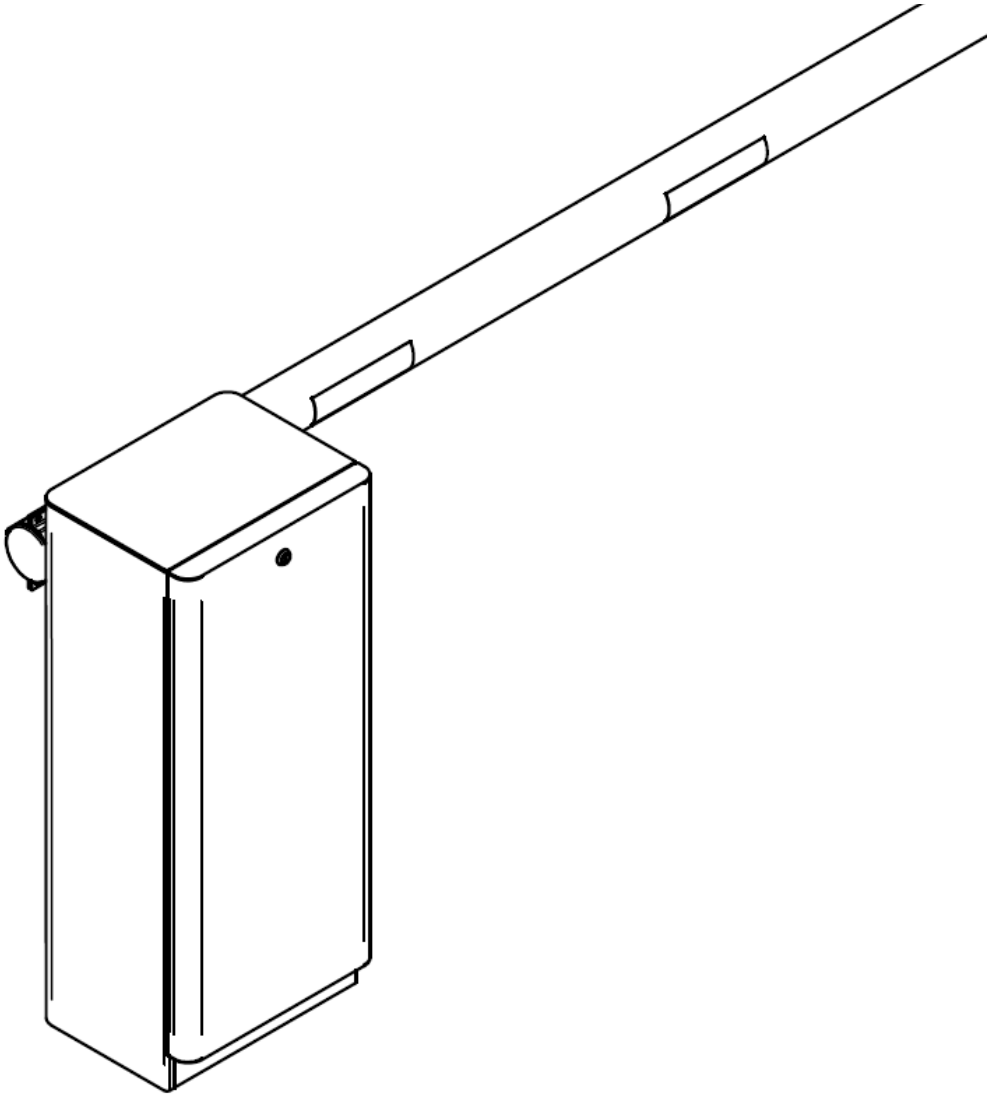
Automatic barrier AG900F

User manual



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1. Table of contents

2. Acknowledgement

Thank you for purchase and congratulations on choosing one of our automatic barriers. All AUTOGARD products are launched on the market only after they prove themselves successful in test installations in the most demanding conditions.
To ensure the best experience with our products, we use only the top-quality materials and components and perform series of tests throughout the production process. AUTOGARD products have been designed for high performance, easy maintenance and long service life. The production fully complies with technical standards and regulations in force.

3. Purpose of use

Automatic barriers by AUTOGARD are intended to control and manage vehicular movement into/from reserved areas.
Barriers may be operated only by competent, trained or instructed individuals.

Automatic barrier AG900F is driven by a high torque three-phase electric motor and a V-belt on sufficient dimensioned worm gearbox.

Control cabinet are come in powder coated steel in any RAL colour. Arm is come in aluminium with white coating.

4. Unallowed operation

It is forbidden to place any weight on barrier's arm and/or to apply any force on the arm. Also, it is forbidden to use this product in such a way, which may lead to damaging the product and/or endangering persons and/or property.

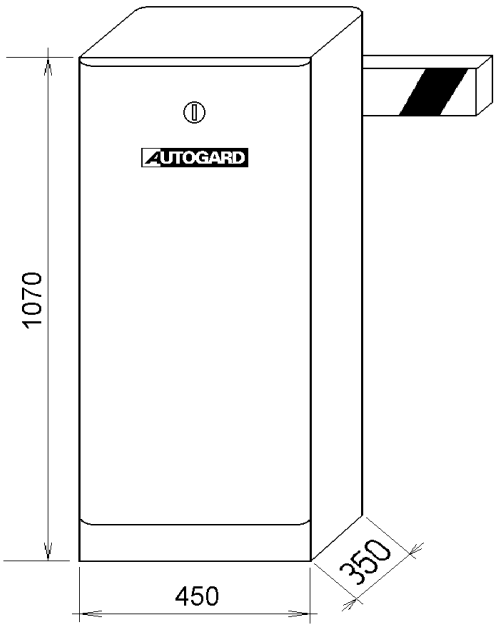
5. Important noticed

The Declaration of Conformity and Certification do not cover the accessories and other equipment, which may be attached to the barrier.

