IP2393EN • 2021-10-26

Ditec PWR50 H/HR/HV/AC Technical Manual

Automation for swing gates

(Translation of the original instructions)

Contents

Key

This symbol indicates instructions or notes regarding safety, to which special attention must be paid.

This symbol indicates useful information for the correct functioning of the product.

General safety precautions

ATTENTION! Important safety instructions.
Please follow these instructions carefully. Failure to observe the information given in this manual may lead to severe personal injury or damage to the equipment.
Keep these instructions for future reference.
This manual and those for any accessories can be downloaded from www.ditecautomations.com.

This installation manual is intended for qualified personnel only •Installation, electrical connections and adjustments must be performed by qualified personnel, in accordance with Good Working Methods and in compliance with the current regulations • Read the instructions carefully before installing the product. Wrong installation could be dangerous • Before installing the product, make sure it is in perfect condition •

The packaging materials (plastic, polystyrene, etc.) should not be discarded in the environment or left within reach of children, as they are a potential source of danger • Do not install the product in explosive areas and atmospheres: the presence of inflammable gas or fumes represents a serious safety hazard • Make sure that the temperature range indicated in the technical specifications is compatible with the installation site • Before installing the motorization device, make sure that the existing structure, as well as all the support and guide elements, are up to standards in terms of strength and stability. Verify the stability and smooth mobility of the guided part, and make sure that no risks of fall or derailment subsist. Make all the necessary structural modifications to create safety clearance and to guard or isolate all the crushing, shearing, trapping and general hazardous areas • The motorization device manufacturer is not responsible for failure to observe Good Working Methods when building the frames to be motorized, or for any deformation during use • The safety devices (photocells, safety edges, emergency stops, etc.) must be installed taking into account the applicable

laws and directives, Good Working Methods, installation premises, system operating logic and the forces developed by the motorized door or gate • The safety devices must protect against crushing, cutting, trapping and general danger areas of the motorized door or gate. Display the signs required by law to identify hazardous areas. Each installation must bear a visible indication of the data identifying the motorized door or gate • Before connecting the power supply, make sure the plate data correspond to those of the mains power supply. An omnipolar disconnection switch with a contact opening distance of at least 3mm must be fitted on the mains supply. Check that there is an adequate residual current circuit breaker and a suitable overcurrent cutout upstream of the electrical installation in accordance with Good Working Methods and with the laws in force • When requested, connect the motorized door or gate to an effective earthing system that complies with the current safety standards • Before commissioning the installation to the end user, make sure that the automation is adequately adjusted in order to satisfy all the functional and safety requirements, and that all the command, safety, and manual release devices operate correctly •

During installation, maintenance and repair operations, cut off the power supply before opening the cover to access the electrical parts • The protection cover of the operator must be removed by qualified personnel only.

The electronic parts must be handled using earthed antistatic conductive arms. The manufacturer of the motorization declines all responsibility if component parts not compatible with safe and correct operation are fitted • Only use original spare parts for repairing or replacing products • The installer must supply all information concerning the automatic, manual and emergency operation of the motorized door or gate, and must provide the user with the operation and safety instructions.

Declaration of incorporation of partly completed machinery

EC Declaration of Incorporation

We:
ASSA ABLOY Entrance Systems AB
Lodjursgatan 10
SE-261 44 Landskrona
Sweden

Declare under our sole responsibility that the types of equipment with names:

Ditec PWR50H Irreversible automation for swing gates with mechanical limit switches
Ditec PWR50HV Irreversible automation for swing gates with magnetic limit switches
Ditec PWR50HR Reversible automation for swing gates with mechanical limit switches
Ditec PWR50AC Irreversible/reversible automation for swing gates with mechanical limit switch (opening)

Comply with the following directives and their amendments:

2006/42/EC	Machinery Directive (MD), regarding the following essential health and safety requirements: 1.1.2, 1.1.3, 1.2.1, 1.2.2, 1.2.3, 1.2.4.2, 1.2.6, 1.3.9, 1.4.3, 1.7.2, 1.7.3, 1.7.4, 1.7.4.1, 1.7.4.2.
2014/30/EU	Electromagnetic Compatibility Directive (EMCD)
2011/65/EU	Restriction of hazardous substances (RoHS 2)
2015/863/EU	Restriction of hazardous substances (RoHS 2 Amendment)

Harmonized European standards that have been applied:

EN 61000-6-3:2007 + A1:2011 + AC:2012
EN 60335-1:2012 + AC:2014 + A11:2014 + A13:2017 + A1:2019 + A14:2019 + A2:2019

Other standards or technical specifications that have been applied:

IEC 60335-1:2010 + C1:2010 + C2:2011 + A2:2013 + C1:2014 + A2:2016 + C1:2016
EN 12453:2017

The manufacturing process ensures the compliance of the equipment with the technical file.

Do not put equipment into service until the installed finished Automatic Entrance System has been declared compliant with Directive 2006/42/EC on Machinery.

Responsible for technical file:

Matteo Fino
Business Area PGA
Ditec S.p.A.
Largo U. Boccioni, 1
21040 Origgio (VA)
Italy

Signed for and on behalf of ASSA ABLOY Entrance Systems AB by:

Place	Date	Signature	Position
Origgio	2021-10-26	Matteo Fino	President B.A. PGA

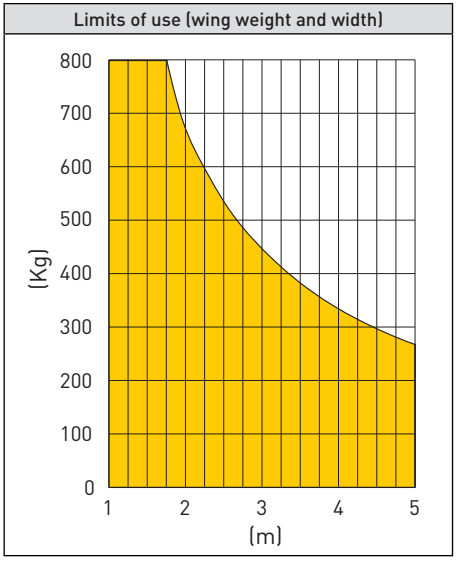
IP2393EN

1. Technical specifications

Tab. 1.0

	Ditec PWR50AC	Ditec PWR50H	Ditec PWR50HV	Ditec PWR50HR
Type	Irreversible / Reversible	Irreversible	Irreversible	Reversible
Stroke control (limit switch)	Mechanical end stop (on opening)	Mechanical end stops	Magnetic limit switches	Mechanical end stops
Power supply	230V ~ / 50Hz	24V⎓		
Maximum power absorption	1.1A	12A		
Power absorbed	250W	65W nom / 288W max		
Max thrust	6000 N	6000 N		
Max stroke	500mm			
Opening time	24÷32s / 90°	14÷80 s / 90°		
Intermittent operation	200 cycles/day [max] 30 consecutive cycles at 20°C	300 cycles/day [max] 80 consecutive cycles at 20°C		
Lifespan	150,000÷450,000 cycles			180,000÷600,000 cycles
	(see the product lifespan charts - Tab. 1.1)			
Operating temperature	-20°C / +55°C (-35°C + 55°C with NIO active)			
Protection rating	IP44			
Dimensions (mm)	1044 x 100 x 124h			
Weight (kg)	10.5			

Chart 1.0



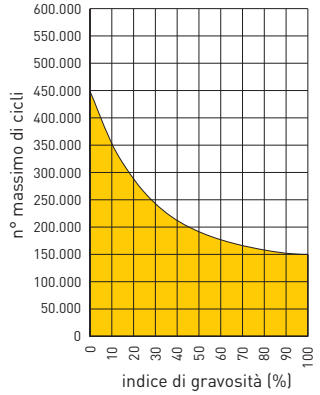
The product lifespan is conditioned by the extent of other onerous conditions:
with reference to Tab. 1.1, various corrective factors have been assessed in relation to the weight and width of the wing and the usage conditions; when taken as a whole, they affect the lifespan of the operating unit (see Chart 1.1).

Tab. 1.1

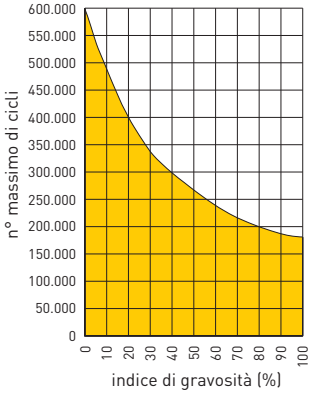
Index of conditioning factors			
		Ditec PWR50AC	Ditec PWR50H/HV/HR
Gate wing weight	>400kg	10	-
	>500kg	-	10
	>550kg	20	-
	>600kg	-	20
	>650kg	30	-
	>700kg	-	30
Gate wing width	>3m	10	
	>4m	20	
Solid gate wing		15	
Windy area		15	
VA/VC/PO/PC speed setting higher than the default values		10	
R1/R2 force setting higher than the default values		10	

Chart 1.1

Product lifespan - Ditec PWR50AC/H/HV



Product lifespan - Ditec PWR50HR



The chart below shows an example of an operating unit lifespan calculation:

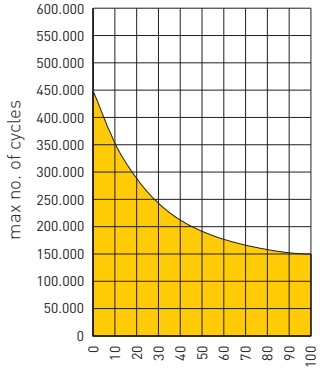
Tab. 1.2

Example of lifespan calculation - Ditec PWR50AC/H/HV	
Gate wing weight = 300kg	0
Gate wing width = 4.5m	20
R1/R2 = 80 (default 50)	10
Solid wing = NO	0
Total stress index	30
Estimated lifespan 240,000 cycles	

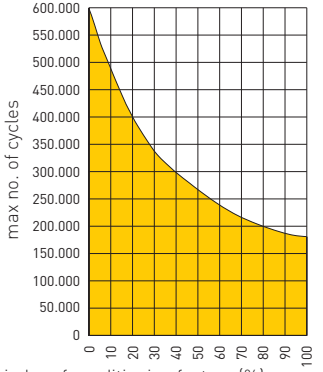
Example of lifespan calculation - Ditec PWR50HR	
Gate wing weight = 300kg	0
Gate wing width = 4.5m	20
R1/R2 = 80 (default 50)	10
Solid wing = NO	15
Total stress index	45
Estimated lifespan 280,000 cycles	

