



**Instructions for Continued Airworthiness and
Installation Instructions**

**HD Extended Maule Main Gear Assembly
ABI-4022X**

**Document Number:
ABI-4022X-ICA
Revision E
12/14/15**

(This document supersedes doc no. ABI-4022X-IM)

Record of Revisions

This Record of Revisions identifies all revisions to this manual. When changes to this manual are needed, revisions will be issued by ABI.

This Record of Revisions shall remain in this manual at all times. Upon the receipt of revisions, insert the revised page(s) into this manual and enter the revision number, revision date, insertion date and signature of person incorporating the revision into the manual in the appropriate spaces below.

| Revision Number | Pages Affected | Date |
|-----------------|----------------|----------|
| A | All | 01/17/12 |
| B | All | 01/20/12 |
| C | All | 02/17/12 |
| D | All | 06/13/14 |
| E | All | 12/14/15 |
| | | |
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- (A) Airframes Alaska drawing ABI-4022X-1-A
- (B) Maule Drawing 4035F

Introduction:

The instructions for Continued Airworthiness document has been developed using the guidelines in Appendix "G" of FAR part 23 as required by FAR 23.

This document is designed to provide aircraft technicians with the sufficient information to inspect, troubleshoot, adjust, repair, test, remove and install the components of the ABI HD Extended Maule Main Gear Assembly (ABI-4022X).

The ABI-4022X is eligible for installation on the Maule Aircraft with conventional/oleo type main gear.

See the List of Applicable Publications (LOAP) on page 7 of this document. The publications listed in the LOAP constitute the required information essential for continued airworthiness for the aircraft.

The information in this document supplements or supersedes the original manufacturer's maintenance manual only in those areas listed. For limitations, procedures and other information not contained in this document, refer to the aircraft manufacturer's maintenance manuals, illustrated parts manuals and/or vendor manuals as listed in the LOAP.

Revisions:

For continuous use of this document, this document must be maintained in current revision status. When revisions are made, the document will be updated in its entirety. Each time the approval holder finds in necessary to revise this document, a revision will be distributed with all new product shipments and be available on our website (www.airframesalaska.com).

It is the responsibility of the person performing maintenance on the installed system to ensure that this document is current prior to performing this maintenance. The current revision number may be verified by contacting Airframes Alaska at PO Box 670989, Chugiak AK, 99567, ph 907-331-4480.

Description and Operation:

Description:

The HD Extended Maule Main Gear Assembly is a direct replacement for the Maule main gear, allowing an additional 3" of clearance. It is eligible for the

Maule conventional geared aircraft. Each gear set (left and right pair) consists of the following;

| Part Number | Description | Qty: |
|--------------------|------------------------|-------------|
| ABI-4022X-1 | Left Hand Gear | 1 |
| ABI-4022X-2 | Right Hand Gear | 1 |
| ABI-4013E-F-1 | Left Hand Oleo Strut | 1 |
| ABI-4013E-F-2 | Right Hand Oleo Strut | 1 |
| 124001-4CR0316 | Maule Brake Lines* | 2 |
| MS21919WDG5 | Adel Clips* | 4 |
| AN833-4D | Bulk Head Fitting* | 2 |
| AN924-4D | Nuts* | 2 |
| NAS1149F0763P | Washers* | 4 |
| NAS1149F0363P | Washers* | 8 |
| MS21044N3 | Nuts | 4 |
| MS24665-283 | Cotter Pin | 8 |
| AN960-616L | Washer | 14 |
| AN960-616 | Washer | 14 |
| AN4-5A | Bolts | 8 |
| MS21044N4 | Nuts | 8 |
| AN960-416 | Washer | 16 |
| NAS6606D38 | Upper Gear Attach Bolt | 4 |
| AN310-6 | Nuts | 6 |
| NAS6606-21 | Lower Oleo Attach | 2 |
| NAS6606D18 | Upper Gear Attach | 2 |
| MS21044N6 | Nut | 2 |
| | 10" Cable Wrap | |
| | | |

*installed on gear.

Operation:

Operation of the ABI-4022X is identical to the operation of the original Maule oleo main gear assemblies.

Airworthiness Limitations:

The Airworthiness Limitations Section is FAA approved and specifies maintenance required under 14 CFR §§ 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No additional Airworthiness Limitations are imposed from the installation of the ABI-4022X landing gear legs.

