



# Helicopter Technology Company presents...

## Rotor Track and Balance On MD500/600 and Bell UH-1H

Helicopter Association International 2017

# Understanding RTB

Why Track and Balance and what is it really?

Dynamic track and balance is the equalization of *forces* around the physical center of rotation.

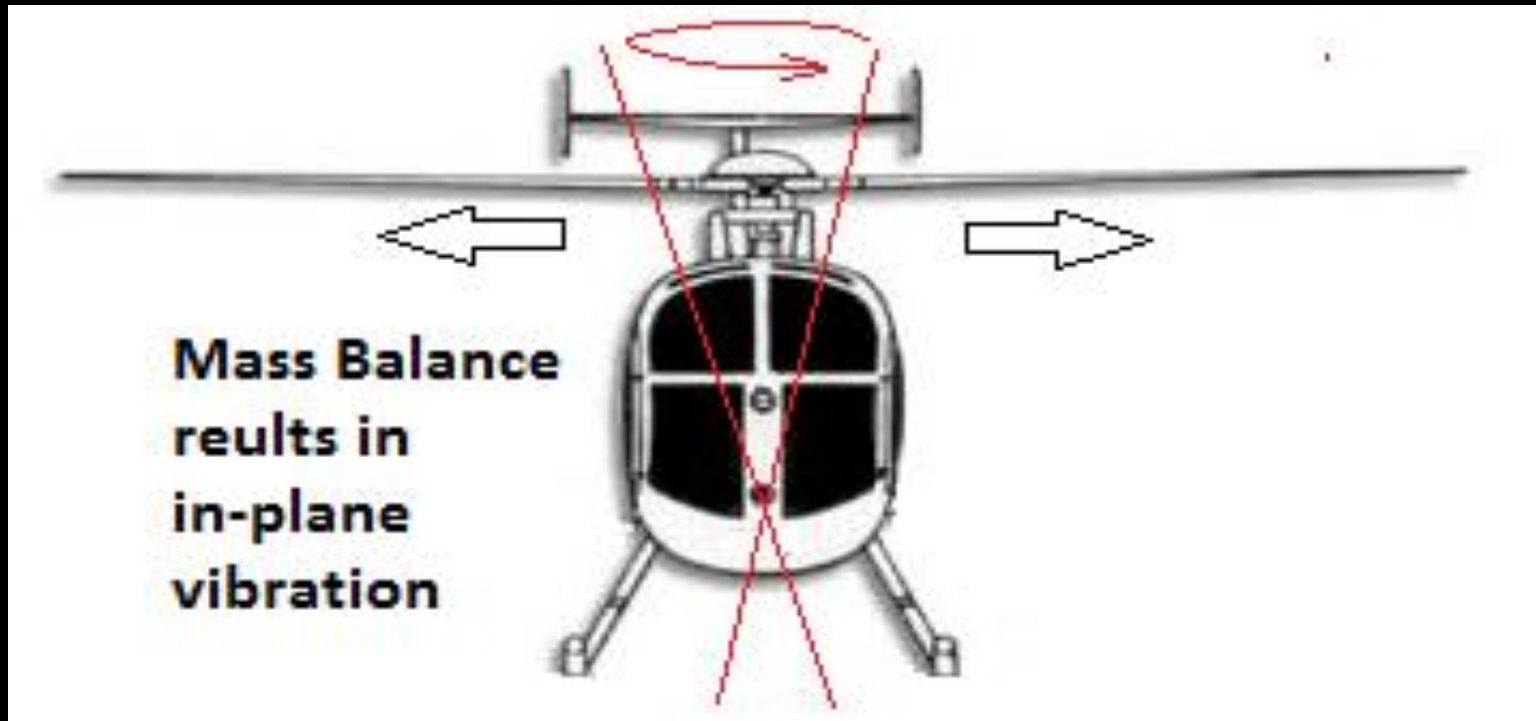
# Mass Balance

## Dynamic Balance

When the mass distribution is centered around the physical rotation center.

In Helicopters – lateral vibration is induced by mass distribution off center

# Rotor Balance



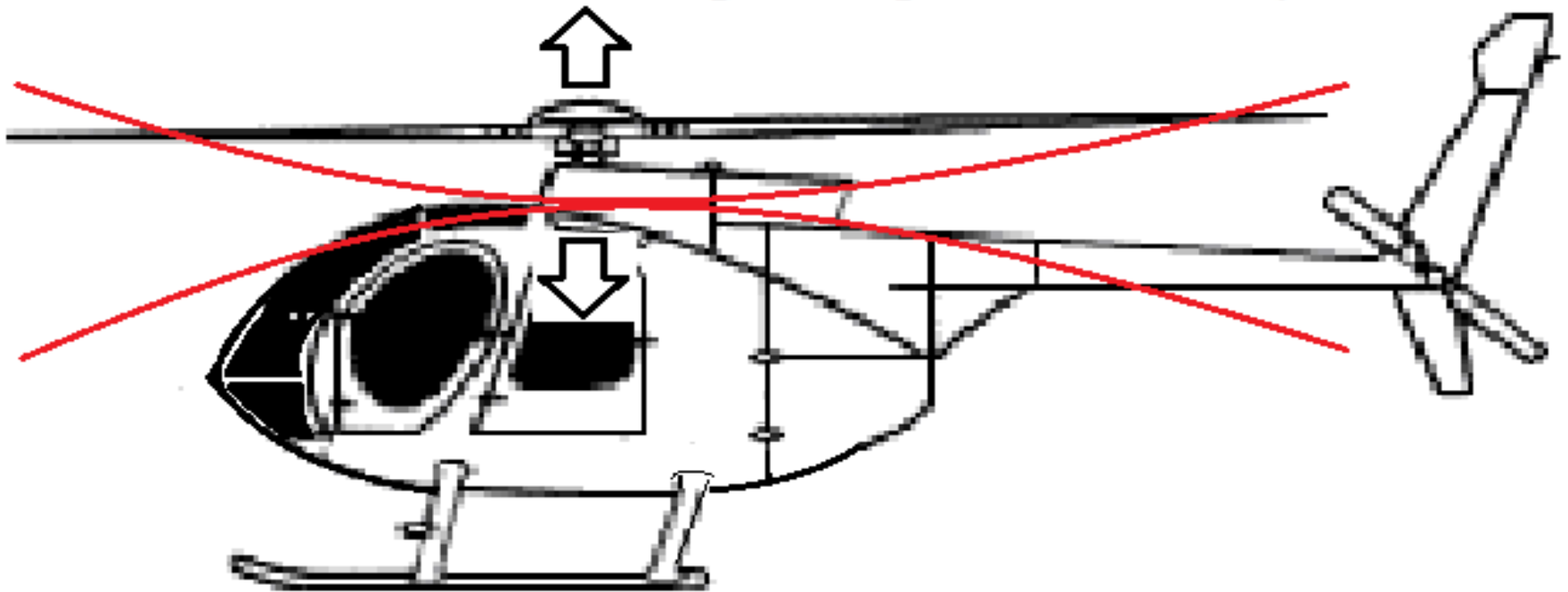


# Rotor Track

- Rotor Track is achieved when the vertical forces from the rotor are equalized about the center of rotation.
- Proper track is achieved using BOTH visual observations and vertical vibration levels.

# Vertical vibration caused by differences of lift on the rotor

Vertical vibration is distributed along the long axis of the helicopter



# Track observations

- Visual observations hold precedent on the ground
- Vertical vibration measurements hold precedent with forward air speed

# Vertical / Lateral Relationships

- On articulated and rigid rotors, vertical adjustments have a profound affect on lateral adjustments – you can't change lift without changing drag.
- On semi rigid rotors constrained in lead/lag there is little effect on balance with track changes

# MD series RTB sequence

- 1. Visual track at Ground Idle (pitch link)
- 2. Visual track at Flight Idle (outer tab)
- 3. Hover balance (roughing in)
- 4. Low speed track (mid/outer tab)
- 5. High speed track (inner/mid tab)
- 6. Autorotation check
- 7. Hover Balance (weight and/or sweep)

# Bell UH-1H RTB sequence

- 1. Visual Ground Track 4700 RPM (pitch change link)
- 2. Visual Ground Track 6600 RPM (pitch change link)
- 3. Hover balance (weight and/or sweep)
- 4. In-flight track (Trim Tab)
- 5. Check and adjust autorotation RPM

# MD 500 helpful numbers

- 70% Nr – 1 flat PCL =  $\sim 1/2$ - $3/4$  inch
- 100%-103% Nr – 1 flat PCL =  $\sim 3/4$ "
- 110 KIAS - .001 inch inner tab = 0.1 IPS
- 110 KIAS - .001 inch mid tab = 0.2 IPS
- 110 KIAS - .001 outer tab = 0.3 IPS
- Hover Balance - 150 gms = 0.8 IPS
- Hover Balance - 6 flats sweep = 0.3 IPS
  
- Tab adjustment is for 16" wide bend

# UH-1H Helpful Numbers

- Hover Balance – 1000 gms = ~0.6 IPS
- Hover Balance – 6 flats sweep = ~ 0.4 IPS
- 6600 RPM Track – 3 flats = ~2" track
- 100 KIAS - .010 inch tab = ~ 0.5 IPS



# MD 500 tips and tricks

- Lateral on top of doghouse gives more sensitive readings for lateral.
- If a gross mis track occurs through translational, tab entire tab in .003 increments in the desired direction.
- Take hover readings at the end of the flight but before touching down.
- Get your auto RPM out of the way early.

# 500 tips and tricks continued

- Use tip targets that adhere to the bottom of the blade – no hang down targets.
- Smooth transition from abrasion strip to paint – no fingernail grab
- Stagger track to minimize 5P (works on some ships)
- Use weight before sweep

# Main Rotor Tip Targets

- Preferred target is Honeywell 4270A
  - Self adhesive
  - No flight change to blade
  - Virtually no added weight
  - No autorotation restrictions



## WARNING

MD series metal tab targets carry a prohibition on touchdown autorotations due to clearance concerns with the tail boom.

# 500 tips and tricks cont...

- If an abnormal flight characteristic is apparent after adjusting a blade, remove the adjustments and track the other blades to that blade.
- Move the blades in the direction that will correct Autorotation RPM
- When all else fails Call HTC for help

# UH-1H tips and tricks

- Perform hover balance at 6000 RPM instead of 6600 RPM
- Add hub chord weight before sweeping
- “Fishing line” your bolt hole weight.
- Always mark your PCLs and drag braces BEFORE making changes
- Split total tab between the blades
- Move blades in a direction that will correct Autorotation RPM.

# MD500 current main part numbers

- C (H) Model                      500P2100-305
  - D/E Model                        500P2100-105
  - F / N / 600                      500P2300-505
- 
- Remember retirement life for 600 installations is based on a RIN (Retirement Index Number). Once on a 600 the blade life is always based on the RIN.

# MD500 TR current PN's

- 500P3100-105 MD 369 D/E 2 blade
- 500P3100-305 MD 369 D/E 4 blade
- 500P3300-505 MD 369 H, HH (C model)
- 500P3500-705 MD 369 F



# UH-1H Current part number

- P/N 204P2100-101
  - Direct replacement for BHT 204-011-250-113
  - 2600 Hour Life Limit

# Questions?

# 369 Tail Rotor tips and tricks

- Rough in balance at 70% Nr
- At 103% take three readings – one with slightly left pedal loaded, one centered and one right pedal slightly loaded.
  - Variation of more than 0.3 VECTOR length means the feather bearings are getting worn.
- Use a thin wrench for holding the weight stud – NOT the castellated nut!

# Main Blade Maintenance

- Apply “Taco Patch” at inner edge of abrasion strip to seal out water and protect bond line
- Coin tap abrasion strips regularly
- Perform Torque Event inspections in a timely manner.
- Keep drain holes clear.

# 369 Tail Rotor Maintenance

- Keep metal parts protected, no bare metal!
- Remove soot regularly
- Keep drain hole open
- Use proper tools when adding/ subtracting chord balance weights

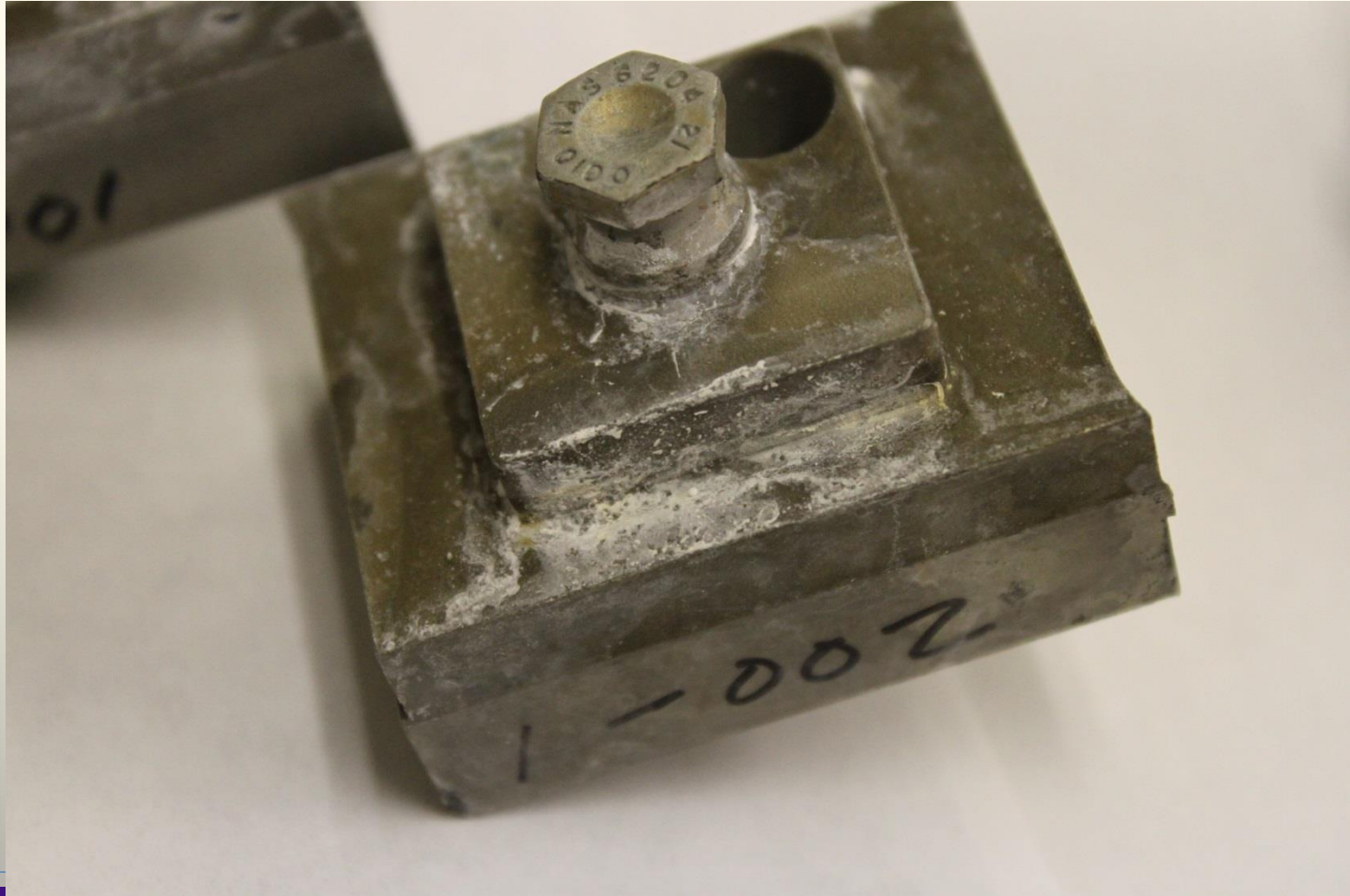
- Largest loss rate on Tail Rotors is due to corrosion
- Corrosion is caused by providing an electrolytic path between metals with different potentials.
- Key factors
  - Water (ion carrier)
  - Salt (makes water conductive)
  - Carbon (exhaust soot is conductive)

# Corrosion control measures

- Chromic Acid Annodize
- Alodine
- Bonding Primer
- Zinc Chromate Epoxy Primer
- Paint

