9.6m Camera Crane System

Operator Guide

Please read this first before using.

Thanks for choosing SECCED’s Superman Crane

For your reference

SN _____

Date of purchase _____

Name and address of the distributor _____

Safety Guideline

1. **The assembly instructions must be read and understood before set-up or operation. The crane may only be assembled in accordance with the manufacturer's instruction manual. The manufacturer's technical specifications and limits must be adhered to all times and in no way exceeded.**
2. **The Superman Crane may only be set-up or operated by trained and experienced personnel. To avoid misuse by untrained personnel, the crane should be dismantled when not in use or under supervision.**
3. **The crane may not be assembled or operated under influence of alcohol, drugs or any other intoxicating substances.**
4. **The manufacturer accepts no liability for damages or injuries for incidents or accidents occurring due to negligence by the crane operator, misuse of the crane or disregarding the instruction manual.**
5. **The camera crane shall be used on the even terrain. If it is used on an uneven terrain, it is not allowed to use the dolly, and the solution is to adjust the tripod to maintain level.**
6. **After setup of the crane, the pan & tilt remote head shall be positioned under the central pivot section when it is left unattended in assembled state, and if the pan & tilt remote head is higher than the central pivot section, there should be someone to look after the crane system.**
7. **Make sure that there is no wire with electric power which has higher voltage than safety level within movement range of the whole crane system.**
8. **Be sure to avoid abruptly swiveling or stopping the crane, otherwise it may cause falling of crane.**
9. **It is not allowed to use the crane under the environment with wind speed faster than 5.5～7.9meter/per second.**
10. **When the camera crane is used in a rainy day, the pan & tilt remote head, controlling box and controlling bar shall be protected against rain, in which the controlling box is strictly prohibited to contact with water.**
11. **Avoid anybody standing under the crane.**
12. **No loose objects may be stored or placed on the crane.**
13. **Before the counterweights are removed from counterweight rod, ensure the remote head is resting on the ground or alternatively supported by an appropriate stable underlay. Gradually remove the counterweights before the remote head, camera or other parts are removed.**
14. **Make sure the location where the crane is installed can support the overall weight of the crane (including the counterweight), and the special attention shall be given when it is set up on roof and aerial construction.**
15. **When the control system is working, it is not allowed to turn the gear of the remote head. If it needs to be adjusted, power supply should be switched off.**
16. **In the interest of safe crane operation, abrupt or sudden movement of the crane should be avoided.**
17. **Only original accessories manufactured by Secced may be used with the crane.**

Content

Setup

1. Dolly

The dolly of the crane system is the foldable dolly in ‘T’ pattern. When unfolding the dolly, press the leg locking pin in Figure 1, turn the active arm to reach the position vertical to the fixed arm, the leg locking pin pops up, and the active arm is locked. The small hole on the active arm is for mounting the tripod on the dolly. When installing the tripod, lead the locking knob through the hole from bottom to top and screw it on the bottom of the central column of tripod. The dolly can be folded when pressing the leg locking pin.

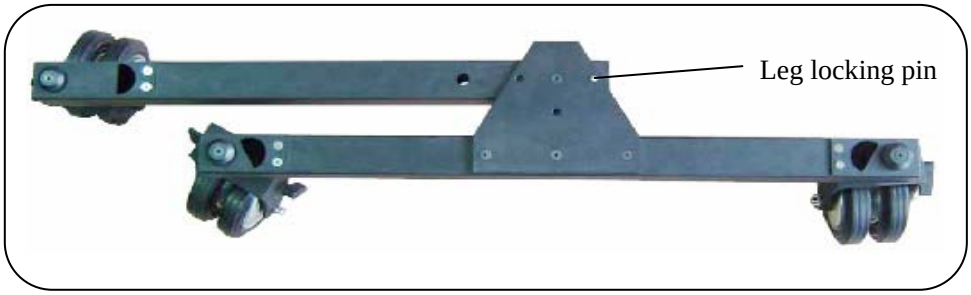


Figure 1

The wheels of dolly can be locked by tightening the wheel brake on the side of the wheel as shown in Figure 2.

