TECHNICAL BULLETIN

TB 20630000-2R2

206 Main Rotor Blade Track and Balance Guidance
Van Horn Aviation Composite Blades

Subject: Track and Balance

Parts Affected: VHA 206 Main Rotor Blades
P/N 20633000-101, 20631000-101, 20635000-501

Models Affected: 206B, 206L series

Compliance: Compliance with this bulletin is at the customer's option.

Description: This technical bulletin describes best practices for track and balance of VHA 206 main rotor blades, including installation procedures, tracking wedge information, and polar charts for both tracking wedges and trim tabs.

REVISION	DATE OF ISSUE	SUMMARY OF CHANGES
1	10/21/2022	Initial Release
2	10/21/2024	Fixed references to AMM sections in Appendices A & B

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PART 1: TRACK AND BALANCE BEST PRACTICES

1.1 INTRODUCTION

Rotor tracking and balancing is essential for all rotorcraft operators and maintainers. Proper track and balance reduces the vibrations that diminish aircraft handling, passenger comfort and component service life.

Blades are brought into ground track, lateral-balanced in hover, and then vertical-balanced in forward flight. Vertical balance specifically matches the lift produced by each rotor blade. Traditionally, the goal of conducting balance runs in forward flight was to ensure the blades fly in the same plane or “in track.” Advancements in balancing tools have allowed the industry to realize that the optimum vibration levels are not always found with blade tips perfectly level, but instead when all the blades produce a lifting force that is equal. Due to unavoidable manufacturing variations, each rotor blade generates slightly more or less lift than others. As a result, one blade will fly slightly higher or lower than the other. Tracking adjustments allow modification of the lift produced by each blade to match the opposite side.

This document describes the recommended track and balance steps for VHA 206B and 206L main rotor blades. It integrates maintenance manual procedures with tips and tricks gathered from operators and other track and balance experts across the industry. When followed carefully, this procedure provides the operator with the best chance of a smooth and painless track and balance experience.

1.2 STANDARD PROCEDURE

This section supplements the existing Bell Aircraft Maintenance Manual (AMM) installation instructions and highlights steps that are critical to track and balance. For further guidance, use the checklists in Appendix A: 206B Installation Checklist and Appendix B: 206L Installation Checklist, where the specific AMM sections are listed for each step. Also read the Read Me First document provided with the rotor blades (or downloadable from vanhornaviation.com) for essential information.

1.2.1 HEAD ASSEMBLY

The main rotor head does not need to be disassembled every time main rotor blades are installed, but proper assembly and alignment is crucial to the dynamic balance of the rotor blade. A trunnion that is off-center shifts the center of rotation for the entire assembly, creating chord mass imbalance and dissymmetry of lift. Pay special attention to this step during head assembly.

1. Center Main Rotor Hub using the trunnion center tooling.
    a. Use work aid described in the AMM to inspect and adjust the centering of the main rotor trunnion.
    b. Trunnion centering tools (Figure 1) for 206 hubs are commercially available from numerous aviation vendors. Operators have expressed that these options simplify the process.

Figure 1: Trunnion centering fixture

1.2.2 BEFORE HUB INSTALLATION

Perform the following steps before every blade installation to ensure you start from a nominal configuration. Since track and balance adjustments often interact with each other, starting from a nominal configuration will yield more predictable results and require less time to balance. Ignoring these steps often results in more engine starts to balance the rotor.

1. Remove span balance weights from the main rotor bolts.
2. Check rig cyclic and collective and reset to nominal.
    a. Set pitch change links to nominal length using trammel tool.
    b. Check collective and cyclic rigging is within limits
3. Zero any trim surfaces.
    a. Trim tabs: Set to zero degrees using Zero Tab Indicator tool provided.
    b. Tracking wedges: Remove and discard any installed tracking wedges.
4. Align hub.

NOTE:

When performing hub alignment, spend extra time getting it as close as possible. Poor hub alignment is often a factor when operators have difficulty reaching desired vibration levels.

    a. String method (VHA recommended):
        i. Install hub on alignment stand with pitch horns fixed. See Figure 2
        ii. Adjust the stand's three point leveling screws to ensure yoke and both grips are level in chord direction. Use protractors to measure level. See Appendix A or B for applicable AMM sections with depictions.
        iii. Torque blade pins per AMM, then install string alignment kit posts in blade pins.
        iv. Attach string outboard of alignment rivets such that string crosses the center of both rivets and is tight enough that it contacts nothing but the posts.
        v. Adjust latch bolt to align blades such that the string is barely touching the posts or gap less than .005" AFTER final torque is applied.
    b. Scope Method is available but is a less accurate and reliable means of alignment. Use string alignment if a string alignment kit is available.
5. Static balance in a sterile environment i.e. no air movement. Static balance provides a good verification of alignment and will save flights during lateral balance.

NOTE:

When balancing 206L blades, it is recommended to make chordwise balance adjustments using chord weights instead of sweep. Excessive sweep on a 206L can sometimes induce tail wag due to the extended tail boom.

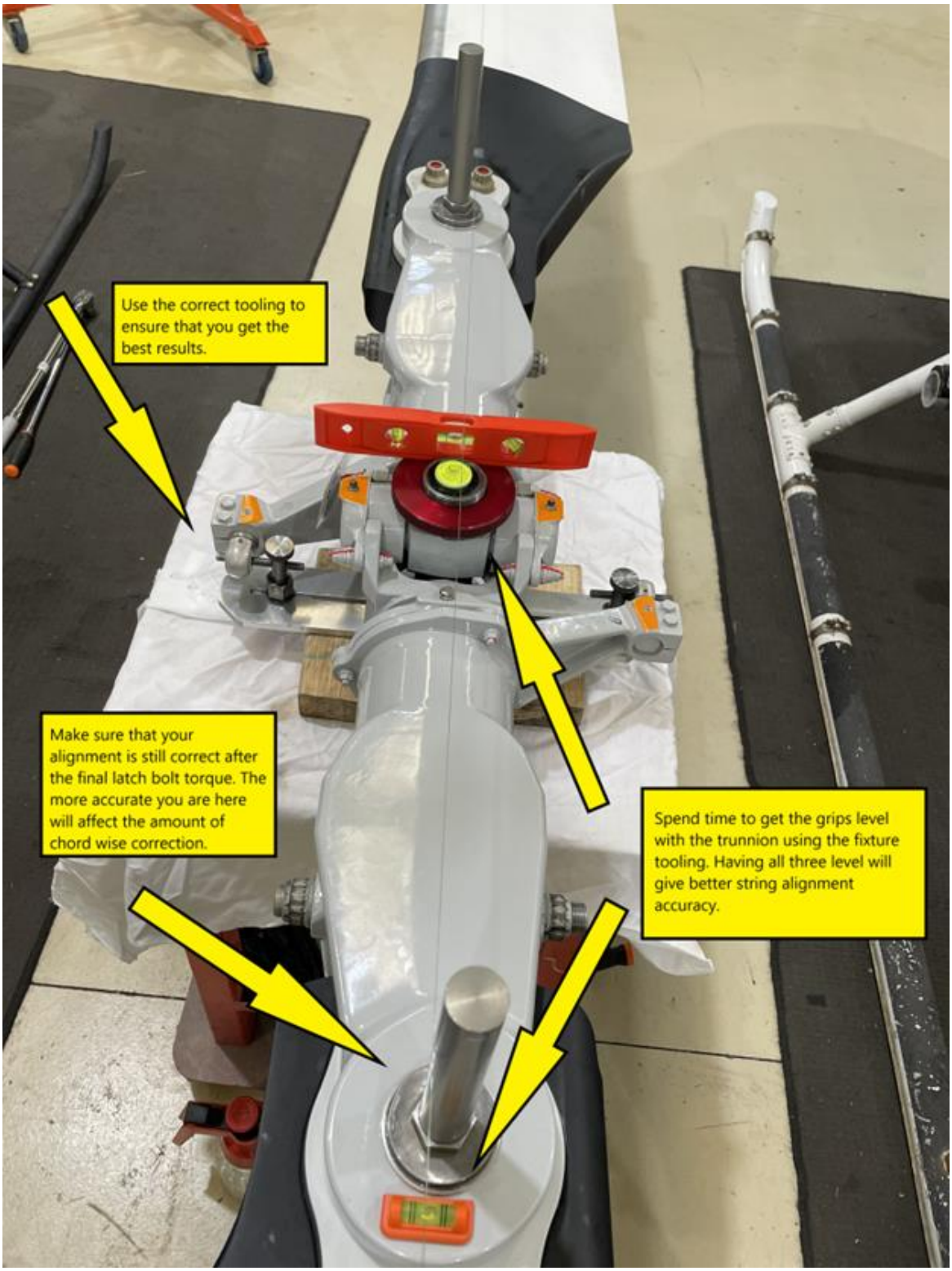


Figure 2: String Method of Hub Alignment

1.2.3 DYNAMIC BALANCE NOTES

- Any rotorcraft dynamic balance equipment that outputs vibration values in IPS (inch/sec) and clock angle (12:00 scale or in degrees) can be used.
- VHA has developed polar charts with move lines specific to the VHA 206B and 206L main rotor blades; these are included in this document's appendices and can be downloaded from vanhornaviation.com.
- Diagnostic Solutions International, LLC (DSI) has developed algorithms using the Honeywell Chadwick Helmuth Vibrex EV2K+ and Carry-on VXP balancers/analyzers. Available for purchase from DSI, these algorithms incorporate the move lines from the VHA polar charts. The standard OEM blade algorithms available on these and other balancers may be used, but often require a few more flights to correct the coefficients for the VHA blades before providing accurate recommendations and predictions.
- For strobe-type tracking devices (i.e. Strobex), place reflective tape on the lower blade surface just aft of the abrasion strip over the black paint, centered at the radial station where the blade sweep starts. See Figure 3.

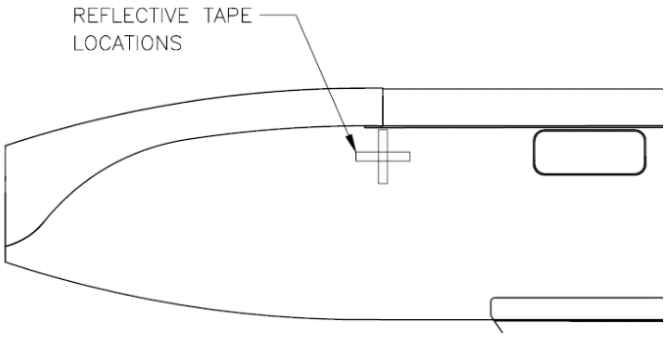


Figure 3: Reflective Tape Location for Strobe Tracking

- When using optical tracking devices, early generation blades with glossy paint may be difficult to pick up. Spraying flat black paint in the target area can resolve this issue. Only use spray paint if optical tracker is not working.

1.2.4 DYNAMIC BALANCE STEPS

1. Ground runs
    a. Adjust pitch change links for track at 100% N_R (rotor RPM).
    b. After the first run, perform main rotor head torque check.