One scratch can negate all 5

# Salt spray test. 4 months

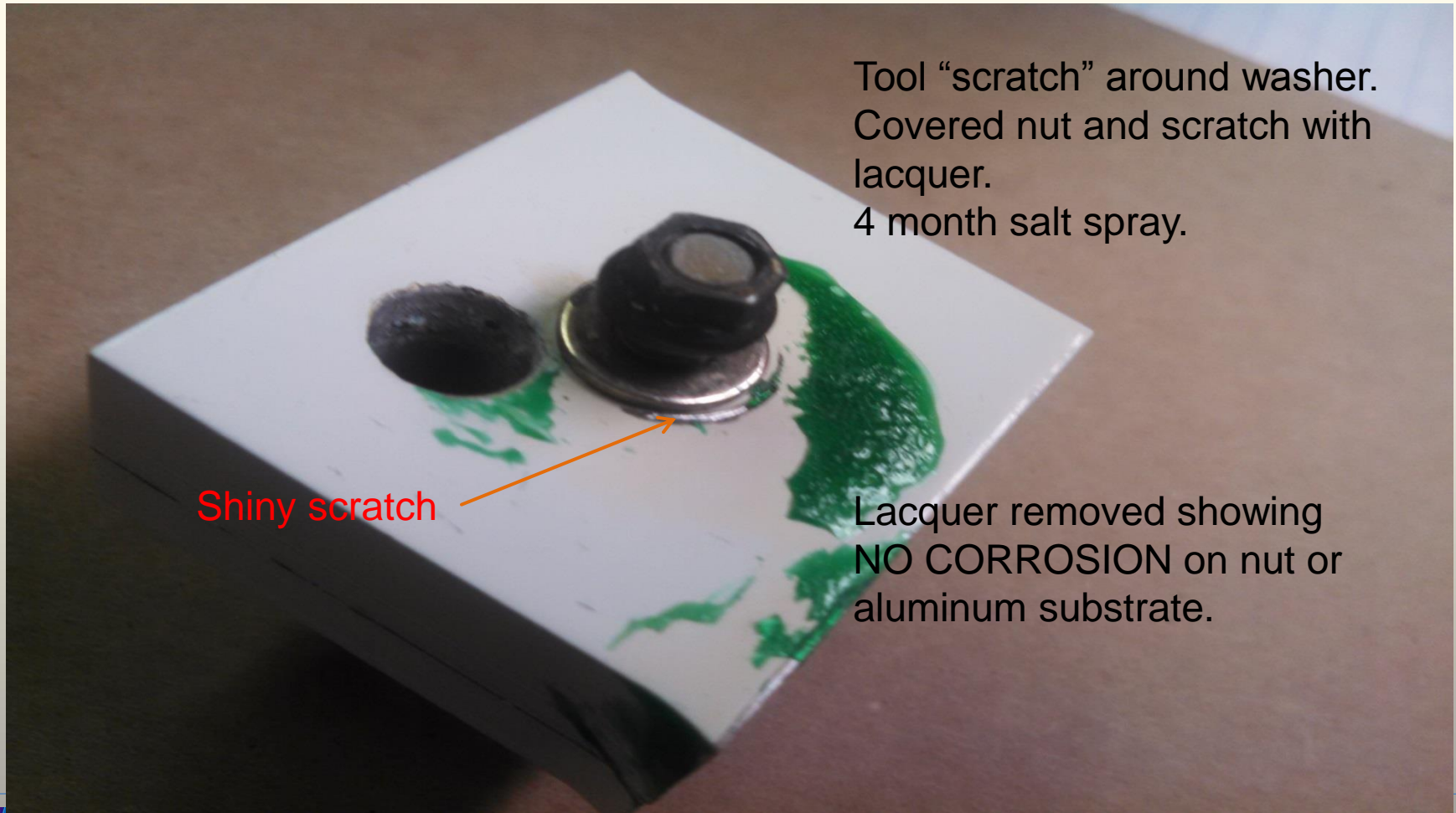




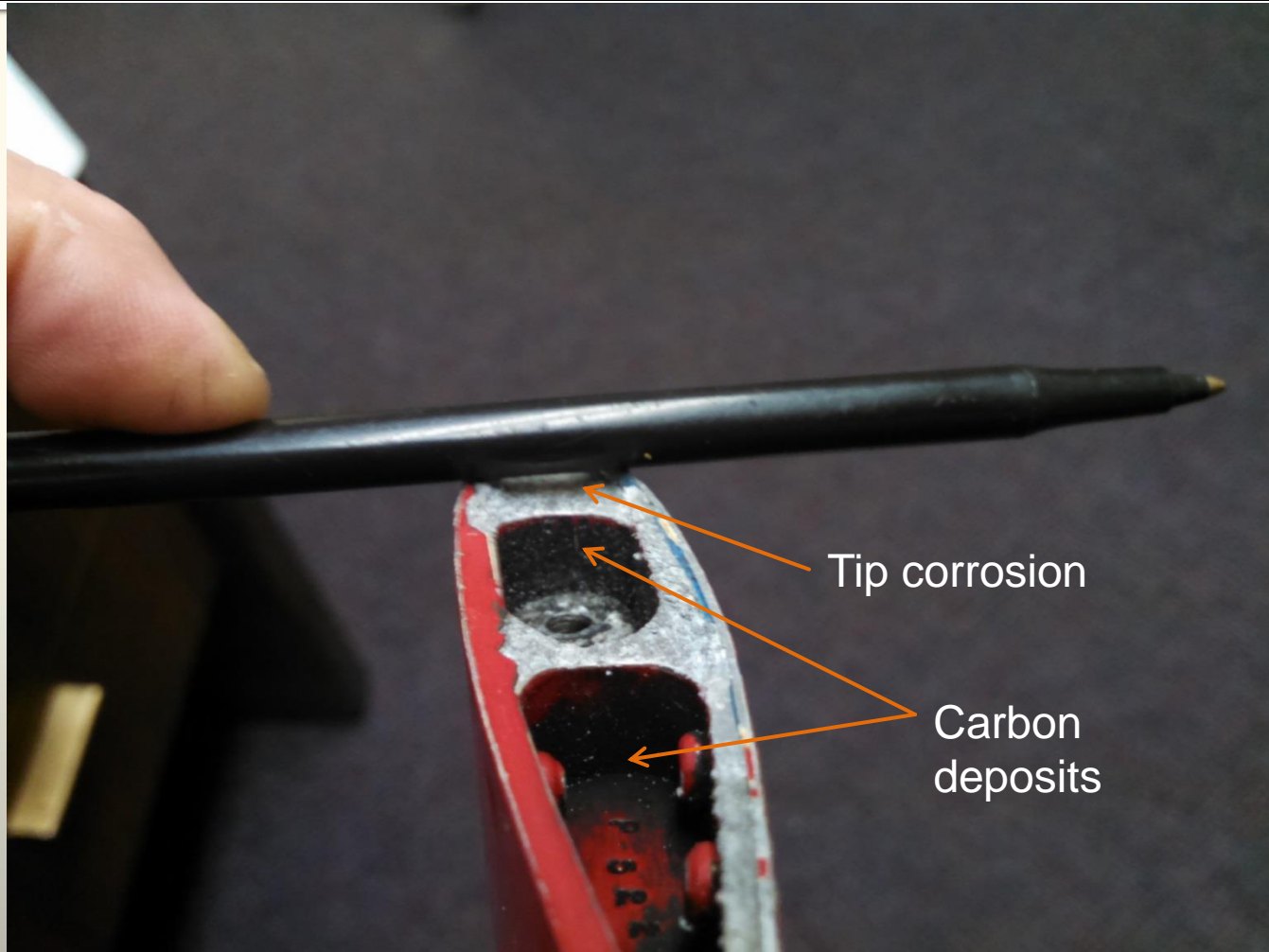
# Corrosion Control



# Field Prevention



# Tail Rotor Corrosion



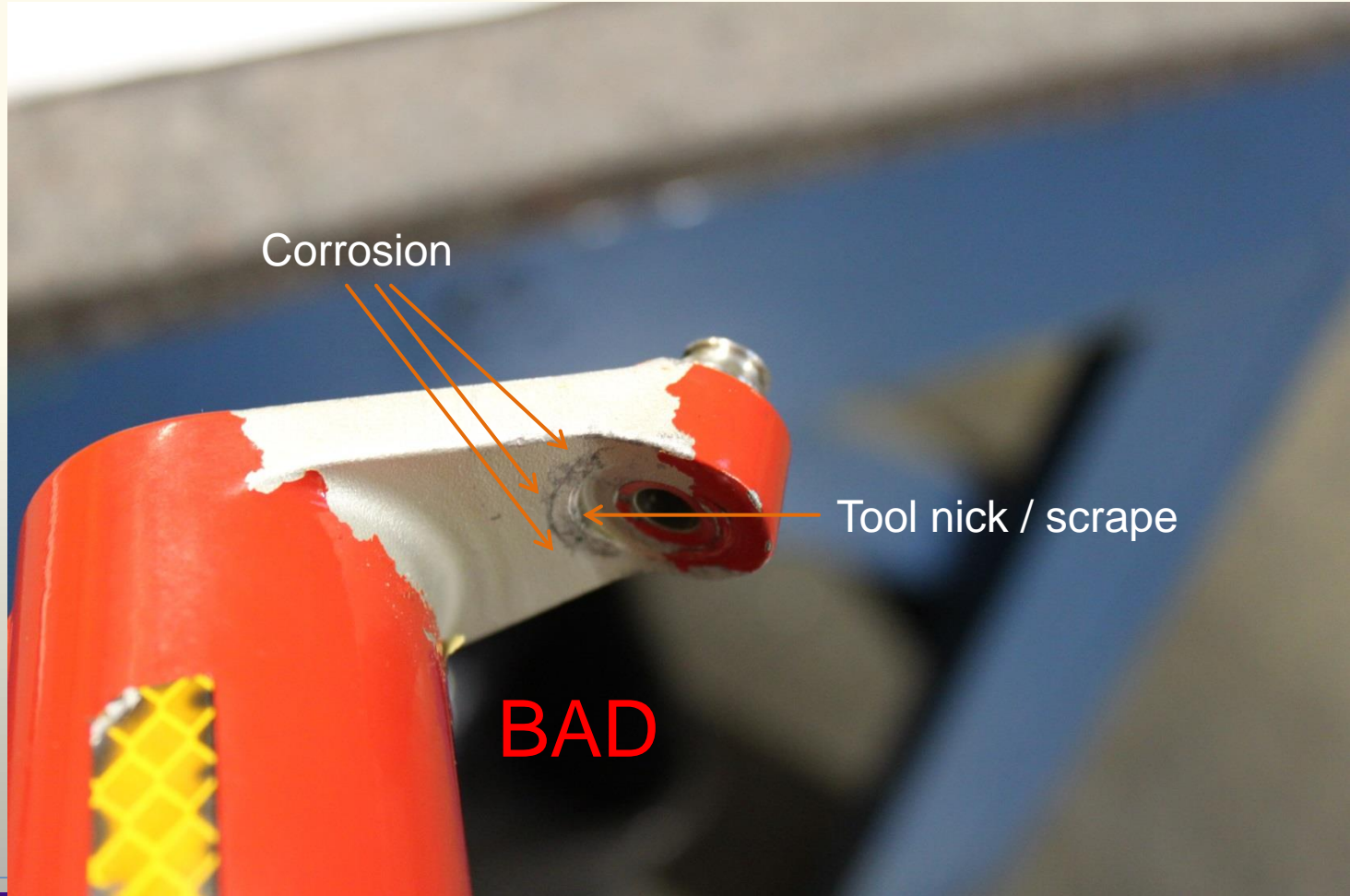


Good

Lack of tool damage

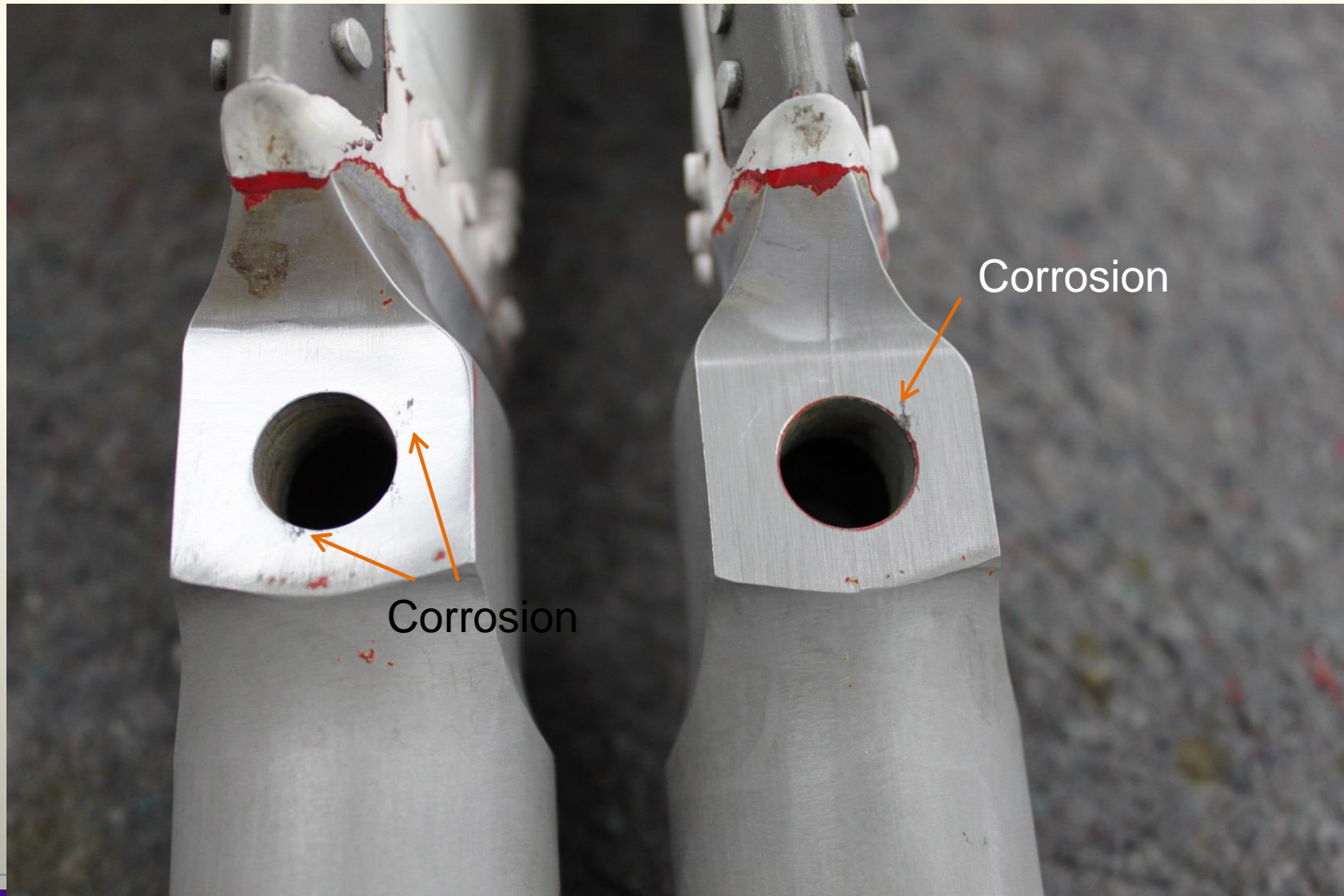
Uniform texture and color  
Total lack of corrosion.

# Corrosion



# Corrosion

# Root





Water wash with a mild detergent by hand.

Replace “TACO” patch as required

DO NOT use abrasives on hard anodized  
leading edge inboard of abrasion strip!

# Blade Care

## Leading edge

- Maintain edge seal of abrasion strip with DP190 or Pro Seal PR1440(Mil-S-8802)
- Use of scotch brite on abrasion strip is OK
- After cleaning be sure to remove detergent residue.

