

AERO RESOURCES, INCORPORATED
Post Office Box 1833
Houston, Texas 77251-1833

DRAWING LIST REPORT NUMBER 1005

INSTALL MOONEY 201 (M20J) SPINNERS ON EARLIER MODEL MOONEYS

MODEL YEARS: 1955 TO 1978

FOR MOONEY MODELS: M20A, M20B, M20C, M20D, M20E, M20F, M20G

DECEMBER 9, 1992

REVISION 1, JULY 12, 1996

REVISION 2, JULY 9, 2001

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AERO RESOURCES, INCORPORATED

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INSTALL MOONEY 201 (M20J) SPINNERS ON EARLIER MODEL MOONEYS

Eligible on the following Mooney Airplane Models:

M20A, M20B, M20C, M20D, M20E, M20F, and M20G through 1978.

Revised May 20, 1997.

INTRODUCTION

This Supplemental Type Certificate (STC) provides for the installation of Mooney 201 (M20J) 2-blade spinners on earlier model Mooneys. The applicable spinner assembly part numbers are: 680031-501, -503, -505, -519, -517 and 940087-501. The Mooney 201 (M20J) Spinner Assembly is required for the installation of the Aero Resources, Inc. (ARI) nose cowl modifications described in the reports listed below, unless alternate spinners have been approved for this purpose. The applicable Mooney nose cowl modifications for the various models can be found in ARI Drawing List Report Numbers 1101, 1102, 1201, and 1202 which were revised on January 25, 1996, and STC Number SA7589SW. Spinner shims may be required to adjust the distance between the ARI nose cowl installation and the trailing edge of the propeller spinner (See Supplement #1).

INSTALLATION INSTRUCTIONS

Before beginning the installation of the Mooney 201 (M20J) 2-blade spinner on your Pre-201 Mooney, be sure that you have the proper instructions and parts from ARI to match the propeller installation on the aircraft.

1. Remove the existing propeller spinner assembly and rear bulkhead assembly, which attaches to the starter ring gear, from the aircraft in accordance with the following instructions:
 - a) Remove the existing spinner doublers and spinner dome.
 - b) Loosen the nuts attaching the propeller to the engine crankshaft. The nuts will have to be backed off evenly so that the propeller may be pulled forward (approximately $\frac{1}{4}$ inch at a time) until all studs are disengaged from the engine crankshaft flange.
 - c) Remove the propeller from the engine.
 - d) Remove the existing rear spinner bulkhead by removing the nuts, washers and bolts attaching the rear bulkhead to the starter ring gear.
2. For the "standard" Mooney 201 (M20J) spinners, install the spinner assembly (Hartzell P/N 940087-501 or McCauley 680031-500 series P/N) in accordance with the following instructions:
 - a) Install the Mooney M20J rear spinner bulkhead in accordance with the instructions in Service Bulletin M20-219 which is attached.

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INSTALL MOONEY 201 (M20J) SPINNERS ON EARLIER MODEL MOONEYS

INSTALLATION INSTRUCTIONS (CONTINUED)

- b) Clean the propeller hub cavity and mating surfaces of the propeller hub and ring gear support. Lightly lubricate a new O-ring and the crankshaft pilot with clean engine oil and install the O-ring into the propeller hub.
- c) Align the propeller mounting studs with the proper holes in the engine crankshaft flange and slide the propeller carefully over the crankshaft pilot until the propeller studs can be started.
- d) Tighten the propeller nuts evenly and work the propeller aft on the crankshaft flange. Tighten the propeller nuts to 60-70 FT-LBS on the standard Hartzell propeller or 55-65 FT-LBS on the standard McCauley propeller.
- e) Install the standard Mooney 201 (M20J) spinner doublers and spinner dome.

Note 1: When installing the standard Hartzell or McCauley Mooney 201 (M20J) spinner dome, Service Bulletin M20-219 specifies the installation of six (6) stiffeners and the use of 6.5 MIL x 0.50 wide "Scotch Brand" No. 549 Teflon tape on the propeller dome. Sufficient Teflon tape should be used to provide a snug hand press fit between the spinner front bulkhead and the propeller dome. ARI provides Teflon tape (P/N 611005) in the modification kit. In those instances where the gap between the front spinner bulkhead and the propeller dome is too great for practical use of the Teflon tape, ARI provides 8 MIL x 1 inch aluminum adhesive tape (P/N 621005) to partially fill the gap before using the Teflon tape. See the parts list on Page 4.

- 3. For "non-standard" 2-Blade and 3-Blade Mooney 201 (M20J) spinners, follow the appropriate instructions in Supplement Number 2 or Supplement Number 3 of this Drawing List Report (DLR 1005) for Hartzell and McCauley spinners. The rear bulkhead of the Hartzell A-2295 2-Blade and 3-Blade spinners is attached to the rear of the propeller hub instead of the starter ring gear. A kit which includes new longer bolts, washers, and spacers is provided with each new Hartzell A-2295 spinner to accomplish this task.

