



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1350 BULLETIN

PIPER CONSIDERS COMPLIANCE MANDATORY

Date: December 17, 2020

(S)

SUBJECT:

**NOSE LANDING GEAR STEERING HORN AND ARM
ASSEMBLIES INSPECTION**

MODELS AFFECTED:

PA-46-350P M350
PA-46-500TP M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

4636759 through 4636761
4697668 through 4697671
4698100 through 4698135

COMPLIANCE TIME:

To coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

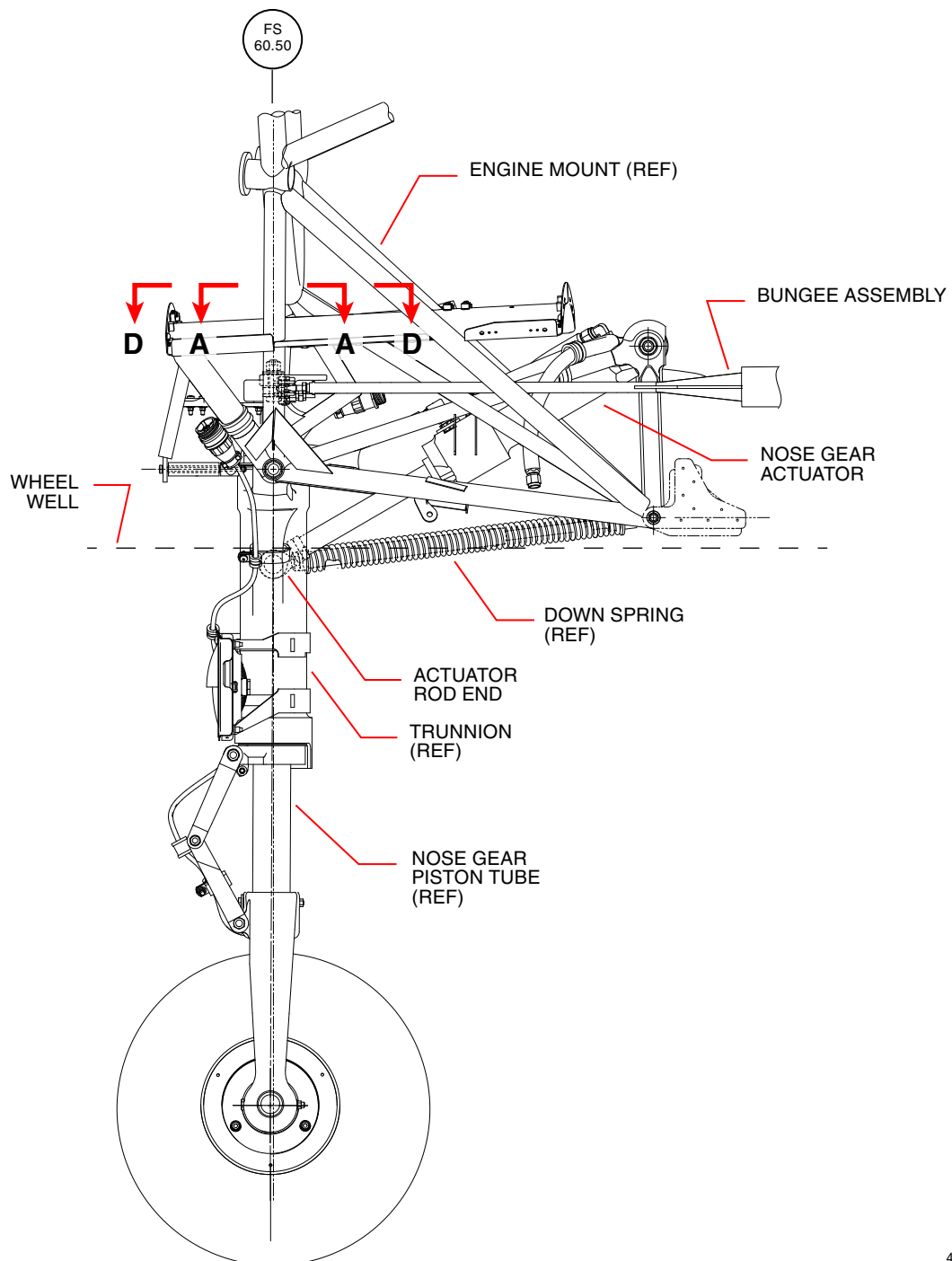
The steering pads, which are components welded onto the nose wheel steering horn assembly, may be protruding beyond the steering horn rollers on the affected airplanes. This may result in the steering pads making improper contact with the nose wheel steering arm assembly. Left uncorrected, this condition may cause damage to the steering arm assembly.

This service bulletin mandates the following steps to address the issues described:

1. Inspect the steering horn assembly to determine if the steering pads are protruding beyond the steering horn rollers, as described above.
2. Inspect the steering arm assembly for damage due to improper contact with the steering pads.
3. If the steering pads are protruding as described above, then replace the steering horn assembly with a new, improved replacement assembly comprised of the steering horn, pads and rollers.
4. If required, based upon inspection, repair or replace the steering arm assembly.

INSTRUCTIONS:

CAUTION: REPAIR TO LANDING GEAR COMPONENTS IS LIMITED TO THE RECONDITIONING OF PARTS (REPLACING BEARINGS AND BUSHINGS), SMOOTHING OUT MINOR NICKS AND SCRATCHES, AND REPAINTING AREAS WHERE PAINT HAS CHIPPED OR PEELED. FOR GREATER DAMAGE, THE REPLACEMENT OF THE AFFECTED COMPONENTS IS REQUIRED.



46N32A000 C

Figure 1 – Sheet 1 of 5
Nose Wheel Steering Assemblies – Typical

1. Gain access to the location of the Nose Wheel Steering Horn Assembly, Piper part number (P/N) 85154-012, and Nose Wheel Steering Arm Assembly, Piper P/N 83626-004. These assemblies are installed above the gear trunnion assembly, just inside the nose landing gear wheel well. Refer to Figure 1.

2. Remove the steering horn from the aircraft. See View A–A and Detail B.

NOTE: Prior to removal, verify if Steering Horn and Roller Assembly, P/N 46N32A009-001, is installed. If so, then there is no need to replace the part. Proceed to Step 5.

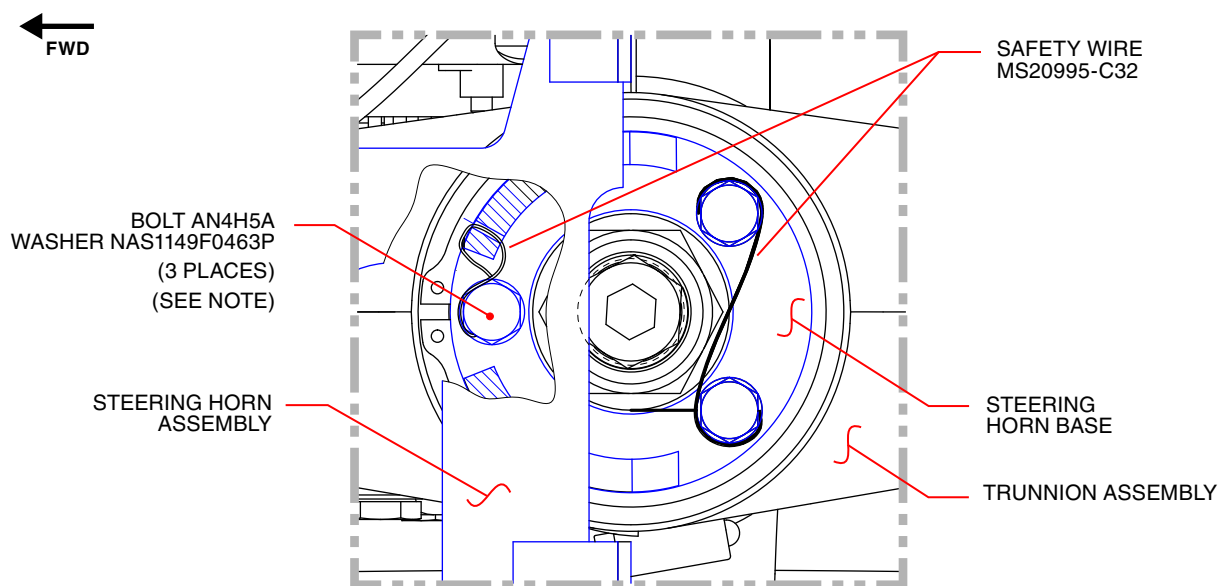
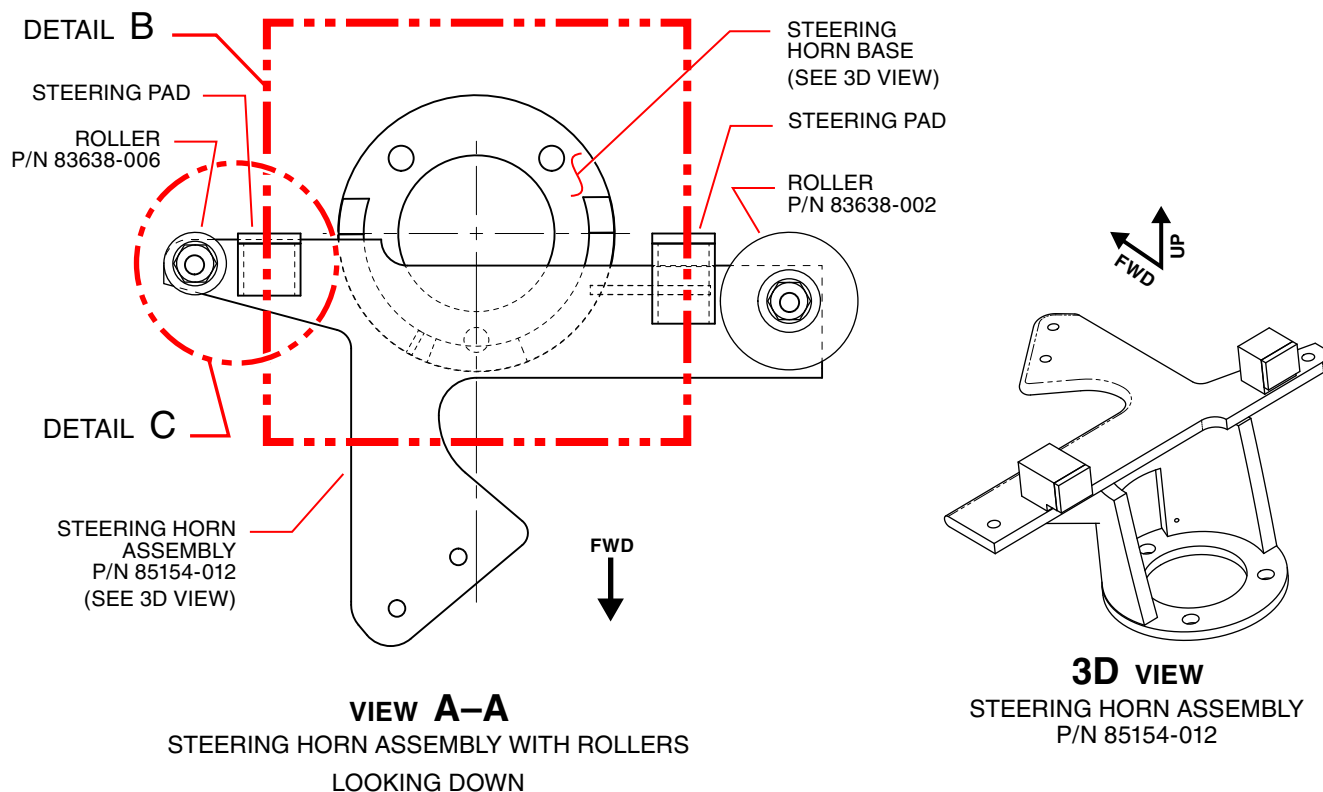
- a. Remove and discard the safety wire retaining the three bolts that attach the steering horn base to the trunnion.
 - b. Loosen and remove the three Bolts AN4H5A and Washers NAS1149F0463P. Retain the hardware for reinstallation; replace any hardware, depending on condition.
 - c. Remove the Nose Wheel Steering Horn Assembly, P/N 85154-012. Do not remove the two Rollers, P/N 83638-002 and P/N 83638-006, from the assembly.
3. Visually inspect the steering horn pads and rollers for any signs of damage.
 - If there is any damage, other than minor nicks or other minor wear, then the steering horn assembly must be replaced, which will be accomplished in an upcoming step. Proceed to Step 5.
 - If there is no visually apparent damage, then proceed to Step 4.
 4. Check if the steering pads and rollers are positioned correctly on the steering horn as shown in Detail C. Place the steering horn onto a flat surface, with the rollers facing the surface. Use a feeler gauge, or a shop aid of appropriate thickness, to determine if the parts are positioned as depicted in Detail C.

NOTE: Detail C provides the correct positioning of the rollers and pads on both the existing and replacement steering horn.

- If the steering pads and rollers are not positioned as Detail C shows, then the parts must be replaced, which will be accomplished in an upcoming step. Proceed to Step 5.
 - If the steering pads and rollers are positioned as Detail C shows, then it may not be necessary to replace the steering horn assembly and rollers. Proceed to Step 5.
5. Inspect the Arm Assembly, P/N 83626-004, for any signs of damage, especially in the areas where the steering pads make contact.

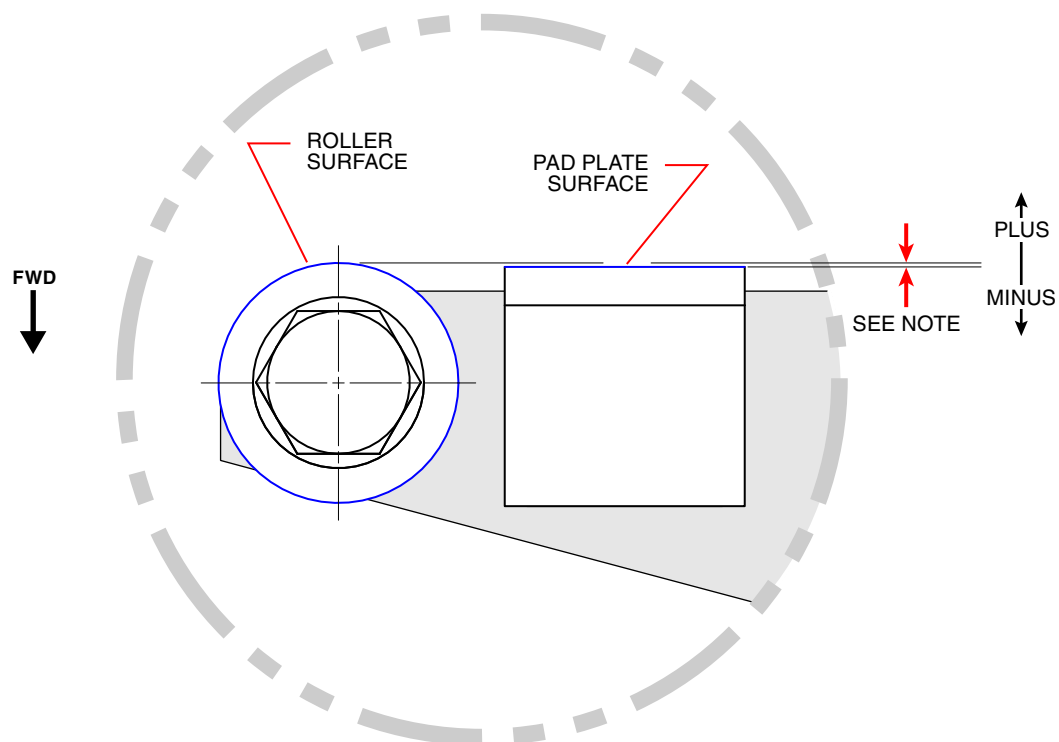
NOTE: This inspection further verifies whether or not the steering pads and rollers, as well as the steering arm, are positioned and installed properly. Existence of the described damage to the arm assembly would indicate that the steering horn pads are improperly contacting the arm, which means the steering horn assembly, and potentially the steering arm assembly, must be replaced.

- If there is any damage at all to the steering arm assembly, then proceed to Step 6.
 - If there is no damage to the steering arm assembly, then proceed to Step 7.
6. Assess the level of damage to the Arm Assembly, P/N 83626-004, discovered during the inspection in Step 5.
 - Repair of the arm assembly is limited to minor damage, such as minor nicks or scratches, chipped or peeled paint, or replacement of the bearing. If minor repairs are possible, then once they are completed, proceed to Step 7, to reinstall or replace the steering horn assembly.
 - More significant damage to the arm assembly requires the replacement of the arm assembly. Proceed to Step 7, to replace the steering horn assembly (Step 7.a.) and the arm assembly (Step 7.c.).



NOTE: Torque Bolts AN4H5A to 25–30 in-lb.

DETAIL B
STEERING HORN BASE (TYPICAL)
(VIEW ROTATED 90 DEGREES CW)



NOTE: The surface of both rollers must be positioned between plus 0.020 in. maximum and minus 0.001 in. maximum distance from the surface of both steering pad plates. The acceptable distance is applicable to both sides at the same time.

DETAIL C

CORRECT ROLLER AND PAD POSITIONING
(TYPICAL OF BOTH ENDS OF HORN AND ALL HORN ASSEMBLIES)

Figure 1 – Sheet 3 of 5
Nose Wheel Steering Assemblies – Typical

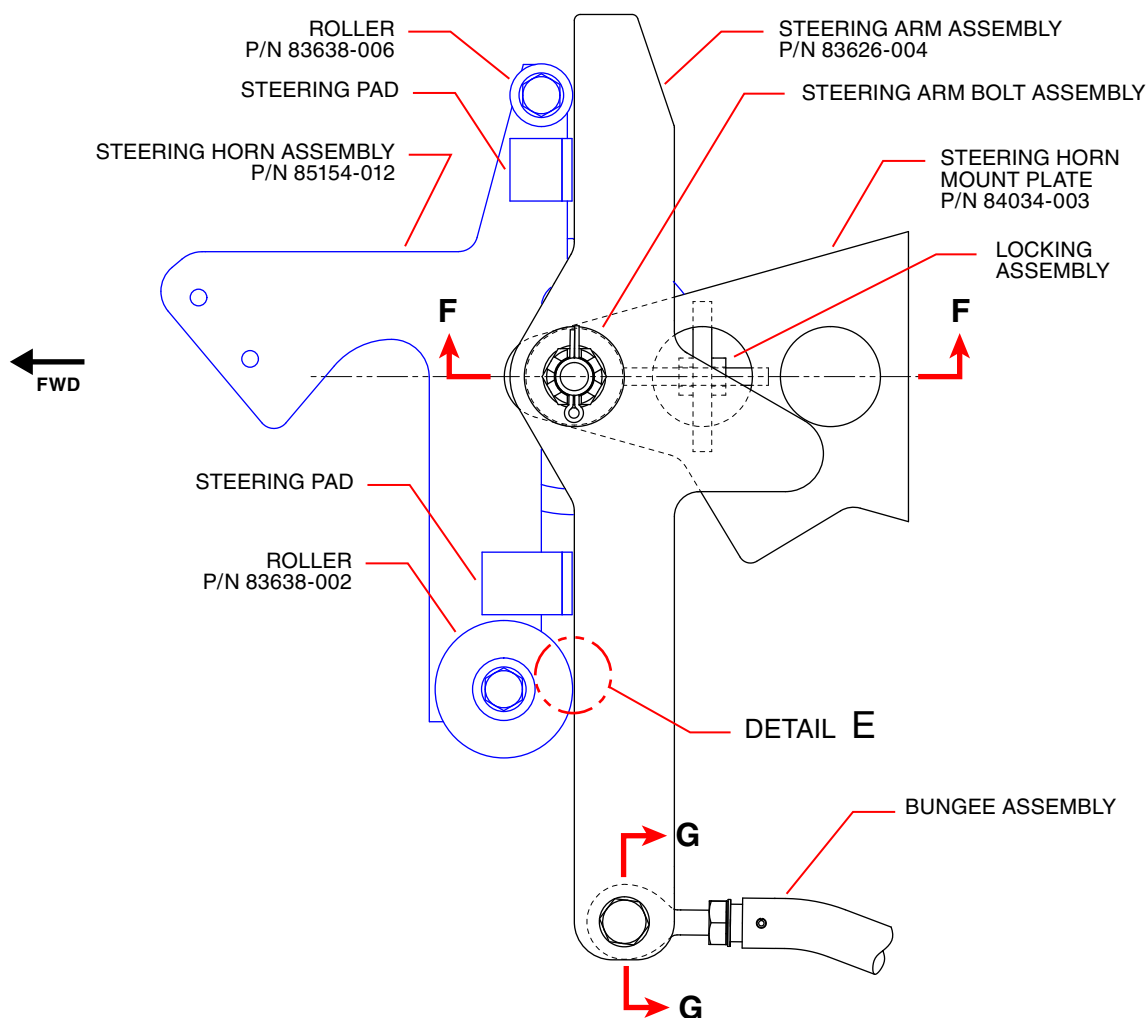
7. Replacement and Reinstallation of Parts

Complete any of the following steps that apply, based on the results of the inspections completed in previous steps:

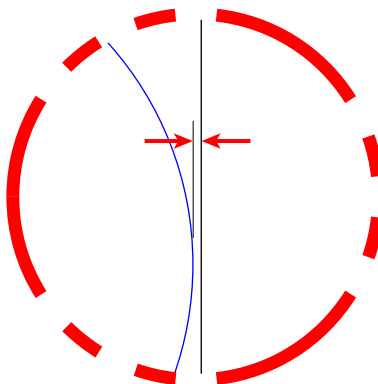
- a. Replace the steering horn assembly and rollers with the new, improved assembly.

NOTE: If the existing steering horn assembly and rollers are going to be reinstalled, then skip to Step b.

- 1) Order one (1) Nose Wheel Steering Horn and Roller Assembly, P/N 46N32A009-801, which is shown in Figure 2. This new, improved assembly replaces, as one assembly, the existing steering horn assembly (which includes the steering pads) and steering horn rollers.
 - 2) Install P/N 46N32A009-801 onto the trunnion assembly, as shown in in Detail B. Torque the bolts per the note in Detail B. Safety wire the bolts with P/N 151-296 (MS20995-C32).
- b. Reinstall the existing steering horn assembly and rollers (if applicable).
- 1) Place the steering horn base (with rollers installed) back onto the top of the trunnion assembly, as shown in Detail B.
 - 2) Install the hardware retained in Step 2, and torque the bolts per the note in Detail B. Safety wire the bolts with P/N 151-296 (MS20995-C32).
- c. Replace the steering arm assembly, if required.
- 1) Order one (1) of each:
 - Steering Arm Assembly, Piper P/N 83626-004
 - Cotter Pin, P/N 424-052 (MS24665-134) (for the bungee attachment, all models)
 - Cotter Pin, P/N 424-059 (MS24665-283) (for the M600 only)
 - 2) Remove the existing arm assembly:
 - a) Disconnect the forward end of the steering bungee from the left hand side of the steering arm, shown in View D–D. Retain the hardware for reinstallation (see View G–G), except for the cotter pin, which is to be discarded; replace any hardware, depending on condition.
 - b) From the bolt assembly common to the steering arm and the mount plate, shown in View F–F, remove the cotter pin, nut and washer that fasten the steering arm to the mount plate. Discard the cotter pin and retain the other hardware; replace any hardware, depending on condition.
 - c) Lift the steering arm assembly off of the bolt.
 - 3) Install the new, replacement Steering Arm Assembly, P/N 83626-004:
 - a) Position the replacement steering arm assembly on the bolt (AN6-15 for M600, or AN6-14A for M350 and M500). Ensure that the bolt hardware stack-up is exactly as defined, for the appropriate model, in View F–F. Replace any hardware on condition.
 - b) Torque the nut (MS17825-6 for M600, or MS21042-6 for M350 and M500), per the note in View F–F.
 - c) On the M600 only, install a new Cotter Pin, P/N 424-059 (MS24665-283).

**VIEW D-D**

FACTORY INSTALLED STEERING HORN ASSEMBLY (P/N 85154-012)
AND STEERING ARM ASSEMBLY (P/N 83626-004)
LOOKING DOWN

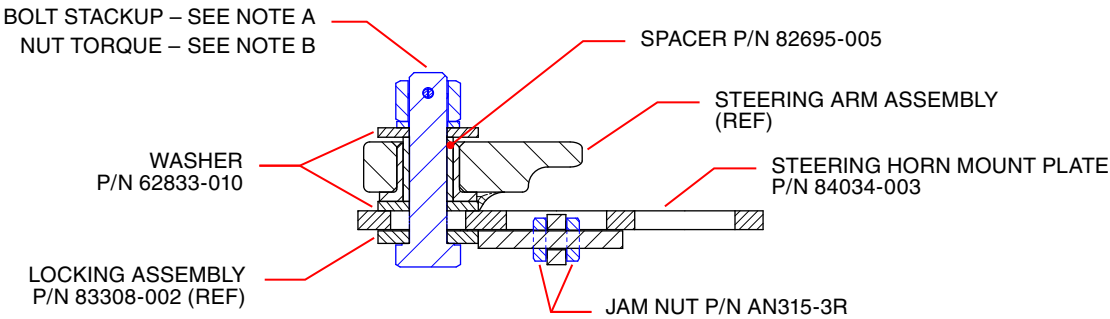


NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL E

CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 4 of 5
Nose Wheel Steering Assemblies – Typical

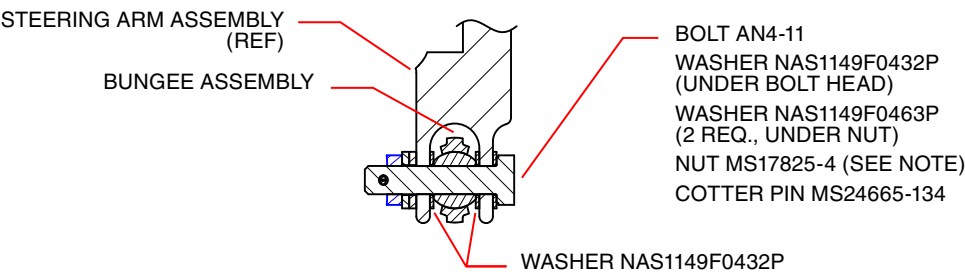


NOTE A: The bolt stackup, by models:

For M600 (shown):	For M350 and M500:
BOLT AN6-15	BOLT AN6-14A
WASHER NAS1149F0663P	NUT MS21042-6
NUT MS17825-6	
COTTER PIN MS24665-283	

NOTE B: For M600 only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.
For M350 and M500, torque the Nut MS21042-6 to 175-190 in-lb.

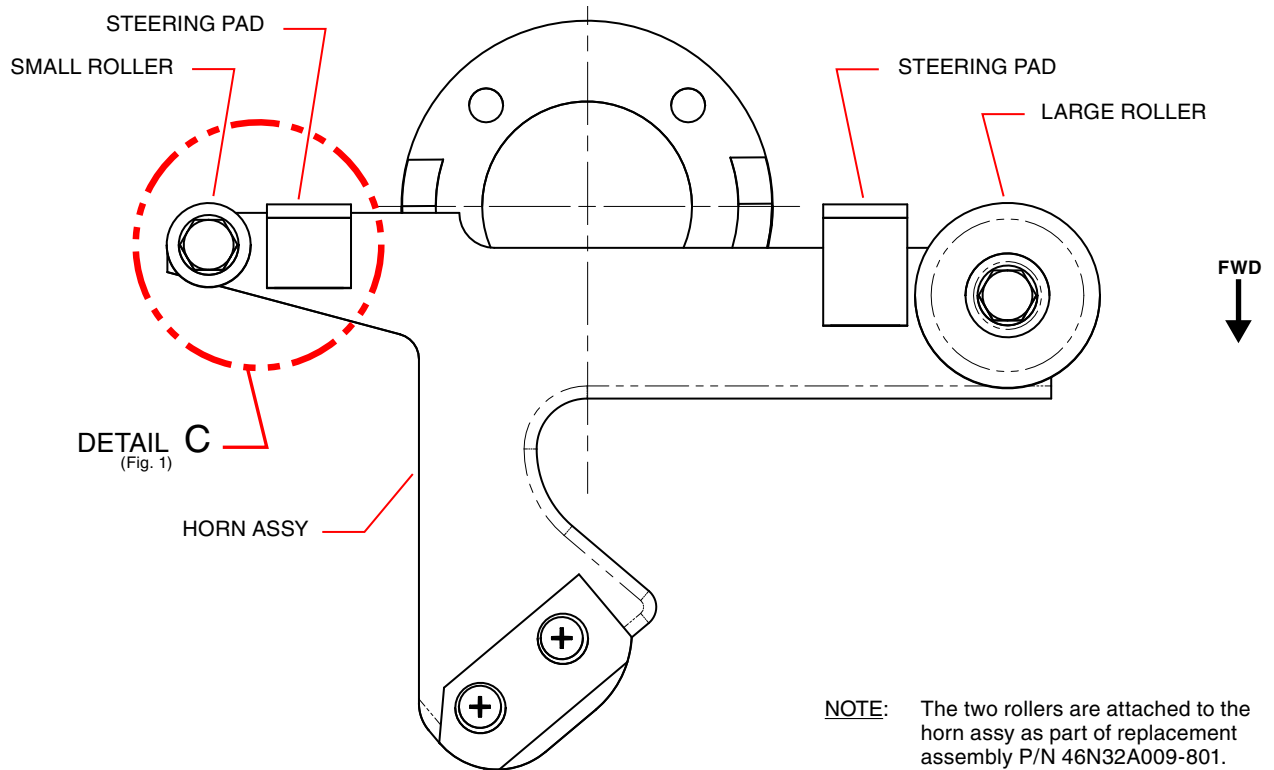
VIEW F-F
STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS



NOTE: Torque the Nut MS17825-4 to 35 in-lb, then back off to the nearest radial slit.