NOTE:

When new components are installed, the head often requires a retorque after spin-up. Omitting this step may cause your balancer to register vibrations that get progressively worse.

    c. Observe lateral vibrations: If value is above 1.0 IPS, revisit head alignment and static balance.
2. Hover
    a. Measure lateral 1/rev vibration.
    b. Perform span weight or chord/sweep adjustment per VHA lateral polar charts until AMM vibration limit achieved. See Appendix C: 206B Polar Charts and Appendix D: 206L Polar Charts.
3. Forward flight
    a. Check flight vertical vibrations
        i. For 206B: check vibrations at 60 and 100 mph
        ii. For 206L: check vibrations at 55 and 105 kias (knots indicated airspeed).
        iii. For all: check at V_H (level flight at max continuous torque or TOT).
        iv. Make adjustments to ensure all regimes are within acceptable criteria of .20 IPS and below.
    b. If there is a question whether to make a pitch change link (PCL) adjustment or a tab/wedge adjustment, make the PCL adjustment first. Most VHA main rotor blades should require only PCL adjustment and little if any outboard wedge. Additionally, see guidance from the AMM Chapter 18:
        i. If vertical 1/rev increases with speed – Adjust tabs/wedge. Excessive tab can affect high speed 2/rev. Find a tolerable medium.
        ii. If vertical 1/rev does not increase with speed and/or is harder in autorotative letdown – Adjust PCL.
    c. Once Step 3.a criteria is met, make minor adjustments to get the lowest vibration level in the range that is flown the most.
4. OGE Hover lateral check
    a. Perform at 50% Torque or higher
5. Autorotation RPM
    a. Follow AMM procedure. Adjust PCLs equally
6. Flap Restraint engagement RPM
    a. Follow AMM procedure:
        i. Remove weight if below 25%.
        ii. Add weight if above 31%.
7. Perform another main rotor torque check after final balance run.

1.3 TROUBLESHOOTING

The AMM provides troubleshooting guidance in the following tables:

- 206B: BHT-206A/B-SERIES-MM-3 Chap 18, Tables 18-3 through 18-5
- 206L: BHT-206L4-MM-3 Chap 18, Tables 18-20 and 18-21.

See additional guidance compiled from high-time operators and industry experts below.

1.3.1 TROUBLESHOOTING 1/REV VIBRATIONS

If adjustments made during track and balance appear to be having an opposite effect from what the polar charts predict:

- Check that the balancer equipment is installed correctly. This may be the result of an accelerometer installed upside down or a photocell or magnetic interrupt placed at an incorrect location.
- Check the balancer manufacturer-provided information for proper installation instructions.

If balancer is showing higher lateral vibration in forward flight:

- Confirm that the accelerometer cables are connected to the right channels. You may be reading vertical vibrations instead of lateral vibrations.

Inability to reduce vibrations below .20 IPS:

- Could be a result of:
  - Loose balance equipment
  - Loose fasteners in the hub or control system
  - Excess play in spherical bearings, trunnion bearing, or swashplate
  - Improper hub alignment
- Check for loose control linkage or swashplate parts.
  - Friction the cyclic, place the collective in normal cruise position and rotate the blades 90 degrees.
  - Have someone stand on the end of a ladder and twist the blade end while you check the flight controls for any looseness. This will help you identify loose rod ends, uniball bearing play, tilt friction, etc.
- Check all attachments and torques and inspect bearings for play.
- If vibrations persist:
  - Remove the hub, swap blades to opposite sides, and run through the checklist again, paying close attention to the trunnion centering and alignment steps.

1.3.2 TROUBLESHOOTING 2/REV VIBRATIONS

The primary vibration read by rotor balancers is 1/Rev, meaning the frequency of the vibration is the same as the main rotor RPM. Additionally, 2/Rev vibrations (higher frequency) are also excited by the main rotor. Their amplitude is affected by anything that changes the natural frequency of the aircraft.

- If 1/Rev vertical vibrations are below 0.10, consider a small pitch change link move to increase vibration to a level between 0.10 and 0.20. This will mask the 2P vibration and result in a smoother ride.
- Check insufficient friction on swashplate ball.
- Check for loose control linkage or swashplate parts.
    - See procedure in Section 1.3.1. Loose rod ends, uniball bearing play, tilt friction, etc., can also manifest a 2/Rev vibration.
- Check tail boom attach bolts torque.
- Check latch bolt torque.
- Check for deteriorated/separated elastomers in transmission mount.
- Check for bolt/bearing wear on the control rod ends.
- Is there excessive differential tab/wedge?
- Check for loose flight steps, cargo hook bungy, battery, ballast weight, high skid or popout floats. Loose gear attach points or missing rubber from clamps will cause a high 2/Rev vibrations
- Check for excessive breakaway friction and proper staking of isolation mount bearing or drag link bearing.
- Check for excessive breakaway of hub trunnion.
- Check for improper assembly of spike striker plate.
- Are any kits attached to aft or forward crosstube or skids (speakers, Antennas, etc)?

1.3.3 SPIKE KNOCKING

- Bell 206B, check:
    - Deterioration of isolation mount
    - Whether the bearing at the gearbox attach point is still staked in the housing.
- Bell 206L: check condition of nodal mount (flexure) and restraint.
- Check bearings on “dogbone” pylon support links for proper seating or excess wear.

1.3.4 VERTICAL 1/REV VIBRATION IN HOVER

- See Bell AMM troubleshooting tables
  - 206B: BHT-206A/B-SERIES-MM-6 Chap 18, Table 18-5
  - 206L: BHT-206L4-MM-6 Chap 18, Table 18-21
- Check for correct trunnion centering

Still having issues? Please contact VHA at 1.480.483.4202 or info@vanhornaviation.com.

PART 2: INSTALLATION PROCEDURES FOR TRACKING WEDGES

2.1 EQUIPMENT AND MATERIALS

- Permanent Marker
- Masking tape
- Scissors
- 20630931-1KIT Tracking Wedge Kit (obtain kit from Van Horn Aviation or source individual components locally):
    - 20630931-1 Tracking Wedge (available in kit ONLY)
    - Sanding Pad (Maroon Scotch-Brite pad or 220-320 grit sandpaper are acceptable alternatives)
    - Isopropyl Alcohol Wipes (Acetone and MPK are acceptable alternatives)

Figure 4: 20630931-1KIT contents

2.2 INTRODUCTION

NOTE:

This bulletin is applicable to the 20631000-101, 20633000-101 and 20635000-501 VHA main rotor blades. The installation of tracking wedge(s) is a regular maintenance item for rotor smoothing.

Traditionally, rotor blades come equipped with trim tabs, which are thin sheet metal components bonded or riveted to the trailing edge of the rotor blade. By bending the portion of the tab that extends beyond the trailing edge of the blade, airflow is deflected either up or down, which slightly alters the angle of attack of the airfoil and therefore produces slightly more or less lift. By changing the trim tab bend angle, the lift produced by all blades can be matched, reducing rotor-induced vibration. However, trim tabs have presented numerous maintenance issues for operators of nearly all brands of main rotor blades. Debonding and/or cracking of metal trim tabs due to in-flight loads is common. Repeated bending can also cause cracking and eventual separation of the tab from the blade.

After a long history of dealing with trim tab-related maintenance issues, the U.S. Army qualified the use of tracking wedges (in lieu of trim tabs) on AH-64 Apache composite main rotor blades in 2009. Since then, tracking wedges have become the preferred means of blade tracking among Army maintainers and have been qualified on CH-47, UH-60, and AH-6 platforms. Tracking wedges have accumulated an estimated 2 million flight hours in the most extreme flight regimes and environments around the world.

Following in the footsteps of this proven success, VHA has decided to become the first rotor blade manufacturer to deliver main rotor blades with tracking wedges to the commercial market.

Made from soft, molded rubber, tracking wedges have a triangular cross-section with a fixed six-degree angle. Unlike trim tabs, the wedges are not permanently installed on the rotor blade but can be removed and replaced as necessary. The “peel-and-stick” pressure-sensitive adhesive adheres to the blade in such a way that the wedge cannot be blown off by horizontal shear force of the airflow but can be pried up vertically with a fingernail.

Wedges deflect airflow at the trailing edge in much the same way as a bent trim tab. However, adjustments are made by varying the length of wedge installed: 3.5 inches of wedge is approximately equal to a 1-degree tab bend. Free of the challenges associated with bending sheet metal, wedges have been found to deliver more precise and repeatable results. This means fewer adjustments are typically required to get vibrations within acceptable limits.

2.3 PROCEDURE

Install tracking wedges per the following procedure:

2.3.1 DETERMINE THE LENGTH OF WEDGE REQUIRED USING THE APPLICABLE POLAR CHART.

Polar charts can be found in Appendix C and Appendix D of this document; they can also be downloaded from vanhornaviation.com. Wedge length should always be cut to the nearest inch. For convenience, reference lines are provided on the surface of the wedge at 1.0-inch increments. It is recommended to install slightly less wedge than necessary to avoid having to remove excess wedge later. It is always preferred to add rather than remove wedge length.

