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A Subsidiary of The Lionel Corporation



OVERHAUL MANUAL
WITH
ILLUSTRATED PARTS LIST

LOCKING HYDRAULIC MAIN LANDING GEAR
ACTUATOR ASSEMBLY

WESTERN HYDRAULICS
P/N 6-3797-2
CESSNA PART NUMBER
9910136-2

Revision 2 - May 1981

3797TM01-2-13
October 1976

WESTERN HYDRAULICS, INC.
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PART NUMBER 6-3797-2

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DESCRIPTION AND OPERATION

1. General

- A. This publication is the basic overhaul manual for the main landing gear actuator.

2. Description

- A. The main landing gear actuator is shown in figure 901. The purpose of the actuator is to provide a linear output at the piston rod to extend and retract the main landing gear on applicable Cessna aircraft.
- B. The actuator is a hydraulically-operated linear unit which incorporates an automatic lock. The automatic lock is engaged whenever the piston rod is fully extended. The automatic lock is released hydraulically. An electrical switch provides an electrical signal to indicate whether or not the piston is locked. The actuator will automatically decelerate (snub) at the end of the retract stroke.

3. Operation

- A. The actuator piston rod will extend and automatically lock when hydraulic pressure is applied to the extend port. It will remain locked in the extended position even when extend pressure is removed.
- B. The actuator piston rod will automatically unlock and retract when hydraulic pressure is applied to the retract port.
- C. The electrical switch is actuated automatically by the lock piston.
- D. Leading particulars are given in figure 1.

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Leading Particulars

Figure 1

Fluid medium.	hydraulic fluid MIL-H-5606
Operating temperature.	.-65°F to + 160°F
Operating pressure.	.1500 PSIG hydraulic 2000 PSIG pneumatic
Retracted length.	.22.60 ± 0.03 inches
Extended length.	37.60 ± 0.03 inches
Stroke.	15.00 inches nominal
Ports	
Extend.	.3/8 inch female tube per MS33649-6
Retract.	3/8 inch female tube per MS33649-6
Switch operating data	
Electrical supply.	.28 volts DC nominal
Current capacity.	. 5 amperes minimum 2 amperes inductive
Operating force.	. 6 to 12 pounds
Release force.	. 4 pounds minimum
Weight.	.10.5 pounds maximum
Effective piston area	
Retract.	.2.018 square inches
Extend.	3.120 square inches

DISASSEMBLY

1. General

- A. Disassemble actuator in accordance with the following procedures; Observing index numbers assigned to IPL, Figure 901.
- B. Do not remove nameplate (2) unless replacement is necessary.
- C. Remove switch (3) and plunger (4) from gland (16). Maintain attaching nuts and washers together for reassembly.
- D. Loosen nut (5) and remove Rod End (7) from piston (17). Remove nut and lock (6) from rod end.
- E. Loosen nut (8) from end cap (10) and remove end cap from barrel (15). Remove packing (12) and backup ring (13) from end cap assembly. Do not remove bearing (11) unless replacement is necessary.
- F. Remove snubber (14) from barrel (15).
- G. Loosen nut (8) from gland (16). Remove barrel (15) from gland and piston (17).
- H. Remove nuts (8) from each end of barrel (15).
- I. Remove gland bearing (20) and spring (21) from gland (16).

NOTE: Gland bearing (20) is spring loaded, use care while removing gland bearing.

- J. Remove piston (17) from gland (16). Remove packing (18) and backup rings (19) from piston (17).
- K. Remove lock ring (24), scraper (25), packings (26) and (28), deltaseal (27), and backup ring (29) from bearing (20). Note: Some older units may have backup ring instead of deltaseal.
- L. Remove lock piston (22) and segments (23) from gland. Remove backup plate (32), packing (30), and backup ring (31) from gland. Remove packing (12) and backup (13) from gland.

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CLEANING

1. General. (Ref. IPL figure 901)

WARNING: USE CLEANING SOLVENT ONLY IN A WELL-VENTILATED AREA. AVOID BREATHING FUMES AND PROLONGED SOLVENT CONTACT WITH SKIN. KEEP AWAY FROM OPEN FLAMES AND OBSERVE ALL FIRE PRECAUTIONS.

- A. Wash all reusable parts in dry-cleaning solvent, Federal Specification P-D-680.
- B. Dry thoroughly with moisture-free compressed air at approximately 25 psig pressure.

NOTE: Do not immerse switch (3) in solvent. Use a clean, lint-free cloth moistened with solvent to clean external surfaces.

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INSPECTION/CHECK

1. General

- A. Inspect all parts for obvious physical damage, such as nicks, burrs, distortion, corrosion, stripped or crossed threads, etc.
Make the following specific inspections:
- B. Bearing (11) and rod end bearing (7) shall rotate smoothly without roughness or binding, break away torque shall be 1 to 15 in-lbs.
- C. The surface finish of the locking angle of segments (23) shall not be rougher than 16 micro-inches AA.
- D. Spring (21) shall have a free length of approximately 2.080 inches, a loaded length of $.980 \pm .010$ inch with an applied load of 51.0 to 55.0 pounds.
- E. Barrel (15) shall have a bore ID of not greater than 1.994 inches, and a surface finish of not rougher than 16 micro-inches AA.
- F. Piston (17) shall have a rod OD of not less than 1.183 inches, a head OD not less than 1.987 inches and surface finishes shall not be rougher than 16 micro-inches AA. The finish on lock angle and radius shall not be greater than 16 micro-inches AA.
- G. Lock piston (22) OD shall not be less than 1.746 inches, and surface finish of not rougher than 16 micro-inches AA. The small bore shall not be greater than 1.498, and a surface finish of not rougher than 16 micro-inches. The lock angle of 45° surface finish shall not be greater than 16 micro-inches AA.
- H. Gland bearing (20) ID shall not be greater than 1.188 inches, and a surface finish rougher than 16 micro-inches AA.

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REPAIR

1. General

Replace any part which is non-repairable which does not meet requirements of inspection/check, or which fails to function during test or operation.

2. Repair

- A. If bearing (11) is considered unuseable and if repair is more expeditious or economical than replacing the entire end cap assembly (9), replacement procedure is recommended as follows:

(1) Bearing removal procedure

- a. Set up end cap assembly (9) in a suitable holding fixture in a milling machine so bearing (11) is centered with spindle of mill.
- b. Cut one staked lip of bearing off with a suitable machine tool or piloted hole saw.

CAUTION

Use care to remove bearing material only. Do not cut into the 1.1870 inch diameter bearing bore or the adjacent 45° chamfer of the aluminum end cap (10).

- c. With bearing lug of end cap (10) supported with a ring-anvil (1.250 inches nominal ID and approximately 1.75 inches OD) and with a hollow punch 1.150 to 1.180 inch OD to fit bearing race, press bearing out with an arbor press.
- (2) If the anodize in the housing ID has been removed or scratched, touchup with chemical film aladine per Military Specification MIL-C-5541.

