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# FERNI KIT Installation Instructions for a "Single" gate...



# THE FERNI-S KIT CONSISTS OF:

- **1 X FERNI MOTOR**
- **1 X CONTROL PANEL**
- **1 X RADIO FREQUENCY CARD**
- 1 X TUNED ANTENNA
- **2 X REMOTE CONTROL TRANSMITTERS**
- **1 X PAIR SAFETY PHOTOCELLS**

# INTRODUCTION

# THESE INSTRUCTIONS WILL SHOW YOU HOW TO INSTALL A FERNI MOTOR TO A SINGLE GATE.

# PLEASE READ THESE INSTRUCTIONS AND DIAGRAMS CAREFULLY BEFORE STARTING ANY WORK.



UNDER NO CIRCUMSTANCES SHOULD THIS EQUIPMENT BE OPERATED UNLESS FITTED TO A GATE.

#### FAILURE TO COMPLY WILL INVALIDATE THE GUARANTEE.

# INSTALLATION INSTRUCTIONS CONTENTS

1) Stage 1:-	Civil & Mechanical Section	Page
1.1 1.2	PRE-INSTALLTION CHECK MOUNTING THE MOTOR BASE PLATE	3 4
2) Stage 2:-	Wiring & Electrical	
2.1 2.2 2.3	FITTING THE CONTROL PANEL IN THE CASING BASIC CABLE LAYOUT LOW VOLTAGE CABLE LAYOUT	6 7 8
3) Stage 3:-	Installation Section	
3.1 3.2 3.3	INSTALLING THE MOTORS INSTALLING THE DRIVE ARMS ADJUSTING THE OPEN & CLOSED CAMS	10 11 12
4) Stage 4:-	Wiring & Electrical (2)	
4.1 4.2 4.3 4.4 4.5 4.6	WIRING THE MOTORS WIRING THE SAFETY PHOTOCELLS INSERTING THE FREQUENCY CARD WIRING IN THE TUNED ANTENNA CODING THE REMOTE CONTROLS POWERING UP THE CONTROL PANEL	14 15 15 16 16 16
5) Stage 5:-	Commissioning the control Panel	
5.1 5.2 5.3 5.4 5.5	INITIAL WIRING & CONTROL PANEL SETUP OPENING & CLOSING THE GATES CONTROL PANEL ADJUSTMENTS AUTOMATIC CLOSE & SAFETY PHOTOCELLS PROGRAMMING THE REMOTE CONTROLS TO THE CONTROL PANEL	18 19 20 21 22
5.6	FINAL ASSEMBLEY	23
6) Troublesh	nooting Guide	25
7) Technical	Information	
7.1 7.2 7.3 7.4 7.5 7.6	TECHNICAL SPECIFICATIONS MOTOR TORQUE SETTINGS ZA5 CONTROL PANEL DESCRIPTION ZA5 WIRING DIAGRAM CONTROL PANEL ADJUSTMENTS ELECTRICAL CONNECTIONS	27 28 29 31 32 33

#### 8) Contact Information

# STAGE 1 CIVIL & MECHANICAL SECTION

#### **1.1 - Pre-Installation Check**

BEFORE BEGINNING YOUR FERNI S GATE INSTALLATION CHECK THE FOLLOWING:

THE GATE POST OR PIERS ARE STRONG ENOUGH TO SUPPORT THE GATE AND THE MOTOR

THE GATE IS STRONG ENOUGH TO BE AUTOMATED.

THE GATE SWINGS FREELY FROM OPEN TO CLOSE AND THERE IS NO FRICTION ON THE HINGS.



IF DISTANCE B IS 0 TO 300mm: DISTANCE A MUST BE AT LEAST 110mm.

IF DISTANCE B IS 300mm TO 380mm: DISTANCE A MUST BE AT LEAST 150mm.