WEIGHT AND BALANCE

The change to weight and balance is 2.0 pounds at -32 inches moment arm which equals -64 inch-pounds total moment. For M20F and M20G long-body models, add -5 inches to the moment arm for a total of -37 inches moment arm and -74 inch-pounds of total moment.

APPROVAL DATA

Make a log book entry and fill out Form 337 and return the aircraft to service.

Description of work: (Back of 337) Installed the Mooney 201 (M20J) spinner assembly in accordance with the appropriate Mooney Service Manual, spinner manufacturer's instructions, and instructions provided in ARI Drawing List Report Number 1005, Revision 2, dated July 9, 2001, and the accompanying STC Number SA8659SW dated July 19, 1993, and last amended on February 12, 2002.

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005

INSTALL MOONEY 201 (M20J) SPINNERS ON EARLIER MODEL MOONEYS

PARTS LIST

| PART NUMBER | DESCRIPTION | NO. REQUIRED |
|--------------------|--------------------|---------------------|
|--------------------|--------------------|---------------------|

STANDARD MOONEY 201 (M20J) SPINNER PARTS – HARTZELL PROPELLERS

| | | |
|---|------------------------------------|----|
| 940087-501 (MOONEY) or 680031-517 (MOONEY) | Hartzell Q-Tip Spinner Assembly | 1 |
| 680031-027 (MOONEY) | Rear Bulkhead Assembly | 1 |
| 680031-019 (MOONEY) | Spinner Dome | 1 |
| 680031-029 (MOONEY) | Spinner Doubler Assembly | 2 |
| 680031-037 (MOONEY) | Forward Bulkhead Assembly | 1 |
| 680031-023 (MOONEY) | Stiffener (S.B. M20-219) | 6 |
| AN4-11A (MOONEY) | Bolts for Rear Bulkhead | 12 |
| AN960-416 (MOONEY) | Washers for Rear Bulkhead | 12 |
| AN363-428 (MOONEY) | Nuts for Rear Bulkhead | 12 |
| MS51958-62 (MOONEY) | Screws for Forward Bulkhead | 6 |
| 6515 (MOONEY) | Fiber Washers for Forward Bulkhead | 6 |
| MS51958-62 (MOONEY) | Screws to Install Spinner | 16 |
| 6515 (MOONEY) | Fiber Washers to Install Spinner | 16 |
| 611005 (ARI) | 6.5 MIL x 0.5 Inch Teflon Tape | 1 |
| M20-219 (ARI) | Mooney Service Bulletin | 1 |
| 601005 (ARI) | Spinner Shim (As Required) | AR |

Note 1: (MOONEY) = Mooney Factory Supplied Part
(ARI) = Aero Resources, Inc. Supplied Part

Note 2: See Supplement #1 (If Applicable) for Installation of Spinner Shims

Note 3: See Supplement #2 (If Applicable) for:
Mooney 201 (M20J) McCauley D-6504 3-Blade Spinner Installation

Note 4: See Supplement #3 (If Applicable) for:
Mooney 201 (M20J) Hartzell A-2295-4 3-Blade Spinner Installation
Mooney 201 (M20J) Hartzell A-2295-5 2-Blade Spinner Installation

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005

INSTALL MOONEY 201 (M20J) SPINNERS ON EARLIER MODEL MOONEYS

PARTS LIST

| PART NUMBER | DESCRIPTION | NO. REQUIRED |
|--------------------|--------------------|---------------------|
|--------------------|--------------------|---------------------|

STANDARD MOONEY 201 (M20J) SPINNER PARTS – MCCAULEY PROPELLERS

| | | |
|---|------------------------------------|----|
| 680031-501 (MOONEY) or 680031-503 (MOONEY) or 680031-505 (MOONEY) or 680031-515 (MOONEY) or 680031-519 (MOONEY) | McCauley Spinner Assembly | 1 |
| 680031-017 (MOONEY) | Rear Bulkhead Assembly | 1 |
| 680031-019 (MOONEY) | Spinner Dome | 1 |
| 940003-501 (MOONEY) | Spinner Doubler Assembly | 2 |
| 680031-011 (MOONEY) | Forward Bulkhead Assembly | 1 |
| 680031-023 (MOONEY) | Stiffener (S.B. M20-219) | 6 |
| AN4-11A (MOONEY) | Bolts for Rear Bulkhead | 12 |
| AN960-416 (MOONEY) | Washers for Rear Bulkhead | 12 |
| AN363-428 (MOONEY) | Nuts for Rear Bulkhead | 12 |
| MS51958-62 (MOONEY) | Screws for Forward Bulkhead | 6 |
| 6515 (MOONEY) | Fiber Washers for Forward Bulkhead | 6 |
| MS51958-62 (MOONEY) | Screws to Install Spinner | 16 |
| 6515 (MOONEY) | Fiber Washers to Install Spinner | 16 |
| 611005 (ARI) | 6.5 MIL x 0.5 Inch Teflon Tape | 1 |
| M20-219 (ARI) | Mooney Service Bulletin | 1 |
| 601005 (ARI) | Spinner Shim (As Required) | AR |
| 621005 (ARI) | 8 MIL x 1 Inch Aluminum Tape | AR |

