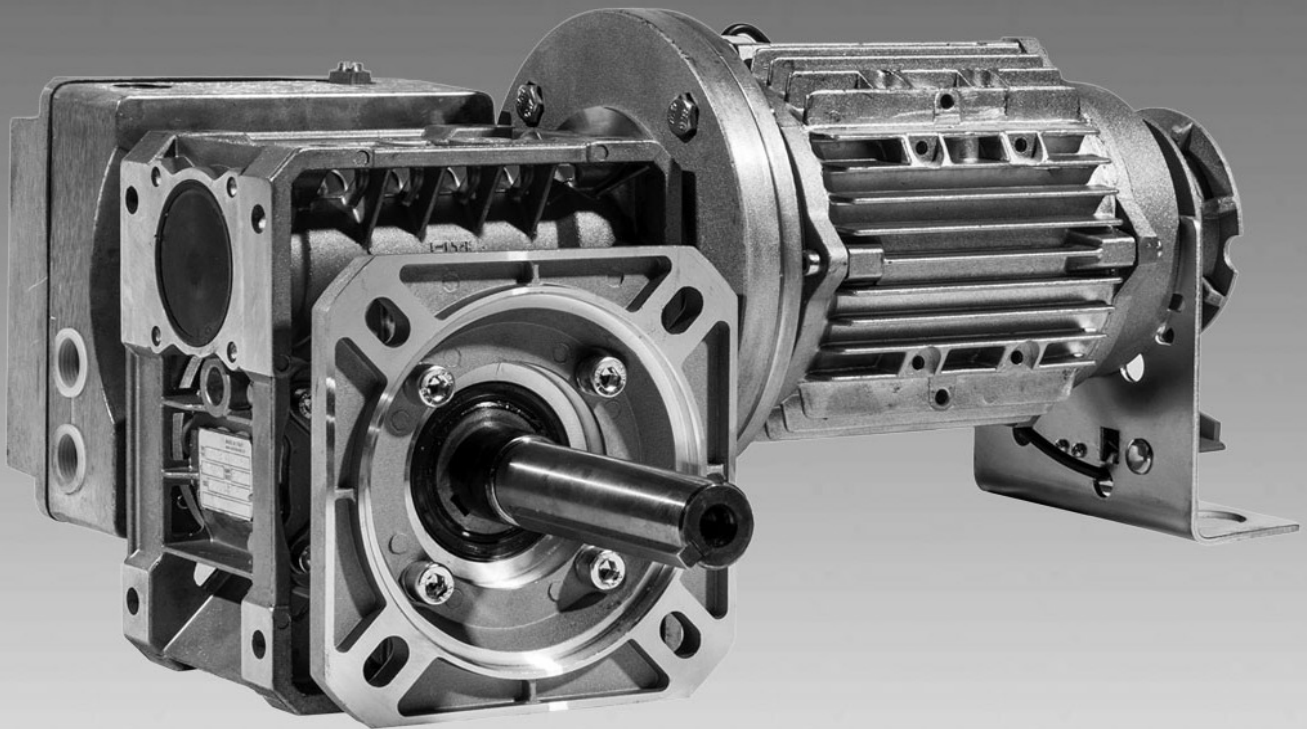


Instructions for Rolling Door Operator type :

# CDO



**Warning : Please read these instructions fully before installation**

## 1. Contents

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## 2. Key to symbols



### **Danger of personal injury!**

*The safety instructions must be observed!*



### **Warning! Danger to property!**

*The safety instructions must be observed!*



### **Information**

*Special information*

*OR*

*Reference to other sources of information*

## 3. General safety instructions

### **Guarantee**

The function and safety of the equipment is only guaranteed if the warning and safety instructions included in these operating instructions are adhered to.

Marantec UK is not liable for any personal injury or damage to property that occurs as a result of the warning and safety instructions being disregarded.

Marantec UK does not accept any liability or warranty for damage due to the use of non-approved spare parts and accessories.

### **Using the equipment for its intended purpose**

Operators of the CDO range are designed exclusively for opening and closing roller shutter doors (complete with installation of a safety brake as required)

### **Target group**

Only qualified and trained specialists are permitted to install and service the operator. Qualified and trained professionals fulfil the following requirements:

- knowledge of the general and specific safety and accident prevention regulations,
- Knowledge of the relevant regulations,
- trained in the use and care of appropriate safety equipment,
- Capable of recognising the dangers associated with installation.

Only qualified and trained electricians may connect the operator and carry out electrical maintenance.