VIEW G-G
BOLT COMMON TO THE BUNGEE
AND STEERING ARM ASSEMBLIES

Figure 1 – Sheet 5 of 5
Nose Wheel Steering Assemblies – Typical

**STEERING HORN AND ROLLER ASSEMBLY**

P/N 46N32A009-801

LOOKING DOWN

Figure 2

Replacement Steering Horn and Roller Assembly

8. Alignment and Adjustment of Nose Landing Gear

To ensure that the nose gear components have been properly installed, review the entirety of Piper Service Letter 1286 (latest revision), "Nose Landing Gear Steering Components Inspection and Adjustment," and complete the applicable procedures to ensure proper nose gear alignment, adjustment and rudder cable tension.

9. Complete a logbook entry documenting compliance with this service bulletin, after the applicable steps in SL 1286 (latest revision) have been accomplished.

MATERIAL REQUIRED:

Per aircraft, on condition:

- One (1) each, Horn and Roller Assy – Nose Wheel Steering, Piper P/N 46N32A009-801; as required, Safety Wire, P/N 151-296 (MS20995-C32)
- One (1) each, Arm Assembly – Steering, Piper P/N 83626-004; Cotter Pin, P/N 424-052 (MS24665-134)
- For PA-46-600TP M600 only – one (1) each, Cotter Pin, P/N 424-059 (MS24665-283)

AVAILABILITY OF PARTS:

Your Piper Approved Service Center

EFFECTIVITY DATE:

This service bulletin is effective upon receipt.

SUMMARY:

Applicable factory participation is limited to new aircraft in warranty at the time of compliance. Factory participation will remain in effect for a period of time not to exceed 180 days from the date of this service bulletin.

Please contact your Piper Approved Service Center to make arrangements for compliance with this service bulletin in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1350A BULLETIN

PIPER CONSIDERS COMPLIANCE MANDATORY

Date: February 10, 2021

(S)

Service Bulletin (SB) 1350A supersedes SB 1350 in its entirety. Aircraft that were previously made compliant with SB 1350 must confirm that the torque of the steering horn base bolts matches that provided in Figure 1, Sheet 2, of SB 1350A.

SUBJECT:

**NOSE LANDING GEAR STEERING HORN AND ARM
ASSEMBLIES INSPECTION**

REASON FOR REVISION:

SB 1350A updates the torque of the bolts for steering horn base in Figure 1, Detail B.

MODELS AFFECTED:

PA-46-350P M350
PA-46-500TP M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

4636759 through 4636761
4697668 through 4697671
4698100 through 4698135

COMPLIANCE TIME:

To coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

The steering pads, which are components welded onto the nose wheel steering horn assembly, may be protruding beyond the steering horn rollers on the affected airplanes. This may result in the steering pads making improper contact with the nose wheel steering arm assembly. Left uncorrected, this condition may cause damage to the steering arm assembly.

This service bulletin mandates the following steps to address the issues described:

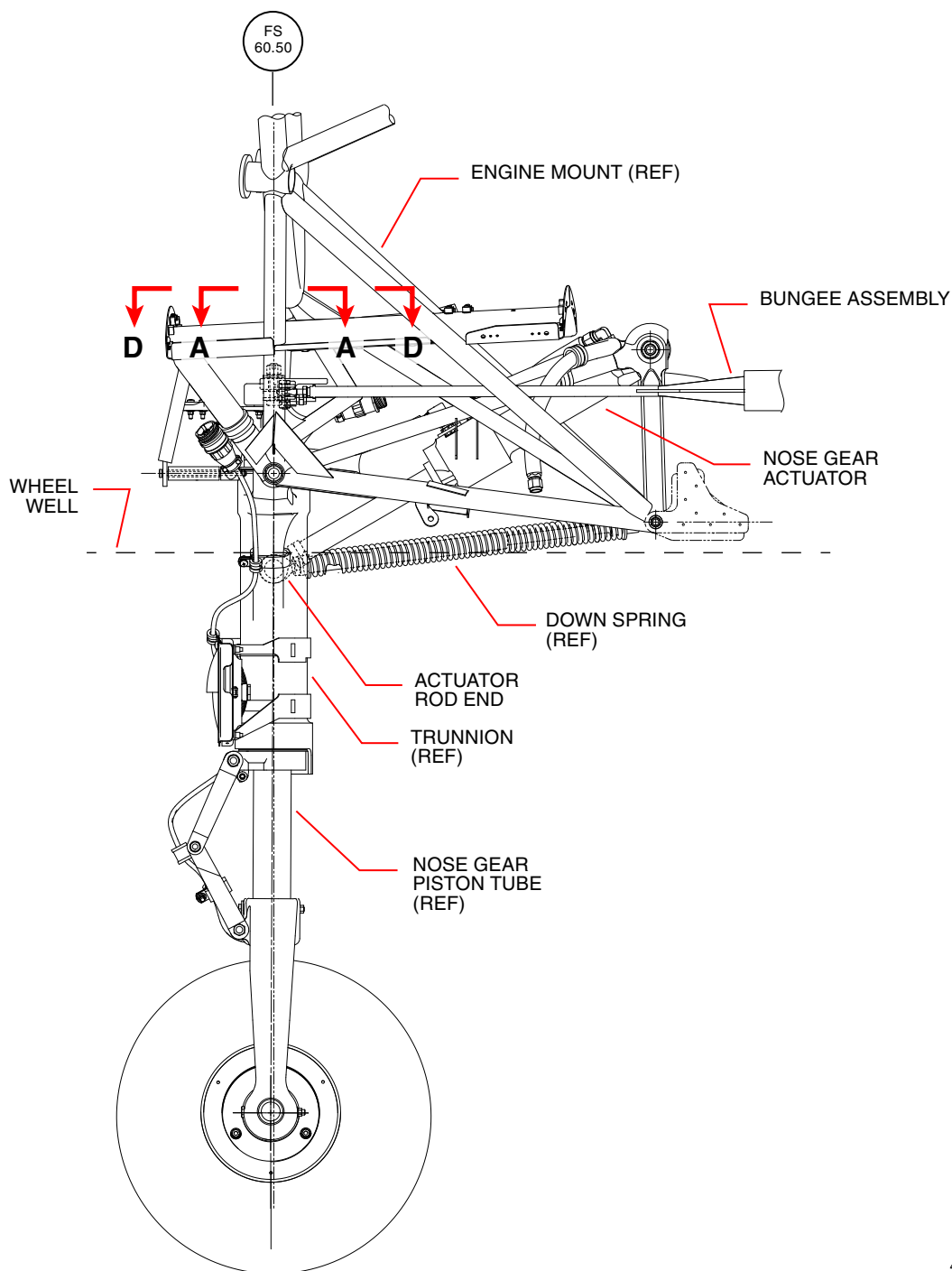
1. Inspect the steering horn assembly to determine if the steering pads are protruding beyond the steering horn rollers, as described above.
2. Inspect the steering arm assembly for damage due to improper contact with the steering pads.
3. If the steering pads are protruding as described above, then replace the steering horn assembly with a new, improved replacement assembly comprised of the steering horn, pads and rollers.
4. If required, based upon inspection, repair or replace the steering arm assembly.

ATA/JASC: 3200

(OVER)

INSTRUCTIONS:

CAUTION: REPAIR TO LANDING GEAR COMPONENTS IS LIMITED TO THE RECONDITIONING OF PARTS (REPLACING BEARINGS AND BUSHINGS), SMOOTHING OUT MINOR NICKS AND SCRATCHES, AND REPAINTING AREAS WHERE PAINT HAS CHIPPED OR PEELED. FOR GREATER DAMAGE, THE REPLACEMENT OF THE AFFECTED COMPONENTS IS REQUIRED.



46N32A000 C

Figure 1 – Sheet 1 of 5
Nose Wheel Steering Assemblies – Typical

1. Gain access to the location of the Nose Wheel Steering Horn Assembly, Piper part number (P/N) 85154-012, and Nose Wheel Steering Arm Assembly, Piper P/N 83626-004. These assemblies are installed above the gear trunnion assembly, just inside the nose landing gear wheel well. Refer to Figure 1.

2. Remove the steering horn from the aircraft. See View A–A and Detail B.

NOTE: Prior to removal, verify if Steering Horn and Roller Assembly, P/N 46N32A009-001, is installed. If so, then there is no need to replace the part. Proceed to Step 5.

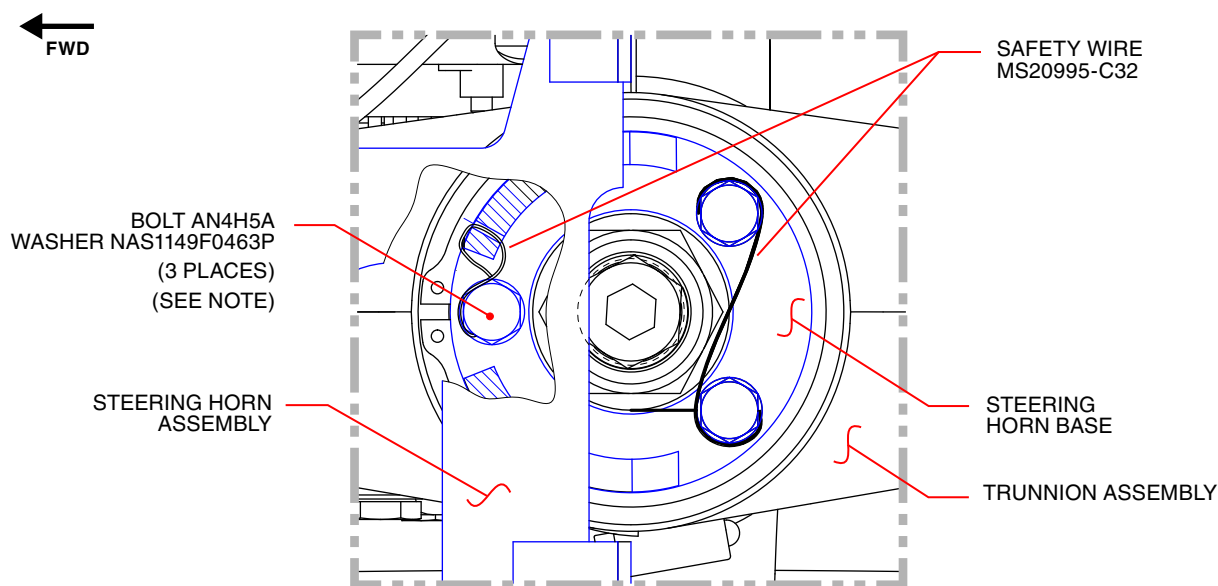
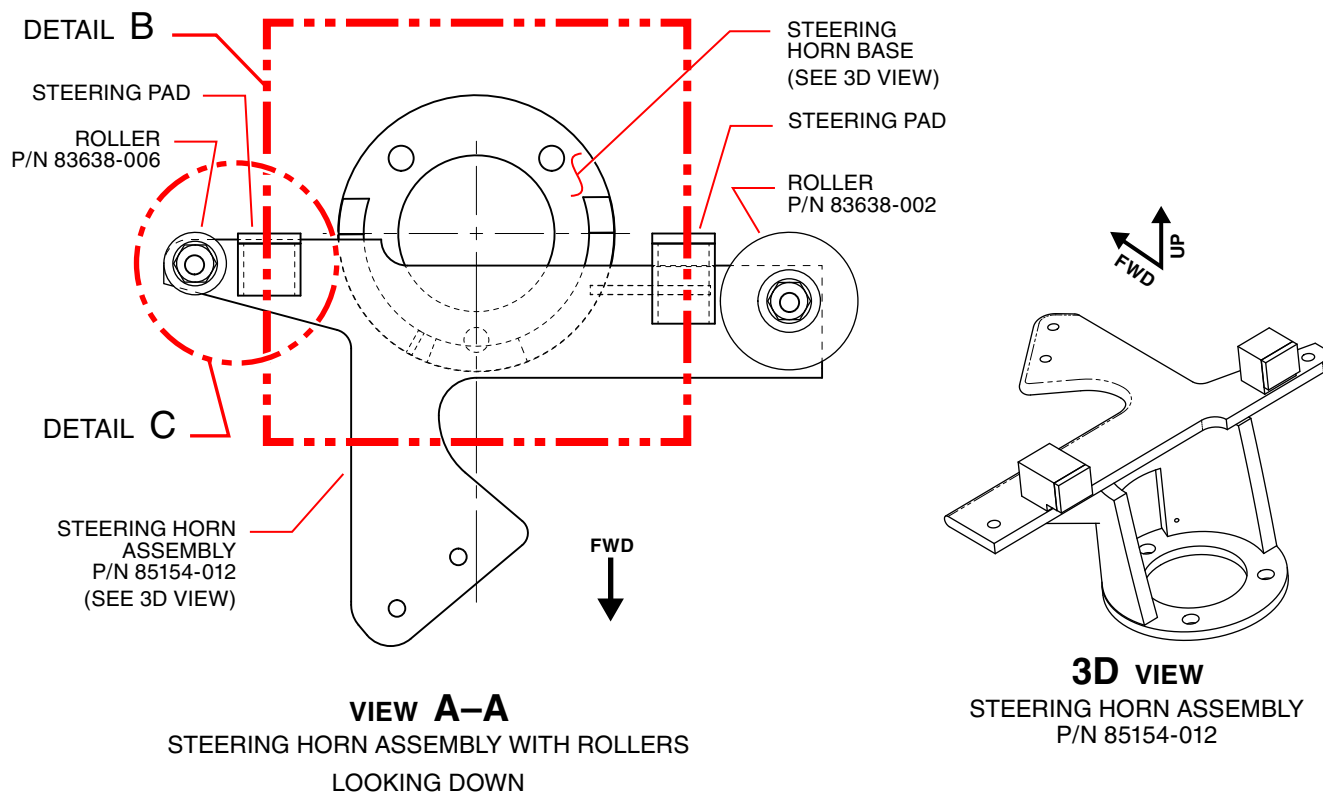
- a. Remove and discard the safety wire retaining the three bolts that attach the steering horn base to the trunnion.
 - b. Loosen and remove the three Bolts AN4H5A and Washers NAS1149F0463P. Retain the hardware for reinstallation; replace any hardware, depending on condition.
 - c. Remove the Nose Wheel Steering Horn Assembly, P/N 85154-012. Do not remove the two Rollers, P/N 83638-002 and P/N 83638-006, from the assembly.
3. Visually inspect the steering horn pads and rollers for any signs of damage.
 - If there is any damage, other than minor nicks or other minor wear, then the steering horn assembly must be replaced, which will be accomplished in an upcoming step. Proceed to Step 5.
 - If there is no visually apparent damage, then proceed to Step 4.
 4. Check if the steering pads and rollers are positioned correctly on the steering horn as shown in Detail C. Place the steering horn onto a flat surface, with the rollers facing the surface. Use a feeler gauge, or a shop aid of appropriate thickness, to determine if the parts are positioned as depicted in Detail C.

NOTE: Detail C provides the correct positioning of the rollers and pads on both the existing and replacement steering horn.

- If the steering pads and rollers are not positioned as Detail C shows, then the parts must be replaced, which will be accomplished in an upcoming step. Proceed to Step 5.
 - If the steering pads and rollers are positioned as Detail C shows, then it may not be necessary to replace the steering horn assembly and rollers. Proceed to Step 5.
5. Inspect the Arm Assembly, P/N 83626-004, for any signs of damage, especially in the areas where the steering pads make contact.

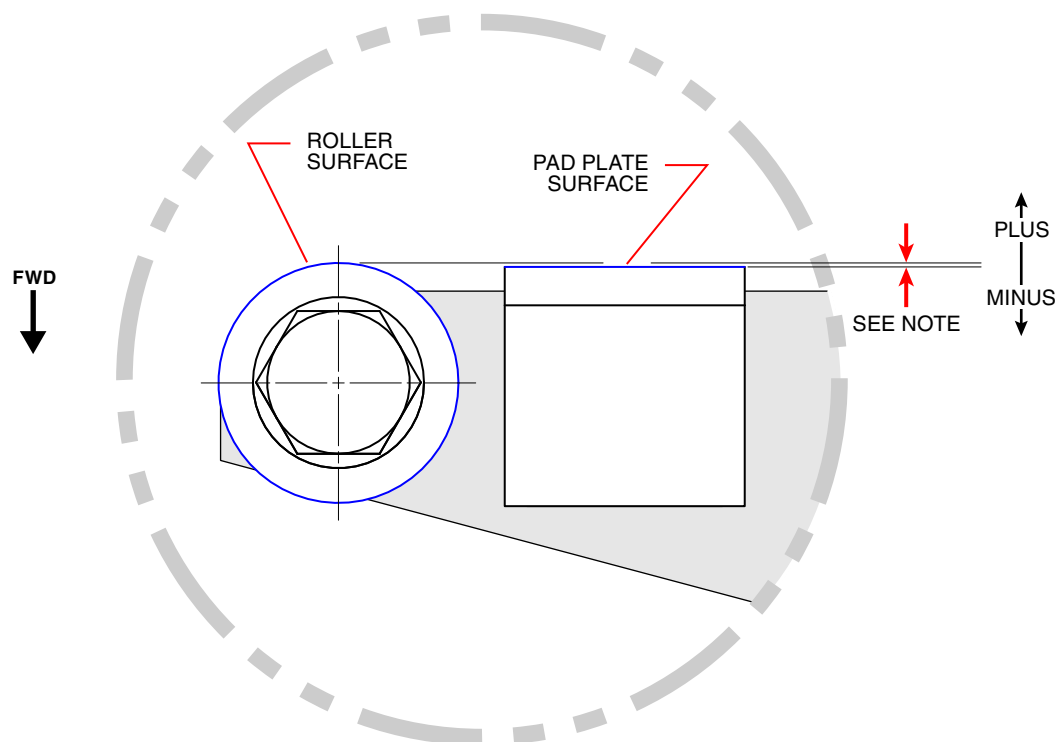
NOTE: This inspection further verifies whether or not the steering pads and rollers, as well as the steering arm, are positioned and installed properly. Existence of the described damage to the arm assembly would indicate that the steering horn pads are improperly contacting the arm, which means the steering horn assembly, and potentially the steering arm assembly, must be replaced.

- If there is any damage at all to the steering arm assembly, then proceed to Step 6.
 - If there is no damage to the steering arm assembly, then proceed to Step 7.
6. Assess the level of damage to the Arm Assembly, P/N 83626-004, discovered during the inspection in Step 5.
 - Repair of the arm assembly is limited to minor damage, such as minor nicks or scratches, chipped or peeled paint, or replacement of the bearing. If minor repairs are possible, then once they are completed, proceed to Step 7, to reinstall or replace the steering horn assembly.
 - More significant damage to the arm assembly requires the replacement of the arm assembly. Proceed to Step 7, to replace the steering horn assembly (Step 7.a.) and the arm assembly (Step 7.c.).



NOTE: Torque Bolts AN4H5A to 60–75 in-lb.

Figure 1 – Sheet 2 of 5
Nose Wheel Steering Assemblies – Typical



NOTE: The surface of both rollers must be positioned between plus 0.020 in. maximum and minus 0.001 in. maximum distance from the surface of both steering pad plates. The acceptable distance is applicable to both sides at the same time.

DETAIL C

CORRECT ROLLER AND PAD POSITIONING
(TYPICAL OF BOTH ENDS OF HORN AND ALL HORN ASSEMBLIES)

Figure 1 – Sheet 3 of 5
Nose Wheel Steering Assemblies – Typical

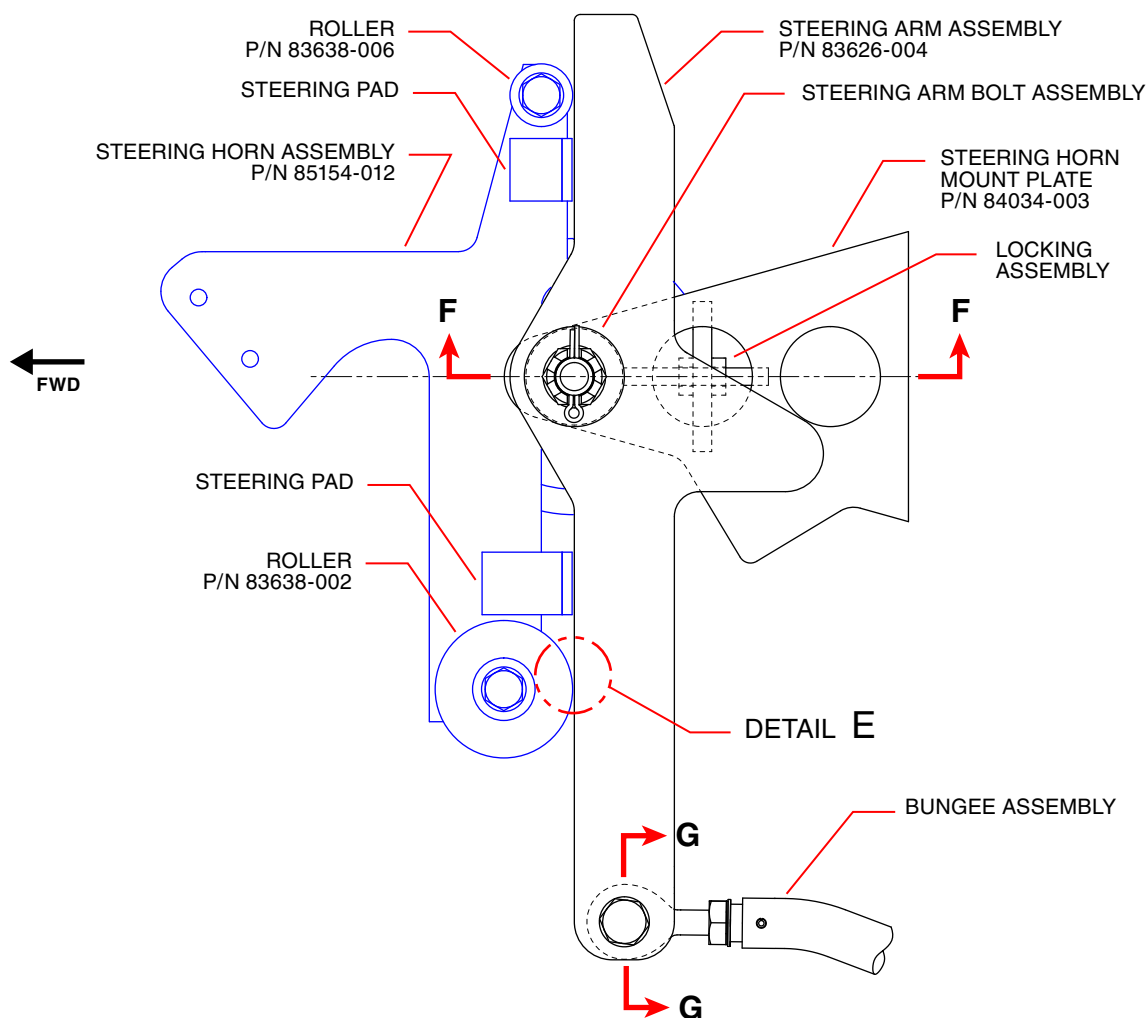
7. Replacement and Reinstallation of Parts

Complete any of the following steps that apply, based on the results of the inspections completed in previous steps:

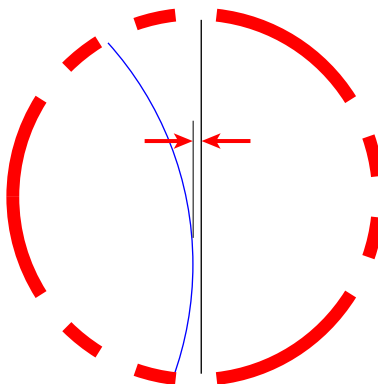
- a. Replace the steering horn assembly and rollers with the new, improved assembly.

NOTE: If the existing steering horn assembly and rollers are going to be reinstalled, then skip to Step b.

- 1) Order one (1) Nose Wheel Steering Horn and Roller Assembly, P/N 46N32A009-801, which is shown in Figure 2. This new, improved assembly replaces, as one assembly, the existing steering horn assembly (which includes the steering pads) and steering horn rollers.
 - 2) Install P/N 46N32A009-801 onto the trunnion assembly, as shown in in Detail B. Torque the bolts per the note in Detail B. Safety wire the bolts with P/N 151-296 (MS20995-C32).
- b. Reinstall the existing steering horn assembly and rollers (if applicable).
- 1) Place the steering horn base (with rollers installed) back onto the top of the trunnion assembly, as shown in Detail B.
 - 2) Install the hardware retained in Step 2, and torque the bolts per the note in Detail B. Safety wire the bolts with P/N 151-296 (MS20995-C32).
- c. Replace the steering arm assembly, if required.
- 1) Order one (1) of each:
 - Steering Arm Assembly, Piper P/N 83626-004
 - Cotter Pin, P/N 424-052 (MS24665-134) (for the bungee attachment, all models)
 - Cotter Pin, P/N 424-059 (MS24665-283) (for the M600 only)
 - 2) Remove the existing arm assembly:
 - a) Disconnect the forward end of the steering bungee from the left hand side of the steering arm, shown in View D–D. Retain the hardware for reinstallation (see View G–G), except for the cotter pin, which is to be discarded; replace any hardware, depending on condition.
 - b) From the bolt assembly common to the steering arm and the mount plate, shown in View F–F, remove the cotter pin, nut and washer that fasten the steering arm to the mount plate. Discard the cotter pin and retain the other hardware; replace any hardware, depending on condition.
 - c) Lift the steering arm assembly off of the bolt.
 - 3) Install the new, replacement Steering Arm Assembly, P/N 83626-004:
 - a) Position the replacement steering arm assembly on the bolt (AN6-15 for M600, or AN6-14A for M350 and M500). Ensure that the bolt hardware stack-up is exactly as defined, for the appropriate model, in View F–F. Replace any hardware on condition.
 - b) Torque the nut (MS17825-6 for M600, or MS21042-6 for M350 and M500), per the note in View F–F.
 - c) On the M600 only, install a new Cotter Pin, P/N 424-059 (MS24665-283).

**VIEW D-D**

FACTORY INSTALLED STEERING HORN ASSEMBLY (P/N 85154-012)
AND STEERING ARM ASSEMBLY (P/N 83626-004)
LOOKING DOWN

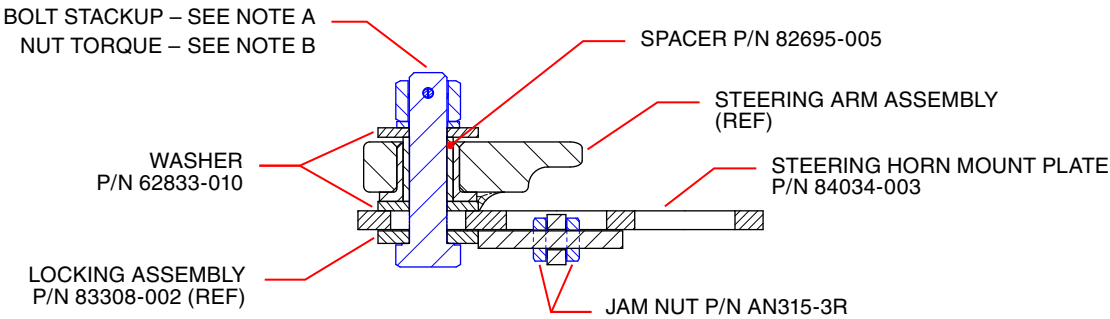


NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL E

CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 4 of 5
Nose Wheel Steering Assemblies – Typical

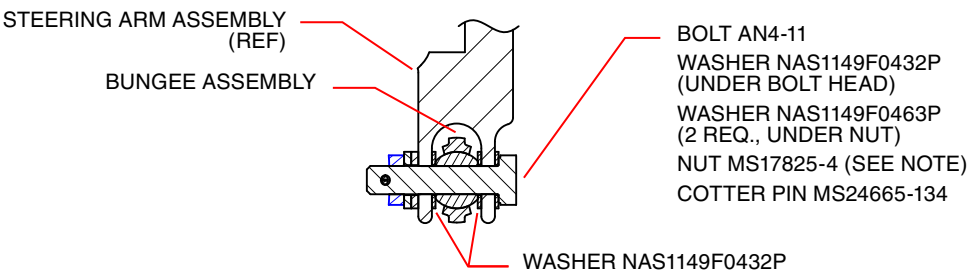


NOTE A: The bolt stackup, by models:

For M600 (shown):	For M350 and M500:
BOLT AN6-15	BOLT AN6-14A
WASHER NAS1149F0663P	NUT MS21042-6
NUT MS17825-6	
COTTER PIN MS24665-283	

NOTE B: For M600 only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.
For M350 and M500, torque the Nut MS21042-6 to 175-190 in-lb.