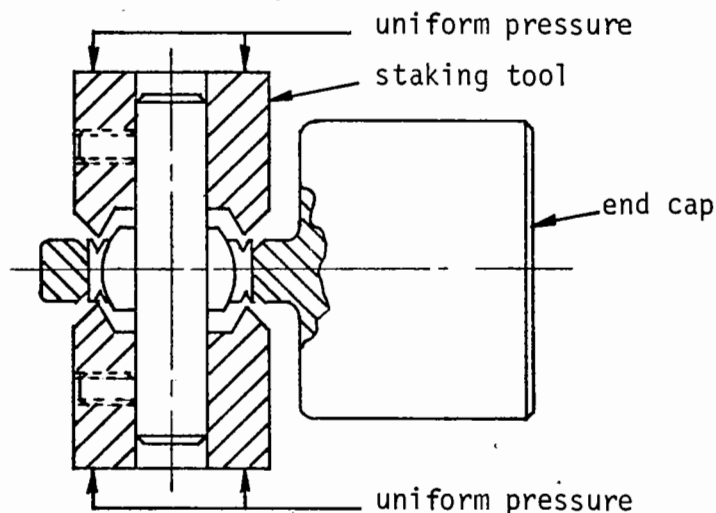
WESTERN HYDRAULICS, INC.
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REPAIR continued

- (3) Clean housing thoroughly with a lint-free cloth.
- (4) Lubricate the housing ID and bearing OD with grease per MIL-G-23827 or compound per MIL-C-11796.

NOTE: Bearing OD to housing ID fit should be 0.0005 inch loose to 0.0005 inches interference.

- (5) Insert and center new bearing (11) in housing. Stake with staking tool. See Figure 401.



Bearing Staking
Figure 401

3. Replacement

- A. Replace all lock wire during each overhaul.
- B. Replace all packings and backup rings during each overhaul.
- C. Replace scraper (25) during each overhaul.

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ASSEMBLY

1. General (Ref IPL figure 901)

NOTE: Lubricate all packings, seals, threaded components and sliding surfaces with MIL-H-5606 or MIL-H-6083 hydraulic fluid.

- A. Assemble packing (18) and backup rings (19) on piston (17).
- B. Assemble packing (12) and one backup ring (13); packing (30) and backup ring (31); and backup plate (32) into gland (16).
- C. Place piston (17) upright on bench and install gland over piston. Using soft metal probe, assemble four segments (23) around piston rod with lock angle up.

CAUTION

The segment lock angles must be facing up for the actuator to function properly.

- D. Assemble packing (26) and deltaseal (27) into gland bearing (20) per Figure 501. Assemble scraper (25) and lock ring (24) into gland bearing. Assemble packing (28) and backup ring (29) onto gland bearing.

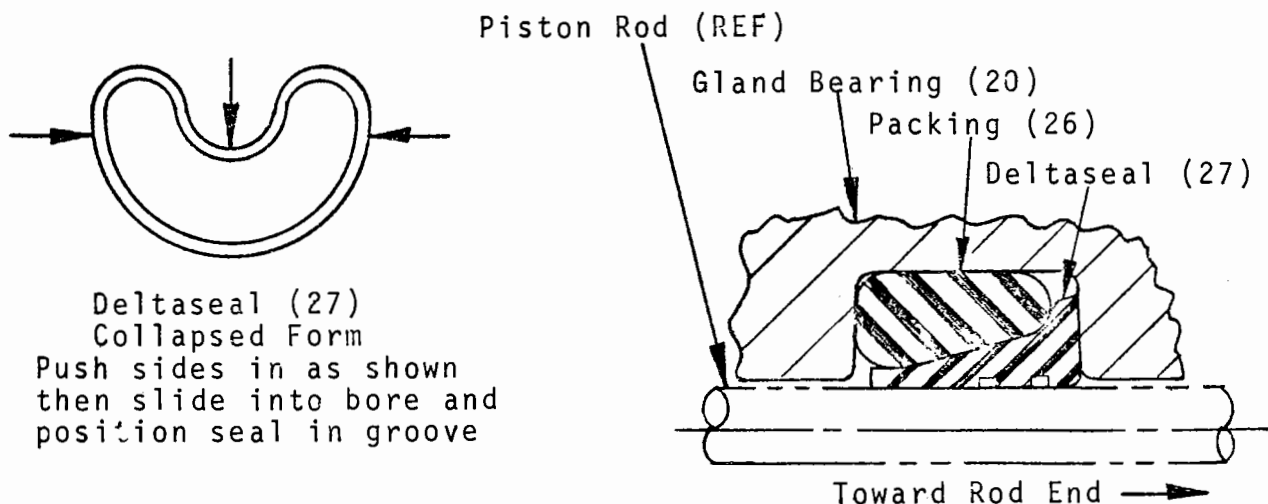


FIGURE 501. DELTASEAL INSTALLATION

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ASSEMBLY continued

NOTE: Before next assembly operations, apply light coat of silicone fluids (DC 210H MFD by Dow Corning - distributed by Anderson Company, Sunnyvale, CA 1-800-672-1851) to the following parts and noted surfaces:

Gland Bearing (20) -- External from packing groove to spring seat

Lock Piston (22) ---- All External

Spring (21) ----- All Over

Gland (16) ----- Spring Cavity

- E. Assemble lock piston (22), spring (21) and gland bearing (20) into gland (16). Torque gland bearing (20) 50 to 75 ft./lbs. Lockwire with MS20995C32.
- F. Assemble nuts (8) 2 places on barrel (15) with lock wire holes toward each other.
- G. Assemble one packing (12) and one backup ring (13) into end cap assembly (9).
- H. Assemble snubber (14) into barrel (15) and assemble end cap assembly (9) onto barrel to bottom out on snubber and torque to 100-150 ft./lbs. Torque end cap assembly nut (8) 100-150 ft./lbs. Lockwire with MS20995C32.
- I. Assemble end cap assembly with barrel over piston (17) and into gland (16). Bottom out barrel and back off until extend port is 160° from retract port and switch port, when looking at the rod end of actuator toward the head end. Torque nut (8) to 100-150 ft./lbs. Lockwire with MS20995C32.
- J. Hydraulically or manually extend and lock actuator. Lightly coat plunger of switch (3) and plunger (4) with silicone fluid (see note above) and install into gland (16). Install switch (3) with nut and washer saved from disassembly, into gland. Adjust switch so that the electrical signal comes on (continuity between leads (1 & 3) and (4 & 6) see figure 601) then turn another 90° ± 10°. Tighten switch nut and lockwire with MS20995C32.
- K. With actuator extended fully, assemble rod end (7) with nut (5) and lock (6) into piston. Adjust to 37.60 ± .03 inches extended length. Torque jam nut 100 to 150 ft./lbs. and lockwire with MS20995C32.