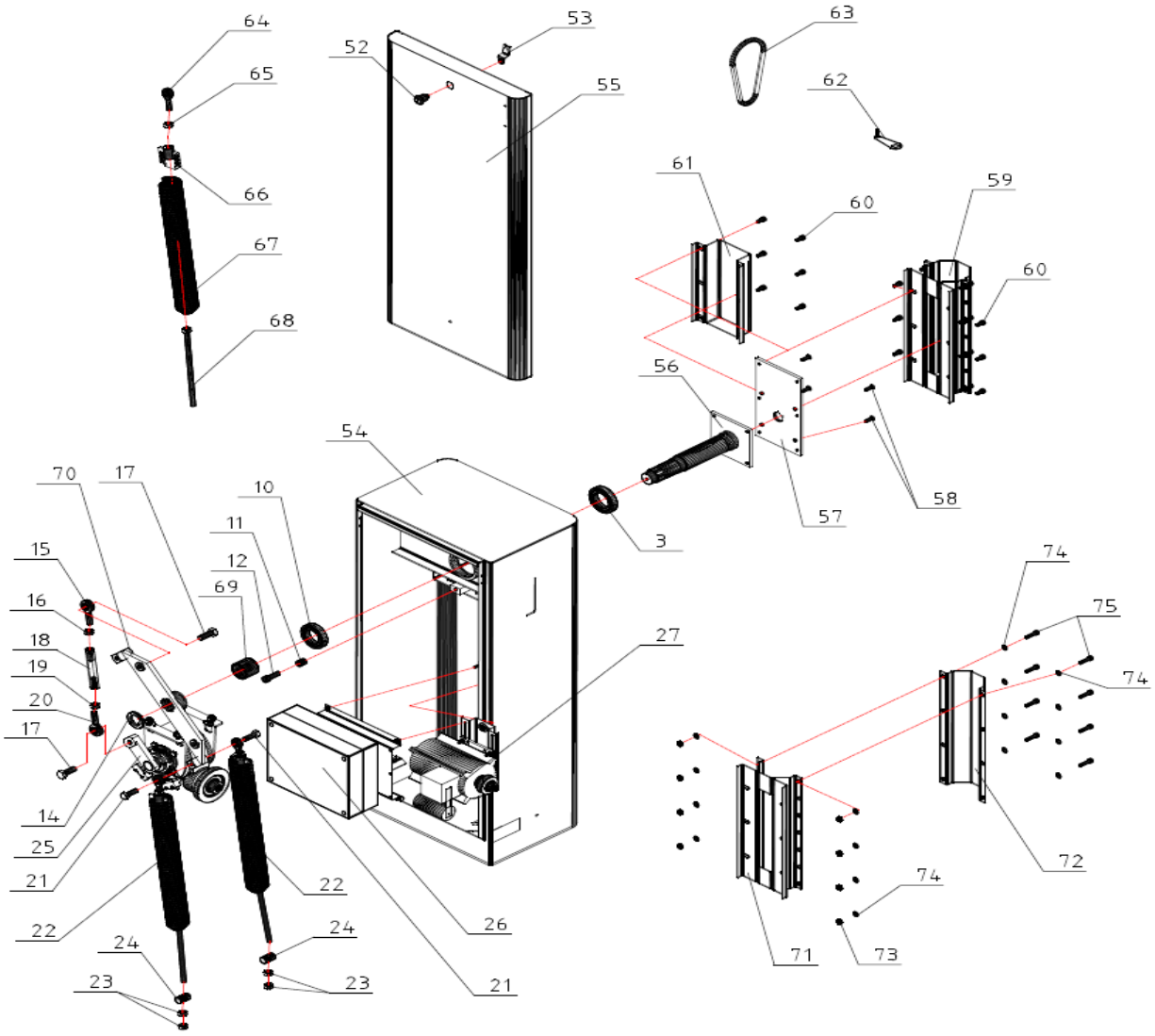
6. Specifications

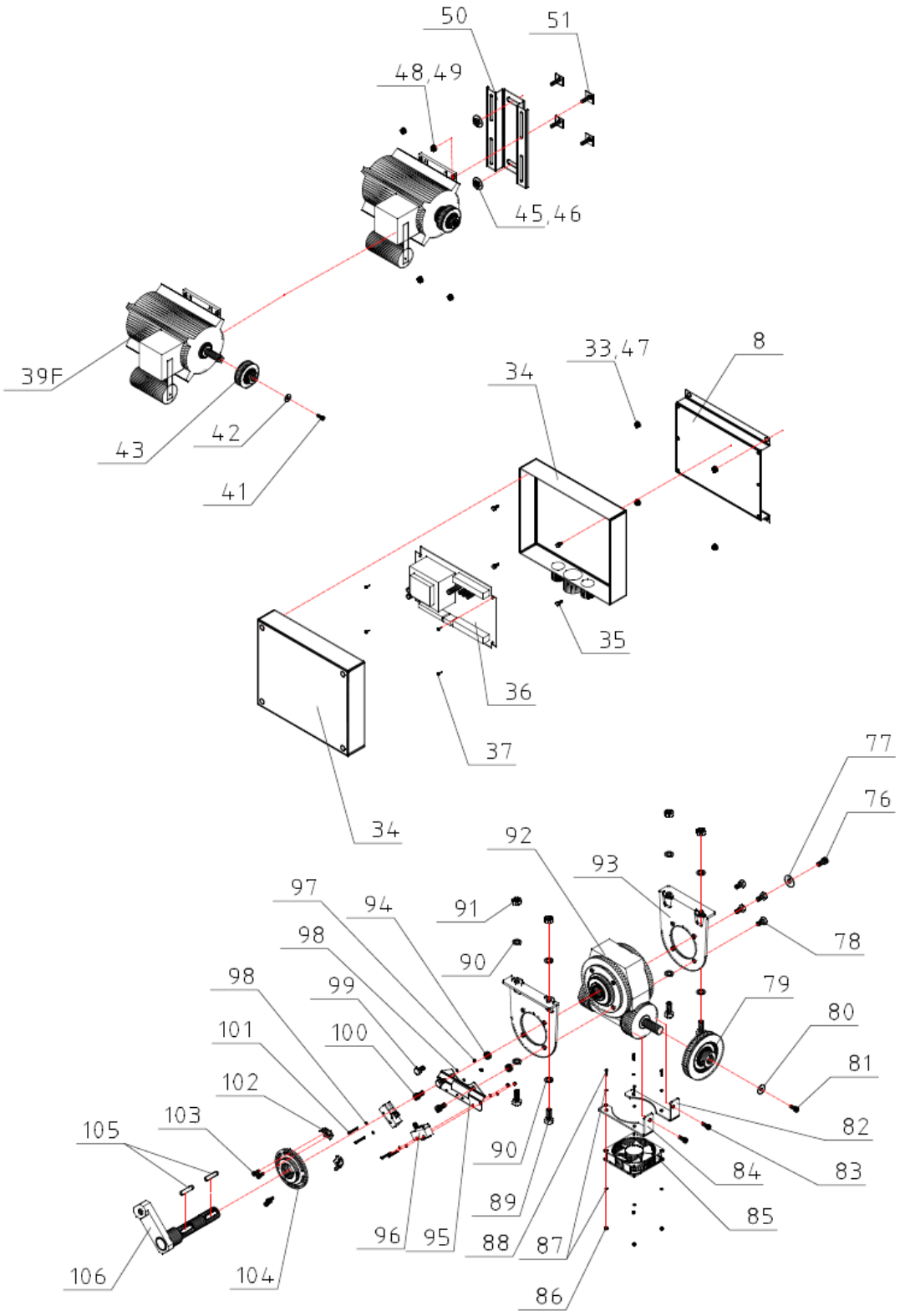
6.1. Parameters, dimensions

Model	AG900F
Power supply	230V AC/50Hz
Power consumption	electronics – max. 65W, motor 250W 400V/50Hz
Control unit	microprocessor with frequency converter
Boom lengths	2m – 9m
Open/close speed	5 - 7 s
Closing	Automatic/manual
Protection rating	IP 43
Dimension	450x350x1070 mm
Weight	130 kg
Storage temperature	+10°C - +40°C
Operating temperature	-20°C - +70°C



6.2. Detail schematic of AG900F & common parts

