

3DStereoRig

created by alain derobe



User Manual

ENGLISH

Before operating this product, please read the instruction carefully and save this manual for future use.

Art. Nr. 25003 | v0904

Manufacturer Information:

The manufacturer of this product is

P+S Technik GmbH

Siemensstraße 12
85521 Ottobrunn/Munich
Germany.

Please find worldwide authorised representation and dealer on our website
<http://www.pstechnik.de> or send an e-mail to 3d@pstechnik.de
asking for the contact details.

Concerning any service and warranty requests, please contact your local distributor
or P+S Technik GmbH directly.

Safety instructions:

Temperature range:



The Image Converter has been tested for a temperature range from 0° C to +50° C. For field reports regarding more extreme temperatures please contact P+S Technik Technical Support helpdesk@pstechnik.de

Maintenance / Special Tools:

Do not touch glass components with sharp objects. For cleaning do only use special lens cleaning supplies. Refer all servicing to qualified service personnel.

Storage:

Please store the Image Converter in a dry and dust free place.

Disposal:



Please dispose packaging materials, defective and no more usable components and devices properly and do not let play children with it .

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1. 3D Stereo Rig



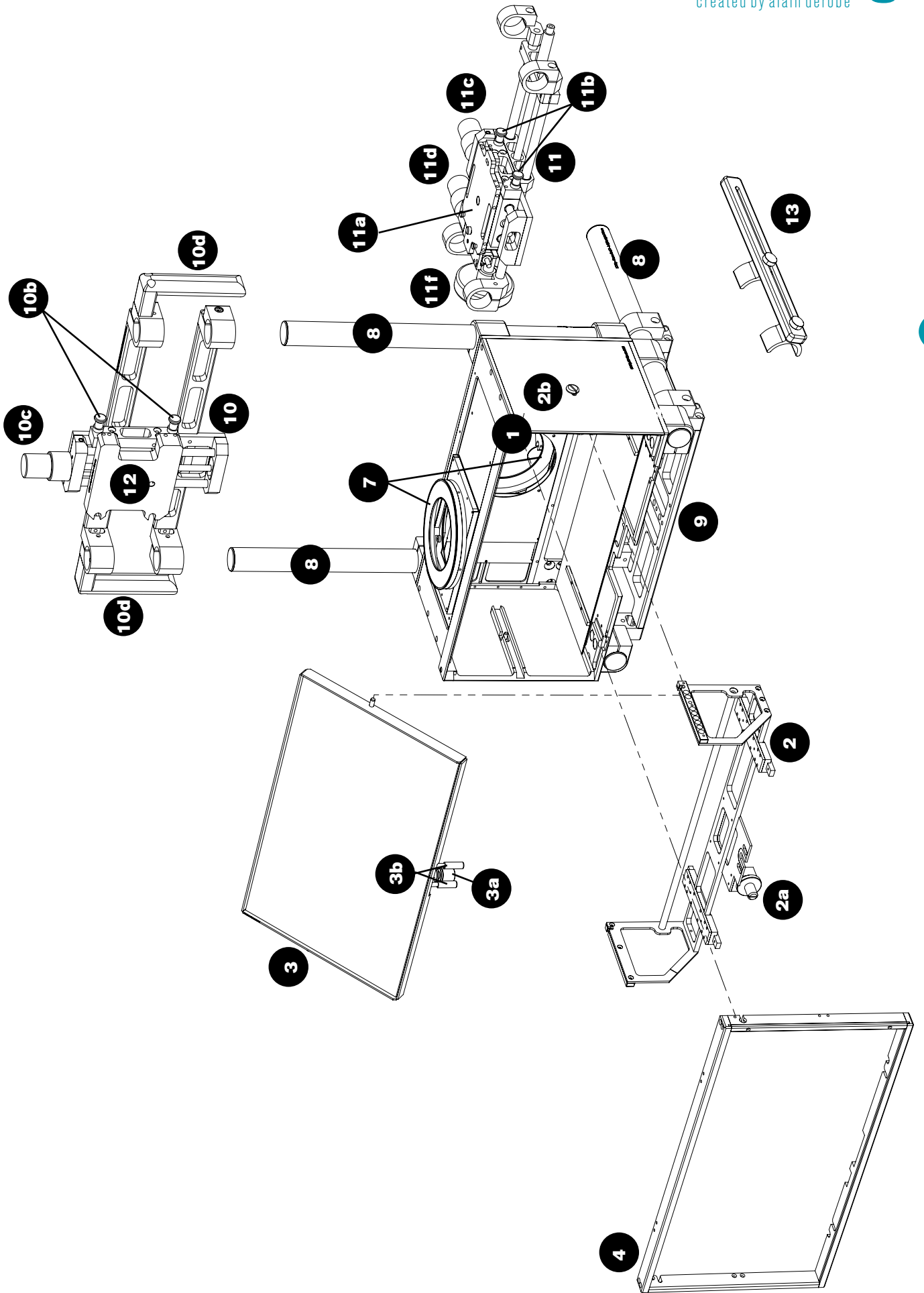
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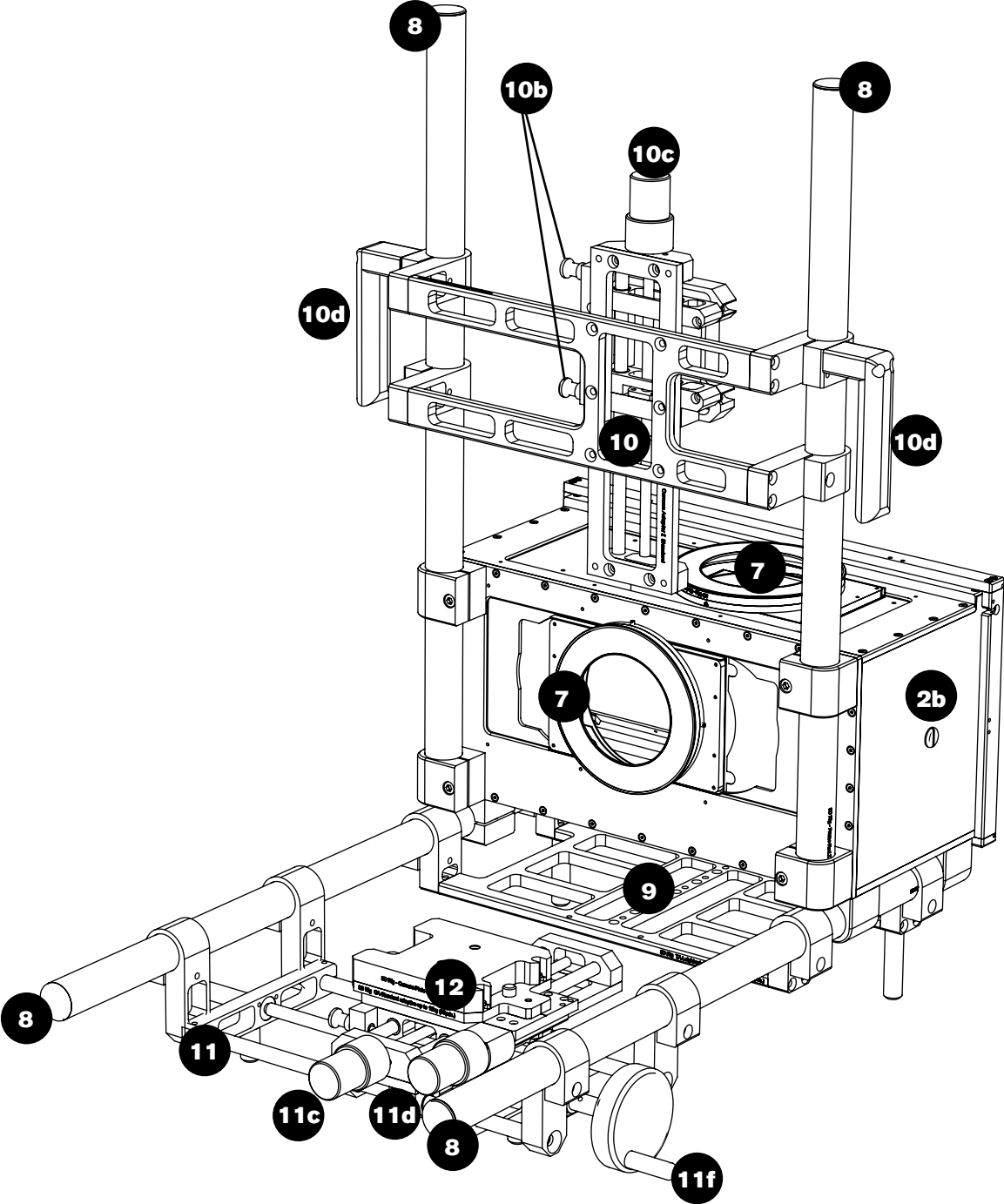
3D Stereo Rig