Qualified and trained electricians fulfil the following requirements:

- knowledge of the general and specific safety and accident prevention regulations,
- knowledge of the relevant electrical regulations,
- trained in the use and care of appropriate safety equipment,
- capable of recognising the dangers associated with electricity.

### **Instructions for installation and connection**

- The controls must be disconnected from the electricity supply before carrying out electrical works. It must be ensured that the electricity supply remains disconnected during the works.
- Local protective regulations must be complied with.
- Mains cables and control cables must be laid separately.

## Regulations and bases for testing

For connecting, programming and servicing, the following regulations must be observed (the list is not exhaustive).

### Construction product standards

- EN 13241-1 (Products without fire resistance or smoke control characteristics)
- EN 12445 (Safety in use of power operated doors - Test methods)
- EN 12453 (Safety in use of power operated doors - Requirements)
- EN 12635 (Industrial, commercial and garage doors and gates - Installation and use.)
- EN 12978 (Safety devices for power operated doors and gates - Requirements and test methods)

### Electromagnetic compatibility

- EN 55014-1 (Radio disturbance, household appliances)
- EN 61000-3-2 (Disturbances in supply systems - harmonic currents)
- EN 61000-3-3 (Disturbances in supply systems - voltage fluctuations)
- EN 61000-6-2 (Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments)
- EN 61000-6-3 (Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments)

### Machinery guidelines

- EN 60204-1 (Safety of machinery, electrical equipment of machines, part 1: general requirements)
- EN 12100-1 (Safety of machinery. Basic concepts, general principles for design. Basic terminology, methodology)

### Low voltage

- EN 60335-1 (Household and similar electrical appliances - Safety)
- EN 60335-2-103 (Particular requirements for drives for gates, doors and windows)

## 4. Overview of products

### Various options

The following package options are available for the flange mounted CDO Rolling Door operator:

The operators listed below can be supplied with various manual overrides.

**CDO-50 1ph**

**CDO-100 3ph / 1ph**

**CDO-150 3ph**

**CDO-175 3ph**

**CDO-200 3ph / 1ph**

**CDO-275 3ph**

**CDO-300 3ph**

**CDO-375 3ph**

**CDO-400 3ph**

## 5. Installation

### 5.1 Preparation



#### **Danger!**

To avoid injury, the following points must be observed:

- The operator must be installed free of any tension.
- The operator must not move on the mounting bracket.
- The design and subsurface of all components must be suitable for the forces encountered.



#### **Warning!**

To avoid damage to the operator and the door, the operator must only be fitted if:

- the operator is undamaged,
- the ambient temperature is  $-20\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$ ,
- the altitude of the location does not exceed 1,000 m,
- a suitably rated mains protection device has been selected.

Before installation, ensure that:

- the operator is not blocked,
- the operator has been newly prepared after a lengthy storage period,
- all connections have been carried out correctly,
- the direction of rotation of the drive motor is correct,
- all motor protective devices are active,
- no other sources of danger exist,
- the installation site has been cordoned off over a wide area.



#### **Information**

The relevant instruction for the door must be observed when fitting the drive to the door.

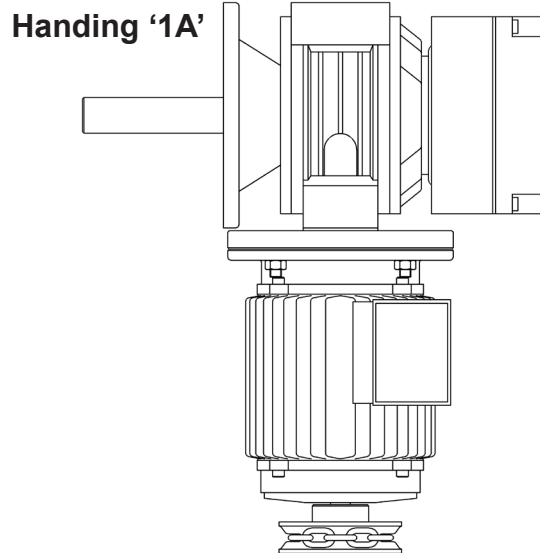
- a suitably rated mains protection device must be selected.

