembly internal lugs are first moved forward on the driveshaft between the four lugs on the aft mount flange of the driveshaft, and then the cup assembly is rotated through a small angle until the holes on the four internal lugs on the cup line up with the holes in the four external lugs on the driveshaft. The cup and disk assembly is then moved aft until the internal lug faces contact the driveshaft lug faces.
6. Install forward four AN4-6A bolts with their hardware to join the KAflex® Driveshaft to the transmission input shaft. Note the number of washers and their placement per the drawing. Do not tighten these bolts at this point.
7. Install aft four AN4-7A bolts with their hard-

ware to join the KAflex® Driveshaft to the engine output shaft. Note the number of washers and their placement. Do not tighten these bolts at this point.

8. Since the KAflex® Rotor Brake Disk is somewhat larger in diameter than the Bell Rotor Brake Disk, verify clearance all around the newly -installed components.
9. Remove Work Aid from forward flex frames of driveshaft.
10. Tighten all eight bolts (four forward and four aft) to 50-70 inch pounds in accordance with the assembly drawing.

63-11. INSTALLATION OF CALIPERS

1. Install SKCP 2970 Spacer on the right and left 400371(-1) of 400397(-2) Brake Assemblies.
2. Install shims on each side. Verify that differential shim thickness on each side and puck to disk clearances are equal to within .020 inch. The maximum shim thickness is .130 inch.



NOTE THE FORWARD EXTENT OF THE HYDRAULIC LINE SUPPLYING THE RIGHT CALIPER ASSEMBLY AND THE POTENTIAL FOR INTERFERENCE WITH THE FIREWALL DRIVESHAFT DOOR BELL PART NUMBER 206-062-901-085. IF NECESSARY, SCREW THE ANGLE BULK-HEAD FITTING DEEPER INTO THE CALIPER TO OBTAIN PROPER CLEARANCE.

3. Inspect area for interferences. Note especially clearance around the repositioned caliper assemblies and the rotor brake disk. Clearance should be .030" minimum around static parts and .080" minimum around rotating parts.

63-12. KAflex® ROTOR BRAKE INSPECTION

The following inspections are in addition to inspections of the Rotor Brake System in accordance with Bell Service Instruction Number 206-105.

1. Inspection of KAFLEX® Driveshaft

The driveshaft in the rotor brake area is inspected through the holes in the SKCP 2967-13 Cup. Torque stripes on the bolts in the driveshaft have been placed tangentially so that they may be viewed through the aforementioned holes. In addition to the inspections listed in Paragraph 63-8 through 63-10, the tips of the various bolted joints of the coupling should be inspected for evidence of excessive angular travel that may result in contact with the cup and subsequent polishing of the areas in contact. In the event this is observed, it indicates that excessive deflections have been imposed on the system, and the driveshaft should be removed and returned to Kamatics Corporation for a 6000-hour inspection with a full description of the history of the part and the reason for removal.

2. Inspection of KAflex® SKCP 2967-13 Rotor Brake Cup

The Rotor Brake Cup should be visually inspected at the same intervals as the driveshaft. The inspection should include looking for loose or missing hardware, evidence of contact with the driveshaft on the bore of the cup, evidence of contact with nearby lines, fittings, et cetera, and presence of cracks, dents or other distress. The part is made from 17-4 Stainless Steel, and has no coating.

3. Inspection of KAflex® Rotor Brake Disk

The Rotor Brake Disk should be visually inspected at the same intervals as the driveshaft. Inspect for loose or missing hardware, evidence of improper contact with the caliper pucks, evidence of overheating or distortion, or evidence of excessive wear of the disk or caliper pucks. Check the rotor disk for excessive runout and play. The gap between the rotor brake disk and the caliper pucks should be consistent on all four pucks within .020". Additionally, twice a year the rotor brake disk should be checked for thickness and parallelism of the faces. Replace the disk if its thickness is below .260" or if its faces are not parallel within .002".

63-13. KAflex® ROTOR BRAKE MAINTENANCE AND REPAIR

1. There is no periodic maintenance requirement for the KAflex® rotor brake.
2. Maintenance and Repair of KAflex® Rotor Brake Cup.

Only repair to superficial damage is permitted. Cracks or smooth dents in excess of .010" deep are cause for removal and replacement. Surface distress up to .010" deep is to be blended smoothly with surrounding surface to a finish of 32 microinches. Rework of this nature that covers any more than 50% of any contiguous two square inch areas is cause for removal and replacement of the part.