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7. Installation

7.1. Important notice

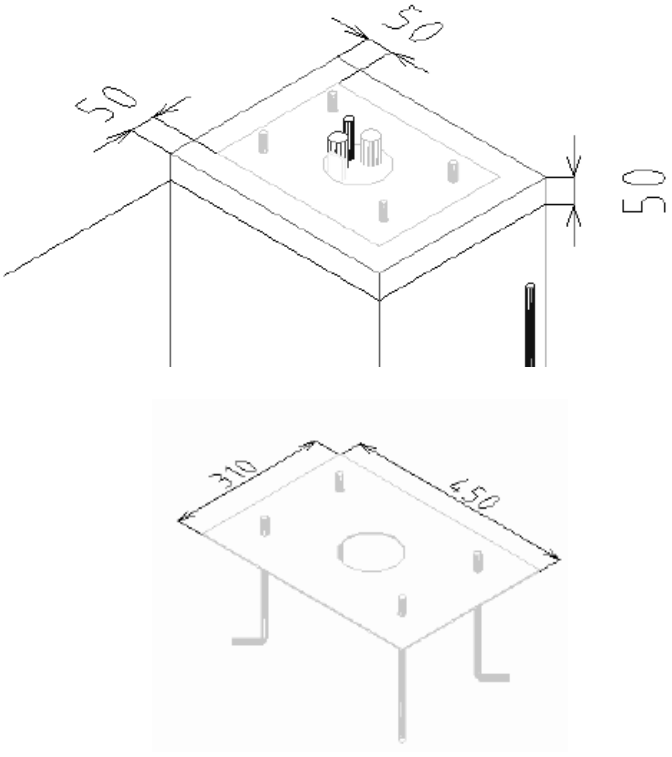
Automatic barriers need permanent power supply.
The power must connect behind current protector (RCCB).

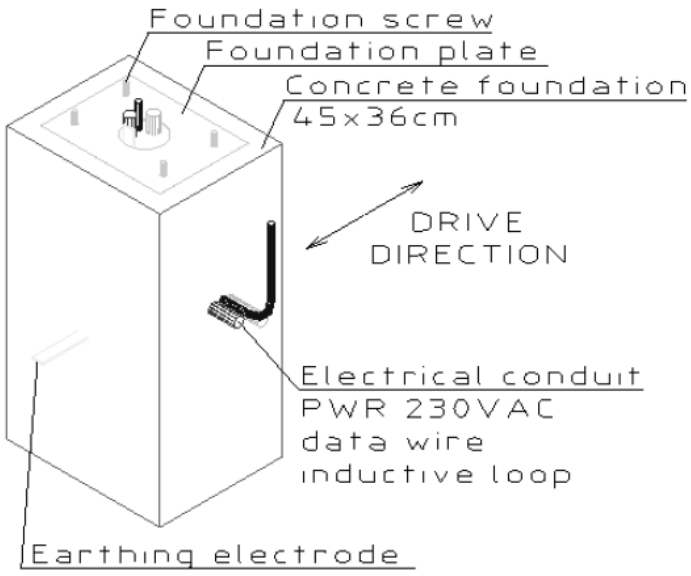
Installation can be carried out only by approved person, who has valid certification according to directive 50. The person has been instructed to installation by the supplier or the installation is carry out under supplier supervision.

