

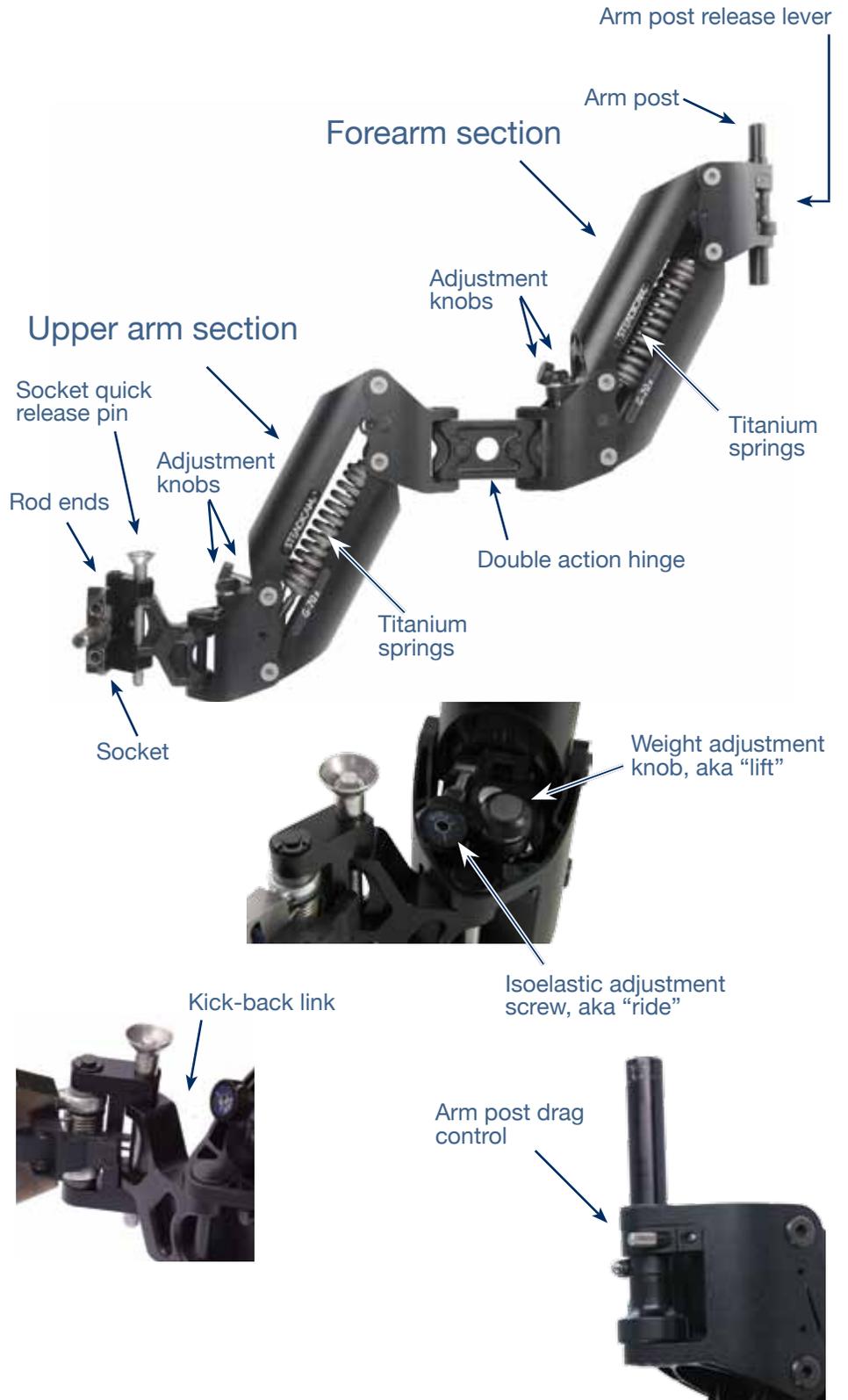
*G-70x™ Arm: Ultra<sup>2</sup>®/Shadow™ stabilizers*



# The G-70x™ Arm

## G-70x™ Arm

The G-70x™ arm has a total lifting capacity of 12 to 70 pounds and a 29" boom range. The arm also incorporates a ride control, a quick post change mechanism, an arm post drag control, and a kickback link.





