

*Vest: Steadicam® Fawcett Exovest®*



**STeadICAM®**

## Introduction

The Steadicam® Fawcett Exovest® is a semi-rigid exoskeletal vest that transfers the weight and torque of supporting a Steadicam® into anatomically appropriate areas, without interfering with natural movement.

Primary weight transfer is to the pelvis via four pads ergonomically placed around the waistband, and primary torque transfer is via a pad system at the upper back. Lower pads avoid compressing the abdomen in front, and the base of the spine in back. Upper pads avoid compressing the neck, shoulder joint, shoulder blades, and spine. Crucially, the absence of chest straps allows for unrestricted breathing and arm movement.

Pad systems are connected by rigid sliding components, and tightened by double and triple-purchase straps for precise fit under load, so weight-bearing characteristics can be fine-tuned on the fly.

The exemplary rigidity of the outer structure extends the torque-resisting lever-arm from mid-back (on existing vests) to high-shoulder level—halving the force required to counterbalance a Steadicam® rig.

Symmetrical twin-rod spars, rising fore and aft from the waistband, increase vertical range of the socket block—and uniquely, permit both front and rear arm mounting.

Four integral pivots allow the vest to conform to natural body movements. The rise and fall of the hips as weight is shifted from one leg to the other is accommodated by a lower pivot system, so the socket block remains level, and at the same height when walking—resulting in less muscular strain, and better overall stability and balance. The upper pivot system allows free movement of the shoulders.

The resultant feel is of increased lightness and control. Between takes, the entire vest may be relaxed by means of one over-center lever, as the upper pad system beds in only under load.

The Exovest® is lightweight and less constrictive than conventional vests—allowing for better respiration, circulation, transpiration, and movement—and is especially comfortable for female operators.

The designer, Chris Fawcett, operates and teaches Steadicam® use worldwide and has extensively studied the physiology of human weight-bearing appliances. He is the author of *Steadicam® Posture*<sup>1</sup>.



*Rear view*



*Front view*



## Fitting the Vest

Note: The Exovest® is a radical new concept in Steadicam® support. As such, it needs to be fitted well. This manual will explain how to put the vest on (bottom latch first), how to place the pads (on your pelvic bones), how to lift the rear rods off your back (booster pads), and how to get the pivot system to work with your body. To get the most from your Exovest®, follow the directions below, and experiment with different settings until it conforms to the size and shape of your body. Once these adjustments are finalized, you can enter and exit the vest quickly by means of two latches and one over-center lever.

### *1. Fitting the Exovest®*

The first time you fit the Exovest, please follow the instructions below. Afterwards, just enter and exit using the two dovetail latches and the waist over-center lever.

1. Relax the waist VELCRO® brand, tagging it back so the waistband is fully expanded.
2. Lengthen the rods, front and back, until they are about the length of your torso. Longer is better at this stage.
3. Open the dovetail latches, top and bottom, and slip the vest over your shoulders, fastening first the bottom latch, then the top. If your waistband is too tight even with the VELCRO® fully relaxed, see section 5, Customising the waistband.
4. Tighten the waist VELCRO® straps, evenly on each side, until the waistband is snug.
5. Stick your thumbs inside the waistband, and work the vest down until the shoulder straps rest on your shoulders.
6. Lift your legs a few times as if you were climbing stairs—not a full 90 degree knee bend, just step height. The vest should ride up a little but settle onto your pelvic bones.
7. Lock the waistband off at this height by closing the waist over-center lever. Check that the lever is closed correctly—its components should be flush. If the plastic waist slider is obstructing the closure of the lever, causing it to spring open, your waistband may be set to the larger size. See section 5, Customizing the waistband.
8. Open the rod clamps front and back (some people can do this alone, some of you will need assistance) and settle the top section of the vest down onto your shoulders. The rod lengths don't need to be the same front and back.



Centering the rods

9. Ensure that both sets of rods are centered on your body. Check the front rods in a mirror, and the rear rods by touching your spine with your thumb, as shown above. If they're off center, adjust the waist VELCRO® straps, relaxing one side while tightening the other.
10. Adjust the shoulder straps to leave you enough room to breathe deeply in your upper chest, as shown below.



Room to breathe

11. The sizing should be correct now, so all that remains is to ensure the pads are correctly positioned. The four waist pads should rest on your pelvic bones. If you are broad across the pelvis, and the front waist pads are pushing into your abdomen, remove the vest and move the pads a little outboard.
12. When you lift the Steadicam, the bulk of the weight should go into your pelvis, but allow a little stabilizing weight to rest on your shoulders—don't leave a gap up there. When you push the Steadicam out in front of you, the rear rods should not touch your back. If they do, remove the vest, and insert a booster pad between the back pad.



Keep the rods off your back

You should examine your posture in a mirror at this point. If the rods are touching your back because you are slouched forward, you may wish to correct this by standing up straight rather than by using a booster pad.

It's worthwhile experimenting with your settings from time to time to find out what suits you best. Because the ExoVest is semi-rigid, a small change can make a big difference to how the forces are inserted into your body. If you learn any new tricks, be sure to let us know.