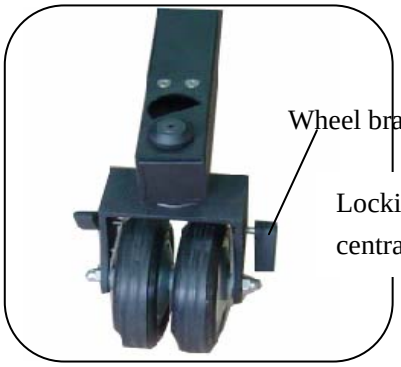


Figure 2

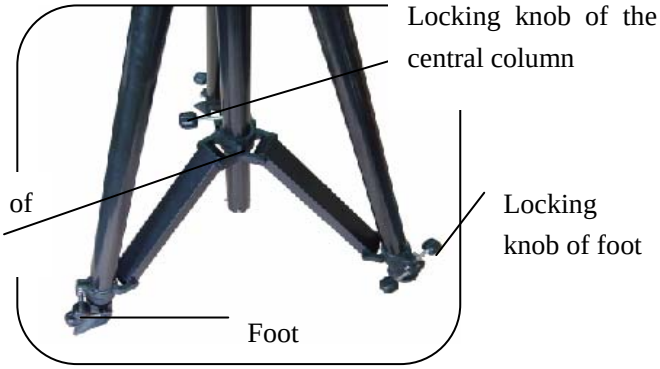


Figure 3

2. Tripod

Loosen the locking knob on the central column of tripod (as in Figure 3) to spread out three legs. Press the spreader down to the very bottom, and then tighten the knob. Loosen the locking knob on the foot to let it be as parallel as possible to the ground, and then tighten the locking knob of the foot.

Install the tripod on the dolly as shown in Figure 4. Rotate the foot down and insert it into the hole on the dolly, and insure the bottom surface of leg is parallel to the small straight edge. Screw the locking knob (See Figure 5) of dolly onto bottom of central r of the tripod through the central hole of dolly. All locking knobs of tripod and dolly should be tightened after installation.

When adjusting the horizontal level of the top of tripod and the tripod need to be heightened, the feet of tripod need to be lengthened. As shown in Figure 6, loosen the locking knob and the foot can be lengthened. After making sure the feet is prolonged to the proper length and the direction of the foot is right, tighten the locking bolt. Loosen the locking knob of the protective sleeve, put upwards the protective sleeve to the highest position, and then tighten the locking bolt.

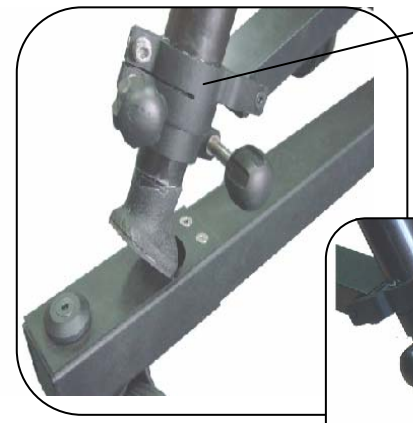


Figure 4

Figure 6

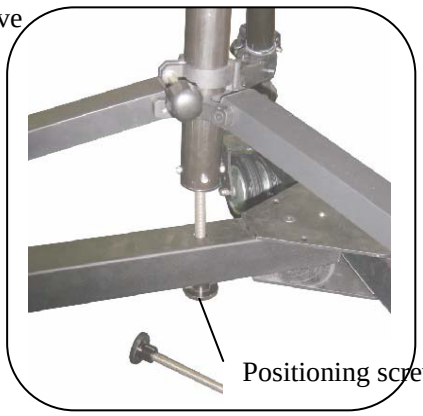


Figure 5

3. Central Pivot Section

The central pivot section installed on the tripod in Figure 7 is the rotating pivot of crane for swiveling right and left. There are two ways to connect the tripod with the central pivot section; the first one is to connect by the pedestal as shown in figure 7. The second way is to connect with the central pivot section by a big round plate and knobs. All connection between rotating set and pedestal or big round plate use M12X50 knob.

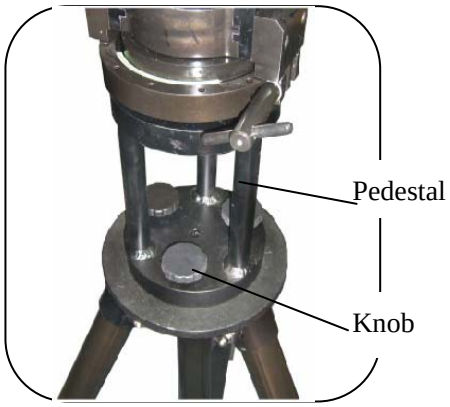


Figure 7

4. Arm

The arm is formed by several 1.2m tubes. The tubes are numbered from the end of counterweight rod.