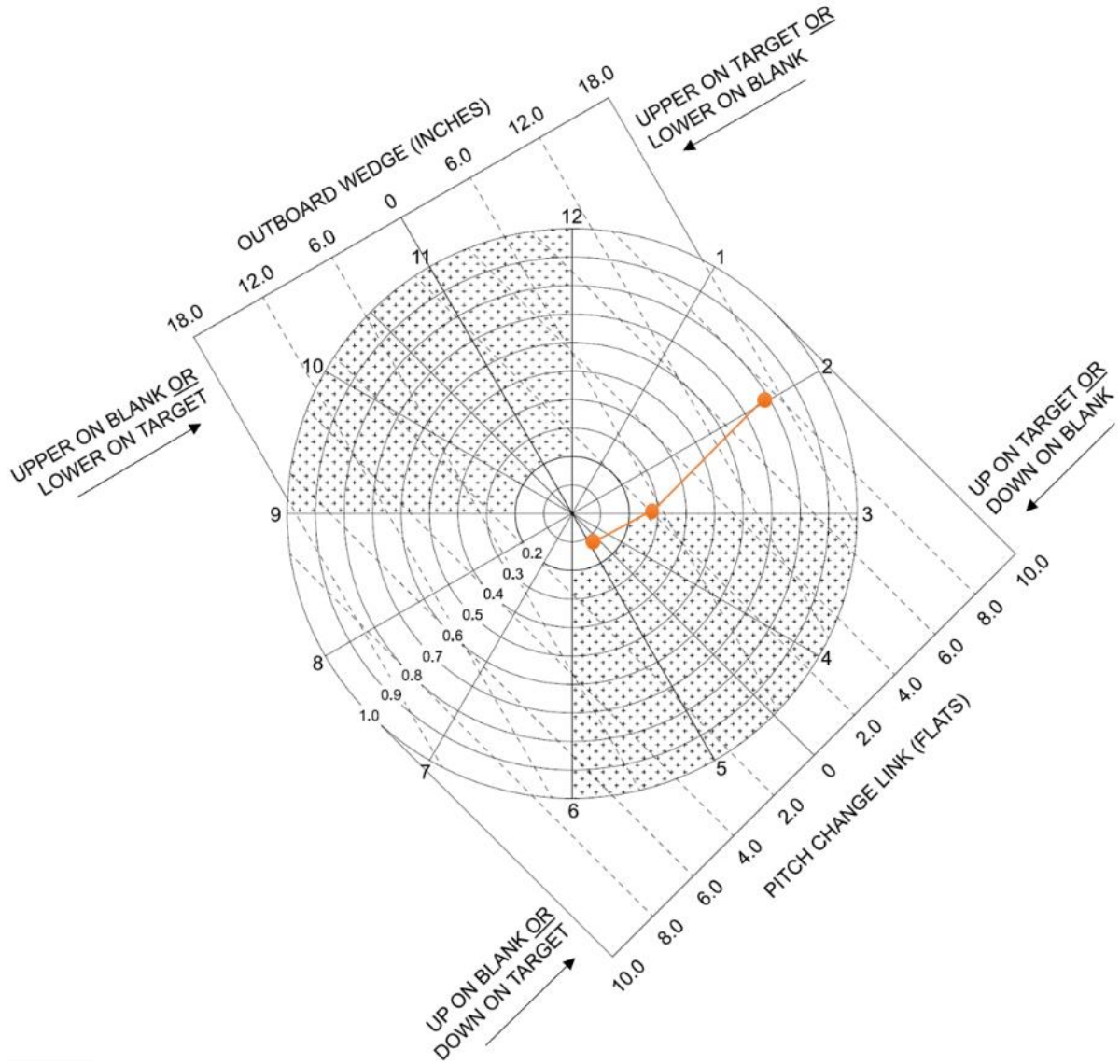


Figure 5: Sample polar chart showing 2 moves: 6 flats up on target pitch link, then 6 inches of wedge installed on target blade upper surface.

2.3.2 CUT TRACKING WEDGE

Cut the 20630931-1 tracking wedge to the length determined per the applicable polar chart with a pair of scissors prior to installation on the rotor blade.

NOTE:
DO NOT cut wedges with a razor or knife on the surface of the blade as this may damage composite fibers.

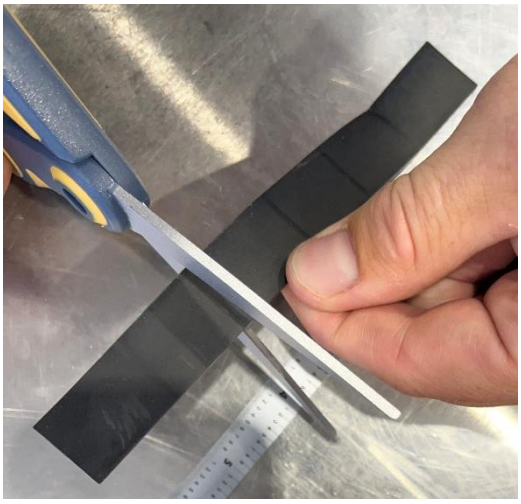


Figure 6: Cutting wedge to length using scissors

2.3.3 DRY FIT WEDGE

Dry fit the wedge at the desired location (See Figure 7).

NOTE:
DO NOT remove the paper backer from the adhesive yet.

Wedges can be installed on the upper or lower surface, as required, at rotor stations 79.0 and/or 150.5 for 20631000-101 and 20635000-501 main rotor blades, and rotor stations 79.0 and/or 167.0 for 20633000-101 main rotor blades.

Paint stripes are provided for reference on the surface of some blades to assist in locating rotor stations 79.0 and 150.5 or 167.0 as applicable. The wedge should be centered on the desired rotor station with the thick side of the wedge flush to the trailing edge of the blade (see Figure 7 and Figure 8).

NOTE:
When adding additional wedge length, always keep the total wedge length centered at the intended rotor station by adding equal lengths on either side of the previously installed wedge

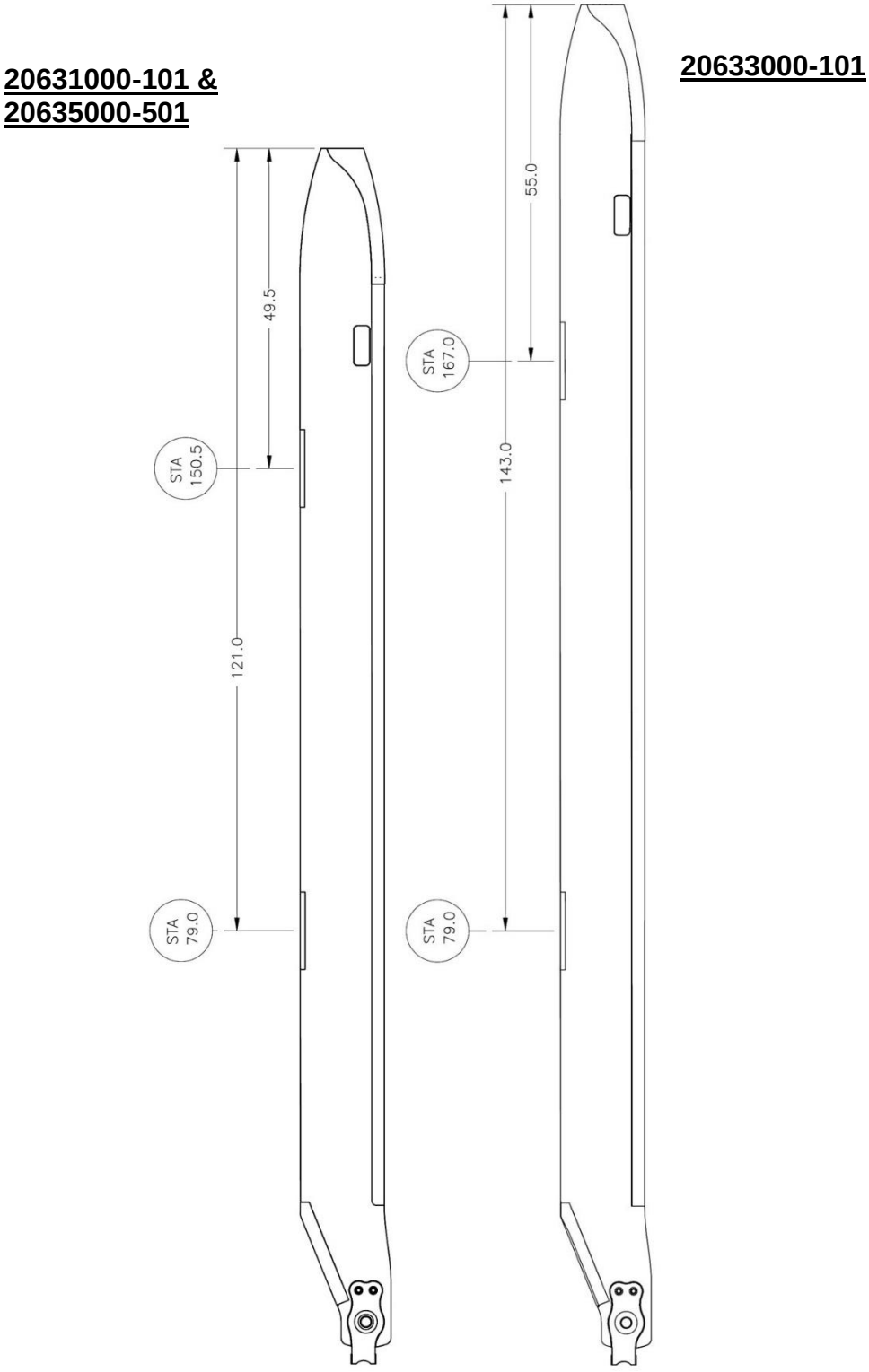


Figure 7: Permissible Locations for Tracking Wedges on VHA 20631000-101, 20635000-501, and 20633000-101 Main Rotor Blades

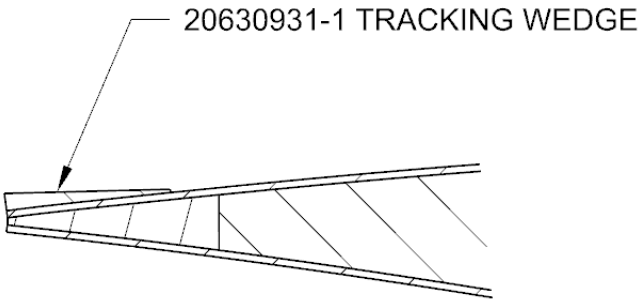


Figure 8: Tracking Wedge Installation (upper or lower surface as required)

2.3.4 MASK THE BOND AREA

1. Hold the wedge in place and trace the outline with a contrasting permanent marker.
2. Remove the wedge and use masking tape to mask 1/16 to 1/8-inch outside of the marker line. See Figure 9.

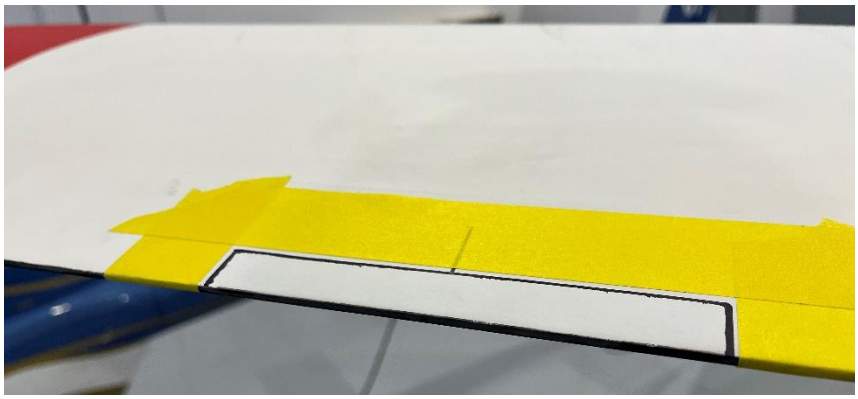


Figure 9: Install masking for surface preparation

2.3.5 PREPARE AREA

1. Thoroughly wipe the area using one of the provided isopropyl alcohol wipes. Wipe in one direction only to move residue away from the bond area. Discard the soiled wipe after use. Acetone, methyl ethyl ketone (MEK), or methyl propyl ketone (MPK) may be used, if necessary, as alternatives. Allow the solvent to flash before proceeding.

2. Lightly abrade the surface using the provided sanding pad. A maroon Scotch-Brite pad or 220-320 grit sandpaper may be used as alternates. DO NOT scuff completely through the clearcoat or paint layer. The goal is only to roughen the surface, not to remove a significant amount of material.

Figure 10: Abrade surface using provided "Step 2" sandpaper

3. Remove all masking tape and wipe the area with a fresh isopropyl alcohol wipe, acetone, MEK, or MPK to remove all sanding residue. Allow solvent to flash before proceeding. Repeat as necessary until wipe comes away clean.

2.3.6 INSTALL WEDGE

Remove the paper backer from the tracking wedge and install on the surface of the blade using firm hand pressure. Be sure to center the wedge at the intended rotor station within +/- .25 inches and align the thick edge flush to within .10 inches of the trailing edge of the blade (see Figure 11). Apply firm pressure along the entire length of the wedge to activate the adhesive. Wait a minimum of 5 minutes after bonding before starting the aircraft.