Chart 1.2

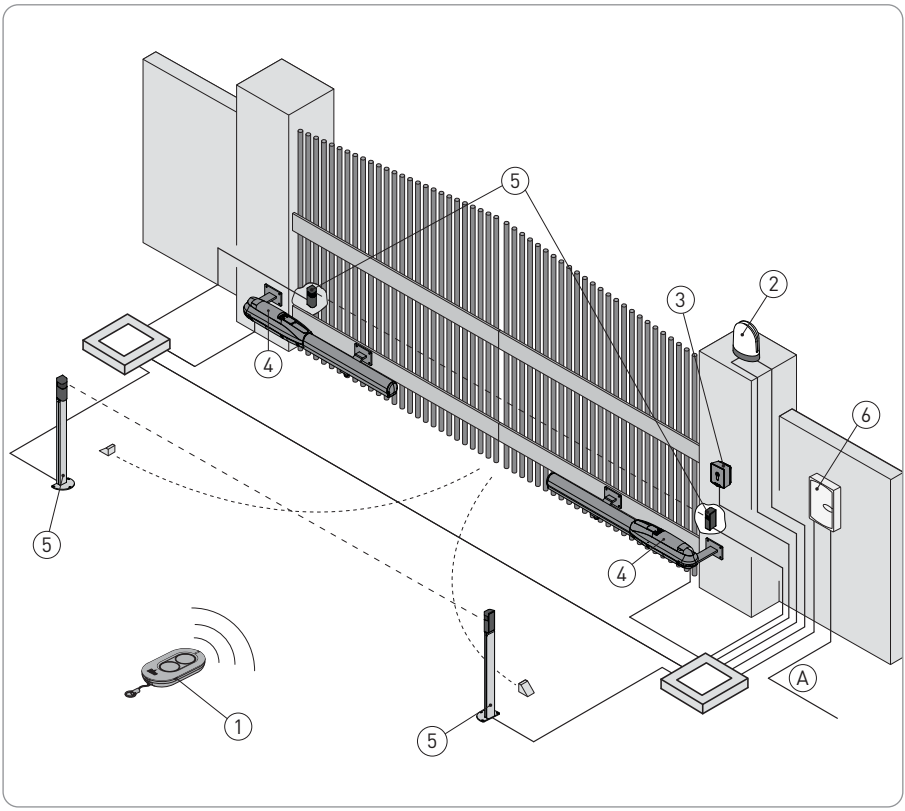
Product lifespan - Ditec PWR50AC/H/HV



Product lifespan - Ditec PWR50HR

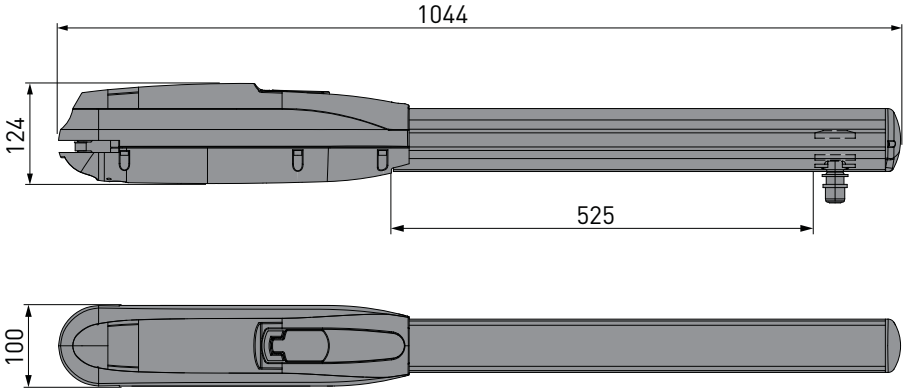


2. Standard installation



Ref.	Description	Cable
1	Transmitter	/
2	Flashing light	2 x 1mm²
	Aerial (integrated in the flashing light)	coaxial 58Ω
3	Key-operated selector switch	4 x 0.5mm²
	Wireless keypad with digital combination	/
4	Actuator	4 x 1.5mm²
5	Photocells	4 x 0.5mm²
6	Control panel	3G x 1.5mm²
A	Connect the power supply to a certified-compliant omnipolar switch (not included) with a contact opening distance of at least 3mm. Connection to the mains must be via an independent channel, separated from the connections to the command and safety devices.	

3. Dimensions and gear motor references



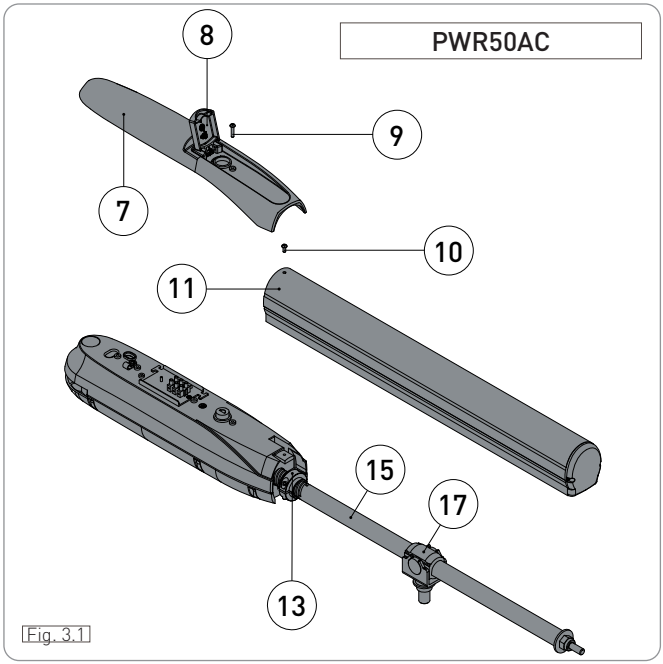


Fig. 3.1

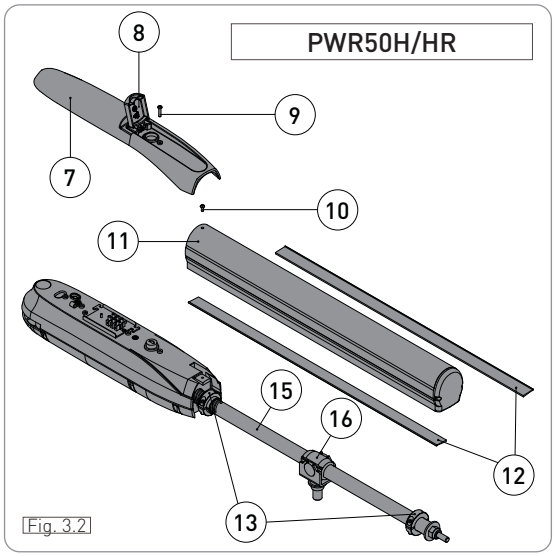


Fig. 3.2

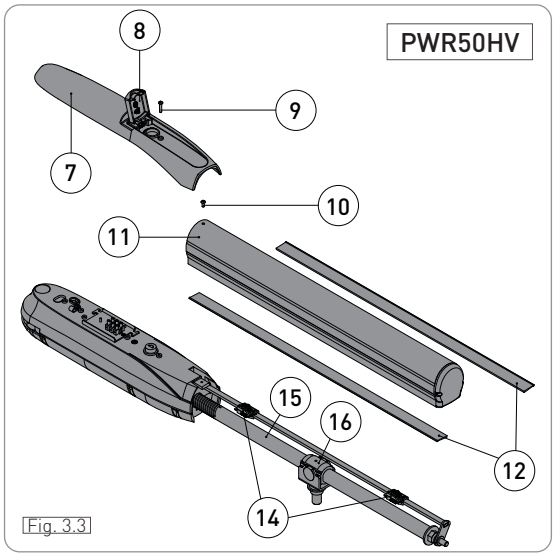


Fig. 3.3

Ref.	Description	Ref.	Description
7	Rear cover	13	Mechanical end stops
8	Release lock hatch	14	Magnetic limit switches
9	Screw for fastening the rear cover	15	Drive screw
10	Screw for fastening the front cover	16	Split nut + magnet
11	Front cover	17	Split nut
12	Protective brushes		

