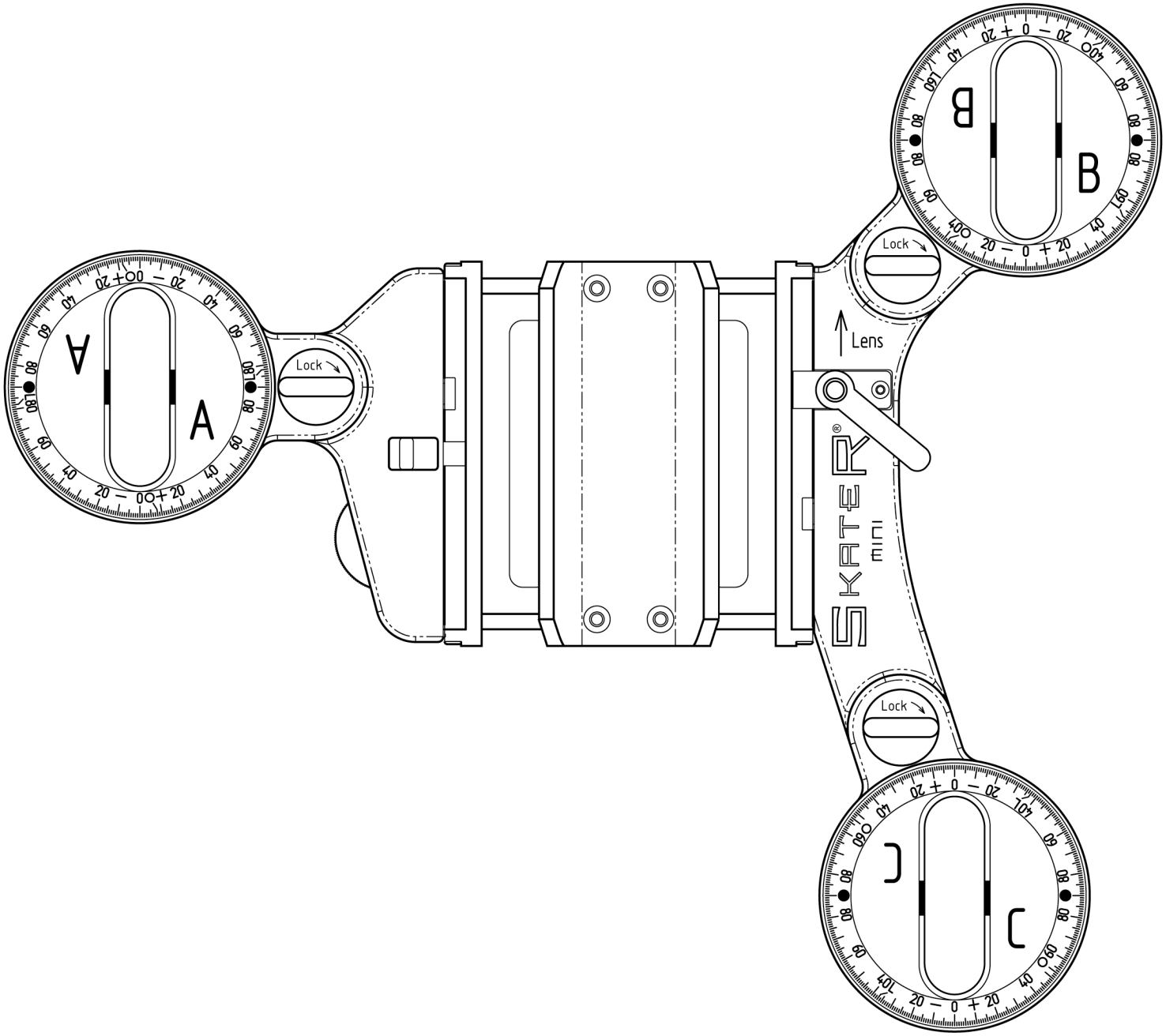
SKATER® mini

Operating Manual



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Professional Cine Equipment Manufacture

