

SUBJECT: Landing Gear Shock Disc Retrofit

INTRODUCTION: This Service Bulletin allows the owners of 1965 and earlier Model M20C & M20E aircraft to convert their landing gear to allow the installation of Lord Shock Discs and a nose gear shock absorber. Two kits are necessitated due to a different nose gear door configuration on 1965 models. Partial kit installations are acceptable as follows: (1) Nose Gear only, (2) Both Main Gears only.
Revision A allows 1965 and earlier Model M20C, M20E and all M20D, S/N 101 thru 260 with retractable gear, aircraft to be modified to utilize Lord Shock Discs on Nose Gear Installation without converting to use shock absorber.

TIME OF COMPLIANCE: At owners option.

GROUP A

GROUP B

MODELS AFFECTED: 1965 ONLY - M20C & E

MODELS AFFECTED: 1962 thru 1964
M20C, 1964 M20E

SERIAL NUMBERS AFFECTED:

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1965 M20C S/N 2742, 2807 thru 3184

M20C S/N 1852, 1940 thru 2741, 2743
thru 2806

1965 M20E S/N 400, 470 thru 831

M20E S/N 101 thru 399, 401 thru 469

INSTRUCTIONS - GROUP A

INSTRUCTIONS GROUP B

NOSE GEAR (Ref. Kit Part No. M20-139-001)

NOSE GEAR (Ref. Kit Part No. M20-139-002)

1. Place aircraft on jacks.
2. Remove nose wheel and 540003 spindle assembly.
3. Use GSE 030010 (old P/N ME 120) shock disc replacement tool to remove collar bolt, collar, link assembly, (4) discs and spacers. Refer to Service & Maintenance Manual for use of GSE 030010 & GSE 030011.
4. Remove both 310213-1 and 310010-2 exhaust cavity fairings.
5. Remove 540001-5 support truss assy. and the 540004 leg assembly as a unit from the aircraft.

1. Same
2. Same
3. Same
4. Remove 310010-1 & 2 exhaust cavity fairings.
5. Same

INSTR. GROUP A (CONT.) NOSE GEARINSTR. GROUP B (CONT.) NOSE GEAR

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| 6. Remove and replace the 540004 leg assembly with 540004-501 leg assy. Install the 540001 support truss and the 540004-501 leg assy. back in aircraft and secure. (Refer to nose gear Fig. #2.) | 6. Same |
| 7. Install the (3) 530021 discs on the 540015-1 link assembly. (Refer to nose gear Fig. #1.) | 7. Same |
| 8. Install the 530023-1 spacer on top of the disc with the "Standoff" to the rear. (Refer to nose gear Fig. #1.) | 8. Same |
| 9. Using the GSE 030010 tool, replace the 540015-1 link assy. in the reverse order of removing. (Items outlined by #3 above.) | 9. Same |
| 10. Install 510027-7 collar and bolt. | 10. Same |
| 11. Install 540003-502 spindle assy. | 11. Remove 550016 nose gear door installation. Components of installation shown in nose gear Fig. #5. |
| 12. Install 530028-501 shock absorber assembly. (Refer to nose gear Fig. #1 for location of shock absorber and hardware.) | 12. Note position of eccentric bushing and disconnect the two 560044 tubes from the truss assy. Disconnect the truss from the retracting link. |
| 13. Install nose wheel, exhaust cavity fairings and check security of all parts replaced. (Refer to lubrication chart in Service & Maintenance Manual for lubrication of landing gear.) | 13. Remove 540002-20 retraction truss assy. |

REVISION A

NOSE GEARINSTRUCTIONS KIT P/N M20-139-004

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|---|---|
| 1. Place Aircraft on jacks. | 14. Install 540016 retraction truss assy. in the same manner as previously removed. |
| 2. Remove nose wheel from 540003 spindle assy. | 15. Connect the 560044 tubes to the retraction truss. |
| 3. Remove spindle assy from 540004 leg assy. | 16. Connect the retract link to the retraction truss. (Note 530003-13 or 530068-001 must be used.) |
| 4. Use GSE 030010 (old P/N ME 120) shock disc replacement tool to remove collar, hardware, 4 shock discs and spacers from link assy 540005-3. | 17. Install the 540003-501 spindle assy. |
| 5. Remove nose gear door instl. per Nose Gear, Group B, steps 11 - 16, if necessary, for aircraft affected by Group B instructions. | 18. Install the 530028-501 shock absorber assy. (Refer to nose gear Fig. #1 for location of shock absorber and hardware.) |
| | 19. Install 550032 nose gear doors. Connect nose gear link to retract truss. (Refer to nose gear Fig. #2.) |
| | 20. Connect nose gear doors to nose gear link. |
| | 21. Reinstall exhaust cavity fairings and nose wheel. |