7.2. Concrete foundation

Concrete foundation will be built below the frost depth, will be of suitable size and solid prior to the installation of barrier operator. All wiring shall be routed and protected by suitable electrical conduits. It is recommended for the foundations to exceed the fitting kit by 50mm on each side.

Ensure minimum of 20 cm free space at each side of the fitting kit for easy access during installation and maintenance.





7.3. Installation procedure

1) Clean fitting set before the installation process.
2) Fit the barrier using a fitting set, levelling a tighten (4 x washer, 4 x nut M12) barrier must not move any direction after tightening all screws (during moving barrier acts power up to 5kN)
3) The boom with the holder by type of boom (rectangle or round profile) we attach 4 - 8 imbus screws M8 on the axis of rotation of boom.
4) Rod length defines opening of boom ranging 90º and is set during manufacturing. Is possible the length adjusts, if it necessary
5) Connect earthing of barrier to earthing screw of the control cabinet
6) Connect electric wiring to specific terminals (L, N, PE)
7) Connect ethernet (model with ethernet module)
8) Connect other devices (detectors, button, photocell, etc.)
9) Check the connection to power grid is in compliance with all legal.

8. Service

8.1. Boom length, springs

Using incorrect balancing springs, pulleys and V-belts may result in damaging the product and endangering persons and/or property. Adhere to the following information depending on your barrier configuration.

		Balancing spring		Pulley / V-belt
Boom length (m)	Boom profile	Boom without accessories	Boom with accessories	
6	Rectangular	Green + Green	Green + Blue	150 / Z10x580
	Round	Blue	White	100 / Z10x475
7		Green + Green	Green + Blue	112,5 / Z10x500
8		Green + Blue	Blue + Blue	150 / Z10x580
9		Blue + Blue	Blue + White	150 / Z10x580

8.2. Balancing springs

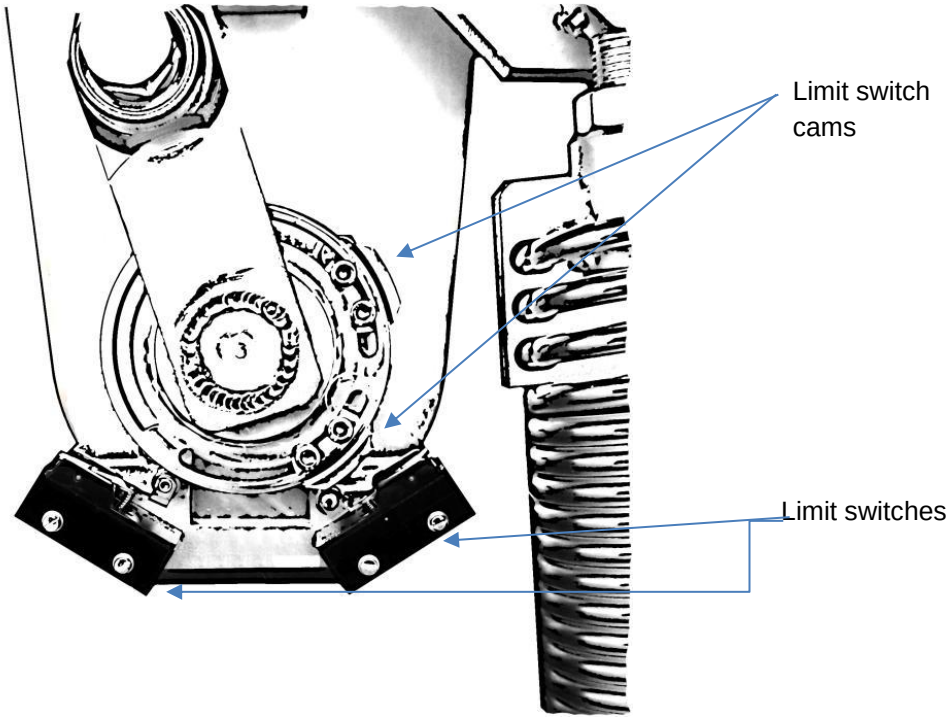
After assembling the barrier with boom is necessary check balancing of the boom by spring via **Chyba! N enalezen zdroj odkazů.**. The barrier is assembled for specific length of boom from manufacturing. (speed, balancing). If is install the boom of other length, is necessary will do following:

- Balancing of boom - perform with mounted boom of final length, with all accessories, spring/springs and disconnecting the rod from gearbox to axis of boom.
- Balancing we do it by stretching or releasing the spring with a bolt on the lower end of the spring. Balanced system the boom - the spring must have fluently moving in full range. After the balancing, connect the boom with rod from gearbox and check position in 90 º , fix the nuts. This operation is important in terms fluently moving of the boom and minimal mechanical stress the parts of control cabinet.

Note: Balancing is necessary repeat with every change type of the boom (Rectangular/Round profile) , disassembly accessories(e.g. STOP table, pressure slat) and change length of the boom(e.g. vehicle accident).

8.3. Fine-tuning boom end positions

Optimum horizontal (closed) end position of boom shall be perpendicular to barrier operator and the range of motion to vertical (open) end position shall be 90°. To allow adjustments to specific conditions of each installation site the range of motion is set larger than 90° from factory. This usually means that the boom will travel beyond its optimum end positions and it is necessary to fine-tune one or both end positions. Both end positions are set by limit switches, which can be found near a cam shaft in front of a gearbox holder. Adjust the position of limit switch cams on the cam shaft to set a new end position. Switch cams are mount imbus screw M5.



