

T E C H N O D O L L Y

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Manual TECHNODOLLY

General

Part 1.

Safety instructions

Part 2.

Mechanics

Part 3.

Software

Part 4.

Electronics (separate book)

Connectors (separate book)

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General

The TECHNODOLLY is the first of its generation. Film directors can now conceive camera movements without having to make any compromises. Directors of photography can shoot their ideas within minutes, and the producers can achieve outstanding results.

In terms of its cinematographer possibilities, the TECHNODOLLY can be used by crews to create movements of unlimited length and complexity. These camera moves can be repeated with precision.

The camera operator, grip and focus-puller set up the first frame, some frames in between and the last frame of the desired move. The TECHNODOLLY computer remembers these set frames and generates the movement between the frames. The camera operator then travels on that move and tunes the move instantly by deleting or adding new frames.

For live action the camera operator overrides the TECHNODOLLY during the move. The TECHNODOLLY stores unlimited amounts of movements and can repeat these movements even months later.

The telescopic arm, camera head, focus, zoom and iris are always on the spot. With its motorized base the TECHNODOLLY covers movements within a space as big as 25 foot wide, 15 ft. high and 80 ft. long.

The TECHNODOLLY package consist out of:

Telescopic arm for max. lens height of 15 ft.

Motorized base with track

DirectDrive camera head with three lens motors

Control desk with two monitors

Field of application

The TECHNODOLLY is designed to carry film and television cameras up to 35 kg. The TECHNODOLLY is not designed to carry persons or to be used for any other application than recording film or video

Part 1

Safety instructions

Preliminary remarks

The TECHNODOLLY is the first automatic camera dolly to be developed and built for general shooting, and not only for „motion control“ shots.

This camera dolly and telescopic arm allows the user to design and finalize camera moves no matter how long or how complex the tracking shot might be.

The TECHNODOLLY works **semi-automatically** in the sense that the crane operator must keep his dead-man button pressed down to activate the movement of the TECHNODOLLY. When the operator no longer activates the button, the TECHNODOLLY will stop automatically. In other words, the TECHNODOLLY **never moves fully automatically** without human control.

The TECHNODOLLY is a new product, first introduced onto the market in 2005. The TECHNODOLLY is operated by a crane operator and a camera operator using interactive controls. From your experience of using the equipment you may have some suggestions for improving safety, for simplifying the controls or extending its operational possibilities. If so, we as the developers will be very keen to hear from you.

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Important safety instructions concerning the operating software

1.

The TECHNODOLLY is only to be used by operators with extensive prior experience of telescopic camera cranes. They must also have undergone special training approved by TECHNOCRANE.

2.

While the TECHNODOLLY is moving, the responsible operator must always watch the moving unit to ensure safe movement. The operator should always place himself in a position where he has an overview of the movement without any visual obstructions. The operator should also place himself outside of the view of a monitor in order to avoid any unconscious glances at the camera picture.

3.

After SAMPLING the last FRAME, the responsible operator should always check the MOVE by carefully travelling backwards along the path until the first FRAME is reached. By following this procedure the operator checks to make sure that the path calculated by the computer does not meet any obstacles.

4.

When shooting in public, the whole area of the TECHNODOLLY's movement should be secured and marked off with red-and-white tape.

5.

While in operation, the TECHNODOLLY should rest on the leveling jacks or tracks, not on its pneumatic wheels.

6.

The stop-buffers should always be attached to both ends of the track.

7.

Nobody should disable or override any safety features of the TECHNODOLLY. This applies in particular to the automatic breaks or the dead-man button.

8.

For the simple and safe design and alteration of camera moves, it is important to follow the rules of the TECHNODOLLY operating system. Some of these rules are vital to safety. You must never ignore or override them.

Other safety precautions

1.1. Safety straps

When not in use, or during transport, the arm of the TECHNODOLLY should always be secured by two safety straps – one at the front and one at the back. On the base, fasten the safety straps with snap hooks at the eyebolts. On the arm, pull the straps through the holes provided. This prevents the straps from slipping off under strain or becoming detached by mistake.



1.1.a - Snap hook into eyebolt on dolly



1.1.b - Strap through front holes



1.1.c - Strap through the back/hole

Do not use only one safety strap when the TECHNODOLLY is being transported, assembled or parked. In these situations one side of the arm is much heavier than the other and the straps hold down the lighter side. Since it is not clear which side happens to be heavier, the safety straps must always be attached on both sides.

But even when the straps are attached to the base, the crane can still be brought out of balance if, for instance, the telescopic arm is fully extended without having the counterweights attached. The crane can then still tip forwards or backwards even with the safety straps in position. So it is important to remember that the straps, in themselves, do not ensure balance in every situation.

Only when the camera is attached to the TECHNODOLLY and the arm is perfectly balanced with counterweights for every length, may the safety straps be released. Once the straps are taken off, the crane operator must always keep hold of the crane. Whenever the crane operator leaves the arm, he must first ensure that the safety straps have been re-fastened.



1.1.d – TECHNODOLLY with straps

1.2. Leveling jacks

The base is set horizontally by adjusting the leveling jacks. To place the TECHNODOLLY on the largest possible footprint, attach the leveling jacks to the dolly wheels. Since the dolly wheels can turn in different directions, the steering at the front and rear of the dolly must be first be locked with the locking bar before setting down the leveling jacks.



1.2. - Locking steering with the locking bar

1.3. Securing the counterweights

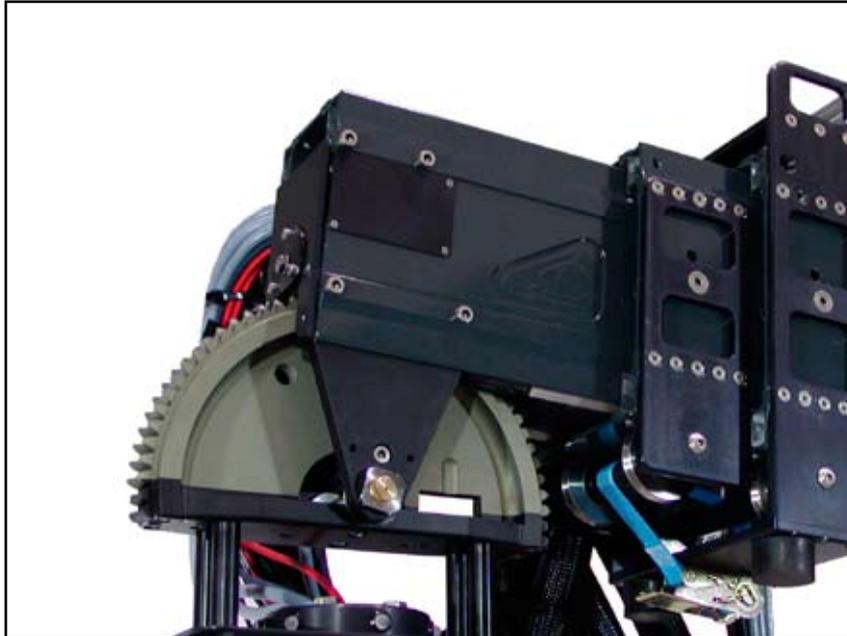
The counterweights should always be secured by the retaining nut to prevent them coming loose.



1.3. – Tightening a M24 hexagon nut onto counterweights

1.4. Securing the beam sections

During transportation the beam sections of the arm might extract and slide outwards. To avoid this danger, first ensure that the beam sections are fully retracted and then secure them with the small ratchet strap. Do NOT attach the ratchet strap to the auto-horizon unit.



1.4.a – Tightened strap between beams



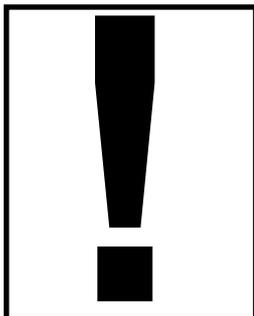
1.4.b - Strap attached to auto-horizon – don't do this!

1.5. Cleaning and maintenance

The TECHNODOLLY should never be cleaned when the electronics are switched on. The arm can only be cleaned and serviced by putting one's hands into the beam sections, so any unintended telescopic movement of the beams could lead to a serious accident. Also ensure that no one else interferes manually by sliding the beam in or out, since this could also cause injury to the person servicing the beam.

1.6. Protective covers

There is always a danger of someone gripping the arm and having their hands cut off by the moving beam sections. This is why it is forbidden to work with the TECHNODOLLY when the plastic protective covers are not fitted. The protective covers should only be removed for servicing and cleaning the tracks and rollers. They must always be screwed back on afterwards.



Important: BEFORE REMOVING THE PLASTIC PROTECTIVE COVERS ALWAYS SWITCH OFF THE ELECTRONICS AND PULL OUT THE PLUG FROM THE POWER SOCKET TO PREVENT ANY RISK OF THE CRANE MOVING UNINTENTIONALLY AND INJURING SERVICE PERSONNEL.



1.6. – Protective cover

1.7. Transportation

The rules for transporting the TECHNODOLLY are the same way as for other TECHNOCRANES with the exception that:

1. The counterweights can NOT remain on the TECHNODOLLY during transportation.
2. The DirectDrive Head can remain on the TECHNODOLLY during transportation.
3. The TRACKS should always be transported in their own shelf trolley. Wheel the shelf trolley to the position where you want to lay the tracks. The tracks should then be lifted from the shelves by two people. Note that each track weigh 40 kg (88.2 lbs).
4. When loading and fastening the DESK in the truck, please take care that the sun shades are not damaged.

1.8. Recharging of batteries

In order to avoid damage to the batteries inside of the TECHNODOLLY recharge the batteries every 4 weeks. Just plug the mains connector of te TECHNODOLLY (connecting of desk is not needed) to mains power for at least 24 hours. For this recharging you do not need to switch the TECHNODOLLY on.



1.8. – Recharging of batteries



RECHARGE BATTERIES EVERY 4 WEEKS

1.9. Checkmove

At the beginning of each working day make one „check-move“ in order to confirm the full functionality of the TECHNODOLLY. Telescope the beams fully in and out. Program a move and see if all functions perform correctly.

1.10. Spare parts

Use only spare parts delivered by Technocrane s.r.o., Plzen. Do not use any unauthorised main boards or hard disks for driving the TECHNODOLLY desk.

Part 2.

Mechanics

List of components

The TECHNODOLLY consists of six electromechanical components and the software.

1. Pan-tilt-roll head
 - 3.1.a. - Head

2. Telescopic beam sections
 - 3.1.b.- Arm

3. Electronics column
 - 3.1.c. – Electronics column

4. Technodolly base
 - 3.1.d. – Base

5. Track wheels and tracks
 - 3.1.e. – Tracks

6. Control desk
 - 3.1.f. – Desk

2.1. Dolly

2.1.1. Leveling jacks

During operation, the base of the TECHNODOLLY should either stand on the leveling jacks or on the tracks. Otherwise the dolly will not have the necessary stability. When on the jacks, the base must be positioned horizontally and the wheel steering must be blocked with the locking rod.



2.1.1. – Base with jacks and locking rod

2.1.2. Fitting the leveling jacks

Fit the leveling jacks by being pushed them into the hollow shaft of the wheel and tightening the nut on the inside of the wheel assembly.



2.1.2.a – Leveling jack



2.1.2.b - Nut to secure leveling jack

2.1.3. Leveling of the base

Before leveling the base the steering must be locked by screwing the locking rod to the leveling jacks.



2.1.3.a - Steering with locking rod

The base should be leveled gradually and evenly, using all the jacks. Adjusting the jacks on one side only may lead to excessive tilting of the base.



2.1.3.b – Raising the jacks

2.2. Tracks and track wheels

2.2.1. Transporting of the tracks

To avoid any damage to the tracks for the TECHNODOLLY, they must be transported in their own shelf trolley. During transportation, ensure that the tracks do not knock against anything.

