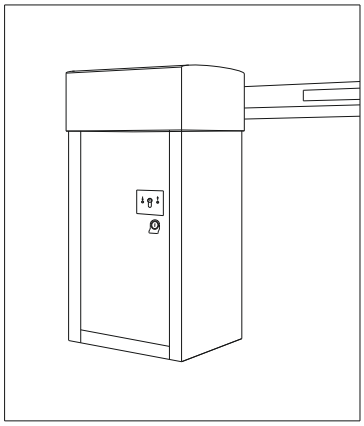
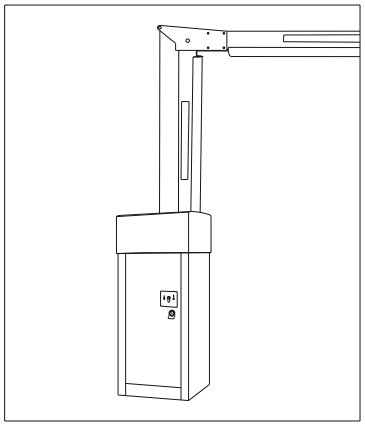
- Schrankenanlagen
- Schiebetore/ Zäune
- Parksysteme
- Zutrittssysteme
- Pollersysteme
- Videoüberwachung

Installation and operating instructions for barriers

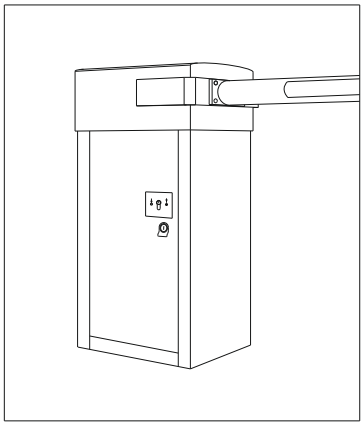
IPS 3.500



IPS/K 3.500



ITS 6.100



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IMPORTANT NOTES !!!

Read this entire manual before you install and operate the barrier.

Electrical devices such as barriers may be installed, operated, serviced and maintained only by qualified personnel. The INTESIK GmbH takes no responsibility for any consequences arising from the use of this product.

Incorrect operation can result in dangers that include damage of the material, severe personal injury or even death.

Read these instructions carefully before installing and operating the barriers. Installation, adjustment, repair and maintenance may only be carried out by qualified personnel.

The user is responsible for compliance with all relevant international and national electrotechnical requirements regarding the protective earthing of all devices.

Numerous components of the barrier, including the circuit boards, are supplied via the mains voltage. DO NOT TOUCH! Use only electrically insulated tools.

Do not touch unshielded components or screw connections with voltage present.
Steps before servicing the barrier:

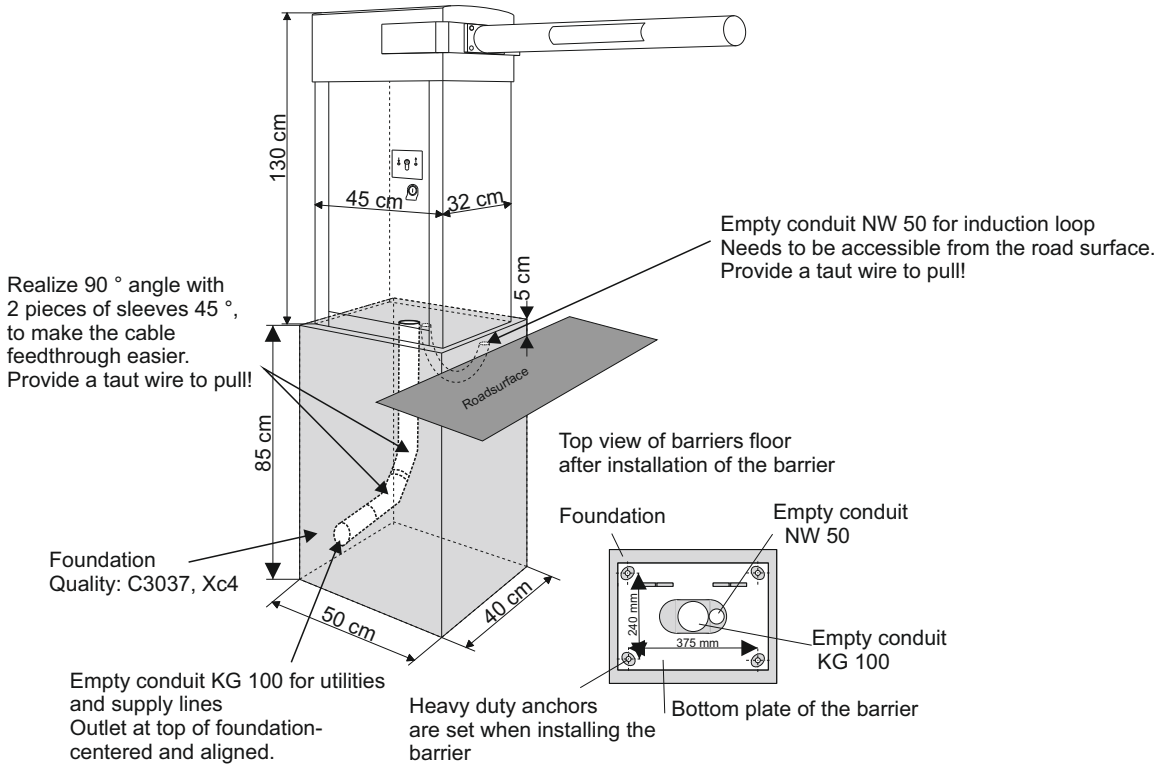
- Cut off any electrical supply.
- Install a sign with the words "DO NOT SWITCH ON" on all power switches.
- Lock the circuit breaker or disconnector in the open position.
- WAIT 15 MINUTES to allow the DC bus capacitors to discharge (barrier with IKS/F III)
- Measure the voltage of the DC bus between the PA / + and PC / - terminals to ensure that the DC voltage is less than 42 volts. (barrier with IKS/F III)
- If the DC bus capacitors do not discharge completely contact INTESIK GmbH. In this case the inverter must not be repaired or put into operation.
- Install all covers and close them before operating the barrier again.

Not following these instructions will result in death or serious injury!

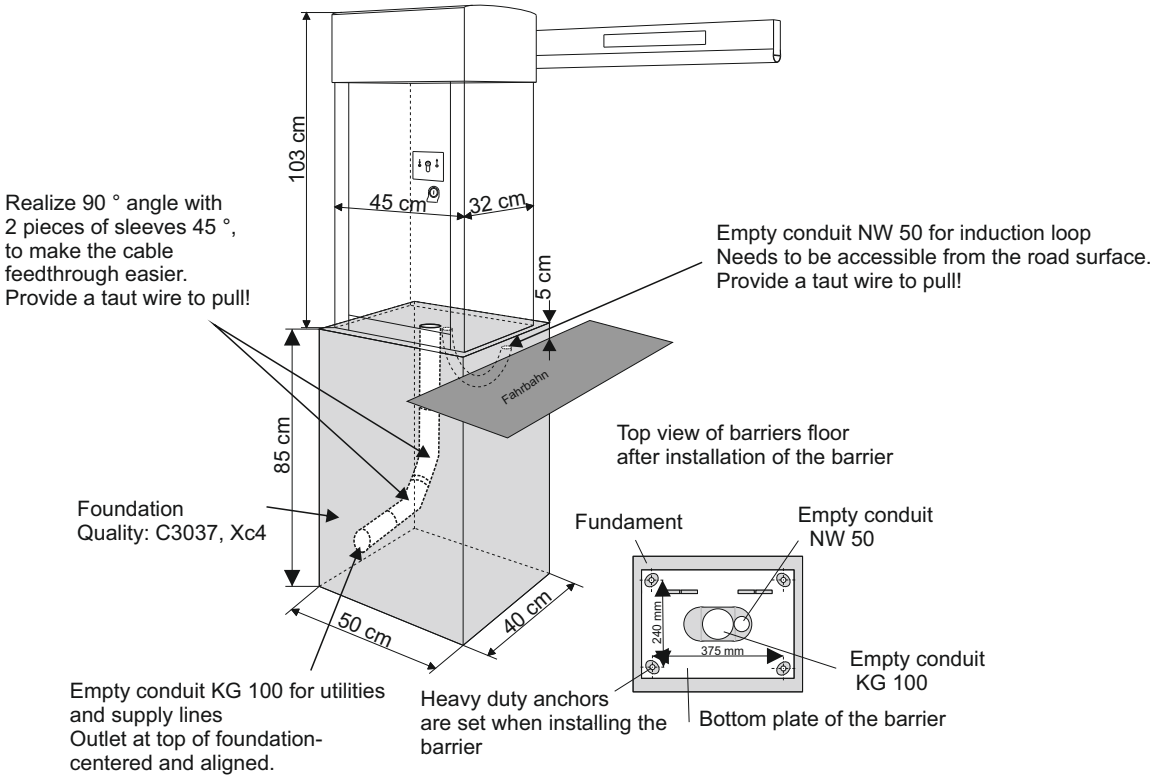
EQUIPMENT DAMAGE
Do not install the barrier or accessories and do not take it into operation if damages can be seen on any components.