8.4. Emergency (manual) open/close

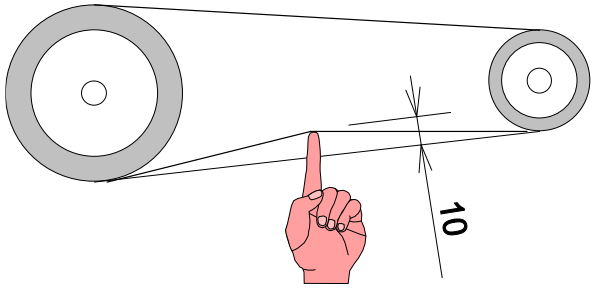
There may be situations when it is necessary to open or close barrier manually, e.g. in case of power outage. For such case, automatic barrier is equipped with a hand wheel for manual open/close. The wheel is located on electromotor, opposite side from a V-belt pulley. Rotate hand wheel in desired direction to manually open/close the barrier.

Disconnect barrier from power supply before performing manual open/close!

8.5. Maintenance

Regular maintenance of automatic barriers ensures their trouble-free performance and extends service life. For the best results it is recommended to perform the following operations every three months:

1. Earthing screw check – tighten, if necessary.
2. Connected cables check – tighten, if necessary.
3. Bolt and screw joints check – tighten, if necessary.
4. Apply penetrating oil (WD-40 or similar) on rod end bearings.
5. Check V-belt tensioning – adjust by reducing or increasing centre distance of pulleys, if necessary. Optimal belt deflection is 10 mm.



8.6. Troubleshooting

Problem	Explanation	Action
By command open/close boom does not open/close.		Check error on display (error can be visible together with command only)
	Broken cable	Control LED must be active for specific input – check cable
Boom does not fully open or close.	Incorrect settings	Check settings of control unit.
	Error	Check table of error state E0x.
Barrier does not operate (there is nothing on controller display and no LEDs are active).	Main power supply down	Check main power supply
Barrier does not operate (LEDs on controller are active but there is nothing on controller display).	Fuse „F1“	Change fuse
Error state „E01“	Wrong contact	Check clamp – tighten, if necessary
	Broken cable	Check cable
	Safety feature error	Remove error from safety feature (SAFE)
Error state „E02“	Wrong contact	Check clamp – tighten, if necessary
	Wrong end-position switch	Change end-position switch

Error state „E03“	Boom is blocked.	Unblock boom mechanical (e.g. obstacle...)
Error state „E04“	Wrong contact	Check clamp – tighten, if necessary
	Too many commands, at the same time	Check all inputs, control LEDs are inactive
Error state „E05“	Wrong contact	Check clamp – tighten, if necessary
	Setting permanent state	Turn off permanent state (inputs LOCK)
Error state „E06“	Wrong contact	Check clamp – tighten, if necessary
	Broken boom	Move boom back, to right position
	Open door of cabinet	Close door
Error state „E07“	Motor overloading	Boom hits an obstacle or is overloading
Error state „E09“	Fuse „F2“	Change fuse
	Wrong contact	Check clamp – tighten, if necessary
	Wrong switching power supply	Change switching power supply