It is recommended to install slightly less wedge than necessary to avoid removing excess wedge later. It is always preferred to add rather than remove wedge length.

NOTE:

Once the paper backer is removed, DO NOT allow the exposed adhesive to contact anything other than the cleaned blade surface to which it is intended to be bonded as this could contaminate the bondline.

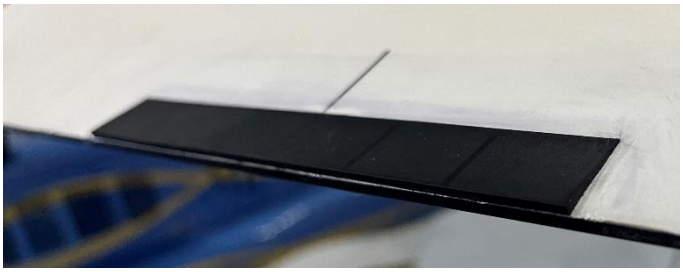


Figure 11: Tracking wedge installed on blade trailing edge

2.3.7 CONFIRM TRACK

Perform tracking flight to measure updated vibration levels and repeat steps 2.3.1 through 2.3.6 to add additional tracking wedge(s), if necessary, until vibration levels are reduced below 0.2 IPS.

NOTE:
DO NOT deliberately attempt to reduce vibration levels below 0.15 IPS as 2/Rev vibration levels will become more noticeable and subjective vibration levels may seem worse.

2.4 REMOVING WEDGES

If the total wedge length needs to be reduced or if a wedge was mislocated or otherwise installed in error, remove and discard the entire wedge. Wedges are removed easily by hand; simply peel from one end to the other. Once the wedge is removed, proceed with further adjustment using a fresh wedge.

NOTE:
DO NOT use a razor blade or other sharp objects to remove wedges.

NOTE:
DO NOT trim wedges on the surface of the blade with a razor or knife as this may damage the composite fibers.

NOTE:
DO NOT reuse removed wedge sections as the adhesive layer has been compromised and might not remain attached to the blade in flight.

APPENDIX A: 206B INSTALLATION CHECKLIST

20631000-101 and 20635000-501 Main Rotor Blades

Company		
A/C Serial #		
Blade S/N's		
Blades TTSN		
Date of install		

Pre-Installation Inspections

Perf. by	Date	Action	Reference
		Check swashplate tilt friction. Adjust as necessary	BHT-206A/B-SERIES-MM-6 Section 62-29
		Check spherical bearings in collective lever, swashplate inner and outer rings for radial and axial play	BHT-206A/B-SERIES-MM-6 Chap 62 Figure 62-17
		Inspect trunnion bearings for radial / axial play	BHT-206A/B-SERIES-MM-6 Section 62-6
		Remove chord balance weights from yoke and span balance weights from under blade bolt plug	BHT-206A/B-SERIES-MM-3 Chap 18 – Figure 18-10
		Use trammel tool to set pitch change links length to nominal	BHT-206A/B-SERIES-MM-6 Chap 62 – Figures 62-10 thru 62-13
		Check collective rigging	BHT-206A/B-SERIES-MM-6 Section 67-8
		Check cyclic rigging	BHT-206A/B-SERIES-MM-6 Section 67-37
		If equipped, zero trim tabs using Zero Tab Indicator tool and Trim Tab Bender	BHT-206A/B-SERIES-MM-3 Chap 18 – Figure 18-13
		If equipped, remove & discard tracking wedges	TB 2063000-2R1 Part 2 Wedge removal instructions

Trunnion Inspection

Condition and alignment of the trunnion assembly is absolutely critical to successfully balancing the main rotor. Please review records to confirm the following.

		Component	Hours	P/N (helps if support is needed)
		Main Rotor Trunnion	TTSO:	
		Tension Torsion Strap	TTSN:	

THE FOLLOWING 2 STEPS ARE NOT ALWAYS NECESSARY FOR BLADE INSTALL. If found to be necessary, disassemble, inspect, and reassemble the hub and pay close attention to the following critical inspections

Perf. by	Date	Action	Reference
		Inspect tension-torsion strap for protruding wires, bulging, fretting	BHT-206B3-CR&O Section 62-15 Normal Inspection - Step 6
		Center Trunnion & pillow blocks	BHT-206B3-CR&O Section 62-17 Assembly - Steps 3 & 4

Hub Assembly

Perf. by	Date	Action	Reference
		Install workaid through pitch horns to prevent grips from rotating	BHT-206A/B-SERIES-MM-6 Section 62-41
		Install blades & blade bolts in hub	
		Hub alignment (string method)	BHT-206A/B-SERIES-MM-6 Section 62-42
		• Install on alignment stand with pitch horns fixed	
		• Adjust the three point leveling screws of the stand to ensure yoke and both grips are level in chord direction. Level is measured using protractors as seen in Fig 62-27 Item 1 Note.	
		• Torque blade pins per Maintenance manual, then install posts in blade pins	
		• Attach string outboard of alignment rivets such that it crosses the center of both rivets and is tight enough such that it contacts nothing but the posts	
		• Adjust latch bolt to align blades such that the string is barely touching the posts or gap less than .005” AFTER final torque is applied.	
		Static Balance (span only)	BHT-206A/B-SERIES-MM-6 Section 62-44

Hub installation

Perf. by	Date	Action	Reference
		Install workaid through pitch horns to prevent grips from rotating	BHT-206A/B-SERIES-MM-6 Section 62-7
		Install mast with cone set in mast recess	
		Install flap restraints, torque mast nut, install lock bolt & safety wire	
		Connect pitch links to pitch horns & cotter pin	
		Perform mast nut torque check	

Install Balance Equipment

Perf. by	Date	Action	Reference
		Install lateral accelerometer at main gearbox	Balancer manufacturer’s installation instructions for 206B main blade balance.
		Install vertical accelerometer in cockpit. Verify orientation	
		Install RPM sensor (photocell or magnetic pickup)	
		Install blade tracking equipment	
		• If using Strobex or equivalent, apply reflective tape on blades 20 inches from tip	See Figure 12 below
		• If using an optical tracker, apply flat black spray paint on the tip of the abrasion strips	
		Install wires and connect to balancer. Verify channels	

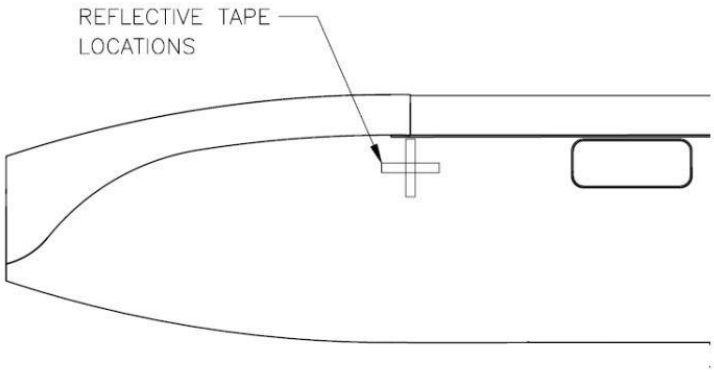


Figure 12: Reflective tape locations for Strobex, 1 piece each side, lower surface

Ground Runs

Perf. by	Date	Action	Reference
		Perform ground runs @ 100% N_R – observe track split, adjust pitch links to improve track, repeat until track split under .25 inch	BHT-206A/B-SERIES-MM-3 Section 18-23
		Perform mast nut torque check	BHT-206A/B-SERIES-MM-6 Section 62-7
Omitting this step may cause your balancer to register vibrations that get progressively worse.			

IGE Hover – Lateral Balance Flights

It is recommended to make one adjustment per flight to verify vibration corrections.			
Perf. by	**Date**	**Action**	**Reference**
		Perform IGE Hover check. Record lateral IPS and clock angle. Modify span balance weights, sweep or chord balance weights per VHA lateral polar chart Repeat steps until lateral vibration is below .20 IPS (below .10 IPS preferred)	BHT-206A/B-SERIES-MM-3 Section 18-24, 18-25 & 18-26 VHA Polar charts per TB 2063000-2 Appendix C BHT-206A/B-SERIES-MM-3 Section 18-40, 18-41, 18-42 & 18-43 BHT-206A/B-SERIES-MM-3 Chap 18, Table 18-4
		Observe IGE hover vertical vibration. If above .50 IPS, adjust pitch link to improve track.	BHT-206A/B-SERIES-MM-3 Section 18-27.2 (shows as 18-1.2)

Forward Flight - Vertical Balance Flights

Most blade installations should require only pitch link adjustment and little if any outboard tracking wedge/trim tab for high speed tuning. Outboard tracking wedges/trim tab produce larger vibration reduction at high speed.

Only if vertical balance targets cannot be achieved with pitch link and outboard tracking wedge/trim tab, modification to sweep or inboard tracking wedges/trim tab may be used.

Once vertical vibrations are below .20 at all target airspeeds, do not attempt to further decrease vertical IPS values. Vertical vibration levels below .10 will expose the naturally occurring 2/rev vibration produced by the main rotor, which decreases ride comfort.

Perf. by	Date	Action	Reference
		Perform forward flight balance runs • Record IGE hover vertical IPS and clock angle on each flight as a verification • Record vertical IPS and clock angle at 60mph. If IPS value is under .60 IPS, increase speed to 100mph and record vertical IPS and clock angle • Modify pitch change links, trim tabs, tracking wedges or sweep per VHA vertical polar charts • Repeat steps until IGE hover, 60 mph & 100mph vertical vibration is below .20 IPS	BHT-206A/B-SERIES-MM-3 Section 18-27 (shows as 18-1) VHA Polar charts per TB 2063000-2R1 Appendix C. BHT-206A/B-SERIES-MM-3 Section 18-44, 18-42 TB 2063000-2R1 Part 2 Wedge installation instructions BHT-206A/B-SERIES-MM-3 Chap 18, Table 18-4
		At Operators Discretion (not required) Record vertical IPS and clock angle at any additional airspeeds which are common during operation. • Adjust pitch change links or outboard tracking wedge as desired. • Do not exceed .20 IPS at 100 mph.	
		Record final vibration numbers and total adjustments from nominal:	

	IGE Hover Lateral	IGE Hover Vertical	60mph Vertical	100mph Vertical	____mph Vertical
IPS					
Clock					

	Span balance wgt.	Sweep/ Chord wgt.	Pitch link	Outbd wedge	Inbd wedge
Red blade (S/N _____)					
Wht blade (S/N _____)					

Final Checks

Perf. by	Date	Action	Reference
		Perform OGE Hover lateral check (while at 50% Torque or above)	BHT-206A/B-SERIES-MM-3 Section 18-28
		Flap Restraint engagement RPM	BHT-206A/B-SERIES-MM-3 Section 18-29
		Autorotation RPM - Adjust pitch links equally	BHT-206A/B-SERIES-MM-3 Section 18-30
		Perform mast nut torque check	BHT-206A/B-SERIES-MM-6 Section 62-7

See Technical Bulletin 20633000-2R1 Section 1.3 for tips on troubleshooting.