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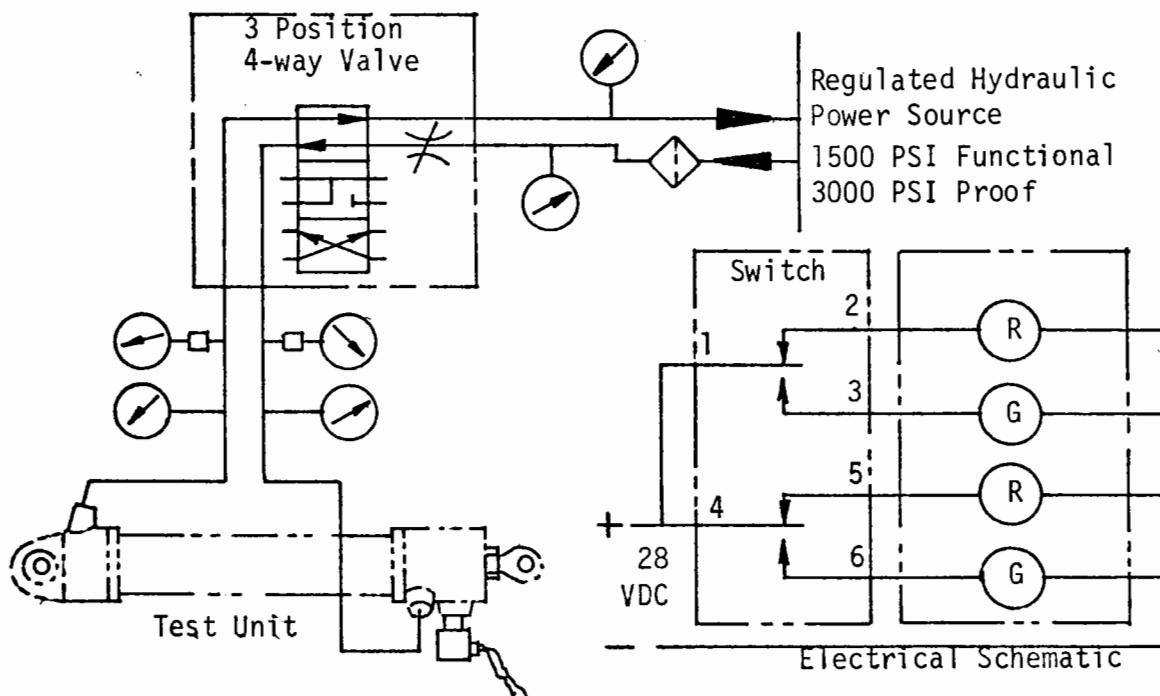
TESTING

1. General

- A. Perform test in the order given. Use MIL-H-5606 or MIL-H-6083 hydraulic fluid continuously filtered through a 15 micron absolute non-bypass filter. Perform tests at room temperature (70°F to 120°F).
- B. Connect switch (3, IPL figure 901) to a light or other suitable indicating source through leads as shown in figure 601.

2. Operational Test

- A. With actuator connected in accordance with figure 601, operate through 5 cycles with 1500 psi pressure applied alternately to the ports. Observe for snubbing at end of retract stroke.
- B. There shall be no external leakage except that a maximum of 1 drop in 25 cycles shall be allowed past external sliding seals.
- C. There shall be no tendency to stick or bind.



TEST SCHEMATIC
FIGURE 601

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2. Operational Test continued

- D. The light or other suitable indicating mechanism shall give proper indication when the actuator is in the locked and unlocked position.
- E. With actuator piston extended, locked and extend ports open, apply 15 psig to retract port. Maintain pressure for five (5) minutes. There shall be no leakage from extend port after the first minute.
- F. With actuator piston retracted and extend port open, apply 15 psig at retract port. Maintain pressure at retract port for five (5) minutes. There shall be no leakage at the extend port after the first minute.

Raise pressure at retract port to 1500 psig and maintain for five (5) minutes. There shall be no leakage at extend port after first minute.

3. Proof Pressure Test

- A. With actuator piston in the fully extended and locked position, apply hydraulic pressure simultaneously to both extend and retract ports at a rate not to exceed 25,000 psig per minute until pressure of 3000 psig is reached. The proof pressure of 3000 psig shall be maintained for a period of two (2) minutes.

There shall be no evidence of leakage, failure or permanent set.

4. Unlocking Characteristics

- A. With the actuator piston in the extended and locked position with zero pressure at the extend port and switch indicating locked position, apply increasing pressure at the retract port to cause the piston to unlock. Lock and unlock the actuator piston a minimum of three cycles.

The unlock pressure range shall be between 250 and 400 psig with zero pressure at the extend port.

5. Post Test

- A. Drip drain actuator and plug ports with suitable closure plugs with gaskets.
- B. Date and test stamp each actuator.

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TROUBLESHOOTING

1. Troubleshooting is shown in figure 701, and refer to IPL figure 901

TROUBLE	PROBABLE CAUSE	REMEDY
Leakage around barrel nut (8) and barrel (15)	Defective packing (12) or backup ring (13).	Replace packing and backup rings
Leakage at gland (16)	Defective packings (26,28 or 30) or backup rings (27,29 or 31)	Replace packings and backup rings
Piston (17) binds or operates unevenly	Foreign matter between piston (17) and bearing (20) or piston and barrel (15).	Remove piston, examine unit, clean affected parts and replace seals.
	Segments (23) are dragging excessively on piston (17)	Remove and inspect segments. Repair or replace if necessary.
	Scored barrel (15) ID, piston (17) either head or rod, or bearing (20) ID	Remove and examine parts for defects; repair or replace defective parts.
No "locked" or "unlocked" light indications.	Faulty or improperly installed switch (3).	Check switch adjustment or replace switch.
Unit does not unlock within required pressure range	Defective spring (21)	Replace spring.
	Binding segments (23) or lock piston (22)	Remove and examine parts for defects, replace defective parts. Polish segments if scratched.

Troubleshooting

Figure 701

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STORAGE INSTRUCTIONS

1. Wrap the actuator in moisture-barrier paper, specification MIL-P-121, or equivalent.
2. Mark the outermost package with the actuator nomenclature, part number, cure date, and date of overhaul.