#### **1.2 - Mounting the Motor Base Plate**

Fig 2



USING SUITABLE ANCHOR BOLTS OR CHEMICAL RESIN FOR BRICK PIER SECURITY MOUNT THE MOTOR PLATE TO THE BRICK PIER. FOR WOODEN POSTS IT IS ADVISED TO FIX THE MOTOR PLATE TO THE POST. A THREADED BAR SHOULD BE PLACED ALL THE WAY THROUGH THE POST THEN BOLTED. *Fig 3* 



WHEN MOUNTING THE MOTOR PLATE BE SURE TO RESPECT THE 150mm DIMENSION FROM THE BOTTOM OF THE MOTOR PLATE TO GROUND LEVEL. THIS IS TO ENSURE SUFFICIENT CLEARENCE FOR THE TRANSMISSION DRIVE ARM TO BE INSERTED THROUGH THE MOTOR. ENSURE THAT THE DISTANCE BETWEEN THE CENTRE OF THE FRONT BRACKET 'A' 450mm. THE FRONT GATE BRACKET MUST BE FIXED LOWER THAN THE MOTOR PLATE BY 19mm AS SHOWN



# END OF INSTALLATION STAGE 1

#### **BEFORE STARTING STAGE 2 - Wiring & Electrical PLEASE CHECK THAT YOU HAVE CORRECTLY:**

		Ref	Page
1.	Checked Requirements	1.1	3
2.	Mounted Motor Base Plate	1.2	4

#### NOW STAGE 1 IS FULLY COMPLETED YOU ARE READY TO BEGIN STAGE 2 OF YOUR FERNI AUTOMATION KIT INSTALLATION

# **STAGE 2- WIRING & ELECTRICAL**

# 2.1 - Fitting the Control Panel in the Casing



Securely fasten the control panel PCB to the casing with the screws supplied.



Plug the green connector from the transformer to the PCB ensuring that it connects the correct way.

NB <u>FROG Series Motors:</u> connect the black wires coming out of the board to one capacitor.

#### 2.2 - Basic Cable Layout

THIS DIAGRAM DETAILS THE BASIC CABLE LAYOUT FOR A SINGLE MOTOR.

THE POWER SUPPLY TO THE CONTROL PANEL SHOULD BE LIVE AND PROTECTED IN ACCORDANCE WITH THE 16TH EDITION ELECTRICAL REGULATIONS. THE SUPPLY SHOULD BE RATED AT A MINIMUM OF 6 AMPS. WHEN INSTALLING WIRES OUTDOORS THE CABLE APPROACH TO ALL DEVICES MUST BE FROM BELOW TO CREATE A "DRIP-LOOP" AND THEREBY AVOID UNNECCESSARY WATER INGRESS.



WHEN INSTALLING LOW VOLTAGE CABLE AROUND THE GATEWAY IT IS ADVISED TO PUT ALL LOW VOLTAGE CABLE IN EITHER DUCTING OR ALKATHENE PIPING. ALL CABLE JOINTING SHOULD BE CARRIED OUT ABOVE GROUND.

Fig 5

#### 2.3 - Low Voltage Cable Layout



ALL CAME ACCESSORIES CAN BE WIRED 0.2m STRANDED CABLE (BUGLAR ALARM TYPE). THE TUNED ANTENNA SHOULD BE WIRED WITH COAXIAL CABLE (RG59).

# END OF INSTALLATION STAGE 2

#### **BEFORE STARTING STAGE 3 - Installation PLEASE CHECK THAT YOU HAVE CORRECTLY:**

		Ref	Page
1.	Fitted the Control Panel in the Casing	2.1	6
2.	Installed Basic Cable Layout	2.2	7
2.	Installed Low Voltage Cable Layout	2.3	8

#### NOW STAGE 2 IS FULLY COMPLETED YOU ARE READY TO BEGIN STAGE 3 OF YOUR FERNI AUTOMATION KIT INSTALLATION

# STAGE 3 INSTALATION SECTION

### 3.1 - Installing the Motor



INSERT THE MOTOR INTO THE MOTOR BASE PLATE IN ALIGNMENT WITH THE 4 PRE-DRILLED HOLES AND FIX IT WITH THE TWO M8 X 110 BOLTS & NUTS SUPPLIED. FOR RIGHT HAND INSTALLATIONS, REVERSE THE POSITION OF THE MOTOR AND USE THE SECOND PAIR OF HOLES (SEE FIGURE 7)

#### 3.2 - Installing the Drive Arms



INSERT THE STRAIGHT ARM THROUGH THE GEARBOX, HOLDING IT IN PLACE FIT THE FLARED WASHER USING THE M6 X 20 COUNTER SUNET SCREW. GRIP THE SHAFT IN PLACE BY TIGHTENING THE FOUR GRUB SCREWS TOP AND BOTTOM OF THE GEARBOX. JOIN AND FIX THE TWO ARMS TOGETHER WITH THE WASHER AND THE M8 X 16 BOLT.