4. Installation

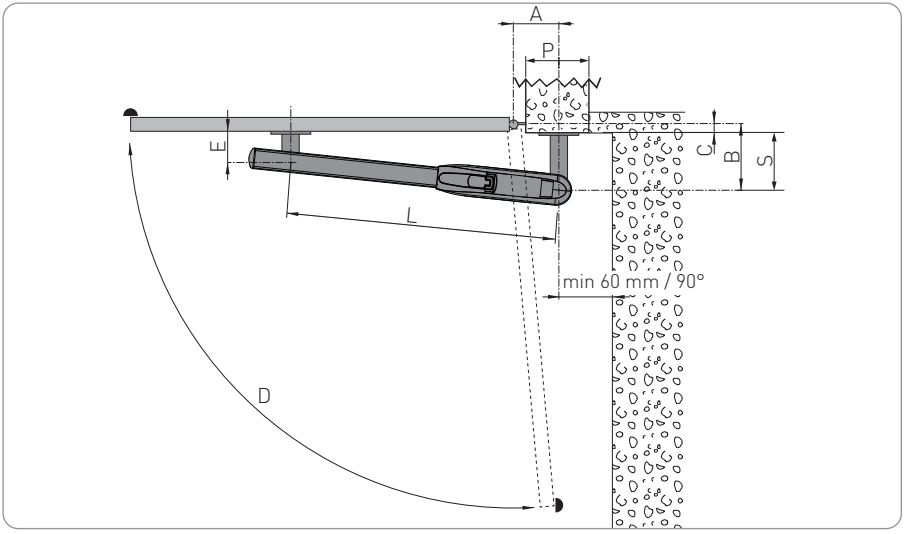
The given operating and performance features can only be guaranteed with the use of DITEC accessories and safety devices. Unless otherwise specified, all measurements are expressed in mm.

4.1 Preliminary checks

Make sure the gate structure is sturdy and the hinges are lubricated and smooth.
If possible, fit an opening and closing stop. Otherwise, use the mechanical stops (integrated for opening stop with PWR50AC, optional for closing stop with PWRFM, integrated for opening and closing stops with PWR50H/HR) and/or the electromechanical limit switches (included for PWR50HV) if available. The mechanical construction elements must comply with the requisites of Standard EN12604.

The automation fastening point varies according to the space available and the gate to be automated. The installer must therefore choose the best solution to ensure that the system works correctly in each individual situation.

The installation measurements indicated in the table allow you to choose the values of [A] and [B] on the basis of the required opening angle and in relation to the on-site spaces and overall dimensions.
Increasing measurement [A], you reduce the approach speed during opening.
Reducing measurement [B], you increase the gate opening angle.
Measurements [A] and [B] must, however, be compatible with the effective motor stroke.



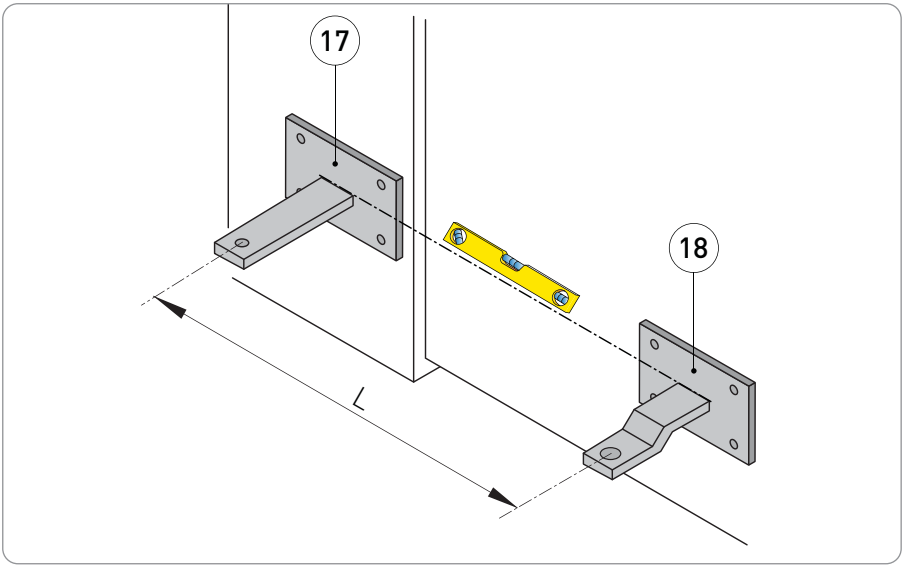
Tab. 4.1

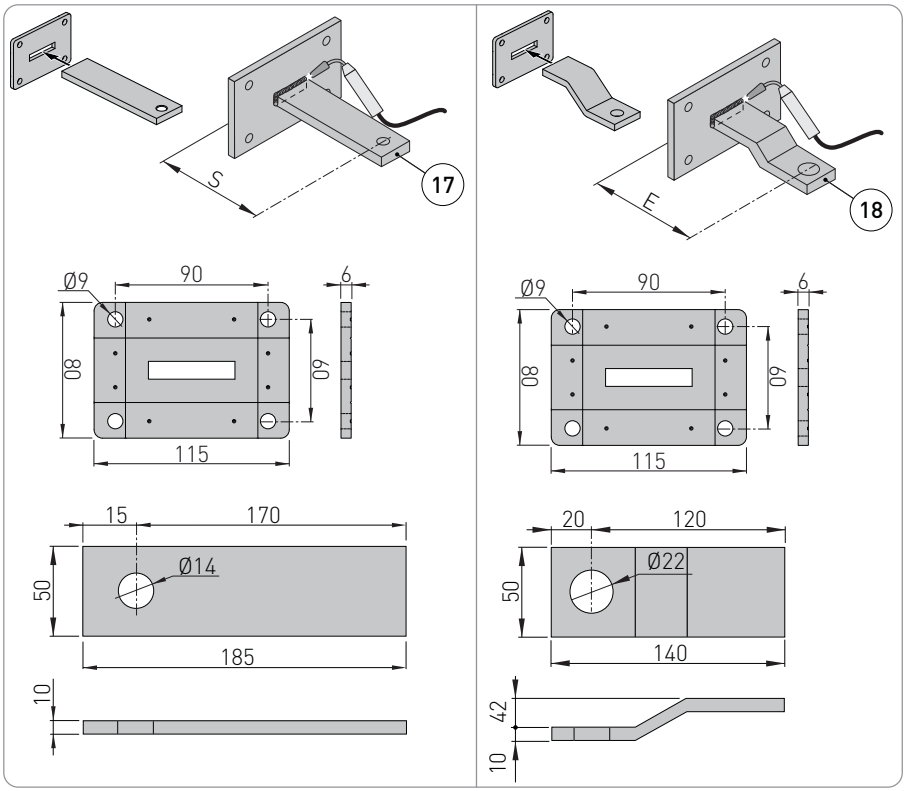
A	B	C	S	D	E	L	P min
200	190	20	170	120°	120	910	220
200	200	50	150	110°			220
100	220	50	170	90°			120
130	210	70	140	95°			150
170	220	100	120	95°			190
200	190	100	90	100°			220
150	220	150	70	95°			170
130	290	220	70	90°			150

4.2 Fastening the brackets

After selecting the most suitable point for fastening the front bracket [18] to the gate wing, to establish its height you must first size, position and fasten the rear bracket [17].
If necessary, shorten the rear bracket [17] following the indications given in Tab. 4.1.