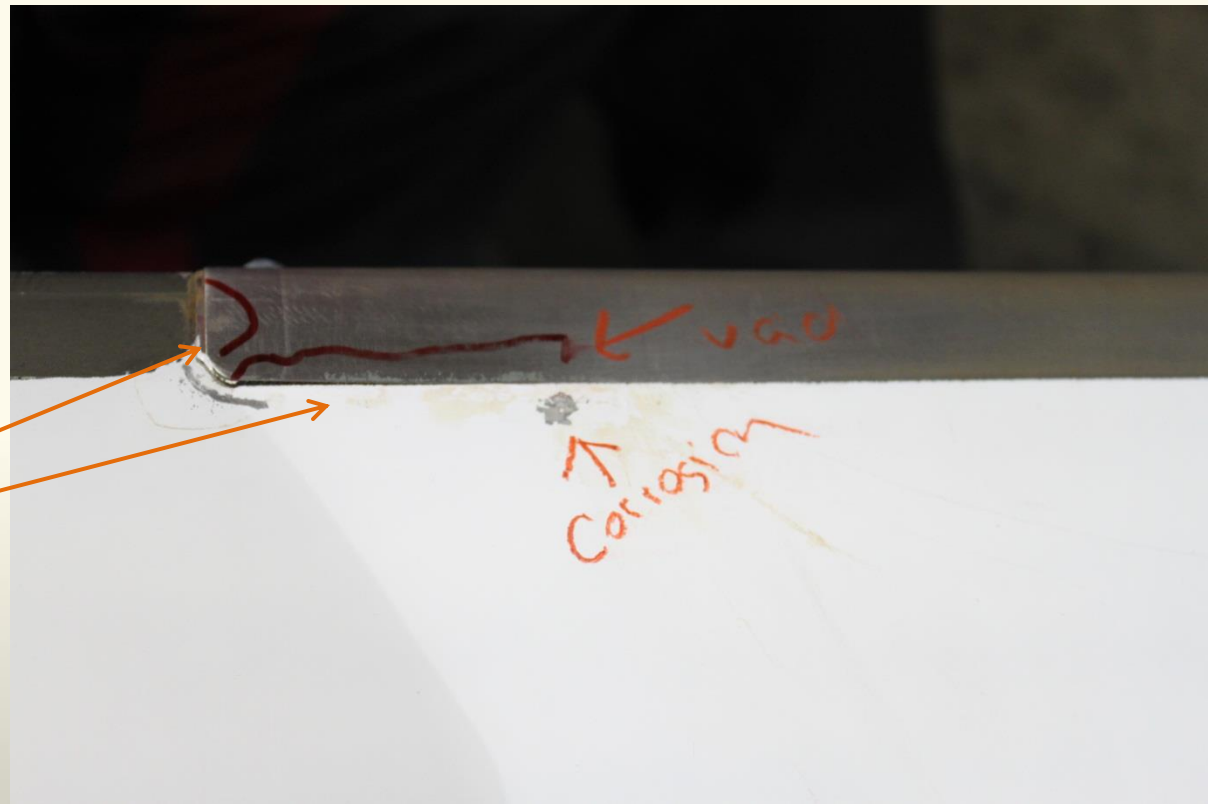


# Blade Care

## Abrasion Strip

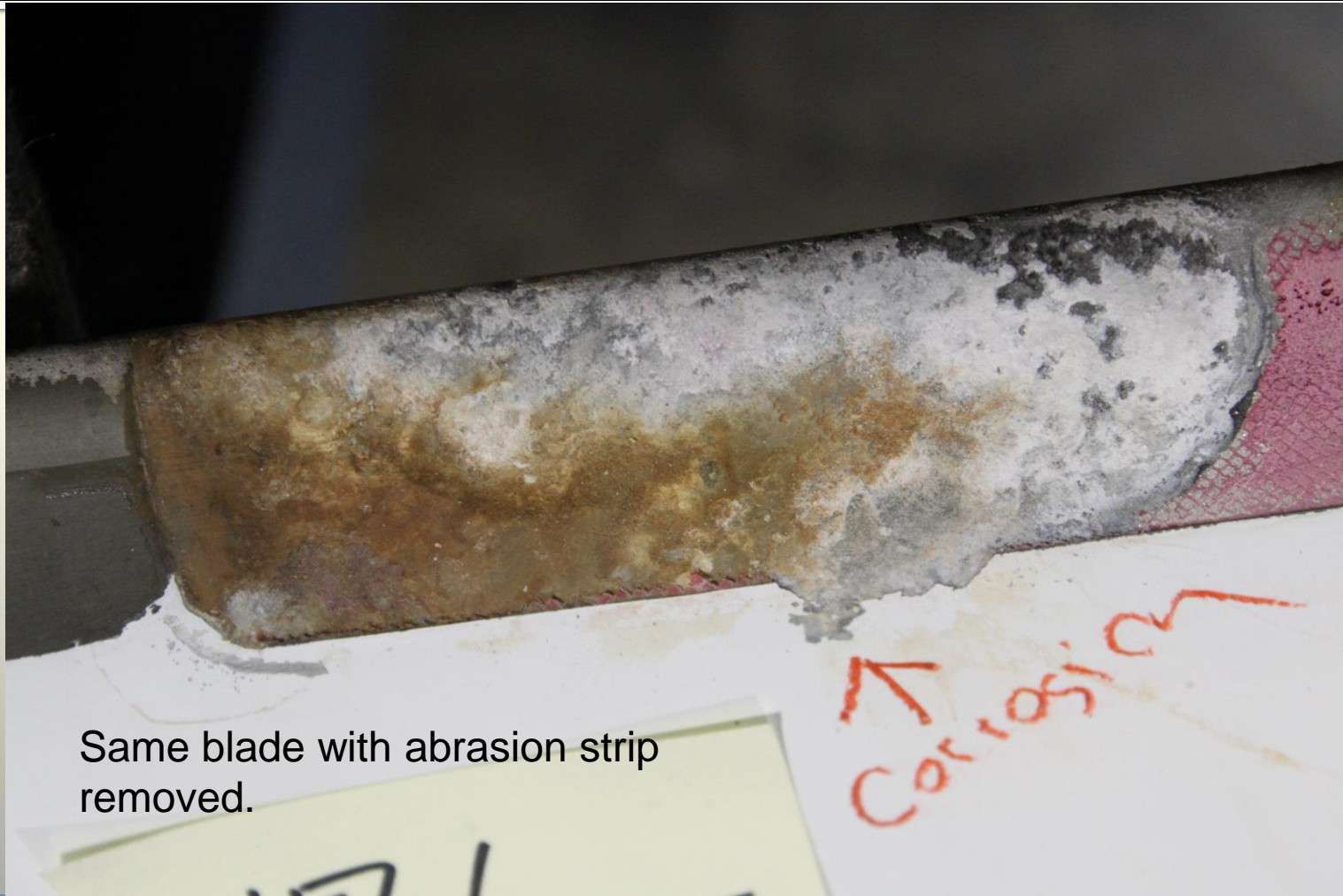
No evidence a patch was applied to the joint between the inner end of the abrasion strip and the blade.

Blade tapped for voids and marked by customer



# Blade Care

## Abrasion Strip



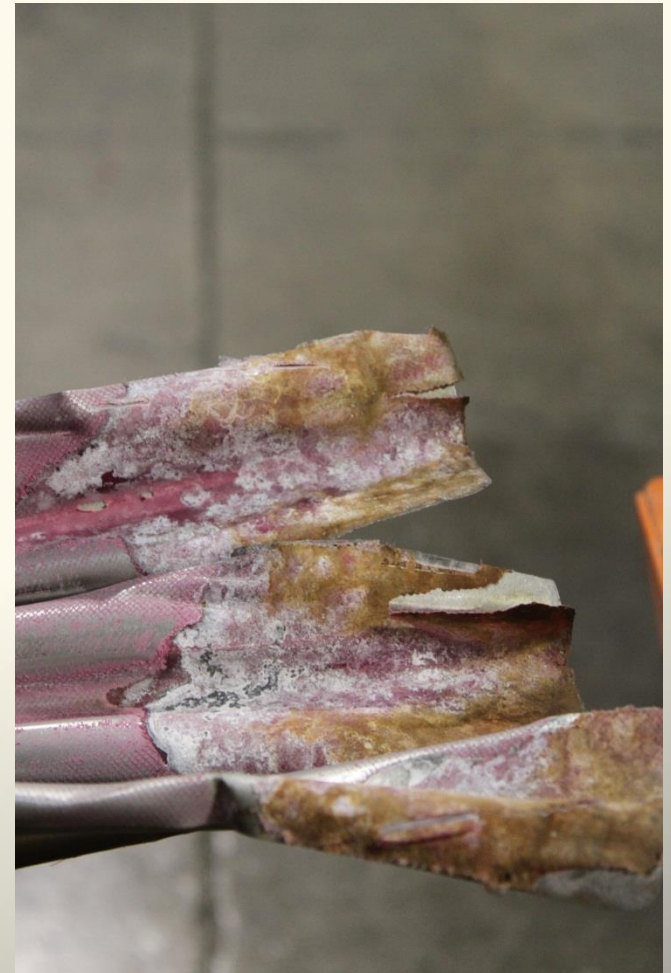
Same blade with abrasion strip removed.

# Blade Care

## Abrasion Strip

If one blade is corroded, chances are the other blades have a similar problem.

These three abrasion strips were from the same aircraft, with about 2000 hours and had no taco patch applied between the abrasion strip inboard end and the hard anodized leading edge.



# Corrosion Q&A

# Troubleshooting

- High/ Medium frequency  
Focus on tail rotor and drive train.  
Possible MR 5 rev complaint depending on where it is felt.
- Low frequency  
Focus on main rotor.
- Check recent maintenance records.

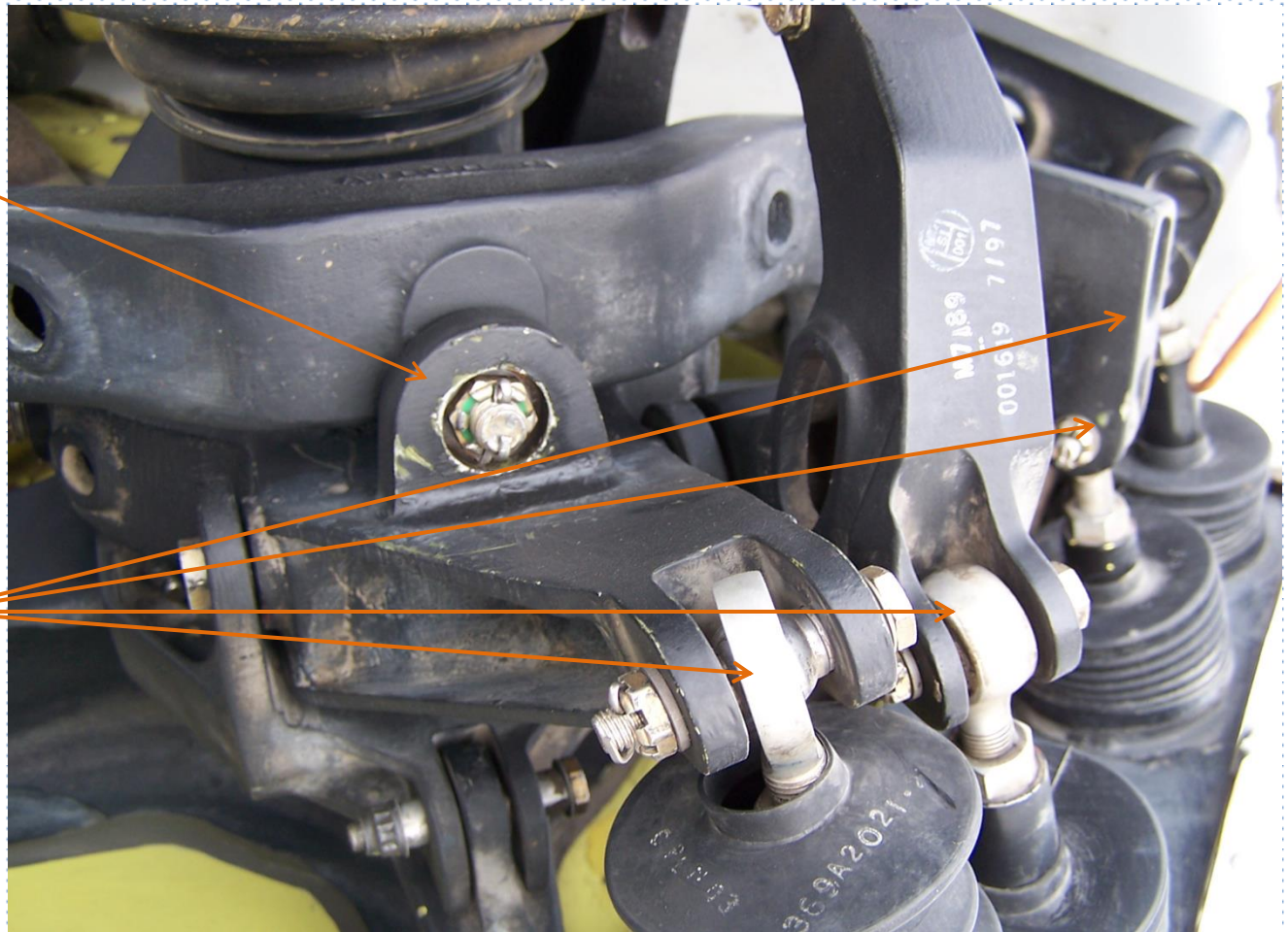


# Visual inspection

## Mixing levers

Worn bearing  
here will result in  
cyclic feedback.

Seldom a problem  
but check for  
looseness or  
binding.



# Main Rotor

## Visual inspection

- ☐ Rod end wear
- ☐ Time on rotating bolts/ bearings  
~ 2500 hours its ready for rebuild
- ☐ Finger inspection
- ☐ For/aft bolt in mixing levers is problematic for cyclic feedback
- ☐ Bearing wear
- ☐ Poor torque up

# Main Rotor Visual inspection

15130-22-6087 Burkhard Domke © 2009

Large weight  
stack on  
yellow and/or  
green – no  
plug in  
swashplate.

“Wrong”  
blade  
interrupter  
down.





# Main Rotor Visual inspection

Plunger – smooth  
Roller – no flat spots

Proper torque up and  
shimming - critical

Single interrupter on  
drive link is standard  
for most balance  
systems

Check for axial and  
radial play

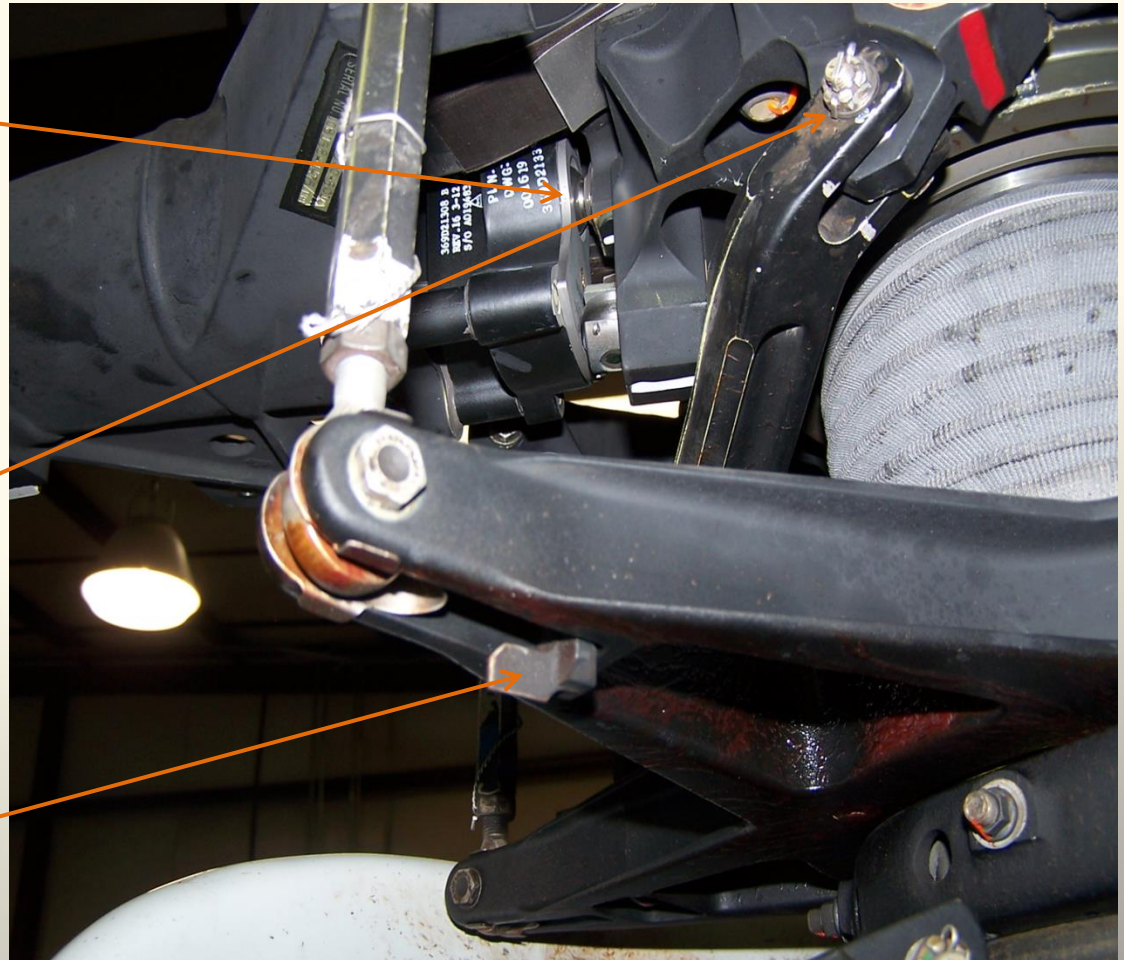


# Main Rotor Visual inspection

Place finger here and have someone move the tip of the blade fore/aft when coned. Play here will generate cyclic feedback and make track unpredictable

Worn bearings here will cause cyclic feedback and erratic track.