The G-70x™ arm socket is inserted into the socket block on the vest.

### *Adjusting the arm lift angle*

Setting 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 of 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 sled and see what happens.

### *Side to side*

For almost all operators, regardless of body type, the typical adjustment for the “side to side” screws (the rod ends in the arm) is 2 to 2.5 turns out on the top screw and ALWAYS all the way in on the bottom screw.



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 to prevent binding.

### *In and out*

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.



The “in-out” adjustment on the socket block varies greatly by the operator’s body type. If you have big pectorals 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 comfortably.

### *Goofy foot*

If you want to operate “goofy-foot,” — with the sled on the right side —you will need to reverse the socket block.

On the vest, loosen the socket block height adjustment screws. You may have to tap the plate hard with your fist to get everything to release. Flip the plate and retighten the clamp. Be sure the dovetail clamp properly mates with the beveled retainer.



On the arm, pull the “parachute pin,” flip the mating block, and reinsert the parachute pin with the kick back link rotated (see page 6). Note that the mating block is now reversed; the upper side to side adjusting screw is now the lower screw and vice versa.



To set your threads, first dial the lower side to side screw all the way in, then adjust the upper screw to your threads - about 2 to 2.5 turns out. Use the same procedure to change back to left side operating.



Use a 1/4” allen 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.

## G-70x™ Arm Ride and Lift

### *Basic adjustments: Ride and Lift*

Each arm segment has two adjusting knobs:

The **Ride** knob alters iso-elasticity from a hard ride to an ultra-effortless iso-elastic ride — just shy of locking up at top and bottom.

The **Lift** knob dials lifting power continuously from 12 lbs to 70 lbs.



#### *Adjustment of Ride*

Ride is a new feature and it takes a few minutes to understand how it works, and how to make it work for you. In the field, it only takes a few seconds to get the exact performance you want from the G-70x™ arm.

If you can, preset Ride close to the desired level of iso-elasticity in both arm sections before picking up the sled and adjusting Lift.



Start by presetting the Ride knob to the middle of its travel (about 20 threads visible). Once you get the iso-elastic feel you like, make a note of the threads and the camera weight for future reference.

Ride can only be adjusted when the arm segment is raised to its highest, unloaded position, so it is easiest to adjust before you pick up the sled. It can also be adjusted when flying the sled by booming up fully.

The G-70x™ arm becomes progressively less iso-elastic as the arm's lift is increased. Heavier loads will require a counterclockwise adjustment of the Ride knob to obtain – or maintain – the desired iso-elasticity. Lighter loads will require a clockwise adjustment of the Ride knob to decrease iso-elasticity.

Turning the Ride knob also has a slight effect on the lifting power of the arm. So preset the Ride as best you can and then adjust the arm's lift.

The stops at both ends of travel of the Ride knob should not be forced.



Adjusting the ride: the arm must be angled up at the top of its range. Note: the ride knob is horizontal, the lift knob is vertical.



## *Adjustment of Lift:*

All lift adjustments must be done while wearing the rig, so pick up the sled. Stand in the classic Missionary position and properly set your threads before proceeding.

Adjust the “forearm” section first (the arm section closest to the gimbal). Hold the arm segment slightly above level. When the coaxial springs are perpendicular to the adjusting mechanism, the spring force is neutral — neither up nor down — reducing the effort needed to turn the knob.



Slightly raise or lower the arm segment to find the sweet spot. Adjust the arm's lifting power so that the arm section seeks a position slightly above horizontal.



When the forearm section is set correctly, adjust the upper arm section to follow (track with) the upper arm section as you boom fully up and down. Do not worry if the arm tends to lock up or down at this point.

Note that the Lift knob has a range of adjustment of 32 turns. This means that each turn of the Lift knob will add or subtract about 1.5 lbs (.68kg) of lift.

