



SERVICE LETTER

No. 782B

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.
December 1, 1977 S/M

(Supersedes and voids prior issues within the Service Letter No. 782 series.)

Subject: Landing Gear Manual Extension System Inspection and Nose Gear Down Lock Spring Installation.

Reason for Revision: Revised recommended inspection intervals (see I. Inspection under Compliance Time, below.)

<u>Models Affected:</u>	<u>Serial Numbers Affected:</u>
PA-24, PA-24-250 and	
PA-24-260 Comanche.....	24-1 to 24-5047 inclusive
PA-24-400 Comanche.....	26-2 to 26-148 inclusive
PA-30 Twin Comanche.....	30-1 to 30-2000 inclusive
PA-39 Twin Comanche "C/R".....	39-1 to 39-155 inclusive

Compliance Time:

- I. INSPECTION: Recommended as follows;
 - A. Aircraft with 1000 hours or more total time in operation - at the next regularly scheduled inspection interval (100 Hour or Annual), and at each subsequent 1000 hours of operation.
 - B. Aircraft with less than 1000 hours total time in operation - at 1000 hours of operation and at each subsequent 1000 hours of operation.
- II. INSTALLATION: (affected aircraft - reference Material Required II, below);
Recommended during one of the above referenced inspection intervals or sooner, at owner/operator's discretion.

NOTE:

Aircraft (denoted in Material Required II, below) that have previously installed Piper Kit No. 760 627, Landing Gear Emergency Extension Security Installation - as announced on Piper Service Spares Letter No. SP-325 dated February 12, 1973, do not require installation of Kit No. 761 082 described herein.

Purpose: Reports have been received from the field describing failure of the landing gear to remain in the "down locked" position during landing roll-out. This condition occurred following: (1) normal (electrical) landing gear extension failure, and (2) landing gear extension by manual (emergency) system.

(continued)

Purpose: (continued)

Investigation revealed that the down lock mechanism did not remain engaged due to system wear, apparently as a result of inadequate system maintenance and inspection. In some cases, chronic landing gear circuit breaker tripping preceded actual failure (collapse), which should have indicated to the operator that system maintenance was needed.

In order to properly maintain the landing gear system on the above referenced aircraft and to provide a "back-up" down lock mechanism, this Service Release:

1. Provides instructions to conduct a detailed landing gear manual extension system inspection, including system component wear limits, and
2. Announces the availability of a field installation kit containing material and instructions to install an additional nose gear down lock spring on earlier model aircraft (see Material Required No. II, below).

Instructions:

- I. Inspection: attached.
- II. Installation: contained in Piper Kit Number 761 082, Nose Gear Down Lock Spring Installation Kit (reference Material Required II, below).

Material Required:

- I. Refer to attached main and nose gear wear limit tables; replace components exceeding specified wear limits.
- II. Applies to: PA-24, PA-24-250 and PA-24-260 serial numbers 24-1 to 24-4782 inclusive, 24-4784 to 24-4803 inclusive; PA-24-400 Comanche, serial numbers 26-2 to 26-148 inclusive; and PA-30 Twin Comanche, serial numbers 30-1 to 30-1716 inclusive, 30-1718 to 30-1744 inclusive: One (1) each per aircraft Piper Kit No. 761 082 Nose Gear Down Lock Spring Installation @ suggested unit list price \$28.25A.

Availability of Parts: Your Piper Field Service Facility.

Effectivity Date: This Service Release is effective upon receipt.

Summary: Please contact your Piper Field Service Facility to make arrangements for the inspection and product refinement installation described herein, as recommended in Compliance Time, above. Kit installation time is approximately 14 man-hours per aircraft. To minimize aircraft down time/labor expense, suggest coordination during routine aircraft inspection/maintenance interval.

