

STEADICAM® Flyer Instruction Manual



**USE WITH
SK
VIDEO TAPE**

STEADICAM FLYER

MANUFACTURED AND DISTRIBUTED BY

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This manual and the accompanying videotape are to be used together to instruct you in setting up and using your Steadicam Flyer. Begin by watching section I of the tape, "Parts Identification and Sled Assembly", without trying to follow along. If you see anything in the tape that is unclear, rewind and watch it again. When you come to the end of section 1, stop the tape and open your manual to "Parts Identification and Sled Assembly". Then follow the step-by-step instructions in the manual.

There are corresponding manual sections for each section on the tape, then follow along with the manual. When you finish the steps in the manual, return to the videotape.

The Flyer is not difficult to learn but you will want to develop good habits from the start. Allow two sessions of about two hours each for learning and practice. It is helpful to have a friend to work with, especially in the sections on operating where a spotter can compare your movements with those on the tape. Take turns practicing and spotting for each other.

STEADICAM® *Flyer*

Introduction To The Steadicam Flyer

The Steadicam Flyer is part of the family of Academy Award winning Steadicam systems invented by Garrett Brown and designed, developed, manufactured and distributed around the world by The Tiffen Company, 90 Oser Avenue, Hauppauge, New York. The Flyer is made to be used with video camcorders weighing 4 -15 pounds. Its basic parts are a SLED on which the camcorder is mounted, articulated ARM and VEST.

The Flyer is designed to give the operator the mobility and flexibility of a handheld camcorder with the precision and smoothness of a dolly. The Flyer achieves this image stability in several ways.

The relatively lightweight camcorder is made more stable by means of the CENTER POST with its BATTERY/MONITOR counterweight at one end. This makes the camcorder less susceptible to operator motion. It also lowers the camcorder's center of gravity to a point on the center post from which the camcorder's movement can be more precisely controlled.

Near the center of gravity, we put a GIMBAL. The gimbal isolates the sled from unwanted angular motion. Angular motion disturbs the viewers eye much more than up and down or side-to-side camcorder movement.

Giving the operator a MONITOR to watch instead of an eyepiece further isolates the camcorder from operator motion.

For additional support, the system includes an ARM and a VEST. They support the weight of the camcorder and sled, dissipate high and low frequency vibrations from the operator and spread the weight and torque of the camcorder and counterweight system over the operator's upper body.

SECTION 1: PARTS IDENTIFICATION AND SLED ASSEMBLY

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Begin by unpacking the parts of the Flyer System:

- Vest
- Arm
- Sled (stage, center post, gimbal, monitor, battery holder)
- Tiffen SteadiSTAND
- Docking bracket
- Power cable (4 pin XLR to small 2 pin Lemo)
- Video cable (BNC to BNC)
- "T" handle Allen wrench

You will need several additional items to assemble and balance the FLYER. Gather them now:

- A charged NP-1 type or a charged Anton Bauer Proformer or Pag Mini Super Pack battery or "V-Mount" battery for the Steadicam. (If you have not already done so, charge the battery now.)
- Your 4 - 15 pound video camcorder or camcorder
- Videotape for your camcorder.
- A large flat head screwdriver.
- A roll of masking or paper tape.
- A grease pencil
- A sandbag (optional)
(Steadicam Sandbag #FFR-000014)



Vest



Upper Sled



7" 16:9 LCD Color Monitor



Flyer System on SteadiSTAND



Arm Extended



Arm Extended



Low Mode Kit (optional)



Instruction Tape



"T" Handle Allen Wrench



Accessory Pack
Screws/Cable Adapter



Docking Bracket



SteadySTAND

STEADICAM® Flyer

Set up the Tiffen SteadiSTAND and docking bracket:

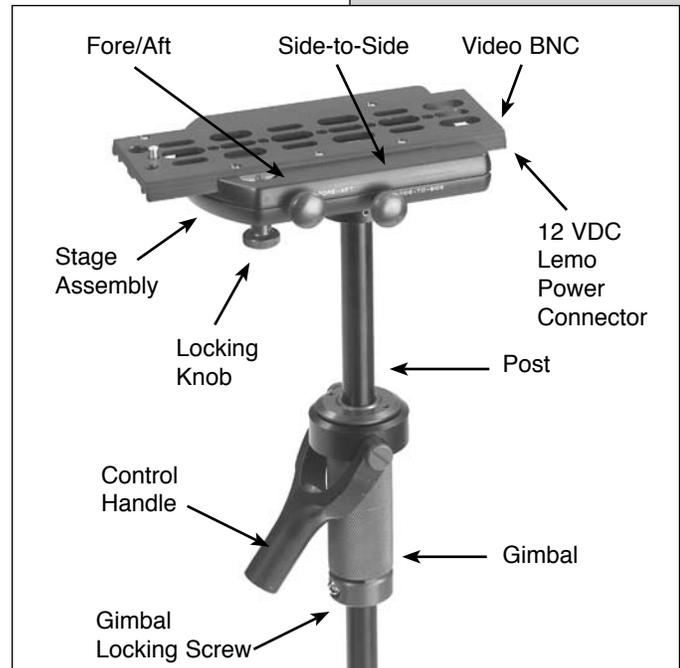
- Set up your stand at a height halfway between your shoulder and elbow.
- Put the docking bracket on the stand and tighten the docking bracket locking knob.
- To open the yoke, push the button at the end of the aircraft pin and pull the aircraft pin out of the yoke.

Adjust the monitor position:

- Tilt the monitor to about 45 degrees.

If the gimbal is not already at the top of the center post, move it there:

- Insert the “T” handle Allen wrench into the locking Allen bolt on the gimbal.
- Loosen the bolt.
- Slide the gimbal to the top of the center post, but leave enough space between top to gimbal and bottom of the stage to accommodate the docking yoke.



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Put Batteries into battery holders:

- If you are using the Anton Bauer Hytron 50 or Pag Mini Super Pack or “V-Mount” slip the battery into the quick release plate on the top sled of the battery mounting bracket..
- For NP-1 type batteries, insert battery into battery holder on top side of the battery mounting bracket and close cover.
- Note that for all four battery types the top attachment is for active use and the bottom attachment serves to carry a spare battery to also serve as a counterweight for use with heavier accessories.
(NOTE: F-24 sled has both battery holders active - switch selection - 12/24)

Dock the sled in the docking bracket:

- Hold the sled upright, with the adjusting knobs on the stage facing away from the grip stand. Put the center post into the bracket so the bottom of the stage rests on the yoke.
- Push the aircraft pin back through the yoke, securing the post in the bracket.