## *Re-adjust the Ride knob for the desired iso-elastic response*

With the arm set to carry the load, you can micro-adjust Ride for any given load.

In general, most operators will want the most iso-elastic possible ride. To adjust the arm for maximum iso-elasticity at any given lift, turn the ride knob counterclockwise until the arm section begins to “lock” up or down at the extremes of travel. Then turn the ride knob clockwise a couple of turns. This will keep the arm from locking up or down. Test and micro-adjust the lift and ride knobs as necessary.

Typically, the arm is very forgiving of less than “perfect” adjustments of lift and ride. Some operators will set the arm sections at a higher nominal angle (+20° or more), to minimize any lifting required with heavier cameras and/or high boom heights. Pushing down is easier than lifting fully with the extended boom range possible with the G-70x™ arm.

The arm can also be adjusted to hang lower than normally for shots with low boom heights, with very little penalty in performance. Minor changes in sled weight (+/- several lbs/kg) do not require adjustment of the ride knob.

Some operators prefer a more centered ride (like a IIIA arm with a less than maximum load), or a more centered ride when hard-mounted on rough terrain. Experiment and use the arm the way you like it.

## *Some adjustment tips:*

When adjusting from a light load to a heavy load: It helps to have an assistant independently control the height of the upper arm and make his lift adjustment at the same time as you adjust the forearm lift.

It also helps if you raise your docking stand so you can stand next to it and insert the arm post into the gimbal yoke of your docked sled with your heavy camera aboard. As you and your assistant adjust the lift of both arm segments, they will gradually pick up the weight until it floats free of the dock.

When adjusting from a heavy load to a light load: Leave the heavy load aboard if possible, and with the sled on the stand, remain adjacent to the stand while you lighten the lift of both arm sections at the same time. Then remove the heavy weight and rebalance the sled for the light camera and then see if the lift needs further adjustment.



Lift can be altered by forcefully holding the arm segments at the correct angle while adjusting, but be prepared for some exertion! You might be shocked how energetic the springs feel if you are raising or lowering the lift by 30 lbs (14kg)!

## G-70x™ Arm “Kick Back”

### *The G-70x™ arm “kick back” connector*

To accommodate both regular and goofy-foot operators, the two mating parts held by the “parachute” pin can fit together in two ways. The design intent is to “kick back” the upper arm segment as shown in the photos. When “kicked-back,” the arm moves further out of the way while operating with the sled more in front of you or to the arm mounting side. The parts need to be set one way for regular operating, and the opposite way for goofy foot operating.

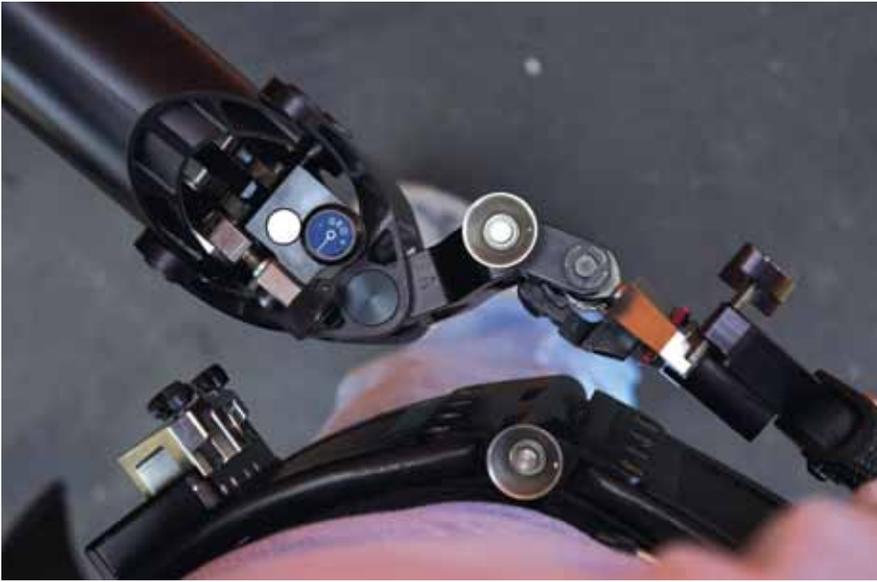


Regular



Goofy-foot

## *With a back mounted vest*



Operators with “back mounted” vests should also orient the connection to send the arm to the inside.

