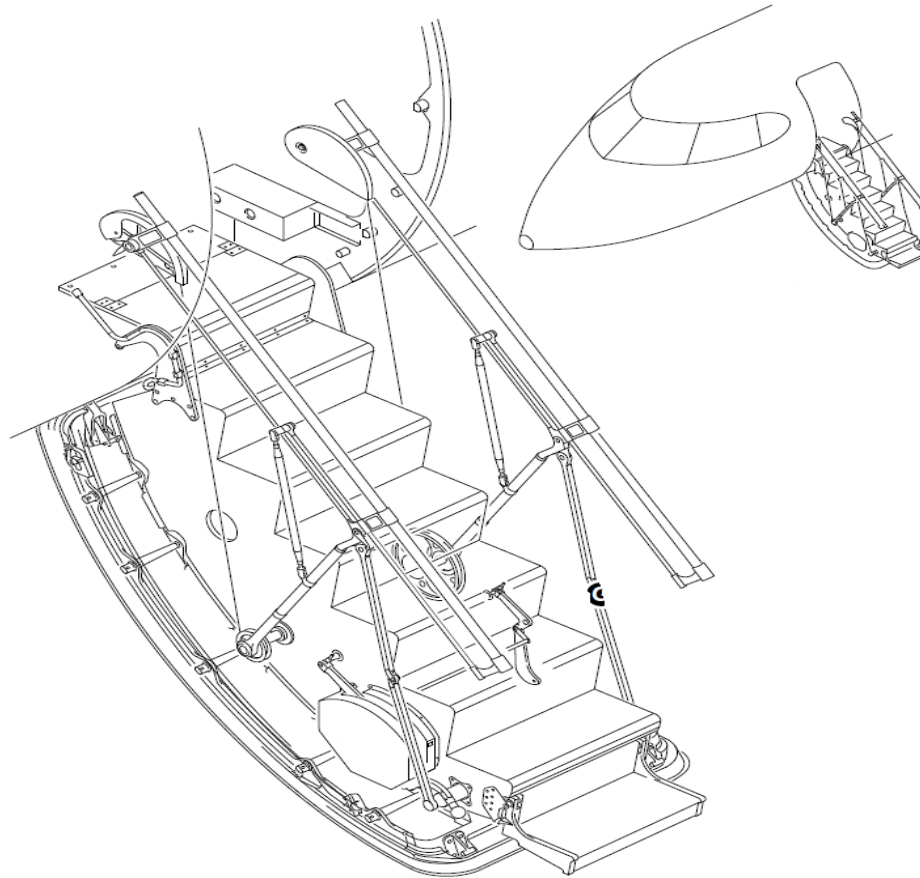


Global Pax Door

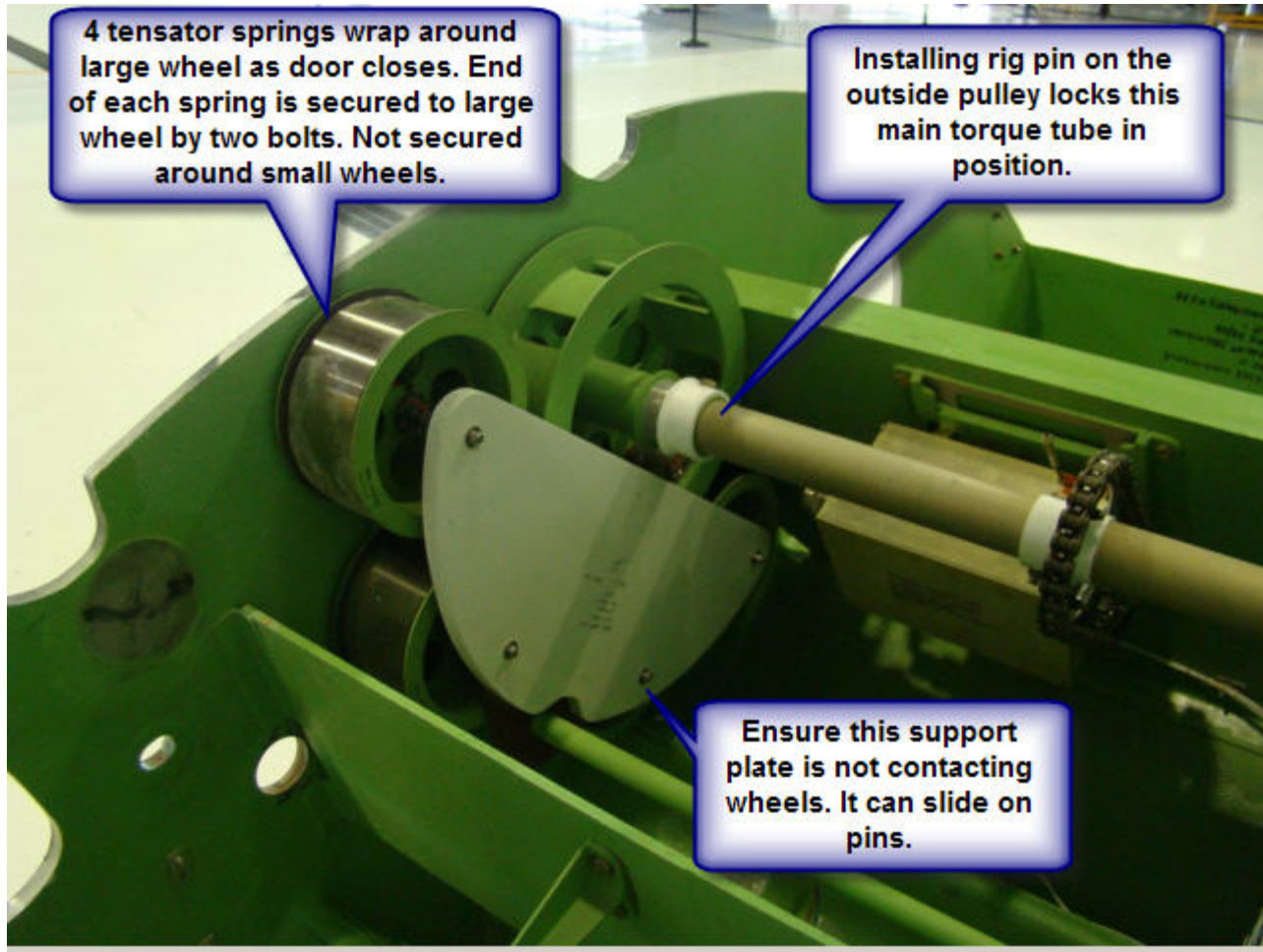


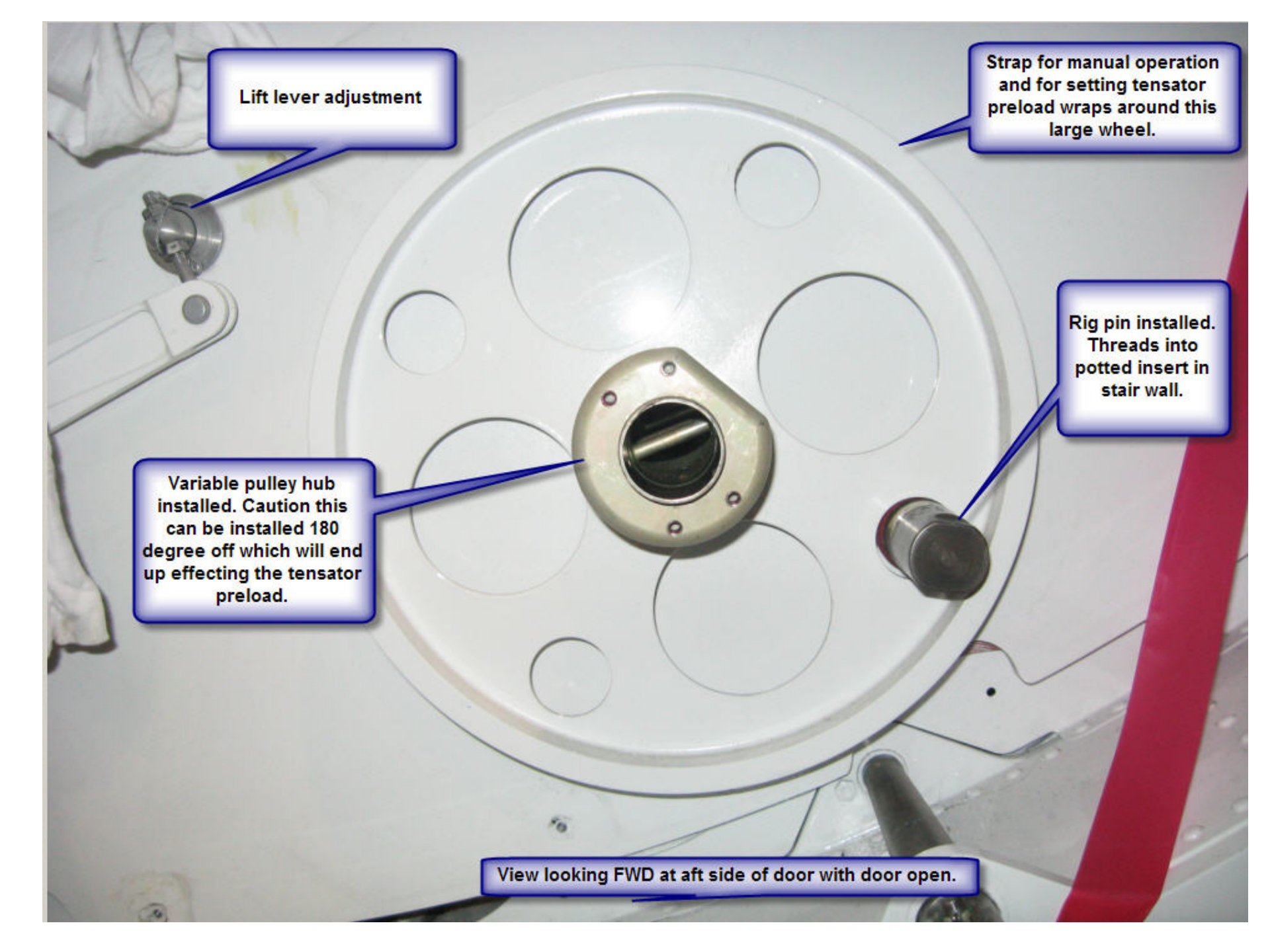
Troubleshooting Familiarization
and Hints and Tips



Tensator Springs

- Correct preload is 6.5 turns counterclockwise.
- When tension is put back on cables by removing rig pin---use strap to move rope pulley clockwise—never go past 6.5 turns counterclockwise to avoid springs falling off drums---lowering door onto cables moves pulley counterclockwise
- Tensator springs are life limited to 1500 landings
- Tensator springs have been found cracked and broken.
- Observe the tensator spring drums for free movement, some spindles have been found to prevent the drum from rotating freely.
- Inadequate amount of preload turns may cause the door to not pull enough to be able to easily latch the door. This may require pulling in the door from the inside or pushing from the outside before the handles can be moved to latch the door.





Lift lever adjustment

Strap for manual operation and for setting tensator preload wraps around this large wheel.

Rig pin installed. Threads into potted insert in stair wall.

Variable pulley hub installed. Caution this can be installed 180 degree off which will end up effecting the tensator preload.

View looking FWD at aft side of door with door open.

You cannot see the bolt and nuts that attach the tensator springs to the large drum. This is an indicator that the variable radius pulleys are installed 180 degrees off. This will cause the tensator preload to be 6 turns instead of 6.5 turns and make the door heavy.

Nuts and bolts are out of view on this side.

View looking inside door from boarding light access panel.