Note 1: (MOONEY) = Mooney Factory Supplied Part
(ARI) = Aero Resources, Inc. Supplied Part

Note 2: See Supplement #1 (If Applicable) for Installation of Spinner Shims

Note 3: See Supplement #2 (If Applicable) for:
Mooney 201 (M20J) McCauley D-6504 3-Blade Spinner Installation

Note 4: See Supplement #3 (If Applicable) for:
Mooney 201 (M20J) Hartzell A-2295-4 3-Blade Spinner Installation
Mooney 201 (M20J) Hartzell A-2295-5 2-Blade Spinner Installation

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #3)

INSTALL MOONEY 201 (M20J) 3-BLADE SPINNERS ON EARLIER MOONEYS (HARTZELL A-2295-4 3-BLADE AND A-2295-5 2-BLADE SPINNERS)

Eligible on the following Mooney airplane models:

All Mooney 201 (M20J) models and Pre-201 models (M20A thru M20G) supported by Hartzell's 3-blade STC SW4529NM and all of the above models that have Hartzell propellers with the HC-C2YK or HC-C2YR hub installed. July 9, 2001.

INTRODUCTION

The purpose of this supplement is to add two new Hartzell spinners, Part Number A-2295-4 and Part Number A-2295-5, to ARI STC Number SA8659SW. Part Number A-2295-4 is a 3-blade spinner supported by Hartzell STC Number SA4529NM and will be used instead of Hartzell Part Number A-2295-1, which is described above in Supplement #2. Hartzell also developed a 2-blade version of this same spinner which is identical in size and has Part Number A-2295-5. The 2-blade version of the spinner fits the Mooney 201 (M20J) and the Pre-201 model Mooneys (M20A thru M20G) which have the 2-blade Hartzell propeller installed.

HARTZELL A-2295-4 3-BLADE SPINNER CONVERSION

Hartzell designed the A-2295-4 spinner to be almost identical in size to the standard Mooney 201 (M20J) spinner. This new 3-blade spinner is installed in the same manner as the A-2295-1 spinner. This spinner is 14.5 inches in diameter by 19.0 inches long. It comes with a rear bulkhead that attaches to the back of the Hartzell 3-blade propeller hub. The Hartzell 3-blade propeller and spinner STC SA4529NM is eligible on M20C, D, E, F, G, and J Models.

HARTZELL A-2295-5 2-BLADE SPINNER CONVERSION

The Hartzell A-2295-5 2-blade spinner is designed to fit the Mooney 201 (M20J) and Pre-201 Mooneys (M20A thru M20G) which are equipped with Hartzell 2-blade propellers that have the HC-C2YK or HC-C2YR hub. The standard Mooney 201 spinner has a rear spinner bulkhead which attaches to the engine starter ring gear. The A-2295-5 spinner comes with a rear bulkhead and installation kit which allows it to be attached to the back of the propeller hub. Consequently, Service Bulletin M20-219 does not apply to this installation. This spinner is the same size as the 3-blade A-2295-4 spinner, 14.5 inches in diameter by 19.0 inches long.

COOLING TEST COMPARISON - M20J SPINNER VERSUS HARTZELL SPINNERS

In order to certify the Mooney 201 (M20J) 2-blade spinner for use on Pre-201 Mooneys, Aero Resources, Inc. and the FAA conducted cooling tests on Pre-201 aircraft with the larger M20J spinner (14.5 inches in diameter by 20.0 inches long) installed. The purpose of the tests was to assure that the larger M20J spinner did not adversely affect engine cooling. The cooling tests were successful in documenting that engine cooling remained within acceptable limits with the larger M20J spinner installed on Pre-201 Mooneys.