2.2.2. Laying of tracks

The tracks can be laid with a minimum of two and a maximum of six sections. Depending on the number of sections, the track length comes to 6, 9, 12, 15 or 18 meters. It is important to lay the tracks in the right order, i.e. their numbered sequence, so that the cable carrier will slide along in the guide channel. Each track section is connected with two bolts to its adjacent section.



2.2.2. Two bolts through the sleeper



2.2.2.c. Leveling jacks fitted along the track

It is very important that the tracks are laid horizontally and securely with the aid of the leveling jacks. The track support must be sturdy and stable so that the entire weight of the TECHNODOLLY (800 kg) is securely supported. Check after several movements to make sure that the track supports have not loosen or shifted their position.

2.2.3. Attaching the track wheels

The track wheels are mounted onto the wheel shaft with a screw and half-moon washer for each wheel.



2.2.3. Attaching the track wheels

2.2.4. Putting the dolly on the tracks

First the starter ramps must be laid onto the sleepers. Only use the original TECHNODOLLY ramps for this. The dolly is then slowly and carefully rolled onto the tracks.



2.2.4.a. Technodolly ramps



2.2.4.b – Base moving onto the ramps

Make sure that the track wheels are seated properly on their tracks before the pneumatic wheels are moved clear of the ramp.

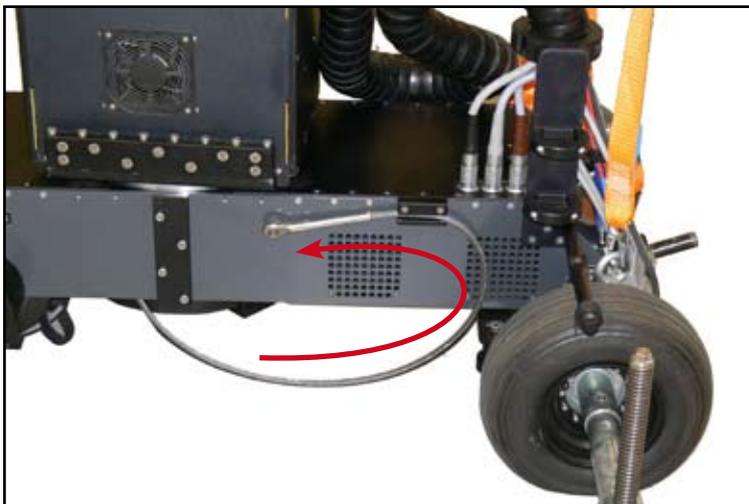


2.2.4.c - Track wheels on tracks

2.2.5. Wire

The base contains a motor with an integrated wire drum that moves the entire TECHNODOLLY along the tracks at speeds up to 1,5 m/sec.

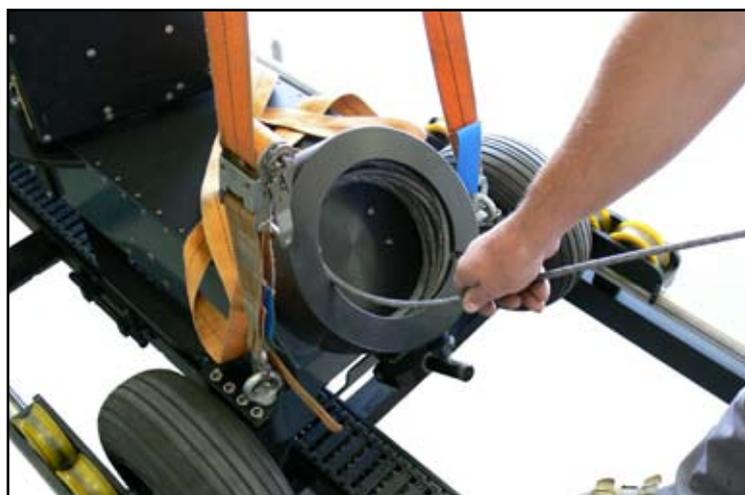
1. Detach the wire with the eye-bold from it's holder at the base.



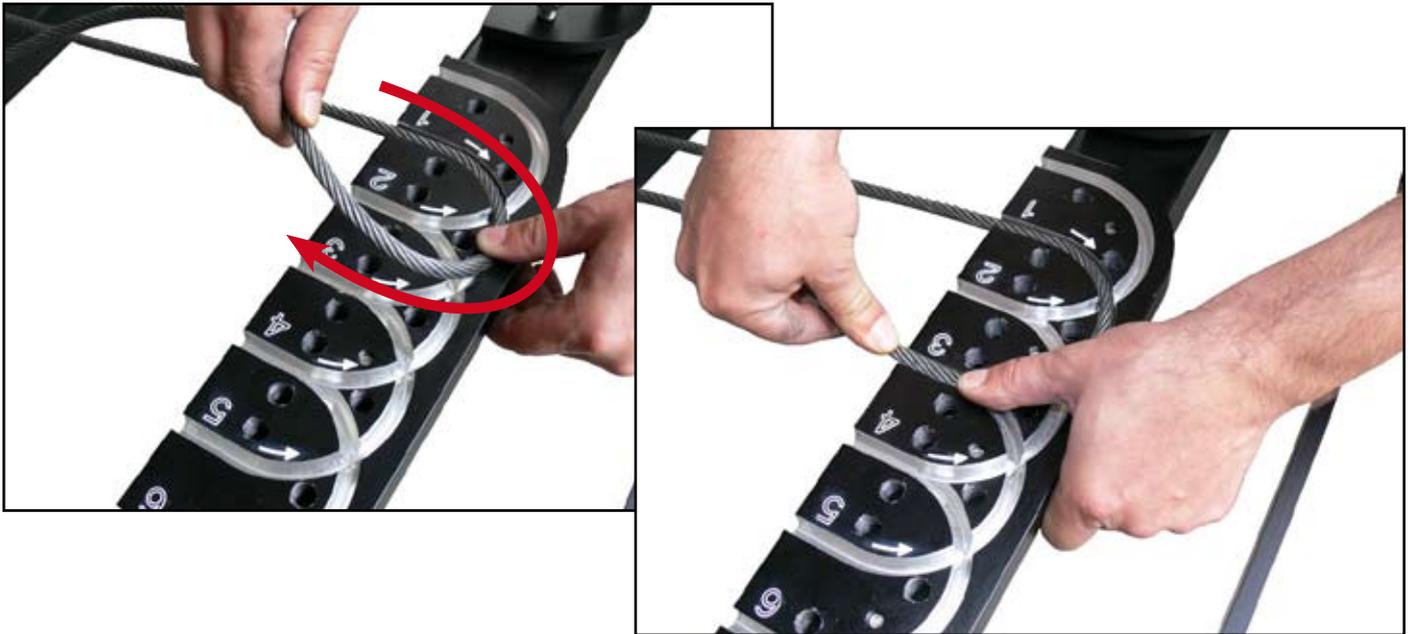
2. Attach the wire with the eye-bold to the end of the rail.



3. Take the other end of the wire from it's nest.



4. Lay the wire into the curved slot at the other end of the track. Pull the wire by hand as tight as possible.



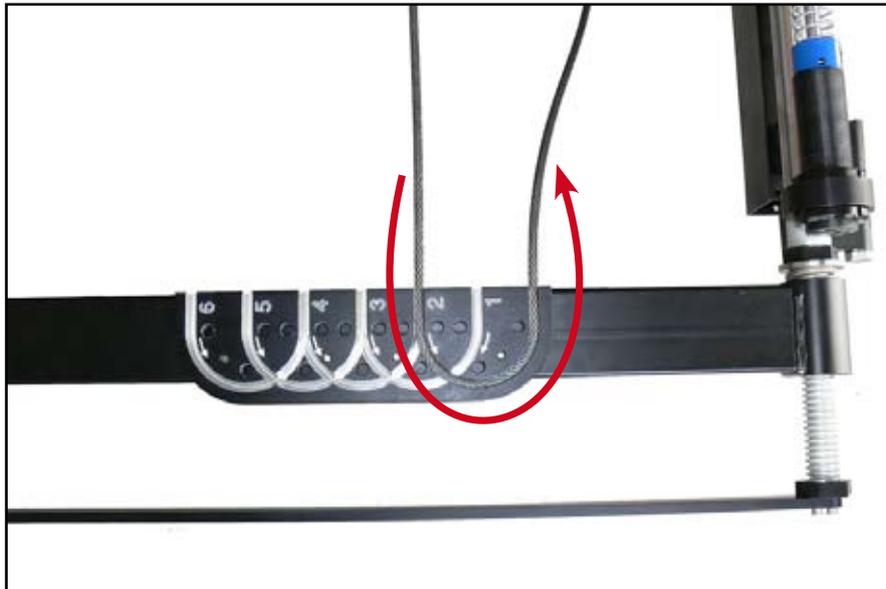
5. Lock the wire with the three clamping screws at the clamping plate.



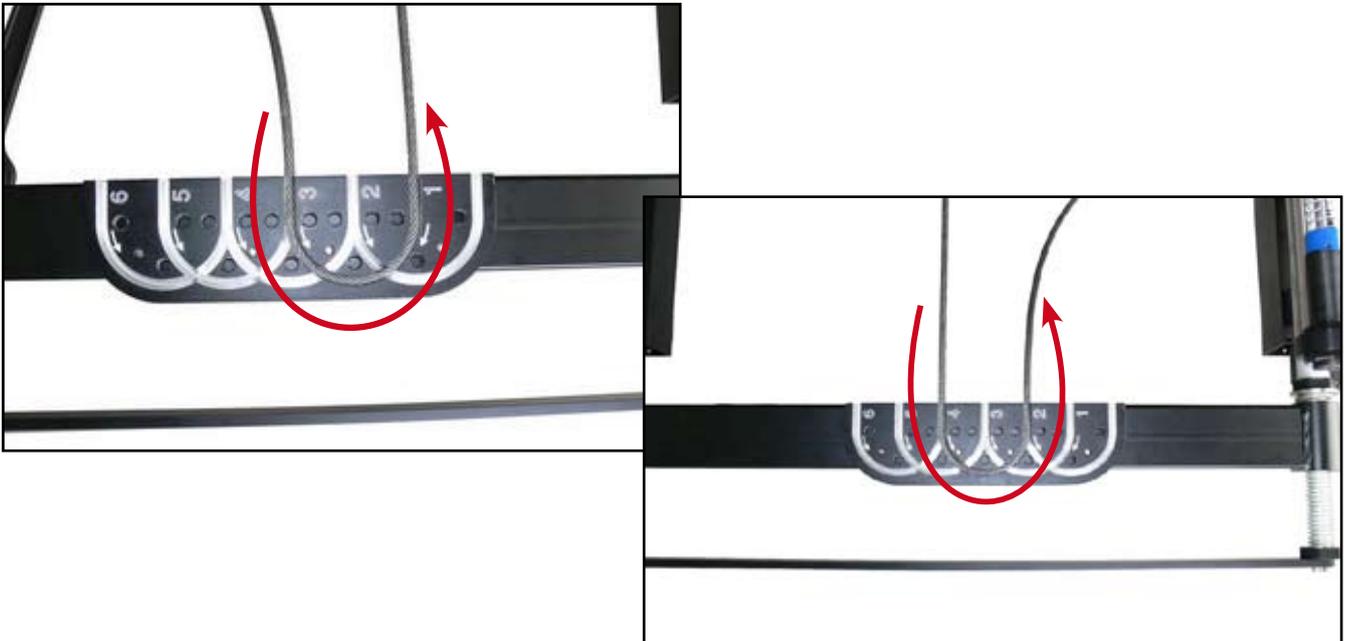
6. Take care that you use the correct slot. And take care that you insert the wire in the correct direction. If you use only one track insert the wire in slot no. 1 (take care of the reversed direction).