Not following these instructions can result in death, serious injury or equipment damage!

1. Foundation ITS 6.100



2. Foundation IPS 3.500 + IPS/K 3.500



3. Technical specifications and scope of delivery

Technical specifications:

	IPS 3.500 + IPS/K	ITS 6.100
Maximum boom length	3.500mm	6.100m
Opening-/closing time:	3,4s	5,5s
Input:	370W	370W
Voltage:	230V	230V
Frequency:	50Hz	50Hz
Measurements W x D x H	450 x 320 x 1.050	450 x 320 x 1.050
Weight without boom:	72kg	80kg

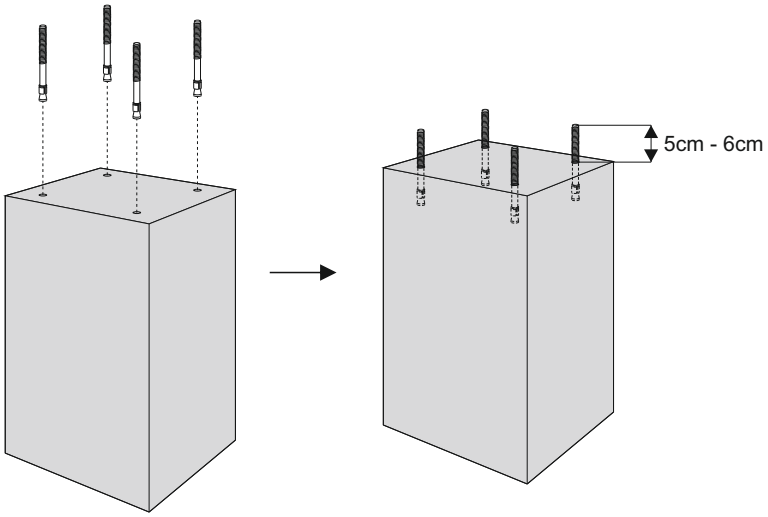
Scope of delivery:

IPS 3.500 + IPS/K 3.500	ITS 6.100
Housing with mechanics, drive technology and mounting plates	Housing with mechanics, drive technology and mounting plates
Barrier boom	Barrier boom
Microprocessor control	Microprocessor control
Loop detector	Loop detector
Key switch	Key switch
Documentation	Documentation
4 Stud bolts	4 Stud bolts
	2 Springs
1 Key for friction clutch	1 Key for friction clutch
3 Keys for housing	3 Keys for housing
3 Keys for key switch	3 Keys for key switch

4.Installation

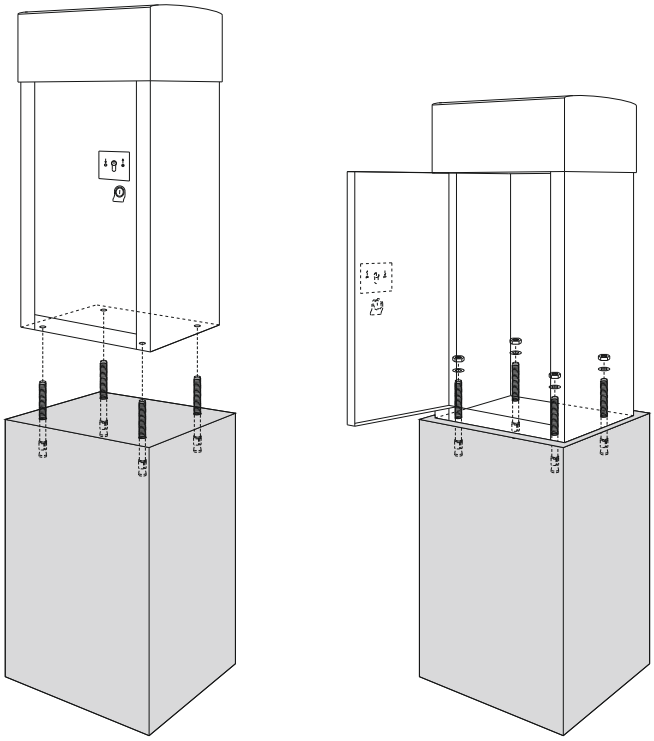
4.1 Setting and casting the heavy duty anchors in the concrete

Diameter of the drill hole: IPS 3.500 = 10mm ITS 6.100 = 10mm
Bolts are put on the heavy-duty anchors and then the heavy duty anchors are driven into the drill hole. 5cm - 6cm of the thread of the heavy-duty anchors should protrude from the foundation.



4.2 Placing the barrier on the foundation:

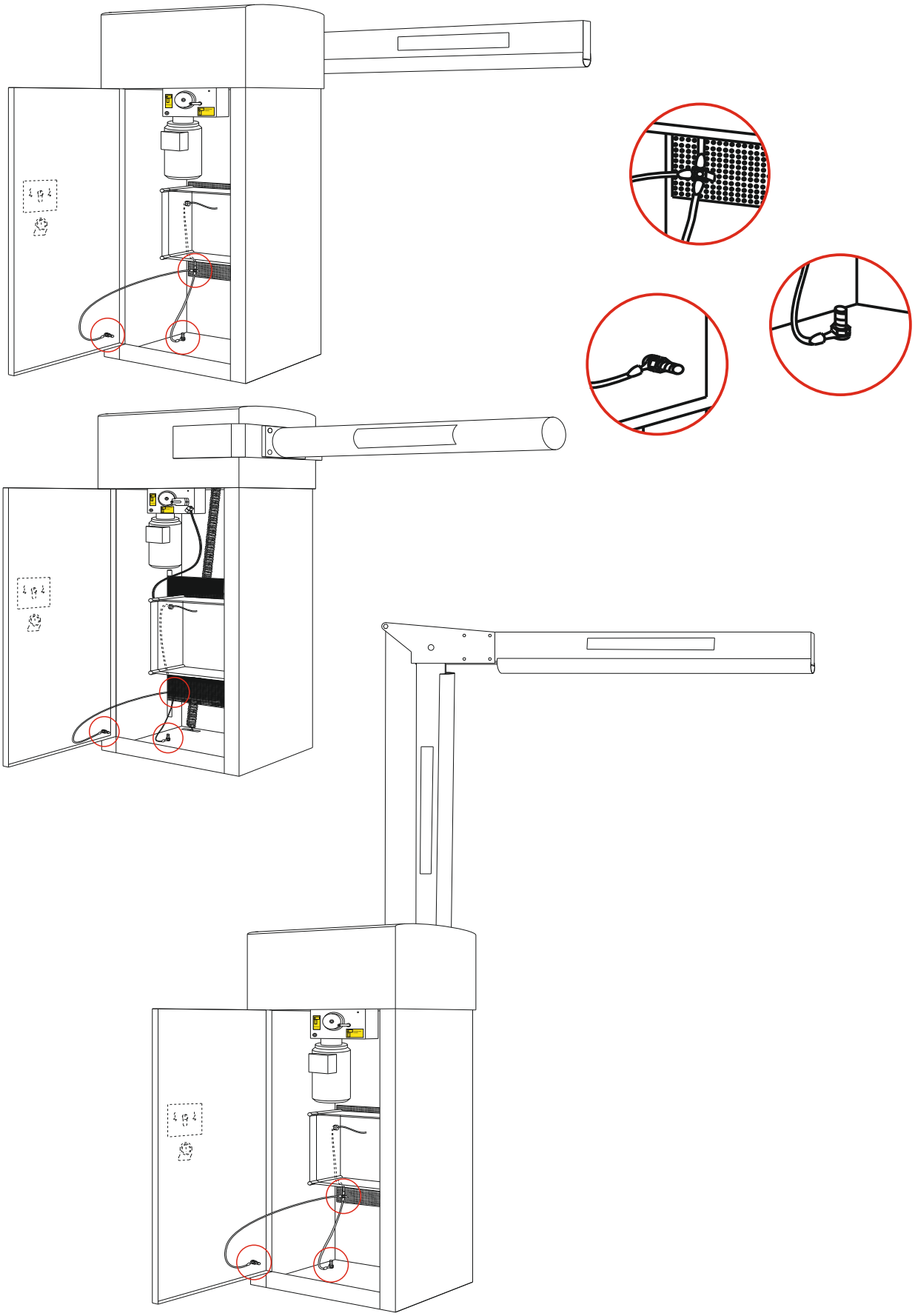
After the heavy duty anchors were driven into the foundation, the barrier can be placed.
Then the barrier is screwed down to the heavy duty anchors from the inside.