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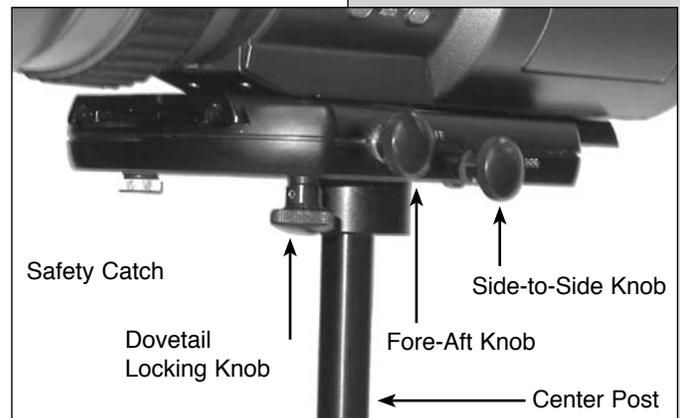
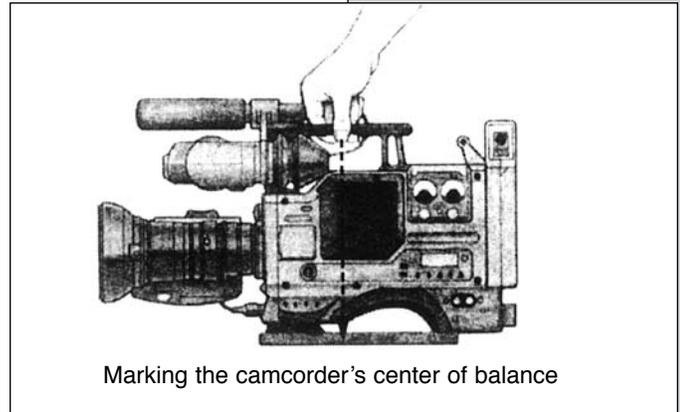
Mounting the Camcorder on The Sled

Find your camcorder's center of balance:

- Remove the battery from your camcorder. You will not need it and it adds weight to the system. (Camera must have 12 volt AUX input)
- Put the quick release plate on your camcorder.
- Hold the camcorder by the handle with two fingers of one hand. Move your fingers back and forth until camcorder hangs level and balanced.
- With a grease pencil, mark the place on the quick release plate that is directly below your fingers on handle. This is the center of balance. It is usually under the front edge of the shoulder rest.
- Remove the quick release plate from the camcorder.

Remove the dovetail from the stage:

- Loosen the dovetail locking knob one half turn only. (If you unscrew this knob all the way the spring may pop out, so use one half turn only.)
- Safety stops on the dovetail and a safety catch on the sled keep the camcorder assembly from sliding off the stage when the dovetail locking knob is loose. Locate the safety catch under the stage. Pull the dovetail to the back of the stage until the safety catch stops it. Pull the safety catch down and slide the dovetail out of the stage.
- Make sure the safety catch springs back into its position when the dovetail is out.



SECTION II: MOUNTING THE CAMCORD- ER ON THE SLED

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Attach the quick release plate to the dovetail:

- Examine the dovetail.
Turn it over to locate the rack, the three rows of large and small slots, and the stops.

- Remove the screws that are stored at the front of the dovetail. Set them aside for the moment.

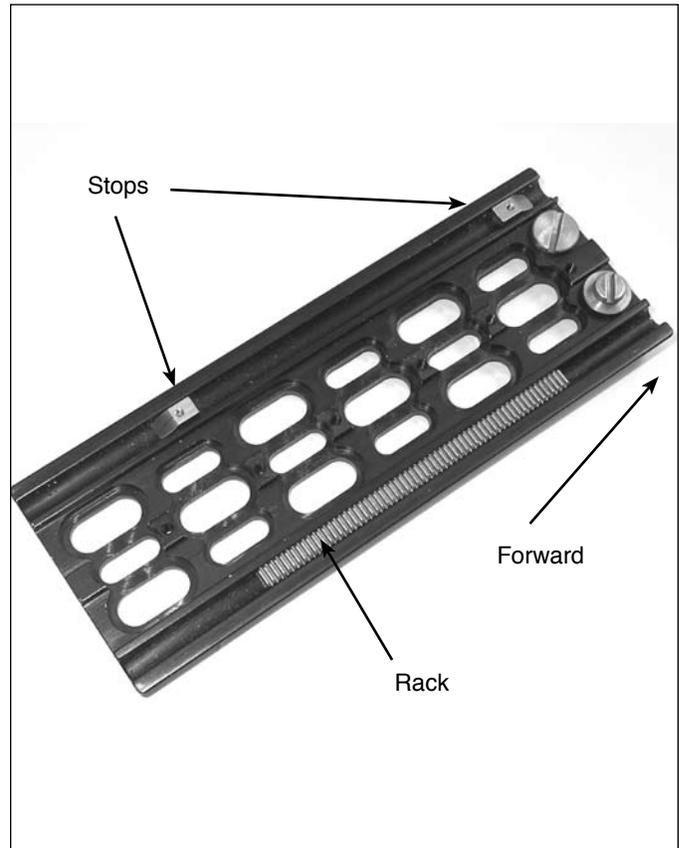
- Put the quick release plate and the dovetail on a table in front of you side by side, bottom sides up, both facing forward. The rack of the dovetail should be on your right.

- Without changing the orientation of the dovetail, place it on top of the quick release. The rack should still be on the right. Line up the center row of slots in the dovetail with the screw holes on the quick release.

- Slide the dovetail forward or backward until the center of the dovetail rack is over the center of balance you marked on the quick release.

- Move the dovetail forward or back no more than 1/4", until one large quick release screw hole and one small quick release screw hole show through the corresponding size slots in the dovetail. Choose holes as far apart as possible for maximum stability.

- Insert the large and small screws and tighten them with a screw driver.



NOTE: IF YOUR CAMCORDER DOES NOT HAVE A POSITION TO INSERT BOTH SCREWS – USE THE PROVIDED POSITIONING PIN.

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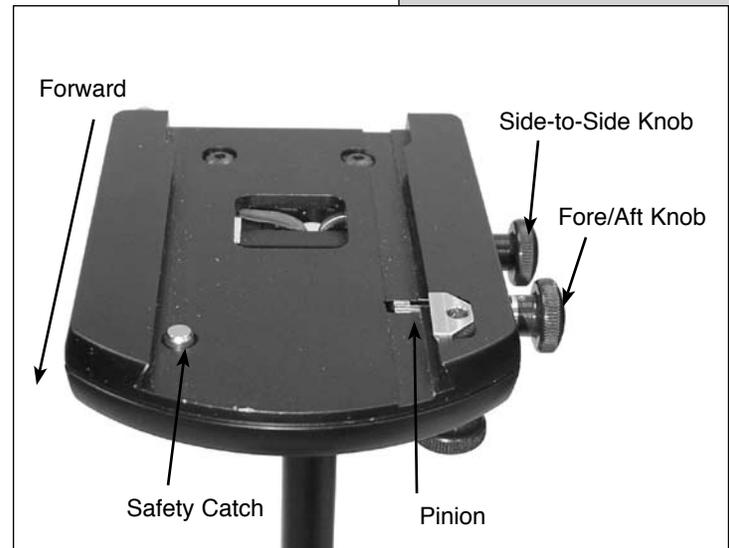
Mounting the Camcorder on The Sled

*Take a moment to look at the stage
before you put the dovetail back on:*

- Make sure the safety catch has returned to its proper position.
- Turn the fore/aft knob. Watch the pinion move. The pinion engages with the rack on the dovetail plate.
- Turn the side-to-side adjustment knob. Watch the stage move.