7. If you use two tracks insert in the slot no. 2.



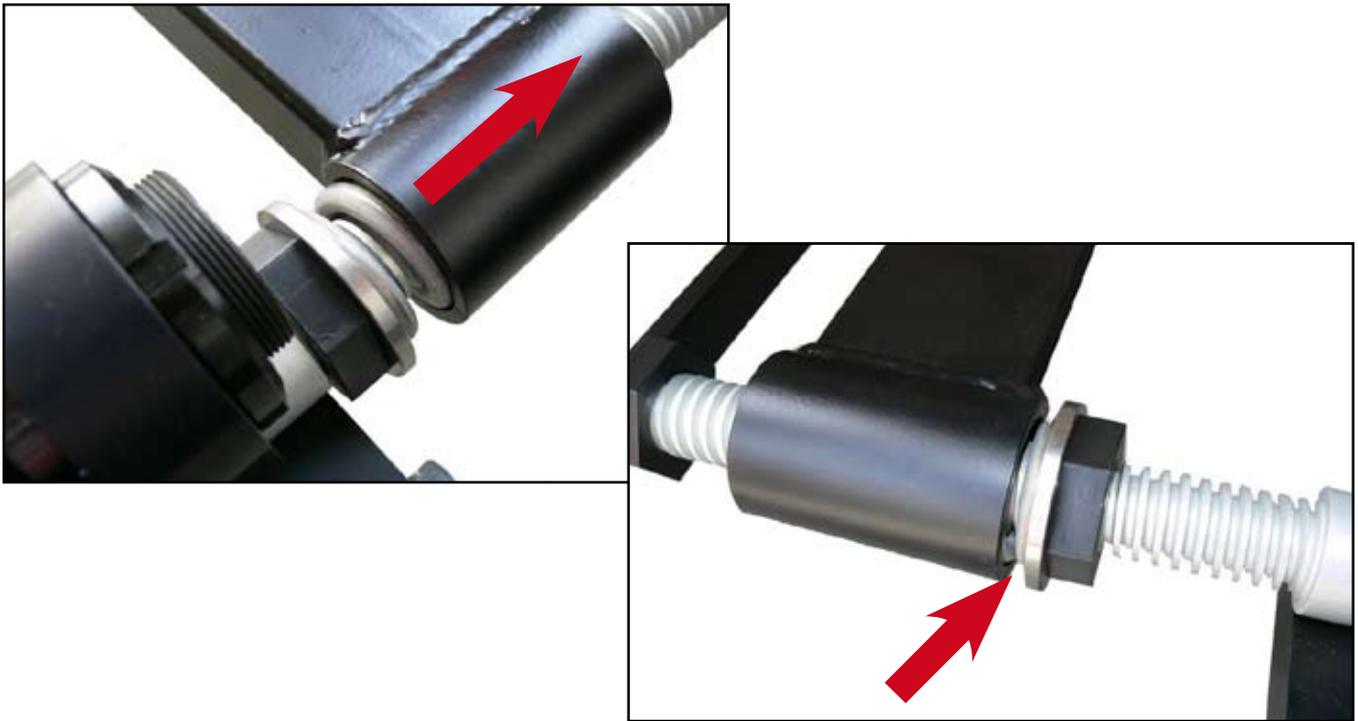
8. If you use three or more tracks use the slots no. 3 - 6.



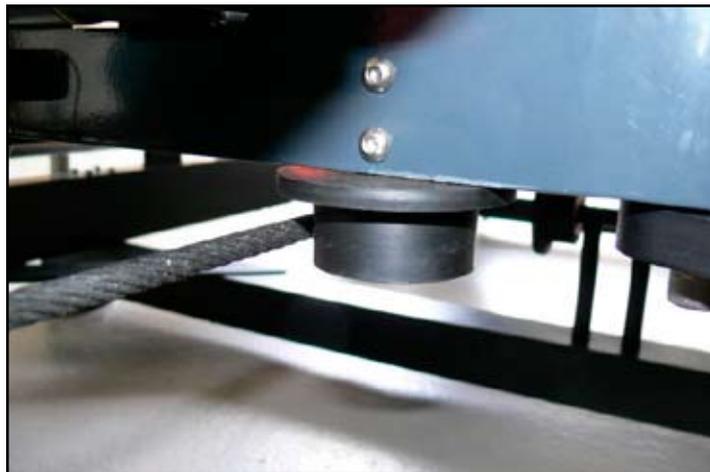
9. Tighten the wire with the use of the plastic nut.



10. Tighten the wire until the big spring is not visible any more.



10. Ensure that the wire is running via the bottom rubber roller at the base.



11. After finished shooting on track ensure that the end of the wire with eye-bold is always stored in it's holder. A sensor in the holder ensures that the track motor is switched off and that the wire drum in the bas can not be damaged.



12. Restore the wire in the nest after shootin in order to avoid any damage to the wire.



2.2.6. Inserting the cable carrier

The position from which the cable carrier starts depends on the length of the tracks that have been laid.

For two track sections (2x 3 meters = 6 meters), the carrier will inserted as follows:



2.2.6.a. - Two tracks with cable carrier

In the case of three track sections (3×3 meters = 9 meters) the carrier is inserted as shown:



2.2.6.b. - Three tracks with cable carrier

For three or four track sections (4×3 meters = 12 meters), the carrier will be inserted as follows:



2.2.6.c. - Four tracks with cable carrier

The fixed end of the cable carrier is always screwed to a sleeper



2.2.6.d. - Attaching the cable carrier to a sleeper



2.2.6.e. - Attaching the cable carrier to the base

The moving end of the cable carriers is always plugged onto the base and attached with two nuts.

2.2.7. Two **TECHNODOLLY** on one track

It is possible to work with two **TECHNODOLLY** on one track. The **TECHNODOLLY** and the tracks need special modification for this special work.



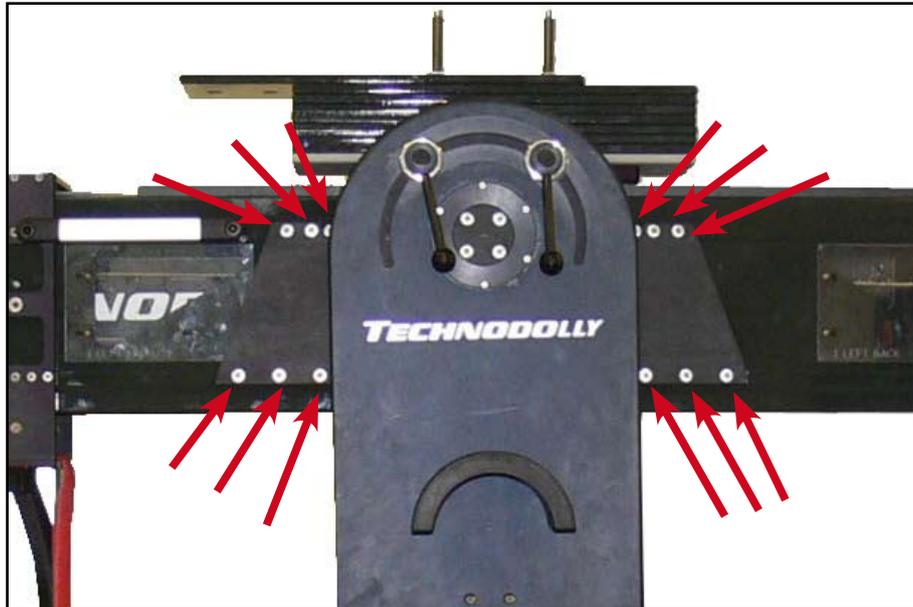
2.2.7.a. - Two **TECHNODOLLY** on one track

Each **TECHNODOLLY** has to be operated by its own technician. The technicians have to take care that both cranes do not interfere

2.3. Electronics column

2.3.1. Detaching the telescopic beam sections

First of all dismantle the camera head and remove all the counterweights from the beam. Then all the plugs must be pulled out of the electronics column. The next step is to open the fastening screws on the sides.



2.3.1.a. - Arrows showing the screws on one side

The whole beam unit can then be lifted out from the top. Please note that the beam unit must be lifted 2.10 meters upwards in order to clear it from the column.



Important: DO NOT TURN THE CRANE TILT MOTOR BY HAND.

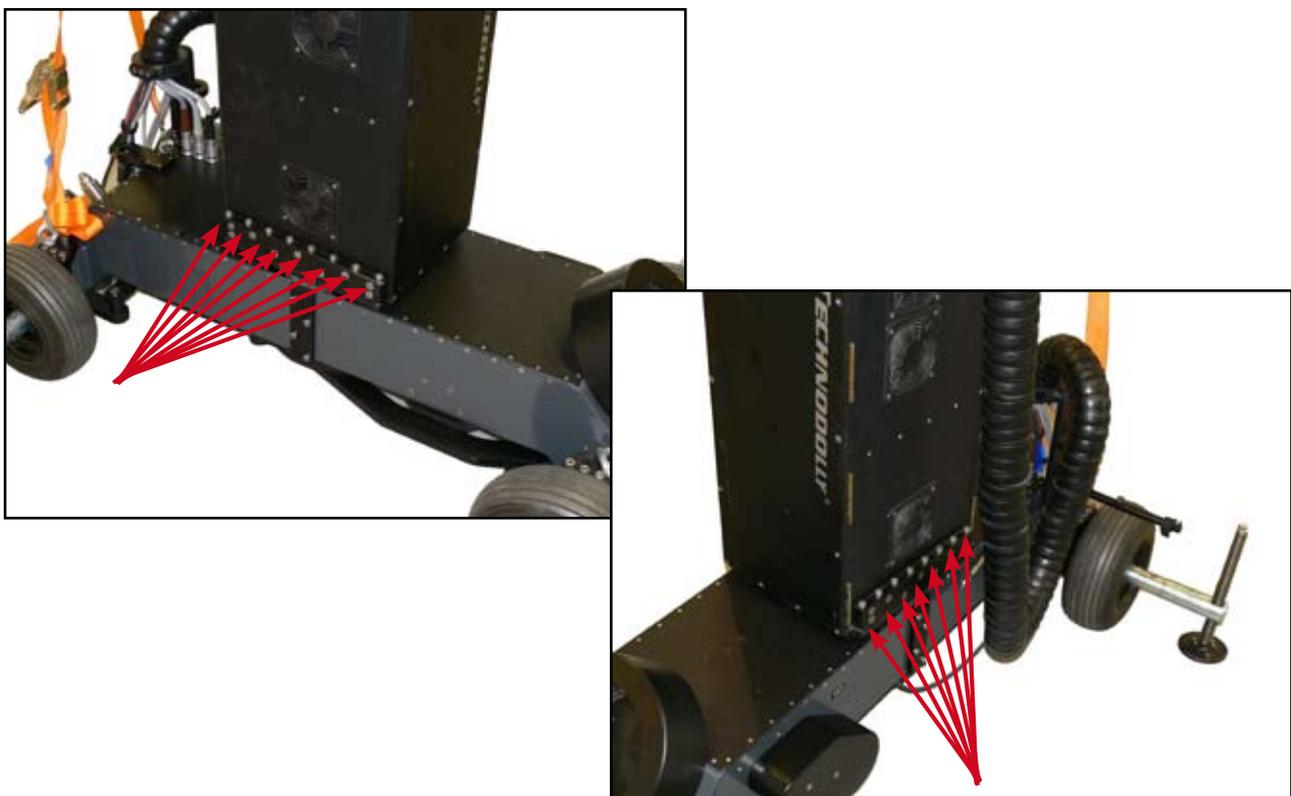
2.3.2. Detaching the electronics column

If necessary, the electronics column can be separated from the base. First of all the pan brake on the column must be firmly locked. This is essential to ensure that the column is reinstalled in the right position.



2.3.2.a. - Locking the crane pan brake by hand

After that, loosen all six M16 nuts connected to the base.