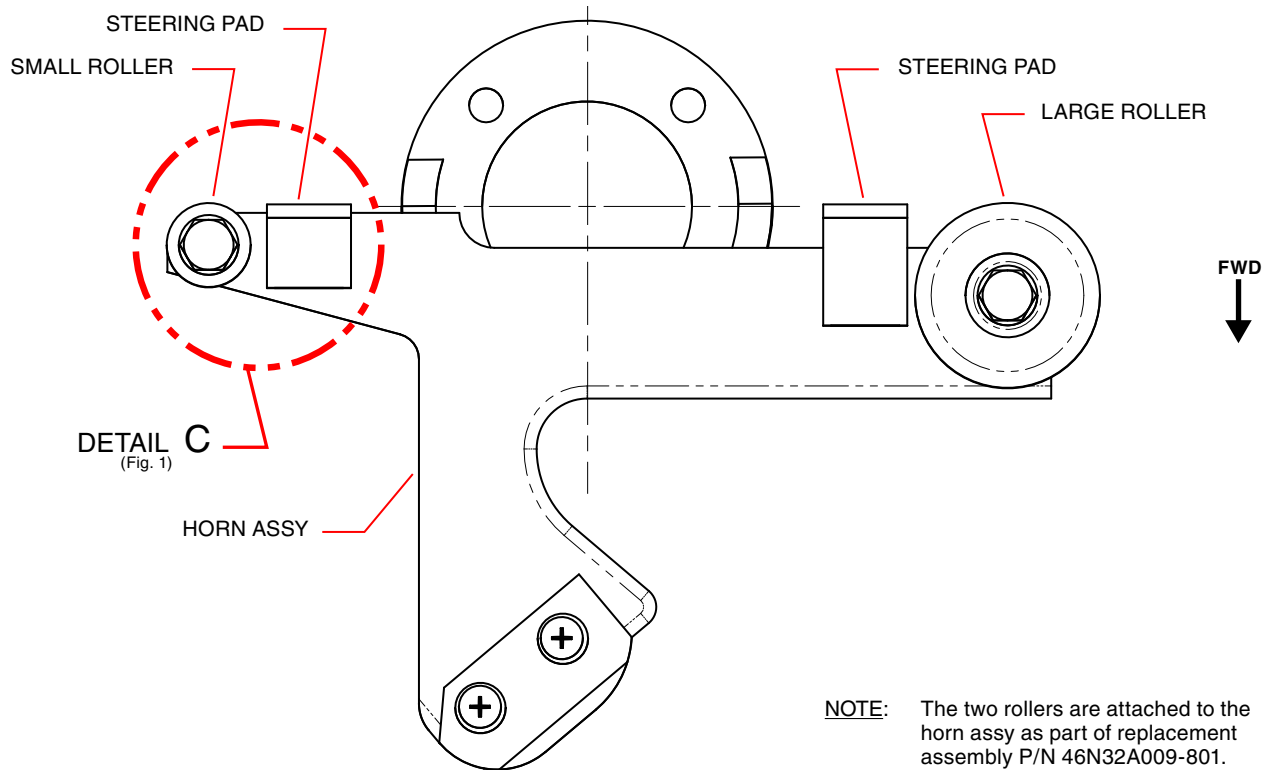
VIEW F-F
STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS



NOTE: Torque the Nut MS17825-4 to 35 in-lb, then back off to the nearest radial slit.

VIEW G-G
BOLT COMMON TO THE BUNGEE
AND STEERING ARM ASSEMBLIES

Figure 1 – Sheet 5 of 5
Nose Wheel Steering Assemblies – Typical

**STEERING HORN AND ROLLER ASSEMBLY**

P/N 46N32A009-801

LOOKING DOWN

Figure 2

Replacement Steering Horn and Roller Assembly

8. Alignment and Adjustment of Nose Landing Gear

To ensure that the nose gear components have been properly installed, review the entirety of Piper Service Letter 1286 (latest revision), "Nose Landing Gear Steering Components Inspection and Adjustment," and complete the applicable procedures to ensure proper nose gear alignment, adjustment and rudder cable tension.

9. Complete a logbook entry documenting compliance with this service bulletin, after the applicable steps in SL 1286 (latest revision) have been accomplished.

MATERIAL REQUIRED:

Per aircraft, on condition:

- One (1) each, Horn and Roller Assy – Nose Wheel Steering, Piper P/N 46N32A009-801; as required, Safety Wire, P/N 151-296 (MS20995-C32)
- One (1) each, Arm Assembly – Steering, Piper P/N 83626-004; Cotter Pin, P/N 424-052 (MS24665-134)
- For PA-46-600TP M600 only – one (1) each, Cotter Pin, P/N 424-059 (MS24665-283)

AVAILABILITY OF PARTS:

Your Piper Approved Service Center

EFFECTIVITY DATE:

This service bulletin is effective upon receipt.

SUMMARY:

Applicable factory participation is limited to new aircraft in warranty at the time of compliance. Factory participation will remain in effect for a period of time not to exceed 180 days from the date of this service bulletin.

Please contact your Piper Approved Service Center to make arrangements for compliance with this service bulletin in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.
Attn: Customer Service
2926 Piper Drive
Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1285 LETTER

Date: July 24, 2020

(S)

MAINTENANCE ALERT

SUBJECT:

PROPER TIRE PRESSURE MAINTENANCE

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Prior to first flight each day

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

This service letter provides guidelines to ensure that all of the affected aircraft are operated with properly serviced nose and main gear tire pressures.

INSTRUCTIONS:

NOTE: Information provided in this service letter will be incorporated into a future revision of the applicable Pilot's Operating Handbooks (POH), placards for tire service instructions, and Piper Airplane Maintenance Manuals (AMM). Until the revisions are provided, the tire pressure information in this service letter supersedes that which is currently provided in the applicable POHs, placards and AMMs. Until the revision is provided, place a copy of this service letter in Section 8, near the Tire Inflation paragraph, in the applicable POH.

There are several safety benefits to proper tire maintenance, including its effect on ground steering. Maintaining proper aviation tire inflation pressure reduces the size of a tire's rolling contact patch, which reduces the magnitude of the force associated with ground steering.

According to tire manufacturers, aviation tire pressure should be checked daily, prior to the first flight of the day, when the tires are "cold." (A cold tire is one that has the same temperature as the ambient environment, and has not been operated for at least three hours.) If an aircraft is flown less than one time per day, tire pressure should be checked prior to each flight (as part of the preflight inspection).

ATA/JASC: 3244

(OVER)

Tire manufacturers state that aviation tires can acceptably lose no more than five (5) percent of pressure in a 24-hour period. (The nominal loaded tire pressure should be maintained daily, but a five percent loss in pressure is acceptable during a given day.) Tire manufacturers consider a tire pressure below 95 percent of the nominal loaded pressure during two consecutive 24-hour periods to be a cause for inspection of the tire and wheel assembly.

A visual inspection of aviation tires is insufficient to determine whether or not they have acceptable tire pressure. When looking at a tire, it may appear to be properly inflated when it could, in fact, be significantly underinflated. The only way to verify proper tire pressure is to measure the tire pressure with a quality, calibrated tire gauge.

Table 1 provides the nominal loaded and unloaded tire pressure ranges for the affected aircraft. The applicable tire pressure provided in Table 1 shall be maintained daily, on active, flying aircraft.

TABLE 1
LOADED AND UNLOADED TIRE INFLATION PRESSURE

MODEL	TIRE PRESSURE (psi of cold tire)			
	NOSE		MAIN	
	Unloaded (on jacks)	Loaded (weight on wheels)	Unloaded (on jacks)	Loaded (weight on wheels)
PA-46-310P Malibu	45	45	40	40
PA-46-350P Mirage/M350	50-53	52-55	55-58	57-60
PA-46R-350T Matrix	50-53	52-55	55-58	57-60
PA-46-500TP Meridian/M500:				
6 Ply Tire – P/N 551-606 (Nose)	50-53	52-55	N/A	
8 Ply Tires	P/N 551-612 (Nose)	70-74	N/A	
	P/N 551-609 (Main)	N/A	55-58	57-60
10 Ply Tire – P/N 551-619 (Nose)	88-92	92-97	N/A	
PA-46-600TP M600	88-92	92-97	95-99	99-104

NOTE: Pressures specified in Table 1 apply to wheel assemblies measured when tires are at ambient temperature, and either unloaded (aircraft on jacks, or tires that are not installed) or loaded (weight on wheels).

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Att'n: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1285A LETTER

Date: January 12, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1285A supersedes SL 1285 in its entirety.

SUBJECT:

PROPER TIRE PRESSURE MAINTENANCE

REASON FOR REVISION:

SL 1285A announces the availability of placards for PA-46-600TP M600 aircraft.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Prior to first flight each day

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

Part I:

Part I of this service letter provides guidelines to ensure that all of the affected aircraft are operated with properly serviced nose and main gear tire pressures.

Part II:

For the models identified in Part II, revised placards are available, and the applicable Piper Pilot's Operating Handbook revisions will be available soon.

INSTRUCTIONS:**Part I. Proper Tire Maintenance**

NOTE: Information provided in this service letter will be incorporated into a future revision of the applicable Pilot's Operating Handbooks (POH), placards for tire service instructions, and Piper Airplane Maintenance Manuals (AMM).

Until the revisions are provided, the tire pressure information in this service letter supersedes that which is currently provided in the applicable POHs, placards and AMMs. Until the applicable POH revision is provided, place a copy of this service letter in Section 8, near the Tire Inflation paragraph, in the applicable POH.

There are several safety benefits to proper tire maintenance, including its effect on ground steering. Maintaining proper aviation tire inflation pressure reduces the size of a tire's rolling contact patch, which reduces the magnitude of the force associated with ground steering.

According to tire manufacturers, aviation tire pressure should be checked daily, prior to the first flight of the day, when the tires are "cold." (A cold tire is one that has the same temperature as the ambient environment, and has not been operated for at least three hours.) If an aircraft is flown less than one time per day, tire pressure should be checked prior to each flight (as part of the preflight inspection).

Tire manufacturers state that aviation tires can acceptably lose no more than five (5) percent of pressure in a 24-hour period. (The nominal loaded tire pressure should be maintained daily, but a five percent loss in pressure is acceptable during a given day.) Tire manufacturers consider a tire pressure below 95 percent of the nominal loaded pressure during two (2) consecutive 24-hour periods to be a cause for inspection of the tire and wheel assembly.

A visual inspection of aviation tires is insufficient to determine whether or not they have acceptable tire pressure. When looking at a tire, it may appear to be properly inflated when it could, in fact, be significantly underinflated. The only way to verify proper tire pressure is to measure the tire pressure with a quality, calibrated tire gauge.

Table 1 provides the nominal loaded and unloaded tire pressure ranges for the affected aircraft. The applicable tire pressure provided in Table 1 shall be maintained daily – inflate tires if they are low – on active, flying aircraft.

NOTE: Use nitrogen, if available, to inflate tires. It will not sustain combustion and will reduce degradation, due to oxidation, of the liner material, casing plies, and wheel.

TABLE 1
LOADED AND UNLOADED TIRE INFLATION PRESSURE

MODEL	TIRE PRESSURE (psi of cold tire)			
	NOSE		MAIN	
	Unloaded (on jacks)	Loaded (weight on wheels)	Unloaded (on jacks)	Loaded (weight on wheels)
PA-46-310P Malibu	45	45	40	40
PA-46-350P Mirage/M350	50-53	52-55	55-58	57-60
PA-46R-350T Matrix	50-53	52-55	55-58	57-60
PA-46-500TP Meridian/M500:				
6 Ply Tire – P/N 551-606 (Nose)	50-53	52-55	N/A	
8 Ply Tires	P/N 551-612 (Nose)	70-74	73-76	N/A
	P/N 551-609 (Main)	N/A		55-58 57-60
10 Ply Tire – P/N 551-619 (Nose)	88-92	92-97	N/A	
PA-46-600TP M600	88-92	92-97	95-99	99-104

NOTE: Pressures specified in Table 1 apply to wheel assemblies measured when tires are at ambient temperature, and either unloaded (aircraft on jacks, or tires that are not installed) or loaded (weight on wheels).

Part II. Replacement Placards and POH Revision

NOTE: As replacement placards for the affected aircraft models become available, as well as the applicable POH revisions, then Table 2, below, will be updated and a revision to this service letter will be published.

- Order the applicable tire and strut service instruction placards listed in Table 2, for the nose landing gear and main landing gear.
- Installation of the replacement placards is to be accomplished in conjunction with the incorporation of the applicable POH revision shown in Table 2.

NOTE: Upon completing Part II, remove any copy of this service letter from the POH (in Section 8, near the Tire Inflation paragraph).

- Make a logbook entry documenting compliance with Part II of this service letter.

TABLE 2
REPLACEMENT TIRE AND STRUT SERVICE PLACARDS

PIPER MODEL	LANDING GEAR PLACARD		POH REVISION
	NOSE P/N	MAIN P/N ¹	
PA-46-600TP M600	100700-161	100700-160	VB-2793, Rev. 5 VB-2366, Rev. 5

NOTE 1: Two main landing gear placards are required per aircraft.

MATERIAL REQUIRED: For Part II, applicable placards listed in Table 2, per aircraft

AVAILABILITY OF PARTS: Your Piper Approved Service Center

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1285B LETTER

Date: June 15, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1285B supersedes SL 1285A in its entirety.

SUBJECT:

PROPER TIRE PRESSURE MAINTENANCE

REASON FOR REVISION:

SL 1285B corrects tire inflation pressures for multiple models (Table 1), adds a note regarding significant changes in ambient temperatures, and announces new placards for PA-46-600TP M600 aircraft.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Prior to first flight each day

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

Part I:

Part I of this service letter provides guidelines to ensure that all of the affected aircraft are operated with properly serviced nose and main gear tire pressures.

Part II:

For the models identified in Part II, revised placards are available, and the applicable Piper Pilot's Operating Handbook revisions will be available soon.

INSTRUCTIONS:**Part I. Proper Tire Maintenance**

NOTE: Information provided in this service letter will be incorporated into a future revision of the applicable Pilot's Operating Handbooks (POH), placards for tire service instructions, and Piper Airplane Maintenance Manuals (AMM).

Until the revisions are provided, the tire pressure information in this service letter supersedes that which is currently provided in the applicable POHs, placards and AMMs. Until the applicable POH revision is provided, place a copy of this service letter in Section 8, near the Tire Inflation paragraph, in the applicable POH.

There are several safety benefits to proper tire maintenance, including its effect on ground steering. Maintaining proper aviation tire inflation pressure reduces the size of a tire's rolling contact patch, which reduces the magnitude of the force associated with ground steering.

According to tire manufacturers, aviation tire pressure should be checked daily, prior to the first flight of the day, when the tires are "cold." (A cold tire is one that has the same temperature as the ambient environment, and has not been operated for at least three hours.) If an aircraft is flown less than one time per day, tire pressure should be checked prior to each flight (as part of the preflight inspection).

Tire manufacturers state that aviation tires can acceptably lose no more than five (5) percent of pressure in a 24-hour period. (The nominal loaded tire pressure should be maintained daily, but a five percent loss in pressure is acceptable during a given day.) Tire manufacturers consider a tire pressure below 95 percent of the nominal loaded pressure during two (2) consecutive 24-hour periods to be a cause for inspection of the tire and wheel assembly.

A visual inspection of aviation tires is insufficient to determine whether or not they have acceptable tire pressure. When looking at a tire, it may appear to be properly inflated when it could, in fact, be significantly underinflated. The only way to verify proper tire pressure is to measure the tire pressure with a quality, calibrated tire gauge.

Table 1 provides the nominal loaded and unloaded tire pressure ranges for the affected aircraft. The applicable tire pressure provided in Table 1 shall be maintained daily – inflate tires if they are low – on active, flying aircraft.

NOTE: Use nitrogen, if available, to inflate tires. It will not sustain combustion and will reduce degradation, due to oxidation, of the liner material, casing plies, and wheel.

TABLE 1
LOADED AND UNLOADED TIRE INFLATION PRESSURE

MODEL	TIRE PRESSURE (psi of cold tire)			
	NOSE		MAIN	
	Unloaded (on jacks)	Loaded (weight on wheels)	Unloaded (on jacks)	Loaded (weight on wheels)
PA-46-310P Malibu	45	45	40	40
PA-46-350P Mirage/M350	50 max	50-52	55 max	55-57
PA-46R-350T Matrix	50 max	50-52	55 max	55-57
PA-46-500TP Meridian/M500:				
6 Ply Tire – P/N 551-606 (Nose)	50 max	50-52	N/A	
8 Ply Tires	P/N 551-612 (Nose)	70 max	N/A	
	P/N 551-609 (Main)	N/A	55 max	55-57
10 Ply Tire – P/N 551-619 (Nose)	88 max	88-92	N/A	
PA-46-600TP M600	88 max	88-92	95 max	95-99

NOTE: Pressures specified in Table 1 apply to wheel assemblies measured when tires are at ambient temperature, and either unloaded (aircraft on jacks, or tires that are not installed) or loaded (weight on wheels).

NOTE: As stated in tire manufacturers' tire care and maintenance manuals, inflation pressure should be adjusted for ambient temperature effects. When tires are going to be subjected to ambient temperature differences between two locations in excess of 50°F (27°C), inflation pressures should be adjusted to the colder temperature prior to takeoff. An ambient temperature change of 5°F (3°C) produces a pressure change of approximately one (1) percent.

For example, tire pressure on an aircraft that is departing Phoenix at 95°F (35° C) for Chicago at 45°F (7°C) should be adjusted for the destination's colder conditions. The difference is 50°F (28°C), so the tire pressure should be increased by 10 percent before departing Phoenix. This practice also applies when checking pressure in a heated hangar during the winter.

Part II. Replacement Placards and POH Revision

NOTE: As replacement placards for the affected aircraft models become available, as well as the applicable POH revisions, then Table 2, below, will be updated and a revision to this service letter will be published.

1. Order the applicable tire and strut service instruction placards listed in Table 2, for the nose landing gear and main landing gear.
2. Installation of the replacement placards is to be accomplished in conjunction with the incorporation of the applicable POH revision shown in Table 2.

NOTE: Upon completing Part II, remove any copy of this service letter from the POH (in Section 8, near the Tire Inflation paragraph).

3. Make a logbook entry documenting compliance with Part II of this service letter.

TABLE 2
REPLACEMENT TIRE AND STRUT SERVICE PLACARDS

PIPER MODEL	LANDING GEAR PLACARD		POH REVISION
	NOSE P/N	MAIN P/N ¹	
PA-46-600TP M600	100700-164	100700-163	VB-2793, Rev. 7
			VB-2366, Rev. 6

NOTE 1: Two main landing gear placards are required per aircraft.

MATERIAL REQUIRED: For Part II, applicable placards listed in Table 2, per aircraft

AVAILABILITY OF PARTS: Your Piper Approved Service Center

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.
Attn: Customer Service
2926 Piper Drive
Vero Beach, FL 32960
or:
CustomerService@piper.com
Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1286A LETTER

Date: January 21, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1286A supersedes SL 1286 in its entirety.

For M600 only: on aircraft that were previously made compliant with SL 1286, compliance with SL 1286A is required at the next regularly scheduled maintenance event, not to exceed the next 50 hours time in service.

For all other models: on aircraft that were previously made compliant with SL 1286, no further action is necessary until the next 100 hour/annual inspection.

SUBJECT:

**NOSE LANDING GEAR STEERING COMPONENTS
INSPECTION AND ADJUSTMENT**

REASON FOR REVISION:

SL 1286A clarifies the procedures required for PA-46-600TP M600 aircraft.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service (TIS). After that, compliance is to occur every 100 hours, in accordance with the applicable maintenance manual.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

Several aircraft components, and their rigging, are important for proper ground steering and directional control. These components require regular, proper inspection and adjustment, and, on condition, replacement, to maintain proper ground steering and directional control.

This service letter provides a review of the best practices for maintaining ground steering system components on the affected aircraft: rudder cable tension, nose landing gear alignment, nose gear rake angle, and nose gear steering arm clearance.

NOTE: In addition to the nose landing gear procedures included in this service letter, proper tire pressure maintenance and main landing gear alignment are important to overall steering and directional control. For tire pressure maintenance, refer to Piper Service Letter 1285, "Proper Tire Pressure Maintenance." For main landing gear alignment, refer to Section 32-10-00 of the applicable Piper Airplane Maintenance Manual.

INSTRUCTIONS:

NOTE: This service letter is intended to bring attention to specific procedures that appear in the Piper Airplane Maintenance Manuals (AMM) for the affected aircraft.

NOTE: Any procedures in this service letter that include changes to procedures currently available in the applicable AMMs will be incorporated into a future revision of the applicable AMMs.

NOTE: In addition to the maintenance specified in this service letter for the nose landing gear, there are scheduled and unscheduled inspections in Sections 5-20-00 and 5-50-00 of the AMMs, respectively. The troubleshooting chart found in Section 32-20-00 can assist in targeting the cause and remedy of issues with the nose landing gear, including steering and directional control. Also, Section 12-20-00 specifies the type and frequency of lubrication for the landing gear, steering bellcrank and rod ends.

NOTE: Adhere to proper towing and taxiing practices provided in the applicable Pilot's Operating Handbook (POH) and Piper AMM. Refer to "Ground Handling" in Section 8 of the applicable POH, and Sections 9-00-00 and 9-10-00 of the applicable Piper AMM.

For reliable steering and directional control, chapters 32-20-00 and 27-20-00 include procedures that will help ensure that nose landing gear steering components operate nominally. These procedures verify the nose gear alignment, nose gear rake angle, clearance between the steering arm and steering horn rollers, and rudder cable tension (the rigging and adjustment of the rudder controls).

1. Nose Landing Gear Alignment

NOTE: In addition to maintaining the nose landing gear alignment, maintaining the main landing gear alignment affects proper ground directional control. Refer to Section 32-10-00 of the applicable AMM for the main landing gear alignment procedure.

- **For all affected models except PA-46-600TP M600**, check and set the alignment of the nose gear per "Alignment," in Section 32-20-00 of the applicable AMM.

- 1) In place of the following steps in Section 32-20-00 of the applicable AMM:
 - Step (3) under "Alignment," of Piper PA-46-350P/PA-46R-350T AMM P/N 761-876 and Piper PA-46-500TP AMM P/N 767-072
 - Step (c) under "Nose Gear Assembly Alignment," in Piper PA-46-310P/350P AMM P/N 761-783Complete Item 3, Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers, below.
- 2) Upon the completion of Item 3, below, continue the remaining alignment steps in the applicable AMM.

- **For PA-46-600TP M600 aircraft only**, check and align the rudder pedals and the nose gear:

- 1) Loosen the rudder cable turnbuckles to allow for rudder pedal movement.
- 2) Adjust the pushrods:
 - a) Unclamp and slide the pushrod bellows assembly to expose the Pushrods, P/N 83660-002. See the applicable AMM, Section 27-20-00, Figure 1, Sheet 3.
 - b) Disconnect push rods from Bellcrank Assembly, P/N 83639-002, as necessary, to adjust both pushrods connected to the left and right rudder pedals. Adjust the pushrods until the adjustable ends are bottomed out (that is, adjusted for minimum pushrod lengths).
 - c) Hold the bellcrank perpendicular to BL 0.00 at FS 93.00. Reconnect the pushrods to the bellcrank assembly.
 - d) Verify the alignment of the rudder pedals. If the left and right pedals are misaligned, realign by adjusting only one of the pushrods: Turn the rod end a half turn at a time, to extend it until the left and right rudder pedals are aligned with each other in the cockpit.

NOTE: This adjustment may result in rudder pedal positions that deviate from the standard neutral position (FS 105.70).

- 3) With the rudder set at 0 degrees, set the tension for the rudder cables, per Section 27-20-00 of Piper PA-46-600TP M600 AMM, P/N 767-617.
- 4) Check and set the alignment of the nose gear per "Alignment," "Adjustment," and "Clearance," in Section 32-20-00 of Piper PA-46-600TP AMM P/N 767-617.

As part of the alignment procedure, with the exception of PA-46-310P Malibu aircraft, it is necessary to check the rake angle and, if required, to adjust it (Item 2, below).

2. Rake Angle Adjustment

NOTE: Rake angle adjustment is not applicable to PA-46-310P aircraft.

As mentioned under Item 1, it is necessary to inspect and/or adjust the nose gear rake angle as part of the nose gear alignment procedure. In addition, inspection and/or adjustment of the rake angle is necessary whenever the pilot experiences poor steering, or upon the replacement or service to the nose gear trunnion, the nose gear actuator, or the engine mount.

Check and adjust the rake angle, for the applicable models (all except PA-46-310P), per "Adjustment," in Section 32-20-00 of the applicable AMM.

Adjusting the rake angle affects the clearance between the steering arm and steering horn rollers, which requires that this clearance is checked, as provided under Item 3, below.

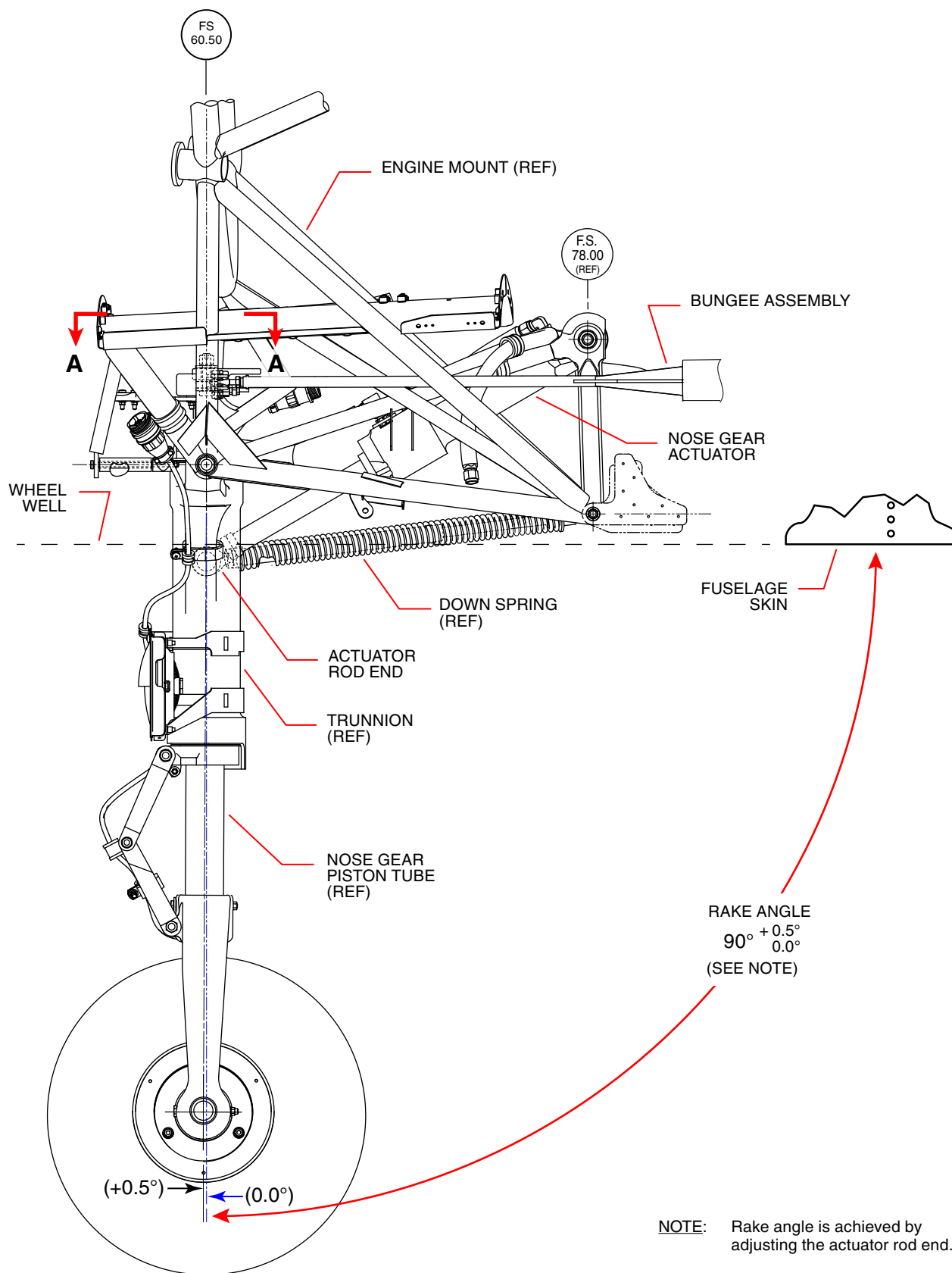
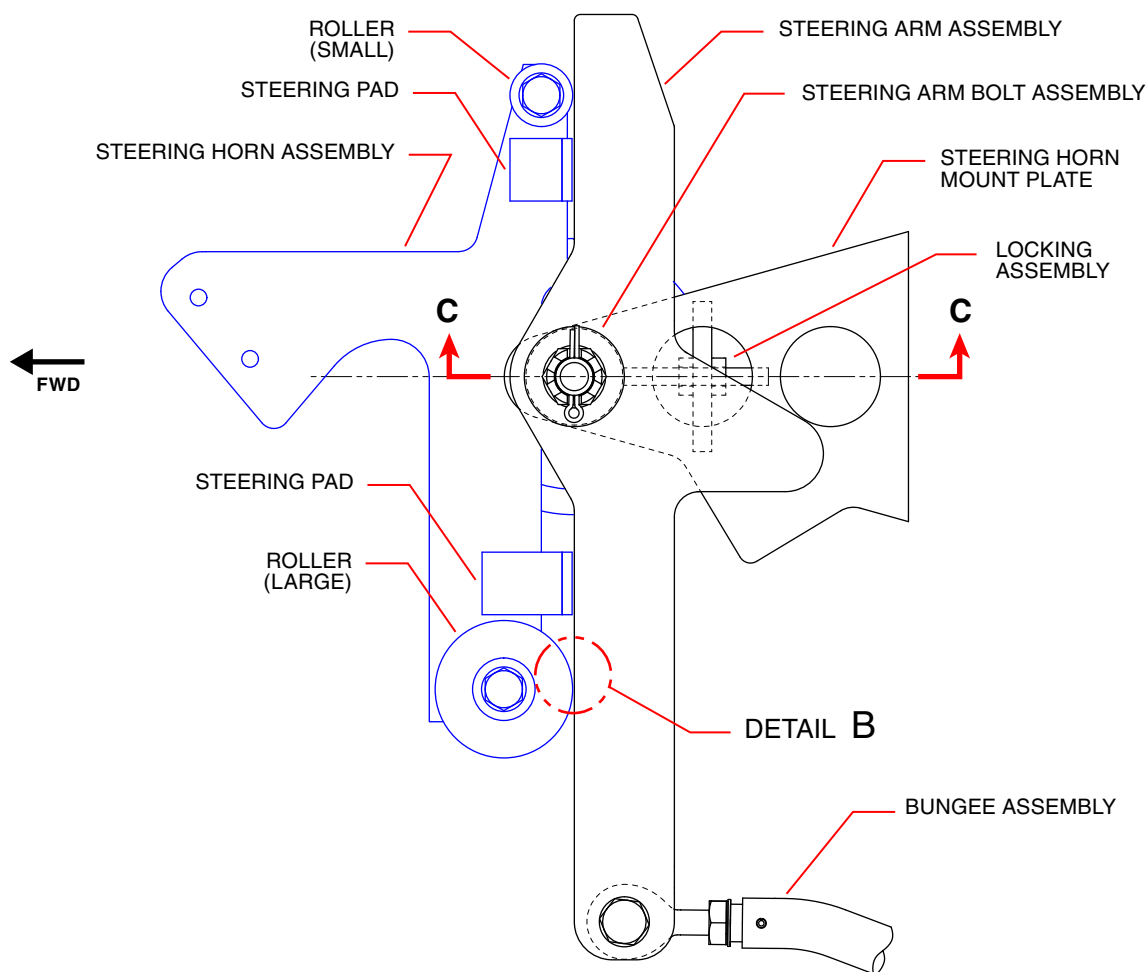
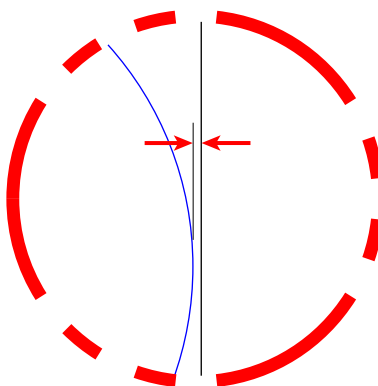