Put the dovetail back into the stage:

- Insert the dovetail with quick release attached into the back of the stage. Slide it forward until it clicks. If you encounter resistance, engage the rack and pinion by gently pushing the plate forward while turning the fore/aft knob until you hear the click of the safety catch. The fore/aft knob will now move the dovetail fore and aft. Set it in the center of its range of movement. Tighten the dovetail locking knob securely. Clip your camcorder onto the quick release plate.



Steadicam Stage

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Connect the power and video cables.

- Connect the BNC - BNC video cable (BNC-phono "RCA" adapter provided) from "Deck Video Playback Out" on the camcorder to the "Video" input on the back of the stage. ("Deck Video Out" is preferred so you can watch playback.)
- Connect the power cable by plugging the two-pin Lemo into the Power output on the back of the stage and the XLR into the 12V DC power input on your camcorder.
- Make the cables neat with cable ties or tape. Make sure you do not inhibit fore and aft movement.
- Power up the monitor and camcorder to make sure you have a picture. If you do not, try adjusting the brightness and contrast.
- Turn the system off.



F-24 Stage Assembly



F24 HD/SDI Monitor



7" Color Monitor

This is the end of Section II. The camcorder is now mounted on the sled. Turn back to the videotape and watch Section III, "Balance Adjustments" before you go on to balance the rig.

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Rough Balance Adjustments

The sled should be docked in the docking bracket. Perform a rough fore/aft balance adjustment by centering the camcorder over the center post:

- Loosen the dovetail locking knob under the stage.
- Turn the fore/aft knob to move the camcorder forward or back until your center of balance mark on the quick release plate is over the center post.
- Re-tighten the dovetail locking knob.

If you find you can not get the center of balance over the center post, remove the camcorder, quick release plate and dovetail from the stage and reposition the quick release slightly forward or back on the dovetail. See instructions in Section II, "Mounting the Camcorder on the Sled"

Perform a rough side-to-side balance adjustment:

- Look under the camcorder for the quick release mounting holes.
- Turn the side-to-side knob on the stage until the mounting holes are lined up with the center post.



**SECTION III:
BALANCE
ADJUSTMENTS**

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To further adjust the balance, we need to put the sled on the docking bracket balancing stud where it can move freely:

- Pull the aircraft pin and remove the sled and camcorder from the docking bracket.
- Loosen the locking knob of the docking bracket and turn the bracket 180 degrees to get the yoke out of the way. Tighten the locking knob.
- Put the gimbal mounting hole on the bracket balancing stud. (You may want to sandbag the grip stand for stability here. Tiffen Sandbag FFR-000014)

Before letting go of the sled, be certain that it feels bottom heavy. If the sled wants to top over with the gimbal at the top of the post, the camcorder weighs more than 15 pounds and is beyond the weight specifications of the Steadicam Flyer.

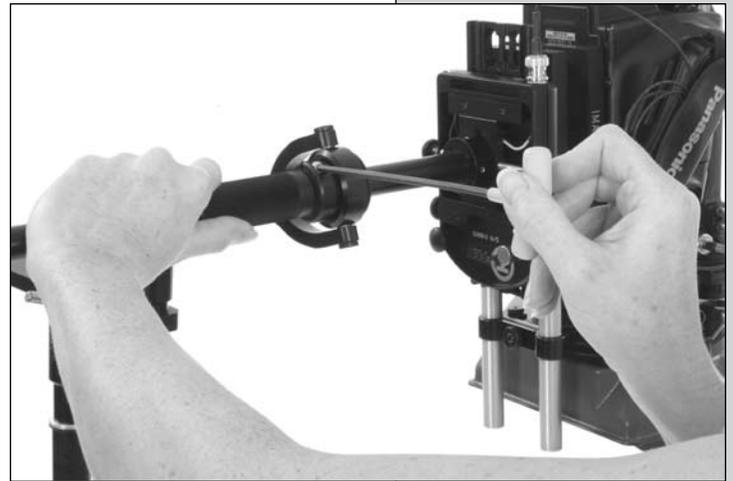


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Rough Balance Adjustments

The stability of the Steadicam depends on it being slightly bottom heavy. If it is top heavy, it will tip over. If it is too bottom heavy, it will be sluggish and hard to aim. If it is just slightly bottom heavy, it will be both stable and easy to control. To achieve vertical balance, put the gimbal, which acts as a pivot point, just above the center of gravity on the center post:

- Lift the center post to horizontal. Hold it securely.
- Rotate the center post until the gimbal locking Allen bolt is accessible
- With one hand firmly holding the camcorder or the center post, use the T handle Allen wrench to loosen the gimbal locking bolt. (Remember, keep the post horizontal when the bolt is loosened!) Take the wrench out of the bolt but keep it within reach.
- Grasp the center post and carefully slide the post in the gimbal. Use your thumb to push against the gimbal. Find the place where the sled is balanced on the gimbal like a see-saw on a fulcrum. Then slide the post through the gimbal 1/3 to 1/2" more, until it is a little bottom heavy, that is, heavier at the monitor end than at the camcorder end.
- Tighten the gimbal locking bolt. (Be careful not to over tighten as the Allen wrench can generate tremendous force.) The unit should be in rough vertical balance.
- Lower the post back to vertical.



WARNING: IF YOU LOOSEN THE GIMBAL LOCKING BOLT WHEN THE CENTER POST IS VERTICAL, THE CAMCORDER AND STAGE WILL DROP RAPIDLY AND DAMAGE THE STEADICAM.

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Look at the Steadicam from the side.

If the camcorder lens tipped up or down:

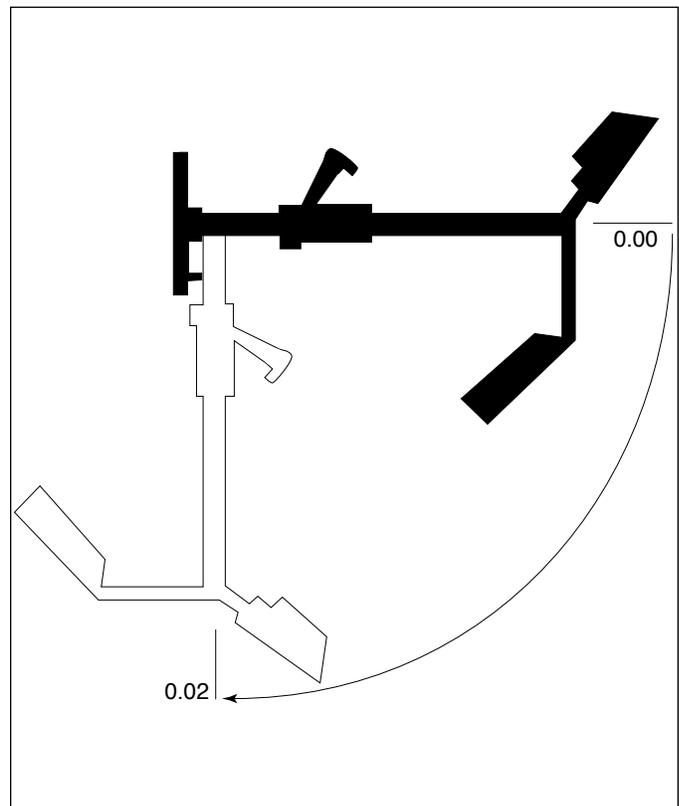
- Hold the center post at vertical.
- Loosen the dovetail locking knob.
- Move the camcorder forward or backward by turning the fore/aft knob until the camcorder is level.
- Re-tighten the dovetail locking knob.

