

ACCOMPANYING DOCUMENTS

PD 006/07/2013

RAILWAY TRACTION
DISCONNECTORS

TYPE **QAV; EQAV**

1.5 kV; 3000 A

ISO 9001:2009
ISO 14001:2005

ivep[®]

GENERAL

The railway traction disconnectors referred to in this document are completely assembled, including the second-tier insulation, and after being unpacked they are immediately ready for mounting.

Following the transport special attention is to be paid to checking whether the arc-quenching horns have suffered a damage. In case of need these have to be retightened and adjusted in a way to stay in contact after the main contacts become disconnected.

If required by the client the disconnectors are delivered with a drive unit and mounting platform. The manual drive unit is delivered in disassembled state and its assembly and adjustment takes place as a part of the assembly works on site.

ASSEMBLY OF THE MOUNTING PLATFORM

The mounting platform is designed as a general-purpose platform which can be adapted to suit power transmission masts with a diameter ranging from 140 to 300 mm at the installation place. .

The mounting works consist of fixing the platform to the intended place using an M16 threaded sleeve.

The Fig. 9 shows one or two mounting platforms fixed to a power pole. When mounting two platforms one against the other then M 16 bolts are used instead of the threaded sleeves.

MOUNTING THE DISCONNECTOR

The disconnector is mounted by fixing the switching device to the supporting platform.

If the disconnector is of doubled insulation then the delivered connected pieces are to be used for mounting it. The pitch of the fixing holes is 160 ± 1 mm.

MOUNTING THE DISCONNECTOR WITH EARTHING SWITCH

The mounting steps are similar to that of the stand alone disconnector. After connecting the pull rods the proper insertion of the knife contacts of the earthing switch into the disconnector is to be checked. Adjustments can be done by loosening two M10 screws for fixing the contacts and by shifting the contacts in oval-shaped holes. Following the adjustment the screws have to be retightened in correct way.

MOUNTING THE DRIVE UNIT

The drive unit is installed in the disconnector axis at a height approx. 1500 above ground, or at other installation height as needed.

The drive unit can be fixed to the pole/mast using one of the following options:

- a) using a sleeve, similarly to the mounting platform.
This type of mounting is used for standard drive units completed with a holder to which the drive is fixed with two M10 x 25 screws.
- b) banding – using two fixing bands
- c) by screwing to the mast/pole
This type of mounting requires two M10 holes to be drilled into the mast/pole, with a pitch of 120 ± 1 mm.

MOUNTING THE INTER-BEARING AND CONNECTING RODS

The inter-bearings are delivered in two versions:

- a) for mounting by banding or screwing to the mast/pole
- b) for mounting using a sleeve

When mounting two disconnectors to the mast/pole, one opposite to the other, the mounting steps are exactly the same as for mounting two platforms. Either of the types is fixed in the mast/pole axis, along a line connecting the switching device and the drive unit, in a similar manner to that described for the respective versions, with the inter-bearing fixed as follows:

Mounting the inter-bearing fixed to the sleeves or using the banding fixing mode

Measure first the required distance (1312 mm or 1377 mm, depending on the fixing mode). Fix the inter-bearing to the location chosen and tighten it slightly to provide for a repositioning along the mast axis upwards or downwards, in case of need.

Switch the disconnector ON, up until stop. While remaining in this position interconnect the disconnector with the inter-bearing using an insulated rod to which you have previously mounted a clamping end piece. Then fix the insulated rod from both sides to the other parts of the drive unit using threaded stirrups.

Thereafter measure (still in the ON switching position) the necessary rod length. Cut the rod short to the size you need and interconnect the drive unit with the inter-bearing using the stirrups.

After completing the assembling works on the disconnector and the drive unit, the operation of the assembly is to be verified. The inter-bearing is mounted in correct position if its lever angle is symmetrical to an axis perpendicular to the mast.

If necessary modify the position of the inter-bearing by shifting it on the pole to another, more proper position. When shifting the inter-bearing the length of the rods remains unchanged.

After having attained the suitable position of the inter-bearing, verify the operation of the switching device. When moving the operating lever slowly the disconnector must switch ON with adequate reliability, and attain its position up until the stop.

Modifications to the disconnector run may be done by shifting the drive unit in oval-shaped holes or by dislocating the control lever in fixing stirrups of either the drive unit or the bearing.

Mounting the inter-bearing by fixing it to the mast using screws

Due to the limited possibility of shifting the fixing plate of the inter-bearing in oval-shaped holes it is recommended to proceed as follows:

- 1) Interconnect the switching device, the insulated rod and the inter-bearing using stirrups.
- 2) When all the parts have been assembled switch the disconnector into ON switching position, until the stop screw and mark the positions at which the M10 fixing holes are to be drilled out (the 1312 mm measure).
Check the angle between the rocking bearing handle and that of the insulated rod. If the disconnector is to operate properly the lever angle should range within 20° - 30°.
- 3) Measure the length of the bottom tube and interconnect the tube and the drive unit.