### 5.2 CDO Operator - Flange Mount Handing

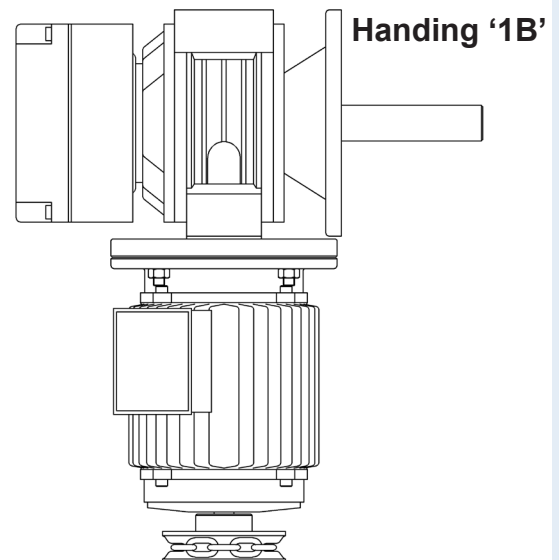
#### Handing the operator

The CDO Range of operators can be supplied for left or right hand installation. Please refer to the diagram below when ordering.

#### As viewed from above



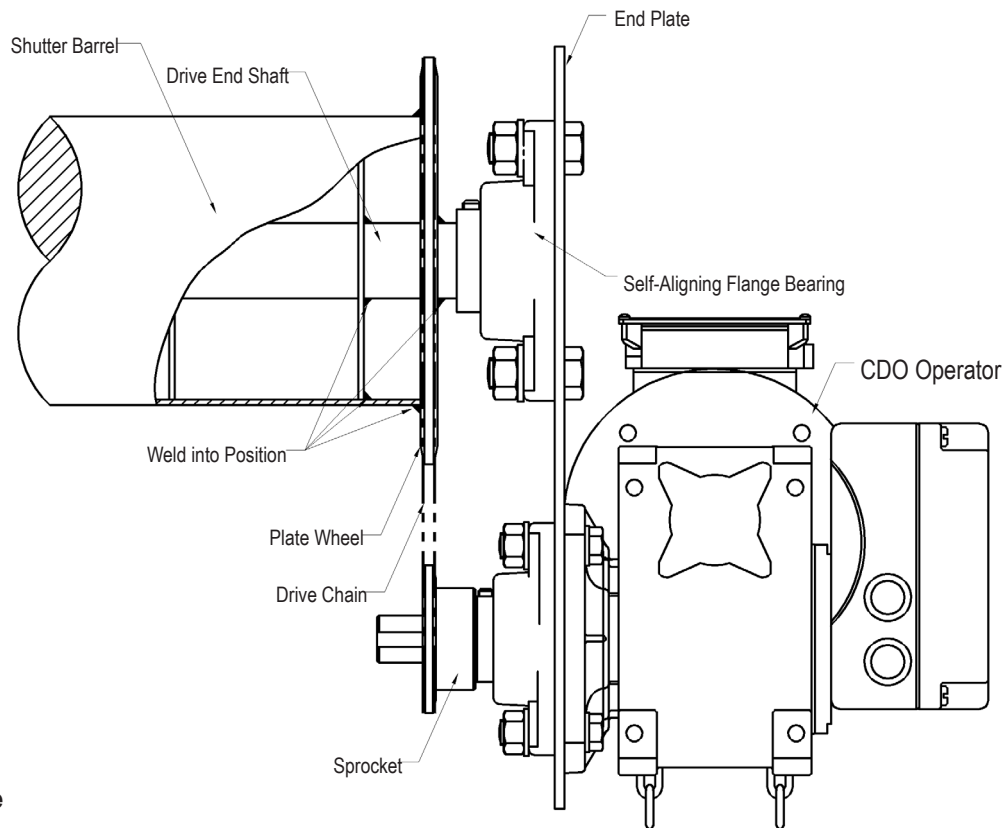
#### As viewed from above



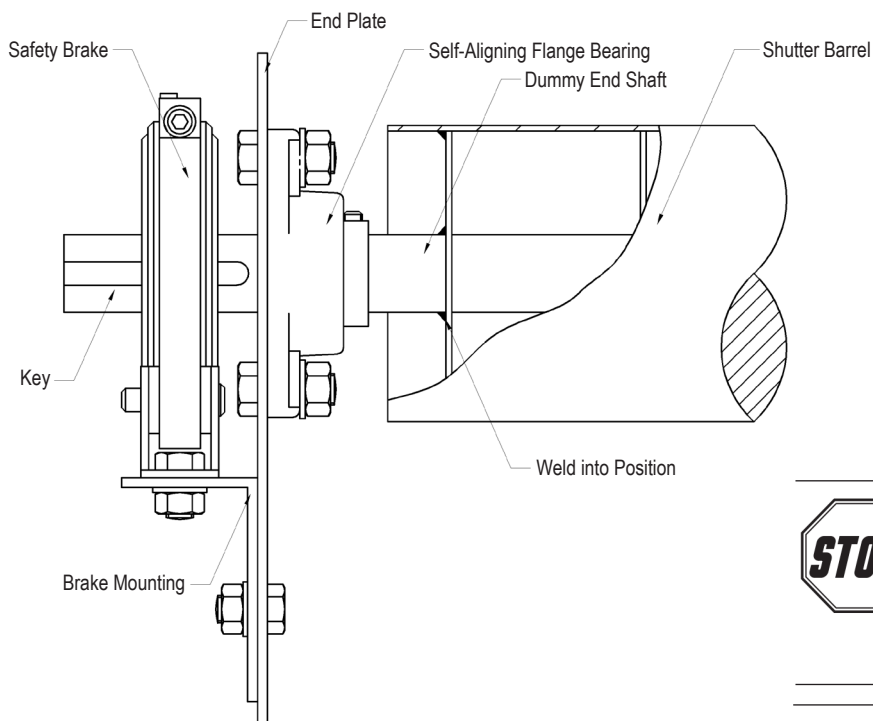
#### **Warning!**

Damage due to improper installation the drive! To avoid damage to the drive and to the door, the drive must be mounted on a torque support bracket that is vibration damped.

### 5.3 Mounting using sprocket and chain - typical example



### 5.4 Dummy end / safety brake - typical example



#### **Danger!**

A safety brake or equivalent device must be fitted to the dummy end of the shutter barrel to protect the safety of the machine against drive chain failure.



#### **Information:**

Marantec UK Ltd. constantly strives to improve the quality of its goods and as such reserves the right to replace/modify products without prior notification. Any examples given are intended for guidance only.