The 3D Stereo Rig is a modular mirror rig for stereoscopic recording. This professional tool enables the user to record stereoscopic content with interaxials from 0 cm till 12 cm. It uses a sophisticated beamsplitter design that allows the lenses to physically overlap - this is crucial to achieving the precision you need for quality 3D production.

2. Components

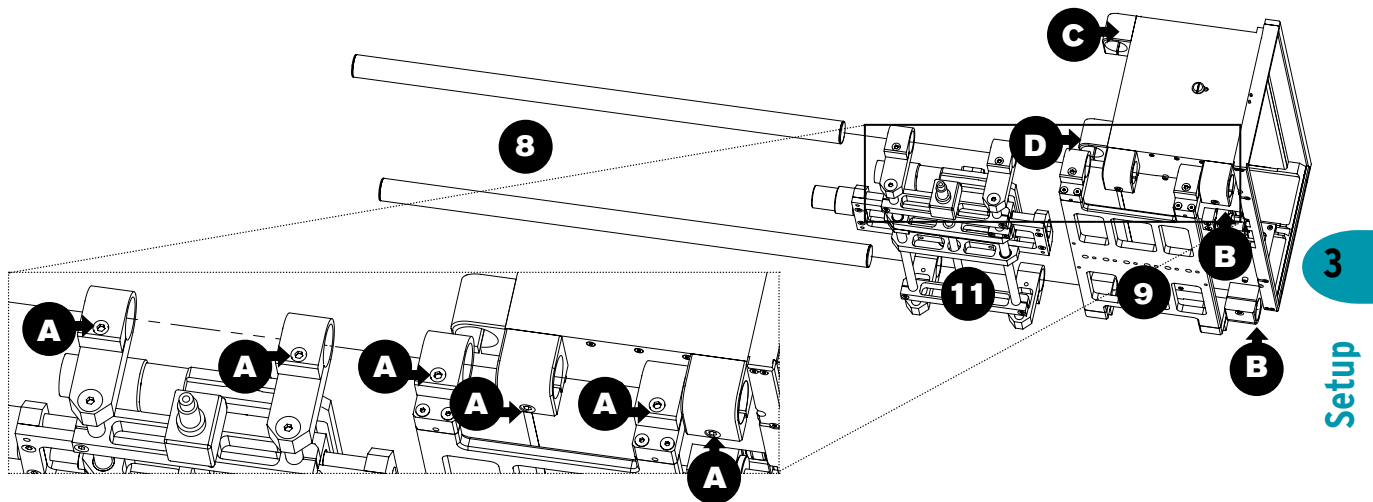
- 1** one mirror box with eight frame rod brackets
- 2** one mirror carriage
 - 2a one horizontal calibration screw
 - 2b two side fixation screws
- 3** one mirror frame with mirror and two pins
 - 3a one tilt calibration screw
 - 3b two vertical fixation screws
- 4** one front frame with protection glass
- 5** one pair of side French flags with knobs and Allen screws
- 6** one top French flag with knob and Allen screws
- 7** one pair of reduction rings
- 8** two pairs of frame rods
- 9** one tripod adapter
- 10** one fixed camera adapter
 - 10a camera table
 - 10b two knobs of fast release mechanism
 - 10c one distance to mirror adoption knob with counter
 - 10d one pair of side handles
- 11** one adjustable camera adapter
 - 11a camera angulation table
 - 11b two knobs of fast release mechanism
 - 11c one distance to mirror adoption knob with counter
 - 11d one convergence knob with counter
 - 11e one restriction bolt
 - 11f one detachable hand wheel
 - 11g one counter for hand wheel adjustment
- 12** one pair of 3D camera plates
 - 12a one pair of 3D camera adapter plates (depending on the camera model you use)
 - 12b one pair of Sachtler Touch & Go plates (depending on the camera model you use)
- 13** one distance tool for camera adapter setup
 - 13a one distance ring





3. Mechanical Setup

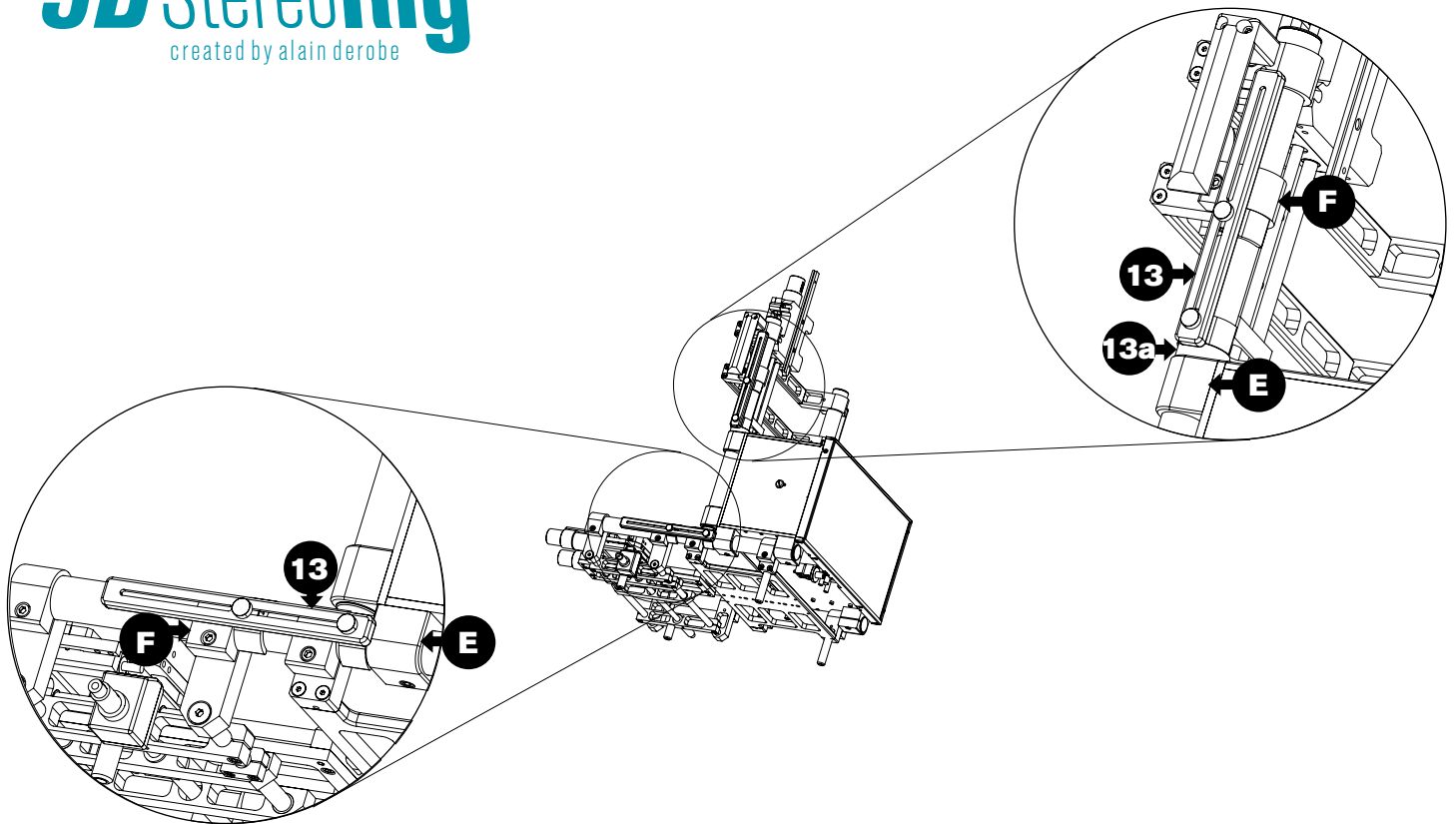
The 3D Stereo Rig is modular designed: This means that you can use the rig in different setups with different components depending on the camera model and the lenses you want to use.