Attention! Over-tightening and possibly lack of strength of the concrete can cause the bolts to be drawn from the foundation.

4.3 Preparing of the electrical connections

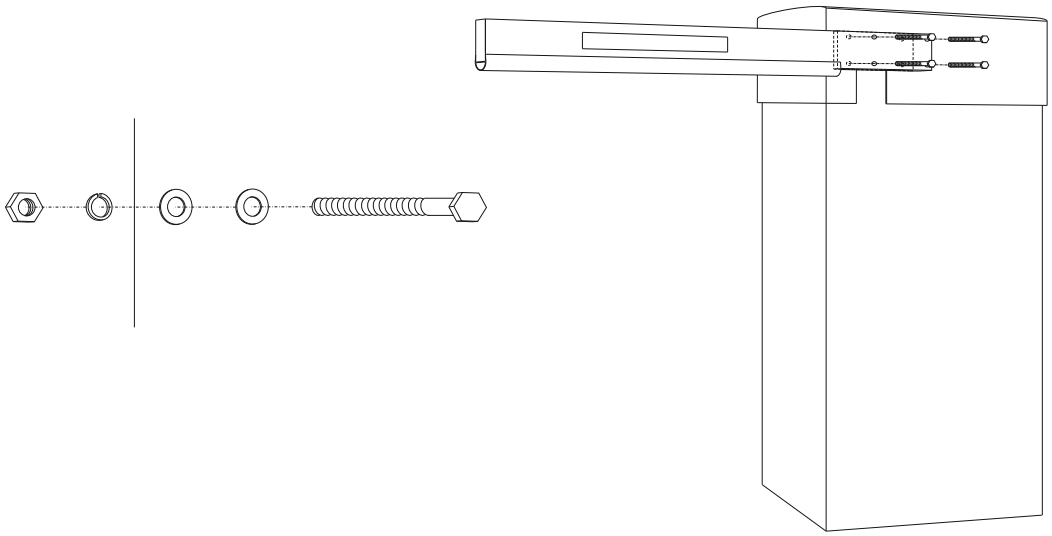
The grounding conductors must be connected at the points shown in the diagram.



4.4 Installation of the barrier boom IPS 3.500 (install with help of a 2nd person!)

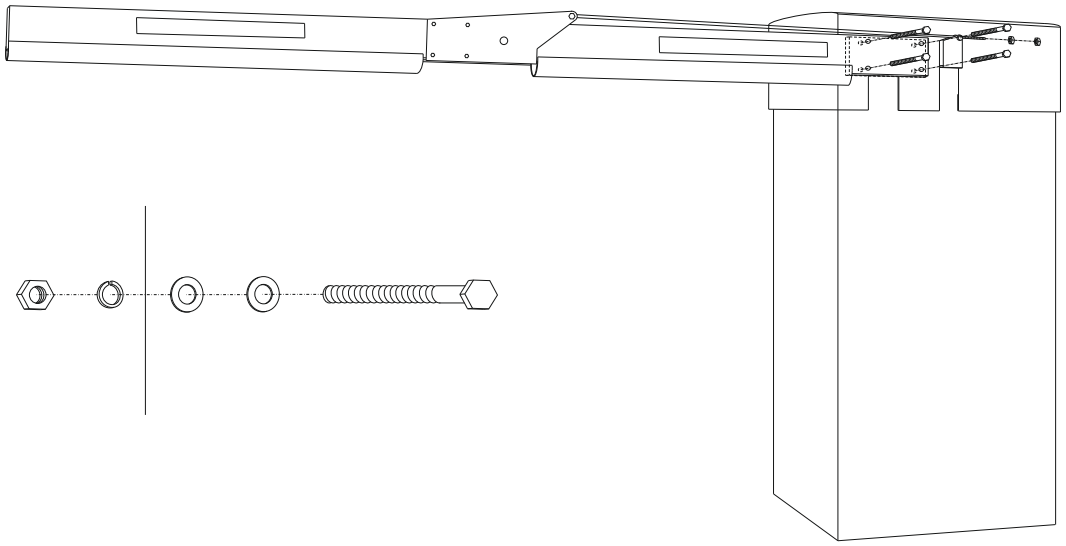
To mount the rail one person holds part 1 horizontally to the barrier.The second person carries it carefully over the boom connector until the holes fit together. Proceed cautiously to ensure that the coating of the barrier is not damaged. Then apply a washer on the M8 x 40mm screw and then lead the screw from the side of the barrier boom through the holes. Apply a washer on the opposite side, too. After that use a spring ring with M8 nut or alternatively use a self-locking nut without using a spring ring.

NOTE: The minimum length of the boom for the IPS 3.500 is 120 cm!



4.5 Installation of the jointed barrier boom IPSK 3.500

At first proceed as described in 4.4.
After the boom has been installed the guide rod at the top of the boom must be bolted and the boom needs to be balanced. (Parallelogram)
Then at first put the washer on the rod and after that the nut.
The nut needs to be screwed several rounds onto the end of the rod. After that the end of the boom is carefully lowered. Now the boom can be aligned with the help of the nut. Tightening the nut will raise the boom tip.
If one loosens it the boom descends. If you finished aligning the boom the screw nut is countered with a second one to prevent from loosening.

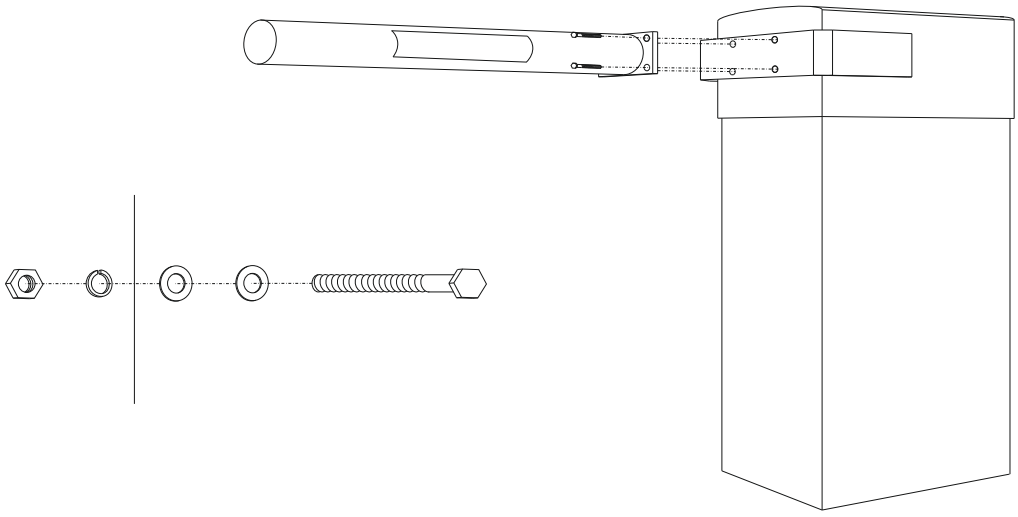


4.6 Installation of the barrier boom ITS 6.100

To mount the boom one person holds the rail horizontally to the barrier.
The second person directs the boom so that the holes in the barrier boom holder and those of the boom fit together and screws them together.

At first pass the bolts through the holes to prevent a slipping of the boom.
To do this you put the screws through the washers and then through the aligned holes. After that you put another washer and a spring washer on the screw from the other side and then screw with a nut.

NOTE: The minimum length of the boom for the ITS 6.100 is 300 cm!



4.7 Hooking of the springs ITS 6.100

CAUTION Risk of injury!
To avoid injury use appropriate, auxiliary tools.

Depending on the boom length springs are used in the ITS 6.100.
To avoid injuries these are not mounted on delivery.