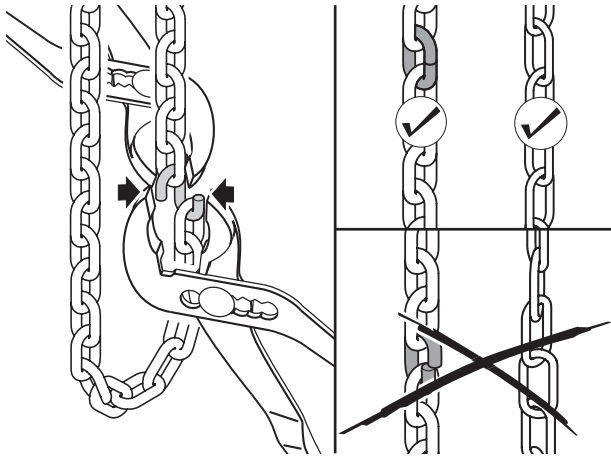
## 5. Installation

### 5.5 Installation of the emergency hand chain (for operators with emergency hand chain)



**Information:**

To ensure that they work correctly, the chain links must not be twisted.



- Join the ends of the emergency hand chain together with a chain connecting link.



**Warning!**

To avoid damage to the operator and the door, the emergency hand chain must be safely secured (for example in a 'chain keep' ) while the door is operated electrically.

### 6.1 Preparation



**Warning!**

To avoid damage to the operator, the following points must be observed:

- The types of cable and their diameters must be selected according to current regulations.
- The nominal currents and the type of connection must correspond to those on the motor type plate.
- The drive details must agree with the connected loads.



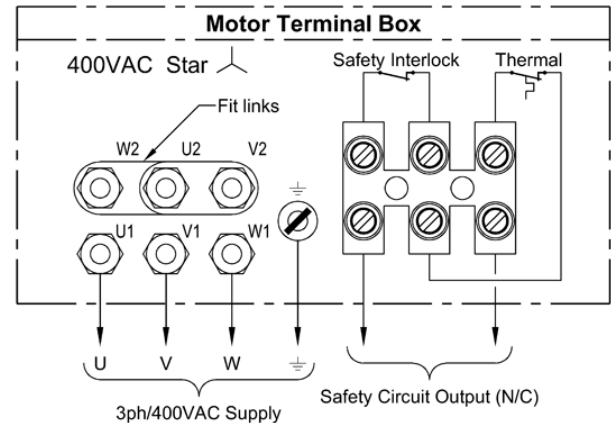
**Information:**

When operated with electronic control units, the corresponding start-up instructions and circuit diagrams must be complied with.