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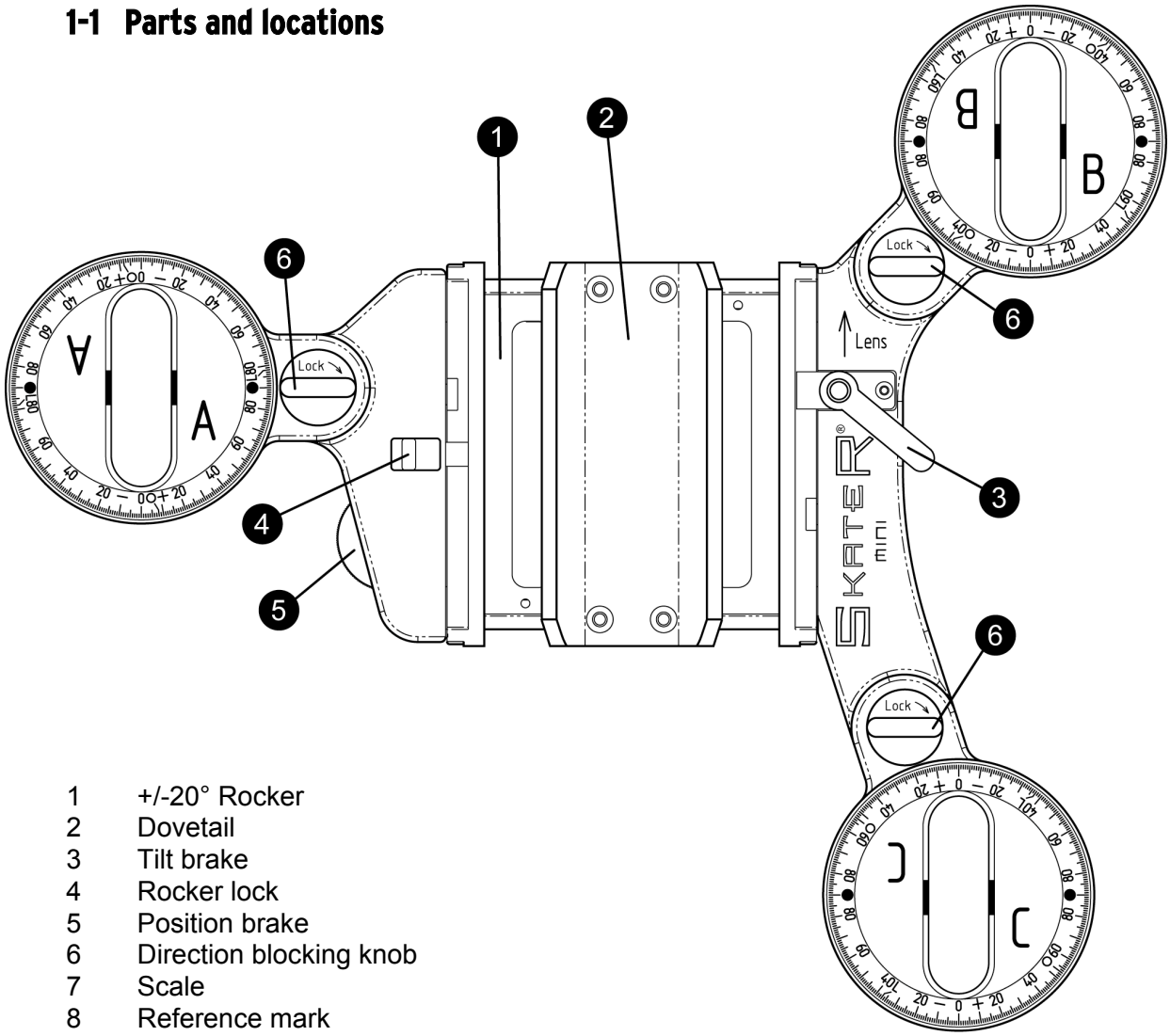
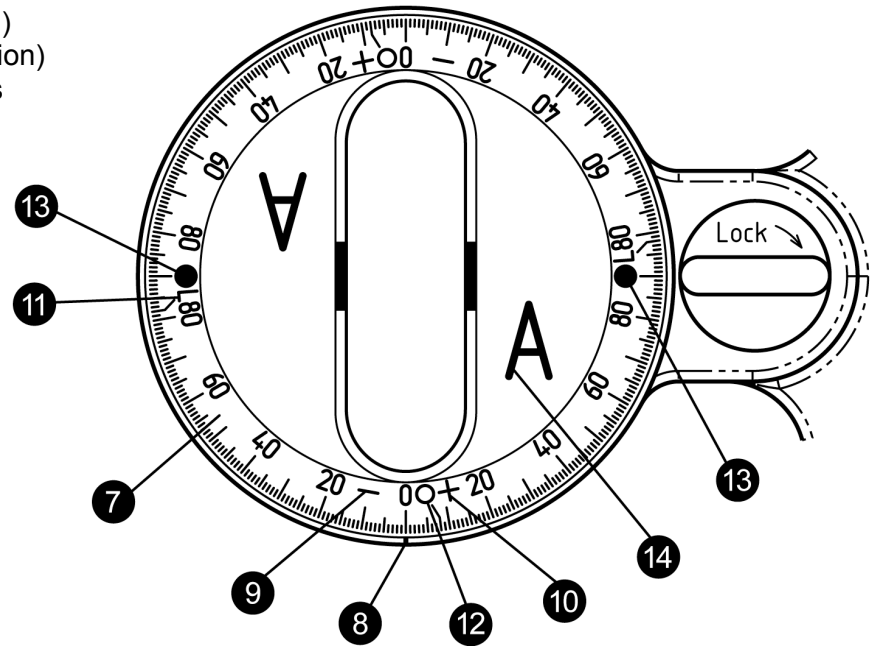
1-1 Parts and locations