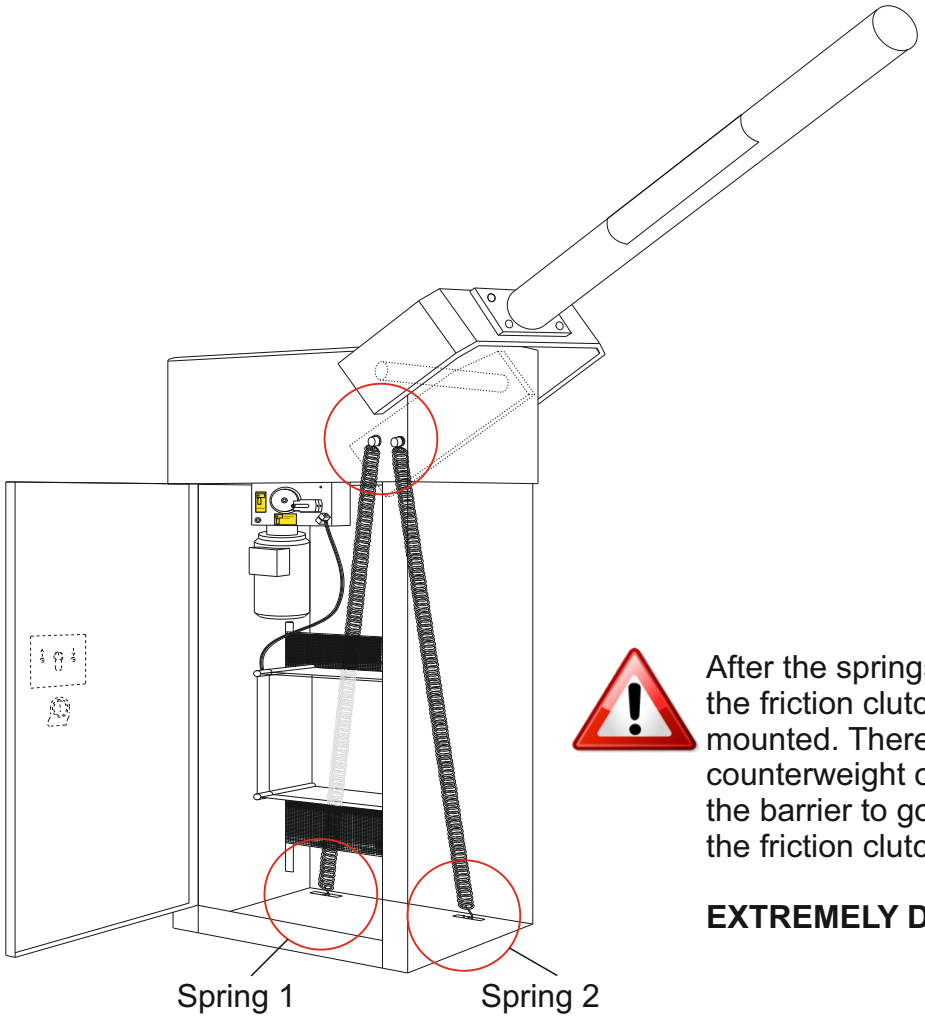
Boom length from 300 cm to 449 cm - Spring 1
Boom length from 450 cm to 600 cm - Springs 1 + 2

At first the hood of the barrier should be removed and the friction clutch needs to be loosened (for operation of the friction clutch see 5.1, page 13). After this is done the boom must be raised by 45 ° and the friction clutch has to be tightened again.

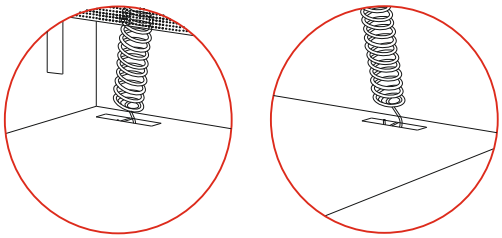
Then the springs need to be hooked into the bottom of the barrier with the open eyehooks (see illustration).

After that the spring is stretched and the other end is guided over the rolls of the mechanics. The bearing rollers have to be secured with a cotter pin to prevent slipping.

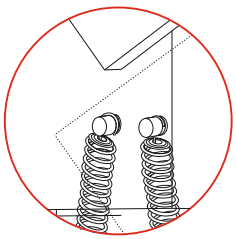
It is important to ensure that the springs are correctly attached everywhere and that they fit tightly. Now the friction clutch can be loosened and the boom put back down again. After that the friction clutch must be tightened again and the hood can be reinstalled.



Step 1



Step 2



After the springs have been mounted do not loosen the friction clutch when there is no barrier boom mounted. There is a huge spring energy that without counterweight of the boom causes the mechanics of the barrier to go up with extreme force when loosening the friction clutch.

EXTREMELY DANGEROUS TO LIFE!

4.8 Setting the limit switches

After the barrier has now been mechanically mounted and electrically connected it can be put into operation.

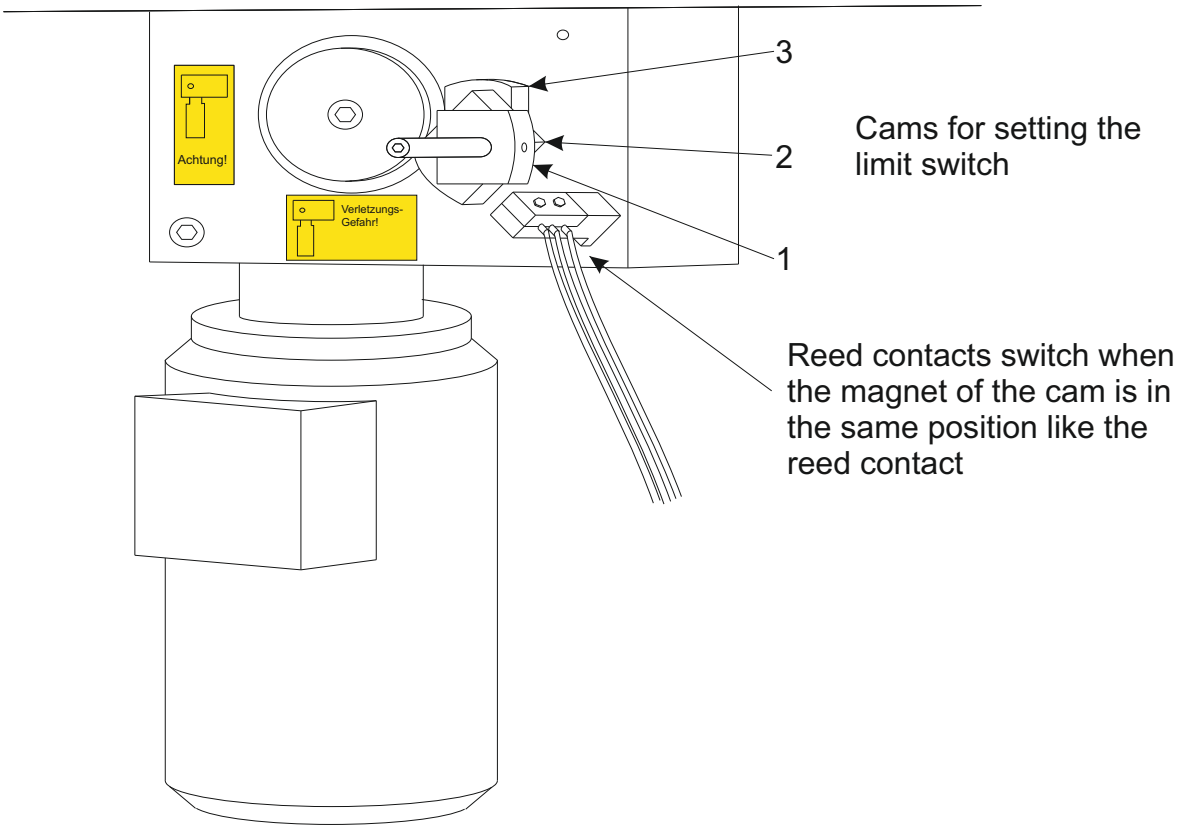
The limit switches can now be adjusted with several test runs. To do this the three cam screws must be adjusted so that the cams do not move during the test drive but can be readjusted by hand.

The limit switches work with so-called reed contacts. This principle is based on magnetism. For proper function precise alignment and small gaps are necessary.

Cam 3 is used to set the upper end position and cam 1 is used to set the lower end position. The boom should be vertical in the open position and vertical in the closed position and aligned horizontally to the ground.

Then cam 2 is set in the same way. It needs to be centered between cams 1 and 2 and at 45 ° positionit has to point to the middle of the reed sensor.
The most precise possible adjustment of the cam 2 can be achieved by opening and closing the barrier several times while it is readjusted until the barrier moves at the same speed to "Open" and "Closed" end position.
Since the position of the boom is detected with the aid of the cams and the speed of the boom is determined with the cams a most precise setting of the cams is necessary!