3. Maintenance and Repair of KAflex® Rotor Brake Disk

Repair of the rotor brake disk is limited to blending of surface damage on the rim or mounting bolt circle. Damage that can be removed by blending to a maximum depth of .020" is acceptable. Damage requiring more than this is cause for removal and replacement.

4. Maintenance and Repair of KAflex® Spacer

Smoothly blend any damage to a maximum depth of .030".

63-14. OPERATIONAL INSTRUCTIONS FOR MAINTENANCE OF AUTO-FAULT SYSTEM

WARNING

REMOVAL OF THE AUTO-FAULT POWER UNIT P/N 303-0005 FROM THE AIRCRAFT WILL TERMINATE THE OPERATION OF ALL CHIP LIGHT INDICATIONS IN THE CAUTION-WARNING SYSTEM. DO NOT OPERATE THE AIRCRAFT WITH THE AUTO-FAULT POWER UNIT REMOVED.

The Benz Airborne Systems Auto-Fault System incorporates into the rotorcraft chip detector warning system a way to clear nuisance chips less than 0.005 inch cross sectional diameter and continuously monitors the integrity of all chip detector circuits. The Auto-Fault System goes through a self-test each time electrical power is turned on the aircraft.

The Auto-Fault System is interconnected into the rotorcraft chip detector electrical system without compromising the normal operation of the Original Type Certificated (TC) chip detector system.