Fine tune the side-to-side balance:

- Look at the sled from the front. If the post is not vertical, adjust the side-to-side knob on the stage until the center post is vertical. (Use the bubble level on the monitor to help you find the right position.)

Fine tune vertical balance by using this simple “drop time” test:

- Make sure the dovetail locking knob is tight.
- Stand behind the grip stand, so the stand is between you and the sled.
- Grasp the center post near the base and move the center post from vertical to horizontal. Hold it there.
- Look to be sure the monitor is not going to hit the stand when you let go of the center post, and put your free hand near the stand to catch the center post when it drops.
- Let go of the center post.
- Count how many seconds it takes the center post to fall to vertical. Try using “One Mississippi, Two Mississippi” or use a stopwatch.)



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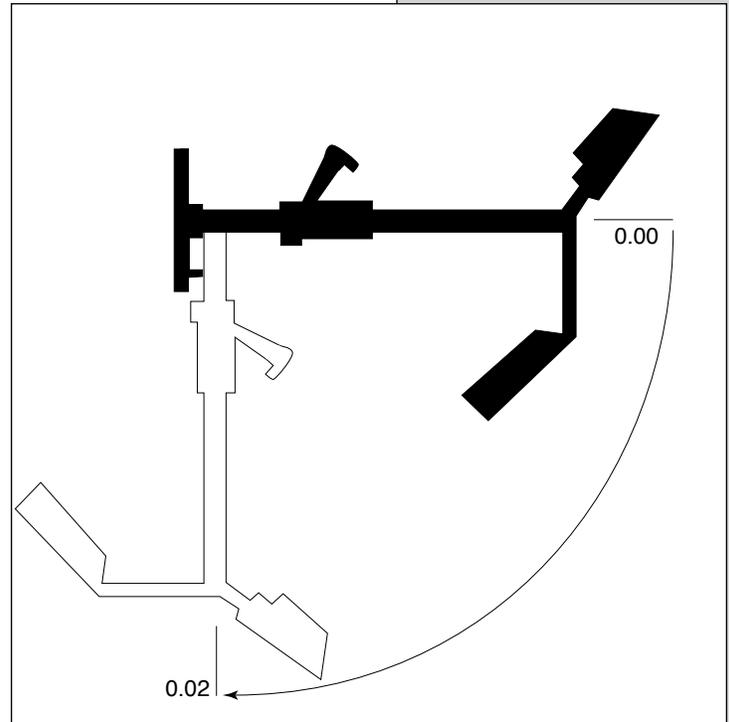
Fine Balance Adjustments

If the rig has a drop time of less than two seconds it is too bottom heavy. You need to move the bottom mass (the lower sled, monitor and battery) closer to the gimbal. If the drop time is more than two seconds, the rig is top heavy. You need to move the top mass (the upper sled, stage and camcorder) closer to the gimbal:

- Lift the center post to horizontal again. (Remember, never loosen the gimbal locking bolt when the post is vertical.)
- Rotate the center post until the gimbal locking Allen bolt is accessible and hold the center post and gimbal firmly. With your free hand, use the T handle Allen wrench to loosen the gimbal locking bolt.
- Slide the center post through the gimbal. Move the lower portion of the sled about 1/4" closer to the gimbal if the rig was bottom heavy. Move the upper portion of the sled about 1/4" closer to the gimbal if the rig was top heavy.
- Re-tighten the gimbal locking bolt.
- Re-do the drop test. Keep making small adjustments until the sled is balanced.

Balance Note:

**“Drop-Time” of 2 to 2 1/2 seconds ok.
You will eventually determine what works best for you.**



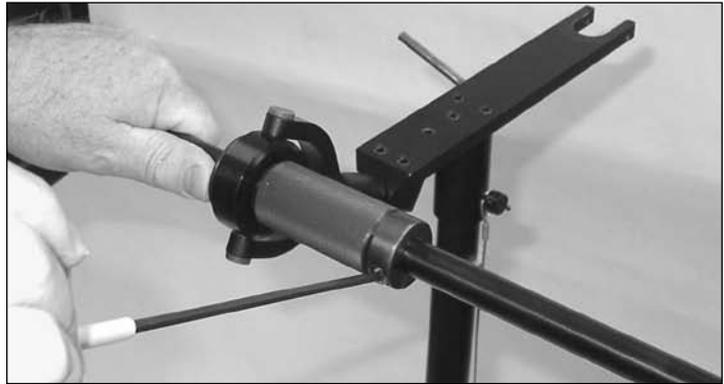
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Recheck the fore/aft and side-to-side balance by looking at the sled. Trim with the fore/aft and side-to-side knobs if necessary.

Many experienced Steadicam operators adjust their sleds for a three second drop time which gives them a slightly less bottom heavy rig and more delicate control. For more on this, please see "Additional Adjustments".



THIS IS THE END OF SECTION III. YOU HAVE NOW BALANCED THE SLED. TURN ON THE VIDEOTAPE AND WATCH SECTION IV, "THE VEST AND THE ARM", THEN CONTINUE IN THE MANUAL.



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The Vest

Please read the vest instructions completely before you try to put the vest on. It is very helpful to have a friend help you the first time you put on the vest. Otherwise use a full-length mirror.

Open the vest:

- Loosen both chest straps.
- Release the hip straps.
- Open the chest buckle on the same side.
- Open the shoulder buckle on the same side.

Put on the vest.

The vest buckles top to bottom:

- Slip the vest on.
- Buckle the open shoulder buckle.
- Buckle the open chest buckle.
- Center the chest plate on your chest by tightening the the chest straps evenly and attach loose ends to velcro.
- Push down on the chest plate to seat the shoulder pads on your shoulders.
- Pull out the chest plate release pin and adjust the center spar up or down so the hip pad sits centered on your hip bones (i.e. the pad is half above and half below the hip bones.) Replace the chest plate release pin in the nearest hole.
- Tighten the hip straps completely and evenly. Be sure the Velcro straps are horizontal on the hip pads when you are done.
- The vest should be very snug, but not uncomfortable. Adjust strap tension if necessary.



Flyer Vests, 2 sizes, compact & regular

**SECTION IV:
BALANCE
ADJUSTMENTS**

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Practice removing the vest. The vest should be unbuckled from bottom to top:

- Undo the hip strap first.
- Undo the chest buckle above it.
- Undo the shoulder buckle above the open chest buckle and slip out of vest. When you put it back on, you will not need to re-adjust the chest plate, or the chest straps.