Interrupter leading drive link may cause indexing problems.





# Main Rotor

## Visual inspection

Inspect lead/lag link for freedom of movement. Dust + Triflow makes gooey tar that inhibits free articulation.

Non uniform gaps are OK top and bottom blade to blade.

Some older blades would have S/N tag on top of lead-lag link. Glue bead would hit pitch housing impeding smooth motion.

Lead/Lag hinge must move freely



# Main Rotor Visual inspection

## Weight

- Preferred method of balancing rotor
- Used after tracking is complete
- Limit 150 grams (per HMI)
- Seal after final weight installed

Note: Max weight on two adjacent pins indicates a heavy blade opposite (assuming nominal dampers)

Expect 50+ grams on green blade of non-weighted rotating swashplates.



# Main Rotor

## Visual inspection

### DAMPERS

No time life but they can still get “tired”.

Best set to nominal and leave alone.

Using machine trackers, consistent leads or lags can pinpoint mis-adjusted dampers – yes even after nominal settings are set.



# Blade Inspection

## Abrasion Strips

### Abrasion strips

Critical to blade flight characteristics. Affects chord and span balance as well as aerodynamics.

Stainless tape added as an additional abrasion strip. That's a one inch tongue depressor.

Typically, any lip in excess of .005 will trip the airflow over the blade.





# Blade Inspection

## Wrinkles / Dents



# Blade Care

## Dents





# Blade Care

## Gouges

PAINT

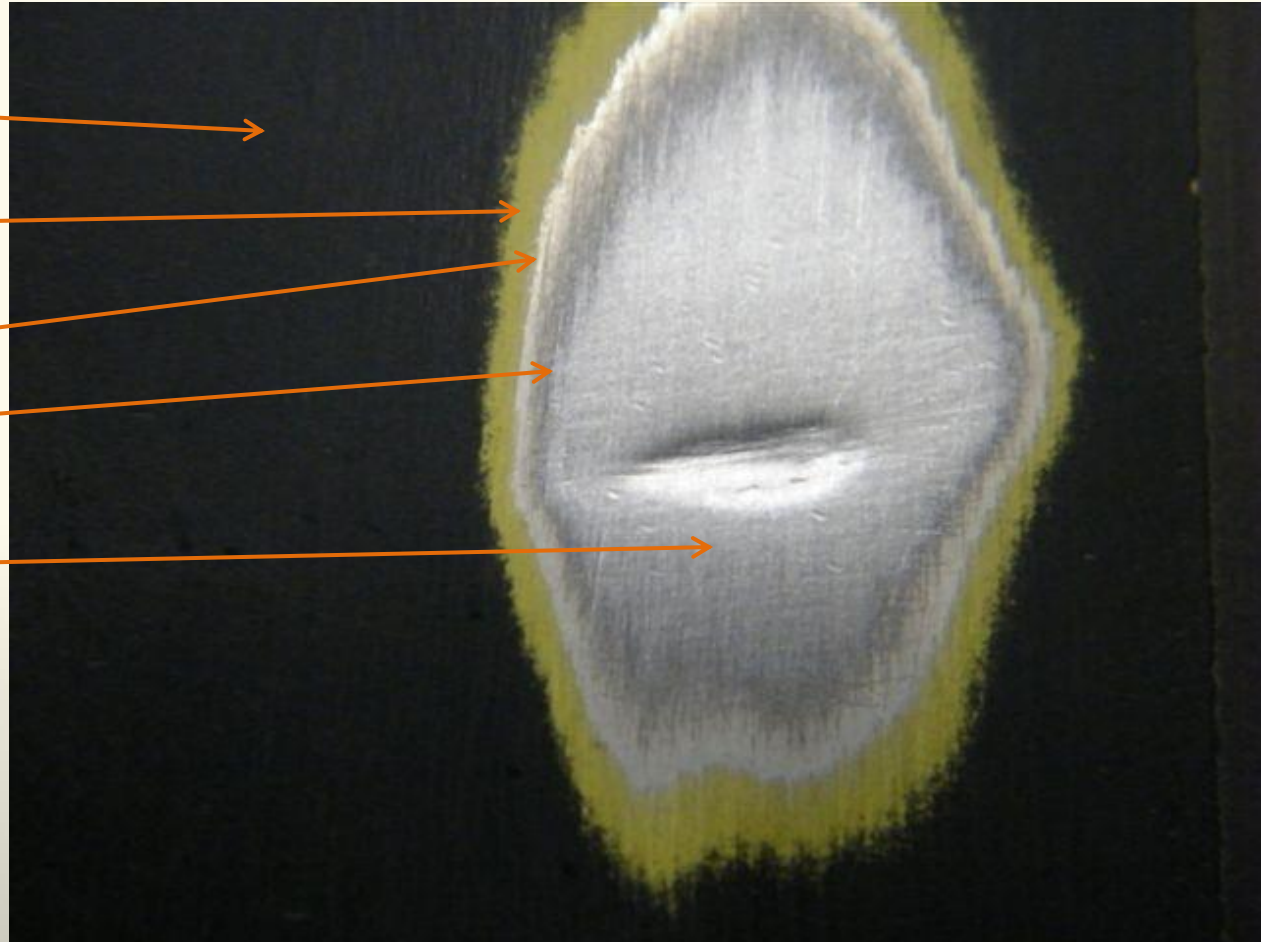
PRIMER

BONDING PRIMER

ANODIZE

BLADE SKIN (ALUM.)

This “dent” perforated the skin rendering the blade unserviceable.



# Blade Inspections

## Trim Tabs

OUCH !

This tab has been permanently stretched by heavy handed use of the tab bender.

Important tip:  
Blend, blend, blend



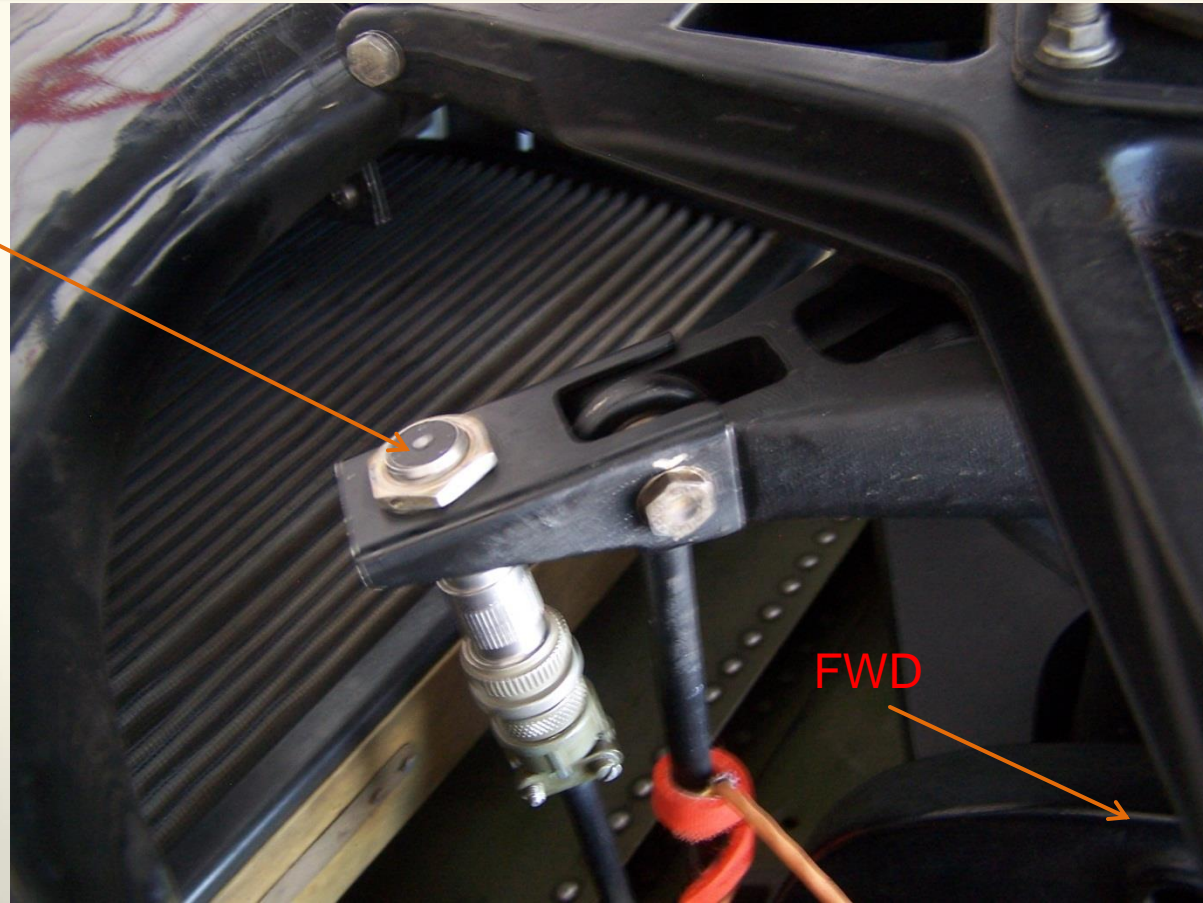
# Main Rotor RTB Installation conventions

Solutions are predicated on specific installations of magnetic pickup, interrupter, photocell, blade labeling, and accelerometer location and orientation.

Screw up here and you are in for a long day, or two, or three....

# Main Rotor Mag Pickup 500C

Magnetic pickup on 369H is on right rear quarter of fixed swashplate.





# Main rotor Mag 500D,E,F,N

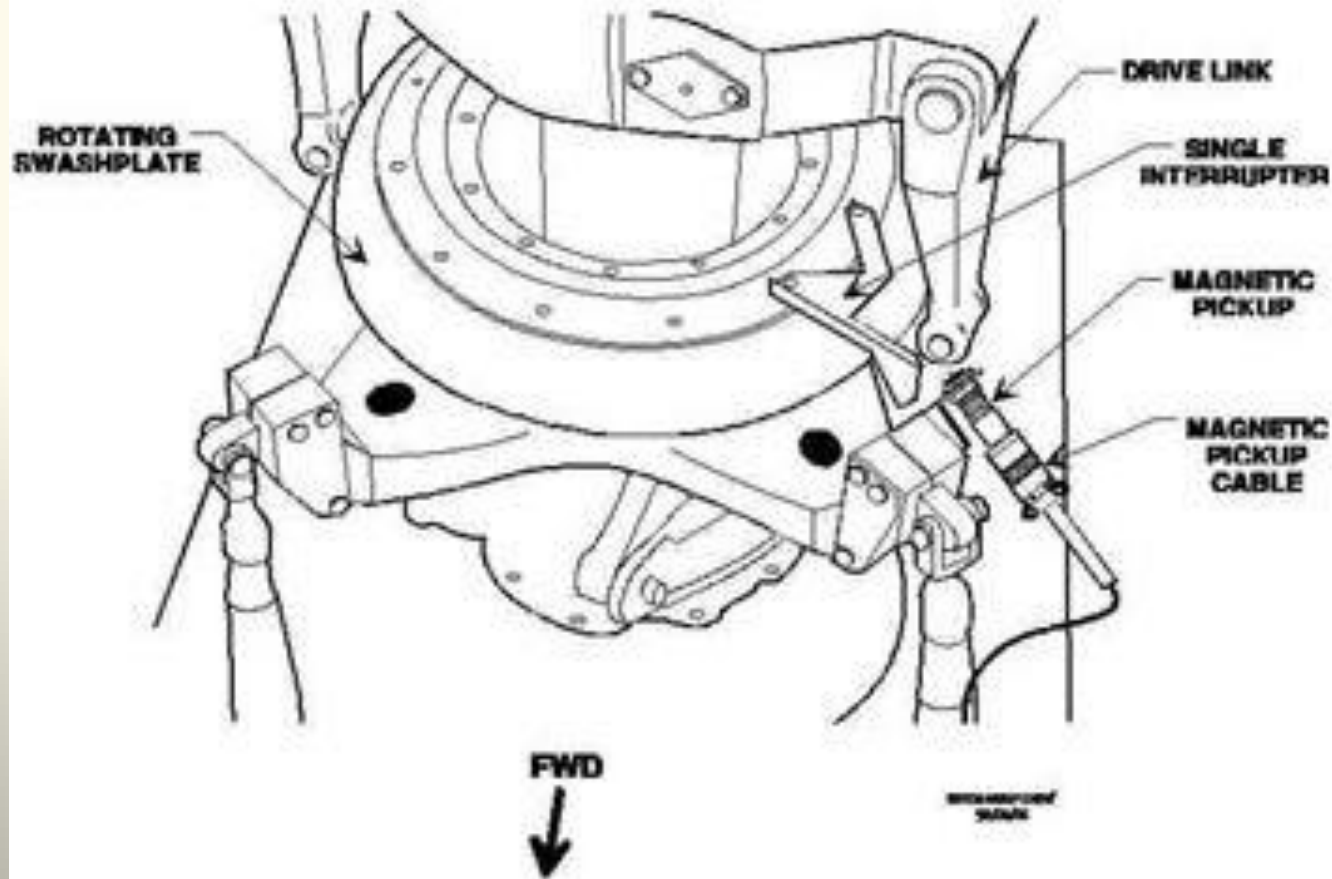
Magnetic Pickup on front left swashplate. This is an MD part number – DO NOT use a 3030 magnetic pickup. It could cause interference with the controls.

Gap is set to ~.060 inch.

Install cable to allow full travel of swashplate.