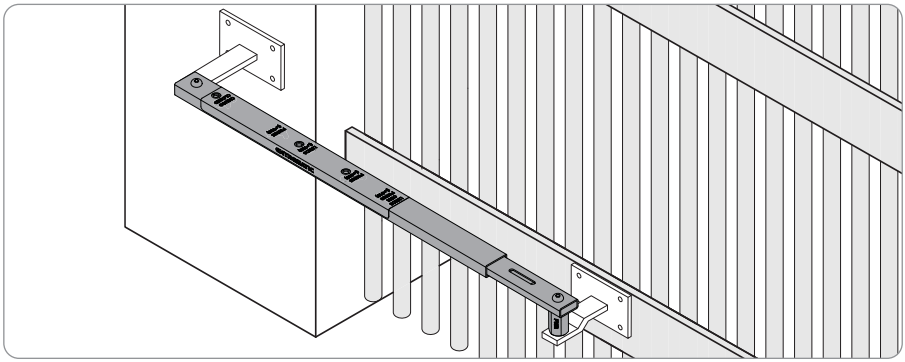
- Once you have fastened the rear bracket [17] following the measurements given on page 9, fasten the front bracket [18] to the gate.
- With the gate fully closed, position the front bracket [18], respecting the measurement (L). Make sure the front bracket [18] and rear bracket [17] are properly levelled, as shown in the figures below, then fasten the front bracket [18] to the gate.





4.3 Using the mounting tool

During installation, the bracket positioning operation can be greatly simplified by using the mounting tool (PWRMI - optional accessory), which allows you to ascertain the correct fastening position of the brackets and the distance between them. This avoids positioning errors and incorrect fastening hole alignment, thanks also to the built-in spirit-level.
The mounting tool is compatible with all the pistons of the PWR, Obbi and Luxo series.



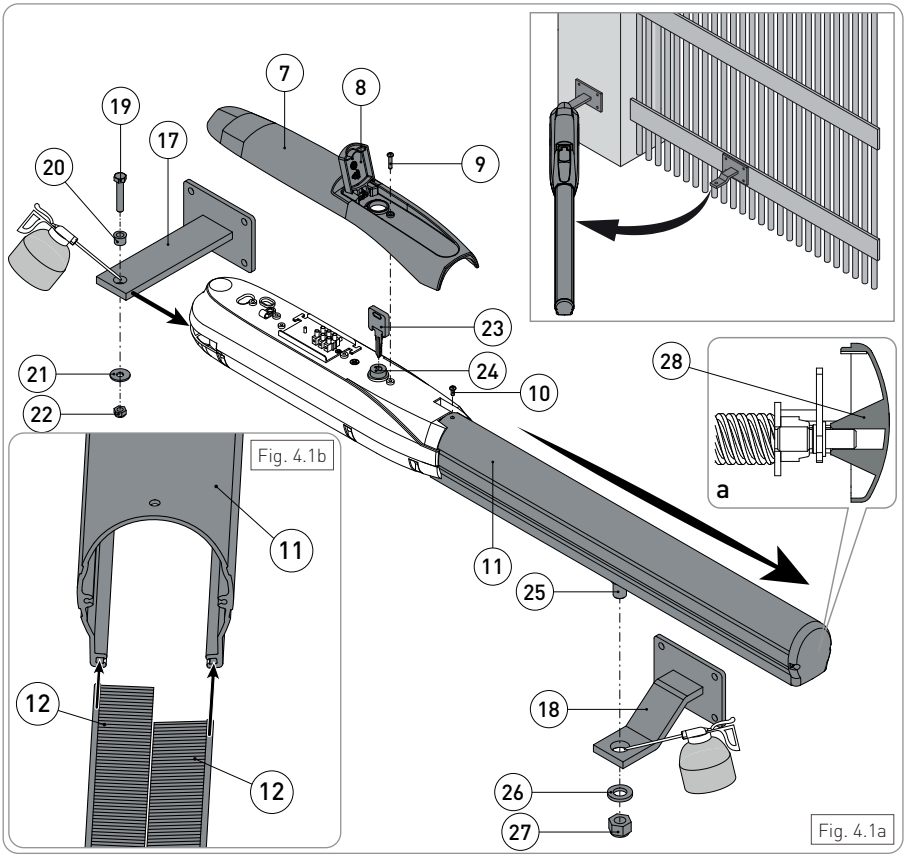
4.4 Installing the gear motor

- Open the lock hatch [8], loosen the 3.9x22mm screw [9] and remove the rear cover [7]. Loosen the screw M4 x 8mm [10] and take out the front cover [11] as shown in the figure. Release the motor by inserting the key [23] in the relative lock [24] and turning it clockwise (see the USER INSTRUCTIONS).
- Fasten the motor to the rear bracket [17] using the M8 x 45mm screw [19], the bush [20] and the Ø 24mm washer [21], then tighten the M8 self-locking nut [22] as far as it will go.
- Open the gate wing manually and insert the front coupling pin [25] in the slot of the front fastening bracket [18]. Lock the pin in the bracket using the washer Ø30mm [26] and nut M16 [27] supplied. Before installing the motor, grease the rotation points.

NOTE: pay special attention to the correct assembly of the washer on the brackets.

- For PWR50H/HR/HV insert the protective brushes [12] in the relative guides on the front cover [11] (see Fig. 4.1b).
- After making the adjustments (par. 4.5), insert the front cover [11] on the drive screw and fix it in place using the screw [10].

NOTE: make sure the drive screw [25] enters the head [28] of the cover [11] correctly (detail in figure 4.1a).