Still having issues? Please contact VHA at 1.480.483.4202 or info@vanhornaviation.com.

Providing this completed checklist and any available balancer data will help our engineering department to quickly assist you

APPENDIX B: 206L INSTALLATION CHECKLIST

20633000-101 Main Rotor Blades

Company		
A/C Serial #		
Blade S/N's		
Blades TTSN		
Date of install		

Pre-Installation Inspections

Perf. by	Date	Action	Reference
		Check swashplate tilt friction. Adjust as necessary	BHT-206L4-MM-6 Section 62-29
		Check spherical bearings in collective lever, swashplate inner and outer rings for radial and axial play	BHT-206L4-MM-6 Chap 62, Figure 62-14
		Inspect trunnion bearings for radial / axial play	BHT-206L4 -MM-6 Section 62-7
		Remove chord balance weights from yoke and span balance weights from under blade bolt plug	BHT-206L4-MM-3 Chap 18, Figure 18-9
		Use trammel tool to set pitch change links length to nominal	BHT-206L4-MM-6 Chap 62, Figures 62-11
		Check collective rigging	BHT-206L4-MM-6 Section 67-8
		Check cyclic rigging	BHT-206L4-MM-6 Section 67-38
		If equipped, zero trim tabs using Zero Tab Indicator and Trim Tab Bender	BHT-206L4-MM-3 Chap 18, Figure 18-11
		If equipped, remove & discard tracking wedges	TB 2063000-2R1 Part 2 Wedge removal instructions

Trunnion Inspection

Condition and alignment of the trunnion assembly is absolutely critical to successfully balancing the main rotor. Please review records to confirm the following.				
		Component	**Hours**	**P/N (helps if support is needed)**
		Main Rotor Trunnion	TTSO:	
		Tension Torsion Strap	TTSN:	
THE FOLLOWING 2 STEPS ARE NOT ALWAYS NECESSARY FOR BLADE INSTALL. If found to be necessary, disassemble, inspect, and reassemble the hub and pay close attention to the following critical inspections				
Perf. by	**Date**	**Action**		**Reference**
		Inspect tension-torsion strap for protruding wires, bulging, fretting		BHT-206L-CR&O-3 Section 62-33 Normal Inspection – Step 13
		Center Trunnion & pillow blocks		BHT-206L-CR&O-3 Section 62-35 Assembly - Steps 3 & 4

Hub Assembly

Perf. by	Date	Action	Reference
		Install workaid through pitch horns to prevent grips from rotating	BHT-206L4 -MM-6 Section 62-40
		Install blades & blade bolts in hub	
		Hub alignment (string method)	BHT-206L4-MM-6 Section 62-43
		• Install on alignment fixture with pitch horns fixed	
		• Adjust the three point leveling screws of the stand to ensure yoke and both grips are level in chord direction. Level is measured using protractors as detailed in 62-43 Step 8	
		• Torque blade pins per Maintenance manual, then install posts in blade pins	
		• Attach string outboard of alignment rivets such that it crosses the center of both rivets and is tight enough such that it contacts nothing but the posts	
		• Adjust latch bolt to align blades such that the string is barely touching the posts or gap less than .005” AFTER final torque is applied	
		Static Balance (span only)	BHT-206L4-MM-6 Section 62-44

Hub installation

Perf. by	Date	Action	Reference
		Install workaid through pitch horns to prevent grips from rotating	BHT-206L4-MM-6 Section 62-9
		Install mast with cone set in mast recess	
		Install flap restraints, torque mast nut, install lock bolt & safety wire	
		Connect pitch links to pitch horns & cotter pin	
		Perform mast nut torque check	

Install Balance Equipment

Perf. by	Date	Action	Reference
		Install lateral accelerometer at main gearbox	Balancer manufacturer’s installation instructions for 206L main blade balance.
		Install vertical accelerometer in cockpit. Verify orientation	
		Install RPM sensor (photocell or mag pickup)	
		Install blade tracking equipment	
		• If using Strobex or equivalent, apply reflective tape on blades 20 inches from tip	See Figure 12 below
		• If using an optical tracker, apply flat black spray paint on the tip of the abrasion strips	
		Install wires and connect to balancer. Verify channels	

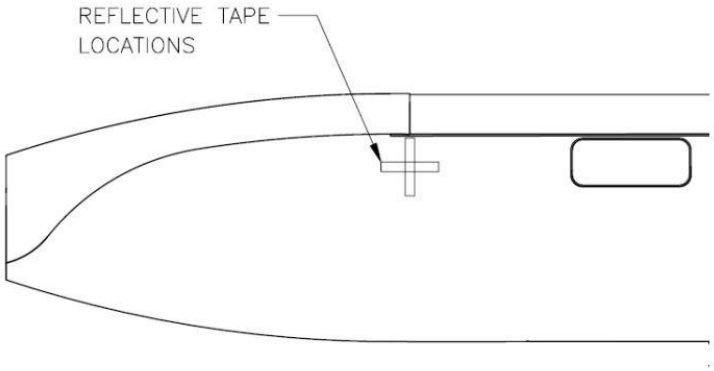


Figure 13: Reflective tape locations for Strobex, 1 piece each side, lower surface

Ground Runs

Perf. by	Date	Action	Reference
		Perform ground runs @ 100% N_R – observe track split, adjust pitch links to improve track, repeat until track split under .25 inch	BHT-206L 4-MM-3 Section 18-11
		Perform mast nut torque check	BHT-206L4-MM-6 Section 62-9
Omitting this step may cause your balancer to register vibrations that get progressively worse.			

IGE Hover – Lateral Balance Flights

It is recommended to make one adjustment per flight to verify vibration corrections.			
Perf. by	**Date**	**Action**	**Reference**
		Perform IGE Hover check. Record lateral IPS and clock angle. Modify span balance weights, sweep or chord balance weights per VHA lateral polar chart Repeat steps until lateral vibration is below .20 IPS (below .10 IPS preferred)	BHT-206L4-MM-3 Section 18-15, 18-16, 18-17 & 18-18 VHA Polar charts per TB 20630000-2 Appendix D BHT-206L4-MM-3 Chap 18, Table 18-8
		Observe IGE hover vertical vibration. If above .50 IPS, adjust pitch link to improve track.	BHT-206L4-MM-3 Section 18-19 thru 18-22

Forward Flight - Vertical Balance Flights

Most blade installations should require only pitch link adjustment and little if any outboard tracking wedge/trim tab for high speed tuning. Outboard tracking wedges/trim tab produce larger vibration reduction at high speed.

Only if vertical balance targets cannot be achieved with pitch link and outboard tracking wedge/trim tab, modification to sweep or inboard tracking wedges/trim tab may be used.

Once vertical vibrations are below .20 at all target airspeeds, do not attempt to further decrease vertical IPS values. Vertical vibration levels below .10 will expose the naturally occurring 2/rev vibration produced by the main rotor, which decreases ride comfort.

Perf. by	Date	Action	Reference
		Perform forward flight balance runs • Record IGE hover vertical IPS and clock angle on each flight as a verification • Record vertical IPS and clock angle at 55 kias. If IPS value is under 105 kias, increase speed to 100mph and record vertical IPS and clock angle • Modify pitch change links, trim tabs, tracking wedges or sweep per VHA vertical polar charts • Repeat steps until IGE hover, 55 kias & 105 kias vertical vibration is below .20 IPS	VHA Polar charts per TB 20630000-2 Appendix D BHT-206L4-MM-3 Section 18-19 thru 18-24 TB 20630000-2 Part 2 Wedge installation instructions BHT-206L4-MM-3 Chap 18, Table 18-8
		At Operators Discretion (not required) Record vertical IPS and clock angle at any additional airspeeds which are common during operation. • Adjust pitch change links or outboard tracking wedge as desired. • Do not exceed .20 IPS at 100 mph.	
		Record final vibration numbers and total adjustments from nominal:	

	IGE Hover Lateral	IGE Hover Vertical	55 kias Vertical	105 kias Vertical	_____ kias Vertical
IPS					
Clock					

	Span weight	Sweep/ Chord weight	Pitch link	Outbd wedge/tab	Inbd wedge/tab
Red blade (S/N _____)					
Wht blade (S/N _____)					

Final Checks

Perf. by	Date	Action	Reference
		Perform OGE Hover lateral check (while at 50% Torque or above)	BHT-206L4 -MM-3 Section 18-28
		Flap Restraint engagement RPM	BHT-206L4 -MM-3 Section 18-29
		Autorotation RPM - Adjust pitch links equally	BHT-206L4-MM-3 Section 18-25 & 18-26
		Perform mast nut torque check	BHT-206L4-MM-6 Section 62-9

See Technical Bulletin 20633000-2R1 Section 1.3 for tips on troubleshooting.

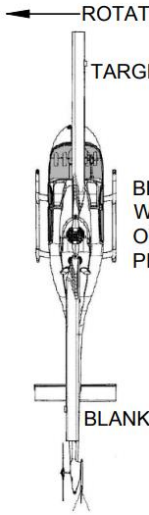
Still having issues? Please contact VHA at 1.480.483.4202 or info@vanhornaviation.com.

Providing this completed checklist and any available balancer data will help our engineering department to quickly assist you

APPENDIX C: 206B POLAR CHARTS

BELL 206B MAIN ROTOR HOVER LATERAL BALANCE CHART (VAN HORN COMPOSITE BLADES)

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
IPS						
CLOCK						
ADJUSTMENT MADE						



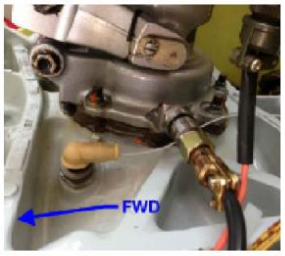
BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP

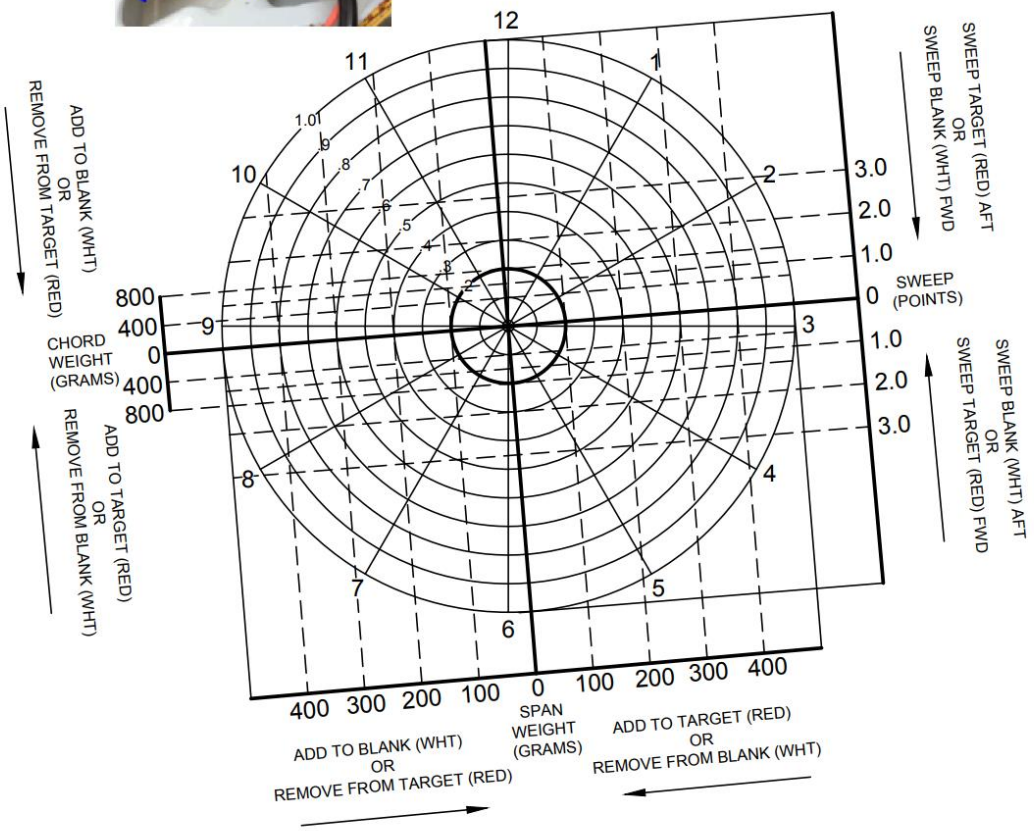
NOTE: MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR PRIOR TO BALANCING.