# UH-1H Magnetic Pickup



# Main Rotor Lateral 500C

Mounted on  
doghouse  
lip on *RIGHT*  
side  
pointing to the  
*RIGHT*



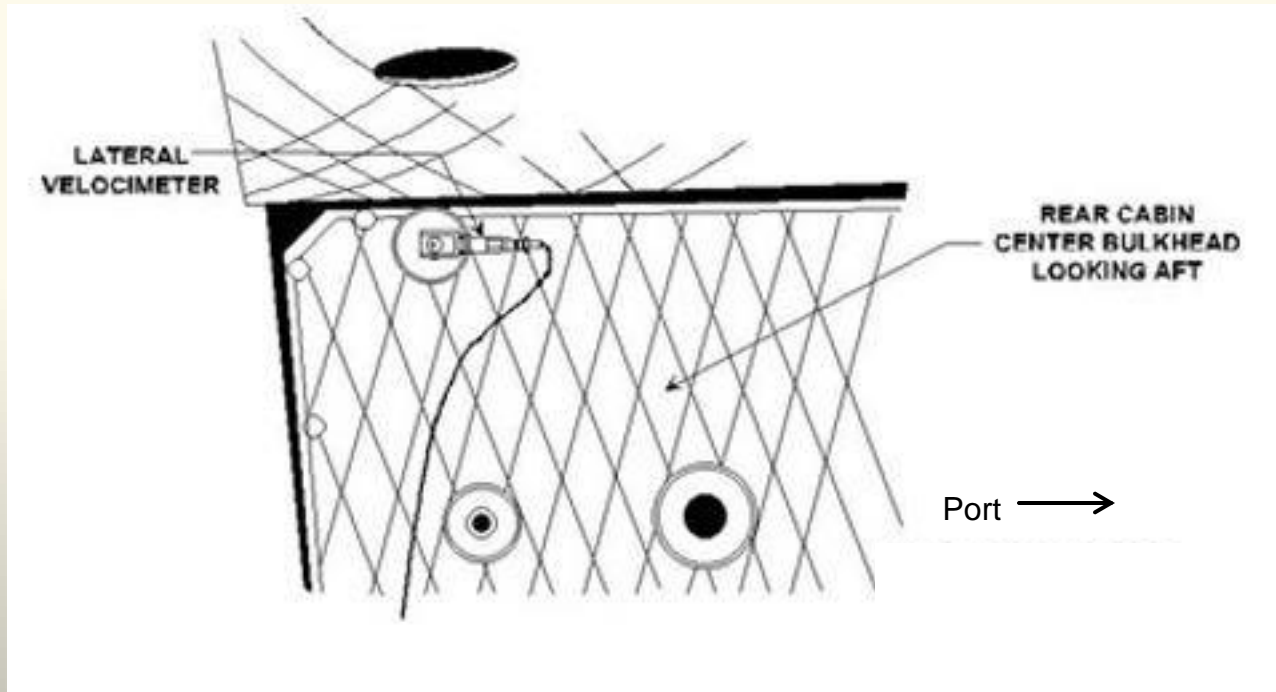


# Main Rotor Lateral Accel. on 500D, E, F, 520





# UH-1H Lateral Accelerometer



# Main Rotor Install MD600



Magnetic pickup same as MD500D/E/F.

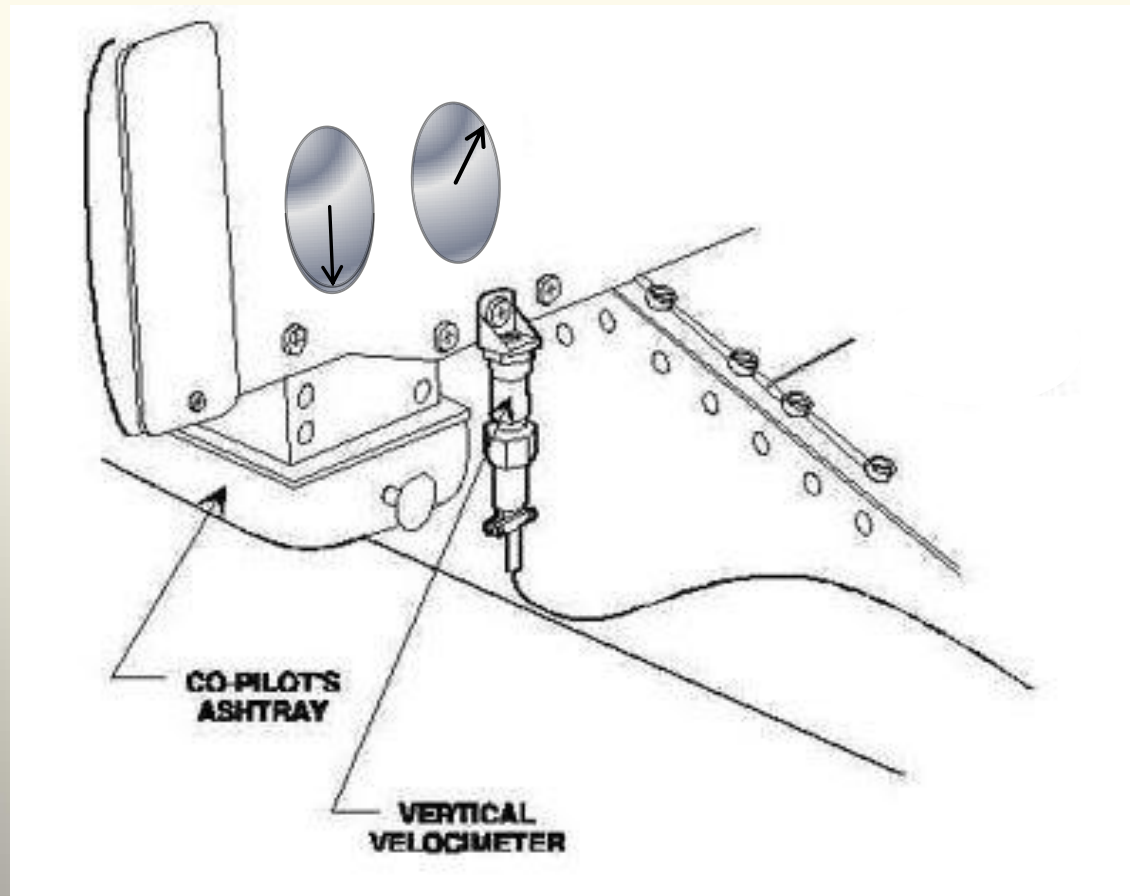
Lateral Accelerometer on left side of aircraft pointing to the left as on D/E/F models.

# Main Rotor Vertical Accelerometer All Variants

On a rigid part of the console pointing  
**DOWN.**



# UH-1H Vertical Accelerometer

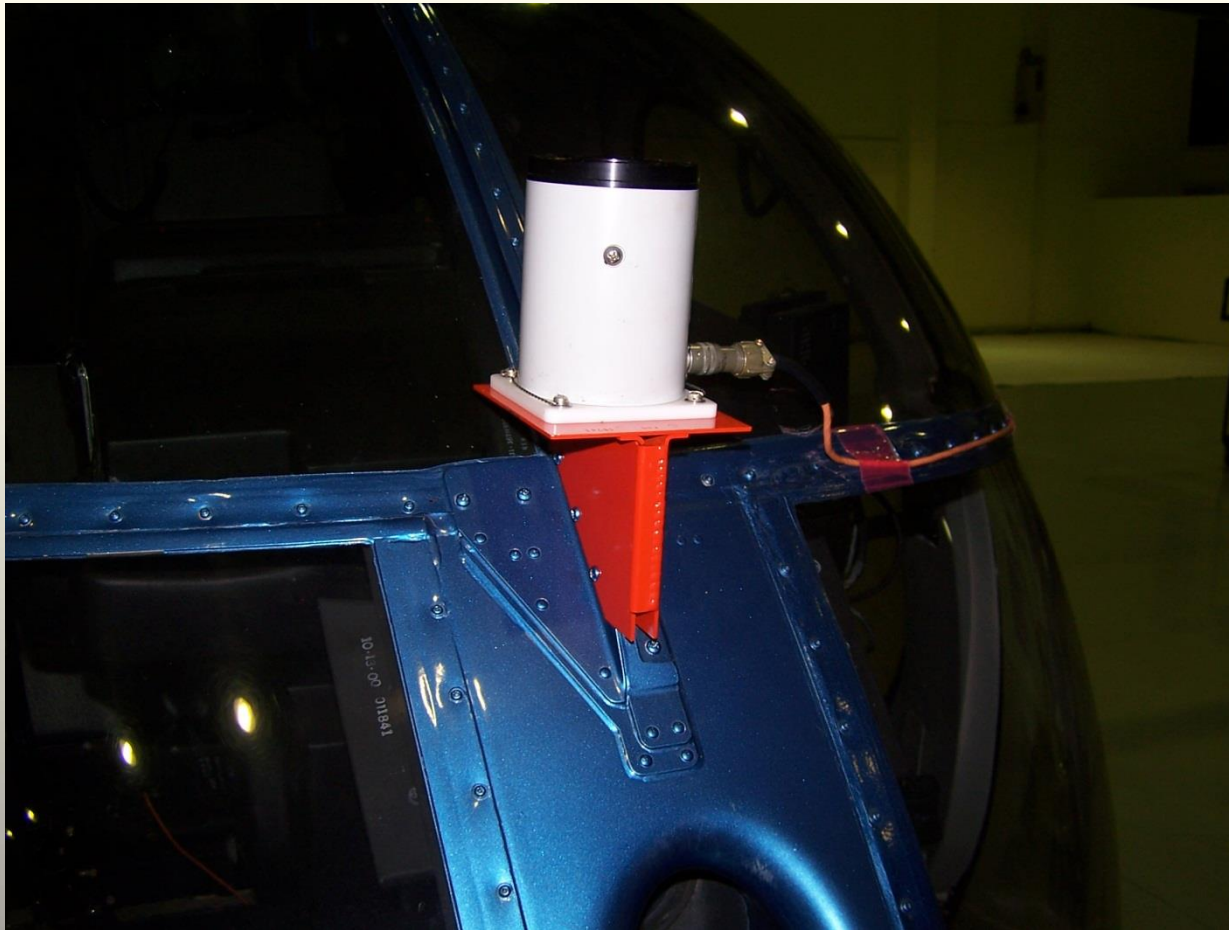




# Optical Trackers

- Work on contrast of blade against background.
- Work well most times but when they don't it can really mess up your calculations. A bad track picture is worse than no track picture.

# Optical Trackers



Optical Tracker mounted on MD 600.

Hard mounted trackers provide precise track and lead lag due to controlled parameters such as known cone angles, known distance from rotor, known angle to rotor, etc.

Track and lead/lag accuracies are on the order of 1mm.

# Optical Trackers

- Finer resolution
- Eliminates “judgement” factor
- Can be archived
- Much better at measuring true lead lag.

# Flight Test

- Benchmark rotor operating conditions:
  - 70%  $N_r$  flat pitch on ground
  - 100-103%  $N_r$  Flat pitch on ground
  - IGE Hover before and after flight
  - Intermediate speeds (50-80 KIAS)
  - High Speed (110 KIAS +)
  - 45 degree banked turns
  - AutoRotation



# Flight Test

# 70% Nr

- Visual Track
  - What you are looking at:
    - Tip path track
    - Cyclic feedback
    - Ground rock
- Adjust track using PCL (approx 1 flat = 1/3 inch) until track is within 1/4 inch.

# Flight track

103% Nr ground

Observe track split if any from 70% Nr

Generally, the direction a blade flies out in forward flight will be indicated by its deviation from 70%.

Use outer tab to remove *half* of the blade track split between 70 and 103% ground.

- Visual Track
  - Observe changes between 70 and 103% on the ground.
- Ground Lateral
  - Acquire a ground balance reading. This will be useful if troubleshooting later.
- Observe
  - Cyclic feedback
  - Collective force

# Flight Test

# IGE Hover

- Track (for reference only)
- Main rotor balance (lateral accelerometer)
  - If less than  $\sim 0.4$  IPS proceed to flight speeds.
  - If  $> 0.4$  balance to  $\leq 0.4$  IPS.

# Flight Test

# Through Trans lift

- View track. If a blade flies out immediately and is out an inch or more after going through translational lift, tab ENTIRE length of tab as necessary to stabilize blade(s). Down for down/ Up for up
- NOTE: Pre programmed balancers do not handle this well!



# Flight Test

# Track at airspeed

- Fly aircraft at 70 KIAS and acquire:
  - Track picture.
  - Vertical vibration level.
  - Lateral measurement (optional)
- Fly aircraft at 110 KIAS and acquire:
  - Track picture.
  - Vertical vibration level.
  - Lateral measurement (optional)

# Flight data sheet

## Flight test data sheet

Note: This data is extremely helpful when using outside resources for technical help.

FLIGHT TRACK AND BALANCE SHEET		AIRCRAFT _____			
FLIGHT NUMBER _____					
FLIGHT CONDITION	TRACK	VERTICAL IPS	PHASE	LATERAL IPS	PHASE
70% Nr GROUND					
100-103% Nr GROUND					
IGE HOVER					
40 KIAS LEVEL					
70 KIAS LEVEL					
110 KIAS LEVEL					
AUTOROTATION					

ADJUST BEFORE NEXT FLIGHT:					
	BLUE	YELLOW	GREEN	RED	WHITE
PCL					
OUTER TAB					
MID TAB					
INNER TAB					
WEIGHT					
SWEEP					

# Adjustments

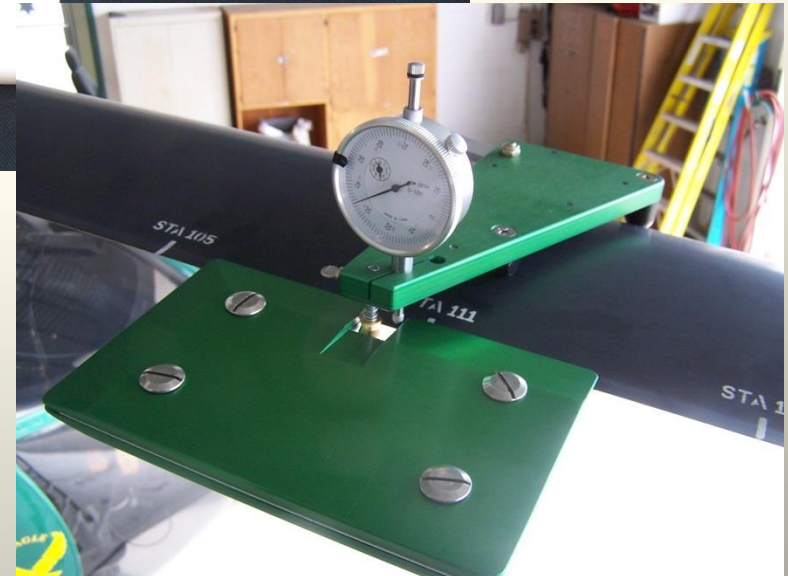
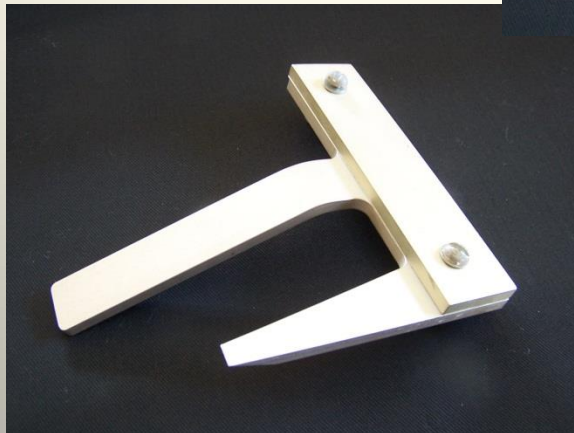
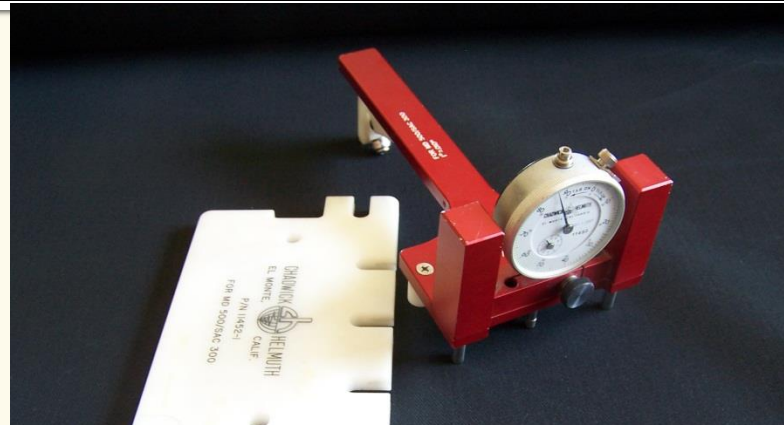
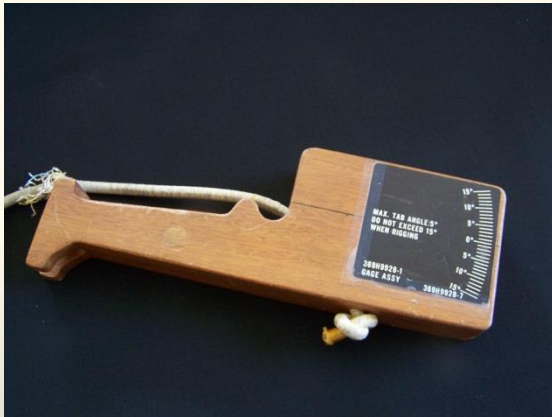
# Tab

- Two strategies:
  - Go for broke – multiple adjustments on more than one blade – risky depending on operator experience level. Useful to rough in a rotor.
  - Incremental – single changes – good idea if you are having trouble or if the rotor is very close to tracked.