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #3)

INSTALL MOONEY 201 (M20J) 3-BLADE SPINNERS ON EARLIER MOONEYS (HARTZELL A-2295-4 3-BLADE AND A-2295-5 2-BLADE SPINNERS)

COOLING TEST COMPARISON (CONTINUED)

The two Hartzell propellers described above (A-2295-4 and A-2295-5) both have the same diameter as the standard M20J 2-blade spinner and are 1.0 inches shorter in length. Consequently, both spinners will present the same obstruction to the flow of ram cooling air entering the engine compartment as the standard M20J spinner. Therefore, the cooling tests already performed with the standard Mooney 201 (M20J) 2-blade spinner should not be significantly altered by the substitution of the A-2295-4 or A-2295-5 spinners manufactured by Hartzell.

Conformity inspections were conducted on June 28, 2001, to assure that the A-2295-4 3-blade spinner and the A-2295-5 2-blade spinner are both compatible with the ARI nose cowl modifications on Pre-201 Mooneys.

INSTALLATION INSTRUCTIONS FOR HARTZELL 2- AND 3-BLADE SPINNERS

1. Remove the existing propeller spinner assembly and rear bulkhead assembly.
2. Install the Mooney 201 (M20J) 3-blade spinner assembly in accordance with the manufacturer's instructions, your Mooney Service Manual, and the applicable instructions on Pages 2 and 3 of this Drawing List Report.

Note 1: Steps 1 and 2 require the complete removal and reinstallation of the aircraft propeller. Be sure to follow the manufacturer's instructions and the instructions in your Mooney Service Manual for removal and installation of the propeller.

Note 2: The installer must determine from the manufacturer or ARI whether Mooney Service Bulletin M20-219 applies to the installation.

WEIGHT AND BALANCE

The change to weight and balance is 2.0 pounds at -32 inches moment arm which equals -64 inch-pounds total moment. For M20F and M20G long-body models, add -5 inches to the moment arm for a total of -37 inches moment arm and -74 inch-pounds of total moment.

APPROVAL DATA

Make a log book entry and fill out Form 337 and return the aircraft to service.

Description of work: (Back of 337) Installed Hartzell A-2295-4 (or A-2295-5) spinner assembly in accordance with Hartzell installation instructions and instructions provided in ARI Drawing List Report Number 1005, Revision 2, dated July 9, 2001, and STC Number SA8659SW.



SUBJECT: PROPELLER SPINNER BULKHEAD INSPECTION
AND MODIFICATION

MODELS
AFFECTED: M20J S/N's 24-0001 thru 24-0786

COMPLIANCE: As soon as practical within the next 25 hours
of operation.

INTRODUCTION: In order to prevent the possibility of cracking
of the 680031-3 or -17 spinner aft bulkhead
assembly around the attachment bolts, the
following inspection and modification should
be implemented.

NOTE: S.B. No. 201, Propeller Spinner
Inspection and Modification, should
be accomplished in conjunction with
this Service Bulletin if not already
complied with.