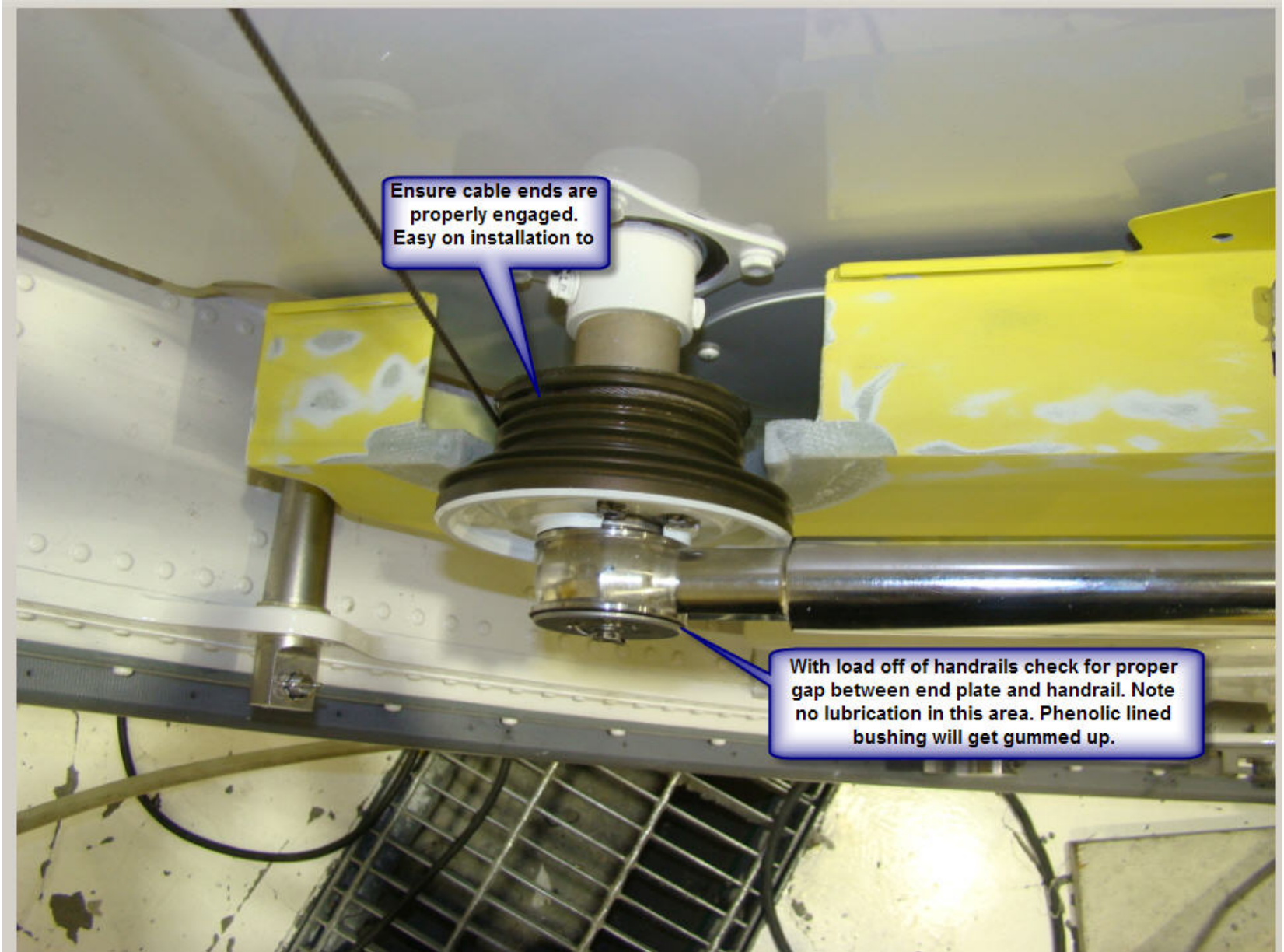
ROKIE, IL, U.S.A
LARGER DOOR ACTUATOR
PATENT NO. 5,803,404
8710/2R5202
ROIER P/N GS321-0581-00
21
K
000-1043

In this view you can see the bolt and nuts that secure the tensator springs. This is an indicator of correctly installed pulleys. They should be in this position when the door is fully open and the tensator springs have the correct preload of 6.5 turns.

View looking inside door from boarding light access panel.

Cables and Pulleys

- Rig per AMM 52-11-00
- Different tensions for pre and post variable pulley SB 52-037. More critical than actual tension value is that tensions are equal within 10lb.
- Can use cable tensions to move door fwd or aft. Tighter tension on fwd cable will move door fwd and vice versa. Keep within 10lb.
- Upper cable quadrants on rare occasions are incorrectly manufactured. Ensure they are both equally positioned and vertical strut lines up with handrail strut.
- When pulleys and tensator springs are correctly installed and rigged the bolts and nuts on large drum are facing the fuselage with door open. If not correct---pulleys may be 180 degrees off.
- Ensure cable ball end is properly engaged in pulley.
- Variable radius pulley post SB 52-037 has more mechanical advantage at bottom end of door operation but much less when approaching airframe cutout. Unable to power through any minor deviations that were not visible pre SB.



Ensure cable ends are properly engaged. Easy on installation to

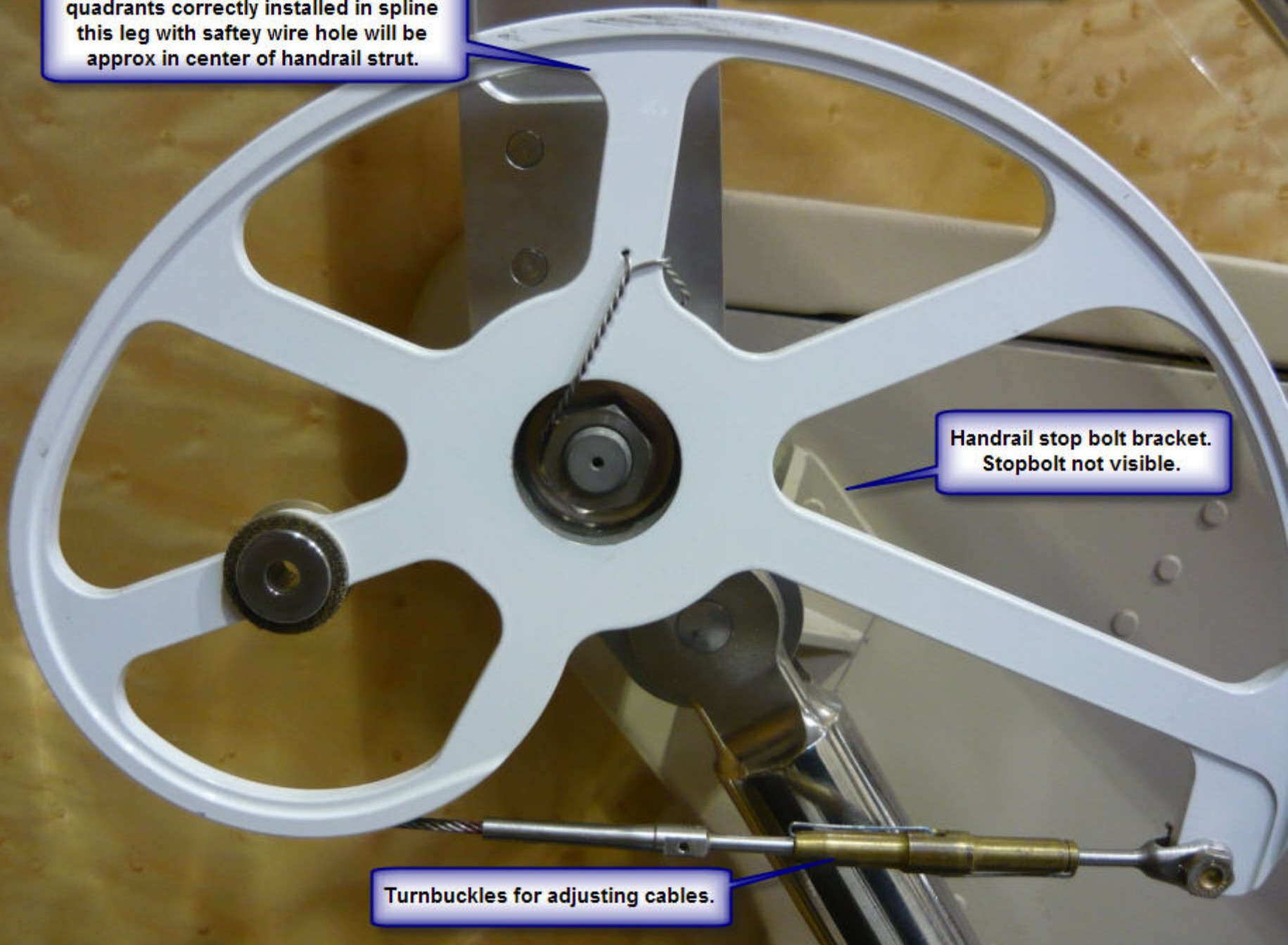
With load off of handrails check for proper gap between end plate and handrail. Note no lubrication in this area. Phenolic lined bushing will get gummed up.

With door all the way open and upper quadrants correctly installed in spline this leg with safety wire hole will be approx in center of handrail strut.

Center of handrail strut.

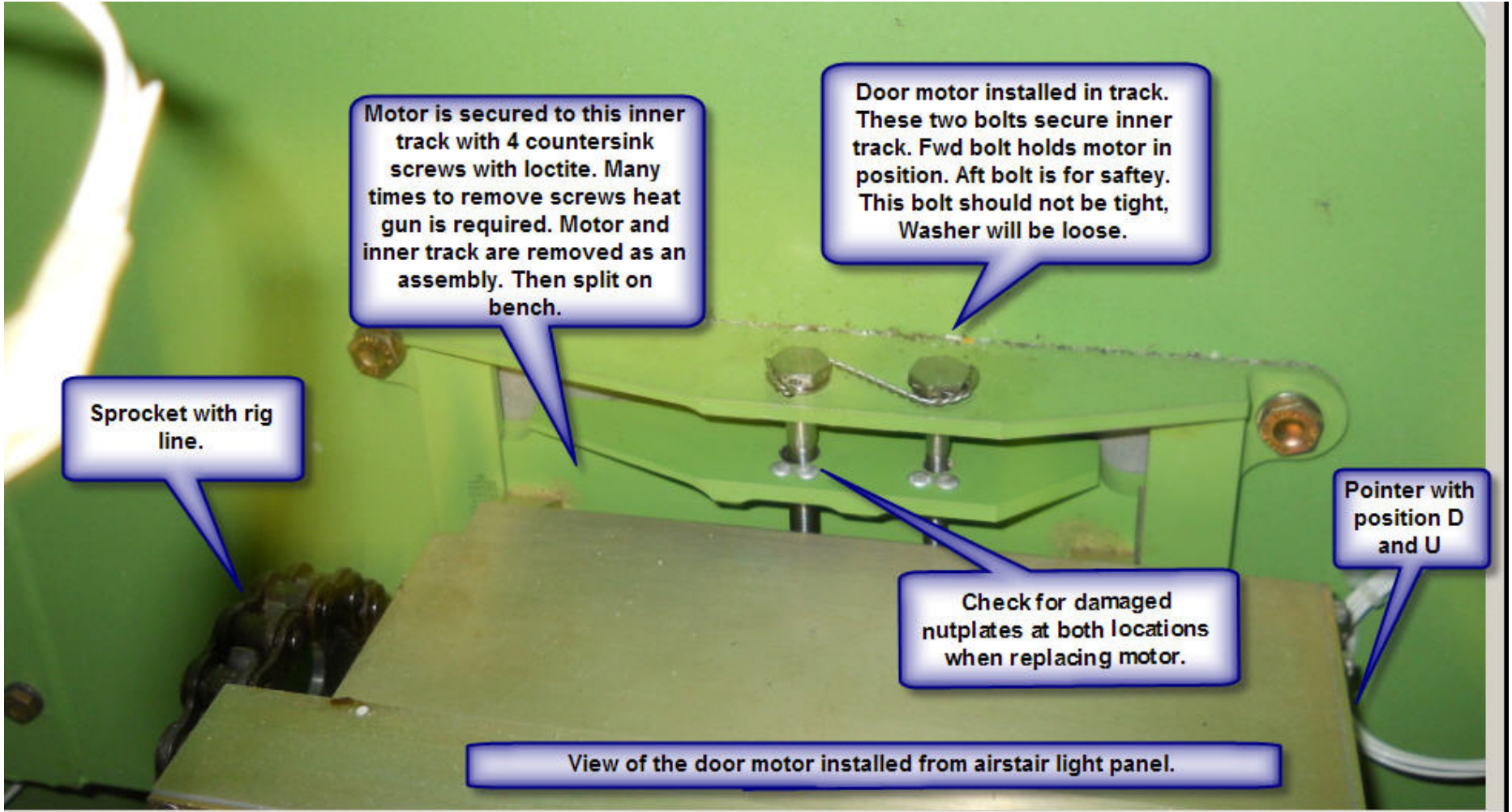
Handrail stop bolt bracket.
Stopbolt not visible.