1 +/-20° Rocker
2 Dovetail
3 Tilt brake
4 Rocker lock
5 Position brake
6 Direction blocking knob
7 Scale
8 Reference mark
9 "-" for negative scale values
10 "+" for positive scale values
11 "L" (lock position)
12 Circle (pan position)
13 Registration pins
14 Wheel ID



2-1 Adjusting tilt angles

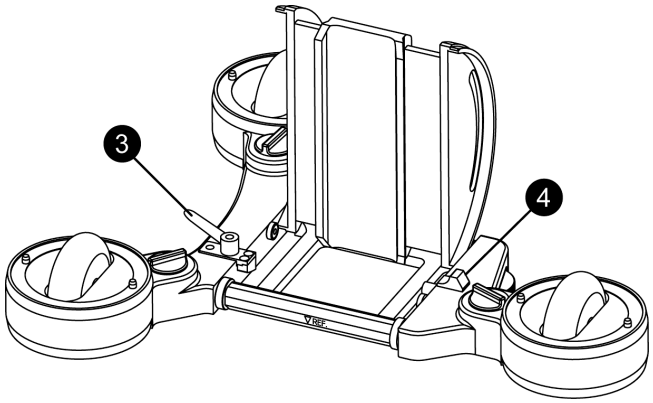
Use the orange tilt brake (3) to fix an adjusted tilt angle. The standard rocker allows a tilt range of +/-20°. If a bigger tilt range is required an optional +/- 30° rocker is available (see below).
To adjust the tilt brake for stronger or lesser tension, pull out the orange lever to disengage it from its screw and turn until you obtain the desired range of the brake.

Tilt range can vary depending on the mounted camera. Ideal cameras have high positions of their film mags, like the ARRI 435, the ARRI III, the Arricam Studio etc. If a mag is located very low, like with the Arricam light, the range of tilting up can be limited, as it is also the case with HD cameras or video cameras having a battery pack in the back.

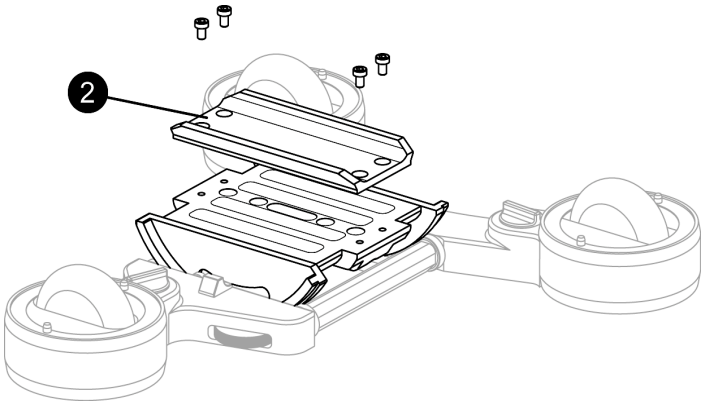
Safety information: Always ensure the tilt brake is safely secured. The system is designed to work with fixed tilt angles.

Changing the rocker

You can easily change a mounted +/-20° rocker by simply pushing the rocker lock (4) outwards to unlock the mechanical guide. With a loose tilt brake the rocker slides out.
Slide in the +/-30° rocker (order No. 20629) from top while the rocker lock is pushed outwards and fix in any desired position with the tilt brake (3).
No further adjustment is necessary.



2-3 Removal of integrated dovetail



If you are not using a standard cine sliding plate simply remove the integrated dovetail (2) from the rocker by unscrewing all four allen wrench screws on the top side of the dovetail. You can now either fix another mounting bracket or mount your camera directly on the top surface of the rocker using one or two of the supplied 3/8" screws.