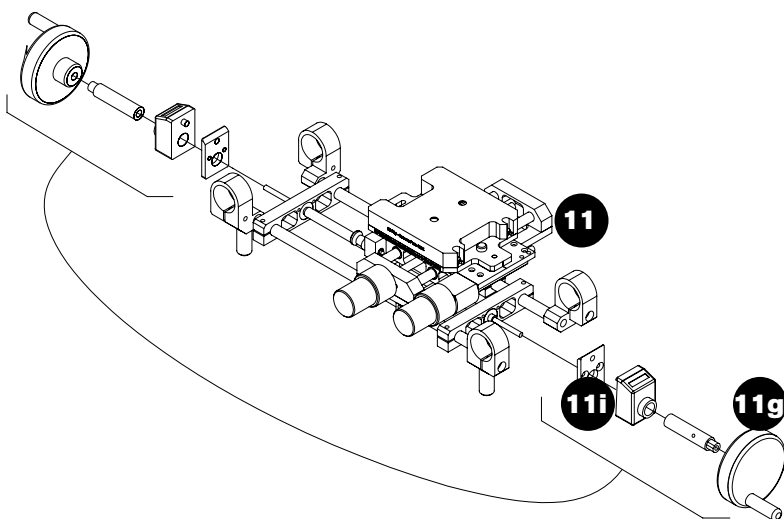
3.1 Tripod Adapter, Camera Adapters and Frame Rods

The tripod adapter (9) and the camera adapters (10, 11) are connected to the mirror box (1) by two horizontally and two vertically mounted frame rods (8). To slide in the horizontal frame rods make sure that all screws (A) of the brackets are loose. Place mirror box, tripod adapter and horizontally mounted adjustable camera adapter (11) as shown in the picture and slide in the frame rods until they are aligned with the front brackets (B) of the mirror box. Now fasten all screws (A) – don't tighten the screws with too much force; that could damage the carbon fibre of the frame rods.

Do the same with the remaining pair of vertical frame rods (8). Unfasten all the screws (C) on the vertical brackets of the mirror box. Now slide in the vertical frame rods until they are aligned with the lower vertical brackets (D). Fasten all screws (C) and then slide on at first the distance ring (13a, see next page) and then the vertically mounted fixed camera adapter (10) onto the pair of vertical frame rods.



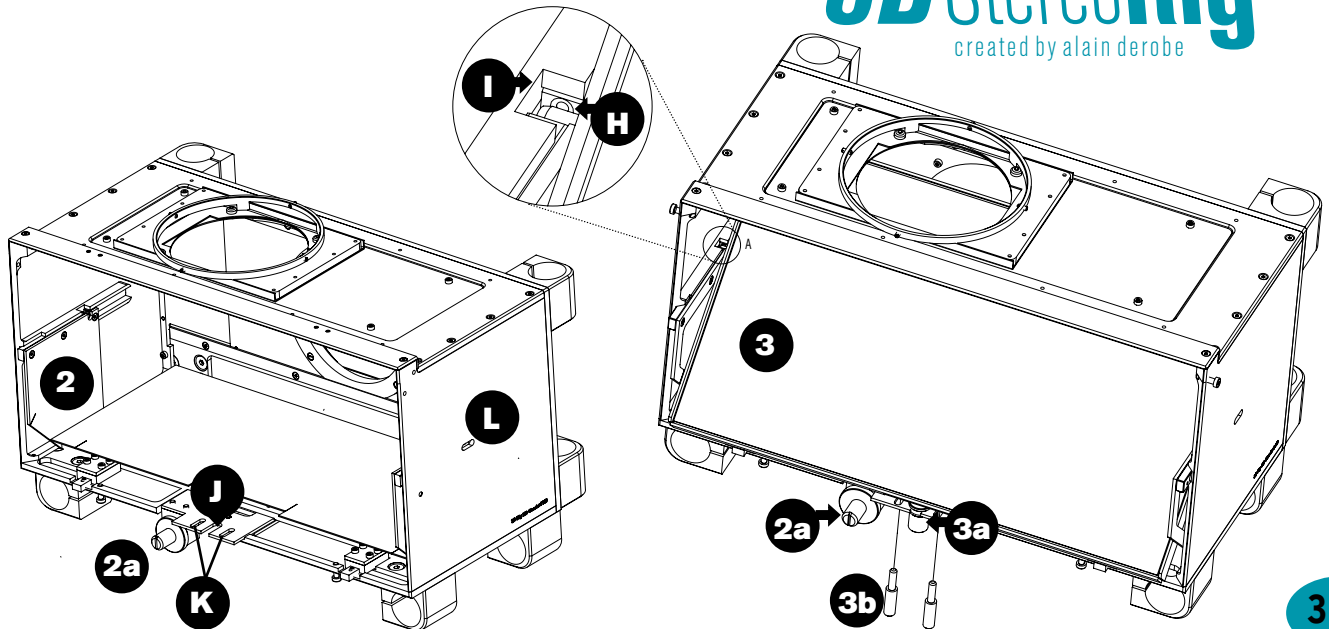
For an optimal aligning of the camera adapters (which is crucial due to the sophisticated calibration method) use the distance tool **(13)** and in case of the vertically fixed camera adapter the distance tool **(13)** and the distance ring **(13a)**. At first slide the distance ring **(13a)** onto the vertical rods as far as possible to the exterior bracket of the mirror box **(E)**. Then the distance tool **(13)** is held between the closest bracket of the mirror box **(E)** respectively the distance ring **(13a)** and the closest bracket of the camera adapter **(F)** to adjust the distances between the camera adapters and the mirror box. Make sure that there is no gap between the brackets and the distance tool. Now tighten all screws of the camera adapters.