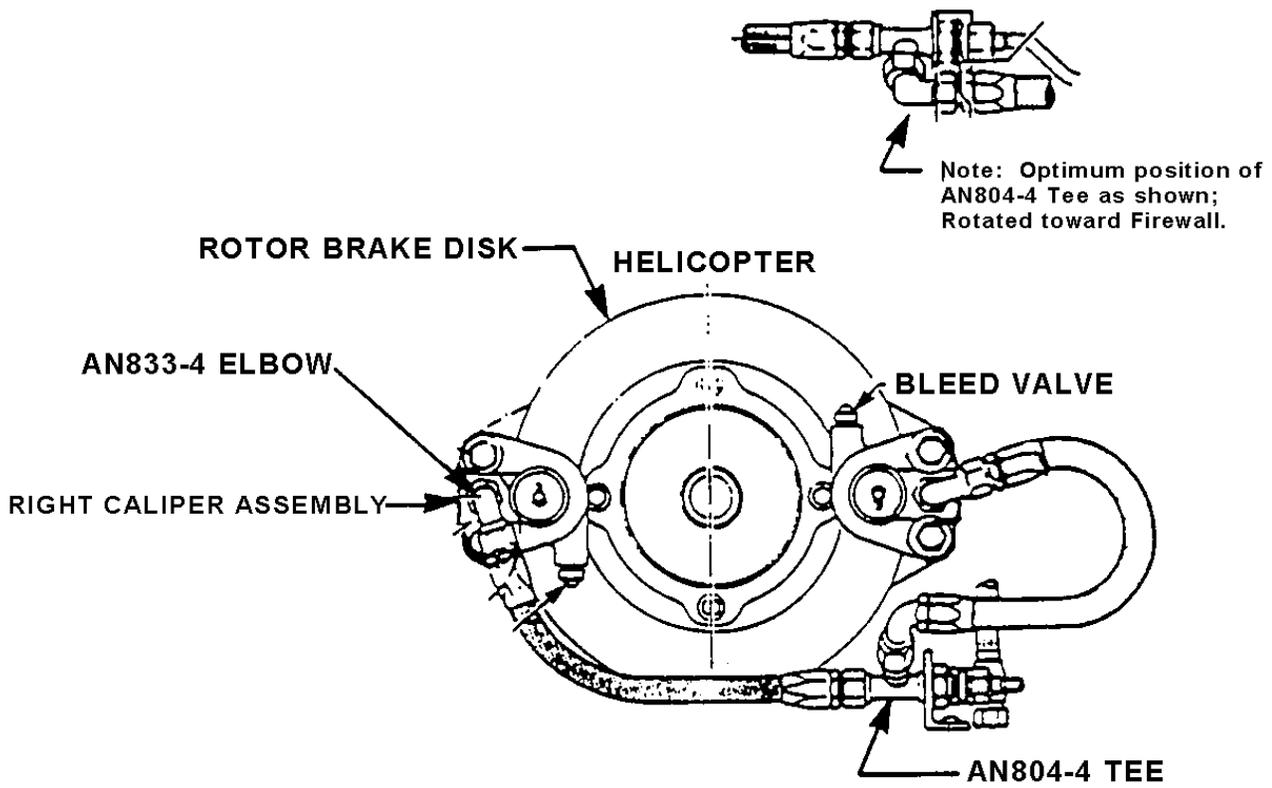


Figure 63-4. View Looking AFT at Rotor Brake

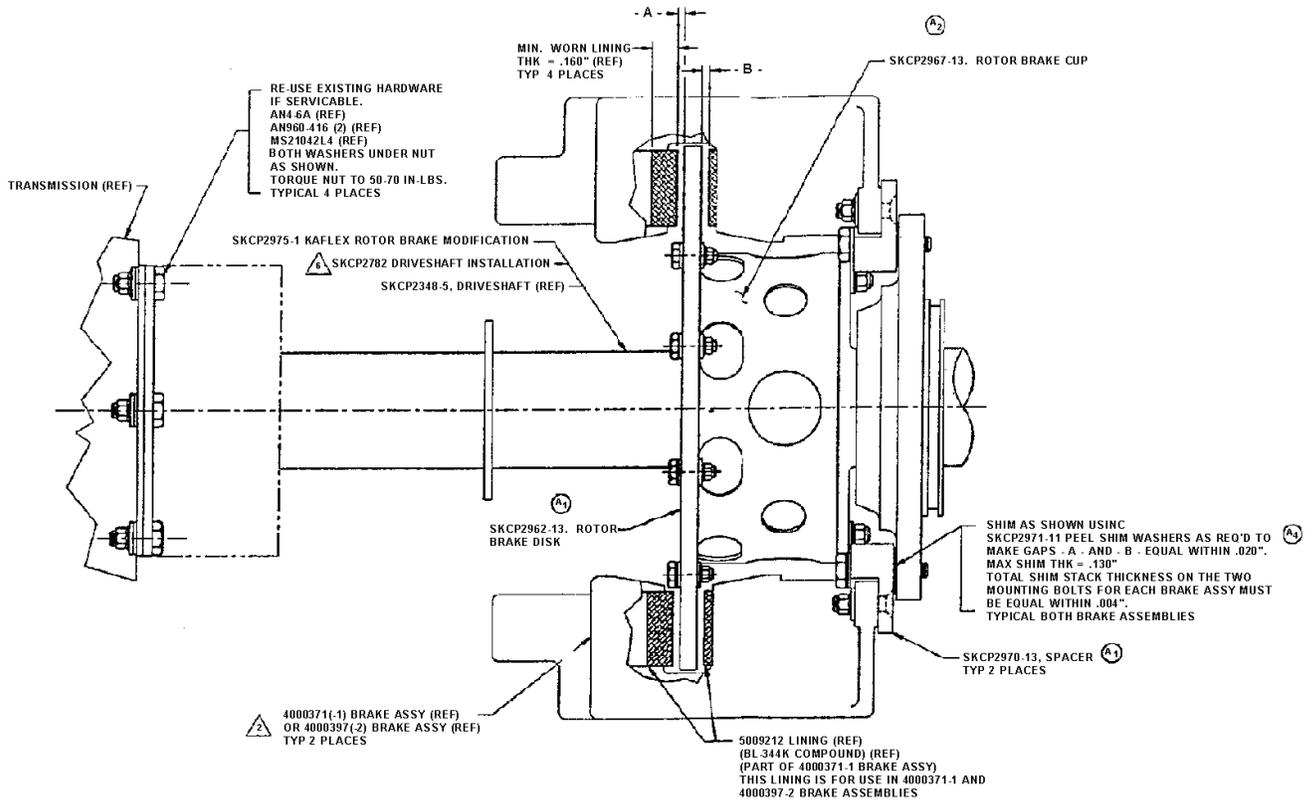


Figure 63-5. View Looking Down at Rotor Brake

An internal malfunction of the Auto-Fault System automatically restores normal operation of the aircraft TIC chip detector system, however, if the connector at the power unit becomes disconnected, the complete rotorcraft chip detector system is inoperable. This will be evident with the absence of the chip light illumination on the caution-warning panel during the initial application of power.

A "Clear Chip" switch is located adjacent to the Caution-Warning panel to allow the pilot to manually attempt to clear chips, which will extinguish the corresponding chip light, if successful.

The Power Unit is located on the aft side of the pilots seat back and is easily accessible by the pilot during preflight and postflight checks and by maintenance personnel.