Flyer Vest

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Arm Lift Angle

Determining your threads is part of basic operating technique:

- ❑ Two adjustment screws in the socket block on the vest and two “rod ends” in the mating section of the arm determine the angle lift of the arm.
- ❑ These two adjustments are your “threads”. They are personal and critical for good operating. Some combination of adjustment of these screws - and your physique and posture - will make the arm lift straight up when carrying the sled.
- ❑ The angles of adjustment are not directly “in-out” and “side-to-side”, but rotated about 30 degrees clockwise (relative to the operator). We can suggest approximate threads to start, but the only way to test your threads is to pick up the Steadicam and see what happens.
- ❑ For almost all operators, regardless of body type, the typical adjustment for the “side-to-side” screws (the rod ends in the arm) is 1.5 to 2 turns out on the top screw and ALWAYS all the way in on the bottom screw.
- ❑ Use the rollers when the arm is not under load. The two side-to-side screws work independently of one another. Do not tighten the lower screw, but be sure it is all the way in, and then back it out 1/8th of a turn.

The “in-out” adjustment on the socket block varies greatly by the operator’s body type.

- ❑ If you have big pecs and a flat stomach, the top screw is almost all the way in. If you’ve been eating well and exercising less, the top screw will be further out.
 - ❑ Always dial in the top screw first to your setting, then turn in the bottom screw until it just snugs up against the fitting. **There is no need to tighten the bottom screw very hard.**
 - ❑ With both pairs of screws properly adjusted, the camera will float in all positions with the operator standing relatively comfortable.
3. If you want to operate “goofy-foot,” - with the sled on the right side - you will need to reverse the socket block.



Looking down at the top “in-and-out” screw. Count the threads indicated by the arrow. This is a typical adjustment for a person in reasonable shape.



Use rollers to adjust the “side-to-side” screws. When wearing the rig, be sure to hold the centerpost in line with the “in-out” thumbscrews. This will take the loading off the side-to-side screws.

Now turn on the videotape and watch Section V, “Basic Operating Positions”. You may take the arm & vest off. Remove the arm BEFORE you take off the vest!

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With the vest on and the arm attached to the vest, undock the rig:

- Face the side of the camcorder and bow at the waist. Don't bend your knees. (It is helpful to have a friend spotting you the first time you do it.)
- Lift the gimbal mounting hole to the same angle as the post on the connection arm and place the post in the hole. Work it in by straightening and jiggling a little. (Be sure the pin is inserted all the way into the mounting hole.)
- Use your right hand to hold the arm and gimbal together. With the other, pull the aircraft pin out of the docking yoke.
- Place your left hand on the center post just below the gimbal to steady the camcorder. Do not try to hold on to the camcorder.
- Move so your left shoulder is next to the camcorder, bend your knees, straighten your back and step back from the stand to remove the sled from the docking bracket.

You are now holding the Steadicam. Take a deep breath. Relax.



SECTION V: BASIC OPERATING POSITIONS

STEADICAM® *Flyer*

Unlocking and Docking

Holding the Steadicam will feel awkward at first. Don't worry – you will gain endurance and coordination rapidly as you practice with it. Practice replacing the sled in the docking bracket now:

- Bow from the waist and put the center post in the bracket with the stage resting on the docking yoke.
- Put the aircraft pin back in the docking yoke to secure the sled.
- Jiggle a little to slide the arm post out of the gimbal mounting hole and step back.
- Rest. Stretch.

When you don't have time to dock and undock, you can relieve some muscle tension by holding the rig close to your body on either side or clasping the camcorder close to your chest. You can even sit down.



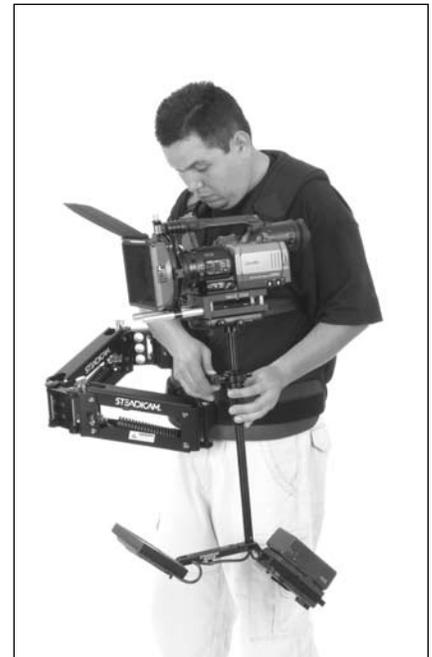
STEADICAM® *Flyer*

The arm tension is adjusted for the heaviest camcorder it can hold so it does not bottom out when you put the camcorder and sled on the arm for the first time. Now adjust the arm for the weight of your camcorder:

- With the vest on, attach the arm and undock the rig.
- Move the arm to the middle of its booming (up and down range) and let go. (If it stays where it is, you are probably close to the right adjustment.)
- If the camcorder rises, press down on the articulating arm until it is horizontal and turn the weight adjustment knob counter-clockwise a couple of turns.
- Let the camcorder go again. If it falls, increase the tension by making the arm horizontal and turning the weight adjustment knob clockwise. If the camcorder rises, loosen the tension again.
- Keep making small adjustments until the camcorder does not rise or fall when you let go of it in the middle of its booming range.

Remember, the weight adjustment knob turns freely when the articulating arm is horizontal.

(DO NOT FORCE OR USE A PLIERS TYPE TOOL TO ADJUST.)



STEADICAM® *Flyer*

Position and Posture

Position the arm:

- Move the camcorder to your left so the arm crosses your body.
- Adjust the arc of the arm so the rig feels comfortable to you. Keep the camcorder close to your body.

Move your torso to feel how your body controls the Steadicam:

- Lean your shoulders back and hips forward. Feel the camcorder try to move back. Lean forward from the hips. Feel the camcorder try to move forward.
- Hold your shoulders still and move your hips from side-to-side. Note how the Steadicam moves with the tilt of your hips.
- Try to position your body so the camcorder stays in place with only light fingertip control from your hands.



Caution: If you rest your right hand on the connecting arm, keep your fingers out of the space between the elbow and the articulating arm. A sudden rise of the camcorder could injure your fingers if they are in this place.

STEADICAM® *Flyer*

Position your hands:

- Place the fingers of your left hand on the center post just below the gimbal. All five fingers should be LIGHTLY in contact with the post. This hand will point the camcorder and do pans and tilts.
- Place the fingers of your right hand on the gimbal, a little more firmly. This hand fine tunes the position of the Steadicam, moving it side-to-side or closer to or farther from your body. The right hand will also boom the arm up and down.

Remember, use your fingertips. If the Flyer is properly adjusted, no more force will be needed. Clenching the center post or gimbal will counteract the Steadicam's "float". Light fingertip control is the key to a steady camcorder and smooth moves.



CAUTION: IF YOU REST YOUR RIGHT HAND ON THE CONNECTING ARM, KEEP YOUR FINGERS OUT OF THE SPACE BETWEEN THE ELBOW AND THE ARTICULATING ARM. A SUDDEN RISE OF THE CAMCORDER COULD INJURE YOUR FINGERS IF THEY ARE IN THIS SPACE. THIS IS INCORRECT FOR OPERATION.