Installation/Removal and Maintenance Practices:

Access Panels:

There are no access panels involved in the installation or maintenance of this kit.

Inspection:

Inspect attaching fittings and bolts for security, corrosion and cracks and inspect brake hose for security, chafing and leaks. Check oleo attach bolts for bending or shearing.

*Note: Use the step above as a guide for inspection after an unusually hard landing or any time there is concern about the condition of the main landing gear or their attachments.

WARNING: INSURE AIRCRAFT IS SECURE AND PROPERLY SUPPORTED BEFORE BEGINNING ANY WORK. WORKING UNDER AN IMPROPERLY STABILIZED AIRCRAFT COULD CAUSE INJURY OR DEATH.

Properly stabilize the aircraft following the airframe manufacturer's instructions.

REMOVAL OF MAIN LANDING GEAR. (See drawing 4035F in appendix C)

- 1) Raise and support aircraft using wing jacks, Float lift rings or other factory approved method.
- 2) Remove interior to gain access to Upper Oleo attach bolts (1) or (30)
- 3) Remove wheel and brake assemblies.
- 4) Disconnect LH and RH brake lines at fuselage and top of "A" Frame brace. (See drawing 4035F)
- 5) Remove Bolt (5) Washer (3) and nut (4) from lower Oleo strut tube (6) and landing gear assembly (9).
- 6) Separate Oleo strut (6) and gear leg assembly (9) by rotating gear leg away from fuselage.
- 7) While supporting gear leg assembly, remove upper gear attach bolts (28) washers (3) nuts (7) and cotter pins (8).
- 8) From inside cockpit carefully remove upper oleo bolt (1) or (30) spacers (*careful not to lose these as you will reuse on installation if serviceable*) (2) washers (3) and nuts (4) from Oleo Strut assemblies while Strut assembly is being supported under the aircraft.
- 9) Clean and inspect gear fittings on fuselage and ready for installation of ABI HD Extended Gear.

Installation of Alaskan Bushwheel HD Extended Main Gear

- 1) Remove internal oleo strut components from original oleo strut assemblies per manufacturer's instructions and inspect. If serviceable, install into the ABI extended oleo strut P/N ABI-4013E-F in reverse order of disassembly. If components are not serviceable, contact the aircraft manufacturer for replacement parts.
- 2) Install ABI Extended Oleo strut PN# ABI-4013E-F into upper oleo attach fitting in fuselage using supplied NAS 6606-21 bolts AN 960-616 and AN960-616L washers as needed reusing spacers (2) (drwg 4035F) from

- step 8 of disassembly to center Oleo between lugs and AN365-624A nuts, torque to 225 In/lbs.
- 3) Install Gear leg assembly LH/RH with supplied NAS 6606-D38 bolts starting with the aft attach bolt using supplied AN960-616 /616L washers to shim the slack in lugs as needed. **DO NOT** tighten aft attach bolt/nut at this time. Install forward –D38 bolt with washers as needed. Snug forward and aft attach bolts to allow free movement of landing gear leg without deformation of fuselage gear lugs and safety with cotter pins.
 - 4) Swing gear leg away from fuselage enough to allow the axle tab to be inserted into oleo strut housing. Using supplied NAS6606-18 bolts washers and nuts torque to 200in/lbs
 - 5) Install wheel and brake assembly on new gear leg.
 - 6) Connect brake line to fitting on upper A frame brace. Bleed brake system to purge any trapped air.
 - 7) Reinstall aircraft interior.
 - 8) Verify all hardware has been torqued and safety checked.
 - 9) Lower aircraft and remove jacks.

Refer to the ABI-4022X-1-A drawing which may be used as a guide during disassembly. (See Appendix attachment)

Cleaning, Inspection and Repair:

Thorough cleaning is important.

- a) Clean and inspect all parts. When inspecting the gear, look at the attach fittings and bolts for security, corrosion and cracks.
- b) Inspect the brake hose for security, chafing and leaks.
- c) Check oleo attach bolts for bending or shearing.

There are not any wear limits on these parts. Replace damaged or worn parts.

CAUTION: Use the above steps a) - c) as a guide for inspection after an unusually hard landing or any time there is concern about the condition of the main landing gears or their attachments.

Inspection Requirements:

Scheduled Inspections and Maintenance Checks:

This section of the document contains information regarding Time Limits- Inspection and Maintenance Checks, Overhaul and Replacement Items and Inspection Requirements.