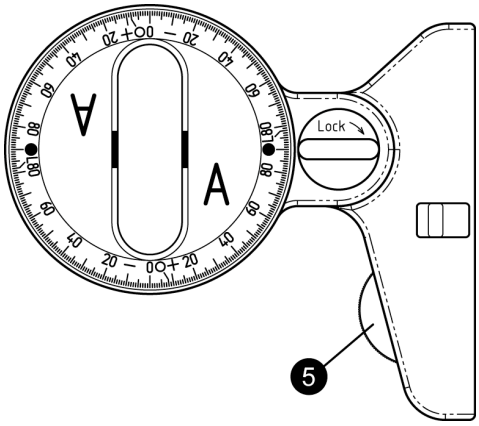
In this case the 3/8” screws have to be tightened from below through the opening of the center frame. It is not possible to slide out a rocker with a mounted camera.

Please make sure to remove all 3/8" screws if they are not used. First of all you can't lose them, and secondly, in some cases they can be in the way if you want to use the full tilt range.

⚠ **Safety information:** To allow the use of the full length of the integrated dovetail, the designers have decided not to limit the end positions with pins. Always make sure the gripping lever of your camera sliding plate is safely fixed.

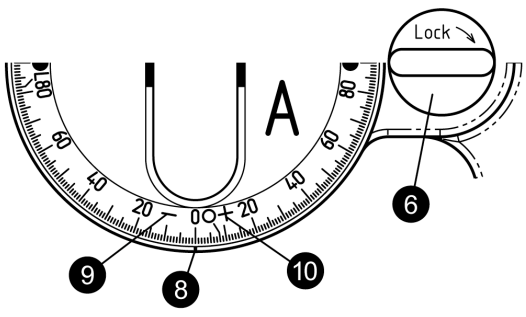
2-4 Using the position brake

To fix a current camera position use the position brake (5). Turning the knurled brass nut to the right will press a rubber pad onto the surface preventing the SKATER Mini from changing its position. Turning it left will loosen the brake.



⚠ **Safety information:** Even if the position brake is used, always ensure the SKATER Mini is safely secured. Additional supports might be necessary to prevent this device from rolling off a surface. The manufacturer is not responsible for any damage on equipment or harm to people caused by an accidential rolling off a surface.

2-5 Linear Tracking



To execute linear tracks just align the scales of each wheel A, B and C to the same value, fix them and you are ready to go.
The outer ring of each scale shows engraved reference marks (8) to which the scale has to be aligned. Use the direction blocking knob (6) to fix an adjusted direction.

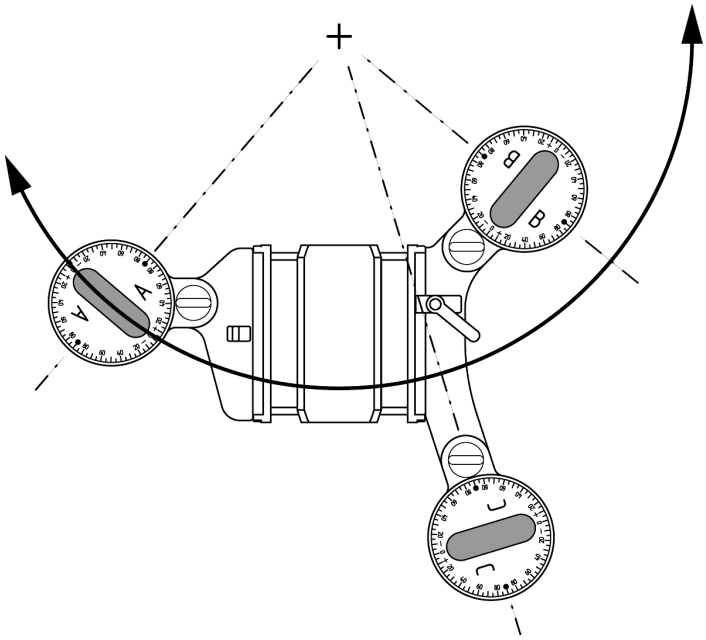
Please note that the positive values are indicated in white, marked "+" (10) and the negative values are indicated in yellow, marked "-" (9).

2-6 Direction blocking knob

Once an orientation of a wheel is adjusted, turn the orange direction blocking knob (6) clockwise to avoid unintentional change of wheel directions. Turn is anticlockwise to unlock for further adjustments on the wheel angle.

2-7 Circular moves around an object

The SKATER Mini allows you to carry out circular camera moves around an object in front of the lens. Shots like this would normally require sophisticated rigging or even motion control and can now be done with almost no prep time.



Place an object in front of the camera and make sure all axes of the wheels A, B and C cross precisely in that object. This alignment will give you an orbiting camera move around that object.
Please note that the performance of your SKATER Mini is highly dependent on precise alignment!