INSTR. KIT P/N M20-139-004 (CONT.)REVISION A NOSE GEAR

6. Inspect leg assy at steering and pivot attach points for wear or damage. Replace bushings or hardware if necessary. Components not included in Kit #3.
7. Install the (3) 530021-000 Lord Shock Discs on the new 540015-1 shock link assy. (Refer to Nose Gear Fig. #1.)
8. Install the 530023-1 spacer on top of the discs with the "Stand-off" to the rear. (Refer to Nose Gear Fig. #1.)
9. Use the GSE 030010 tool to replace the 540015-1 link assy. in reverse order of removal.
10. Install 510050-3 collar, AN5-16A bolt, AN960-516 washers (2), and AN365-524 nut.
11. Reinstall 540003 spindle assy. to leg assy. and shock link assy. using new bushings and hardware.
12. Install nose gear doors, if removed, and nose wheel; secure all components. (Refer to Lubrication Chart in Service & Maintenance Manual for proper lubrication of landing gear.)
13. Refer to Nose Gear instructions Kit #2, steps 19, 20, 22 and 23 for final rigging.

INSTR. GROUP B (CONT.) NOSE GEAR

22. Check all parts replaced for security. (Refer to lubrication chart in Service & Maintenance Manual for lubrication of landing gear.)
23. Refer to Service & Maintenance Manual for rigging procedures for landing gear and nose gear doors.

NOTE: The eccentric bushings may have to be relocated to obtain the proper travel of the nose gear.

INSTRUCTIONS GROUP AMAIN GEAR (REF. KIT P/N M20-139-003)

1. Remove the spindle attach bolt and hydraulic brake line. Swing main gear wheel forward. Use GSE 030011 (old P/N ME 121) shock disc replacement tool to remove the 510027 collar and bolt.
2. Remove the 520003-3 link assy. from the main gear.
3. Install the (4) 530021 discs on the 520010-1 link assy.
4. Install the 510047-1 spacer assy. on top of the disc with the "Stand-off" forward. (Refer to main gear Fig. #3.)

INSTRUCTIONS GROUP BMAIN GEAR (REF. KIT P/N M20-139-003)

1. Same
2. Same
3. Same
4. Same

INSTR. GROUP A (CONT.) MAIN GEARINSTR. GROUP B (CONT.) MAIN GEAR

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|---|----------|
| 5. Install the 520010-1 link assy. using the GSE 030011 (old P/N ME 121) tool to compress the 530021 shock discs. | 5. Same |
| 6. Install the 510049 collar and bolt. | 6. Same |
| 7. Remove the GSE 030011 (old P/N ME 121) tool and reinstall the spindle attach bolt. | 7. Same |
| 8. Remove the 2 bolts that attach the 510013 bracket. Replace this bracket with the 510046 bracket, and reinstall the (2) bolts and secure with safety wire. (Refer to main gear Fig. #4.) | 8. Same |
| 9. Check security of parts replaced. Lubricate per Lubrication Chart. | 9. Same |
| 10. Connect hydraulic brake lines. Refill hydraulic reservoir. Purge air from hydraulic system. Check operation of brakes and check for leaks. | 10. Same |
| 11. Upon completion of retrofit of all three gears, refer to Service & Maintenance Manual. Check preload of all three gears and rigging. <ol style="list-style-type: none"> a. Check lubrication b. Rig nose gear doors per Service & Maintenance Manual. c. Check security of all parts. d. Check operation of landing gear. e. Check warning system lights and horn for proper operation. f. Check green light for gear down and locked. Remove jacks and return aircraft to service. | 11. Same |

NOSE GEAR PARTS TO REMOVEGROUP A

1. 540003 (spindle)
2. 540005-3 (link)
3. 540004 (leg)
4. 510022 (spacer)
5. 510021 (3 spacers)
6. 510008 (shock pad)
7. 3 CRE-7,14 (4 discs)

REVISION A

1. 540005-3 (link)
2. 510027-7 (collar)
3. AN5-16A (bolt)
4. AN365-524 (nut)

Group B

1. Same
2. Same
3. Same
4. Same
5. Same
6. Same
7. Same
8. 540002-20 (truss assy.)
9. 550019 (arm assy.)
10. 550007 (torque tube)
11. 550020 (adjustable contact arm)
12. 340006 (pickup strap)
13. 550004-1 & 2 or -501 & 502 (nose gear door assy.)