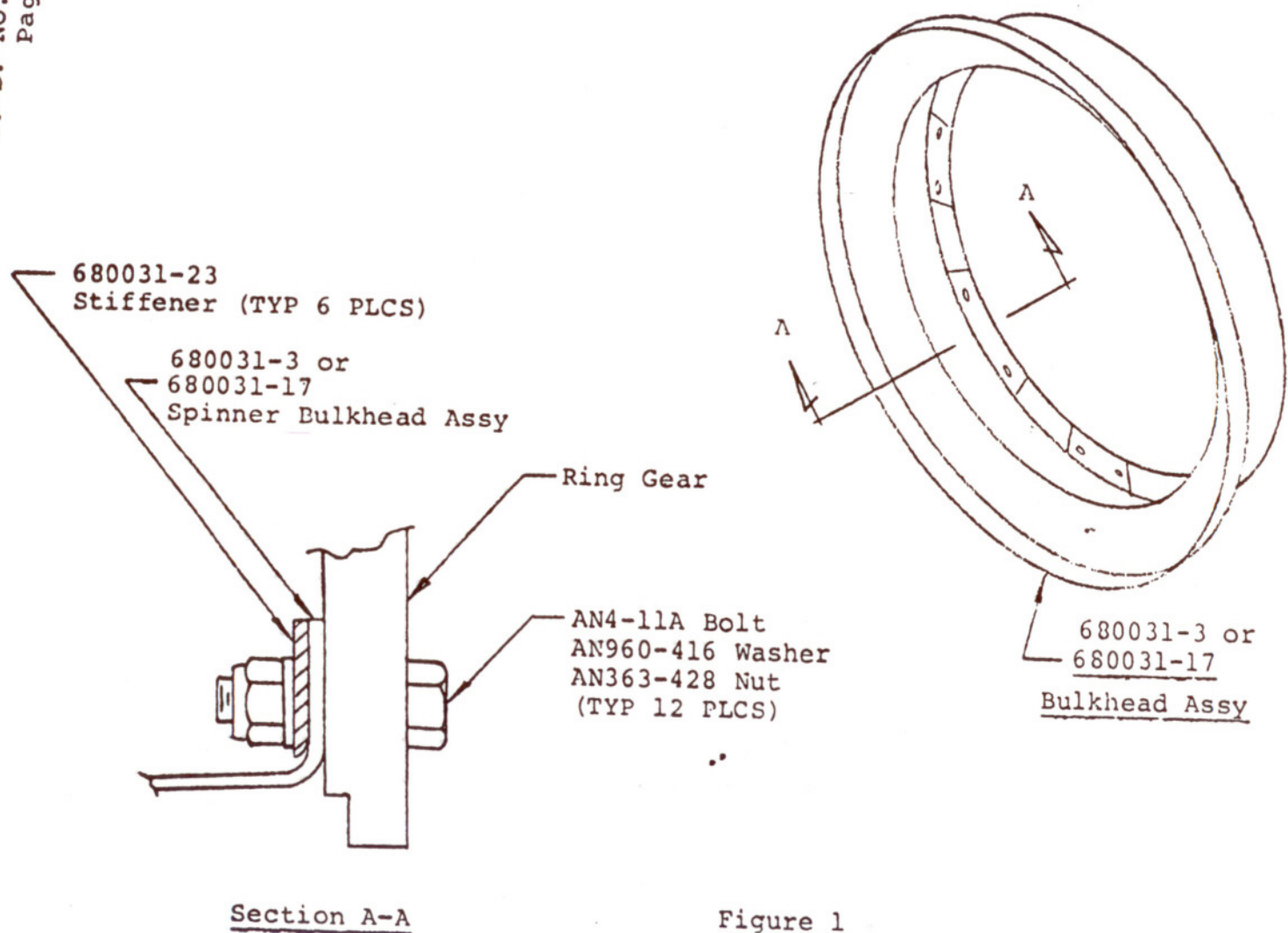
1. Remove the 680031-7 or -19 propeller spinner.
2. Remove the propeller assembly.
3. Remove (12) AN4-10A bolts attaching
680031-3 or 680031-17 bulkhead assy to
the engine ring gear.
4. Inspect 680031-3 or 680031-17 bulkhead
assy for cracks; if cracked, replace bulkhead.
If no cracks are found, proceed with instal-
lation of Service Bulletin stiffeners
680031-23 (6 each as shown in Figure 1).
5. Reinstall propeller and spinner removed per
Steps 1 and 2 with existing hardware. (Torque
all bolts to specified torque. AN4-11A 50 to
70 in-lbs., prop attach bolts 55 to 65 ft-lbs.,
and spinner screws 30 in-lbs. +5 in-lbs.).

CAUTION: The forward spinner bulkhead should have a
snug fit on the propeller dome. Install
6.5 MIL x .50 wide "Scotch Brand" No.
549 pressure sensitive tape, mfg. by 3M
Co., St. Paul, Minnesota, on propeller
dome as required to provide a snug hand
press fit.

6. Make appropriate log book entry and fill out
and return compliance card.

SERVICE BULLETIN
KIT NO. M20-219-1

680031-23 Stiffeners 6 ea.
AN4-11A Bolt 12 ea.



AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #1)

SPINNER SHIM FOR ARI NOSE COWL (1958-1978 M20A, B, C, D, E, F, & G)

Eligible on the following Mooney Airplane Models:

M20A, M20B, M20C, M20D, M20E, M20F, and M20G through 1978.

Revised May 20, 1997.

INTRODUCTION

Due to the variation in propeller installations on the above aircraft, it is sometimes necessary to provide additional clearance between the propeller, the M20J spinner assembly and the Aero Resources, Inc. (ARI) nose cowl installation. This is particularly true of Mooneys equipped with earlier model McCauley propellers.

The 1/8-inch thick ARI spinner shim described below is designed to fit between the rear spinner bulkhead and the engine starter ring gear. The number of shims that can be used is limited by the contact area between the front spinner bulkhead and the propeller dome. The spinner must be thoroughly supported by the front spinner bulkhead and propeller dome to prevent cracking of the rear bulkhead assembly.

These spinner shims also make it possible to install the Mooney 201 (M20J) Hartzell spinner assembly (P/N 940087-501), on earlier model Mooneys with McCauley propellers. Hartzell propeller installations thus far have not required any shims for the spinner and propeller to fit properly with the nose cowl. Therefore, shims will not initially be shipped to owners of Hartzell equipped Mooneys unless requested.