Turnbuckles for adjusting cables.



Actuator Motor

- -9 Actuator restoration--gearhead replacement due at 625L—all others not life limited.
- Rig per AMM 52-11-25---Use SB 52-037 E (c) note 1 allows 360 degree rotation to adjust speed. Turn sprocket in hard direction to move the slow down point closer to airframe when closing.



Motor is secured to this inner track with 4 countersink screws with loctite. Many times to remove screws heat gun is required. Motor and inner track are removed as an assembly. Then split on bench.

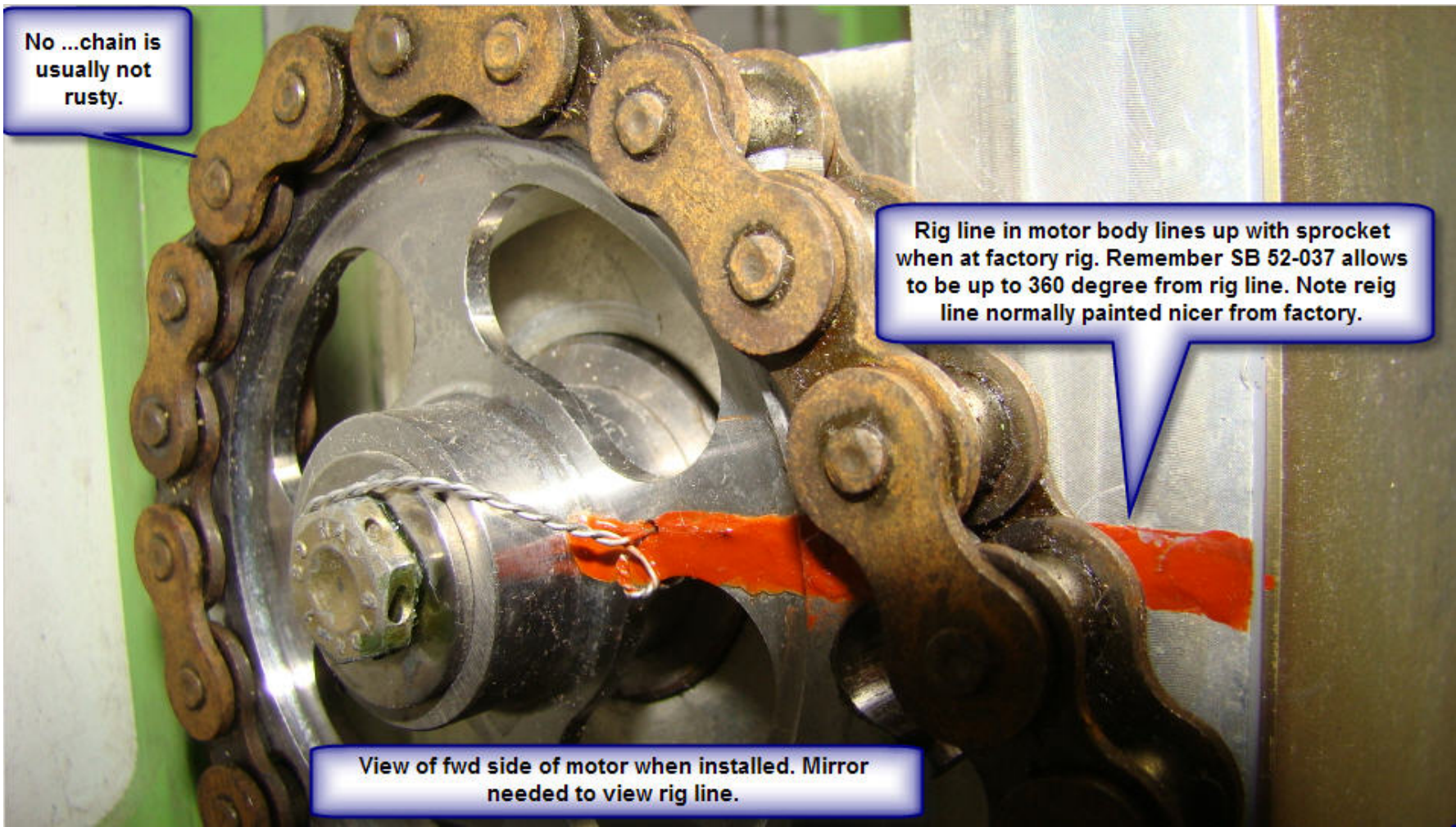
Door motor installed in track. These two bolts secure inner track. Fwd bolt holds motor in position. Aft bolt is for safety. This bolt should not be tight, Washer will be loose.

Sprocket with rig line.

Pointer with position D and U

Check for damaged nutplates at both locations when replacing motor.

View of the door motor installed from airstair light panel.

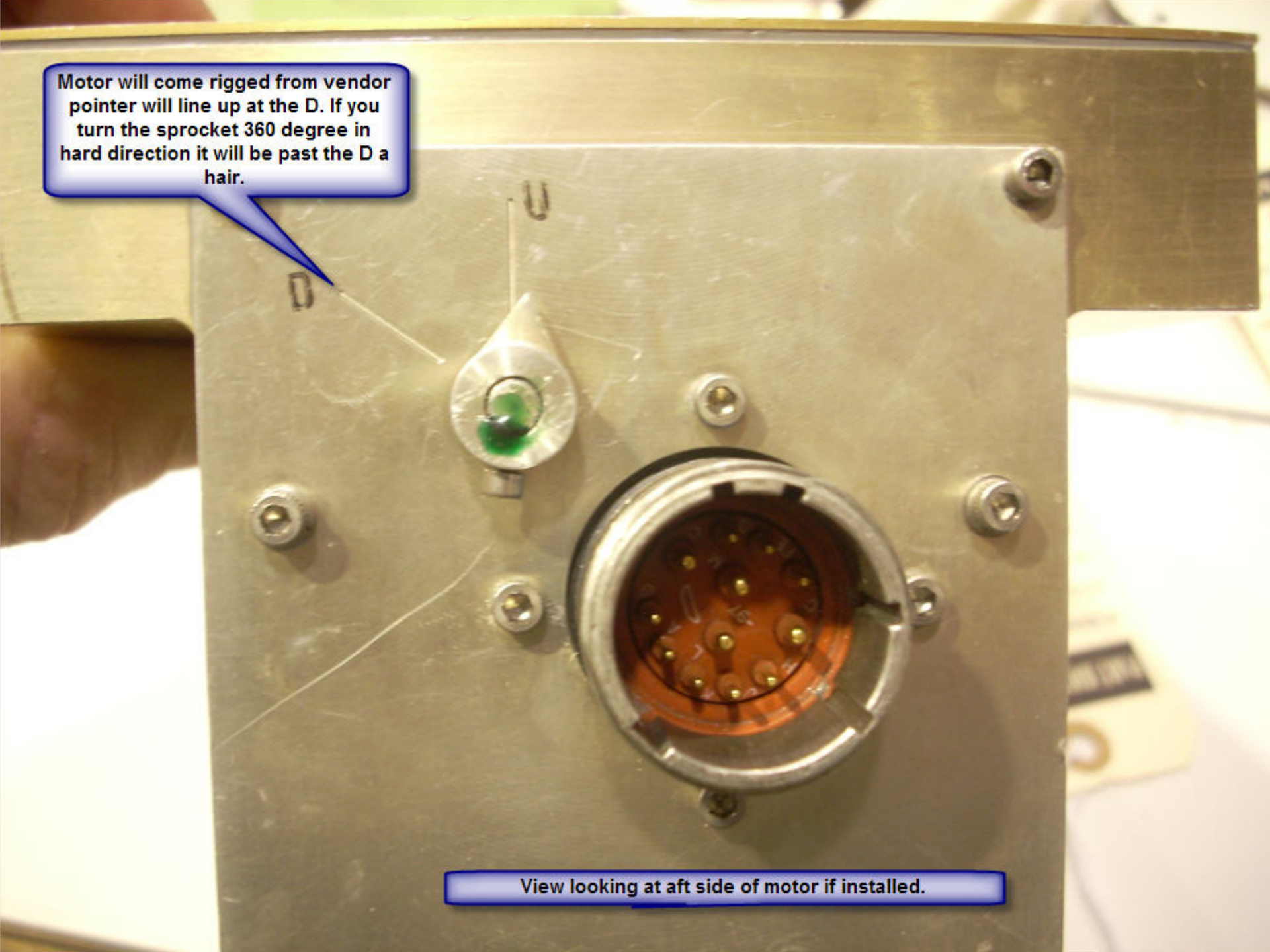


No ...chain is usually not rusty.

Rig line in motor body lines up with sprocket when at factory rig. Remember SB 52-037 allows to be up to 360 degree from rig line. Note reig line normally painted nicer from factory.

View of fwd side of motor when installed. Mirror needed to view rig line.

Motor will come rigged from vendor
pointer will line up at the D. If you
turn the sprocket 360 degree in
hard direction it will be past the D a
hair.



View looking at aft side of motor if installed.

Handrails


- Some earlier handrails were installed under an STC and need to be maintained per IFCA.
- Rig handrails per AMM 52-11-21.
- Pay particular attention to handrail stop bolts in stowed position. Too tight and door will not close. Hold handrails into spring latches then measure .005 to .010 at stop bolt per steps 18-19.
- Do not operate door with protection on handrails –can jam and break.
- Handrail extensions are installed at completion.. See DTS.
- Lubricate handrails Ref SMM use Royco 363 on telescope tubes. This will alleviate handrail chatter. Best to lubricate with door closed so that lubricant seeps into tubes. Only lubricate telescoping tubes do not lube phenolic bushing locations.
- Handrail lower telescope tubes can break. We have procedure and tooling to replace sections. Check pricing first.. May be cheaper to replace entire assy.

A close-up photograph of a handrail leg attachment point on a white metal structure. The handrail leg is a polished metal rod that is secured to a cylindrical metal fitting on the structure. A blue callout box with a white border and a pointer indicates a specific joint on the handrail leg. The background shows the white metal structure with various bolts and components.

**Lower handrail legs breaks
off here when door falls
without support / tensors.**

A close-up photograph of a stainless steel mechanical assembly. The assembly consists of several cylindrical tubes and a central bracket-like component. A blue callout box with a white border and a pointer is positioned in the upper right quadrant, pointing to a small, circular pin or fastener on the bracket. The background is a plain, light-colored surface.

**Pins swaged
with GSE**

A close-up photograph of a handrail stop bolt on a white metal structure. The bolt is a cylindrical metal component with a hexagonal base. A blue callout box with a white border and a blue pointer line points to the bolt. The background shows a white metal frame and a wooden floor.