## 6. Initial Operation

### 6.2 Motor Connections

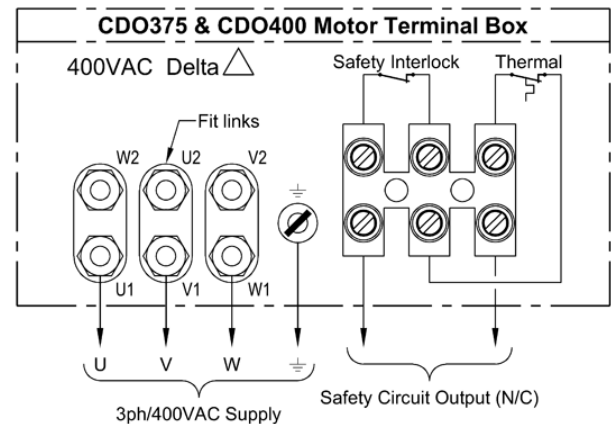
#### 'Standard' 3ph Motor Connection



#### 3 x 400V Star connection (standard)

The motor should be configured as shown above for connection to a 3 x 400V control panel.

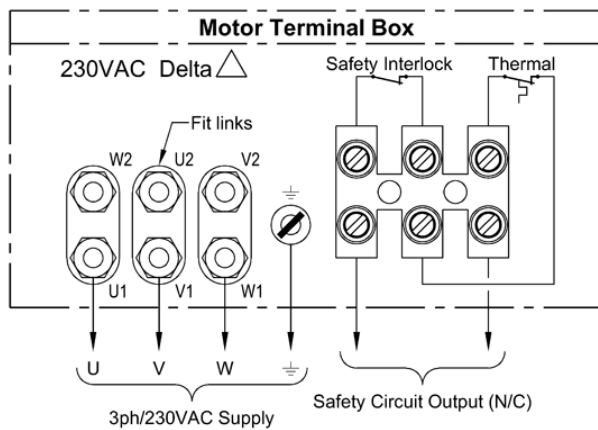
#### '400V / 690V' 3ph Motors Connection



#### 3 x 400V Delta connection (CDO375 & CDO400)

The CDO375 & CDO400 should be configured as shown above for connection to a 3 x 400V control panel.

## 'Inverter Drive' 3ph Motor Connection



### 3 x 230V Delta connection (inverter)

The motor should be configured as shown above for connection to a 3 x 230V control panel.



#### Warning!

Ensure the correct motor connection configuration is used to avoid damage to the motor. Do not use '230 VAC Delta' connection for 3ph/400VAC control panels.

### Safety Circuit

The safety circuit combines the Thermal Trip and, for operators with Manual Override, the Interlock Switch.

The Thermal Trip is a heat sensitive switch embedded in the motor windings that will operate should the motor be overloaded.

The Hand Chain Interlock provides a means of control circuit isolation to prevent electrical operation whilst the door is being operated manually.

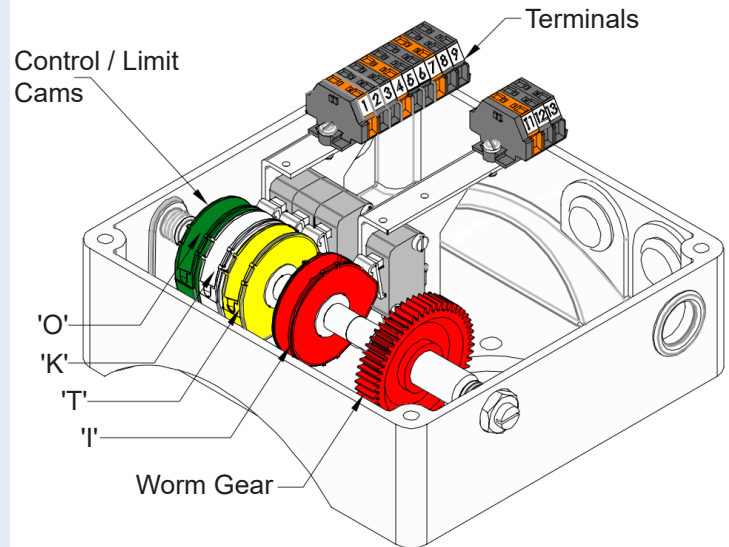


#### Warning!

To ensure compliance with BS 7671 wiring regulations (IET) the Thermal Trip must be connected into the relevant controller safety circuit (Stop circuit).