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ILLUSTRATED PARTS LIST

1. General. This section lists, describes, and illustrates parts comprising the main landing gear actuator part number 6-3797-2.
 - A. How to Use the Parts List. Turn to the sectional view (figure 901) and identify the part by appearance. Note the item number assigned to the illustrated part. Locate the item number in the accompanying parts list. The line entry for that item number will provide the part number, description, assembly relationship, and quantity required for that particular application.
 - B. Item Number. Where the index number is preceded by a dash (-), the part is not illustrated.
 - C. Assembly Relationship. Each assembly listed as followed by a listing of its component parts, properly indented to show their relationship to the assembly. Parts are listed in general order of disassembly.
 - D. Units Per Assembly. Quantities specified in the UNITS PER ASSY column are the total number of each part required per assembly or subassembly and are not necessarily the total used in the complete equipment.
 - E. Effectivity. The effectivity (USAGE CODE) column indicates parts used on different actuator configurations. Unless noted, parts are used on all actuator configurations.
 - F. Vendor Codes. Parts manufactured by or procured from sources other than Western Hydraulics, Inc. are identified by a five-digit vendor code. The vendor code is preceded by a "V" and shown in parentheses following the item nomenclature. The following list identifies vendor codes used in this manual.

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CODE

VENDOR

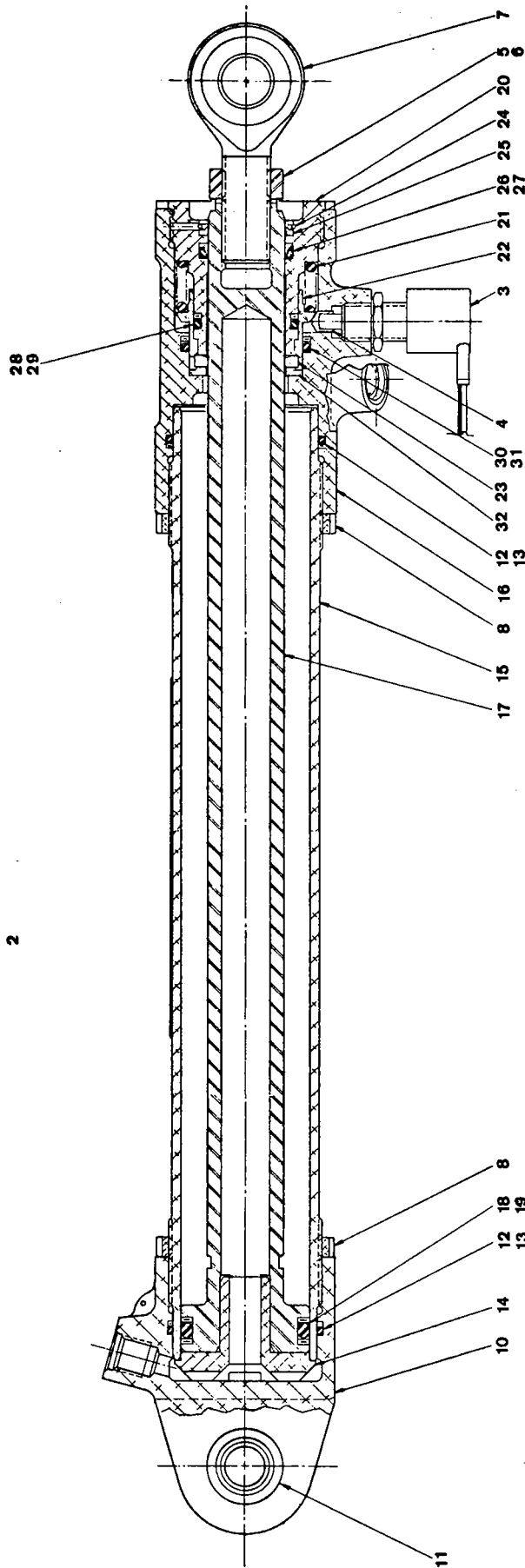
91929

Honeywell, Inc.
Micro Switch Division
Freeport, Illinois 61032

09250

W. S. Shamban & Company
P.O. Box 176
Fort Wayne, Indiana 48801

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Main Landing Gear Actuator, Sectional View
Figure 901

WESTERN HYDRAULICS, INC.
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FIG & ITEM NO.	PART NUMBER	NOMENCLATURE 1 2 3 4 5 6 7	USAGE CODE	UNITS PER ASSY
901-1	6-3797-2	ACTUATOR, MLG.....		
2	3-3798-22	.NAMEPLATE		1
3	1CH1-6	.SWITCH (V91929)....		1
4	2-3798-28	.PLUNGER.....		1
5	NAS509-12	.NUT, JAM.....		1
6	NAS559-5	.LOCK, ROD END.....		1
7	MS21242S12K	.ROD END		1
8	3-3797-19	.NUT, LOCK.....		2
-9	4-3797-23	.END CAP ASSY.....		1
10	4-3797-23-1	..END CAP.....		1
11	MS21230-10	..BEARING.....		1
12	MS28775-140	.PACKING (O-ring)...		2
13	MS28774-140	.RING-BACKUP.....		2
14	3-3797-25	.SNUBBER.....		1
15	4-3797-17	.BARREL.....		1
16	4-3797-15	.GLAND.....		1
17	4-3797-24	.PISTON.....		1
18	MS28775-326	.PACKING (O-ring)...		1
19	MS28774-326	.RING-BACKUP.....		2
20	4-3797-05	.BEARING, GLAND.....		1
21	2-3797-10	.SPRING.....		1
22	3-3797-22	.LOCK PISTON.....		1
23	3-3797-07	.SEGMENT.....		4
24	909032-2-114	.RING, LOCK.....		1
25	MS28776-12	.SCRAPER.....		1
26	MS28775-217	.PACKING (O-ring)...		1
27	S30681-217	.DELTASEAL (V09250)..		1
28	MS28775-220	.PACKING (O-ring)...		1
29	MS28774-220	.RING-BACKUP.....		1
30	MS28775-224	.PACKING (O-ring)...		1
31	MS28774-224	.RING-BACKUP.....		1
32	2-3797-12	.PLATE, BACKUP.....		1

- Item not illustrated



Service Newsletter

March 17, 1989

SNL89-3

TITLE

MAIN AND NOSE LANDING GEAR ACTUATOR SWITCH SEALING

TO

CESSNA DISTRIBUTORS, MULTI-ENGINE SERVICE STATIONS AND PROPJET
SERVICE STATIONS

MODELS AFFECTED

Model 402C thru F406 and 414A thru 441 airplanes equipped with actuators listed on pages 9 and 10 of the attached instructions.

Serial Numbers . . .	402C0001 thru 402C1020	414A0001 thru 414A1212
	404-0001 thru 404-0859	421C0001 thru 421C1807
	F406-0001, 0003, 0004,	425-0001 thru 425-0236
	0006, 0007 and 0009	441-0001 thru 441-0362

DISCUSSION

It has been determined that moisture can possibly enter the landing gear actuator switch mechanism and contribute to switch malfunctions which could subsequently cause incorrect landing gear position indications.