Handrail stop bolt. Adjust with door closed and hand pressure engaging handrails into spring catches.

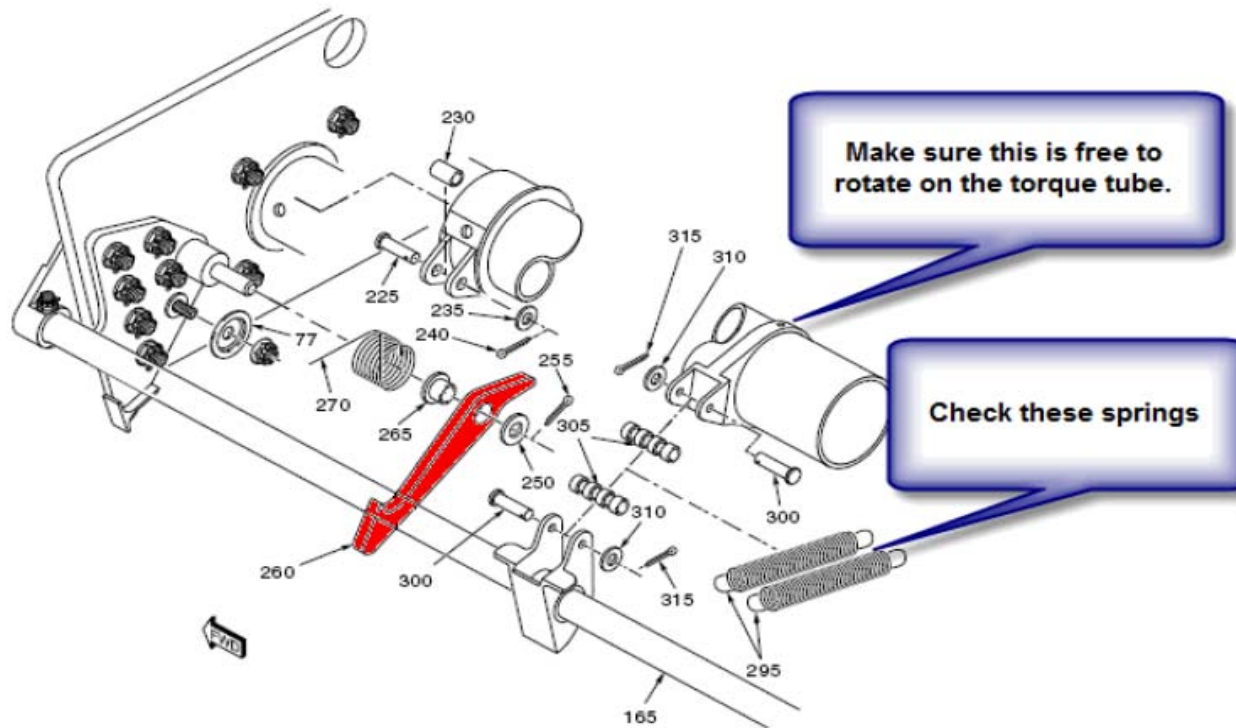


GSE available for swaging pins to replace sections of handrail struts. G700-52113-1



Lower Folding Step

- No lower step motor from 9001- 9133. Introduced via SB
- Rig door actuator speed to slow door down when door is vertical during closing to aid in step folding. See actuator page. For pre 9133 (no step motor).
- With door open if lower step has excessive bounce rig stop brackets ref AMM 52-11-00 rig step (d).
- If lower step fails to fold and a loud bang is heard then it folds---(with or without step motor)--check the springs on the steps. They have been known to bind due to FOD on collar or springs that are damaged or too long.
- If lower step fails to fold (with step motor) starts folding then slowly extends down---possible bad step motor or chain has stretched. New style step motor available -3 replaces motor and chain.



If lower step is binding....

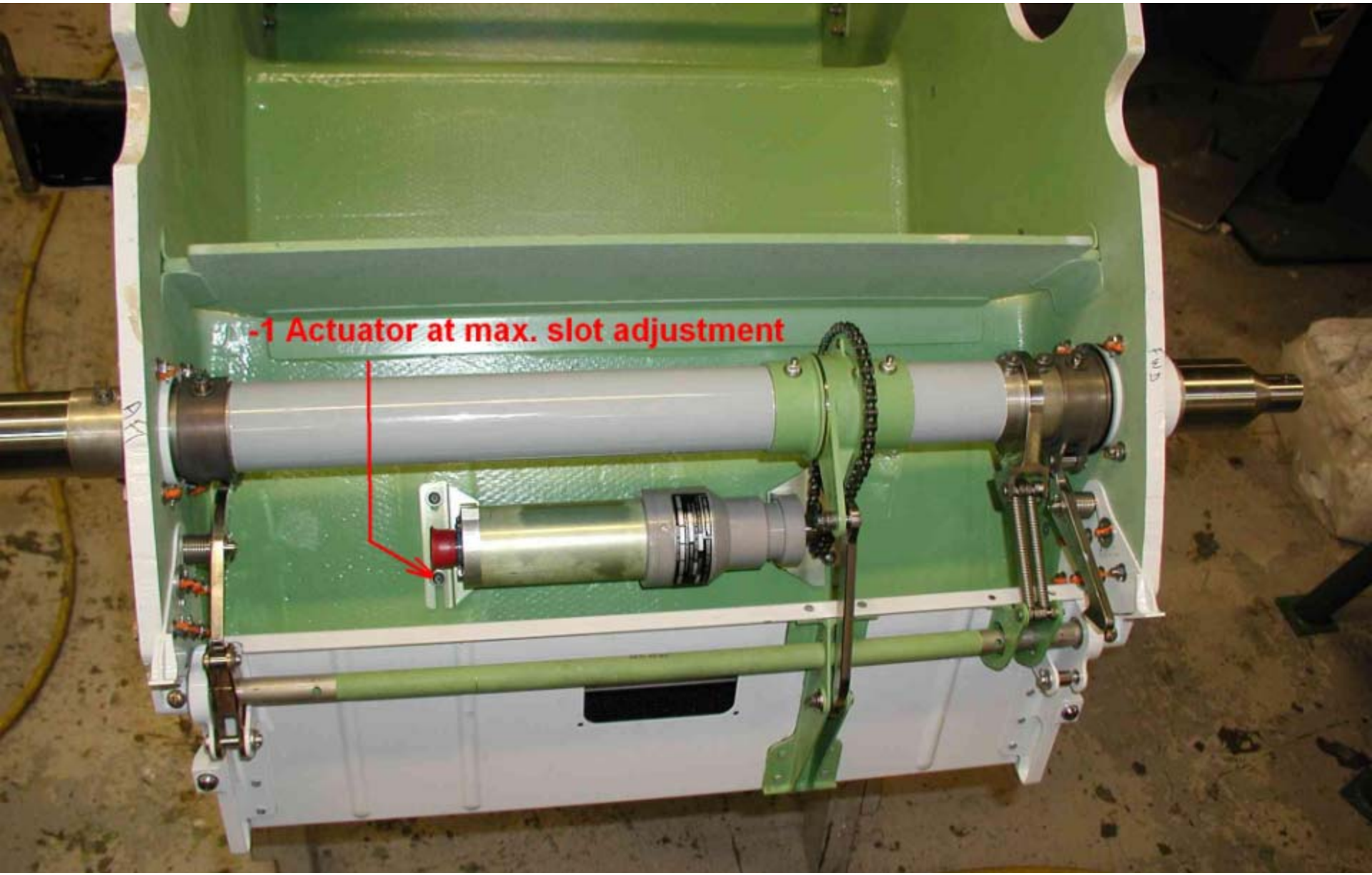
View looking fwd
under lower step.

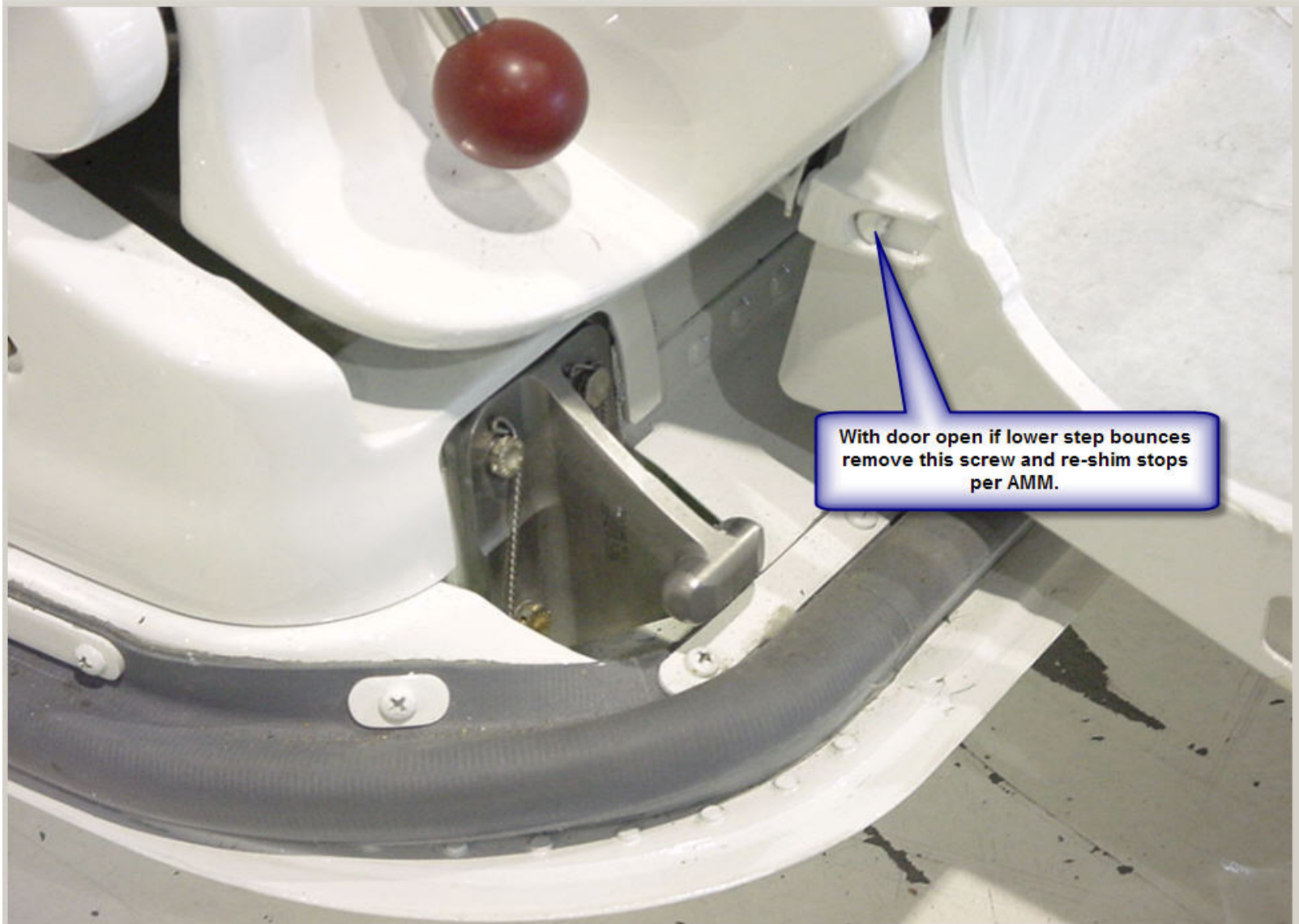
Inspect spring for any signs of the coils
with deformation. This would indicate
spring hanging up when step is opening at
the center point of lever when the spring
is fully compressed and kinks.

Inspect this lever for
freedom of movement
around tube. It should
be loose and free of
debris.