Figure 1 – Sheet 1 of 3
Nose Wheel Adjustment – Typical



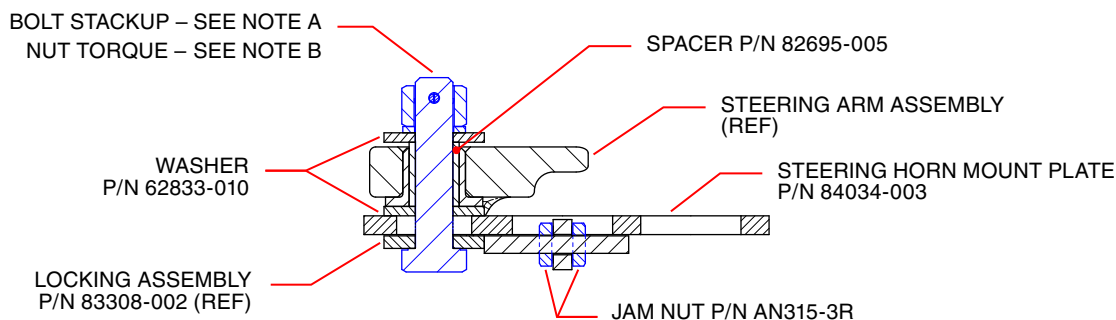
VIEW A-A
NOSE LANDING GEAR
STEERING HORN AND STEERING ARM ASSEMBLIES
LOOKING DOWN



NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL B
CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 2 of 3
Nose Wheel Steering Assemblies – Typical



NOTE A: The bolt stackup, by models:

For PA-46-600TP (shown):	For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP:
BOLT AN6-15 WASHER NAS1149F0663P NUT MS17825-6 COTTER PIN MS24665-283	BOLT AN6-14A NUT MS21042-6

NOTE B: For PA-46-600TP only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.

For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP, torque the Nut MS21042-6 to 175-190 in-lb.

SECTION C–C

STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS

Figure 1 – Sheet 3 of 3
Nose Wheel Steering Assemblies – Typical

3. Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers

NOTE: The following procedure has been incorporated into the current revision (Nov. 30, 2020) of Piper M600 AMM P/N 767-617.

NOTE: This procedure replaces the following steps in the currently available revisions of the applicable AMMs:

- Step (3) under “Alignment,” in Section 32-20-00, of these applicable AMMs:
 - Piper PA-46-350P/PA-46R-350T AMM P/N 761-876
 - Piper PA-46-500TP Meridian/M500 AMM P/N 767-072
- Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00, in Piper PA-46-310P/350P AMM P/N 761-783.

Checking and adjusting the clearance between the nose landing gear steering arm and steering horn rollers is part of the alignment procedure found in applicable AMMs (see Item 1, above). In place of Step (3) under “Alignment,” or Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00 of the applicable AMMs (refer to the note, immediately above), complete the following procedure.

Adjust the steering arm to achieve the desirable clearance between it and the steering horn rollers. First, adjust it with the assembly in neutral position, then with the left pedal pressed and, finally, with the right pedal pressed. The instructions for adjusting this clearance, in the applicable AMMs, will be replaced with the following procedure.

- 1) With the landing gear in the down and locked position, weight proportionally on the nose gear and the nose wheel facing forward, adjust the steering arm.
 - a) Loosen the steering arm bolt assembly and adjust the jam nuts fore and aft (refer to View C–C).
 - b) Place 0.020 of an inch (in.) thick feeler gauges (two are required) between the steering horn rollers and the steering arm. Adjust the steering arm to achieve contact between the steering horn roller, the feeler gauge, and steering arm, for both left and right hand sides simultaneously.

- c) When properly adjusted, the acceptable clearance between both rollers and the steering arm is between 0.010 and 0.030 in., as shown in Detail B.

NOTE: This clearance requirement applies to both rollers at the same time. The clearance measurement is to be taken while the nose wheel is locked in alignment with the longitudinal axis, and the steering arm is parallel to the steering horn pads (as shown in Figure 1, View A–A).

- d) Torque the steering arm assembly nut per torque note in Figure 1, View C–C, and tighten the locking assembly jam nuts.

NOTE: In Steps 2) and 3), below: the small roller will make contact with the steering arm when the left rudder pedal is depressed; the larger roller will make contact with the steering arm when right rudder pedal is depressed.

2) Clearance with the left rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the left rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the larger roller on the steering horn assembly, as shown in Figure 2.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d), below. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the larger roller on the steering horn assembly at full left rudder pedal deflection.
- c) With weight on wheels, lock the rudder pedals together, in alignment with each other and on fuselage station 105.70 (with the exception of the deviation for the M600 model, due to pushrod adjustment required in Item 1, above). See Figure 4.
- d) To align the nose wheel straight forward (weight remaining on wheels), stand in front of the nose gear and align the center rib of the tire with the chalk line. Alternatively, lay a straightedge along the side of the tire and parallel the straightedge with the chalk line.

NOTE: The chalk line referred to was created while accomplishing Item 1, Nose Landing Gear Alignment.

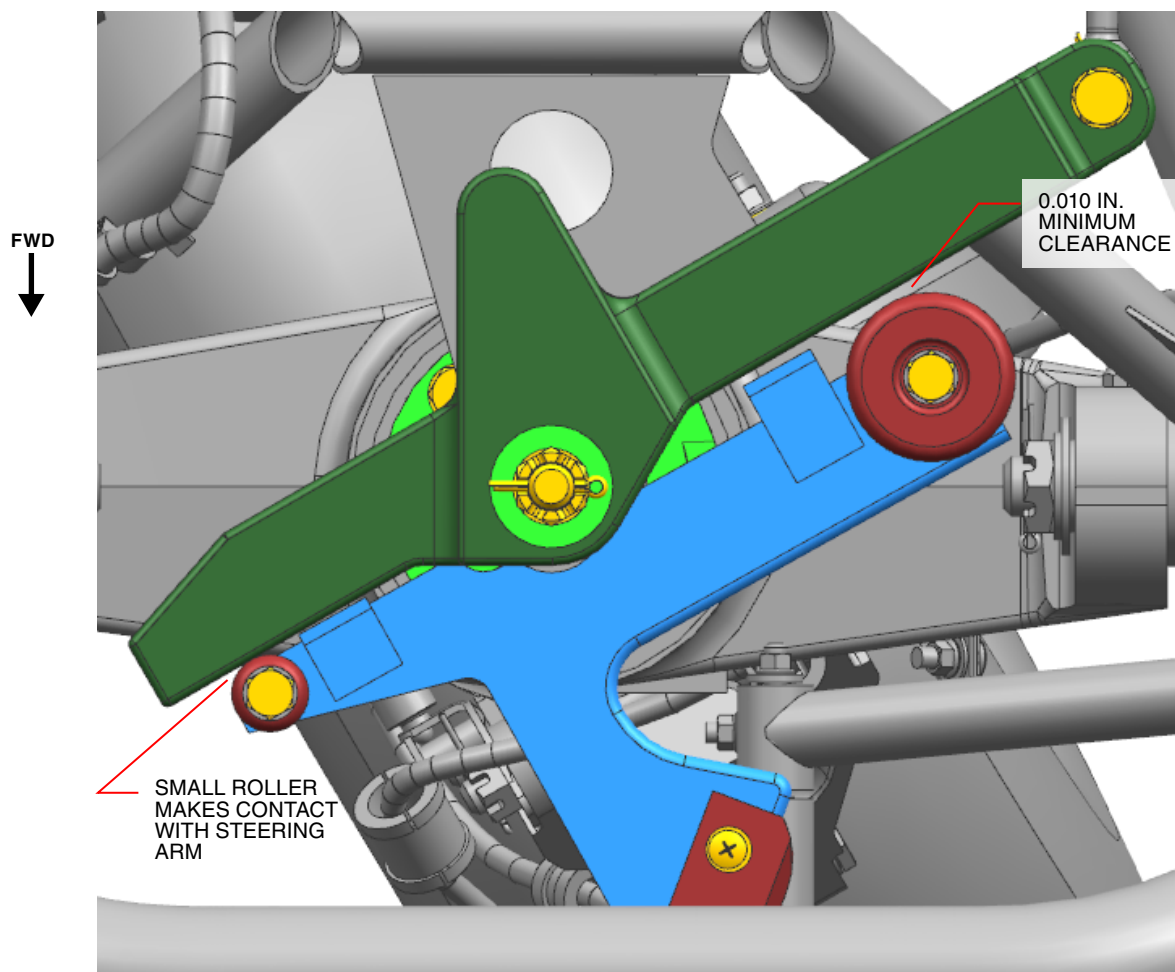
- e) If Steps c) and d) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

3) Clearance with the right rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the right rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the small roller on the steering horn assembly, as shown in Figure 3.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d) under Step 2), above. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the small roller on the steering horn assembly at full right rudder pedal deflection.
- c) If Steps c) and d) under Step 2) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

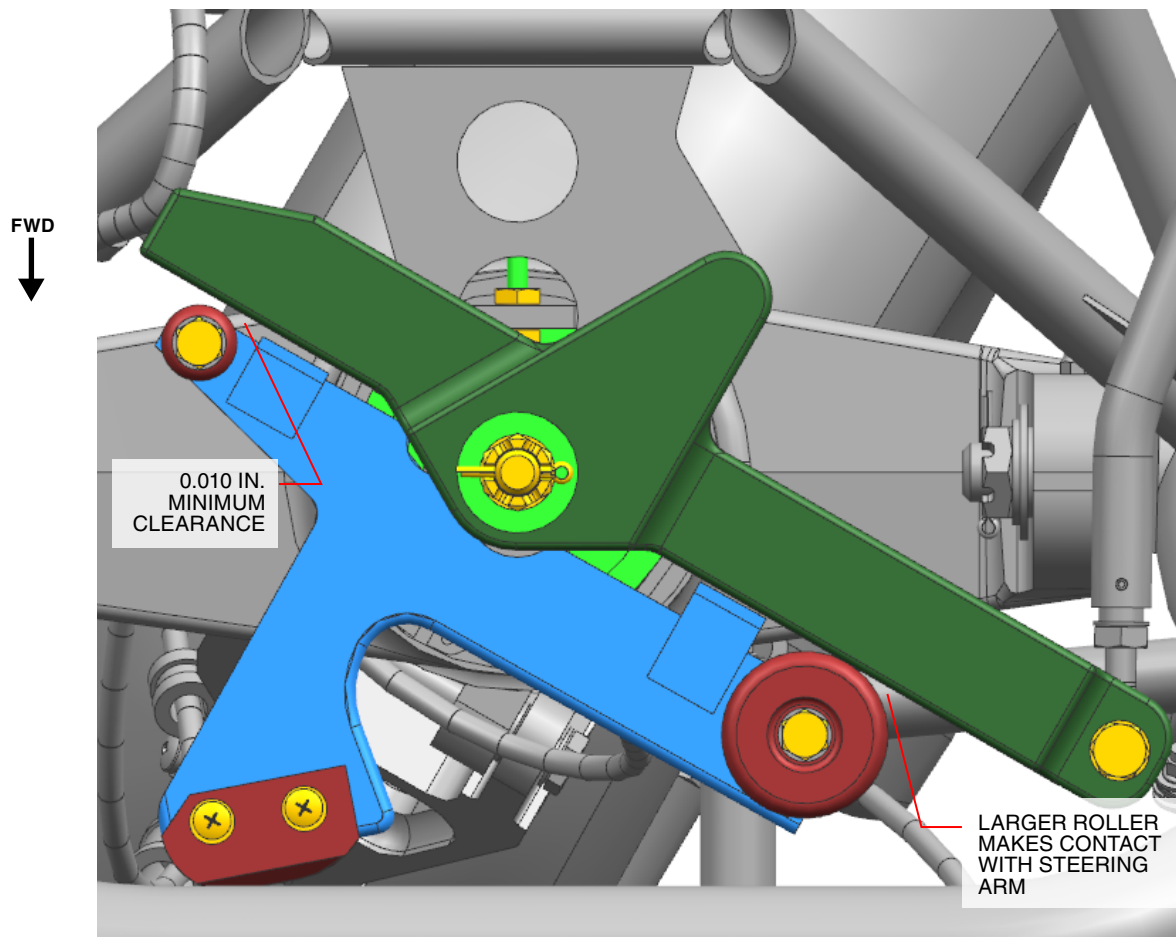
4. Rudder Cable Tension

Confirm that the tension of both rudder control cables is correct, per the appropriate steps in Section 27-20-00 of the applicable AMM.



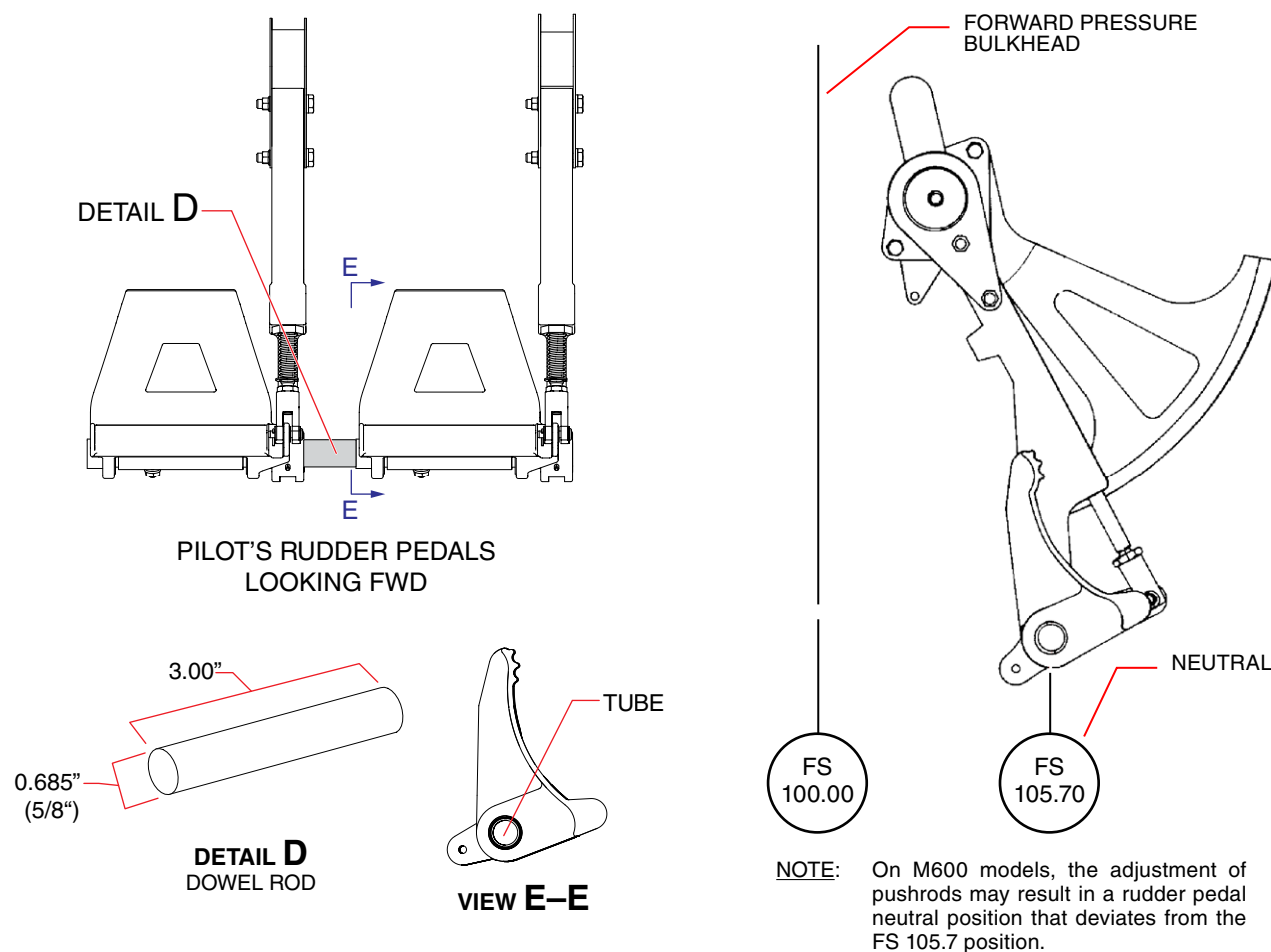
LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 2
Position of Steering Horn and Arm Assemblies – Left Rudder Pedal Pressed



LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 3
Position of Steering Horn and Arm Assemblies – Right Rudder Pedal Pressed

**CLAMPING RUDDER PEDALS IN NEUTRAL POSITION****RUDDER PEDALS IN NEUTRAL POSITION**

NOTE: This figure illustrates the requirement to fix the rudder pedals in the neutral position while performing the applicable rigging step. Instead of using the depicted technique, it is permissible to fashion and utilize tools and/or devices that are suitable for accomplishing the same intent.

Figure 4
Rudder Pedals Set in Neutral Position

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1286B LETTER

Date: January 28, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1286B supersedes SL 1286A in its entirety.

- For M600 only: On aircraft that were previously made compliant with SL 1286, compliance with SL 1286B is required at the next regularly scheduled maintenance event, not to exceed the next 50 hours time in service. Prior to next flight, M600 aircraft that were previously made complaint with SL 1286A must comply with Step 1.(4), to rig the aileron-rudder interconnect.
- For all other models, if compliance with SL 1286 or SL 1286A has already been accomplished on an aircraft, no further action is necessary until the next 100 hour/annual inspection.

SUBJECT:

**NOSE LANDING GEAR STEERING COMPONENTS
INSPECTION AND ADJUSTMENT**

REASON FOR REVISION:

SL 1286B adds rigging of the aileron-rudder interconnect to procedure required for only PA-46-600TP M600 aircraft.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service (TIS). After that, compliance is to occur every 100 hours, in accordance with the applicable maintenance manual.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

Several aircraft components, and their rigging, are important for proper ground steering and directional control. These components require regular, proper inspection and adjustment, and, on condition, replacement, to maintain proper ground steering and directional control.

This service letter provides a review of the best practices for maintaining ground steering system components on the affected aircraft: rudder cable tension, nose landing gear alignment, nose gear rake angle, and nose gear steering arm clearance.

NOTE: In addition to the nose landing gear procedures included in this service letter, proper tire pressure maintenance and main landing gear alignment are important to overall steering and directional control. For tire pressure maintenance, refer to Piper Service Letter 1285, "Proper Tire Pressure Maintenance." For main landing gear alignment, refer to Section 32-10-00 of the applicable Piper Airplane Maintenance Manual.

INSTRUCTIONS:

NOTE: This service letter is intended to bring attention to specific procedures that appear in the Piper Airplane Maintenance Manuals (AMM) for the affected aircraft.

NOTE: Any procedures in this service letter that include changes to procedures currently available in the applicable AMMs will be incorporated into a future revision of the applicable AMMs.

NOTE: In addition to the maintenance specified in this service letter for the nose landing gear, there are scheduled and unscheduled inspections in Sections 5-20-00 and 5-50-00 of the AMMs, respectively. The troubleshooting chart found in Section 32-20-00 can assist in targeting the cause and remedy of issues with the nose landing gear, including steering and directional control. Also, Section 12-20-00 specifies the type and frequency of lubrication for the landing gear, steering bellcrank and rod ends.

NOTE: Adhere to proper towing and taxiing practices provided in the applicable Pilot's Operating Handbook (POH) and Piper AMM. Refer to "Ground Handling" in Section 8 of the applicable POH, and Sections 9-00-00 and 9-10-00 of the applicable Piper AMM.

For reliable steering and directional control, chapters 32-20-00 and 27-20-00 include procedures that will help ensure that nose landing gear steering components operate nominally. These procedures verify the nose gear alignment, nose gear rake angle, clearance between the steering arm and steering horn rollers, and rudder cable tension (the rigging and adjustment of the rudder controls).

1. Nose Landing Gear Alignment

NOTE: In addition to maintaining the nose landing gear alignment, maintaining the main landing gear alignment affects proper ground directional control. Refer to Section 32-10-00 of the applicable AMM for the main landing gear alignment procedure.

- **For all affected models except PA-46-600TP M600**, check and set the alignment of the nose gear per "Alignment," in Section 32-20-00 of the applicable AMM.

- 1) In place of the following steps in Section 32-20-00 of the applicable AMM:
 - Step (3) under "Alignment," of Piper PA-46-350P/PA-46R-350T AMM P/N 761-876 and Piper PA-46-500TP AMM P/N 767-072
 - Step (c) under "Nose Gear Assembly Alignment," in Piper PA-46-310P/350P AMM P/N 761-783Complete Item 3, Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers, below.
- 2) Upon the completion of Item 3, below, continue the remaining alignment steps in the applicable AMM.

- For PA-46-600TP M600 aircraft only, check and align the rudder pedals and the nose gear:

- 1) Loosen the rudder cable turnbuckles to allow for rudder pedal movement.
 - 2) Adjust the pushrods:
 - a) Unclamp and slide the pushrod bellows assembly to expose the Pushrods, P/N 83660-002. See the applicable AMM, Section 27-20-00, Figure 1, Sheet 3.
 - b) Disconnect push rods from Bellcrank Assembly, P/N 83639-002, as necessary, to adjust both pushrods connected to the left and right rudder pedals. Adjust the pushrods until the adjustable ends are bottomed out (that is, adjusted for minimum pushrod lengths).
 - c) Hold the bellcrank perpendicular to BL 0.00 at FS 93.00. Reconnect the pushrods to the bellcrank assembly.
 - d) Verify the alignment of the rudder pedals. If the left and right pedals are misaligned, realign by adjusting only one of the pushrods: Turn the rod end a half turn at a time, to extend it until the left and right rudder pedals are aligned with each other in the cockpit.
- NOTE:** This adjustment may result in rudder pedal positions that deviate from the standard neutral position (FS 105.70).
- 3) With the rudder set at 0 degrees, set the tension for the rudder cables, per Section 27-20-00 of Piper PA-46-600TP M600 AMM, P/N 767-617.

CAUTION: IF RUDDER PEDAL DEFLECTION BEYOND THE PRIMARY RUDDER STOPS RESULTS IN THE RUDDER PEDALS MAKING CONTACT WITH THE PRESSURE BULKHEAD FITTING, BEFORE THE SECONDARY STOPS ARE ENGAGED:

1. ELONGATE THE PUSHRODS HALF A TURN AT A TIME UNTIL A POSITIVE CLEARANCE IS OBTAINED BETWEEN THE RUDDER PEDAL AND THE PRESSURE BULKHEAD FITTING AT SUCH DEFLECTION.
2. REPEAT STEPS 2) THROUGH 5) OF THIS PROCEDURE.

- 4) Rig the aileron-rudder interconnect in accordance with Section 27-10-00 of Piper AMM P/N 767-617.
- 5) Check and set the alignment of the nose gear per "Alignment," "Adjustment," and "Clearance," in Section 32-20-00 of Piper PA-46-600TP AMM P/N 767-617.

As part of the alignment procedure, with the exception of PA-46-310P Malibu aircraft, it is necessary to check the rake angle and, if required, to adjust it (Item 2, below).

2. Rake Angle Adjustment

NOTE: Rake angle adjustment is not applicable to PA-46-310P aircraft.

As mentioned under Item 1, it is necessary to inspect and/or adjust the nose gear rake angle as part of the nose gear alignment procedure. In addition, inspection and/or adjustment of the rake angle is necessary whenever the pilot experiences poor steering, or upon the replacement or service to the nose gear trunnion, the nose gear actuator, or the engine mount.

Check and adjust the rake angle, for the applicable models (all except PA-46-310P), per "Adjustment," in Section 32-20-00 of the applicable AMM.

Adjusting the rake angle affects the clearance between the steering arm and steering horn rollers, which requires that this clearance is checked, as provided under Item 3, below.