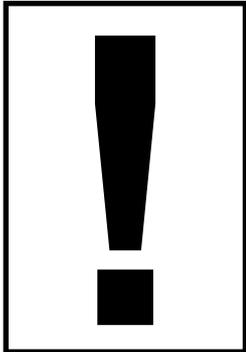
2.3.2.b. - View from the bottom, arrows showing nuts

When taking off the electronics column in TECHNODOLLY, do not forget that it weights 270 kg (600 lbs.).

2.4. Beam sections

2.4.1. Removal of the transparent protective covers

The plastic protective covers must be removed from the beam sections to allow servicing and cleaning. It is usually sufficient to remove the side covers only.



Important: BEFORE REMOVING THE PLASTIC PROTECTIVE COVERS ALWAYS SWITCH OFF THE ELECTRONICS AND PULL OUT THE PLUG FROM THE POWER SOCKET TO PREVENT ANY RISK OF THE CRANE MOVING UNINTENTIONALLY AND CAUSING INJURY.

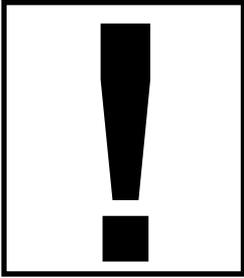
To take off the protective covers first loosen the fastening screws by one turn. The covers can then be shifted sideways and removed.



2.4.1.a – Loosening the screws



2.4.1.b – Removing the plastic shield



Important: AFTER EVERY SERVICE ALWAYS REPLACE THE PLASTIC PROTECTION SHIELDS. THERE IS A CONSTANT DANGER THAT PERSONNEL OR MEMBERS OF THE PUBLIC WILL TOUCH THE CRANE BEAM AND INJURE THEIR HANDS ON ITS MOVING SECTIONS.

When the plastic protective covers have been put back into position do not turn the screws too tight, because this might damage the material

2.5. Rollers

2.5.1. Quiet and smooth movement

There are external and internal tracks along the arm. The beam sections move telescopically by running along these tracks on inner and outer rollers.



2.5.1.a - Inner rollers



2.5.1.b - Outer rollers

For a quiet and smooth sliding movement, which is essential for perfectly smooth camera work, the tracks and rollers must be kept clean and lubricated. Any dirt should be thoroughly removed from the tracks and rollers before degreasing them with a cleaning agent.



2.5.1.c - Cleaning the tracks



2.5.1.d - Cleaning the rollers

Then a fine film of grease should be applied to the tracks, using a brush for best results.

When cleaning it is important not to forget the inside tracks, even though they are less accessible. They carry the same load as the outside tracks and are therefore equally important for smooth movement.



2.5.1.e – Greasing the tracks with a brush



2.5.1.f – Cleaning inside tracks

It is also important to clean the tracks on which the counterweight carriage rides on the first beam. These tracks carry a moving load of 200 kg (440 lbs.). Any dirt will cause slight vibrations that will be transferred to the film image.



2.5.1.g - Cleaning the counterweight tracks

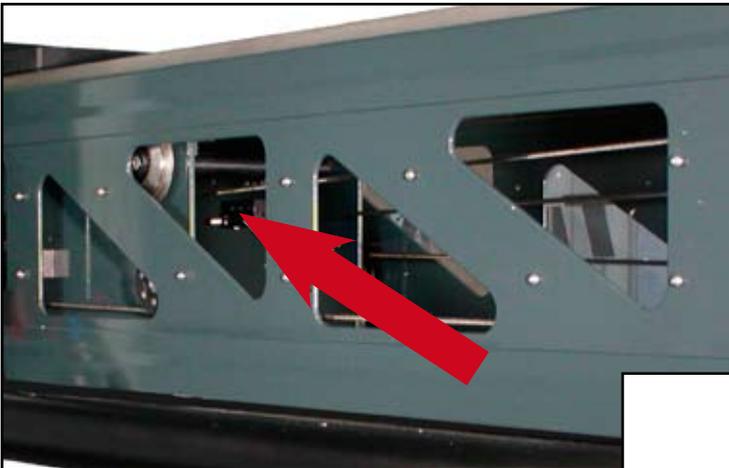
2.6. Drive cables

2.6.1. Tensioning the drive cables

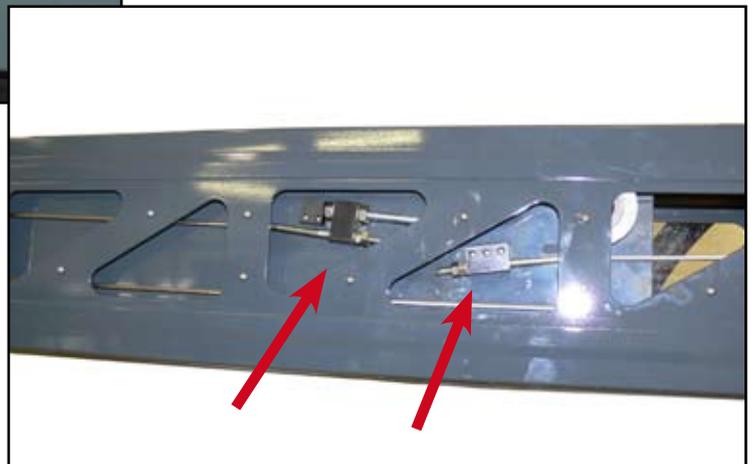
The beam sections of the telescopic crane are extended and retracted by a cable mechanism. To ensure there is no play in the movement of the beam sections, all four cables must be evenly tensioned on their anchor points.



2.6.1.a - Anchorage pulling out cable (2nd beam section)



2.6.1.b - Anchorage pulling in cable (2nd beam section)



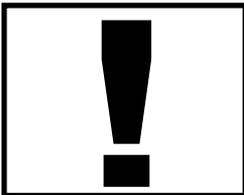
2.6.1.c - Anchorage pulling in and out cable (3rd beam section)

To tension the cables hold the threaded anchor bolt steady with a 6mm spanner and tighten the nut with a 13mm spanner.



2.6.1.e – Tightening the cables

The cables have the correct tension if they remain quite taut when the crane has been tilted up at 60 degrees.

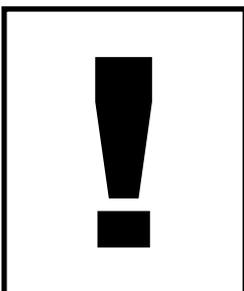


Important: AFTER TENSIONING THE CABLES, ALWAYS SECURE THE NUT ON THE ADJUSTING BOLT WITH THE LOCK-NUT.

After the tightening of the cables, ensure that each cable stud is secured with a second lock-nut. Use two 13 mm spanners to ensure that the lock-nuts are tight.



2.6.1.f – Securing nut with two spanners



Important: AFTER THE CARRIER HAS BEEN ADJUSTED TO REMOVE ANY PLAY, THE TWO FASTENING SCREWS IN THE AXLE-BOX CASE MUST BE RE-TIGHTENED. IMPORTANT: SCREW THE COVER BACK ON IMMEDIATELY AFTERWARDS. SERIOUS INJURY CAN BE CAUSED IF FINGERS GET INTO THE BELT OR CHAIN GEARS.

2.7. Counterweights

2.7.1. Balancing the crane

On a crane of fixed length the camera is mounted and then the counterweights are successively added until the crane is balanced. In the case of a telescopic crane, the counterweight carriage is designed to slide inwards and outwards to balance the crane at every length. For this reason the initial balancing of a telescopic crane follows a very different procedure:

First step:

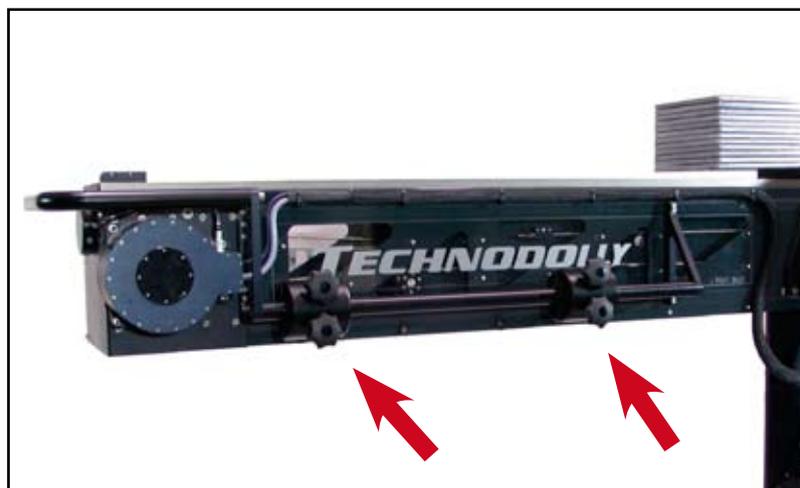
First make sure that the arm is secured by the two ratchet straps. Move the beams until the counterweights are above the center of the column. Now balance the crane with the non-moving counterweights like sliding weights and back weight.



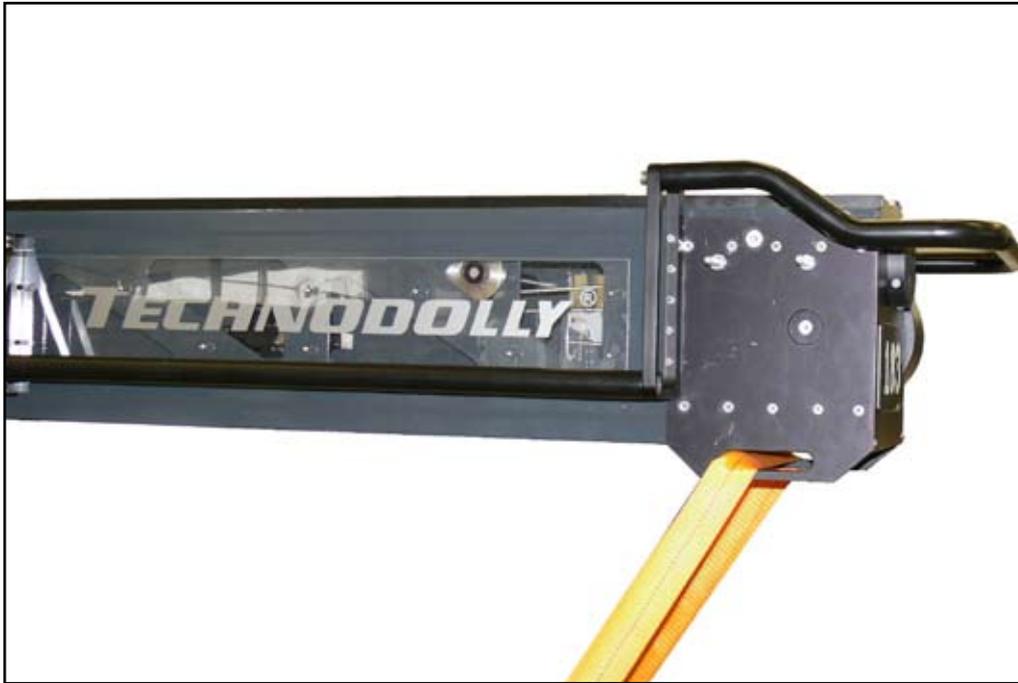
2.7.1.a – TECHNODOLLY with straps

Second step:

Extend the beams fully and load the counterweight carriage until the crane is balanced. Do not change the sliding weights from step one.