**Note:** If you're an experienced Steadicam® operator, you'll notice you are using different back muscles. This is because most vests resist the torque at mid-back level, necessitating that work be done entirely in the lower region of the back. By doubling this lever arm, we halve the force necessary to counterbalance the rig, and engage back muscles to the height of the shoulders.

## 2. Relaxing into the Vest

With traditional Steadicam® vests, when walking, you need to hold your pelvis level to prevent the rig from pulling from side to side. In the Exovest®, you can walk normally, allowing your hip joints to rise and fall relative to one another. As you get used to relaxing your pelvis, you'll feel the Exovest® working with your body.

With the rig held comfortably in front of the centerline of your body, shift your weight sideways onto one leg, bringing the rig with you and remaining **entirely upright**. Now relax the stomach, back, and leg muscles that are holding your pelvis level so your unloaded knee bends and your unloaded hip joint drops. You will feel the pivot system shifting to accommodate this. Shift your weight, bringing the rig along, to the other leg, letting the pelvis rotate naturally as the other hip joint rises, again remaining entirely upright. Repeat this until you feel the pivot system working .

Now bring this freedom of movement into a slow walk, and if you feel confident, even a slow jog. Get used to the feeling of the vest moving with you. You will soon find that, by freeing your pelvis, you will be able to move more smoothly and with less effort. Additionally, the socket block will remain at a more constant height relative to the ground.

Operating in a good missionary or Don Juan position, with the rig held toward the centerline of your body, rather than off to the side, will increase the efficiency of the pivot system and reduce muscular strain while operating. If you have a short move that you'd normally do with your arms only, try broadening your stance, and moving your body with the rig instead. Face into the rig to keep it as much on your centerline as possible.



Note: The small stopper block that restricts the rotation of the arm block to 180° aids with fitting and removing an arm to and from the vest, but many operators find that an arm functions better without it. Removing the stopper helps the arm to fold back out of the way as you cross the rig in front of your body. If you remove the stopper from a G-70x® arm, kick the aircraft-pin link forwards instead of backwards to increase reach.

### 3. Operating Adjustments

By virtue of the double and triple-purchase VELCRO® straps, you can tweak the force-placement characteristics of the vest without having to remove it. For convenience, retag the inner end of the waistband VELCRO® so the outer end closes close to the front of your body where you can grasp it easily.



Adjusting under load

In between takes, relax the entire vest by releasing the over-center lever at the waist.



Over-center lever in relax position

If you require a low lens height, or simply prefer to have the socket block mounted lower than usual, you can set the bridge plate to jump over the lower pivot. Be advised that the further the Steadicam® arm attachment point is from your own shoulder, the more likely you are to limit your boom range. (Goofy operators, see Section 6.)



Bridge plate jumping lower pivot

### 4. Customizing the Shoulder Straps

If the shoulder straps are too wide or too narrow, or the dovetail latch is difficult to fasten, you need to conform the shoulder straps to better match your anatomy. Remove the vest, and slightly loosen the four allen screws at front (shown below), then slacken the shoulder VELCRO® so you can slightly loosen the four allen screws to the rear.



Shoulder strap placement



Adjusting shoulder strap clearance

Fasten the shoulder latch securely, then release the front rod clamp to allow the front rods to find their own level. Now adjust the shoulder width by sliding the straps to left or right. Holding both sets of rods horizontal in their pivots, tighten the screws while maintaining a symmetrical distance between each shoulder strap and the centerline of the vest. If you can get someone else to do this for you, while you are wearing the vest, all the better.

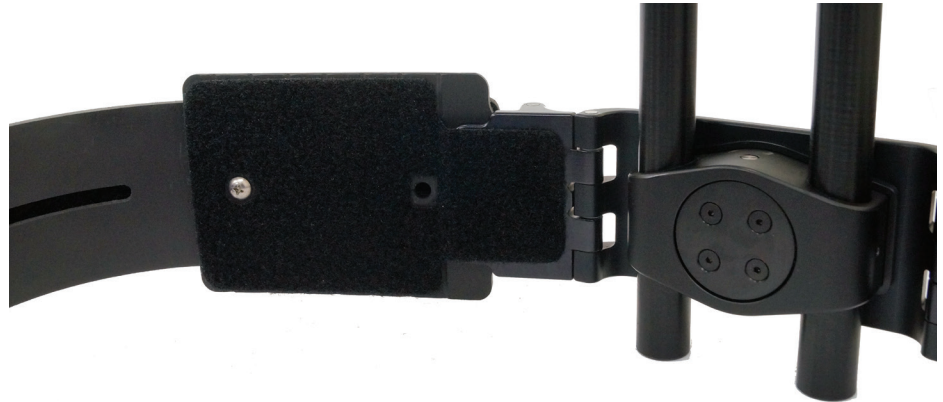


**Note:** If the shoulder latch becomes sticky after this procedure, reseal the latch by loosening and re-tightening the two dovetail screws while wearing the vest.



### *5. Customizing the Waistband*

The standard waistband will fit pelvic girths of around 28-48 in (71-122 cm). To allow the waistband to reach its full extension, on each side, move the small retaining screws at the inside of the rear waistband from their inboard to their outboard positions. For narrower waists, the waistband will function best with the center waistband strap retracted to the rear, and with these screws in their inboard positions. For special sizing requirements, please contact Tiffen®.