NOTE: DO NOT EXCEED MANUFACTURER'S ADJUSTMENT LIMITS.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. MOVE LINES WILL TRAVEL PARALLEL TO THICK BORDER LINE OF ADJUSTMENT TYPE USED. USE DASHED LINES THAT EXTEND FROM THICK BORDER LINE TO DETERMINE CORRECT ADJUSTMENT VALUE. ARROWS INDICATE DIRECTION NEXT MEASUREMENT SHOULD GO IF ADJUSTMENT IS MADE. COMBINATION OF ADJUSTMENT TYPES MAY BE NECESSARY TO ACHIEVE 0.2 IPS OR LESS GOAL.

VELOCIMETER IS ON MGB POINTING LEFT.





PAPER CHART P/N 768-26009, REV-

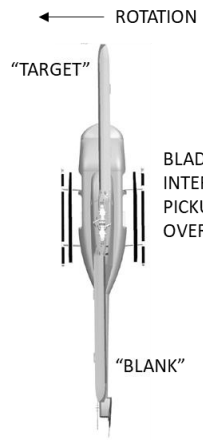
206B MAIN ROTOR BLADES
20631000-101 & 20635000-501
60 MPH VERTICAL BALANCE CHART

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

	1	2	3	4	5	6
IPS CLOCK						
ADJUSTMENT MADE						



BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP OR REFLECTIVE TAPE OVER PHOTOCELL

NOTE: PRIOR TO VERICAL BALANCING, MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR AND LATERAL BALANCED IN HOVER.

NOTE: DO NOT EXCEED PITCH CHANGE LINK ADJUSTMENT LIMITS IN MAINTENANCE MANUAL.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE.

INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN

206B MAIN ROTOR BLADES

20631000-101 & 20635000-501

100 MPH VERTICAL BALANCE CHART (PAGE 1)

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

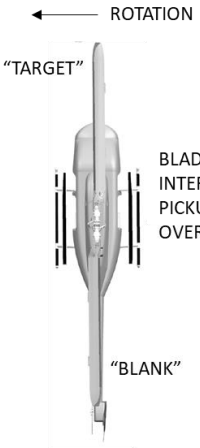
	1	2	3	4	5	6
IPS						
CLOCK						
ADJUSTMENT MADE						

NOTE: PRIOR TO VERICAL BALANCING, MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR AND LATERAL BALANCED IN HOVER.

NOTE: DO NOT EXCEED PITCH CHANGE LINK ADJUSTMENT LIMITS IN MAINTENANCE MANUAL. DO NOT EXCEED 24 INCHES OF WEDGES AT ANY LOCATION.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE.

NOTE: WHEN IN SHADED REGION OF CHART, INSPECT FOR LOOSENESS IN THE HUB, PITCH LINKS AND BALANCE EQUIPMENT. MOST BLADES SHOULD REQUIRE ONLY PITCH LINK ADJUSTMENT AND LITTLE IF ANY OUTBOARD WEDGE. IF TRACK CANNOT BE ACHIEVED WITH THESE TWO ADJUSTMENTS, SEE PAGE 2 FOR ADDITIONAL OPTIONS.



BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP OR REFLECTIVE TAPE OVER PHOTOCELL

INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN

206B MAIN ROTOR BLADES

20631000-101 & 20635000-501

100 MPH VERTICAL BALANCE CHART (PAGE 2)

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

	1	2	3	4	5	6
IPS CLOCK						
ADJUSTMENT MADE						

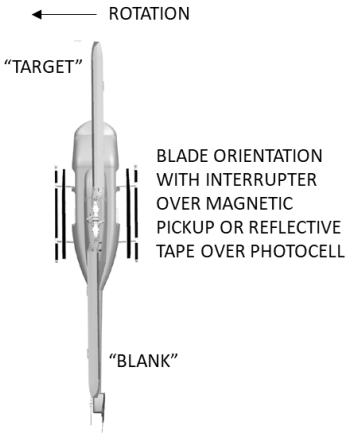
NOTE: THIS PAGE SHOULD ONLY BE USED AFTER INSTRUCTIONS FROM PAGE 1 HAVE BEEN COMPLETED AND VERTICAL BALANCE HAS STILL NOT BEEN ACHIEVED. SWEEP AND INBOARD TAB HAVE SIDE EFFECTS THAT SHOULD BE AVOIDED IF POSSIBLE.

NOTE: DO NOT EXCEED SWEEP LIMITS IN MAINTENANCE MANUAL. DO NOT EXCEED 24 INCHES OF WEDGES AT ANY LOCATION.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE. ONCE OUTSIDE OF SHADED REGION ON PAGE 1 CHART, FINISH BALANCE OPERATIONS USING PAGE 1 INSTRUCTIONS.

NOTE: EXCESSIVE INBOARD WEDGE MAY INCREASE 2/REV LATERAL VIBRATIONS AT SPEEDS UP TO 60 MPH AND MAY INCREASE 1/REV VERTICAL VIBRATIONS IN HOVER.

NOTE: SWEEP AFFECTS LATERAL BALANCE. WHEN USED FOR VERTICAL BALANCE, VERIFY LATERAL VIBRATION AT HOVER IS WITHIN LIMITS. ADDITIONALLY, SWEEP MAY CHANGE THE EFFECTS OF PITCH CHANGE LINK OR WEDGE ADJUSTMENTS.

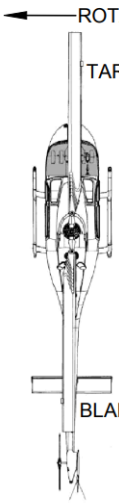


INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN

(Use only if blades are equipped with trim tabs)

BELL 206B MAIN ROTOR 100KIAS VERTICAL BALANCE CHART (VAN HORN COMPOSITE BLADES)

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
IPS						
CLOCK						
ADJUSTMENT MADE						

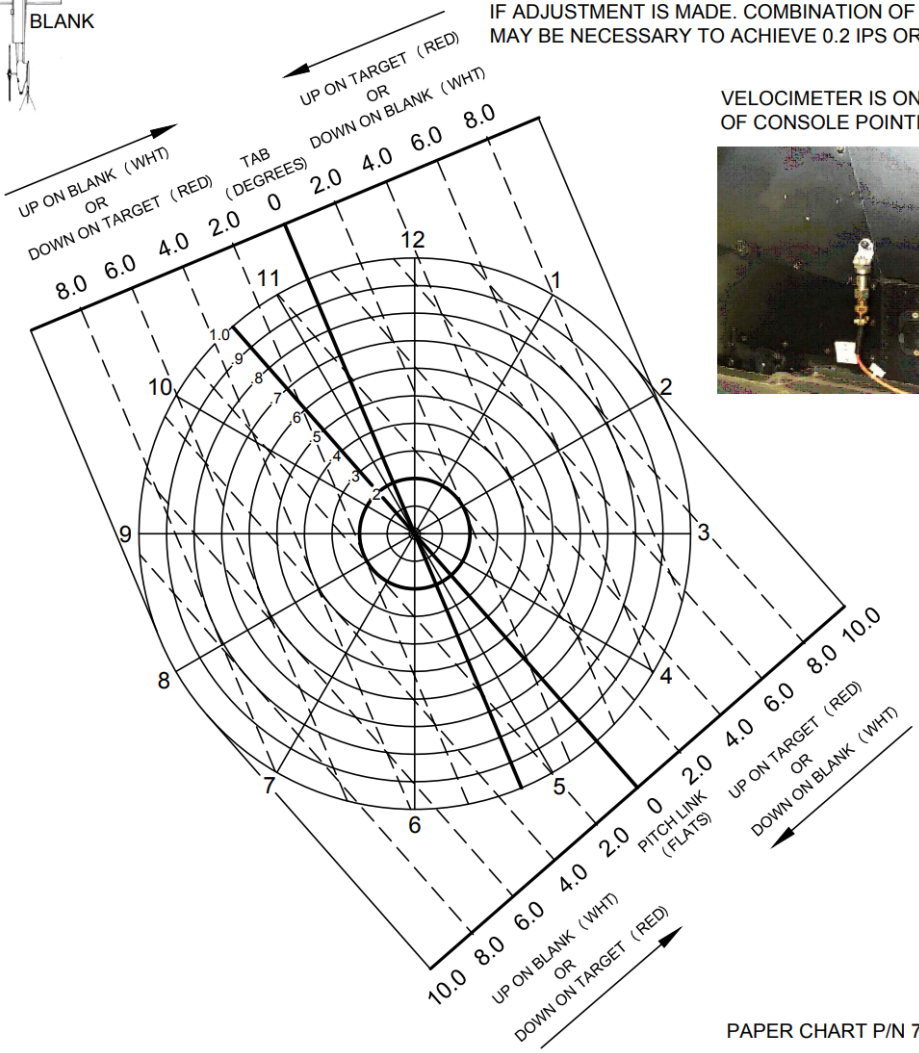


BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP

NOTE: MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR PRIOR TO BALANCING.

NOTE: DO NOT EXCEED MANUFACTURER'S ADJUSTMENT LIMITS.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. MOVE LINES WILL TRAVEL PARALLEL TO THICK BORDER LINE OF ADJUSTMENT TYPE USED. USE DASHED LINES THAT EXTEND FROM THICK BORDER LINE TO DETERMINE CORRECT ADJUSTMENT VALUE. ARROWS INDICATE DIRECTION NEXT MEASUREMENT SHOULD GO IF ADJUSTMENT IS MADE. COMBINATION OF ADJUSTMENT TYPES MAY BE NECESSARY TO ACHIEVE 0.2 IPS OR LESS GOAL.