The hand wheel **(11g)** can be installed either on the right hand side of the adjustable camera adapter **(11)** or on the left hand side. This is variable depending on the preference of the operator. To install the hand wheel, unfasten the tiny Allen screw underneath the hand wheel knob and slide the hand wheel on the axle. Fasten the Allen screw. For left hand operation the counter **(11i)** can be mounted to the left side as well.

Note:

Detach the hand wheel **(11g)** any time you transport/ship the Stereo 3D Rig in a box. The axle is quite vulnerable to a bending force.



3.2 Cover and Mirror Frame

Note: Always use gloves to prevent the mirror of being scratched or having fingerprints.

Before mounting or detaching the mirror frame (3):

Make sure the French Flags (5, 6) and the front frame with protection glass (4) are detached from the mirror box.

Note: Read on next page for instruction about how to detach the front frame.

To mount or change the mirror frame (3):

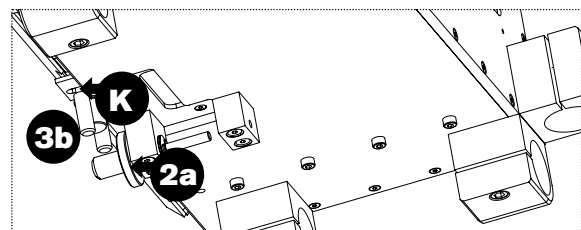
- Unscrew and remove the two side fixation screws (2b).
- Turn the horizontal calibration screw (2a) counter clockwise to move the mirror carriage forward (2).
- When the horizontal calibration screw (2a) is loose, move the mirror carriage (2) by hand until the pin slots (H) of the mirror carriage are aligned with the corresponding slots (I) of the slide rail inside the mirror box.

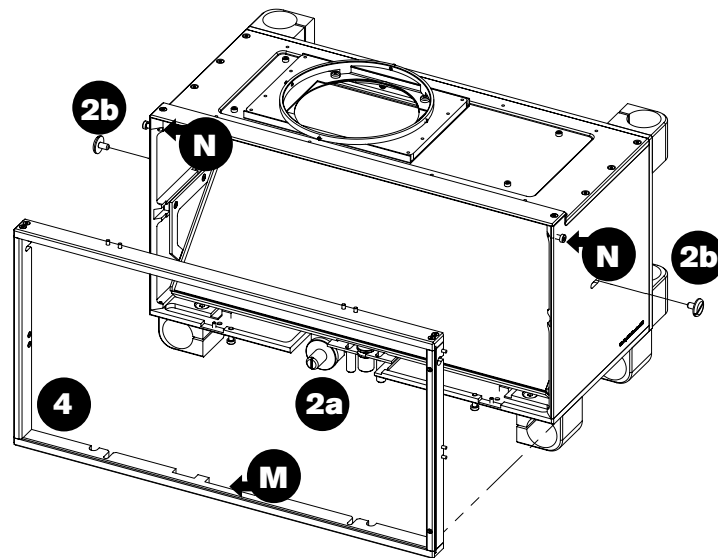
DANGER:

Never detach the mirror carriage (2) completely as you may loose the ball bearing !!!

To attach the mirror frame (3) into the mirror carriage (2):

- At first tighten the tilt calibration screw (3a) into the notch (J) carefully. Make sure that the threads in the tiltable block are aligned with the nut holes (K) towards the vertical fixation screws (3b).
- Tighten the two vertical fixation screws (3b).
- Now insert the two pins of the mirror frame gently into the corresponding pin slots (H, I) of the mirror carriage (2) and the side rail. Be careful as the mirror could be damaged if you use too much force.
- Now the mirror carriage can be moved backwards until the horizontal calibration screw (2a) takes hold.
- Then turn it (2a) clockwise until the threads of the mirror carriage are aligned with the corresponding nut holes (L) towards the side fixation screws (2b).
- Tighten the two side fixation screws (2b) to fix the mirror carriage (2).