<u>REVISION A</u>	<u>NOSE GEAR PARTS TO REMOVE (CONT.)</u>	<u>GROUP B</u>
5. 914004 (bolt, (shock link))	14. 550021 (control tube)	
6. 914007-5 (bushing)	15. 550024 (spring bracket)	
7. AN365-918 (nut)	16. 916009 (spring)	
8. AN7-22A (bolt, spindle pivot, 2 ea.)	17. 550022 (hinge bracket-torque tube)	
9. 914007-3 (bushing, 2 ea.)		
10. AN365-720 (nut, 2 ea.)		

NOSE GEAR PARTS TO INSTALLKIT P/N M20-139-001

1. 530021 (3 Lord discs)
2. 530023-1 (spacer assy.)
3. 540015-1 (shock link assy.)
4. 540004-501 (leg assy.)
5. 540003-501 (spindle)
6. 530028-501 (shock absorber)

Additional Hardware

- 1 AN6-13A (bolt)
- 1 AN6-15A (bolt)
- 2 AN363-624 (nut)
- 3 AN960-616 (washer)
- 2 AN960-616L (washer)
- 1 914007-5 (bushing)
- 2 914007-3 (bushing)
- 1 AN5-16A (bolt)
- 3 MS15001-1 (fitting, lube)

KIT P/N M20-139-004 (Rev. A)

1. 530021 (shock discs-Lord, 3 ea.)
2. 530023-1 (spacer assy.)
3. 540015-1 (shock link assy.)
4. 510050-3 (collar)
5. AN5-16A (bolt, collar)
6. AN365-524 (nut)
7. 914004 (bolt, shock link)
8. AN365-918 (nut)
9. 914007-5 (bushing, shock link
1 ea.)
10. AN7-22A (bolt, spindle pivot,
2 ea.)
11. 914007-3 (bushing, spindle
2 ea.)
12. AN365-720 (nut, 2 ea.)

KIT P/N M20-139-002

1. Same
2. Same
3. Same
4. Same
5. Same
6. Same
7. 540016 (retract truss eccentric bushing
and hardware)
8. 550032 (Nose gear door assy.)
9. 150080-013 (Decal-Tire Pressure 30 psi)

Additional Hardware

- 1 AN6-13A
- 1 AN6-15A
- 2 AN363-624
- 3 AN960-616
- 2 AN960-616L
- 1 914007-5
- 2 914007-3
- 1 AN5-16A
- 3 MS15001-1
- 2 914007-1 (bushing)

MAIN GEAR PARTS TO REMOVE

<u>GROUP A</u>	<u>GROUP B</u>
1. 3CRE-714 (5 shock discs)	1. Same
2. 510022 (spacer)	2. Same
3. 520003-3 (link)	3. Same
4. 510027-8 or 9 (collar)	4. Same
5. 510008 (shock pad)	5. Same

MAIN GEAR PARTS TO REMOVE (CONT.)GROUP A (CONT.)

6. 510021 (4 spacers)
7. 510013 (bracket)

GROUP B (CONT.)

6. Same
7. Same

MAIN GEAR PARTS TO INSTALLKIT P/N M20-139-003

1. 530021 (4 discs)
2. 510047-1 (spacer assy.)
3. 520010-1 (link assy.)
4. 510049 (collar)
5. 510046 (bracket)
6. NOTE: Gear will not retract unless part 510046 is installed in place of part 510013.

Additional Hardware

- 2 MS 15001-1
- 1 MS 15001-4 (fitting lube)
- 1 914003-501 (bolt)
- 1 914007-5

NOTE: The above listed parts and hardware are for one MAIN GEAR assembly only.