VELOCIMETER IS ON LEFT SIDE OF CONSOLE POINTING DOWN.

PAPER CHART P/N 768-26012, REV-

APPENDIX D: 206L POLAR CHARTS

BELL 206L MAIN ROTOR HOVER LATERAL BALANCE CHART (VAN HORN COMPOSITE BLADES)

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
IPS						
CLOCK						
ADJUSTMENT MADE						

ROTATION

TARGET

BLANK

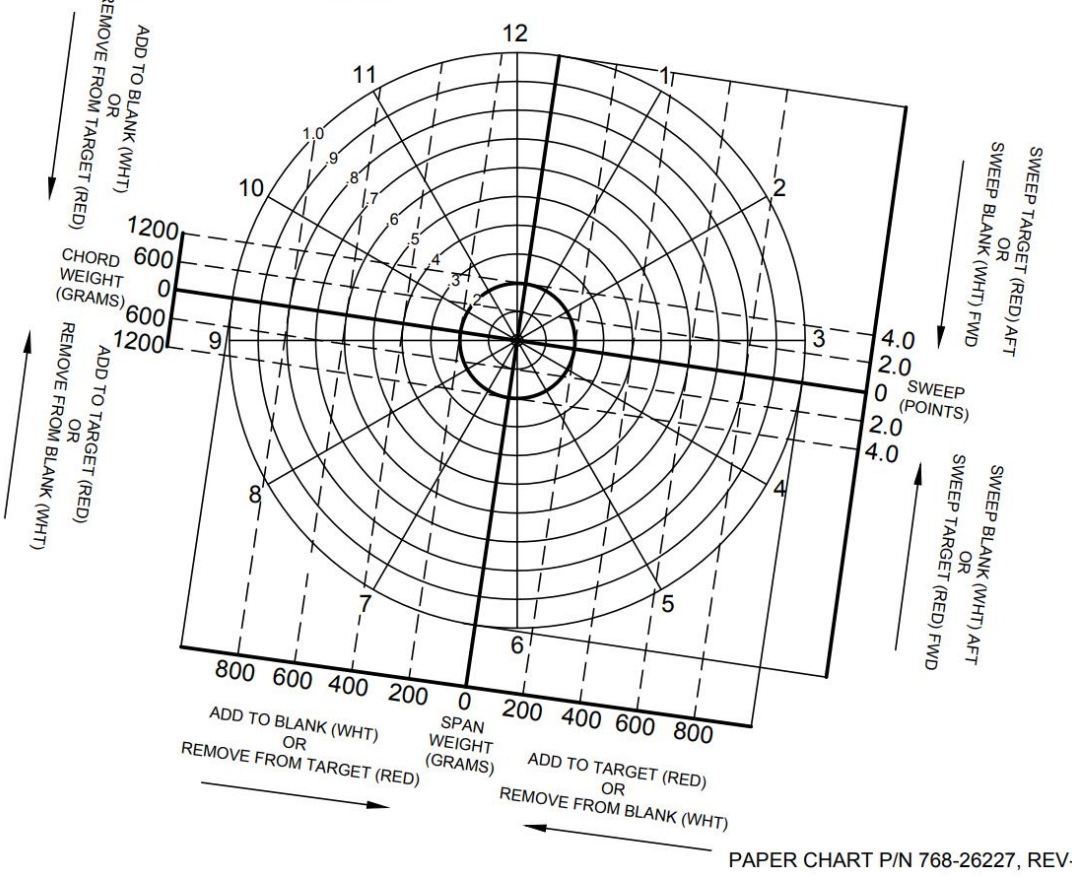
BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP

NOTE: MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR PRIOR TO BALANCING.

NOTE: DO NOT EXCEED MANUFACTURER'S ADJUSTMENT LIMITS.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. MOVE LINES WILL TRAVEL PARALLEL TO THICK BORDER LINE OF ADJUSTMENT TYPE USED. USE DASHED LINES THAT EXTEND FROM THICK BORDER LINE TO DETERMINE CORRECT ADJUSTMENT VALUE. ARROWS INDICATE DIRECTION NEXT MEASUREMENT SHOULD GO IF ADJUSTMENT IS MADE. COMBINATION OF ADJUSTMENT TYPES MAY BE NECESSARY TO ACHIEVE 0.2 IPS OR LESS GOAL.

VELOCIMETER IS ON MGB POINTING LEFT.



PAPER CHART P/N 768-26227, REV-

206L MAIN ROTOR BLADES

20633000-101

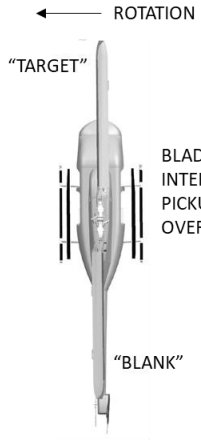
55 KIAS VERTICAL BALANCE CHART

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

	1	2	3	4	5	6
IPS CLOCK						
ADJUSTMENT MADE						



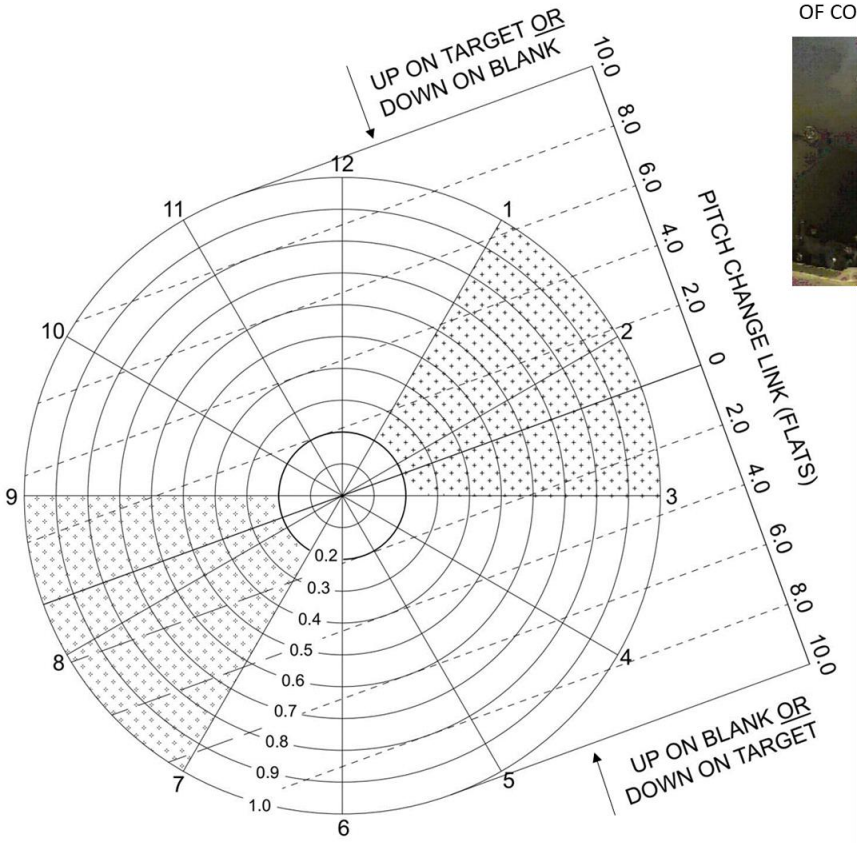
BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP OR REFLECTIVE TAPE OVER PHOTOCELL

NOTE: PRIOR TO VERICAL BALANCING, MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR AND LATERAL BALANCED IN HOVER.

NOTE: DO NOT EXCEED PITCH CHANGE LINK ADJUSTMENT LIMITS IN MAINTENANCE MANUAL.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE.

INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN



206L MAIN ROTOR BLADES
20633000-101
105 KIAS VERTICAL BALANCE CHART (PAGE 1)

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

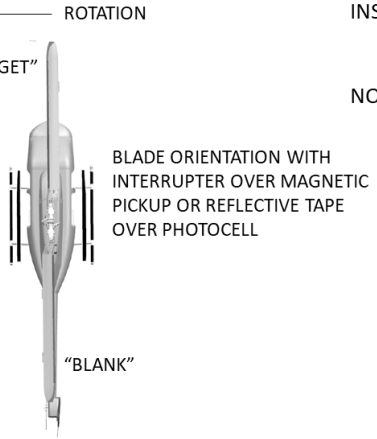
	1	2	3	4	5	6
IPS						
CLOCK						
ADJUSTMENT MADE						

NOTE: PRIOR TO VERICAL BALANCING, MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR AND LATERAL BALANCED IN HOVER.

NOTE: DO NOT EXCEED PITCH CHANGE LINK ADJUSTMENT LIMITS IN MAINTENANCE MANUAL. DO NOT EXCEED 24 INCHES OF WEDGES AT ANY LOCATION.

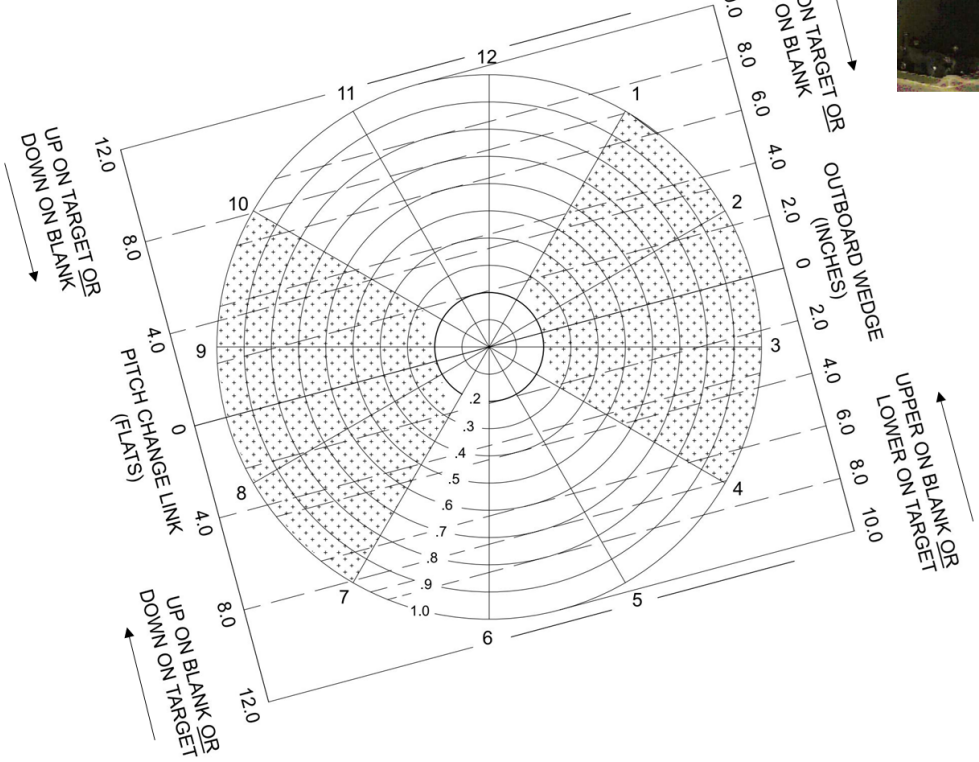
INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE.