Time Limits – Inspection and Maintenance Checks:

Note: Recommended inspection/maintenance intervals do not guarantee that the item will function properly between inspection/maintenance checks.

The inspection intervals are based on average usage and environmental conditions.

Aircraft operated under extreme conditions (salt water, muddy terrain etc.), may require more frequent maintenance than the intervals specified in this document. The aircraft operator may perform more frequent inspection/maintenance checks based on his own usage.

The operator should perform the first inspection interval of the ABI-4022X installation to coincide with the next scheduled inspection of the aircraft. Bolts and fittings should be inspected during 100 hour and/or annual inspections. The hinges should be lubricated with a light engine oil.

Overhaul and Replacement Items:

There are no scheduled overhaul or replacement item requirements. Maintenance of the ABI-4022X components is “on Condition”.

List of Applicable Publications (LOAP)

The publications listed in the LOAP constitute the required information essential for continued airworthiness of the aircraft.

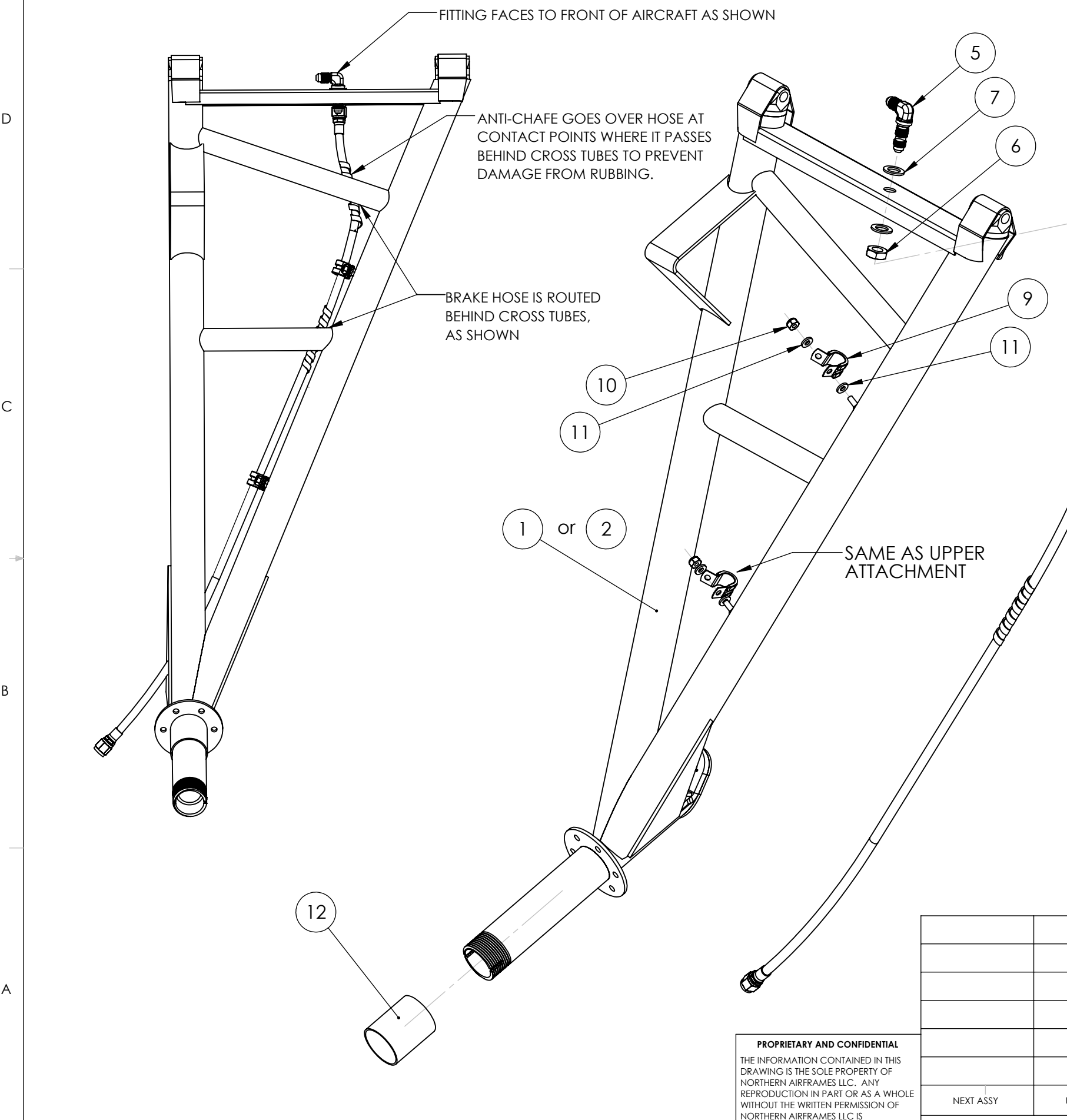
| Title | Document Number | Revision/Date |
|--|------------------------|----------------------|
| Alt. Main Landing Gear Installation (Drawing) | 4035F | REV H, 1/26/2009 |
| HD Extended Maule Main Gear Assembly (Drawing) | ABI-4022X-1-A | REV -, 12/4/2015 |