INSTALLATION INSTRUCTIONS

1. Remove the existing spinner dome from the aircraft and set it aside.
2. Remove the Mooney 201 (M20J) Hartzell or McCauley spinner assembly from the shipping carton. Detach the M20J spinner from the rear bulkhead and slide the spinner over the aircraft propeller until the front edge of the propeller cut-outs on the spinner dome come to within 1/4 - inch of the propeller blades. The propeller dome should extend all the way through the front spinner bulkhead. If the propeller dome does not extend through the front spinner bulkhead, then the propeller will not properly support the spinner, and ARI should be contacted for an alternate spinner or to arrange for the return of the kit for a refund.

Note 1: In order to assure a snug fit between the front spinner bulkhead and the propeller dome on Mooney 201 (M20J) spinner installations, Mooney Service Bulletin M20-219 specifies the use of 6.5 MIL x .50 inch wide "Scotch Brand" No. 549 pressure sensitive Teflon tape around the propeller dome. ARI supplies this tape as part of the installation kit (P/N 611005).

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #1)

SPINNER SHIM FOR ARI NOSE COWL (1958-1978 M20A, B, C, D, E, F, & G)

INSTALLATION INSTRUCTIONS (CONTINUED)

Note 2: In some earlier model propeller installations, the gap between the Mooney 201 (M20J) front spinner bulkhead and the propeller dome may be as large as 0.25 inch, and the use of the Teflon tape alone is not practical. To close this larger gap, ARI supplies 8 MIL x 1 inch aluminum adhesive tape (P/N 621005). The aluminum tape should be wrapped around the propeller dome until the gap is filled to within a few thousandths of a snug fit. Then the Teflon tape should be wrapped on top of the aluminum tape to accomplish a snug fit. The Teflon tape is used to fill the gap in order to avoid metal to metal friction between the propeller dome and the front spinner bulkhead. The addition of this aluminum tape may be necessary for some earlier model McCauley installations.

3. Our initial experience indicates that about four (4) shims will be required to install the M20J spinner on earlier model McCauley equipped Mooneys. The following measurements will determine the exact number of shims required:
 - a) With the existing spinner dome removed and before removing the propeller to install the new spinner assembly, measure and record the distances from the starter ring gear to the front edge of each propeller blade where it extends through the spinner.
 - b) Take the M20J spinner with the rear bulkhead attached and before it is installed, and place it on a flat surface with the spinner pointing upward. Measure and record the distances from the flat surface to the front edge of each spinner cut-out where the propeller blade extends through the spinner.
 - c) Subtract the average of the distances measured in Step 3a from the average of the distances measured in Step 3b. The difference between these measurements should be NO LESS THAN +0.155 inch, plus or minus 0.03 inch, in order to provide proper clearance for the propeller blades.
4. If the difference measured in Step 3c is LESS than +0.155 inch, plus or minus 0.03 inch, then 1/8 -inch shims should be added until the difference measured in step 3c is at least +0.155 inch, plus or minus 0.03 inch.
5. The twelve (12) AN4-11A, 1 and 1/8-inch bolts supplied with Service Bulletin M20-219 will have to be changed to accommodate the shims that may be added as follows:

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #1)

SPINNER SHIM FOR ARI NOSE COWL (1958-1978 M20A, B, C, D, E, F, & G)

INSTALLATION INSTRUCTIONS (CONTINUED)