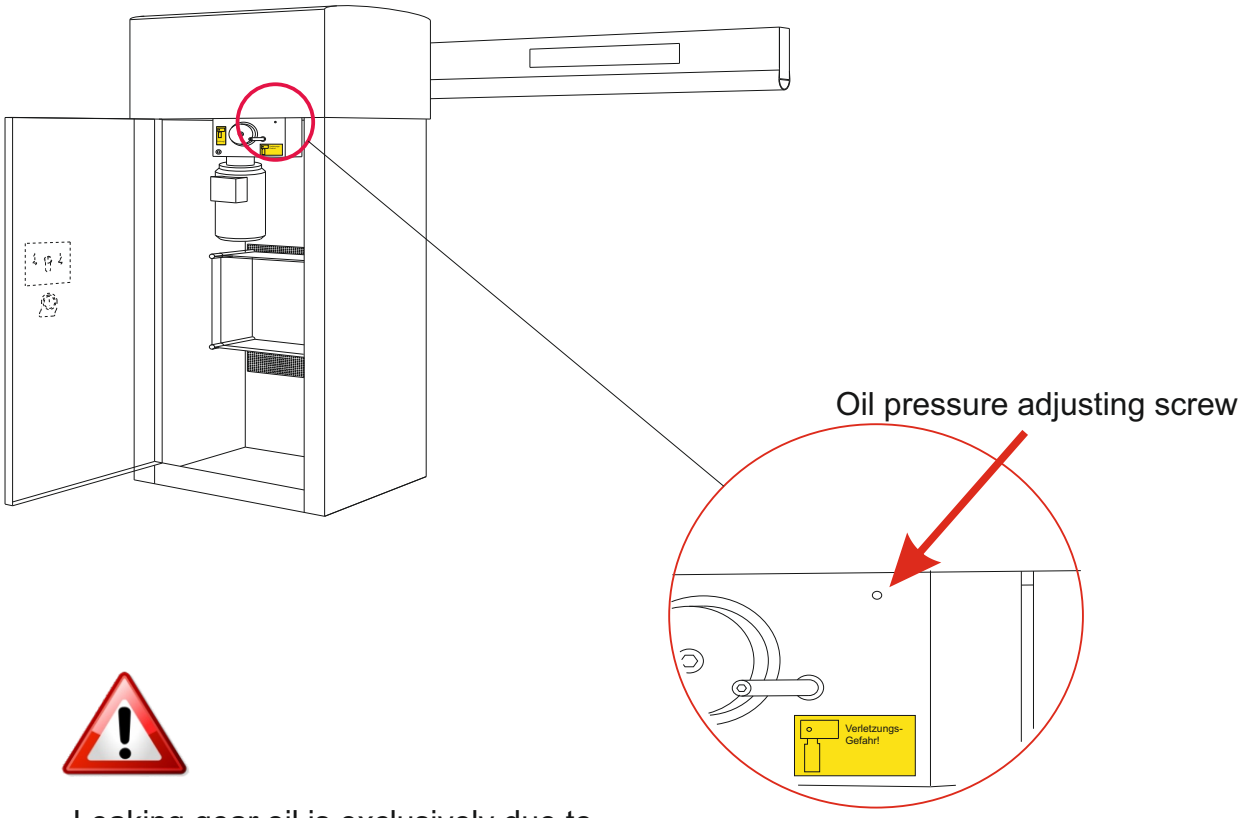
When this is achieved the cam screws can be tightened.



4.9 Loosening of the oil pressure adjusting screw

In the transmission of the barrier drive gear oil and air is present. When heated during operation the air expands and exerts pressure onto the oil. To avoid the spill of oil e.g. in the area of the double shaft seal an oil pressure adjusting screw is existing in the upper range of the the gear housing where only air is present.

After the installation of the barrier the oil pressure adjusting screw needs to be unscrewed about 2 threads with use of an Allen key - 4mm . This serves to equalize the pressure with increasing oil temperature and thus prevents damage to the gear.



Leaking gear oil is exclusively due to the non-release of the oil pressure adjusting screw and leads to exclusion of warranty!

5. Operating the barrier

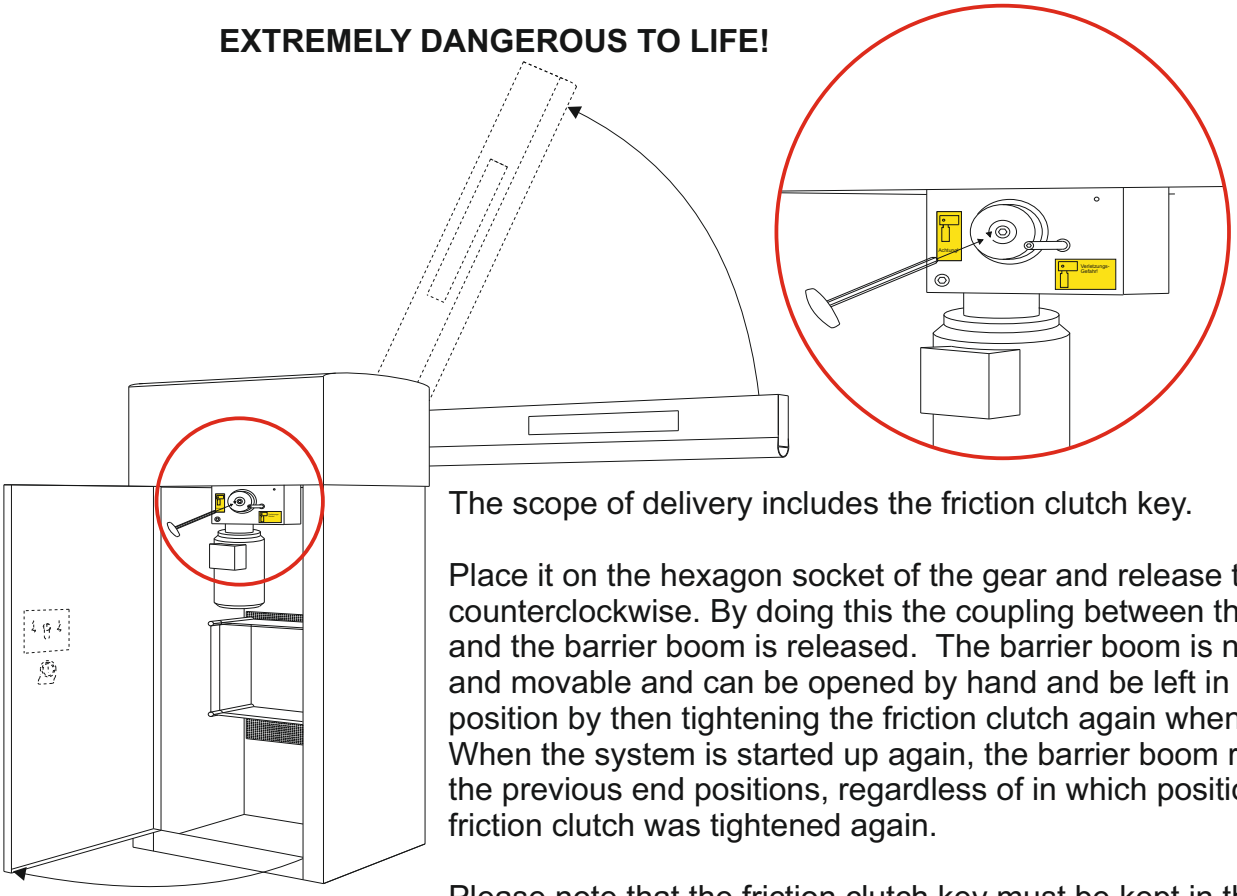
5.1 Manual opening of the the gate by loosening the friction clutch

The barrier can be opened manually by using the so-called friction clutch.
This is useful during a power failure or a technical failure.

Attention! NEVER loosen the friction clutch without mounted boom !

After the springs have been mounted do not loosen the friction clutch when there is no barrier boom mounted. There is a huge spring energy that without counterweight of the boom causes the mechanics of the barrier to go up with extreme force when loosening the friction clutch.

EXTREMELY DANGEROUS TO LIFE!

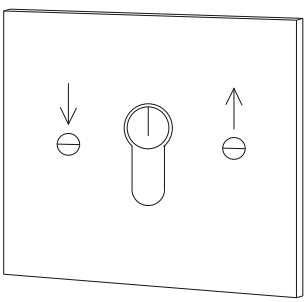


The scope of delivery includes the friction clutch key.

Place it on the hexagon socket of the gear and release the clutch counterclockwise. By doing this the coupling between the gear and the barrier boom is released. The barrier boom is now free and movable and can be opened by hand and be left in the upper position by then tightening the friction clutch again when it‘s open. When the system is started up again, the barrier boom returns to the previous end positions, regardless of in which position the friction clutch was tightened again.

Please note that the friction clutch key must be kept in the barrier housing all the time!

5.2 Function of the key switch



In direction "Arrow up" the switch locks. By default, the automatic functions such as „closing“ and „safety“ via induction loop are turned off at the same time. At the same time the barrier opens and remains open.

In direction "arrow down" the original switch position, the automatic function is restored, thus reactivated. If the key is turned a little bit further, a short impulse is given to the barrier in order to close it.