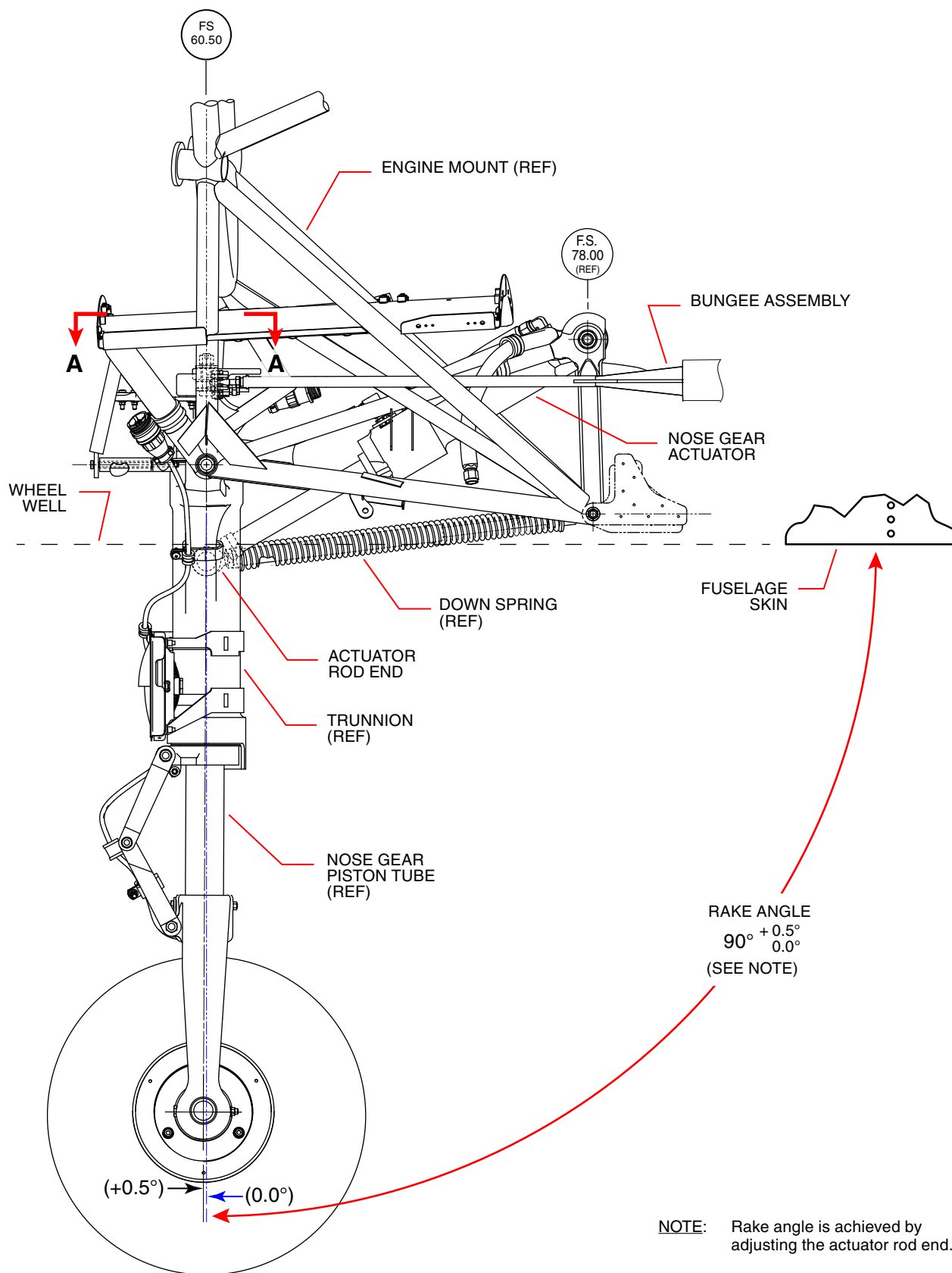
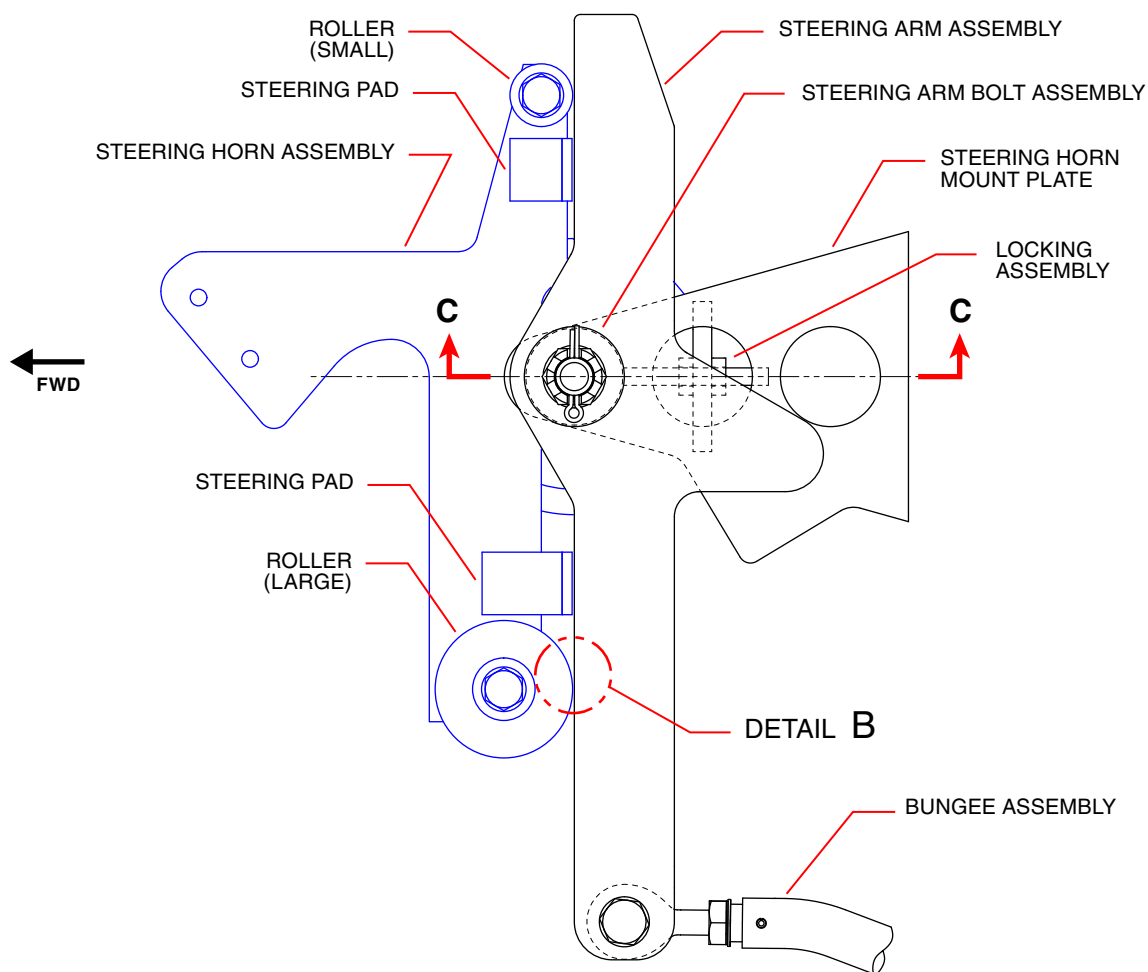
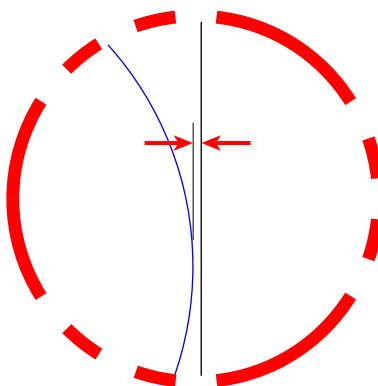


Figure 1 – Sheet 1 of 3
Nose Wheel Adjustment – Typical



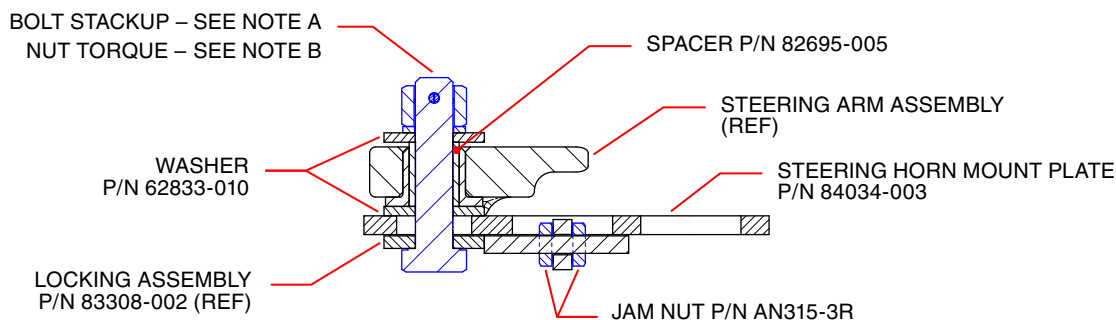
VIEW A-A
NOSE LANDING GEAR
STEERING HORN AND STEERING ARM ASSEMBLIES
LOOKING DOWN



NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL B
CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 2 of 3
Nose Wheel Steering Assemblies – Typical



NOTE A: The bolt stackup, by models:

For PA-46-600TP (shown):	For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP:
BOLT AN6-15 WASHER NAS1149F0663P NUT MS17825-6 COTTER PIN MS24665-283	BOLT AN6-14A NUT MS21042-6

NOTE B: For PA-46-600TP only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.

For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP, torque the Nut MS21042-6 to 175-190 in-lb.

SECTION C-C

STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS

Figure 1 – Sheet 3 of 3
Nose Wheel Steering Assemblies – Typical

3. Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers

NOTE: The following procedure has been incorporated into the current revision (Nov. 30, 2020) of Piper M600 AMM P/N 767-617.

NOTE: This procedure replaces the following steps in the currently available revisions of the applicable AMMs:

- Step (3) under “Alignment,” in Section 32-20-00, of these applicable AMMs:
 - Piper PA-46-350P/PA-46R-350T AMM P/N 761-876
 - Piper PA-46-500TP Meridian/M500 AMM P/N 767-072
- Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00, in Piper PA-46-310P/350P AMM P/N 761-783.

Checking and adjusting the clearance between the nose landing gear steering arm and steering horn rollers is part of the alignment procedure found in applicable AMMs (see Item 1, above). In place of Step (3) under “Alignment,” or Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00 of the applicable AMMs (refer to the note, immediately above), complete the following procedure.

Adjust the steering arm to achieve the desirable clearance between it and the steering horn rollers. First, adjust it with the assembly in neutral position, then with the left pedal pressed and, finally, with the right pedal pressed. The instructions for adjusting this clearance, in the applicable AMMs, will be replaced with the following procedure.

- 1) With the landing gear in the down and locked position, weight proportionally on the nose gear and the nose wheel facing forward, adjust the steering arm.
 - a) Loosen the steering arm bolt assembly and adjust the jam nuts fore and aft (refer to View C-C).
 - b) Place 0.020 of an inch (in.) thick feeler gauges (two are required) between the steering horn rollers and the steering arm. Adjust the steering arm to achieve contact between the steering horn roller, the feeler gauge, and steering arm, for both left and right hand sides simultaneously.

- c) When properly adjusted, the acceptable clearance between both rollers and the steering arm is between 0.010 and 0.030 in., as shown in Detail B.

NOTE: This clearance requirement applies to both rollers at the same time. The clearance measurement is to be taken while the nose wheel is locked in alignment with the longitudinal axis, and the steering arm is parallel to the steering horn pads (as shown in Figure 1, View A–A).

- d) Torque the steering arm assembly nut per torque note in Figure 1, View C–C, and tighten the locking assembly jam nuts.

NOTE: In Steps 2) and 3), below: the small roller will make contact with the steering arm when the left rudder pedal is depressed; the larger roller will make contact with the steering arm when right rudder pedal is depressed.

2) Clearance with the left rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the left rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the larger roller on the steering horn assembly, as shown in Figure 2.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d), below. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the larger roller on the steering horn assembly at full left rudder pedal deflection.
- c) With weight on wheels, lock the rudder pedals together, in alignment with each other and on fuselage station 105.70 (with the exception of the deviation for the M600 model, due to pushrod adjustment required in Item 1, above). See Figure 4.
- d) To align the nose wheel straight forward (weight remaining on wheels), stand in front of the nose gear and align the center rib of the tire with the chalk line. Alternatively, lay a straightedge along the side of the tire and parallel the straightedge with the chalk line.

NOTE: The chalk line referred to was created while accomplishing Item 1, Nose Landing Gear Alignment.

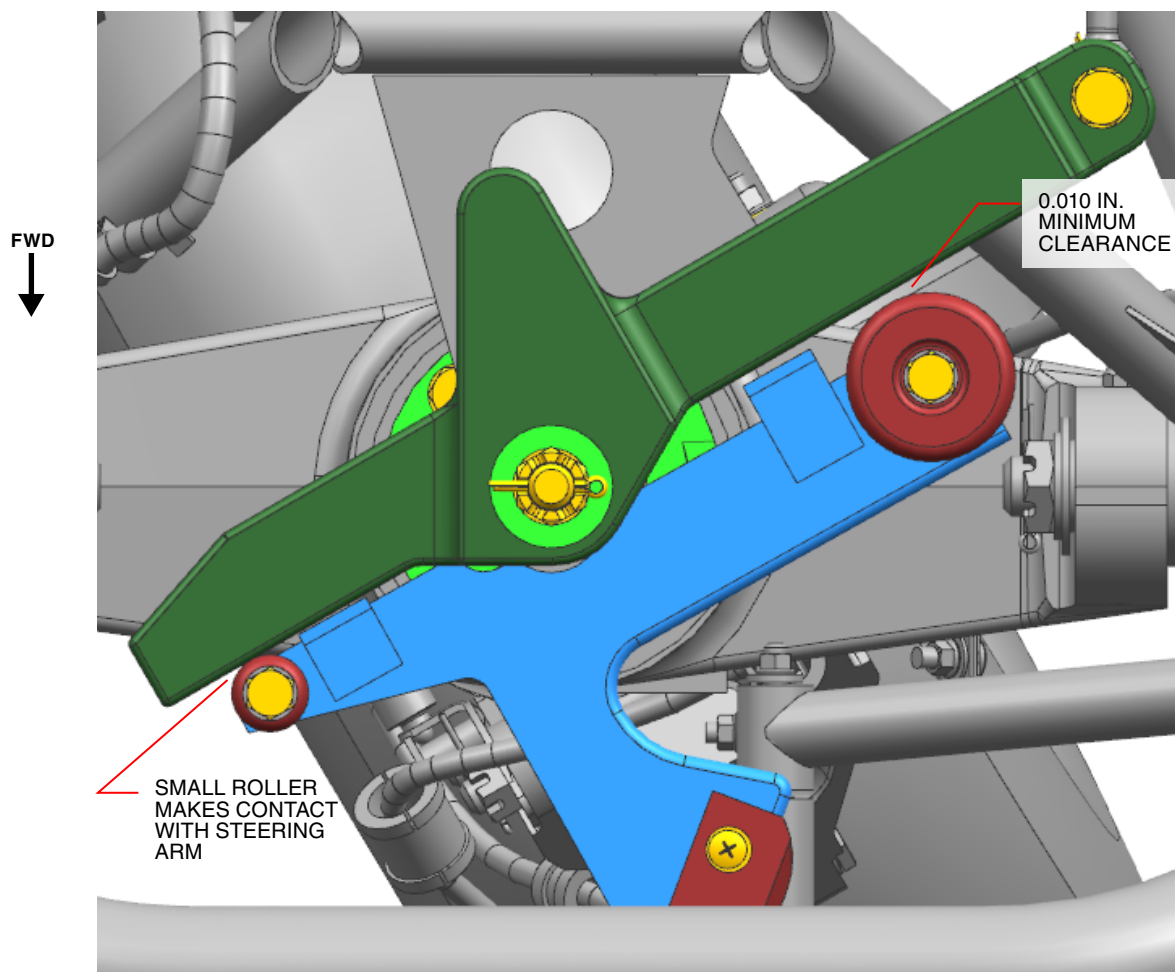
- e) If Steps c) and d) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

3) Clearance with the right rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the right rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the small roller on the steering horn assembly, as shown in Figure 3.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d) under Step 2), above. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the small roller on the steering horn assembly at full right rudder pedal deflection.
- c) If Steps c) and d) under Step 2) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

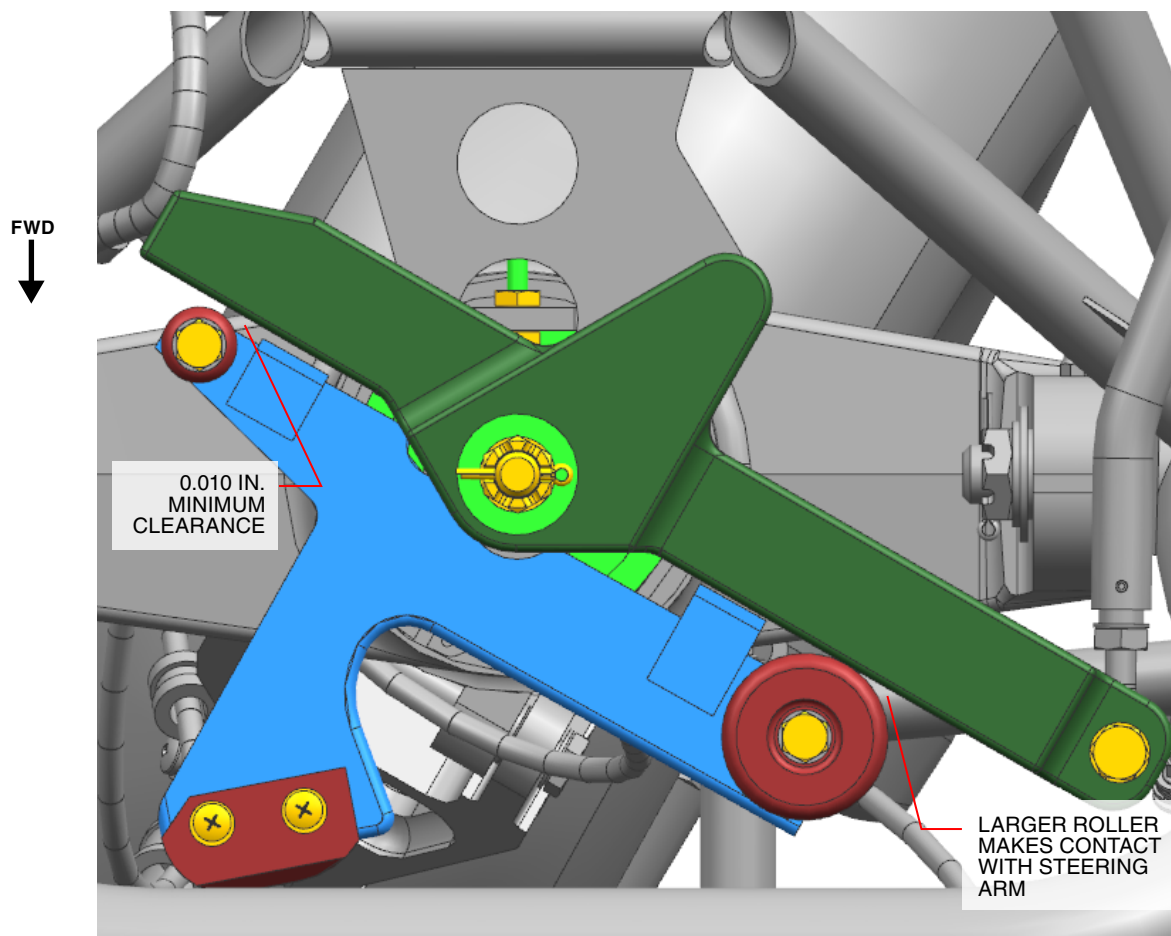
4. Rudder Cable Tension

Confirm that the tension of both rudder control cables is correct, per the appropriate steps in Section 27-20-00 of the applicable AMM.



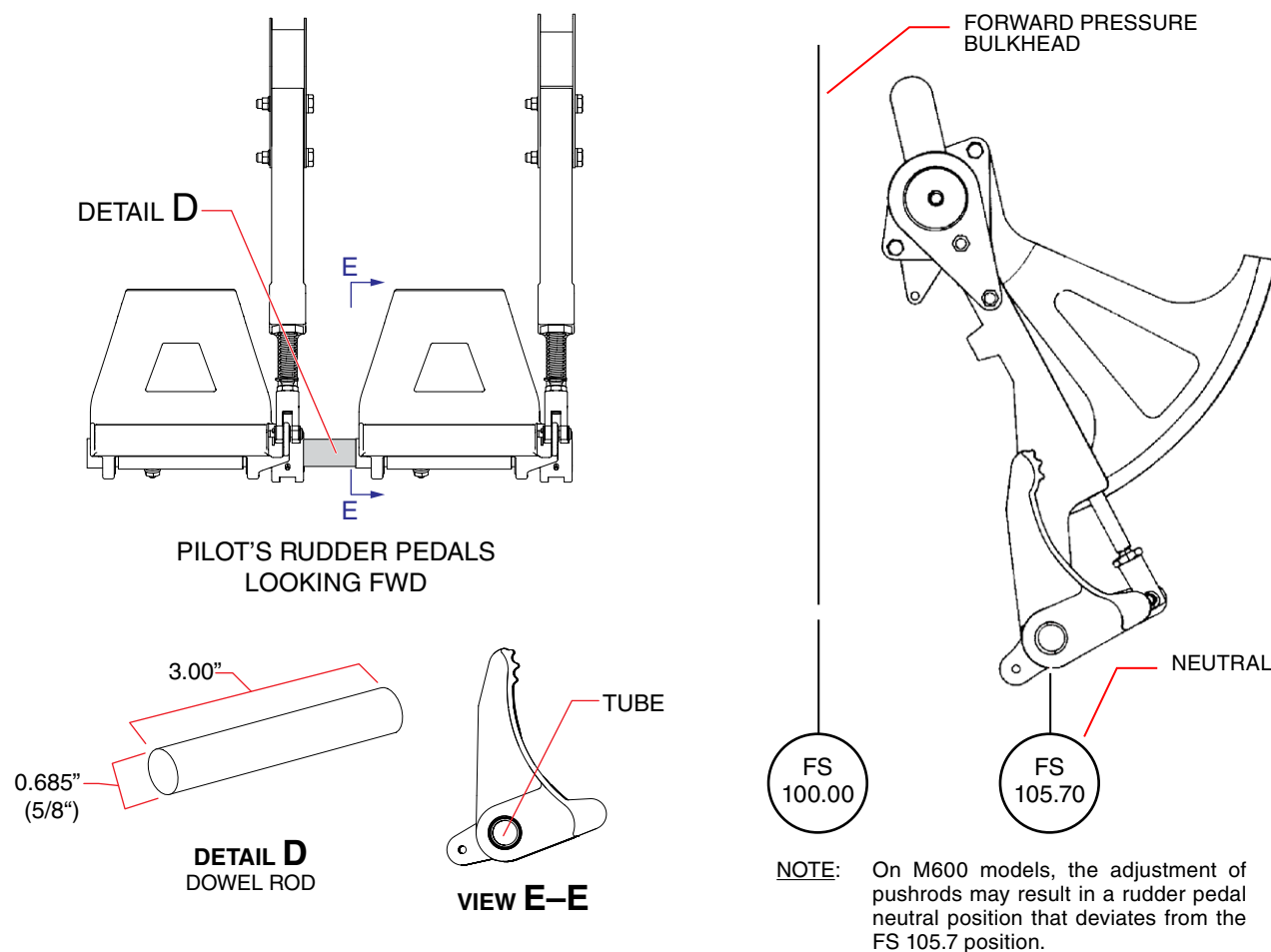
LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 2
Position of Steering Horn and Arm Assemblies – Left Rudder Pedal Pressed



LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 3
Position of Steering Horn and Arm Assemblies – Right Rudder Pedal Pressed

**CLAMPING RUDDER PEDALS IN NEUTRAL POSITION****RUDDER PEDALS IN NEUTRAL POSITION**

NOTE: This figure illustrates the requirement to fix the rudder pedals in the neutral position while performing the applicable rigging step. Instead of using the depicted technique, it is permissible to fashion and utilize tools and/or devices that are suitable for accomplishing the same intent.

Figure 4
Rudder Pedals Set in Neutral Position

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: For only M600 models that must accomplish the pushrod and rudder adjustment procedure in this service letter, factory participation is limited to new aircraft in warranty at the time of compliance. Factory participation will remain in effect for a period of time not to exceed 180 days from the date of this service letter.

Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1286C LETTER

Date: March 24, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1286C supersedes SL 1286B in its entirety.

SUBJECT:

**NOSE LANDING GEAR STEERING COMPONENTS
INSPECTION AND ADJUSTMENT**

REASON FOR REVISION:

SL 1286C clarifies the steps to check and adjust the clearance between the nose landing gear steering arm and steering horn rollers, and the nose gear alignment.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Initial compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service (TIS). After that, compliance is to occur every 100 hours, in accordance with the applicable maintenance manual.

- For M600 only:
 - If compliance with SL 1286B has already been accomplished, no further action is necessary until the next 100 hour/annual inspection. If an aircraft was not made compliant with SL 1286B, but was made compliant with SL 1286A, then prior to next flight, it must be made complaint with Step 1.(4), to rig the aileron-rudder interconnect.
 - On aircraft that were previously made compliant with SL 1286, compliance with SL 1286C is required at the next regularly scheduled maintenance event, not to exceed the next 100 hours time in service.
- For all other models, if compliance with SL 1286, SL 1286A, or SL 1286B has already been accomplished on an aircraft, no further action is necessary until the next 100 hour/annual inspection.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

ATA/JASC: 3200

(OVER)

PURPOSE:

Several aircraft components, and their rigging, are important for proper ground steering and directional control. These components require regular, proper inspection and adjustment, and, on condition, replacement, to maintain proper ground steering and directional control.

This service letter provides a review of the best practices for maintaining ground steering system components on the affected aircraft: rudder cable tension, nose landing gear alignment, nose gear rake angle, and nose gear steering arm clearance.

NOTE: In addition to the nose landing gear procedures included in this service letter, proper tire pressure maintenance and main landing gear alignment are important to overall steering and directional control. For tire pressure maintenance, refer to Piper Service Letter 1285, "Proper Tire Pressure Maintenance." For main landing gear alignment, refer to Section 32-10-00 of the applicable Piper Airplane Maintenance Manual.

INSTRUCTIONS:

NOTE: This service letter is intended to bring attention to specific procedures that appear in the Piper Airplane Maintenance Manuals (AMM) for the affected aircraft.

NOTE: Any procedures in this service letter that include changes to procedures currently available in the applicable AMMs will be incorporated into a future revision of the applicable AMMs.

NOTE: In addition to the maintenance specified in this service letter for the nose landing gear, there are scheduled and unscheduled inspections in Sections 5-20-00 and 5-50-00 of the AMMs, respectively. The troubleshooting chart found in Section 32-20-00 can assist in targeting the cause and remedy of issues with the nose landing gear, including steering and directional control. Also, Section 12-20-00 specifies the type and frequency of lubrication for the landing gear, steering bellcrank and rod ends.

NOTE: Adhere to proper towing and taxiing practices provided in the applicable Pilot's Operating Handbook (POH) and Piper AMM. Refer to "Ground Handling" in Section 8 of the applicable POH, and Sections 9-00-00 and 9-10-00 of the applicable Piper AMM.

For reliable steering and directional control, chapters 32-20-00 and 27-20-00 include procedures that will help ensure that nose landing gear steering components operate nominally. These procedures verify the nose gear alignment, nose gear rake angle, clearance between the steering arm and steering horn rollers, and rudder cable tension (the rigging and adjustment of the rudder controls).

1. Nose Landing Gear Alignment

NOTE: In addition to maintaining the nose landing gear alignment, maintaining the main landing gear alignment affects proper ground directional control. Refer to Section 32-10-00 of the applicable AMM for the main landing gear alignment procedure.

a. Model-specific alignment procedures

- **For all affected models except PA-46-600TP M600**, check and set the alignment of the nose gear per "Alignment," in Section 32-20-00 of the applicable AMM.

- a) In place of the following steps in Section 32-20-00 of the applicable AMM, instead complete Item 3, "Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers":
 - Step (3) under "Alignment," of Piper PA-46-350P/PA-46R-350T AMM P/N 761-876 and Piper PA-46-500TP AMM P/N 767-072
 - Step (c) under "Nose Gear Assembly Alignment," in Piper PA-46-310P/350P AMM P/N 761-783
- b) Upon the completion of Item 3, below, continue the remaining alignment steps in the applicable AMM. Then, return to this service letter and continue from Step b., below.

- **For PA-46-600TP M600 aircraft only**, check and align the rudder pedals and the nose gear:

- a) Loosen the rudder cable turnbuckles to allow for rudder pedal movement.
- b) Adjust the pushrods:
 - (1) Unclamp and slide the pushrod bellows assembly to expose the Pushrods, P/N 83660-002. See the applicable AMM, Section 27-20-00, Figure 1, Sheet 3.
 - (2) Disconnect push rods from Bellcrank Assembly, P/N 83639-002, as necessary, to adjust both pushrods connected to the left and right rudder pedals. Adjust the pushrods until the adjustable ends are bottomed out (that is, adjusted for minimum pushrod lengths).
 - (3) Hold the bellcrank perpendicular to BL 0.00 at FS 93.00. Reconnect the pushrods to the bellcrank assembly.
 - (4) Verify the alignment of the rudder pedals. If the left and right pedals are misaligned, realign by adjusting only one of the pushrods: Turn the rod end a half turn at a time, to extend it until the left and right rudder pedals are aligned with each other in the cockpit.

NOTE: This adjustment may result in rudder pedal positions that deviate from the standard neutral position (FS 105.70).

- c) With the rudder set at 0 degrees, set the tension for the rudder cables, per Section 27-20-00 of Piper PA-46-600TP M600 AMM, P/N 767-617.

CAUTION: IF RUDDER PEDAL DEFLECTION BEYOND THE PRIMARY RUDDER STOPS RESULTS IN THE RUDDER PEDALS MAKING CONTACT WITH THE PRESSURE BULKHEAD FITTING, BEFORE THE SECONDARY STOPS ARE ENGAGED:

1. ELONGATE THE PUSHRODS HALF A TURN AT A TIME UNTIL A POSITIVE CLEARANCE IS OBTAINED BETWEEN THE RUDDER PEDAL AND THE PRESSURE BULKHEAD FITTING AT SUCH DEFLECTION.
2. REPEAT STEPS 2) THROUGH 5) OF THIS PROCEDURE.

- d) Rig the aileron-rudder interconnect in accordance with Section 27-10-00 of Piper AMM P/N 767-617.

- b. As part of the alignment procedure for all affected models except for the PA-46-310P Malibu aircraft, it is necessary to check the rake angle and, if required, to adjust it (Item 2, below).

2. Rake Angle Adjustment

NOTE: Rake angle adjustment is not applicable to PA-46-310P aircraft.

As mentioned under Item 1, it is necessary to inspect and/or adjust the nose gear rake angle as part of the nose gear alignment procedure. In addition, inspection and/or adjustment of the rake angle is necessary whenever the pilot experiences poor steering, or upon the replacement or service to the nose gear trunnion, the nose gear actuator, or the engine mount.

Check and adjust the rake angle, for the applicable models (all except PA-46-310P), per "Adjustment," in Section 32-20-00 of the applicable AMM.

Adjusting the rake angle affects the clearance between the steering arm and steering horn rollers, which requires that this clearance is checked, as provided under Item 3, below.