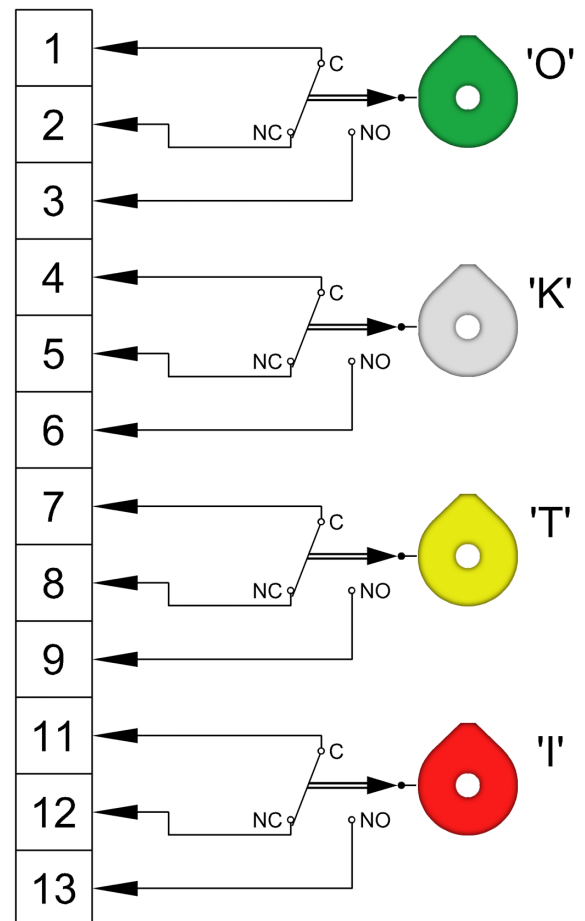
**Note:-** For operators with a disengage clutch, the disengage switch output must be connected in series with the motor safety circuit (N/C).

## 6.3 Mechanical Limit Switches



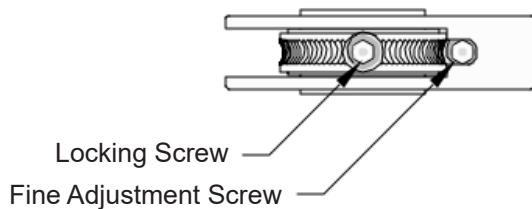
- 'O' Control cam for limit switch, CLOSED (green)
- 'K' Control cam for limit switch, OPEN (white)
- 'T' Control cam for limit switch, AUX (yellow)
- 'I' Control cam for limit switch, AUX (red)

### Limit Switch Connections (microswitches)



## 6.4 Setting Mechanical Limits

### Control / Limit Cam Adjustment



Each control cam has a locking screw and a fine adjustment screw.

The locking screw is used to lock the corresponding control cam in the desired position. Finer adjustment can be made with the fine adjustment screw.

#### Set the CLOSED end position

- ☞ Drive the door to the CLOSED end position.
- ☞ Set the control cam ('O' - GREEN) so that the CLOSED limit switch is actuated.
- ☞ Tighten the locking screw.

#### Set the OPEN end position

- ☞ Drive the door to the OPEN end position.
- ☞ Set the control cam ('K' - WHITE) so that the OPEN limit switch is actuated.
- ☞ Tighten the locking screw.



#### **Warning!**

To avoid damage to the operator it is important that all unused cams **MUST** be locked in position

## 6.5 Check the system

### Check the direction of travel

- ☞ Drive the door in the CLOSED direction. The operator must close the door.
- ☞ Drive the door in the OPEN direction. The operator must open the door.



#### **Information:**

If the door's direction of travel does not correspond to the commands keyed in, then the direction of rotation must be changed. Instructions for changing the direction of rotation are given in the control unit operating manual. After this the direction of travel must be checked again.

### Check the limit switch settings

- ☞ Drive the door to the CLOSED end position. The operator must stop in the desired position.
- ☞ Drive the door to the OPEN end position. The operator must stop in the desired position.

### Check the mechanical functions

After assembling and installing all components the functions of the system must be checked.

- ☞ Check that all mountings have been securely tightened.
- ☞ Check all the functions of the system.
- ☞ Check that the operator runs smoothly.
- ☞ Check whether the operator is leaking oil.

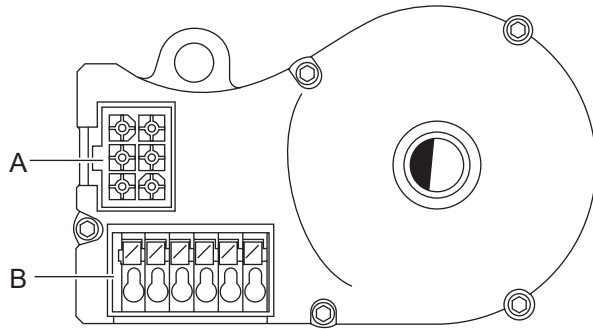
If the operator makes unusual noises or leaks oil:

- The operator must be taken out of service immediately,
- Contact technical support.



