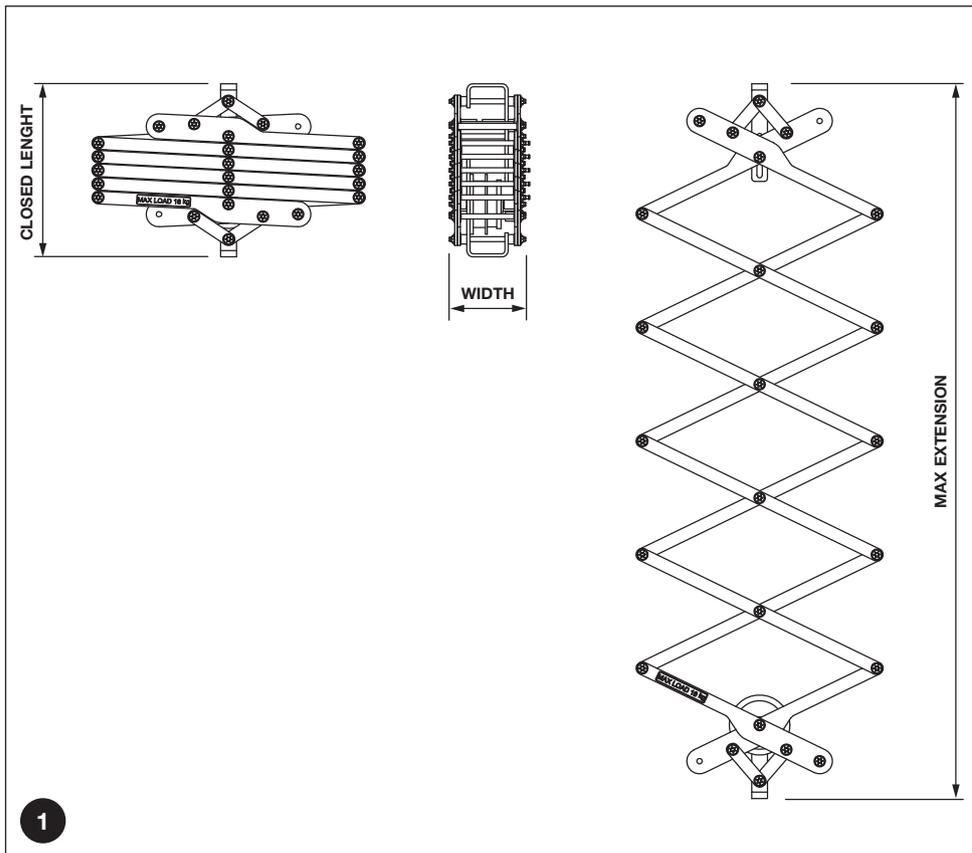


Manfrotto

INSTRUCTIONS
FRICION PANTOGRAPH
TOP 2C AND 4C



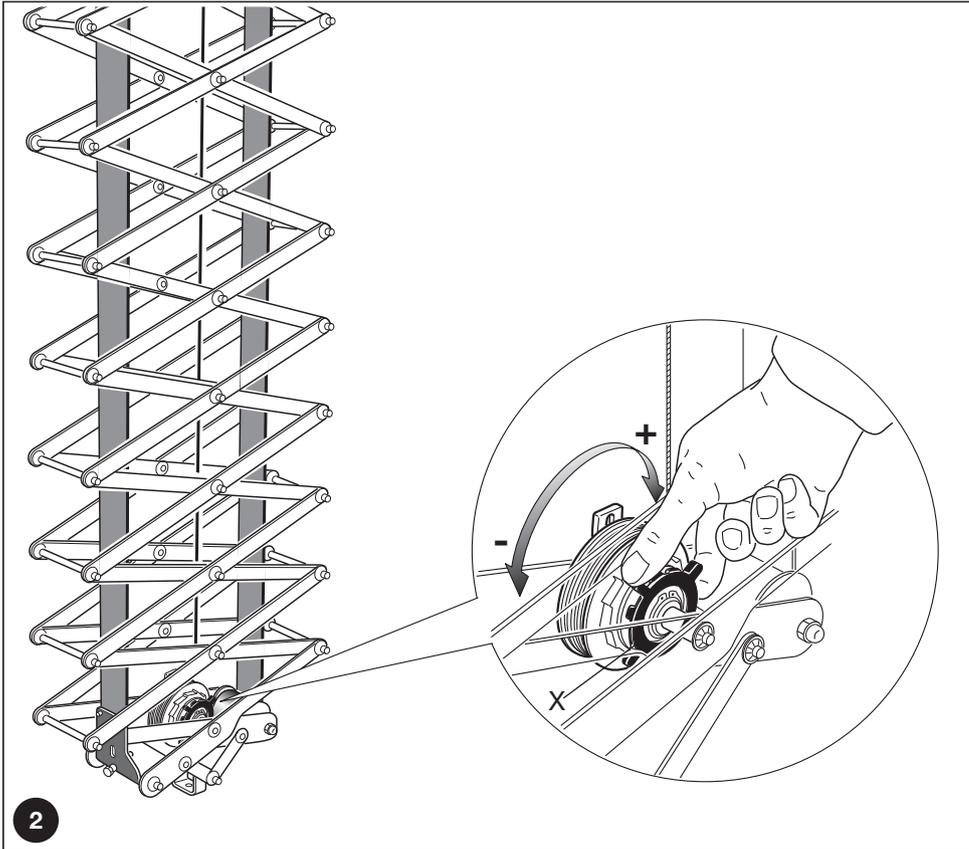
FRICITION PANTOGRAPH 1

The friction pantograph is made of aluminum (P-Al MgSi UNI 3569) and manufactured according to DIN 15560-46.

The load is supported by a steel cable of 2 mm diameter (safety factor 12). Loads up to 12 kg (26.4 lbs) can be suspended using only the patented friction device, while loads up to a maximum of 18 kg (39.7 lbs) require the use of the optional springs.

In any case, it is always advisable to use the springs to aid raising your pantograph. To choose the proper one please refer to chapter "CHOOSING AND INSTALLING A SPRING".

Model	FF3512	FF3514
Lifting rope	2mm wire rope	2mm wire rope
Safety factor rope	12	12
Self weight	4.6kg - 10.1lbs	7.2kg - 15.8lbs
Max working load	18kg -39.7lbs	18kg -39.7lbs
Closed length	27cm - 10.7"	37cm - 14.6"
Max extension	200cm - 79"	380cm - 150"
Width	15.6cm - 6"	15.6cm - 6"

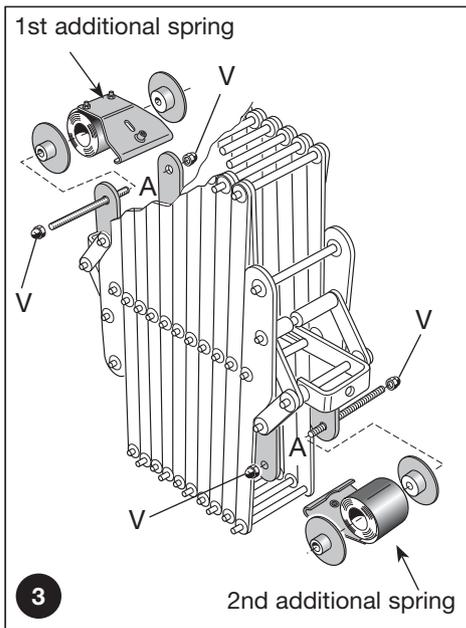


FRICION ADJUSTMENT ②

The pantograph can be regulated to keep suspended loads from 1 kg (2.2 lbs) to 18 kg (39.7 lbs) perfectly balanced. By turning the notched ring "X", you can adjust the pantograph's friction; this will ensure that the load remains stable when set in position, but that it will move smoothly up and down when necessary.

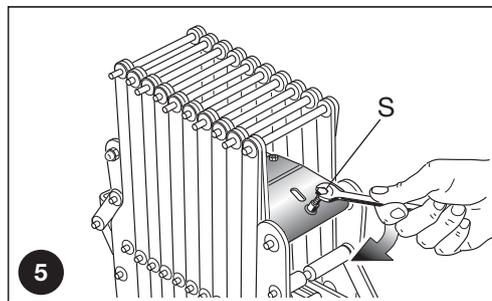
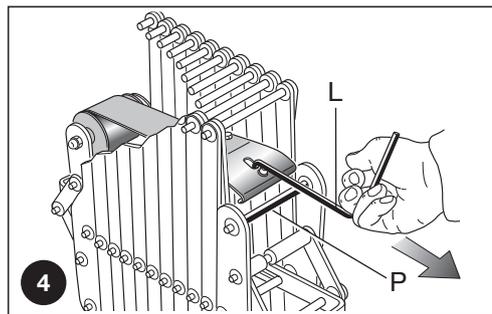
PLEASE NOTE

The friction mechanism does NOT help lift the load, it only holds the load in the desired position and stops it from dropping downwards. Use the appropriate springs to help with load lifting. For further information, please refer to the chapter "**Choosing and Installing Additional Springs**".



Insert the appropriate spring in housing "A" and block it with nuts "V" using appropriate wrench. Use the hook "L" to pull the spring head over stud "P". Block it with screw "S" to guarantee that the spring can not unhook itself and to ensure that the pantograph adheres to safety regulations.

⚠ While the spring hook-up operation is very simple, it can be dangerous if not carried out with care. We advise you to wear work gloves and only hook up the spring with the **pantograph in the closed position**. Check carefully that the spring is securely hooked and fastened to the pantograph before extending.

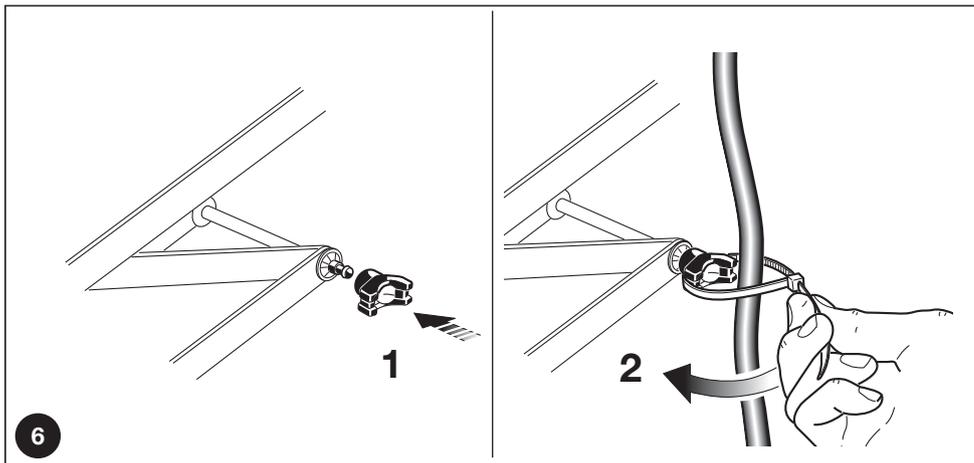


CHOOSING AND INSTALLING ADDITIONAL SPRINGS ③ ④ & ⑤

When choosing the additional spring(s) for your pantograph, you will first need to know exactly which model of pantograph you have, in order that you can select the spring of the correct length. If you have one of the new compact pantographs (with grey-painted "scissors"), look at the colour of notched ring "X" (see chapter "Friction Adjustment"): the 2m (79") version has a **red** notched ring, while the 3.8m (150") version has a **blue** notched ring. After having identified the length of the pantograph, choose the appropriate spring/springs by referring to the table below.

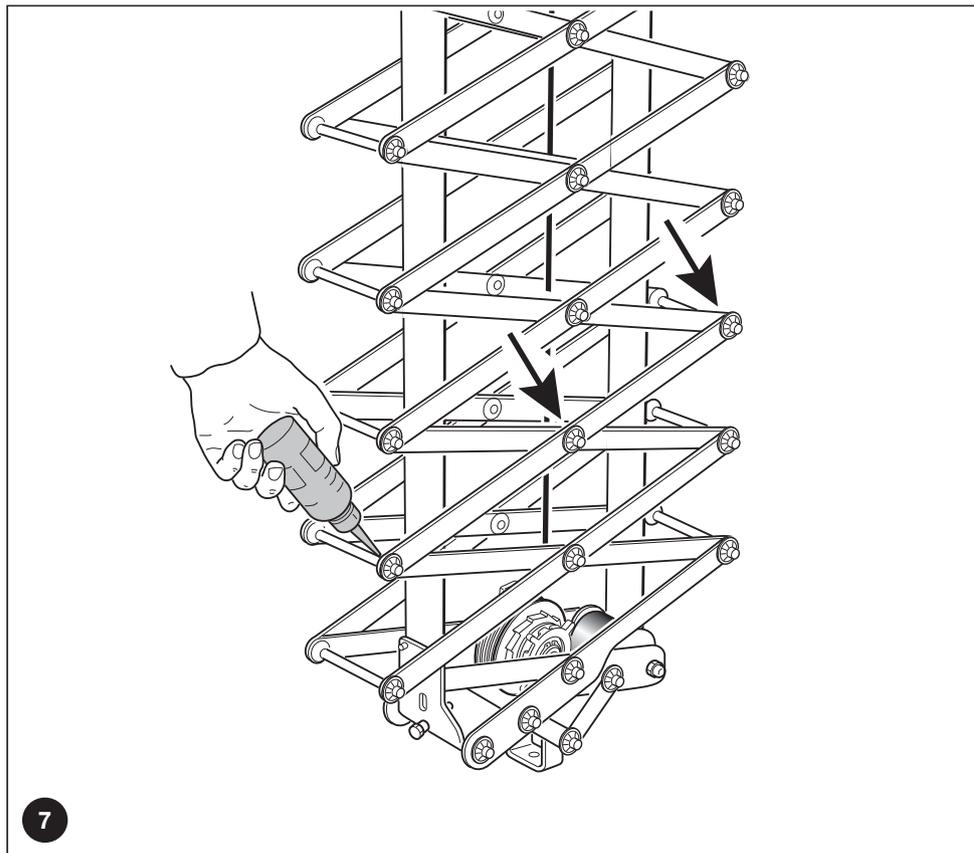
Model	FF3512	FF3514
Notched ring colour	BLUE	RED
Extension	200 cm - 79"	380 cm - 150"
Spring Available	Type 4 (Red) FF3531	Type 4 (Blue) FF3533
	Type 12 (Red) FF3532	Type 12 (Blue) FF3534

Spring type	Counter balanced Weight
Without spring	from 1 (2.2lbs) to 4 kg (8.8lbs)
Type 4	from 3 (6.6lbs) to 8 kg (17.6lbs)
Type 4 + Type 4	from 8 (17.6lbs) to 14 kg (30.8lbs)
Type 12	from 9 (19.8lbs) to 16 kg (35.3lbs)
Type 4 + Type 12	from 13 (28.6lbs) to 18 kg (39.7lbs)



CABLE AND HOLDING CLIPS 6

- Mount the supplied cable-holding clips as shown.
- With the pantograph closed, pass the power cable through the clips and secure it with cable ties (not supplied).
- Recommended cable ties from 3 to 4,5mm width.



MAINTENANCE 7

To ensure your Pantograph continues to work correctly and safely, you must make the following regular checks:

Every 6 months:

Check that the steel wire and counterweight springs (if installed) are in good condition – that they are not kinked or twisted and that they show no sign of cuts/breaks or other irregularities. Check that all screws on counterweight springs are tight.

Check that all the fixing screws on top and bottom attachments are tight and that the pantograph is firmly fixed to the supporting structure.

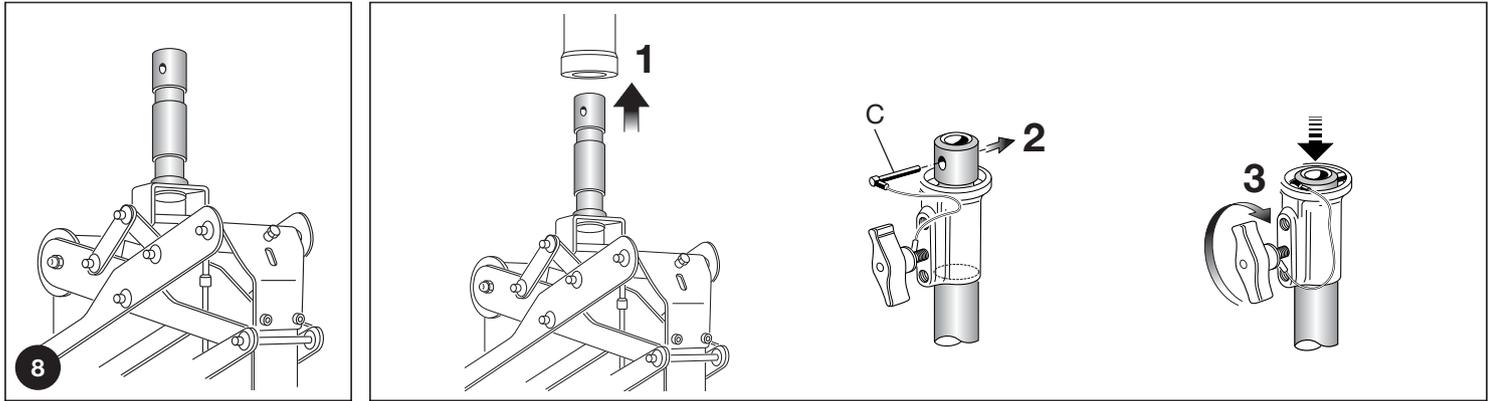
If required, lubricate connecting points of the double scissor as indicated in figure 7, use a dry lubricant such as PFTE(Teflon). Never lubricate the friction drum or cable

All the operations above described and all operations necessary for the use of the pantograph must be carried out by trained staff.



TOP ATTACHMENT 8

28MM (1-1/8") - MALE ATTACHMENT

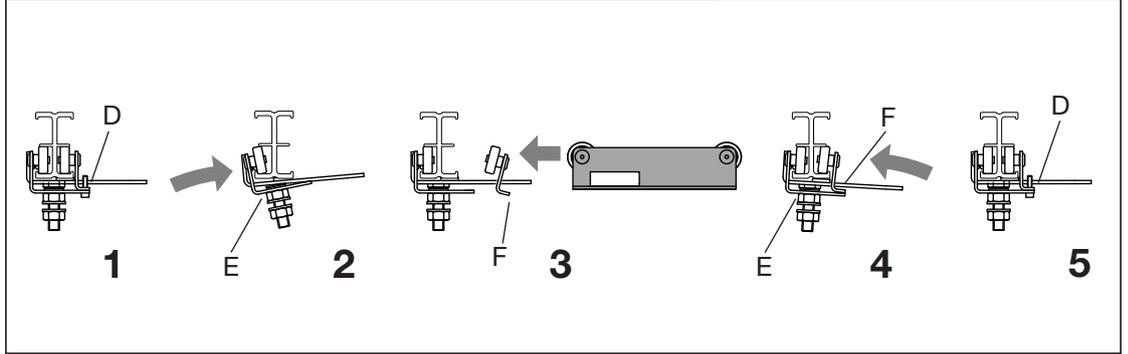
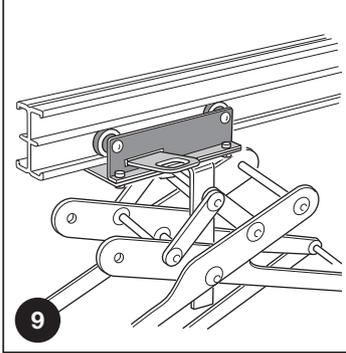


We recommended to use only hanging device complete of safety pin.

The spigot has an hole drilled through it, into which you should insert the safety pin "C" in such a way that it protrudes equally from both sides of the 28mm (1 1/8") spigot.

TOP ATTACHMENT 9

SPRING BRAKED DISMOUNTABLE CARRIAGE FOR IFF RAIL TYPE 50, 60 OR 80



Follow these operation to mount or dismount the carriage from the rail (type 50, 60 or 80).

First completely unscrew the bolt and nuts "D" (fig. 1).

Take part "E" and place it on the rail as shown in figure "2".

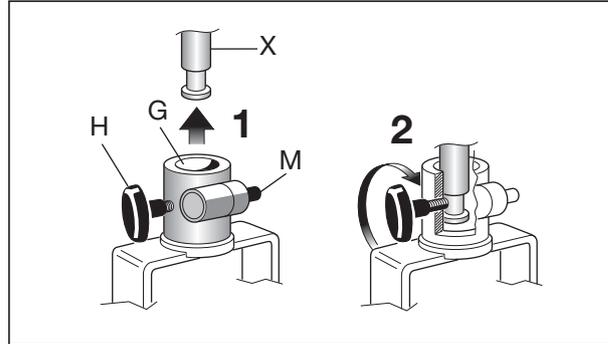
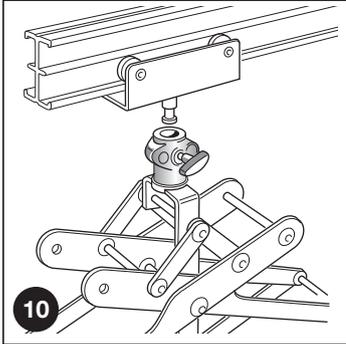
Take part "F" and place it on the rail as shown in figure "3".

Slide the two part "E" and "F" in order to joint them (fig. 4).

Lock securely bolt and nuts "D" (fig. 5).

TOP ATTACHMENT 10

16MM (5/8") FEMALE ATTACHMENT

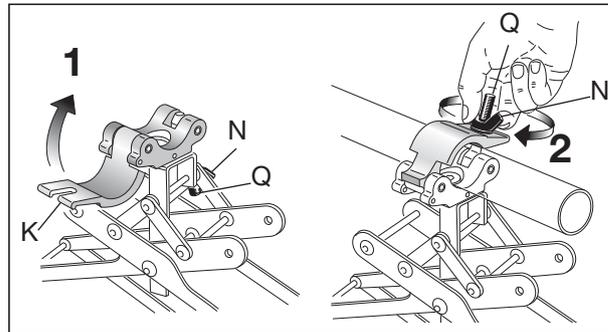
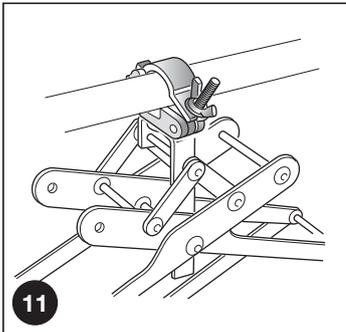


Unscrew knob "H", depress button "M", insert the male attachment "X" on the hole "G" and release the button. Lock firmly knob "H": ensure that the knob is able to seat in the recessed safety groove on the male attachment (fig. 10) Button "M" serves as safety catch, but it is strongly recommend to secure the load with appropriate safety cable (not supplied).

To dismantle the pantograph proceed as follow: HOLDING the pantograph with one hand, unlock the knob "H" and then depress button "M".

TOP ATTACHMENT 11

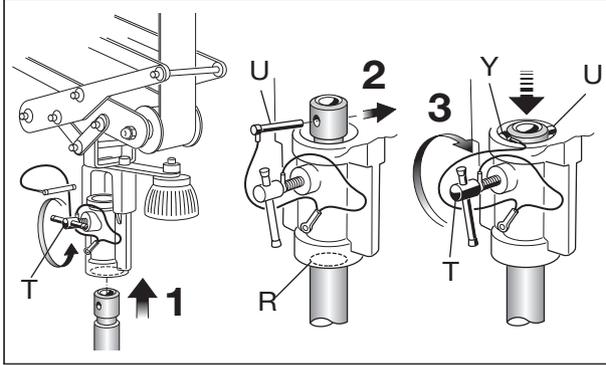
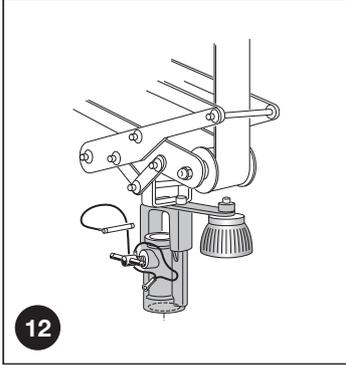
ALUMINUM CLAMP FOR PIPE DIAM 42÷52MM (1-1/4" ÷2")



FIX THE PANTOGRAPH ONTO THE BARREL Unscrew wing nut "N" to release mobile jaw "K". Fix the clamp onto the barrel by using the rod "Q" and the wing nut "N"

BOTTOM ATTACHMENT 12

28MM - (1-1/8") FEMALE ATTACHMENT



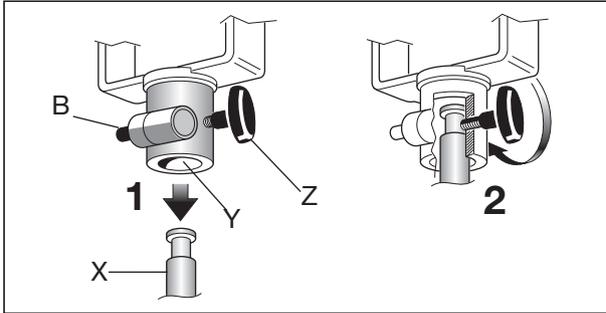
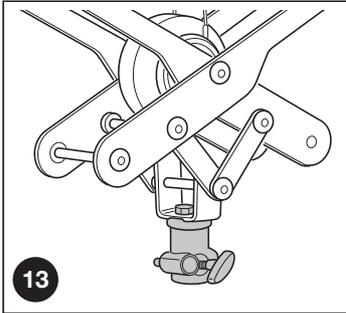
Loose knob "T" until 28 mm (1 1/8") luminaire spigot can be fully inserted into the clamp. Insert the 28 mm (1 1/8") luminaire spigot on the female attachment "R" until it protrudes as shown in figure 12.

The spigot has a hole drilled through it, into which you should insert the safety pin "U" in such a way that it protrudes equally from both sides of the 28 mm (1 1/8") spigot.

Now lift the clamp so that the safety pin "U" seats captive in the recessed depression "Y" and temporarily holds the weight of the luminaire. Then tighten the locking lever "T" firmly against the recessed safety groove on the spigot.

BOTTOM ATTACHMENT 13

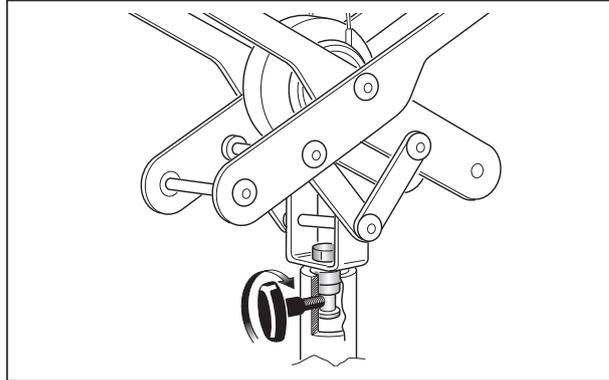
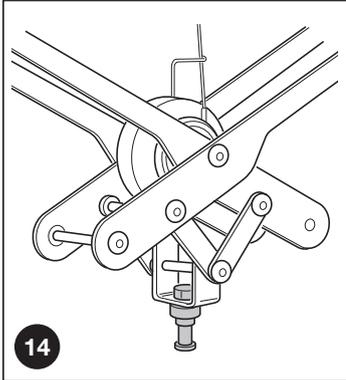
16MM - (5/8") FEMALE ATTACHMENT



Unscrew knob "Z", depress button "B", insert the male attachment "X" on the hole "Y" and release the button. Lock firmly knob "Z": ensure that the knob is able to seat in the recessed safety groove on the male attachment (fig. 13) Button "B" serves as safety catch, but it is strongly recommend to secure the load with appropriate safety cable (not supplied).

To dismantle the load proceed as follow: HOLDING the load with one hand, unlock the knob "Z" and then depress button "B".

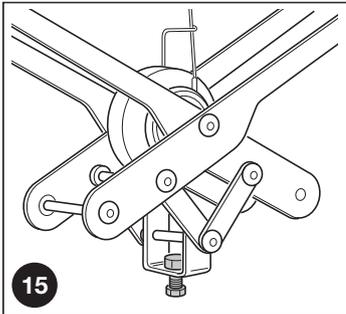
BOTTOM ATTACHMENT 14
16MM (5/8") MALE ATTACHMENT



Always ensure that the knob of the 16mm (5/8") female attachment seat in the recessed safety groove on the pantograph 16mm (5/8") male attachment.

It is recommend to secure the load with appropriate safety cable (not supplied).

BOTTOM ATTACHMENT 15
M10X30MM SCREW WITH NUT



After mounting the load and firmly locked, secure it with appropriate safety cable (not supplied).

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