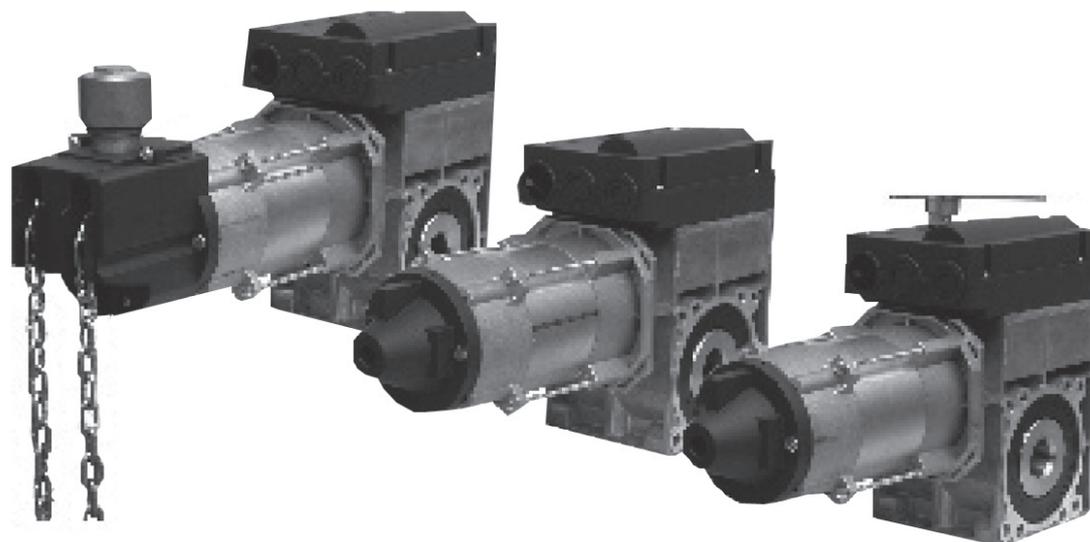


Nice

CE

SD



Gearmotors for sectional doors

EN - Instructions and warnings for installation

Nice

CAUTION **Important safety instructions. Observe all the instructions as improper installation may cause serious damage**
CAUTION **Important safety instructions. It is important to comply with these instructions to ensure personal safety. Store these instructions**

- Before commencing the installation, check the “Product technical specifications”, in particular whether this product is suitable for automating your guided part. Should it be unsuitable, DO NOT proceed with the installation
- The product cannot be used before it has been commissioned as specified in the “Testing and commissioning” chapter

CAUTION **According to the most recent European legislation, the implementation of an automation system must comply with the harmonised standards set forth in the Machinery Directive in force, which allow for declaring the presumed conformity of the automation. On account of this, all operations regarding connection to the mains electricity, as well as product testing, commissioning and maintenance, must be performed exclusively by a qualified and skilled technician!**

- Before proceeding with the product’s installation, check that all materials are in good working order and are suitable for the intended applications
- The product is not intended for use by persons (including children) with reduced physical, sensory or mental capacities, nor by anyone lacking sufficient experience or familiarity with the product
- Children must not play with the appliance
- Do not allow children to play with the control devices of the product. Keep the remote controls out of reach of children

CAUTION **In order to avoid any danger from inadvertent resetting of the thermal cut-off device, this appliance must not be powered through an external switching device, such as a timer, or connected to a supply that is regularly powered or switched off by the circuit**

- Provide a disconnection device (not supplied) in the plant’s mains power supply, with a contact opening distance that ensures complete disconnection under the conditions envisaged by Overvoltage Category III
- Handle the product with care during installation, taking care to avoid crushing, knocks, falls or contact with liquids of any kind. Keep the product away from sources of heat and open flames. Failure to observe the above can damage the product and increase the risk of danger or malfunctions. If this should happen, stop installation immediately and contact the Customer Service
- The manufacturer assumes no liability for damage to property, items or persons resulting from non-compliance with the assembly instructions. In such cases the warranty does not cover material defects
- The weighted sound pressure level of the emission A is lower than 70 dB(A)
- Cleaning and maintenance to be carried out by the user must not be effected by unsupervised children
- Before intervening on the system (maintenance, cleaning), always disconnect the product from the mains power supply
- Check the system periodically, in particular all cables, springs and supports to detect possible imbalances, signs of wear or damage. Do not use if repairs or adjustments are necessary, because a failure with the installation or the incorrectly balanced automated system may lead to injury
- The packaging materials of the product must be disposed of in compliance with local regulations
- **The product must not be installed outdoors**
- Keep an eye on moving doors and do not let anyone go near them until they have opened or closed fully
- Be careful when activating the manual release device, as an open door may fall suddenly due to weak or broken springs, or if it is unbalanced
- Every month, check that the drive motor reverses when the door encounters a 50 mm-high object placed on the ground. If necessary, readjust the door and check it again, as incorrect adjustment is potentially dangerous (for drive motors incorporating a trapping safety system that intervenes when the door’s lower edge encounters an obstacle)
- If the power cable is damaged, it must be replaced by the manufacturer or by the latter’s technical assistance service, or by a similarly qualified person, in order to prevent any type of risk

INSTALLATION PRECAUTIONS

- Prior to installing the motor, remove all unnecessary cables or chains and deactivate any equipment – such as locking devices – not required for motorised operation
- Check that there are no points where trapping or crushing against fixed parts can occur when the moving section is in the fully open or closed position; adequately protect any such parts
- Install the manoeuvring assembly for manual release at a height below 1.8 m
NOTE: if removable, the manoeuvring assembly must be kept close to the door
- Make sure that the controls are kept at a safe distance from moving parts, while allowing a good view of these. Unless a selector is used, the controls should be installed at least 1.5 m from the ground and must not be accessible
- Permanently attach the trapping hazard warning labels in a highly visible location or near the fixed control devices (if present)
- Permanently attach the manual release label close to the manoeuvring assembly
- After installation, make sure that the motor prevents or stops door opening when the latter is loaded with a 20 kg weight secured to the centre of its bottom edge (for drive motors that can be used with doors having opening widths exceeding 50 mm)
- After installation, make sure that the mechanism is properly adjusted and that the motor reverses when the door collides with a 50 mm-tall object placed on the ground (for drive motors incorporating a trapping safety system that intervenes when the bottom edge of the door encounters an obstacle);
Following installation, check and ensure that no door parts obstruct public roadways or pavements.

GENERAL DANGER WARNINGS AND PREVENTIVE SAFETY

According to the VDE 0113 booklet, the emergency stop devices must also be perfectly efficient regardless of the gearmotor operation mode. Any release of the emergency stop device must absolutely not cause an uncontrolled or undefined restarting.

OVERTURNING MOMENT: The fall of the balanced door wings by weights can be avoided if the gearmotor is still able to support the wing weight even if the spring breaks.

This provision is based on the regulations of the National Insurance Institute for Industrial Accidents BGR 232. The static overturning moment is the maximum load allowed for the mechanism at the time the spring breaks.

The Mstat static overturning moment is calculated with the following formula:

$$M_{stat} [Nm] = \text{Wing weight [N]} \times \text{cable winder drum radius [m]}$$

Considering that two balancing springs can yield at the same time, the **Commission of experts on the subject of building devices** recommends sizing the gearmotor so that it is able to support

- the total weight of the wing when there are one or two springs
- 2/3 of the weight of the wing when there are three springs
- 1/2 of the weight of the wing when there are four springs.

Pursuant to the directives mentioned above, the considerably greater gearmotor breaking load is not to be contemplated in defining the gearmotor sizing. In the case of cable winder drums of the scalar type, the greater winding diameter is to be considered.

Consider the allowed forces of the cables!

ASSEMBLY INSTRUCTIONS / FIXING THE MECHANISM

Clutch gearmotor

The gearmotor is to be pushed not too forcefully on the relevant part of the previously greased flexible shaft.

The key (tab) is to be blocked on the through seat of the shaft with 1 screw (or, as an alternative, with a fixing ring) to prevent accidental movement (**Fig. 1**).

There are fixing holes (on the bracket) to secure the support (bracket) to the reduction unit flange.

Precise fixing of the support (bracket) is specified in the instructions of the main door (**Fig. 2**).

Fixing must be performed using 4 M 8x12 screws and the washers supplied. Tightening torque must be 20 Nm. The support is to be secured on the building side with 2 8/M10 screws.

EMERGENCY MANUAL RELEASES

The manual emergency release is envisaged for opening and closing the door in case of power failure, so it is to be used only in emergency situations.

- Avoid regular use!!

Warning! Danger of injury in the case of incorrect use!

- Deactivate the main switch before using the manual emergency release.
- The manual emergency release is to be executed only with the motor stopped.
- The manual emergency release manoeuvre is to be executed from a safe place.
- With a gearmotor equipped with brake (pressure), the main door

must be opened and closed with the braken open (released).

- On doors not balanced with weights, the brake is to be released only for checking purposes with the door in the low position for safety reasons.
- An undesirable brake release must be prevented with an adequate check (measurement) on site.

The manual emergency release must not move the door beyond the final positions because in this case the main switch would activate.

Therefore, operation of the door in electrical mode is no longer possible.

Handle-operated manual emergency release (fig. 3)

- Insert the handle exerting moderate pressure, then turn it up to when it clicks in position. In this way the control voltage is interrupted and the door can no longer be activated electrically.
- Open and/or close the door turning the handle
- The control voltage is reset and the door can again be activated electrically by removing the handle.

Manual chain-operated emergency release (fig. 4 and 9)

- Movement to the right or left activates a microswitch that will cut out the voltage going to the reduction unit, afterwards the main door can be opened or closed by pulling the chain.
- After releasing the chain, the voltage will be restored and the reduction unit will once again be operational.

Average duration: 200 cycles!

Manual chain-operated emergency release 2 (fig. 5a-d)

- Grasp the red handle / manual control (1) and softly pull until stopping to interrupt the control voltage, and therefore prevent activation of the door in electric mode.
- Open and/or close the door with the emergency release chain (2)
- Grasp the green handle /motor control (3) and softly pull until stopping to restore the control voltage, and therefore once again consent operation of the door in electric mode.

Average duration: 350 cycles!

Interlocking release (fig. 6)

- Pull the red cable to release the gearmotor.
- Manually move the door upwards or downwards.
- Pull the green cable to once again lock the gearmotor.

Modification of the length of the emergency release chain (fig. 7)

- The emergency release chain opens in the connection point and therefore can be extended or shortened by adding or removing links.
- The links must be carefully bent.
- When the emergency release chain length is modified, it is necessary to pay attention

WARNING: Max. chain length: 14 metres - max. assembly height 8 m!!!

NOTE: with chains having lengths min. 15 metres it is necessary to use the "2" chain release.

The door must be balanced in all positions when assembling and balancing with the weights according to the procedures prescribed by the standards. Correct balancing is ascertained by manually opening and closing the door with identical activation force in both directions.