Tip: We strongly recommend to use calculated values for adjusting direction angles of wheel A, B and C and not just to guess the alignment. A slight offset will still produce a curved move, but it might not hit the same starting spot when tracking back. After a couple of takes you could end up somewhere different from where you've started...
Take advantage of the supplied rotation table (see below) or use the free download of the the rotation calculator, available in Excel or Palm versions (see below) providing you with precise values for each wheel.

2-8 Using the rotation table for circular moves

SKATER® mini

Distance from REF. mark on front side to center of rotation

Dist. cm	A	B	C
0	-12,5	-19,0	62,0
5	-26,2	-0,7	66,4
10	-37,3	17,8	69,6
15	-46,0	33,2	72,1
20	-52,5	44,7	74,1
25	-57,6	52,9	75,7
30	-61,6	58,9	77,0
35	-64,7	63,3	78,1
40	-67,3	66,7	79,0
45	-69,4	69,4	79,8
50	-71,2	71,5	80,5
60	-73,9	74,7	81,6
70	-76,0	77,0	82,5
80	-77,6	78,7	83,2
90	-78,9	80,0	83,8
100	-79,9	81,0	84,3
110	-80,8	81,9	84,7
120	-81,5	82,6	85,1
130	-82,2	83,1	85,4
140	-82,7	83,7	85,7
150	-83,2	84,1	85,9

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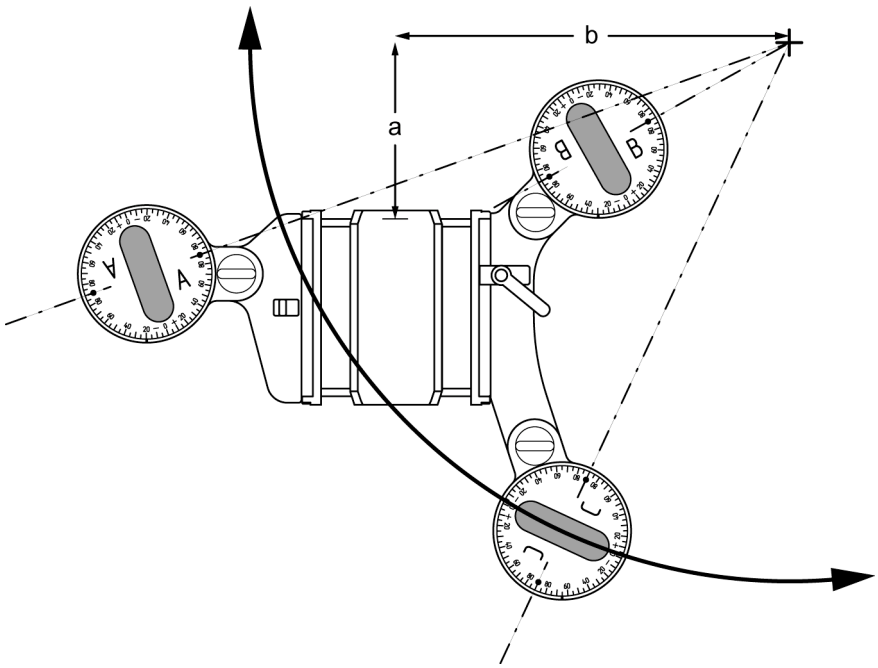
The small rotation table supplied with the SKATER is the easiest and fastest way of setting up an alignment for circular camera movements.
The laminated water resistant table shows units in cm (yellow) on one side and units in inches (orange) on the other. The first column offers more than 20 different distances to a center of rotation, the next three columns show angles to be set up for wheel A, B and C.
All distances are measured from a triangular REF. mark on the front side of the SKATER Mini.
Even if the scale is only showing full angles, we have decided to provide the first decimal digit, as it can help to line up wheel directions closer to one angle mark or to another.

Tip: After placing an object in front of the camera, it makes sense to block the position brake (5), so the camera remains in that position while wheel angles are aligned.
Use a tape measure to find out the distance between REF. mark and object and just look up that distance on the rotation table, to get proper angles for all wheels. Please make sure to align all values as accurate as possible.
It is often also helpful to mark the starting position with tape or a marker, so you know exactly where to go back to if the move needs further adjustment.

2-9 Curved Moves

The SKATER Mini allows much more than only center rotations. You can pick any point as a center of rotation and align the axis of all wheels to this point providing you with all sorts of curved camera moves.
For a rough guess both registration pins (13) of each wheel should be in line with the desired center of rotation.
But again, it's highly recommended to use calculated values for a proper



line up, as they are provided with the rotation calculator (see below), available as a free download on the P+S Technik website, www.pstechnik.de.
Curved moves are of course also circular rotations, but they use a side offset (b) and not only a distance in camera direction (a) from the REF. mark on the front side of the SKATER Mini. In a shot those setups will appear as curved moves.