Appendix A

8 7 6 5 4 3 2 1

REVISIONS

| ZONE | REV. | DESCRIPTION | DATE | APPROVED |
|------|------|------------------|-----------|----------|
| | - | ORIGINAL RELEASE | 12/4/2015 | |




NOTES:

1. ABI-4022X-1 (LEFT) EXTENDED GEAR SHOWN. ABI-4022X-2 (RIGHT) EXTENDED IS MIRRORED. QUANTITIES AND PART NUMBERS FOR STANDARD LENGTH ABI-4022-1, -2 GEAR LISTED IN B.O.M. ALSO.
2. ENSURE BOTH OPEN ENDS OF BRAKE LINE ARE CAPPED WITH PLASTIC DUST COVERS AFTER ASSEMBLY.

| ITEM NO. | PART NUMBER | DESCRIPTION | STANDARD GEAR QTY. | EXTENDED GEAR QTY. |
|----------|-----------------|-----------------------------------|--------------------|--------------------|
| 1 | ABI-4022X-1, -2 | EXTENDED MAULE GEAR LEG | - | 1 |
| 2 | ABI-4022-1, -2 | STANDARD MAULE GEAR LEG | 1 | - |
| 3 | 124001-4CR0316 | EXTENDED BRAKE LINE HOSE ASSY. | - | 1 |
| 4 | 124001-4CR0280 | STANDARD BRAKE LINE HOSE ASSY. | 1 | - |
| 5 | AN833-4D | BRAKE LINE FITTING - ELBOW | 1 | 1 |
| 6 | AN924-4D | BRAKE FITTING NUT | 1 | 1 |
| 7 | NAS1149F0763P | WASHER | 2 | 2 |
| 8 | ANTI-CHAFE | PROTECTIVE SPIRAL WRAP, 4" LENGTH | 2 | 2 |
| 9 | MS21919WDG5 | CLAMP | 2 | 2 |
| 10 | MS21044N3 | LOCK NUT | 2 | 2 |
| 11 | NAS1149F0363P | WASHER | 4 | 4 |
| 12 | ABI-4009-2 | BEARING SPACER (OPTIONAL) | 1 | 1 |

PROPRIETARY AND CONFIDENTIAL
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| | | | |
|--------------------------------------|---------|----------------------|-------------|
| UNLESS OTHERWISE SPECIFIED: | | NAME | DATE |
| DIMENSIONS ARE IN INCHES | | DRAWN | AJH 12/4/15 |
| TOLERANCES: | | CHECKED | |
| ANGULAR: BEND ± | | ENG APPR. | |
| TWO PLACE DECIMAL ± | | MFG APPR. | |
| THREE PLACE DECIMAL ± | | Q.A. | |
| INTERPRET GEOMETRIC TOLERANCING PER: | | COMMENTS: | |
| MATERIAL | | | |
| NEXT ASSY | USED ON | | |
| FINISH | | | |
| APPLICATION | | DO NOT SCALE DRAWING | |