1. Mechanical limit switches

The upper and lower deactivation positions of the door are defined by setting the limit switch.

The gearmotor must be electrically connected for making this setting. To access the limit switch (**fig. 8: CIRCUIT BOARD WITH 6 SWITCHES/CAMS**) unscrew the limit switch guard. It is possible to move the door in dead man mode using the built-in "OPEN", "CLOSE" and STOP buttons if the external control devices have not yet been connected with the control station included in the supply. Switch off the power and reverse the two L1 and L2 phases of the gearmotor if the door does not open when pressing the "OPEN" button.

The door must open even if the gearmotor has been installed upside down when the "OPEN" button is pressed. Otherwise, switch off the power and reverse the two L1 and L2 phases.

It is also necessary to properly correct the two emergency stop limit switches so that they trip after the limit switch.

Switching off with door in low position

The limit switch for switching off with door in low position is to be set as follows (**fig. 8**):

Move the door to the desired CLOSE position.
Set the contactor cam **3 E↓**(white) to activate the limit switch.

Tighten the fixing screw **A**.
For accurate adjustment, turn the **screw B**.

Move the door into the desired OPEN position
Set the contactor cam **1 E↑**(green) in order to activate the limit switch.
Tighten the fixing screw **A**.

For accurate adjustment, turn the **screw B**.

The safety limit switches **2 SE↓** and **4 SE↑** (red) must be set in order to be released right after the overtaking of the control limit switch.

The safety limit switches **2 SE↓** and **4 SE↑** (red) are factory-set in order to follow the limit switch at a short distance.

Check that the fixing screws are in the correct position after the operation test.

The additional limit switches **6 P1↓** and **5 P1↑** are switching contacts with zero potential.

In **automatic mode** limit switch 6 is used as a preliminary limit switch. Therefore it is to be set so that it releases when the door reaches a distance of 5 cm from the ground.

In **dead man mode** it is not necessary to set it and it is used as a contact with zero potential.

2. Electronic limit switches (transducer absolute value), type ENAS003 and type KOSTAL (fig. 10 and 11)

The EES electronic limit switch is a positioning switch with absolute value for rolling shutters, doors and main doors. The assessment, or setting, of the final positions is carried out with gearmotors for doors tuned to the EES.

During assembly simply insert the six-pole plug. Particular mechanical settings and positionings are not needed.

The terminals for the safety chain (safety switch) are respectively located on the EES side (type **ENAS003**) and on the plate beneath the EES (**KOSTAL type**). (**Fig. 9 and 10**)

Warning! Danger of death due to electric shock.

Before starting the assembly operations, exclude the voltage from the conductors and check that they are really equal to zero.

The commutability of the motor voltage makes it possible to use the gearmotor on both a 3 x 400 V and 3 x 230 V power grid.

The motor is wired in the factory with star connection for a 3 x 400 V power grid.

For connection to a 230 V power grid, switch the motor onto a delta connection.

To commute the voltage onto the motor, wire the ends of the windings as illustrated in **fig. 12-15**.

When fixing the motor cables, pay attention that the cables are long enough to consent solid fixing, in order to create a connection able to remain secure over time.

Pull the conductors to check if the connection is secure.

ANNUAL CHECK

BGR 232 directive "Windows, doors and main doors with mechanical operation" is applied. It can be obtained from the National Insurance Institute for Industrial Accidents of your trade association or from us on request.

Maintenance interventions on windows, doors and main doors with mechanical operation must be performed only by personnel authorised by the company, having the necessary experience and skills (BGR 232).

Information for whoever carries out the checks

Gearmotor:

The mechanism is maintenance-free and it is provided with permanent lubrication. Absolutely no rust must form on the output shaft.

Fixings:

Make sure that the fixing screws are all in the correct position and in perfect condition.

Balancing by weights (e.g. in the sectional main doors):

The door must be balanced in all the positions (see the door assembly instructions) when balancing is done with weights according to the procedures prescribed by the standards.

Brake (if present):

During the annual check perfect brake operation is to be ascertained.

In the case of heavy wear of the brake pads, it is necessary to replace the complete brake. Before replacement, disconnect the cables connected to the electric card.

TECHNICAL SPECIFICATIONS

NOTE: all the technical characteristics indicated refer to a temperature falling between -5°C and $+40^{\circ}\text{C}$. • Nice reserves the right to change all the modifications to the product it deems necessary at any time, but keeping the functions and intended use unaltered.

We recommend using 20 rpm gearmotors for doors with vertical movement with conical cable winder drum.

For non-balanced sectional doors we recommend using RDF series gearmotors with parachute device.

When assembling gearmotors with 31.75 mm diameter shaft from the left, the tab is to be blocked only with a shoulder collar because fixing with a screw could break the shaft.

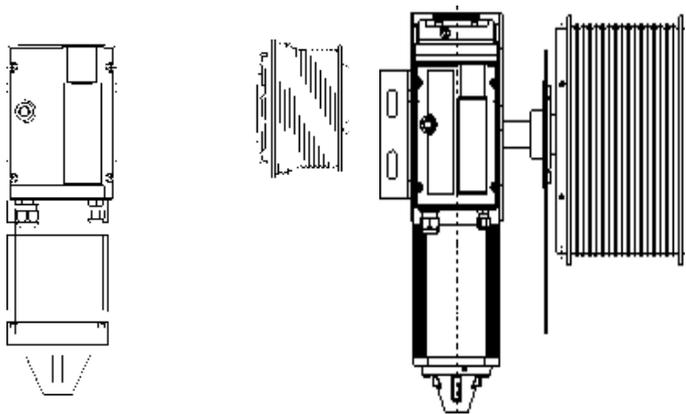
Only suspended assembly is allowed for "light chain" gearmotors (fig. 4).

Technical data						
	SD-70-20 3_400	SD-70-20 1N_230	SD-80-30 3_400	SD-100-24 3_400	SD-120-20 3_400	SD-140-20 3_400
Hollow shaft \varnothing (mm)	25,4	25,4	25,4	25,4	25,4	25,4 / 31,75
Max. torque (Nm)	70	60	80	100	120	140
Rated torque (Nm)	56	48	64	80	96	112
No. outgoing revs (RPM)	20	20	30	24	20	20
Static stop moment (Nm) *	600	600	600	600	600	600
Weight lifted (Kg)	300	250	380	450	530	600
Motor power (kW)	0,37	0,37	0,55	0,37	0,37	0,55
Limit switch area (revs)	15	15	15	15	15	15
Working voltage (V)	3x400	1x230	3x400	3x400	3x400	3x400
Frequency (Hz)	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz	50 Hz
Nominal draw (A)	1,6	2,6	2,4	1,6	1,6	2,4
Cycles per hour **	6	5	6	7	5	6
Connection cable	4x1,5mm ² - 6x0,75mm ² - 2x0,75mm ²					
Operating temperature ($^{\circ}\text{C}$)	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$	$-5^{\circ}\text{C}/+40^{\circ}\text{C}$
Noise level (sound pressure) db(A)	<70	<70	<70	<70	<70	<70
Protection rating	IP54	IP54	IP54	IP54	IP54	16
Weight (Kg)	13	13	14	14	16	16

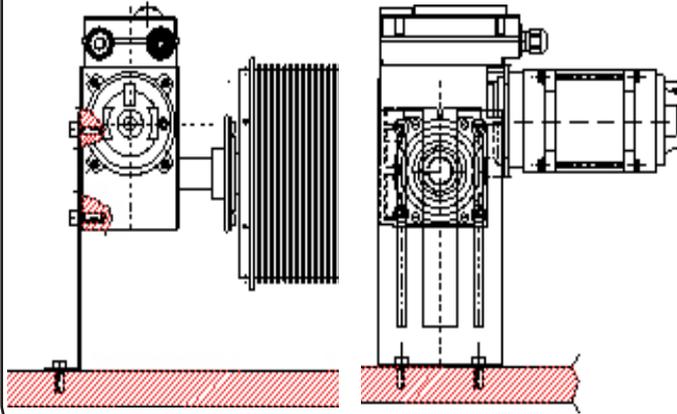
* Values estimated considering the specific weight of the door 13 kg/m² and the diameter of the rope winding drum = \varnothing 120mm.

** Max. cycles per hour considering use of the full encoder range (15)*.

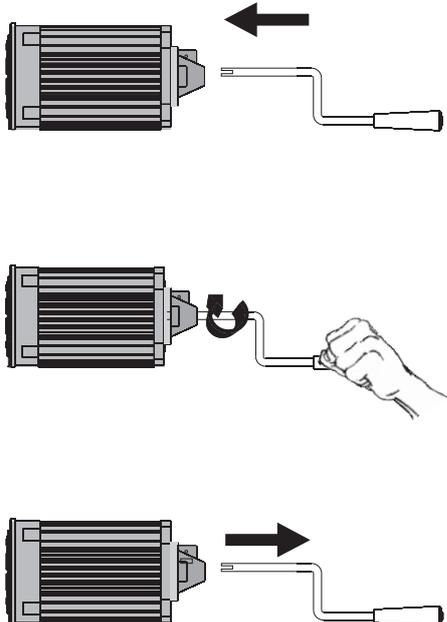
1 Assembly of gearmotor shaft using fixing screw or ring



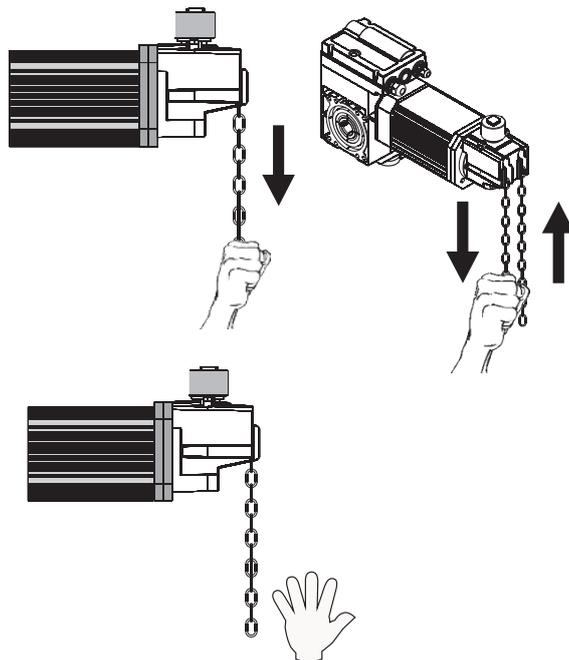
2 Application of support for suspended or vertical assembly