## 6.6 Digital Limits

Electronic interface



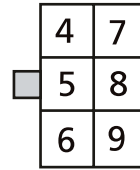
- A: AVE plug (absolute value encoder plug)  
 B: AVE plug terminal (absolute value encoder plug terminals).



**Information:**

Please refer to the control unit operating manual for instructions on setting the limit end positions.

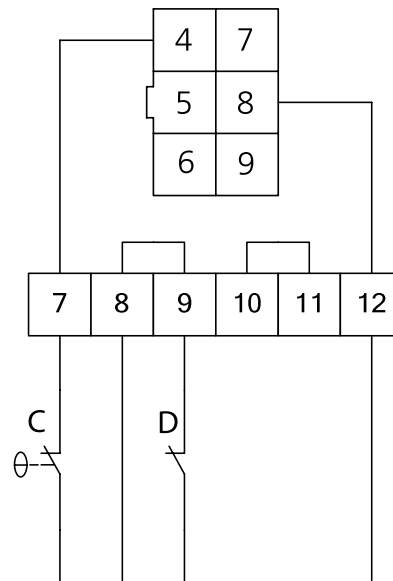
### Wiring allocation, AVE (absolute value encoder) plug



The numbers on the plug are also the wire numbers.

- 4: Safety circuit input (N/C)
- 5: RS 485 B
- 6: GND
- 7: RS485 A
- 8: Safety circuit output (N/C)
- 9: 7...18V<sub>DC</sub>

### AVE (absolute value encoder) plug terminal (7-12)



- C: Thermal element in the drive
- D: Manual emergency control (emergency crank or emergency chain)

## 7. Emergency Operation



### **Danger!**

To avoid injury, the following points must be observed:

- Emergency operation may only be carried out from a safe standing position.
- Emergency operation may only be carried out when the motor is stationary.
- The system must be disconnected from the power supply during emergency operation.
- Operators with a spring brake must be actuated against the closed brake when opening or closing the door.
- For safety reasons, brakes in doors without a weight counterbalance must only be released in the closed door position for testing purposes.
- Accidental releasing of the brake must be rendered impossible by preventive measures at the installation site.

During maintenance works or in the case of an electrical failure, the door can be moved towards the OPEN or CLOSED positions with the help of the emergency manual override equipment.

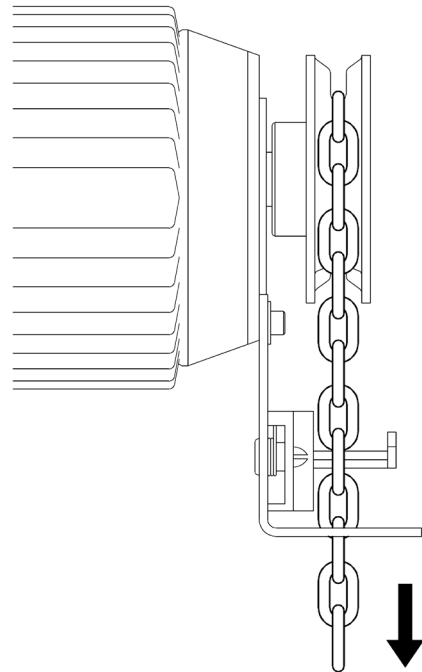


### **Information:**

If the door is moved beyond the CLOSED or OPEN end positions, the operator may no longer be activated electrically

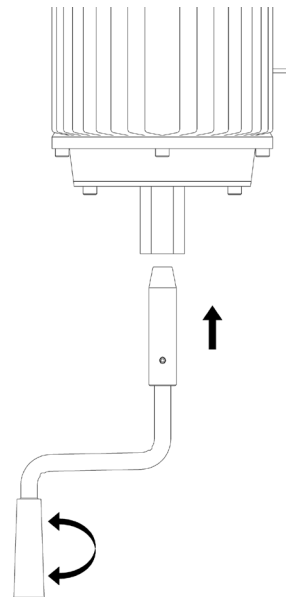
- place the door back into a normal position before attempting powered operation.