80% of your tracking will be done to one or two blades only

# Adjustments

## Tab Tools



# Adjustments

# Tab

Correct and precise tab adjustment is the key to getting the 500 to fly smoothly.

Scale tools are OK for roughing in but you should use a dial indicator tool for the final stages of adjustment.

@120 KIAS - .001 inch bend of inner tab =  
0.1 IPS!



# Vertical chart

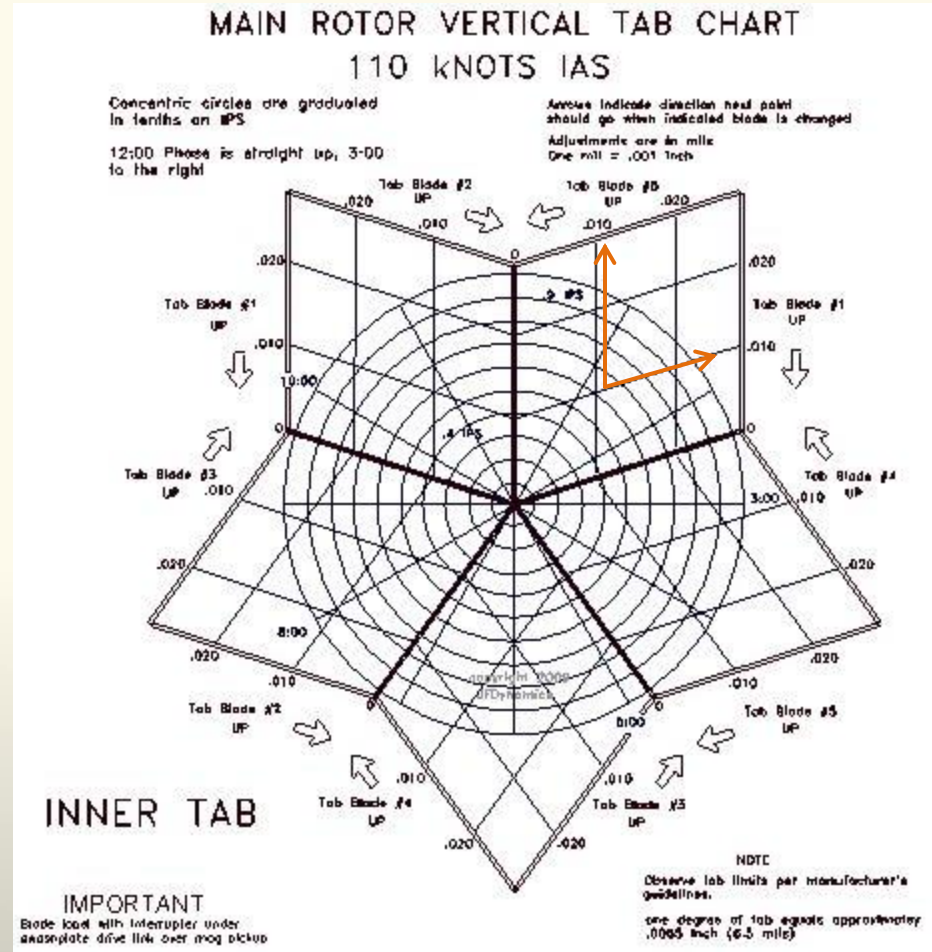
Main rotor vertical chart for 110 KIAS

Ex. 1:07 Phase, 0.65 IPS

Adjustment would be up .010 inch on blade #1 and #5 (blue and white) inner tab...

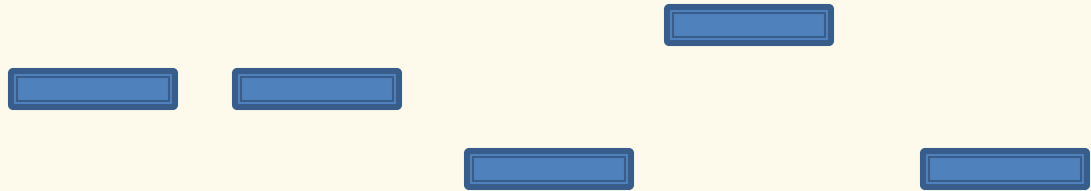
OR

Tab green down .016 inch (plot opposite/do opposite)



# Symmetrical track splits

This:



Equals This:



Whatever you do to one blade you can do to the opposite two blades 62% of that adjustment for a net zero vertical change to the rotor.

Whatever you do 100% of to two blades separated by a blade you can do 62% to the blade between in the opposite direction for a net zero change.

# Symmetrical track splits

This :

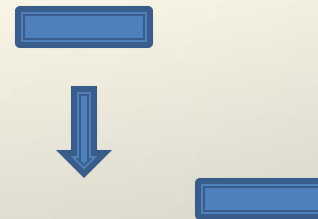


Can be resolved by this:

Down tab .006 each

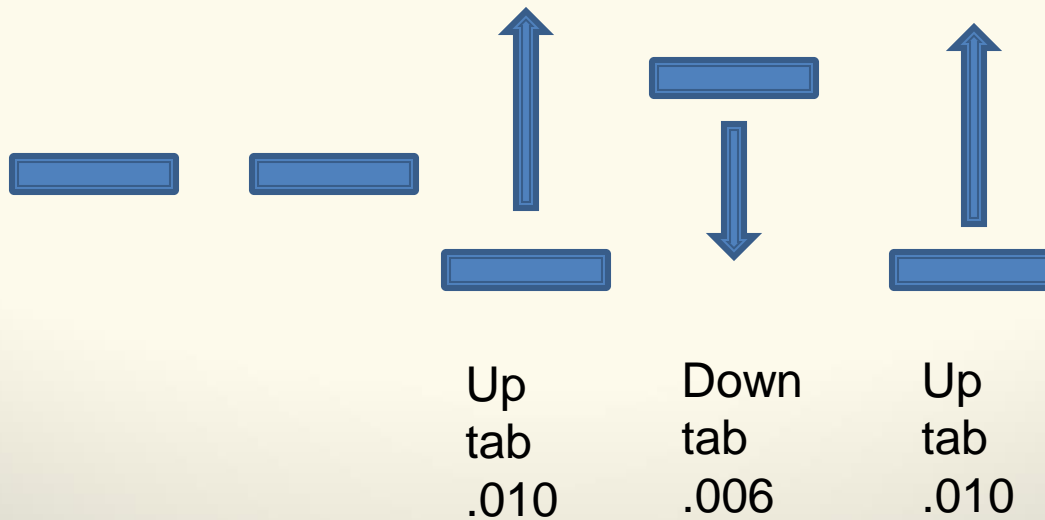


Down tab .010



# Symmetrical track splits

- Or this:



# Trailing Edge

# Trim Tab

- DO NOT handle blade by the trailing edge!
- Tip “socks” can bend end of tab, especially in high winds. If high winds are expected, remove the blades and store.



# Trailing edge

## Trim Tabs

- Tabs are set to nominal on new blades.
- Tabs are returned to nominal on repair or overhaul
- Tab requirement will be different after abrasion strip replacement. All repaired blades are now filled and faired.

# Blade Care

# Tip end

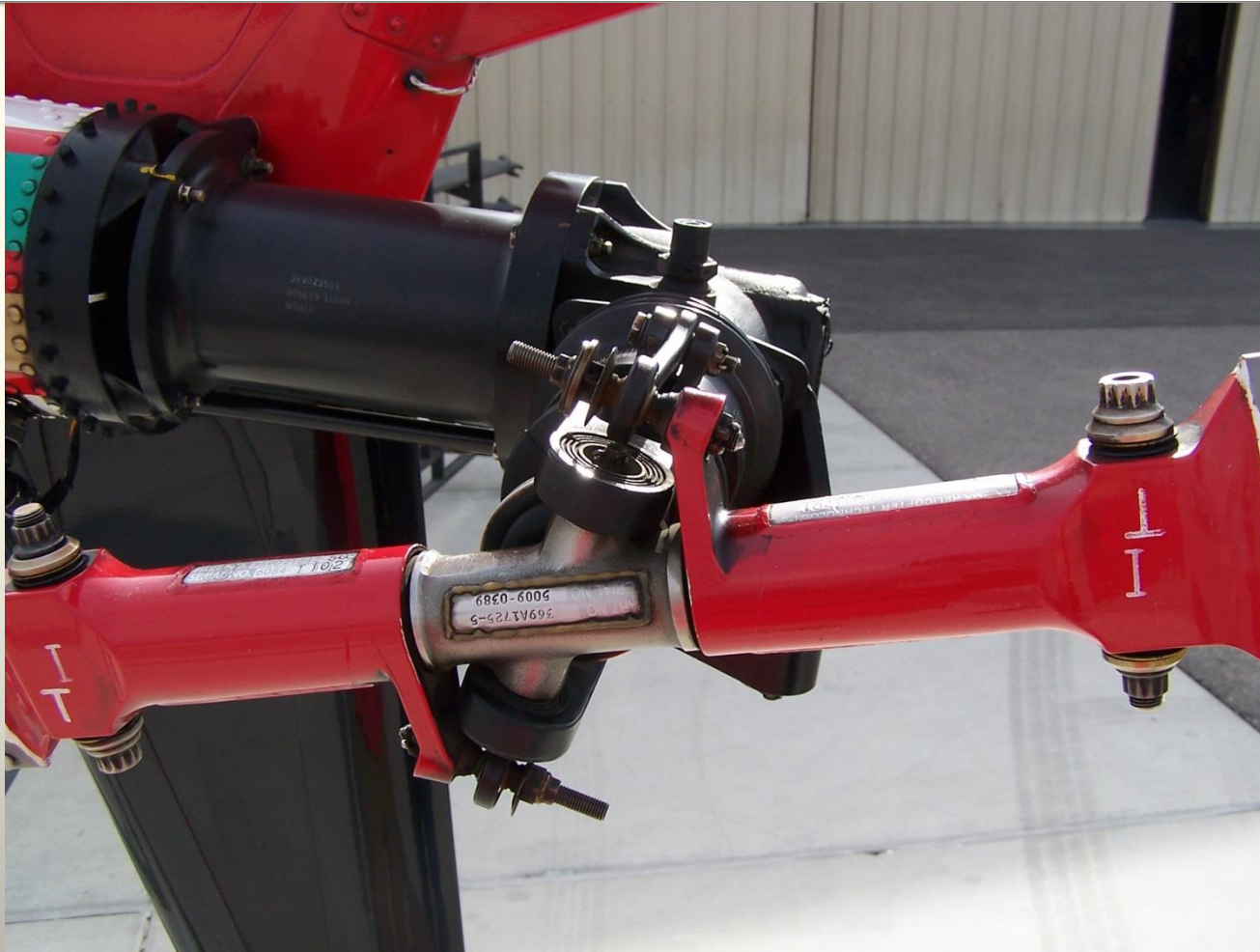
- 500C/D/E tip color orange
- 500F tip color yellow
- High Visibility paint schemes are available in concentric “bulls eye”.
- One blade white is not recommended.

# Blade painting

Painting the entire blade without balancing the blade to a master is not approved.

This upsets the chordwise CG of the blade and will likely result in undesirable flight behavior

# Tail Rotors



# TAIL ROTOR

## TAIL ROTOR BALANCE

Two step balance:

- Ground idle (typically 70% Nr)
- Flight Idle (100-103% Nr)



Ground idle balance began on OH-6A to prevent shearing of tail rotor driveshaft due to excessive imbalance of the tail rotor.

- Good balance at 70% Nr generally results in a good balance at 100—103% Nr on OH-6A, 369H and 369D.

- Using the balance chart, multiply the weight amounts by approximately 1.3 for the 70% Nr balance.
- Expect a slightly different phase response at 70%.
- Balance to .3 IPS or less before proceeding to Flight Idle (100-103% Nr)

- Tip weight
  - Heavy – approx. 6.2 grams
  - Medium – approx. 1.6 grams
  - Light – approx. 0.2 grams

Weights may be trimmed in half, but trimmed weight must always be on leading edge stud and the outermost weight. MD balance level requirement may not be achievable without trimming the weights

Do not “zero” a weight pocket.

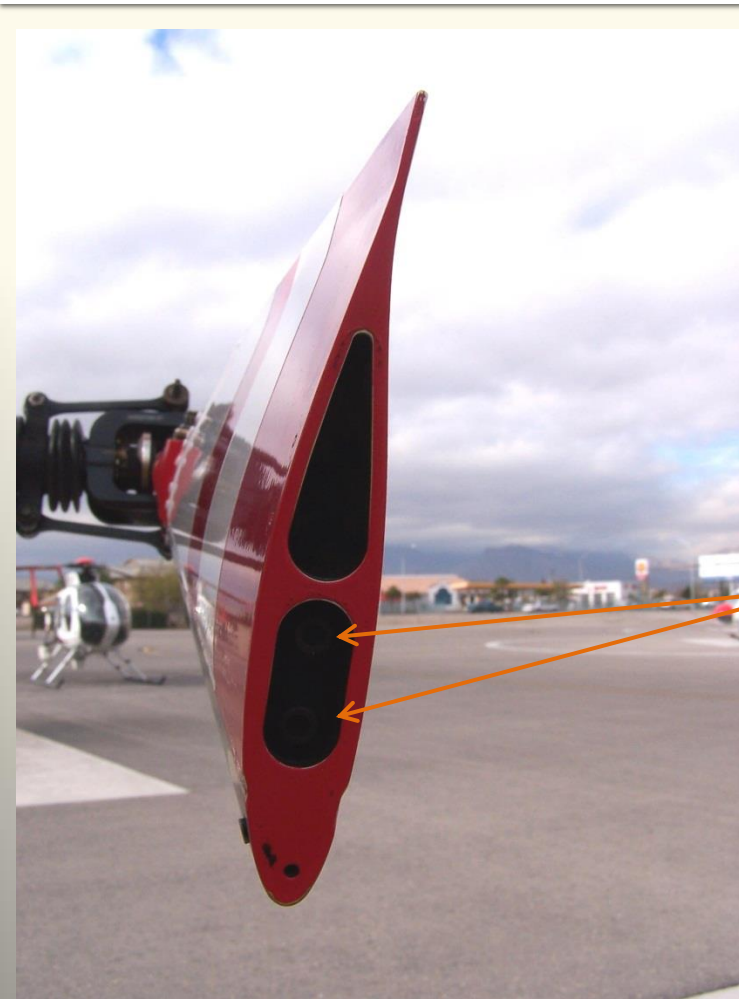
# Tail Rotor

## Tip Weight

### Caution

Strip or cross thread the tip weight nut plate and you will be buying a new blade.