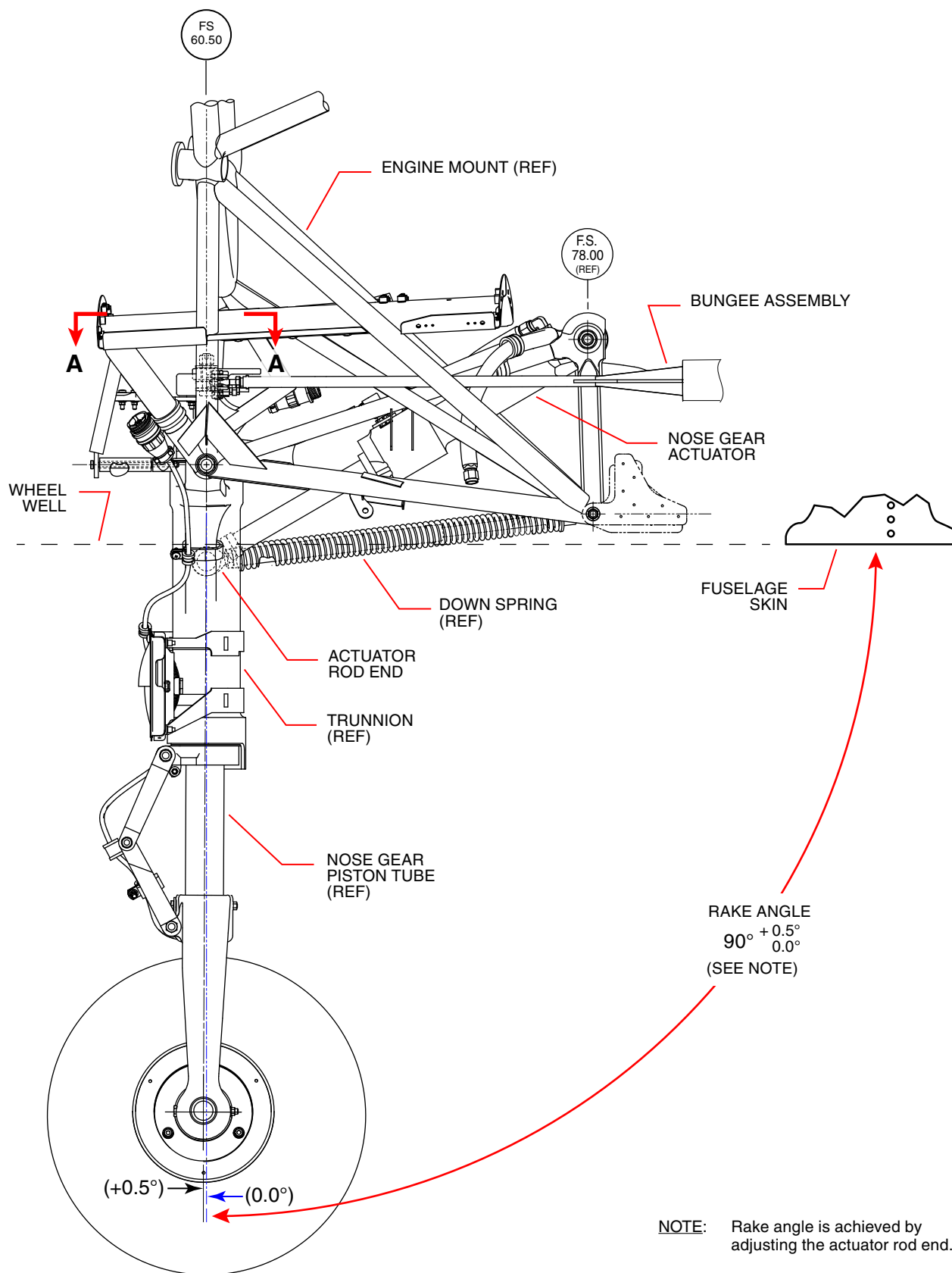
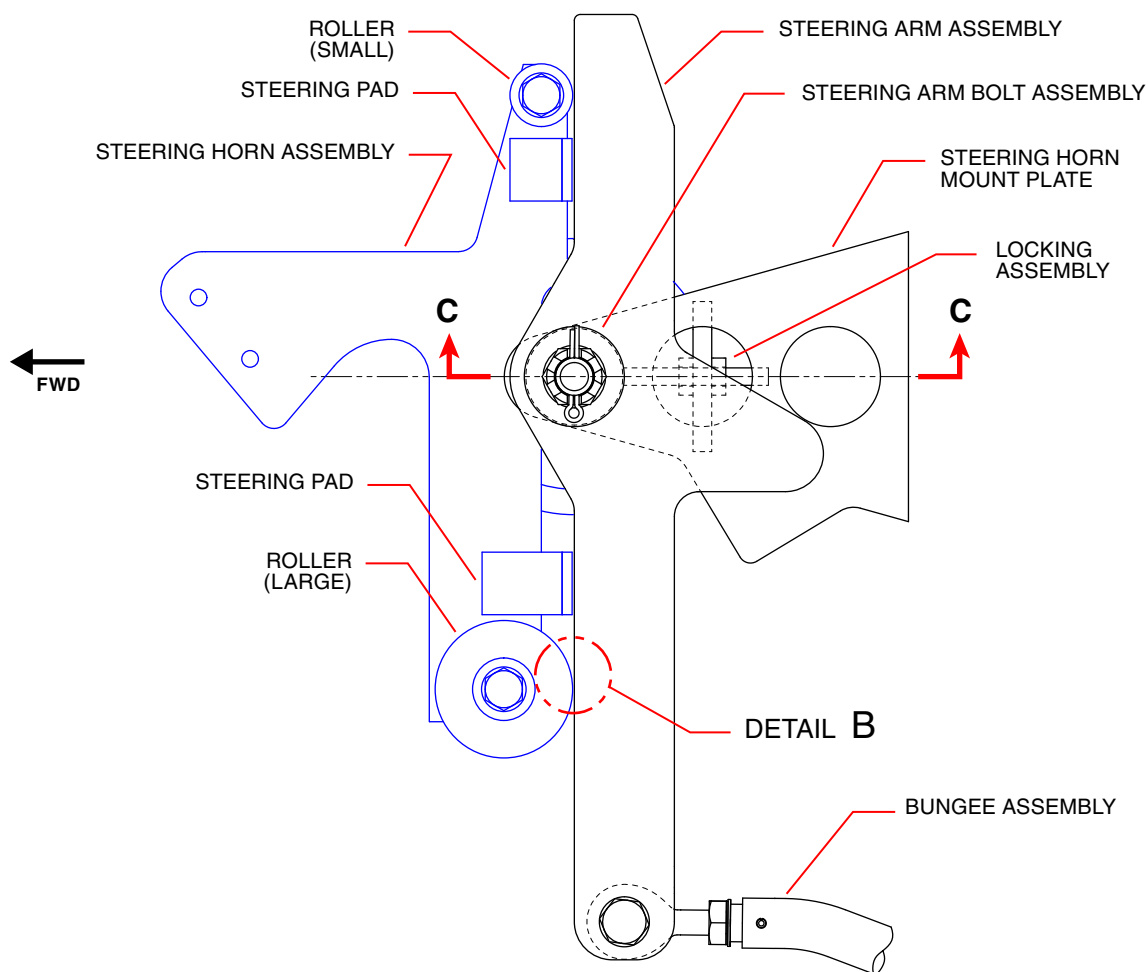
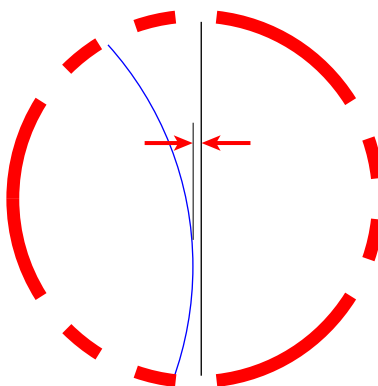


Figure 1 – Sheet 1 of 3
Nose Wheel Adjustment – Typical



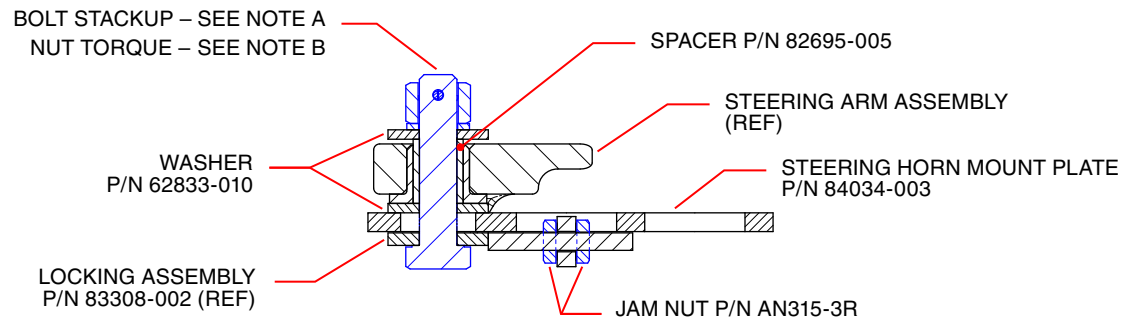
VIEW A-A
NOSE LANDING GEAR
STEERING HORN AND STEERING ARM ASSEMBLIES
LOOKING DOWN



NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL B
CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 2 of 3
Nose Wheel Steering Assemblies – Typical



NOTE A: The bolt stackup, by models:

For PA-46-600TP (shown):	For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP:
BOLT AN6-15 WASHER NAS1149F0663P NUT MS17825-6 COTTER PIN MS24665-283	BOLT AN6-14A NUT MS21042-6

NOTE B: For PA-46-600TP only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.
For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP, torque the Nut MS21042-6 to 175-190 in-lb.

SECTION C-C
STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS

Figure 1 – Sheet 3 of 3
Nose Wheel Steering Assemblies – Typical

3. Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers

Checking and adjusting the clearance between the nose landing gear steering arm and steering horn rollers is part of the alignment procedure found in applicable AMMs.

NOTE: This procedure replaces the following steps in the currently available revisions of the applicable AMMs:

- “Alignment,” “Adjustment,” and “Clearance” paragraphs, under Nose Gear Assembly, in Section 32-20-00 of PA-46-600TP AMM P/N 767-617.
- Step (3) under “Alignment,” in Section 32-20-00, of these applicable AMMs:
 - Piper PA-46-350P/PA-46R-350T AMM P/N 761-876
 - Piper PA-46-500TP Meridian/M500 AMM P/N 767-072
- Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00, in Piper PA-46-310P/350P AMM P/N 761-783.

Adjust the steering arm to achieve the desirable clearance between it and the steering horn rollers. First, adjust it with the assembly in neutral position, then with the left pedal pressed and, finally, with the right pedal pressed. The instructions for adjusting this clearance, in the applicable AMMs, will be replaced with the following procedure.

- 1) With the landing gear in the down and locked position, weight proportionally on the nose gear and the nose wheel facing forward, adjust the steering arm.
 - a) Loosen the steering arm bolt assembly and adjust the jam nuts fore and aft (refer to View C-C).
 - b) Place 0.020 of an inch (in.) thick feeler gauges (two are required) between the steering horn rollers and the steering arm. Adjust the steering arm to achieve contact between the steering horn roller, the feeler gauge, and steering arm, for both left and right hand sides simultaneously.

- c) Ensure that there is a minimum of 0.010 in. gap between both steering horn pads and the steering arm. When properly adjusted, the acceptable clearance between both rollers and the steering arm is between 0.010 and 0.030 in., as shown in Detail B.

NOTE: This clearance requirement applies to both rollers at the same time. The clearance measurement is to be taken while the nose wheel is locked in alignment with the longitudinal axis, and the steering arm is parallel to the steering horn pads (as shown in Figure 1, View A–A).

- d) Torque the steering arm assembly nut per torque note in Figure 1, View C–C, and tighten the locking assembly jam nuts.

NOTE: In Steps 2) and 3), below: the small roller or right hand steering horn pad will make contact with the steering arm when the left rudder pedal is depressed; the larger roller or left hand steering horn pad will make contact with the steering arm when right rudder pedal is depressed.

2) Clearance with the left rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the left rudder pedal pressed firmly against the left forward stop, determine if there is: a 0.010 in. minimum clearance between the steering arm and the larger roller, and a positive clearance between the steering arm and the left hand steering horn pad, on the steering horn assembly, as shown in Figure 2.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d), below. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the larger roller, and a positive clearance for the left hand steering horn pad, on the steering horn assembly, at full left rudder pedal deflection.
- c) With weight on wheels, lock the rudder pedals together, in alignment with each other and on fuselage station 105.70 (with the exception of the deviation for the M600 model, due to pushrod adjustment required in Item 1, above). See Figure 4.
- d) To align the nose wheel straight forward (weight remaining on wheels), stand in front of the nose gear and align the center rib of the tire with the chalk line. Alternatively, lay a straightedge along the side of the tire and parallel the straightedge with the chalk line.

NOTE: The chalk line referred to was created while accomplishing Item 1, Nose Landing Gear Alignment.

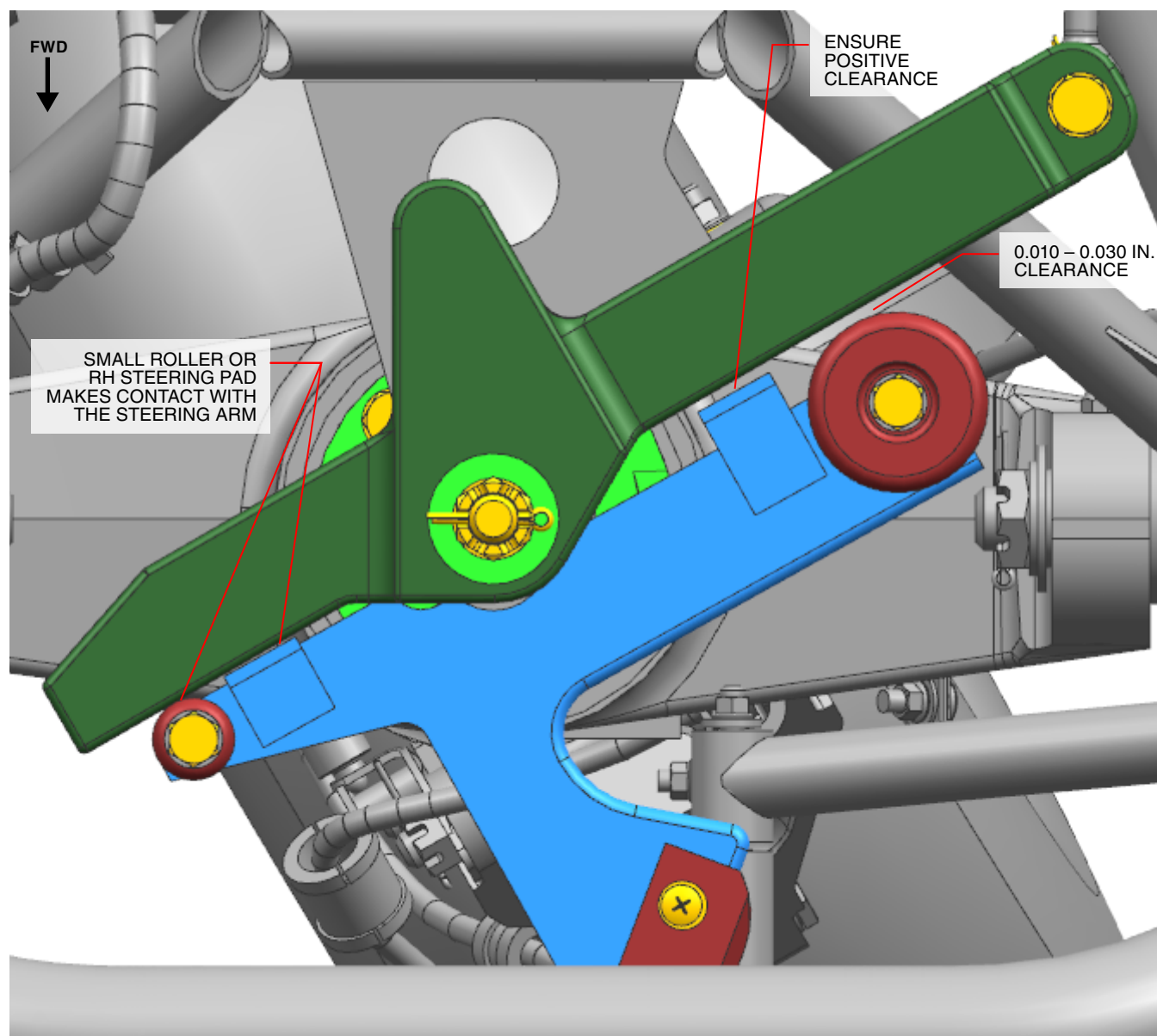
- e) If Steps c) and d) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

3) Clearance with the right rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the right rudder pedal pressed firmly against the right forward stop, determine if there is: a 0.010 in. minimum clearance between the steering arm and the small roller, and a positive clearance between the steering arm and the right hand steering horn pad, on the steering horn assembly, as shown in Figure 3.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d) under Step 2), above. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the small roller, and a positive clearance for the right hand steering horn pad, on the steering horn assembly, at full right rudder pedal deflection.
- c) If Steps c) and d) under Step 2) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

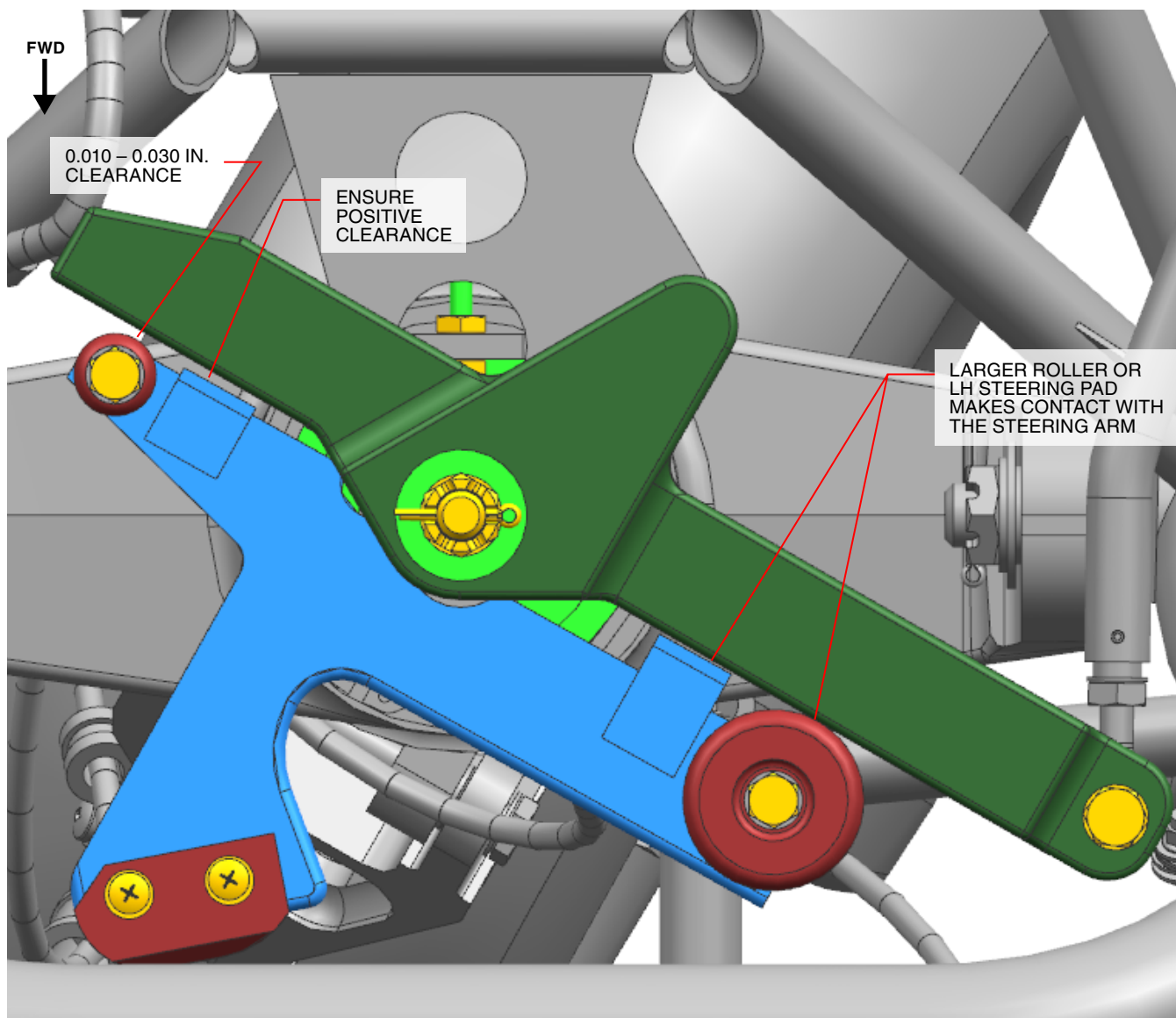
4. Rudder Cable Tension

Confirm that the tension of both rudder control cables is correct, per the appropriate steps in Section 27-20-00 of the applicable AMM.



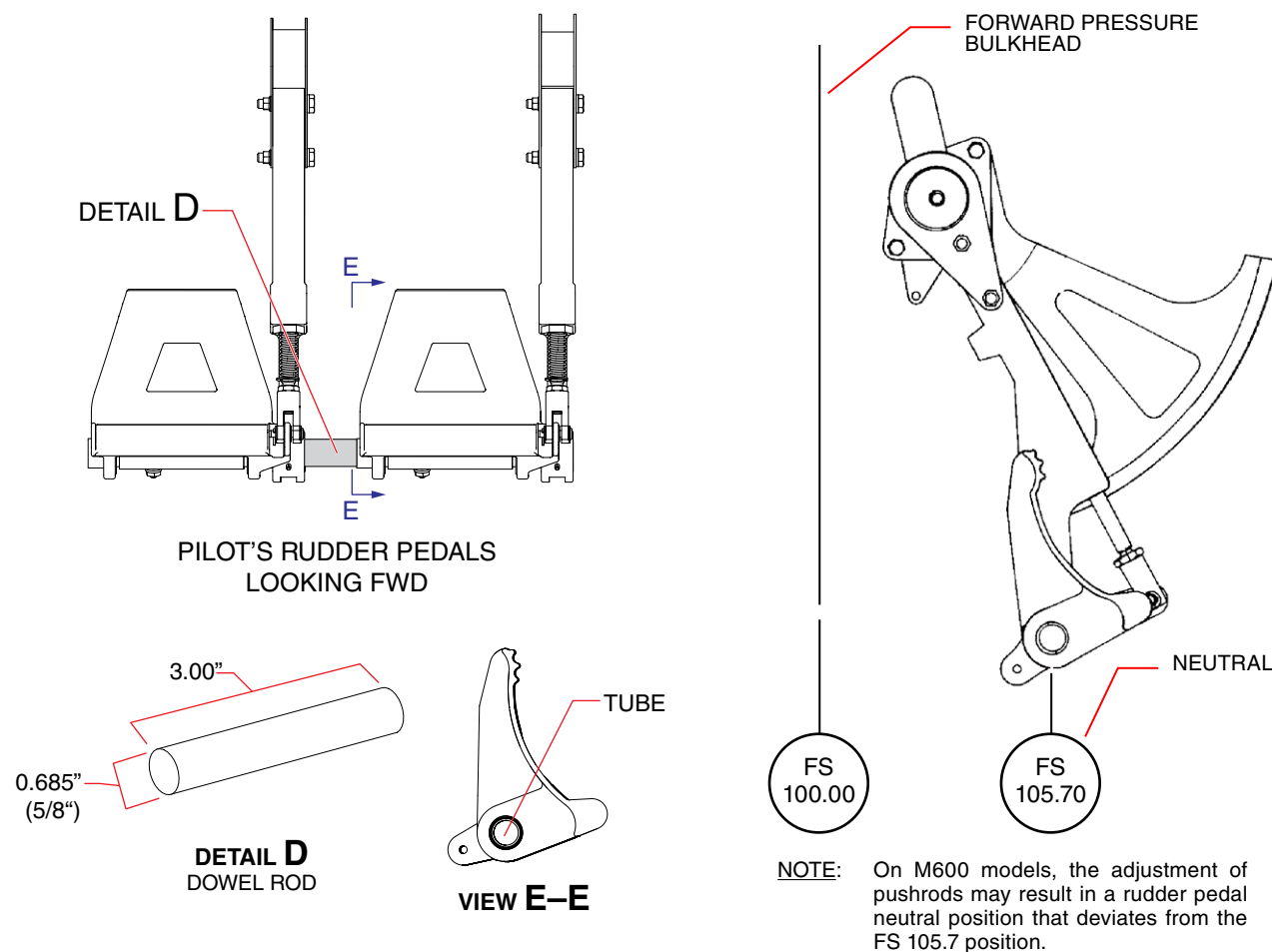
LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 2
Position of Steering Horn and Arm Assemblies – Left Rudder Pedal Pressed



LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 3
Position of Steering Horn and Arm Assemblies – Right Rudder Pedal Pressed

**CLAMPING RUDDER PEDALS IN NEUTRAL POSITION****RUDDER PEDALS IN NEUTRAL POSITION**

NOTE: This figure illustrates the requirement to fix the rudder pedals in the neutral position while performing the applicable rigging step. Instead of using the depicted technique, it is permissible to fashion and utilize tools and/or devices that are suitable for accomplishing the same intent.

Figure 4
Rudder Pedals Set in Neutral Position

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: For only M600 models that must accomplish the pushrod and rudder adjustment procedure in this service letter, factory participation is limited to new aircraft in warranty at the time of compliance. Factory participation will remain in effect for a period of time not to exceed 180 days from the date of this service letter.

Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1286D LETTER

Date: October 15, 2021

(S)

MAINTENANCE ALERT

Service Letter (SL) 1286D supersedes SL 1286C in its entirety.

SUBJECT:

**NOSE LANDING GEAR STEERING COMPONENTS
INSPECTION AND ADJUSTMENT**

REASON FOR REVISION:

SL 1286D corrects some measurements given in figures, and adds mention of a relevant maintenance manual.

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Initial compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service (TIS). After that, compliance is to occur every 100 hours, in accordance with the applicable maintenance manual.

• **For M600 only:**

- If compliance with SL 1286B or SL 1286C has already been accomplished, no further action is necessary until the next 100 hour/annual inspection. If an aircraft was made compliant with SL 1286A (but not revision B or C), then prior to next flight, it must be made compliant with Step 1. d), to rig the aileron-rudder interconnect.
- On aircraft that were previously made compliant with SL 1286, compliance with SL 1286D is required at the next regularly scheduled maintenance event, not to exceed the next 100 hours time in service.
- **For all other models**, if compliance with a previous revision of this service letter has already been accomplished on an aircraft, no further action is necessary until the next 100 hour/annual inspection.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

ATA/JASC: 3200

(OVER)

PURPOSE:

Several aircraft components, and their rigging, are important for proper ground steering and directional control. These components require regular, proper inspection and adjustment, and, on condition, replacement, to maintain proper ground steering and directional control.

This service letter provides a review of the best practices for maintaining ground steering system components on the affected aircraft: rudder cable tension, nose landing gear alignment, nose gear rake angle, and nose gear steering arm clearance.

NOTE: In addition to the nose landing gear procedures included in this service letter, proper tire pressure maintenance and main landing gear alignment are important to overall steering and directional control. For tire pressure maintenance, refer to Piper Service Letter 1285, "Proper Tire Pressure Maintenance." For main landing gear alignment, refer to Section 32-10-00 of the applicable Piper Airplane Maintenance Manual.

INSTRUCTIONS:

NOTE: This service letter is intended to bring attention to specific procedures that appear in the Piper Airplane Maintenance Manuals (AMM) for the affected aircraft.

NOTE: Any procedures in this service letter that include changes to procedures currently available in the applicable AMMs will be incorporated into a future revision of the applicable AMMs.

NOTE: In addition to the maintenance specified in this service letter for the nose landing gear, there are scheduled and unscheduled inspections in Sections 5-20-00 and 5-50-00 of the AMMs, respectively. The troubleshooting chart found in Section 32-20-00 can assist in targeting the cause and remedy of issues with the nose landing gear, including steering and directional control. Also, Section 12-20-00 specifies the type and frequency of lubrication for the landing gear, steering bellcrank and rod ends.

NOTE: Adhere to proper towing and taxiing practices provided in the applicable Pilot's Operating Handbook (POH) and Piper AMM. Refer to "Ground Handling" in Section 8 of the applicable POH, and Sections 9-00-00 and 9-10-00 of the applicable Piper AMM.

For reliable steering and directional control, chapters 32-20-00 and 27-20-00 include procedures that will help ensure that nose landing gear steering components operate nominally. These procedures verify the nose gear alignment, nose gear rake angle, clearance between the steering arm and steering horn rollers, and rudder cable tension (the rigging and adjustment of the rudder controls).

1. Nose Landing Gear Alignment

NOTE: In addition to maintaining the nose landing gear alignment, maintaining the main landing gear alignment affects proper ground directional control. Refer to Section 32-10-00 of the applicable AMM for the main landing gear alignment procedure.

a. Model-specific alignment procedures

- **For all affected models except PA-46-600TP M600**, check and set the alignment of the nose gear per "Alignment," in Section 32-20-00 of the applicable AMM.
 - a) In place of the following steps in Section 32-20-00 of the applicable AMM, instead complete Item 3, "Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers":
 - Step (3) under "Alignment," of Piper PA-46-350P/PA-46R-350T AMM P/N 761-876 and, as applicable, Piper PA-46-500TP AMM P/N 767-072 or AMM P/N 767-005.
 - Step (c) under "Nose Gear Assembly Alignment," in Piper PA-46-310P/350P AMM P/N 761-783.
 - b) Upon the completion of Item 3, below, continue the remaining alignment steps in the applicable AMM. Then, return to this service letter and continue from Step b., below.