NOTE: Normal Steadicam position is close to the body. Pictures showing Steadicam away from body for illustration purposes only.

STEADICAM® *Flyer*

Moving Around in the Steadicam

Practice moving around in the Steadicam and get used to the way it feels:

- Walk around. Pay attention to the way your movements and posture affect the Steadicam. Relax your muscles and control the Flyer with your body position and a light, finger-tip touch. Leave the monitor off for now. Don't worry about "making shots".

As the Steadicam gets farther away from your body, you must lean back a bit more and use your arm reach to keep that light balanced touch. If you lean forward the Steadicam will try to move away from you, requiring a firmer grip and tiring your back muscles more quickly.

- Swing the arm around to find its range of motion. Note how to avoid hitting your leg with the battery.
- Practice gentle boom moves with your right hand. Find the lowest and highest positions the camcorder can reach. These are the stops. The Steadicam does not function at these extremes. The ideal place to work is near the center of the Steadicam's range.
- Put the Steadicam on the grip stand and take a break.

Stretch and relax.

This is the end of Section V. Turn the videotape on and watch Section VI, "Exercises 1 & 2".



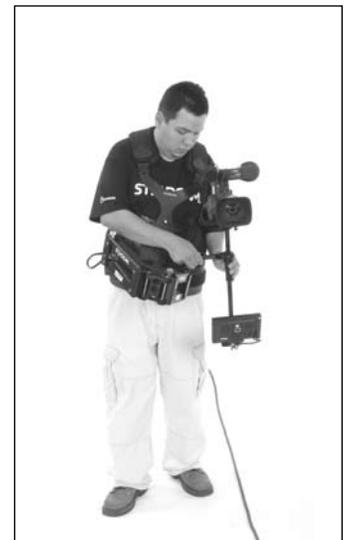
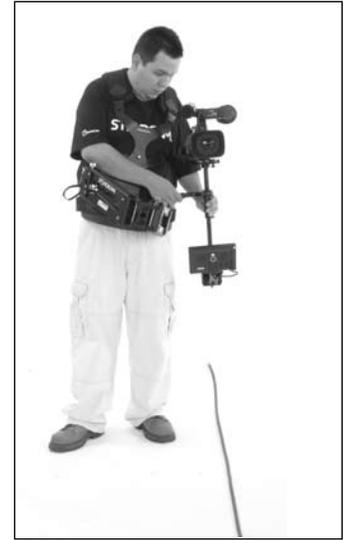
STEADICAM® *Flyer*

The following practice exercises are designed with two purposes: To get you familiar with moving in the Flyer, and to help you begin to develop operating skills.

These exercises may seem very different to you than heroic and complex “Steadicam shots” like following waiting or running actors across open or bumpy terrain. But it is important to note that having a lot of action in the frame can hide important operating mistakes. These exercises will teach you good habits and skill from the start.

Prepare for the exercises. You will need a space where you can walk in a straight line for 15 to 25 feet.

- Put up a 2 x 2 foot tape cross on the wall, placing the crossing tape lines horizontal and vertical.
- Make a straight tape line on the floor perpendicular to the wall. The line should start about three feet from the wall and run for 15 to 25 feet.



**PRACTICE
EXERCISES**

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EXERCISE 1: Walking the line

In this exercise, you will learn to move the camcorder smoothly along a straight line.

- Get into the rig. Leave the monitor off. Position the arm across your body and the camcorder on your left side.
- Stand at one end of the tape line on the floor with the center post directly over the line.
- Walk forward. Look down to see that you are keeping the center post over the tape line. If you have trouble getting it there, adjust the arm or your distance from the line. Don't forget: FINGERTIPS on the center post and gimbal.
- Go back the other way. Lean slightly forward as you walk forward to get a smooth start. Try walking with your knees slightly bent. Go back and forth until you feel comfortable with this. Don't worry if there is some bounce in the camcorder as you walk. It will steady as you improve.



**SECTION VI:
EXERCISES 1 & 2**

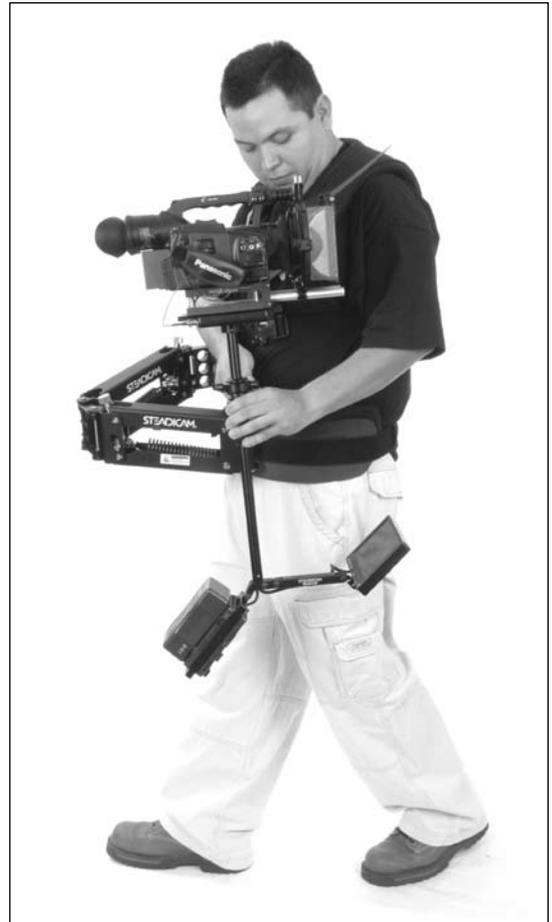
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EXERCISE 2: Over the shoulder

In this exercise, you will learn to shoot with the camcorder pointing back over your shoulder. This is useful if you are walking in front of your subject.

- Walk the tape line on the floor with the camcorder shooting back over your left shoulder. Shooting this way lets you see where you're going.
- Keep the center post over the tape line as in the previous exercise. Do this several times until you are comfortable with it.

This is the end of Section VI, "Exercises 1 & 2". Start the videotape and watch Section VII, "Exercises 3, 4 & 5" before you attempt to do them.