Figure 63-6. Power Unit

63-15. NORMAL OPERATIONAL PROCEDURES

1. Turn on electrical power either by the battery switch or APU and observe the Power Unit display Indicator lights, Clear Chip Switch and the Caution Warning Panel Chip Lights for operation. If all cycle, on and off, within seven (7) to ten (10) seconds the system is operating correctly. This test may also be initiated by depressing the "Press to Test" button on the face of the Power Unit.
2. If the Caution Warning Panel Chip Lights and Power Unit Lights stay on, push the Press the "Clear Chip" Switch located adjacent to the Caution Warning Panel. If all lights go out, you have cleared the chip detector that had nuisance debris across the poles. If any lights stay on then the cause must be determined before flight.
3. When viewing the Power Unit display, if one of the chip location lights remains illuminated with the "Chip" light on the Power Unit illuminated, then the chip detector at the location specified should be removed to determine source of chip light.

4. When viewing the Power Unit display, if one of the chip location lights remains illuminated with the "Maint." light on the Power Unit illuminated, then the chip detector at the location specified should be removed and cleaned.
5. When viewing the Power Unit display, if one of the chip location lights remains illuminated with the "Wire Fault" light on the Power Unit illuminated, then the wire between the Power Unit and the chip detector should be inspected for an open condition.
6. When viewing the Power Unit display, if the "Box Fail" light is illuminated, then the Power Unit should be removed and repaired.

63-16. IN-FLIGHT OPERATION PROCEDURE

The Auto-Fault System is functional during all flight operations. The rotorcraft caution-warning system is continuously monitoring all aircraft chip detectors and warns the pilot when a chip is captured. If the caution-warning chip light does not extinguish after depressing the "Clear Chip" Switch then the procedures as outlined in the Emergency Procedure Section of the Rotorcraft Flight Manual must be followed.

63-17. MAINTENANCE INSTRUCTIONS FOR AUTO-FAULT SYSTEM

When a chip light illuminates, no more than one (1) clear may be accomplished during a single flight on any one oil system within a 30 minute time period.

NOTE

When attempting to clear a chip light, do not press the "Clear Chip" switch adjacent to the caution-warning panel more than three (3) times, waiting 5 seconds between each clear attempt. If chip light does not extinguish after three (3) attempts, follow the EMERGENCY/MALFUNCTION procedures in the basic Rotorcraft Flight Manual (RFM).

No more than two (2) CLEARS are permitted on any one oil system within 50 hours of flight time, once 2 or more clears have been recorded investigate the cause for the indication in accordance with the applicable Bell or RR Maintenance Manual.

Each chip indication that is cleared must be logged in the rotor and/or engine maintenance logs so that all crewmembers can review data before each flight. If a third indication of a chip in anyone oil system is indicated within the 50 hour flight time limit, land as soon as possible. Refer to Rolls Royce/Allison 250-C250 Series Operation and Maintenance Manual for component disposition.

63-18. MAINTENANCE INSTRUCTIONS, POWER UNIT - REMOVAL AND INSTALLATION

1. Remove Power Unit:
 - A. Aircraft electrical power must be turned off.
 - B. Gain access to the Power Unit and disconnect electrical harness.
 - C. Remove 4 ea. screws, washers and nuts retaining Power Unit.
2. Install Power Unit:
 - A. Position Power Unit in proper location and install 4 ea. screws, washers and nuts.
 - B. Attach electrical harness.
3. Operational Check of Power Unit:
 - A. Apply electrical power to the aircraft and perform the preflight operation procedure, Section III, 1.A.
4. Remove/Installation Chip Detector (Generic)
 - A. Follow procedures outlined in applicable Bell and Allison Maintenance Manual for the remove and installation of specific chip detectors.
5. Operational Check of Chip Detector (Generic)

This procedure will check the aircraft and the Benz Auto-Fault System Chip Warning system at the same time. For these checks to work, aircraft electrical power must be on and all connectors in the system connected, additionally, all detectors must be clear of any debris and the Power Unit functioning properly.

 - A. Gain access to the chip detector requiring operational check.
 - B. Remove the chip detector probe from its installed/grounded position. This condition will cause the corresponding chip location light and "Wire Fault" light to illuminate on the display of the Power Unit. Install chip detector back to ground and the lights should extinguish.
 - C. Remove the chip detector probe from its installed position and place a section of .003 inch dia. 1010 steel wire across the detector magnets and short out detector. Ground chip detector probe body. This condition will cause the corresponding chip location light and "Chip" light to illuminate on the display of the Power Unit and the corresponding chip light on the caution-warning panel to illuminate. Press the "Clear Chip" switch, up to three times, all lights should extinguish. Clean any remaining debris from the chip detector and reinstall.
 - D. Any unexpected results witnessed during steps B & C will require additional troubleshooting or repair or replacement of the Power Unit or chip detectors.