The work steps when checking the operation of the drive unit and/or making modifications to the same is similar to those described above. However, the position of the inter-bearing may be changed only within the groove established in the fixing metal sheet.

SERVICE INSTRUCTIONS

The horn-type QAV and EQAV disconnectors are nearly maintenance-free switching devices. The first inspection of the contact system after 10 years could be achieved by adequate structural design, selection of suitable construction materials and the surface treatment chosen. For the purpose of increasing the equipment reliability it is recommended to conduct a regular visual checking of the electrical equipment in operating conditions (once a year). If it is feasible from the operational point of view, it is recommended to make a few no-load switching operations to the disconnector to clean the contact surfaces and verify the mechanical operation of the drive unit.

Revision works conducted once in 10 years include the following:

- a) Checking the condition of the main contacts, cleaning and greasing the contact surfaces with contact lubricant. The same is to be done also to the earthing switch if the disconnecter is fitted with such.
- b) Checking the condition of the bearings, greasing the same if necessary.
- c) Verification of the mechanical operation of the drive unit.
- d) Checking the retightened state of screw connections.

PACKAGING AND TRANSPORT RULES

At the moment of delivery the disconnecters are fixed to wooden pallets. Make sure that the pallets are ordinarily fixed to the means of transportation, in order to avoid any damage to the switching device during the transport, primarily the insulators of the arc-quenching horns. When handling the disconnector during the transport, storage or assembly, it is **forbidden to lift and handle the switching device by gripping on the arc-quenching rods**. This could impair its breaking capability. The switching devices may be stored without any further protection from atmospheric effects, however, any handling operations that might impair its mechanical operation should be avoided (incl. the surface treatment). Access for unauthorized personnel and handling of such personnel with the switching device is to be prevented.

LIST OF ACCESSORIES

Item	Title	Number	Note
1.	disconnector QAV 1.11 disconnector QAV 1.12 disconnector EQAV 1.11 disconnector EQAV 1.12		
2.	mounting platform	22 – 0963	
3.	manual drive unit	32 – 2098	control handle for mounting using bands or screws (stroke 200 mm)
4.	drive bracket	32 – 2267	bracket for mounting the drive units to a sleeve
5.	inter-bearing	32 – 2101	for mounting using bands or screws
6.	inter-bearing	32 – 2102	fixing on the sleeve
7.	clamping end piece	62 – 1631	
8.	pivot	52 – 1203	
9.	sleeve	52 – 1205	
10.	insulated rod	32 – 2119	
11.	pull rod l = 2500 mm	42 – 3934	for disconnectors mounted up to 5.5 m above the ground
	pull rod l = 3000 mm	42 – 3935	for disconnectors mounted to 5,5 - 6m above the ground
	pull rod l = 3500 mm	42 – 3936	for disconnectors mounted to 6 m - 6,5 m above the ground.
12.	padlock		of a design with a common key
13.	splint pin	Cu 4 x 30	

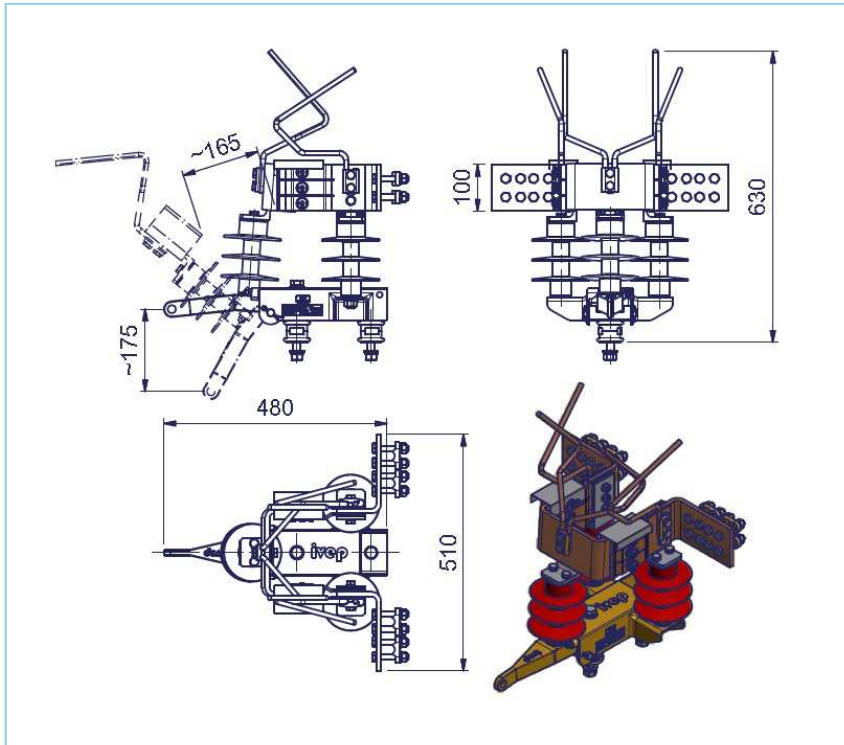
The sleeves and connecting bolts are not a part of the delivery.