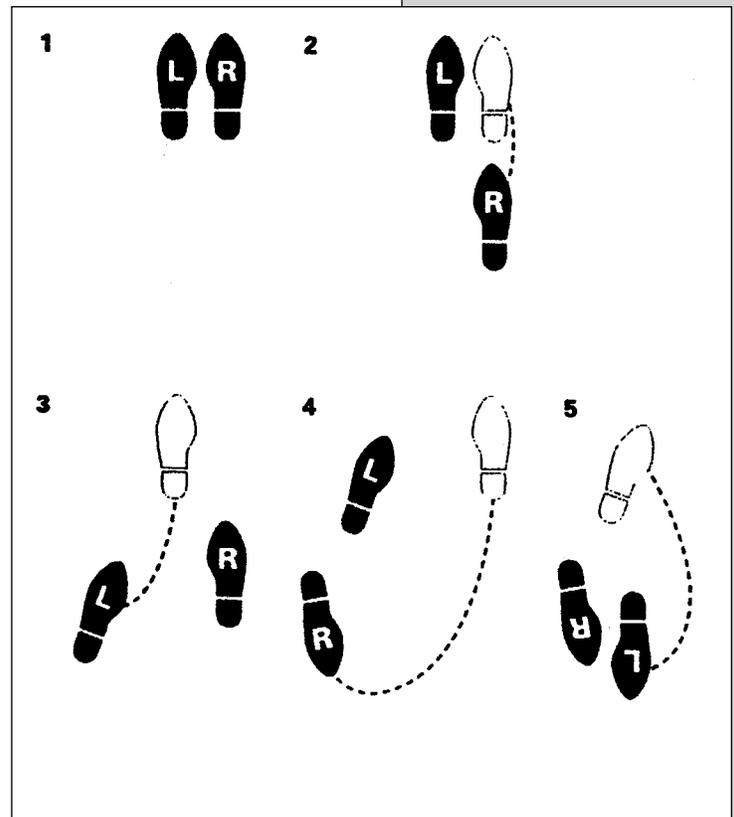


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EXERCISE 3: *The switch*

In this exercise, you will learn to make a move around your Steadicam so you can change the direction of your travel without changing the direction of the camcorder:

- Stand at one end of the tape line, with the camcorder pointing forward and the center post over the line (Figure 1).
- Step back with your right foot to start the camcorder moving back (Figure 2).
- Let your fingertips slide around the center post as you move.
- Step your left foot to your left, across the tape line (Figure 3).
- Pivot on your left foot and step your right foot across the line, so your right foot comes down facing the new direction of travel (Figure 4).
- Step and go. The camcorder is still facing the same direction but now it is "over the shoulder" and you are moving in the opposite direction (Figure 5).
- Walk a few steps along the tape line then come to a smooth stop.
- Turn the camcorder around and try the move again. Repeat the move until you feel comfortable with it.



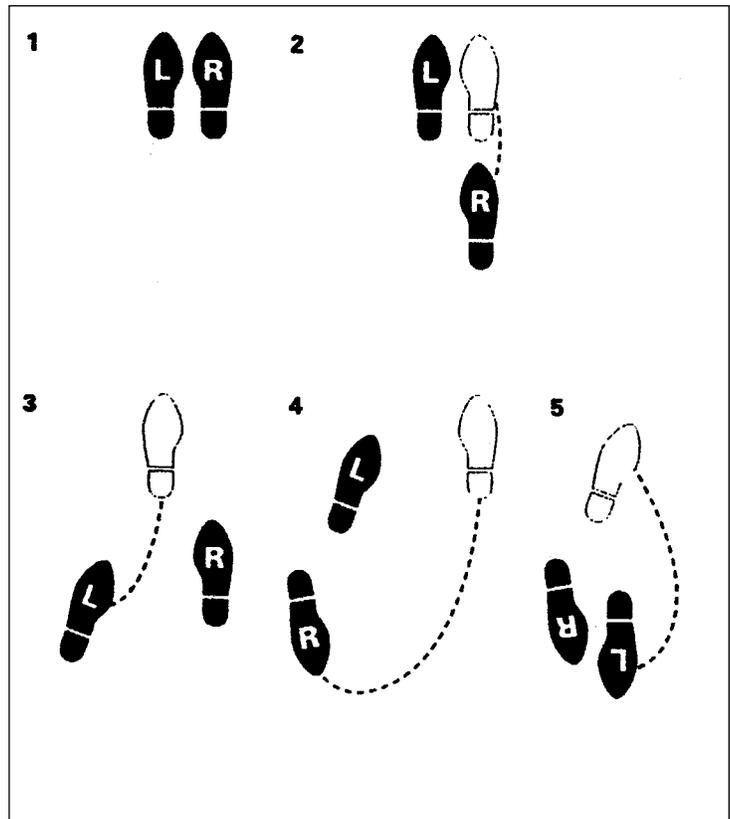
**SECTION VII:
EXERCISES 3, 4 & 5**

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EXERCISE 4: *The reverse switch*

In this exercise, you will again change your direction of travel without changing the direction the camcorder is aimed. You begin with the camcorder over your shoulder this time.

- Stand at one end of the tape line, with the camcorder pointed over your shoulder and the center post over the line (Figure 1).
- Begin the move by pivoting to your left to start the camcorder moving along the line.
- Step back and turn with your left foot (Figure 2).
- Step across the line with your right foot so your body moves around the camcorder and the right foot lands in the new direction of travel (Figure 3).



- Step your left foot across the center line and go (Figure 4).
- Walk a few paces along the tape line. Come to a smooth stop. Repeat this move until you feel comfortable with it.

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EXERCISE 5: The walk and switch

This combines the previous three exercises.

- Lean forward for a gentle start. Walk forward with the center post over the tape line. Aim at the cross on the wall.
- At the end of the line, come to a gentle stop and do the Switch: step the right foot back ... step the left foot across the line ... pivot step ... and go.
- When you get to the other end of the tape line, stop gently and do a Reverse Switch: pivot to the left ... step and turn with the left foot ... step across the line with the right foot ... step the left foot across the line and go.

Keep the camcorder pointing at the tape cross. Repeat the exercise until it gets comfortable.

This is the end of Section VII, "Exercises 3, 4 & 5". Take a well deserved break and watch Section VIII of the videotape, "Exercises 6 & 7".

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EXERCISE 6: Pan and tilt

In this exercise, you will practice smooth and controlled pans and tilts.

- Make a small circle on the center of the Steadicam monitor screen with a grease pencil.
- Get into the rig and power up your system (at last). Set the lens to medium wide angle.
- With your left hand resting LIGHTLY on the center post just below the gimbal, and your right hand on the gimbal, practice pans. Aim the camcorder at the cross you made earlier on the wall, so the circle on the monitor is over the left end of the horizontal tape line. Gently pan right and stop at the right end of the tape. Practice feathering your starts and stops.
- Practice tilts. Place the monitor circle on the bottom of the vertical tape line. Tilt up the line and stop at the top. Feather starts and stops.

Tip: When you tilt, you can avoid unwanted panning by adjusting your grip. Move the pinkie of your “tilt” hand onto the back of the center post for stabilization.

**SECTION VIII:
EXERCISES 6 & 7**

STEADICAM® *Flyer*

EXERCISE 7: Walk and switch with the monitor on

Repeat Exercise 5 with the monitor turned on.

- Walk the line, switch, walk back and reverse switch. Keep an eye on the monitor and try to keep the dot in the center on the center of the tape cross.
- When you are getting good at this exercise, put tape in your camcorder and record the move. Play it back. Look for smooth moves, smooth starts and smooth stops. If the move gets really easy, zoom in.

This is the end of the Exercise Sections and the end of the videotape. Be sure to read the rest of the manual, especially Section X, “Safety Precautions”. You will find instructions for more exercises and adjustments in the next section, “Additional Exercises and Adjustments”.