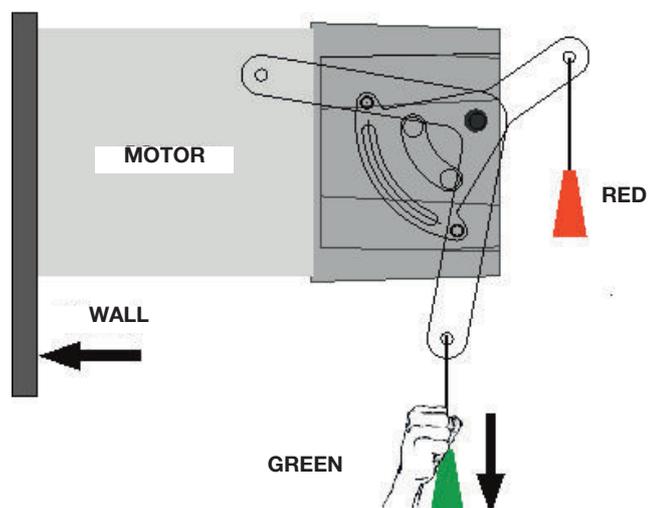
3



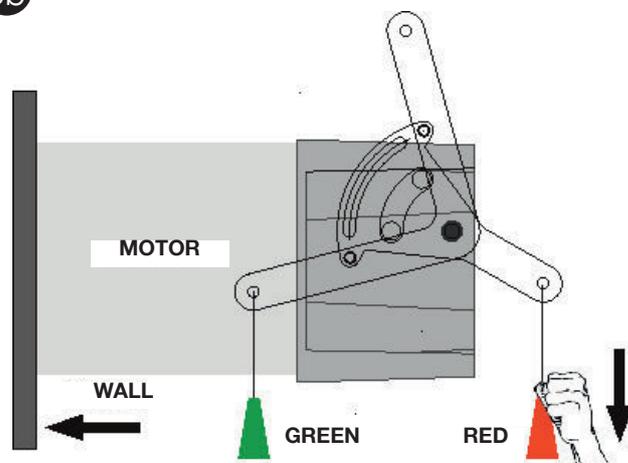
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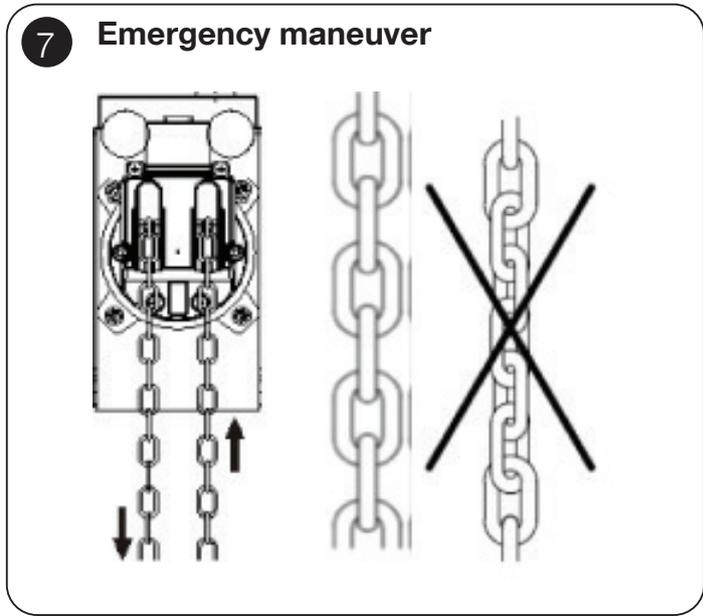
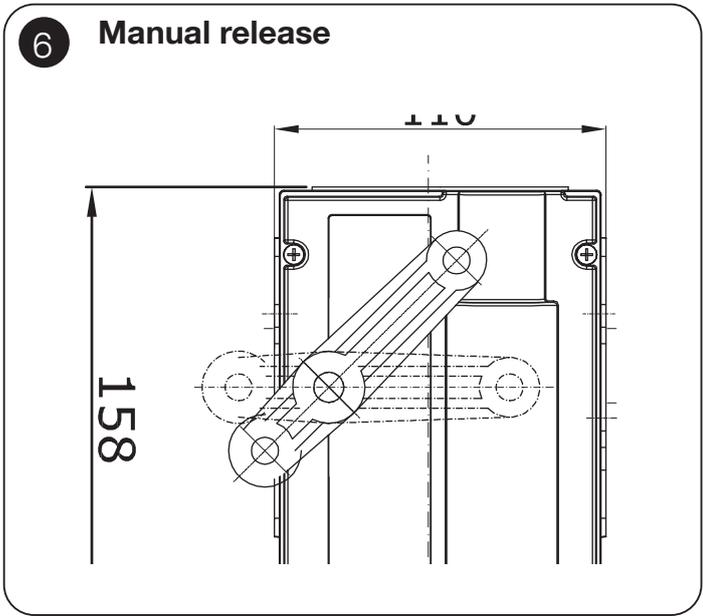
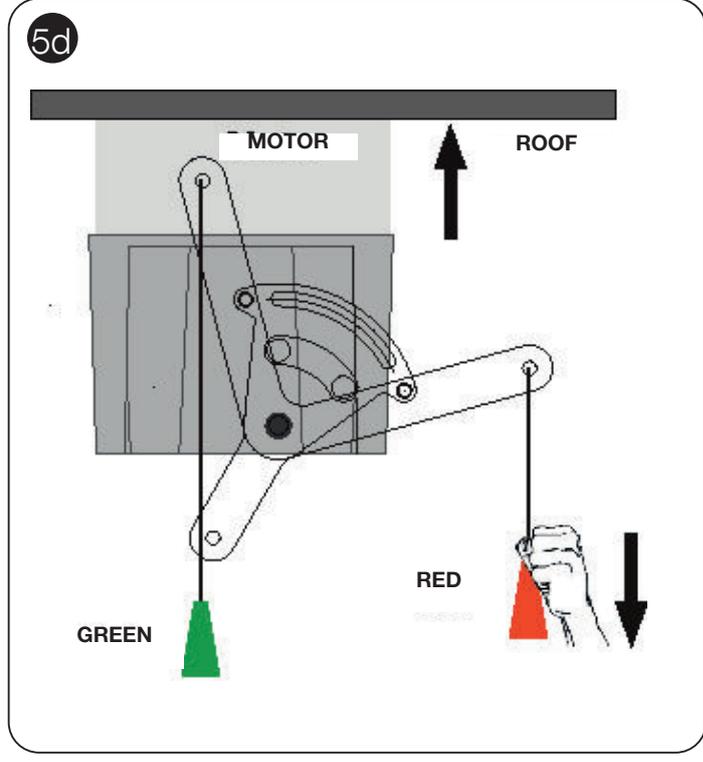
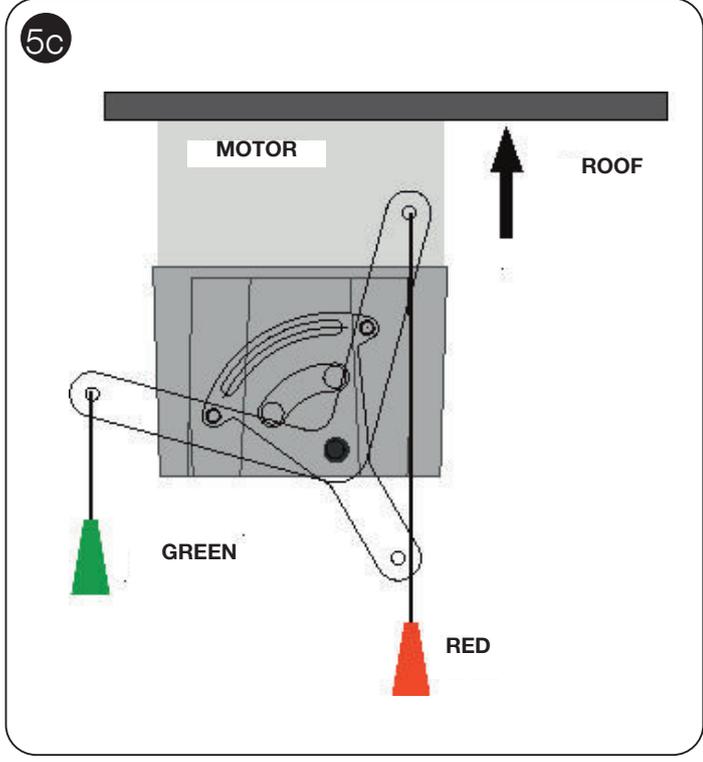


5a



5b





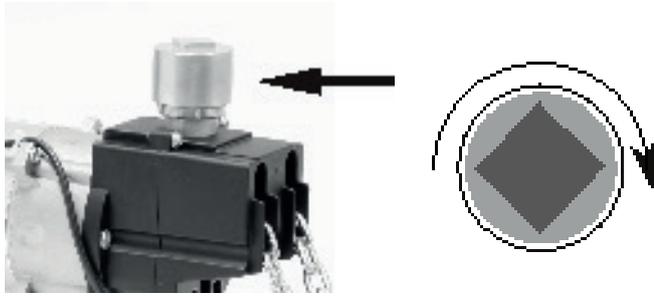
8

6 white	Additional limit switch 1 CLOSE
5 green	Additional limit switch 1 OPEN
4 red	Safety limit switch CLOSE
3 white	Limit switch CLOSE
2 red	Safety limit switch OPEN
1 green	Limit switch OPEN

Mechanical limit switch setting

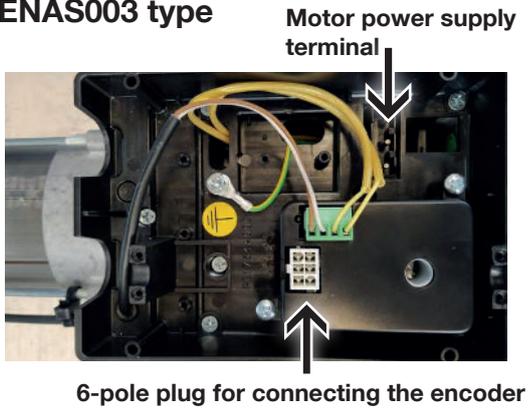
B A

9

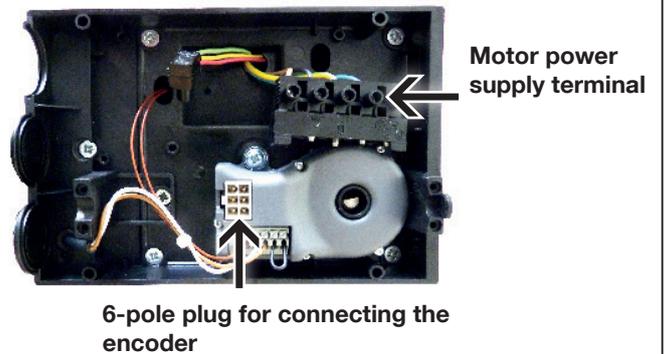


9. Use only if the chain slips!
Turn the handle clockwise until the operational efficiency of the chain is restored!

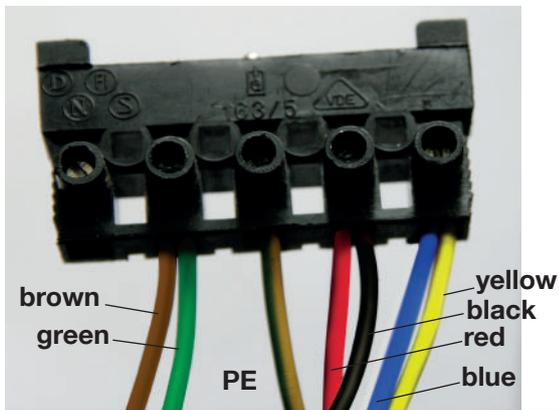
**10 Electronic limit switch
ENAS003 type**