MODE OF CONNECTING THE WIRES/CABLES

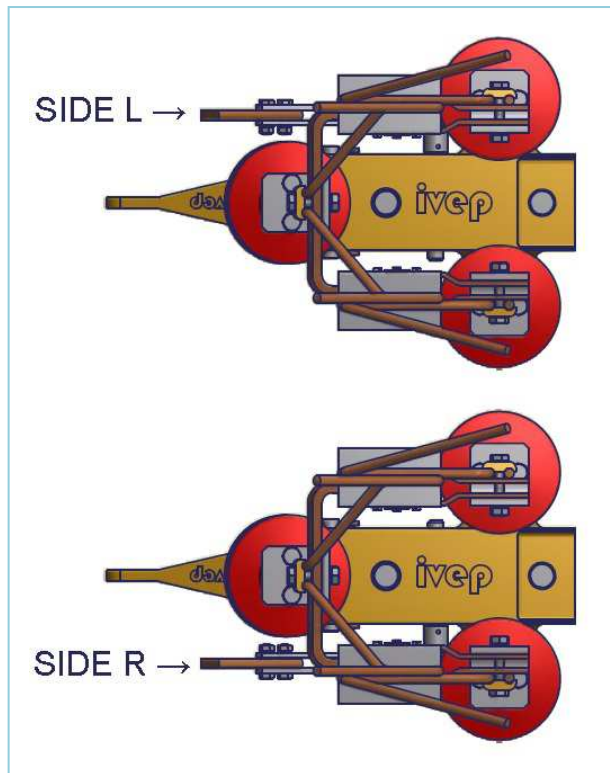
At the moment of delivery the QAV 1.1 disconnecters are equipped with general-purpose flag terminals for connecting the cables via cable lugs, or fixing the cables below cover plates. Each pair of the cover plates is capable of accommodating two cables, each of a cross-section of up to 185 mm².

The incoming flag contact is designed in a way which makes it possible to interchange the various connection modes after putting screws in the holes. The QAV 1.1 disconnectors feature a hole in the support cast piece used to connect the earthing conductor via M12 screw (the screw is not part of the delivery). The EQAV 1.1 combination of disconnector + earthing switch has an earthing clamp (M12 screw) situated near the earthing contact.

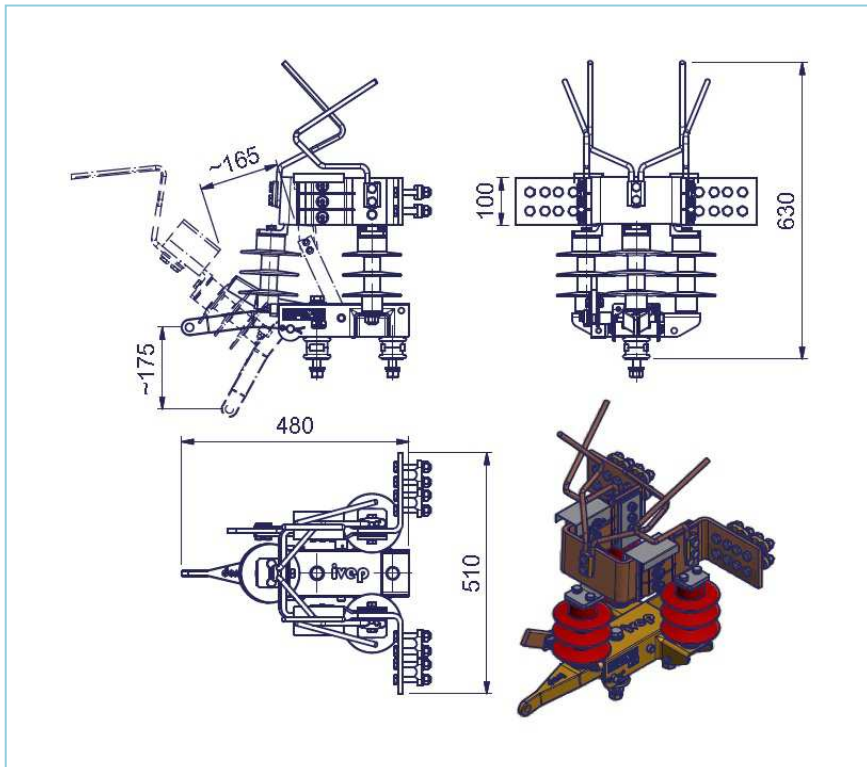
DISCONNECTOR TYPE QAV 1,5.3000.20/1.LB.RB.DI