INSPECTION OF THE LANDING GEAR MANUAL EXTENSION SYSTEM

	REFERENCE CURRENT SERVICE	
	MANUAL PARAGRAPH/FIGURE	
	PA-24 Series	PA-30/39 Series
1. Place aircraft on jacks.....	2-10	2-12
2. Disconnect each gear from the actuator; also disconnect the past center locking springs	6-46, 6-47	7-37, 7-38
3. Inspect all components for condition and wear. (Refer to attached tables I and II for wear limits....	6-48	7-39
4. Inspect rod ends for wear by clinching the bearing between a bolt and nut arrangement as shown on attached figure I; using a dial indicator, measure the total free play between the ball and race. Maximum service limit is .005 inch.....	N/A	N/A
5. Check the thru center travel of both the left and right drag links on the nose gear.....	6-13, Fig. 6-3	7-10, Fig. 7-2
<u>NOTE:</u>		
Insure both nose gear drag links contact thru stops simultaneously.....	6-15, Step "H"	7-12, Step "H"
6. Check thru center travel of each main gear side brace link.....	6-32, Fig. 6-8a	7-23, Fig. 7-8a.
7. Install the downlock springs on the nose gear.		
<u>NOTE:</u>		
If only one spring is used, obtain Piper Kit Number 761 082 for additional spring installation.....	6-14	7-11
8. Disconnect and inspect main gear push pull cables...	6-48	7-39
9. Hook up both main gears and check manual retraction only (transmission not connected).....	6-50, 6-55	7-41, 7-46
10. Hook up the nose gear and rig to operate with the main gear (transmission not connected); synchronize the over-center locks		
<u>NOTE:</u>		
At this point the landing gear is in a down locked serviceable condition, without benefit of the transmission.....	6-50, 6-55	7-41, 7-46
11. Perform landing gear retraction load test.....	6-58	7-49
12. Reengage transmission; perform a retraction/extension cycle of the landing gear electrically. Make necessary limit switch adjustments.....	6-51 through 6-67	7-42 through 7-54
13. Insure landing gear is down and locked; remove aircraft from jacks.		
14. Make appropriate log book entries.		

Above data reflects June 1976 PA-24 and PA-30/39 Service Manual information.

