

# MAIN OPERATING INSTRUCTIONS

***MPT-9***



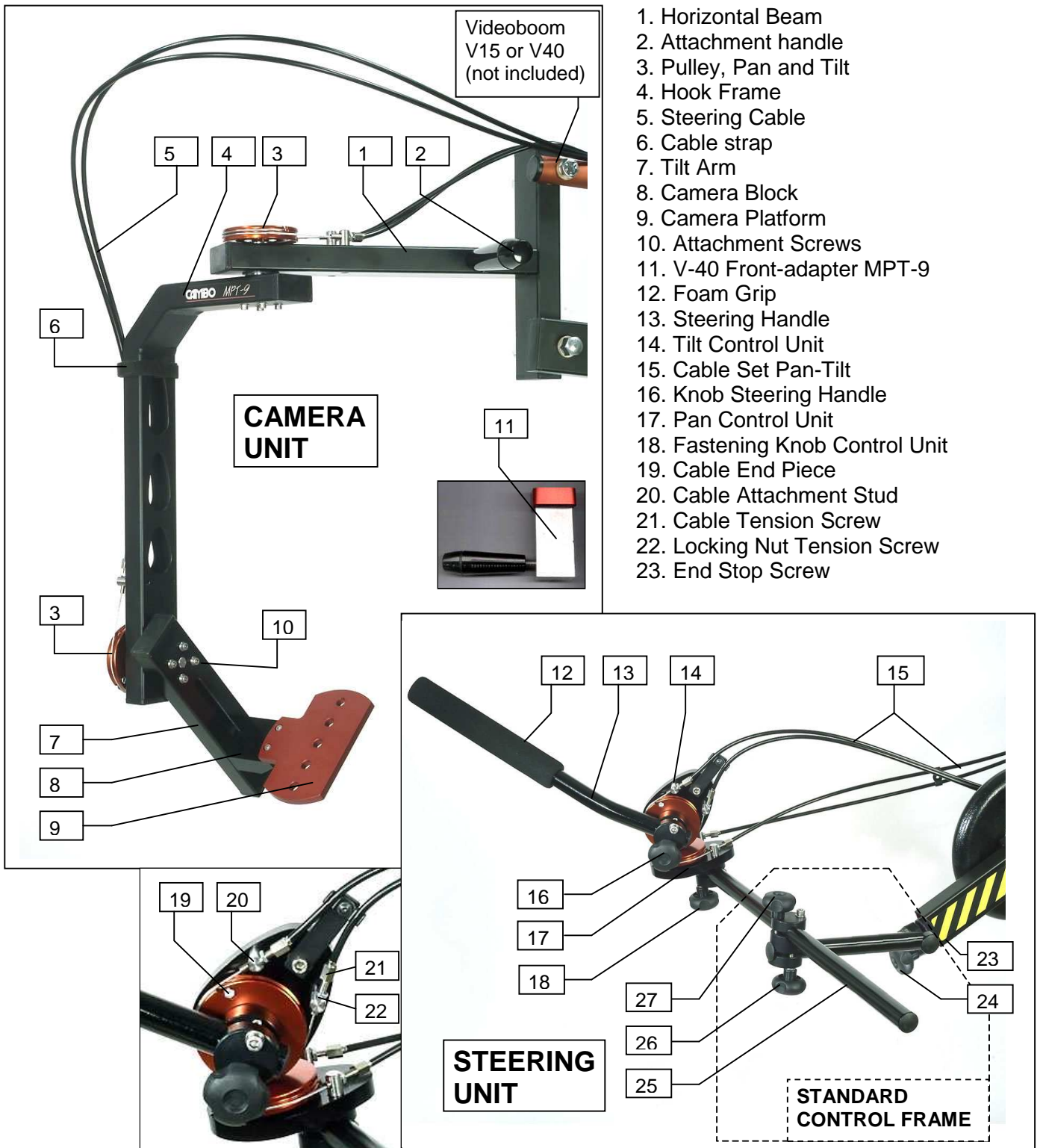
*Mechanical Pan Tilt Unit* **CAMBO**

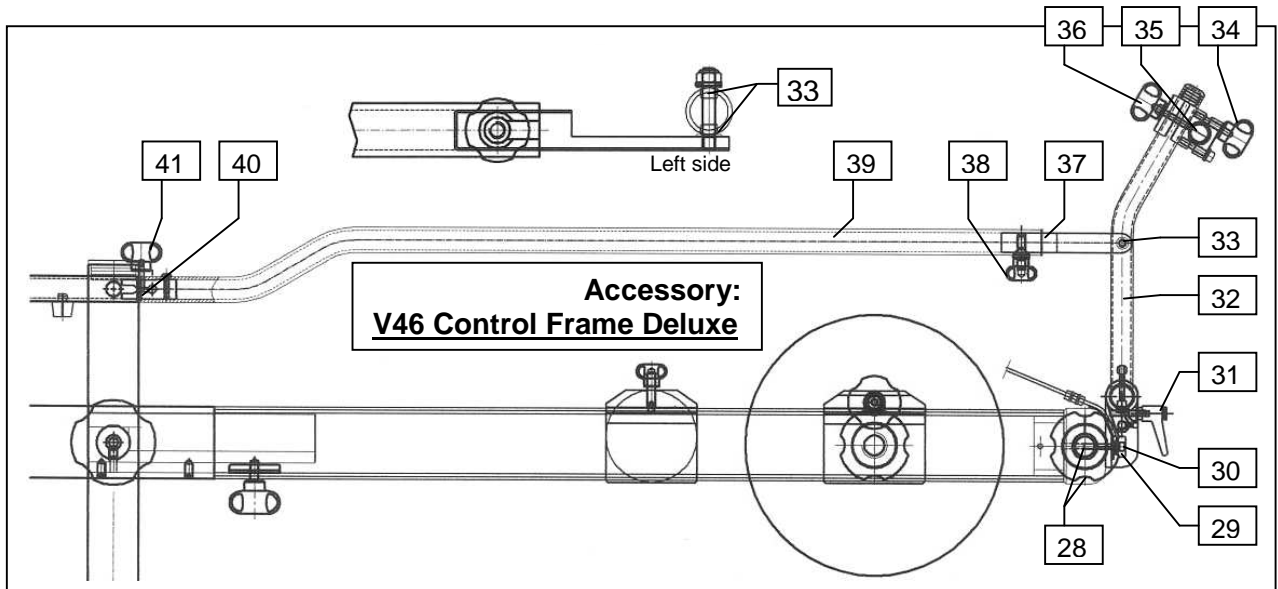
## 1. INTRODUCTION

You have bought an MPT-9 Mechanical Pan Tilt Unit out of the wide range of Cambo Video products. We expect that you will achieve very good results and performance using this equipment.

These instructions give short information about the main functions of the new MPT-9 Unit on the Cambo V15 and V40 Videoboom. The MPT-9 adds new dimensions to your Videoboom, doing 340 degrees tilt and 340 degrees pan. The Mechanical Pan Tilt Unit is quickly set up and fits into a compact softcase that will be available from your Cambo dealer.

## 2. LIST OF FUNCTIONS AND PARTS





- 27. Locking Knob Horizontal Correction
- 28. V48 Double Fixed weight system.
- 29. Pegs V48
- 30. Screws Pegs V48
- 31. Handle Clamp
- 32. Vertical (Depth) Bar
- 33. Bushes Steering Bar
- 34. Locking Knob Horizontal Correction
- 35. Steering Bar V40
- 36. Locking Knob Depth Correction
- 37. Split Position Extension Tube
- 38. Locking Knob Steering Bar end
- 39. Steering Bar Control Frame V40
- 40. End Cap Cross Beam V40
- 41. Locking Knob Steering Bar front
- 42. Extra Handle Set (Accessory)

- 24. Locking Knob Control Frame
- 25. Steering Bar V15
- 26. Locking Knob Depth Correction