6. Control unit IKS/F-III

6.1 Buttons, inputs and outputs

S1	Button CLOSE
S2	Switch control unit ON (When wiring the input „Control unit ON“, S2 must be in the lower position (OFF) !)
S3	Button OPEN
Reset	Adjustment of the induction loops

Inputs:

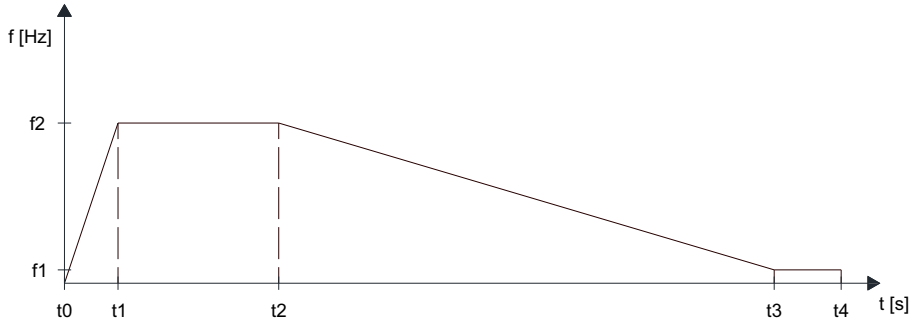
I-00	Kl1.7/8	Induction loop „OPEN“ ON	(without current inactive)
I-01	Kl1.11/12	Stop + open again	(without current active)
I-02	Kl1.15/16	Opening in self-retaining mode	(without current inactive)
	Kl1.17/18	Opening in self-retaining mode	(without current inactive)
I-03	Kl1.19/20	Control unit ON	(without current inactive)
	Kl1.21/22	Control unit ON	(without current inactive)
I-04	Kl1.23/24	Closing in self-retaining mode	(without current inactive)
	Kl1.24/25	Closing in self-retaining mode	(without current inactive)
I-05	Kl1.27/28	Stop + open again + close again	(without current active)
I-06	Kl1.31/32	Automatic function OFF	(without current inactive)
I-07	Kl1.36/37	Close in dead man function	(without current inactive)
I-08	Kl1.39/40	Closing/Safety	(without current active)
I-09	Kl1.46/47	Reedsensor „OPEN“	(without current inactive)
I-10	Kl1.48/49	Reedsensor „CLOSED“	(without current inactive)
I-11	Kl1.50/51	Stop	(without current active)
I-12	Kl1.52/53	not usable	
	Kl1.55/56	Induction loop 1	
	Kl1.57/58	Induction loop 2	
I-13	Dip-Switch	Function selection	
I-14	Dip-Switch	Function selection	
I-15	Dip-Switch	Function selection	

Outputs:

O-00	Kl2.1	NO	internally occupied
	Kl2.2	COM	internally occupied
	Kl2.3	NC	
O-01	Kl2.4	NO	internally occupied
	Kl2.5	COM	internally occupied
	Kl2.6	NC	
O-02	Kl2.7	NO	see 6.4 „Selection of functions“
	Kl2.8	COM	see 6.4 „Selection of functions“
	Kl2.9	NC	see 6.4 „Selection of functions“
O-03	Kl2.10	NO	see 6.4 „Selection of functions“
	Kl2.11	COM	see 6.4 „Selection of functions“
	Kl2.12	NC	see 6.4 „Selection of functions“
O-04	Kl2.13	NO	see 6.4 „Selection of functions“
	Kl2.14	COM	see 6.4 „Selection of functions“
	Kl2.15	NC	see 6.4 „Selection of functions“
O-05	Kl2.16	NO	see 6.4 „Selection of functions“
	Kl2.17	COM	see 6.4 „Selection of functions“
	Kl2.18	NC	see 6.4 „Selection of functions“

6.2 Speed curve

The speed curve of the barrier includes an acceleration and a braking ramp. The speed curve is shown below.



The curve shown corresponds to the behavior with a full movement. The ramps differ according to the type of barrier. These can be found in the chart below.

	IPS 3.500	ITS 6.100
f1	10 Hz	5 Hz
f2	40 Hz	60 Hz
t1	1 s	0,5 s
t3 - t2	3,5 s	3,8 s

The triggering of a function that interrupts the movement (e.g. stop and open again), causes the movement to stop immediately (without ramp). The subsequent behavior of the barrier deviates from the ramp shown above and depends on the position of the barrier boom at the moment of restart and the direction of movement.

6.3 Synchronous wiring

In systems with a synchronous function one of the barriers is programmed with a master and the other with a slave programming. All signals from impulse generators, external components, etc. are processed by the master. The slave only follows the movements of the master.
It is therefore necessary to ensure that the master is installed in the intended position!

In the slave version the signals from the induction loops are applied to outputs O-04 and O-05 without directly influencing the slave. The function of the induction loops which are evaluated by the slave's circuit board detector are therefore only determined by the wiring with the master.

The signals of safety devices must be processed by the master‘s circuit board, as well. They must not be connected to the slave, as otherwise it could come to malfunction!

The minimum connections to be made are shown below:

Master			Slave
KL2.10	Synchronous command 1	—>	X1.3
KL2.11	Synchronous command 1	—>	X1.5
KL2.13	Synchronous command 2	—>	X1.7
KL2.14	Synchronous command 2	—>	X1.8
KL2.7	Synchronous command 3	—>	KL1.50
KL2.8	Synchronous command 3	—>	KL1.51
R1B	maximum force reached	—>	R1C
KL1.11	maximum force reached	—>	R1B

The contacts R1B and R1C can be found on the inverter.

The connections for the functions of the slave induction loops must be made individually. The DIP-switches I-13, I-14 and I-15 must be switched OFF!

6.4 Functions

<u>Opening in self-retaining mode:</u>

To open the barrier self-retaining, an impuls on input I-02 should not remain longer than 2 seconds. Otherwise the barrier may not close, although it has accordingly components (for example inductionloops with closing function) and a vehicle passes the barrier.

Permanent-Open:

To put the barrier in permanent open mode the contact for the permanent open signal is placed statically on input I-02 "Open in self-retaining mode".
A pending signal on this input has priority over the other movement signals so that the barrier cannot be closed when the signal is present.

If the barrier is in the "Open" end position and the signal remains for min. 15s on this input, the control switches to a permanent open mode which means that the barrier closes automatically when the signal drops out.

A warning time in the range from 0s to 255s can be set for this closing via TV-1. In this case the closing of the barrier is delayed by the set time and for this time the output defined in the next chapter „function selection“ e.g. for operating a warning light is switched.

Function selection:

The functions of the control unit can partly be influenced via the DIP switches I13 to I15. The functions of the various positions of the DIP switches are defined below.

DIP-Switch position I13	I14	I15		
OFF	OFF	OFF	Induction loop 1:	Close/Safety
			Induction loop 2:	Presence
			O-02 :	Feedback "barrier OPEN“
			O-03 :	Feedback "barrier CLOSED“
			O-04 :	Feedback "PRESENCE“
			O-05 :	Feedback "CLOSE/SAFETY“
			Forced closure:	No
OFF	OFF	ON	Induction loop 1:	Close/Safety
			Induction loop 2:	Open/Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	No
OFF	ON	OFF	Induction loop 1:	Stop + Open again + Close again
			Induction loop 2:	Stop + Open again + Close again
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	No
OFF	ON	ON	Induction loop 1:	Close/Safety
			Induction loop 2:	Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	No
ON	OFF	OFF	Induction loop 1:	Stop + Open again + Close again
			Induction loop 2:	Open/Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	No