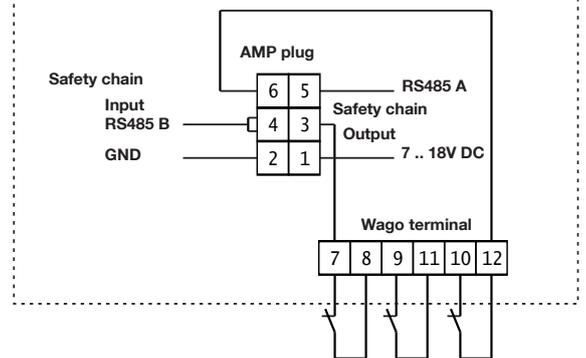
**11 Electronic limit switch
Kostal type**



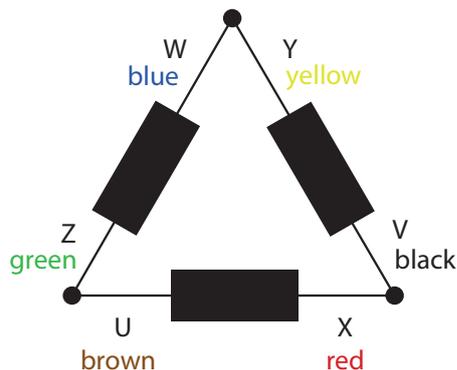
12 Delta connection



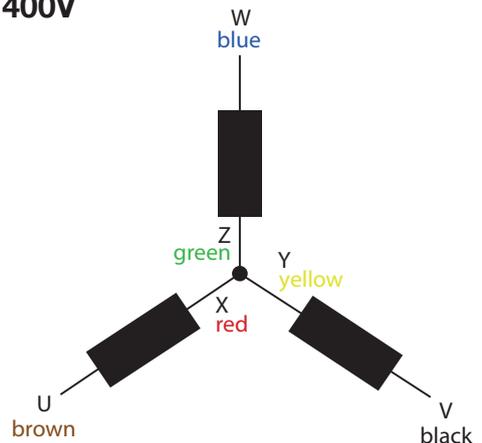
13



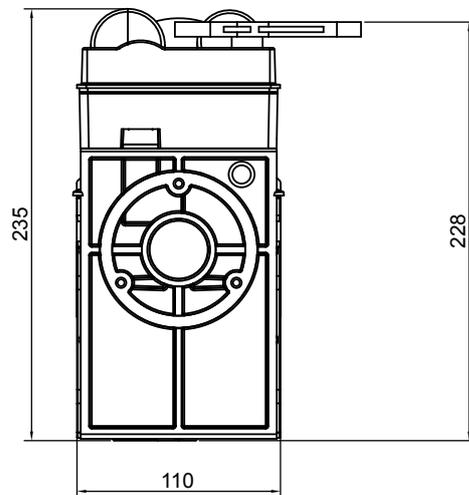
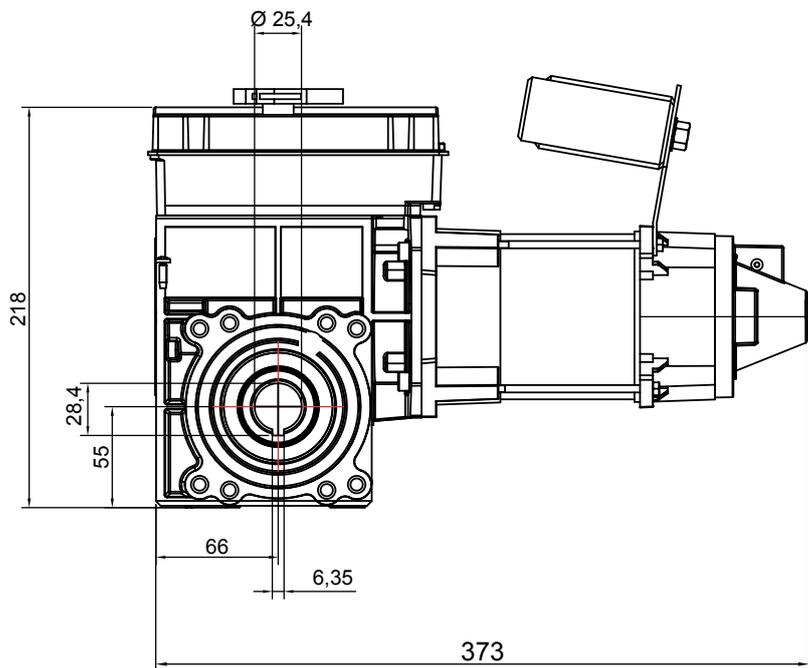
**14 3~230V
Standard wiring**



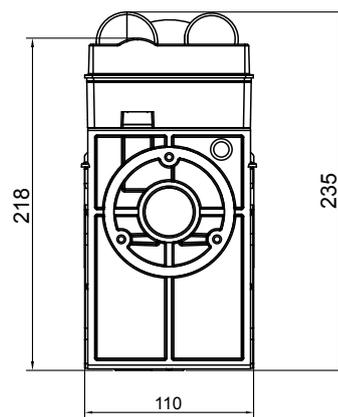
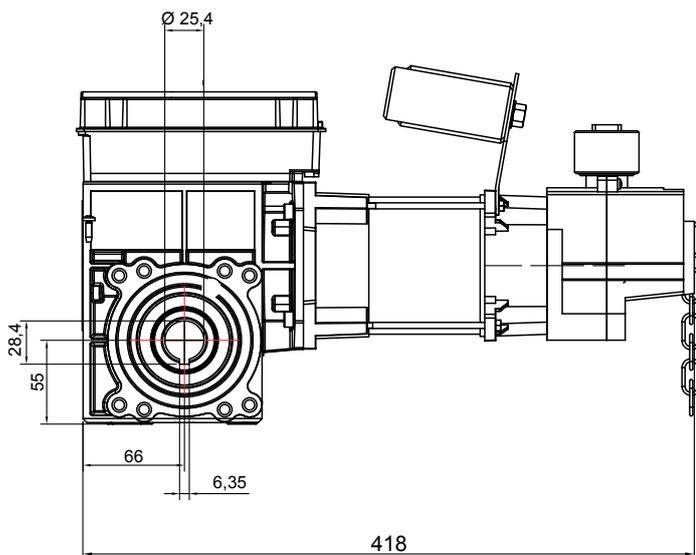
15 3~400V



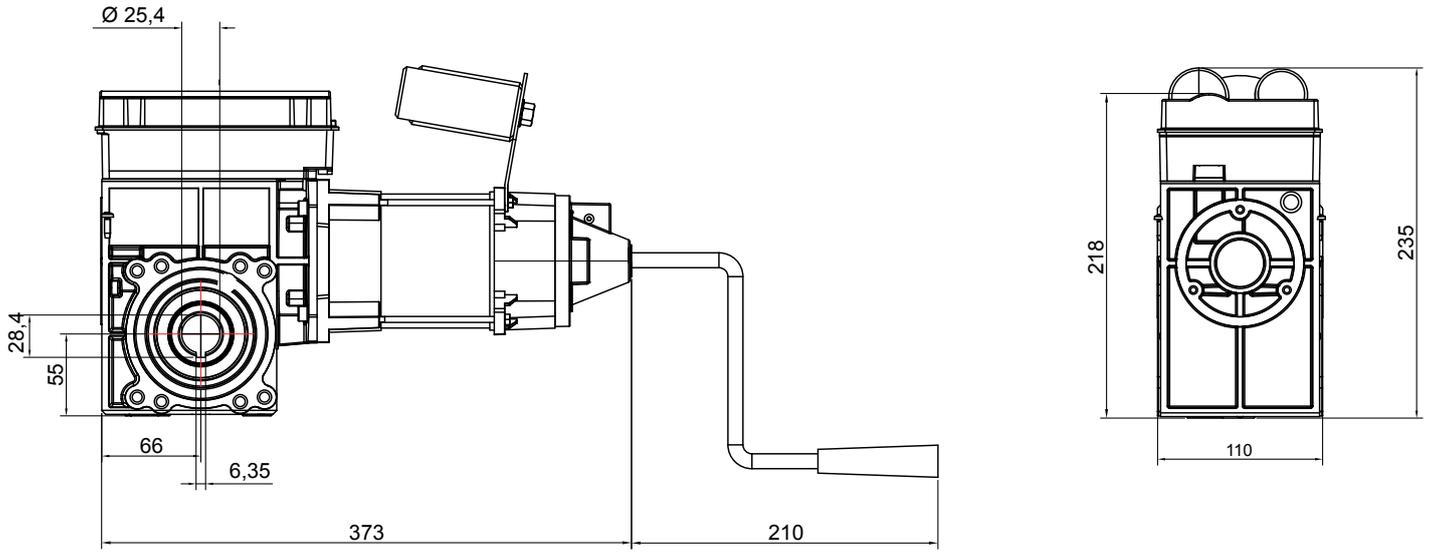
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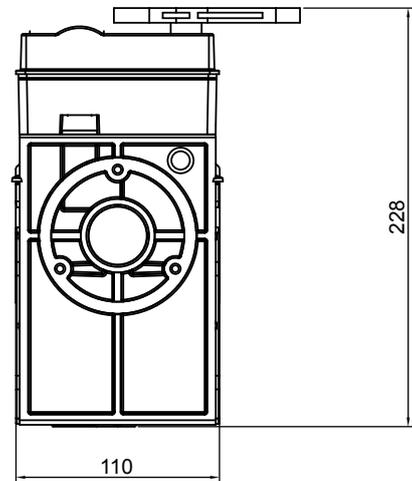
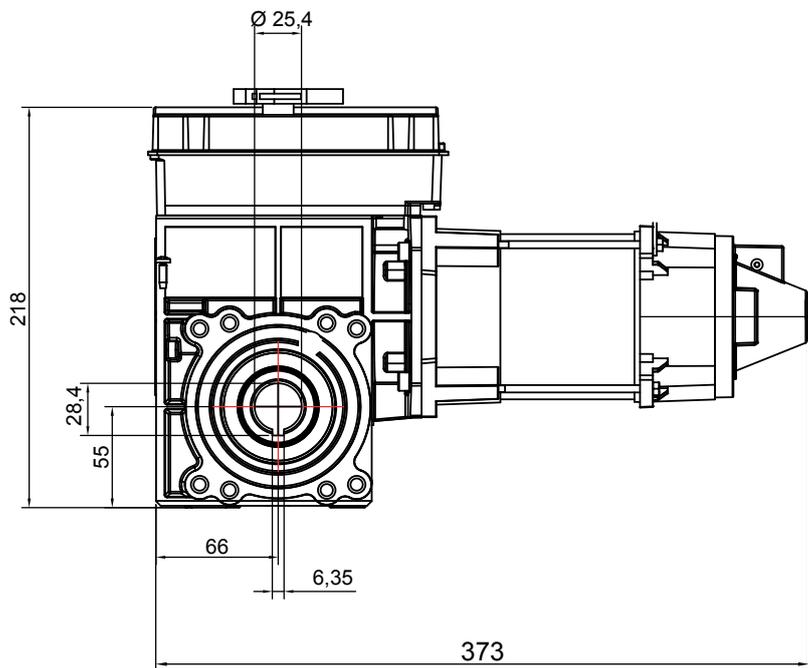
SD_70-20 1_230 KE