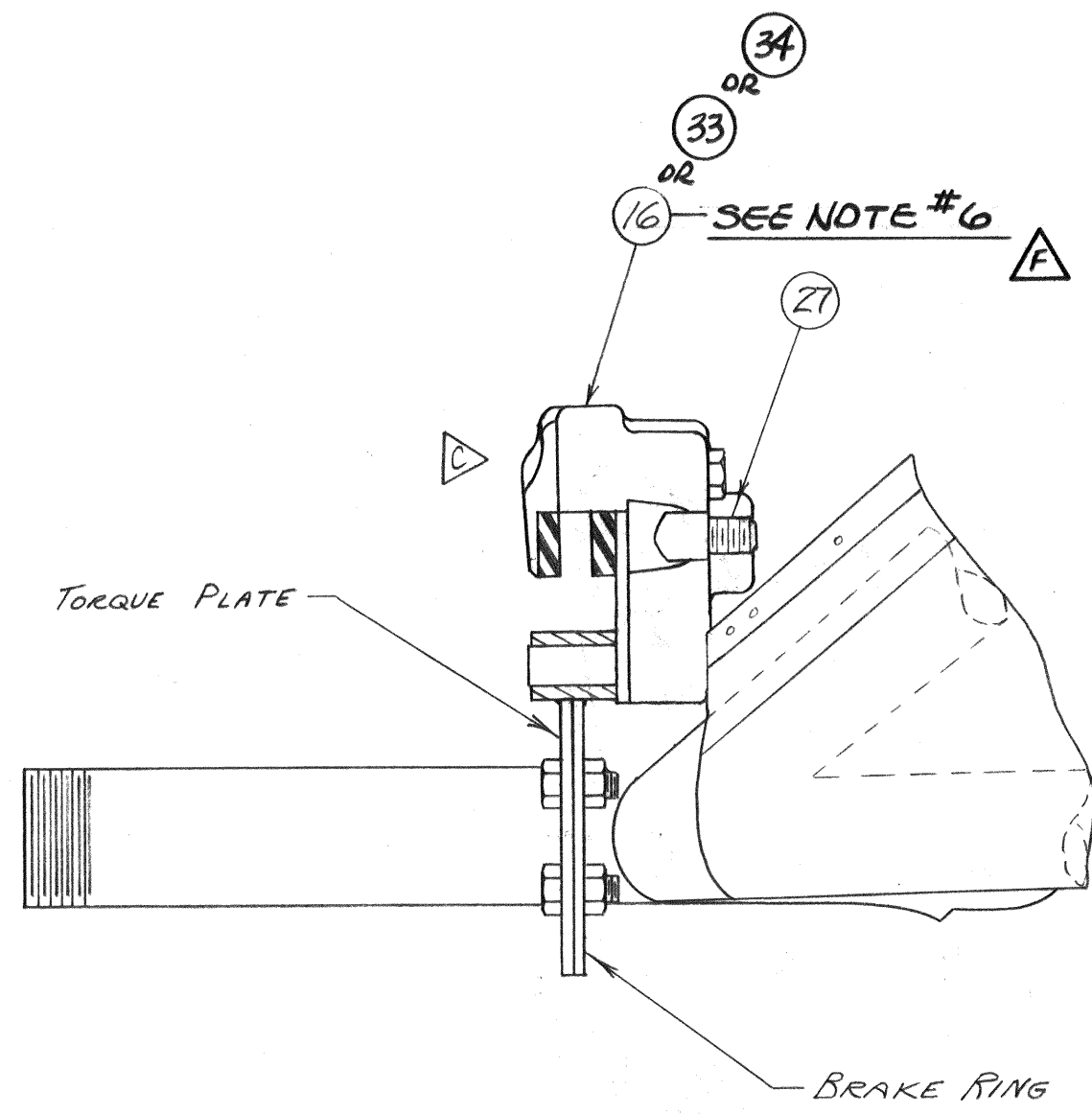
TITLE: MAULE GEAR FINAL ASSEMBLY DRAWING