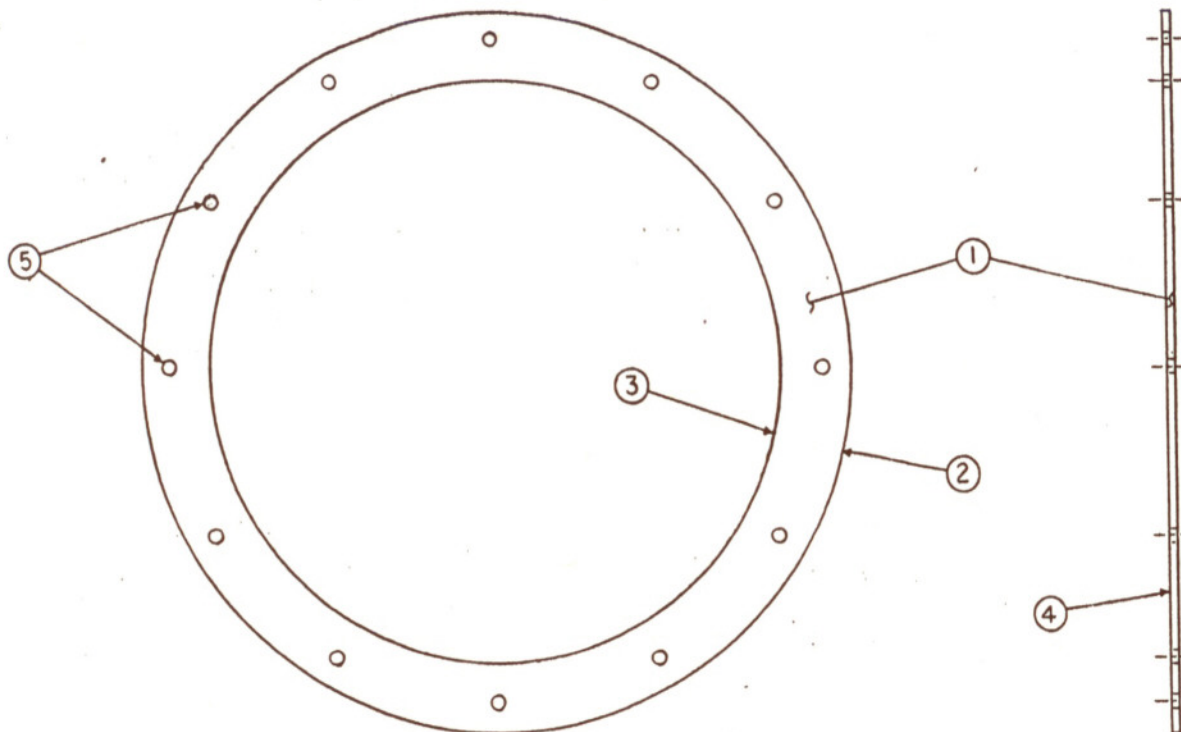
| <u>NO. SHIMS</u> | <u>BOLT P/N</u> | <u>BOLT LENGTH</u> |
|------------------|-----------------|--------------------|
| 1 | AN4-12A | 1 AND 1/4 INCH |
| 2 | AN4-13A | 1 AND 3/8 INCH |
| 3 | AN4-14A | 1 AND 1/2 INCH |
| 4 | AN4-15A | 1 AND 5/8 INCH |
| 5 | AN4-16A | 1 AND 3/4 INCH |
| 6 | AN4-17A | 1 AND 7/8 INCH |

6. Install the rear bulkhead and spinner assemblies in accordance with the instructions on Pages 1 and 2 of this report (DLR #1005), except insert the required number of shims between the starter ring gear and the rear spinner bulkhead assembly. Add 0.525 pounds for each shim, which includes the additional weight of the longer bolts. The installer must replace the standard AN4-11A bolts with the proper bolts for the number of shims used.

WEIGHT AND BALANCE

This change in weight and balance assumes four (4) shims with AN4-15A bolts for a total weight increase of 2.1 pounds at -18 moment arm which equals -38 inch-pounds total moment. For M20F and M20G long-body models, add -5 inches to the moment arm for a total of -23 moment arm and a total of -48 inch-pounds moment. This will make the net additional weight of the M20J spinner modification including shims 4.1 pounds at -24.9 inches moment arm which equals -102 inch-pounds total moment. For M20F and M20G long-body models, add -5 inches to the moment arm for a total of -29.9 inches moment arm and -123 inch-pounds total moment.

SIDE VIEW



NOTE 4: EACH SHIM, ALONG WITH THE ADDITIONAL LENGTH OF BOLTS REQUIRED, WILL WEIGH APPROXIMATELY 0.5 LBS.

| LIST OF MATERIALS AND SPECIFICATIONS | | |
|--------------------------------------|----------|--|
| ITEM NO. | PART NO. | DESCRIPTION |
| 1 | 601005 | THIS PART IS MADE OF 1/8-INCH THICK 3003 ALUMINUM ALLOY. |
| 2 | N/A | OUTSIDE DIAMETER IS 11 1/8 INCHES \pm 1/16 INCH WITH \pm 0.010 CONCENTRICITY |
| 3 | N/A | INSIDE DIAMETER IS 9 1/2 INCHES \pm 1/16 INCH WITH \pm 0.010 CONCENTRICITY |
| 4 | N/A | THE THICKNESS OF THE PART IS 1/8-INCH AND THE FLATNESS IS 1/32-INCH |
| 5 | N/A | THE TWELVE (12) 1/4-INCH HOLES FIT A 10 3/4-INCH BOLT CIRCLE. THE LOCATION AND PATTERN OF THE HOLES ARE CONTROLLED BY USING THE M20 SPINNER REAR BULKHEAD AS A PATTERN. HOLE LOCATIONS ARE \pm 0.010 INCH. |

| | | |
|----------------------|---------------------------------------|-------------------------|
| AERO RESOURCES, INC. | | |
| SCALE FULL SIZE | APPROVED BY E.W. KIMBROUGH, P.A.S. | DRAWN BY E.W. |
| DATE 1-25-56 | | REVISED |
| SPINNER SHIM | | |
| FRONT AND SIDE VIEWS | | MANUFACTURED BY 1005 |

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (SUPPLEMENT #2)

INSTALL MOONEY 201 (M20J) 3-BLADE SPINNERS ON EARLIER MOONEYS (HARTZELL A-2295-1 AND MCCAULEY D-6504 SPINNERS)

Eligible on the following Mooney Airplane Models:

All Pre-201 (M20J) Models supported by M20J 3-blade propeller STC's.