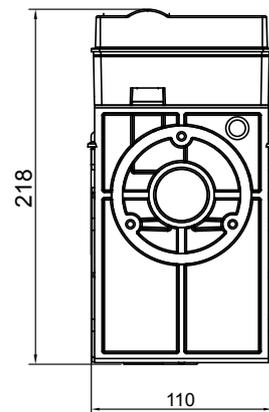
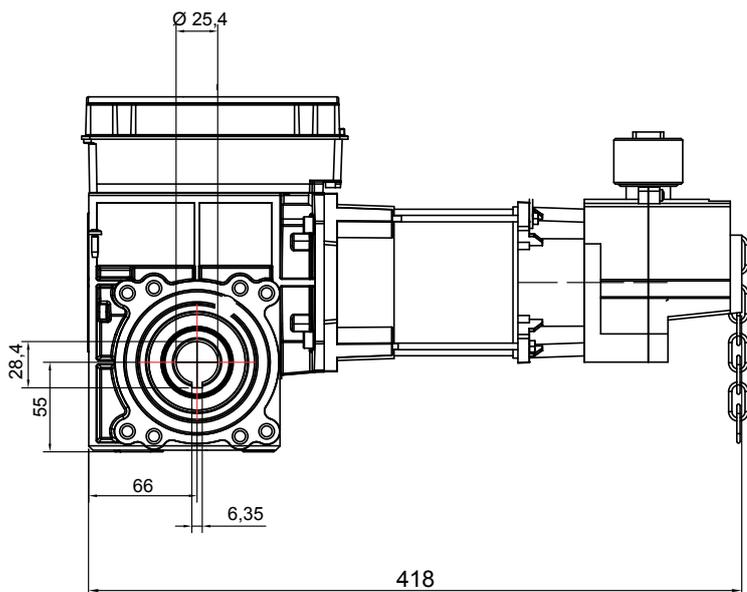
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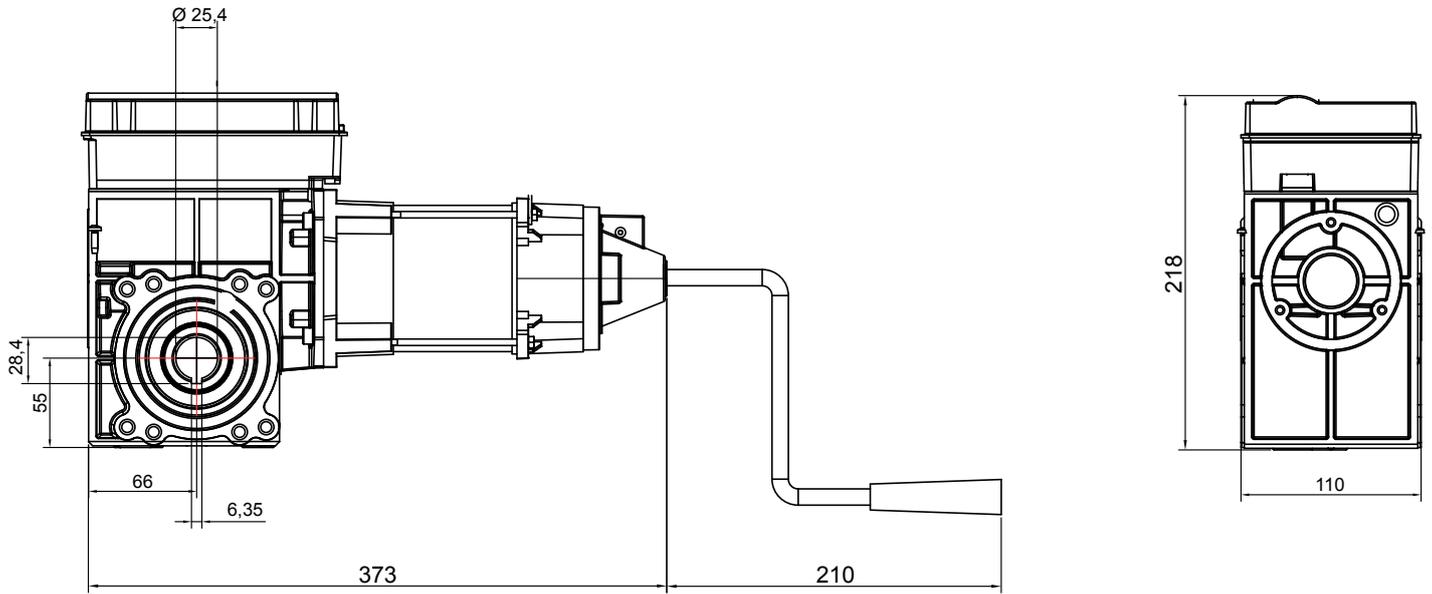
SD-70-20 3_400 E