9. Control unit

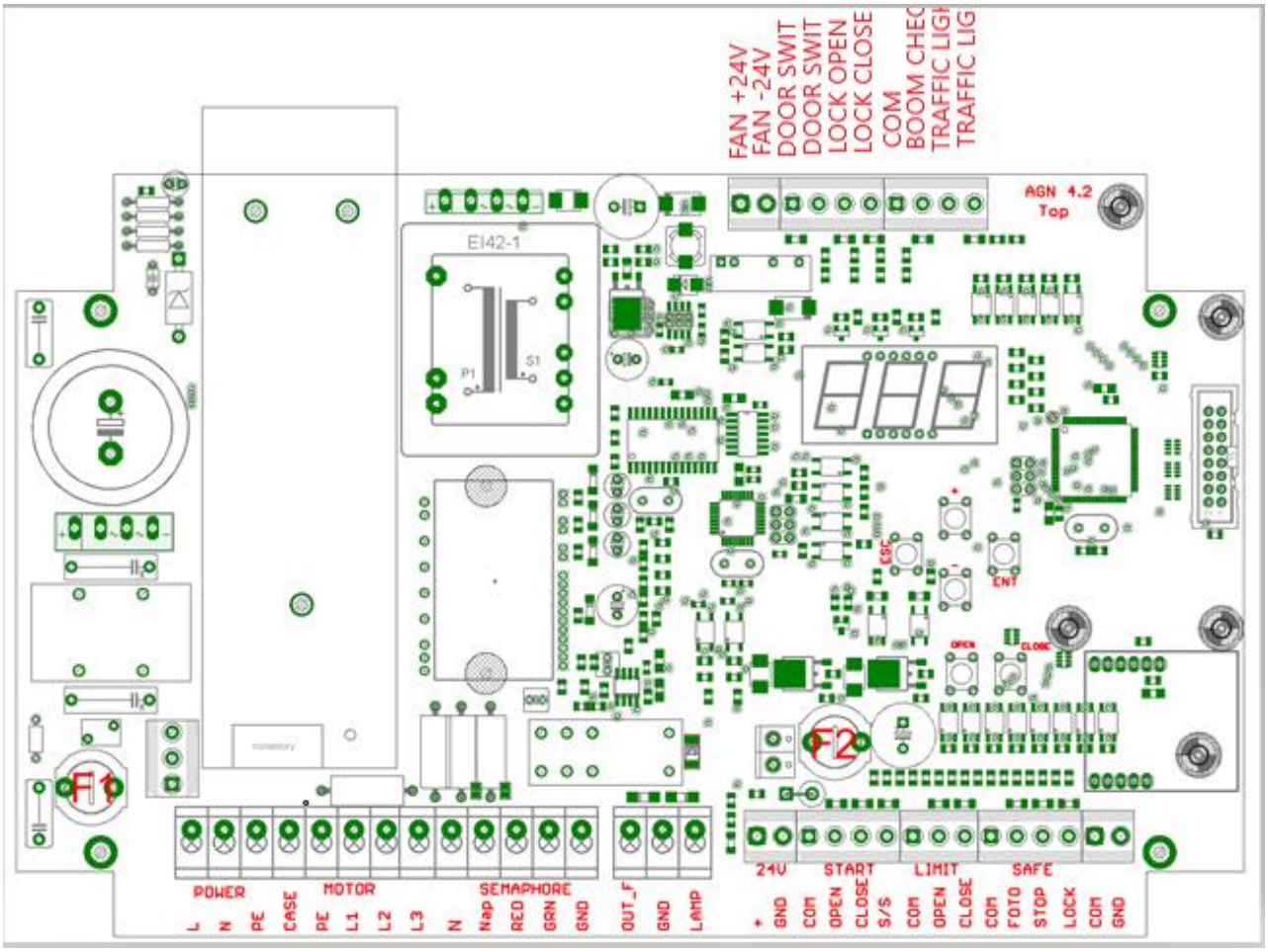
9.1. Control unit AGN4.x

9.1.1. Description

Automatic barrier AG900F is equipped with control unit AGN4.x microprocessor-based control unit, which evaluates input from peripherals (loop detectors, safety photocells, remote receiver etc.). A set of programming buttons allows to change settings via display.

To the unit is possible connection various peripherals – electromotor, end-position switches, relay modules, RS-485 module etc.

9.1.2. Schematic



9.1.3. Fuses

Fuse	Type	Value	Note
F1	T	5A	Motor + Processor
F2	F	3,15A	24VDC

9.1.4. Inputs/outputs of AGN4.x

9.1.4.1. Bottom side (left to right) – power and control I/O

CLAMP	SECTION	DESCRIPTION
L	POWER	230V AC – single phase
N		230V AC – neutral
PE		230V AC – protective earth
CASE	CASE	Connection to earthing bolt
PE	ELECTROMOTOR	Electromotor– protective earth PE
L1		Electromotor – phase L1
L2		Electromotor – phase L2
L3		Electromotor – phase L3
N	SEMAPHORE	Traffic light – common conductor for 230V AC
Nap		Traffic light – power supply for outputs (24V, 230V)
RED		Traffic light – phase (230V AC) for red light
GRN		Traffic light – phase (230V AC) for green light
GND		Traffic light – ground 24VDC (GND AGN)
OUT_F		Programmable output
GND		Common output GND for OUT_F and LAMP
LAMP		Output for self-flashing beacon or self-flashing boom lights
24V +	24V	Output 24VDC power supply for accessories, max 300mA
24V - / GND		Output 24VDC power supply for accessories, max 300mA
COM	START	Control inputs – common
OPEN		Control input – open push button (N.O.)
CLOSE		Control input – close push button (N.O.)
S/S		Control input – Step by step (N.O.)
COM	LIMIT	Limit switch input – common
OPEN		Limit switch input – Open end position limit switch (up-position)
CLOSE		Limit switch input – Close position limit (down-position)
COM	SAFE	Safety inputs - common
FOTO		Safety inputs – photocells, blocks closing, (N.C.)
STOP		Safety inputs - stop push button, stops any boom movement (N.C.)
LOCK		Safety inputs – permanent open (N.O.), barrier remains open for signal duration
COM		Inputs - common
GND		GND

9.1.4.2. Top side – control I/O

CLAMP	Section	DESCRIPTION
FAN +24V DC		+24V fan power supply (AG/M1 only)
FAN -24V DC		-24V fan power supply (AG/M1 only)
DOOR SWITCH N.C.		Inputs for signal switch of opened cabinet door (N.C.)
DOOR SWITCH COM		Inputs for signal switch of opened cabinet door (COMMON)
LOCK.OPEN		Permanent open input (N.O.) - barrier remains open for signal duration, all other commands are ignored
LOCK.CLOSE		Permanent close input (N.O.) - barrier remains close for signal duration, all other commands are ignored
COM		Common input
BOOM CHECK		Boom damage check – breakaway arm mechnism (N.C.)
Traffic light control		-24V traffic light remote control input
Traffic light control		+24V traffic light remote control input

10. Settings

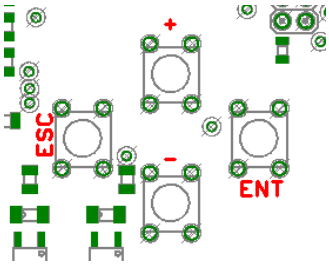
10.1. Start the control unit

After connection the power supply the green LED lights up in right-up corner and relevant LED in the line according to activated inputs, on the display is displayed FW version (3x pairs of number and pair of letter). After, the unit is in basic state – flashing dashes on the display, i.e. the barrier will work normally, at activating control commands will react to appropriate movement.