- **For PA-46-600TP M600 aircraft only**, check and align the rudder pedals and the nose gear:

- a) Loosen the rudder cable turnbuckles to allow for rudder pedal movement.
- b) Adjust the pushrods:
 - (1) Unclamp and slide the pushrod bellows assembly to expose the Pushrods, P/N 83660-002. See the applicable AMM, Section 27-20-00, Figure 1, Sheet 3.
 - (2) Disconnect push rods from Bellcrank Assembly, P/N 83639-002, as necessary, to adjust both pushrods connected to the left and right rudder pedals. Adjust the pushrods until the adjustable ends are bottomed out (that is, adjusted for minimum pushrod lengths).
 - (3) Hold the bellcrank perpendicular to BL 0.00 at FS 93.00. Reconnect the pushrods to the bellcrank assembly.
 - (4) Verify the alignment of the rudder pedals. If the left and right pedals are misaligned, realign by adjusting only one of the pushrods: Turn the rod end a half turn at a time, to extend it until the left and right rudder pedals are aligned with each other in the cockpit.

NOTE: This adjustment may result in rudder pedal positions that deviate from the standard neutral position (FS 105.70).

- c) With the rudder set at 0 degrees, set the tension for the rudder cables, per Section 27-20-00 of Piper PA-46-600TP M600 AMM, P/N 767-617.

CAUTION: IF RUDDER PEDAL DEFLECTION BEYOND THE PRIMARY RUDDER STOPS RESULTS IN THE RUDDER PEDALS MAKING CONTACT WITH THE PRESSURE BULKHEAD FITTING, BEFORE THE SECONDARY STOPS ARE ENGAGED:

1. ELONGATE THE PUSHRODS HALF A TURN AT A TIME UNTIL A POSITIVE CLEARANCE IS OBTAINED BETWEEN THE RUDDER PEDAL AND THE PRESSURE BULKHEAD FITTING AT SUCH DEFLECTION.
2. REPEAT STEPS 2) THROUGH 5) OF THIS PROCEDURE.

- d) Rig the aileron-rudder interconnect in accordance with Section 27-10-00 of Piper AMM P/N 767-617.

- b. As part of the alignment procedure for all affected models except for the PA-46-310P Malibu aircraft, it is necessary to check the rake angle and, if required, to adjust it (Item 2, below).

2. Rake Angle Adjustment

NOTE: Rake angle adjustment is not applicable to PA-46-310P aircraft.

As mentioned under Item 1, it is necessary to inspect and/or adjust the nose gear rake angle as part of the nose gear alignment procedure. In addition, inspection and/or adjustment of the rake angle is necessary whenever the pilot experiences poor steering, or upon the replacement or service to the nose gear trunnion, the nose gear actuator, or the engine mount.

Check and adjust the rake angle, for the applicable models (all except PA-46-310P), per "Adjustment," in Section 32-20-00 of the applicable AMM.

Adjusting the rake angle affects the clearance between the steering arm and steering horn rollers, which requires that this clearance is checked, as provided under Item 3, below.

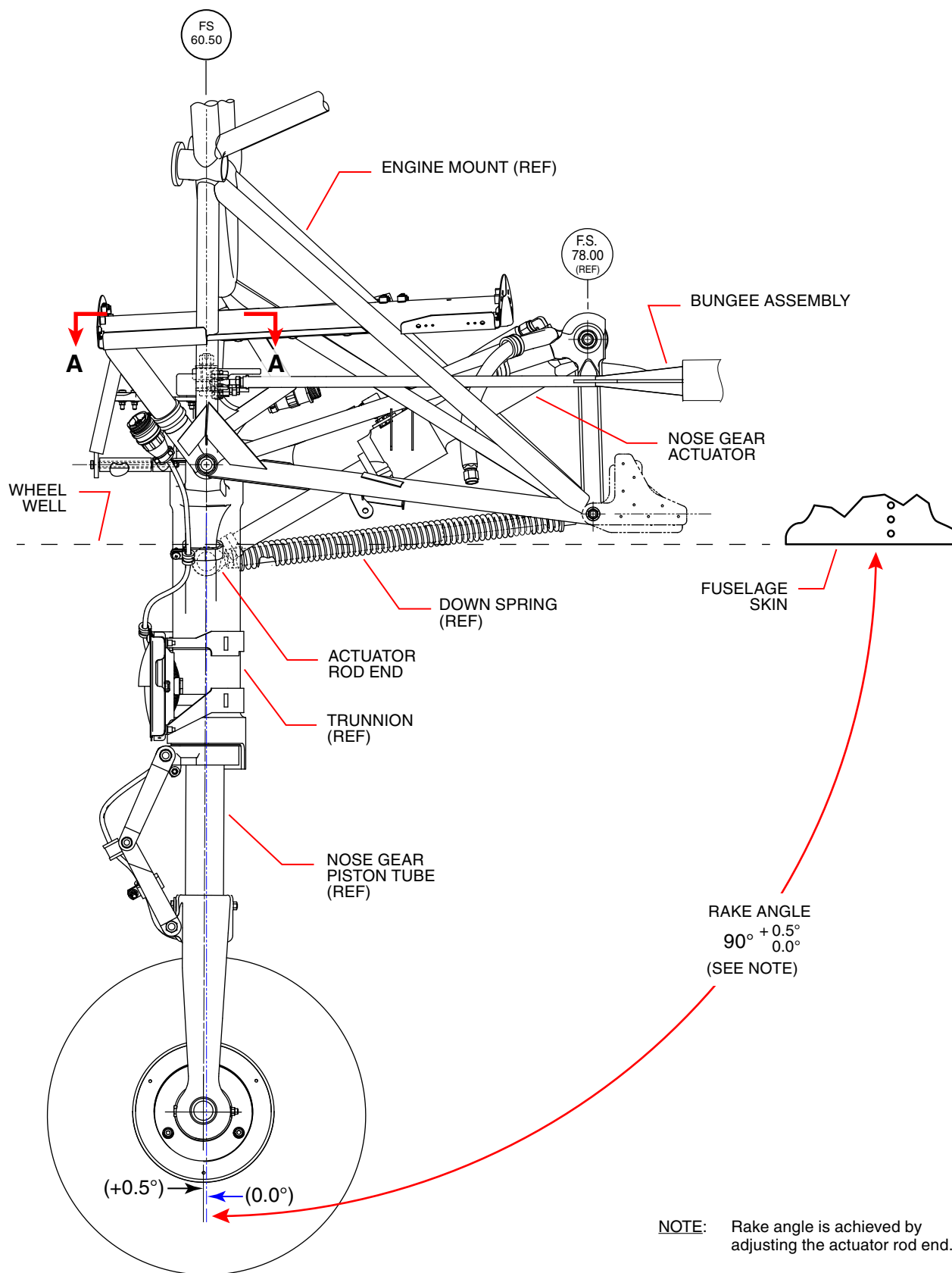
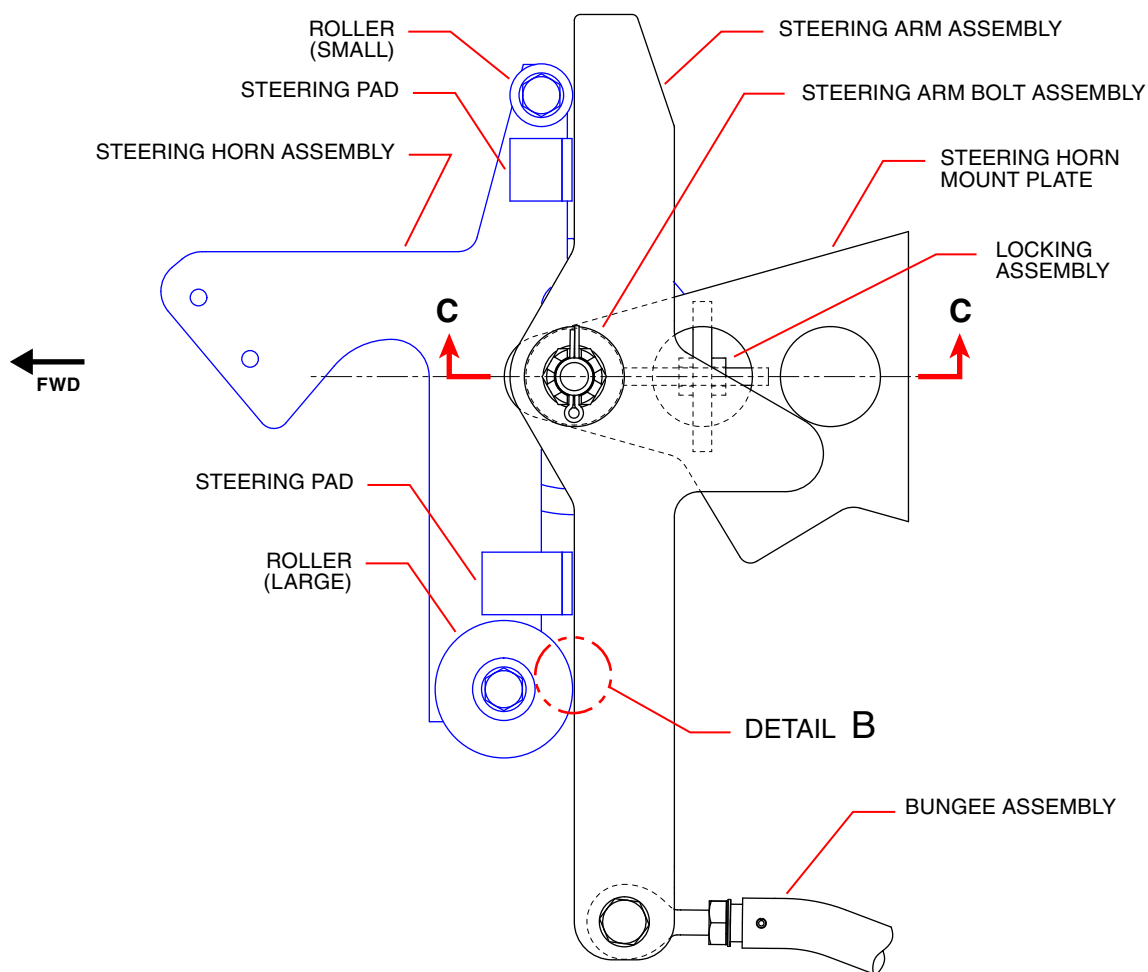
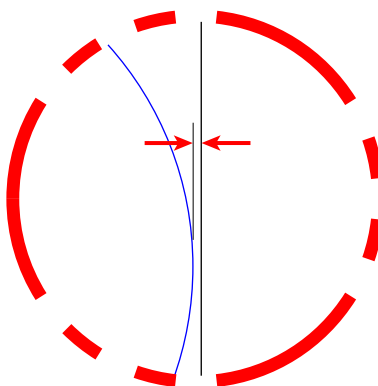


Figure 1 – Sheet 1 of 3
Nose Wheel Adjustment – Typical



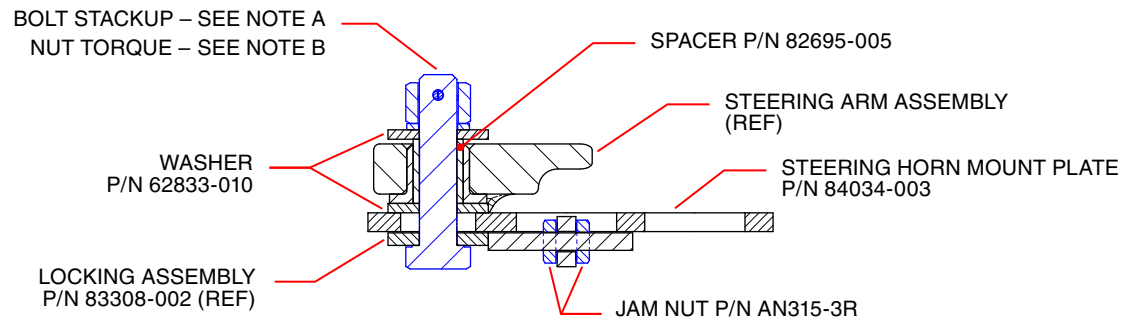
VIEW A-A
 NOSE LANDING GEAR
 STEERING HORN AND STEERING ARM ASSEMBLIES
 LOOKING DOWN



NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL B
 CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 2 of 3
 Nose Wheel Steering Assemblies – Typical



NOTE A: The bolt stackup, by models:

For PA-46-600TP (shown):	For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP:
BOLT AN6-15 WASHER NAS1149F0663P NUT MS17825-6 COTTER PIN MS24665-283	BOLT AN6-14A NUT MS21042-6

NOTE B: For PA-46-600TP only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.
For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP, torque the Nut MS21042-6 to 175-190 in-lb.

SECTION C-C
STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS

Figure 1 – Sheet 3 of 3
Nose Wheel Steering Assemblies – Typical

3. Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers

Checking and adjusting the clearance between the nose landing gear steering arm and steering horn rollers is part of the alignment procedure found in applicable AMMs.

NOTE: This procedure replaces the following steps in the currently available revisions of the applicable AMMs:

- “Alignment,” “Adjustment,” and “Clearance” paragraphs, under Nose Gear Assembly, in Section 32-20-00 of PA-46-600TP AMM P/N 767-617.
- Step (3) under “Alignment,” in Section 32-20-00, of these applicable AMMs:
 - Piper PA-46-350P/PA-46R-350T AMM P/N 761-876
 - Piper PA-46-500TP Meridian/M500, as applicable, AMM P/N 767-072 or AMM P/N 767-005
- Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00, in Piper PA-46-310P/350P AMM P/N 761-783.

Adjust the steering arm to achieve the desirable clearance between it and the steering horn rollers. First, adjust it with the assembly in neutral position, then with the left pedal pressed and, finally, with the right pedal pressed. The instructions for adjusting this clearance, in the applicable AMMs, will be replaced with the following procedure.

- 1) With the landing gear in the down and locked position, weight proportionally on the nose gear and the nose wheel facing forward, adjust the steering arm.
 - a) Loosen the steering arm bolt assembly and adjust the jam nuts fore and aft (refer to View C-C).
 - b) Place 0.020 of an inch (in.) thick feeler gauges (two are required) between the steering horn rollers and the steering arm. Adjust the steering arm to achieve contact between the steering horn roller, the feeler gauge, and steering arm, for both left and right hand sides simultaneously.

- c) Ensure that there is a minimum of 0.010 in. gap between both steering horn pads and the steering arm. When properly adjusted, the acceptable clearance between both rollers and the steering arm is between 0.010 and 0.030 in., as shown in Detail B.

NOTE: This clearance requirement applies to both rollers at the same time. The clearance measurement is to be taken while the nose wheel is locked in alignment with the longitudinal axis, and the steering arm is parallel to the steering horn pads (as shown in Figure 1, View A–A).

- d) Torque the steering arm assembly nut per torque note in Figure 1, View C–C, and tighten the locking assembly jam nuts.

NOTE: In Steps 2) and 3), below: the small roller or right hand steering horn pad will make contact with the steering arm when the left rudder pedal is depressed; the larger roller or left hand steering horn pad will make contact with the steering arm when right rudder pedal is depressed.

2) Clearance with the left rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the left rudder pedal pressed firmly against the left forward stop, determine if there is: a 0.010 in. minimum clearance between the steering arm and the larger roller, and a positive clearance between the steering arm and the left hand steering horn pad, on the steering horn assembly, as shown in Figure 2.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d), below. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the larger roller, and a positive clearance for the left hand steering horn pad, on the steering horn assembly, at full left rudder pedal deflection.
- c) With weight on wheels, lock the rudder pedals together, in alignment with each other and on fuselage station 105.70 (with the exception of the deviation for the M600 model, due to pushrod adjustment required in Item 1, above). See Figure 4.
- d) To align the nose wheel straight forward (weight remaining on wheels), stand in front of the nose gear and align the center rib of the tire with the chalk line. Alternatively, lay a straightedge along the side of the tire and parallel the straightedge with the chalk line.

NOTE: The chalk line referred to was created while accomplishing Item 1, Nose Landing Gear Alignment.

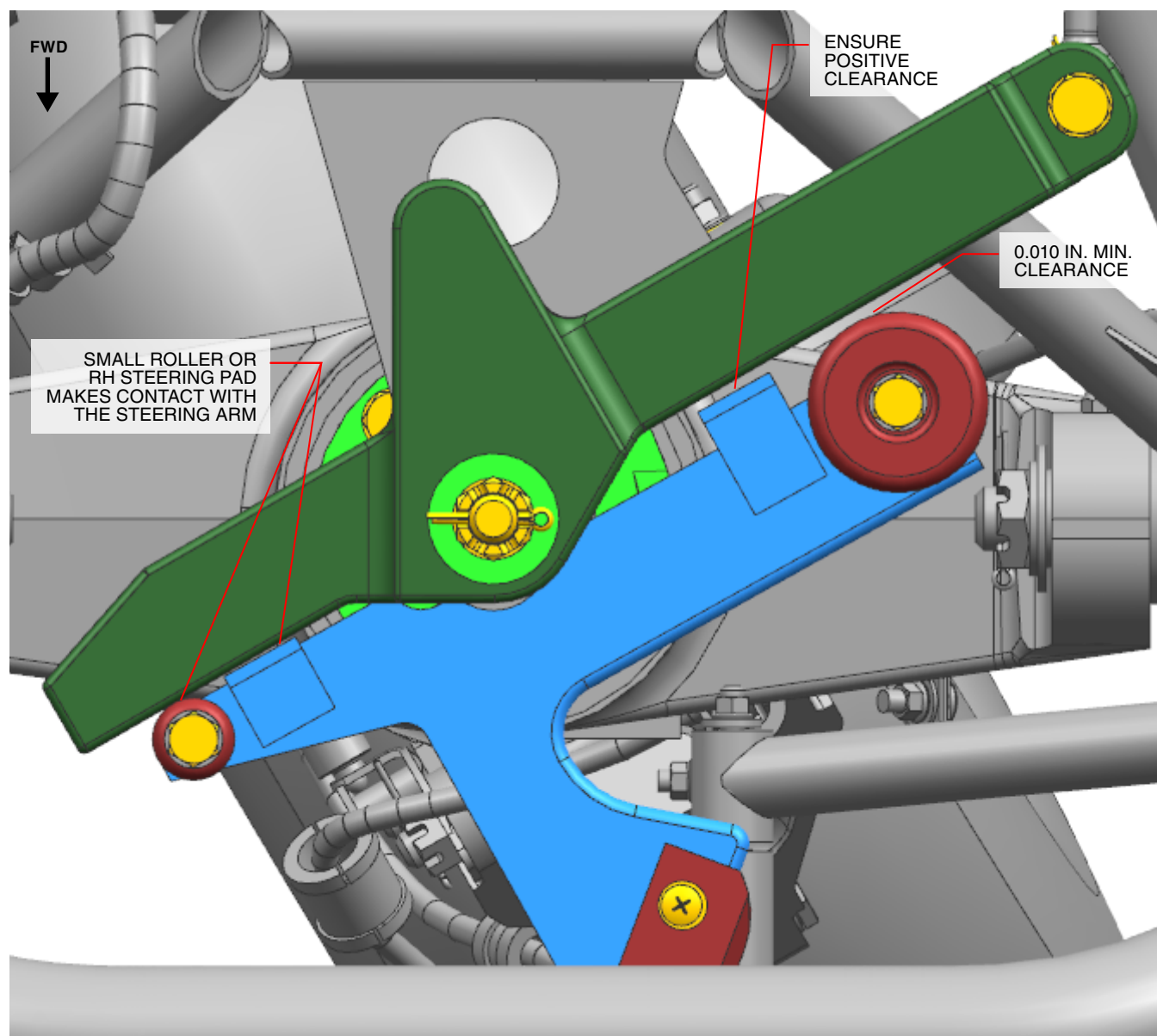
- e) If Steps c) and d) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

3) Clearance with the right rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the right rudder pedal pressed firmly against the right forward stop, determine if there is: a 0.010 in. minimum clearance between the steering arm and the small roller, and a positive clearance between the steering arm and the right hand steering horn pad, on the steering horn assembly, as shown in Figure 3.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d) under Step 2), above. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the small roller, and a positive clearance for the right hand steering horn pad, on the steering horn assembly, at full right rudder pedal deflection.
- c) If Steps c) and d) under Step 2) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

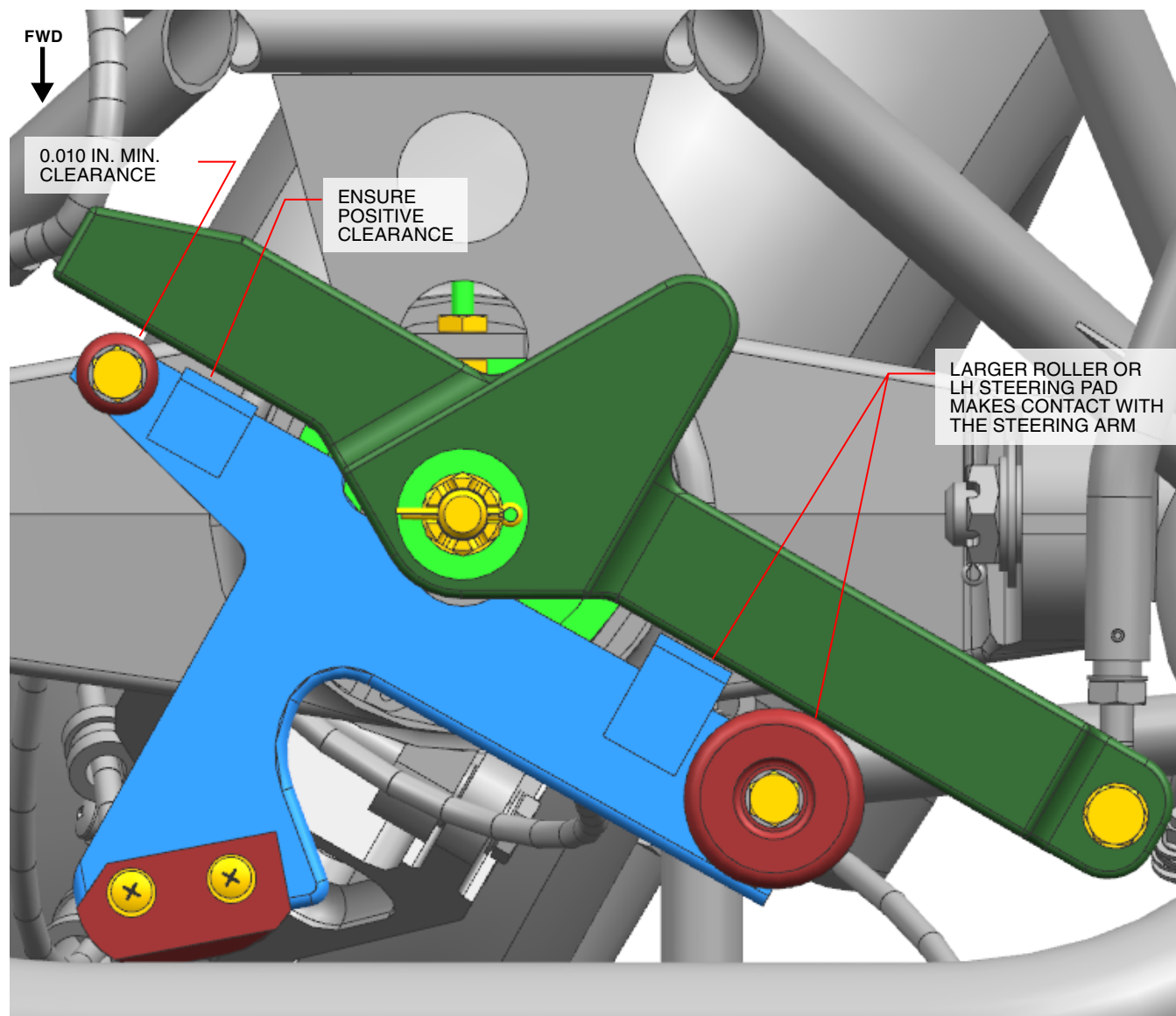
4. Rudder Cable Tension

Confirm that the tension of both rudder control cables is correct, per the appropriate steps in Section 27-20-00 of the applicable AMM.



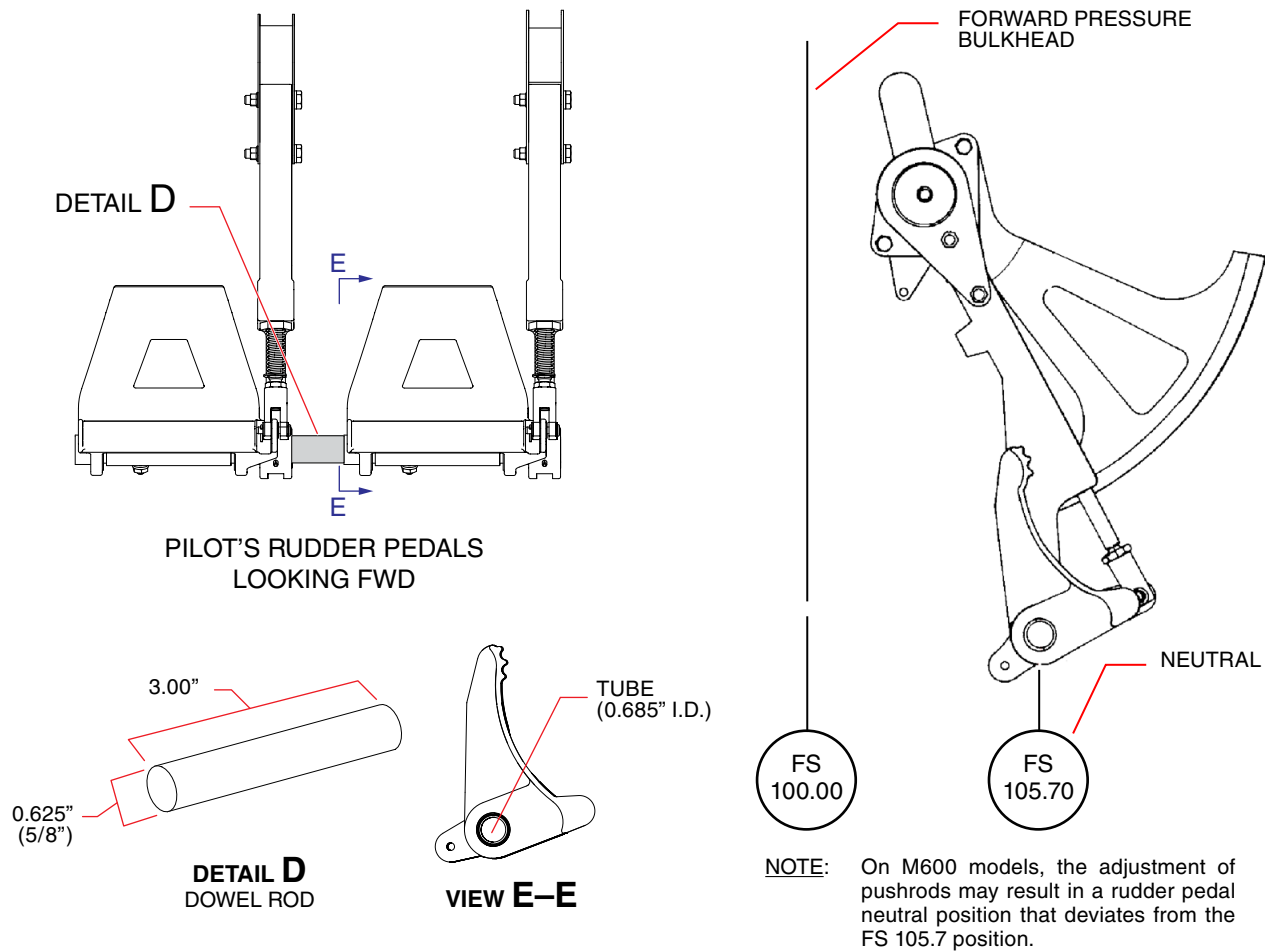
LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 2
Position of Steering Horn and Arm Assemblies – Left Rudder Pedal Pressed



LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 3
Position of Steering Horn and Arm Assemblies – Right Rudder Pedal Pressed

**CLAMPING RUDDER PEDALS IN NEUTRAL POSITION****RUDDER PEDALS IN NEUTRAL POSITION**

NOTE: This figure illustrates the requirement to fix the rudder pedals in the neutral position while performing the applicable rigging step. Instead of using the depicted technique, it is permissible to fashion and utilize tools and/or devices that are suitable for accomplishing the same intent.

Figure 4
Rudder Pedals Set in Neutral Position

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: For only M600 models that must accomplish the pushrod and rudder adjustment procedure in this service letter, factory participation is limited to new aircraft in warranty at the time of compliance. Factory participation will remain in effect for a period of time not to exceed 180 days from the date of this service letter.

Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Attn: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"



Piper Aircraft, Inc.
2926 Piper Drive
Vero Beach, FL, U.S.A. 32960

SERVICE NO. 1286 LETTER

Date: August 18, 2020

(S)

MAINTENANCE ALERT

SUBJECT:

**NOSE LANDING GEAR STEERING COMPONENTS
INSPECTION AND ADJUSTMENT**

MODELS AFFECTED:

PA-46-310P Malibu
PA-46-350P Mirage/M350
PA-46R-350T Matrix
PA-46-500TP Meridian/M500
PA-46-600TP M600

SERIAL NUMBERS AFFECTED:

All
All
All
All
All

COMPLIANCE TIME:

Compliance is to coincide with the next regularly scheduled maintenance event, but not to exceed the next 50 hours time in service (TIS). After that, compliance is to occur every 100 hours, in accordance with the applicable maintenance manual.