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-1 Actuator at max. slot adjustment

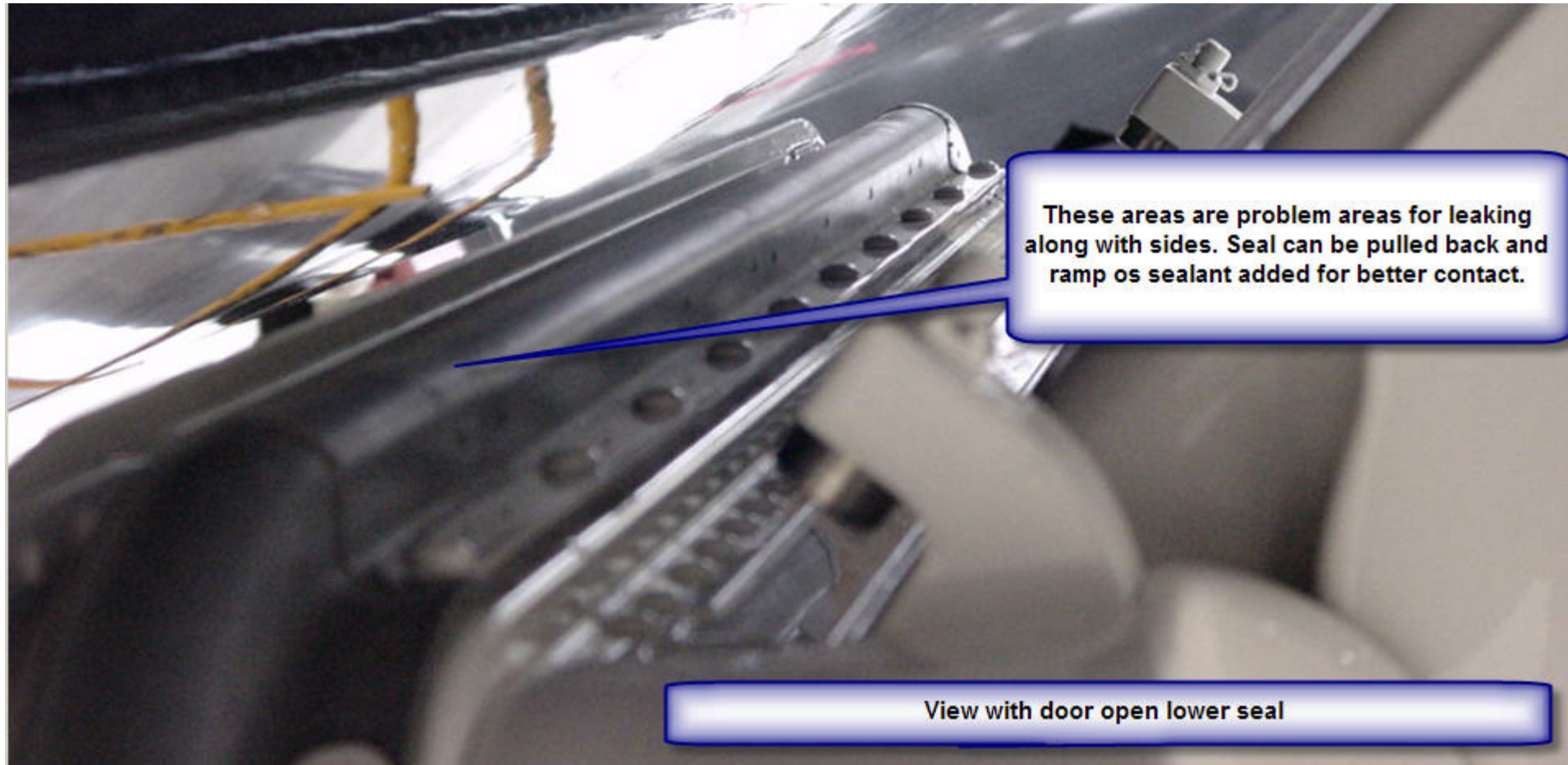




**With door open if lower step bounces
remove this screw and re-shim stops
per AMM.**

Door Seal

- Seal is reparable per SRM 52-00-14 with RTV 157—for small nicks see general section in repair.
- If the seal is leaking due to poor contact on seal striker—can be repaired by applying PRC under seal (gap sealing) to push seal assy over the seal striker. Ref AMM 52-11-37 R&R of seal step 3 (g).



These areas are problem areas for leaking along with sides. Seal can be pulled back and ramp or sealant added for better contact.

View with door open lower seal



**Common area for
pressurization air to pass
and make noise**

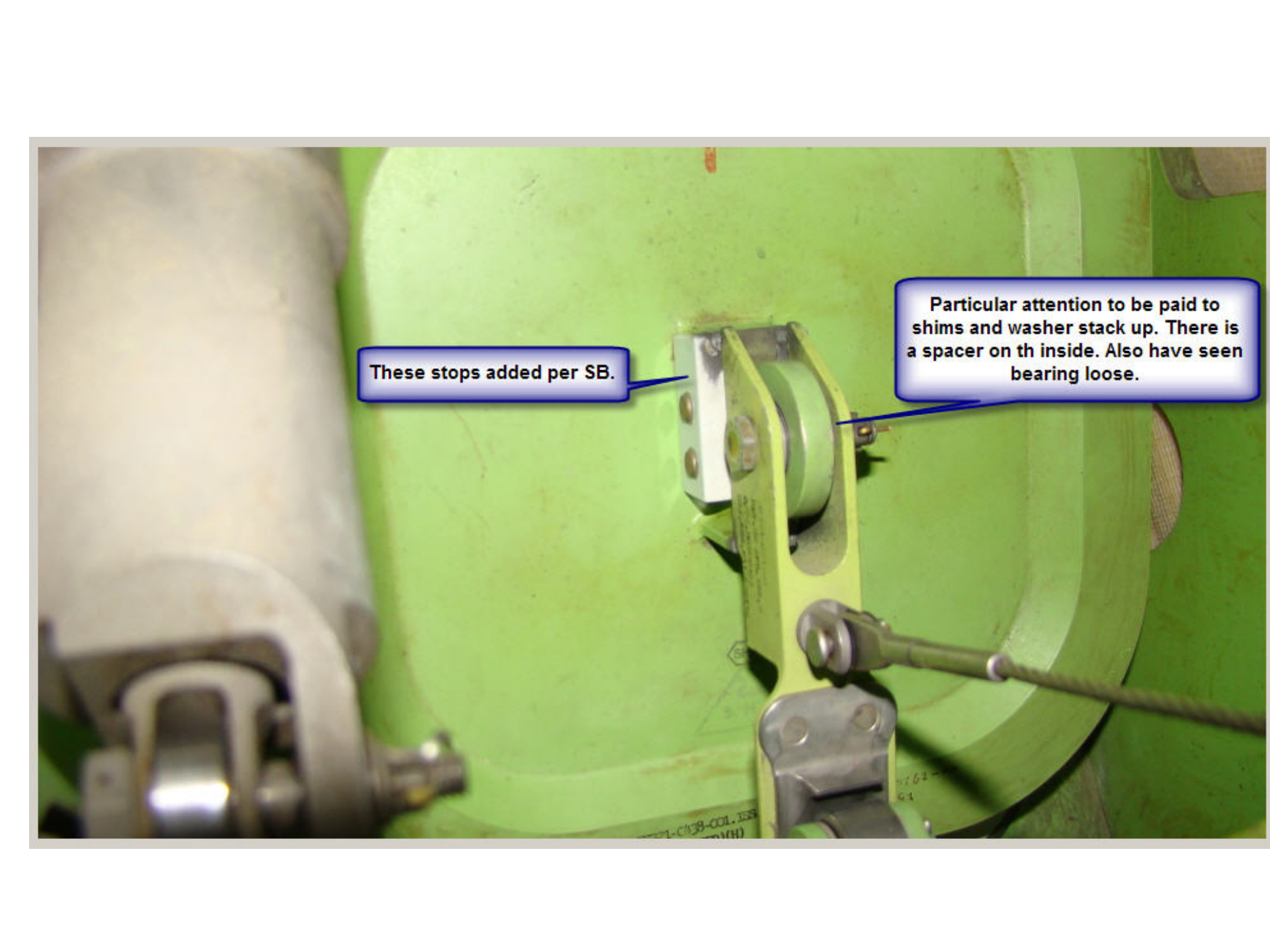
Vent Flap

- Adjust per AMM 52-11-69. Pay close attention not to apply too much pressure to door—this condition will increase the unlatching force required to open door especially from inside. The adjusting bolt should be adjusted until vent flap seal contacts no more.
- Check for migrating bearing—repairable per SB 52-029
- Check for broken springs and incorrectly installed hinge hardware.



Vent flap adjusting bolt

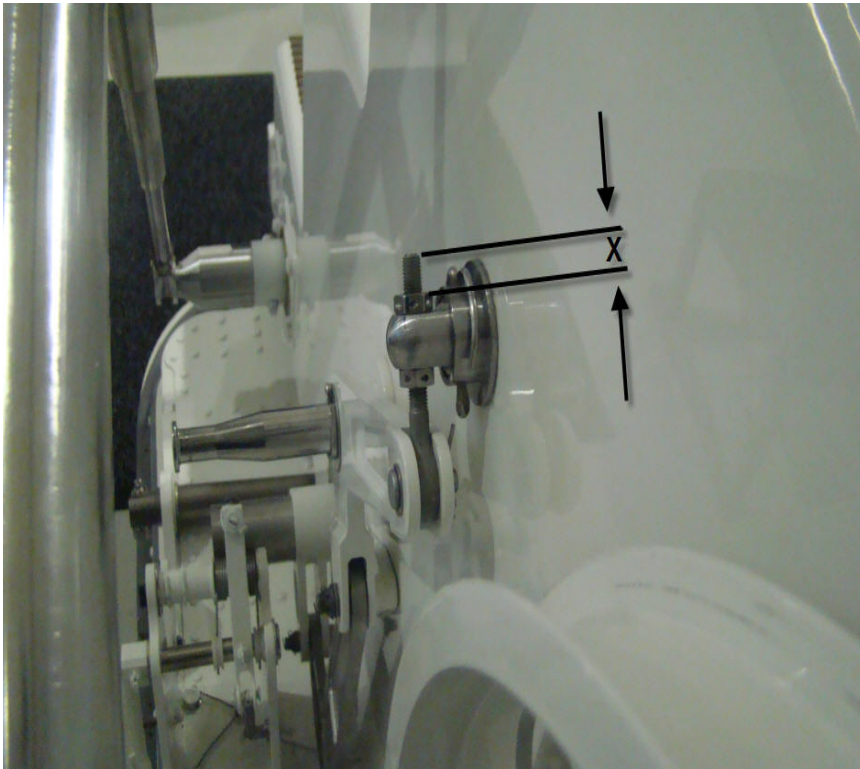
View looking from bottom step into door



These stops added per SB.

Particular attention to be paid to shims and washer stack up. There is a spacer on th inside. Also have seen bearing loose.

Lift Levers



- **To tilt top of door aft;**
Decreasing X on forward side tilts door aft.
Increasing X on aft side tilts door aft.
- **To tilt top of door forward;**
Increasing X on forward side tilts door forward
Decreasing X on aft side tilts door forward
- **To lift door**
Decrease X on both sides
- **To lower door**
Increase X on both sides.

Adjust lateral position of door

- Shimming the fwd (swan neck) airstair hinge is covered in rig AMM 52-11-00 step (a). Only the fwd hinge is shimmed and typically shim is only on one side of swan neck. This will move the door evenly fwd or aft.
- Adjusting cable tensions. See cable slide.
- To tilt the door fwd and aft use lift levers. See previous slide. Ref AMM 52-11-00 rig step (i)
- Shimming guide rollers can help position the door in the airframe —bumping the door into position. Ensure that .015 to .020 clearance is maintained on either fwd or aft roller end to door. Ref AMM 52-11-00 rig step (i).
- Sometimes variable radius pulleys are not matched fwd and aft then the cable tensions are not even when closed but even open. This will cause the door to hit the seal striker. In some cases requires replacement of vrp.
- In some cases necessary to shim the abutment pin retainers on door to move abutment pins into door to provide clearance to seal striker. Via srpsa.