Retaining screw moved to outboard position.

### *6. Reconfiguring for Goofy Operators*

You can simply flip the bridge plate for goofy operating (rig to the right side of the operator's body), but this puts the socket block on the same side as the over-center lever, and limits downward travel of the socket block as described in Section 8.

To maximize utility, a goofy operator may reconfigure the vest to be the mirror image of a standard vest by moving both the shoulder and waist latches to the right-hand side of the vest. The screw-hole patterns in both the chest and abdominal plates are left-right symmetrical, so moving the latch hardware from one side to the other is quite straightforward. You'll need a set of English Allen Keys to continue.

#### ***Shoulder:***

1. Remove the 2 screws that fasten the right-hand shoulder strap to the chest plate. Set the screws aside.
2. Remove the 2 screws that fasten the silver dovetail wedge to the left shoulder strap assembly. Remove the dovetail wedge, leaving the plastic handle and VELCRO® strap in place, and move the wedge, using its own screws, to the right shoulder strap assembly. Keep the dovetail wedge in its original orientation to the vest.
3. Remove the 4 screws that hold the silver dovetail grabber and its strike plate to the chest plate and move these to the left side of the plate using the same 4 screws. Keep the dovetail grabber in its original orientation relative to the vest.
4. Screw the left shoulder strap securely to the chest plate using the 2 remaining screws.
5. Reseat the latch following the note on page 7.

## Waist:

1. Remove the front pads. Unthread the VELCRO® waistband straps from rear and the front rollers, on both left and right sides of the vest, but leave the VELCRO® tagged to the center slides.
2. Pull both front plastic waistband slides clear from the rest of the waistband.
3. On the right-hand side of the waistband, remove the four screws that attach the plastic waistband slide, and its front roller, to the abdominal plate. Keep the slide, the roller, and its screws together.
4. On the left-hand side of the waistband, peel off the VELCRO® backing strip behind the silver dovetail wedge, and remove the 2 screws that fasten the silver dovetail wedge and its strike plate to the abdominal plate. Move the wedge from the left to the right-hand side of the plate using the same 2 screws. Keep the dovetail in its original orientation to the vest, but mirror it left– right. Stick the VELCRO® backing strip behind the dovetail wedge.
5. Screw the original right-hand plastic slide, and its roller, to the left side of the abdominal plate, using the 4 matching screws.

6. Fit the front slides into the rear slide assembly, and rethread the VELCRO® straps.

If it isn't clear to you how to do this, please seek assistance. For someone with a little mechanical experience, it's 20 minutes work to make a "full goofy" vest that is still friendly to regular-side operators.

## 7. Posture

The Exovest® is designed to work in conjunction with good operating posture. Now's the time to check your form in a mirror.

Whether walking or standing, angle yourself approximately 45 degrees to the rig.



Stand up straight!



Tuck the rig in close to your center-line, and to your center of gravity.

While standing in this position with the rig floating **in balance** in front of you, adjust your fore–aft threads such that, when looking from the side, you are leaning neither forwards nor backwards, but are upright, with the center of your shoulder girdle directly over the center of your pelvic girdle.

Adjust your side-to-side threads such that, when looking from the front, you are leaning neither left nor right.

Do not allow your head to fall forward, but instead incline it downwards from the level of the top vertebra of your neck. This is the joint around which you nod, and is how you should tilt your head towards the monitor.

For more posture information, please download Steadicam® Posture from [www.steadivision.com/steadipos.html](http://www.steadivision.com/steadipos.html)

Above all, have fun, and fly safe.

## Cleaning Instructions

*Clean the pads of your Steadicam Fawcett Exovest using the cleaning instructions below:*

*Do not machine wash, do not machine dry, and do not soak parts in water or cleaning solution.*

- 1. Remove pads from the pad casing.** Clean all parts separately and conduct your cleaning in a well-ventilated area.
- 2. Clean the dust and debris.** Vacuum the foam with a hose attachment. Work through the foam in circular motions, removing any debris from all sides of the foam. Work carefully to get inside every crevice of the foam.
- 3. Spot clean.** Hand wash only. Spot clean any stains with a small amount of mild laundry detergent and water on a clean cotton cloth. Gently dab at the stain with the solution.
- 4. Spray, don't soak.** Load a spray bottle with one part mild laundry detergent and two parts warm water. Spray the foam until the entire surface is covered; do not soak the foam. Let the solution sit for several hours.
- 5. Remove detergent.** With a clean, damp cotton cloth, press the foam until all the detergent is cleaned away. If necessary, rinse the cloth throughout the process.
- 6. Dry it out.** Air dry only. Lay the foam flat to dry in a well ventilated area with windows; otherwise, you risk mildew forming on the foam. Allow it to dry for approximately 24 hours.

*Unless there has been a spill or an accident, it's a good idea to only deep clean your foam products about once a year.*



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Designed and Manufactured in the United States of America

<sup>1</sup>*Steadicam® Posture*

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