APPROVAL:

The engineering aspects of this service document have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved.

PURPOSE:

Several aircraft components, and their rigging, are important for proper ground steering and directional control. These components require regular, proper inspection and adjustment, and, on condition, replacement, to maintain proper ground steering and directional control.

This service letter provides a review of the best practices for maintaining ground steering system components on the affected aircraft, as applicable: rudder cable tension, nose landing gear alignment, nose gear rake angle, and nose gear steering arm clearance.

NOTE: In addition to the nose landing gear procedures included in this service letter, proper tire pressure maintenance and main landing gear alignment are important to overall steering and directional control. For tire pressure maintenance, refer to Piper Service Letter 1285, "Proper Tire Pressure Maintenance." For main landing gear alignment, refer to Section 32-10-00 of the applicable Piper Airplane Maintenance Manual.

ATA/JASC: 3200

(OVER)

INSTRUCTIONS:

NOTE: This service letter is intended to bring attention to specific procedures that appear in the Piper Airplane Maintenance Manuals (AMM) for the affected aircraft.

NOTE: Any procedures in this service letter that include changes to procedures currently available in the applicable AMMs will be incorporated into a future revision of the applicable AMMs.

NOTE: In addition to the maintenance specified in this service letter for the nose landing gear, there are scheduled and unscheduled inspections in Sections 5-20-00 and 5-50-00 of the AMMs, respectively. The troubleshooting chart found in Section 32-20-00 can assist in targeting the cause and remedy of issues with the nose landing gear, including steering and directional control. Also, Section 12-20-00 specifies the type and frequency of lubrication for the landing gear, steering bellcrank and rod ends.

NOTE: Adhere to proper towing and taxiing practices provided in the applicable Pilot's Operating Handbook (POH) and Piper AMM. Refer to "Ground Handling" in Section 8 of the applicable POH, and Sections 9-00-00 and 9-10-00 of the applicable Piper AMM.

For reliable steering and directional control, chapters 32-20-00 and 27-20-00 include procedures that will help ensure that nose landing gear steering components operate nominally. These procedures verify the nose gear alignment, nose gear rake angle, clearance between the steering arm and steering horn rollers, and rudder cable tension (the rigging and adjustment of the rudder controls).

1. Nose Landing Gear Alignment

NOTE: In addition to maintaining the nose landing gear alignment, maintaining the main landing gear alignment affects proper ground directional control. Refer to Section 32-10-00 of the applicable AMM for the main landing gear alignment procedure.

Check and set the alignment of the nose gear per "Alignment," in Section 32-20-00 of the applicable AMM.

In place of Step (3) under "Alignment," in Section 32-20-00 of the applicable AMMs (Step (c) under "Nose Gear Assembly Alignment," in Piper PA-46-310P/350P AMM P/N 761-783): complete Item 3, below, to check and adjust the nose landing gear steering arm clearance.

Upon the completion of Item 3, below, continue the remaining alignment steps in the applicable AMM.

As part of the alignment procedure, with the exception of PA-46-310P Malibu aircraft, it is necessary to check the rake angle and, if required, to adjust it (Item 2, below).

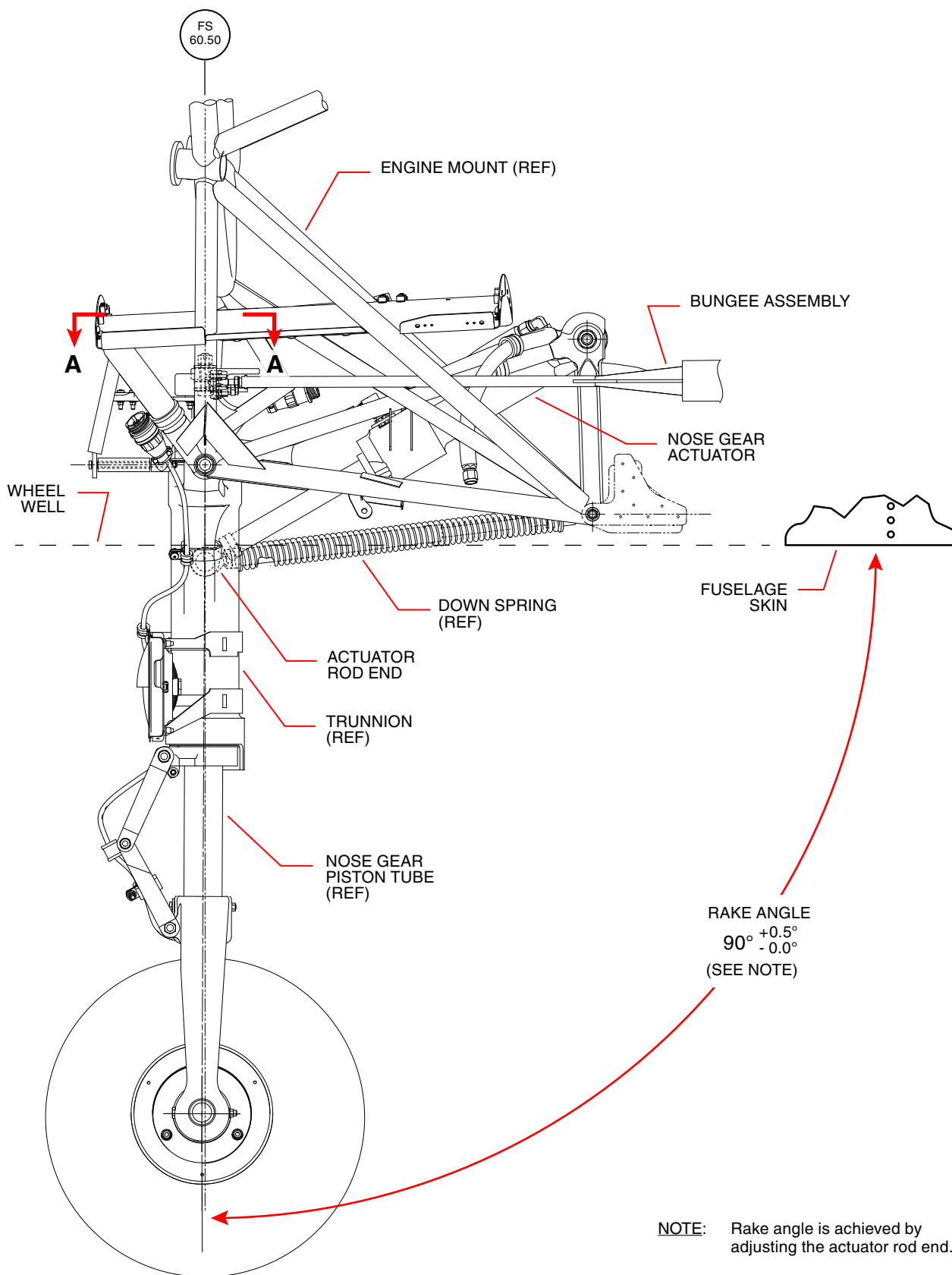
2. Rake Angle Adjustment

NOTE: Rake angle adjustment is not applicable to PA-46-310P aircraft.

As mentioned under Item 1, it is necessary to inspect and/or adjust the nose gear rake angle as part of the nose gear alignment procedure. In addition, inspection and/or adjustment of the rake angle is necessary whenever the pilot experiences poor steering, or upon the replacement or service to the nose gear trunnion, the nose gear actuator, or the engine mount.

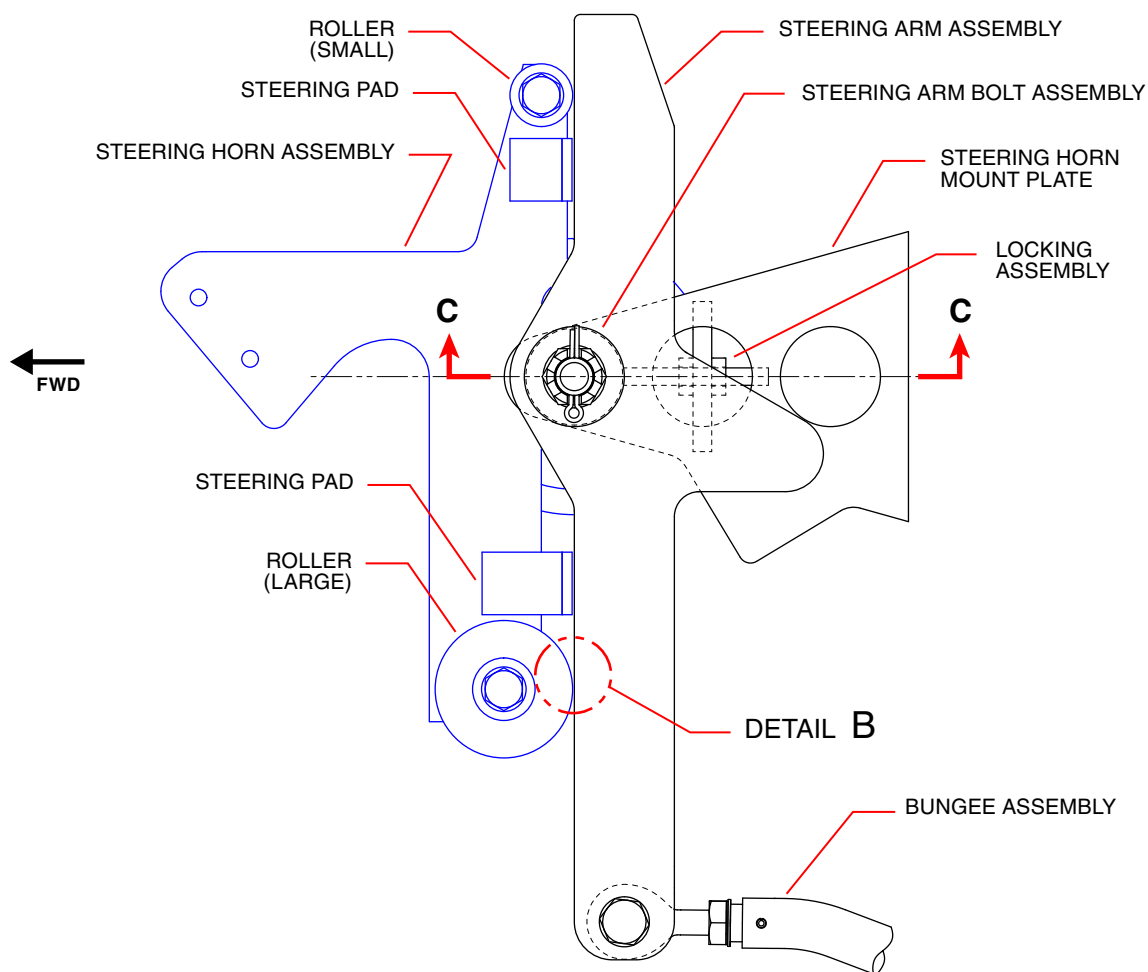
Check and adjust the rake angle, for the applicable models (all except PA-46-310P), per "Adjustment," in Section 32-20-00 of the applicable AMM.

Adjusting the rake angle affects the clearance between the steering arm and steering horn rollers, which requires that this clearance is checked, as provided under Item 3, below.

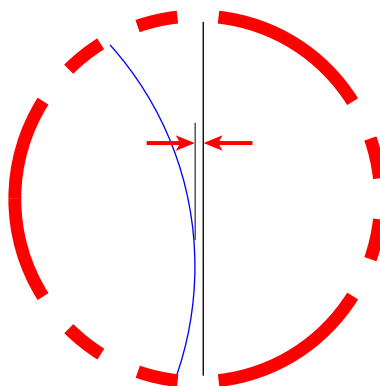


46N32A000 C

Figure 1 – Sheet 1 of 3
 Nose Wheel Adjustment – Typical



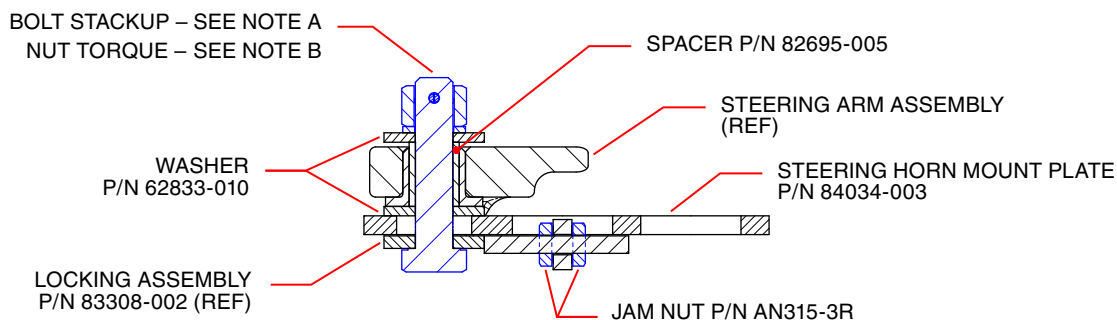
VIEW A-A
 NOSE LANDING GEAR
 STEERING HORN AND STEERING ARM ASSEMBLIES
 LOOKING DOWN



NOTE: The clearance between the steering arm and both of the rollers must be 0.010 – 0.030 inch.

DETAIL B
 CLEARANCE BETWEEN STEERING ARM AND ROLLERS

Figure 1 – Sheet 2 of 3
 Nose Wheel Steering Assemblies – Typical



NOTE A: The bolt stackup, by models:

For PA-46-600TP (shown):	For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP:
BOLT AN6-15 WASHER NAS1149F0663P NUT MS17825-6 COTTER PIN MS24665-283	BOLT AN6-14A NUT MS21042-6

NOTE B: For PA-46-600TP only, torque the Nut MS17825-6 to 100 in-lb, then back off to the nearest radial slit.

For PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP, torque the Nut MS21042-6 to 175-190 in-lb.

SECTION C-C

STEERING ARM BEARING BOLT STACK-UP AND JAM NUTS

Figure 1 – Sheet 3 of 3
Nose Wheel Steering Assemblies – Typical

3. Clearance between Nose Landing Gear Steering Arm and Steering Horn Rollers

NOTE: This procedure replaces the following steps in the currently available revisions of the applicable AMMs:

- Step (3) under “Alignment,” in Section 32-20-00, of these applicable AMMs:
 - Piper PA-46-350P/PA-46R-350T AMM P/N 761-876
 - Piper PA-46-500TP Meridian/M500 AMM P/N 767-072
 - Piper PA-46-600TP M600 AMM P/N 767-617
- Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00, in Piper PA-46-310P/350P AMM P/N 761-783.

Checking and adjusting the clearance between the nose landing gear steering arm and steering horn rollers is part of the alignment procedure found in applicable AMMs (see Item 1, above). In place of Step (3) under “Alignment,” or Step (c) under “Nose Gear Assembly Alignment,” in Section 32-20-00 of the applicable AMMs (refer to the note, immediately above), complete the following procedure.

Adjust the steering arm to achieve the desirable clearance between it and the steering horn rollers. First, adjust it with the assembly in neutral position, then with the left pedal pressed and, finally, with the right pedal pressed. The instructions for adjusting this clearance, in the applicable AMMs, will be replaced with the following procedure.

- 1) With the landing gear in the down and locked position, weight proportionally on the nose gear and the nose wheel facing forward, adjust the steering arm.
 - a) Loosen the steering arm bolt assembly and adjust the jam nuts fore and aft (refer to View C-C).
 - b) Place 0.020 of an inch (in.) thick feeler gauges (two are required) between the steering horn rollers and the steering arm. Adjust the steering arm to achieve contact between the steering horn roller, the feeler gauge, and steering arm, for both left and right hand sides simultaneously.

- c) When properly adjusted, the acceptable clearance between both rollers and the steering arm is between 0.010 and 0.030 in., as shown in Detail B.

NOTE: This clearance requirement applies to both rollers at the same time. The clearance measurement is to be taken while the nose wheel is locked in alignment with the longitudinal axis, and the steering arm is parallel to the steering horn pads (as shown in Figure 1, View A–A).

- d) Torque the steering arm assembly nut per torque note in Figure 1, View C–C, and tighten the locking assembly jam nuts.

NOTE: In Steps 2) and 3), below: the small roller will make contact with the steering arm when the left rudder pedal is depressed; the larger roller will make contact with the steering arm when right rudder pedal is depressed.

2) Clearance with the left rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the left rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the larger roller on the steering horn assembly, as shown in Figure 2.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d), below. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the larger roller on the steering horn assembly at full left rudder pedal deflection.
- c) With weight on wheels, lock the rudder pedals together, in alignment with each other and on fuselage station 105.70. See Figure 4.
- d) To align the nose wheel straight forward (weight remaining on wheels), stand in front of the nose gear and align the center rib of the tire with the chalk line. Alternatively, lay a straightedge along the side of the tire and parallel the straightedge with the chalk line.

NOTE: The chalk line referred to was created while accomplishing Item 1, Nose Landing Gear Alignment.

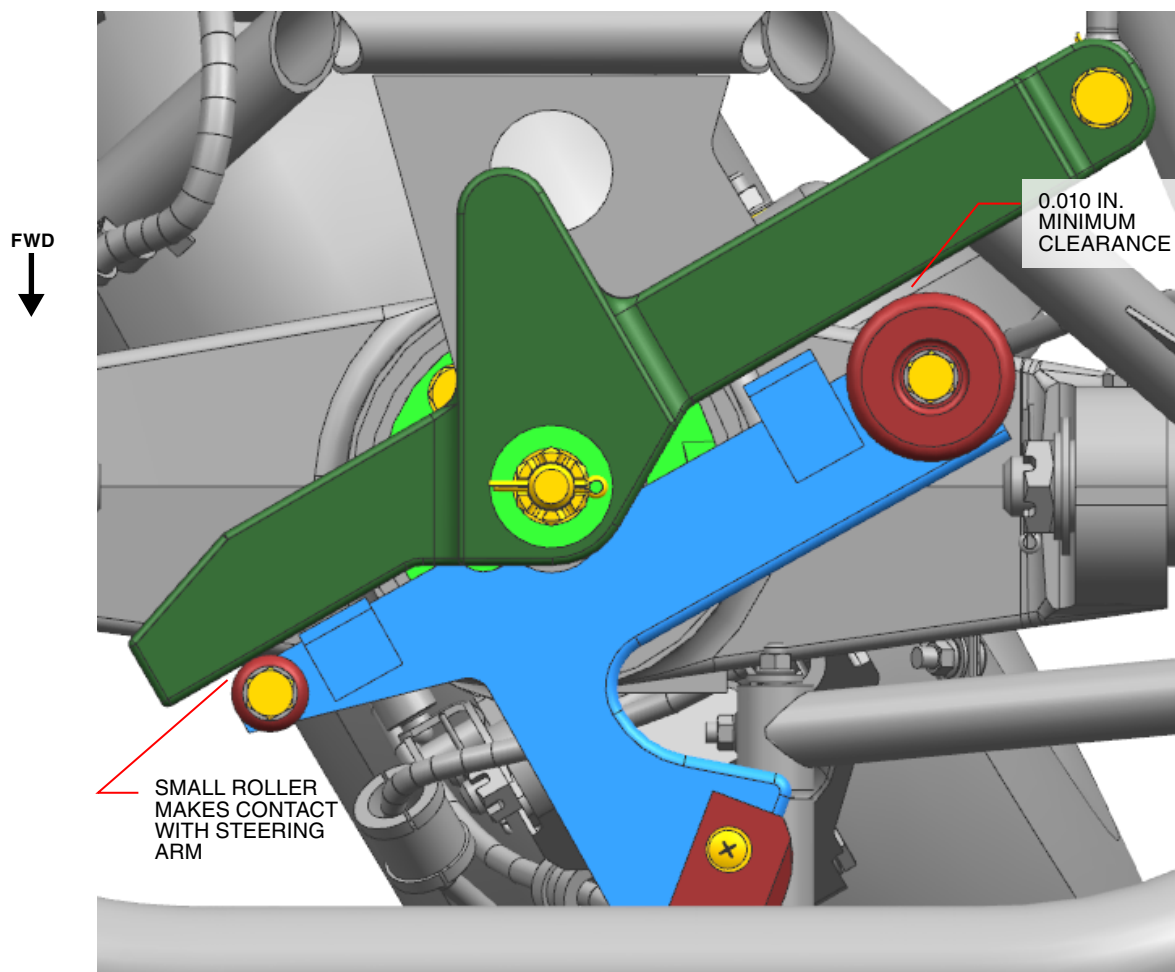
- e) If Steps c) and d) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

3) Clearance with the right rudder pedal pressed:

- a) With the nose wheel off the ground and free to turn, and the right rudder pedal pressed firmly against the right forward stop, determine whether there is 0.010 in. minimum clearance between the steering arm and the small roller on the steering horn assembly, as shown in Figure 3.
- b) If the clearance is less than the minimum 0.010 in., then complete Steps c) and d) under Step 2), above. Increase the nose landing gear centered clearance per the steering arm adjustment procedure, Step 1), above. A 0.010 in. minimum clearance must be maintained for the small roller on the steering horn assembly at full right rudder pedal deflection.
- c) If Steps c) and d) under Step 2) were necessary, unlock the rudder pedals, then repeat Step a), above, to confirm that minimum clearance is achieved.

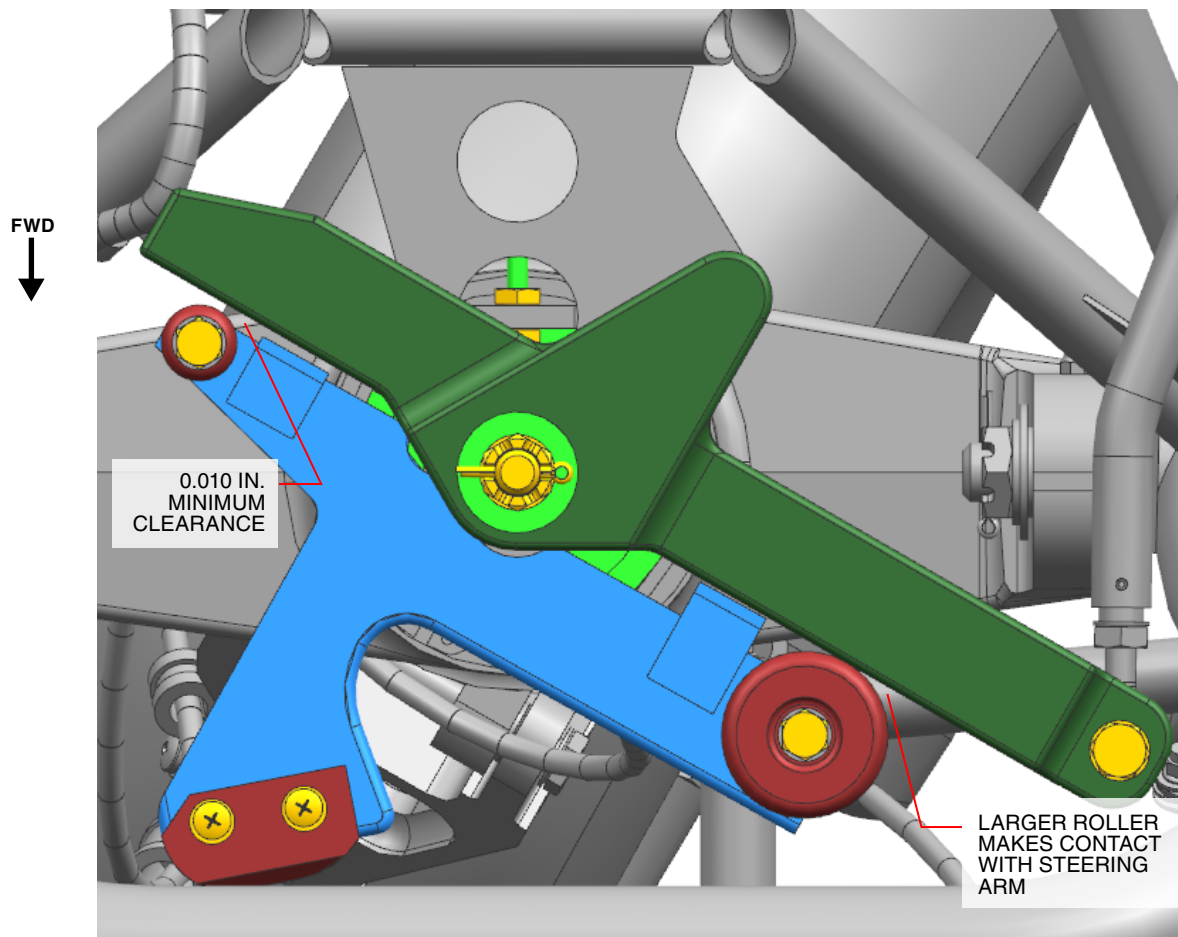
4. Rudder Cable Tension

Confirm that the tension of both rudder control cables is correct, per the appropriate steps in Section 27-20-00 of the applicable AMM.



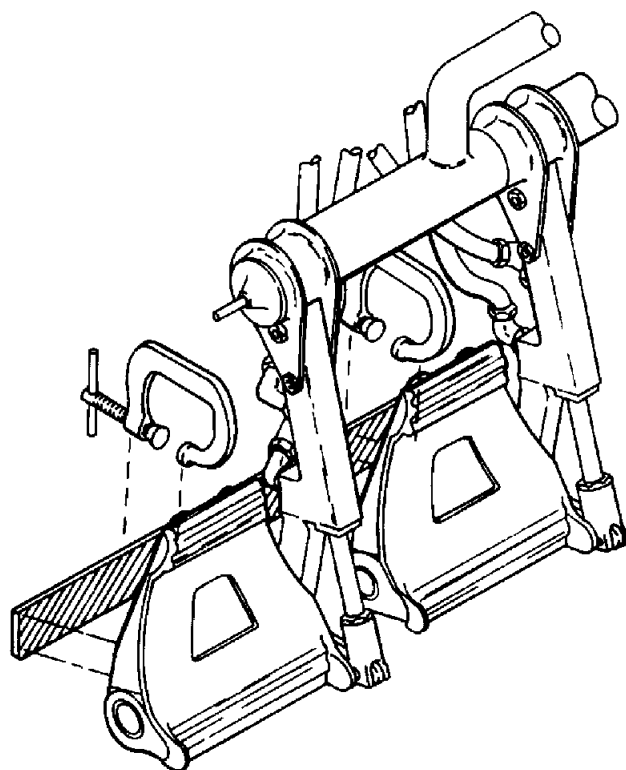
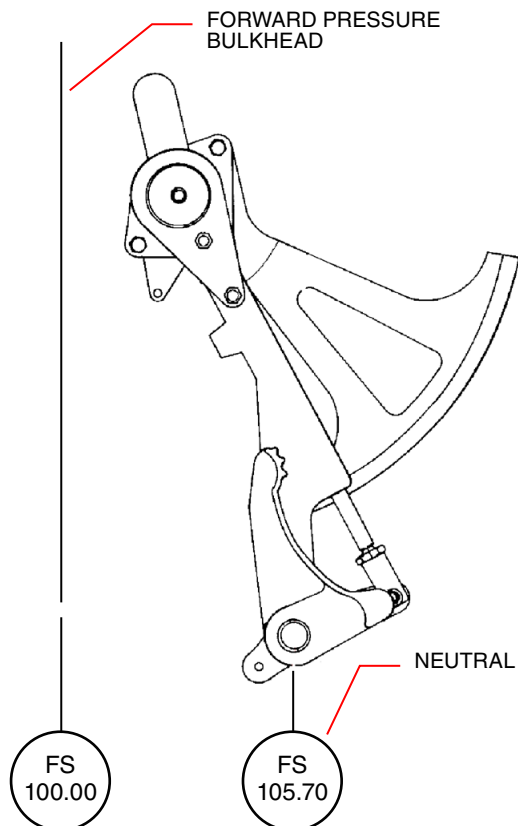
LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 2
Position of Steering Horn and Arm Assemblies – Left Rudder Pedal Pressed



LOOKING DOWN
(M600 INSTALLATION SHOWN, OTHERS SIMILAR)

Figure 3
Position of Steering Horn and Arm Assemblies – Right Rudder Pedal Pressed

**CLAMPING RUDDER PEDALS IN NEUTRAL POSITION****RUDDER PEDALS IN NEUTRAL POSITION**

NOTE: This figure illustrates the requirement to fix the rudder pedals in the neutral position while performing the applicable rigging step. Instead of using the depicted technique, it is permissible to fashion and utilize tools and/or devices that are suitable for accomplishing the same intent.

Figure 4
Rudder Pedals Set in Neutral Position

MATERIAL REQUIRED: N/A

AVAILABILITY OF PARTS: N/A

EFFECTIVITY DATE: This service letter is effective upon receipt.

SUMMARY: Please contact your Piper Approved Service Center to make arrangements for compliance with this service letter in accordance with the compliance time indicated.

NOTE: Please notify the factory of any address/ownership corrections. Changes should include aircraft model, serial number, and current owner's name and address.

Corrections and/or changes should be directed to:

PIPER AIRCRAFT, INC.

Att'n: Customer Service

2926 Piper Drive

Vero Beach, FL 32960

or:

CustomerService@piper.com

Please include in subject line: "Aircraft ownership update"