RELEASE THE MOTOR (ROTATING THE HAND GRIP IN THE DIRECTION OF THE ARROW.



FIT THE CURVED ARM TO THE FRONT MOUNTING BRACKET USING THE M12 X 50 BOLT AND M12 NUT.

### 3.3 - Adjusting the Open & Closed Cams



#### OPEN POSITION

RELEASE THE GATE MOTOR AND MOVE THE GATE TO THE DESIRED OPEN POSITION. NOW ROTATE THE UPPER CAM UNTIL IT MAKES CONTACT WITH THE MICROSWITCH. CLOSE THE GATE AND TIGHTEN THE SCREW IN THE CAM.

#### CLOSED POSITION

RELEASE THE GATE MOTOR AND MOVE THE GATE TO THE DESIRED CLOSED POSITION. NOW ROTATE THE LOWER CAM UNTIL IT MAKES CONTACT WITH THE MICROSWITCH. OPEN THE GATE AND TIGHTEN THE SCREW IN THE CAM.

# END OF INSTALLATION STAGE 3

#### **BEFORE STARTING STAGE 4 - Wiring & Electrical (2) PLEASE CHECK THAT YOU HAVE CORRECTLY:**

		Ref	Page
1.	Installed the Motor	3.1	9
2.	Installed the Drive Arm	3.2	10
3.	Adjusted the Open & Closed Cams	3.3	11

#### NOW STAGE 3 IS FULLY COMPLETED YOU ARE READY TO BEGIN STAGE 4 OF YOUR FERNI AUTOMATION KIT INSTALLATION

# STAGE 4 WIRING & ELECTRICAL (2)

### 4.1 - Wiring the Motor

ENSURE THAT THE MOTOR IS ADEQUATELY EARTHED.



Fig 11

#### 4.2 - Wiring in the Safety Photocells

SAFETY BEAMS SHOULD BE FITTED APPROXIMATELY 15 INCHES FROM GROUND LEVEL



IF FITTING A SECOND ARC LINE OF SAFETY BEAMS THEN C & NC MUST BE WIRED IN "SERIES"

#### 4.3 - Inserting the Radio Frequency Card

Fig 13



#### 4.4 - Wiring in the Tuned Antenna



#### **4.5 - Coding the Remote Controls**

1. REMOVE THE BATTERY COVER & CASING OF THE REMOTE CONTROL HANDSET TO REVEAL THE DIAGRAM BELOW



### 4.6 - Powering up the Control Panel

CONNECT PROTECTED MAINS POWER TO TERMINALS L1 + L2 IN THE CONTROL PANEL (L2 BEING LIVE!). ENSURE THAT THE CONTROL PANEL IS ADEQUATELY EARTHED.

# END OF INSTALLATION STAGE 4

#### **BEFORE STARTING STAGE 5 - Commissioning the Control Panel**

PLEASE CHECK THAT YOU HAVE CORRECTLY:

		Ref	Page
1.	WIRED THE MOTOR AS SHOWN	4.1	13
2.	WIRED IN THE SAFETY PHOTOCELLS	4.2	14
3.	INSERTED THE RADIO FREQUENCY CARD	4.3	14
4.	WIRED IN THE TUNED ANTENNA	4.4	15
5.	PROGRAMMED THE REMOTE CONTROLS	4.5	15
6.	POWERED UP THE CONTROL PANEL	4.6	15