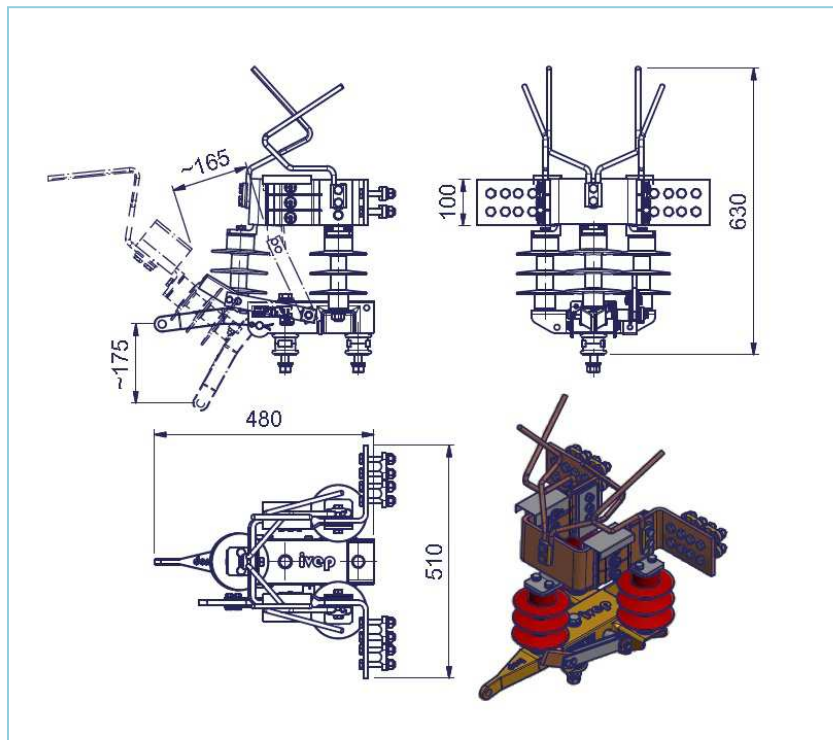
DISCONNECTOR WITH EARTHING SWITCH – FOR LEFT-HAND (L) OR RIGHT HAND (R) MOUNTING