When using a back mounted vest, set the kickback link inwards as shown in the photo. This is the opposite direction from the kickback link’s use in a front mounted vest. The idea is to get the socket block both closer to the body and to the sled. Why? See the next tip.

When using any back mounted vest, all arms are more extended from the load (the sled) to the attachment point (the socket block). Additionally, the “end block” nearest the body is pointing forward. With a normal, front-mounted vest, the arm extension is less and the end block is oriented sideways to the load.

Extending any arm makes it more likely to go over centers and lock up.

When you lean back with a back mounted vest, the upper arm section’s end block leans back in line with the upper arm section. (With a front mount vest, the end block rotates perpendicular to the upper arm section as you lean back). With a back mounted vest, this leaning back puts the end block in a more iso-elastic

position, making the upper arm section more likely to go over centers and lock up.

All arms behave this way, but the consequences become evident with an extended range ( $\pm 70$  degree) and very iso-elastic arm like the G-70x™ arm or G-50x™ arm. The travel in most other arms is restricted to  $\pm 50$  degrees, and this effect occurs above that angle.

The solution is to have about one-half the “iso” help ( $1/2$  the threads) in the upper arm section that one has in the forearm section. You fine tune the adjustment the same way as described on page 5, increasing the iso-elastic response until the arm starts to lock up, then dialing it back in a few turns.

Walking with a back mounted vest also “activates” the socket block more than with a front mounted vest; it rocks back and forth in line with the upper arm section, again with consequences for the arm’s response. It may require an even smaller “less iso” link.

If you leave the forearm fully iso, it has the “helper torque” throughout its range, low to high, and when the arm is extended, it tends to force the upper arm over centers. Consequently, you should not only reduce the iso for the upper arm link with a back mounted vest, but also reduce the iso for the forearm. That way when raised, the operator is lifting a little, the torque is reduced correspondingly and the transferred torque is likewise reduced – hence a smaller tendency for the upper arm section to go over centers. Even with the iso dialed down, the G-70x™ arm’s response in the  $\pm 50$  degree range is more iso-elastic than other arms.

**Tip:** Many operators with front mount vests have removed the stopper for the socket block spring. If you do this, also change the kickback link to the forward position (like the back mount photo). It’s a bit harder to insert the arm into the socket block, but the range of motion is increased.

## G-70x™ Arm Posts

# Working with arm posts

## Changing arm posts

To change posts, rotate the mechanism to expose the release lever. Raise the lever to horizontal to unlock the post. Note: the mechanism will remain in place. Replace post with desired length post, leaving at least 1.125in (29mm) protruding above the arm. Clamp by rotating lever back to vertical.



## Rotational drag

To set the rotational drag, turn the drag knob clockwise to increase drag and counterclockwise to decrease drag. Changing a post does not affect the drag setting.



## General uses

In general, use the shortest possible post in the arm. This avoids possible clearance problems below the arm.

**The quickest way to increase lens height is to use a longer post in the arm and to raise the socket block on the vest.** This increase in gimbal height (and therefore lens height) - up to 11.5in (29cm) - puts the gimbal about as high as one can comfortably reach with the operating hand. A longer arm post could be used, but one can't reach the gimbal and do the most precise work.

**Be aware that using a long arm post can exert enormous torque on the arm bearings and bones. The heavier the camera is, the shorter the arm post should be. If you want a very high or low lens height, get a light camera!!**

Remember, a long arm post alters the height of all the components equally, which may make viewing the monitor more difficult or annoying. Check to see what works; every situation is a little different. The ability to quickly change arm posts or to adjust the height of the socket block on the vest, and/or to extend the sled components, (all without tools!) gives the operator many choices to achieve a given range of lens heights and viewing options.



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