Tip weight secured by two Allen screws



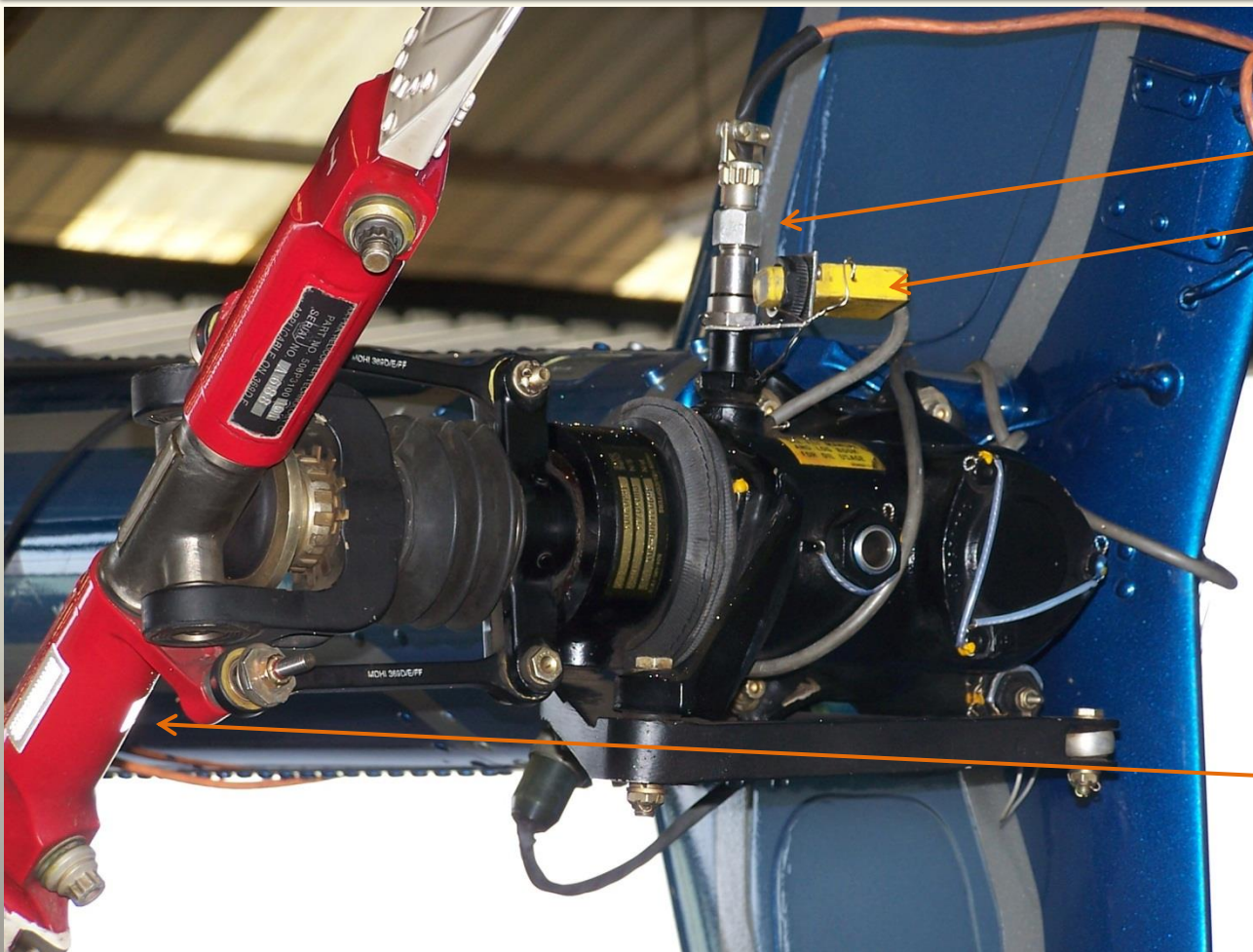
# Tail Rotor

## Weight Installs

- Tip has a nut plate holding the weight with approximately 6 threads.
- Tip cap thickness uses an additional 6 threads.
- After weight stack, you need 14 threads on Allen head screw to ensure proper thread engagement in nut plate.

# Tail Rotor

Typical installation for balance



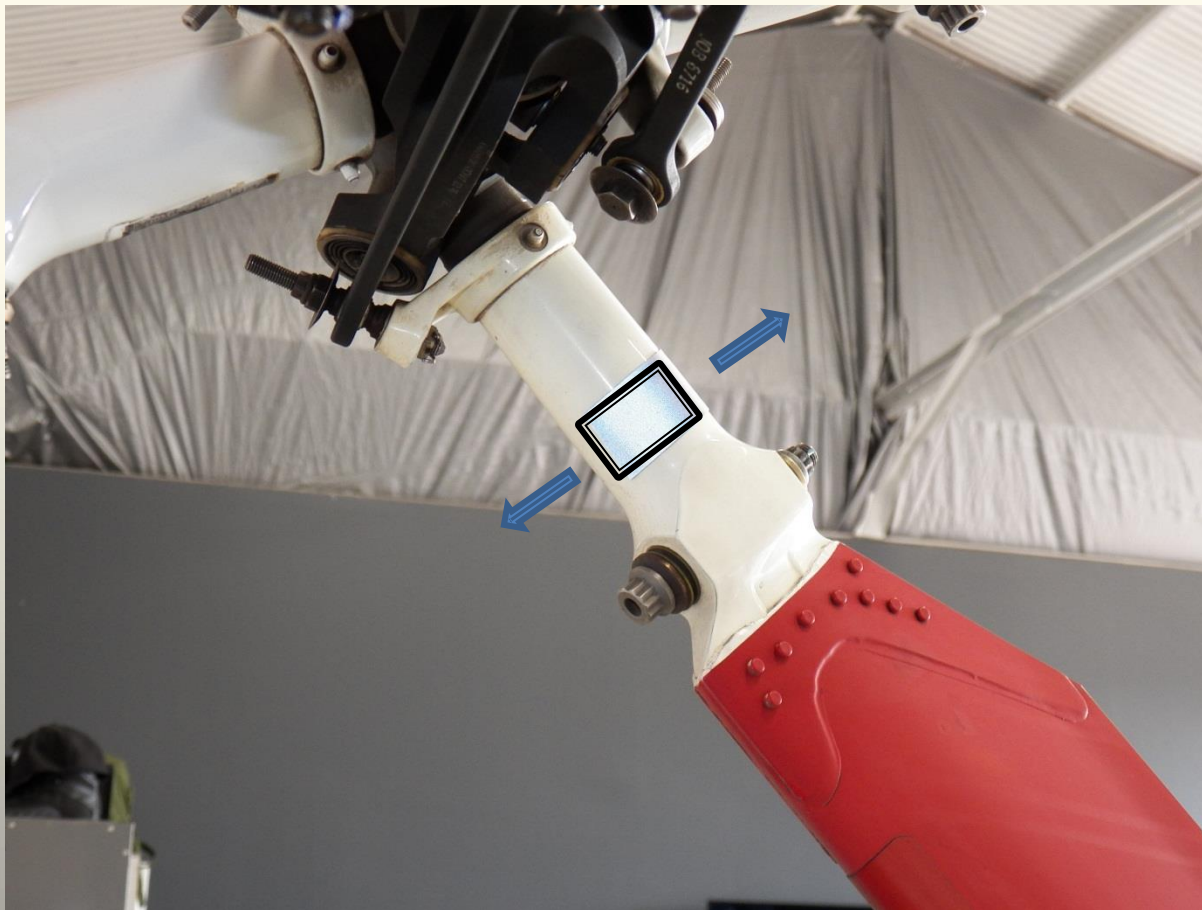
Accelerometer holding photocell in bracket in breather plug tapped hole.

Retro tape



# Tail Rotor

## Retro tape installation



Retro tape aligned  
CHORDWISE for photocell.

Banner photocell requires a  
“dwell” time on the tape.  
Span orientation may not  
provide enough time for the  
photocell to acquire signal.

500E horizontal stabilizer had a design change from the D model. The trim tab on the stabilizer can vibrate in sympathy with the tail rotor making balance difficult or impossible.

Removal of the stabilizer does not remedy this problem.

Numerous configurations are allowed for the horizontal stabilizer.

Weights are typically added here.



# Tail rotor

# E model

- Acquire a balance reading at 100 thru 105%  $N_r$  each 1% increase.
- If the peak reading is nearer 100%  $N_r$ , add weight plates to trim tab (up to 2 on each side). This lowers the frequency of the tab.
- If the peak reading is nearer 105%  $N_r$ , add gussets and/or . This raises the frequency of the tab.

# Tail Rotor

## Feather Bearing

- Take a reading at 103% Nr pedals centered
- Take a reading at 103% Nr pedals loaded slightly left
- Take a reading at 103% Nr pedals loaded slightly right.
- The closer the vector length between points, the better the feather bearings.

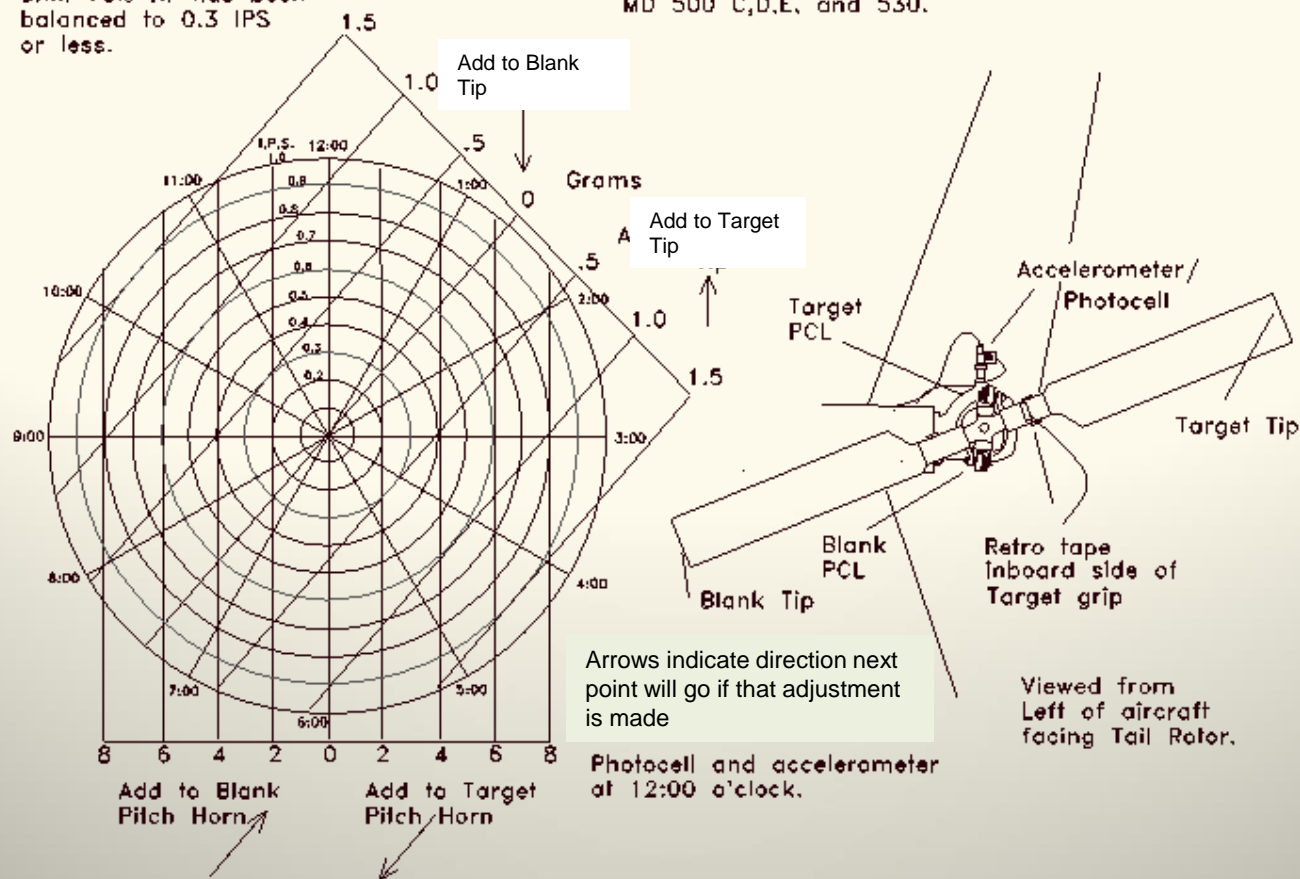
# Tail Rotor

# Balance Chart

NOTE: Do not run at 103% Nr until 70% Nr has been balanced to 0.3 IPS or less.

## Tail Rotor Photocell Chart

MD 500 C,D,E, and 530.





- DO NOT use a wrench on the cotter pinned bolt to tighten the holding nut for the chord weight.

If you do.....

..... You are very likely to scratch the pitch horn, compromising the strength and corrosion resistance of the pitch horn.

# Tail Rotor

## Chord weight

Excessive chord weight indicates the trunnion is not optimally centered.

Lots of chord weight puts a large load on the pitch horn and a loss of safety margin is the result.

# Tail Rotor Alert Service Bulletin

- SB 369D-210, SB369E-105, SB369F-091, SB369H-252 are covered under HTC Notice number 3100-5 dated 25 AUG 2011

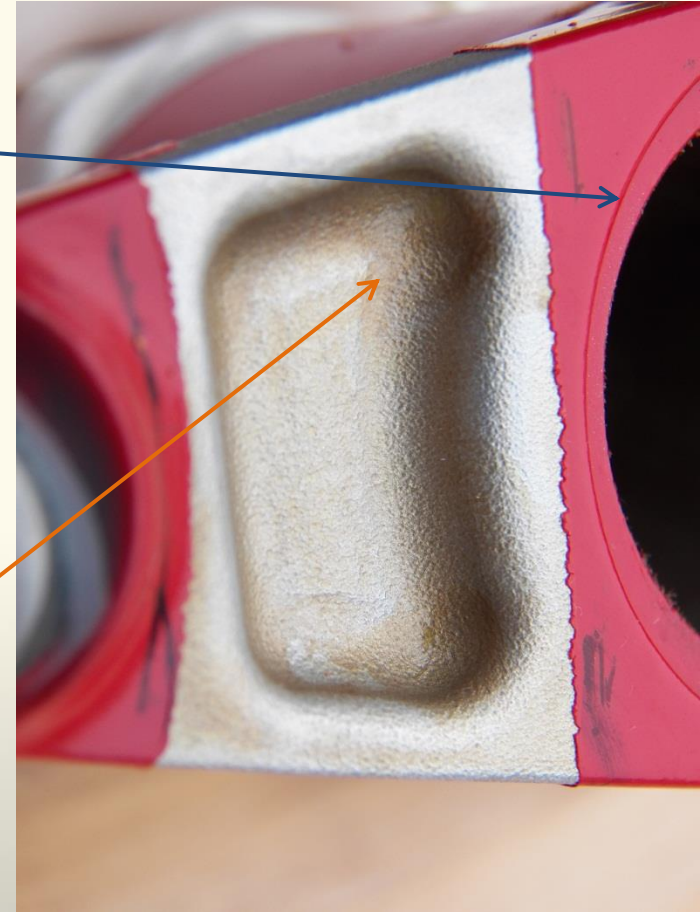
# Tail Rotor

## Pitch Horn Inspection

Do NOT allow stripper in bond line of teflon bearing sleeve.



Unworked,  
peened,  
alodined  
surface with  
no corrosion



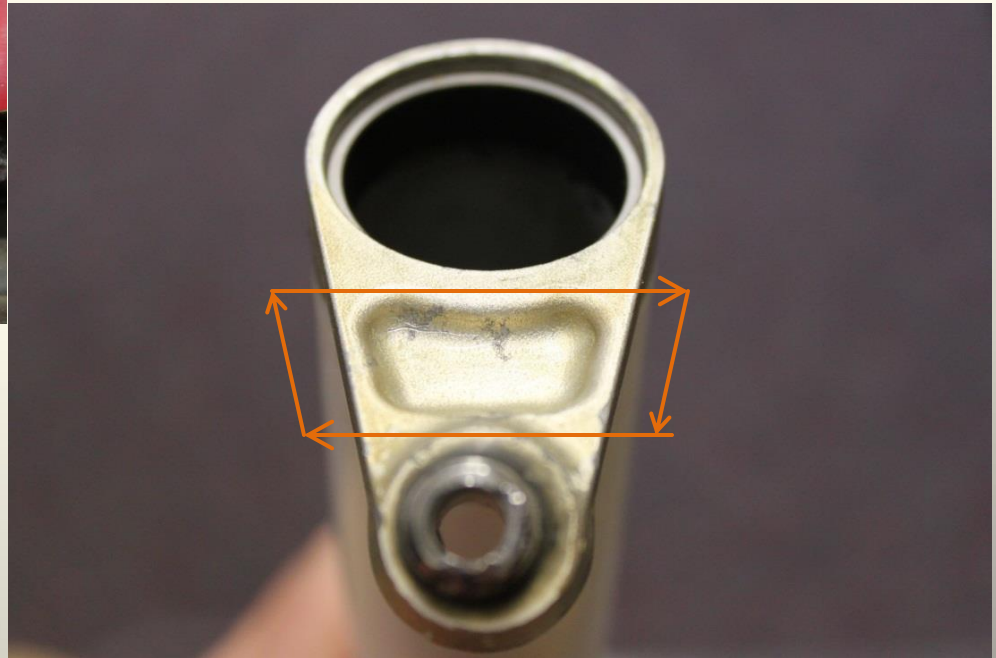
# Tail Rotor

# Corrosion



Water + Combustion byproducts +  
Broken surface finish =  
Corrosion

Service Bulletin says “Any corrosion”  
in the specified area is cause for  
rejection.





# Tail Rotor

## Work Practices



Good spot face showing no scratches  
No corrosion when stripped



Spot face scored with wrench  
paint compromised, corrosion  
present

We see this A LOT!