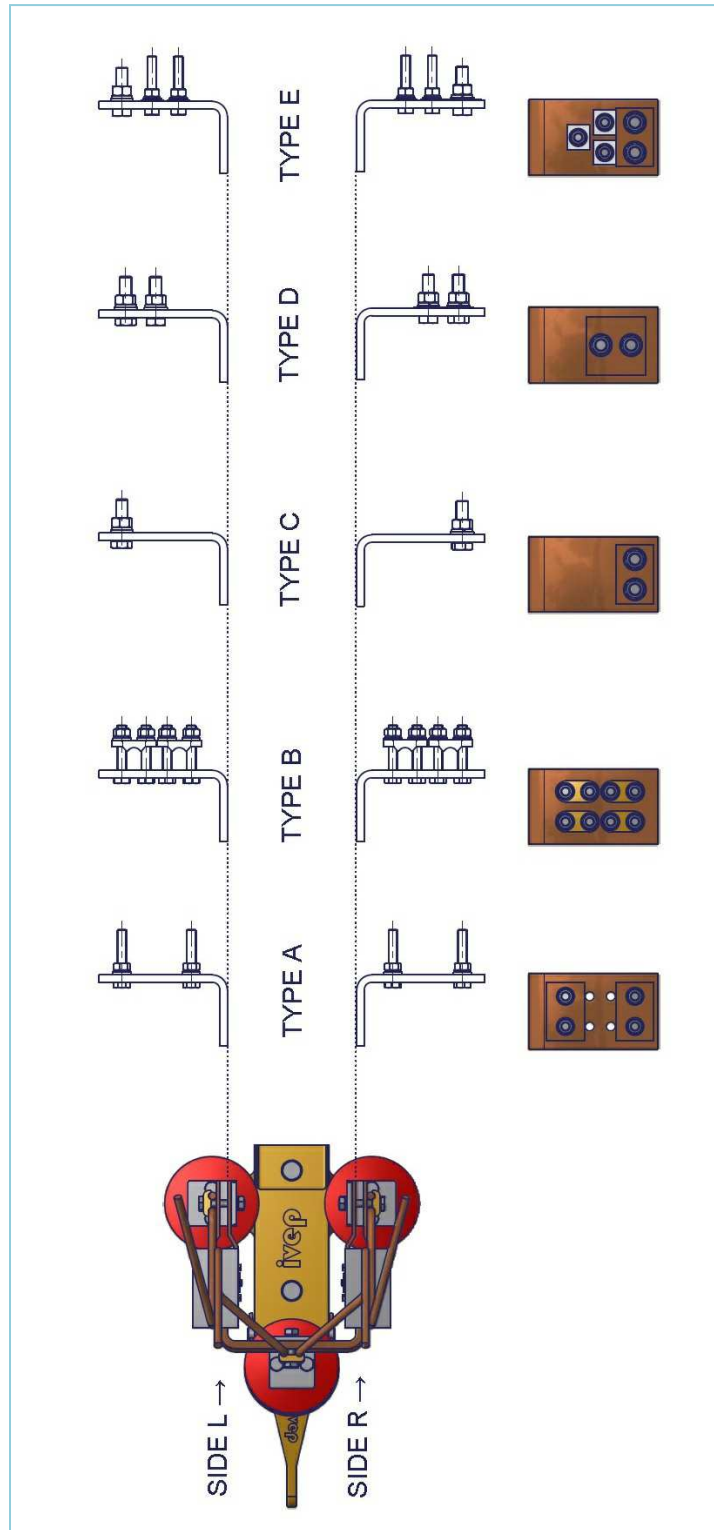
DISCONNECTOR WITH EARTHING SWITCH MOUNTED ON THE LEFT-HAND (L) SIDE



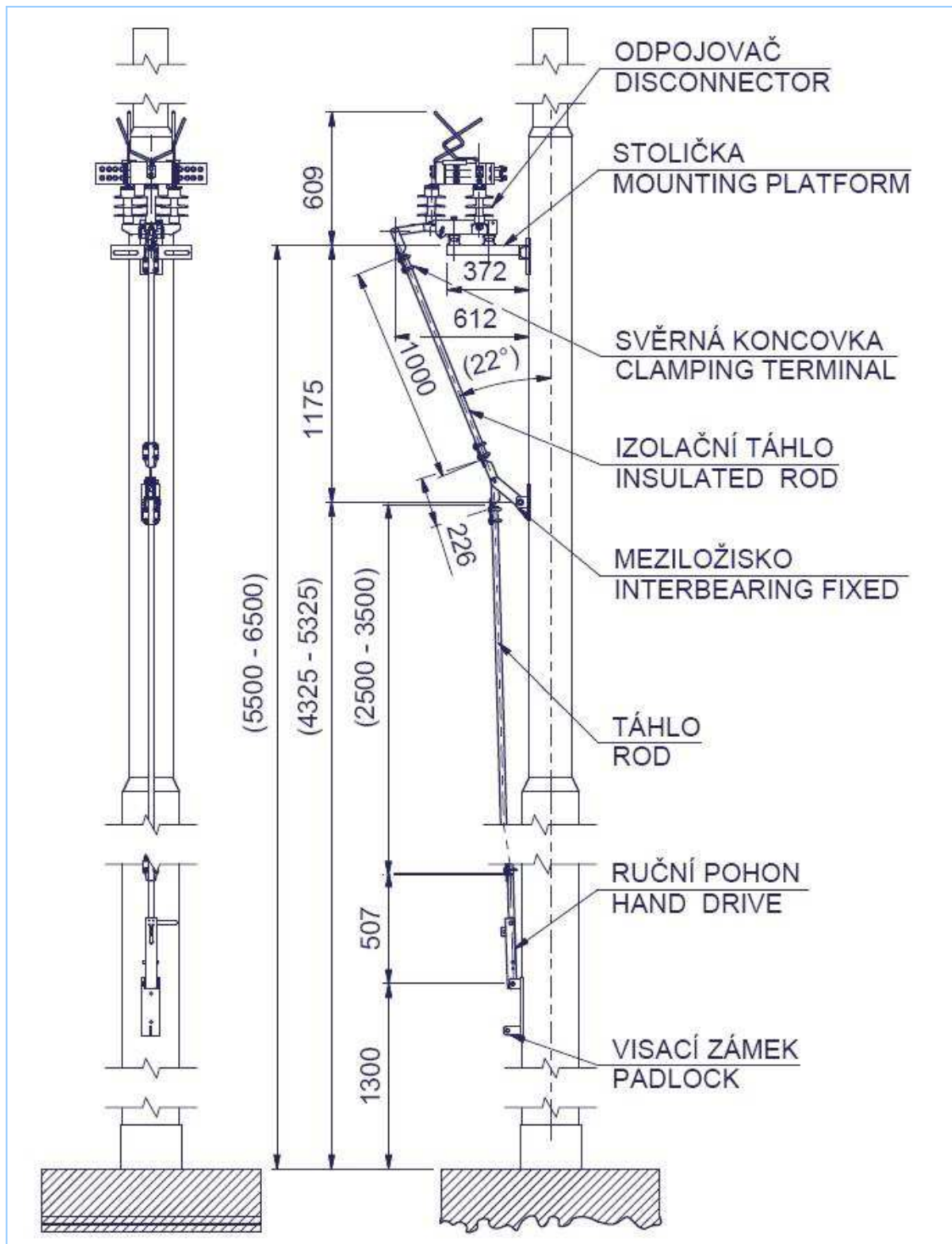
DISCONNECTOR WITH EARTHING SWITCH MOUNTED ON THE RIGHT-HAND (R) SIDE