Tip: If a curved move is used to track into a new camera angle, for instance for a product shot in a commercial, it is often beneficial if the side offset (b) is bigger than the distance in camera direction (a).

2-10 Rotation Calculator

The Rotation Calculator is a free shareware, available as an Excel file or a palm version on the P+S Technik website, www.pstechnik.de. Download and use these very handy programs if you intend to work with side offsets for rotation centers.
Please feel free to pass these files on to other crew members.

All distances are measured from REF. (triangle) mark on the front side of the SKATER Mini to center of desired rotation.

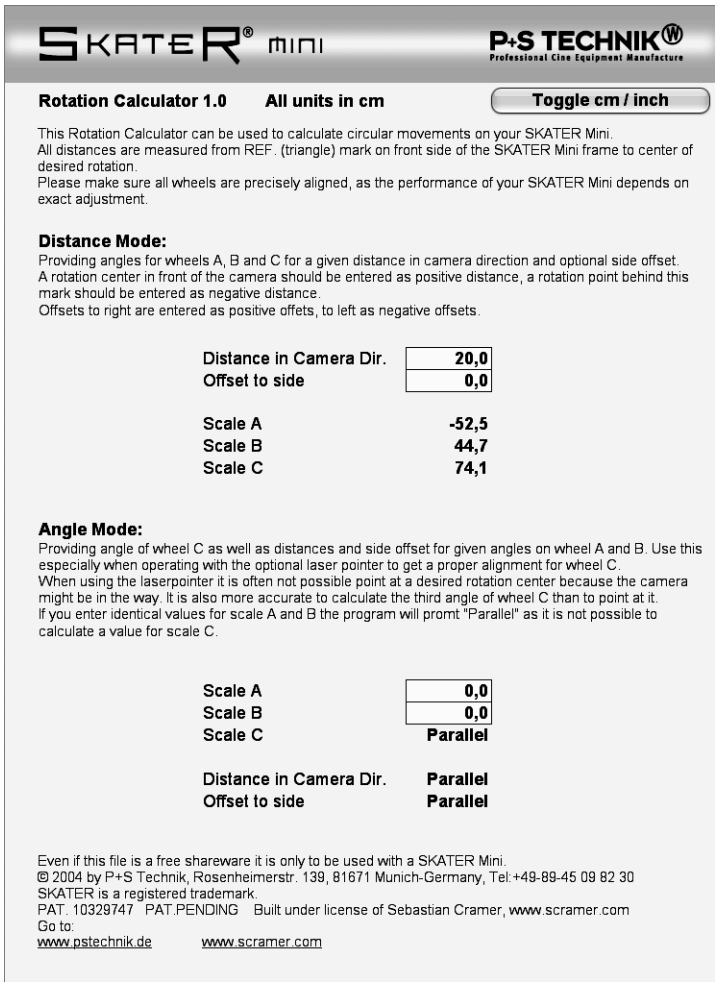
Palm Version

The palm version includes two files, the “Rotation Calculator.prc” and a “Mathlib.prc”. Both have to be installed on your palm.

A button can be used to toggle between inch and cm units. Another button allows you to change to “Angle Mode” which is explained in more detail further below.
Under “Distance Mode” you will find a help file, telling you how to use this program in detail.

Excel Version

The Excel Version also allows to toggle between cm and inch units.
All helpful information is included here. As in the palm version, this version also works in two modes, the “Distance Mode” and the “Angle Mode” (see below).
This file uses macros for proper operation, so you have to permit the use of macros.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Rotation Calculator 1.0 **All units in cm** Toggle cm / inch

This Rotation Calculator can be used to calculate circular movements on your SKATER Mini.
All distances are measured from REF. (triangle) mark on front side of the SKATER Mini frame to center of desired rotation.
Please make sure all wheels are precisely aligned, as the performance of your SKATER Mini depends on exact adjustment.

Distance Mode:
Providing angles for wheels A, B and C for a given distance in camera direction and optional side offset.
A rotation center in front of the camera should be entered as positive distance, a rotation point behind this mark should be entered as negative distance.
Offsets to right are entered as positive offets, to left as negative offsets.