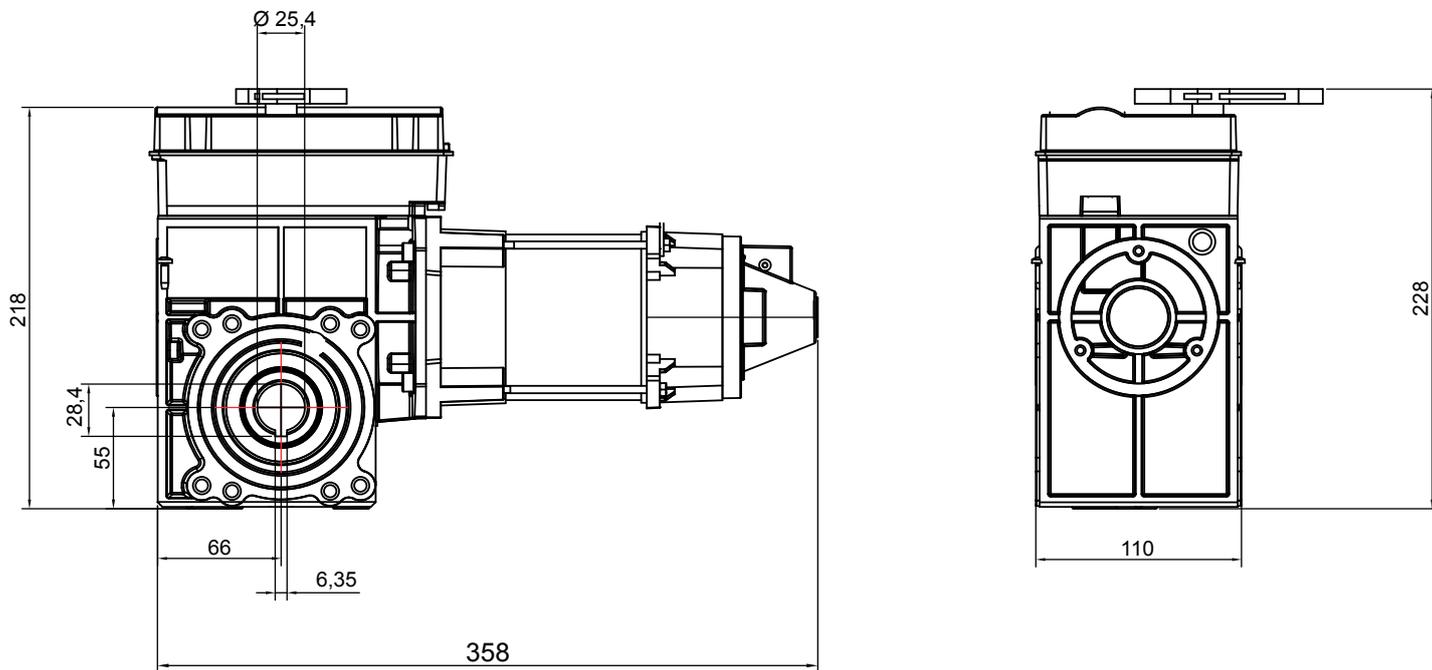
SD-70-20 3_400 KE



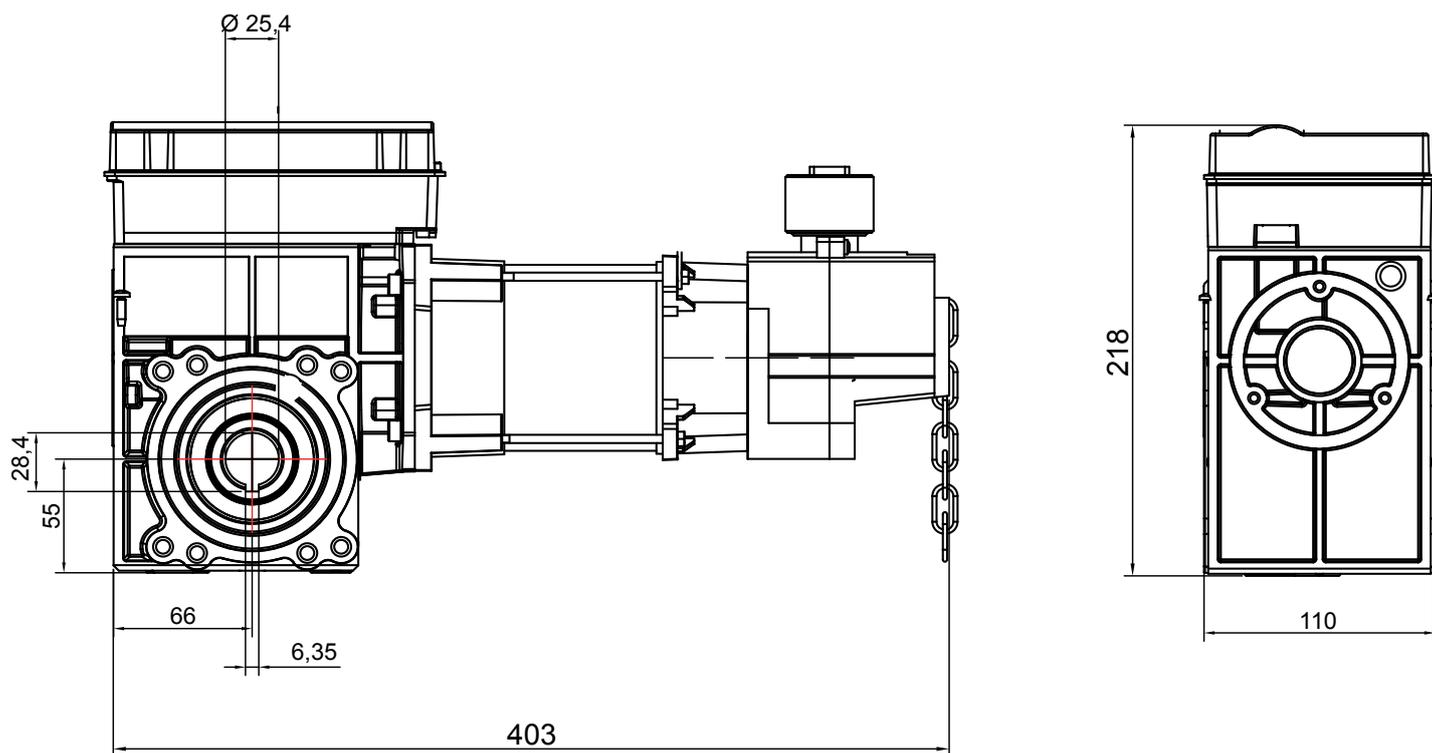
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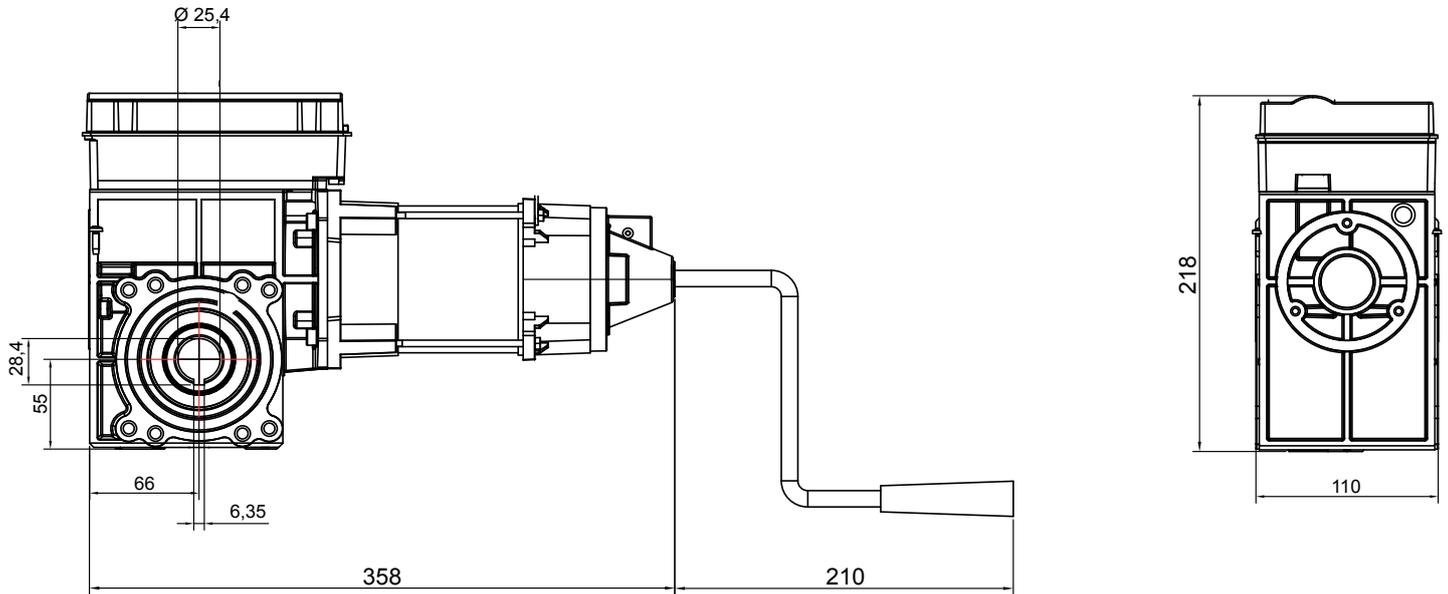
SD-80-30-E