KIT P/N M20-139-003

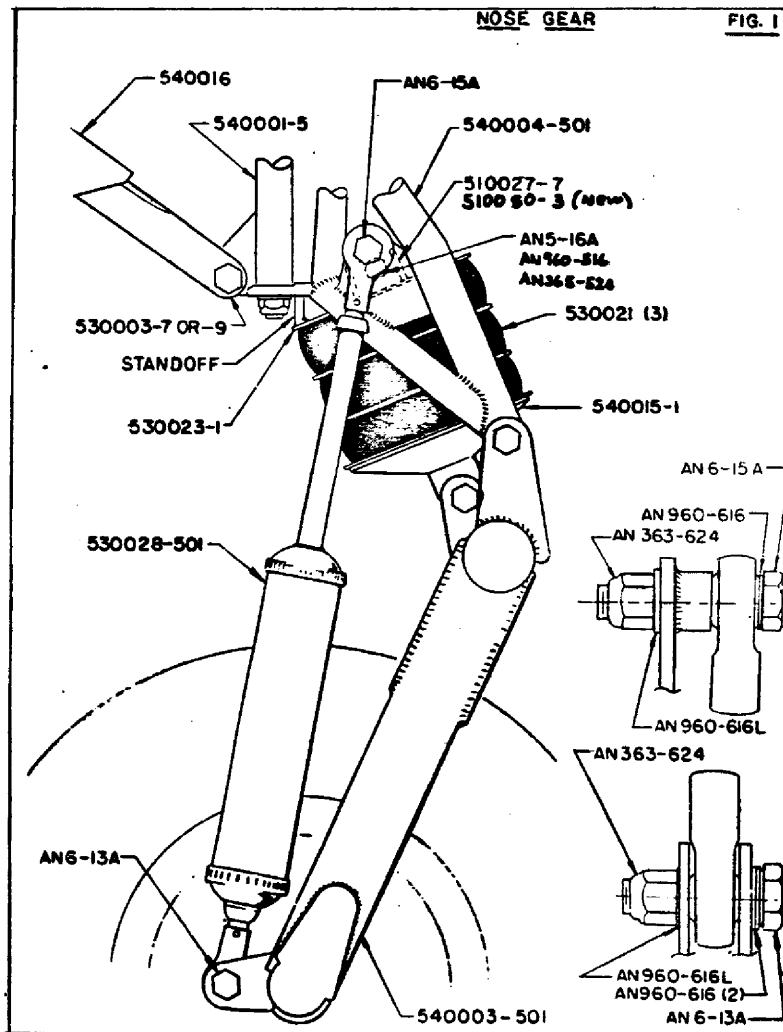
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4. Same
5. Same
6. Same