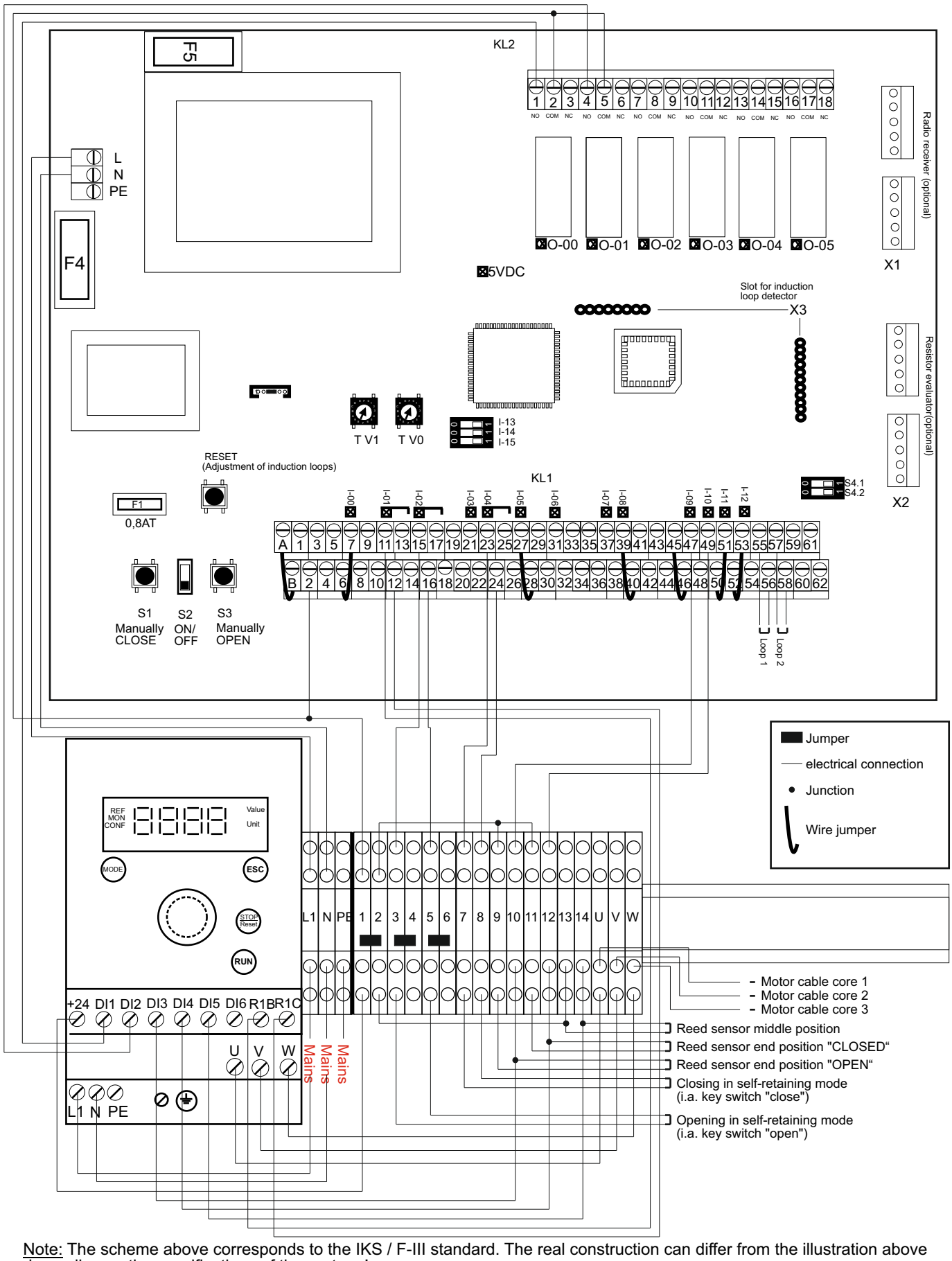
DIP switch position

I13	I14	I15		
ON	OFF	ON	Induction loop 1:	Stop + Open again + Close again
			Induction loop 2:	Open/Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	Yes (adjustable via TV-0 0-255s)
ON	ON	OFF	Induction loop 1:	Close/Safety
			Induction loop 2:	Open/Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	Yes (adjustable via TV-0 0-255s)
ON	ON	ON	Induction loop 1:	Close/Safety
			Induction loop 2:	Close/Safety
			O-02 :	Synchronous command 1
			O-03 :	Synchronous command 2
			O-04 :	Synchronous command 3
			O-05 :	Warning light after permanent open
			Forced closure:	Yes (adjustable via TV-0 0-255s)

6.5 Power supply

Kl1.1/3/5:	GND	Kl3.8:	L1
Kl1.2/4/6:	+24V	Kl3.9:	N
Fuse:	F1 0,8AT		
	F4 0,5AT		
	F5 0,4AT		

6.6 Scheme of clamps and wiring



Note: The scheme above corresponds to the IKS / F-III standard. The real construction can differ from the illustration above depending on the specifications of the system !

7. 2-channel loop detector D-IKS

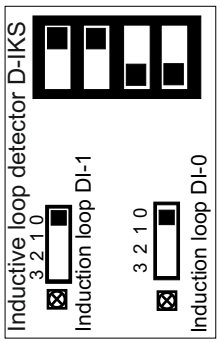
The probability of a malfunction of the induction loop is getting higher if the sensitivity is increased.

Therefore the lowest sensitivity “Level 1” is always recommended. Temperature fluctuations, minor road movements or influences of external voltage fields can disrupt the induction loop.

The detector then switches off for safety.
This status is indicated by a flashing LED (DI-1 or DI-2).
It is then in the responsibility of the operator to RESET the induction loop by briefly pressing the "RESET" button (see page 15 or 17) once. This is to be done without any vehicles or others metallic objects are in the measuring range of the induction loop.

By pressing the RESET the two LEDs light up simultaneously for about 2 seconds.
A successful RESET is confirmed when subsequently both LEDs go out.

ATTENTION! You must pay close attention to the safety instructions in chapter 10. „Miscellaneous“ !

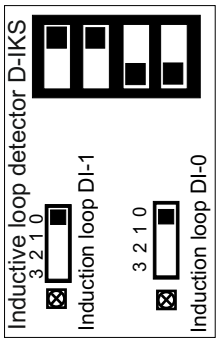


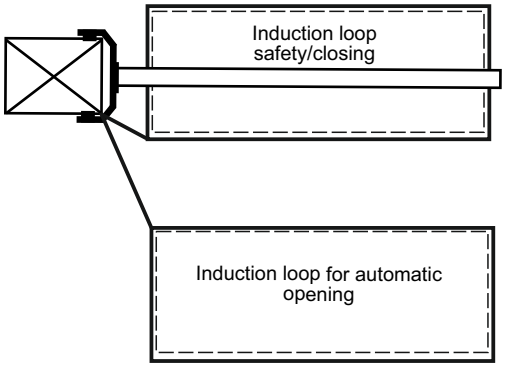
The sensitivity of the induction loops is set via the slide switches.
Position "0", the corresponding induction loop is switched off.
Position "1", lowest sensitivity is set.
Position "2", medium sensitivity is set.
Position "3", highest sensitivity is set.

In general the lowest sensitivity is sufficient.

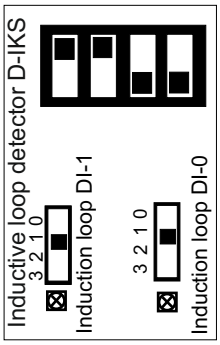
With the dip switches in the lower sector of the detector different frequencies have to be assigned to the induction loops to avoid overlapping.

Settings of the dip switches for barrier systems with two induction loops

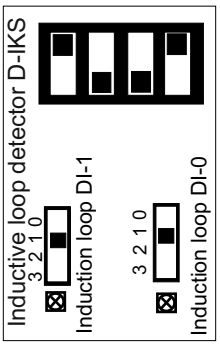




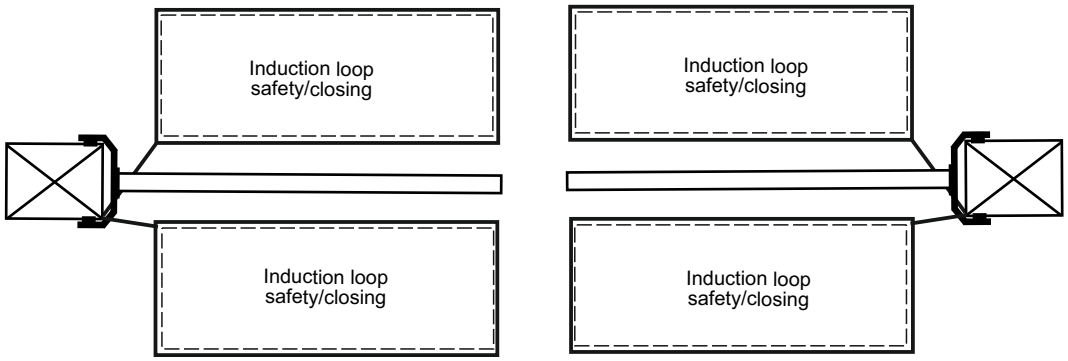
Settings of the dip switches for barrier systems with four induction loops