STEADICAM® *Flyer*

Trimming for headroom

So far, we have assumed the camcorder's rest position should be exactly horizontal. This is not always the case. You can use the balance and trim of the FLYER STEADICAM to work for your shots. If you are going to have to hold the camcorder at a tilt for much of a shot, (like looking up at a tall actor), you can adjust the fore/aft trim so the FLYER seeks the proper tilt angle. You might trim for the hardest part of a shot. Proper trimming reduces the need to use your left hand. The smaller the force applied to the center post, the smaller will be the disturbance to the image.

- Walk up stairs with the camcorder aimed at the top of the stairs. Before you begin, adjust trim for the desired tilt.
- Make a shot going down stairs with the camcorder aimed at the bottom and the trim adjusted for the desired tilt.
- Make shots going up and down stairs with the camcorder aimed over your shoulder. Once again, adjust trim before making the shot.

**SECTION IX:
ADDITIONAL EXERCISES &
ADJUSTMENTS**

STEADICAM® *Flyer*

Following a moving subject

The following additional exercises will help you become accustomed to more complex moves and to following a moving subject. You will need a friend or co-worker to act as your subject. Do these exercises with the monitor on. Run the tape and check playback.

In this exercise, you will learn to adjust for head room with the boom function.

- Start with the camcorder boomed low. Have a person walk past you.
- Boom up as the subject approaches, then down as the subject moves away. The object is to hold headroom with the boom function, not the tilt. This avoids keystoneing the set or showing unnecessary floor or ceiling details.

2. Practice shooting to the side.

- Have your friend walk as you walk alongside.
- Vary the distance between the camcorder and the subject.
- Move from a medium to a close shot.
- Walk on the other side of the subject.

Create simple scenarios. You might ask your subject to go from one room to another, pick up an object and carry it to a third room.

- Rehearse the move to determine where you want the Steadicam to be as you follow the action.
- Record the move on tape, watch playback and re-do the move until you get a take you are happy with.
- Do two or three shots like this.

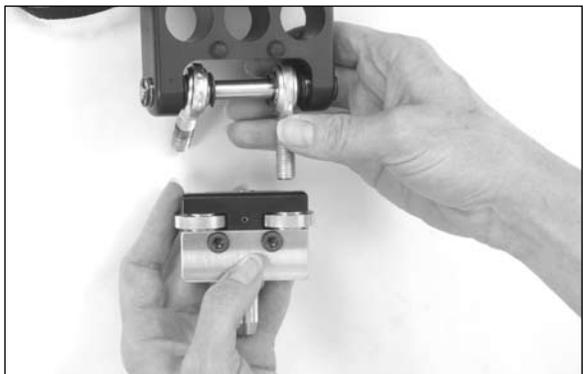
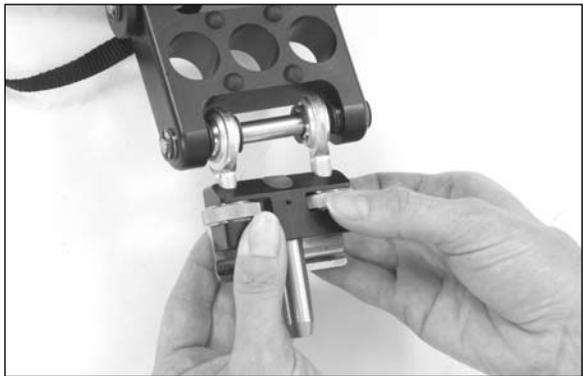
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Adjusting for right side operation

Some shots (like moving along a wall close to the right of the camcorder) will require you to reverse the bridge and operate with the camcorder on the right side of your body. You should eventually learn to operate the Steadicam in both configurations.

- With the sled docked and the arm removed, turn the adjusting rollers counter-clockwise to begin removal of the arm interface. Turning both equally, the male arm vest interface assembly will separate from the two adjustment rods. Turn the piece 180° to reverse procedure. Turn rollers until the male component is fully assembled onto the rods. Then use normally.
- To become accustomed to this position, practice Exercises 1 - 7 with the bridge on the left and the camcorder on your right.

Please be careful when removing & replacing the screws to be properly aligned.



STEADICAM® *Flyer*

Other adjustments

Changing the vertical balance:

As you get more experienced, you may want to adjust vertical balance for a three second drop time. This makes the rig less bottom heavy and a less bottom heavy rig gives you more delicate control. This is especially useful when a shot requires a lot of tilting. On the other hand, level shots that do not require a lot of tilt are easier to do with a slightly more bottom heavy rig. To get a more bottom heavy rig, adjust the sled in the gimbal for a quicker drop time.

Cleaning the vest liner:

The liner of the Steadicam vest is held in place with Velcro. It can be removed and washed by hand with mild soap and water. The foam inserts should be removed so they do not get wet*. After washing, air dry thoroughly. When you replace the liner, conform it to the shape of the vest.

***Note:**

Some vests do not have conversion to remove foam. Just wash and allow to - AIR - dry. Commercial laundry's can wash and dry pads.

STEADICAM® *Flyer*

Steadicam operating safety is largely a matter of common sense. Here is a quick list of ideas about avoiding problems:

- Check the area you'll be shooting in before you shoot, without wearing the gear. Make sure your path is clear. Look for obstacles and note anything you might run into or trip over.
- Use a spotter to guide you around objects and to catch you if you fall. Rehearse with the spotter.
- Rehearse getting on and off cranes and other vehicles, including connecting and disconnecting carabineers and safety harnesses. Check knots.
- Use appropriate footwear.
- Use kneepads in rough terrain or when moving quickly. Some operators always wear kneepads.
- Avoid situations where one commonly falls like skis, skates or running in loose sand or snow.
- Never use the FLYER in a helicopter.
- Above all, never be pressured into shooting when you feel it is unsafe.

**SECTION X:
SAFETY PRECAUTIONS**

STEADICAM® *Flyer*

Trouble Shooting

1. If the FLYER comes out of horizontal trim as you work, adjust the fore/aft or side-to-side knobs.
2. If the bottom of the rig "pendulums" (keeps moving when you stop a move), adjust the vertical balance for a slightly longer drop time (less bottom heavy).
3. If the rig feels unstable and wants to tip at the top, adjust the vertical balance for a slightly shorter drop time (more bottom heavy).
4. If the rig tends to drift toward one side, shift the alignment of the center spar on the vest to compensate. If it persists in shifting out of adjustment, you may be wearing the vest too loosely.
5. If your camcorder is slightly over 15 pounds, try removing accessories, eyepiece, batteries.
6. If there is no picture on the monitor, check the switches and cables. Make sure the battery is charged.
7. **Technical Support** is available 7:00am pst – 4:00pm pst daily Monday through Friday. Emergency service is available 24/7 by calling 1-818-749-8748.

If you need any additional help or advice or if you want information about Steadicam Workshops, please feel free to call the Steadicam support team at The Tiffen Company. The number is (631) 273-2500 or www.tiffen.com.



SECTION XI: TROUBLE SHOOTING

NOTES