Additional Hardware

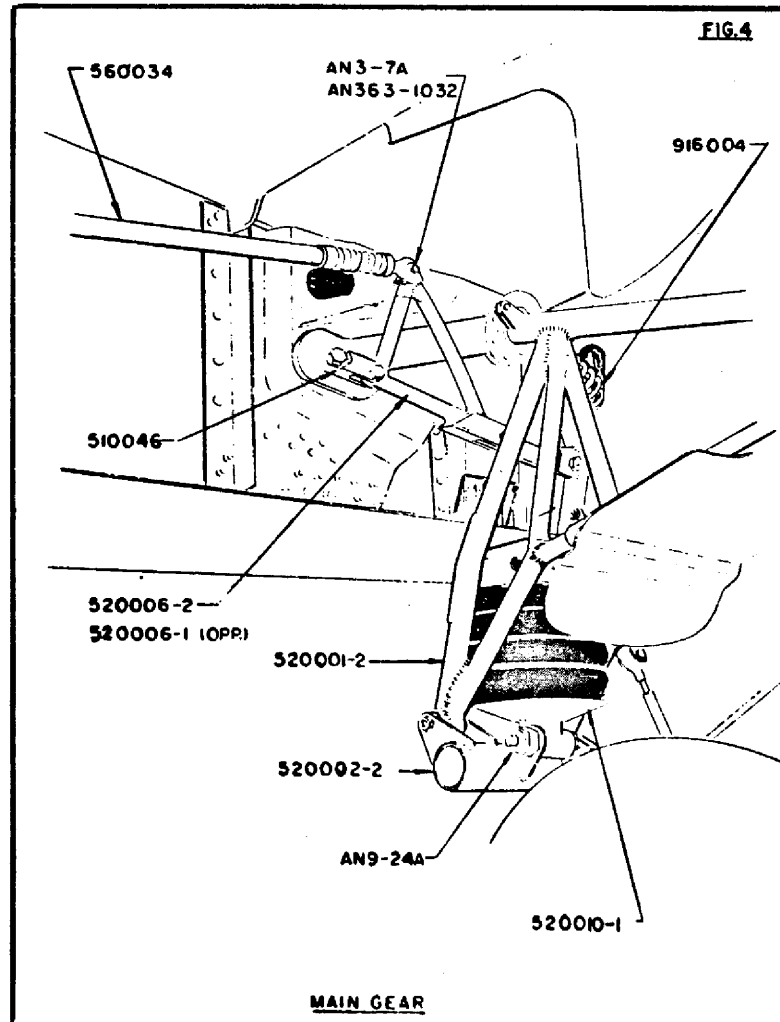
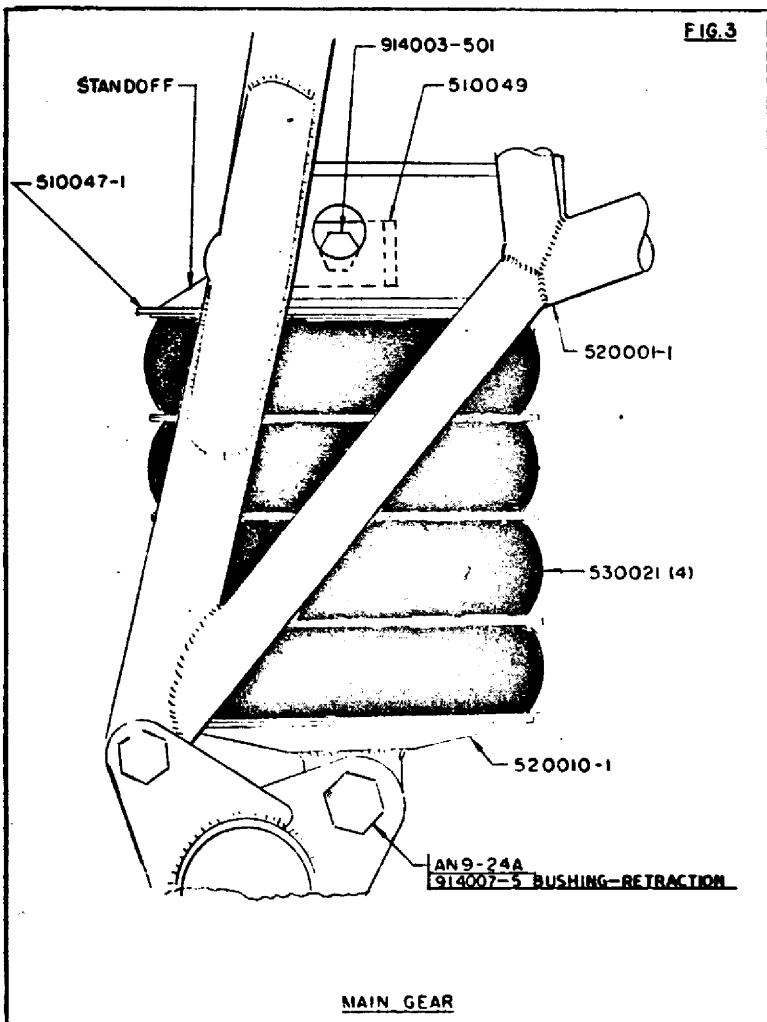
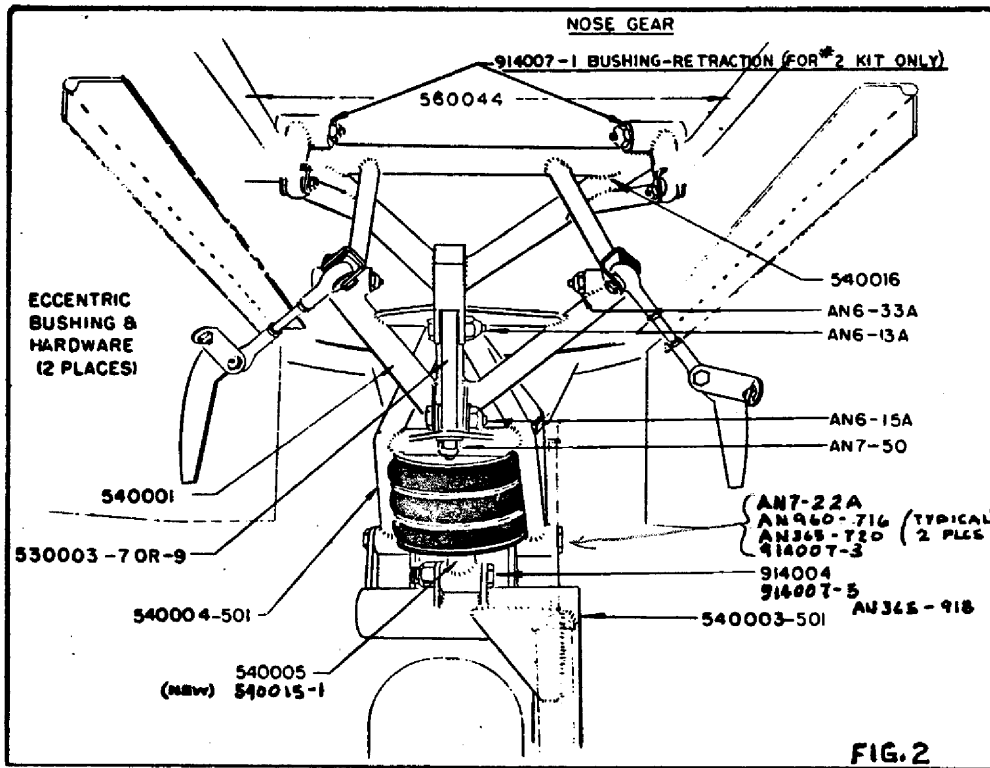
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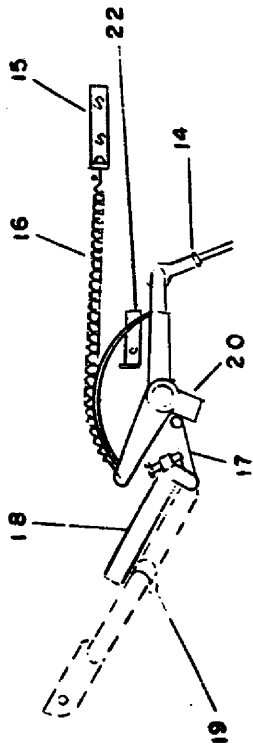
FIGURES/TABLES:
5 Fig. Attached.