#### NOW STAGE 4 IS FULLY COMPLETED YOU ARE READY TO BEGIN STAGE 5 OF YOUR FERNI AUTOMATION KIT INSTALLATION

# STAGE 5 COMMISSIONING THE CONTROL PANEL

### 5.1 - Initial Wiring & Control Panel Setup

Fig 16



- 1. CONNECT POWER TERMINALS L1 L2 AND A SUITABLE EARTH (L2 BEING LIVE!)
- 2. SELECT THE MOTOR POWER SETTING ON THE TRANSFORMER TO LEVEL 1 FOR COMMISSIONING



Fig 17

- 3. SELECT DIPSWITCHES 1 & 2 OFF FOR COMMISSIONING
- 4. ENSURE HARD WIRE LINK IS FITTED BETWEEN TERMINALS 1 & 2 AND 2 & C1



### 5.2 - Opening & Closing the Gate



MOMENTARILY PULSE TERMINALS

 & 3 WITH A PIECE OF WIRE
 TRAILING FROM TERMINAL 2 AND
 MOMENTARILY TOUCHING
 TERMINAL 3.

THE GATE SHOULD START TO OPEN. IF THE MOTOR STARTS TO CLOSE TURN THE POWER OFF TO THE CONTROL PANEL AND CHANGE AROUND X-Y (MOTOR 2) TO CHANGE THE MOTOR DIRECTION.



 ONCE YOU HAVE PROVED THE MOTOR DIRECTION USE TERMINALS 2 & 7 TO OPEN AND CLOSE THE GATES WITH A TRAILING WIRE ONCE AGAIN INTO TERMINAL 2, MOMENTARILY TOUCHING TERMINAL 7.

### **5.3 - Control Panel Adjustments**

 <u>TO SET THE TOTAL RUNNING TIME</u> OF THE MOTORS, ADJUST POTENIOMETER TL TO ALLOW THE MOTORS TO RUN FOR A FURTHER 5-7 SECONDS AFTER THE MOVEMENT CYCLE HAS BEEN COMPLETED (I.E FULLY OPEN OR FULLY CLOSED)



2. <u>CHECK THE SENSITIVITY</u> OF THE GATE BY TRYING TO PHYSICALLY STOP THE GATE AND ADJUST THE POWER SETTINGS ON THE TRANSFORMER ACCORDINGLY. IF MORE POWER IS NEEDED FOR A HEAVIER GATE THEN SWITCH OFF POWER AND MOVE TRANSFORMER WIRE UP TO SETTING 2. FOR RECHECKING SENSITIVITY, REPEAT PROCESS UP TO 3 OR 4 IF EVEN MORE POWER IS NEEDED.



Fig 23

### 5.4 - Automatic Close & Activating Safety Photocells





1. <u>TO SELECT AUTOMATIC CLOSING</u>, SELECT DIPSWITCH 2 **ON**.

SET THE AUTOMATIC CLOSING TIME BY ADJUSTING POTENTIOMETER TCA



FULLY ANTI-CLOCKWISE WILL APPROX. AUTOMATICALLY CLOSE THE GATE AFTER 10 SECONDS AND FULLY CLOCKWISE WILL APPROX. CLOSE THE GATE AFTER 80 SECONDS. A SENSIBLE SETTING IS ABOUT HALFWAY (I.E 6 O'CLOCK POSITION) WHICH WILL AUTOMATICALLY CLOSE THE GATES AFTER APPROX. 30 SECONDS.





 FOR RE-OPENING DURING CLOSING. REMOVE HARD WIRE LINK BETWEEN
 2 & C1 AND INSERT SAFETY BEAM WIRES AS SHOWN.

### 5.5 - Programming the Remote Controls to the Control Panel

#### To use the remote control system, proceed as follows:

- A) Turn power OFF and insert AF radio frequency board then turn power back on
- B) Code the transmitter. See the relevant instruction sheet (See Fig 11)
- C) To store the code on the circuit board Proceed as follows:

Press and hold down the YellowCH1 button on the radio receiver card (the signal LED will start to flash)

At the same time transmit on the top button of your remote control; keep both the top button and the yellow receiver button pressed until the LED stops flashing and remains on constant to indicate that the code has been successfully stored.