# Tail Rotor AD 2013-19-24

- All HTC Tail Rotor blades with “pockets” in the pitch horn area have a mandatory service life of 400 Hrs. if they have not been installed.
- If installed the service life is 100% of service life, IF ASB 2100-5 is adhered to annually and no corrosion is found.
- Recent tests have shown violation of the corrosion protection of the tail rotor will likely result in corrosion and early retirement during the application of ASB2100-5.
- DO NOT use abrasives to strip pitch horn for ASB 2100-5. Use only chemical strippers (Turco).

# Vibration Troubleshooting

- Cyclic Feedback
- Collective buzz
- Floor buzz
- Engine Vibration
- Pedal Buzz

# Troubleshooting      Cyclic Feedback

- Remove blades and check hub balance
- If cyclic feedback increases with a reduction in hub balance level, suspect swashplate.
- Cyclic feedback should decrease as hub balance level is lowered.

- If hub (only) is balanced and aircraft still has cyclic feedback :

**ITS NOT THE BLADES!**

- Proceed to thoroughly check the control system, feathering pins, re nominal dampers, and inspect mixing lever bearings.

- If cyclic feedback occurs only with blades installed:

Check your outboard tabs – sta, 117 and outboard (to end of blade). Excessive bending in one area may create cyclic feedback.

Resequence the blades. Changing blade order has shown to eliminate stick shake.

# Troubleshooting Cyclic Feedback

If during the tracking of the blades a tab bend creates cyclic feedback, remove the tab and track the other blades using that blade as a master.



# Collective Buzz

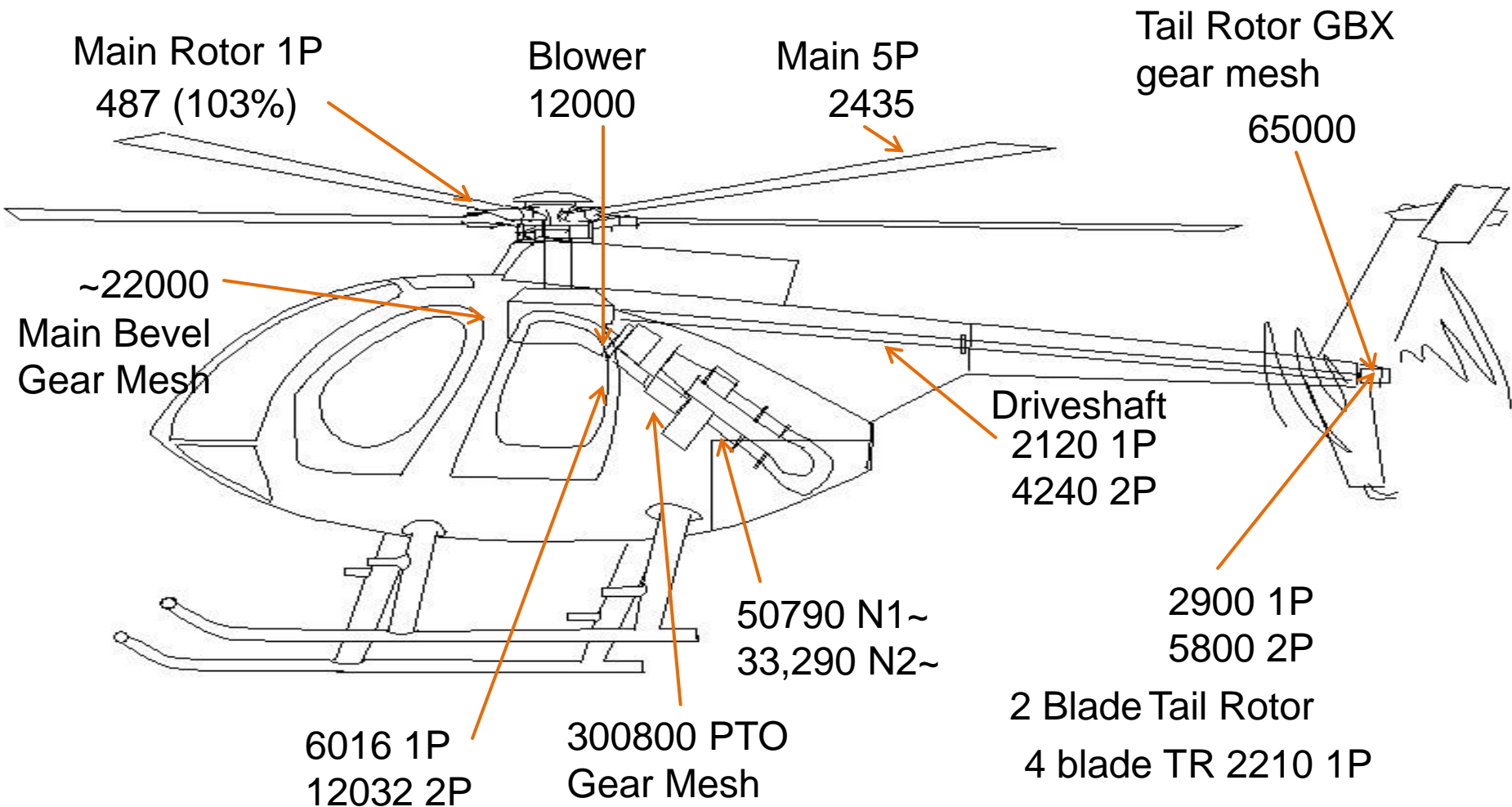
Collective buzz is generally main rotor 5 / rev.

Try tracking the blades out according to the 62% rule. Knife edge tracks often increase main rotor 5-rev levels.

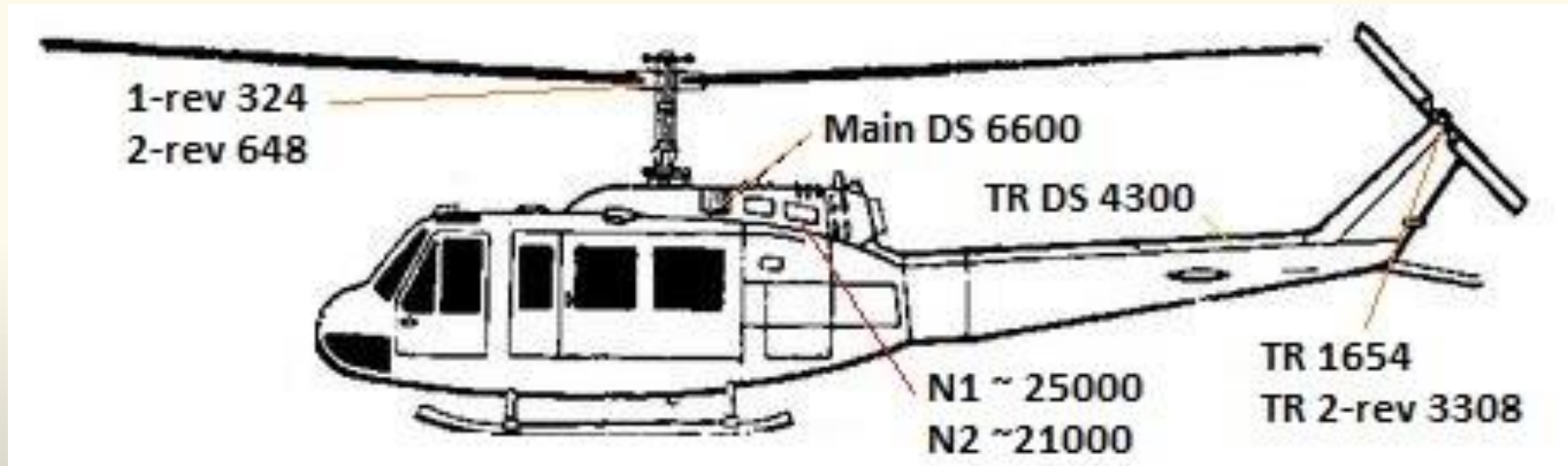
# Floor Buzz

- Hold accelerometer perpendicular to floor and fly aircraft in regime where vibration is most noticeable.
- Acquire a spectra with a frequency range of 400 to ~15,000 CPM.
- Consult frequency graph to determine component causing vibration.
- ❖ Most likely: M/R 5 rev or T/R 2 rev

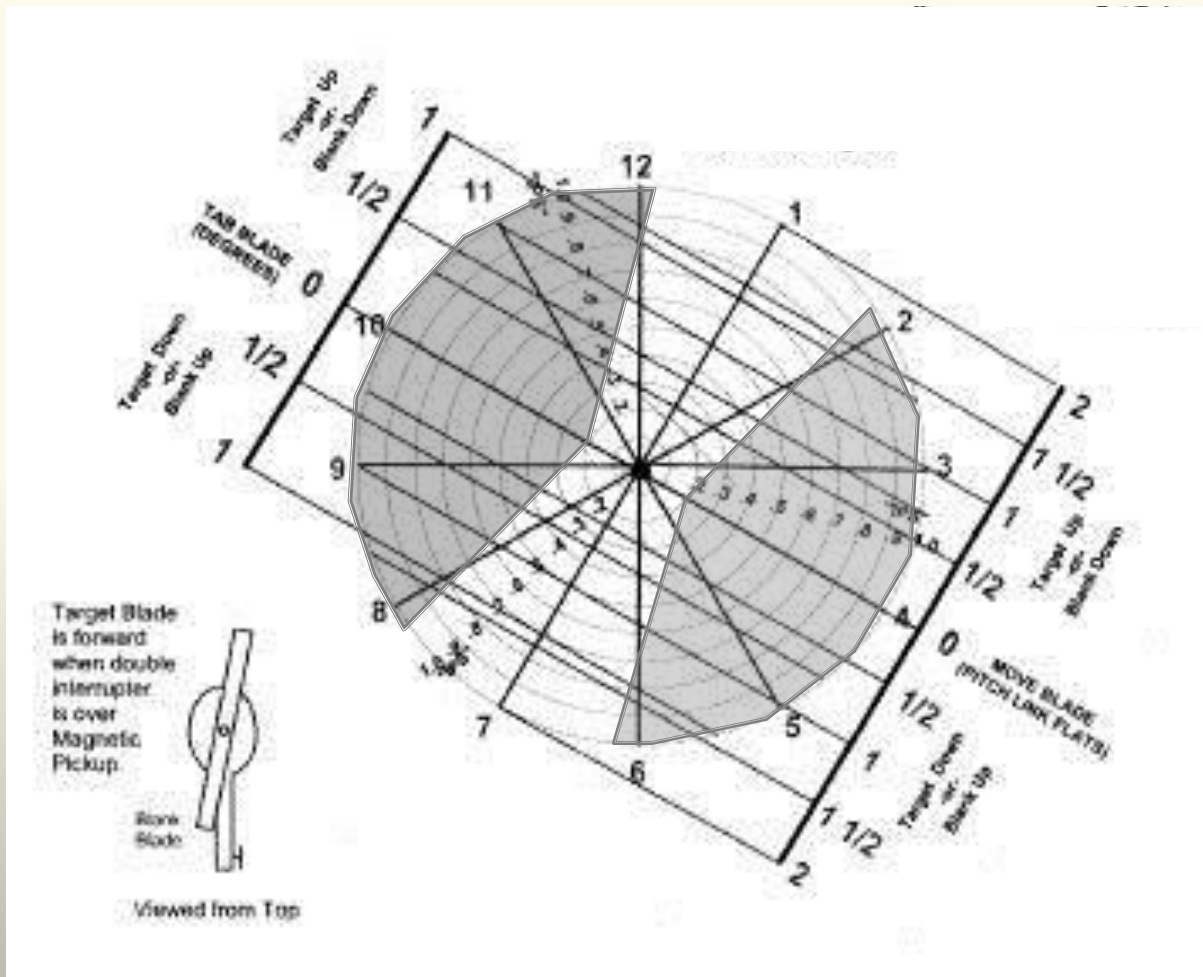
# MD 500 frequencies (typical)



# UH-1H operating frequencies



# UH-1H Blade Mismatch



# Q&A

Thank you for your participation in our service clinic. We trust you have found it informative and helpful in maintaining your Helicopter Technology blades.

You may wish to comment or, if you have any questions utilize our customer satisfaction form.....



# www.helicoptertech.com



# SERVICE BULLETINS



FAA  
Aviation Safety

## AIRWORTHINESS DIRECTIVE

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

**2013-19-24 MD Helicopters, Inc.:** Amendment 39-17606; Docket No. FAA-2013-0401; Directorate Identifier 2012-SW-047-AD.

### (f) Required Actions

- (1) Before further flight, for each applicable blade, revise the Airworthiness Limitations section of the maintenance manual to reflect that the blade has a retirement life of 400 hours time-in-service (TIS).
- (2) For helicopters with an applicable blade installed that has 390 through 700 hours TIS, within 10 hours TIS, replace the blade with an airworthy blade.
- (3) AMOCs approved previously in accordance with AD No. 2003-08-51 (68 FR 39449, July 2, 2003; correction 68 FR 47447, August 11, 2003) are approved as AMOCs for the corresponding requirements in this AD.

# AMOC continued...

Alternative Method of Compliance (AMOC) for AD 2003-08-51  
Affecting Service Life of MD369 and MD500 Series Tail Rotor Blades  
FAA Project Number TD10382LA-R

This AMOC allows the service life limit of all tail rotor blades affected by AD 2003-08-51 to be increased from 400 hours time in service to their previous life limit as it appears in the most recent revision to the Helicopter Technology Company (HTC), and MD Helicopters, Inc. (MDHI) maintenance manuals.

We concur that accomplishment of the following instructions can be used as an AMOC to the requirements of AD 2003-08-5.1, and will provide an acceptable level of safety in accordance with paragraph (g) of this AD:



# Nickel Abrasion Strips

*Helicopter Technology Company, LLC*

## **Mandatory Service Bulletin**

**NOTICE No.:** 2100-8R3

**DATE:** 29 April 2016

**PAGE:** 1 of 6

### **MAIN ROTOR BLADE ABRASION STRIP DAILY INSPECTION REQUIREMENTS**

#### **PART NUMBERS AND SERIAL NUMBERS AFFECTED:**

500P2100-105 (STC Number SR09047RC) with 1.25 inch (31.8 mm) Chord Length Abrasion Strip installed and less than 700 hours Total Time Since New (TTSN) or since Abrasion Strip Replacement, All Serial Numbers. These blades are also known as MD Helicopters, Inc. Part Number 369D21120-505 and all references in MD Helicopters, Inc. CSP-HMI-2 that pertain to Part Number 369D21120-505 pertain to HTC Part Number 500P2100-105 as well.

# Root Inspection

*Helicopter Technology Company, LLC*

## **Service Notice**

**NOTICE No.:** 2100-5

**DATE:** 25 August 2014

**PAGE:** 1 of 2

### **MAIN ROTOR BLADE ROOT FITTING PERIODIC INSPECTION REQUIREMENTS**

#### **REQUIRED ROOT FITTING INSPECTIONS:**

- 1) Root Fitting Inspection every 100 hours as described in the 100 Hour or Annual Inspection Checklist – Chapter 5 Continued Airworthiness (Reference 1 - CSP-HMI-2 and Reference 3 - HTCM-001).
- 2) Torque Event Inspection every 35 hours or 200 Torque Events (TE's) as described in Airworthiness Limitations - Chapter 4 Airworthiness Limitations (Reference 1 - CSP-HMI-2, Reference 3 - HTCM-001, Reference 4 - AD 2005-21-02, and Reference 5 - SB 2100-3R3).

# www.helicoptertech.com



The screenshot shows a web browser window with the address bar displaying "www.helicoptertech.com/survey/". The website has a dark blue background with a large, stylized blue and white graphic on the left side that resembles a helicopter rotor. The text "Helicopter Technology Company" is displayed in a light blue, stylized font. A vertical menu of yellow buttons with blue star icons is located on the left, containing the following links: Home, About Us, Products, Contact Us, Technical Publications, Capabilities List, and Customer Feedback. The main content area on the right is titled "Customer Satisfaction Survey" in white text. Below this title is a section titled "Your Contact Information" which contains three white input fields for "Name (Optional)", "Email (Optional)", and "Phone (Optional)".

www.helicoptertech.com/survey/

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Helicopter Technology Company



# Keep 'em flying...smoothly

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