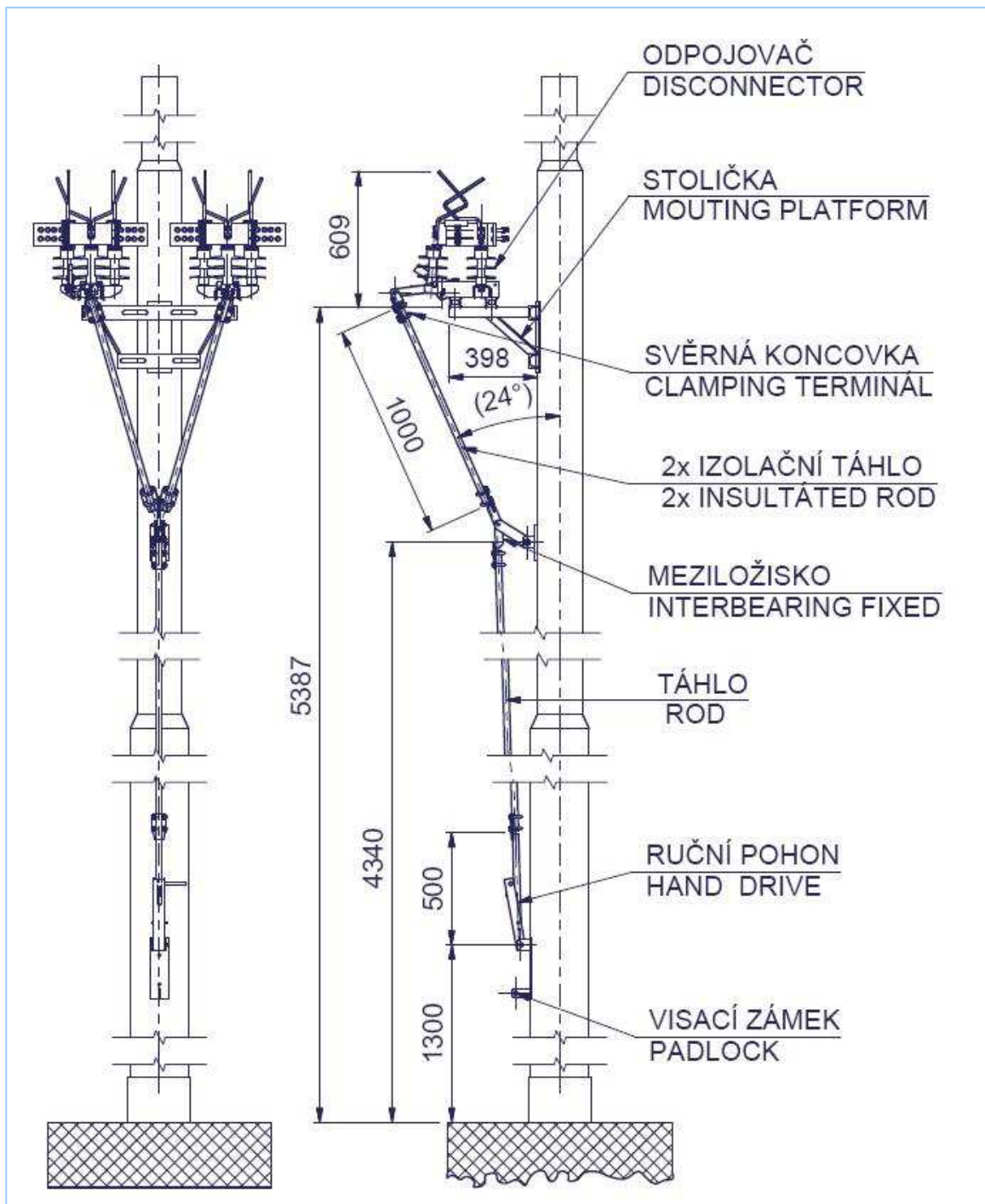
CONNECTING FLAG CONTACTS – VARIOUS DESIGN OPTIONS



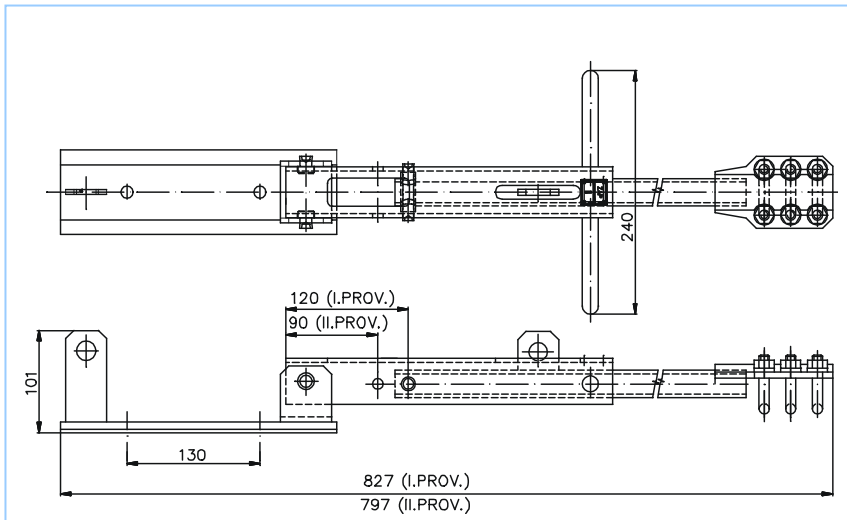
MOUNTING A DISCONNECTOR WITH MANUAL DRIVE UNIT ON A MAST USING THE SMD 1 MOUNTING PLATFORM