- **N.B.** If you wish to change the code on your transmitter in the future, simply repeat the procedure above with all the remotes on the installation.
- **WARNING:** Disconnect the power supply from the control board before inserting OR removing the AF radio-frquency card from the socket.

#### **5.6 - Final Assembley**

ONCE FINAL COMMISSIONING HAS BEEN COMPLETED FIT THE MOTOR COVER WITH THE 4 X 3.9 X 13 SCREWS PROVIDED.

Fig 27



EMERGENCY RELEASE (TO BE DONE WHILE THE MOTOR IS OFF)



IN THE CASE OF A POWER FAILURE OR MALFUNCTION, UNLOCK THE GEAR MOTOR BY USING THE KNOB PROVIDED.

# **END OF INSTALLATION** STAGE 5

#### **PLEASE CHECK THAT YOU HAVE CORRECTLY:**

		Ref	Page
1.	SET POWER SETTING, SET DIPSWITCHES COMMISSIONING, ENSURE WIRE LINK IS FITTED BETWEEN TERMINALS 1 & 2	S FOR	
	AND 2 & C1	5.1	17
2.	SET THE OPENING AND CLOSING TIMES FOR GATES	5.2	18
3.	ADJUSTED THE CONTROL PANEL	5.3	19
4.	IF REQUIRED, ACTIVATED AUTOMATIC CLOSING AND SAFETY PHOTOCELLS	5.4	20

5.	PROGRAMMED THE REMOTE TO THE CONTROL PANEL	5.5	21
6.	FITTED MOTOR COVER	5.6	22

# **6. TROUBLESHOOTING GUIDE**

A MULTIMETER WILL BE NEEDED

PROBLEM	SOLUTION
GATE WILL NOT RESPOND WHEN GIVEN A COMMAND	1. CHECK POWER SUPPLY TO THE CONTROL PANEL.
	2. CHECK CONTROL PANEL FUSES.
	3. CHECK HARD WIRE LINK FITTED BETWEEN TERMINALS 1 & 2.
GATE IS OPEN BUT WILL NOT CLOSE AND GREEN LED IS FLASHING	1. CHECK SAFETY BEAMS ARE WIRED CORRECTLY. (IF MORE THAN ONE SET OF BEAMS ARE FITTED THEY MUST BE WIRED IN SERIES.)
	2. CHECK THAT THERE IS POWER GOING TO THE BEAMS, IF NOT RESTORE POWER.
	3. IF SAFETY BEAMS ARE NOT FITTED ENSURE THAT A HARD WIRE IS FITTED BETWEEN TERMINALS 2 & C1.
	4. REMOVE SAFETY BEAM WIRES 2 & C1 FROM CONTROL PANEL AND CHECK IF YOU HAVE A NORMALLY CLOSED CIRCUIT COMING FROM THE BEAMS.
WHEN COMMISSIONING GATE AUTOMATICALLY OPEN BUT DO NOT AUTOMATICALLY CLOSE	1. MOTOR WIRES ARE WRONG WAY ROUND. CHECK AND PROVE MOTOR DIRECTION BY MOMENTORIALLY PULSING TERMINALS 2 & 3. THE GATE SHOULD OPEN UP. TURN AUTOMATIC CLOSING <i>OFF</i> (DIP SWITCH 2) UNTIL MOTOR DIRECTION HAS BEEN PROVED.

CONTINUED ON NEXT PAGE

PROBLEM	SOLUTION
GATE WILL NOT RESPOND TO REMOTE CONTROL COMMAND	1. AF FREQUENCY CARD NOT FITTED TO CONTROL PANEL.
	2. REMOTE CONTROL HAS NOT BEEN PROGRAMMED INTO THE CONTROL PANEL.
	3. REMOTE CONTROL HAS THE WRONG CODE SETTING.
	4. "OPERATOR PRESENT" HAS NOT BEEN SELECTED TO DEACTIVATE RADIO REMOTE CONTROLS (DIPSWITCH 1).
	5. WRONG FREQUENCY CARD FITTED FOR THE REMOTE CONTROL.