### **Operation with emergency wheel guide & interlock**



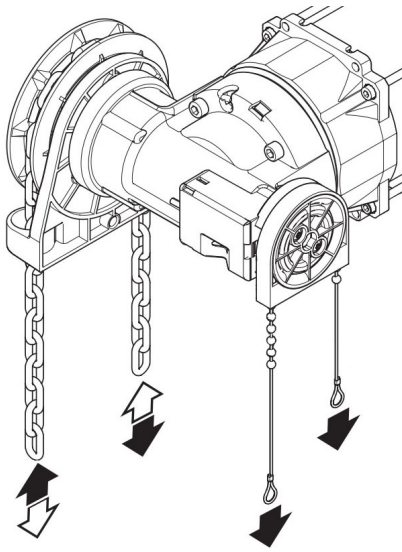
- ☞ Lift the handchain off the safety switch and place it on the chainwheel.
- ☞ The Door can now be operated by hand chain. Before power is restored, the above procedure must be reversed

### **Operation with emergency hand crank**



- ☞ Push the emergency hand crank into the operator as far as it will go.
- ☞ Move the door in the OPEN or CLOSE direction by turning the emergency hand crank.
- ☞ Remove the emergency hand crank from the operator after completing emergency manual operation.

## Operation with emergency floor level hand chain (KE)



### Releasing

- ☞ Gently pull the cable with the red handle downwards as far as possible. The control voltage will be interrupted and the door can no longer be operated electrically.
- ☞ Release the emergency hand chain from its fixing.
- ☞ Move the door in the OPEN or CLOSE direction by pulling on the emergency hand chain on the side concerned.

### Locking

- ☞ Gently pull the cable with the green handle downwards as far as possible. The control voltage will be switched on again and the door can be operated electrically.
- ☞ Attach the emergency hand chain to its fixing. The door can now be moved with the operator.

## 8. Maintenance



### **Warning!**

To avoid damage to the operator and door, the following points must be observed:

- Maintenance must only be carried out by authorized persons.
- Directive BGR 232 must be complied with.
- Worn or faulty parts must be replaced.
- Only approved parts may be installed.

All maintenance work must be documented.



### **Information:**

The drive unit has lifetime lubrication and is maintenance-free.

- ☞ Check that all mountings have been securely tightened.
- ☞ Check the brake (if available).
- ☞ Check the limit switches and safety switches.
- ☞ Check for noises and oil leaks.
- ☞ Check the mounting of the operator for corrosion.
- ☞ Check the housing for damage.

## 9. EU Declaration of Conformity

# DECLARATION OF INCORPORATION

Authorised Distributor:  
Marantec UK; Unit 10 Christleton Court, Manor Park, Runcorn, WA7 1ST

We hereby declare that the products described below:

**CDO-50 / 100 / 150 / 175 / 200 / 275 / 300 / 375 / 400 Door Operator**

are in conformity with the essential requirements of the Machinery Directive 2006/42/EC.

In addition, the partly completed machinery is in conformity with the Electromagnetic Compatibility Directive 2014/30/EU and the Low Voltage Directive 2014/35/EU.

The following standards were applied:

<b>EN 60204-1</b>	<b>Safety of machinery, electrical equipment of machines - Part 1: General requirements</b>
<b>EN ISO 12100</b>	<b>Safety of machinery - Basic concepts, general principles for design</b>
<b>EN 12453</b>	<b>Safety in use of power operated doors - Requirements</b>
<b>EN 12604</b>	<b>Industrial, commercial and garage doors and gates - Mechanical aspects - Requirements</b>
<b>EN 61000-6-2</b>	<b>Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments</b>
<b>EN 61000-6-3</b>	<b>Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments</b>
<b>EN 60335-2-103</b>	<b>Particular requirements for drives for gates, doors and windows</b>

The relevant technical documentation is compiled in accordance with Annex VII(B) of the Machinery Directive 2006/42/EC. We undertake to transmit, in response to a reasoned request by the market surveillance authorities, this documentation in electronic form within a reasonable period of time.

Person authorised to compile the relevant technical documentation:

**Marantec UK**

The machinery is incomplete and must not be put into service until the machinery into which the partly completed machinery is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Place / Date:

Runcorn, 20/04/2016

Manufacturer's signature:



**Mr Steve Lloyd**

Position of signatory:

**Managing Director**



Raising Standards  
Safety Assured

**Door & Gate Operators, Access Control & Security Equipment**

Registered in England & Wales No. 2525292



Certificate Number 10668  
8320  
ISO 9001

Marantec UK Ltd. reserves the right to change / modify products without prior notification