| | | |
|----------|---------------|-----|
| SIZE | DWG. NO. | REV |
| B | ABI-4022X-1-A | - |

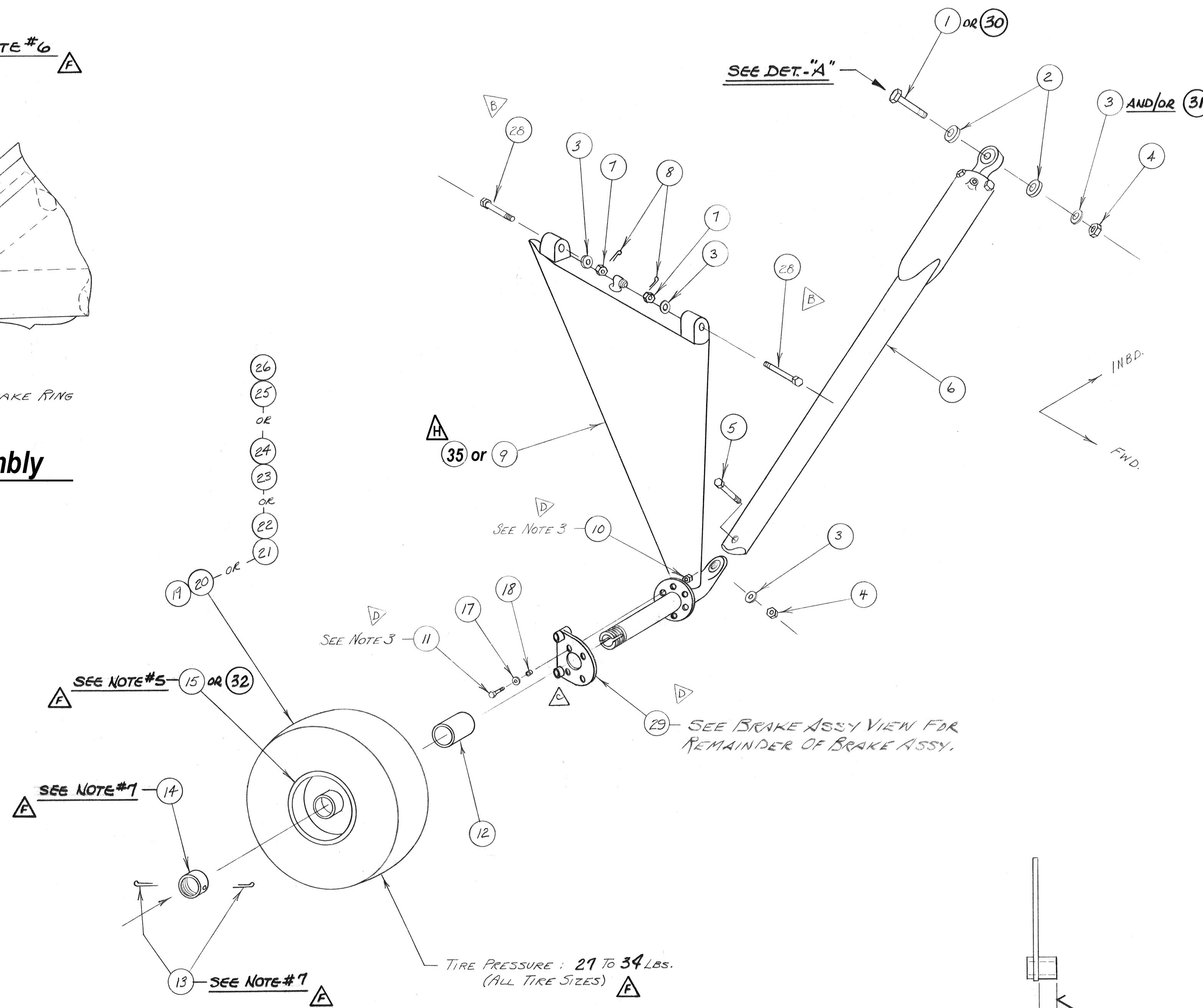
SCALE: 1:1 WEIGHT: SHEET 1 OF 1

8 7 6 5 4 3 2 1

Appendix B

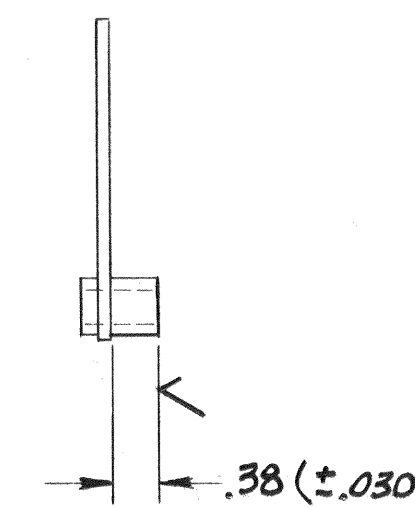


Top View - Brake Assembly



Right Side Shown - Left Side Opposite

TIRE PRESSURE : 29 TO 34 LBS.
(ALL TIRE SIZES)