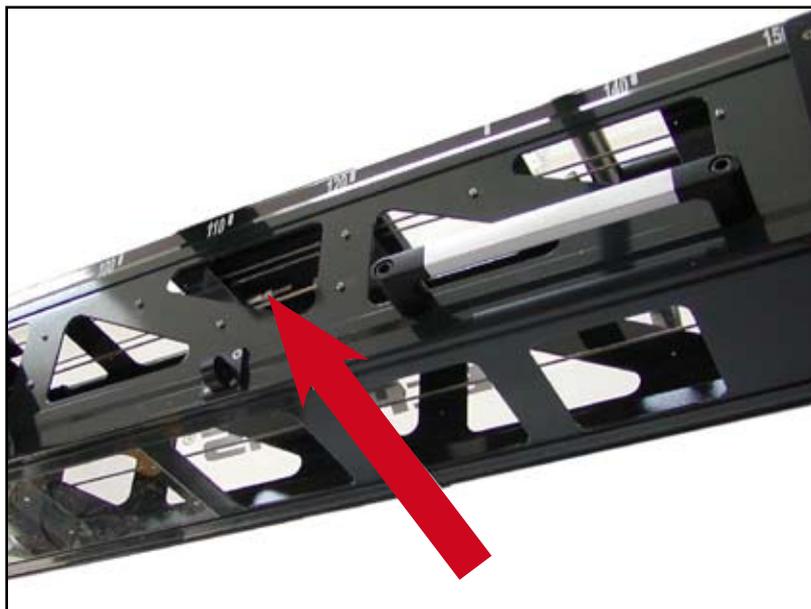
2.7.1.b - Sliding weights on crane



2.7.1.c – Back weights

2.7.2. Tensioning the counterweight cable

The counterweight cables are tensioned at the counterweight carriage. The lock-nut must first be loosened. Then, using a 13 spanner, the tensioning nut can be tightened on the thread terminal.

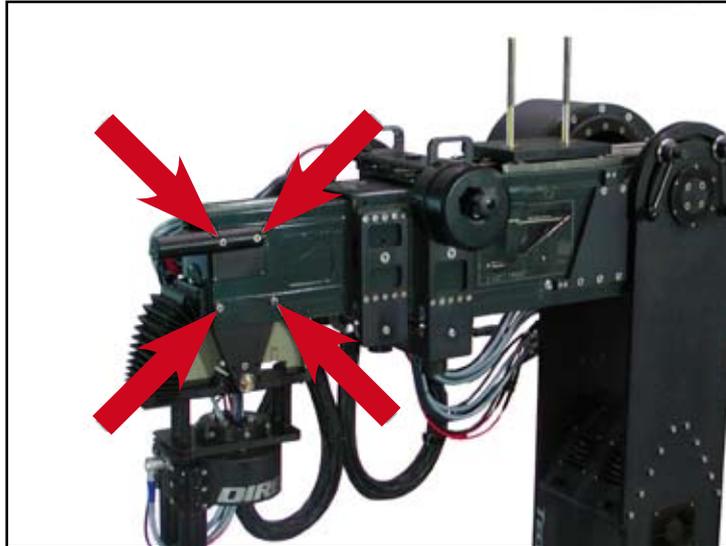


2.7.2 – Nut for the counterweight cable

2.8. Autohorizon

2.8.1. Attaching the autohorizon gear

The autohorizon is mounted on the end beam section with 8 screws. After releasing all 8 screws the autohorizon can be easily removed.

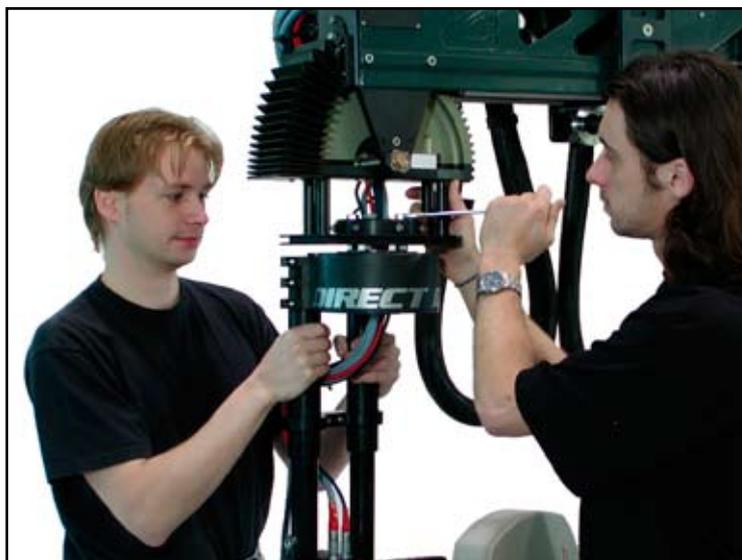


2.8.1. - Four screws on the left

2.9. Direct Drive Head

2.9.1. Attaching the remote head

The remote head is bolted on by tightening the four nuts through the Mitchell base plate on the autohorizon.



2.9.1.a – Mounting pan and tilt head

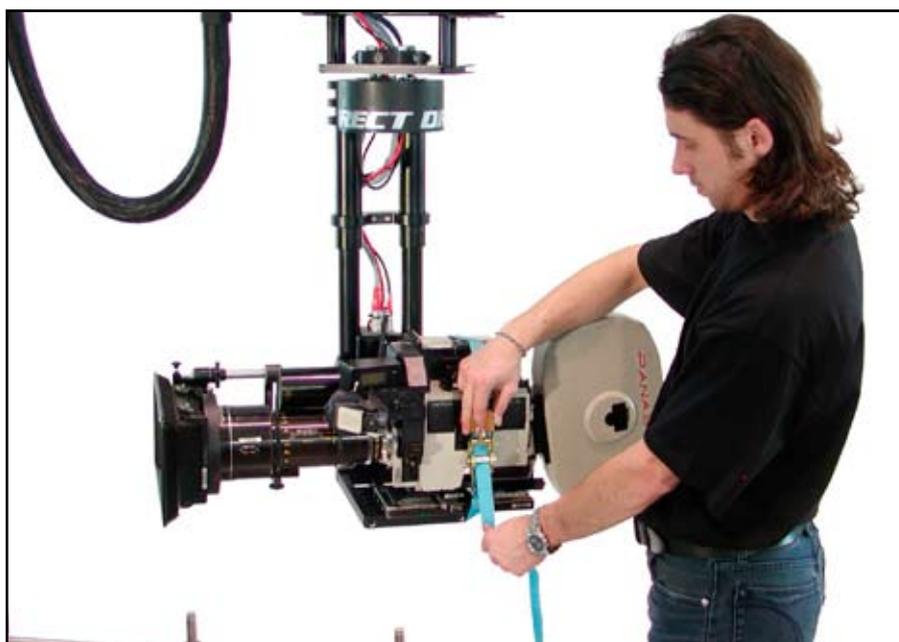
2.9.2. Attaching the camera

The camera's base plate is attached to the remote head with two 3/8" screws.



2.9.2.a - Mounting camera on the base plate

The camera must also be additionally secured with a safety strap to prevent it from slipping off when adjusting.

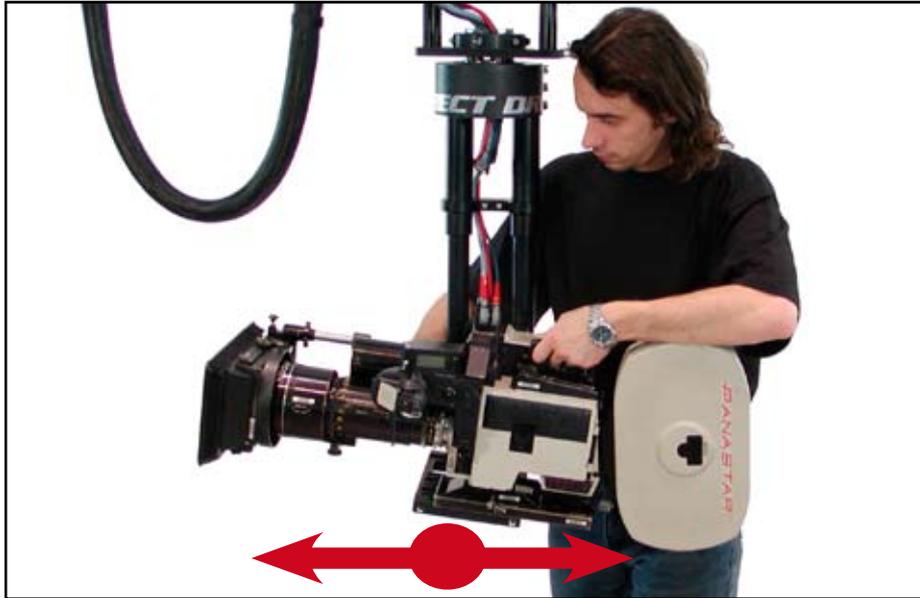


2.9.2.b - Securing the camera with a strap

2.9.3. Balancing the camera (tilt)

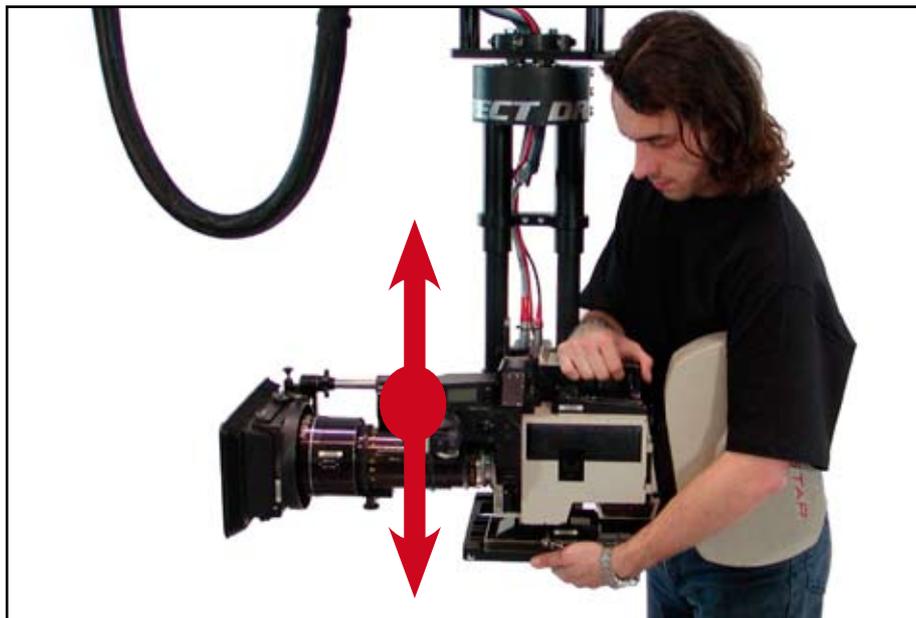
The camera must be attached to the remote head as close to its center of gravity as possible. The camera should be slid back and forth to find this point. The remote head can be moved freely once the crane's power has been switched off.

First slide the camera back and forth on the camera plate until the camera remains horizontal (find its horizontal center).



2.9.3.a - Moving camera back and forth

Then raise and lower the camera on the vertical adjustment plate until the camera remains balanced and stationary at all tilt angles (find its vertical center).