NOTE: WHEN IN SHADED REGION OF CHART, INSPECT FOR LOOSENESS IN THE HUB, PITCH CONTROL SYSTEM AND BALANCE EQUIPMENT. MOST BLADES SHOULD REQUIRE ONLY PITCH LINK ADJUSTMENT AND LITTLE IF ANY OUTBOARD WEDGE. IF TRACK CANNOT BE ACHIEVED WITH THESE TWO ADJUSTMENTS, SEE PAGE 2 FOR ADDITIONAL OPTIONS.



BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP OR REFLECTIVE TAPE OVER PHOTOCELL

INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN



206L MAIN ROTOR BLADES
20633000-101
105 KIAS VERTICAL BALANCE CHART (PAGE 2)

HELICOPTER S/N: _____

BLADE S/N's: _____

DATE: _____

	1	2	3	4	5	6
IPS						
CLOCK						
ADJUSTMENT MADE						

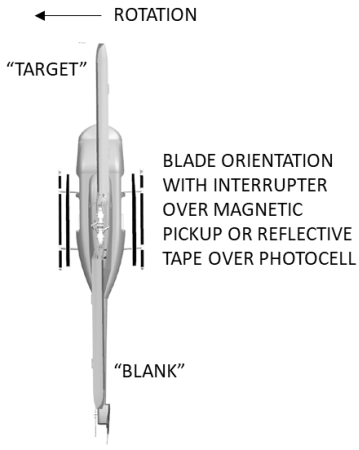
NOTE: THIS PAGE SHOULD ONLY BE USED AFTER INSTRUCTIONS FROM PAGE 1 HAVE BEEN COMPLETED AND VERTICAL BALANCE HAS STILL NOT BEEN ACHIEVED. SWEEP AND INBOARD TAB HAVE SIDE EFFECTS THAT SHOULD BE AVOIDED IF POSSIBLE.

NOTE: DO NOT EXCEED SWEEP LIMITS IN MAINTENANCE MANUAL. DO NOT EXCEED 24 INCHES OF WEDGES AT ANY LOCATION.

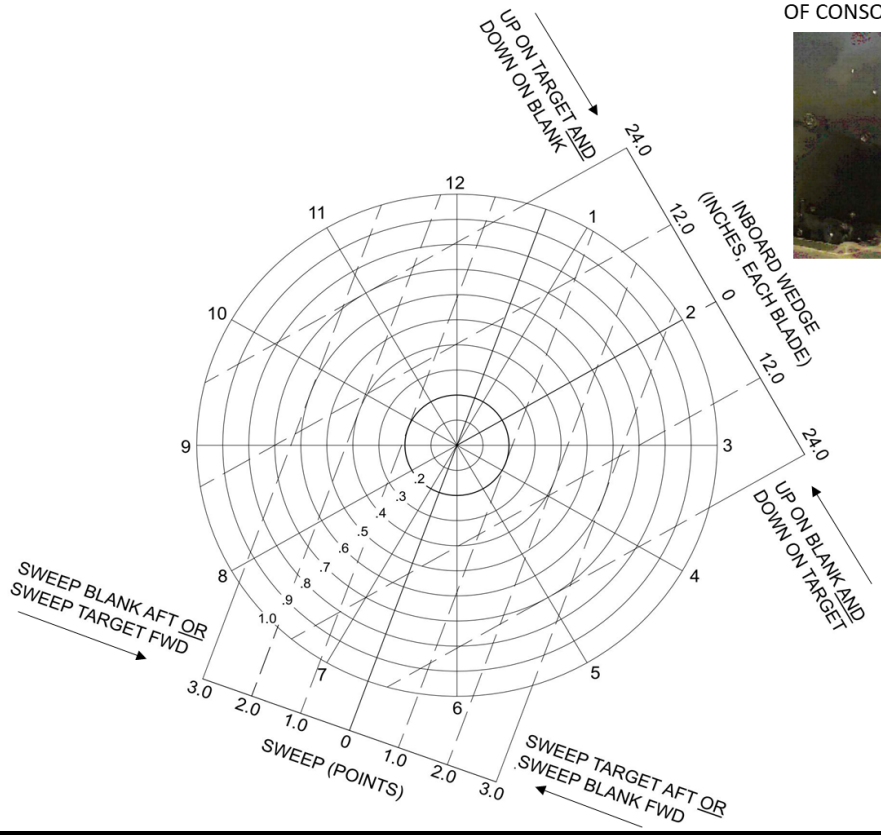
INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. DETERMINE ADJUSTMENT FOR DESIRED DIRECTION USING ARROWS, AND USE DASHED LINES TO DETERMINE ADJUSTMENT VALUE. ONCE OUTSIDE OF SHADED REGION ON PAGE 1 CHART, FINISH BALANCE OPERATIONS USING PAGE 1 INSTRUCTIONS.

NOTE: EXCESSIVE INBOARD WEDGE MAY INCREASE 2/REV LATERAL VIBRATIONS AT SPEEDS UP TO 60 MPH AND MAY INCREASE 1/REV VERTICAL VIBRATIONS IN HOVER.

NOTE: LONGRANGERS ARE PRONE TO TAIL WAG WHEN EXCESSIVE SWEEP IS USED. ADDITIONALLY, SWEEP MAY CHANGE THE EFFECTS OF PITCH CHANGE LINK OR WEDGE ADJUSTMENTS. WHEN SWEEP IS USED FOR VERTICAL BALANCE, VERIFY LATERAL VIBRATION AT HOVER IS WITHIN LIMITS.



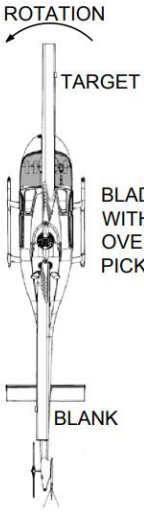
INSTALL VELOCIMETER ON LEFT SIDE OF CONSOLE POINTING DOWN



(Use only if blades are equipped with trim tabs)

BELL 206L MAIN ROTOR 105KIAS VERTICAL BALANCE CHART (VAN HORN COMPOSITE BLADES)

	RUN 1	RUN 2	RUN 3	RUN 4	RUN 5	RUN 6
IPS						
CLOCK						
ADJUSTMENT MADE						



BLADE ORIENTATION WITH INTERRUPTER OVER MAGNETIC PICKUP

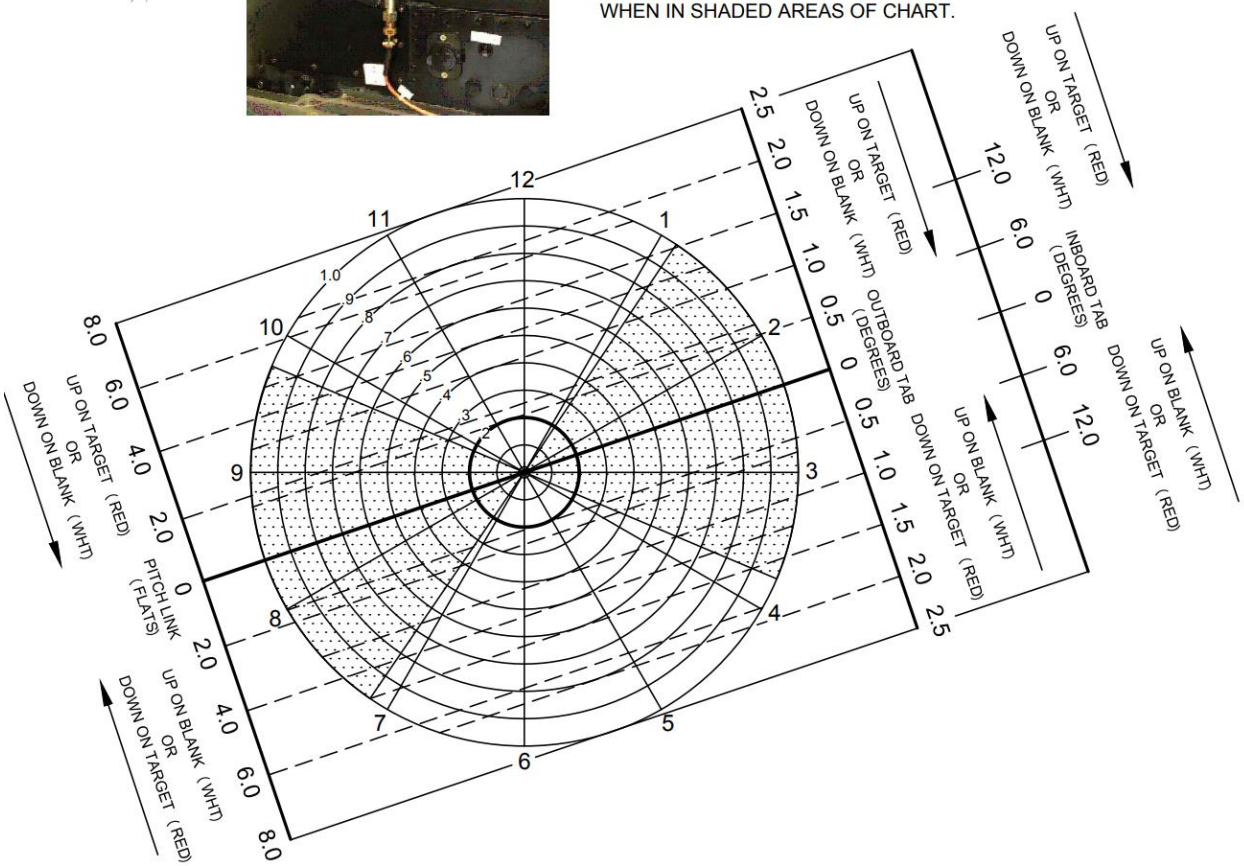
NOTE: MAIN ROTOR BLADES MUST BE FLAT TRACKED ON THE GROUND AT 100% NR PRIOR TO BALANCING.

NOTE: DO NOT EXCEED MANUFACTURER'S ADJUSTMENT LIMITS.

INSTRUCTIONS: PLOT MEASUREMENT FROM BALANCER ON CHART. MOVE LINES WILL TRAVEL PARALLEL TO THICK BORDER LINE OF ADJUSTMENT TYPE USED. USE DASHED LINES THAT EXTEND FROM THICK BORDER LINE TO DETERMINE CORRECT ADJUSTMENT VALUE. ARROWS INDICATE DIRECTION NEXT MEASUREMENT SHOULD GO IF ADJUSTMENT IS MADE. COMBINATION OF ADJUSTMENT TYPES MAY BE NECESSARY TO ACHIEVE 0.2 IPS OR LESS GOAL.

NOTE: USE COMBINATION OF INNER TAB UP AND OUTER TAB DOWN ON OPPOSITE BLADE WHEN IN SHADED AREAS OF CHART.

VELOCIMETER IS ON LEFT SIDE OF CONSOLE POINTING DOWN.



PAPER CHART P/N 768-26228, REV-