To remove the mirror frame (3) from the carriage (2):

- At first you have to make sure that the two side fixation screws **(2b)** are removed and that the pin slots **(H)** of the mirror carriage are aligned with the corresponding slots **(I)** inside the mirror box.
- Then remove the tilt calibration screw **(3a)** and the two vertical fixation screws **(3b)** from the tiltable block.
- Now pull gently on both ends of the mirror frame until the two pins of the mirror frame are released from the corresponding slots **(H, I)**. Be careful as the mirror could be damaged if you use too much force.

To setup the French flags (5, 6):

Just turn the black knobs on the side/top clamp poles. If the French flags are too loose you can fasten the small Allen screws on the poles.

To install the front frame (4):

- Attach the front frame carefully to the mirror box.
- Make sure, that its notches **(M)** for the tilt calibration screw and the two vertical fixation screws are on the lower end of the front frame.
- Now screw on the two fixation screws **(N)**.

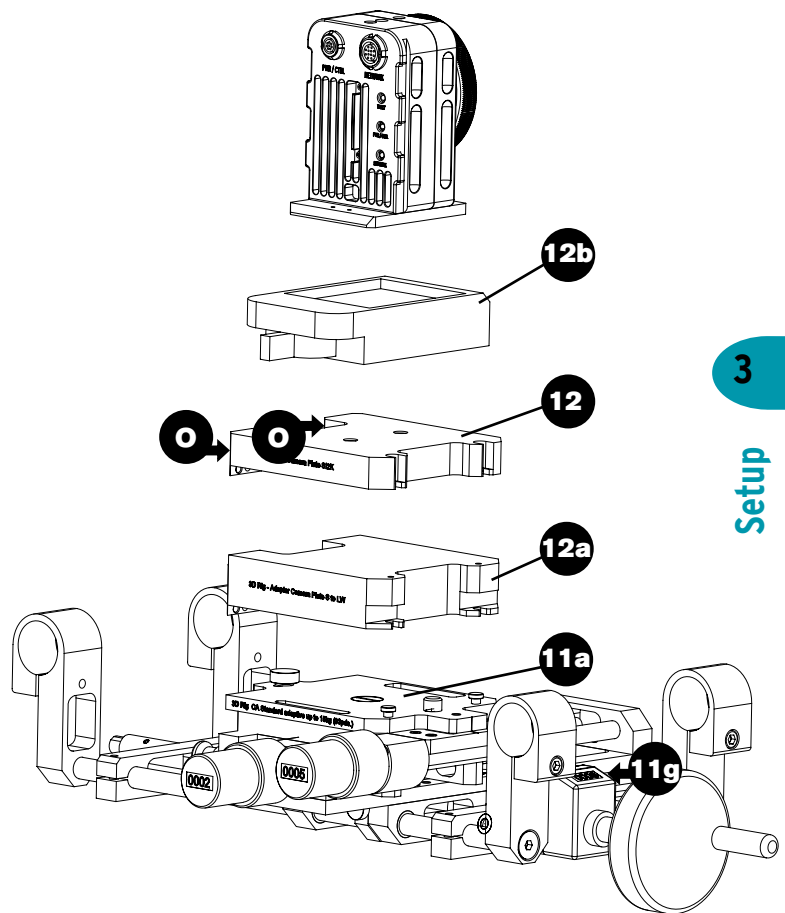
To detach the front frame (4) from the mirror box:

Just unscrew the two fixation screws **(N)** and pull the front frame carefully off the mirror box.

3.3 Camera

The sandwich combination of camera plates needed to mount your camera depends on the camera model you use. In case of large cameras (e.g. RED One) you just need the 3D camera plates **(12)** included in your camera kit. In case of Sony HDW you also need two Chrosziel quicklock plates to attach directly to the 3D camera plates **(12)**.

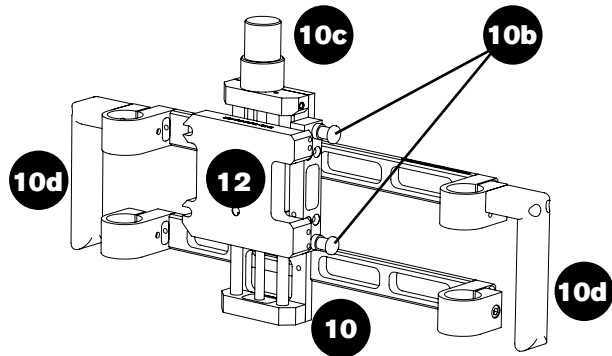
Before you are able to mount smaller cameras (e.g. SI-2K, Sony PMW-EX3, Sony HDC-X300), at first attach your 3D camera adapter plates **(12a)** to the camera tables **(10a, 11a)**. Then attach your Sachtler Touch and Go plates **(12b)** to the P+S Technik 3D camera plates **(12)** with the provided screws **(O)**. Now attach the sandwich of camera plates **(12+12b)** to the 3D camera adapter plates **(12a)** already attached to the camera tables **(10a, 11a)**. Make sure that all screws **(O)** are fastened. Now you are ready to attach both cameras to the camera adapters. Check the stability of the setup before you take your hands off the cameras.