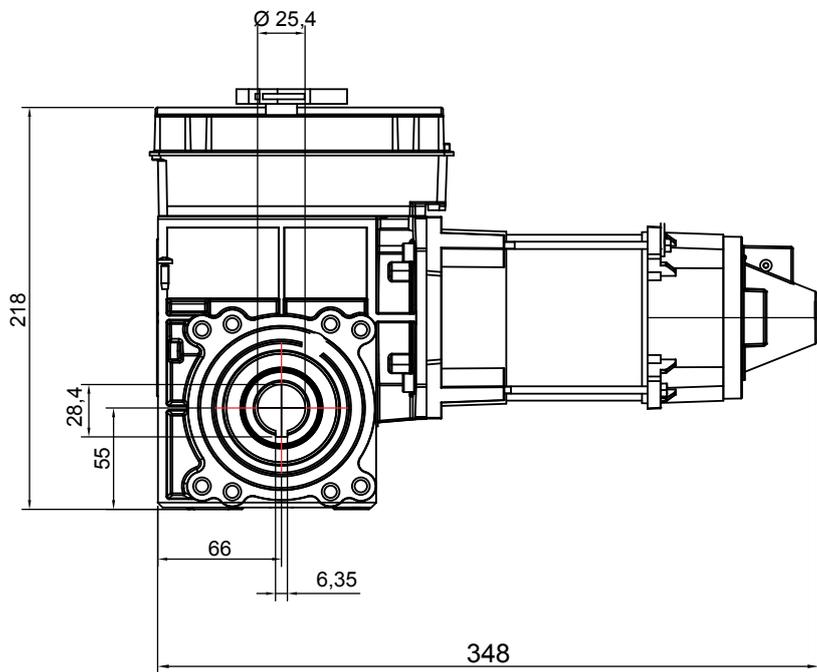
SD-80-30-KE



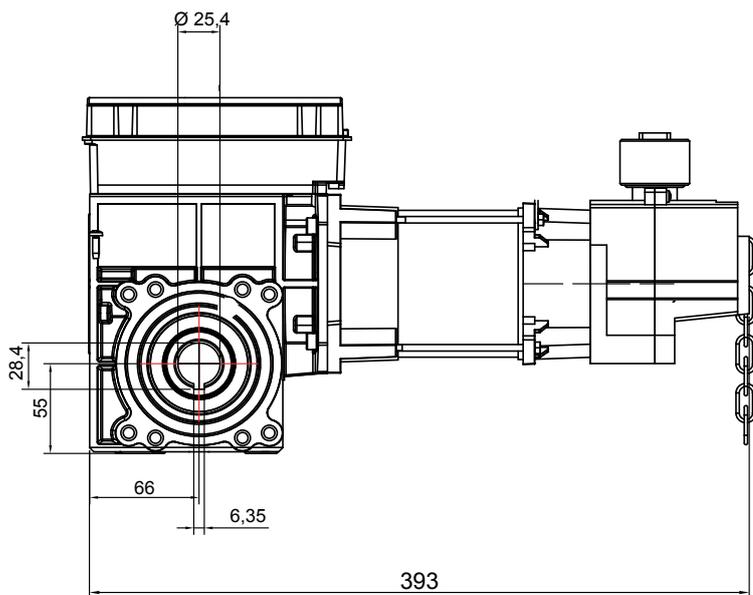
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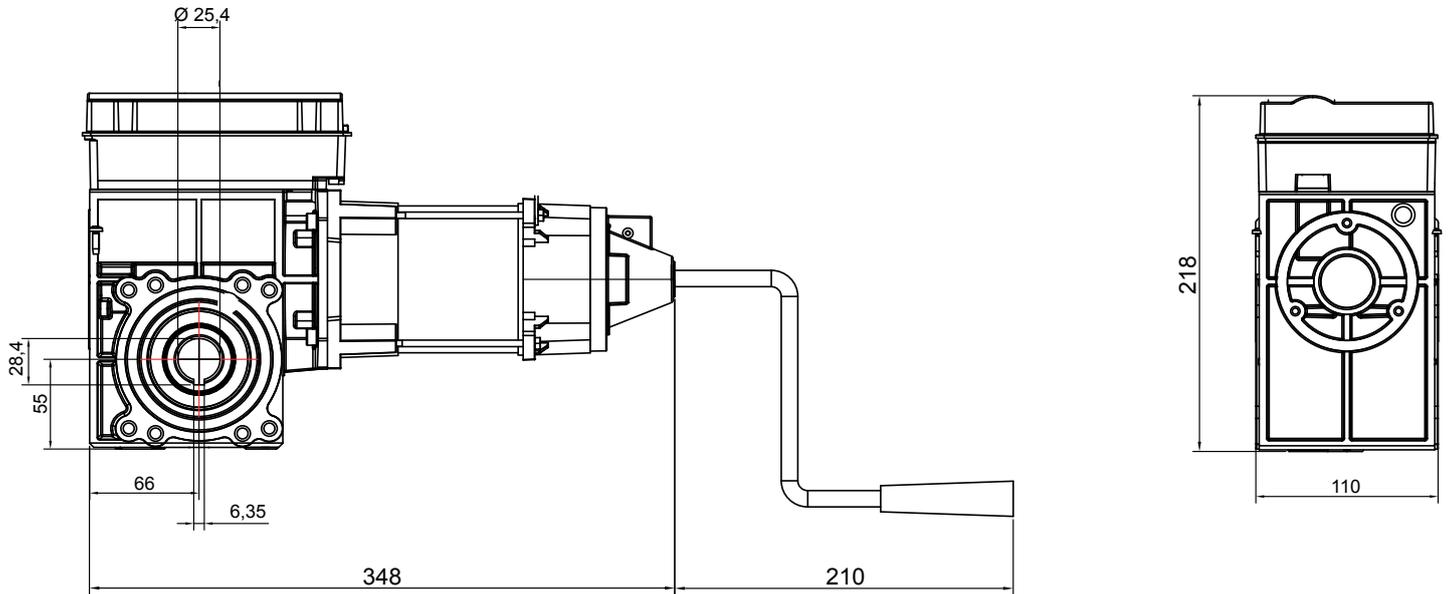
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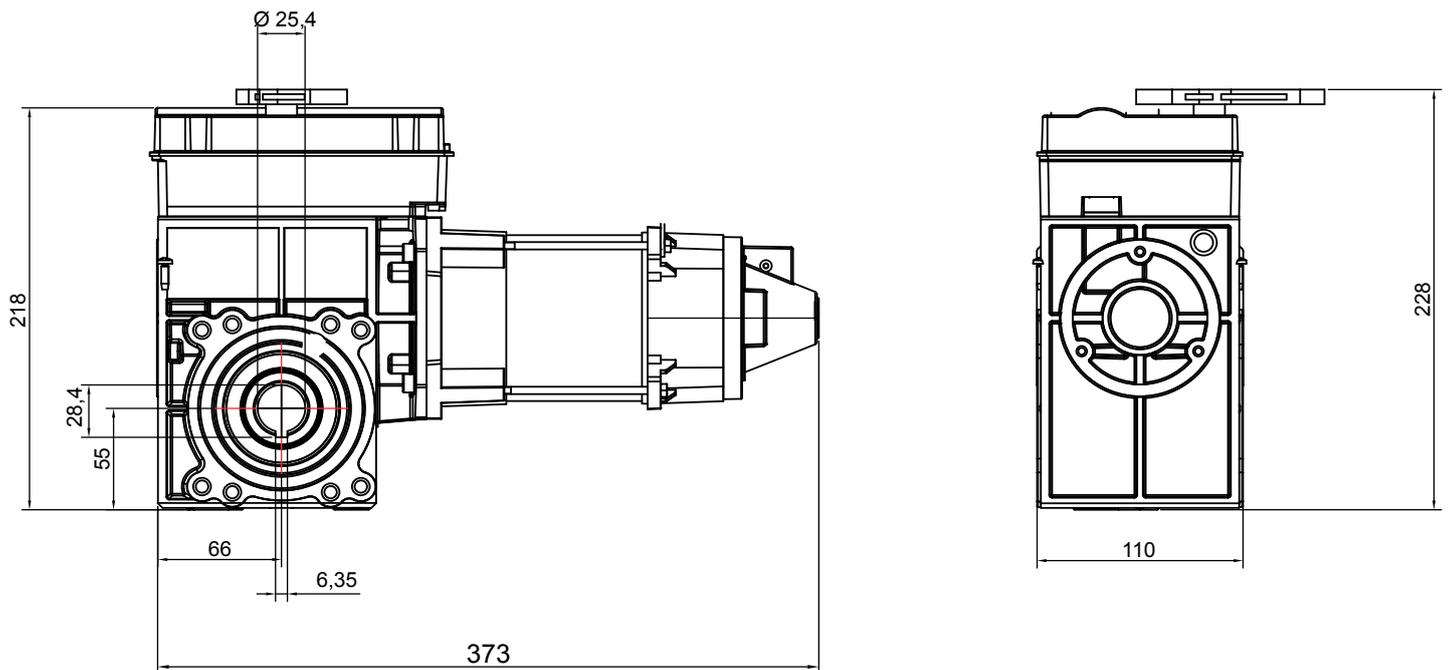
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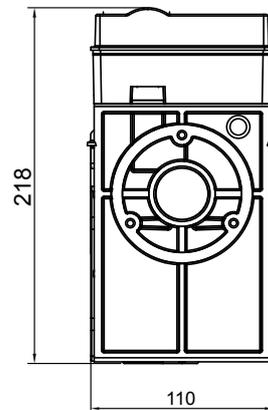
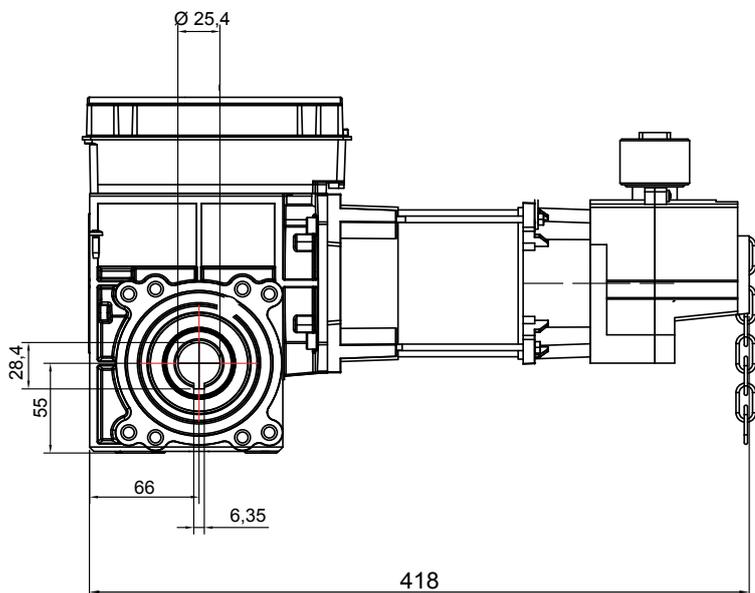
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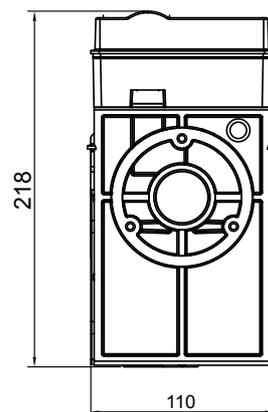
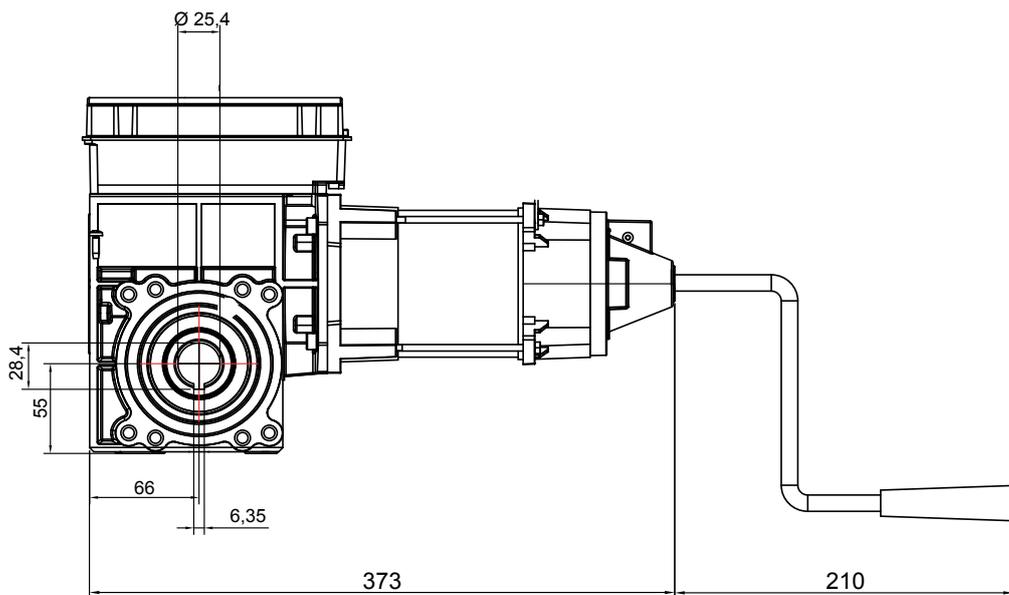
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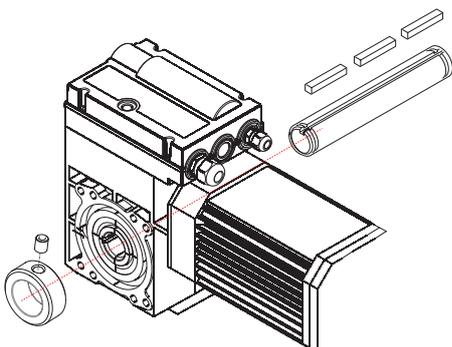
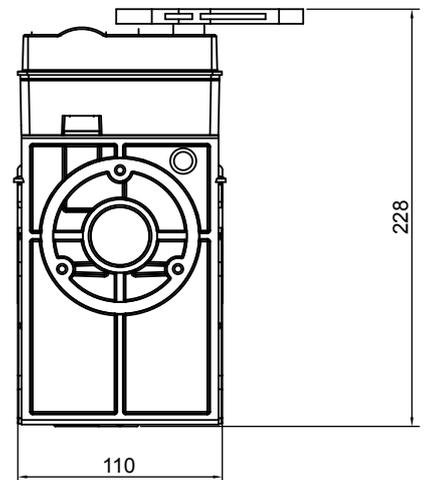
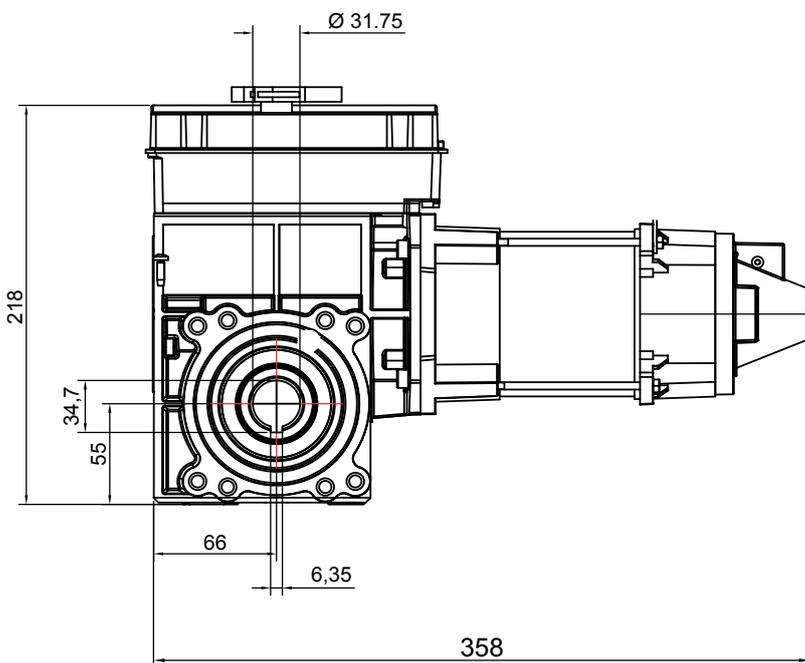
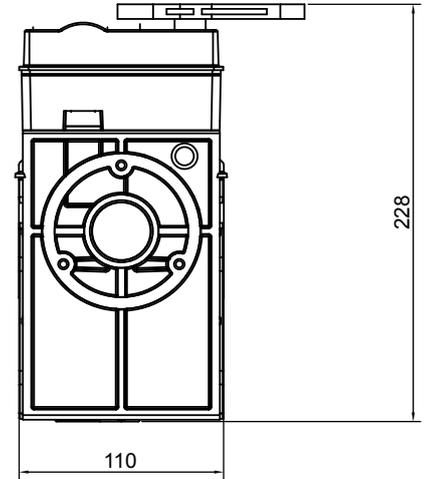
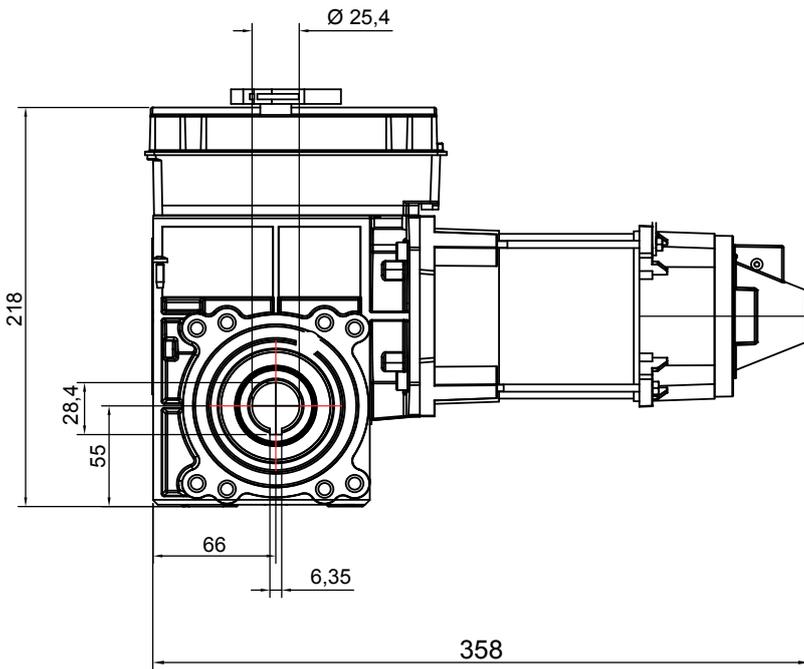
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SD_120-20-3_400-KU