# *IF THE PROBLEM IS STILL APPARENT CONTACT THE* CAME *TECHNICAL HELPLINE:*

# 0115 921 0430

THIS INSTALLATION WAS COMPLETED BY:
NAME ADDRESS
TEL MOBILE DATE OF INSTALLATION

# 7. TECHNICAL INFORMATION

# 7.1 - Technical Specification

Туре	Weight	Power Supply	Nominal Current	Motor Power	Duty Cycle	Torque	Capacitor
F 1000	14 Kg	230V a.c	1,3 A	150 W	30%	*320 N.m	10 uF



Width of Motor	Weight of Gate
2.00 m	800 kg
*2.50 m	600 kg
3.00 m	500 kg
3.50 m	450 kg
4.00 m	400 kg

\* AN ELECTRIC LOCK IS SUGGESTED WHEN THE GATE WING IS WIDER THAN 2.5M



## 7.2 - Motor Torque Settings

SEE ALSO PAGE 14

To vary the motor torque, move the indicated spade connector to one of the four position : 1=min, 4=max.

**N.B.** It is always best to start from position one and increase the torque setting as required.



## 7.3 - ZA5 Control Panel Description

### **Description of Control Panel:**

The ZA5 control board is suitable for controlling one automation of ATI, FERNI and FROG series 230V swing gates with up to 600W power and 50-60Hz frequency. Wholly designed and built by CAME S.p.A. it meets UNI8612 regulations in force. The board is inserted and fixed to the ABS case (S4339 or S4340), which has an IP54 protection level, with air recycling inlet and transformer. the board requires 230V AC at terminal blocks L1-L2 and the inlet is proetcted with two 5A fuses. A 3.15A fuse proetcts the low voltage command devices. The accessories' total wattage (24V) must not exceed 20W.

### Safety:

PHOTOCELLS CAN BE CONNECTED TO OBTAIN:

*Re-Opening*: <u>Re-opening</u> during closure (2-C1), if the photocells identify an obstacle while the gate is closing, they will reverse the direction of movement until the gate is completely open;

<u>Total stop</u> (1-2), shutdown of gate movement without automatic closing; a pushbutton or radio remote control must be actuated to resume movement.

### Accessories whichcan be Connected to this Unit:

<u>Flashing signal light</u> when gate is in motion 25W max. (E1-W) <u>Electric lock</u> (11-ES) <u>Radiofrequency "AF" board</u>

### **Other functions available**

<u>Automatic closing</u> The automatic closing timer is automatically activated at the end of the opening cycle. The preset, adjustable automatic closing time is automatically interrupted by the activation of any safety system, and is deactivated after a STOP command of in case of power failure.

<u>"Operator present" function</u> Gate operators only when the pushbutton is held down (the radio remote control system is deacticvated);

## Adjustments

<u>*Trimmer TL*</u> Adjustment of operating time; <u>*Trimmer TCA*</u> Adjustment of automatic closing

**Caution!** Disconnect the unit from the main power lines before carrying out any operation inside the unit.

### **Other functions available:**

Automatic closing: The automatic closing timer is automatically activated at the end of the opening cycle. The pre-set, adjustable automatic closing time is automatically interrupted by the activation of any safety system, and is deactivated after a STOP command or in case of power failure.

"Operator present" function:

Gate operates only when the pushbutton is held down (the radio control system is deactivated)



### 7.4 - ZA5 Wiring Diagram



Terminals 1 and 2, 2 and C1 are normally closed circuits and if they are not used they must be linked

Safety beams which are connected to obtain Re-opening During the closing cycle

## 7.5 - Control Panel Adjustments

**Trimmer T.L.** - Adjustment of operating time from a minimum of 0 seconds to a maximum of 120 seconds N.B. it is advised to let the motors run on for between 6 and 8 seconds after the last gate has fully close.

**Trimmer T.C.A** - Adjustment of automatic closing time from a minimum of 1 to a maximum of 120 seconds.





# 7.6 - Electrical Connections



# NOTES

# **8. CONTACT INFORMATION**



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THIS INSTALLATION WAS COMPLETED BY:
NAME
ADDRESS
TEL MOBILE DATE OF INSTALLATION