NOTE:
REFER TO
S.B. M20-202
FOR PROPER
RIGGING OF
STEERING AND
TRACKING
MECHANISM



13	8367-501 502	550004	DOOR L.-R.
14	8129	550021	RET. LINK
15	8133	550024	SPRING BRKT.
16	508	916009	SPRING
17	8126	550020	RET. LEVER ARM
18	8125	550019	DOOR RET. LEVER
20	8651	550007	RET. CAM
21	8130	550022	RET. CAM BEARING
22	3098	340006	BRKT.



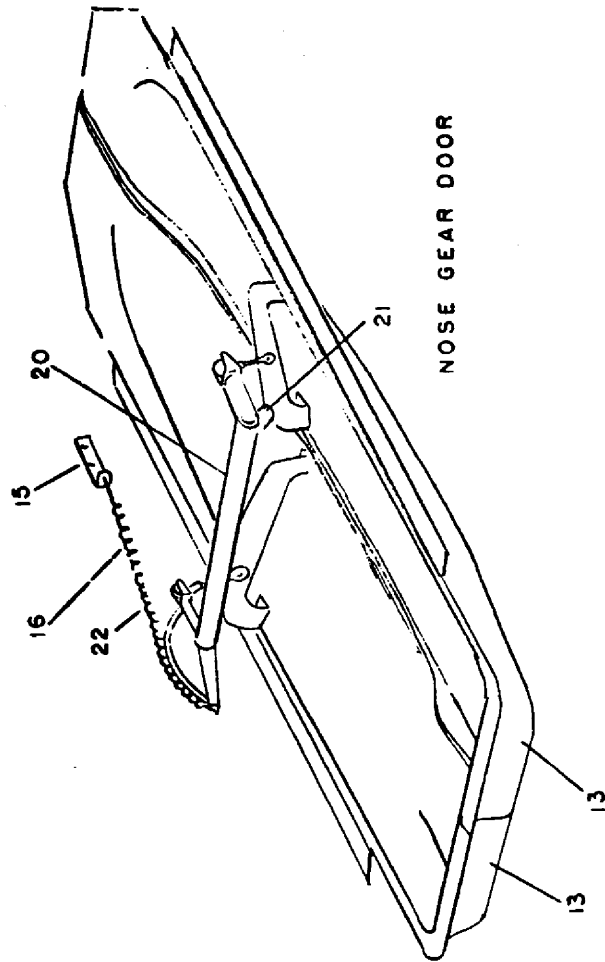
NOSE GEAR DOOR RETRACTING MECHANISM

MODELS AFFECTED

1962 THROUGH 1964

M20 C S/N 1852,1940-2741, 2743-2806

M20 E S/N 101 -399; 401-469



NOSE GEAR DOOR

FIG. 5