The above airplanes should have the landing gear actuator switches inspected and sealed, as described in the attached instructions, when landing gear actuators are disassembled and inspected or earlier if switch malfunctions have been experienced.

NOTE: All affected new and overhaul/exchange main and nose landing gear actuators shipped from the Cessna Supply Division since March 10, 1989 incorporate this modification.

Page 1 of 2

To obtain satisfactory results, procedures specified in this publication must be accomplished in accordance with accepted methods and prevailing government regulations. The Cessna Aircraft Company cannot be responsible for the quality of work performed in accomplishing the requirements of this publication.

The Cessna Aircraft Company, Customer Services, P.O. Box 7704, Wichita, Kansas 67277 U.S.A. (316) 946-7550, Telex: 4319022, Facsimile (316) 942-9006

The following parts to accomplish the switch inspection/sealing are available from the Cessna Supply Division for the suggested list prices shown.

<u>Part Number</u>	<u>Description</u>	<u>Qty./Airplane</u>	<u>Price</u>
RTV734	Sealant - 3 oz. 1 oz. approx. (alternate, RTV162)		\$ 21.60 (PS) ea.
MS20995C32	Safety Wire	As Required	\$ 25.30 (PS)/roll

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE

Information regarding the landing gear actuator switch sealing is being included in applicable supplier maintenance/overhaul manuals.

* * * * *



Attachment to Service Newsletter

SNL 89-3

TITLE: INSPECTION/SEALING PROCEDURES FOR THE NOSE AND MAIN LANDING GEAR ACTUATORS DOWNLOCK MICRO SWITCHES ON 400 SERIES AIRPLANES.

EFFECTIVITY:

*MODELS AFFECTED

402C
404
F406

414A
421C
425
441

*SERIALS AFFECTED

402C0001 thru 402C1020
404-0001 thru 404-0859
F406-0001, 0003, 0004,
0006, 0007, 0009
414A0001 thru 414A1212
421C0001 thru 421C1807
425-0001 thru 425-0236
441-0001 thru 441-0362

*Refer to Table 2 and 3 for listing of actuator assemblies that require inspection.

PARTS LIST:

<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>NOMENCLATURE</u>
1 Tube (3 oz)	RTV 734	Sealant
	RTV 162 (Alternate)	Sealant
A/R	MS20995-C32	Safety Wire

Table 1. Supplier Publications Versus Actuator Assembly Part Numbers Covered in the Supplier Publications.

NOTES

The following appropriate Supplier Maintenance/Parts List Publications must be available to the mechanic when removing, installing, adjusting and testing the landing gear downlock actuators and micro switches.

The publications can be ordered as listed in the current Cessna Customer Care Supplies & Publications Catalog.

Table 1. Supplier Publications Versus Actuator Assembly Part Numbers Covered in the Supplier Publications (Continued)

CESSNA PUBLICATION NUMBER	SUPPLIERS AND MANUAL APPLICABILITY FOR ACTUATOR DOWNLOCK ASSEMBLIES																
3797TM01-2-13	Western Hydraulic Incorporated Hydraulic Actuator Assembly Overhaul/Maintenance and Illustrated Parts List covering the following part: <u>Main Gear</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Western Part No.</u></th></tr> <tr> <td>9910136-2</td><td>6-3797-2</td></tr> </table>	<u>Cessna Part No.</u>	<u>Western Part No.</u>	9910136-2	6-3797-2												
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9910136-3	6-3990-3																
3798TM01-2-13	Western Hydraulic Incorporated Hydraulic Actuator Assembly Overhaul/Maintenance and Illustrated Parts List covering the following part: <u>Nose Gear</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Western Part No.</u></th></tr> <tr> <td>9910139-3</td><td>6-3798-3</td></tr> </table>	<u>Cessna Part No.</u>	<u>Western Part No.</u>	9910139-3	6-3798-3												
<u>Cessna Part No.</u>	<u>Western Part No.</u>																
9910139-3	6-3798-3																
D5499-5-13AF	Cessna Fluid Power Division Airplane Cylinder Component Maintenance Manual with Illustrated Parts List covering the following parts: <u>Nose Gear Actuator</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Fluid Power Part No.</u></th></tr> <tr> <td>9910139-3</td><td>57142EAA</td></tr> <tr> <td>9910139-7</td><td>57142EAA</td></tr> <tr> <td>9910139-9</td><td>57142EAC</td></tr> </table> <u>Main Gear Actuator</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Fluid Power Part No.</u></th></tr> <tr> <td>9910136-8</td><td>57213-LAA</td></tr> <tr> <td>9910136-11</td><td>57213-LAB</td></tr> <tr> <td>9910136-12</td><td>57213-LAC</td></tr> </table>	<u>Cessna Part No.</u>	<u>Fluid Power Part No.</u>	9910139-3	57142EAA	9910139-7	57142EAA	9910139-9	57142EAC	<u>Cessna Part No.</u>	<u>Fluid Power Part No.</u>	9910136-8	57213-LAA	9910136-11	57213-LAB	9910136-12	57213-LAC
<u>Cessna Part No.</u>	<u>Fluid Power Part No.</u>																
9910139-3	57142EAA																
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<u>Cessna Part No.</u>	<u>Fluid Power Part No.</u>																
9910136-8	57213-LAA																
9910136-11	57213-LAB																
9910136-12	57213-LAC																

Table 1. Supplier Publications Versus Actuator Assembly Part Numbers Covered in the Supplier Publications (Continued)

CESSNA PUBLICATION NUMBER	SUPPLIERS AND MANUAL APPLICABILITY FOR ACTUATOR DOWNLOCK ASSEMBLIES														
32-31-01-5-13	Teijin Seiki Co., Ltd. Actuator Assembly, Hydraulic, Locking, Component Maintenance Manual with Illustrated Parts List covering the following parts: <u>Nose Landing Gear</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Teijin Seiki Part No.</u></th></tr> <tr> <td>9910139-3</td><td>1521900-3</td></tr> <tr> <td>9910139-5</td><td>1521900-3A</td></tr> <tr> <td>9910139-6</td><td>1521900-5</td></tr> <tr> <td>9910139-7</td><td>1521900-7</td></tr> <tr> <td>9910139-8</td><td>1521900-7A</td></tr> <tr> <td>9910139-9</td><td>1521900-9</td></tr> </table>	<u>Cessna Part No.</u>	<u>Teijin Seiki Part No.</u>	9910139-3	1521900-3	9910139-5	1521900-3A	9910139-6	1521900-5	9910139-7	1521900-7	9910139-8	1521900-7A	9910139-9	1521900-9
<u>Cessna Part No.</u>	<u>Teijin Seiki Part No.</u>														
9910139-3	1521900-3														
9910139-5	1521900-3A														
9910139-6	1521900-5														
9910139-7	1521900-7														
9910139-8	1521900-7A														
9910139-9	1521900-9														
32-32-01-5-13	Teijin Seiki Co., Ltd. Actuator Assembly, Hydraulic, Locking, Component Maintenance Manual with Illustrated Parts List covering the following parts: <u>Main Landing Gear</u> <table> <tr> <th><u>Cessna Part No.</u></th><th><u>Teijin Seiki Part No.</u></th></tr> <tr> <td>9910136-3</td><td>1521200-5</td></tr> <tr> <td>9910136-4</td><td>1521200-6</td></tr> <tr> <td>9910136-5</td><td>1521200-7</td></tr> <tr> <td>9910136-8</td><td>1521200-9</td></tr> <tr> <td>9910136-9</td><td>1521200-10</td></tr> <tr> <td>9910136-10</td><td>1521200-11</td></tr> </table>	<u>Cessna Part No.</u>	<u>Teijin Seiki Part No.</u>	9910136-3	1521200-5	9910136-4	1521200-6	9910136-5	1521200-7	9910136-8	1521200-9	9910136-9	1521200-10	9910136-10	1521200-11
<u>Cessna Part No.</u>	<u>Teijin Seiki Part No.</u>														
9910136-3	1521200-5														
9910136-4	1521200-6														
9910136-5	1521200-7														
9910136-8	1521200-9														
9910136-9	1521200-10														
9910136-10	1521200-11														

A. Nose Gear and Main Gear Downlock Actuator and Micro Switch Inspection and Sealing Procedures.

1. Removal of Downlock Actuator Assemblies.

NOTE

The following procedures are typical for all main and nose gear actuators listed in Tables 2 and 3.

- (a) Jack airplane until tires are clear of ground.
- (b) Disconnect battery on Models F406, 425 and 441. Ensure Battery Switch is placed in the OFF position on 402C, 404A, 414A and 421C Models.
- (c) Disconnect electrical leads of downlock micro switch at splice and tag wires.
- (d) Tag and remove the nose and main gear downlock actuators per the appropriate airplane maintenance manual instructions. Retain parts for reinstallation.

2. Removal and Inspection of the Downlock Actuator Micro Switches.

- (a) Using the appropriate Supplier Maintenance Manual instructions (Reference Table 1), tag and remove the downlock micro switch assembly from the main and nose landing gear actuators. (See Figure 1.) Retain parts for reinstallation.
- (b) Visually inspect the micro switch assembly locking cavity for water and/or corrosion. Take a lubricant sample from the cavity if lubricant is present, and check for presence of any hard sandy particles.

NOTE

If the inspection reveals any evidence of corrosion, the actuator is to be overhauled per the instructions and procedures in their respective Overhaul Manuals.

CAUTION

DO NOT USE ANY LUBRICANT OTHER THAN THE HYDRAULIC FLUID SPECIFIED IN APPLICABLE OVERHAUL MANUAL DURING ASSEMBLY, REPAIR AND/OR REPLACEMENT OF PARTS ON THE ACTUATOR ASSEMBLY. THE USE OF OTHER LUBRICANTS DURING ASSEMBLY, REPAIR AND/OR REPLACEMENT OF PARTS ON THE ACTUATOR COULD RESULT IN ELECTRICAL SWITCH CONTAMINATION AND SUBSEQUENT CORROSION OF THE DOWNLOCK MECHANISM WHICH COULD POSSIBLY RESULT IN PROVIDING FALSE LANDING GEAR POSITION INDICATIONS.

3. Installation of the Downlock Actuator Micro Switches.
 - (a) After inspection, removal of water and cleaning, using the appropriate suppliers manuals as a guide, reinstall all micro switches on the landing gear downlock actuator assemblies.
 - (b) With the nose gear and main gear cylinders extended and locked, proceed to adjust the downlock micro switches per the instructions in the appropriate supplier component maintenance manuals. (See Table 1.)
4. Landing Gears Downlock Actuators and Micro Switches Functional Tests.
 - (a) Refer to the appropriate airplane Supplier Component Maintenance Manual (See Table 1.), and perform an Actuator Functional Test (on the bench) per the suppliers procedures.
 - (b) If actuators perform as specified, proceed with the Micro Switches sealing procedures called out in the following Step 5.
5. Sealing Procedures for the Nose and Main Landing Gear Actuator Downlock Micro Switches.
 - (a) After actuators have been bench tested and are operating within their specified limits, proceed to apply RTV 734 (Alternate RTV 162) Sealant to completely seal (waterproof) locknuts and exposed threads of the downlock micro switches. (See Figure 1, Sheets 2 and 3.)
6. Installation of the Nose and Main Gear Downlock Actuator Assemblies.
 - (a) Refer to the appropriate airplane Maintenance Manual and reinstall the actuators and reconnect the electrical leads of the downlock micro switches at splices and remove tags.
7. Using the appropriate airplane maintenance manual as a guide reinstall or reconnect any other previously removed or disconnected parts which were involved during accomplishment of Step A.1.
8. Using the appropriate POH and Maintenance Manual as a guide, perform a functional test to ensure the nose and main gears are retracting and extending properly.
9. Remove airplane from jacks.
10. Make appropriate logbook entry.

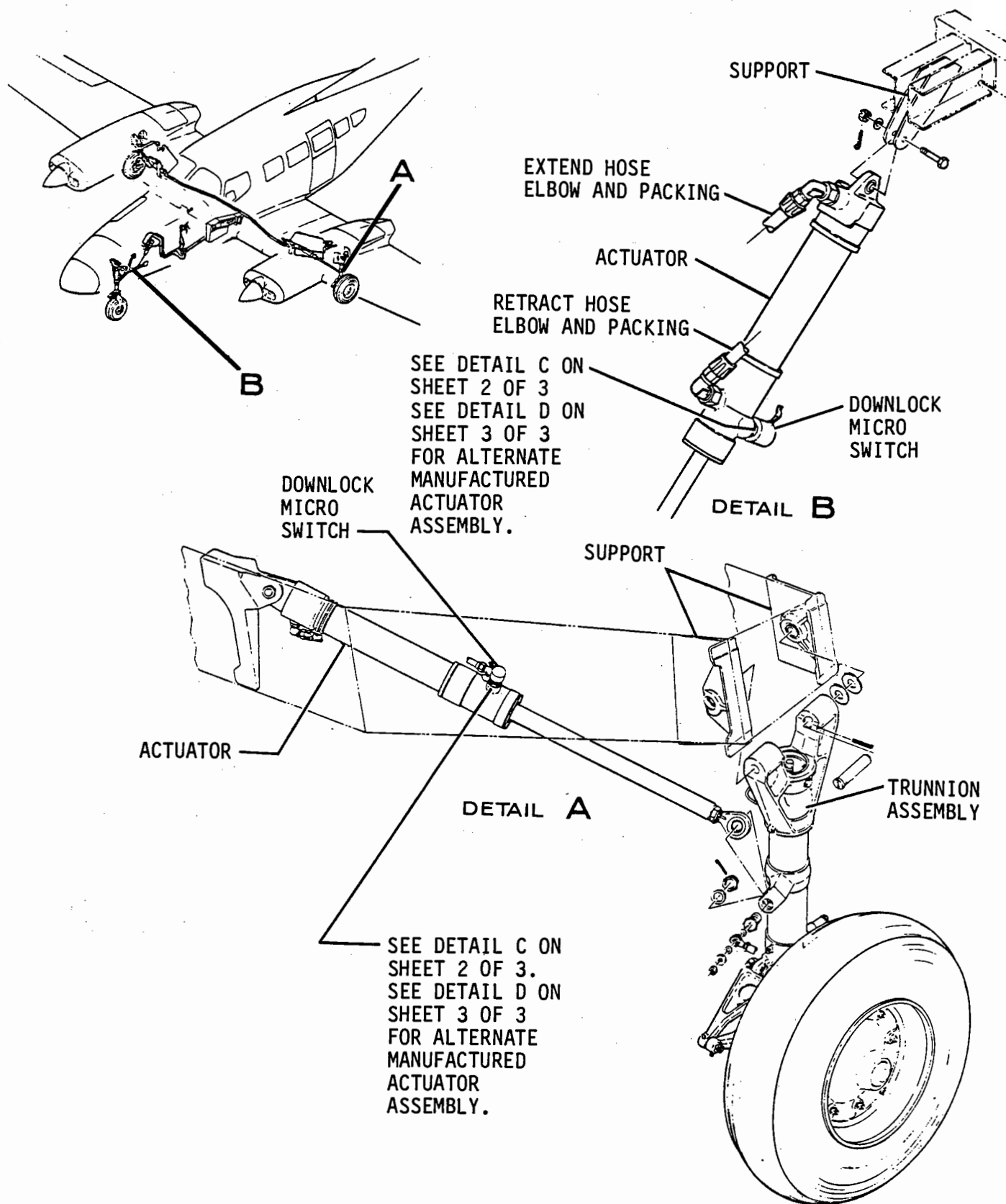


Figure 1. Sealing the Landing Gear Downlock Actuator Micro Switches
(Sheet 1 of 3)

NOTE

TYPICAL VIEW OF THE WESTERN
HYDRAULICS OR CESSNA FLUID
POWER'S MANUFACTURED DOWNLOCK
ACTUATORS WITH MICRO SWITCH.
SEE DETAILS A & B ON SHEET
1 OF 3.

APPLY RTV 734 (ALTERNATE RTV 162)
SEALANT TO COMPLETELY SEAL LOCKNUTS
AND EXPOSED THREADS OF SWITCH.

NOTE

RTV CURE TIME SHALL BE 24-HOURS
MINIMUM AT NORMAL ROOM TEMPER-
ATURE AFTER APPLICATION.

DOWNLOCK
MICRO
SWITCH

SAFETY WIRE TO BE .032
WIRE PER MS20995-C32

DETAIL C

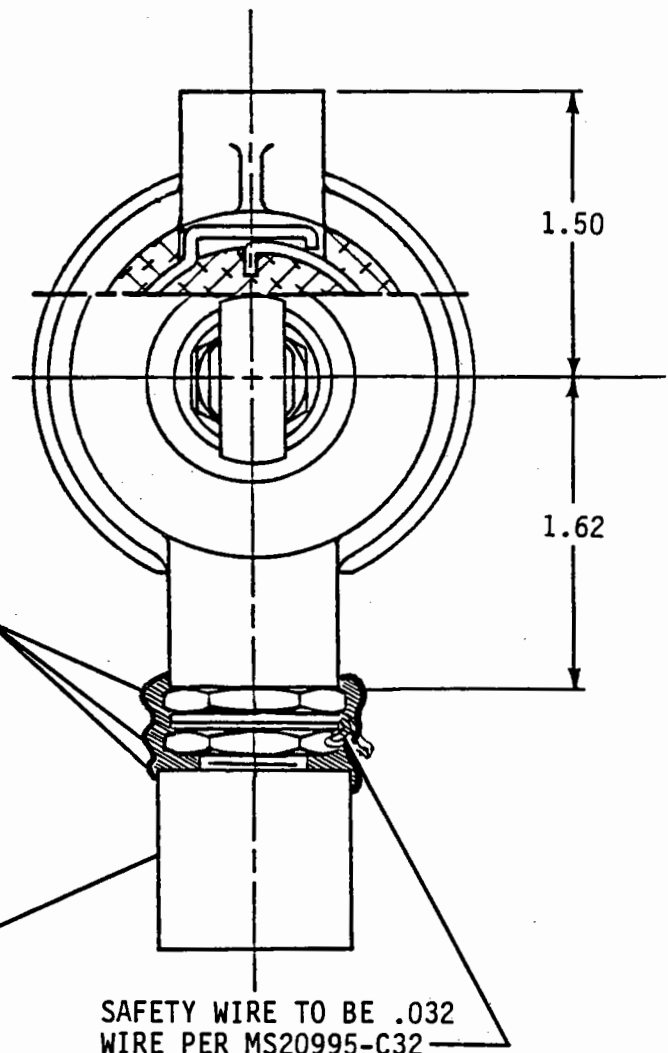


Figure 1. Sealing the Landing Gear's Downlock Actuator's Micro Switches
(Sheet 2 of 3)

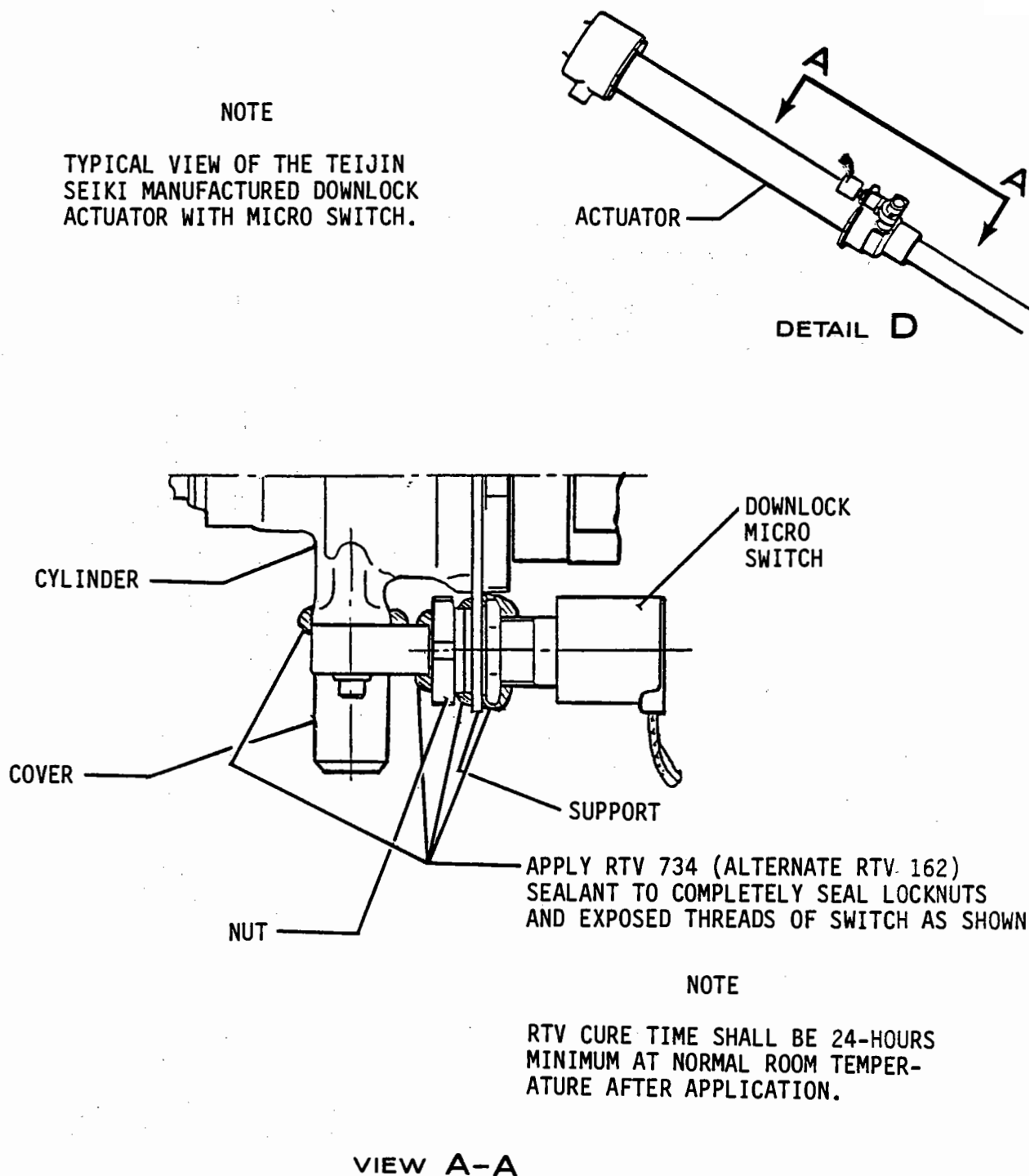


Figure 1. Sealing the Landing Gear's Downlock Actuator's Micro Switches
(Sheet 3 of 3)

TABLE 2. Listing of Main Gear Affected Actuators

CESSNA PART NUMBER	WHERE USED ON AIRPLANE	AIRPLANE APPLICABILITY	SUPPLIER(S) AND SUPPLIER PART NUMBER(S)
9910136-2	BOTH MAINS	1976 thru Early 1977 421C0001 thru 421C0202	WESTERN HYDRAULICS INC. Part No. 6-3797-2
9910136-3 (When Exhausted Use 9910136-8)	BOTH MAINS	1979 thru 1981 404-0001 thru 404-0859 1978 thru 1985 414A0001 thru 414A1006 Early 1977 thru 1979 421C0203 thru 421C0800	WESTERN HYDRAULICS INC. Part No. 6-3790 TEIJIN SEIKI CO., LTD. Part No. 1521200-5
9910136-4 (When Exhausted Use 9910136-9)	RH MAIN	1980 thru Early 1984 421C0801 thru 421C1407 1984 thru Mid 1985 425-0002 thru 425-0214	TEIJIN SEIKI CO., LTD. Part No. 1521200-6
9910136-5 (When Exhausted Use 9910136-10)	LH MAIN	1980 thru Early 1984 421C0801 thru 421C1407 1984 thru Mid 1985 425-0002 thru 425-0214	TEIJIN SEIKI CO., LTD. Part No. 1521200-7
9910136-8	BOTH MAINS	1979 & On, 402C0001 & On 1985 & On, F406-0001 & On 1986 & On, 414A1007 & On 1977 & On, 441-0001 & On	TEIJIN SEIKI CO., LTD. Part No. 1521200-9 CESSNA FLUID POWER DIV. Part No. 57213-LAA
9910136-9 (When Exhausted Use 9910136-11)	RH MAIN	1984 & On, 421C1408 & On Mid 1985 & On 425-0215 & On	TEIJIN SEIKI CO., LTD. Part No. 1521200-10
9910136-10 (When Exhausted Use 9910136-12)	LH MAIN	1984 & On, 421C1408 & On Mid 1985 & On 425-0215 & On	TEIJIN SEIKI CO., LTD. Part No. 1521200-11
9910136-11	RH MAIN	1984 & On, 421C1408 & On	CESSNA FLUID POWER DIV. Part No. 57213-LAB
9910136-12	LH MAIN	1984 & On, 421C1408 & On	CESSNA FLUID POWER DIV. Part No. 57213-LAC

TABLE 3. Listing of Nose Gear Affected Actuators

CESSNA PART NUMBER	WHERE USED ON AIRPLANE	AIRPLANE APPLICABILITY	SUPPLIER(S) AND SUPPLIER PART NUMBER(S)
9910139-3 (When Exhausted Use 9910139-8)	NOSE GEAR	1979 thru Early 1984 402C0001 thru 402C0802 1976 thru 1983 421C0001 thru 421C1401 1977 thru Mid 1984 441-0001 thru 441-0333	WESTERN HYDRAULICS INC. Part No. 6-3798-3 TEIJIN SEIKI CO., LTD. Part No. 1521900-3 CESSNA FLUID POWER DIV. Part No. 57142-EAA
9910139-7 (When Exhausted Use 9910139-9)	NOSE GEAR	Early 1984 & On 402C0803 & On 1978 thru 1985 414A0001 thru 414A1003 1977 thru Mid 1984 441-0334 & On	TEIJIN SEIKI CO., LTD. Part No. 1521900-7 CESSNA FLUID POWER DIV. Part No. 57142-EAA
9910139-8	NOSE GEAR	1984 Only 425-0002 thru 425-0153	TEIJIN SEIKI CO., LTD. Part No. 1521900-7A
9910139-9	NOSE GEAR	1985 & On, F406-0001 & On 1986 & On, 414A1004 & On 1984 & On, 421C1402 & On Mid 1984 & On 425-0154 & On	TEIJIN SEIKI CO., LTD. Part No. 1521900-9 CESSNA FLUID POWER DIV. Part No. 57142-EAC