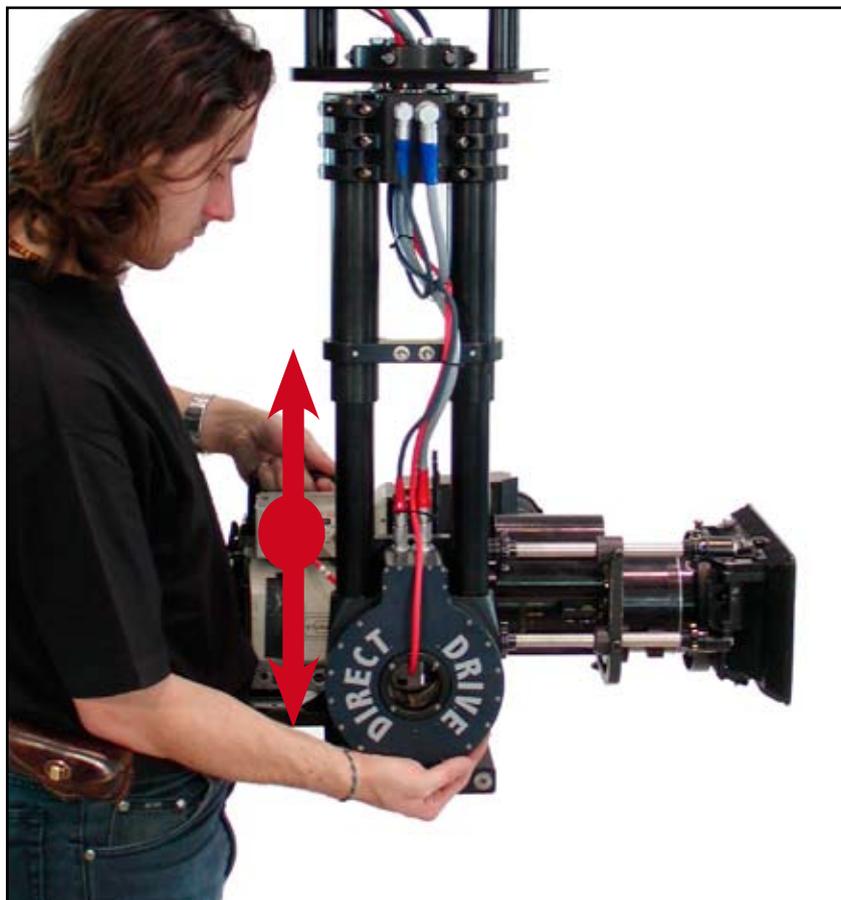
2.9.3.b – Moving camera up and down



Important: MAKE SURE THAT THE FASTENING BOLTS FOR EACH PAN, TILT AND ROLL SECTION ARE THE RIGHT LENGTH FOR THE DEPTH OF THE PLATES AND HAVE THE CORRESPONDING COLOR-CODED MARKINGS. IF THE WRONG SCREWS ARE USED AND THEY ARE TOO LONG, THEY MAY PROTRUDE AND DAMAGE THE BEARINGS.

2.9.4. Adjusting to the camera size

After the camera has been balanced, the DirectDrive Head is adjusted to the size of the camera in use. Open the clamping jaws of the slide pipe and slide the camera to the point where a 360 degree tilt is still possible. It is very important that both sides of the cage be adjusted evenly when the two-sided cage is being used. The more compact the assembly of the remote head, the better the performance of the camera.



2.9.4. – Moving raiser up and down

2.10. Telescope hand controls

2.10.1. Emergency switch

The crane can be switched off at any time from the telescope hand controls by using the emergency cut-off switch. The emergency cut-off switch has to be pulled out after use in order to be able to restart the Technodolly.



2.10.1. - Emergency switch

2.10.2. Speed potentiometer

Using the potentiometer on the rear of the hand control, the operator or grip can pre-select the speed range on the hand control of the path speed or telescopic speed.

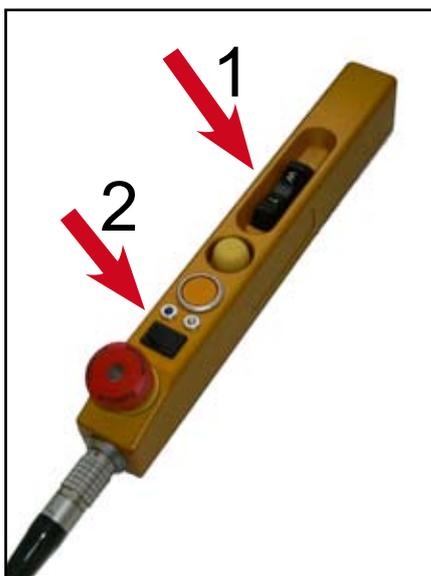


2.10.2. - Potentiometer

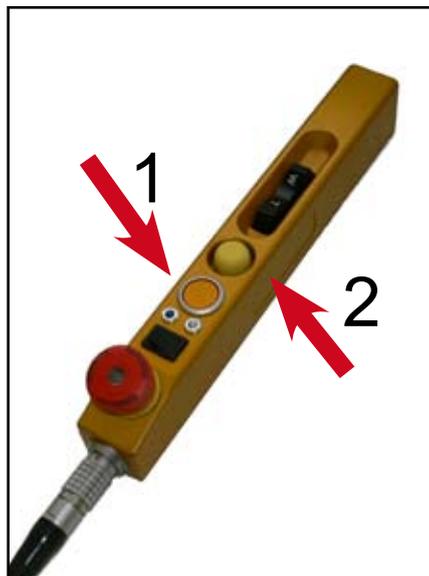
2.10.3. Operation by Technodolly operator

When the frames are being sampled, the operator can use the TELESCOPE ROCKER (1) either to telescope the beams in and out or to travel with the base along the tracks. This selection is made with the mode switch (2). A blue LED above the switch indicates that the rocker is in telescope-control mode, and a white LED indicates that the rocker can control the movement of the base along the tracks.

Once the Technodolly is switched to travel on the programmed path the Technodolly operator can use the rocker (1) to activate backwards and forwards movement along the path.



2.10.3. - Rocker and mode switcher



2.10.4. - Operator's hand controls

Once the yellow button (1) is flashing the Technodolly is ready to run automatically on the programmed move. When the dolly operator is ready to start controlling the move, he pushes the flashing button. The flashing button then lights up continually. This indicates to the operator that the crane is now ready for traveling on the programmed move activated by the rocker.

Once the Technodolly operator has checked a movement by traveling backwards along that move, he can hand over the control of the traveling speed to the cameraman operator at the desk. In this case the Technodolly operator enables the cameraman's traveling by pushing the yellow dead-man switch (2). The task of the Technodolly operator is now to oversee the movement of the crane and release the dead-man switch immediately if any danger arises. This is an important safety feature of the Technodolly and it is strictly forbidden to override the dead-man switch or to neglect the task of supervising the movement of the Technodolly while pressing the dead-man switch.

Part 3

Software

HOW TO GET STARTED

1. Wheel the TECHNODOLLY to the desired position and raise the leveling jacks. NEVER WORK WITHOUT THE DOLLY SITTING ON ITS WHEELS.
2. Fix the camera and the lens motors, wire everything up and balance head and crane PERFECTLY (not just more or less right).
3. Ensure that the hand crane tilt brake is released and that the both electrical brakes are off.
4. Ensure that the electronics column is at 0 degrees, allowing you a maximum arm rotation of a $\frac{3}{4}$ turn to each side. TELL THE GRIP NOT TO ROTATE ANY FURTHER than the cables at the column permit.
5. Connect the main cable between column and desk. Use only the TECHNODOLLY mains cables. Ensure that the two mains cable which supply power the TECHNO-DOLLY are plugged into THREE SEPARATE 230 V sockets (each protected by 16 Amp). Ensure that there is no other load plugged into the same source. Do not plug the desk into one of these sockets.
6. Plug in the telescope rocker and the safety rocker.
7. Switch the desk on at the back-up.
8. Switch on the THREE fuses at the electronic column "on" and switch on the TECHNODOLLY.

HOW TO CREATE A MOVE

1. Ask the grip to swing the crane on in position “one”.
Ask the camera operator to set up his frame.
Ask the focus puller to set the focus.

2. Push SAMPLE button at the desk.

3. Ask grip, camera operator and focus puller to set up additional key frames and confirm each key frame with the SAMPLE button. Once SAMPLED the last frame push PLAY button at the desk.

HOW TO CHANGE THE TIME

1. Click the time line.

2. Enter in the new window the key frame numbers and the desired time between this key frames.

HOW TO PLAY A MOVE

1. Take control over the TECHNODOLLY by pushing the blinking yellow button at your safety rocker.

2. First check if the created path is clear by carefully moving the TECHNODOLLY backwards along the path.

3. Push the “dead-man switch” in order to secure the camera operator’s travelling on the path.

HOW TO TRAVEL DIRECTLY TO ONE FRAME

1. Select the desired MOVE no. and the desired FRAME no. and click the green arrow.

2. Take control over the TECHNODOLLY by pushing the blinking button at your safety rocker.

3. When you press the rocker at the safety rocker forward the TECHNODOLLY the desired FRAME.

4. Slowly and carefully travel with the safety rocker on this UNCHECKED way to the FRAME.

5. If you meet obstacles stop the travel. Then click the green arrow button to put the TECHNODOLLY into manual mode. Move the arm manually around the obstacle and click again the green arrow to resume the travel to the desired frame..

6. Once you are on the FRAME, the button at the safety rocker will start blinking. After pushing the button you can travel on the MOVE.

HOW TO CHANGE A MOVE

by deleting and adding key FRAMES

1. You can delete a key FRAME by clicking "X" on the computer screen.
2. You can add a key frame by firstly exiting the MOVE (pushing PLAY)
3. Using the up and down buttons choose which frame no. should come before the new frame.
4. Ask the crew to go to the position of the desired new frame and push SAMPLE. Press PLAY to view the changed move.

Example: If the frame no. display is "12" then the new key frame will get the no. "12.1" and will be placed between frame "12" and "13".

HOW TO STORE A MOVE

1. Go on "File"
2. Go on "Save as"
3. Write a MOVE name into the window. In order to find a MOVE between several hundred other MOVES, the file name should start with the current date followed by the name and should always end with: .move

Example: 051305paramount1.move

HOW TO SWITCH OFF THE TECHNODOLLY

1. Click the "X" in the right top corner and the computer shuts down. Be aware that you will lose all MOVES which have not been stored with "Save as" on the hard disk.
2. Push the red on/off button at the electronics column and switch off both circuit breakers on the column.
3. Switch the computer OFF.
4. Switch the UPS OFF?? and the switch the black power strip?? OFF.

FAQ

Why can't I switch "ON" the TECHNODOLLY?

There are several possible remedies:

1. Try switching both fuses "off" and "on" again.
2. Open both electrical brakes with the switch on the column.
3. Check if one of the three EMERGENCY buttons has not been activated.??

Can I work with only one 115 V/20 amp. power source?

Yes, but the arm will operate more slowly. Very important: due to the large voltage drop in this circuit, never plug the desk into the same source.

How many moves I can work on at the same time?

The TECHNODOLLY can remember 99 moves. Any one of these 99 camera movements can be entered directly and replayed or altered.

How many frames can I sample in one move?

Each move can have 99 key frames. You will achieve a better move if you sample only a few frames. For example a straight move may work with 3 frames (start, middle, end), and a half circle move may work with 5 frames (every 45 degrees).

How do I start creating a new move?

A move can be entered with the up/down arrows. If a move number is already occupied, the related frames will then be displayed on the monitor. If the move number is free, there will be no frames in the display and you may create a new move under this number.

How can I find my saved move?

1. Go to "File"
2. Go to "Load file"
3. Choose your move from the window with a double click or with "open".

(When saving a move on the hard disk, enter a designation which starts with the actual date, continues with the name and has the ending ".move". Be aware when reloading this move that it will take a different move number. The name given to the move will be displayed at the top of the screen.)

Can I add a frame before the very first frame?

Yes, select frame no. "0" and SAMPLE the new frame. This frame will be allocated the no. "1.0" and will be the new starting point for your move. The previous first frame will now become no. "1.1"

Can I add a frame after the last frame?

Yes, select the last frame number and SAMPLE the additional frame. Now your move will have one frame number more. This new frame will be the new end point of your move.

Can I manually override pan, tilt or roll during the move?

Yes, go on HEAD and click this feature "ON"

Can I switch off the joystick or the handwheels?

Yes, go on HEAD and click this feature "OFF"

Will I loose my move once I repositioned the base manually?

No, but you have to return the base precisely to the same position.

Should completely shut down the TECHNODOLLY for a lunch break?

No, just switch off the column and the base.

Then fasten down the crane with straps, because there will now be no manual arm pan brake.

NEVER USE THE ELECTRICAL ARM PAN AND ARM TILT BRAKES??.

These brakes are only designed for security shut down.

Should I switch the TECHNODOLLY "OFF" overnight?

Yes, save the moves which you want to use next day on the hard disk and shut down the TECHNODOLLY completely.

Does the base pass through a standard door?