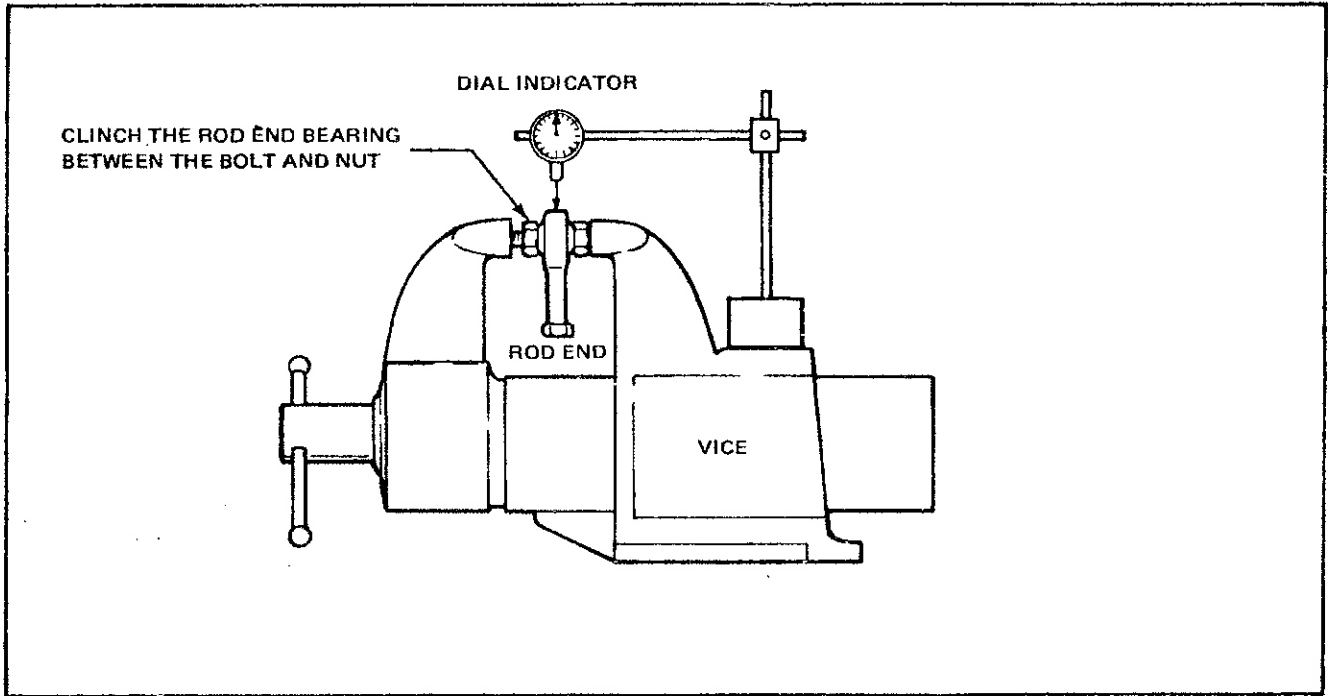
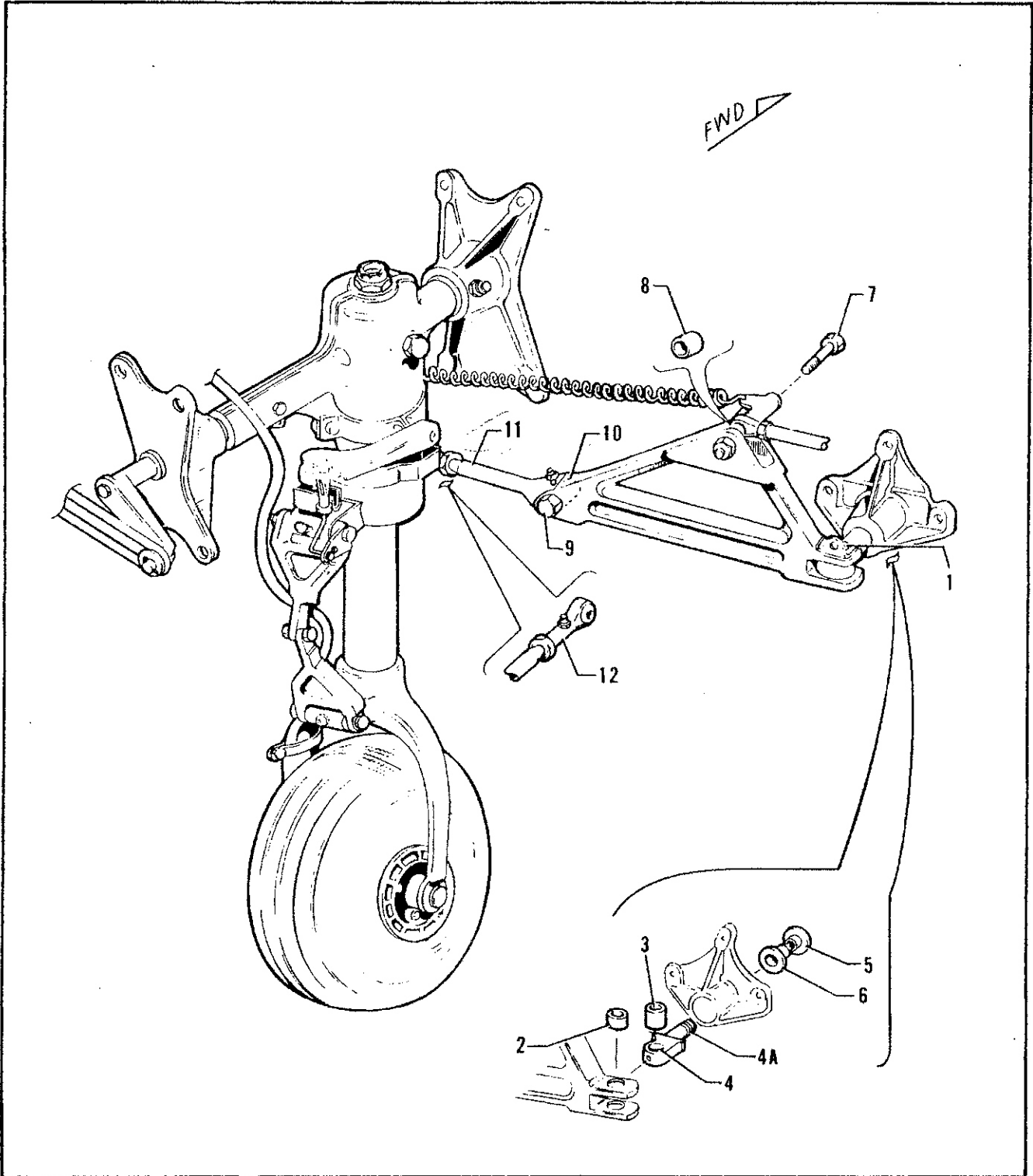