### MPT-9 PACKAGE SYSTEM

There are now four different complete MPT-9 solutions. For the V15 with the normal 80cm extension there is an MPT-9 solution and for the 160cm version (80cm extra extension) there is a set with a longer cable. The V40 versions of the MPT-9 contain a non-extended V40 and a 1meter extended V40 version.

- 99134800 MPT-9 Mechanical Pan Tilt for V-15-80
- 99134801 MPT-9 Mechanical Pan Tilt for V-15-160
- 99134805 MPT-9 Mechanical Pan Tilt for V-40-0
- 99134806 MPT-9 Mechanical Pan Tilt for V-40-100

The (above described) MPT-9 complete systems consist of the following items:

- 99134810 Head (camera unit)
- 99134811 Control unit
- 99134812 Standard Control frame & MPT-11 adapter V15  
or 99134814 Standard Control frame & MPT-10 adapter V40 incl. front adapter (11)
- A Pan and a Tilt cable set out of the following list:
 

99134820 Cable pan 2420mm V15-80	99134824 Cable pan 2900mm V40-0
99134821 Cable tilt 3370mm V15-80	99134825 Cable tilt 3850mm V40-0
99134822 Cable pan 3220mm V15-160	99134826 Cable pan 3900mm V40-100
99134823 Cable tilt 4170mm V15-160	99134827 Cable tilt 4850mm V40-100

### Accessories:

99134813 MPT-9 Extra handle set (42). This set makes it possible to realise a set-up like shown on the front page of these instructions. It also makes independent pan and tilt control possible with one handle for tilt and one handle for the pan movement. The clamp is also useable for a 19mm (zoom) grip handle. Mounting instructions are included with the accessory.