MOUNTING A DISCONNECTOR WITH MANUAL DRIVE UNIT ON A MAST USING THE SMD 2 MOUNTING PLATFORM

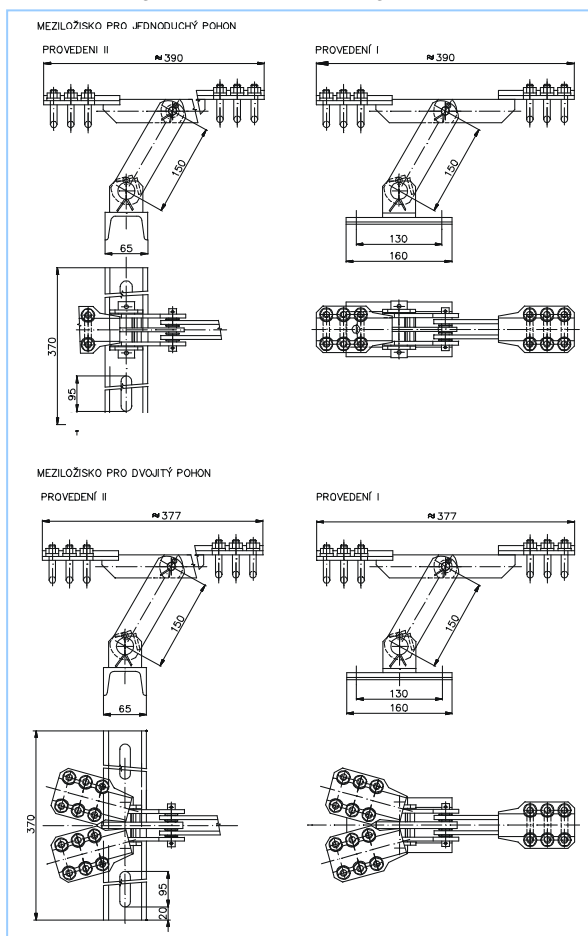


MANUAL DRIVE UNIT



INTER-BEARINGS FOR SINGLE-TYPE OR DOUBLE-TYPE DRIVE UNIT

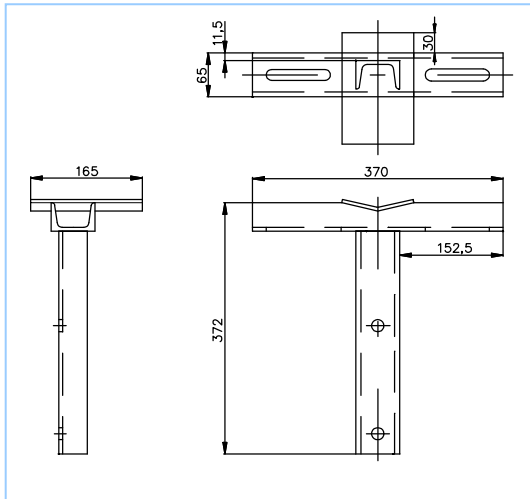
Design option I – for mounting using bands or screws
 Design option II - mounting on a sleeve



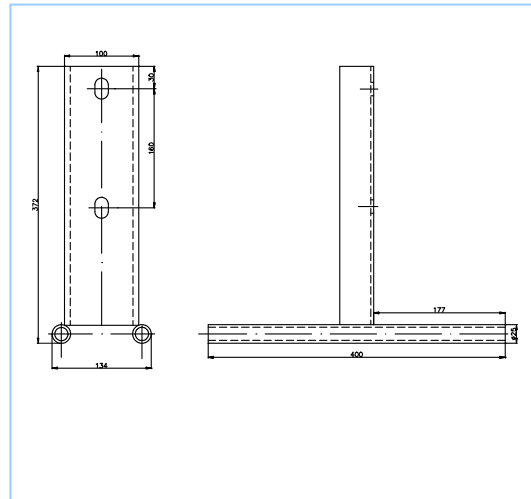
PLATFORM FOR MOUNTING OF DISCONNECTORS CONTROLLED BY SINGLE-TYPE OR DOUBLE-TYPE DRIVE UNIT