The installation of the arm shall start from the section 2 tube with tilt axle hole. Figure 8 indicate the installation of the number 2 tube. Insert the section 2 tube into the central pivot section, and then make sure the locking buckle of the section 2 tube is on upper position. Insert the tilt axle pin into the hole on the central pivot section and through the tilt axle hole on the section 2 tube and come out from the other side of the central pivot section. Insert the fast locking clip into the hole on the tilt axle pin and reach the position as shown in Figure 9.

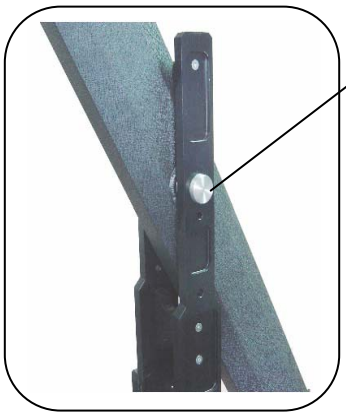


Figure8

Tilt axle pin

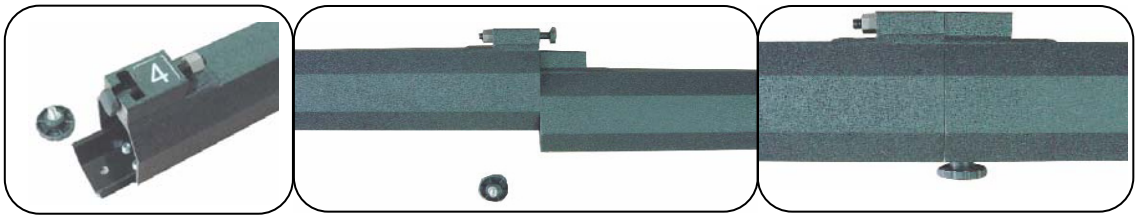
Fast locking clip

Figure9

Figure 10

Successively mount from the section 3 tube to the section 8 tube.

Every tube shall be mounted according to the way shown in Figure 11, and then tighten the screw nut with wrench and the knob on the other side as well.



a b c

Figure 11

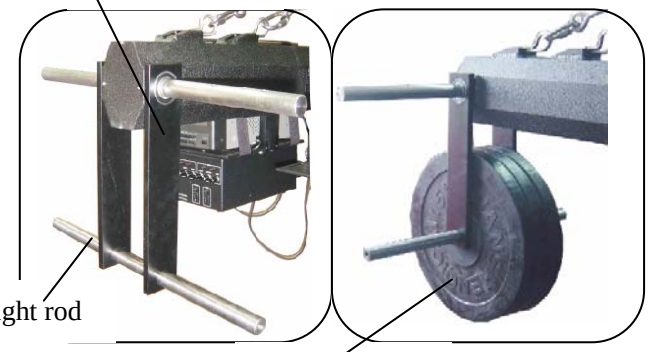


Figure 12 Counterweight Figure 13

Mount the section 1 tube by the same method. Install the counterweight rod and hang the hanger board for counterweight as Figure 12, then insert the counterweight rod, and install the counterweight steel as the method shown in Figure 13 to make the counterweight rod more stable.

5. Mounting plate of remote head and balance steel cable

Set up the mounting plate of pan & tilt remote head with 4 knobs as shown in Figure 14.

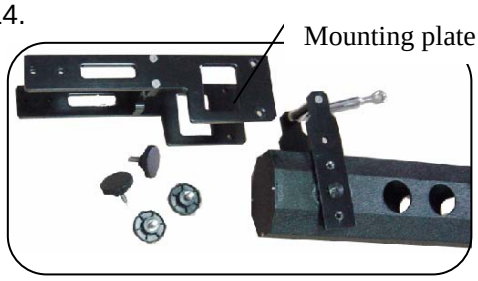


Figure 14

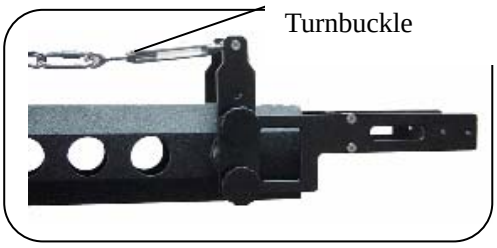


Figure 15-1

The balancing steel cable is installed upon the arm to make sure the pan & tilt remote head maintain level. There are red marks on both connecting ends of balancing steel cable. Place one end which has the turnbuckle at end of mounting plate when installing, and reach the state which is demonstrated in Figure 15-1 and 15-2.

After installation of the balancing steel cable, check if the mounting plate of remote head is level with level rubber. If the mounting plate of remote head is not level, please loosen slightly the locking nut and knob of the section 7 or 8 tube, and tighten them after adjusting the mounting plate of remote head to level.

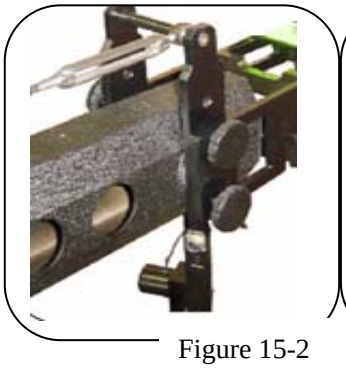


Figure 15-2

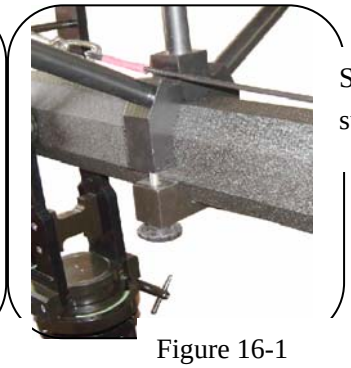


Figure 16-1

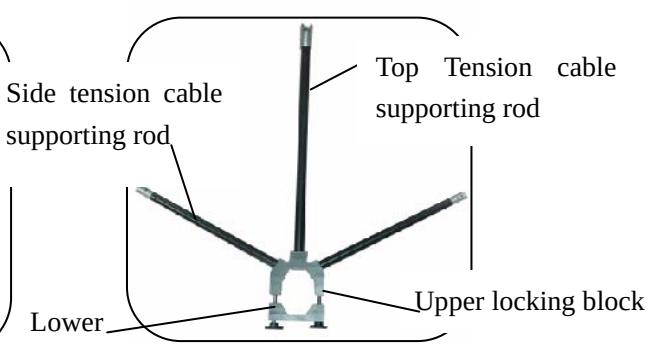


Figure 16-2

6. Tension steel cables

The tension steel cable is used for giving a tension force to the pan & tilt remote head and the camera, keeping the crane straight, increasing the rigidity of the crane arm, and preventing camera shaking while swiveling the crane.

There are 4 tension steel cables, include 2 top steel cables and 2 side steel cables. At first install the upper and lower locking blocks on the place which is 300mm away from the central pivot section (as shown in figure 16-1) and then set up the top tension supporting rod and the two side tension supporting rods on the upper locking block. (As shown in the figure 16-2)

Figure 17

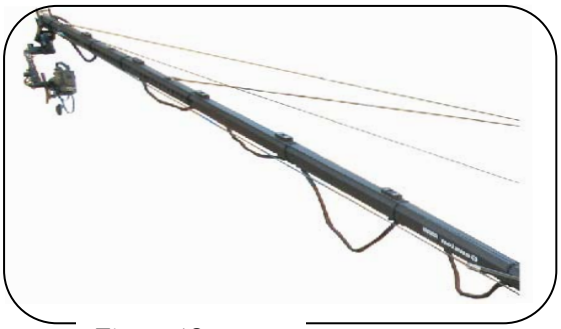


Figure 18

Hook the one end of the top tension steel cable (with black mark at both two ends) which has turnbuckle in the locking slot which is on upside of the section 1 tube. Another end is hooked in the locking slot on the upside of the section 8 tube. Another top tension steel cable should be installed as the same way.

As for the side tension steel cable (with blue mark), hook the one end with turnbuckle in the locking slot on flank of the section 1 tube, and hook the other end in the locking slot on flank of the number 8 tube.

The other side steel cable (with blue mark) shall be installed in the same method on the other side of the tube.

Loosen turnbuckle on every tension steel cable (i.e., turning to let the cable become the longest state), then hook them respectively in the pulley groove of corresponding supporting rod, and then tighten them respectively.

7. Pan & tilt remote head

As in Figure 19, use 4 knobs to install the pan & tilt remote head on the mounting plate, and after this, adjust the mounting plate of remote head to make it level.

As shown in figure 20, put the level ruler on top of the mounting plate. Adjust the turnbuckle for balancing cable, to make the back and front of supporting plate reach level. Turn the locking knob of remote head, make the camera plate at the position as in the figure 21, tighten the screw of camera plate and then install the camera on camera plate. Put all cables which are to connect with camera and the lens control motor through the hole and connect them with camera and the lens control motor respectively as in Figure 22.

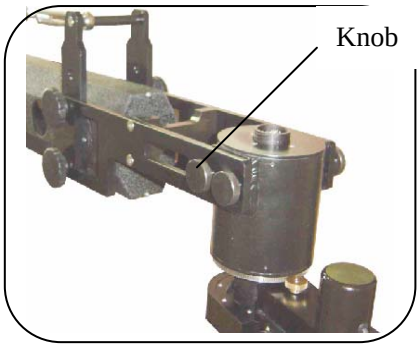


Figure 19

Figure 20

Figure 22

Figure 21a

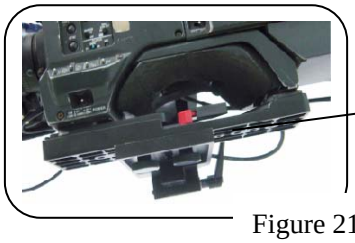


Figure 21b

According to Figure 23, install the lens control motor on the lens.

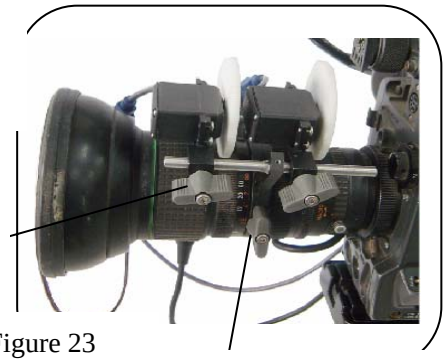


Figure 23

Select the gear most matching with the focus-adjusting gear of lens and install it on the motor frame. Turn clockwise the focus-adjusting gear to the end, and turn anticlockwise the motor gear to the end. Engage the two gears and tighten the motor locking knob. The IRIS motor can be installed by the same method.

Balance should be adjusted after the camera is installed. If camera uses battery to supply power, the battery should be installed before adjusting balance. First of all, release the gear of tilt motor, turn the camera to the position in Figure 24, adjust the positions of the plate backward or forward according to which way the camera turns, then turn the camera to the position in Figure 25 and adjust balancing frame upward or downward according to which way the camera turns, and repeatedly adjust the positions of plate and balancing frame to ensure the camera doesn't move anymore when turning to any position.

Due to influence of cables on the camera, it may not move when it reaches any positions. Under such a situation, influence of such a force should be minimized.
After adjusting the balance, tighten the locking knob for balancing frame. Engage the gear of tilt motor as shown in Figure 23 and tighten the motor locking knob.

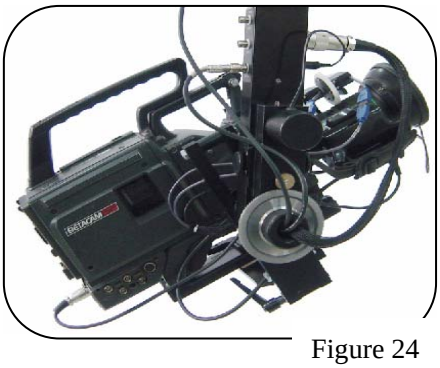


Figure 24

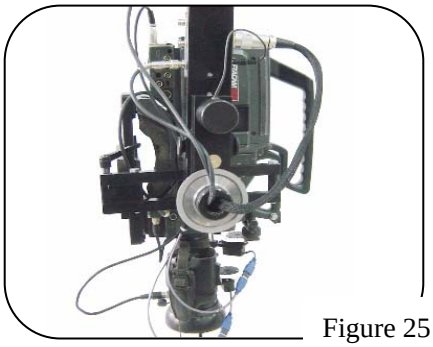


Figure 25

8. Controlling box and controlling bar

Install the hanger board of control box on the crane, and then install the control box on the hanger plate by using pin as the figure 26. The level of the control box can be adjusted by screwing the nut on hanger board. Get the fixing strap through the groove on the cover board of control box, put the monitor on, and bind the monitor on the control box as demonstrated in Figure 27.

Install the remote control bar on the operation rod as in Figure 28, and tighten the locking knob.

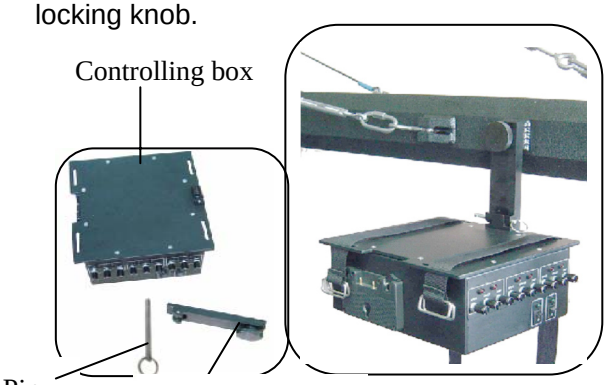


Figure 26

Figure 27

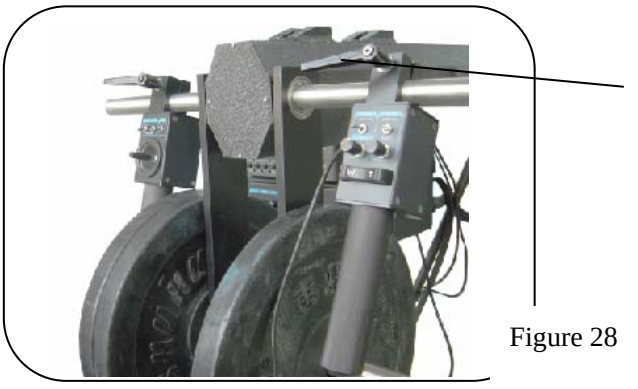
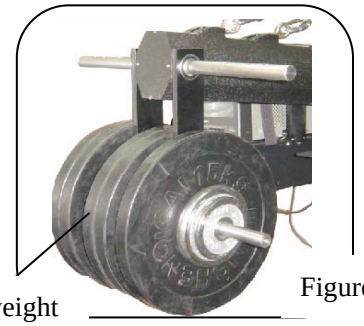


Figure 28

9. Counterweight

Install the counterweight (optional) on counterweight rod as shown in Figure 29, and adjust the weight to enable the crane to keep balance. If balance can not be adjusted with counterweight, counterweight bag have to be bound on the crane and look for the balancing point by moving it along the crane arm as in Figure 30.



Counterweight

Figure 29

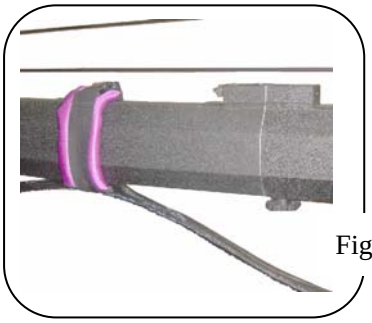


Figure 30

Wire connection

1. Controlling box

Power input of control box: There are three kinds of power supply for the control box: 1) Power network, connect the power line with ‘AC IN’ socket on the back panel of control box. 2) External AC adaptor, connect the power line of adaptor with the ‘DC IN’ socket on the back panel. 3) External battery, attach the battery with ‘Type A’ interface and above 100Wh to the battery interface board on the side of the control box.

Power output of control box: There are two DC power outputs on the back panel of control box for supplying power to the monitor after being connected with the adaptor and power line.

Video input: There are three video interfaces between control box and pan & tilt head for transmitting the video signals of the camera to the control box. Connect the video cable with the video interface socket on the control box to provide the video signals to the monitor.

Operation of earphone: There is a five-core earphone signal channel between control box and pan & tilt head.

The connector of the joystick is connected with ‘JOYSTICK’ socket on the back panel of control box.

The main cable of pan & tilt head is connected with ‘MAIN CABLE’ socket on the back panel of control box.

There is a switch labeled with ‘CAN/FUJI’ on the control box for controlling different lenses. When using Canon lens, switch to “CAN” side, and use Fujinon lens, switch to ‘FUJI’ side. (Figure 32)

Figure 31

2． Pan & tilt remote head

Connect the main cable between pan & tilt head and control box.

There are two sets of motor for control of the pan & tilt head.

The connectors of motor are respectively connected with the sockets of ‘PAN MOTOR’ and ‘TILT MOTOR’ on the pan & tilt head.
If the power supply of camera is given from the pan & tilt head, connect the power cable of adaptor with ‘DC VOLTAGE’ socket on the pan & tilt head.
‘INCOM’ five-core socket is the socket for microphone signals.
The video signal output from the camera can be connected with any of the three video signal sockets ‘VIDEO I, II, III’. (Make sure that it is in corresponding with the video channel of the control box)
The lens control cable is connected with ‘LENS CONTROL’ socket on the pan & tilt head. There are three groups of outputs in this cable, and two of them are for lens control motors, respectively labeled with ‘FOCUS’ and ‘IRIS’. Connect them with the corresponding motors, and the other cable is connected with the input of lens control (under the lens).

Figure 32

Operation

1. Starting up

When use power supply from the line, first turn on ‘POWER’ switch and indicating light is on. If the monitor gets power supply from the control box, firstly turn on the switch of the monitor, then turn on ‘SYSTEM’ switch, hence the corresponding indicating lights should be on. If the camera gets power supply from the control box, turn on the switch of camera finally. The sequence of shutting down shall be vice versa.
When getting power supply from AC adaptor or battery, connect the AC adaptor (its power switch shall be turned on) or the battery then the ‘POWER’ light on the control box is on, and then turns on the monitor, ‘SYSTEM’ switch and the camera according to the sequence above.

2. Control of pan & tilt head

The head can move vertically and horizontally (Pan and Tilt). When there is no external line connection, for the vertical direction it can continuously rotate 360^0 without limitation. As for the horizontal direction, the rotation rounds are limited due to influence of lens control cable. The PAN and TILT movements of the remote head are controlled by the joystick on the control bar.
There are three knobs on the control box for controlling parameters of movement of remote head, in which, ‘SPEED’ controls the speed of rotation of remote head, ‘CENTER’ can control the remote head rotate automatically as the speed which is set up with ‘SPEED’ control knob, and ‘DAMP’ is for adjusting the drag of the remote head. When the drag is small, the pan & tilt head can quickly starts and stops. When the damp is large, the start and stop of the pan & tilt head have the obvious delay. The indicating light above the knob shows the rotation control signal.

Turn the ‘Direct’ switch on the bar to change the control direction. Turn the ‘VCR’ switch, to start or stop video recording.

Figure 33

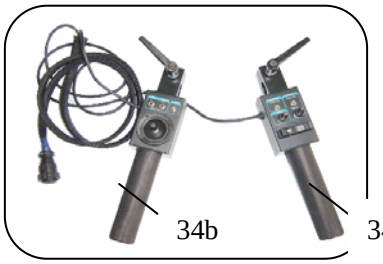


Figure 34

3. Control of lens

The Figure 34b shows the lens control bar. The switch labeled with ‘T’ and ‘W’ is for controlling the zoom of lens; the ‘ZOOM DIRECT’ switch is to change the control direction. ‘RATE’ switch is used to control speed. The knob under the lens control bar is for adjusting ‘focus’. The ‘FOCUS DIRECT’ switch is used for changing direction. The knob above the lens control bar is used for adjusting iris.

Specifications and Technical Data

Length	9.6m*
Height of central axis	1.73m (including dolly) 1.47m (excluding dolly)
Elevation angle	45^0 (including dolly) 34^0 (excluding dolly)
Rotation radius of pan & tilt head	8.1m
Highest point of pan & tilt head	7.25m
Payload of pan & tilt head	12kg
Rotation angle of pan & tilt head	Horizontal: Unlimited Vertical: $\pm 180^0$
Fastest speed of pan & tilt head	Horizontal: 10 rounds/min. Vertical: 10 rounds/min.
Power input	Line: AC 110～250V AC adaptor: DC 12～17V
Power output	Pan & tilt: 13.5V 5A Control box: 13.8V 8A
Size of packing case (L x W x H cm)	Case 1: 131 x 41 x 29 Case 2: 131 x 41 x 24 Case 3: 131 x 41 x 24 Case 4: 131 x 41 x 24 Case 5: 131 x 41 x 38
Gross weight (Kg)	Case 1: 37.5 Case 2: 31.5 Case 3: 36.5 Case 4: 31.5 Case 5: 46 Total weight: 233Kg

SEOED®

SYSTEM CERTIFICATION
ISO 9001:2000 SGS