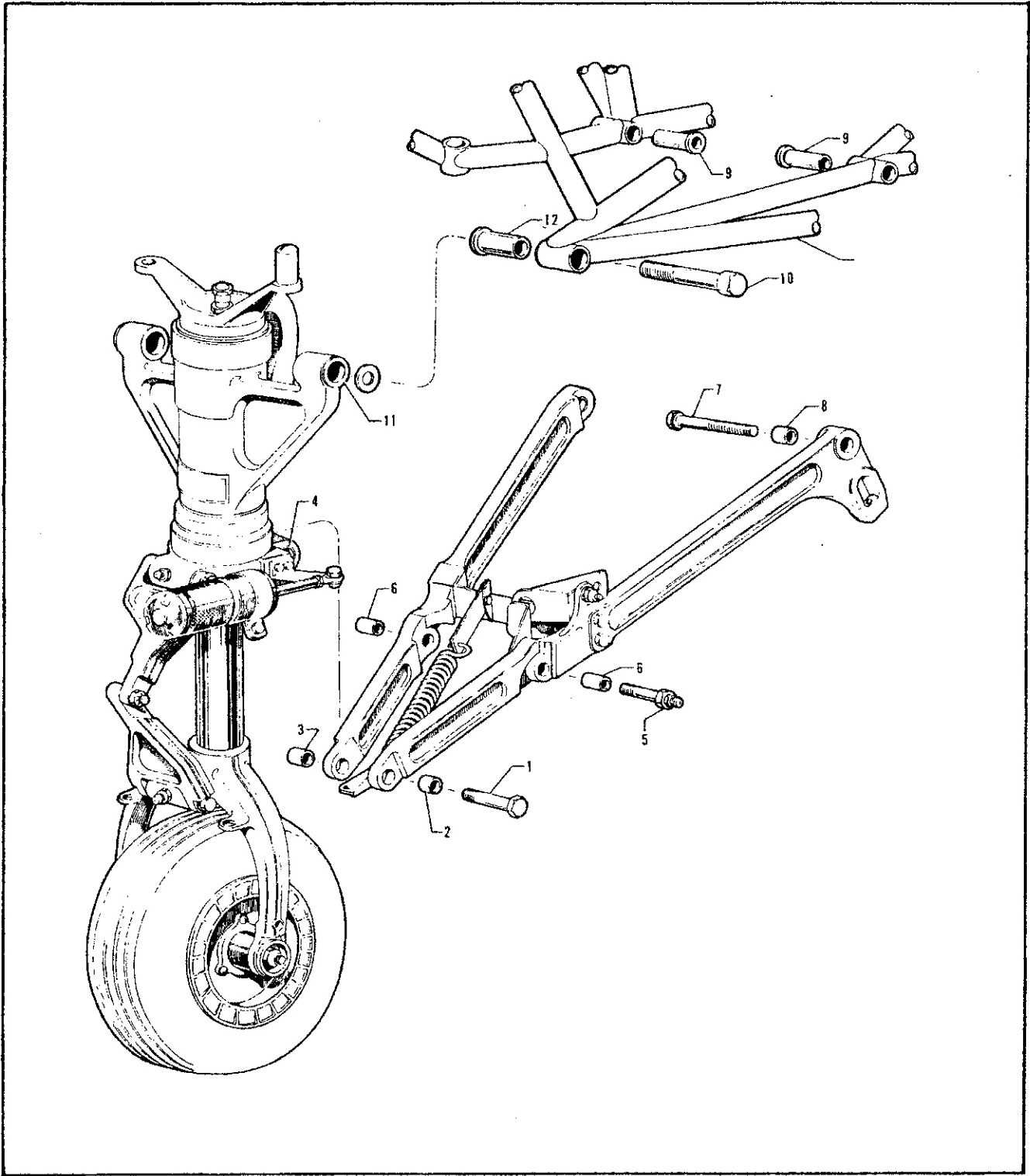
FIGURE 1: INSPECTION OF ROD END BEARINGS