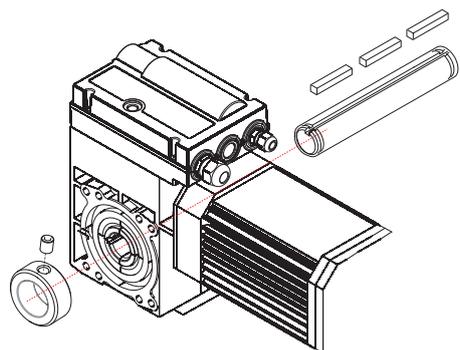
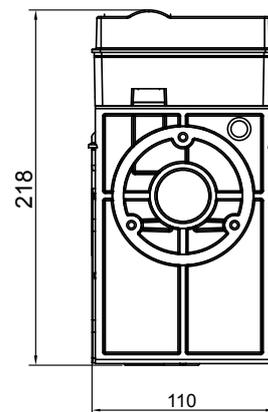
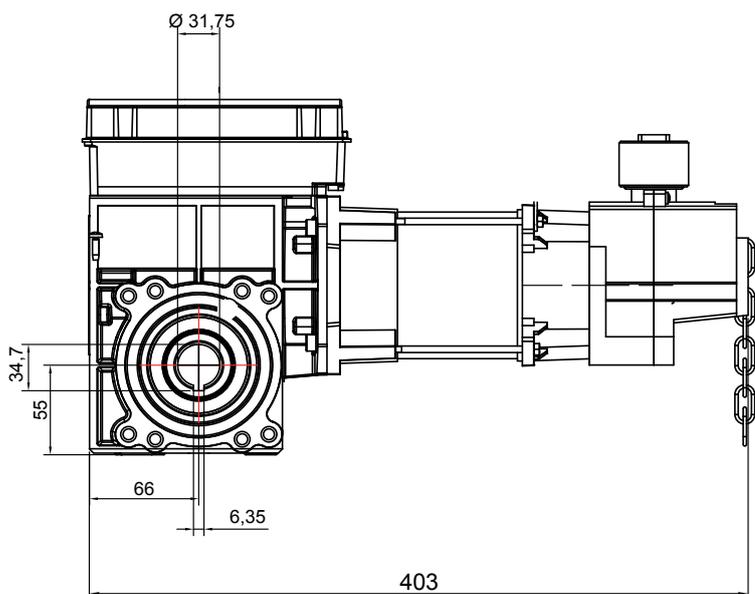
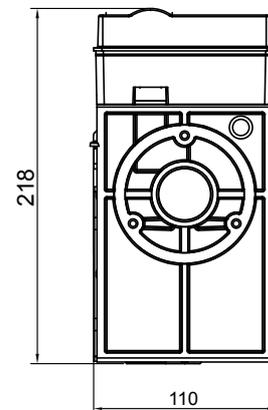
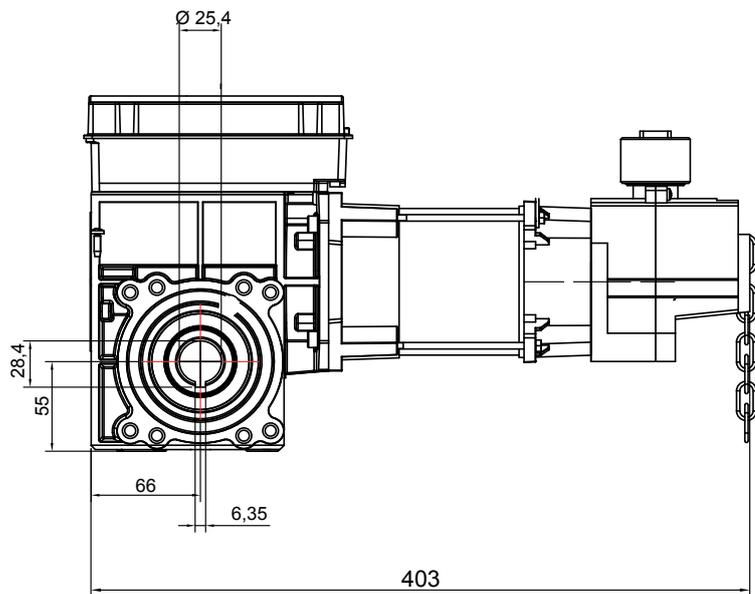


SD_140-20-3_400-E



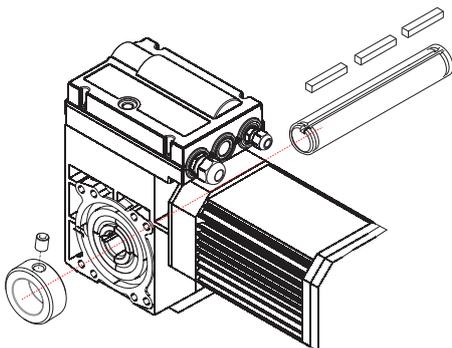
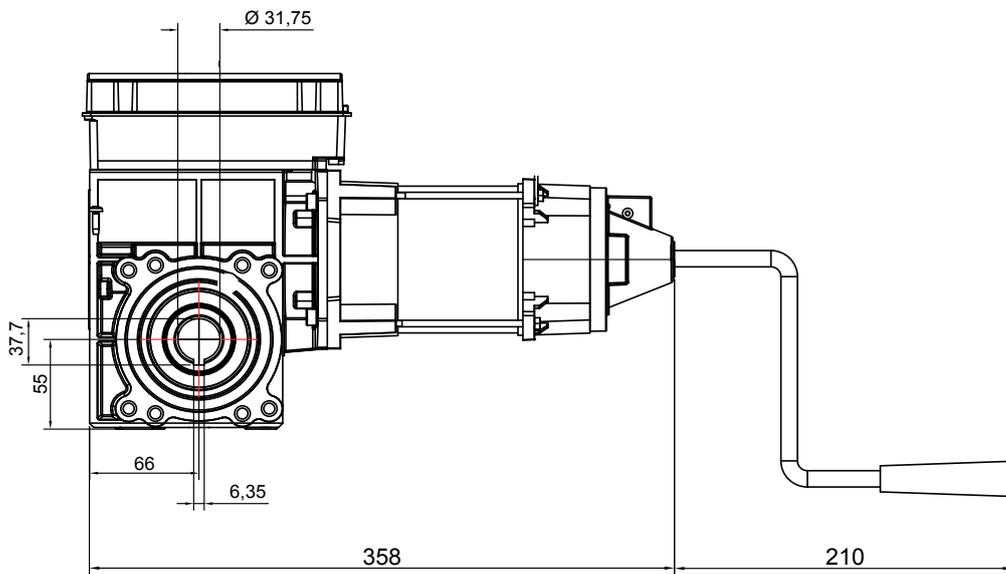
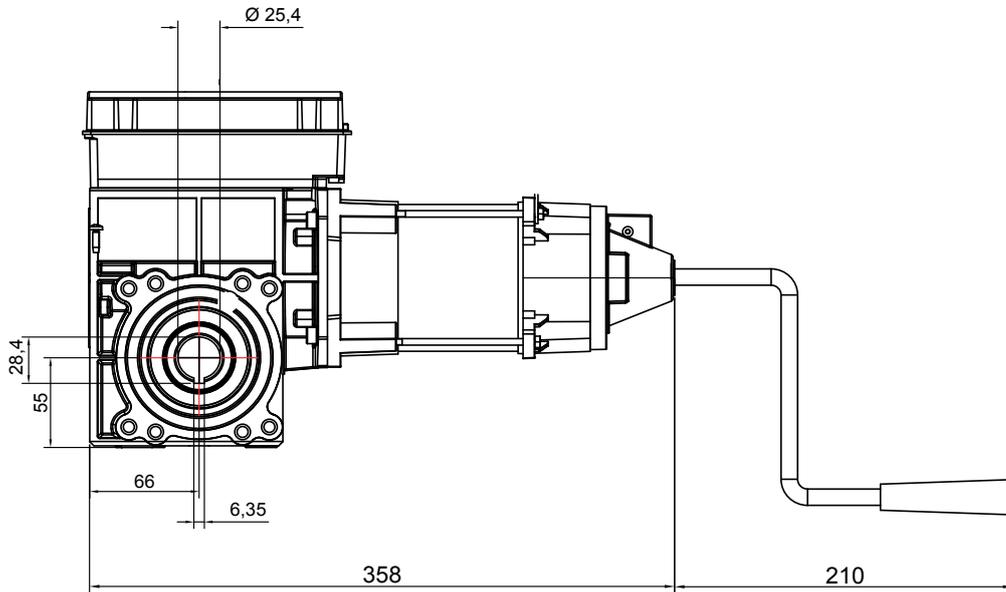
When assembling gearmotors with 31.75 mm diameter shaft from the left, the tab is to be blocked only with a fixing ring because using a screw could break the shaft.

SD_140-20-3_400-KE



When assembling gearmotors with 31.75 mm diameter shaft from the left, the tab is to be blocked only with a fixing ring because using a screw could break the shaft.

SD_140-20-3_400-KU



When assembling gearmotors with 31.75 mm diameter shaft from the left, the tab is to be blocked only with a fixing ring because using a screw could break the shaft.

EC Declaration of Conformity

and declaration of incorporation as “partly completed machinery”

The EC Declaration of Conformity can be downloaded from our website www.niceforyou.com

Nice

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