99134815 MPT-9 V40 Control Frame Deluxe. This frame is mounted to the V40 at the V48 weight system and held upright by a steering bar that is connected to the V40 cross bar.

All above items are also separately available. These instructions describe the set-up of a complete MPT-9 system for a V15 and for a V40, followed by the instructions to change the system to a different cable length.

## INSTRUCTIONS ASSEMBLY & SETTING UP INCLUDING MPT-10 INSTRUCTION

### A. Boom and Tripod set up

Firstly set up your V15 or V40 according to their instructions, using an appropriate tripod.

### B. Mounting Control frame and MPT-10:

#### V15 (standard control frame):

Remove the end-cap from the V15 tail and unscrew the end-stop screw (23) from underneath the tail, using the tools that are supplied with the MPT-9. Take the Control frame and place it with the MPT-11 block in the backside of the tail. Fasten the Control frame using the same screw you took out or use the extra supplied one.

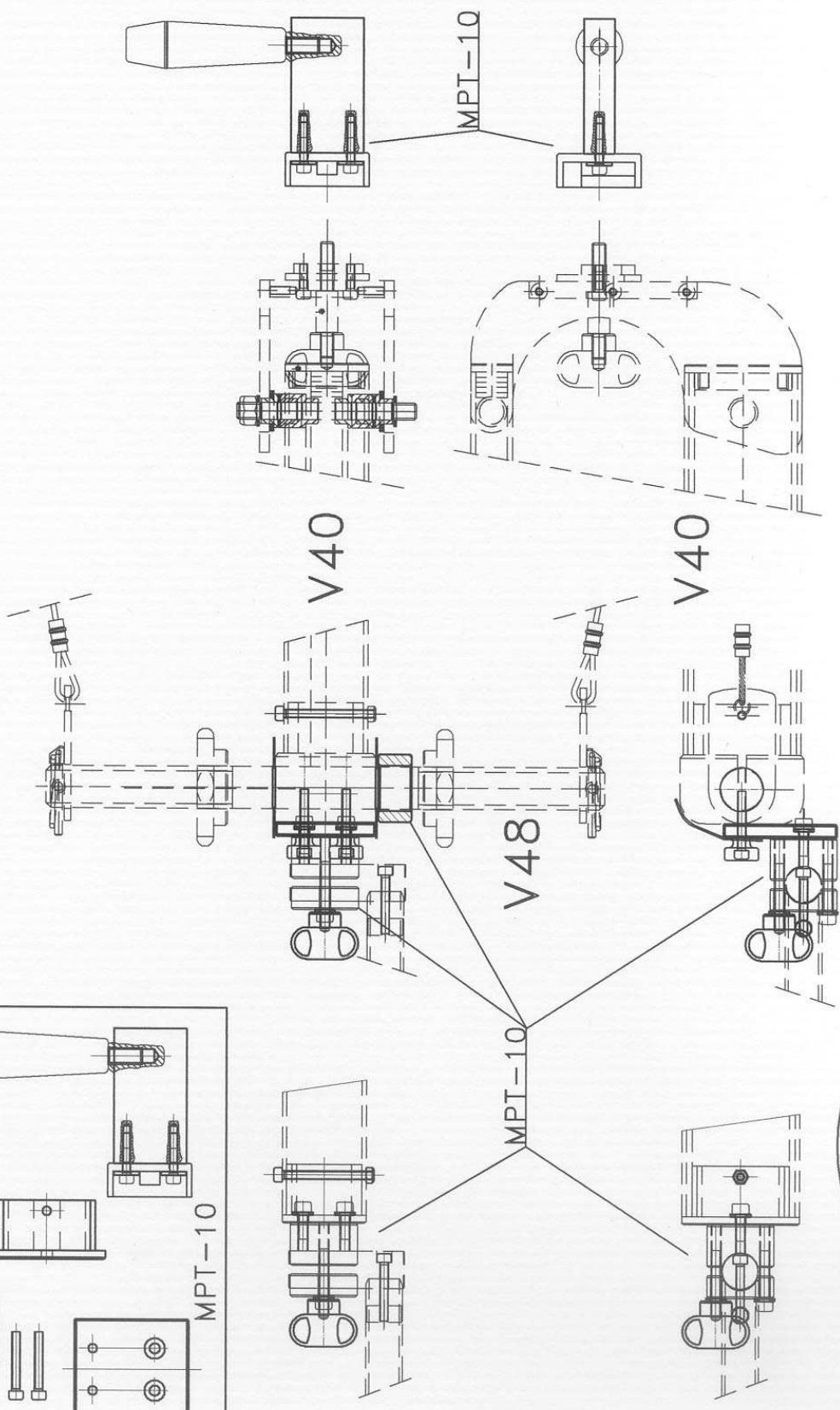
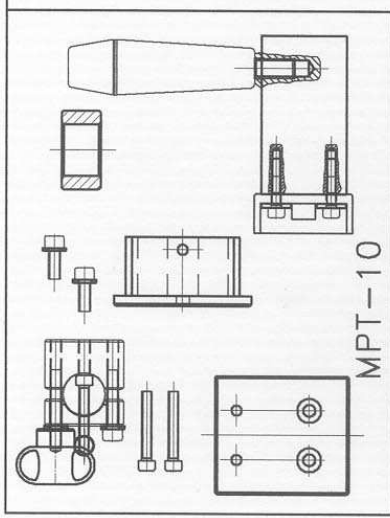
#### V40 with standard control frame:

Remove the end-cap from the V40 tail and unscrew the end-stop screw and nut from the tail, using the tools that are supplied with the MPT-9. Take the V40 Standard Control frame and place it with the MPT-10 block in the backside of the tail. Fasten the Control frame using the same screw and nut you took out or use the extra supplied ones. If there is also a V48 weight system on your V40 tail you should mount the supplied flat plate to the MPT-10 adapter block before attaching it to the V48. Remove the cable pegs, place the control-frame flat plate and replace the cable pegs, now using the longer bolts that are supplied with the control frame.

#### V40 with control frame deluxe (optional):

- ! If there is no **V48 double fixed weight system** on your V40, you need to purchase one and mount it like described in the instructions that come with the V-48.
- The Control frame is mounted behind the two pegs at the backside of the V48 (28). Therefore remove the two pegs using the tools that are supplied with the MPT-9. Take the Control frame and place it on the V48 backside with the fastening holes at the bottom side. Fasten the Control frame and the Pegs together using the longer screws that are supplied with the system. Use the locking Handle (31) to place the frame in a good position.
- If you have a Steering Bar (35), mount the side with the flat-end block on the vertical Depth Bar (32) after you have positioned the two bushes (33, see Detail drawing) on the already mounted system. With the Locking Knob (38) you can add or remove extension pieces at the split position (37), depending on your tail length. Remove the End Cap (40) from the V40 Cross Beam and mount the steering Bar on the Cross Beam, locking it with the Knob (41). Your Vertical (Depth) Bar is now pointing upward. **Using a Steering Bar means that the handle clamp should be loosened!** The Clamp system with the Locking Knobs makes it possible to place the Steering Bar (35) where you want it. All tube clamps have a knob and a hexagon screw that is pre-set for the best clamping-performance. If the hexagon screw is removed it should be replaced at the exact position again for good clamping performance.

V40 with standard control frame:  
99134850—MPT-10 Adapter MPT-9 TO V40





## C1 Mounting MPT-9 on V15:

Remove the Bowl Arm from your V15 with the Attachment handle (2). The MPT-9 is pre-assembled and supplied in a box. Prevent the cables from kinking / twisting when taking out the MPT system. Unroll the cable and place the Head on the video boom, locking it with the Attachment Handle. Fasten the cables to the MPT Hook Frame (4) and the Cross Beam of the Videoboom with the Cable Straps (6). Be sure that the tilt cables have enough play doing the Videoboom and MPT movements. Mount the Control Unit (14,17) on the Steering Bar (25) using the locking knob (18) and give the cables the most optimal course without sharp turns. Be sure that the cables do not twist but go along one side of the video boom. This will give the best result on friction and control of the complete system. Mount the Steering Handle (see picture) on the Tilt (combined with Pan) Control Unit (14) using the Knob of the Steering Handle (16).