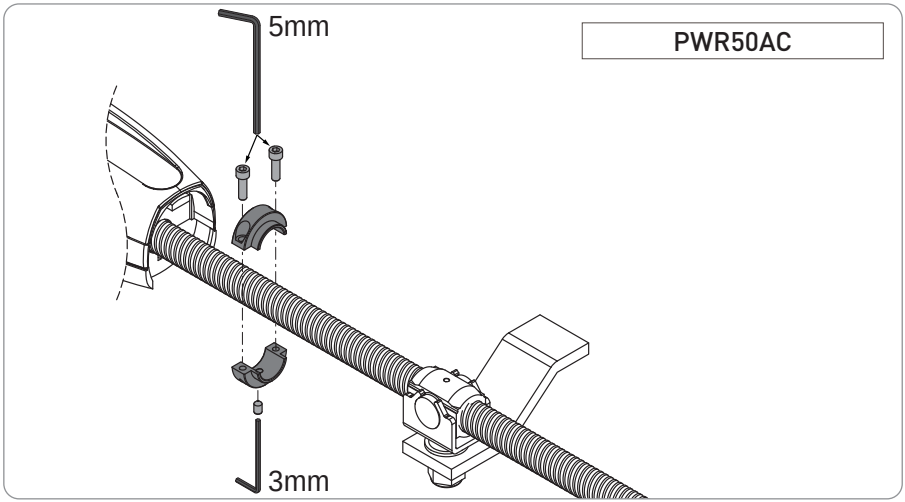


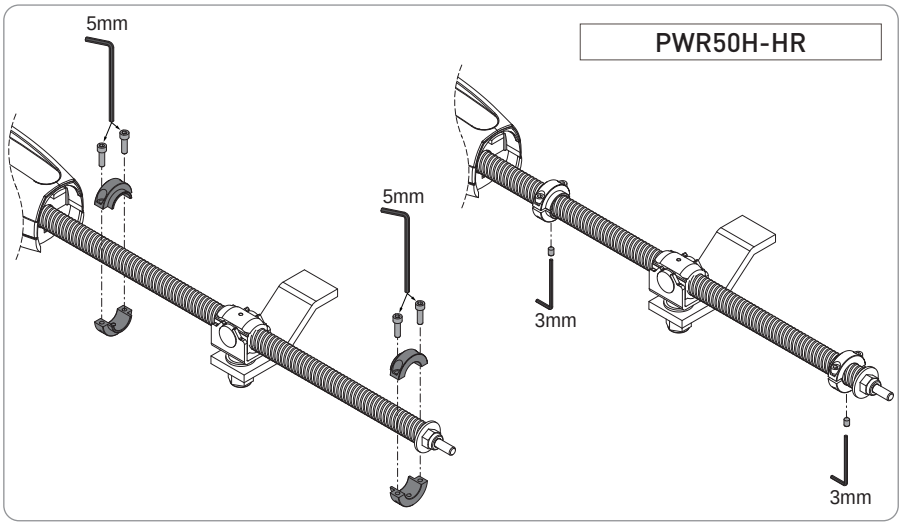
4.5 Adjusting the end stops and limit switches

4.5.1 Mechanical end stops

Bring the wing to its fully open (or closed - PWR50H-HR) position, then loosen the mechanical end stop with a 5mm Allen spanner just enough so it can slide along the drive screw. Bring it up against the split nut, then tighten the screws with the 5mm Allen spanner and fix the 3mm lockscrew.

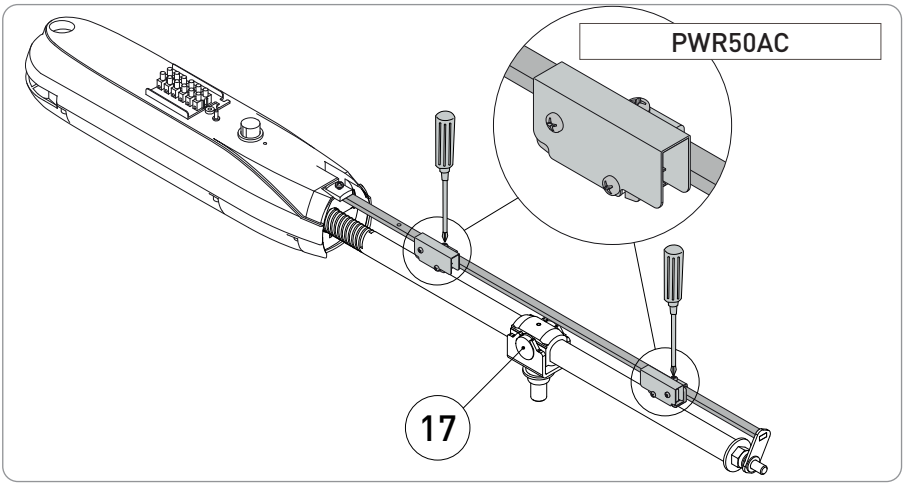
NOTE: PWR50AC has an end stop on opening only. PWR50H-HR have end stops on both opening and closure.





4.5.2 Adjusting the limit switch with microswitch for opening and closure (optional for Ditec PWR50AC)

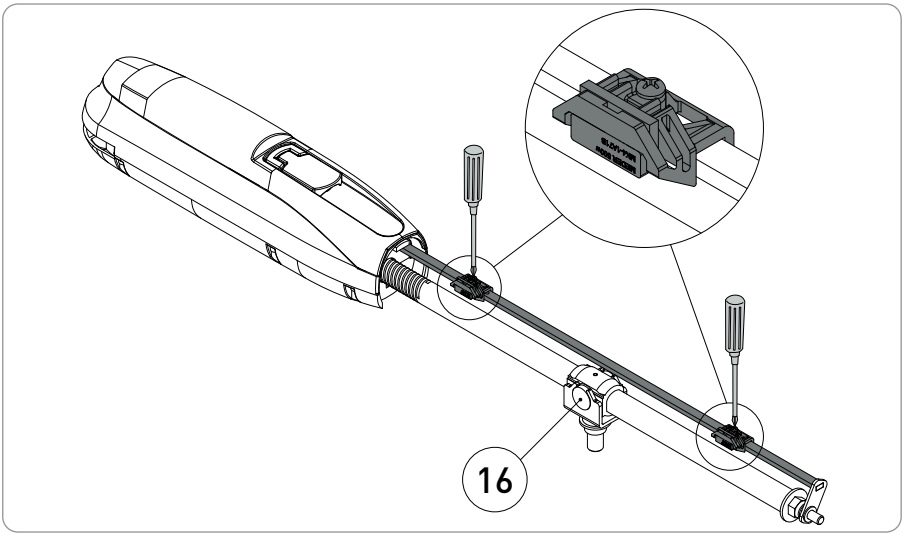
Bring the gate wing to its fully open or closed position. Loosen the limit switches with a Phillips screwdriver (just enough so they can slide along the guide), then bring them above the split nut [17] until the sensor is activated. Fix them in place.