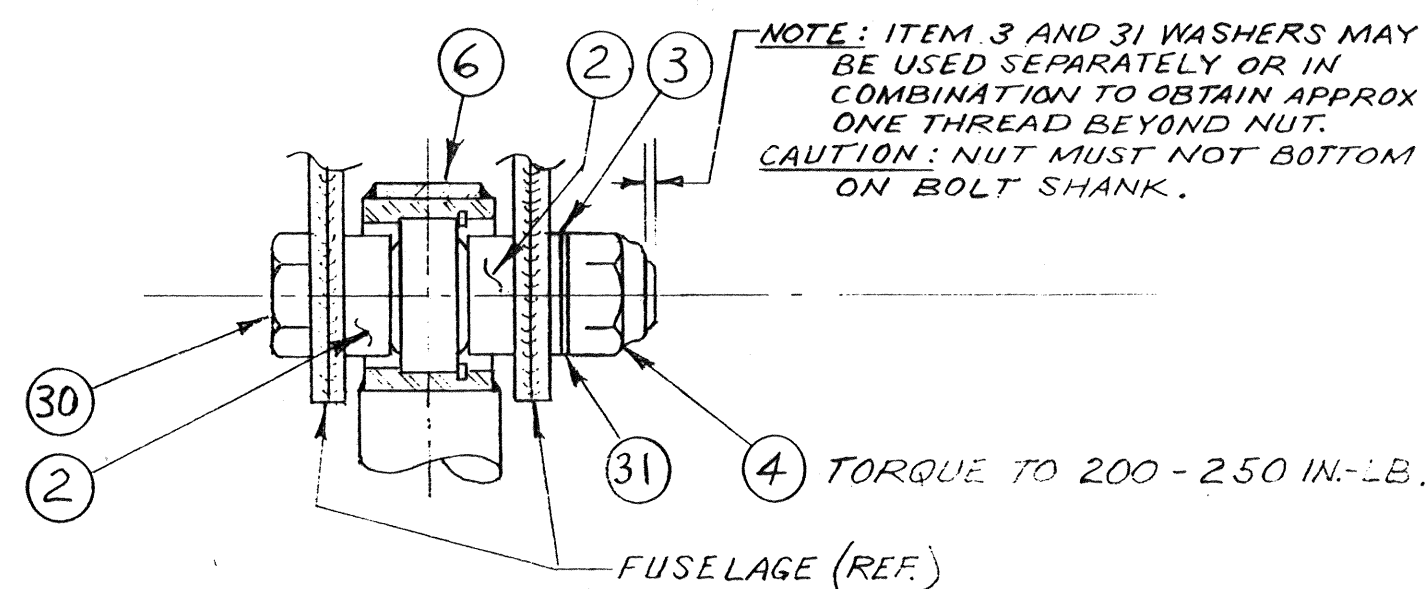
Detail -29

(FOR 30-52N & 30-52K DUAL BRAKE ASSEMBLIES)

Notes:

1. This installation is optional to 4012F installation.
2. Make according to Detail -29 from torque plate 75-37 included with Item (16).
3. Use AN4-4A or AN4-5A bolts and AN364-425 nuts as optional for Items (10) and (11), if required, for a better installation.
4. BRAKE MAY BE INSTALLED ON FORWARD SIDE OF LANDING GEAR AS NECESSARY TO ACCOMMODATE VARIOUS SIZES OF TIRES.
5. (OPTIONAL) ITEM#32 - CLEVELAND P/N 40-75D WHEEL ASSY.
6. (OPTIONAL) ITEM#33 - CLEVELAND P/N 30-52N BRAKE ASSY. - (DUAL) (FOR TW MODELS ONLY).
(OPTIONAL) ITEM#34 - CLEVELAND P/N 30-52K - (DUAL) (FOR TAILWHEEL MODELS ONLY).
7. OPTIONAL INSTALLATION DWG.# 4142 MAY BE USED IN PLACE OF ITEMS #13 AND #14.
8. WHEEL ASSEMBLY 40-75D TO BE USED WITH BRAKE ASSEMBLIES 30-52N AND 30-52K. BOTH ASSEMBLIES ARE UNDER FAA TSO-C262.