Yes, the base is 31" wide and 6' 11" high. (approx. 78 x 208 cm)

(Using special plastic wheels the base can be lowered to 6' 9"/approx. 206 cm)

Can I remove the two bolts for the counterweights in order to clear a low door?

Yes, take the weights off and unscrew the studs with a spanner.

How precise is the TECHNODOLLY?

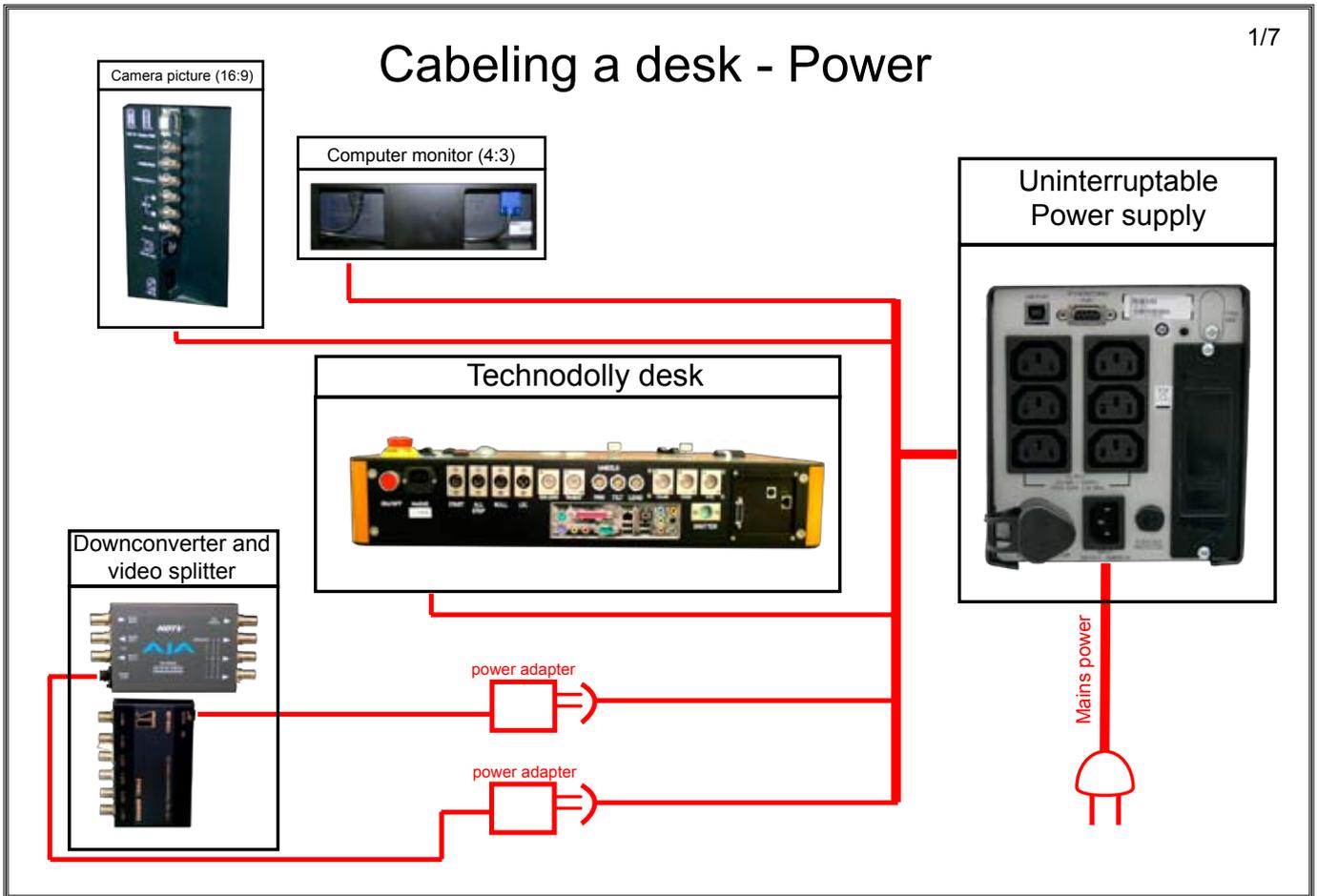
The static repeatability at the first and at the last frame is +/- 0.2 mm measured at the camera at max. telescopic extension.

How should I transport the TECHNODOLLY?

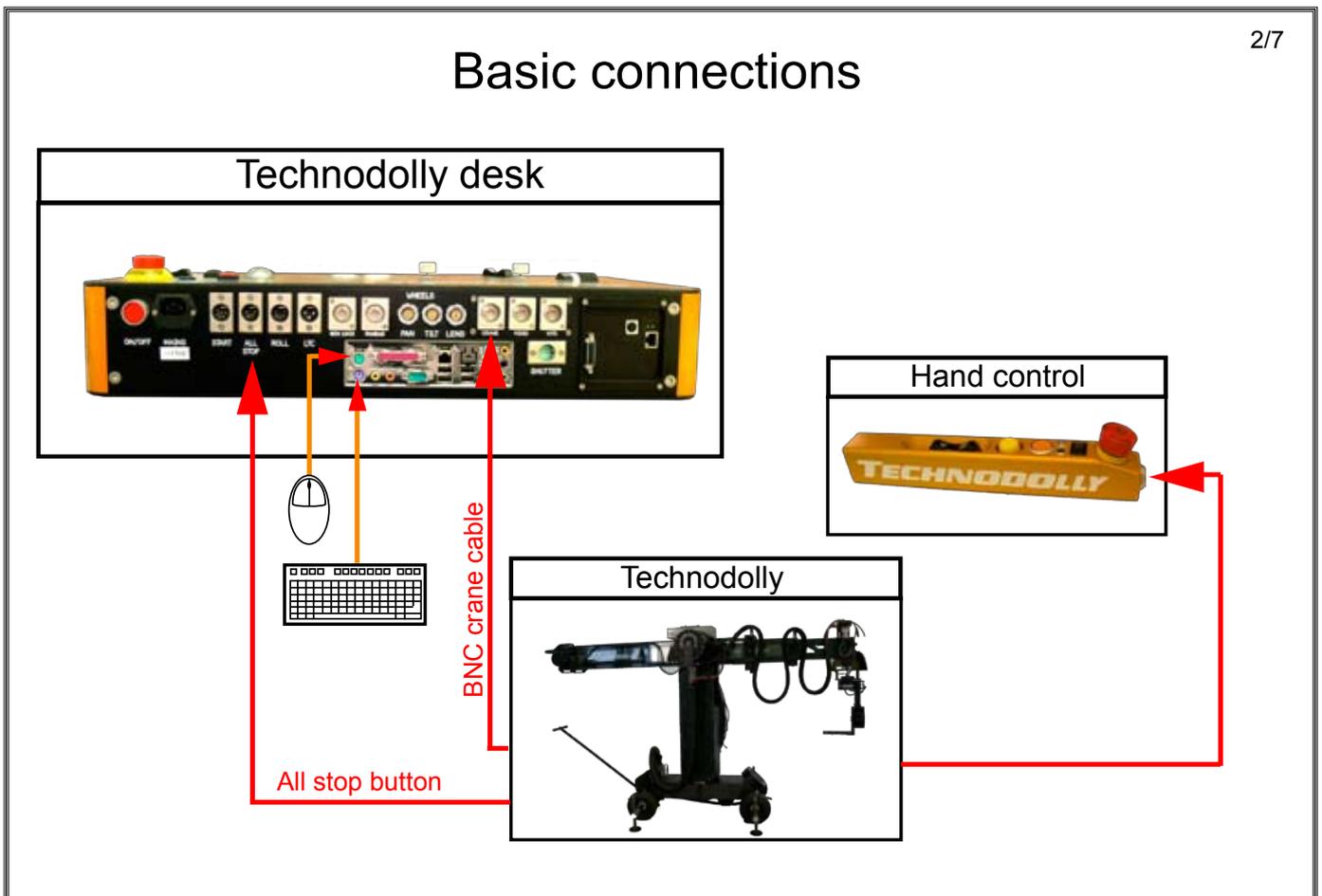
The TECHNODOLLY can be transported in the same way as other TECHNOCRANES except:

1. The counterweights can remain on the TECHNODOLLY during transportation.
2. The DirectDrive Head can remain on the TECHNODOLLY during transportation.
3. The tracks should only be transported in their own shelf trolley.
4. When fixing the desk in the truck please take care that the sun shades do not get damaged.