Note: The additional plates **(12a** and **12b** or just the Chrosziel quicklock plates) are not included in the camera kits.

3.4 Synchronisation of Cameras / Genlock

To be able to record synchronously with both cameras you have to genlock them. For further information please follow the explanation in your camera's user manual.



3.5 Lens Setup

To access or change the lenses (e.g. if you work with a set of primes) you can use the fast release mechanisms (**10b, 11b**) of your camera adapters (**10, 11**). This feature allows you to detach camera and lens without loosening the calibration. To use that feature you have to pull the black knob on the front of the camera table. While leaving this knob pulled pull the whole camera carriage backwards/upwards. Now pull the black knob on the other end of the carriage and pull the camera carriage with the camera backwards/upwards until the knob locks. Double-check if everything is secured before you take your hands off the cameras.

Depending on the front diameter of the lens there are four different light protection rings available (#24780, #24779, #25565, #24426). These can be changed just by clicking the adapter ring into the receptacle.

4. Calibration

In the following paragraph you get to know which knob is responsible for which adjustment.

4.1 Distance of the Cameras to the Mirror

(affecting the size of one picture in relation to the other)

You are able to change the distance of the cameras to the mirror by turning the distance adoption knobs **(10c, 11c)**. Assuming that the camera adapters were mounted at the correct distance using the distance tool **(13)**, the digits on the incorporated counter of the distance to mirror adoption knob of the vertical mounted camera adapter should match the digits on the counter of the distance to mirror adoption knob of the horizontal mounted camera adapter. Turn one distance to mirror adoption knob with the other knob staying fixed to match both picture sizes. The same picture size can be controlled by using a monitor displaying the pictures of both cameras in 50% overlay mode.

4.2 Tilting of the Mirror

(equivalent to tilting of the upper camera)

You are able to equate the optical axis of the upper camera to the optical axis of the lower camera by tilting the mirror instead of the upper camera. This feature was implemented because it is easier to tilt a 300 g mirror instead of a heavy camera. This makes it possible to reduce the weight needed for a rugged camera-tilting mechanism on the rig.

In order to tilt the mirror you need to loosen the two vertical fixation screws **(3b)**. Now you can tilt the mirror by turning the tilt calibration screw **(3a)**. Turning counter clockwise will tilt the optical axis of the upper camera to the ground, tuning clockwise will tilt the optical axis of the upper camera to the sky.

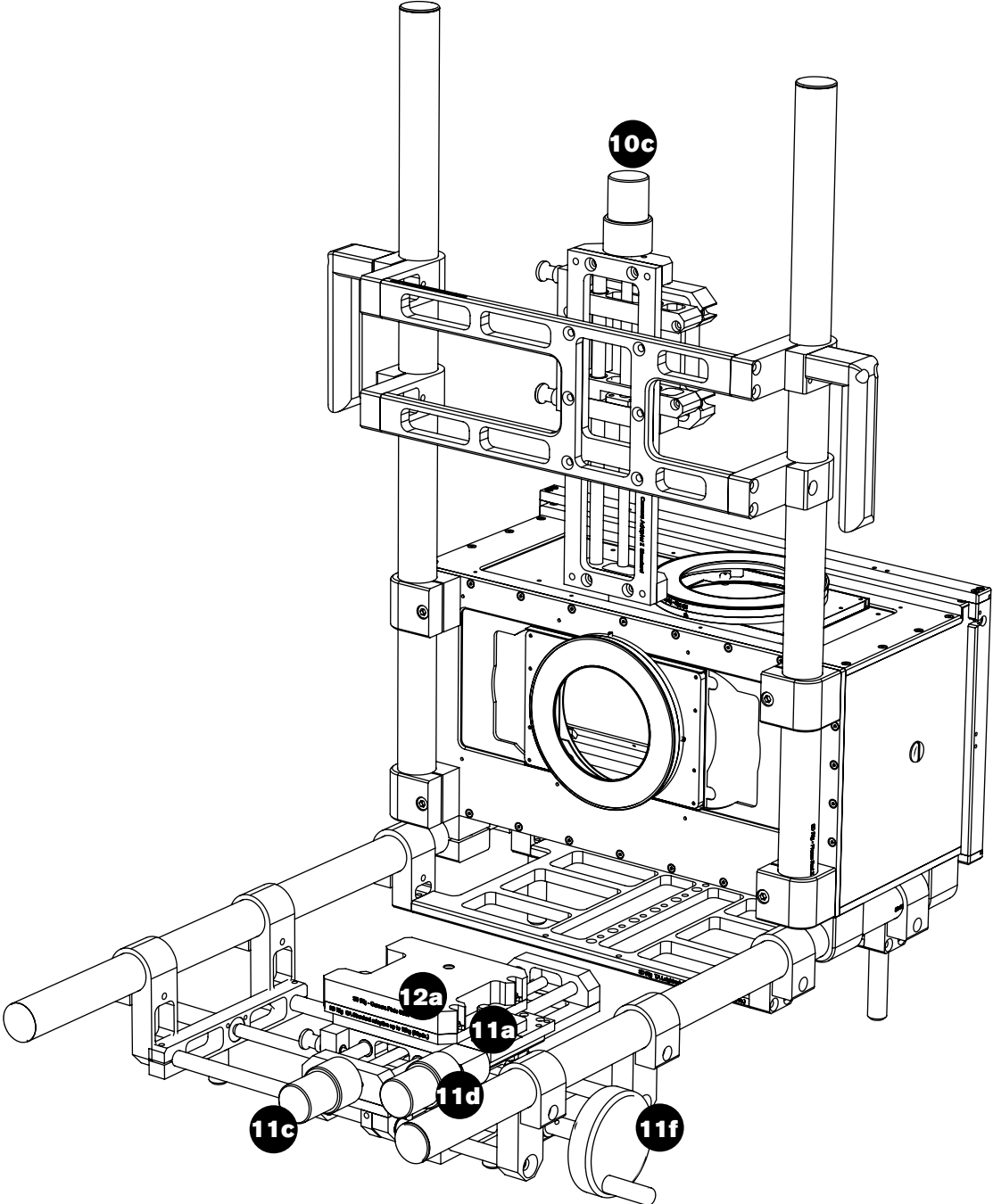
4.3 Moving the Mirror forward and backward