| REF. NO. | PART NO. | REQ'D | DESCRIPTION | FINISH | MAT'L & SPEC. | STOCK |
|----------|---------------|-----------------|---|--------|-------------------------|---|
| 35 | 4156B | 2 | (Optional) ABI HD Landing Gear Assembly | | | |
| 34 | 30-52K | 2 | (OPTIONAL) BRAKE ASSY. | | TSO-C262 | |
| 33 | 30-52N | 2 | (OPTIONAL) BRAKE ASSY. | | TSO-C262 | |
| 32 | 40-75D | 2 | (OPTIONAL) WHEEL ASSY. | | TSO-C262 | |
| 31 | AN960-616A | 2 | WASHER | | | |
| 30 | NAS1306-21 | 2 | BOLT, CLOSE TOLER, 160,000 PSI TENSILE | | | |
| 29 | -29 | 2 | TORQUE PLATE (SEE NOTE 2) | | | |
| 28 | AN6-26 | 4 | BOLT | | | |
| 27 | AN822-4R-4D | 2 | ELBOW | | | |
| 26 | 8.50 X 6 | 2 | INNERTUBE | | | |
| 25 | 8.50 X 6 TYPE | 2 | TIRE (4 OR 6 PLY RATING) | | | |
| 24 | 8.00 X 6 | 2 | INNERTUBE | | | |
| 23 | 8.00 X 6 TYPE | 2 | TIRE (4 OR 6 PLY RATING) | | | |
| 22 | 7.00 X 6 | 2 | INNERTUBE | | | |
| 21 | 7.00 X 6 TYPE | 2 | TIRE (4 OR 6 PLY RATING) | | | |
| 20 | 6.00 X 6 | 2 | INNERTUBE | | | |
| 19 | 6.00 X 6 TYPE | 2 | TIRE (4 OR 6 PLY RATING) | | | |
| 18 | -18 | 8 | BUSHING | | Cad Plate to Spec. S-19 | 4130 St Cond N MIL-F-8738 |
| 17 | AN960-416L | 8 | WASHER | | | 3/8 O.D. x .065 wall x .117 +.000-.005 |
| 16 | 30-63E | 2 | BRAKE ASSY (CLEVELAND AIRCRAFT) | | TSO-C26 | |
| 15 | 40-97D | 2 | WHEEL ASSY (CLEVELAND AIRCRAFT) | | TSO-C26 | |
| 14 | 4010B | 2 | AXLE NUT | | | |
| 13 | AN380-4-2 | 4 | COTTER PIN | | | |
| 12 | 4009B-2 | 2 | SPACER TUBE | | | |
| 11 | AN4-6A | 8 | BOLT | | | |
| 10 | AN365-4E8 | 8 | NUT | | | |
| 9 | 4011F | 1 PER 12 IN. | LANDING GEAR LEG ASSY | | | |
| 8 | AN380-3-5 | 4 | COTTER PIN | | | |
| 7 | AN310-6 | 4 | NUT | | | |
| 6 | 4008F | 1 PER 12 IN. | OLEO STRUT ASSY | | | |
| 5 | AN6-15A | 2 | BOLT | | | |
| 4 | AN365-62A | 4 | NUT | | | |
| 3 | AN960-616 | A.R. | WASHER | | | |
| 2 | 4007B | 4 | SPACERS | | | |
| 1 | AN6-17A | 2 | BOLT | | | |



DETAIL-A

ALTERNATE HIGH STRENGTH OLEO BOLT

TORQUE TO 200 - 250 IN.-LB.

FUSELAGE (REF.)

| REV. | DESCRIPTION | DATE |
|------|--|-----------|
| H | Added Optional Heavy Duty Landing Gear, Item (35). | 26 Jan 09 |
| G | Added "A" to part no.'s. for items (-1), (-5) & (-11) | 11 Feb 08 |
| F | INCORPORATED DCN'S M3708A AND M4760A, INCLUDING ADDITION OF NOTE#1. | 28 FEB 03 |
| E | INCORP'D DCN'S M2961, M3051, M3192 AND M3501. | 30 JAN 80 |
| D | INCORP'D DCN M2348 & M2750. CHG'D P/N OF (3) & (6). | |
| C | ADDED -2350 EFFECT. INCORPORATED DCN M2223. ADDED EFFECT FOR M-S-210C & 220C | 2 MAR 76 |
| B | Changed (7) call-out on bolts to (28). Added Item (28) to BOM. | 29 OCT 73 |
| A | Added call-out to machine bushing on torque plate. Changed p/n's of Items (1) & (11). Added -180 effect. | 15 MAR 72 |

THIS DWG. APPLICABLE TO: MODEL SERIAL NUMBER

| | | |
|---|--|---|
| FOL. BLOCK FRACTIONS ± 1/16 2 PLACE ± .030 3 PLACE ± .010 ANGLE ± 2° | | REV. H SCALE ~ SIZE Alt. Main Landing Gear Installation DWG. BY S.S.M. CHECKED BY LEB DATE 22 Sep 70 NO. 4035F |
|---|--|---|