Distance in Camera Dir.	20,0
Offset to side	0,0
Scale A	-52,5
Scale B	44,7
Scale C	74,1

Angle Mode:
Providing angle of wheel C as well as distances and side offset for given angles on wheel A and B. Use this especially when operating with the optional laser pointer to get a proper alignment for wheel C.
When using the laserpointer it is often not possible point at a desired rotation center because the camera might be in the way. It is also more accurate to calculate the third angle of wheel C than to point at it.
If you enter identical values for scale A and B the program will promt "Parallel" as it is not possible to calculate a value for scale C.

Scale A	0,0
Scale B	0,0
Scale C	Parallel
Distance in Camera Dir.	Parallel
Offset to side	Parallel

Even if this file is a free shareware it is only to be used with a SKATER Mini.
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www.pstechnik.de www.scramer.com

Distance Mode:

Providing angles for wheels A, B and C for a given distance in camera direction and optional side offset.
A rotation center in front of the REF. mark should be entered as positive distance, a rotation point behind this mark should be entered as negative distance.
Offsets to the right are entered as positive offsets, to the left as negative offsets.

Angle Mode:

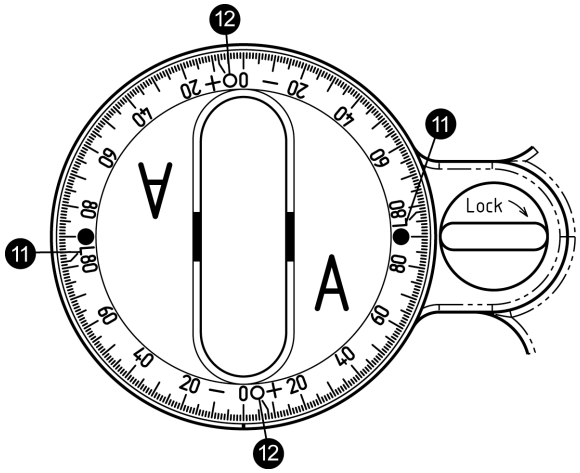
Providing the angle of wheel C as well as distances and side offset for given angles on wheel A and B. Use this especially when operating with the optional laser pointer (see below) to get a proper alignment for wheel C.
When using the laserpointer it is often not possible to point at a desired rotation center because the camera might be in the way. It is also more accurate to calculate the third angle of wheel C than to point at it.
If you enter identical values for scale A and B the program will prompt "Parallel" as it is not possible to calculate a value for scale C.

2-11 SKATER Mini Laserpointer

The optional laserpointer (order no. 20658) offers another way of aligning wheels to any rotation center. Simply place the laserpointer into the two registration pins on the scale and point to a desired rotation center.

Tip: Always use the position brake (5) before aligning wheel directions with the laserpointer to make sure the camera remains in the same position.
Sometimes it is not possible to point from wheel C, because the camera might be in the way. Use the rotation calculator in “Angle Mode” in this case to get a calculated angle for wheel C.
Even if it is possible to point from wheel C to the rotation center, we do recommend the use of the rotation calculator in “Angle Mode”, as this is a more accurate way of aligning the third wheel.

2-12 "L" and “O” marks



Each scale has its individual “L” (Lock) mark. If all wheels are lined up in “L”-position, the SKATER Mini is locked, giving you an adjustable rocker plate for low camera angles.

If the scale for each wheel is turned to line up with the circular “O”-position, the SKATER Mini is turning around its center, which allows you to perform basic panning shots on low camera angles.

2-13 Working with the SKATER Mini Steadybag

The SKATER Mini Steadybag is an optional accessory (order no. 20671) which allows to work with dutched camera angles and adds flexibility to your SKATER Mini.
Simply slide out the mounted rocker and put the steadybag onto the frame of the SKATER Mini and place your camera in the desired angle.
It can also be beneficial if you intend to start a movement on the SKATER and continue the shot with a handheld camera.

2-14 Using the SKATER Mini with borescope lenses

A straight borescope snorkel lens can improve the flexibility of a SKATER as it allows an easy way of adjusting lens heights just by tilting the camera up and down. With a borescope you can almost touch the surface with the lens on tracking shots. It can also help on table top closeups, like product labels, control panels, food, insects, flowers etc. to quickly adjust the lens height and accomplish your creative aim.

For practical reasons it is better if the borescope is fairly short as it gives better control on setups and camera moves. But sometimes can be quite tricky to find short borescopes. Talk to your local rental house for further information.

When using a straight borescope you might want to slide the camera further back than the integrated dovetail allows. In this case remove the dovetail and mount a standard (or long) sliding plate onto the rocker, to let you shift the camera further back.