May 20, 1997.

INTRODUCTION

The manufacturers of Hartzell and McCauley Propeller have obtained STC's to install a 3-blade propeller on Mooney 201 (M20J) and earlier model Mooneys instead of the standard 2-blade propeller. The purpose of this supplement is to allow the Mooney 201 (M20J) 3-blade spinner to be installed on those Pre-201 Mooneys which have received STC's for the Hartzell and McCauley 3-blade propellers.

HARTZELL A-2295-1 3-BLADE PROPELLER CONVERSION

Hartzell STC Number SA4529NM provides for the installation of Hartzell 3-blade propeller Part Number HC-C3YR-1RF/F7282 on M20C, D, E, F, G and J Models of Mooney aircraft. The spinner that Hartzell initially used with the M20J 3-blade conversion was Part Number A-2295-1. The diameter of the A-2295-1 spinner is 13.75 inches by approximately 17.0 inches long. The standard 2-blade spinners used on Pre-201 Mooneys are 12.75 inches in diameter by approximately 13.25 to 15.0 inches long. The standard Mooney 201 (M20J) 2-blade spinner is 14.5 inches in diameter by 20.0 inches long. Service Bulletin M20-219 does not apply to the Hartzell installation.

MCCAULEY D-6504 3-BLADE PROPELLER CONVERSION

McCauley STC Number SA315CH provides for the installation of a McCauley 3-blade propeller on M20A, B, C, D, E, F, G and J aircraft. McCauley uses 3-blade propeller Part Number P4247151-02 on the M20A, B, C, D, and G aircraft and 3-blade propeller Part Number P4247151-01 on the Mooney M20E, F, and J aircraft. McCauley 3-blade spinner Part Number D-6504 is used on the Mooney 201 (M20J) 3-blade propeller conversion. The diameter of the McCauley D-6504 3-blade spinner is 14.44 inches by 19.19 inches long. Service Bulletin M20-219 applies to the McCauley installation.

COOLING TEST COMPARISON BETWEEN 2-BLADE AND 3-BLADE SPINNERS

In order to certify the Mooney 201 (M20J) 2-blade spinner for use on Pre-201 Mooneys, Aero Resources, Inc. and the FAA conducted cooling tests on Pre-201 aircraft with the larger M20J spinner (14.5 inches in diameter by 20.0 inches long) installed. The purpose of the tests was to assure that the larger M20J spinner did not adversely affect engine cooling. The cooling tests were successful in documenting that engine cooling remained within acceptable limits with the larger M20J spinner installed on Pre-201 Mooneys.

AERO RESOURCES, INCORPORATED

DRAWING LIST REPORT NUMBER 1005 (Supplement #2)

INSTALL MOONEY 201 (M20J) 3-BLADE SPINNERS ON EARLIER MOONEYS (HARTZELL A-2295-1 AND MCCAULEY D-6504 SPINNERS)

COOLING TEST COMPARISON (CONTINUED)

The M20J 3-blade spinners supplied by the above manufacturers both have slightly smaller diameters than the standard M20J 2-blade spinner and are 1.0 to 3.0 inches shorter in length. Consequently, both spinners will present less obstruction to the flow of ram cooling air entering the engine compartment than the standard 2-blade M20J spinner. Therefore, the cooling tests already performed with the larger M20J 2-blade spinner should not be significantly altered by the substitution of the M20J 3-blade spinners supplied by the above manufacturers.

INSTALLATION INSTRUCTIONS

1. Remove the existing propeller spinner assembly and rear bulkhead assembly.
2. Install the Mooney 201 (M20J) 3-blade spinner assembly in accordance with the manufacturer's instructions, your Mooney Service Manual, and the applicable instructions on Pages 2 and 3 of this Drawing List Report.

Note 1: Steps 1 and 2 require the complete removal and reinstallation of the aircraft propeller. Be sure to follow the manufacturer's instructions and the instructions in your Mooney Service Manual for removal and installation of the propeller.

Note 2: The installer must determine from the manufacturer or ARI whether Mooney Service Bulletin M20-219 applies to the installation.

WEIGHT AND BALANCE

Follow the weight and balance instructions on Page 3 of this report and the instructions supplied by the propeller manufacturer. The change in weight between the 2-blade spinner and 3-blade spinner will be negligible.

APPROVAL DATA

Follow the approval data instructions on Page 3 of this report and the instructions supplied by the propeller manufacturer, except substitute the appropriate spinner designation and manufacturer's instructions.