## C2 Mounting MPT-9 on V40:

Remove the Bowl Arm from your V40 with the Attachment knob. Mount the V-40 front adapter for the MPT-9, locking it with the same knob. Place it with the attachment handle (2) at the left side. Remove the attachment handle. The MPT-9 is pre-assembled and supplied in a box. Prevent the cables from kinking / twisting when taking out the MPT system. Unroll the cable and place the Head on the video boom, locking it with the Attachment Handle (2). Fasten the cables to the MPT Hooked Frame (4) and the Cross Beam of the Videoboom with the Cable Straps (6). Be sure that the tilt cables have enough play doing the Videoboom and MPT movements. Mount the Control Unit (14,17) on the Steering Bar (25) of the standard or deluxe control frame using the locking knob (18) and give the cables the most optimal course without sharp turns. Be sure that the cables do not twist but go along one side of the video boom. This will give the best result on friction and control of the complete system. Mount the Steering Handle (see picture) on the Tilt (combined with Pan) Control Unit (14) using the Knob of the Steering Handle (16).

## D. Adjusting Cable Tension

In order to get the best performance the cable tension should be checked and, if necessary, adjusted. The best way to check the tension is while the system is completely set up and the cables have the most optimal course without sharp turns. The necessary tension in the cables is a personal setting because the friction in the MPT-9 movements is depending on this tension. When the cable tension is too low the system will have play at the beginning of each movement. When the cable tension is too high the system will have too much friction and the handle goes too heavy. There is a personal optimum between these two items. Factory set the performance should be very close to your optimum settings.

**How to adjust Cable Tension:** Each cable set, tilt or pan, has four Cable Tension Screws (21) that all tension the same cable set. You can set the tension on the tilt movement cable set independent from the pan movement cable set.

Firstly loosen the Locking Nut (22) of the Tension Screw (21) you want to adjust using the supplied tools. Then correct the tension, increasing the tension turning the Tension screw towards the black outer cable or decreasing the tension turning it away from the outer cable.

Use the tools if necessary and feel the friction in the MPT-9 System using the handle till you find your optimum. If the tension needs to be adjusted more than possible with one tension screw you can use one or more tension screws of the same cable set.

After setting lock the tension screws with the Locking Nuts (22). Be sure that the Cable Tension screws (21) do not touch the red cable wheel at the control unit side.



## E. Changing Cables

Changing the MPT cable set is possible of course but it is not recommended to have very regular cable changes between different video boom set-ups.

You need to change cables when:

- You are changing the system from V15 to V40 or the other way around
- You are changing the Video Boom length
- There is a cable defect

NOTE: The MPT-9 Cables should always be dealt with carefully without applying sharp bends, kinks or twisting the cable. The cable should be stored like it is rolled on a wheel of at least 40cm diameter.

There are now four different pan and tilt cable sets available (see MPT-9 Package System).

A Cable set (pan or tilt) consists of two assembled cables to make one cable loop. One cable assembly consists of an inner cable with two Cable End-pieces (19) and an outer cable with two Cable attachment Studs (20) and two Tension Screws (21) with Nuts (22). The two Cable attachment Studs (20) are of a different length. So on each Control Unit plate there is a long and a short attachment Stud. In the picture the longer stud is indicated with '20'. Both Control unit plates and the cable attachment at the MPT Head have the longer stud at the same place. This determines the turning direction of the camera.



### How to change Cables:

- E1 Loosen all Locking Nuts (22) of the tension screws (21).
- E2 Turn all Tension Screws (21) into the Cable attachment Studs (20) to release tension.
- E3 Remove the Steering Handle (13) using the Knob (16).
- E4 Take all Cable end-pieces (19) out of the cable wheels (lower cables last).
- E5 Control Unit: Loosen Cable attachment studs with hexagon key.
- E6 Take Cable set from control unit.
- E7 Take new cable set and mount cable attachment studs (20) to the control unit. The longer stud should be placed at the indicated (20) position. (longest cable for tilt and shortest cable for pan movement) Do not tighten the screws yet.
- E8 Loosen cable attachment studs from head unit.
- E9 Remove old cable from Head unit and Videoboom.
- E10 Take new cable-end (longest for tilt) and mount it with the attachment stud (20) to the Head Unit (again with the longest stud at the right side of the cable wheel). Do so for all four cable-attachment studs.
- E11 Attach cables to Videoboom without sharp bends.
- E12 All new cable tension screws (21) should be turned totally inside the attachment studs (20).
- E13 Head Unit: Put cable of the short attachment stud  $\frac{3}{4}$  around the wheel and place cable end-piece into the cable wheel hole with the hexagon side up. (2x) See picture for right wheel position.
- E14 Head Unit: Put second cable  $\frac{3}{4}$  around the wheel and place cable end-piece into the cable wheel hole with the hexagon side down. (2x)
- E15 Head Unit: Set Attachment screws globally in the right cable-direction and fasten them.
- E16 Control Unit: Put cable of the short attachment stud  $\frac{3}{4}$  around the wheel and place cable end-piece into the cable wheel hole with the hexagon side up. (2x)
- E17 Control Unit: Remove new longer attachment stud (remaining loose cable end)