Airframe guide roller

Knock off lever fitting

Typical seal striker damage from abutment pins. Repairable per REO

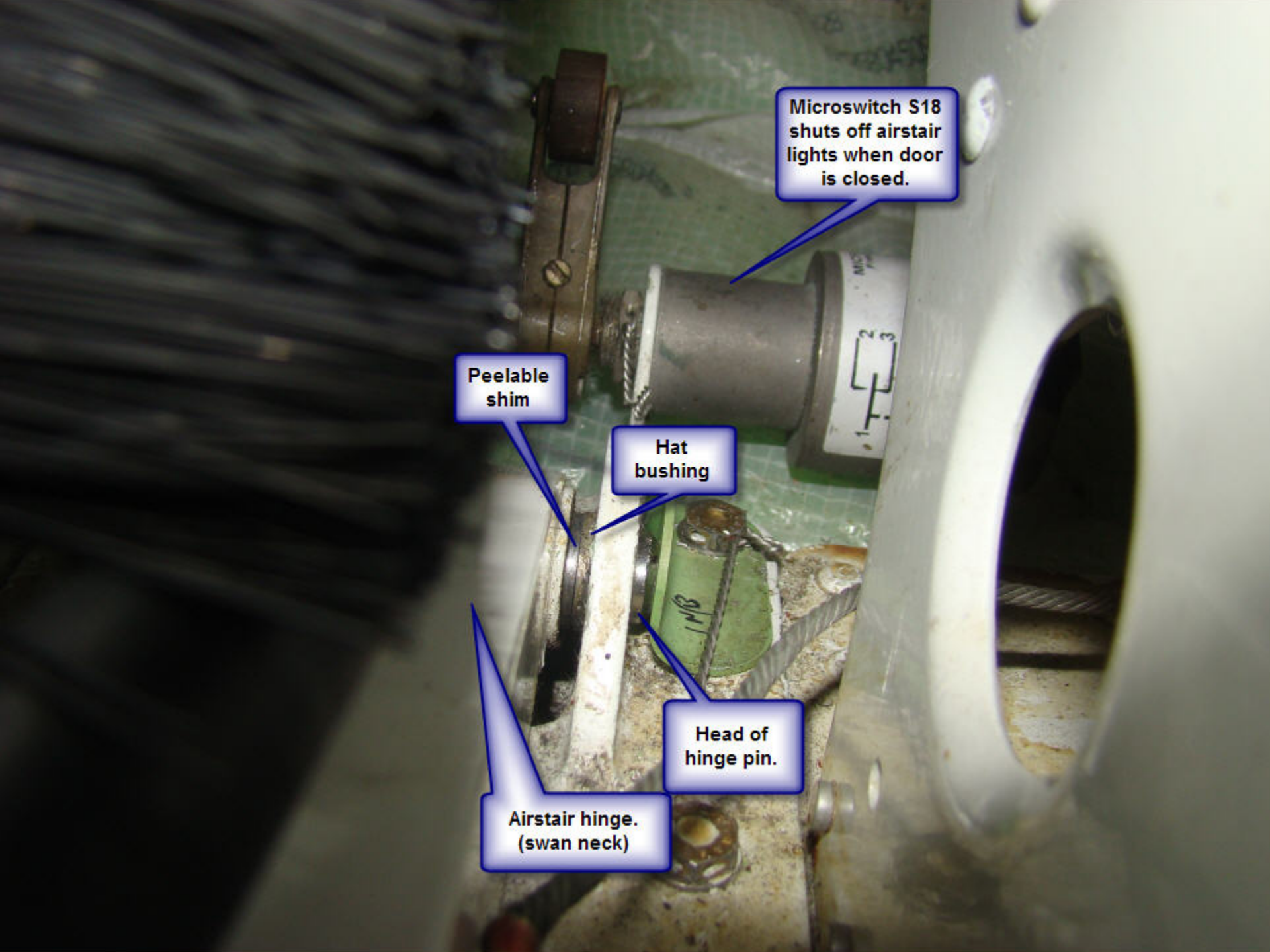
Microswitch S18
shuts off airstair
lights when door
is closed.

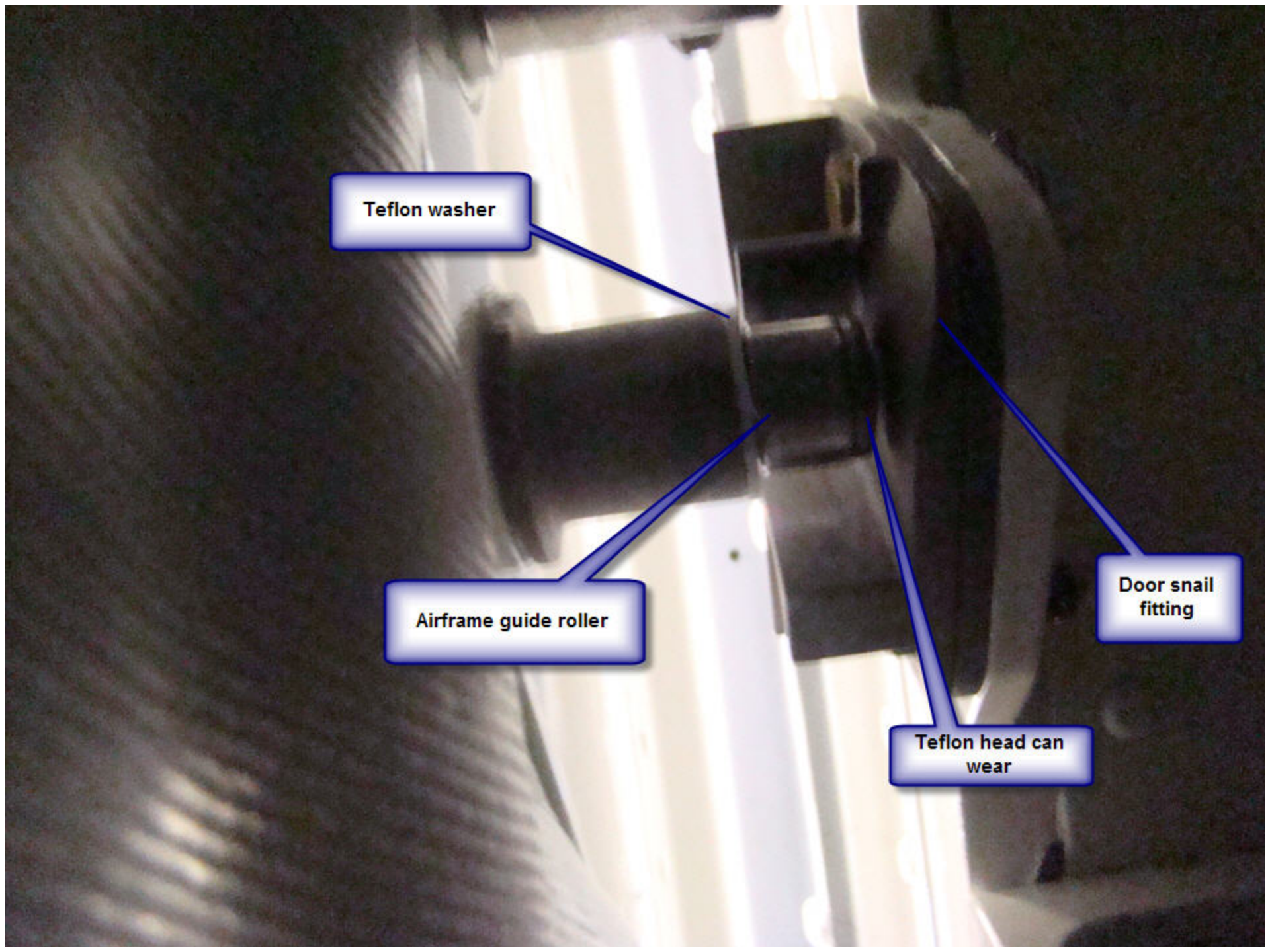
Peelable
shim

Hat
bushing

Head of
hinge pin.

Airstair hinge.
(swan neck)





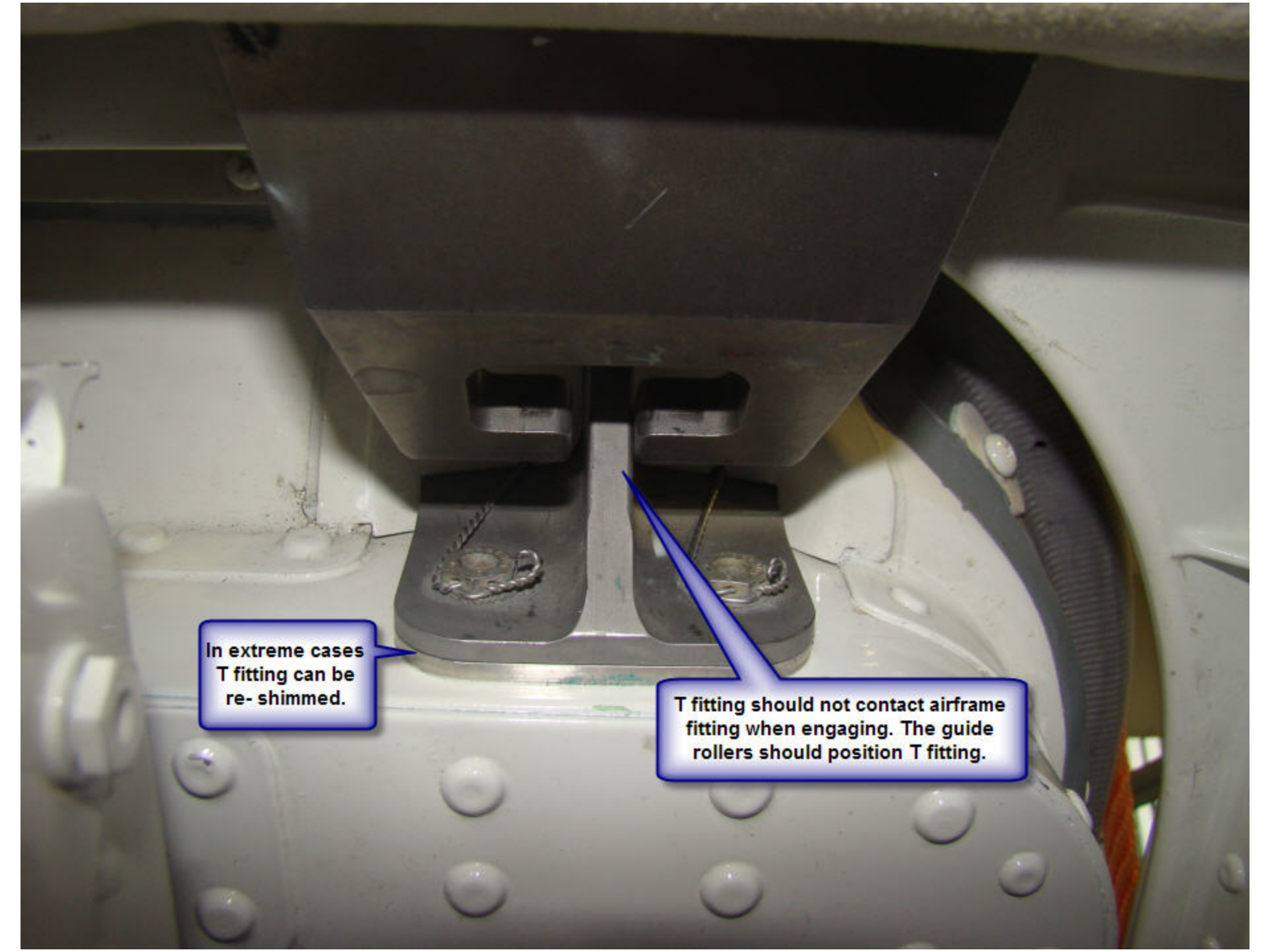
Teflon washer

A close-up photograph of an aircraft door latch mechanism. The image shows a complex assembly of metal and plastic parts. A central cylindrical component is surrounded by various washers and rollers. The lighting is dramatic, with strong highlights and deep shadows, emphasizing the textures and shapes of the components. Four blue callout boxes with white text and leader lines point to specific parts: 'Teflon washer' at the top, 'Airframe guide roller' at the bottom left, 'Teflon head can wear' at the bottom right, and 'Door snail fitting' on the right side.