Cabeling a desk - Power

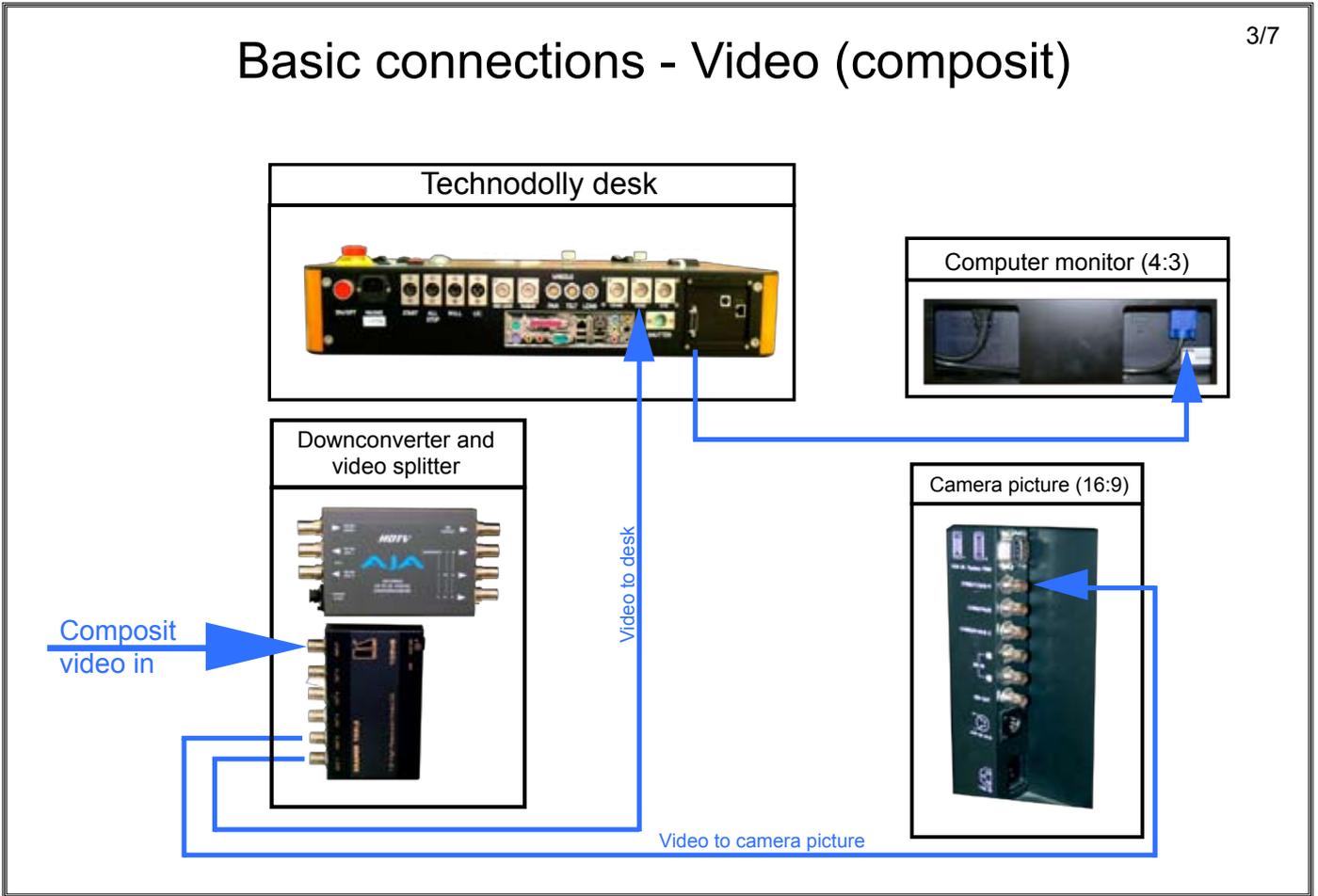


Basic connections



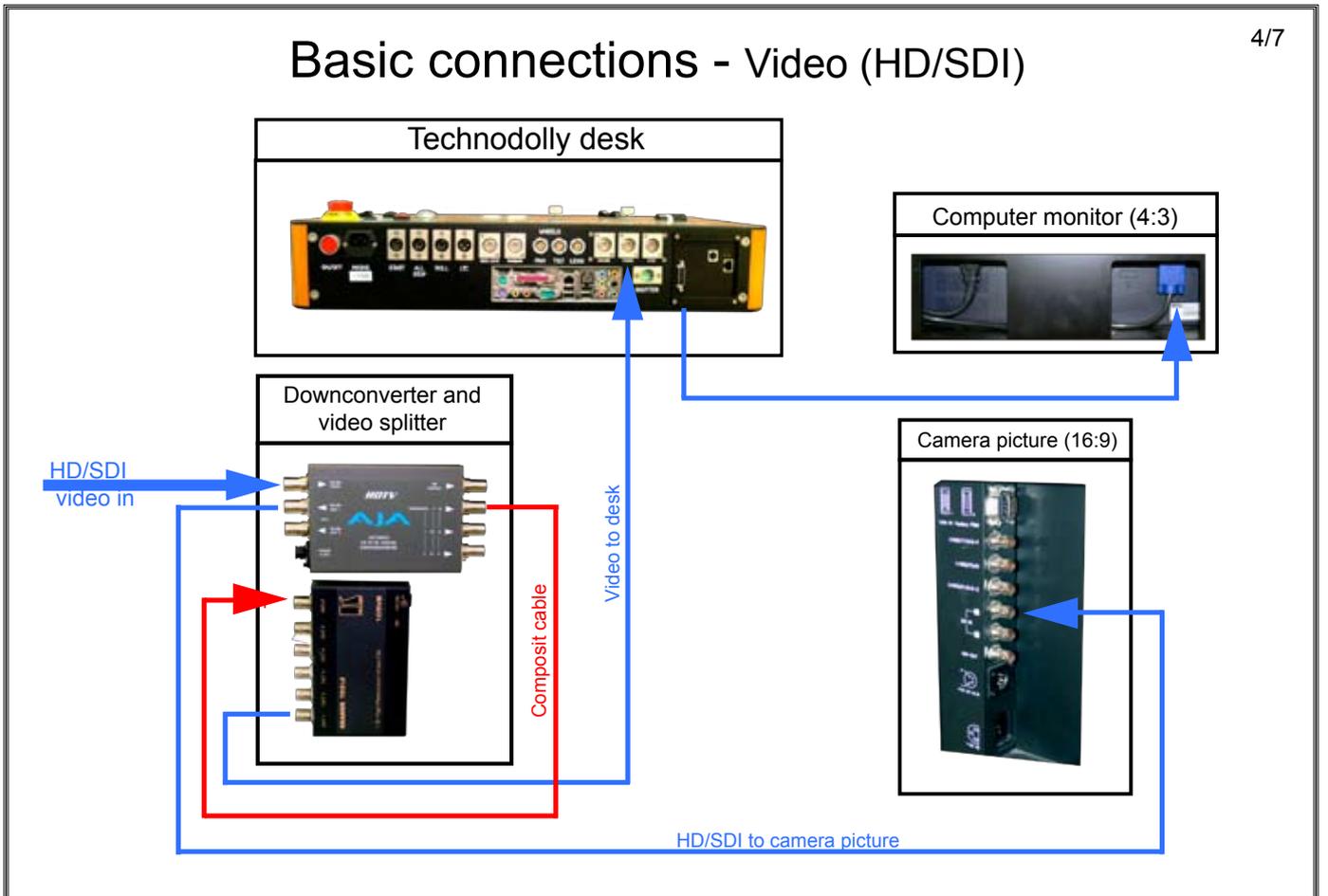
Basic connections - Video (composit)

3/7



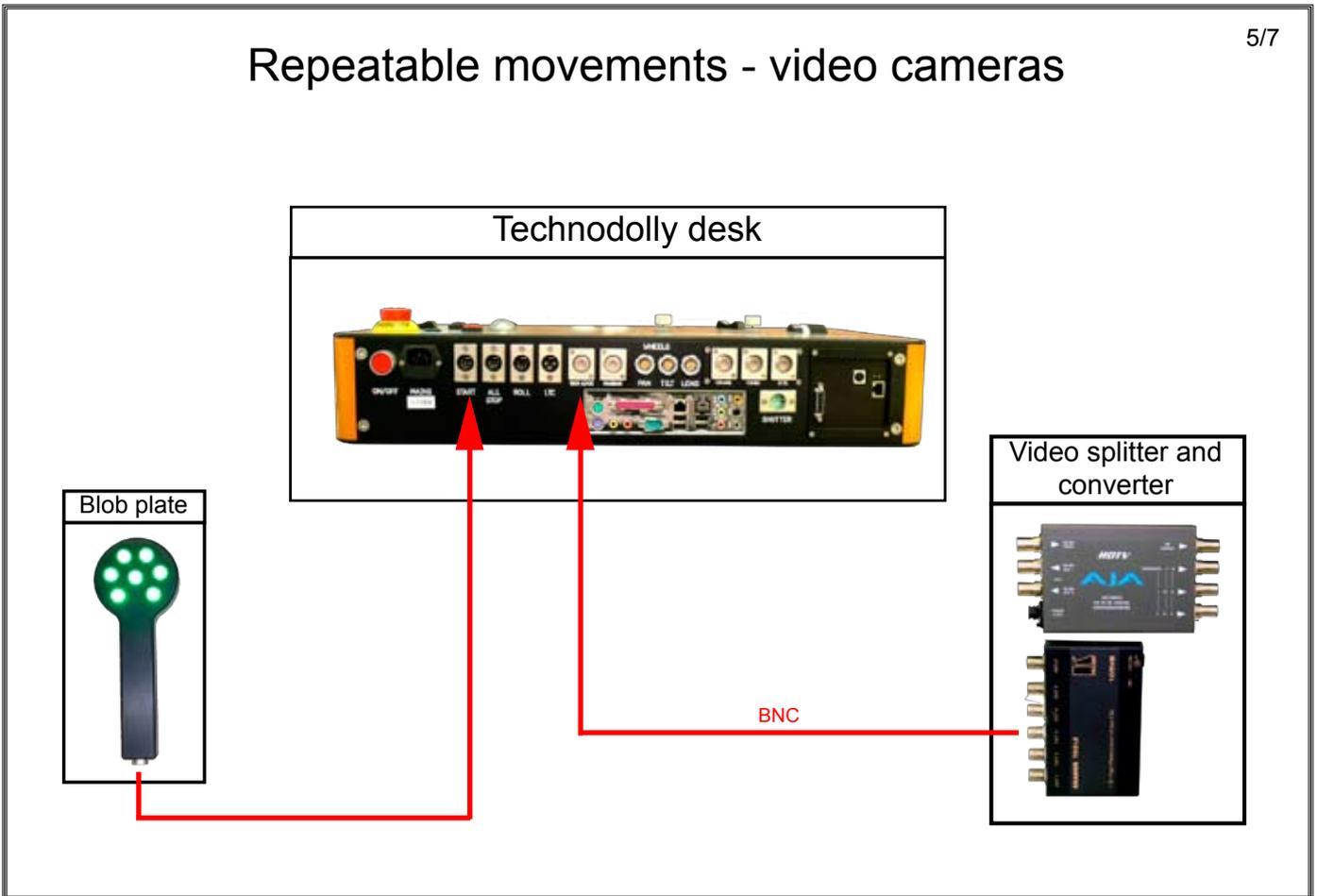
Basic connections - Video (HD/SDI)

4/7



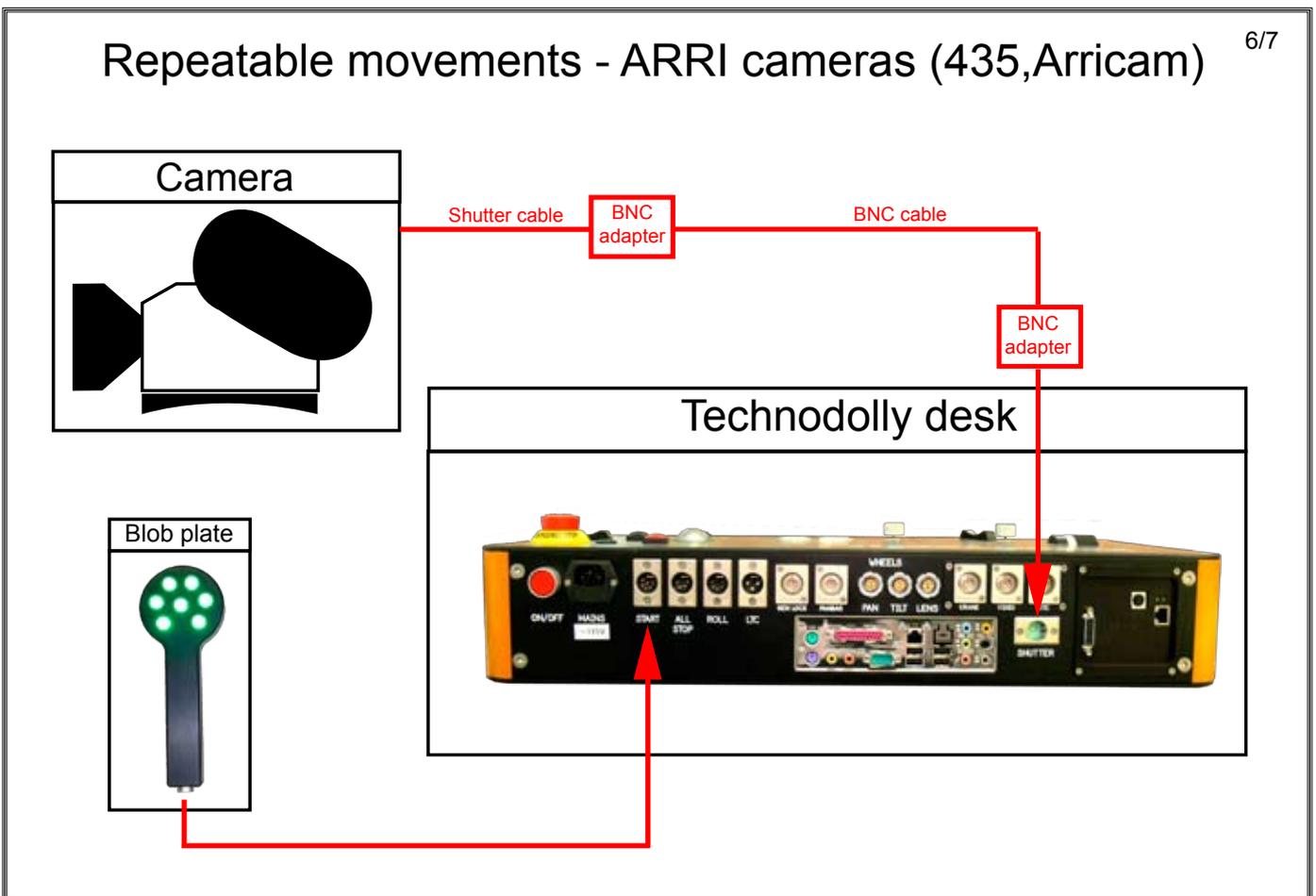
Repeatable movements - video cameras

5/7



Repeatable movements - ARRI cameras (435, Arricam)

6/7



Notice: