A track at roof level is required to allow the machine to traverse.
Two different types of track may be considered: one in <u>concrete</u> and the other with <u>two metal rails.</u>

1. Concrete track

During the construction of the building, it is economic to lay a track in reinforced concrete, which should be strong enough to withstand the pressure imposed by the front and rear wheels of the machine.

If an expansion joint or a joint between two sections of concrete is needed, it is recommended that the joint is made in accordance with the layout below (Fig. 1).

The reason for this recommendation is to prevent a shock when the machine passes over the expansion joint.

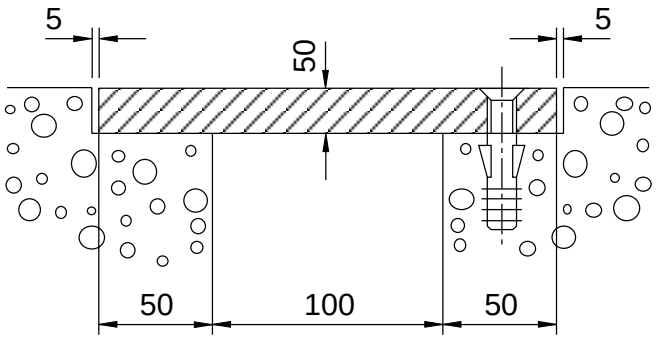


Fig. 1

The conventional joint below (Fig. 2) should not be used, since when the machine passes such a joint the resulting shock would be felt throughout the building.

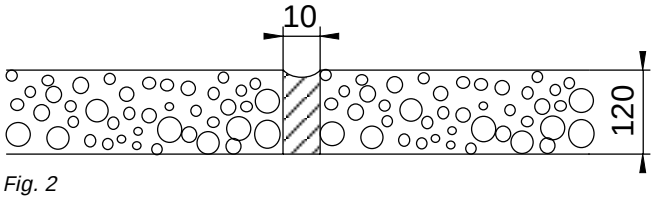


Fig. 2

1.1. Concrete track - with "L" shaped guide rail

Angled metal guide rail fixed to the concrete.
Hot galvanised for protection.

The drawing below (Fig. 3) shows the track for a JUNIOR 213A machine:
a) location and size of the trolley in relation to the track
b) location of the track in relation to the parapet.

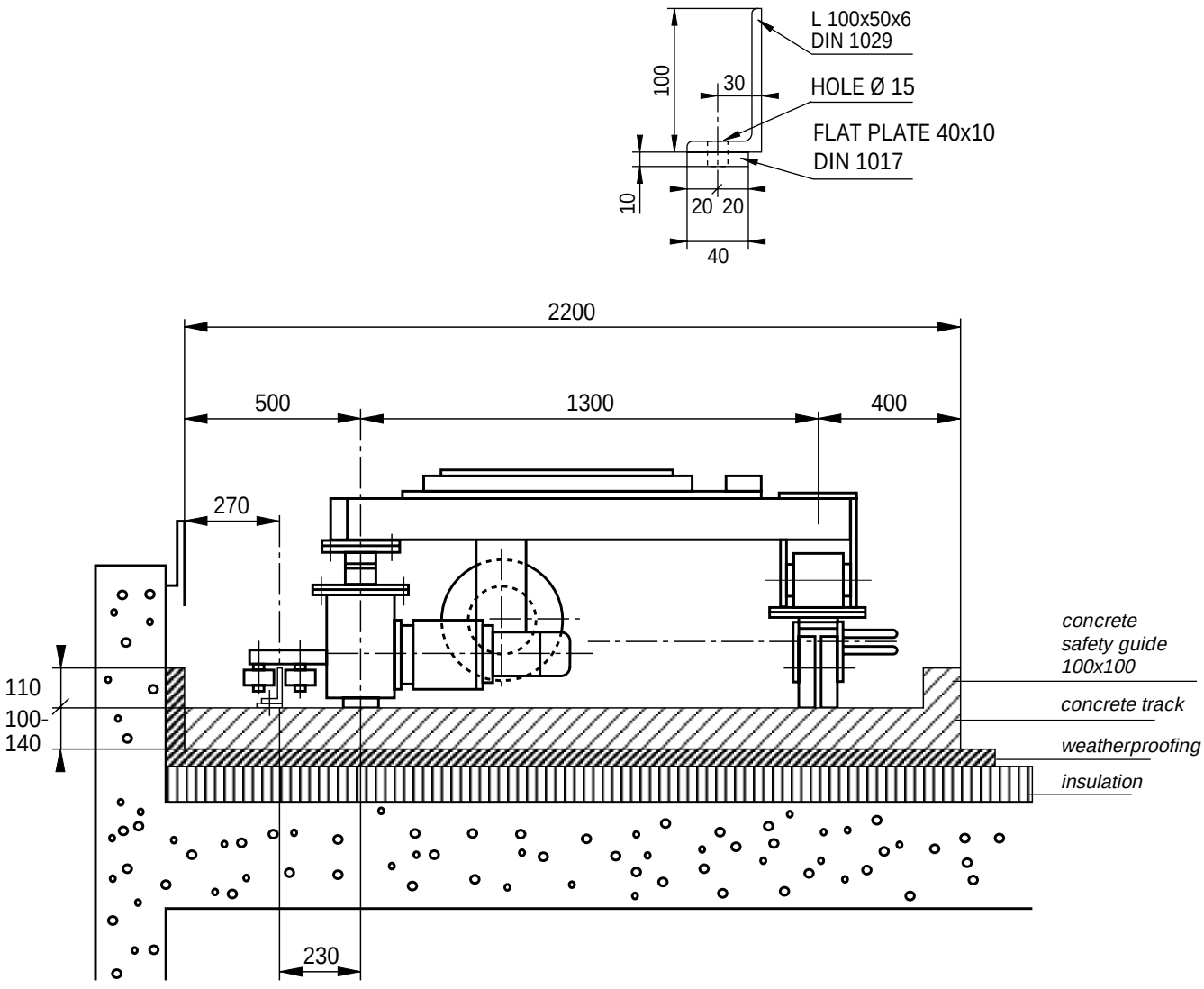
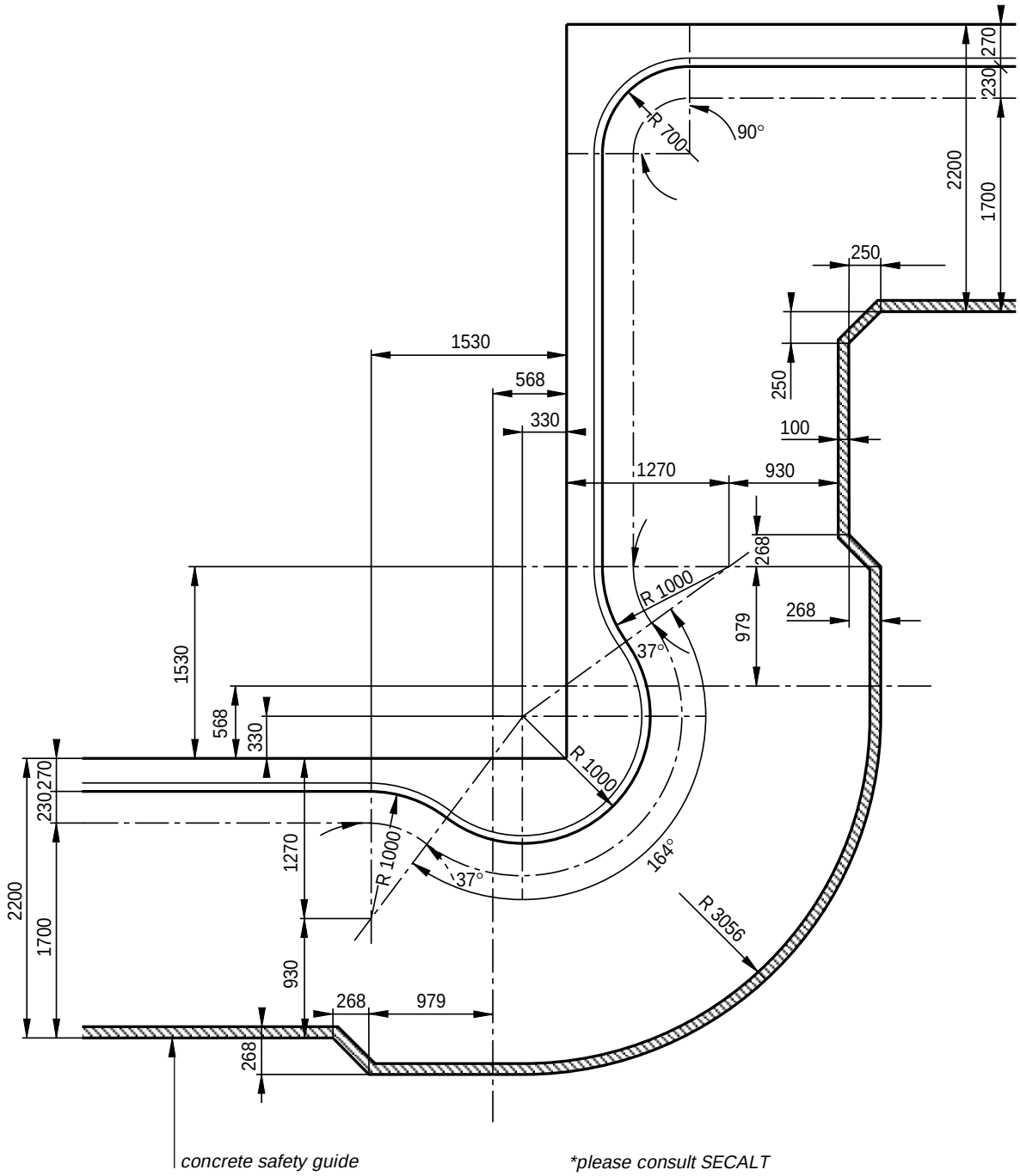


Fig. 3
Concrete track with "L" shaped guide rail for JUNIOR 213A machine.

Fig. 4
Example of layout
of a concrete track
with "L" shaped guide rail
*for JUNIOR 213A machine **



concrete safety guide

**please consult SECALT*
for the other types of machine

1.2. Concrete track - with concrete safety guide

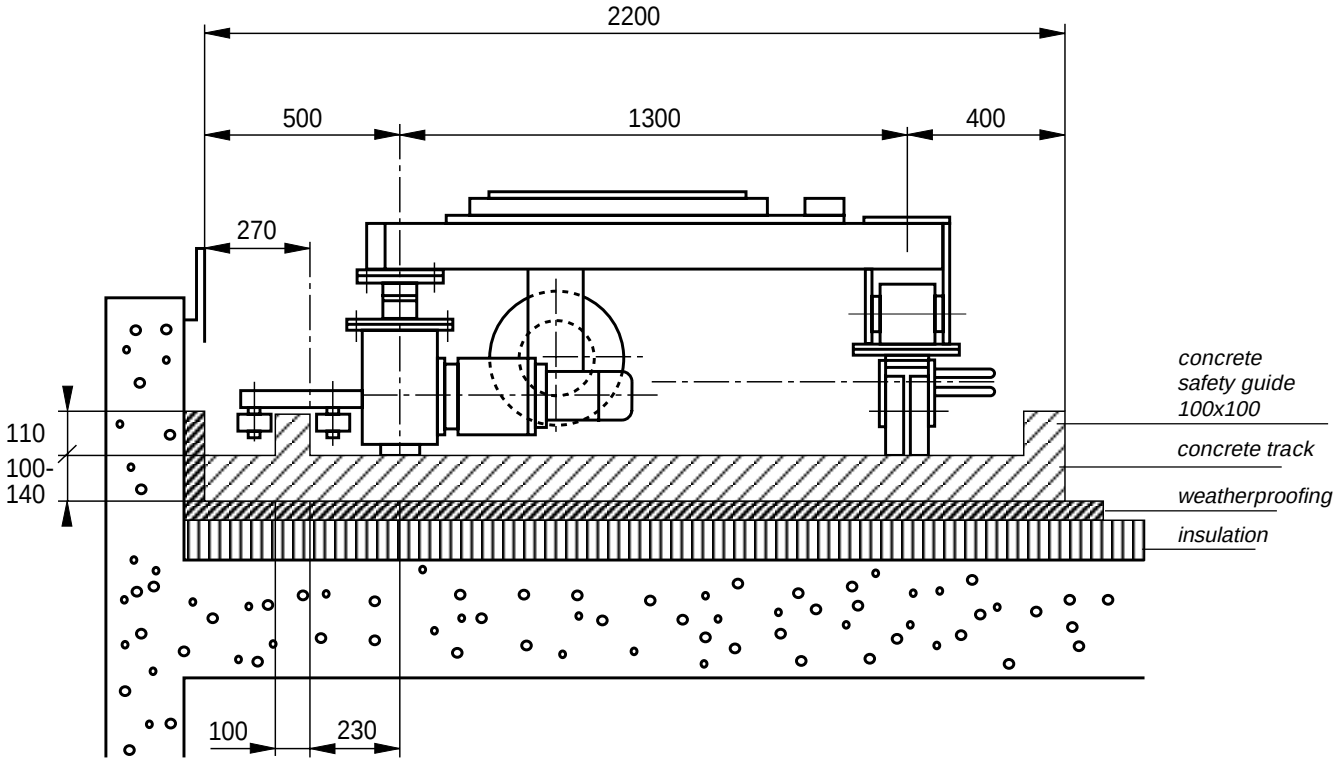
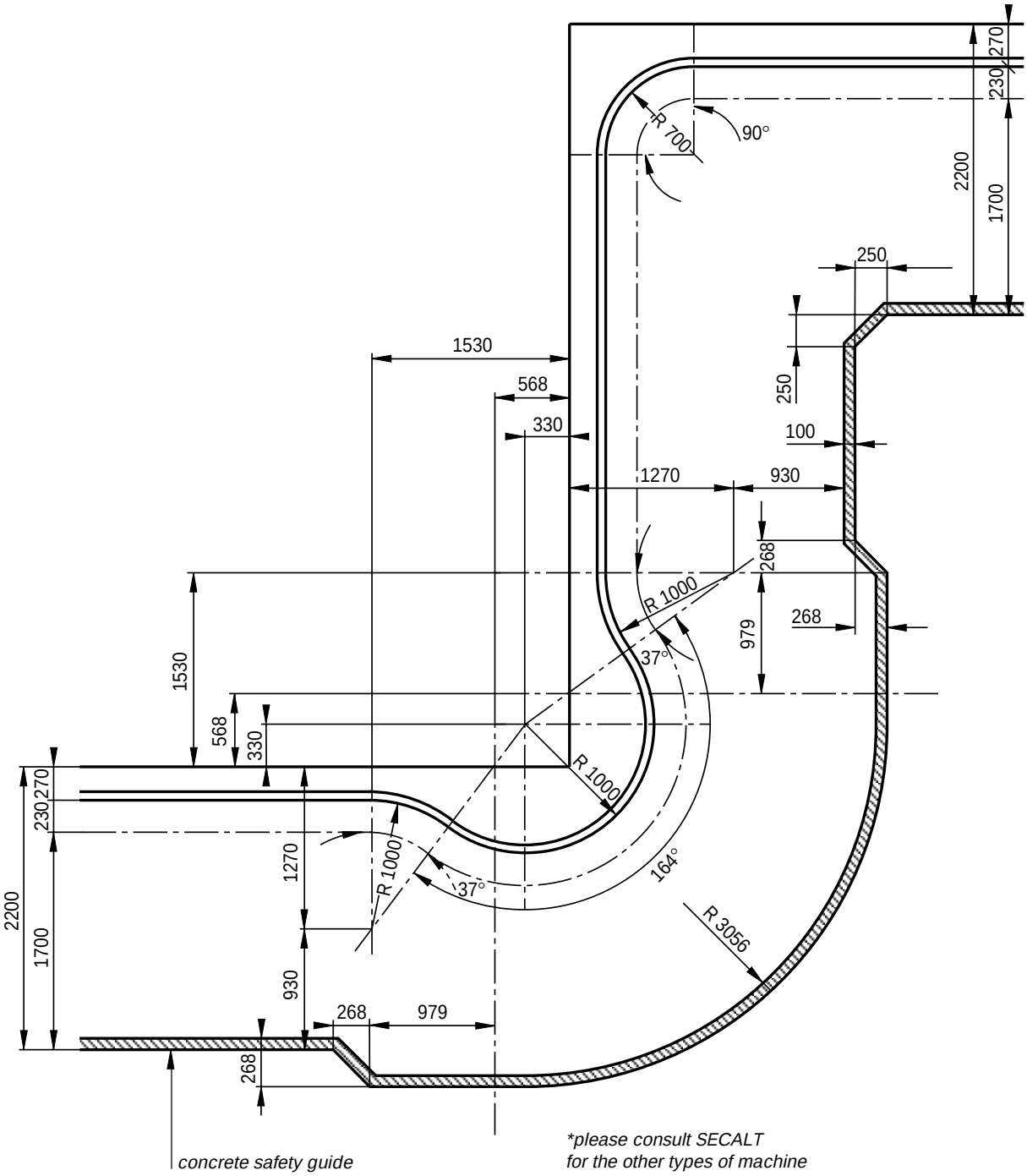


Fig. 5
Concrete track with concrete guide for JUNIOR 213A machine.

Fig. 6
Exampl of layout
of a concrete track with
concrete guide
*for JUNIOR 213A machine **



**please consult SECALT*
for the other types of machine

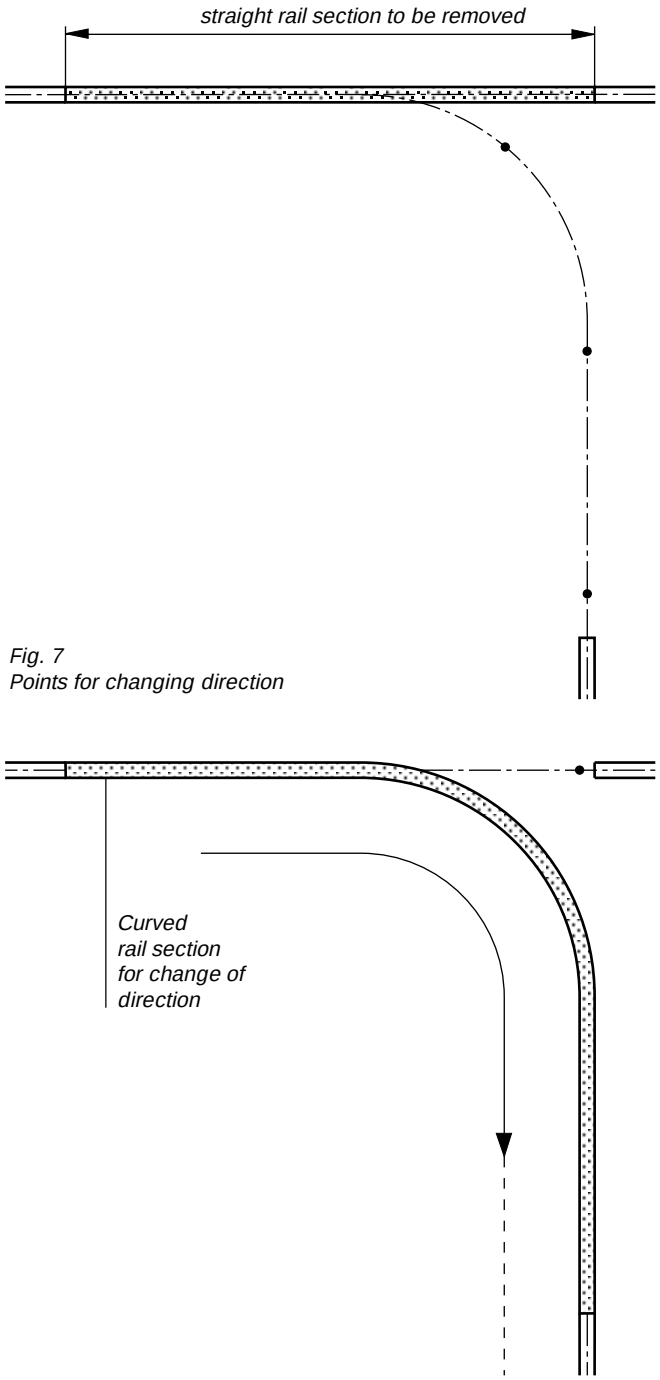


Fig. 7
Points for changing direction

1.3. Points for changing direction or parking

In some cases the tracks on the roof must be fitted with points for :
- the machine to change direction
  (in certain special cases)
- parking the machine.

The points consist in replacing a straight rail with a curved rail and vice versa so that the machine can change direction.
The points are the same type as the guide rail on the roof, either an angled "L" rail, or concrete guide type.

2. Metal track

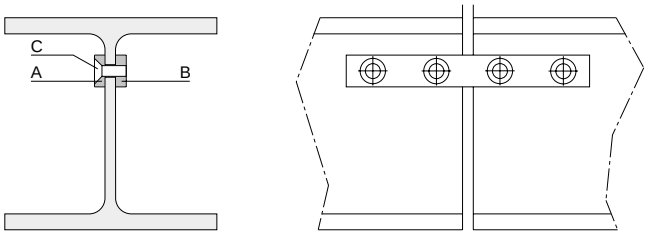
The rails are designed for fast and accurate assembly. The rail sections are joined together using bolted or welded fishplates. In open circuits, the last rail section must be attached using bolted fishplates.

The rails and sleepers are hot galvanised to prevent corrosion. The size of the rail depends on the weight of the machine and the distance between the track support plinths.

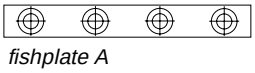
5 rail sizes are recommended (IPE160, IPE180, IPE200, HEA180, HEB200).

The roller frames are defined by the type of BMU machine (Fig. 10, 11, 12, 13 and 14).

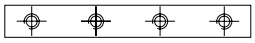
Fig. 8
Rail joint using
*2 **bolted** fishplates (A+B)*
= 2 flat plates 190x25x10 (IPE160) or 230x30x10 (IPE180, IPE200, HEA180, HEB200)



Bolt C:
- For IPE and HEA
Bolt M12x25
DIN 7991 stainless steel
- For HEB
Bolt M12x30
DIN 7991 stainless steel



fishplate A
with 4 countersunk holes



fishplate B
with 4 threaded holes M12

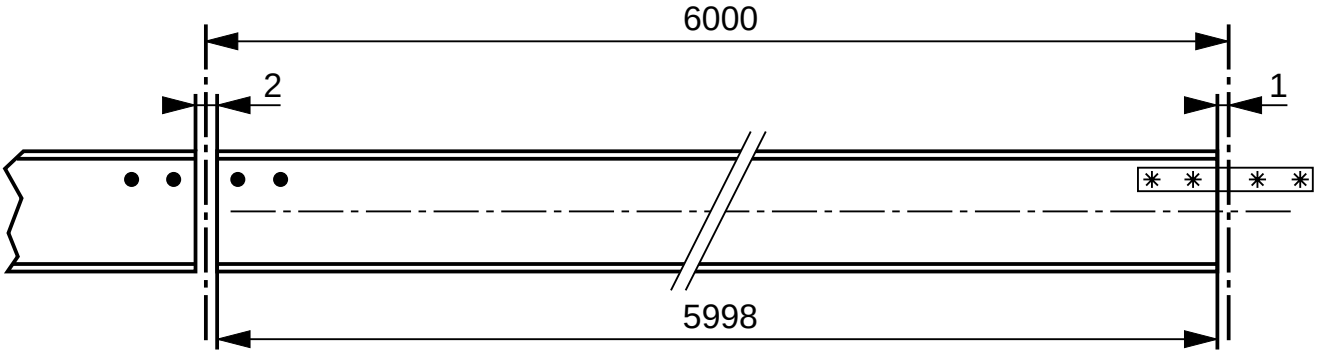
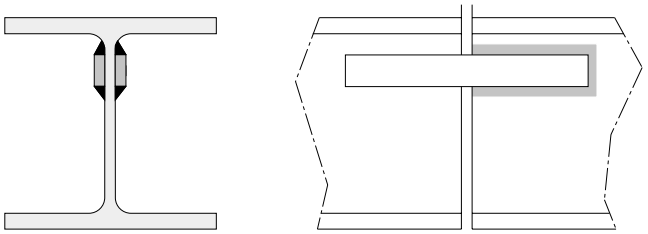


Fig. 9
Rail joint using
*2 **welded** fishplates (A + B)*
= 2 flat plates 190x25x10 (IPE160) or 230x30x10 (IPE180, IPE200, HEA180, HEB200)



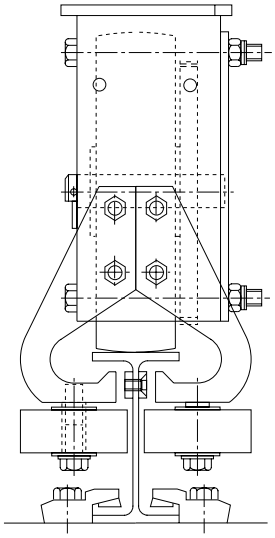


Fig. 10
VENUS roller frame
1000 daN
on IPE 160 rail

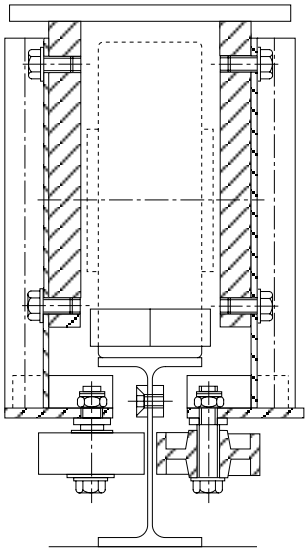


Fig. 11
Roller frame 2400 daN
on IPE 180 rail

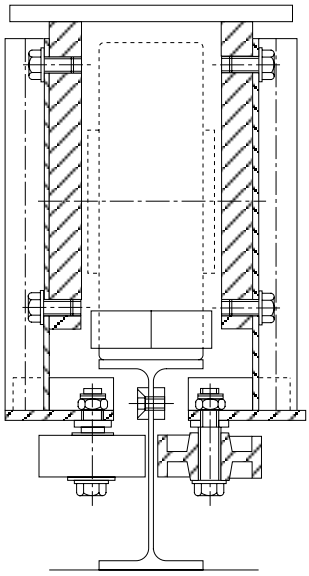


Fig. 12
Roller frame 2400 daN
on IPE 200 rail

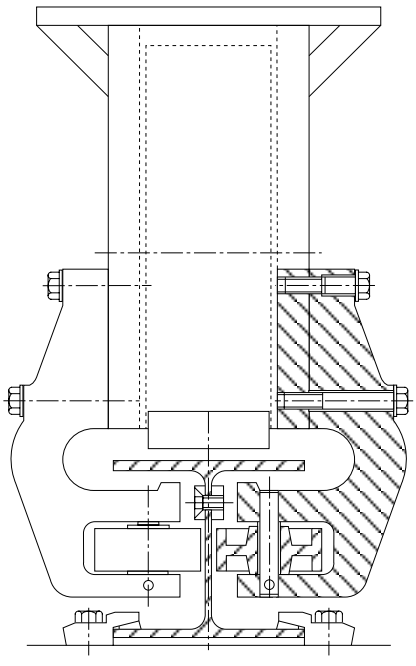


Fig. 13
Roller frame 3800 daN
on HEA 180 rail

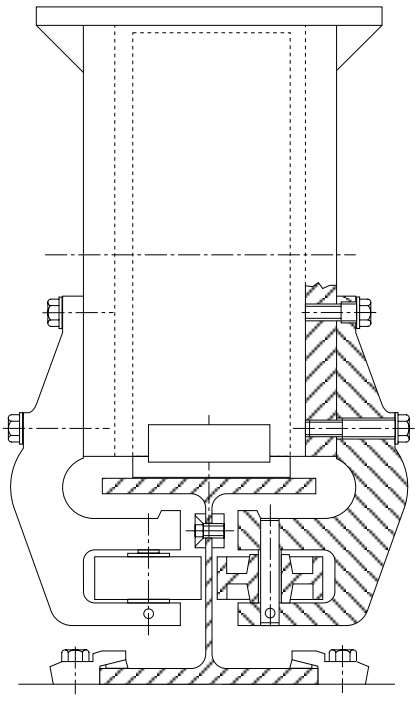


Fig. 14
Roller frame 4900 daN
on HEB 200 rail

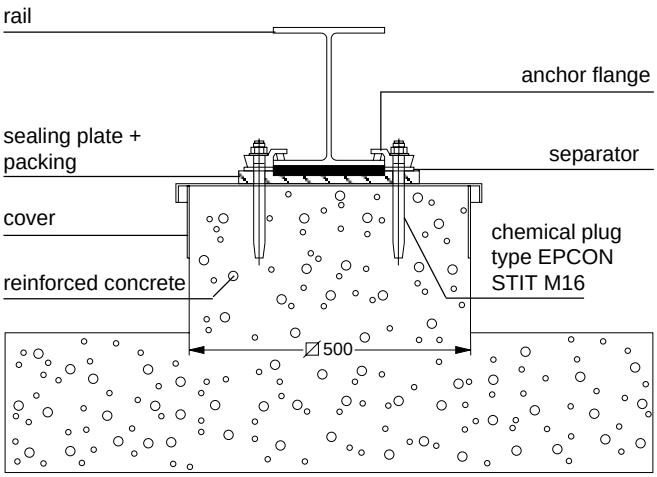


Fig. 15 - Concrete track support plinth

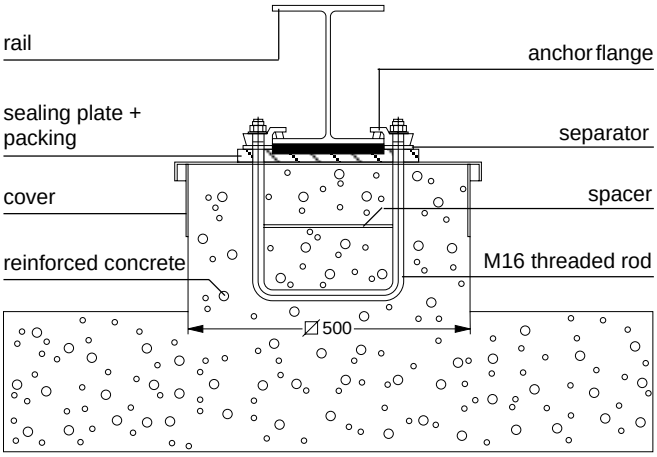


Fig. 16 - Concret plinth

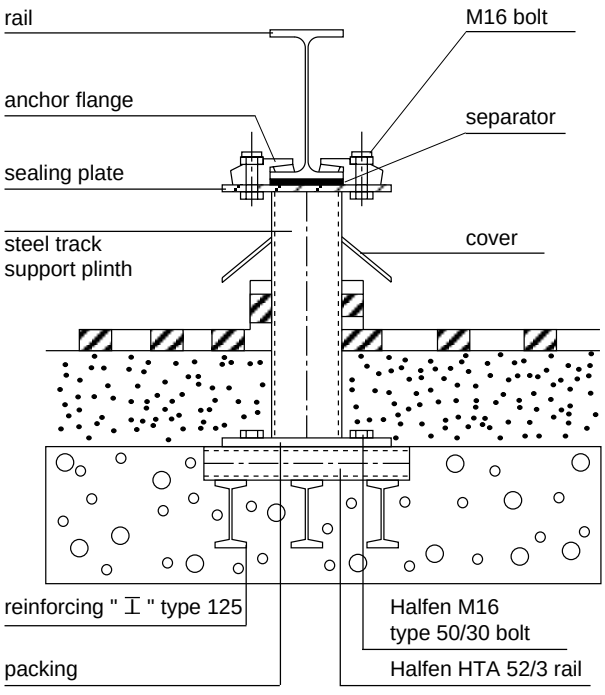


Fig. 17 - Potelet acier

The rails are supported on plinths every 2 or 3 m depending on the loading on the wheels of the machine.

Three examples are given below:

2.1. Concrete track support plinths (Fig. 15 & 16)
A concrete track support plinth is made every 2 to 3 m to support the rail. The sleeper has a zinc cover and a seating plate which takes the adaptable rail fixing system.

2.2. Steel track support plinths (Fig. 17)
The steel track support plinth is a length of square hollow section to which a seating plate is soldered at one end. The adaptable rail fixing system is fitted to the seating plate.

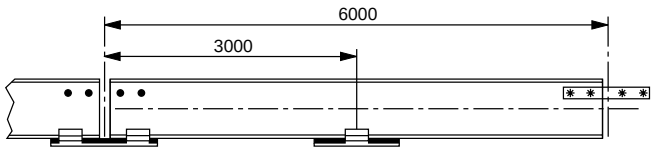


Fig. 18 - Position of seating plates

2.3. Rail fixing system
The concrete or steel track support plinths are fitted with an adaptable rail fixing system. This system has a separator placed under the rail with 2 or 4 anchor flanges.

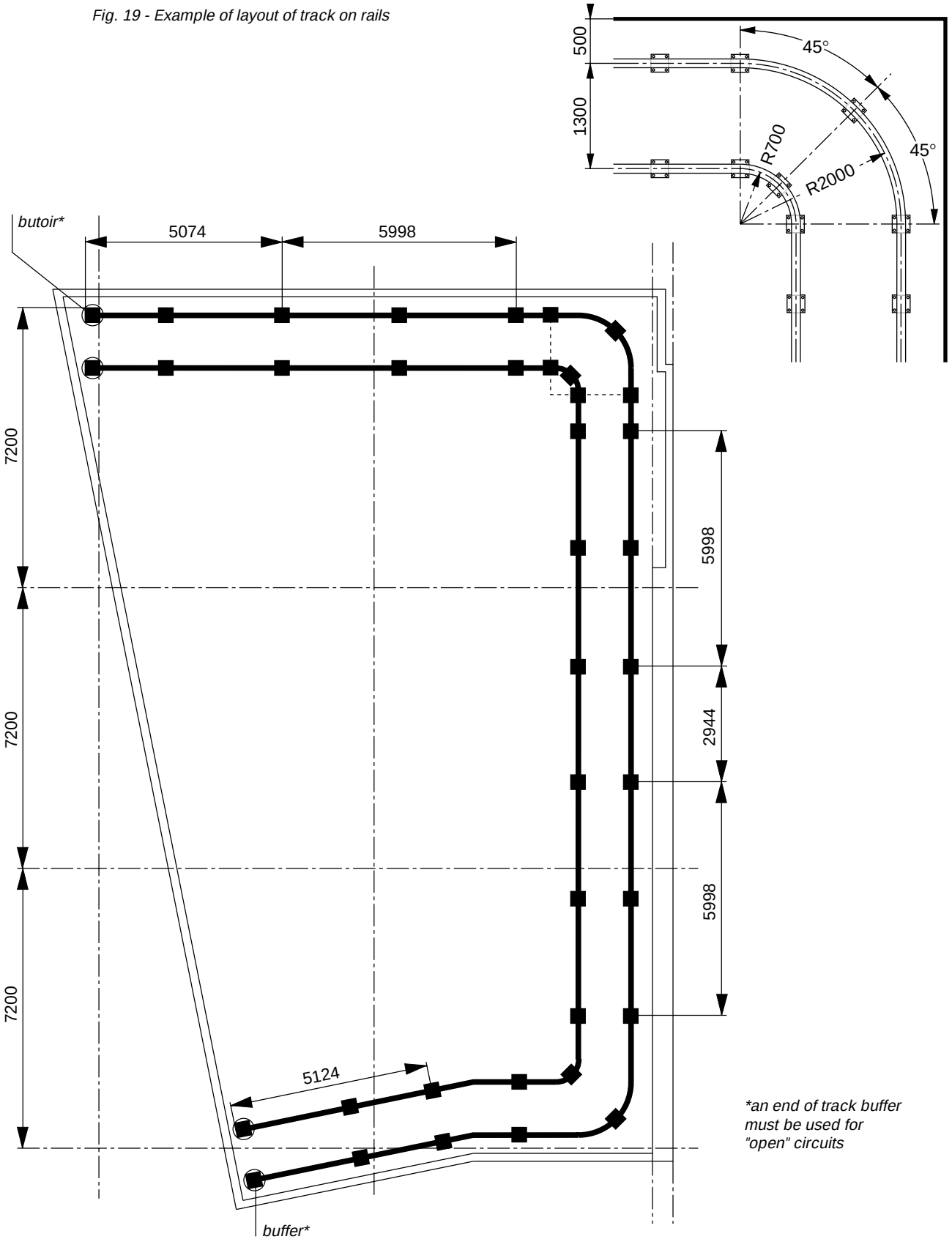
The separator has been specially designed to allow for flexing and expansion in the rail when it is fixed.

It has three functions:
- to spread the load on the seating plate
- to absorbe the uneven contact between the rail and the seating plate
- to reduce the noise and vibrations.

The anchor flanges have been specially designed to meet the requirements of our machines, and in particular regarding the transverse adjustment and resistance to the lateral pressure applied by the guide rollers.

The low height of the anchor flanges allows the travel of the horizontal guide rollers. Between the anchor flanges and the rail there is a block of synthetic elastomer. The anchor flanges are fixed to the seating plate by M16 bolts, quality 8.8 and are galvanised for protection.

Fig. 19 - Example of layout of track on rails



**an end of track buffer must be used for "open" circuits*

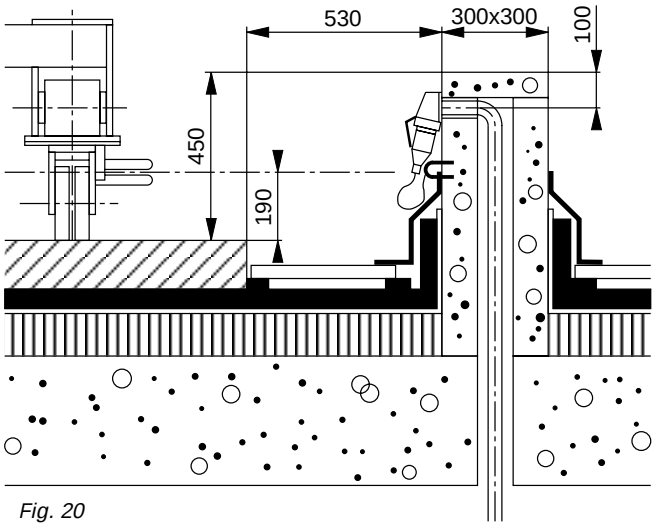


Fig. 20
Power point on concrte track support plinth

3. Power supply

There should be power points every 40 m along the track (for JUNIOR and SENIOR machines) or every 30 m for MINI machines.

These power points may be fitted to the concrete (Fig. 20) or steel sleepers (Fig. 21).

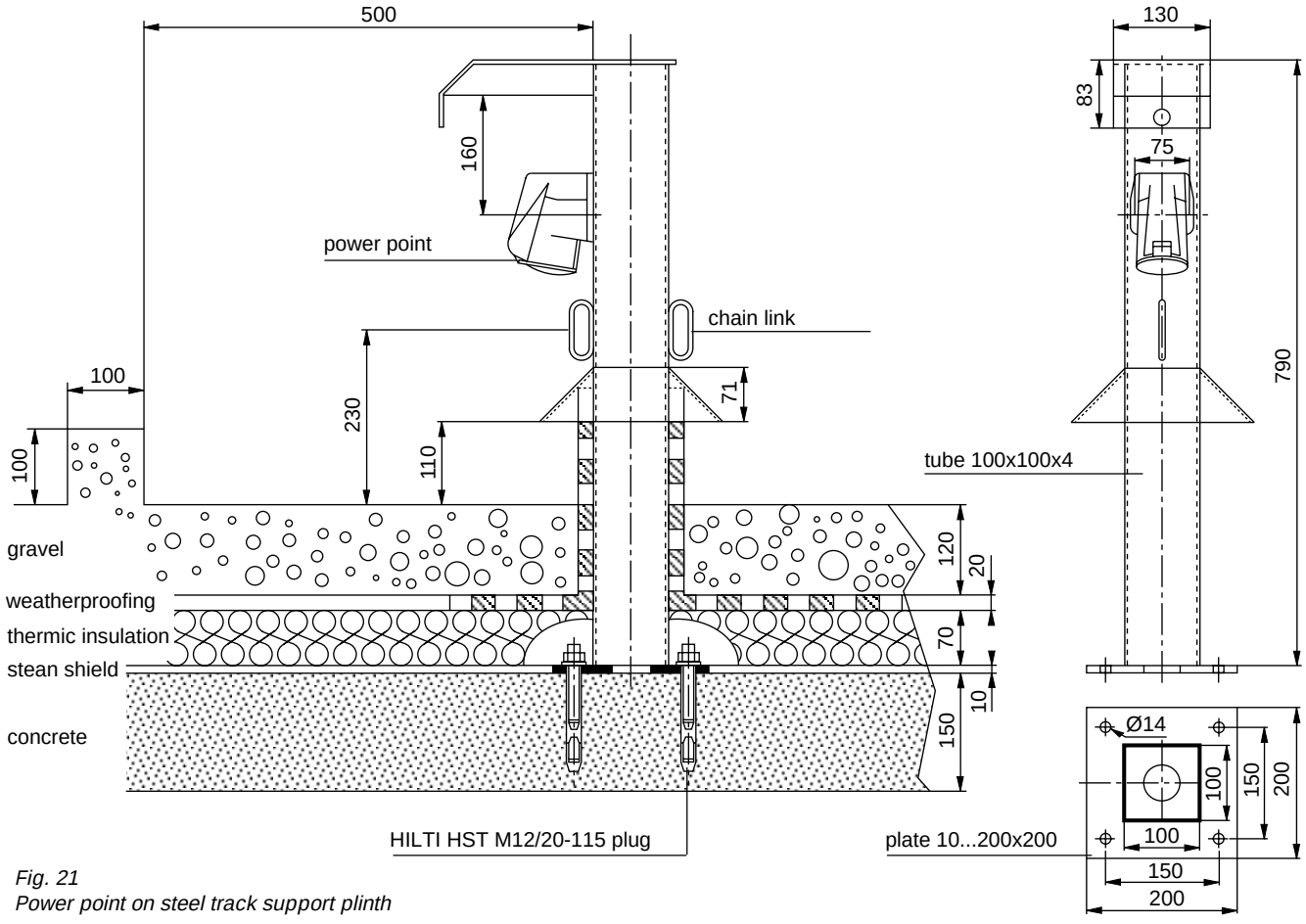


Fig. 21
Power point on steel track support plinth