Airframe guide roller


Door snail fitting

Teflon head can wear

A close-up photograph of a mechanical assembly. A dark grey metal T fitting is mounted on a white-painted metal base. The T fitting has two horizontal arms and a vertical stem. The base has two circular indentations, each containing a small metal roller. A blue callout box on the left points to the base of the T fitting, and another blue callout box on the right points to the vertical stem of the T fitting. The background shows a white metal structure with several rivets.

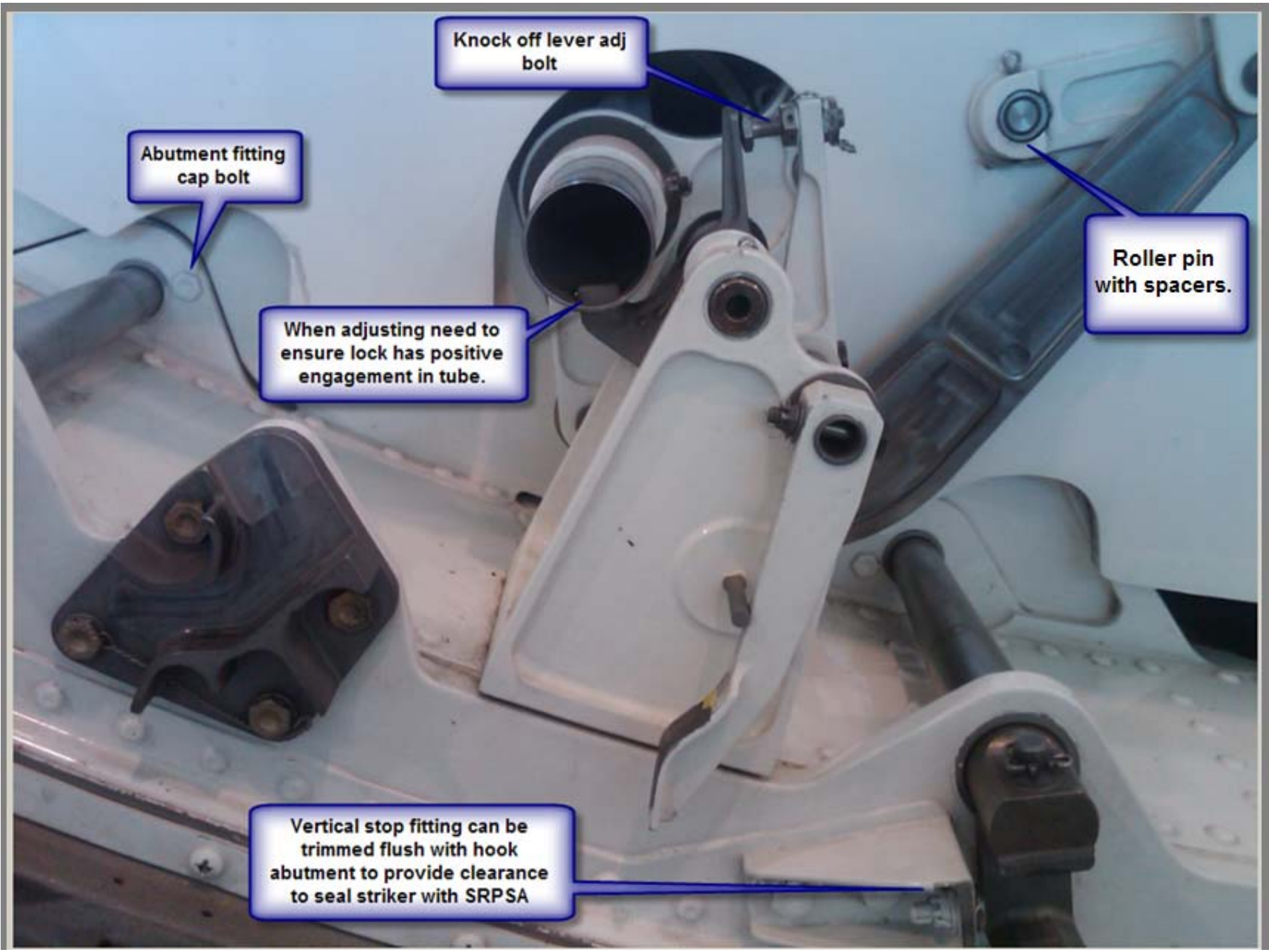
In extreme cases
T fitting can be
re- shimmed.

T fitting should not contact airframe
fitting when engaging. The guide
rollers should position T fitting.



Washer is added under abutment fitting end cap to move abutment fitting closer to door and away from seal striker. SRPSA needed.

View inside of door



Knock off lever adj bolt

Abutment fitting cap bolt

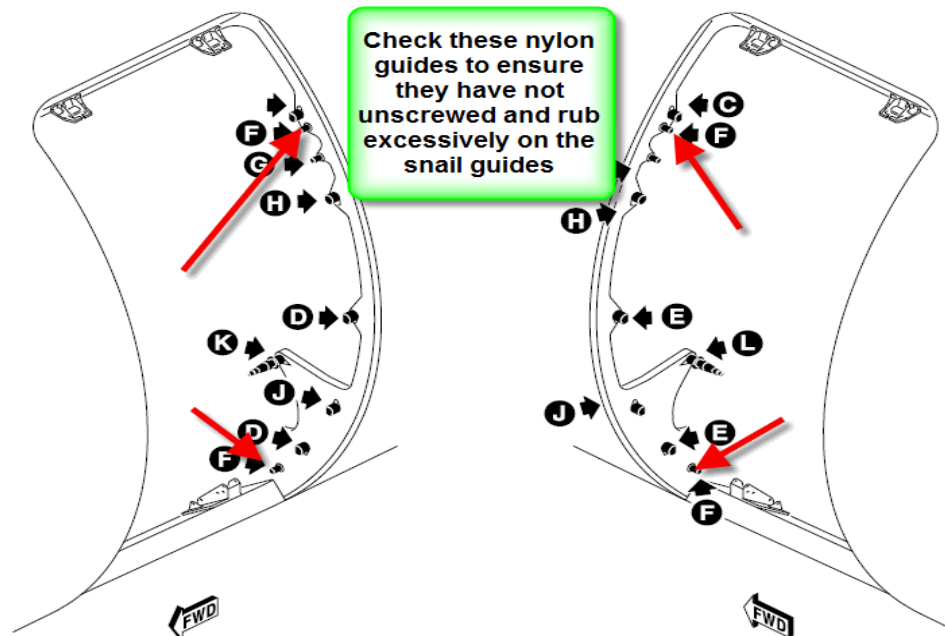
When adjusting need to ensure lock has positive engagement in tube.

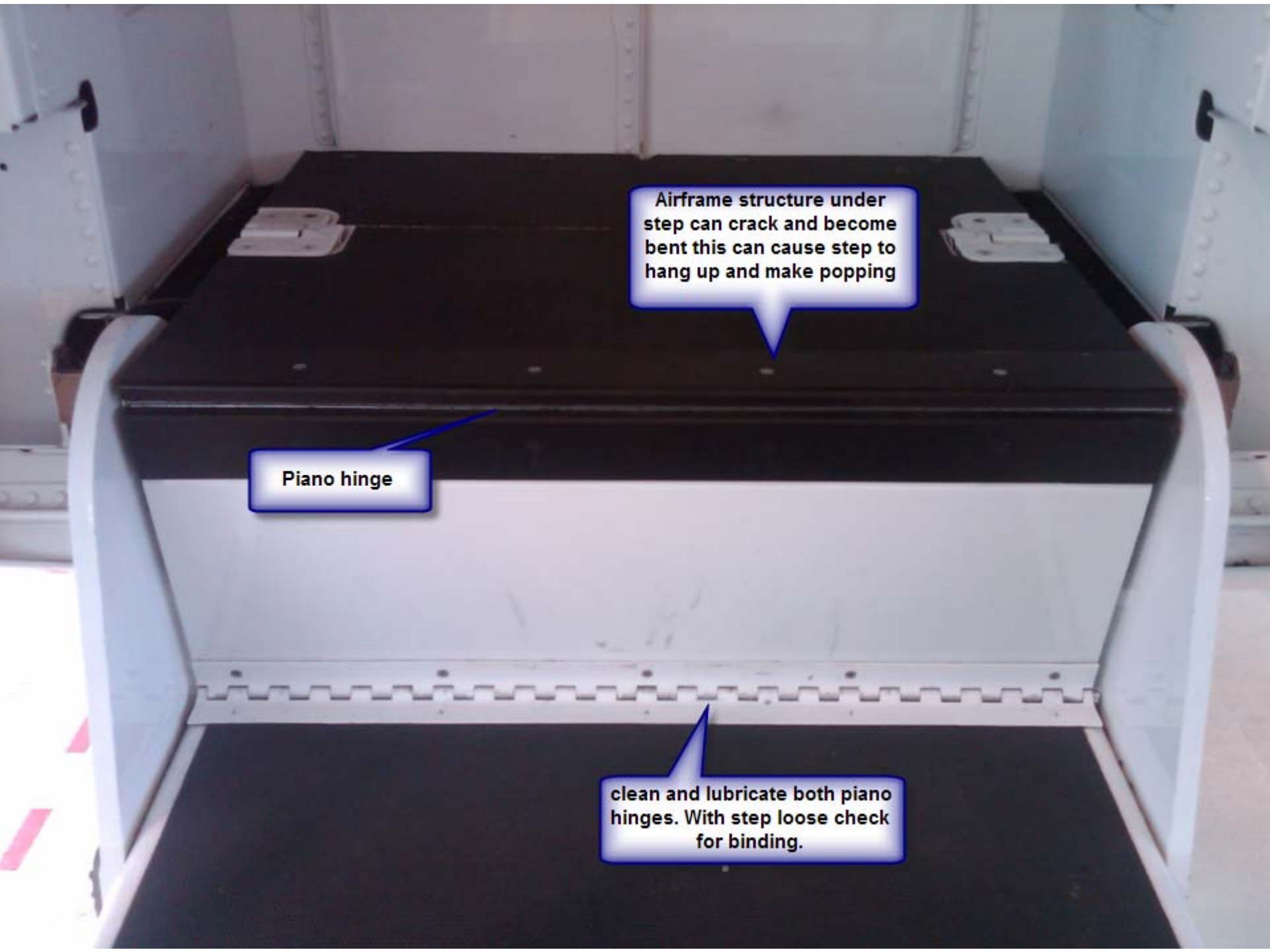
Roller pin with spacers.

Vertical stop fitting can be trimmed flush with hook abutment to provide clearance to seal striker with SRPSA

Door does not engage airframe far enough--difficult to latch

- Often seen after variable pulley SB 52-037
- Check handrail stop bolts—see handrail page.
- Lubricate handrails—see handrail page.
- Top step –remove, disassemble hinge, check for binding , lubricate and re-install ref AMM 12-22-00.
- Tensator springs ---check for proper preload—see tensator page.
- Check for any contact with any structure or fittings and rectify.
- Check the rig of the knock off lever adjusting screw per AMM 52-11-00 rig step (e). This will disengage the locking arm from the torque tube to allow for the latching mechanism to operate.