Mounting platform for fixing of one disconnector on a mast

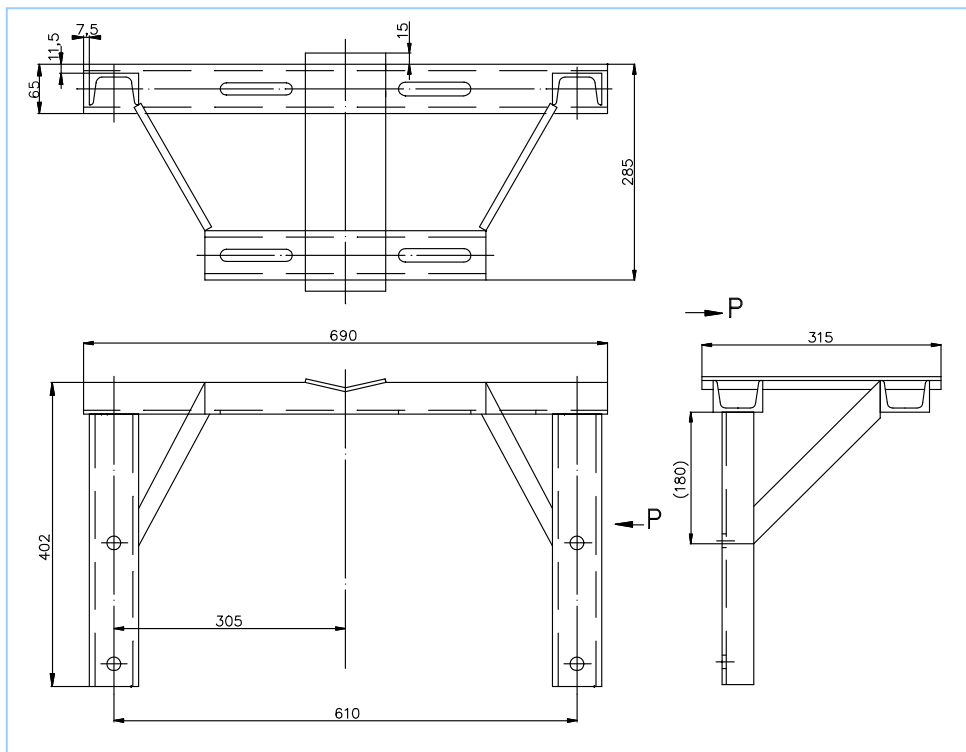
fixing on a sleeve



fixing using bands

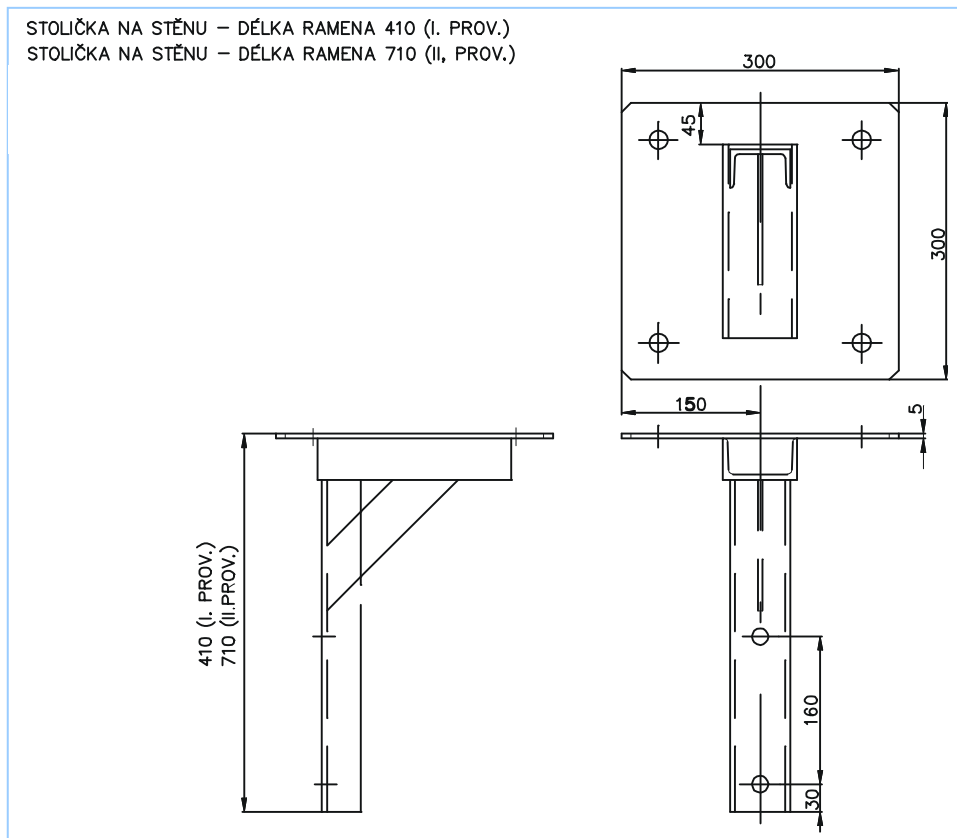


Mounting platform for fixing of two disconnectors on either a mast or a wall



Mounting platform for fixing one disconnector on a wall

STOLIČKA NA STĚNU – DÉLKA RAMENA 410 (I. PROV.)
STOLIČKA NA STĚNU – DÉLKA RAMENA 710 (II. PROV.)



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