- E18 Place Cable end-piece (19) of this remaining cable  $\frac{3}{4}$  around cable wheel in the hole with hexagon side down.
- E19 Check if all outer cable ends of this cable loop are rightly positioned in their end caps and in the tension screws.
- E20 Take Cable Stud of the remaining loose cable and fasten it on the control unit plate while tensioning the cable if necessary.
- E21 Set this attachment Stud (20) in the right (cable) direction and check all other stud directions after cable tensioning by hand. The inside cables should not touch the tensioning screws.
- E22 Tension Cables as described above: D. Adjusting Cable Tension
- E23 Do E10 to E22 also for the pan cables if you did not do it parallel.
- E24 If necessary wrap the spiroflex of the old cable set around the ends of the new cables to keep the pan cables together and the tilt cables together.

## F. Mounting the Camera

Lock all Videoboom movements after you have counterbalanced. Place the camera platform (9) of the MPT-9 Head in the lowest position and mount a camera (quick-lock) flat plate if you use one. Mount the camera on the camera platform with the Tilt Arm (7) at the right side of the camera. If you use the MPT-9 Head up side down you should firstly mount the Head up side down and then mount the camera again (see instructions G.).

The camera centre of gravity should be at the rotation point of the MPT Head. Place the camera with the flat plate and the vertical adjustment globally at this position. The vertical adjustment is done loosening the Camera block (8) with the hexagon screw at the backside using a hexagon key and shifting the camera plate up or down. If the camera goes a certain direction, when you let go of it, the position should be readjusted. Mind that the handle at the control side should be mounted for a good set up.

## G. Mounting the MPT-9 Head up side down

Depending on what Videoboom is used the way of setting up is different for the up side down position of the MPT Head.

**On the V40** build 2003-02 or later the V-40 adapter for the MPT Head is mountable in both ways. The models before have another attachment plate. Then you need to de-assemble the V-40 adapter with the two hexagon screws inside and remount the block with the handle pointing the opposite way.

**On the V15** build 2003-02 or later the MPT-9 the MPT Head is mountable in both ways. The models before have an attachment block that takes the attachment handle only at one side. If necessary the attachment block can be de-assembled from the V15 with the two hexagon screws inside the front profile of the V15. Remount the block with the handle pointing the opposite way.

**The MPT Head** should also be modified for this use. Loosen the four attachment screws (10) that hold the vertical tilt arm and rotate the arm 180 degrees. Then fasten the screws again.

**!** **The MPT Control Unit** should be placed up side down to get the right direction of all pan and tilt movements.

## USING THE MPT-9 MECHANICAL PAN TILT SYSTEM

The MPT-9 has a fluid friction system in the Head Unit, which enables you to make very smooth pan and tilt movements. The MPT Control Unit is also mountable as a separate pan and separate tilt control with two independent handles. The accessory: extra Handle Set (42) gives this option. It also makes it possible to make a set-up with a fixed extra handle on the Steering



Bar (see front page). Depending on what you are shooting the mpt-9 is controllable in more than one way. Combined Videoboom and MPT movements are possible when the control unit is mounted as a combined pan-tilt control. The free hand can control the Videoboom movement.

## SPECIFICATIONS MPT-9

- **Max. Camera Load:** 10kg
- **Pan Range:** 340°
- **Tilt Range:** 340°
- **MPT-9 dimensions:**

MPT-9 Head (packed size):	447x130x310mm (hxwxd)
Control Unit (combined control):	229x131x139mm (hxwxd)
Control Frame V15 (mounted):	116x558x305mm (hxwxd)
Control Frame V40 (mounted):	376x558x208mm (hxwxd)
V40 Steering Bar:	894mm
- **Weight:**

MPT-9 Head:	2,3kg
Control Unit + Cable Set:	2,7kg
Control Frame V15	0,8kg
Control Frame V40	1,7kg

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