2-15 SKATER Mini as a model mover

Some clients even use the SKATER Mini as a model mover device to rotate objects in front of the lens (circular mode, set to “O” marks) or track objects into frame in curved or linear moves.
Find out what you can do with it...

Storage and care

3-1 General information

Your SKATER Mini is a low maintenance precision tool. Best for storage and transportation is the optional flight case (order no. 20659) which also allows storing space for the +/-30° rocker.
To clean your SKATER Mini use a wetted soft fabric to wipe off any dust or dirt.

3-2 Cleaning the wheels

Make sure the running surface of all wheels is always clean. Especially a thin film of grease can affect the precision of a track quite significantly. Small dirt particles can also reduce the smoothness of the SKATER Mini´s moves.
Use a bit of dishwashing liquid on a wetted soft fabric (make sure it is not dripping wet) to clean off any residues on the running surface. Wipe clean without dishwashing liquid. Make sure all wheels are dry before placing the SKATER back into your set.

3-2 Cleaning the runners of a rocker

Make sure no dust or dirt is on the curved top and bottom surface of both runners located on the right and left side of each rocker. Most likely if the SKATER Mini is used on location, dust or dirt can be a problem. Don’t wait till you hear crunching noises when tilting up or down. Clean the runners frequently, as it is very easy to do.
Just slide the rocker out and clean the surfaces of the runners as well as the running surface of the three bearings on each side with a wetted soft fabric (make sure it is not too wet).

4-1 FAQs

Does the SKATER Mini replace a dolly?
No, the idea is to use it whenever it is faster and more efficient. In most productions the SKATER Mini is required as well as a dolly and will be used for a few shots only. For fast removal of your camera head from a dolly, crane or tripod we have integrated a dovetail into the SKATER Mini, so you can easily make those changes without losing time on changing the sliding plates.

Is the SKATER Mini only meant for table top work?
The design comes from a table top background. But more and more the SKATER Mini is also being used in feature and documentary work, especially on locations which are hard to reach. If you have to walk up five flights of stairs it might be easier to just take the SKATER, two apple boxes and a board than to bring a dolly and tracks up there.

Can I change the tilt angle during a shot?
The system is designed to work with fixed tilt angles. With some experience you might also be able to tilt in a shot, but this needs some experience. We've heard about DoPs doing this.

The object I'm filming is too high or too low, how can I adjust the lens height?
One way is to change the vertical position of the object or the tracking surface. If the lens should be just a bit higher, change to the +/-30° rocker, which will increase camera height about 2 cm or 0.8 inch. If you need to go a bit lower, loose the sliding plate and the integrated dovetail and mount the camera directly onto the rocker.
Another elegant way is the use of a straight borescope (see above) as it allows you to adjust a lens height by changing the tilt angle of a camera.

What kind of surface do I need?
Just about any one will do. Make sure the board, platform, table or floor has a plain surface. If you have a solid surface but it has dents, just place a thin plain panel on top. Sometimes it’s only necessary to track a couple of inches to achieve the desired shot, so often the tracking surface doesn’t have to be extremly big.
Also keep in mind that the wider your shot is, the less critical is the surface. If you are on a wide lens you might even get away with small dents or a slight uneveness on the surface.

How precise is the repeatabilty of the SKATER Mini?
If all wheel directions are precisely aligned, the SKATER is very precise. We recommend to always use calculated values for all scales, as they are much more accurate. Use the supplied rotation table or, even better, get a free download of the Rotation Calculator (available in Palm versions or as an Excel file, www.pstechnik.de). It will give you proper results.
In any case it can be useful to mark the start and end point of a move with a marker. If there is a slight offset after a couple of takes, you can still re-position the SKATER according to the marks. Those marks will also help the camera assistent doing the focussing.

5-1 General technical information

Width	436.5mm / 17,2"
Length	385.0mm / 15.2"
Height including wheels	72.0mm / 2.83"
Mounting height with +/-20° rocker	51.4mm / 2.0"
Mounting height with +/-30° rocker	71.0mm / 2.8"
Weight incl. +/-20° Rocker	3800 grams / 8,38 lb
Maximum load	30kg / 66 lbs
Size of flight case	500x425x115mm
Best operating temperature	-0°- 40°C

(Tilt range may vary depending on the mounted camera)

5-2 Accessories and order information

Article	**Order No.**
SKATER Mini, including +/-20° rocker Dovetail for 20° rocker 2 Rotation Tables download of Rotation Calculator	20768
SKATER Mini +/-30° Rocker including dovetail	20629
SKATER Mini Laserpointer	20658
SKATER Mini Flight Case	20659
SKATER Mini Steadybag	20671
SKATER Mini additional Rotation Table	20769

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