10.2. Settings the control unit

Used these buttons for navigate menu:

- ESC (return to higher-level menu)
- ENT (return to lower-level or confirm)
- + (move to up or increase parameter value)
- - (move to down or decrease parameter value)



In basic mode of control unit flash the dashes on the display or error state (Exx), by press the button (ENT) enter to programming mode, that has four parts:

1) Set parameters (SET)
   a) Timing(PAR)
   b) Logical (LoG)
2) Factory settings
3) Error memory (ERR)
4) Displaying inputs and outputs (DIS)

10.2.1. Programmable parameters

10.2.1.1. Table of timing-function (PaR)

Parameter	Description	Range	Factory settings
P01	**Timer** (Sets delay for automatic closing of barrier after it has been fully opened) **0 –** OFF **1-255 –** time in seconds	0 - 255	0
P02	**Delay** (delay of closing after a closing command is received) **0 –** delay off **1-255 –** delay in seconds	0 - 255	0
P03	**Electronic brake power**	0 - 100	30
P04	**Run time of electromotor** (x 100ms)	0 - 100	
P05	**Motor speed** (Hz)	0 - 127	
P06	**Motor speed slow** (Hz)	0 - 127	
P07	**Acceleration / Slowdown** (Hz)	0 - 127	
P08	**Address RS485**	21-30	
P09	**Speed of electromotor from intermediate position**	0 - 127	

10.2.1.2. Table of logical-function (LoG):

L01	Not used	0 - 2	0
L02	Not used	0 - 3	2
L03	**LAMP** (determinates behaviour of beacon or boom lights) 0 – not flashing 1 – flashing during boom movement only 2 – flashing permanently 3 – flashing during boom movement and open barrier 4 – flashing during boom movement and close barrier 5 – lighting during boom movement 6 – lighting permanent 7 – lighting during boom movement and open barrier 8 – lighting during boom movement and close barrier	0 - 8	0
L04	**FOTO** (‘close’ command memory) 0 – closing command is ignored 1 – closing command is stored in memory and will be performed after SAFE.FOTO becomes closed again, i.e. obstacle or vehicle is not detected 2 – barrier will be closed automatically after vehicle passage (SAFE.FOTO becomes closed again)	0 – 2	0
L05	**Traffic lights to RED** 1 – upon receiving a closing command 2 – upon activating any of safety inputs (photocells, loop detectors etc.) 3 – by external control on AGN input 4 – by external control via RS485	1 - 4	1
L06	**Closing blocked while START.OPEN input is active** 0 – disabled 1 – enabled	0 - 1	0
L07	**Timer reset** 0 – not reset 1 – timer is reset by activating a safety input or opening command	0 - 1	0
L08	**Electronic brake** 0 – disabled	0 - 1	0

	1 – enabled (brake power according to parameter P03)		
L09	**RE11 definition** 3 – Copy state of FOTO input	3	3
L10	**OUT_F** (output OUT_F) 0 – no function or can be controlled via RS485 1 – Brake 2 – electromagnetic valve (used with RKB road blockers)	0 - 2	0
L11	**Input LOCK** 0 – N.O. (normally open) 1 – N.C (normally closed)	0 - 1	0
L12	**STOP input behaviour** 0 – all closing commands are ignored while SAFE.STOP is open 1 – closing command is stored in memory and will be performed after SAFE.STOP becomes closed again 2 – barrier will be closed automatically after vehicle passage (SAFE.STOP becomes closed again). No previous closing command is required. 3 – barrier arm will stop	0 - 3	3
L13	**Boom reversing** 0 – upon activating SAFE.FOTO or SAFE.STOP boom will reverse 1 – upon activating SAFE.FOTO or SAFE.STOP boom will stop and continue closing only after these inputs are deactivated again.	0 - 1	0

10.2.2. Factory settings

The following procedure will delete all user defined values to their defaults:

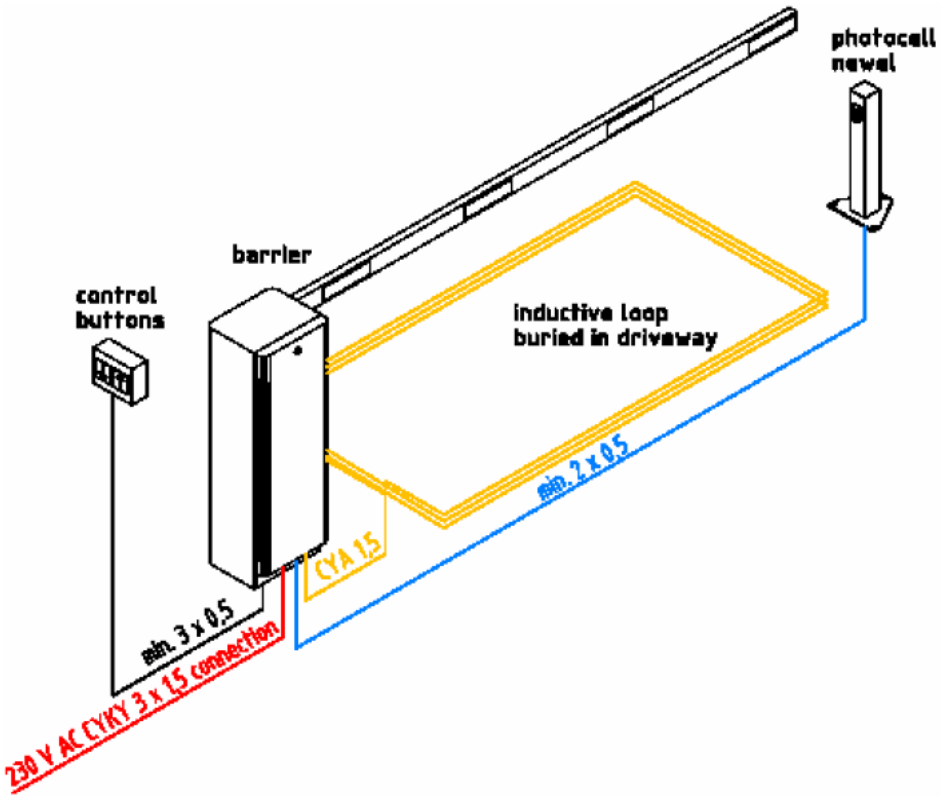
- Press **ENT** to enter programming menu.
- Navigate to DEF by using **+** button
- Press **ENT**
- Controller display will now show **RES**
- Press **ENT**. The factory defaults are now restored.

10.2.3. Error codes (EER)

- E01 – SAFE.FOTO input open
- E02 – Limit switch error
- E03 – Motor run duration expired
- E04 – Multiple control inputs active
- E05 – Control unit blocked by control inputs
- E06 – DOOR SWITCH.NC or BOOM CHECK.NC inputs are open
- E07 – Motor overloading
- E08 – not used
- E09 – 24V power supply error

11. Example of possible connection

The easiest installation of automatic barrier is control by double button. The button is connecting with a cable with minimal cross-section 3 x 0,5 mm^2.



Other options control of automatic barrier:

- Radio remote control
- Induction detectors control
- Control by card, contact or contactless attendance systems
- Control by attendance systems for public places with random visitors (paid parking)

12. Recommended accessories

- ✓ induction detector
- ✓ safety photocell
- ✓ safety pressure strip
- ✓ warning beacon
- ✓ lighting of arm
- ✓ remote control
- ✓ table STOP
- ✓ curtains and double curtains
- ✓ joint mechanics
- ✓ fixed or foldable tip support
- ✓ attendance systems

13. ES - The Declaration of Conformity

We,

AUTOGARD spol. s r.o.
Nová 32
664 41 Popůvky - CZ
IČ: 49446053
herewith declare,

CE

under our sole responsibility, that conceptions and constructions solving of the product as well the embodiments put into circulation, conform to the essential requirements of the following Government Regulation (EU Declaration):

Type:	**Automatic barrier**
Model:	**AG900F**
Technical parameters:	**230 V AC/ 50 Hz, 750 W** **Operating temperature: -20 - +70°C**
Manufacturer:	**AUTOGARD spol. s r.o., Nová 32, 664 41 Popůvky - CZ**

Description and purpose of use:
Automatic barrier is used for prevent passage of vehicles.

Government Regulation (EU declaration):
Government Regulation no. 118/2016 Sb. (Directive 2014/35/EU),
Government Regulation no. 117/2016 Sb. (Directive 2014/30/EU),
Government Regulation no. 176/2008 Sb. (Directive 2006/42/ES).

Used harmonized standards, national standards and technical specifications:
ČSN EN ISO 12100:2011, ČSN EN 61000-6-4 ed.2:2007, ČSN EN 60204-1 ed:2007

The device is safe under conditions of normal and specific use.
The manufacturer has taken a measure to ensure the conformity of all equipment placed on the market with the technical documentation and basic requirements of the above Government Regulations (EU directives).

The conformity assessment was carried out according to §12, article 3, word a), ACT no. 22/1997 Sb. as amended.

Popůvky 3.2.2020	Ing. Milan Plhák, executive director	
.....	.....	.....
Place and date	Name and function of responsible person	Signature

14. Disposal of equipment

Products intended for disposal must be disassembled and the individual components sorted according to the type of materials used (various types of metals, plastics).

Store the parts in a designated place for the collection and disposal of secondary raw materials.

15. Test report of barrier according to ČSN EN 60204-1

Test	Required values	Result
Protective connection test	R < 0,1 Ohm	Passed
Voltage test	V = 2,5kV for 1 sec	Passed
Residual voltage protection		Passed
Function	Setting a check	Passed

16. Certificate of competition and quality of product

The appliance is complete with all accessories and equipment, without any faults and complies to valid standards ČSN.

Type of appliance:	AG900F
Production number:	
Periodic inspection:	100.000 cycles (1 cycle => opening + closing) or six months, whichever come first.
Tested by: Name:	Signature:

17. Warranty

Product: Automatic barrier AG900F + accessories delivered by company AUTOGARD spol. s r.o.

Supplier: AUTOGARD spol. s r.o., Nová 32, 664 41 Popůvky

AUTOGARD spol. s r.o.
provozovna: Nová 32
664 41 Popůvky
DIČ: CZ49446053, tel.: 545 214 149

Done in Popůvky on .....

Signature and stamp

Length of warranty

Manufacturer AUTOGARD spol. s r.o., is responsible for construction, used material, production and functionality of delivered appliance in length of 24 months from handover to the customer. Uninstalled spare parts that were taken out by the manufacturer in warranty period and replaced for new ones become ownership of the manufacturer.

Conditions of warranty

The appliance has to be used for the purpose that was designed for. As a subject to warranty will not be considered damages that were caused by incorrect usage. Additionally, damages that were caused by 3rd party, will of good or incorrect storage. Prior agreement Any changes or alterations on appliance can only be done with prior agreement of the manufacturer.

Warranty expires

a/ length of warranty is expired

b/ by any changes or repair on appliance or its part carried out by unapproved (approved service is arranged by manufacturer)

c/ by using non original spare parts and its appliance or alteration of changes to original parts without prior agreement with manufacturer.

d/ connecting to current not in compliance with norms ČSN, or connecting to other power supply then stated by the manufacturer.

e/ neglecting of regular service inspections by the manufacturer's authorized service center

f/ by not paying the goods within payment terms

g/ non-compliance with regular inspection intervals

Claim of warranty

Any clams on appliance has to be carried out with the goods supplier – manufacturer. The customer has to present valid Warranty list and describe the fault. Without presenting the warranty list the fault cannot be treated as an official claim for which warranty can be applied.