(equivalent to changing the height of the upper camera)

You are able to adjust the height of the upper camera to the height of the lower camera by moving the mirror forward or backward. This feature was implemented because of the same reason the tilting mechanism was implemented.

In order to move the mirror forward and backward you need to loosen the two side fixation screws **(2b)**. By turning the horizontal calibration screw **(2a)** counter clockwise you move the mirror carriage forward. This is equivalent to a movement upwards of the upper camera. By turning the horizontal calibration screw **(2a)** clockwise you move the mirror carriage backward. This is equivalent to a movement downwards of the upper camera.

Once you have calibrated your mirror, make sure that you tighten up the two side fixation screws **(2b)** again.



4.4 Change of 3D parameters

4.4.1 Changing the Interaxial

The interaxial (sometimes called interocular) is the distance between the two optical axis of the two cameras. Basically with the change of the interaxial you change the depth of your 3D image. In order to shoot good 3D without stressing the viewers' eyes you need experience or you need to calculate the appropriate interaxial by using a software tool like the Stereoscopic Calculator of 3D Consult (www.stereoscopic-calculator.com). If you have questions on 3D settings you can contact 3d@3d-consult.eu.

The interaxial is changed by turning the detachable hand wheel **(11f)**. The counter **(11g)** indicates the value of the interaxial in mm (metric). Depending on the preference of the operator the hand wheel and the counter can be mounted to the other side of the interaxial slide. To know how to change the position of the hand wheel please refer to the paragraph tripod adapter, camera adapters and frame rods setup.

4.4.2 Changing the Angulation (Convergence)

By changing of the angulation (turning of one camera – results in converging of both optical axis to a point) you change basically the position of your object relative to the screen window. There are different ways to shoot 3D – so this feature may be used in different ways depending on the operators' preference and experience. You can change the angulation (we call angulation the turning of just one camera while the other camera is staying fixed – the result is a convergence setting) by turning the convergence knob **(11d)**. If the digits on the counter are at zero, the parallel position of the angulation table **(11a)** is indicated.

Be aware that depending on how accurate you screwed on and aligned the camera on the angulation table **(11a)**, the zero indication may differ from the parallel position of the optical axis of the lower camera relatively to the upper camera.

You are able to turn the camera +/- 3° (if you loose the restriction bolt **(11e)** you can turn the camera +/- 5°). The minus range is only of interest for a correction of the zero position; otherwise your optical axis would diverge and that wouldn't make sense for 3D.

For the appropriate setting depending on the screen window distance you can use the Stereoscopic Calculator of 3D Consult (www.stereoscopic-calculator.com). Be aware that if you use too large values you receive a keystone distortion in your 3D image.

5. Storage and Care

5.1 Storage and Transportation

Best storage and transportation is the optional flight case.
Always keep the 3D Stereo Rig in a dry place.

5.2 Cleaning the Mirror

The special coated mirror is very sensitive. Don't clean it with acid detergent. Use a dry microfiber cleaning cloth to wipe off any dust or dirt or a slight humid microfiber cloth wetted with a water and denatured ethyl alcohol mixture (1:1) to clean off grease or oil.

Note: If there is sand or other solid particles on the mirror don't wipe it down – this may injure the surface. Take an air spray and try to spray it off carefully.

6. Additional Accessories

For convenient stereoscopic shooting there is the following accessory provided:

- 3D Monitors: Please contact P+S Technik
- Stereoscopic Calculator; software to calculate optimal 3d settings on the rig (interaxial and convergence);
from 3D Consult (www.3d-consult.eu)
- Synchronized lens control set; set to synchronize focus and iris on both lenses;
from cmotion (www.cmotion.eu)

7. Additional Training

For training workshops, please contact Florian Maier from 3D Consult (www.3d-consult.eu) or visit the 3D section of the P+S Technik website (www.pstechnik.de).

8. 3D Competence Centers and Resellers

For your local 3D Competence Centers and Resellers, please visit the P+S Technik website (www.pstechnik.de).