MAIN GEAR WEAR LIMITS (See Table I)

Index No.	Part No.	Item	Mfg. Limits		Service Limits	
			I.D.	O.D.	Min.	Max.
1	AN26-25	Bolt	————	.373/.371	.370	.373
2	14843-16	Bushing	.375/.373	————	.373	.376
3	14843-30	Bushing	.374/.376	.435/.433	.374 .432	.377 .435
4	20829	Stud	.4365/.4385	————	.4365	.4395
4	22512	Stud	.4365/.4385	————	.4365	.4395
4a	20829	Stud	————	.497/.495	.494	.497
4a	22512	Stud	————	.560/.558	.557	.560
5	20737-6	Bushing	.498/.500	————	.498	.501
5	20737- 14	Bushing	.561/.563	————	.561	.564
6	20737-5	Bushing	.498/.500	————	.498	.501
6	20737- 13	Bushing	.561/.563	————	.561	.564
7	AN4-23A	Bolt	————	.249 +.000 -.003	.245	.249
8	20737-8	Bushing	.251/.249	————	.249	.252
9	AN26-21	Bolt	————	.373/.371	.370	.373
10	14843-60	Bushing	.373/.375	.435/.433	.373 .432	.376 .435
11	24911	Link	.4365/.4385	————	.4365	.4395
11	25046	Link	.4365/.4385	————	.4365	.4395
11	20768	Link	.4365/.4385	————	.4365	.4395
11	22577	Link	.4365/.4385	————	.4365	.4395
12	23412	Bearing-	(See Figure 1)	————	————	.005
12	22943	Rod End				

TABLE I: MAIN GEAR WEAR LIMITS



NOSE GEAR WEAR LIMITS (See Table II)

Index No.	Part No.	Item	Mfg. Limits		Service Limits	
			I.D.	O.D.	Min.	Max.
1	AN6-34	Bolt	_____	.374 +.000 -.003	.370	.374
2	14843-18	Bushing	.3745/.3755	_____	.3745	.3765
3	14843-18	Bushing	.3745/.3755	_____	.3745	.3765
4	20737-4	Bushing	.374/.376	_____	.374	.377
5	22066	Bolt	_____	.3742/.3737	.3727	.3742
6	14843-18	Bushing	.3745/.3755	_____	.3745	.3765
7	AN6-23	Bolt	_____	.374 +.000 -.003	.370	.374
7	AN6-26	Bolt	_____	.374 +.000 -.003	.370	.374
8	14843-18	Bushing	.3745/.3755	_____	.3745	.3765
8	14843-19	Bushing	.3745/.3755	_____	.3745	.3765
9	20803	Bushing	.374/.376	_____	.374	.376
10	AN178-40	Bolt	_____	.4991/.4986	.4976	.4991
11	20777	Bushing	.5015/.5000	_____	.5000	.5025
11	31766	Bushing	.5015/.5000	_____	.5000	.5025
12	17164-0	Bushing	.4995/.5005	_____	.4995	.5015
12	17164-4	Bushing	.4995/.5005	_____	.4995	.5015

TABLE II: NOSE GEAR WEAR LIMITS