Airframe structure under step can crack and become bent this can cause step to hang up and make popping

Piano hinge

clean and lubricate both piano hinges. With step loose check for binding.

A close-up photograph of a white metal hinge assembly. The hinge consists of two white metal plates, each secured with two screws. A central cylindrical roller is visible. A callout box with a blue border and white background points to the hinge pin on the left side of the assembly. The background is a dark, textured surface.

**Check for hinge
pin binding**

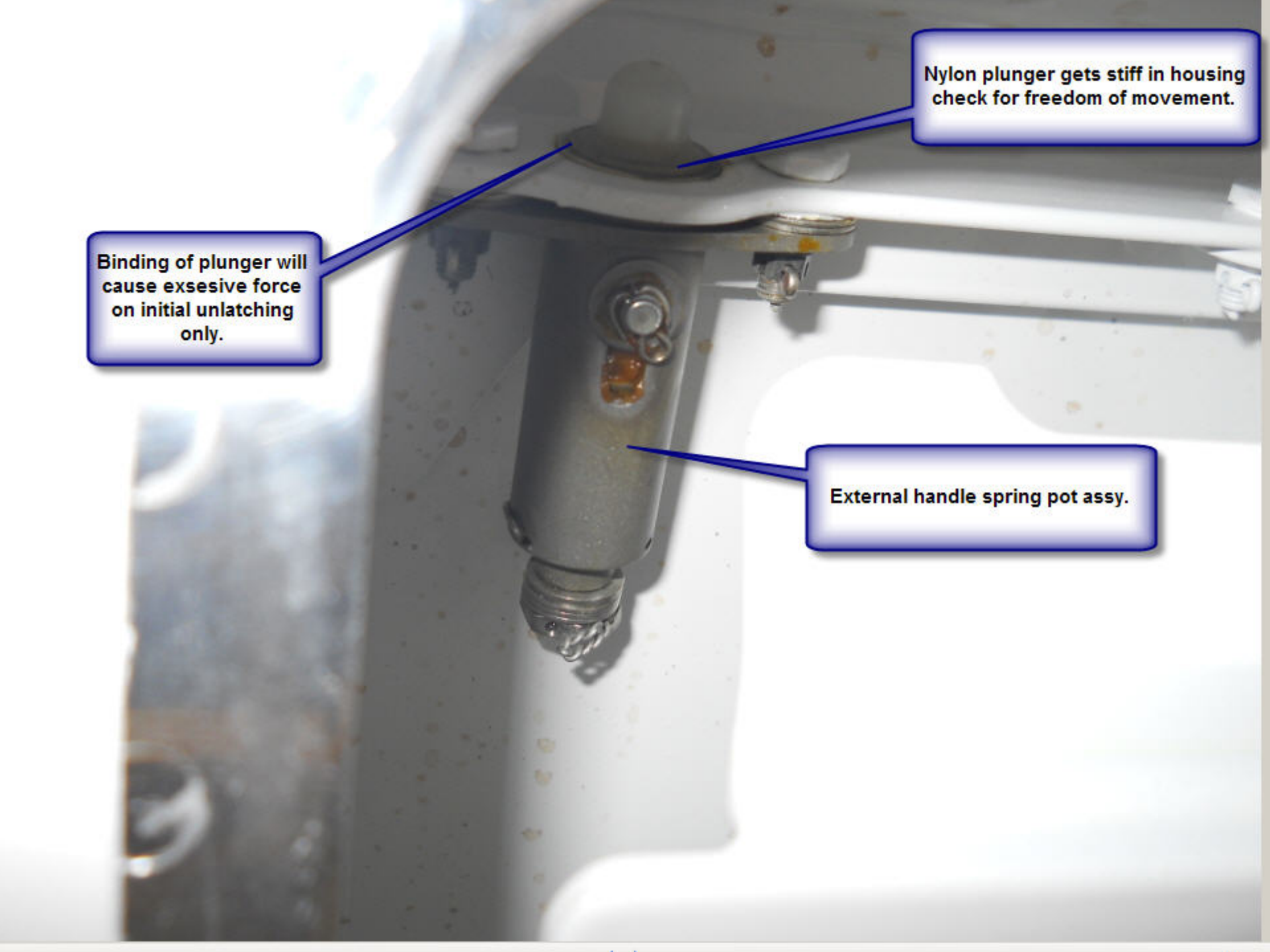
Observed Faults

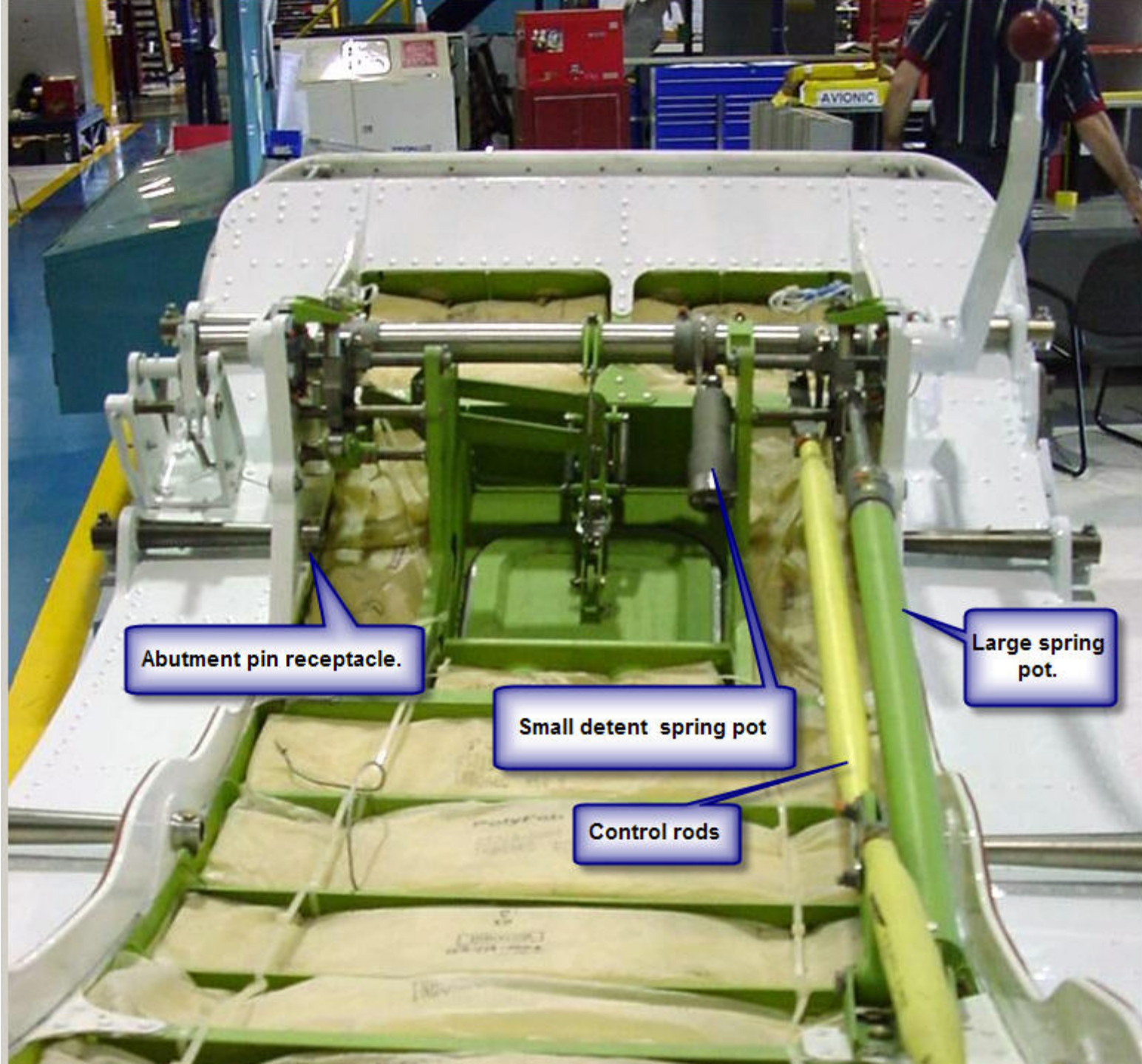
- Door external or internal handle unlatching forces too high
- Check external handle spring pot---check for binding and freedom of movement—Check rig per AMM 52-11-11. Correctly rigged plunger adds approx 5 lbs of force. This is only in effect on the initial unlatching stage. SB installs new style plunger not nylon.
- Lightly lubricate snail fittings on door and airstair.
- Replace large spring pot inside door. This assy helps lighten the door hence lowering the lifting force. Ref AMM 52-11-01-720-801.
- Check small spring pot inside door adjacent to g locks for proper rig. Adds force to detents in torque tube.
- Check vent flap rig—see vent flap page. This is only in effect on the initial unlatching stage

Nylon plunger gets stiff in housing check for freedom of movement.

Binding of plunger will cause excessive force on initial unlatching only.

External handle spring pot assy.





Abutment pin receptacle.

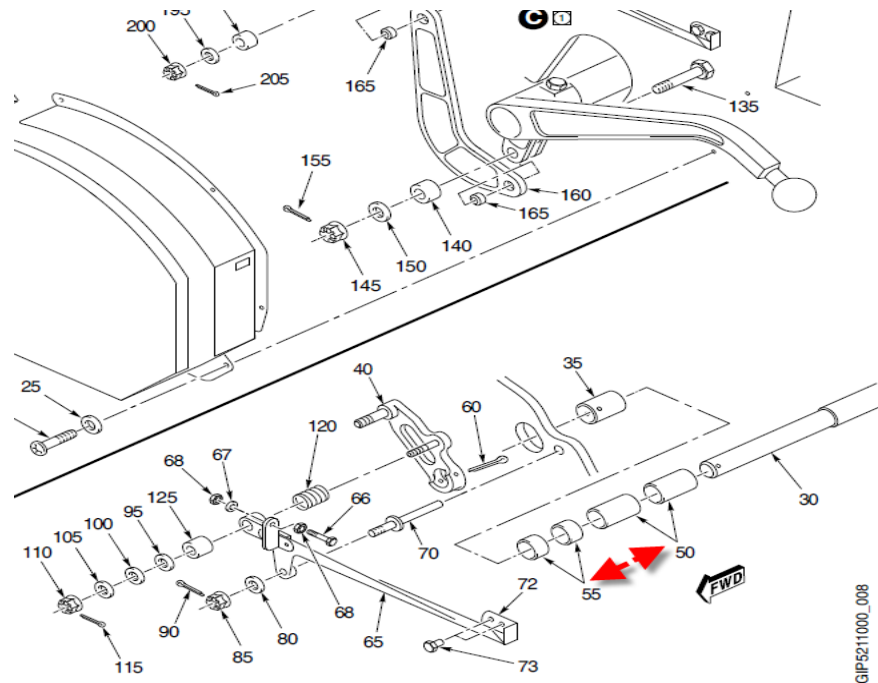
Small detent spring pot

Control rods

Large spring pot.

Observed Faults

- If excessive play (bounce or rocking) is found between door and airstair with door open adjacent to lower step—check that special rollers and spacers on roller pin which is removed when airstairs are split are correctly installed. Larger diameter rollers should be on outside.



Passenger Door Assembly
Figure 2 (Sheet 2 of 5)

GRF5211000_008

: ALL

Observed Faults

- Door will not open from inside or outside.
 - Some events reported that crew were not able to open the door from inside or outside
 - Aircraft door side was exposed to direct sun or extreme ambient heat conditions.
 - Aircraft needed to be repositioned to shade or have water sprayed on the door and fuselage before the handles could be operated.
 - Check gap at top of door, if the gap is too small (condition sometimes caused by paint collecting at the edge) the door will not be able to lift and extend out.