4.5.3 Adjusting the magnetic limit switches (optional for Ditec PWR50H/HR, standard on Ditec PWR50HV)

NOTE: not available for PWR50AC.

Bring the gate wing to its fully open or closed position. Loosen the limit switches with a Phillips screwdriver (just enough so they can slide along the guide), then bring them above the split nut [16] until the magnetic sensor is activated. Fix them in place.



4.6 Electrical connections

NOTE: the electrical connections and start-up of the PWR50AC gear motors are shown in the installation manuals of the LCA70 and LCA80 control panels.
NOTE : the electrical connections and start-up of the PWR50H/HR/HV gear motors are shown in the installation manuals of the LCU40H control panels.

To connect the automation to the control panel, proceed as follows:

- Remove the rear cover [7] as explained in paragraph 4.4.
- Fit the cable gland on the automation, inserting it in the relative threaded slot in the metal fusion (Fig. 4.6a, 4.6b and 4.6c).
- Connect the various wires as shown in the electrical diagram in Fig. 4.6d and 4.6f.
- Fasten the rear cover [7] to the gear motor.

To increase the protection of the motor cable, a corrugated flexible tube can be used.

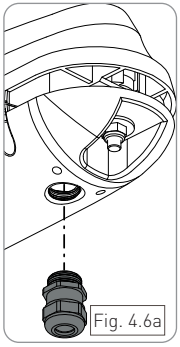


Fig. 4.6a

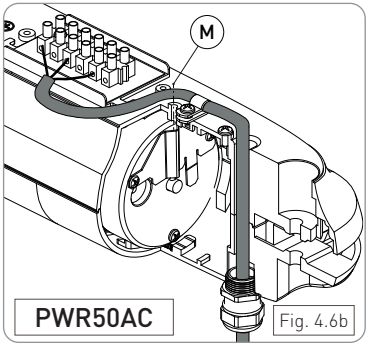


Fig. 4.6b

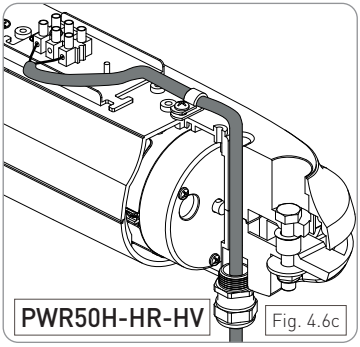
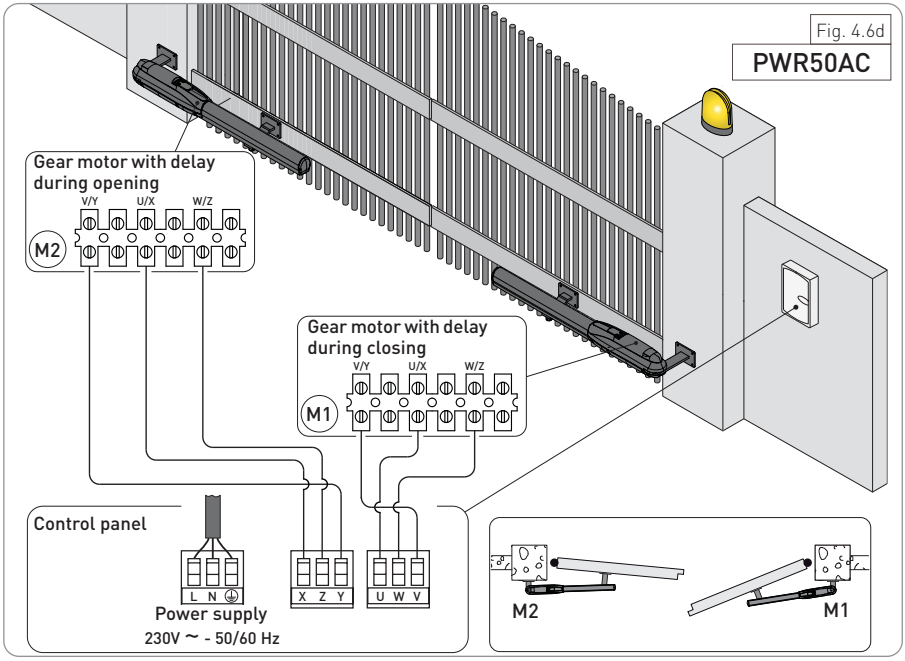