Detector
Barrier 1



Detector
Barrier 2



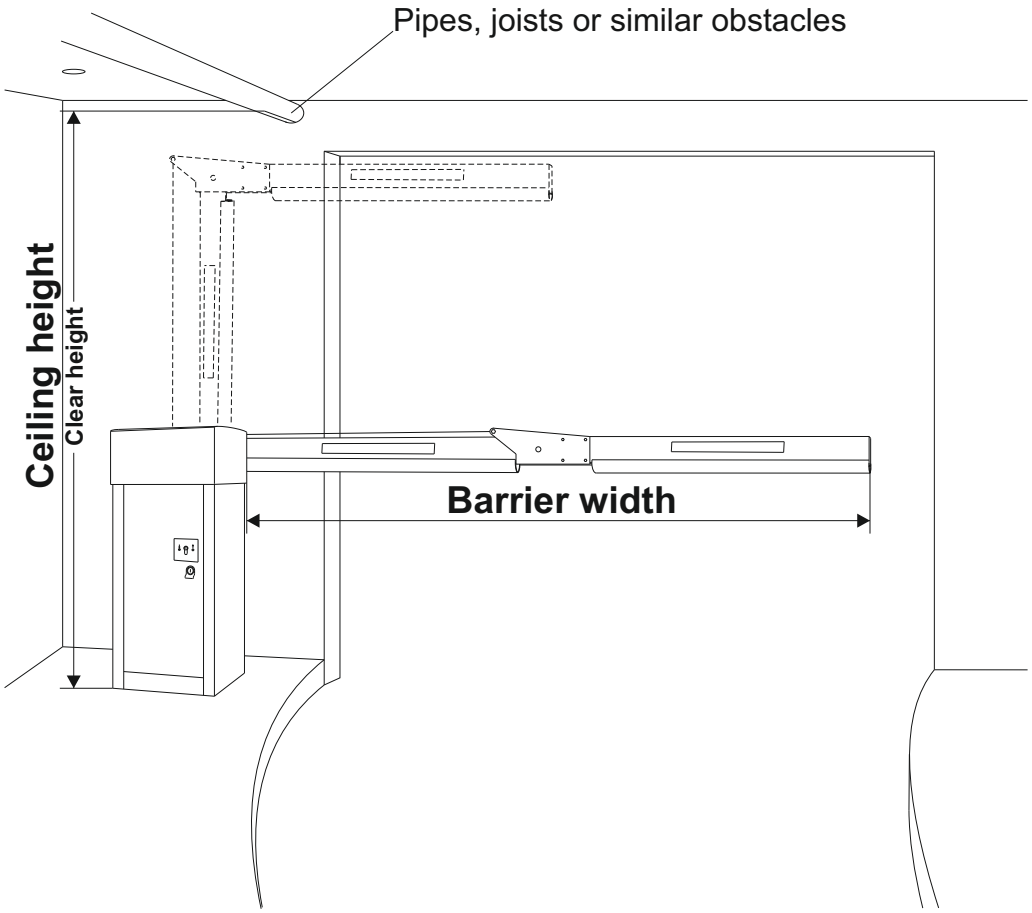
ATTENTION! When the voltage at the barrier is switched off and on the induction loops are adjusted again.
This can lead to malfunctions if there are vehicles on one of the loops at the time of switching on again!

8. Measuring of the jointed barrier boom

If the dimensions of the jointed barrier boom are not listed please provide the following dimensions for reorder:

1. Barrier width
This is the complete width of ??the road to be blocked. It is measured from the first edge of the barrier housing to the end of the boom.
(Maximum 3,50m)

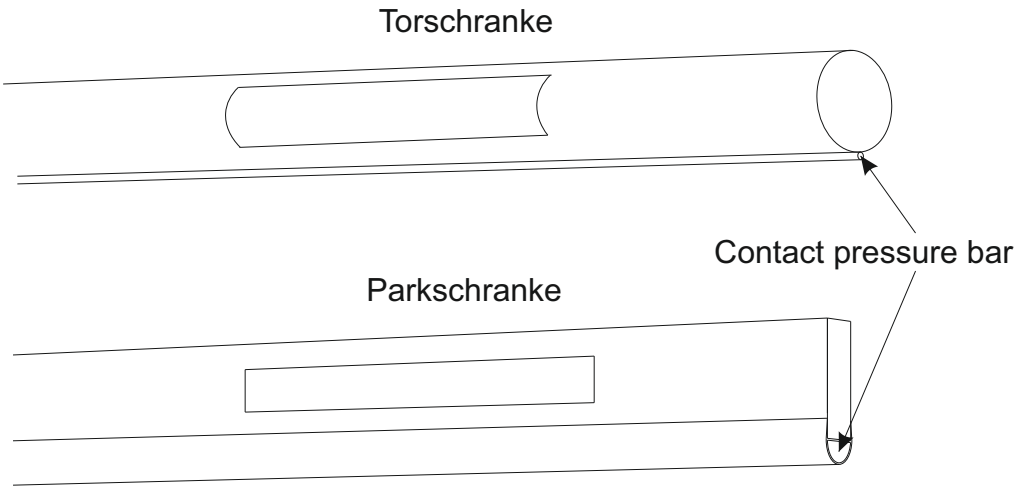
2. The clear height in the entire boom area
It is measured from the top of the foundation to the bottom of the ceiling or below existing pipes, beams or similar obstacles.



9. Notes on the contact pressure bar

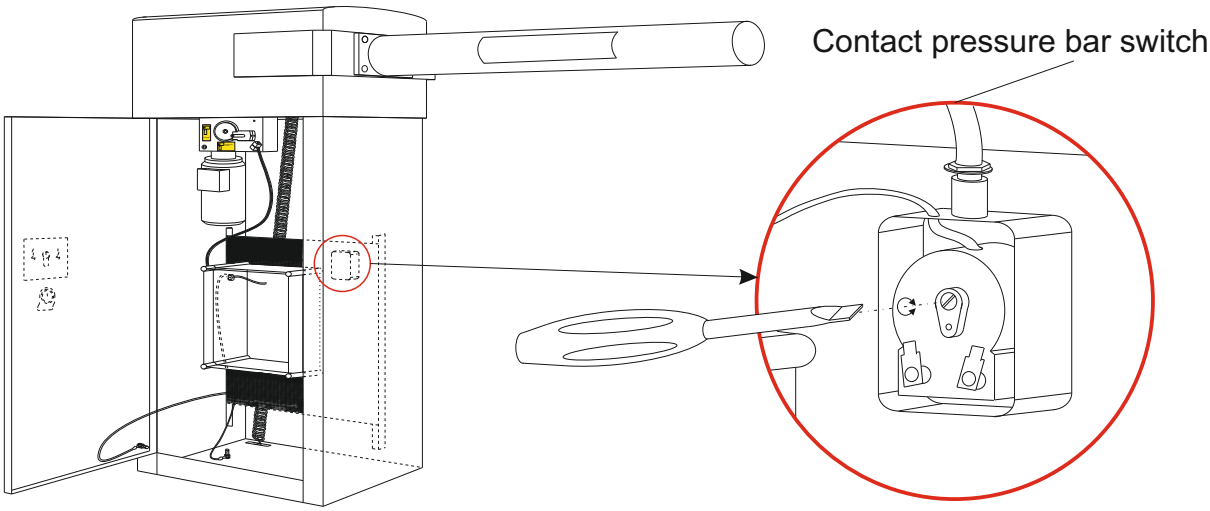
The contact pressure bar is optional and not necessarily included in the scope of delivery.
The following information is only relevant for projects with such a bar.
If none of your barriers are equipped with a contact pressure bar you can ignore this section.

The contact pressure bar is placed beneath the boom of the respective barrier as shown below.



At the Parkschranke IPS the contact pressure bar is integrated in the rubber lip (if present). .

The response sensitivity is set using a rotary control on the contact pressure bar switch.



ATTENTION!
The controller must not be set too sensitive. Otherwise malfunctions can occur even because of minor changes in the weather!

Due to different weather conditions and seasons it can become necessary to readjust the sensitivity because of fluctuating air pressures.
It is not in the responsibility of the manufacturer but in the responsibility of the operator of the barrier to readjust the sensitivity.

10. Miscellaneous

10.1 Accident prevention / EN standard:

BARRIERS ONLY FOR VEHICLE TRAFFIC !
Regarding the terms of accident prevention we would like to draw your attention to the EN standards which have to be followed during the use of power-operated barriers by the operator. As a manufacturer of barriers we have to advise you that the barriers may only be used for vehicle traffic .
People, bicycle and motorcycle riders are not allowed to use the barrier system.
The operator must strictly ensure separation of vehicles and passengers with appropriate measures. Structural separations such as a pedestrian crossings next to the roadway have to be supplemented by appropriate signs and warnings .
The operator also has to ensure that the system is used accordingly. Hence the requirement gives clear instructions .

In addition barrier systems and induction loops/laserscanner in automatic mode are not suitable for special vehicles. One of the reasons for that is that induction loops need a minimum amount of metal in the loop region to ensure safe detection of a vehicle.

High build vehicles or other vehicles that cannot ensure this minimum amount of metal over the induction loop are not allowed to use the barrier system!

Examples of special vehicles , among others

- Waste transport vehicles
- Tree transport vehicles
- Snow removal vehicles
- Vehicles with trailers
- Bicycles
- Motorcycles
- Trikes
- Quads
- Forklifts

10.2 Annual inspection.

According to DIN EN 12635 barriers must be checked by an expert according to the manufacturer's instructions!

The following tests must be carried out by an expert at least once in a year:

Control and inspection of:
1. Visible, security-relevant damage
2. General function of the system
3. Security-related functions
4. Safety friction clutch
5. Note in the inspection book

We would be happy to provide these services to you. Contact us!