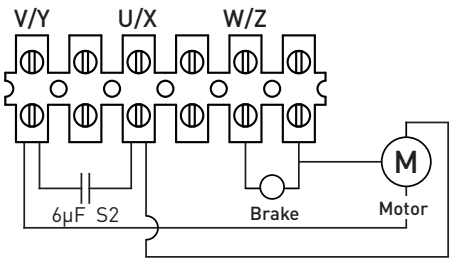
Fig. 4.6c

4.6.1 Ditec PWR50AC connection diagram



4.6.1a Ditec PWR50AC motor connection diagram

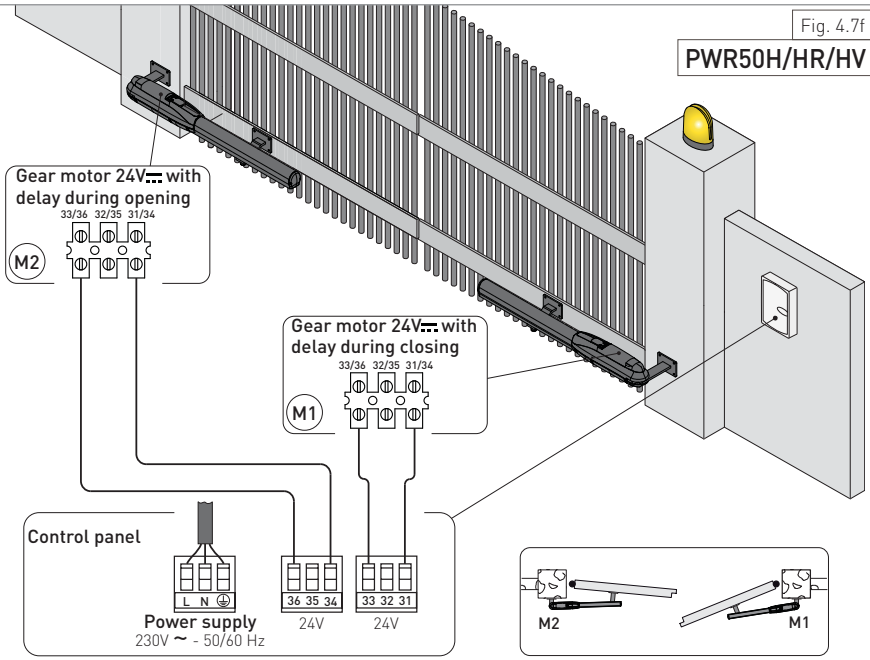
Fig. 4.7e



4.6.2 Ditec PWR50H/HR/HV connection diagram

Fig. 4.7f

PWR50H/HR/HV



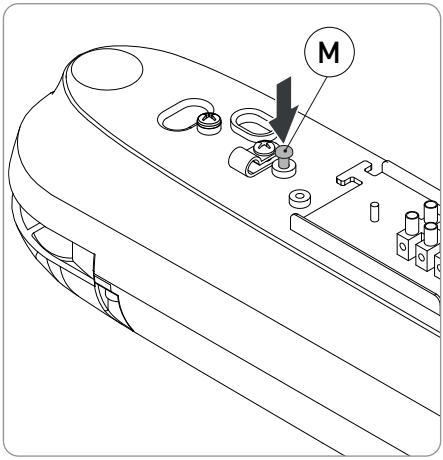
5. Reversible mode

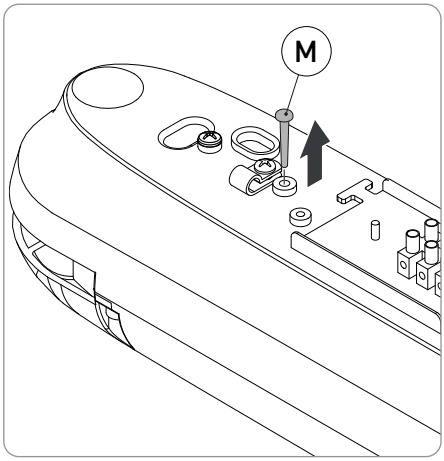
5.1 Mode change for Ditec PWR50AC

The motor is supplied in irreversible mode. To make the motor reversible, insert the pin [M].

NOTE: this operation must be carried out with the motor activated.

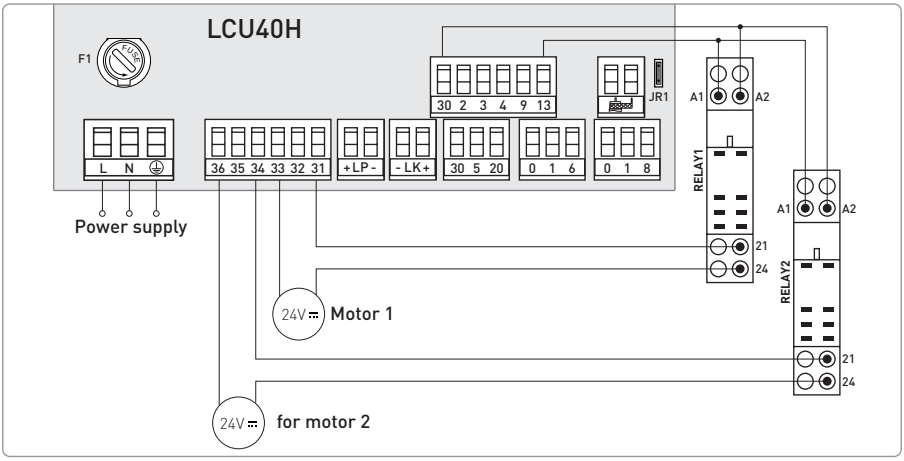
When the pin [M] is removed, the motor becomes irreversible.





5.2 Reversible mode for Ditec PWR50HR: connecting the PWR50KR protection relay

The Ditec PWR50HR motor is reversible, but the PWR50KR protection relay must be installed as shown below:



NOTE: the relays are supplied with PWR50HR motors.

Set the menu to enable the command on output 13:

NB: available via the LCU40H card ver. 2.6, and FW ver. 4.4.0.

6. Routine maintenance plan

Carry out the following tasks every 6 months, or every 36,000 cycles
Disconnect the 230V~ power supply and batteries (if present):
- Clean the gate rotation pins, hinges and drive screw and lubricate them with neutral grease.
- Check the state of wear of the brushes (12), and replace them if necessary.
- Check the resistance of the fixing points.
- Check the electrical connections are in good condition.

Reconnect the 230V~ power supply and batteries (if present):
- Check the power adjustment.
- Check all the commands and safety functions (photocells) are working properly.
- Check the release system is working properly.
- If batteries are fitted, check they are working properly (in continuity) by disconnecting the power supply and performing a series of consecutive operations. At the end, reconnect the 230V~ power supply.

NOTE: for spare parts, see the spares price list.

7. Troubleshooting

Problem	Possible cause	Intervention
The gate doesn't open or close.	No power supply.	Make sure the mains supply is active.
	Gear motor released.	See the release instructions.
	Photocells occupied.	Check the photocells are clean and operating correctly.
	Permanent STOP command.	Check the STOP command or the electronic panel.
	Faulty selector.	Check the selector or electronic panel.
	Faulty remote-control unit.	Check the condition of the batteries.
	Electromechanical locking device not working.	Check the lock is positioned and working correctly.
The gate opens, but it doesn't close.	Photocells occupied.	Check the photocells are clean and operating correctly.

The crossed-out wheelie bin symbol indicates that the product should be disposed of separately from normal household waste. The product should be recycled in accordance with local environmental regulations for waste disposal. By separating a product marked with this symbol from household waste, you will help reduce the volume of waste sent to incinerators or land-fill and minimise any potential negative impact on human health and the environment.

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